



# Memo

**TO:** Chairperson, Committee of the Whole

**SUBJECT:** Water Consumption Plan

**DATE:** February 4, 2022

**FROM:** Chief Administrative Officer

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## **BACKGROUND**

Water metering was introduced in 2013 with a view to conserving a valuable resource. While water consumption has been reduced, it is still way above the Canadian per capita consumption rates. Total per water in Canada was 427 litres per person per day in 2017 while the total per capita water consumption per capita was above the national average in Newfoundland and Labrador, New Brunswick, Yukon, Quebec, British Columbia, and Prince Edward Island while it was the lowest in Nunavut and Manitoba.

Per capita water consumption in Lake Cowichan was estimated in 2021 to be 476 litres and the goal is to do better. That can be achieved by progressively reducing the "block of consumption" currently at 35 cubic meters to at least 30 cubic meters in 2023.

A requirement for the grant application for the sewer treatment upgrades is for council to approve a water conservation plan which must be included in the application. The attached plan has been updated to reflect recent water consumption figures and adjustments to reflect the new water treatment plant and revised quantitative corporate targets as water consumption has not been adequately reduced.

## **STAFF RECOMMENDATION**

that Council endorse the updated 2022 Water Conservation Plan to ensure that its water resources are always used in an environmentally sustainable manner that should result in reductions in liquid waste and the use of energy.

A handwritten signature in black ink, appearing to read "Joseph A. Fernandez", written over a horizontal line.

Joseph A. Fernandez

## Town of Lake Cowichan

### Water Conservation Plan

February 8, 2022

#### Background: Community Water Use Profile

The community's potable water supply is drawn from Cowichan Lake, treated, and processed at the Water Treatment Plant and stored in a reservoir on Indian Road for distribution to the end user. Currently, customers are on water meters and pay fees based on their water usage. Additional charges are levied for those going over their monthly allotments. Town records show that in 2021, 560,905 m<sup>3</sup> of water was consumed. With an estimated population estimated at 3,400 in 2021 this represents 164.9 m<sup>3</sup> per capita or 362.9 m<sup>3</sup> per household. This rate of water consumption is somewhat higher than the Canadian average usage of 156 cubic metres per capita (2016 data).

The Official Community Plan projects a population growth rate of 1 to 1.5% per annum through the year 2041. Under a base "business as usual" case water consumption will increase to 782,415 m<sup>3</sup> annually to support a population of 4,500 people.

#### Vision

The Town's vision as expressed in the newly updated Official Community Plan is:

*Our vision is to create a vibrant, healthy, sustainable community that exists in harmony with the natural environment, enjoys a balanced economy, supports all generations, and provides the opportunities to satisfy diverse social needs.*

The vision for a water conservation plan is consistent with and supportive of this overall community vision and can succinctly be stated:

*Our vision is to conserve precious water resources in order to achieve sustainable social, economic and environmental benefits.*

#### Goals

1. To use water resources in an environmentally sustainable manner by limiting waste, increasing efficiency, and encouraging water conservation practices.
2. To use water resources in an economically sustainable manner by containing and reducing system operation costs at all points in the distribution system, including treatment, distribution, and sanitary treatment for outflows.

3. To use water resources in a socially responsible manner by creating an equitable cost structure and setting an example of good stewardship for neighbouring communities and water user stakeholders.

## Objectives/Targets

### Qualitative objectives

1. To ensure adequate future quantity and quality of domestic water supply --*Official Community Plan Objective. 4.6.1 – (2)*.
2. To encourage opportunities for rainwater re-cycling --*Official Community Plan policy 6.4.4.3 – 3*).
3. Upgrade the Town's liquid waste facility to achieve tertiary treatment level--*Official Community Plan policy. 4.6.1.1 – (7)*.
4. Ensure that the sewage effluent meets the standards required under the Environment Management Act - *Official Community Plan policy. 4.6.1.1 – (5)*.

### Quantitative Corporate Targets

1. Reduce per capita water consumption
  - a) By 2023 to 160 cubic metres per capita; and
  - b) By 2035 to 125 cubic metres per capita.
2. Reduce per capita water consumption in order to achieve reduced GHG emissions (Official Community Plan secondary targets for GHG emission reductions –Section 3.2.1.4):
  - b) By 2025 reduce greenhouse gas emissions by achieving the following:
    - iii. Reduce water supply operations energy consumption by 20%; and
  - c) By 2050 reduce greenhouse gas emissions by achieving the following:
    - iii. Reduce water supply operations energy consumption by 50%.

## Conservation Actions

### 1. Water Metering

- In 2013, metering for water consumption began for all users on the Town water system. All water customers are metered based on a base fee for a more than reasonable "block" of consumption and an additional fee per cubic metre for usage above and beyond.

- The Town is considering reducing the “block” to a more reasonable block to meet increased demands and the impact the new water treatment plant is having on our existing wastewater treatment plant. The stringent requirements mandated by the Province to meet its Water Treatment Objectives for Surface Water in British Columbia has had an impact on the wastewater treatment plant caused by the required backwashes at the water treatment plant.

## 2. Lawn Sprinkling Regulations

- Continue lawn sprinkling restrictions generally in accordance with the following:

During the summer (June 1 to September 30) and with the prolonged drought conditions of late the Town has instituted new lawn sprinkling restrictions for both business and residential customers. Sprinkling is only permitted between 7:00 am and 9:00 am and between 7.00 p.m. and 9.00 p.m. only on specified days (even numbered addresses on Tuesday, Thursday, and Saturday; odd numbered addresses on Wednesday, Friday, and Sunday) at Stage 1 of the Water Restrictions. Further restrictions are imposed beyond this level to sprinkling being prohibited at Stage 3.

## Anticipated Savings in Water Usage

The table compares the base case with a conservation plan. It reveals a substantial reduction in water consumption following the introduction of water metering and ongoing water conservation programs. **By 2035 usage should drop to 125 cubic metres per capita annually compared with the current usage of 282 cubic metres per capita annually; a reduction of over 50%. By 2035 total annual water consumption on the conservation plan track should be no greater than 562,500 cubic metres.** This compares to an anticipated 1,269,000 cubic metres under a base case scenario. The conservation plan will be compared to actual results and revised on a periodic basis.

Projected Base Case and Conservation Plan Water Consumption							
		Total Annual Water Consumption (cubic metres)		Annual Per Capita Water Use (cubic metres)		Annual Per Household Water Use (cubic metres)	
	Population	Base Case	Conservation Plan	Base case	Conservation Plan	Base Case	Conservation Plan
2011	3,140	885,750	n/a	282	n/a	660	n/a
<b>2018</b>	<b>3,226</b>	<b>967,260</b>	<b>680,347</b>	<b>282</b>	<b>210</b>	<b>660</b>	<b>363</b>
2021	3,400	1,050,450	560,905	282	138	660	323
2035	4,500	1,269,000	562,500	282	125	660	293

### Assumptions

Average household size of 2.24 --based on 2016 Census

Base case water consumption patterns rise with population increase  
Population estimates for 2016 derived from BC Stats census data  
Population projections for 2020 and 2035 based on a 1.5 % annual average growth rate

### ***Water & Wastewater***

Infrastructure in this sector includes the water reservoir and pumps used to distribute water, as well as the lift stations and sewage lagoon used to process and treat liquid waste into a compliant effluent to be discharged into the environment.

The water source is Cowichan Lake, and it is pumped from the raw water pumphouse on Northshore Road to the water treatment plant on Indian Road. Treated water is held in the onsite reservoir and distributed throughout the community.

Several lift stations move liquid waste to the Town's sewage lagoons on Grants Lake Road, where it is treated to provincial guidelines. Effluent is discharge via gravity into the Cowichan River.

Lake Cowichan has an above average water consumption per capita, which results in a higher volumes of liquid wastes requiring treatment. To address this issue the Town is exploring reducing the block structure.

The Town will maintain progressive block water pricing model to encourage water conservation *Official Community Plan policy - 4.6.1.1 – (10)*.

Water and Wastewater services account for 3.75% of total corporate emissions and 32.44% (349,421 kW.h) of electricity consumption.