Memorandum

Date:	June 6, 2022	File Number:	GL-RZ-2014.1 (Crystal Mountain)
To:	Galiano Island Local Trust Committee		
From:	Brad Smith, Island Planner William Shulba, Senior Freshwater Specialist Local Planning Services		
CC:	Robert Kojima, Regional Planning Manager		
Re:	GL-RZ-2014.1 (Crystal Mountain) – Groundwater Information Requests		

Purpose

The purpose of this staff memo is to provide further information to the Galiano Island Local Trust Committee (LTC) on application GL-RZ-2014.1 (Crystal Mountain) with respect to groundwater resources and alternatives for a phased approach to development.

The LTC discussed a number of water related items at the May 2, 2022 meeting and subsequently passed the following resolution:

> **GL-2022-48**
> **It was Moved and Seconded,**
> that the Galiano Island Local Trust Committee requests staff to provide further reporting for GL-RZ-2014.1 (Crystal Mountain) addressing Trustee's questions and community input related to groundwater resources and alternatives for a phased approach to development.
>
> **CARRIED**

The following is intended to address this request.

Groundwater Data Question and Answer

Have the daily water use estimates been revised in the latest version of the WMP?

Yes, updated daily water demand volumes are higher than the original estimates based on the fixtures in the buildings and the number of people using those fixtures; these estimates are now more closely tied to provincial standards for sewerage systems.

Does the WMP currently have enough groundwater to satisfy all potable and non-potable water requirements?

No. CMS has proposed a hybrid system that would use groundwater for potable water needs and rainwater for non-potable uses; there is a period where the rainwater catchment does not provide enough for non-potable use and cisterns would get filled from the well.

At 100% use of both potable and non-potable water as estimated in the WMP, there is a shortfall of ~732 L/D. This is intended to be offset by storage catchment of 45,415 litres of groundwater for potable uses and 112,925 litres of rainwater catchment for non-potable uses.

The view of the professional engineer authoring the WMP is that this storage volume will be sufficient to meet the periodic shortfall in groundwater availability.

Is a 12 hour pump test on the central well reasonable in this case? How about the time of year the test was conducted?

A 12-hour pump test was conducted in 2015 by a professional hydrogeologist who deemed it to be sufficient to assess the well yield for the relatively low anticipated water demand for the centre. The estimated low water demand of 2839 (now 4801) L/day in 2015 was comparable to the requirements for a domestic residential well where a 12 hour test is typically sufficient. Groundwater datalogger monitoring completed in the Central Well in fall/winter of 2021 were consistent with the results of the 2015 pump test.

Staff are not of the view that additional pump tests are required. Staff do recommend datalogger monitoring of the Central Well to be continued in perpetuity.

The driest season of the year in the summer does not typically equate to the lowest groundwater levels, which are usually between the end of September and the start of November. The pump test was conducted in October 2015.

What is the groundwater region classification for the CMS property?

The Groundwater Region has been identified as vulnerable by Islands Trust staff following the groundwater availability assessment in addition to other assessments such as risk of saltwater intrusion into the aquifer.

The North Trincomali Channel groundwater region was classified critical groundwater availability because there are many privately managed wells on the coast below the proposed CMS development that have potential for well-to-well interference that may cause issues with salt water intrusion or lowering groundwater levels in adjacent wells.

Is there any evidence of saltwater intrusion in the Central Well?

There is no data that shows there is saltwater intrusion occurring in the Central Well. The Central Well has been observed as having a muted tidal influence. The analysis of the Central Well pump test water quality sample was below the drinking water standard and threshold for determining saltwater intrusion for chloride.

What is the status of provincial water license approval?

The Province is still reviewing the CMS water licence application. The applicant has submitted an update to reflect amended water volumes based on their latest WMP. Water licence approval is likely to take a year or more due to provincial backlog. Provincial water licences are typically based on annual volume and/or maximum daily volume limits.

Adoption of any rezoning approval by the LTC could be made conditional upon approval of a provincial water licence for the volume requested.

Is a phased development approach feasible?

The LTC could seek a phased development approach with requirements for water monitoring to demonstrate water use estimates are reasonable and sufficient water supply is available prior to additional phases of development being allowed to proceed. The phasing plan could implemented through a S.219 covenant.

If the LTC wants to further consider a phased approach, staff would need to engage with the applicant to explore what alternatives to phasing may be viable, if any, and bring that information back to the LTC at a future meeting.

Are there other alternatives to reducing groundwater use/impacts?

Yes. The LTC could possibly consider:

- Reducing the overall retreat user capacity (to equal a reduction of roughly 732 L/D) so that there is available groundwater to meet all potable and non-potable water requirements in the WMP;
- Including additional bylaw provisions that establish seasonal operating windows and/or maximum annual retreat user day limits;
- Seeking other ways from applicant to reduce overall groundwater consumption in proposal, such as elimination of caretaker residence, implementing increased efficiency in water management such as greywater recycyling etc.