Town of Comox
2022 Annual Drinking Water Quality Report

Table of Contents

Introduction

In 2003, the Provincial Government passed legislation that brought into effect the British Columbia Drinking Water Protection Act (the Act) and the Drinking Water Protection Regulation (the Regulation). The Act and Regulation detail municipal responsibilities as a water supplier.

The Act covers all water systems other than single-family dwellings and systems excluded through the regulation. It outlines requirements for water suppliers in terms of ensuring that the water supplied to their users is potable and meets any additional requirements established by the Regulation or by the water supply system's operating permit, as set by the local Drinking Water Officer. The Regulation sets out requirements for drinking water quality including treatment, construction and operation of water systems, monitoring, reporting, and public notification for water quality advisories.

The Town of Comox (the Town) supplies potable water to approximately 15,000 residents and industrial, commercial and institutional (ICI) customers within Town boundaries. The Town has a bulk water agreement in place to purchase water from the Comox Valley Regional District (CVRD).

General Description

The Town operates and maintains a Class II Water Distribution System. This classification is determined through British Columbia's Environmental Operation Certificate Program (EOCP) and is reviewed every 5 years. Following the review in 2020, the Town's distribution system maintained a Class II rating. System risk has been reduced through the introduction of new preventative maintenance programs and initiation of an asset management program.

The Town's water system consists of:

- 100 km of water mains;
- 414 fire hydrants;
- 1 pressure reducing valve station; and
- 984 mainline valves.

This system is designed to adequately supply water to its end users and in the event of an emergency provides the required flow for fire protection.

Island Health

Island Health administers the Drinking Water Act and the Drinking Water Regulation. The Drinking Water Officer is responsible for issuing operating permits and monitoring compliance of drinking water systems. In BC the surface water treatment objectives for microbiological parameters are:

- 4 log (99.99%) removal or inactivation of viruses;
- 3 log (99.9%) removal or inactivation of Giardia Lamblia and Cryptosporidium;
- 2 treatment processes in place;
- 1 NTU or less turbidity in finished water; and
- 0 detected E.coli, total and fecal coliforms.

The Town of Comox is required to meet these objectives under their operating permit.

Source Water

The Town obtains its water from the Comox Valley Water System (CVWS) operated by Comox Valley Regional District (CVRD). The water provided by the CVRD is sourced from Comox Lake and is treated through the new Water Treatment Plant (WTP) that was completed in 2021. Water enters the WTP and is filtered, chlorinated, sampled and metered by the CVRD.

Source Water Testing

Quality of the source water is monitored and tested by the Comox Valley Regional District. The CVRD water quality reports can be found on their website at https://www.comoxvalleyrd.ca/waterquality.

Transmission System

Water supply is distributed through the CVRD's transmission system to multiple CVRD reservoirs These reservoirs provide water storage for the Town's water system.

Distribution Sampling

In order to ensure water quality standards and regulations are met, the Town regularly tests the water quality throughout the distribution system. Under guidance from Island Health, the Town has installed a series of water sampling test points. The Town completes weekly sampling and submits the samples to an Island Health approved laboratory for testing. If a sample shows evidence of Total Coliforms and/or E.coli, the Lab will immediately contact, by phone, both the Town Public Works and Island Health in keeping with the requirements of the Regulation.

Sample Requirements

The Regulation requires the Town to take a minimum number of samples per month based on the following population figures:

- Less than 5,000 — 4
- 5,000 to 90,000 — 1 per 1,000 population
- More than 90,000 — 90 plus 1 per 10,000 population in excess of 90,000

Sample Stations

The Town has five sample stations located throughout the distribution system with varying flow patterns, rates and conditions. They are located as follows:

- Kye Bay — In front of the municipal washroom facility
- Ninebark — At the intersection of Military Row and Ninebark Way
- Public Works — Within the Town Public Works yard
- Marina — At Marina Park near the Municipal Splash Park
- Filberg — At the south end of Filberg Road

Distribution Sampling Overview

The Town's current population mandates a minimum of 15 samples to be collected and tested each month. Sampling frequency and locations continue to meet the monitoring protocol set out by Island Health.

Standards & Regulatory Distribution Testing

The Regulation requires a supplier to collect and test samples from the distribution system. The Canadian Centre for Disease Control (CDC) Laboratory in Vancouver analyzes all water samples sent by Island Health.

Town of Comox water sampling results for 2022 can be found on the Island Health website: https://www.islandhealth.ca/learn-about-health/drinking-water/water-sampling-results

Distribution Testing Parameters

Physical and bacteriological parameters are collected, sampled and tested from each of the Town's sampling sites; all 5 sites are sampled weekly with samples from 4 sites being submitted for bacteriological testing. The sites that alternate are the Filberg and Marina test points.

Physical Parameters

- Free chlorine residual measured in milligrams per litre (mg/L)
  - Guideline is 0.2mg/L
- Turbidity measured in nephelometric turbidity units (NTU)
  - Guideline is 1 NTU
  - Guideline is < 0.5 µg/L

Free Chlorine Residual

In order to control the re-growth of bacteria in the distribution system it is important to maintain a disinfectant residual. The minimum disinfectant residual of 0.2 mg/L (milligrams per liter) of free chlorine is maintained.

Results

In 2022, the Town of Comox collected and tested 264 samples; no samples fell below the benchmark of 0.2mg/L of free chlorine residual.

Turbidity

Turbidity is a valuable indicator of water quality. Turbidity is a measure of the cloudiness of water caused by suspended particles given in NTU. The measurement is a quantification of the scattering and absorption of light by these suspended particles; the higher the turbidity the cloudier the water. Water with high turbidity may shield harmful organisms which increases disinfectant demand.

In 2018 the CVRD installed UV treatment as an interim measure pending construction of the Water Treatment Plant (WTP). With the UV in place Island Health approved an increase from 1 NTU to 3 NTU of source water before a boil water advisory is required. In 2021, the CVRD completed the construction and commissioning of the new WTP. With the WTP in operation, Island Health has reduced the allowable limit for NTU. The Town's operating permit does not have a specific upper limit for turbidity, however we attempt to keep the level below 1 NTU during normal operations.

Results

In 2022, turbidity was below 1 NTU throughout the Town of Comox system.

Total Coliforms & Escherichia coli

Total coliform and E. coli are typically used as indicators for overall drinking water quality. The Regulation establishes the parameter and standards for the microbiological quality of water.

Total Coliform Bacteria

Standard:

(a) 1 sample in a 30 day period
No detectable total coliform bacteria per 100 ml

(b) More than 1 sample in a 30 day period.
At least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml.

Escherichia coli

Standard: No detectable E. coli per 100 ml

Results

In 2022, no samples collected from the Town of Comox water system tested positive for total coliforms or E.coli.

Trihalomethanes & Haloacetic Acids

Trihalomethane and haloacetic acids are used to indicate the potential creation of harmful bi-products during the chlorination process due to organic matter in the source water. Samples are collected for trihalomethanes and haloacetic acids from one sample station quarterly. The location where the sample is taken is rotated through the Town's sample stations.

Trihalomethanes

Trihalomethane measured in parts per billion. Guideline is 100 ppb.

Haloacetic Acids

Haloacetic Acid measured in parts mg/L. Guideline is 0.08 mg/L.

Results

In 2022, no collected samples in the Town of Comox exceeded the guidelines for trihalomethanes and haloacetic acids.

Annual Flushing Program

The Town of Comox's watermain flushing program is aimed to enhance the overall water quality within the water distribution system and improve systems operations by reducing turbidity, removing sediment (silt and biofilms), lowering chlorine demand, increasing system hydraulic capacity and increasing the life of system components. This program supports the Town's Asset Management program as it allows for in situ condition inspections of the water system and helps maintain water infrastructure integrity, thus increasing the service life of the system and its appurtenances. The Town completes flushing of all of the water system annually and provides an opportunity to service fire hydrants as part of the flushing program. Many of the water system isolation valves are operated annually.

System Improvements

The Town continues to make improvements to the overall distribution system and its appurtenances. Projects are identified and prioritized within the Asset Management Program enabling sound financial planning to maintain and enhance level of service to the community.
System Improvements in 2022 included:

- Acceptance of the subdivision at 2309 McDonald Road (Labrador Drive extension, Grumman Place extension, Tracker Place extension, Hercules Place, Aspen Road extension)
- Installation of 46 new private property water meters
- Replacement of 52 water meters due to various issues

Operator Qualifications

The Environmental Operator Certification Program (EOCP) is a not-for-profit society that oversees the certification of water and wastewater operators in BC. The Town has 8 EOCP-certified water operators with the following qualifications:

- Water Distribution I - 5 certified employees
- Water Distribution II - 2 certified employees
- Water Distribution III – 1 certified employee
- Water Treatment I - 1 certified employee

Emergency Response Plan

The Emergency Response Plan has been prepared to provide staff with an effective plan to respond to an emergency related to the Town's water distribution system. In response to the 2020 COVID-19 pandemic this plan was amended to include viral outbreak as a risk; contingency documentation was further developed detailing operator requirements and workload management if staffing were to be impacted by high rates of infection.