Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Regional Water Supply Commission

Wednesday, June 16, 2021 | **11:30 AM** | **6th Floor Boardroom, 625 Fisgard St., Victoria, BC V8W 1R7**

Members:
L. Szpak (Chair); G. Baird (V. Chair); N. Chambers; Z. De Vries; S. Dubow; S. Duncan; C. Graham; K. Harper; M. Hicks; B. Isitt; K. Kahakauwila; G. Logan; J. Loveday; R. Mersereau; T. Morrison; J. Rogers ; T. St-Pierre; C. Stock; N. Taylor;G. Young; R. Wade; E. Wood Zhelka

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

3.1. 21-387 Adoption of the May 19, 2021 minutes.

Recommendation: That the minutes of the May 19, 2021 meeting be adopted.

Attachments: Draft Minutes - May 19, 2021

4. REPORT OF THE CHAIR

5. PRESENTATIONS/DELEGATIONS

In keeping with directives from the Province of BC, this meeting will be held by Live Webcast without the public present.

Presentations and delegations requests can be made online at www.crd.bc.ca/about/board-committees/addressing-the-board, a printable form is also available. Requests must be received no later than 4:30 p.m. two calendar days prior to the meeting.

6. WATER ADVISORY COMMITTEE REPORT

6.1. Report from the Chair of the Water Advisory Committee [Verbal]

6.2. 21-476 Draft Minutes of the June 3, 2021 Water Advisory Committee Meeting

Recommendation: That the Draft Minutes of the June 3, 2021 Water Advisory Committee meeting be received for information.

Attachments: Water Advisory Committee Draft Minutes June 3, 2021

7. COMMISSION BUSINESS

7.1. 21-477 Options & Implications for Developing Reserve Fund for Greater Victoria Water Supply Area Land Acquisition

Recommendation: That the Regional Water Supply Commission:

Not pursue the establishment of a reserve fund for Greater Victoria Water Supply Area Land Acquisition at this time, and address any land purchase opportunities through adjustments to the existing capital program and utilize existing capital funding and/or debt financing to fund the acquisition.

Attachments: Staff Report: Options & Implications of Developing a Reserve Fund for GVWSA

7.2. 21-499 Regional pH & Corrosion Study Update

Recommendation: That the Regional Water Supply Commission receive this report for information.

Attachments: Staff Report: Regional pH & Corrosion Study Update

Appendix A: Lead Sampling Procedure

7.3. 21-468 Water Quality Summary Report for Greater Victoria Drinking Water System - January to March 2021

Recommendation: That the Regional Water Supply Commission receive the Water Quality Summary Report for the Greater Victoria Drinking Water System - January to March 2021 for information.

Attachments: Staff Report: Water Quality Summary Report - GVDWS - Jan-Mar 2021

Appendix A: Water Quality Summary Report

7.4. 21-478 Greater Victoria Water Supply Area Wildlife Program

Recommendation: That the Regional Water Supply Commission receive the report for information.

Attachments: Staff Report: GVWSA Wildlife Program

Appendix A: Canada Goose and American Bullfrog figures

Appendix B: Letter from Chief Medical Health Officer regarding beaver

Appendix C: GVWSA Protected Lands on Southern Vancouver Island

Appendix D: SARA Listed Species Expected in the GVWSA

7.5. 21-479 Summary of Recommendations from Other Water Commissions

Recommendation: That the summary of recommendations from other water commissions be received for information.

Attachments: Summary of Recommendations

7.6. 21-480 Water Watch Report

Recommendation: That the June 7, 2021 water watch report be received for information.

Attachments: Water Watch Report

8. MOTION WITH NOTICE

8.1. 21-481 Motion with Notice (May 19, 2021): Once Through Cooling Systems - Commissioners Rogers and Wood Zhelka

Recommendation: That staff be directed to report back on the jurisdictional questions and incentive funding consideration regarding the elimination of once through cooling equipment for the 2022 budget.

Attachments: Motion with Notice: Once Through Cooling Systems

9. NEW BUSINESS

10. ADJOURNMENT

Next Meeting: July 21, 2021

To ensure quorum, please contact Denise Dionne at ddionne@crd.bc.ca or 250.360.3087 if you or your alternate cannot attend.

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes

Regional Water Supply Commission

Wednesday, May 19, 2021 **11:30 AM** **6th Floor Boardroom**
625 Fisgard St.
Victoria, BC V8W 1R7

PRESENT:
L. Szpak (Chair); G. Baird (Vice Chair); N. Chambers; Z. de Vries (EP); S. Dubow (EP); S. Duncan (EP); C. Graham (EP); K. Harper (EP); M. Hicks (EP); B. Isitt (EP); K. Kahakauwila (EP); G. Logan (11:48 am) (EP); R. Mersereau; T. Morrison (EP); J. Rogers (EP); T. St-Pierre (EP); C. Stock; N. Taylor; E. Wood Zhelka (EP); G. Young (EP)

STAFF:
T. Robbins, General Manager, Integrated Water Services; A. Constabel, Senior Manager, Watershed Protection; G. Harris, Senior Manager, Environmental Protection; S. Irg, Senior Manager, Water Infrastructure Operations (EP); D. Dionne, Administrative Coordinator; S. Orr, Senior Committee Clerk (Recorder)

REGRETS: J. Loveday; R. Wade

EP – Electronic Participation

The meeting was called to order at 11:32 am.

1. TERRITORIAL ACKNOWLEDGEMENT

Vice Chair Baird provided the Territorial Acknowledgement.

Commissioner Young expressed concern over the reference to Ceded vs. Unceded territories in the Acknowledgement, as it relates to the Douglas Treaty.

2. APPROVAL OF THE AGENDA

MOVED by Commissioner Stock, and **SECONDED by** Commissioner Mersereau,
That the May 19, 2021 Regional Water Supply Commission agenda be approved.
CARRIED

3. ADOPTION OF MINUTES

3.1 21-386 Adoption of the Minutes of the March 17, 2021 meeting.

Attachments: DRAFT Minutes: March 17, 2021

MOVED by Commissioner Stock, and **SECONDED by** Commissioner Mersereau,
That the minutes of the March 17, 2021 meeting be approved.
CARRIED

4. REPORT OF THE CHAIR

The Chair stated that the COVID-19 vaccinations are currently underway in the region and thanked staff and the Commission for their engagement through electronic meetings.

5. GENERAL MANAGER'S REPORT

5.1 Water Supply Outlook - Verbal

T. Robbins reported on the water supply outlook noting:
- Sooke Lake Reservoir began it's annual draw down on May 13
- He noted historical monthly averages of rainfall
- Given the current storage volumes there are no concerns with water supply

5.2 Smith Hill Reservoir Duck Ramp - Verbal

T. Robbins provided an update stating that a duck ramp was installed at the Smith Hill Reservoir in response to concerns raised by residents. He stated that the reservoir is proposed to be decommissioned in future.

The Commission thanked staff for the work.

Staff responded to questions from the Commission regarding the decommissioning of Smith Hill Reservoir.

MOVED by Commissioner Chambers, and **SECONDED by** Commissioner Taylor,
That the General Managers report be received for information.
CARRIED

6. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

7. WATER ADVISORY COMMITTEE

The next meeting of the Water Advisory Committee is scheduled for June 3, 2021.

8. COMMISSION BUSINESS

8.1 21-407 Greater Victoria Water Supply Area Mining Access Request

Attachments: Staff Report: Greater Victoria Water Supply Area Mining Access Request
Appendix A: Location Map of Placer Mining Tenure No. 994033
Appendix B: Signed Access Agreement

A. Constabel introduced the report.

Staff answered questions from the Commission regarding the sunset clause.

MOVED by Commissioner Baird, and **SECONDED by** Commissioner Mersereau,
That the Regional Water Supply Commission authorize Greater Victoria Water Supply Area access and special use to Jesse Wylie and his agents (where agency is confirmed) and workers (that hold valid free mining certificates) that meet Capital Regional District insurance requirements, subject to the conditions of the Access Agreement.
CARRIED

8.2 21-388 Greater Victoria Drinking Water Quality - 2020 Annual Report

Attachments: Staff Report: Greater Victoria Drinking Water Quality - 2020 Annual Report
Appendix A: Greater Victoria Drinking Water Quality - 2020 Annual Report

G. Harris introduced the report.

Staff responded to questions from the Commission regarding:
- Lead levels
- Leech Watershed
- Water temperature

MOVED by Commissioner Chambers, and **SECONDED by** Commissioner Stock,
The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2020 Annual Report be approved.
CARRIED

8.3 21-389 Greater Victoria Water Supply Area 2020 Wildfires Follow Up

Attachments: Staff Report: Greater Victoria Water Supply Area 2020 Wildfires Follow Up
Appendix A: Maps Showing Water Quality Sampling Sites
Appendix B: Burned Area Recovery Photos

A. Constabel introduced the report providing an overview of wildfire events in August 2020.

The Commission thanked staff for their excellent work.

Staff answered questions from the Commission regarding:
- BC Wildfire Service partnership
- Recovery costs from Emergency Management BC

MOVED by Commissioner Stock, and **SECONDED** by Commissioner Baird,
That the Regional Water Supply Commission receive this report for information.
CARRIED

8.4 21-390 Summary of Recommendations from Other Water Commissions

Attachments: Summary of Recommendations from Other Water Commissions

MOVED by Commissioner Baird, and **SECONDED** by Commissioner Stock,
That the Summary of Recommendations from Other Water Commissions be received for information.
CARRIED

8.5 21-391 Water Watch Report

Attachments: Report: Water Watch

MOVED by Commissioner Mersereau, and **SECONDED** by Commissioner Rogers,
That the May 10, 2021 Water Watch Report be received for information.
CARRIED

9. NEW BUSINESS

There was no New Business.

10. NOTICE(S) OF MOTION

Commissioners Rogers and Wood Zhelka introduced the following Notice of Motion:

That staff be directed to report back on the jurisdictional questions and incentive funding considerations regarding the elimination of once through cooling equipment for the 2022 budget.

11. ADJOURNMENT

MOVED by Commissioner Baird, and **SECONDED** by Commissioner Stock,
That the May 19, 2021 meeting of the Regional Water Supply Commission be adjourned at 12:11 pm.
CARRIED

_____

CHAIR

_____

SECRETARY

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MINUTES OF A MEETING OF THE Water Advisory Committee, held Thursday, June 3, 2021 at 1:30 p.m., Goldstream Meeting Room, 479 Island Highway, Victoria, BC, Victoria, BC

PRESENT: **Commissioners:** E. Cote (Chair) (EP); G. Baird; J. Caradonna (EP); C. Davis (EP); M. Doehnel; T. Krawczyk (EP); C. Nowakowski (EP); J. Rogers (EP); K. Sander (EP); W. Scheuer (1:39 PM) (EP); H. Thompson (EP); D. Timothy (EP)

Staff: T. Robbins, General Manager; A. Constabel, Senior Manager, Watershed Protection; D. Dionne (Recorder)

REGRETS: J. Todd; M. Turner

EP = Electronic Participation

The meeting was called to order at 1:30 p.m.

1. TERRITORIAL ACKNOWLEDGEMENT

Chair Cote provided the Territorial Acknowledgement to open the meeting and acknowledged the recent discovery of the remains of 215 children on the grounds of the former residential school in Kamloops. She also stated that she is committed to rereading the Truth and Reconciliation Commission report.

2. APPROVAL OF AGENDA

MOVED by G. Baird, **SECONDED** by C. Davis,
That the agenda be approved.

CARRIED

3. ADOPTION OF MINUTES

MOVED by M. Doehnel, **SECONDED** by C. Davis,
That the minutes of the March 4, 2021meeting be adopted.

CARRIED

4. CHAIR'S REMARKS

Chair Cote stated that the working groups are doing really good work and that the Agriculture Water Rates group would like to call a meeting before September to discuss its findings.

5. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

6. UPDATES FROM WORKING GROUPS

- Long term water supply and demand management

  There was no report from this group.

- Water Quality

  There was no report from this group. T. Robbins advised that there is a report going to the June 16, 2021 Regional Water Supply Commission meeting that provides an update on the tap sampling program.

- Major Capital Projects

  There was no report from this group.

- Water Rates

  M. Doehnel reported that the group met three times and worked on a presentation to provide to the Committee. The group decided to review and hear the discussion under Item 7.2 today prior to making its presentation to the group.

  He also reported that the group has not reviewed anything related to First Nations water rates. T. Robbins advised that there have been discussions internally related to First Nations water rates and service agreements for both sewer and water. He further stated that staff are looking at presenting options to the Saanich Peninsula Water Commission for a sub-regional solution for First Nations water rates. He noted that it is a dynamic topic and staff should have a better idea of timing for that report and a better sense of what the options might look like over the next couple of months.

  Discussion ensued regarding the vacancy on the Committee for a First Nations representative and that the Committee felt it is important to have this representation when it comes discussions involving First Nations water rates. The Committee requested to have a more fulsome discussion regarding First Nations representation at its next meeting.

7. COMMITTEE BUSINESS

7.1. Options & Implications for Developing Reserve Fund for GVWSA Land Acquisition

A. Constabel presented the report providing a background and a summary of work to date. She advised that the report, with any recommendations from this Committee, will be presented to the Regional Water Supply Commission at its June 16, 2021 meeting.

Discussion ensued and staff responded to questions from the Committee. The following is a summary of the Committee's feedback to be included in the report to the Regional Water Supply Commission:

- Q: Was the Leech Water Supply Area (WSA) purchase financed? Are there barriers to obtaining financing for $20 million going forward?

  A: Yes, the $64 million Leech land acquisition was financed. No, financing of $20 million is not expected to be a barrier now or in future.

- Q: Does Capital Regional District (CRD) have right of first refusal on any of the priority lands? A reserve fund could be established for any right of first refusal lands.

  A: Only on one parcel owned by Kapoor Lumber Company. [The parcel is 155 ha and the right of first refusal was negotiated as part of the 1998 land exchange between the CRD/Province/Kapoor Lumber.]

- Q: Does the CRD invest reserve funds, or do the funds sit without earning any interest? Funds invested now would be subject to inflation.

  A: Yes. [Collectively across the CRD, all positive balances receive a small amount of internal interest based on investments (typically GICs).]

- Q: Do the current low interest rates influence the decisions on whether to finance or not?

  A: Yes, staff consider the interest rate in making recommendations and decision making.

- Q: There is a discrepancy if Regional Parks has a land acquisition reserve fund but the GVWSA does not. Shouldn't the need/strategy be the same?

  A: Some differences include: Parks raises funds through requisitions; the GVWSA lands of interest are specific and fixed.

- Members of the public would support a reserve fund given the value and management of undeveloped private forest land in the region.

- The CRD could undertake multi criteria analysis or intangibles analysis, to try to bring together direct/tangible and indirect/intangible aspects to valuing land parcels to the CRD.

- The purchase of the Leech WSA should be included as a reference or example in the report to the Commission.

MOVED by G. Baird, **SECONDED** by D. Timothy,
That the report be received for information and that staff be directed to include comments from the Water Advisory Committee's discussion in the report to the Regional Water Supply Commission.

CARRIED

7.2. Agriculture Water Rate Review – Discussion

T. Robbins stated that staff are seeking feedback from the Committee on the approach and principles for the Request for Proposals (RFP) process as laid out in the discussion document. He provided an overview of the five proposed options.

The Committee questioned whether the CRD subsidized other property usage, similar to the District of Summerland's approach which includes categories for cemetery,

playing fields, golf courses, greenhouses. The CRD, in some cases, does subsidize the same categories, depending on whether the property has a BC Assessment farm classification.

T. Robbins stated that staff would like to issue the RFP in July and procure a consultant to proceed with obtaining stakeholder feedback through the engagement process. A report could then go to the Regional Water Supply Commission in the fall. The Committee discussed consultant type, purpose and stakeholder engagement.

The Committee supported the principles in the document, but would like to ensure that the Water Rate working group has an opportunity to provide its feedback to the chosen consultant.

The Committee requested that staff set up a Water Advisory Committee special meeting to further discuss the Agriculture Water Rate review and to receive information from the Water Rate working group.

MOVED by M. Doehnel, **SECONDED** by G. Baird,
That the Agriculture Water Rate discussion documentation be received for information.

CARRIED

7.3. Summary of Regional Water Supply Commission Recommendations

MOVED by M. Doehnel, **SECONDED** by G. Baird,
That the Summary of Recommendations be received for information.

CARRIED

7.4. Water Watch Report

T. Robbins provided an update on the current water supply outlook and noted that there are no concerns with water storage going into the warmer season.

C. Davis and J. Caradonna left the meeting

MOVED by J. Rogers, **SECONDED** by M. Doehnel,
That the May 25, 2021 Water Watch report be received for information.

CARRIED

8. NEW BUSINESS

MOVED by M. Doehnel, **SECONDED** by G. Baird,
That staff be directed to find out what categories (Cemetery, Park, Playfield, Golf Course, Greenhouse) in the District of Summerland are receiving the agriculture water rate and report back through the Agriculture Rate Review RFP process.

CARRIED

9. ADJOURNMENT

MOVED by G. Baird, **SECONDED** by M. Doehnel,
That the June 3, 2021 meeting be adjourned at 3:03 p.m.

CARRIED

CHAIR

SECRETARY

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RWSC 21-08

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 16, 2021

SUBJECT **Options & Implications of Developing a Reserve Fund for Greater Victoria Water Supply Area Land Acquisition**

ISSUE SUMMARY

To report on the options and implications of developing a reserve fund to support future Greater Victoria Water Supply Area (GVWSA) land acquisitions.

BACKGROUND

The Regional Water Supply Commission (Commission) approved GVWSA land acquisition priorities in March 2020 as follows:

Priority 1: Sooke Lake Reservoir catchment lands
Priority 2: Sooke Lake Reservoir buffer lands
Priority 3: Goldstream Water System catchment lands
Priority 4: Buffer lands providing primary access to the Sooke WSA and the Kapoor Tunnel
Priority 5: Goldstream Water System buffer lands
Priority 6: Leech River catchment lands
Priority 7: Buffer lands containing primary access to the Leech WSA

The Commission also directed staff to take a more active approach in pursuing land acquisition.

Along with approval of the priorities, the Commission passed a motion directing staff to: "*prepare a report on options and implications of developing a reserve fund for land acquisition priorities for the Greater Victoria Water Supply Area*".

The approved land acquisition priorities total 2,753 hectares (ha), with disposition opportunity of 963 ha, yielding a net land acquisition goal of an additional 1,790 ha.

A recent acquisition of a small GVWSA land parcel settled at $4,500 per acre ($11,115 per ha). Using the same selling price as an estimate to achieve all of the land acquisition priorities would cost roughly $20 million.

Some Commission members expressed a desire to set aside reserve funds in order to pursue land acquisition goals and for the Commission to be agile in acquiring priority land parcels when opportunities arise. A review of the priorities and rough estimates of possible timing and cost are shown in Table 1 below. The costs are based on the most recent selling price but should be considered at the low end of actual future costs.

Table 1. 20 Year Plan to Achieve All GVWSA Land Acquisition Priorities

Land Acquisition Time Frame	Approx. Area to Acquire	Land Priorities Acquired	Cost ($ million)	Number of land parcels involved
0 - 5 year goal	700 ha	Priorities 1-3 (Sooke and Goldstream watersheds)	7.8	11
5 - 10 year goal	700 ha	Priority 4 (Buffer lands to main infrastructure/access)	7.8	3
10 – 15 year goal	200 ha	Priority 5 and 6 (Goldstream buffer, Leech catchment)	2.1	12
15 - 20 year goal	200 ha	Priority 7 (Leech buffer)	2.1	6
20 years	**1,800 ha**	**All Priorities**	**$ 20 million**	**32**

**Acquisition could only occur with a willing land seller, which may not be the case within the proposed acquisition time frames.*

Currently, any land acquisition outlined in the existing 5 year capital plan is planned to be funded by contributions through the wholesale water rate, which includes a mix of water capital fund contributions and debt financing. If an opportunity arises to acquire land that has not been budgeted for in the current capital plan, there may not be the capital funding in place to make the purchase. However, options for purchasing land parcels when opportunities arise can include:

- Amend the capital plan to defer other current year projects, to allow for the purchase of new parcels of land within the existing capital budget;
- Amend the existing capital plan to allow the purchase of new parcels of land, and borrow funds via the existing or new loan authorization (dependent on funding authorization specifications) to fund the acquisition; or,
- Establish a reserve for land acquisition, to enable future land purchases as and when they arise, without impacting funding for other capital priorities. A capital plan amendment would still be required.

<u>Examples of Past GVWSA Land Acquisitions</u>

The larger portion (8,791 hectares) of the purchase of the Leech WSA lands from a private forest land holder occurred in 2007. Sixty million dollars were financed in April 2008 for a 15 year term at 4.65% interest for the first 10 years with a rate of 2.60% for the final 5 year term which ends April 2023. In the first 10 years, payments of $5.8 million were made annually and in the last 5 years $4.6 million per annum. An approximation of the impact on the wholesale water rate when the financing ends in 2023 is $0.0956 per cubic metre of water.

The recent acquisition of a 58.7 ha land parcel for $652,500 included sufficient time to allow for the purchase to be added to the capital plan as part of the regular capital budget planning, approval and financing process, and no amendments or extra financing was required.

Water Advisory Committee Input

A similar report on the options and implications of a reserve fund for GVWSA land acquisition was brought to the Water Advisory Committee on June 3, 2021. The Committee elected to receive the report for information and to provide the Commission with the Q&A and feedback on the report:

- Q: Was the Leech WSA purchase financed? Are there barriers to obtaining financing for $20 million going forward?

  A: Yes, the $64 million Leech land acquisition was financed. No, financing of $20 million is not expected to be a barrier now or in future.

- Q: Does Capital Regional District (CRD) have right of first refusal on any of the priority lands? A reserve fund could be established for any right of first refusal lands.

  A: Only on one parcel owned by Kapoor Lumber Company. [*The parcel is 155 ha and the right of first refusal was negotiated as part of the 1998 land exchange between the CRD/Province/Kapoor Lumber.]*

- Q: Does the CRD invest reserve funds, or do the funds sit without earning any interest? Funds invested now would be subject to inflation.

  A: Yes. [*Collectively across the CRD, all positive balances receive a small amount of internal interest based on investments (typically GICs).]*

- Q: Do the current low interest rates influence the decisions on whether to finance or not?

  A: Yes, staff consider the interest rate in making recommendations and decision making.

- Q: There is a discrepancy if Regional Parks has a land acquisition reserve fund but the GVWSA does not. Shouldn't the need/strategy be the same?

  A: Some differences include: Parks raises funds through requisitions; the GVWSA lands of interest are specific and fixed.

- Members of the public would support a reserve fund given the value and management of undeveloped private forest land in the region.

- The CRD could undertake multi criteria analysis or intangibles analysis, to try to bring together direct/tangible and indirect/intangible aspects to valuing land parcels to the CRD.

- The purchase of the Leech WSA should be included as a reference or example in the report to the Commission.

ALTERNATIVES

Alternative 1

That the Regional Water Supply Commission:

Not pursue the establishment of a reserve fund for Greater Victoria Water Supply Area Land Acquisition at this time, and address any land purchase opportunities through adjustments to the existing capital program and utilize existing capital funding and/or debt financing to fund the acquisition.

Alternative 2

That the Regional Water Supply Commission:

Direct staff to pursue the establishment of a reserve fund for Greater Victoria Water Supply Area Land Acquisition, starting in the 2022 budget year, and contribute annually to the reserve through the wholesale water rate. The Commission will be able to review and approve the contribution amount each year.

Alternative 3

That this report be referred back to staff for additional information.

IMPLICATIONS

Financial Implications

The establishment and annual contribution of funds from the Regional Water Supply Service to a reserve fund for GVWSA land acquisition would impact the wholesale water rate (which distributes the annual cost of the contribution amongst participants based on water consumption, like all other costs of the service) as shown in Table 2. The annual contribution is not required to stay the same but could change from year to year depending on the pressures on the water rate and current land acquisition opportunities. Where land acquisition purchases cannot be fully funded from the reserve, the remainder could be funded from existing capital and/or debt financing.

Table 2. Wholesale Water Rate Impacts from Annual Contributions to a Reserve Fund

Annual Contribution	Number of Years Required to Achieve a $ 20 million Reserve	Wholesale Water Rate Increase ($/m^3)	Wholesale Water Rate Increase (%)
$0.5 million	40 years	$0.0104	1.5%
$1.0 million	20 years	$0.0208	3 %
$1.4 million	14 years	$0.0292	4%
$1.6 million	12.5 years	$0.0333	5%

To achieve all land acquisition priorities over 20 years to the schedule suggested in Table 1, a contribution schedule of $1.6 million annually for the first ten years followed by annual contributions of $0.5 million for the second decade would be needed. The timing and funds necessary should be considered conceptual given uncertainty regarding purchase opportunities, prices and feasibility of parcel subdivisions to limit acquisition of excess land.

To begin contributions in 2022, a reserve bylaw would first need to be enacted for the Regional Water Supply Service, for the specific purpose of establishing a reserve fund for (GVWSA) land acquisition.

Advantages of a Reserve Fund

The advantages of the establishment of a reserve fund for GVWSA land acquisition are:

- the slow accumulation of funds on hand so that larger land purchases do not have a sudden impact on the water rate, capital funding or debt servicing;
- the ability to respond quickly to land sale opportunities as they arise; and,
- demonstration of a commitment and ability to pursue and acquire priority lands as per the GVWSA Land Acquisition Priorities for the protection of the GVWSA and regional water supply.

Disadvantages of a Reserve Fund

The disadvantage of establishment of a GVWSA land acquisition reserve fund are:

- there would be an increase in the water rate specific to establishing an annual contribution to a land acquisition reserve fund;
- funds may be tied up for years without spending;
- funds are restricted from being used for any other capital spending priorities (other than land acquisition) that the Regional Water Supply Service may have or develop; and,
- today's water consumers pay into a fund that may not benefit them for many years.

Purchasing Land without a Reserve Fund

Under the existing water rate model the Regional Water Supply Service is funded by a mixture of water rate income and debt to fund capital projects. There is already the ability and flexibility to fund large capital projects under this model with opportunities to borrow funds under the existing loan authorization for long term debt with the Municipal Finance Authority (MFA).

In order to make an unanticipated land purchase, the capital plan would need to be amended. The decision would need to be made whether to reprioritize the existing capital plan (approximately $25 million each year) to accommodate the land acquisition within the existing budget (defer or cancel projects), or add the land acquisition to the capital plan and increase the capital budget to accommodate it, or a combination of both. If the capital budget is increased, the debt financing that supports the capital plan would be reviewed and further borrowing would be initiated as necessary. As an example, if debt financing were to be considered for a new land acquisition of $8 million, the current annual principal and interest payment would be approximately $580,000 per year for 15 years. The existing loan authorization with the MFA allows for borrowing twice annually.

Alignment with Existing Plans & Strategies

The 2017 Regional Water Supply Strategic Plan calls for the CRD to "seek ownership and control of the remaining catchment lands and critical adjacent lands to act as a buffer". The Commission adopted land acquisition priorities for the GVWSA to guide the acquisition of lands. In principle, establishment of a land acquisition reserve fund provides further commitment to acquire GVWSA

lands, but lack of a reserve fund is likely not a barrier given the ability to acquire financing relatively quickly and easily through existing processes. Long term financing rates available to the Regional Water Supply Service through the MFA are currently 2.9%.

CONCLUSION

The Regional Water Supply Commission adopted Greater Victoria Water Supply Area (GVWSA) Land Acquisition Priorities in 2020 and directed staff to report on options and implications of developing a reserve fund to support the land acquisition goals.

There is a great deal of uncertainty and lack of control over when priority land parcels may become available for purchase, and the price of any land parcels. If established, reserve funds may be wholly insufficient or sit idle for many years, and may charge consumers for service they do not receive.

The current wholesale water rate model, with access to financing for capital projects, provides ability and flexibility to accommodate land purchases as they arise without significantly burdening the wholesale water rate and/or customers of today.

RECOMMENDATION

That the Regional Water Supply Commission:

Not pursue the establishment of a reserve fund for Greater Victoria Water Supply Area Land Acquisition at this time, and address any land purchase opportunities through adjustments to the existing capital program and utilize existing capital funding and/or debt financing to fund the acquisition.

Submitted by:	Annette Constabel, MSc., RPF, Senior Manager, Watershed Protection
Concurrence:	Ted Robbins, B.Sc., CTech., General Manager, Integrated Water Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 16, 2021

SUBJECT **Regional pH & Corrosion Study Update**

ISSUE SUMMARY

To provide an update on the Regional pH & Corrosion Study, including preliminary results from the residential tap sampling program that was included in the ongoing Greater Victoria pH & Corrosion Study.

BACKGROUND

In response to new drinking water guidelines issued by the BC Ministry of Health in April 2019, the Capital Regional District (CRD) added a residential tap sampling program to the scope of the Greater Victoria pH & Corrosion Study. The participating municipalities of Saanich, Victoria/Esquimalt and Oak Bay agreed to proportionally cost-share this added scope in order to include their municipal water systems into this program.

In early 2020, the consultant leading the study designed the tap sampling program based on information gathered in the study areas on building age, known history of lead service lines or previous lead results, and water corrosivity indices developed in earlier parts of the study. During the first iteration, approximately 200 houses were identified in the study areas of Saanich, Oak Bay, Victoria/Esquimalt and the Westshore municipalities (including Sooke), based on these criteria. The onset of the program was delayed by COVID 19 protocols until October 2020. Because the participation rate was lower than desired, an additional 100 houses were selected in a second iteration in early 2021. Due to COVID 19 protocols, the communication with residents was limited to a letter drop. The start of the tap sampling program was further delayed by the temporary decommissioning of the new hypochlorite disinfection equipment at the Goldstream Water Treatment Plant in 2020 and into early 2021. The temporary switch to the gas chlorination system to complete deficiency work altered the water chemistry sufficiently to have a potential effect on metal leaching test results. It was important to continue the study under consistent water chemistry conditions to yield scientifically defensible results and reflect future water quality conditions.

In April 2021, the tap sampling program proceeded with 124 houses whose owners volunteered to participate with sampling their kitchen taps. By April 16, 2021, samples from 104 houses across the identified study areas were received at the commercial laboratory for analysis. The samples consisted of three 1-litre bottles collected in accordance with the lead sampling protocols in the BC Ministry of Health and Health Canada guidelines (Appendix A).

The first 1 litre sample was taken from the kitchen tap after a minimum of 6h complete water stagnation in the residential plumbing system (First Draw sample). This would have been typically very early morning before any resident uses any water fixtures or taps. Results of the First Draw samples are measured against the Canadian Drinking Water Guidelines Action Limit of 15 µg/L to determine whether water chemistry conditions are corrosive and centralized corrosion control treatment is warranted. The critical statistical measure for this determination is the 90 percentile (P90: the lead concentration that the highest 10% results exceed) of all First Draw samples. The second and third 1 litre samples were taken from the same kitchen tap after five minutes of running the tap and subsequent 30 minutes of stagnation (30MS). These samples represent a typical tap use pattern and signify typical lead and copper concentrations that a resident would consume

when using this tap. Results of these 30MS samples were compared to the Health Canada maximum acceptable concentration (MAC) of 5 µg/L for lead and 2,000 µg/L for copper.

In May 2021, CRD staff received the laboratory results and immediately performed a preliminary analysis of the data to inform the participating residents in a timely manner, as well as municipalities and Island Health. Residents were provided with an explanation of the results and, in case of any exceedances, provided with educational material to help them identify potential lead sources and show them how to protect themselves from high lead concentrations until any lead sources are eliminated.

A more comprehensive evaluation and assessment of the tap sampling results will be included in the final report of the overall Greater Victoria pH & Corrosion Study, which is expected to be completed in late Q2 2021.

Tap Sampling Results

Of the 104 houses that submitted samples across the study areas, only one house registered an exceedance of the First Draw sample Action Limit. The same house also had an exceedance of the MAC in the 30MS samples. This is a clear indication of a lead source in this particular residential plumbing system.

No further exceedances of the Action Limit or the MAC were recorded for any other property. The 90 percentile of the First Draw samples was 0.00187 mg/L, well below the Action Limit. Three houses registered an elevated lead concentration between 0.005 and 0.006 mg/L, which is below the Action Limit but does indicate a minor lead source near the sampling tap. Mitigation could be as simple as replacing the kitchen faucet with a new, lead-free fixture.

Only the one aforementioned exceedance of the MAC in the 30MS samples was recorded in all samples. This represents an exceedance percentage of 0.95%. The total average of all 30MS samples was 0.00047 mg/L and, therefore, well below the MAC. These results do not indicate a community health concern associated with consumption of tap water in Greater Victoria.

For each participating jurisdiction, the lead and copper results are summarized in Tables 1 and 2.

Table 1: 2021 Tap Sampling Program Lead Results

Study Areas	P90 of 1st Draw Samples [µg/L]	Action Limit for P90 [µg/L]	% of Exceedance of Action Limit in 1st Draw Samples	Average of all 30MS Samples	MAC for 30MS [µg/L]	% of Exceedance of MAC in 30MS Samples
CRD-Westshore	1.20	15	0%	0.35	5	0%
Victoria/Esquimalt	2.38	15	0%	0.52	5	0%
Oak Bay	1.24	15	0%	0.35	5	0%
Saanich	2.58	15	3.70%	0.59	5	3.70%
CRD-Sooke	1.55	15	0%	0.30	5	0%
Overall Results	1.87	15	0.95%	0.47	5	0.95%

Table 2: 2021 Tap Sampling Program Copper Results

Study Areas	P90 of 1st Draw Samples [µg/L]	Action Limit for P90 [µg/L]	Average of all 1st Draw Samples	% of Exceedance of Action Limit in 1st Draw Samples	Average of all 30MS Samples	MAC for 30MS [µg/L]	% of Exceedance of MAC in 30MS Samples
CRD-Westshore	294.77	1300	134.66	0%	71.42	2000	0%
Victoria/Esquimalt	207.00	1300	126.68	0%	55.24	2000	0%
Oak Bay	306.60	1300	144.69	0%	65.11	2000	0%
Saanich	294.40	1300	163.34	0%	51.91	2000	0%
CRD-Sooke	262.90	1300	138.93	0%	59.67	2000	0%
Overall Results	295.3	1300	141.41	0%	59.01	2000	0%

Next Steps

The final report of the Greater Victoria pH & Corrosion Study will provide recommendations for the CRD and Island Health to consider. CRD staff have discussed preliminary results with Island Health. There was consensus that due to the relatively small sample size and recognition that not all areas of the region were fully covered, the CRD will conduct a supplementary tap sampling program toward the end of 2021. Water suppliers (i.e., CRD, municipalities) will follow up this study with future tap sampling within their own jurisdiction in consultation with Island Health. The CRD will ensure the work is done in a coordinated and collaborative process, recognizing that each water supplier is responsible for identifying and removing potential lead service lines and/or communicating with affected customers on risks associated with lead concentrations in tap water. CRD staff will evaluate the regional findings with Island Health to inform a system-wide reevaluation of potential corrosion control treatment needs.

CONCLUSION

Staff expanded the scope of the ongoing Greater Victoria pH & Corrosion Study to include a tap sampling program in response to new lead monitoring requirements issued by the BC Ministry of Health in April of 2019. The preliminary results of the tap sampling conducted in April 2021, which targeted 104 homes for higher potential risk, indicate no community health concerns associated with lead or copper in homes served by the Greater Victoria Drinking Water System. The results indicate there is not a need for regional corrosion control treatment at this time. However, the CRD and the municipalities cannot conduct sampling in every home or business; therefore, property owners will need to be aware of potential risks associated with some private plumbing, pipes and fixtures. The CRD will continue to work with all water suppliers and Island Health to ensure safe, potable drinking water and promote outreach and education to all residents and business owners about any water quality risks.

RECOMMENDATION

That the Regional Water Supply Commission receive this report for information.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Lead Sampling Procedure

Lead Sampling Procedure

Single-family Home

Making a difference...together

Lead Sampling and Analysis Study

This procedure will take approximately one hour to complete and must be done first thing in the morning before any water has been used for lawn watering, showers, toilet flushing, etc. Do not run other sources of water while sampling as well.

1 Prepare for Sampling

Do prior to sampling (the night before)

- Fill out the Residence Information form provided in your sampling package.
- Add your address to the Chain of Custody form next to "Site #" (see instructions included in the package).
- Print your address on the "Client" line on all sample bottles.

2 First Draw Sampling

Collect the "First Draw" sample after water has been stagnant in the pipes for 6 to 18 hours

- No drinking, running tap water, showering or flushing the toilet (best done in the morning).

- Open and hold the First Draw bottle under the spout, open the cold tap and slowly fill the bottle then shut off the tap.
- Add the date and time to the Chain of Custody form on line #1 (First Draw).

3 Prepare for 30MS Sampling

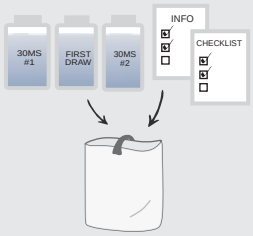
- Ensure the First Draw Sampling (Step 2) is done first.
- Run the water for 5 minutes.

- Then, turn the tap off and wait 30 minutes. Do not run water or flush toilets during this time.

4 30MS Sampling

- Open 30MS #1 bottle and hold it under the cold water tap. Slowly open the tap and fill the bottle. Close the tap and the bottle. Repeat this for the 30MS #2 bottle right after.
- Add the date and time to the Custody form on line 2 and 3 (30MS #1 and 30MS #2).

5 Assemble the Package



- Place the information and custody forms and bottles into the bag.
- Sign the security seal and use it to seal the bag across the opening.

6 Leave Package for Pickup

- Leave the bag outside your front door and out of direct sunlight.
- Email a photo to Jessica Dupuis at jdupuis@crd.bc.ca to confirm the sample bag is ready for pickup.

Example timeline (what the timing of your sampling could look like):

1	2	3/4		5/6
9:00 - 9:30 pm Prepare	overnight 6:15 - 6:25 am Collect sample	6:25 - 6:30 am Run tap 5 minutes	6:30 - 7:00 am Don't use any water!	7:00 - 7:10 am Collect samples	7:10 - 8:00 am Package for pickup

Making a difference...together

EEP 21-27

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 16, 2021

SUBJECT **Water Quality Summary Report for Greater Victoria Drinking Water System – January to March 2021**

ISSUE SUMMARY

Staff provide regular updates on the monitoring results for water quality conditions observed in the Greater Victoria Drinking Water System in between annual reporting to the regulator.

BACKGROUND

The Capital Regional District (CRD) supplies drinking water to the water distribution systems across Greater Victoria via the Regional Water Supply System. As a requirement under the *BC Drinking Water Protection Act*, the CRD monitors and reports on water quality to ensure the region's drinking water supply is safe and potable. The results are presented on a regular basis directly to the Commission and Island Health, and to the general public through the CRD website.

All public drinking water systems in BC must comply with the *BC Drinking Water Protection Act* and the *BC Drinking Water Protection Regulation*. In addition, the CRD relies upon water quality parameters in the Guidelines for Canadian Drinking Water Quality and guidelines developed by the US Environmental Protection Agency to inform the CRD's water quality monitoring program.

Water quality monitoring is one of the cornerstones of the multi-barrier approach to providing safe potable drinking water to the region's residents. The monitoring program ensures proper integration of an understanding of source waters, treatment process, distribution infrastructure operations and maintenance, and the delivery of water to customers. The program also ensures that potential risks or concerns are effectively managed to ensure a safe drinking water supply.

Appendix A summarizes the monitoring results for raw water in Sooke Lake Reservoir, the treated water at the two water treatment plants and for the treated water in various parts of the supply and distribution systems for the first quarter period of January to March 2021.

IMPLICATIONS

Environmental Implications

The summary report indicates very good overall source water quality and good drinking water quality in all system components of the Greater Victoria Drinking Water System. The system is monitored for physical, chemical and biological water quality parameters.

Monitoring results indicate that the CRD continues to meet guidelines for maintaining an unfiltered source water supply. Data from within the distribution systems also indicate a good balance between managing bacterial growth and ensuring good water quality with low concentrations of disinfection byproducts. Metal concentrations, including lead, are very low within the distribution systems, and physiochemical parameters indicate a low metal corrosion potential of the drinking water.

The recommissioning of the new hypochlorite chlorination equipment in February 2021 and the reinstatement of the Sooke Lake intake screen in March 2021 will help maintain the excellent drinking water quality in Greater Victoria.

Intergovernmental Implications

The CRD also provides compliance monitoring of the municipal systems within the region to deliver effective and efficient oversight for both monitoring and reporting of water quality within the overall water system. Responding to any issues that may arise remains the responsibility of the municipalities.

Social Implications

The full disclosure of water quality monitoring data maintains public confidence in the CRD managing the regional drinking water supply effectively. The data and reports are available online through the CRD public website. Staff respond to customer questions and concerns directly, and work with CRD operational staff, municipal staff, small system operators and Island Health officials to ensure good communication and support for the overall system.

CONCLUSION

The water quality monitoring program remains an essential component in the delivery of a safe and abundant drinking water supply to the region. Monitoring results for summer and fall 2020 indicate good water quality overall, and all parameters indicate stable general conditions.

RECOMMENDATION

That the Regional Water Supply Commission receive the Water Quality Summary Report for the Greater Victoria Drinking Water System – January to March 2021 for information.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

ATTACHMENT

Appendix A: Water Quality Summary Report for the Greater Victoria Drinking Water System – January to March 2021

WATER QUALITY SUMMARY REPORT
FOR THE GREATER VICTORIA DRINKING WATER SYSTEM
JANUARY TO MARCH 2021

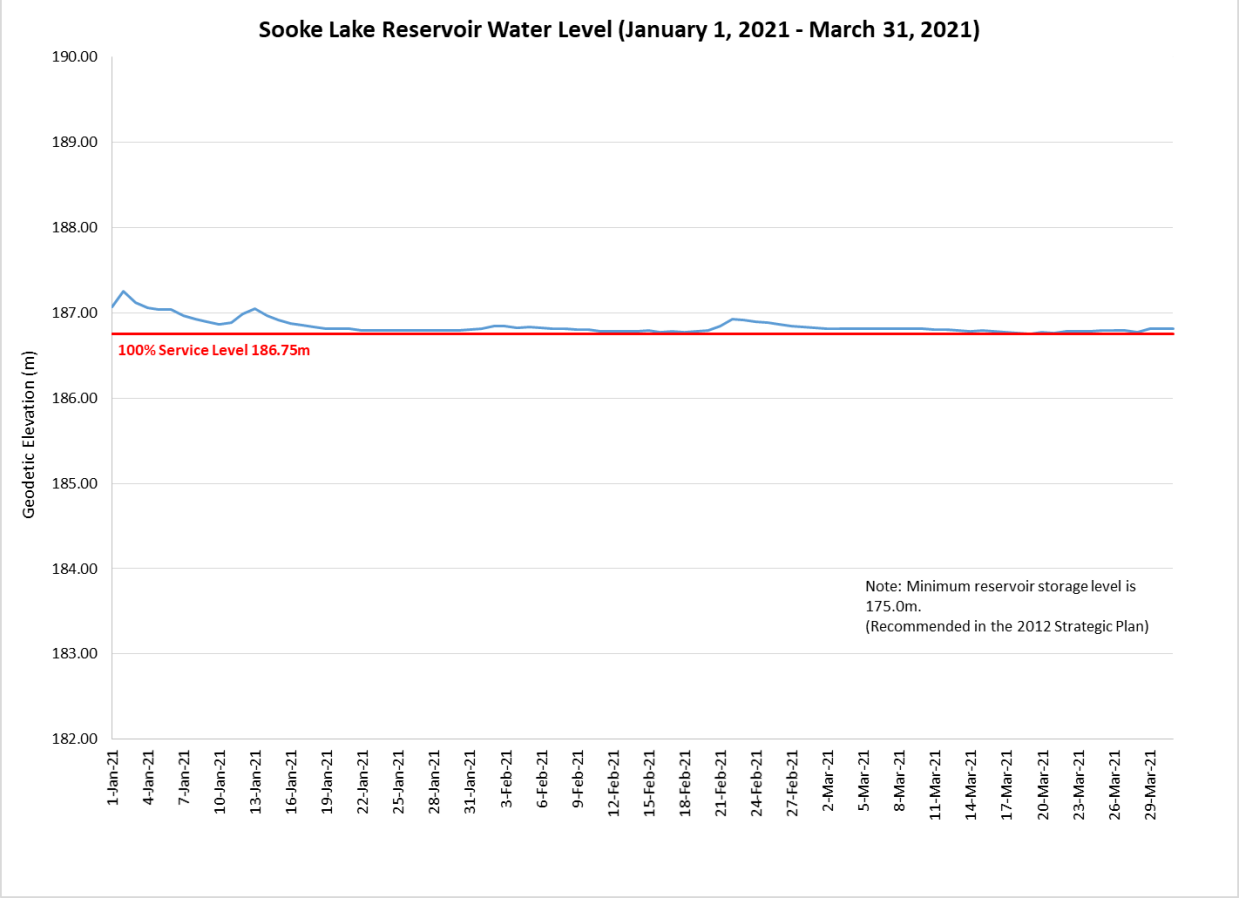
June 2021

SOURCE WATER – SOOKE LAKE RESERVOIR

Physical Parameters

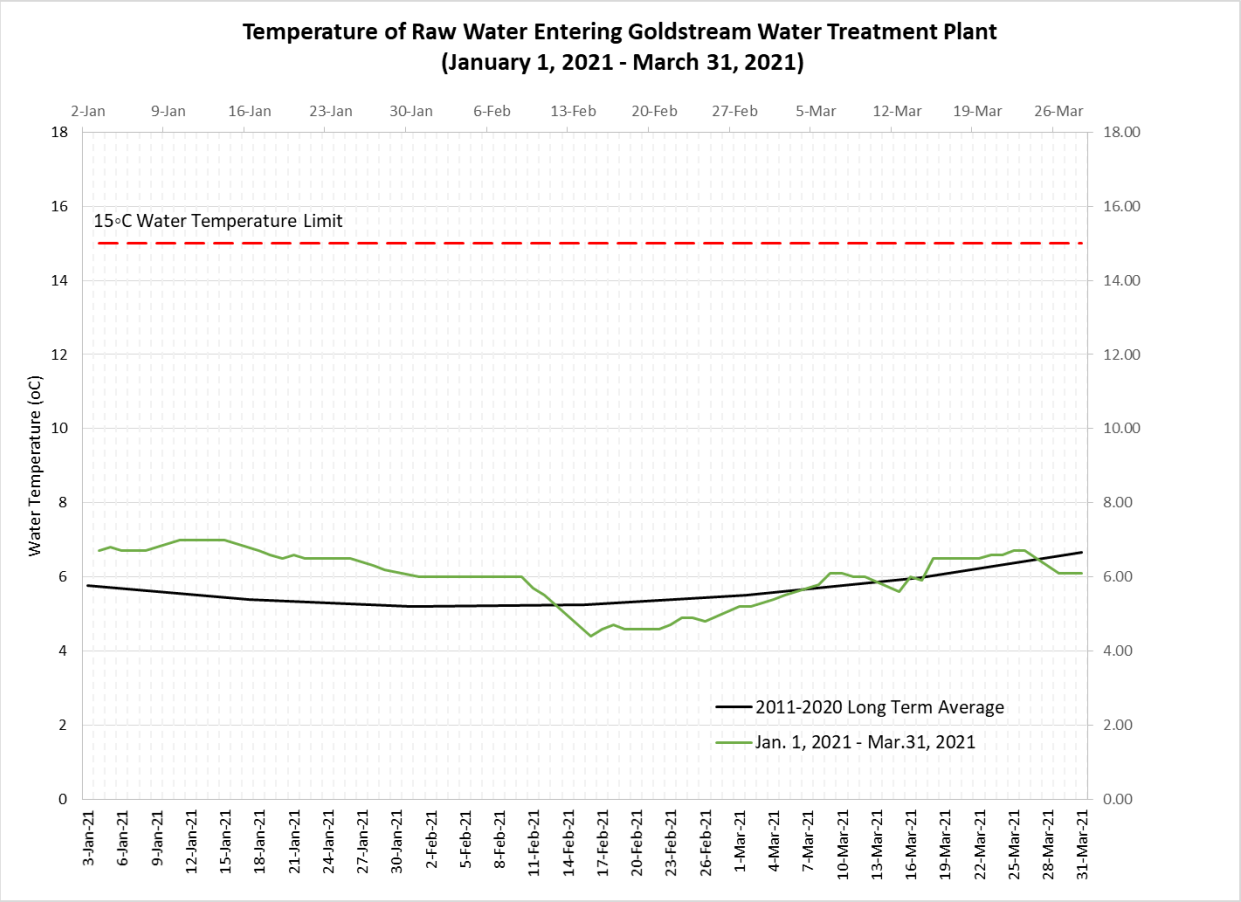
Water Levels. Sooke Lake Reservoir was at 100% of full capacity and spilling into the Sooke River throughout this reporting period (Figure 1). This is in line with the historical reservoir levels at that time of year.

Figure 1



Water Temperature. The raw water temperature measured at the Goldstream Water Treatment Plant remained slightly above the long-term average trend from the beginning of this reporting period to mid-February. For the rest of the period, the water temperature fluctuated closely around the long-term seasonal trend. For the entire period, the temperature was well below the aesthetic limit of 15ºC (Figure 2).

Figure 2



Turbidity. Turbidity in the lake near the intake tower remained well below the 1.0 Nephelometric Turbidity Unit (NTU) limit for the entire reporting period (Table 1). Heavy rainfall and runoff events during this period had no measurable impact on the raw water turbidity. This demonstrates the robustness of the Sooke Lake Reservoir in terms of turbidity impacts. The low turbidity of the raw water allows the UV disinfection stage to remain effective at inactivating bacteria and parasites.

Table 1

Sooke Reservoir, South Basin (1m) - SOL-00-01					
	Samples Collected	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**
Turbidity	6	NTU	0.2	0.38	0.29

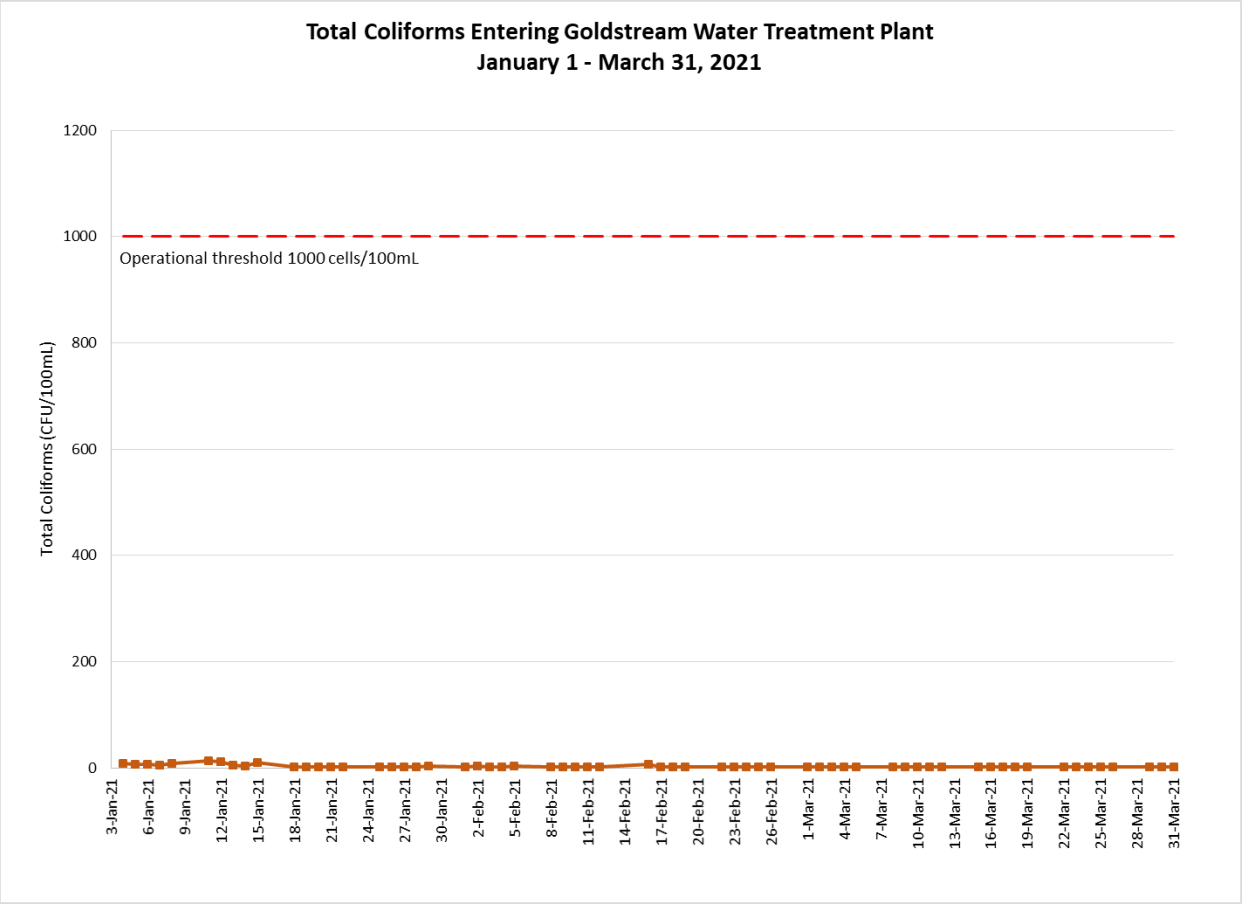
Water Transparency. The transparency of the lake water measured with the Secci Disc in the lake was high (between 7 and 9 m) and consistent with the long-term average. There were no significant algal events that could have impacted the water transparency during this period.

Dissolved Oxygen. The dissolved oxygen concentrations at three lake sampling stations have been consistently between 10-11 mg/L from surface to bottom. This well-oxygenated state prevents internal nutrient loading or metal releases from lake sediments during summer lake stratification, and is another indicator of the oligotrophic status of Sooke Lake.

Bacteria

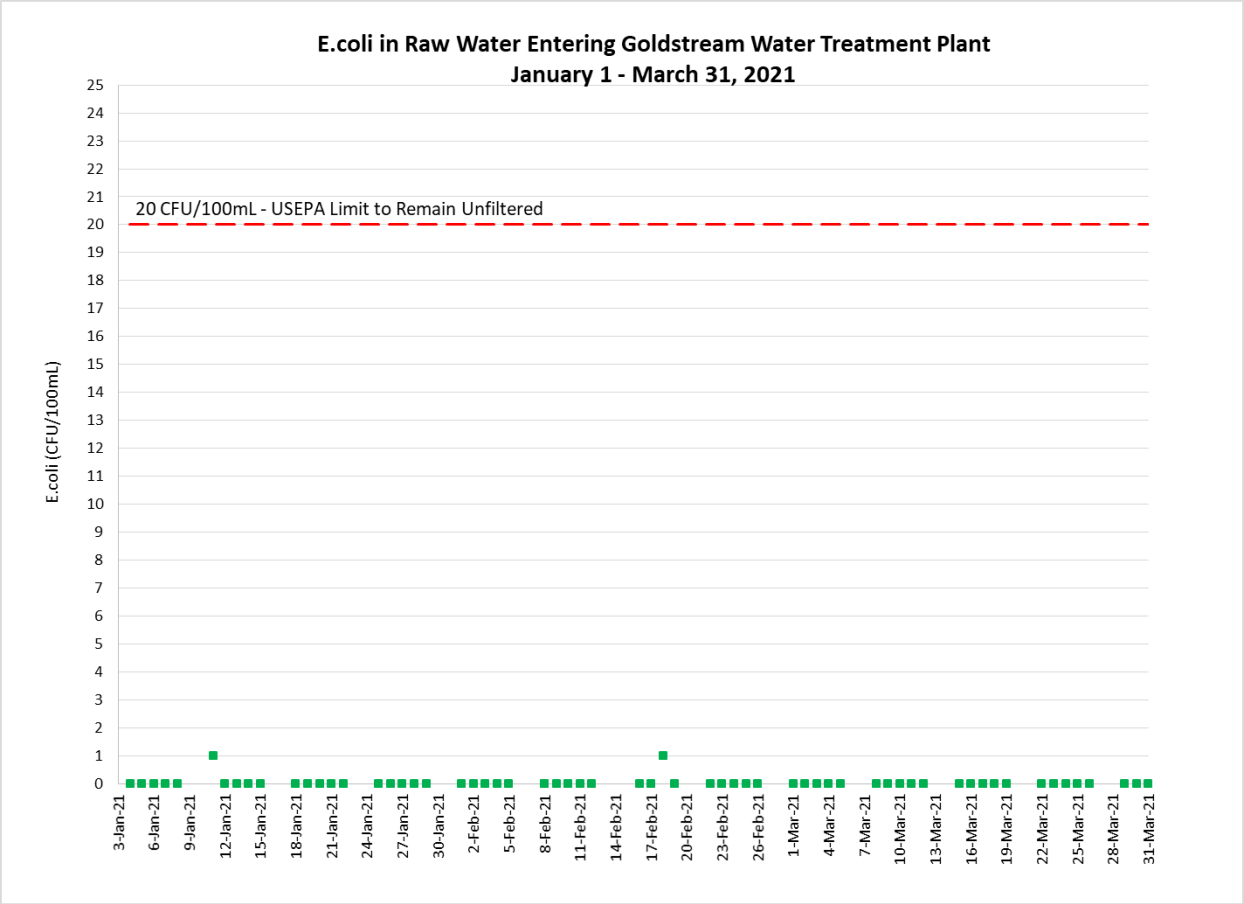
Total Coliform Bacteria and E. Coli. The total coliform concentrations in the raw source water entering the Goldstream Water Treatment Plant remained extremely low throughout the entire reporting period (Figure 3); in fact the concentration was most often zero. This demonstrates the very high raw water quality in Sooke Lake Reservoir.

Figure 3



E. coli concentrations during the reporting period were mostly non-detected or extremely low and, therefore, consistently well under the limit for meeting the critical United States Environmental Protection Agency (USEPA) filtration exemption criteria for surface water used for drinking water supply (Figure 4). These results are very typical for Sooke Lake Reservoir and demonstrate the very high raw water quality.

Figure 4



Nutrients

In general, the nutrient concentrations during the reporting period confirmed the ultra-oligotrophic status of Sooke Lake Reservoir, which is indicative of very low productivity in an upland lake with a virtually undisturbed catchment. This lake status is demonstrated by very low overall nutrient concentrations with a high nitrogen:phosphorus ratio and dissolved organic nitrogen being the dominant constituent of the total nitrogen. These conditions allow only limited biological activity in the lake, thus ensuring a good quality source for unfiltered drinking water. The majority of nutrient input occurs during rain-induced runoff events in the fall and winter. These naturally-added nutrients are then quickly consumed by aquatic organisms, which is an indication of a healthy and functioning food chain in the lakes ecosystem (Tables 2 and 3). The phosphorus and nitrogen concentrations recorded during this period were all in line with the historical seasonal trends.

Table 2

Sooke Reservoir, South Basin (1m) - SOL-00-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	3	ug/L	135	154	144
Total Phosphorus	3	ug/L	<1	3.10	2.10

Table 3

Sooke Reservoir, North Basin (1m) - SOL-04-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	3	ug/L	122	139	129
Total Phosphorus	3	ug/L	<1	3.40	1.8

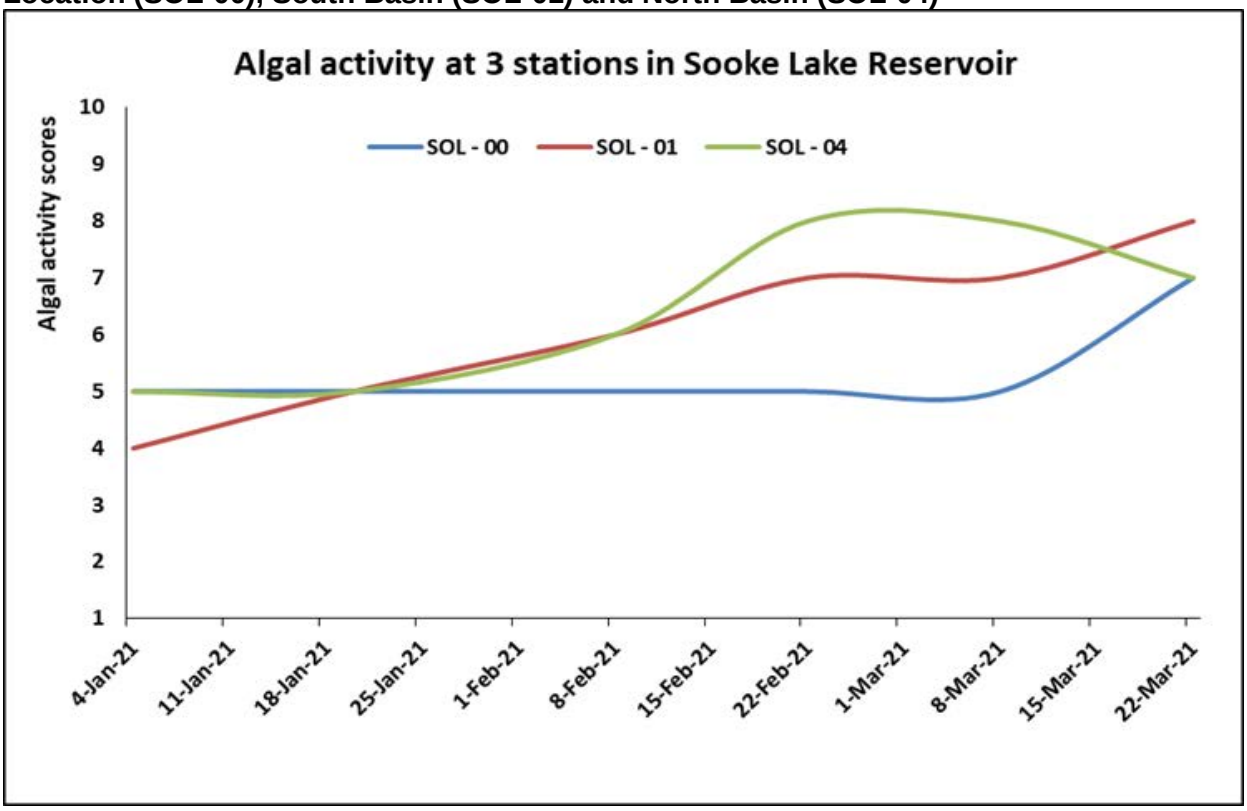
Protozoan Parasites

In three tests during this reporting period of the raw water entering the Goldstream Water Treatment Plant, no *Cryptosporidium* oocysts and no *Giardia* cysts were found. This is another testament of the very high raw water quality in Sooke Lake Reservoir.

Algae

Algal activity scores ranged from 1 to 10 based on algal abundance, were assessed via towed samples collected biweekly at three stations in Sooke Lake Reservoir. These scores provide a general picture of the algae activity in the source water. From January to March 2021, the scores were well in line with general historic trends for this particular season. The algal activity was quite low at the beginning of January when low temperature and light intensity were not suitable for algal growth. The scores tended to increase towards the end of winter and early of spring (Figure 5). The dominant alga was a common species for this time of year; colonial diatom, *Asterionella formosa*. Subdominant algae in most sampling events were also common colonial diatoms, *Tebellaria* spp. These algae might cause taste, odor and clogging issues when in bloom.

Figure 5: Algal activity scores from January-March 2021, Sooke Lake Reservoir, Intake Location (SOL-00), South Basin (SOL-01) and North Basin (SOL-04)



During the reporting period, no algal blooms were observed and there were no water quality concerns related to algae in Sooke Lake Reservoir.

WATER TREATMENT PLANTS

Goldstream Water Treatment Plant (formerly called Japan Gulch Disinfection Facility)

Turbidity. The raw water entering the Goldstream Disinfection Facility was well below 1 NTU during the reporting period (Table 4).

The temporary decommissioning of the Sooke Lake intake screen (0.5 mm openings) for replacement until March 2021 did not have a measurable impact on the raw water turbidity results.

Table 4

Goldstream Water Treatment Plant Turbidity - Raw Water	
Samples Collected	61
Minimum	0.15 NTU
Maximum	0.58 NTU
Mean	0.24 NTU

Main #4 First Customer Sampling Station Total Coliform Bacteria and E. Coli
At the Main #4 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant, no samples tested positive for *E.coli* or total coliform bacteria during the entire reporting period.

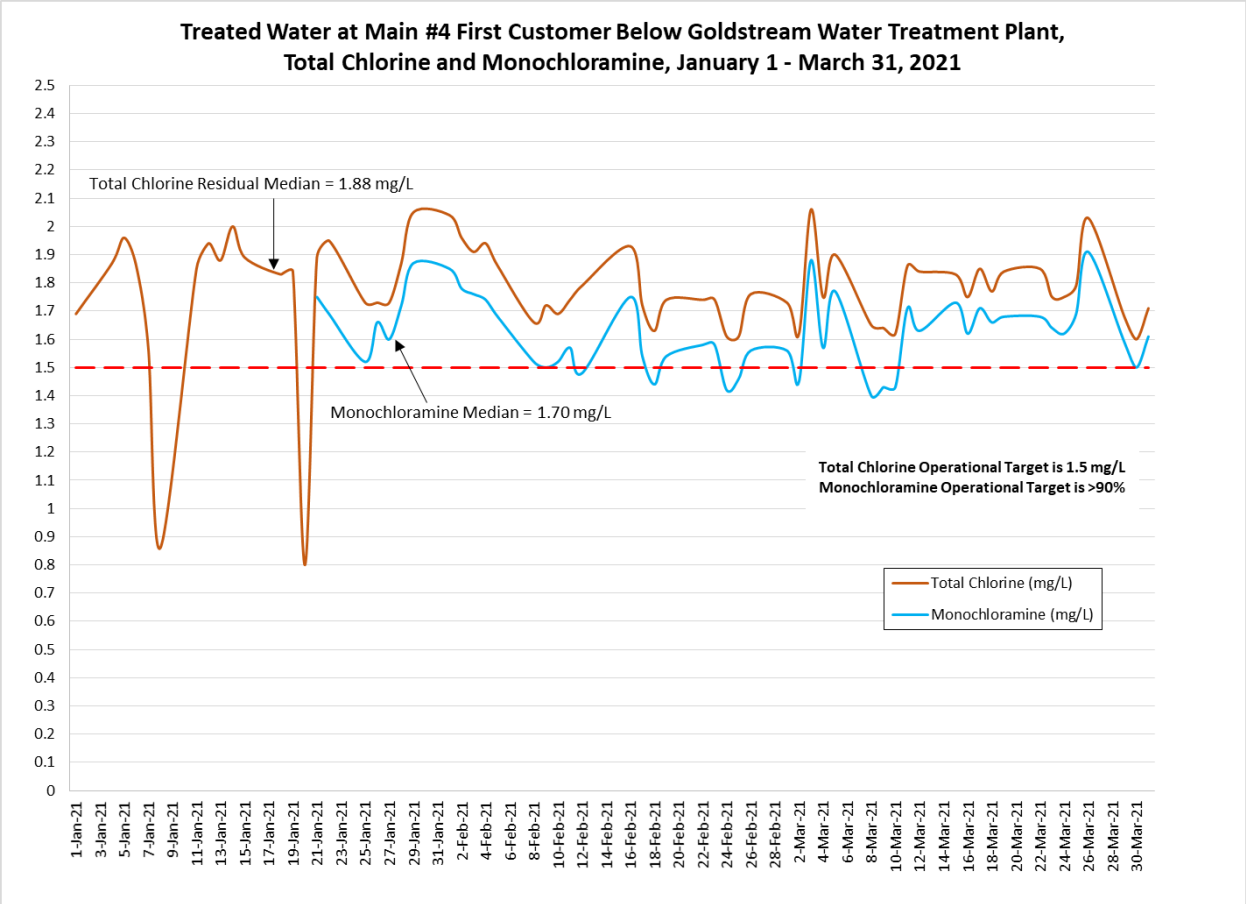
Main #5 First Customer Sampling Station Total Coliform Bacteria and E. Coli
At the Main #5 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant, no samples tested positive for *E.coli* or total coliform bacteria during the entire reporting period.

These results demonstrate the efficacy of the disinfection process at the Goldstream Water Treatment Plant.

Secondary Disinfection. Figure 6 shows the total chlorine and monochloramine concentrations at the Main #4 First Customer Sampling Station. The target concentration of 1.5 mg/L for total chlorine was consistently achieved except for two days in January when repair works on the ammonia injection system had short impacts on the chlorine dosage. The CT chlorination (chlorine concentration x contact time) was not compromised by these short-term interferences. The ammonia injection was discontinued on December 26, 2020 and reinstated by January 21, 2021. During this time, the Goldstream Plant supplied chlorinated instead of chloraminated water to the system. The switch from a fully chloraminated system to a fully chlorinated system took almost three weeks; the switch back only 7-10 days. Free chlorine residuals were boosted in North Saanich and in Metchosin during this period to ensure proper secondary disinfection at the far ends of the system. This experience showed that free chlorine residuals cannot be sufficiently maintained throughout the Greater Victoria Drinking Water System by dosing alone at the Goldstream Plant. This effect would be exacerbated if it occurred during the warmer months. The use of chloramines for secondary disinfection in Greater Victoria is therefore appropriate.

In early March 2021, the hypochlorite disinfection equipment was recommissioned after lengthy repairs in 2020. The new equipment provides better and more consistent chloramine residuals. The target of 90% monochloramines was easily achieved with the new equipment (Figure 6).

Figure 6



Sooke River Road Water Treatment Plant

Turbidity. The raw water entering the Sooke River Road Water Treatment Plant was consistently well under 1 NTU (Table 5).

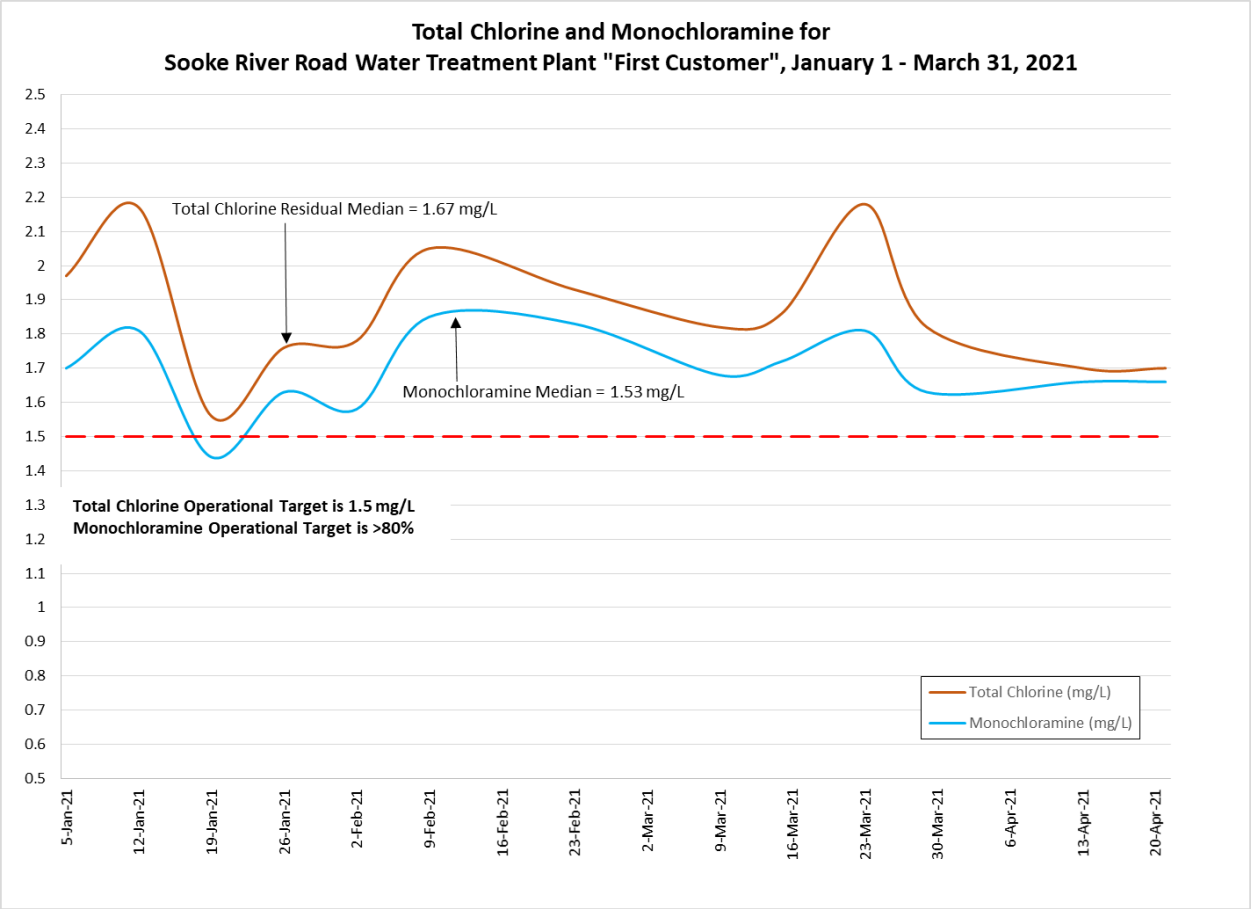
Table 5

Sooke River Road Water Treatment Plant Turbidity - Raw Water	
Samples Collected	11
Minimum	0.16 NTU
Maximum	0.25 NTU
Mean	0.21 NTU

*Sooke First Customer Sampling Station Total Coliform Bacteria and E. Coli*At the Sooke First Customer Sampling Station immediately downstream of the Sooke Water Treatment Plant, total coliform or *E.coli* bacteria were not found in any samples collected from this site. These results demonstrate the efficacy of the disinfection process at the Sooke Water Treatment Plant.

Secondary Disinfection. Figure 7 shows the total chlorine and monochloramine concentrations at the Sooke First Customer Sampling Station. The target concentration of 1.5 mg/L for total chlorine was consistently achieved during the reporting period. The slightly lower target ratio of 80% monochloramine for this facility was consistently achieved throughout the reporting period. The residual concentrations were adequate to provide effective secondary disinfection across this much smaller distribution system.

Figure 7



DISTRIBUTION SYSTEMS

Goldstream (Japan Gulch) Service Area

Table **6**

Month/Year	Samples Collected	Total Coliforms (CFU/mL)				E.coli (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10	Samples > 0	Samples Collected	Adverse > 1 NTU	Median mg/L as CL2	Median °C
Jan-21	334	0	0.0	0	0	0	43	1	0.81	8.3
Feb-21	331	2	0.6	0	1	0	55	1	1.48	7.2
Mar-21	368	0	0.0	0	1	0	59	0	1.48	7.8
Total:	1033	2	0.2	0	0	0	157	2	1.44	7.8

Total Coliform Bacteria and E. Coli. Only two out of 1,033 distribution system samples, or 0.2% of all bacteriological samples during the reporting period, tested positive for total coliform bacteria.

Two samples registered a total coliform concentration of > 10 CFU/100 mL. In all of these cases, the resample was free of total coliform bacteria, indicating that no actual water contamination was the cause of these coliform hits. No *E.coli* bacteria were found (Table 6).

Turbidity. Two of the 157 turbidity samples registered higher than 1 NTU (Table 6). These two adverse results were likely caused by water main flushing activities that can lead to short-term turbidity and colour water observations. Residents are notified of the annual main flushing activities. Overall, these results are an indication of good drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 1.44 mg/L across the system indicates an effective secondary disinfection protecting the potability of the treated drinking water as it flows throughout the system (Table 6).

Water Temperature. The temperature of the drinking water in the system during this reporting period was well below the aesthetic objective in the Canadian Drinking Water Quality Guidelines (15ºC) during the reporting period. Cool drinking water is preferred for aesthetics and for operational reasons.

Water Chemistry. The average pH of the drinking water in the Goldstream Service Area was 7.5 during the reporting period. The pH ranged from 6.6 to 8.8. The lower values come from the earlier part of the reporting period when the chlorine-gas disinfection facility was in operation. Since the recommissioning of the hypochlorite chlorination equipment, the pH and the alkalinity increased. The average alkalinity was 13.5 mg/L. Both averaged values are expected to increase when reporting on a full period with the new hypochlorite equipment in operation.

Disinfection Byproducts. All three typically monitored disinfection byproducts in a drinking water system have been below the Health Canada established health limits in the Goldstream Service Area (Table 7). However, one individual result for haloacetic acids (HAA) exceeded the maximum acceptable concentration (MAC) of 80 µg/L (Cloak Hill Reservoir, North Saanich). Usually, HAA concentrations are consistently in the range of 15-25 µg/L in Greater Victoria. Also, trihalomethane (THM) concentrations were recorded at higher levels early in January, albeit below the MAC of 100 µg/L. They typically range from 10-30 µg/L but January registered concentrations of up to 71 µg/L. This unusual phenomenon was caused by the switch from chloramines to free chlorine residuals until the end of January. Another benefit of using chloramines for secondary disinfection is a much reduced formation of these disinfection by-products. This free chlorine episode in January shows that the unfiltered water of Sooke Lake Reservoir has the potential for disinfection by-product exceedances when using free chlorine for secondary disinfection.

Table 7

Disinfection Byproducts - Greater Victoria Distribution System						
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**MAC (Maximum Acceptable Concentration)**
Haloacetic Acids (HAAs)	7	ug/L	18.0	**85.0**	36.1	80
Trihalomethanes (THMs)	7	ug/L	13.0	71.0	32.6	100
NDMA	7	ng/L	<2.0	<2.0	<2.0	40

Metals. A comprehensive metals analysis was conducted every second month at four different locations in the Goldstream Service Area: (1) where treated water enters the Victoria/Esquimalt System, (2) the Oak Bay System, (3) one in Langford and (4) one in North Saanich. Out of the 32 tested metals, four are monitored particularly closely: iron, manganese, lead and copper. Almost all metal concentrations were below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 8). The sampling station where the Oak Bay System is supplied used to produce elevated lead and copper concentrations, as compared to everywhere else in the system. A replacement of the old sampling lines and sampling fixtures eliminated these elevated lead results. Another sampling installation at the Deep Cove pump station in North Saanich produced high lead concentrations of up to 18.4 µg/L (see Table 8). Again, the plumbing materials of the sampling station were changed in March 2021 and follow-up testing confirmed a substantial reduction in the lead concentrations since.

Table 8

Metals - Greater Victoria Distribution System								
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**AO (Aestetic Objective)**		**MAC (Maximum Acceptable Concentration)**
Aluminum	8	ug/L	14.5	18.56	16.4		100	2900
Copper	8	ug/L	3.2	103.0	37.1	1000		2000
Iron	8	ug/L	15.6	45.2	22.1	300		
Lead	9	ug/L	<0.02	**18.4**	2.7			5
Manganese	8	ug/L	1.7	2.7	2.1	20		120

Sooke Service Area

Table 9

Sooke River Road Water Treatment Plant Service Area										
Month/Year	**Samples Collected**	**Total Coliforms (CFU/mL)**				**E.coli (CFU/100mL)**	**Turbidity**		**Chlorine Residual**	**Water Temp.**
		Samples TC > 0	**Percent TC > 0**	**Resamples TC > 0**	**Samples TC > 10**	**Samples > 0**	**Samples Collected**	**Adverse > 1 NTU**	**Median mg/L as CL2**	**Median °C**
Jan-21	38	1	2.6	0	0	0	5	0	1.29	7.8
Feb-21	30	0	0.0	0	0	0	7	0	1.25	6.8
Mar-21	36	0	0.0	0	0	0	10	0	1.31	7.5
Total:	104	0	1.0	0	0	0	22	0	1.29	7.5

Total Coliform Bacteria and E. Coli. In all 104 bacteriological samples during the reporting period, only one sample tested positive for total coliform bacteria. The resample was free of total coliform bacteria, indicating that no actual water contamination was the cause of this coliform hit. No sample contained *E.coli* bacteria (Table 9).

Turbidity. All 22 turbidity samples registered below 1 NTU (Table 9). This is an indication of excellent drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 1.29 mg/L across the system indicates an effective secondary disinfection protecting the potability of the treated drinking water as it flows throughout the system (Table 9).

Water Temperature. The temperature of the drinking water in the system during this reporting period was well below the aesthetic objective in the Canadian Drinking Water Quality Guidelines

(15ºC) during the reporting period. Cool drinking water is preferred for aesthetics and for operational reasons.

Water Chemistry. The average pH of the drinking water in the Sooke Service Area was 7.4 during the reporting period. The pH ranged from 6.5 to 8.0 and is typically very stable and consistent across this system. The average alkalinity was 15.7 mg/L.

Disinfection Byproducts. The three typically monitored disinfection byproducts in a drinking water system have all been well below the Health Canada established health limits in the Sooke Service Area (Table 10).

Table 10

Disinfection Byproducts - Sooke Distribution System						
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**MAC (Maximum Acceptable Concentration)**
Haloacetic Acids (HAAs)	2	ug/L	23.0	29.0	26.0	80
Trihalomethanes (THMs)	2	ug/L	27.0	32.0	29.5	100
NDMA	2	ng/L	<2.0	<2.0	<2.0	40

Metals. A comprehensive metals analysis was conducted every second month in one location in the Sooke Service Area at the end of the distribution system near Whiffen Spit. Out of the 32 tested metals, four are monitored particularly closely: iron, manganese, lead and copper. All metal concentrations were well below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 11).

Table 11

Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	AO (Aestetic Objective)	OG (Operational Guideline)	MAC (Maximum Acceptable Concentration)
Aluminum	2	ug/L	16	17.5	16.8		100	2900
Copper	2	ug/L	3.2	3.6	3.4	1000		2000
Iron	2	ug/L	23.1	58.0	40.1	300		
Lead	2	ug/L	<0.2	<0.2	<0.2			5
Manganese	2	ug/L	1.6	2.5	2.1	20		120

CONCLUSION

During this first quarter reporting period (January - March 2021), all parameters from source water to treated water indicate stable conditions and good water quality. All trends are in line with historic data and confirm the adequacy of existing water treatment and performance of all major infrastructure components. Unexpected events, such as the loss of the intake screen, did not have any measurable impact on the water quality. Operational activities, such as water main flushing in the distribution systems or the temporary decommissioning of the ammonia injection, had a localized and/or short-term impact on water quality but did not compromise the safety of the drinking water. The multi-barrier approach applied to the Greater Victoria Drinking Water System ensures the excellent drinking water quality achieved during the reporting period.

Making a difference...together

RWSC 21-09

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 16, 2021

SUBJECT **Greater Victoria Water Supply Area Wildlife Program**

ISSUE SUMMARY

To provide the Regional Water Supply Commission (Commission) with an update on the Greater Victoria Water Supply Area (GVWSA) wildlife program.

BACKGROUND

As with all GVWSA programs in the Watershed Protection division, the wildlife management program is centered on mitigating risk to source water quality, and regulatory compliance.

Wildlife and domestic animals can carry disease-causing organisms and faecal coliform bacteria that pose a risk to human health, and act as a vector for introducing these organisms in the water supply reservoirs. The impetus for a program to manage wildlife and domestic animals in the GVWSA was the *Toxoplasmosis* outbreak in 1995 (that affected 110 Greater Victoria residents) that was linked to Humpback Reservoir[1,2] prior to adding ultraviolet disinfection to the water treatment process. It was not determined whether it was domestic or feral cats, or cougars that caused the contamination of the Humpback Reservoir drinking water.

Beyond managing domestic and wildlife species of concern for drinking water quality, the Capital Regional District (CRD) has an obligation to ensure water supply and watershed management activities meet wildlife regulatory requirements in terms of fish and fish habitat (federal *Fisheries Act*), streams and aquatic habitat (provincial *Water Sustainability Act*), protection of birds and nests (international *Migratory Birds Convention Act* and BC *Wildlife Act*), rare and endangered species (federal *Species at Risk Act* and provincial *Wildlife Act*) and provincial guidelines.

Management of Undesirable Wildlife

Canada Geese
Each spring a number of Canada geese leave the agricultural, institutional lands and marine shoreline areas where they overwinter to nest on waterbodies in the GVWSA. A second pulse of geese arrive in June seeking large waterbodies where they can safely reside while they are molting their flight feathers. The wildlife management objective is to minimize Canada geese faecal material entering reservoirs by controlling the total number of geese on reservoirs and keeping geese away from the Sooke Lake Intake Tower. This is achieved by:

1. Locating nests and addling the eggs (shaking the egg to prevent it hatching) in spring;
2. Hazing (scaring and potential kill of a few) geese out of and away from the southern basin of Sooke Lake Reservoir

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[1] Canada Communicable Disease Report Vol 21-18, 30 September 1995. e-2118.pdf (cdc.gov);
[2] Bowie WR et al. 1997: Outbreak of toxoplasmosis associated with municipal drinking water. The Lancet 350: 173-177. Outbreak of toxoplasmosis associated with municipal drinking water - ScienceDirect

All methods must be conducted under Environment Canada permits that are secured annually. While there is no ability to stop geese from arriving from outside of the GVWSA each year, the egg addling program appears to be successful in keeping the total number of geese seeking to breed in the GVWSA low and over time reducing the number (geese look to nest where they were raised). Appendix A shows the trend in Canada geese nests and eggs found and addled annually.

Beaver

While beaver may have been present in the GVWSA historically, staff who have worked in the GVWSA for several decades had never seen a beaver on the water supply reservoirs. This changed in 2006 when signs of beaver feeding were detected on Sooke Lake Reservoir. In discussion with Island Health, the Chief Medical Health Officer issued a letter to the CRD directing it to not allow beaver to establish in the GVWSA (Appendix B).

When consistent beaver sign is detected, a licensed trapper with the required provincial *Wildlife Act* permits traps the beaver. Over the past 15 years, 15 beavers have been trapped and removed or killed, and one beaver was found dead (average of one beaver trapped per year). All beavers trapped in the GVWSA are sent to the provincial animal health laboratory for testing for disease-causing organisms. To date none of the beaver tested have been carrying a disease of concern, but continued testing is considered a prudent risk management approach.

Bullfrogs

The purpose of the American bullfrog control program is to prevent this introduced invasive species from spreading into the GVWSA and Sooke Hills Wilderness Regional Park (SHWRP). A 2009 study completed by the Centre for Coastal Health concluded that there was negligible risk to public health from bullfrogs, however there is a potentially very large risk to native and endangered amphibian species that should continue to be considered. The strategy that has been implemented since 2007 is to remove bullfrogs from a control corridor outside of the GVWSA within Langford and Colwood. To date the program has been successful in keeping bullfrogs out of the GVWSA and SHWRP however efforts to push the population further away outside the corridor have not been realized. Appendix B shows the number of bullfrogs captured in the corridor per year. The work is conducted by a contractor and funded 50% by Regional Parks and 50% Regional Water Supply Service. The Watershed Protection biologist monitors water bodies on CRD lands to provide additional assurance that bullfrogs have not moved beyond the control corridor. New technology “eDNA” to look for bullfrog DNA in water samples as a simpler method to detect bullfrog presence in waterbodies was field tested in collaboration with University of Victoria in 2017. Unfortunately the results were not reliable enough to replace the current in person methods of detecting bullfrogs.

Domestic Animals and Sick Wildlife

Domestic animals (e.g. cats, dogs) are not allowed to be brought in or released in the GVWSA under CRD Bylaw 2804. Where domestic animals are found within catchment areas, Watershed Protection staff will work with CRD Animal Control to capture and remove them. If wildlife that is found to be sick or suffering are found, the Wildlife Conservation Officer Service is called for assistance. This occurs only rarely. Conservation Officers also patrol the GVWSA on occasion during hunting season.

Wildlife Regulatory Compliance

The GVWSA is a contiguous 20,610 hectare (ha) forested natural area on southern Vancouver Island close to Victoria (see Appendix C overview photography). Along with regional and provincial parks, the area provides important habitat for wildlife on southern Vancouver Island. Given the lack of public access, the GVWSA may provide an even greater refuge for wildlife as a large protected area in otherwise relatively developed, busy and noisy forests near Victoria.

The regulatory environment regarding wildlife in BC is complex with overlapping acts and regulations at provincial and federal levels, as well as gaps. The following is a summary of the pertinent legislation, how operational compliance is being achieved and other best management practices.

Migratory Birds Convention Act – International (matching federal legislation in Canada and the US)

What is Protected/Required	*CRD's Management*
• Migratory birds, their nests and eggs • Includes many birds present in the GVWSA including common birds like the robin	• Up until 2019 chance find management of nests • Adoption of GVWSA marbled murrelet mapping provided by provincial researchers, attention to large trees in those areas and avoiding disturbance during nesting season (May – August) • Starting in 2020, migratory bird nesting and habitat surveys ahead of projects that create noise or disturb vegetation e.g. gravel crushing, forest fuel management, drainage structure upgrades. Where active bird nests are found, projects are delayed until after the birds have left the nest. • Exclusion netting on the Sooke Lake Intake Tower to avoid birds (swallows) nesting on the tower/bridge.

Canadian Fisheries Act – Federal

What is Protected/Required	*CRD's Management*
• Fish, fish eggs, fish habitat[3] • Fisheries & Oceans fish protection measures are fully implemented during instream projects or a Request for Review must be submitted. • Instream works are only allowed when stream conditions are dry or during regional timing windows of least risk to fish and fish habitat (cutthroat and rainbow trout: August 15 – September 15) • Prior to replacing/upgrading/removing stream drainage structures, CRD must assess the stream for fish presence and fish habitat. The requirements for fish passage are determined by a qualified professional biologist and incorporated into structure design.	• Fish inventories have been conducted in the main lakes/reservoirs in the GVWSA. The primary fish species found in the GVWSA are cutthroat trout and stickleback. Dolly varden, kokanee and sculpin are present in Sooke Lake Reservoir. Rainbow trout were introduced to a number of lakes by the Province in the 1990's. Brown bullheads were introduced to water supply reservoirs when the original dams were constructed. • Water releases to Sooke River and Goldstream River during the summer to supplement flows for fish and aquatic ecology. A 10 year study of fish and fish habitat in Sooke River was conducted with T'Sou-ke First Nation after reservoir expansion. • 2017 – 2020, Under a capital project, $280,257 has been spent assessing fish and fish habitat in all streams subject to road crossings in the GVWSA. The results are used to inform replacement, upgrade and deactivation of stream crossings. • Careful management of instream works including worksite isolation techniques, fish salvage and exclusion, wastewater management, sediment and erosion control, and use of a qualified environmental monitor on larger projects.

[3] The protection of all fish is a federal responsibility, however the management of freshwater (non-anadromous) fish has been devolved to the provinces. The *Water Sustainability Act* is the main method for protection of freshwater fish habitat on private land.

Water Sustainability Act – Provincial

What is Protected/Required	*CRD's Management*
• Streams, aquatic ecosystems, riparian areas • No work within streams is allowed without provincial notification or approval • Instream works only when stream conditions are dry or during regional timing windows • Compliance with required design elements for stream crossing structures (e.g. design capacity, fish passage, stream stability etc.) • Compliance with additional protection measures for Sensitive Streams as defined in the Regulation (i.e., Goldstream River) • Compliance with additional measures required by the Habitat Officer during the review process.	• An application for a Change Approval or Notification of Instream Work under the *Water Sustainability Act* is submitted each year by a professional forester for all instream works in the GVWSA. The application relies on fisheries biologist stream assessments and established CRD Best Management Practices. Any conditions or issues are discussed with the provincial Habitat Officer. In 2021 application was submitted for instream work in 32 crossings. • Stream crossing structures are being upgraded based on a priority matrix that considers the degree to which a structure is deteriorated, undersized (including climate change projections), a risk to water quality, a barrier to fish passage, and other factors. • Significant investments are being made to ensure fish passage for crossing structures and stream restoration projects. These efforts include the involvement of a hydrologist and qualified registered professional biologist during project planning and construction phases.

Species-at-Risk Act (SARA) (Federal)

What is Protected/Required	*CRD's Management*
• Species-at-risk (SAR) must not be killed, harmed, harassed, captured or possessed. • The residence of one or more individuals must not be damaged or destroyed • No part of critical habitat for a listed species may be destroyed. • Listed species-at-risk under SARA include fish, birds, animals, plants and molluscs. There are a total of approximately 262 SARA listed species in BC. • There are thought to be approximately 28 SARA listed species in the GVWSA (see Appendix D for a listing) • Technically SARA only applies to migratory birds and fish on private land in BC. This means 11 bird species are legally protected in the GVWSA under SARA. • The most common listed species in the GVWSA are: northern goshawk, western screech owl, olive-sided flycatcher, northern red-legged frog and western toad.	• Collation of information on GVWSA species-at-risk (SAR) and species of concern into species accounts (2019) • Field studies in 2019 and 2020 found key indicator species preferred old forest but also younger forest with structural diversity • SAR habitat mapping of marbled murrelet, northern goshawk, and western screech owl in the GVWSA (2020) • SAR habitat assessment prior to ground or vegetation disturbing projects. • Exclusion fencing to avoid western toads (species of concern) taking up residence in burn piles or crossing Sooke Main.

Wildlife Act (Provincial)

What is Protected/Required	*CRD's Management*
• Any active bird nest • Nests of eagles, falcons, osprey and herons whether occupied or not • Any egg or bird from injury, molestation or destruction • All vertebrates from direct harm	• As above for other bird species • Mapping of significant wildlife habitat features – e.g. bear dens, stick nests • Chance find reporting and management • Recording wildlife sightings and notifying staff and contractors of wildlife activities in order to avoid human-wildlife conflicts.

Provincial Species-at-Risk Information

What is Protected/Required	*CRD's Management*
• BC maintains a species-at-risk listing which includes all the SARA listed species as well as additional species and plant communities; in red, blue and yellow categories. The red list alone contains 782 species and plant communities. • A BC *Endangered Species Act* is under development • Professional staff and consultants (e.g. foresters, forest technicians, biologists) must consider the relevant wildlife and species-at-risk in their work (plans, prescriptions, strategies and policies).	• As above.

The Watershed Protection division has had one professional wildlife biologist to manage and implement a wide variety of the GVWSA wildlife program functions since 2000. A greater emphasis in ensuring breeding birds are not disturbed on their nests during the bird breeding window (March 26 to August 17), as well as assessing work sites for species-at-risk prior to operations, is increasing the workload in the wildlife program. For the first time in 2021, a Canada Summer Jobs grant was applied for to help fund an assistant to the program for the summer season.

Looking Forward

Expectations for the wildlife program are increasing as the large grey areas within the wildlife regulatory environment become more defined in BC (provincial endangered species legislation in development) and with increasing social expectations for protecting wildlife while operating in a natural environment. The division will continue to require field assistance and contract subject matter experts to assess and advise the CRD on fish, wildlife and species-at-risk issues relating to operational work in the GVWSA.

Continuing the effort to map high value habitat for species-at-risk and of special concern will help staff better integrate wildlife management into operational projects and will be a key element in the eventual development of a wildlife management plan for the GVWSA. As capabilities in these areas build, chance finds of species, nests or critical habitat before or during operations will continue to need to be accommodated.

Fish and wildlife are an integral part of the forested watershed ecosystem that sustains Greater Victoria's source water and provides biodiversity to the region. Beyond a mandate to protect source water, the guiding principles of management of the GVWSA call for stewardship of biodiversity, species, populations and their habitat.[4] Despite a gap in legislation for the GVWSA

[4] 1999 Strategic Plan for Water Management, volume 3. Watershed Management.

in terms of species-at-risk, the wildlife program is working to establish and follow best management practices to ensure operations mitigate risks to breeding birds, fish and fish habitat, biodiversity and species-at-risk.

CONCLUSION

The wildlife program of the Greater Victoria Water Supply Area (GVWSA) provides management of undesirable species that may pose a risk to water quality, as well as the conservation of fish, wildlife, species-at-risk and habitat according to a complex provincial and federal regulatory environment.

The GVWSA is a refuge for wildlife in an increasingly developed southern Vancouver Island. Most southern Vancouver Island wildlife species are likely represented in the GVWSA and the area is prized by residents for these ecological values as well as the high quality drinking water it provides for Greater Victoria.

RECOMMENDATION

That the Regional Water Supply Commission receive the report for information.

Submitted by:	Annette Constabel, MSC, RPF, Senior Manager, Watershed Protection
Concurrence:	Ted Robbins, B.Sc., CTech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

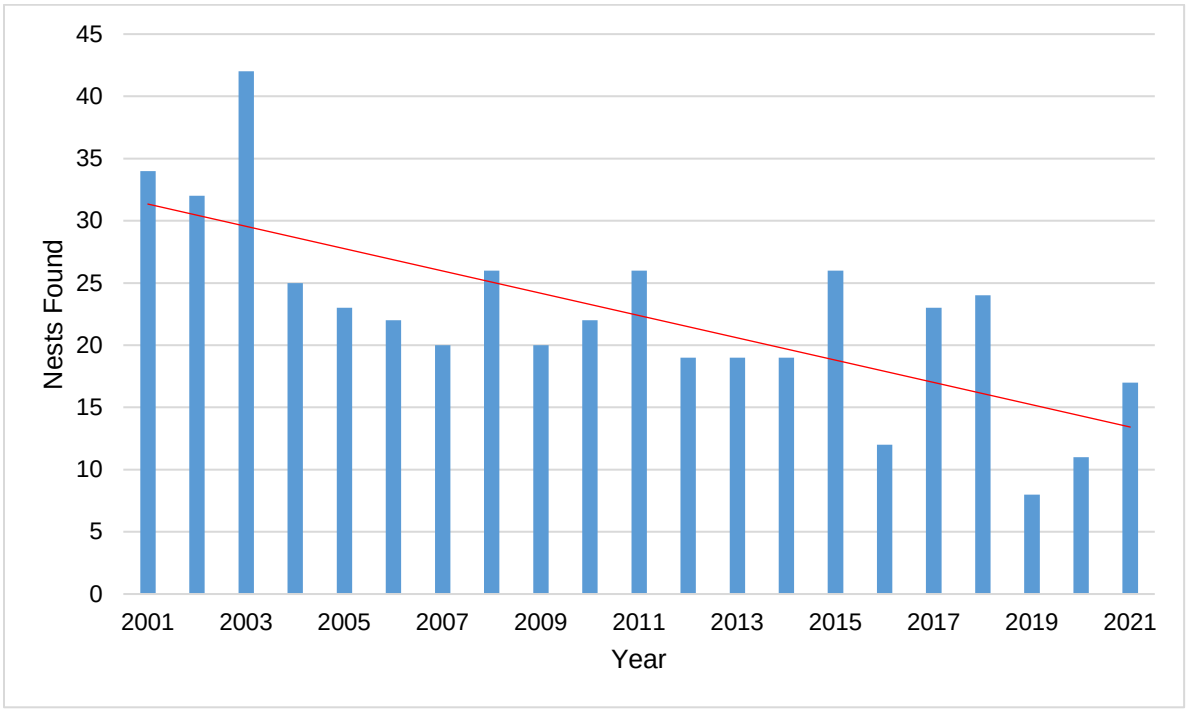
ATTACHMENTS

Appendix A: Canada Goose and American Bullfrog Figures
Appendix B: Letter from Chief Medical Health Officer Regarding Beaver
Appendix C: GVWSA Protected Lands on Southern Vancouver Island
Appendix D: SARA Listed Species Expected in the GVWSA

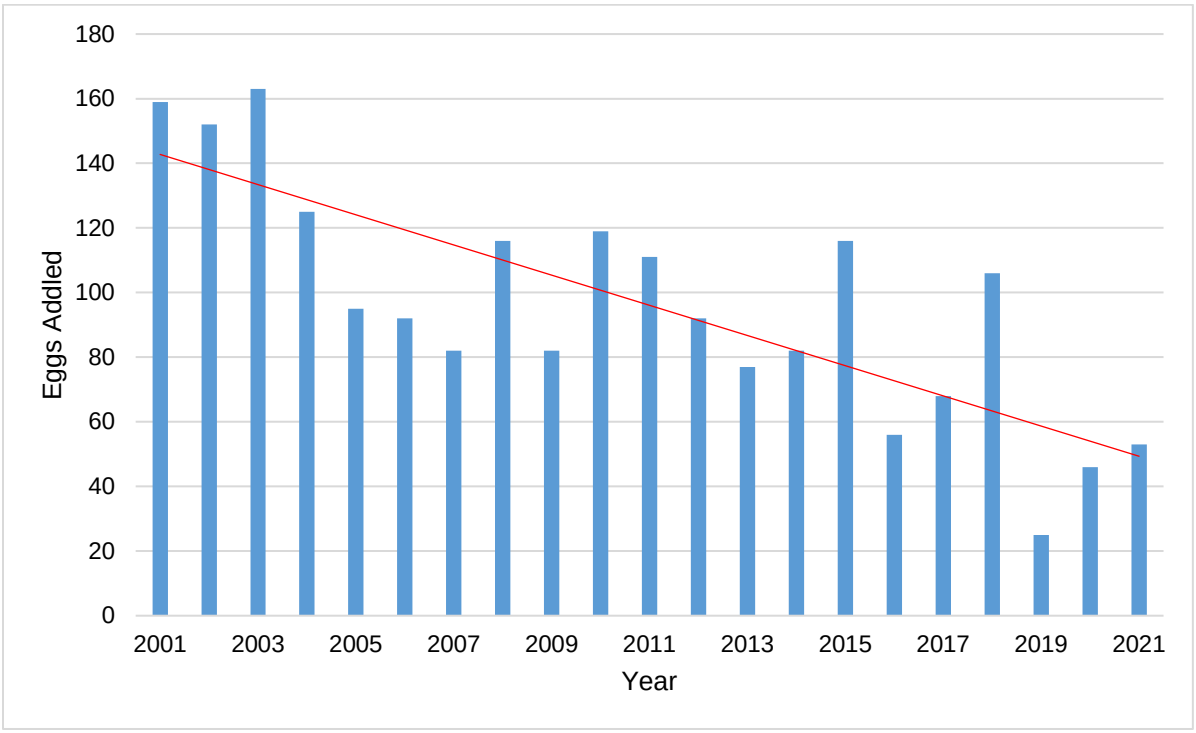
APPENDIX A

Canada Goose Management 2001 – 2021

1. Nests found in the GVWSA and adjacent waterbodies



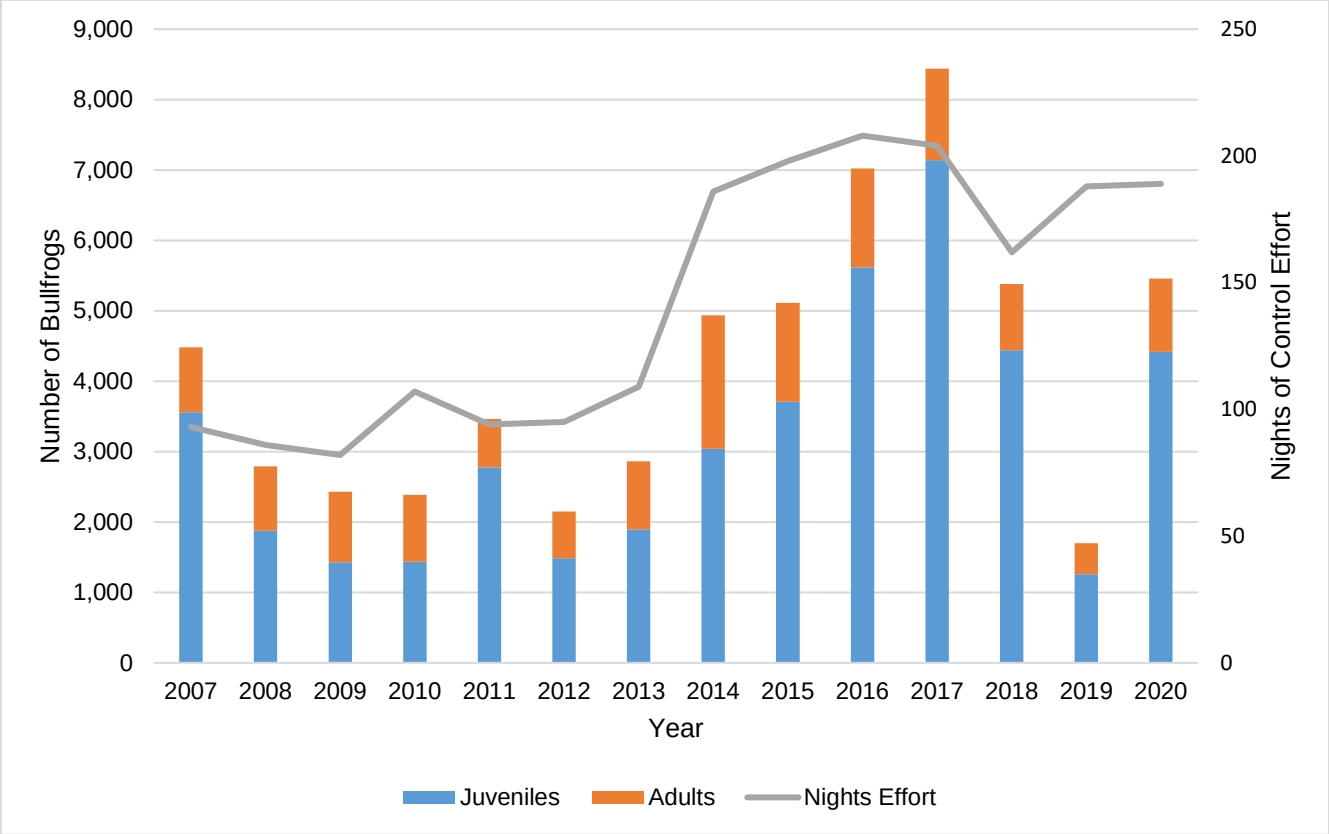
2. Eggs addled in the GVWSA and adjacent waterbodies



APPENDIX A

American Bullfrog Management 2007 - 2020 in the Westshore Control Corridor

Number of Adult and Juvenile Bullfrogs captured in relation to Nights of Control Effort



VANCOUVER ISLAND health authority

Please note Dr. Stanwick's telephone number (250) 519-7066 and fax number (250) 519-7079

April 18, 2006

Jack Hull, P. Eng., MBA
General Manager
CRD Water Services
479 Island Highway
Victoria, BC V9B 1H7

Dear Mr. Hull:

Re: Remove Beaver from Greater Victoria Water Supply Area

It is my understanding that, in at least the last decade, beaver (*Castor canadensis*) have never been observed inside the boundaries of the Greater Victoria Drinking Water Supply Area. Therefore, the recent report of a beaver being found within these boundaries is disturbing because these rodents are known to carry the parasites *Giardia* and *Cryptosporidium* and the bacterium *Leptospira.* Dr. Judy Isaac-Renton, BC Centre for Disease Control, has described these animals as an important vector in the transmission of human water-borne disease within the Province of British Columbia.

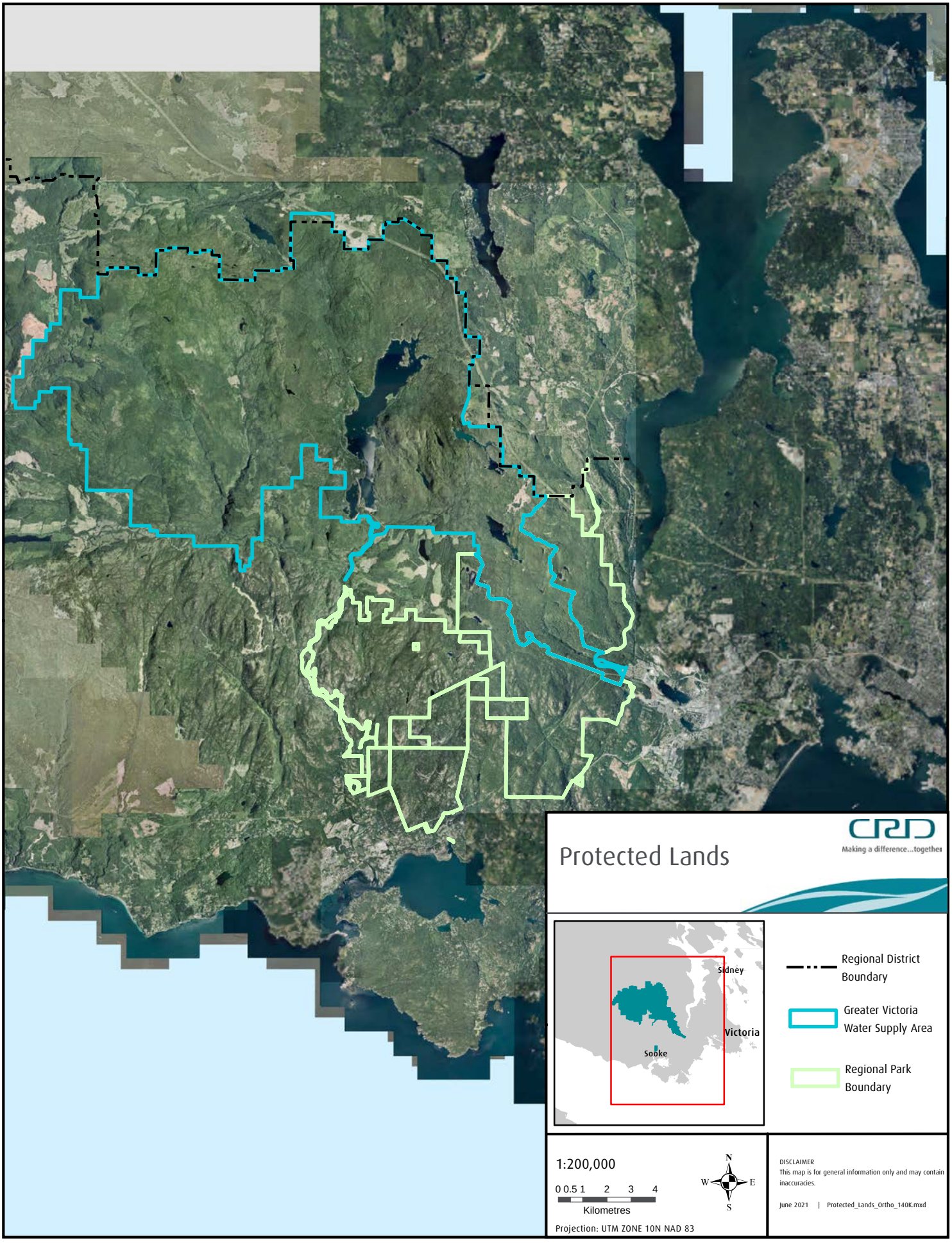
The Greater Victoria Drinking Water Supply System is an unfiltered drinking water supply which uses a multiple barrier approach to prevent contaminants from entering the drinking water. Therefore, it is very important that you not allow any beaver to compromise your source water protection barrier since otherwise it places too great a reliance upon ultraviolet light as the final barrier to kill these parasites.

It is my firm expectation that you will take all necessary steps and precautions to protect the integrity of the Greater Victoria Drinking Water Supply Area and prevent the incursion of beaver into that area. In this way, you will ensure the continuing safety of Greater Victoria's drinking water.

Yours sincerely,

Richard S. Stanwick, M.D., M.Sc., FRCPC, F.A.A.P.
Chief Medical Health Officer

c.c. Barry Boettger, Provincial Drinking Water Officer, BC Ministry of Health
Robin Gear, Regional Drinking Water Coordinator, Vancouver Island Health Authority
Gary Gibson, Senior Environmental Health, Vancouver Island Health Authority, South Island
John Spencer, Pubic Health Engineer, Vancouver Island Health Authority
Gordon Joyce, Manager, Watershed Protection Division, CRD Water Services
Joel Ussery, Superintendent, Resource Planning Section, CRD Water Services
Stewart Irwin, Manager, Water Quality Division, CRD Water Services


Protected Lands
CRD
Making a difference...together
Sidney
Victoria
Sooke
Regional District Boundary
Greater Victoria Water Supply Area
Regional Park Boundary
1:200,000
0 0.5 1 2 3 4
Kilometres
N
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Projection: UTM ZONE 10N NAD 83
DISCLAIMER
This map is for general information only and may contain inaccuracies.
June 2021 | Protected_Lands_Ortho_140K.mxd

APPENDIX D

Species-at-Risk Act

Listed Species in the GVWSA by Category

(See SARA, BC List and Provincial Conservation Status Codes at End)

Scientific Name	Common Name	SARA Status	BC List Status	Provincial Conservation Status
Mammals				
Gulo Gulo Vancouverensis	Wolverine, *vancouverensis* subspecies	1-SC (2018)	Blue	S3 (2010)
Myotis Lucifugus	Little Brown Myotis	1-E (2014)	Yellow	S4 (2015)
Birds				
Accipiter Gentilis Laingi	Northern Goshawk, *laingi* subspecies	1-T (2003)	Red	S2 (2010)
Aegolius Acadicus Brooksi	Northern Saw-whet Owl, *brooksi* subspecies	1-T (2007)	Blue	S2S3 (2017)
Ardea Herodias Fannini	Great Blue Heron, *fannini* subspecies	1-SC (2010)	Blue	S2S3B,S4N (2018)
Brachyramphus Marmoratus	Marbled Murrelet	1-T (2003)	Blue	S3B,S3N (2015)
Chordeiles Minor	Common Nighthawk	1-T (2010)	Yellow	S4B (2015)
Coccothraustes Vespertinus	Evening Grosbeak	1-SC (2019)	Yellow	S5 (2015)
Contopus Cooperi	Olive-sided Flycatcher	1-T (2010)	Blue	S3S4B (2015)
Falco Peregrinus Anatum	Peregrine Falcon, *anatum* subspecies	1-SC (2012)	Red	S2? (2011)
Falco Peregrinus Pealei	Peregrine Falcon, *pealei* subspecies	1-SC (2003)	Blue	S3S4 (2019)
Hirundo Rustica	Barn Swallow	1-T (2017)	Blue	S3S4B (2015)
Megascops Kennicottii Kennicottii	Western Screech-Owl, *kennicottii* subspecies	1-T (2005)	Blue	S2S3 (2017)
Patagioenas Fasciata	Band-tailed Pigeon	1-SC (2011)	Blue	S3S4 (2015)
Reptiles And Amphibians				
Anaxyrus Boreas	Western Toad	1-SC (2018)	Yellow	S4 (2016)
Aneides Vagrans	Wandering Salamander	1-SC (2018)	Blue	S3 (2016)
Chrysemys Picta	Painted Turtle - Pacific Coast Population	1-E (2007)	Red	S1S2 (2018)
Contia Tenuis	Sharp-tailed Snake	1-E (2003)	Red	S1S2 (2018)
Rana Aurora	Northern Red-legged Frog	1-SC (2005)	Blue	S3 (2016)

APPENDIX D

Scientific Name	Common Name	SARA Status	BC List Status	Provincial Conservation Status
Snails And Slugs				
Allogona Townsendiana	Oregon Forestsnail	1-E (2005)	Red	S2 (2015)
Cryptomastix Devia	Puget Oregonian	1-XX (2005)	Red	SX (2015)
Hemphillia Dromedarius	Dromedary Jumping-slug	1-T (2005)	Red	S2 (2015)
Hemphillia Glandulosa	Warty Jumping-slug	1-SC (2005)	Red	S2? (2015)
Nearctula Sp. 1	Threaded Vertigo	1-SC (2012)	Blue	S3 (2015)
Prophysaon Coeruleum	Blue-grey Taildropper	1-T (2019)	Blue	S2S3 (2015)
Insects				
Euphyes Vestris	Dun Skipper	1-T (2003)	Blue	S2S3 (2020)
Vascular Plants				
Bidens Amplissima	Vancouver Island beggarticks	1-SC (2003)	Blue	S3 (2019)
Meconella Oregana	White meconella	1-E (2006)	Red	S1S2 (2019)
Mosses				
Entosthodon Fascicularis	Banded cord-moss	1-SC (2006)	Blue	S2S3 (2015)

SARA Codes and (year of last review)

XX = EXTINCT: A species that no longer exists.
XT = EXTIRPATED: A species that no longer exists in the wild in Canada, but occurring elsewhere.
E = ENDANGERED: A species facing imminent extirpation or extinction.
T = THREATENED: A species that is likely to become endangered if limiting factors are not reversed.
SC = SPECIAL CONCERN: A species of special concern because of characteristics that make it is particularly sensitive to human activities or natural events.

BC List Codes

Extinct: Species that no longer exist. This status is only assigned if the Global Conservation Status rank is GX.

Red: Includes any native species or ecological communities that have, or are candidates for, Extirpated, Endangered, or Threatened status in British Columbia. Extirpated species no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered species and ecological communities are facing imminent extirpation or extinction. Threatened species and ecological communities are likely to become endangered if limiting factors are not reversed. Not all Red-listed species or ecological communities will necessarily become formally designated. Placing species or ecological communities on these lists flags them as being at risk and requiring investigation.

Blue: Includes any native species or ecological community considered to be of Special Concern (formerly Vulnerable) in British Columbia. Species or ecological communities of Special Concern have characteristics that make them particularly sensitive or vulnerable to human activities or natural events. Blue-listed species or ecological communities are at risk, but are not Extirpated, Endangered or Threatened.

Yellow: Includes species or ecological communities that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies.

Provincial Conservation Status Codes

Provincial Status applies to a species' or ecological community's conservation status in British Columbia. The number in parenthesis is the year the status rank was last reviewed.
The status ranks have the following meaning:

SX = presumed extirpated
SH = historical (species)/possibly extirpated (communities)
S1 = critically imperiled
S2 = imperiled
S3 = special concern, vulnerable to extirpation or extinction
S4 = apparently secure
S5 = demonstrably widespread, abundant, and secure.
NA = not applicable
NR = unranked
SU = unrankable

Making a difference...together

JUAN DE FUCA WATER DISTRIBUTION COMMISSION
Tuesday, June 1, 2021 at 12:00 PM

MEETING HOTSHEET (ACTION LIST)

The following is a quick snapshot of the FINAL **Juan de Fuca Water Distribution Commission** decisions made at the meeting. The minutes will represent the official record of the meeting.

3. ADOPTION OF MINUTES

That the minutes of the May 4, 2021 meeting be adopted as amended.

CARRIED

6. COMMISSION BUSINESS

6.1. Water Service Connection Request - 2755 Sooke River Road

That the Juan de Fuca Water Distribution Commission:

As per Bylaw No. 3889, permit the construction of the service through a registered easement and require the construction of waterworks (a water main) from the end of the existing water main, across the entire frontage of 2755 Sooke River Road at the applicant's expense, in order to service lands beyond the extension in the future.

CARRIED
Opposed: Logins, Hicks, Wade

6.2. Summary of Other Water Commission Recommendations

That the Juan de Fuca Water Distribution Commission receive the report for information.

CARRIED

6.3. Water Watch Report

That the Juan de Fuca Water Distribution Commission receive the May 25, 2021 water watch report for information.

CARRIED

Making a difference...together

SAANICH PENINSULA WATER COMMISSION
Thursday, May 20, 2021 at 9:30 AM

MEETING HOTSHEET (ACTION LIST)

The following is a quick snapshot of the FINAL **Saanich Peninsula Water Commission** decisions made at the meeting. The minutes will represent the official record of the meeting.

3. ADOPTION OF MINUTES

That the minutes of the March 18, 2021 meeting be adopted.

CARRIED

7. COMMISSION BUSINESS

7.1. Post Disaster Water supply Update

That the Saanich Peninsula Water Commission receive the report for information.

CARRIED

7.1 (a) Motion Arising:
That, following discussions between Capital Regional District (CRD) and District of Central Saanich staff, the partners, District of Central Saanich, CRD and Tsawout Council, meet to discuss post disaster water supply funding options.

CARRIED

7.1 (b) Motion Arising:

That

A) Staff be asked to report back with recommendations on:

1. Acquiring and funding a set of distribution modules specific to the peninsula;
2. Deploying the distribution modules; particularly location or locations, staffing and trial runs;
3. Short- and long-term storage and maintenance of the distribution modules;
4. How to access the water stored in the reservoirs after seismic valves have been activated and priorities for use; and
5. The length of time our water account holders should be asked to store water and how much they should store in an emergency.

B) Councils be asked to support this work and authorize their staffs to work with CRD staff, first nations, emergency organizations and other stakeholders on the development of the recommendations.

CARRIED

7.2. Bylaw 4411: Saanich Peninsula Water Supply Water Works Facilities Loan Authorization Bylaw

The Saanich Peninsula Water Commission recommends to the Capital Regional District Board:

1. That Bylaw No. 4411 cited as "Saanich Peninsula Water Supply Water Works Facilities Loan Authorization Bylaw No. 1, 2021" be introduced and read a first, second and third time; and

2. Inspector of Municipalities for approval, and if received, to proceed with elector approval by way of the municipal consent process.

CARRIED

7.3. Greater Victoria Drinking Water Quality – 2020 Annual Report

That the report be received for information.

CARRIED

7.4. Summary of Recommendations from Other Water Commissions

That the Summary of Recommendations from other water commissions be received for information.

CARRIED

7.5. Water Watch Report

That the May 10, 2021 Water Watch Report be received for information.

CARRIED

CAPITAL REGIONAL DISTRICT - INTEGRATED WATER SERVICES

Water Watch

Issued June 07, 2021

Water Supply System Summary:

1. Useable Volume in Storage:

Reservoir	June 30 5 Year Ave		June 30/20		June 6/21		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	81,927	18,024	82,599	18,172	85,175	18,738	91.9%
Goldstream	6,860	1,509	7,707	1,696	8,689	1,912	87.6%
Total	88,787	19,533	90,306	19,867	93,864	20,650	91.5%

2. Average Daily Demand:

For the month of June	181.7 MLD	39.98 MIGD
For week ending June 06, 2021	181.3 MLD	39.89 MIGD
Max. day June 2021, to date:	212.2 MLD	46.68 MIGD

3. Average 5 Year Daily Demand for June

Average (2016 - 2020)	175.2 MLD [1]	38.55 MIGD [2]

[1]MLD = Million Litres Per Day [2]MIGD = Million Imperial Gallons Per Day

4. Rainfall June:

Average (1914 - 2020):	35.4 mm
Actual Rainfall to Date	9.9 mm (28% of monthly average)

5. Rainfall: Sep 1- Jun 6

Average (1914 - 2020):	1,555.9 mm
2020/2021	1,583.2 mm (102% of average)

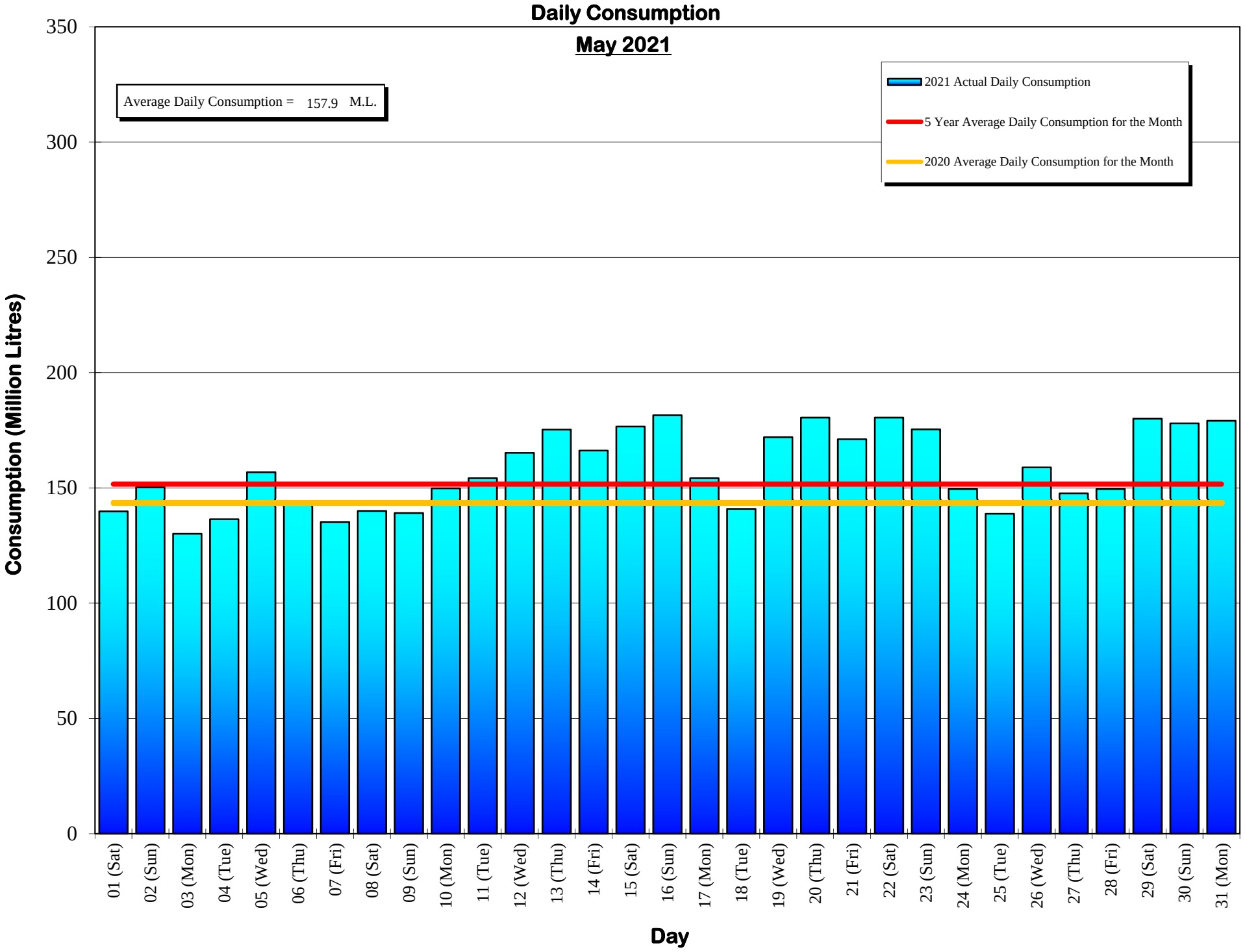
6. Water Conservation Action Required:

CRD's Stage 1 Water Conservation Bylaw is now in effect through to September 30, 2021.
Visit our website at www.crd.bc.ca/water for scheduling information.

If you require further information, please contact:

Ted Robbins, B.Sc., C.Tech
General Manager, CRD - Integrated Water Services
or
Glenn Harris, Ph D., RPBio
Senior Manager - Environmental Protection

Capital Regional District Integrated Water Services
479 Island Highway
Victoria, BC V9B 1H7
(250) 474-9600



J:\WATERENG\HYDROLGY\AMRIT\MONTHEND.21\H2o watch 2021Cons. Chart

Daily Consumptions: - May 2021

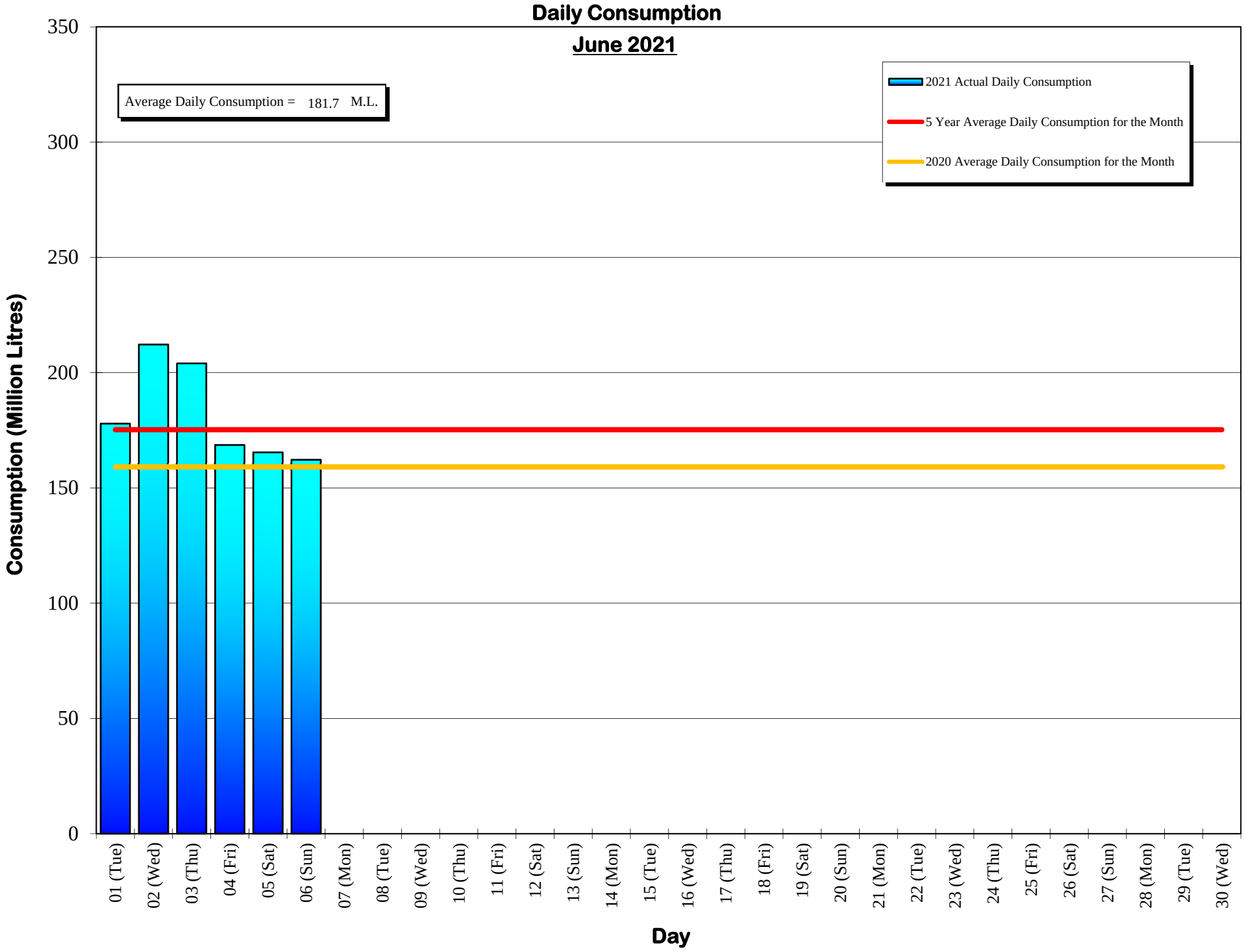
Date	Total Consumption (ML) [1]		(MIG) [2]	Air Temperature @ Japan Gulch High (°C)	Low (°C)	Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am Rainfall (mm)	Snowfall [3] (mm)	Total Precip.
01 (Sat)	139.8		30.8	15	6	Sunny / P. Cloudy	0.0	0.0	0.0
02 (Sun)	150.3		33.1	16	6	Sunny / P. Cloudy	0.0	0.0	0.0
03 (Mon)	130.1	<=Min	28.6	13	7	Sunny / P. Cloudy / Showers	2.3	0.0	2.3
04 (Tue)	136.4		30.0	16	6	Sunny / P. Cloudy	0.0	0.0	0.0
05 (Wed)	156.8		34.5	18	5	Sunny / P. Cloudy	0.0	0.0	0.0
06 (Thu)	143.1		31.5	20	6	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
07 (Fri)	135.2		29.7	13	5	Sunny / P. Cloudy / Showers	1.0	0.0	1.0
08 (Sat)	140.0		30.8	13	5	Cloudy / P. Sunny	0.0	0.0	0.0
09 (Sun)	139.1		30.6	15	7	Cloudy / Showers / P. Sunny	0.3	0.0	0.3
10 (Mon)	149.8		33.0	18	6	Sunny / P. Cloudy	0.0	0.0	0.0
11 (Tue)	154.2		33.9	20	6	Sunny / P. Cloudy	0.0	0.0	0.0
12 (Wed)	165.2		36.3	18	10	Sunny / P. Cloudy	0.0	0.0	0.0
13 (Thu)	175.3		38.6	21	8	Sunny	0.0	0.0	0.0
14 (Fri)	166.2		36.6	23	9	Sunny	0.0	0.0	0.0
15 (Sat)	176.6		38.8	23	9	Sunny	0.0	0.0	0.0
16 (Sun)	181.5	<=Max	39.9	23	10	Sunny / P. Cloudy	0.0	0.0	0.0
17 (Mon)	154.2		33.9	17	7	Sunny / P. Cloudy / Showers	3.3	0.0	3.3
18 (Tue)	140.9		31.0	14	5	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
19 (Wed)	172.0		37.8	13	4	Sunny / P. Cloudy / Showers	0.3	0.0	0.3
20 (Thu)	180.5		39.7	19	4	Sunny	0.0	0.0	0.0
21 (Fri)	171.1		37.7	20	6	Sunny / P. Cloudy	0.0	0.0	0.0
22 (Sat)	180.5		39.7	22	7	Sunny / P. Cloudy	0.0	0.0	0.0
23 (Sun)	175.4		38.6	20	10	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
24 (Mon)	149.5		32.9	15	9	P. Cloudy / Showers	2.0	0.0	2.0
25 (Tue)	138.8		30.5	18	9	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
26 (Wed)	158.9		34.9	15	9	Sunny / P. Cloudy	0.0	0.0	0.0
27 (Thu)	147.6		32.5	15	9	Cloudy / Showers	10.4	0.0	10.4
28 (Fri)	149.5		32.9	16	8	Sunny / P. Cloudy	0.0	0.0	0.0
29 (Sat)	180.0		39.6	20	6	Sunny / P. Cloudy	0.0	0.0	0.0
30 (Sun)	178.0		39.2	21	10	Cloudy / P. Sunny	0.0	0.0	0.0
31 (Mon)	179.1		39.4	25	12	Sunny	0.0	0.0	0.0
TOTAL	4895.6 ML		1076.97 MIG				21.6	0	21.6
MAX	181.5		39.92	25	12		10.4	0	10.4
AVG	**157.9**		34.74	17.9	7.3		0.7	0	0.7
MIN	130.1		28.62	13	4		0.0	0	0.0

1. ML = Million Litres 2. MIG = Million Imperial Gallons 3. 10% of snow depth applied to rainfall figures for snow to water equivalent.

Average Rainfall for May (1914-2020)	47.7 mm
Actual Rainfall: May	21.6 mm
% of Average	45%
Average Rainfall (1914-2020): Sept 01 - Jun 06	1,555.9 mm
Actual Rainfall (2020/2021): Sept 01 - Jun 06	1,583.2 mm
% of Average	102%

Number days with precip. 0.2 or more
11

Water spilled at Sooke Reservoir to date (since Sept. 1) = 8.02 Billion Imperial Gallons
= 36.50 Billion Litres



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Date	Total Consumption (ML) [1]		(MIG) [2]	Air Temperature @ Japan Gulch High (°C)	Low (°C)	Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am Rainfall (mm)	Snowfall [3] (mm)	Total Precip.
01 (Tue)	177.9		39.1	29	13	Sunny	0.0	0.0	0.0
02 (Wed)	212.2	<=Max	46.7	30	15	Sunny	0.0	0.0	0.0
03 (Thu)	204.0		44.9	26	11	Sunny / P. Cloudy	0.0	0.0	0.0
04 (Fri)	168.6		37.1	19	10	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
05 (Sat)	165.4		36.4	16	9	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
06 (Sun)	162.2	<=Min	35.7	12	6	Cloudy / Showers / P. Sunny	8.9	0.0	8.9
07 (Mon)									
08 (Tue)									
09 (Wed)									
10 (Thu)									
11 (Fri)									
12 (Sat)									
13 (Sun)									
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24 (Thu)									
25 (Fri)									
26 (Sat)									
27 (Sun)									
28 (Mon)									
29 (Tue)									
30 (Wed)									
TOTAL	1090.3 ML		239.88 MIG				9.9	0	9.9
MAX	212.2		46.68	30	15		8.9	0	8.9
AVG	**181.7**		39.98	22.0	10.7		1.7	0	1.7
MIN	162.2		35.68	12	6		0.0	0	0.0

1. ML = Million Litres 2. MIG = Million Imperial Gallons 3. 10% of snow depth applied to rainfall figures for snow to water equivalent.

Average Rainfall for June (1914-2020)	35.4 mm
Actual Rainfall: June	9.9 mm
% of Average	28%
Average Rainfall (1914-2020): Sept 01 - Jun 06	1,555.9 mm
Actual Rainfall (2020/2021): Sept 01 - Jun 06	1,583.2 mm
% of Average	102%

Number days with precip. 0.2 or more
3

Water spilled at Sooke Reservoir to date (since Sept. 1) = 8.02 Billion Imperial Gallons
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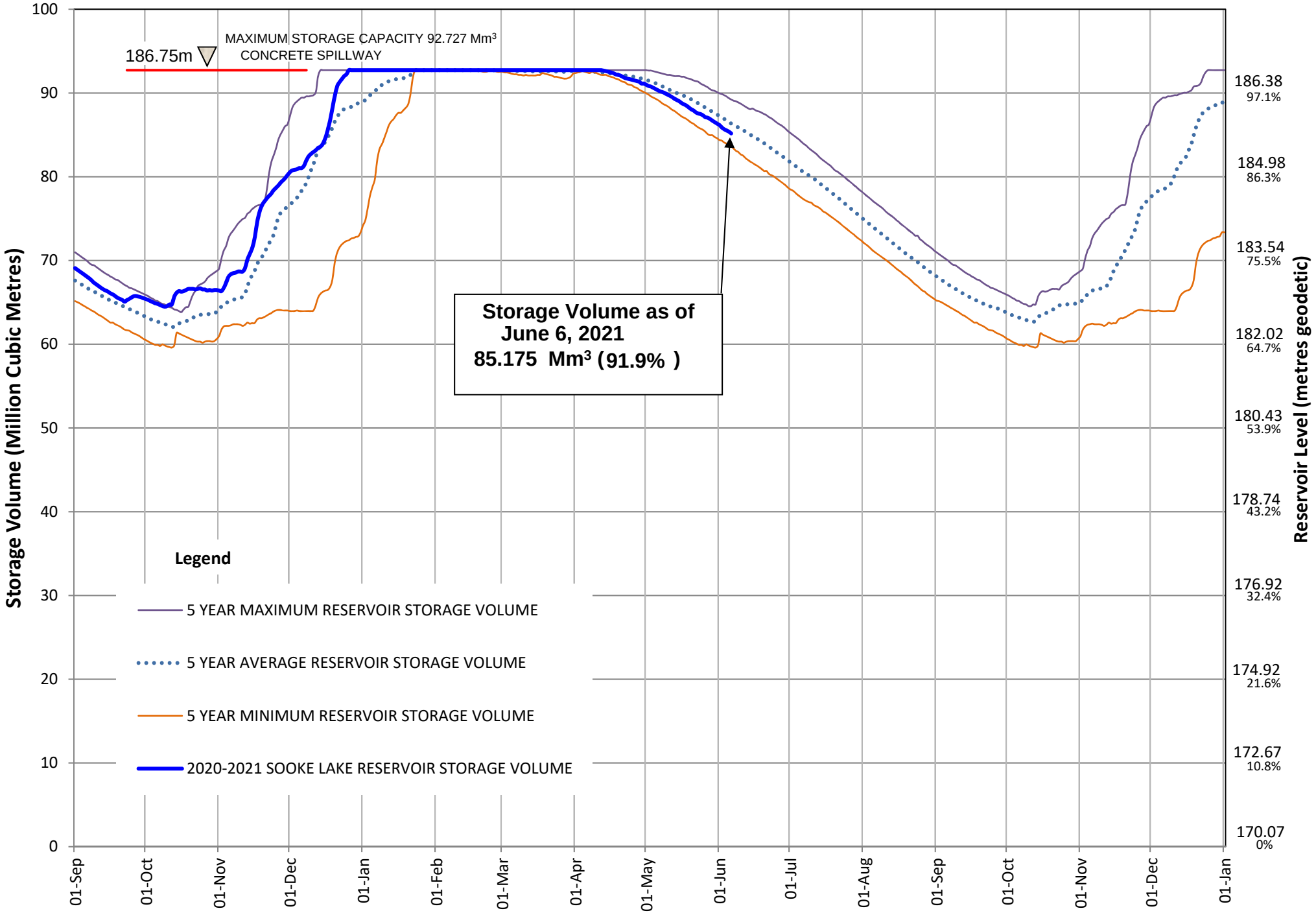
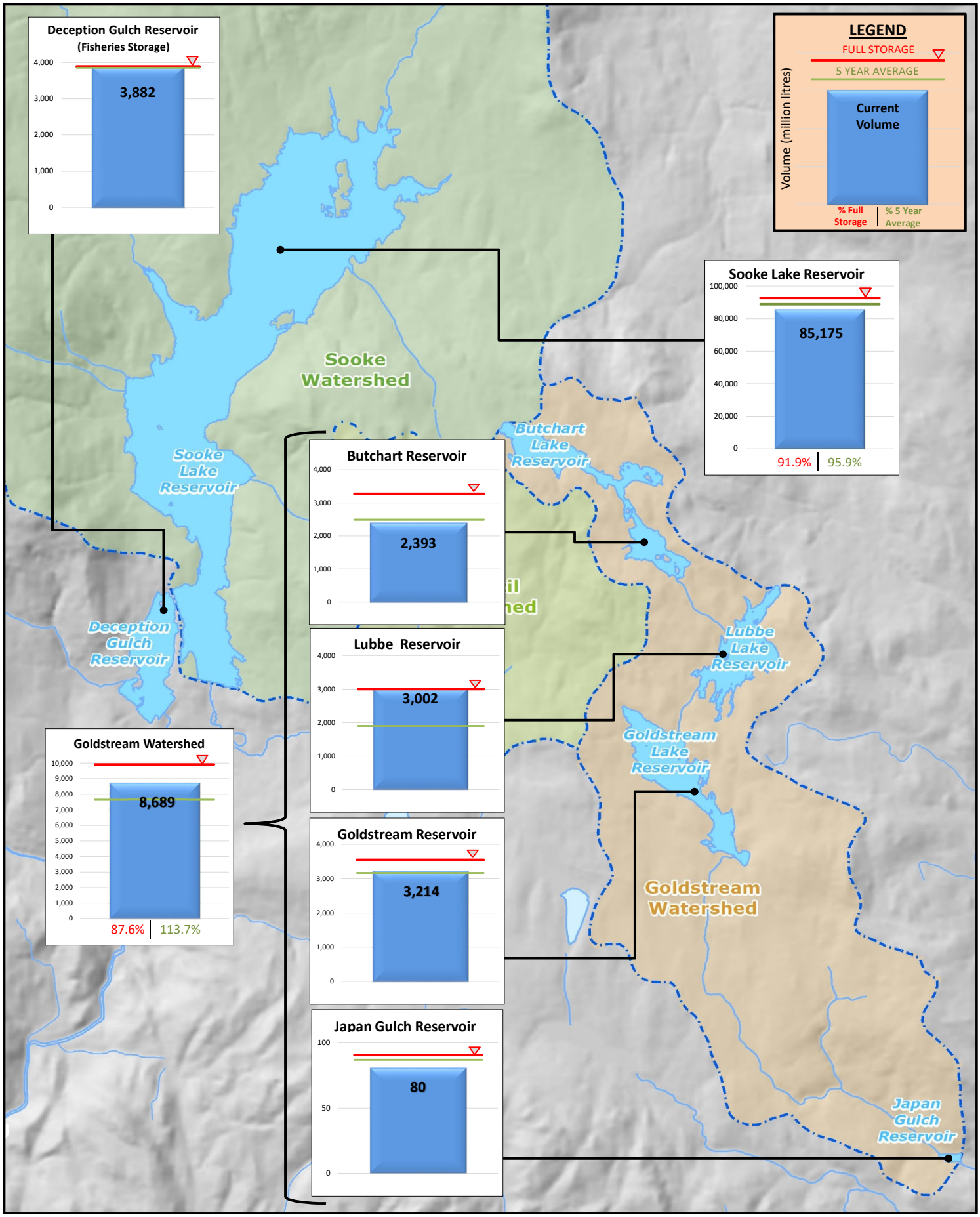
SOOKE LAKE RESERVOIR STORAGE SUMMARY
2020 / 2021



Useable Reservoir Volumes in Storage for June 06, 2021



Motion with Notice Regional Water Supply Commission

Wednesday, June 16, 2021

SUBJECT **Once Through Cooling Systems**

BACKGROUND

WHEREAS

- Once through cooling (OTC) is an inappropriate use of treated potable water;
- CRD efforts to ban OTC systems was impeded by Provincial regulations;
- CRD's 2019 information bulletin to encourage reductions has not achieved significant results;
- CRD has a very successful incentive program to reduce water use (2007 – 2014); and
- Vancouver, through its own building/plumbing code and bylaw 4848 have successfully banned OTC.

RECOMMENDATION

That staff be directed to report back on the jurisdictional questions and incentive funding consideration regarding the elimination of once through cooling equipment for the 2022 budget.

SUBMITTED BY:

Commissioner Rogers
Commissioner Wood Zhelka