

From: Tom Mommsen <[REDACTED]>

Sent: Sunday, March 6, 2022 11:21 PM

To: Dan Rogers <drogers@islandstrust.bc.ca>; Jane Wolverton <jwolverton@islandstrust.bc.ca>; Tahirih Rockafella <trockafella@islandstrust.bc.ca>

Cc: Brad Smith <bsmith@islandstrust.bc.ca>; Art Moses <[REDACTED]>

Subject: comments on Crystal Mountain Water Management Plan

March 6, 2022

Dear Trustees,

We are writing to express our disappointment with the water management plan attached to the March 7, 2022 planner's report for the proposed Crystal Mountain Society Retreat Centre rezoning. Please see the attached pdf.

Also attached is a copy of Brief#3 concerning water management on the Crystal Mountain Society Retreat Centre that we submitted to you in October 2021. This brief has been endorsed by over 175 Galiano Islanders and Galiano homeowners as part of a petition.

The two PDFs are closely linked and we are yet to receive any of the responses promised by the chair during a previous LTC meeting.

Sincerely,

Art Moses & Tom Mommsen

Galiano Island

Via email to trustees Dan Rogers, Jane Wolverton and Tahirih Rockefeller and planner Brad Smith

March 6, 2022

Dear Trustees,

We are writing to express our disappointment with the water management plan attached to the March 7, 2022 planner's report for the proposed Crystal Mountain Society Retreat Centre rezoning.

The plan repeats and compounds the problems with water supply and water use identified in one of the five briefs provided to trustees last fall from a group of Galiano residents. The concerns identified in the briefs were endorsed by more than 175 Galiano residents and homeowners who signed the petition. Unfortunately, and contrary to the promise made by the chair that all questions will be responded to, trustees have neither provided a written reply to any of these briefs, nor any responses to the evidence submitted and the very serious concerns raised in them.

As the brief #3 "Critical Issues Regarding Water" pointed out - confirmed in the latest version of the water management plan - the CMS application seriously underestimates water use at what is designed as a full-time, year-round retreat complex accommodating up to 19 overnight guests in Area A, and another 3 guests in Area B. The latest version of the water management plan also contemplates up to 8 additional individuals as day users, staff and teachers in Area A, while the day use limit proposed by the LTC would allow a maximum number of daily users of 35.

The water use contemplated for these paying guests, most of whom will live in the complex for up to six months at a time, is far less than what's required for tourists and residents anywhere else on Galiano. There is no scientific evidence given in the water management plan to justify this.

From Crystal Mtn Water Managmt Plan submitted 16 Feb. 2022:

3.2 Sustainable Yield

- 2.426 L/m
- 4069 L/d
- 28,483 L/w
- 1.49 mil. L/y

See Groundwater Assessment Report for Crystal Mountain Spiritual Education Centre, Galiano Island, A. Kohut (2015) (Appendix C)

Please note that the sustainable yield was derived from a single 12 hour pump test performed in early October 2015. As pointed out in Brief 3 (attached) a single test should not be the basis of any calculation for sustainable yield. Also the preceding month (Sept 2015) was not particularly dry (almost 60 mm of rain (ENV Canada)), making the single - already weak - observation even weaker. Yet, we will use the derived number for realistic sustainable yield (70% of 4069 L/d), as a reference point, namely **2848 L/d**.

Here are the numbers and the real problems.

1. The water management plan calculates a maximum daily demand for Area A of 2616 L per day (232 L shy of daily sustainable yield).

2. Subtracting the caretakers' demand (2 persons, 350 L/d p) will reduce the maximum daily demand for visitors, staff and teachers to 1916 L/d. (As an aside, the Galiano Island Land Use Bylaw requires 2275 litres of potable water per day for a single residence such as the caretaker's residence (not 700 L for two persons)).
3. Assuming 27 visitors, staff and teachers and dividing that number into 1916 L/d, the plan leaves only 71 L/d per person (L/dp) for Area A– a fifth of what is allocated to each caretaker.
4. At Area B, where a well has yet to be drilled, the water management plan suggests the need for only 284 litres per day for the three people staying there. Without considering the needs of staff or teachers, this would provide each person with just 94 litres a day.
5. Average use in Canada (NRCan) is 249 L/dp. Estimated water consumption for the proposed affordable housing projects range from 230 L/dp (*GALI*) to a range of 167 to 232 L/dp (*GIGARHS*).
6. The LTC has proposed a daily limit at the facility of 35 persons. Accommodating 35 people on site would reduce the water available at Area A to as little as 55 L/dp.
7. If we allocate 71 L/dp to all 35 participants/staff/teachers (2483 L in total) and add the caretakers' demand, the use would be 3184 L/d, **exceeding the accepted sustainable yield by almost 30%.**
8. If realistic water demand (see the draft water management plans for GALI and GIGARHS) is used (200 L/dp) for 27 people plus caretakers, the resulting demand would be 5800 L/d, exceeding the **accepted sustainable yield of 2848 L by almost two-fold. In fact, the demand would exceed the capacity of the well by 43%.**
9. Further, the plan contains no estimate of site water use for the proposed one day a year that CMS would be entitled to exceed the number of 35 participants, staff and teachers on site for “special events”.

The CMS development is located in a groundwater area with the highest class of vulnerability (Class I; Regional Groundwater Availability Project, *cf.* page 1 of brief #3). As such it is willful negligence to critically underestimate water demand for a development for an already water stressed area. Based on more realistic numbers (200 L/dp) used elsewhere on Galiano and in view on the sustainable yield of the well in question, **the maximum allowable number of occupants/staff/teachers on the site would be 14.**

As a new twist, the proponents of Crystal Mountain are disputing the generous – and as shown above excessive - limits on the number of people allowed to be on site (35 per day with one occasion per year when the number can be exceeded for a “special event”). Now CMS is demanding the right to have large crowds at the retreat centre for up to six special occasions a year, undoubtedly mostly scheduled during the dry summer months when demands on the aquifer will be the highest. Based on the calculations above, this request should be turned down categorically by trustees, not the least because there is nothing in the water management plan to support the increased water use that would be required as the current water demand greatly exceeds the capacity of the well already.

We have a related concern: The failure to demand data logging in the applicant's wells during the critically dry late spring/summer season to assess the behaviour of the aquifer is not acceptable. The LTC made this requirement of monitoring during the critical drawdown period for the two affordable housing projects cited

above. Summer data logging for the CMS rezoning is absolutely essential and also a matter of equal treatment to other proposed developments on Galiano. Also, with climate change, extended periods of summer droughts are expected - another reason to err on the cautious side for aquifer production. Logging just the recharge period provides data on recharge only and not on sustainable capacity and drawdown during the critical summer months. This is clearly borne out by the data collected: the aquifer recharges during the fall and winter months. No surprises here. The only new observation is that recharge is independent of individual precipitation events.

We also note that the CMS water management plan does not follow the Local Trust Committee motion of Oct. 6, 2020 which directed the applicant to include in its plan “*a water catchment system designed to supplement groundwater supply for potable water in peak use/low flow periods.*” The only mention of rainwater catchment in the current plan is for water that will be non-potable.

Finally, it is bizarre that there was no requirement to monitor any of the neighbours’ wells to obtain a general idea about interaction between area wells and on the general health of this particularly vulnerable aquifer. The data logging report for the recharge period does note some impact on the water level in CMS wells from pumping of nearby wells. However, no concern is expressed about the opposite: the impact on neighbours’ wells on the amount of water slated to be withdrawn by CMS. The monitoring of a neighbouring well was required for the GALI affordable housing project at the South End of Galiano. Why not here?

Trustees owe the citizens who have pointed out these shortcomings a full written explanation of why they are choosing to continue with this application based on such serious concerns about water and critical conceptual shortcomings in data collection. Better still, trustees should understand that uses proposed under this rezoning are not appropriate in an area that the Trust’s Freshwater Specialist identifies as being ‘highly vulnerable’.

Sincerely,

Art Moses

Tom Mommsen

Attached: Brief #3

Crystal Mountain Development Plan – Brief 3:

Critical issues regarding water

“Water is what will ultimately determine our island’s population capacity. There have been many more reports this year about wells going dry, sediment in people’s water and boil water advisories,” **Trustees Tahirih Rockafella and Jane Wolverton, Trustee Report Active Page, September 2021**

“So judging by the groundwater use and the risk of salt water intrusion on the areas closer to the coast and the well density, there’s a lot of wells there... so even though there is a lot of recharge there is... a high amount of water use in that groundwater region compared to other areas in the north... So putting it all together that creates a highly vulnerable situation.” William Shulba, Islands Trust Freshwater Specialist, speaking about the area of the proposed Crystal Mountain retreat development, Galiano Island Local Trust Committee Sept. 7, 2021. See map below.

CM Proposal in a Highly Vulnerable Groundwater Area

“A highly vulnerable situation”, “areas that are in need of critical attention” – that’s how the Islands Trust Fresh Water Specialist describes the area where the Crystal Mountain Society (CMS) wants to develop a year-round 22-unit retreat centre for international and domestic visitors on land currently zoned for forest use only.



Source: Presentation by W. Shulba, Groundwater Sustainability Implementation Project, Galiano OCP

Curiously, Islands Trust Planning staff made no reference to these critical classifications when they declared there's enough water from one of CMS' existing wells on the property to support the retreat's intensive year-round water use without affecting neighbouring wells.

Serious Underestimate of Water Use

At the same time, staff are seriously underestimating how much water CMS will need to run its operations.

In October 2020, the planner reported that a pump test result on the well CMS is planning to use was 4,069 litres per day (L/d). Once accounting for the 2275 L/d required under Galiano's Land Use Bylaw for the caretaker residence, that leaves only 1,794 L/d for retreat operations involving up to 19 resident retreatants in the main area, for a per person amount of less than 95 L/d per person, not counting support staff, teachers and an undisclosed number of retreatants accommodated elsewhere on Galiano.

This is well below the standard established by Natural Resources Canada of 249 L/d per person.

CMS' Water Management Plan Overview presented to the LTC last April envisages "maximum peak daily demand" as 3,052 litres per day. The planner told the Sept. 7/21 LTC meeting that "the proposed water use in the water report is a maximum of 2,890 L/d". For the Upper Ridge, where a well has yet to be drilled, the Water Management Plan Overview estimates water consumption will be only 94.6 L/d for each of the three visitors accommodated, not counting support staff. In all cases, these numbers are far below the NRCan standard for daily per person water demand.

These low-ball figures bear no relation to the requirements of Galiano's Land Use Bylaw (LUB). The LUB sets out strict allowances for daily water demand "for each building, structure or use of land permitted by this bylaw," resulting from a subdivision, which this application clearly would be. Complying with the bylaw would require at least 2,275 L per day for "each building, structure or use of land", 3,185 L if it was classified as visitor accommodation and 3,640 L for a commercial development.

Ignores effects of climate change on water availability

Planning staff are relying on a 2015 hydrogeological report, but:

- The report was written six years before climate change has deepened and extended dry seasons and increased evaporation.
- The 2015 report relied on a 12-hour pump test performed in October, even though the industry standard for a pump test is 72 hours and maximum water demand will be in the dry summer months.
- During this limited pump test no neighbouring wells were monitored for potential interference.
- No data logging has been done on either of the two other existing wells on the property to assess fluctuating water levels in the aquifer.
- No assessment has been done on the impact of the additional well the applicant plans to drill on its upper ridge.
- Planners have never asked for data from the Spotlight Cove community, which shows a negative effect on groundwater quality during the dry summer months, or the adjacent properties on Clementine Lane and Dobson Lane.

Non-Compliance with Islands Trust Water Directives

In his report to the LTC September 7, 2021, the Planner checked off the Islands Trust Policy Statement directives about water.

"Local Trust Committees and Island Municipalities shall in their official community plans and regulatory bylaws address measures that ensure that neither the density or intensity of land use is increased in areas which are known to have a problem with the quality or quantity of the supply of freshwater, water quality is maintained and existing, anticipated and seasonal demands for water are considered and allowed for."

Local Trust Committees and Island Municipalities shall in their official community plans and regulatory bylaws address measures that ensure water use is not to the detriment of in-stream users.

No work has been done to comply with these directives. And the numbers regarding water consumption don't add up. So why did the planner check the directives off? LTC chair Dan Rogers was right to say he was not prepared to sign off on any matters concerning water.

Instead, trustees are now requiring CMS to place a data logger in one of their secondary wells to monitor aquifer levels from Oct. 2021 and provide data to the LTC by January 2022.

However, to get an effective view of the state of the aquifer from which CMS are intending to draw large amounts of water, the LTC should require data-logging to continue well into the next dry season. That way the Trust will know exactly when water levels drop and how low they go in the summer months when the water use in the proposed retreat will be greatest. That's what the planner, himself, said, while questioning the value of limited data logging this fall.

At the same time, LTC must require monitoring of wells in the neighbourhood, particularly the wells downstream from the CMS development in Spotlight Cove and wells on adjacent properties on Clementine Lane and Dobson Lane.

Otherwise, trustees will be leaving neighbours in the dark, trusting out-of-date information and relying on water consumption estimates that defy local bylaws and common sense.

Water quality and availability are critical issues for all of Galiano, including the vulnerable North End neighbourhood (see map above). The CMS application provides no meaningful assurances their proposal won't negatively affect freshwater.

This document (Brief 3 of 5) was prepared by Galiano residents and landowners who are concerned about the Crystal Mountain application: Sheila Anderson, Serena Coutts, Jenna Falk, Akasha Forest, Suzanne Fournier, Dan Gaucher, Bob Grist, Diana Lilly, Brad Lockett, Pat Mayhill, Ian Mayhill, Tom Mommsen, Art Moses, Sandy Pottle, John Ronsley, Risa Smith