

6 February 2024

Alicia Fraser
General Manager, Integrated Water Services
Capital Regional District

Dear Alicia,

Re: Filtration of Greater Victoria Water Supply System

Thank you for asking Island Health to comment on the Capital Regional District Regional Water Supply 2022 Master Plan, specifically the recommendation to plan for filtration of the Greater Victoria Water Supply System. Please share this letter however you see fit.

Background of roles & responsibilities

Under the [BC Drinking Water Protection Act](#), medical health officers have responsibilities as drinking water officers, and can appoint and delegate responsibilities to other drinking water officers. For Vancouver Island, medical health officers and appointed drinking water officers are employed by Island Health. Additionally, under the [BC Public Health Act](#), medical health officers “must advise, in an independent manner, authorities and local governments within the designated area.... on public health issues”.

Under the BC Drinking Water Protection Act “a water supplier must provide, to the users served by its water supply system, drinking water from the water supply system that (a) is potable water, and (b) meets any additional requirements established by the regulations or by its operating permit”. The drinking water officer is responsible for issuing operating permits. In reviewing an application for, or reviewing an existing operating permit, drinking water officers must consider guidelines, which are consolidated in the [Drinking Water Officers’ Guide](#).

Drinking Water Treatment Objectives & filtration exemption

Within the Drinking Water Officers’ Guide is the [Drinking Water Treatment Objectives \(Microbiological\) for Surface Water Supplies in British Columbia](#). This guidance includes treatment objectives that includes “Two treatment processes for surface water” and states that “To provide the most effective protection, the Guidelines for Canadian Drinking Water Quality recommend that filtration and one form of disinfection be used to meet the treatment objectives.”

This section also provides criteria for a filtration exemption, of which is currently included in the operating permit of the Greater Victoria Water Supply System. One of the criteria for filtration exemption in the Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia is “Average daily turbidity levels measured at equal intervals (at least every four hours) immediately before the disinfectant is applied are around 1 NTU, but do not exceed 5 NTU for more than two days in a 12-month period.” Turbidity is an important indicator of water quality as high levels can overwhelm disinfection processes, resulting in inadequately treated water which raises the risk of causing waterborne disease.

Island Health Medical Health Officers

Chief: Dr. Réka Gustafson 250-519-3406 North Island: Dr. Charmaine Enns 250-331-8591
Central Island: 250-739-6304 Cowichan Region: Dr. Shannon Waters 250-737-2020
South Island: Dr. Mike Benusic, Dr. Murray Fyfe, Dr. Dee Hoyano 250-519-3406
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Of note, the guide states that “Applying the filtration exemption criteria does not mean filtration will never be needed in the future. A consistent supply of good source water quality is critical to the approach, but source quality can change. Therefore, the exemption of filtration must be supported by continuous assessment of water supply conditions. Changing source water quality can occur with changes in watershed conditions. Increased threats identified through ongoing assessment and monitoring may necessitate filtration. Maintaining the exemption condition relies on known current and historic source water conditions, and provides some level of assurance to water suppliers that a filtration system may not be necessary unless the risk of adverse source water quality increases.”

Future of Greater Victoria Water Supply System

The minutes of the 21 February 2001 Capital Regional District Regional Water Supply Commission meeting state that “it has been agreed that filtration will not be required until water is introduced from the Leech River system”. The rationale for this is that the current Greater Victoria Water Supply System has historically very low turbidity levels - for example, the 2022 annual report indicates typical turbidity of 0.2-0.4 NTU, with two short term exceedances of 1 NTU with a peak of 3.4. This meets the filtration exemption criteria regarding turbidity.

With the planned introduction of water from the Leech River to increase capacity of the Greater Victoria Water Supply System, there is evidence that this may introduce turbidity-causing particles into the existing Sooke Lake reservoir. The October 2021 Leech River Watershed Water Quality Analysis Report indicated a median turbidity in the West Leech River of 0.70 NTU with 25% of readings exceeding 1 NTU and a peak turbidity of 1571.6, considerably higher than measurements at the Sooke Lake intake of the Greater Victoria Water Supply System. This raises substantial concerns about increasing turbidity of the Greater Victoria Water Supply System, the extent of which may partly depend on how the Leech River water supply is added to the existing system. The impact of a significant turbidity event would be substantial. Without a filtration system to reduce turbidity before disinfection, a boil water notice would be considered to reduce the risk of waterborne disease acquisition. This would have significant implications for everyone relying on the Greater Victoria Water Supply System, including the public, businesses, and healthcare.

The Capital Regional District Regional Water Supply 2022 Master Plan also considers the potential climate change impacts on the Greater Victoria Water Supply System. Increased overall precipitation and wetter storm events raise risk of turbidity events, and increased temperatures raise risk of wildfires which can lead to turbidity events and algae blooms which can lead to algal toxin contamination – both of which would impact drinking water safety and can be mitigated through filtration. These concerns are further explored in the 2021 Regional Water System Risk and Resilience Study which provides evidence that although turbidity events and algal toxin contamination may not be current issues, climate change will increase the risk of these occurring.

Conclusion

From the perspective as drinking water officers, we recommend implementation of filtration in the Greater Victoria Water Supply System in order to ensure a water system resilient to turbidity events.

This is particularly important if the Leech River is used to supplement the existing source. The provision of potable water is required by provincial law, and this would be threatened if turbidity events occur, which appears to be a

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real risk with the introduction of the Leech River into the Greater Victoria Water Supply System. With the evidence currently available, maintaining the filtration exemption after introduction of the Leech River into the Greater Victoria Water Supply System would not be appropriate and we therefore require filtration of the Greater Victoria Water Supply System if the Leech River is introduced. If there is ambiguity that introduction of the Leech River would result in turbidity events in the Greater Victoria Water Supply System, we would need to see strong evidence to the contrary for a filtration exemption to remain.

Regardless of the addition of the Leech River to the Greater Victoria Water Supply System, we recommend continuing to plan for filtration due to increasing risk of turbidity events. As implementation of filtration takes years of planning and construction, it is prudent to plan now in order to implement before turbidity events occur as these would have substantial impacts on all who rely on the Greater Victoria Water Supply System. At this point of time, maintaining the filtration exemption is appropriate, but this will change if drinking water safety issues occur that could be mitigated by filtration and/or evidence for the risk of adverse source water quality increases.

Sincerely,



Mike Benusic, MD MPH CCFP FRCPC
Medical Health Officer
Island Health



Dr. Réka Gustafson, MD MSc MHSc FRCPC
Chief Medical Health Officer & Vice President
Island Health

CC:

Ted Robbins, Chief Administrative Officer, Capital Regional District

Gord Baird, Chair, Regional Water Supply Commission, Capital Regional District

Drs. Murray Fyfe & Dee Hoyano, Medical Health Officers, Island Health

Gethsemane Luttrell, Director, Health Protection & Healthy Communities, Island Health

Cole Diplock, Regional Manager, Health Protection & Environmental Services, Island Health

Craig Nowakowski, Supervisor, Health Protection & Environmental Services, Island Health

Rory Beise, Environmental Health Officer, Health Protection & Environmental Services, Island Health

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