



Notice of Meeting and Meeting Agenda Regional Water Supply Commission

Wednesday, February 15, 2023

11:30 AM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

MEMBERS:

G. Baird (Chair); C. Stock (Vice Chair); J. Caradonna; N. Chambers; C. Coleman;
Z. de Vries; S. Duncan; C. Graham; S. Gray; C. Green; K. Guiry; S. Hammond;
K. Harper; K. Jordison; S. Kim; D. Lajeunesse; T. Morrison; T. Phelps Bondaroff;
J. Rogers; M. Wagner; M. Westhaver; A. Wickheim

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

3.1. [23-099](#) Minutes of the January 18, 2023 Regional Water Supply Commission meeting

Recommendation: That the minutes of the January 18, 2023 Regional Water Supply Commission meeting be approved.

Attachments: [Draft Minutes - January 18, 2023](#)

4. CHAIR'S REMARKS

5. PRESENTATIONS/DELEGATIONS

Delegations will have the option to participate electronically. Please complete the online application for "Addressing the Board" on our website located here <https://www.crd.bc.ca/about/board-committees/addressing-the-board> and staff will respond with details.

Alternatively, you may email your comments on an agenda item to the Regional Water Supply Commission at iwsadministration@crd.bc.ca. Delegation requests must be received no later than 4:30 p.m. two calendar days prior to the meeting

6. GENERAL MANAGER'S REPORT

7. COMMISSION BUSINESS

- 7.1. [23-106](#) 2023-2027 Regional Water Supply Service Capital Plan Update
- Recommendation:** The Regional Water Supply Commission recommends to the Capital Regional District Board:
- That the 2023 Regional Water Supply Service Capital Budget and Five Year Capital Plan be updated to include \$365,000 for Project 20-27 GVWSA Forest Resilience, for ecological restoration thinning trials development and implementation costs and \$365,000 in revenue from the project.
(WA)
- Attachments:** [Staff Report: 2023-2027 Regional Water Supply Service Capital Plan Update](#)
 [Appendix A: Updated 2023-2027 RWS Service Capital Plan](#)
- 7.2. [23-107](#) 2022 Greater Victoria Water Supply Area Wildfire Management
- Recommendation:** There is no recommendation. This report is for information only.
- Attachments:** [Staff Report: 2022 GVWSA Wildfire Management](#)
 [Appendix A: 2022 Wildfire Management Activity Photos](#)
 [Appendix B: Wildfire Management Map](#)
- 7.3. [23-102](#) Water Conservation Initiative - Once-Through Cooling Project Reduced Rebates Program - Environmental Benefits
- Recommendation:** There is no recommendation. This report is for information only.
- Attachments:** [Staff Report: Once-Through Cooling Project Reduced Rebates Program](#)
- 7.4. [23-091](#) Water Quality Summary Report for Greater Victoria Drinking Water System - July to December 2022
- Recommendation:** There is no recommendation. This report is for information only.
- Attachments:** [Staff Report: Water Quality Summary Report for GVDWS - July to December 20](#)
 [Appendix A: Water Quality Summary Report - GVDWS - July-December 2022](#)
- 7.5. [23-110](#) Summary of Recommendations from Other Water Commissions
- Recommendation:** There is no recommendation, the summary is for information only.
- Attachments:** [Summary Of Recommendations from Other Water Commissions](#)
- 7.6. [23-111](#) Water Watch Report
- Recommendation:** There is no recommendation, the report is for information only.
- Attachments:** [Water Watch Report](#)

8. NOTICE(S) OF MOTION

9. NEW BUSINESS

10. MOTION TO CLOSE THE MEETING

10.1 [23-112](#) Motion to Close the Meeting

Recommendation: That the meeting be closed for appointments in accordance with the Community Charter, Part 4, Division 3: Personal Information under Section 90 (1)(a).

11. RISE AND REPORT

12. ADJOURNMENT

Voting Key:

NWA - Non-weighted vote of all Directors

NWP - Non-weighted vote of participants (as listed)

WA - Weighted vote of all Directors

WP - Weighted vote of participants (as listed)

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

Meeting Minutes

Regional Water Supply Commission

Wednesday, January 18, 2023

11:30 AM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

MEMBERS:

G. Baird; J. Caradonna; N. Chambers (EP); C. Coleman; Z. de Vries; S. Duncan (EP); C. Graham;
S. Gray; C. Green; K. Guiry (EP); S. Hammond; K. Harper; K. Jordison (EP); S. Kim;
D. Lajeunesse; T. Morrison; T. Phelps Bondaroff; J. Rogers; C. Stock; M. Wagner;
M. Westhaver; A. Wickheim (EP)

STAFF:

T. Robbins, Chief Administrative Officer; I. Jesney, Acting General Manager, Integrated Water Services;
A. Constabel, Senior Manager, Watershed Protection; G. Harris, Senior Manager, Environmental
Protection; J. van Niekerk, Senior Manager, Customer and Technical Services; J. Marr, Acting Senior
Manager, Infrastructure Engineering; S. Irg, Senior Manager, Water Infrastructure Operations;
L. Westinghouse, Senior Financial Advisor; T. Duthie, Manager, Administration; D. Dionne,
Administrative Coordinator; M. Risvold, Committee and Administrative Clerk (Recorder)

EP = Electronic Participation

The meeting was called to order at 11:34 am

1. TERRITORIAL ACKNOWLEDGMENT

I. Jesney provided the territorial acknowledgement.

2. ELECTION OF CHAIR

The Acting General Manager called for nominations for the position of Chair of the Regional Water Supply Commission for the term ending December 31, 2023.

Commissioner Stock nominated Commissioner Baird. Commissioner Baird accepted the nomination.

The Acting General Manager called for nominations a second time.

The Acting General Manager called for nominations a third and final time.

Hearing no further nominations, the General Manager declared Commissioner Baird Chair of the Regional Water Supply Commission for the term ending December 31, 2023 by acclamation.

3. ELECTION OF VICE CHAIR

The Chair called for nominations for the position of Vice Chair of the Regional Water Supply Commission for the term ending December 31, 2023.

Commissioner Rogers nominated Commissioner Stock. Commissioner Stock accepted the nomination.

The Chair called for nominations a second time.

Commissioner Harper nominated Commissioner de Vries. Commissioner de Vries accepted the nomination.

The Chair called for nominations a third and final time.

Hearing no further nominations, the Chair invited each nominee to address the Commission.

Ballots were distributed by T. Duthie and M. Risvold, and collected by T. Duthie. The confidential online poll was opened by D. Dionne.

The ballots (including the online votes) were counted by T. Duthie, D. Dionne, and M. Lagoa, Deputy Corporate Officer.

The Chair declared Commissioner Stock Vice Chair of the Regional Water Supply Commission for the term ending December 31, 2023.

MOVED by Commissioner Graham and **SECONDED** by Commissioner Phelps Bondaroff,
That the ballots be destroyed.

CARRIED

4. APPROVAL OF THE AGENDA

MOVED by Commissioner Graham and **SECONDED** by Commissioner Coleman,
That the agenda be approved as circulated.

CARRIED

5. ADOPTION OF MINUTES

- 5.1. [23-057](#) Adoption of Minutes from September 28, 2022

Attachments: [Draft Minutes: September 28, 2022](#)

MOVED by Commissioner Rogers and **SECONDED** by Commissioner Caradonna,
That the Minutes of the September 28, 2022 meeting be adopted.

CARRIED

6. CHAIR'S REMARKS

The Chair had no remarks.

7. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

8. GENERAL MANAGER'S REPORT

I. Jesney introduced himself and staff in the room.

9. COMMISSION BUSINESS

9.1. [23-053](#) Regional Water Supply Commission Orientation [Presentation]

Attachments: [Presentation: Regional Water Supply Commission Orientation](#)

I. Jesney presented the Regional Water Supply Commission Orientation.

Discussion ensued regarding:

- Potential Sooke watershed tour for commission members
- Budget
- 2022 Master plan
- Agricultural water rate
- Retail and wholesale meters
- Demand management
- Strategic planning, transition of new General Manager
- First Nations stakeholders and representation
- Pipe replacement
- Climate action plan
- Water emergency response plan

9.2. [23-056](#) Commission Representation on Water Advisory Committee and Committee Member Appointments

Attachments: [Staff Report: Commission Representation on Water Advisory Committee and Committee Member Appointments](#)
[Appendix A: Terms of Reference](#)

I. Jesney presented the report.

MOVED by Commissioner Rogers and **SECONDED** by Commissioner Coleman,
That the Regional Water Supply Commission:

1. Appoint the Vice Chair to the Water Advisory Committee for a one-year term ending December 31, 2023; and,

2. Strike a nominating committee consisting of the Commission Chair or Chair's delegate, Commission Vice Chair, Juan de Fuca Water Distribution Commission Vice Chair and Saanich Peninsula Water Commission Vice Chair to review the applications, and that the nominating committee report back to the Commission, providing its recommendations for appointment in a closed meeting.

CARRIED

9.3. [23-054](#) Summary of Recommendations from Other Water Commissions

Attachments: [Summary of Recommendations](#)

The report was received for information.

9.4. [23-055](#) Water Watch Report

Attachments: [Water Watch Report](#)

I. Jesney presented the water watch report.

Discussion ensued regarding:

- Public concern of Sooke Lake Dam water spills
- Additional storage to conserve spilled water
- Filtration
- Risk of uncontrolled water flow damaging fish habitat
- Stage 1 water conservation restrictions

The report was received for information.

10. REGIONAL WATER SUPPLY COMMISSION MEETING SCHEDULE

Regular meetings of the Regional Water Supply Commission shall be held at the CRD Board Room, 625 Fisgard Street, Victoria, BC on the third Wednesday of the month commencing at 11:30 am unless otherwise determined.

There are two dates that deviate from this schedule as follows:

- March 22 (instead of March 16) - Due to a Special Board meeting
- September 27 (instead of September 21) - Due to Union of BC Municipalities

11. NOTICE(S) OF MOTION

There were none.

12. NEW BUSINESS

There was none.

13. ADJOURNMENT

MOVED by Commissioner Coleman and **SECONDED** by Commissioner Caradonna,
That the January 18, 2023 Regional Water Supply Commission meeting be adjourned at 1:09 pm.
CARRIED

CHAIR

SECRETARY



**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 15, 2023**

SUBJECT **2023-2027 Regional Water Supply Service Capital Plan Update**

ISSUE SUMMARY

To update the 2023 Capital Plan balances carried forward from 2022 and adjust the budget for Project 20-27 Greater Victoria Water Supply Area (GVWSA) Forest Resilience – wildfire/forest modelling and forest management field trials.

BACKGROUND

On September 28, 2022, the Regional Water Supply Commission (Commission) recommended to the Capital Regional District (CRD) Board, approval of the 2023 Operating and Capital Budget and the Five Year Capital Plan.

Project 20-27 GVWSA Forest Resilience Capital Budget Update

Progress has been made to develop ecological restoration thinning trials in the GVWSA that, if successful, are expected to lead to an ecological restoration thinning program that will run for a number of years.

Ecological restoration thinning in the GVWSA involves reducing the tree density within planted forest stands to achieve the following goals:

1. Improve the forest fuel profile – fewer, more widely spaced, bigger trees with thicker bark rather than many, dense, thin trees with thin bark that are more susceptible to wildfire.
2. Reduce density prior to self thinning - avoid large volumes of downed wood and ladder fuels that would result from the natural succession of dense forest stands.
3. Improve forest health and resilience – improve tree health by reducing competition between trees and reducing tree moisture stress, looking ahead to increasingly longer and drier summers with climate change.
4. Enhance biodiversity/wildlife values – open up stands to allow more species diversity and habitat; achieve old forest stand characteristics sooner.
5. Determine the most effective thinning methods and increase awareness of the benefits of this technique – trial thinning at different densities to observe and monitor benefits and drawbacks of thinning treatment; thin near the existing public tour route to provide a stop to look at and discuss the treatment.

In some stands, the thinned trees may be merchantable, which would offset the cost of thinning to achieve these goals. Chips from woody debris generated by the thinning may also have value. Removal of these forest fuels is part of the goal of the thinning treatments.

In consultation with CRD Finance and Procurement staff, the best method to achieve the ecological restoration thinning trials and offset costs from merchantable timber thinned is to

procure the ecological thinning services separately from conducting a sale of logs/chips. The capital plan therefore requires updating to show both the cost of the treatment and funding from the sale of any logs or chips, which will make the thinning treatment more affordable.

The existing 2023 capital budget (excerpt shown below) provides \$120,000 in carry forward funds for project 20-27 GVWSA Forest Resilience – wildfire/forest modelling and forest management field trials. Of the carry forward funding, \$35,000 is reserved for the project Modelling Effects of Climate Change on Forests and Wildfire in the GVWSA in partnership with University of Victoria, leaving \$85,000 for ecological restoration thinning trial development and implementation.

The capital plan budget update request is to add \$365,000 in ecological restoration thinning trials development and implementation costs with an expected revenue to the project of \$365,000 from thinned stems and/or chips, which creates no impact on the bottom line of the 2023 capital plan. Both the treatment cost and revenue budgets are approximate estimates including contingencies. There is no financial impact anticipated on the water rates with the addition of this project.

SECTION 1: PROJECT DESCRIPTION AND BUDGET												
Project Number	Capital Expenditure Type	Capital Project Title	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
WATERSHED PROTECTION												
Planning -												
20-27	Study	GVWSA Forest Resilience - wildfire/forest modelling and forest management field trials	\$625,000	L	WU	\$120,000	\$120,000	\$50,000	-	-	-	\$170,000
20-27				L	Other		\$365,000					\$365,000

Carry Forward Update to the 2023-2027 Capital Plan

The 2023 – 2027 Capital Plan was approved prior to end of 2022. As part of year end close, authorized projects not yet complete are carried forward and updated on the Capital Plan ahead of CRD Board final approval in March. Appendix A contains the final 2023 – 2027 Capital Plan with updated balances carried forward from 2022.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission recommends to the Capital Regional District Board:

That the 2023 Regional Water Supply Service Capital Budget and Five Year Capital Plan be updated to include \$365,000 for Project 20-27 GVWSA Forest Resilience, for ecological restoration thinning trials development and implementation costs and \$365,000 in revenue from the project.

Alternative 2

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

IMPLICATIONS

Financial Implications

There are no net impacts on the capital budget for 2023 or on the 2023 water rates. It is expected that the additionally requested funds to complete the ecological restoration thinning treatment will be offset by the revenue generated from the sale of any resulting merchantable logs and/or chips.

Service Delivery Implications

The 2017 Regional Water Supply Strategic Plan provided a goal of more active forest management to protect and enhance forest health and resilience. The proposed capital plan update allows the ecological restoration thinning trials and program to move forward in 2023.

CONCLUSION

A capital plan update is required to trial ecological thinning in the Greater Victoria Water Supply Area in 2023. The updated expenditures are fully funded and therefore will not increase the 2023 capital funding requirements or affect the 2023 water rates.

RECOMMENDATION

The Regional Water Supply Commission recommends to the Capital Regional District Board:

That the 2023 Regional Water Supply Service Capital Budget and Five Year Capital Plan be updated to include \$365,000 for Project 20-27 GVWSA Forest Resilience, for ecological restoration thinning trials development and implementation costs and \$365,000 in revenue from the project.

Submitted by:	Annette Constabel, M.Sc., RPF., Senior Manager, Watershed Protection
Concurrence:	Ian Jesney, P. Eng., Acting General Manager, Integrated Water Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer
Concurrence:	Ted Robbins, B.Sc., C.Tech., Chief Administrative Officer

ATTACHMENTS

Appendix A: Updated 2023-2027 Regional Water Supply Service Capital Plan – including the proposed update to Project 20-27

CAPITAL REGIONAL DISTRICT
5 YEAR CAPITAL PLAN
2023 - 2027

<p>Project Number Project number format is "yy-##" "yy" is the last two digits of the year the project is planned to start. "##" is a numerical value. For example, 23-01 is a project planned to start in 2023. For projects in previous capital plans, use the same project numbers previously</p>	<p>Capital Project Description Briefly describe project scope and service benefits. For example: "Full Roof Replacement of a 40 year old roof above the swimming pool area; The new roofing system meets current energy standards with an expected service life of 35 years".</p>	<p>Carryforward from 2022 Input the carryforward amount from the 2022 capital plan that is remaining to be spent. Forecast this spending in 2023 to 2027.</p>	<p>Project Drivers Maintain Level of Service = Project maintains existing or improved level of service. Advance Board or Corporate Priority = Project is a Board or Corporate priority. Emergency = Project is required for health or safety reasons. Cost Benefit = Project provide economic benefit to the organization.</p>
<p>Capital Expenditure Type Study - Expenditure for feasibility and business case report. New - Expenditure for new asset only Renewal - Expenditure upgrades an existing asset and extends the service ability or enhances technology in delivering that service Replacement - Expenditure replaces an existing asset</p>	<p>Total Project Budget Provide the total project budget, even if it extends beyond the 5 years of this capital plan.</p>	<p>Funding Source Codes Debt = Debenture Debt (new debt only) ERF = Equipment Replacement Fund Grant = Grants (Federal, Provincial) Cap = Capital Funds on Hand Other = Donations / Third Party Funding Res = Reserve Fund STLoan = Short Term Loans WU = Water Utility If there is more than one funding source, use additional rows for the project.</p>	<p>Long-term Planning Master Plan / Servicing Plan = Plan that identifies new assets required to meet future needs. Asset Management Plan / Sustainable Service Delivery Plan = Integrated plan that identifies asset replacements based on level of service, criticality, condition, risk, replacement costs as well as external impacts. Replacement Plan = Plan that identifies asset replacements based primarily on asset age and/or asset material/type.</p>
<p>Capital Project Title Input title of project. For example "Asset Name - Roof Replacement", "Main Water Pipe Replacement".</p>	<p>Asset Class L - Land S - Engineering Structure B - Buildings V - Vehicles</p>	<p>Cost Estimate Class Class A (±10-15%) = Estimate based on final drawings and specifications; used to evaluate tenders. Class B (±15-25%) = Estimate based on investigations, studies or preliminary design; used for budget planning. Class C (±25-40%) = Estimate based on limited site information; used for program planning. Class D (±50%) = Estimate based on little/no site information; used for long-term planning.</p>	

Service #: 2.670
Service Name: Regional Water Supply

SECTION 1: PROJECT DESCRIPTION AND BUDGET													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
WATERSHED PROTECTION													
Planning													
17-01	Renewal	Historic Goldstream Powerhouse Building	Repairs of historic Goldstream Powerhouse building and work toward making the site accessible to the public	\$120,000	B	WU	-	\$20,000	-	\$50,000	-	-	\$70,000
17-01				\$376,000	B	Grant	-	-	-	\$300,000	-	-	\$300,000
18-10	Study	Species-at-Risk Wildlife Habitat	Assessments (office and field) and planning for managing wildlife habitat, in particular species-at-risk habitat, in the GVWSA.	\$185,000	L	WU	-	\$50,000	-	-	-	-	\$50,000
19-30	Study	Leech WSA Lakes/Tributaries Assessment	Classification and mapping of terrestrial ecosystems and wetlands and integration with Sooke and Goldstream data.	\$75,000	L	WU	\$38,000	\$38,000	-	-	-	-	\$38,000
20-05	Renewal	Leech WSA Terrestrial Ecosystem Mapping & Wetland Classification/Mapping		\$180,000	L	WU	\$180,000	\$180,000	-	-	-	-	\$180,000
20-06	Study	Addressing mining in Leech WSA (impacts, agreements)	Funding to support work to reduce the impact of mining claims in the Leech WSA	\$60,000	L	WU	-	\$10,000	\$10,000	\$10,000	\$10,000	-	\$40,000
20-27	Study	GVWSA Forest Resilience - wildfire/forest modelling and forest management field trials	Modelling forest and wildfire risk under climate change scenarios & forest/fuel management field trials.	\$625,000	L	WU	\$120,000	\$120,000	\$50,000	-	-	-	\$170,000
20-27					L	Other		\$365,000	-	-	-	-	\$365,000
20-28	Study	GVWSA Forest Resilience - Assessments of forest health and resilience	Field assessments to better understand current forest health and resilience.	\$230,000	L	WU	\$110,000	\$110,000	\$60,000	-	-	-	\$170,000
21-19	Study	Lakes Assessment Sooke and Goldstream WSAs	An assessment of the physical, chemical and biological parameters of the natural lakes in Sooke and Goldstream WSAs	\$75,000	L	WU	\$15,000	\$15,000	-	-	-	-	\$15,000
21-20	Study	West Leech Road	Plan followed by construction of a road to access the western portion of the Leech WSA.	\$320,000	L	WU	\$50,000	\$150,000	\$100,000	-	-	-	\$250,000
23-02	Renewal	GVWSA LiDAR Mapping	Detailed contour mapping of ground, vegetation and tree cover (3D scanning)	\$250,000	L	WU	-	\$200,000	\$50,000	-	-	-	\$250,000
22-04	Renewal	GVWSA Orthophotography	Annual contribution to capture of regional digital orthophotography for baseline mapping and monitoring.	\$95,000	L	WU	\$15,000	\$30,000	-	\$35,000	-	\$40,000	\$105,000
22-09	Study	GVWSA Powerlines Wildfire Risk Mitigation Plan	A detailed assessment, options and plan to reduce the risk of wildfire start from tree fall onto CRD powerlines in the GVWSA.	\$50,000	L	WU	\$40,000	\$40,000	-	-	-	-	\$40,000
22-10	New	GVWSA/RWS Educational Videos	Development of educational videos to address Regional Water Supply issues of interest to the public such as: wildfire risk and mitigation; climate change; water supply master plan update.	\$60,000	L	WU	\$30,000	\$30,000	\$30,000	-	-	-	\$60,000
23-05	Study	Spill Management Plan and Implementation	Review, assessment and re-development of a spill management plan for the GVWSA along with potential procurement of additional equipment or supplies.	\$50,000	L	WU	\$25,000	\$25,000	-	-	-	-	\$25,000
24-03	Study	Biosecurity Risk Assessment & Procedures	Assess GVWSA biosecurity risks and develop mitigating protocols/procedures	\$50,000	L	WU	-	-	\$50,000	-	-	-	\$50,000

Service #: 2.670
 Service Name: Regional Water Supply

SECTION 1: PROJECT DESCRIPTION AND BUDGET													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
Capital													
09-01	Renewal	Leech River Watershed Restoration	A 17 year project to restore the Leech WSA lands for water supply.	\$5,756,000	L	WU	\$125,000	\$325,000	\$200,000	\$200,000	-	-	\$725,000
16-01	Renewal	Replace Gatehouse at Goldstream Entrance	The GVWSA entry gatehouse at Goldstream is past end of life and is to be replaced with a purpose built structure with improved vehicle flow and security function	\$1,800,000	B	WU	\$1,280,000	\$1,280,000	-	-	-	-	\$1,280,000
16-06	Renewal	Goldstream IWS Field Office1	Renewal of Water Quality field office/lab and equipment storage and Watershed Protection office, yard, training space and equipment storage, replacing longstanding temporary facilities.	\$3,200,000	B	WU	\$450,000	\$950,000	\$1,700,000	-	-	-	\$2,650,000
16-06				\$5,000,000	B	Other	\$2,500,000	\$3,000,000	\$1,000,000	\$1,000,000	-	-	\$5,000,000
17-02	New	Leech River HydroMet System	Installation of a network of hydrometeorological stations to collect water quantity and quality information for the Leech WSA.	\$540,000	E	WU	\$40,000	\$80,000	-	-	-	-	\$80,000
18-05	New	GVWSA Forest Fuel Management/FireSmart Activities	Implementation of forest fuel management and FireSmart actions in strategic locations for wildfire risk management in the GVWSA.	\$850,000	L	WU	\$10,000	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$510,000
19-02	New	Whiskey Creek Bridge Replacement (Sooke WSA)	Replacement of the existing undersized bridge with a longer and higher concrete structure.	\$330,000	S	WU	-	\$30,000	\$300,000	-	-	-	\$330,000
19-19	New	Hydromet Upgrades Sooke and Goldstream	Install additional hydrology monitoring sites on Sooke Lake Reservoir inflow streams and increase instrumentation on meteorological stations in Sooke and Goldstream watersheds.	\$230,000	E	WU	-	\$60,000	-	-	-	-	\$60,000
20-01	Replacement	Kapoor Main Mile 1 Bridge and Asphalt Upgrade	Replacement of the existing undersized culvert with a large bridge as well as subsequent 500 m road asphalt replacement.	\$610,000	S	WU	\$390,000	\$440,000	\$160,000	-	-	-	\$600,000
20-29	Renewal	GVWSA Gravel Crushing	Production of gravel at existing quarries in Sooke and Goldstream WSAs.	\$650,000	S	WU	-	-	\$100,000	-	\$200,000	-	\$300,000
21-26	New	Road Deactivation/Rehabilitation in the GVWSA	Deactivate or rehabilitate unneeded roads in the Sooke and Goldstream WSAs.	\$520,000	L	WU	\$60,000	\$100,000	\$100,000	\$100,000	\$100,000	-	\$400,000
21-27	New	Autogate Installations on Primary Access Routes	Install autogates on the main access routes where the Sooke Hills Wilderness Trail and E&N rail line cross to improve security	\$850,000	S	WU	-	-	\$350,000	-	-	-	\$350,000
22-02	New	Muckpile Bridge Supply and Install (Deception)	Replacement of undersized culverts with bridge which will allow for fish and western toad migration.	\$340,000	S	WU	-	\$15,000	-	\$325,000	-	-	\$340,000
23-04	Renewal	17S/Sooke Main Bridge Replacement	Undersized bridge replacement	\$315,000	S	WU	-	-	\$15,000	-	\$300,000	-	\$315,000
22-11	New	Additional Boom Anchors for Sooke Lake Reservoir debris boom	The log boom protecting the Sooke Lake Reservoir Intake Tower from floating woody debris is inadequately anchored and requiring two additional anchors.	\$60,000	E	WU	\$30,000	\$50,000	-	-	-	-	\$50,000
23-10	New	Work platform for Sooke Lake Reservoir	A towable work platform for conducting stationary on-water work activities such as boom and intake tower maintenance and spill response.	\$30,000	E	WU	-	\$30,000	-	-	-	-	\$30,000
23-11	New	Purchase and deployment of Second Wildfire Camera for Leech WSA, and analytic software	A secondary wildfire camera to monitor for heat and smoke signatures in the Leech WSA during fire season.	\$100,000	E	WU	-	\$50,000	\$50,000	-	-	-	\$100,000
23-23	Replacement	Brushcutting head for Excavator	The existing brushcutting head from the excavator used in roadside maintenance has reached end of life and requires replacement.	\$30,000	V	WU	-	\$30,000	-	-	-	-	\$30,000
WaterShed Protection Sub-Total				\$24,012,000			\$5,508,000	\$7,933,000	\$4,425,000	\$2,120,000	\$710,000	\$140,000	\$15,328,000
INFRASTRUCTURE ENGINEERING AND OPERATIONS													
Planning													
16-10	New	Post Disaster Emergency Water Supply	Identify and procure emergency systems for post disaster preparedness.	\$2,250,000	S	WU	\$423,000	\$623,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,423,000
17-13	New	Asset Management Plan	Development of a plan to inform future areas of study and highlight critical infrastructure improvements.	\$400,000	S	WU	\$200,000	\$200,000	-	-	-	-	\$200,000
19-15	New	Hydraulic Capacity Assessment and Transient Pressure Analysis	Determine the existing level-of-service for the RWSC transmission system and conduct a transient pressure analysis	\$250,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
20-08	Study	Regional Water DCC Program	Design of a Regional DCC Program	\$200,000	S	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
20-10	Study	Condition & Vulnerability Assessment	Conduct a condition assessment of critical supply infrastructure and assess its possibility of risk.	\$200,000	S	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
21-05	Study	Level of Service Agreement	From #19-15 & #20-11, develop level-of-service agreements for participating municipalities to address hydraulic capacity of infrastructure.	\$150,000	S	WU	\$150,000	\$150,000	-	-	-	-	\$150,000
23-12	Study	Project Delivery Strategy	Develop a strategy to deliver the identified projects from the 2022 RWS Master Plan.	\$200,000	S	WU	-	\$200,000	-	-	-	-	\$200,000
23-13	Study	Filtration Plant Planning & Design	Conduct a siting, conceptual design and detailed design for a filtration plant	\$16,300,000	S	WU	-	\$300,000	\$500,000	\$500,000	\$5,000,000	\$10,000,000	\$16,300,000
23-14	Study	Council Creek Crossing Hydrology Review	Conduct a hydrology review of the Council Creek crossing of water mains to ensure pipe resilience during high rainfall events.	\$100,000	S	WU	-	\$100,000	-	-	-	-	\$100,000
23-24	New	East-West Connector (Filtration Plant to District of Sooke)	Planning and Conceptual Design of the East- West Supply Main from the proposed filtration plant to the District of Sooke (identified in the 2022 Master Plan)	\$400,000	S	WU	-	-	-	-	\$200,000	\$200,000	\$400,000
23-25	New	Deep Northern Intake and Sooke Lake Pump Station	Planning and Design of the Deep Northern Intake and Sooke Lake Pump Station (identified in the 2022 Master Plan)	\$12,200,000	S	WU	-	\$600,000	\$600,000	\$3,000,000	\$4,000,000	\$4,000,000	\$12,200,000
23-26	New	Transmission Main - Sooke Lake Pump Station to Head Tank	Planning and Design of the Transmission Main from the Sooke Lake Pump Station to Head Tank (identified in the 2022 Master Plan)	\$3,400,000	S	WU	-	\$200,000	\$200,000	\$1,000,000	\$1,000,000	\$1,000,000	\$3,400,000
23-27	New	Gravity Main - Sooke Lake to Head Tank	Planning and Design of a Gravity Transmission Main (redundancy) from Sooke Lake to Head Tank (identified in the 2022 Master Plan)	\$1,400,000	S	WU	-	\$100,000	\$300,000	\$500,000	\$500,000	-	\$1,400,000
23-28	New	Goldstream Reservoir Connector	Planning and Design of the Goldstream Reservoir Connector transmission main	\$4,600,000	S	WU	-	\$100,000	\$500,000	\$2,000,000	\$2,000,000	-	\$4,600,000
Capital													
18-07	New	Replacement of UV System	Replacement of the UV system at the Goldstream Water Treatment Plant	\$8,730,000	E	WU	\$2,850,000	\$8,300,000	-	-	-	-	\$8,300,000
18-08	Replacement	Bulk Supply Meter Replacement Program	Planned replacement of aging bulk meter replacement based upon a condition assessment and water audit.	\$2,050,000	E	WU	\$600,000	\$600,000	-	\$200,000	\$200,000	\$150,000	\$1,150,000

Service #: 2.670
 Service Name: Regional Water Supply

SECTION 1: PROJECT DESCRIPTION AND BUDGET													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
18-15	Renewal	Corrosion Protection Program	Study deficiencies in the current material protection and implement recommendations.	\$1,150,000	S	WU	-	\$150,000	\$150,000	\$150,000	\$150,000	-	\$600,000
18-18	Replacement	Main No.3 Segment Replacement	Replacement of segments of Main No. 3 based upon previous studies.	\$15,600,000	S	WU	\$800,000	\$800,000	\$4,900,000	\$4,900,000	\$4,900,000	-	\$15,500,000
19-05	Renewal	Repairs - Kapoor Shutdown	Repair items such as defects in the Kapoor tunnel, replacement of critical valves, intake exterior inspection and actuator replacement while the Kapoor tunnel is shutdown.	\$600,000	S	WU	\$375,000	\$375,000	-	\$100,000	-	-	\$475,000
19-23	New	Critical Spare Equipment Storage & Pipe Yard	Plan, design and construct a critical equipment storage building.	\$1,100,000	S	WU	\$200,000	\$200,000	\$1,000,000	-	-	-	\$1,200,000
20-16	Replacement	Cecelia Meter Replacement	Replacement of the Cecelia billing meter as well as its enclosure.	\$1,000,000	S	WU	\$50,000	\$450,000	-	-	-	-	\$450,000
20-17	Replacement	Decommission & Conceptual Design of the Smith Hill Site	Plan for decommission the conceptual design for the replacement of the Smith Hill reservoir site.	\$1,300,000	S	WU	\$300,000	\$300,000	\$1,000,000	-	-	-	\$1,300,000
21-06	Replacement	Sooke Lake Dam Spillway Hoist and Stop Log Replacement	Replacement of the sluice gate spillway hoist and stop logs at Sooke Lake Dam.	\$775,000	E	WU	\$260,000	\$510,000	\$250,000	-	-	-	\$760,000
21-09	New	Goldstream Water Chlorination Gas System Removal	Plan and construct provisions for removal of chlorination system	\$200,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
21-10	Replacement	SCADA Masterplan and System Upgrades	Update the SCADA Master Plan in conjunction with the Juan de Fuca Water Distribution, Saanich Peninsula Water and Wastewater, and Core Area Wastewater Services.	\$2,150,000	E	WU	\$500,000	\$800,000	\$300,000	\$300,000	\$300,000	\$300,000	\$2,000,000
21-11	Replacement	RWS Supply Main No. 4 Upgrade	Upgrade vulnerable sections of the RWS Supply Main No. 4 and Main No. 1 to a resilient system to better able to withstand a seismic event. Vulnerable sections are Concrete Cylinder pipe material which is susceptible to failure during a seismic event. This is part of project partnered with the Saanich Peninsula Water system.	\$33,900,000	S	WU	\$1,500,000	\$3,300,000	\$4,500,000	\$11,400,000	\$13,500,000	\$1,200,000	\$33,900,000
21-11			DMAF Grant portion, grant submitted November 2021.	\$14,800,000	S	Grant	-	-	\$1,200,000	\$2,000,000	\$3,600,000	\$6,000,000	\$12,800,000
22-14	New	Sooke River Intake Feasibility	A feasibility study for an intake from Sooke River to replace the Main No. 15 salmon fishery contribution, for a variety of reasons.	\$50,000	S	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
22-15	New	Microwave Radio Upgrades	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed.	\$1,100,000	S	WU	\$200,000	\$400,000	\$200,000	\$200,000	\$200,000	-	\$1,000,000
22-16	Renewal	Goldstream WTP Drainage Improvements	Construct drainage improvements for the Goldstream Water Treatment Plant and assess	\$200,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
22-17	New	Goldstream WTP Safety Improvements	Construct employee and public safety improvements such as a trail notification system if there was an ammonia spill.	\$200,000	E	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
23-15	New	Mt Tolmie Reservoir Security	Conduct public consultation with conceptual designs for site security required at the Mt Tolmie Reservoir	\$60,000	S	WU	-	\$10,000	\$50,000	-	-	-	\$60,000
23-16	Renewal	Humpback Channel Assessment and Upgrades	Hydraulically assess the Humpback Overflow channel and conduct a condition assessment of the culverts at the Gatehouse.	\$200,000	S	WU	-	\$200,000	-	-	-	-	\$200,000
23-17	Replacement	Main No. 4 - Mt Newton to Highway 17	Replacement of a approximately 1.9km of the Main No. 4 concrete pipe from Mt Newton and Central Saanich Road south to where it crosses Highway 17. A Strategic Priorities Fund grant has been applied to fund a portion of the works.	\$2,800,000	S	WU	-	\$2,800,000	-	-	-	-	\$2,800,000
23-17				\$6,000,000	S	Grant	-	-	\$6,000,000	-	-	-	\$6,000,000
25-03	Renewal	Transmission Main Upgrade Program	Identify, conceptually design, detail design and construct transmission main upgrades.	\$30,000,000	S	WU	-	-	-	\$10,000,000	\$10,000,000	\$10,000,000	\$30,000,000
23-29	Renewal	Mt. Tolmie Control Valve Replacement	Supply and installation of the Mt. Tolmie Reservoir Control Valve	\$300,000	E	WU	-	\$300,000	-	-	-	-	\$300,000
													\$0
Infrastructure Engineering and Operations Sub-Total				\$166,315,000			\$8,908,000	\$22,568,000	\$21,850,000	\$36,450,000	\$45,750,000	\$33,050,000	\$159,668,000
DAM SAFETY PROGRAM													
16-16	Renewal	Implications from Goldstream Dam Safety Review	Conduct dam improvements at the Goldstream dams that resulted for the Dam Safety Review and routine inspections (refer to the Dam Safety Database).	\$825,000	S	WU	\$200,000	\$275,000	\$75,000	-	-	-	\$350,000
16-17	Renewal	Butchart Dam No. 5 Remediation Planning & Construction	Phase 1 Rehabilitation (grouting) of Butchart Dam No. 5 and planning for Phase 2.	\$3,550,000	S	WU	\$2,000,000	\$50,000	\$1,950,000	-	-	-	\$2,000,000
17-25	Renewal	Implications from Sooke Lake Dam Safety Review	Conduct dam improvements at the Sooke Lake Dam that resulted from the Dam Safety Review and routine inspections (refer to the Dam Safety Database)	\$1,210,000	S	WU	\$400,000	\$400,000	-	-	-	-	\$400,000
18-19	New	Sooke Lake Dam - Instrumentation System Improvements	Complete dam performance instrumentation system/surveillance improvements for the Sooke Lake Dam.	\$1,800,000	S	WU	\$850,000	\$950,000	\$600,000	-	-	-	\$1,550,000
18-20	New	Sooke Lake Dam - Breach Risk Reduction Measures	Implement measures to reduce Sooke Lake Dam breach implications in the unlikely event of dam failure (refer to the NHC Consulting study).	\$600,000	S	WU	\$500,000	\$250,000	\$250,000	-	-	-	\$500,000
19-07	New	Integrate Dam Performance and Hydromet to SCADA	Integrate the dam safety instrumentation/surveillance (i.e. piezometers and weirs) and HydroMet stations to report to WIO through the existing SCADA system.	\$1,300,000	E	WU	\$400,000	\$600,000	\$200,000	\$200,000	\$200,000	-	\$1,200,000
19-09	New	Cabin Pond Dams Decommissioning	The Cabin Pond Dams (x2) have been retired from drinking water service, plan to decommission.	\$100,000	S	WU	-	-	\$100,000	-	-	-	\$100,000
19-12	New	Goldstream Dams Instrumentation Improvements	Conduct dam safety instrumentation/surveillance improvements (refer to report from Thurber Engineering).	\$600,000	S	WU	\$75,000	\$175,000	\$400,000	-	-	-	\$575,000
19-13	New	Dam Safety Instrumentation	The existing dam safety instrumentation/surveillance equipment is getting older and will need to be replaced/rehabilitated (does not include pending SCADA effort).	\$300,000	E	WU	\$150,000	\$250,000	\$50,000	-	-	-	\$300,000
20-19	Replacement	Goldstream System High Level Outlet Valve Replacements	The Goldstream and Butchart high level outlet valves have been identified as requiring replacement.	\$300,000	S	WU	\$150,000	\$250,000	-	-	-	-	\$250,000
21-03	New	Deception Dam - Dam Safety Review 2021 & Improvements	Conduct a Dam Safety Review and improvements for the Deception Dam.	\$1,800,000	S	WU	\$175,000	\$375,000	\$200,000	\$100,000	\$500,000	\$500,000	\$1,675,000
21-04	New	Saddle Dam - Dam Safety Review 2021 & Improvements	Conduct a Dam Safety Review and improvements for the Saddle Dam.	\$800,000	S	WU	\$100,000	\$200,000	\$150,000	\$200,000	\$75,000	\$75,000	\$700,000
21-21	Replacement	Goldstream Dams - 4 Low Level Gate Improvements	Logistics planning in 2022, installation in 2023	\$150,000	S	WU	\$150,000	\$150,000	-	-	-	-	\$150,000
22-08	New	Deception Dam Surveillance Improvements	Replace and supplement the Dam Safety Instrumentation at Deception Dam.	\$450,000	S	WU	\$150,000	\$150,000	\$300,000	-	-	-	\$450,000

Service #: 2.670
 Service Name: Regional Water Supply

SECTION 1: PROJECT DESCRIPTION AND BUDGET													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
23-07	Renewal	Sooke Lake Dam Spillway and Gates Retrofit	Detail and construct seismic retrofits for the existing structures initially focusing on the spillway and gates structures.	\$450,000	S	WU	-	\$150,000	\$300,000	-	-	-	\$450,000
23-08	Study	Regional Watershed Dams – Flood Forecasting System	Update the existing flood forecasting system (WD4Cast) to a modern version including Standard Operating Procedures and training for staff.	\$300,000	S	WU	-	\$150,000	\$150,000	-	-	-	\$300,000
23-09	Study	Sooke Lake Dam - Dam Safety Review 2023	Conduct a Dam Safety Review to meet regulatory requirement.	\$200,000	S	WU	-	\$200,000	-	-	-	-	\$200,000
23-18	Renewal	Sooke Lake Dam Spillway Channel Improvements	Construct bank protection for the Sooke Spillway Channel and clear the seepage weir blockage.	\$700,000	S	WU	-	\$200,000	\$500,000	-	-	-	\$700,000
23-19	Renewal	Charters Dam - Implications from Dam Safety Review	Carry out recommendations from the 2022 Dam Safety Review for Charters Dam	\$200,000	S	WU	-	\$100,000	\$100,000	-	-	-	\$200,000
25-01	Study	Goldstream Dam - Dam Safety Review 2025 & Addressing Implications	Conduct a Dam Safety Review to meet regulatory requirement.	\$200,000	S	WU	-	-	-	\$200,000	-	-	\$200,000
25-02	Study	Probable Maximum Flood and Inflow Design Flood Updates	Update the previous edition from 2015 (recommended 10 year review cycle).	\$150,000	S	WU	-	-	-	\$150,000	-	-	\$150,000
Dam Safety Program Sub-Total				\$15,985,000			\$5,300,000	\$4,875,000	\$5,325,000	\$850,000	\$775,000	\$575,000	\$12,400,000
WATER QUALITY													
20-04	New	Sooke Lake HyDy Model Development	Critical data collection, model building+calibration, model utilization for 3 different scenarios	\$520,000	E	WU	-	\$120,000	\$120,000	-	-	-	\$240,000
22-06	Study	Sooke Lake Food Web Study	Assess the aquatic food web structure and create an inventory of fish and invertebrate species and distribution in Sooke Lake Reservoir - to be used as indicators of stream health	\$100,000	S	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
23-06	Study	GVDWS Nitrification Study	Investigate nitrification occurrence and potential impacts on drinking water quality	\$50,000	S	WU	-	\$50,000	-	-	-	-	\$50,000
24-02	Replacement	Boat Motor Replacement with Electric Outboards (Sooke and Goldstream Boats)	50hp and 15hp motor replacement due to age and water quality concerns, large electric outboards are already available from Torqeedo for instance	\$60,000	E	WU	\$60,000	\$60,000	-	-	-	-	\$60,000
24-04	Study	Sooke Lake Drawdown Study	Investigate drawdown effects on Sooke Lake water quality and ecosystem impacts with max drawdown and determine a safe max drawdown level for SOL.	\$100,000	S	WU	-	-	\$100,000	-	-	-	\$100,000
25-04	Replacement	4 x multi-parameter field analyzers (SL1000)	Replace 4 multi-parameter (total/free/mono/ammonia) field analyzers	\$20,000	E	WU	-	-	-	\$20,000	-	-	\$20,000
26-01	New	2 x Floating Water Quality Sensor Platforms	To support and confirm water quality data in SOL for Deep Norther Intake, install 2 floating sensor platforms	\$200,000	E	WU	-	-	-	-	\$200,000	-	\$200,000
27-01	Study	Drinking Water Safety Plan Update	Review and update existing DWSP spreadsheet and risk registry. Consider planned system expansions/upgrades.	\$80,000	S	WU	-	-	-	-	-	\$80,000	\$80,000
Water Quality Sub-Total				\$1,130,000			\$110,000	\$280,000	\$220,000	\$20,000	\$200,000	\$80,000	\$800,000
ANNUAL PROVISIONAL													
17-27	Replacement	Watershed Bridge and Culvert Replacement	Replacement of small culverts and bridges throughout the GVWSA.	\$1,000,000	S	WU	-	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
17-28	Replacement	Watershed Security Infrastructure Upgrade and Replacement	New, upgrade and replacement of security infrastructure in the GVWSA.	\$600,000	E	WU	-	\$150,000	\$150,000	\$100,000	\$100,000	\$100,000	\$600,000
17-29	Replacement	Water Supply Area Equipment Replacement	Hydrometeorological, fireweather and wildfire suppression equipment replacement.	\$575,000	E	WU	-	\$115,000	\$115,000	\$115,000	\$115,000	\$115,000	\$575,000
17-30	Replacement	Transmission Main Repairs	Emergency repairs to the transmission mains.	\$1,000,000	S	WU	-	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
17-31	Replacement	Transmission System Components Replacement	Replacement and repair of transmission components.	\$400,000	S	WU	-	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$400,000
17-33	Replacement	Disinfection Equipment Parts Replacement	Replacement of incidental equipment and parts associated with the disinfection system.	\$1,000,000	E	WU	-	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
17-34	Renewal	Supply System Computer Model Update	Annual update of the regional hydraulic model.	\$100,000	S	WU	-	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$100,000
19-16	Replacement	Dam Improvements	Items not covered by Dam Safety Reviews, but brought up in Dam Safety Inspections and Dam Safety Reviews and address item in the dam safety database/risk registry	\$1,500,000	S	WU	-	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$1,500,000
19-22	Replacement	SCADA Repairs & Equipment Replacement	Items not covered by the SCADA Replacement and SCADA Master Plan, but integral in maintaining the SCADA System and revenue meter system.	\$750,000	E	WU	-	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$750,000
21-15	Replacement	Corrosion Protection	Replace corrosion protection assets, such as coatings, for the transmission system when identified.	\$250,000	S	WU	-	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
21-16	Replacement	Valve Chamber Upgrades	Replace failing valves and appurtenances along the RWS supply system.	\$1,000,000	S	WU	-	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
21-17	Replacement	Water Quality Equipment Replacement	Replacement of water quality equipment for the water quality lab and water quality operations	\$250,000	E	WU	-	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
21-18	Renewal	LIMS support	Support for LIMS database	\$125,000	E	WU	-	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$125,000
23-20	Study	Land Exchange/Acquisition	Land surveys, appraisals to support decisions regarding land exchange to increase catchment area, buffer water supply areas and other possible land exchange and acquisition within the RWS system.	\$400,000	L	WU	-	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$400,000
Annual Provisional Sub-Total				\$8,950,000			\$0	\$1,820,000	\$1,820,000	\$1,770,000	\$1,770,000	\$1,770,000	\$8,950,000
CUSTOMER AND TECHNICAL SERVICES													
17-35	Replacement	Vehicle & Equipment Replacement (Funding from Replacement Fund)	This is for replacement of vehicles and equipment used by CRD Water Services for the day-to-day operation and maintenance of the supply system.	\$2,873,000	V	ERF	\$885,250	\$995,000	\$843,000	\$630,000	\$775,000	\$855,000	\$4,098,000
20-22	New	Vehicle for the Dam Safety Program	New Transit Van	\$100,000	V	WU	\$80,000	\$100,000	-	-	-	-	\$100,000
20-23	New	Vehicle for the CSE Support Program	New Transit Van	\$100,000	V	WU	\$62,000	\$100,000	-	-	-	-	\$100,000
21-30	New	Vehicle for Warehouse Operations	New pick up	\$90,000	V	WU	\$62,000	\$90,000	-	-	-	-	\$90,000
22-18	New	Electric Vehicle Charging Stations	7 Dual charging stations at 479 Island Hwy and 1 Dual charging station at the Watershed Protection FOC	\$80,000	E	WU	\$40,000	\$40,000	-	-	-	-	\$40,000
22-18					E	Grant	\$40,000	\$40,000	-	-	-	-	\$40,000

Service #: 2.670
 Service Name: Regional Water Supply

SECTION 1: PROJECT DESCRIPTION AND BUDGET													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2022	2023	2024	2025	2026	2027	5 - Year Total
23-21	New	EV Charging Stations Electrical Infrastructure	Electrical System upgrades at 479 Island Hwy to power up 44 charging stations	\$855,000	E	WU	-	\$680,000	-	-	\$175,000	-	\$855,000
23-22	New	Fuel Truck	Fuel tender truck	\$200,000	E	WU	-	\$200,000	-	-	-	-	\$200,000
23-30	New	Fleet Shop Hoist	Heavy Capacity Hoist for fleet maintenance	\$35,000	E	WU	-	\$35,000	-	-	-	-	\$35,000
23-31	New	Purchase of land	Purchasing of land near 479 for future office space	\$1,500,000	L	WU	-	\$1,500,000					\$1,500,000
Customer and Technical Services Sub-Total				\$5,833,000			\$1,169,250	\$3,780,000	\$843,000	\$630,000	\$950,000	\$855,000	\$7,058,000
GRAND TOTAL				\$222,225,000			\$20,995,250	\$41,256,000	\$34,483,000	\$41,840,000	\$50,155,000	\$36,470,000	\$204,204,000

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 15, 2023**

SUBJECT 2022 Greater Victoria Water Supply Area Wildfire Management

ISSUE SUMMARY

To report on the 2022 wildfire season conditions, results and activities in the Greater Victoria Water Supply Area (GVWSA).

BACKGROUND

GVWSA Wildfire Context

A number of different types of risk assessments of the GVWSA have been completed over the years. In all cases the risk of large-scale wildfire is classified as the greatest land-based risk to drinking water quality. Landscape level wildfire is further defined as a low likelihood but high consequence risk. The water quality risks associated with large fires stem less from the fire as it is burning, but the aftereffects of burned over forested lands from which sediment, soils, woody debris, nutrients and potential contaminants may enter source water reservoirs. Given this risk, the Watershed Protection division has necessarily developed a comprehensive wildfire program including wildfire prevention, detection, preparedness, response, forest fuel management, forest resilience and burned area mitigation & rehabilitation preparedness.

Wildfire Preparedness

The annual GVWSA Wildfire Preparedness Plan sets out the level of preparedness and prevention activities each season. This includes checking equipment and filling water tenders; vegetation management; ground patrols; contract air patrols; training and exercises; adhering to operational restrictions to limit spark producing activities; 'spark watch' monitoring after essential projects; and, maintaining a roster of trained staff on standby during periods of elevated risk. The resources deployed range from a low of one initial attack crew (two firefighters with a four-wheel drive (4WD) truck with water tank, pump and fire tools), to three initial attack crews with seven further firefighters and two fire wardens on standby.

Equipment and water are staged (i.e., water tenders) at strategic places in the GVWSA, as the fire season progresses, to increase the speed of response. Watershed Protection has three dedicated water tenders (water delivery trucks) – one large (16,500 liters (L)) and two 4WD "mini" tenders (2,700 L each). In addition, two tanks that can be mounted in standard gravel trucks (6,800 L and 5,280 L), and a tank that is mounted on the skidder (1,500 L). Initial attack 4WD pickup trucks used on patrol carry 450 L during fire season; as well, fixed water tanks are staged at strategic locations in the GVWSA.

Municipal and volunteer fire department resources are relied upon to respond to all structural fires in interface areas, while wildfire fighting trained resources are required in forested areas. In interface fires, both areas of expertise are required to work in collaboration. Capital Regional District (CRD) staff meet with neighbouring fire departments to exchange information on resources, available equipment and collaboration should the need to rely on each other's resources arise. The CRD, as requested, has conducted training of fire department staff in wildfire

fighting in preparation for interface fires. In extreme need, structural firefighters can fight wildfires under the direction of wildfire fighters, as has occurred in large BC Interior wildfires.

In 2022, 32 staff were trained and ready for wildfire response in the GVWSA, 10 – 15 additional staff within the CRD have training and can also be called upon. Six staff members also achieved the higher national standard for fire line fitness and training to qualify as Type 1 firefighters for CRD's Initial Attack Crew Leader program and BC Wildfire Service fires.

Wildfire Response Agreement

The CRD has a *Wildfire Response Agreement* with the BC Wildfire Service (BCWS) that commits provincial wildfire suppression resources to respond to wildfires on GVWSA and Regional Parks lands. The CRD has obligations under the agreement to provide notification to BCWS and to provide a minimum level of CRD resources to wildfires on its lands. The CRD pays for this service annually, on a per-hectare-basis, for the lands included under the agreement. In 2022, the CRD paid \$8,100 for protection of 20,605 ha of GVWSA lands. This agreement was critical in 2020 when two lightning strikes caused fires in the GVWSA that required significant BCWS air support to control and suppress.

Wildfire Resource Agreement

An additional agreement with the BC Wildfire Service titled *Wildfire Resource Agreement*, allows Watershed Protection staff to gain fire line and fire crew leader experience while supporting BCWS on fires in the Coastal Fire Centre area. Even with a higher than average number of fires in the Coastal Fire Centre, CRD resources were not requested, nor for the most part available, due to staffing shortages in 2022.

2022 BC Wildfire Season Context

The 2022 wildfire season in British Columbia was slow to start, characterized by a cool wet spring. There was sufficient overwinter precipitation to recover from prolonged drought across much of the province in the previous year. However, once the summer heat set in, the fire season extended late into the fall, with significant risk and fire starts in the province continuing well into October. There were high temperature and fire start records set in late August and mid-October in many areas of the province. Despite this, the 2022 BC wildfire season ended with a below average number of fires and hectares burned (1,758 fires and 133,437 ha).

2022 Coastal BC and GVWSA Wildfire Season

2022 in the Coastal Fire Centre was busier than average, but most of the significant fires were in the area of Hope and Manning Provincial Park, with some remote lightning fires in the north and central parts of Vancouver Island. The Coastal Fire Centre recorded 281 wildfires, and 21,779 ha burned in 2022. There were no wildfires within or near the GVWSA.

The weather in the GVWSA became favorable for wildfires (moderate Fire Danger Rating (FDR) with Duff Moisture Code value >40 which indicates that medium size fuels could burn) beginning June 24 and ending October 21. The following figure shows the number of days per year of High and Extreme FDR for the Sooke WSA for the last 21 years. Though it started late, the 2022 wildfire season was dominated by a record 83 days in Extreme FDR, exceeding the previous record of 61 days. The calculated trend line shows a significant and ongoing increase in the number of days in High and Extreme FDR in the last 21 years.

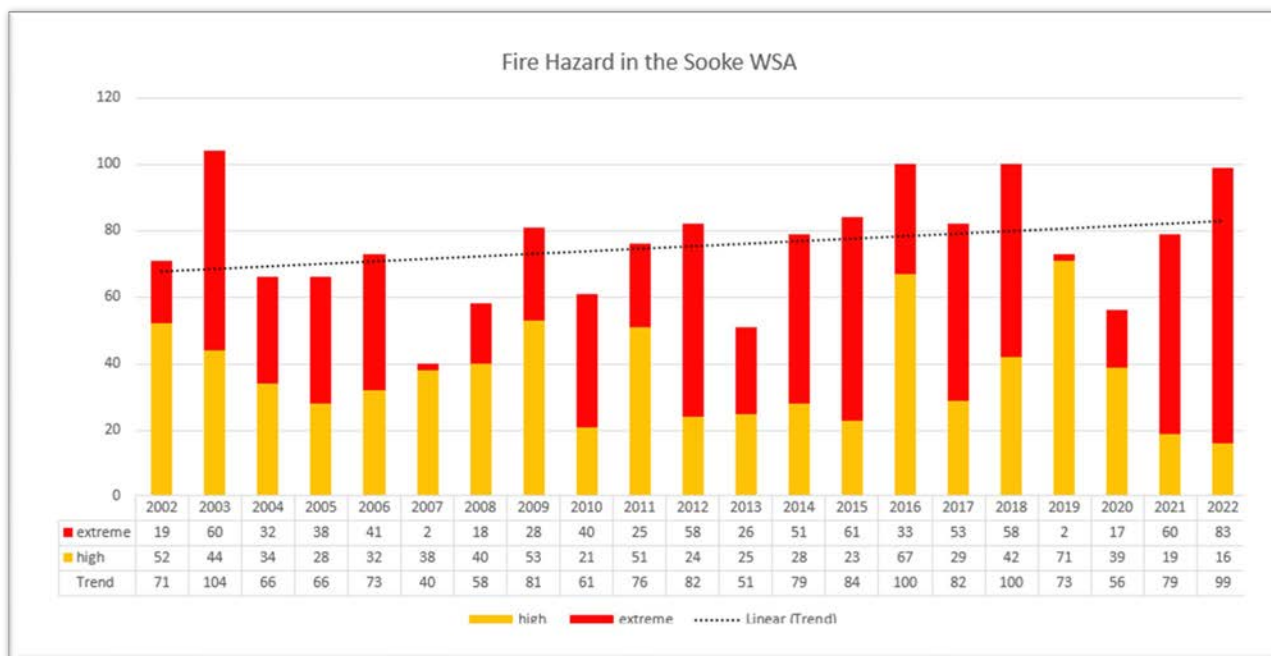


Figure 1. 2022: The number of days in High and Extreme Fire Danger Rating in the Sooke WSA

The extended number of days in Extreme FDR increased costs for wildfire standby and air patrols. It also reduced the number of days available for operational maintenance and upgrades such as brushing and road maintenance. Essential operational activities were completed under *Wildfire Act* exemption with mitigating measures such as frequent wetting down of the worksite. Fortunately, no wildfires started and no suppression activities were required in the GVWSA in 2022.

2022 GVWSA Wildfire Management Activities

The following initiatives were carried out in 2022 in the wildfire management program (see also Appendix A photos and Appendix B map):

- Replacement (due to lightning strike damage) and testing of an infrared wildfire detection camera on Mount Healey.
- Purchase of new Nomex fire resistant PPE (personal protective equipment) pants and shirts.
- Deployment (staff training and procedures) of two micro drones for use in patrol monitoring for wildfire. Drones increase visibility from any point in the watershed and reduces the need to clear trees to maintain vantage points.
- Completion of a new fuel reduction corridor, connecting to the Goldstream system lakes, aimed at preventing a fire approaching from the east entering the Sooke Water Supply Area (WSA), named “Butchart and Goldstream Connector Fuel Reduction Corridor” (Appendix B map).
- Deployment (staff training and procedures) of a “BurnBoss” air curtain burner for more efficient and environmentally friendly disposal of vegetation and wood waste from fuel management and invasive species removal activities.

- Preparation and BCWS approval of a prescribed burn trial in the Leech WSA planned for implementation in 2022, but not initiated due to lack of requisite fuel/weather conditions. This project will be undertaken when conditions allow in 2023.
- Continued development of mechanized ecological restoration thinning trials to reduce forest fuels, reduce tree drought stress and increase biodiversity and wildlife habitat in regenerating forest stands.
- Continuation (second year) of a three-year collaborative research agreement (funded by NSERC¹ and the CRD), led by the University of Victoria and involving the Canadian Forest Service and Essa Technologies Ltd. A research project entitled “Balancing forest, wildfire and carbon management in a changing climate” to model GVWSA wildfire, climate change and forest management scenarios with a goal of informing best forest management for wildfire risk reduction in the GVWSA going forward.
- Completion of modelling of post wildfire sediment delivery and debris flow potential for the Sooke WSA and start of a mitigation strategy for post wildfire conditions.

2020 Wildfires Compensation

CRD submitted a total claim of \$36,825 to Emergency Management BC (EMBC) for financial assistance for overtime and supplies to fight the two 2020 wildfires in the GVWSA. CRD was provided notice in January 2022 that the claim was not eligible and was declined. A meeting has been requested and set with EMBC to understand the decision and inform any future CRD claims.

CONCLUSION

The Greater Victoria Water Supply Area (GVWSA) again experienced a long period of Extreme Fire Danger and wildfire risk in 2022. Fortunately, there were no lightning strikes or wildfire starts in the GVWSA. Annual wildfire prevention and preparedness activities were conducted as well as making progress on other initiatives to mitigate wildfire risk in the GVWSA. In preparation for the 2023 wildfire season, Watershed Protection continues with operational wildfire preparation activities and the CRD will renew the BC Wildfire Service – CRD *Wildfire Response Agreement* that provides provincial firefighting capacity to GVWSA fires.

RECOMMENDATION

There is no recommendation. The report is for information only.

Submitted by:	Annette Constabel, M.Sc., RPF., Senior Manager, Watershed Protection
Concurrence:	Ian Jesney, P. Eng., Acting General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENTS

- Appendix A: 2022 Wildfire Management Activity Photos
- Appendix B: Wildfire Management Map

¹ NSERC – National Science and Engineering Research Council of Canada

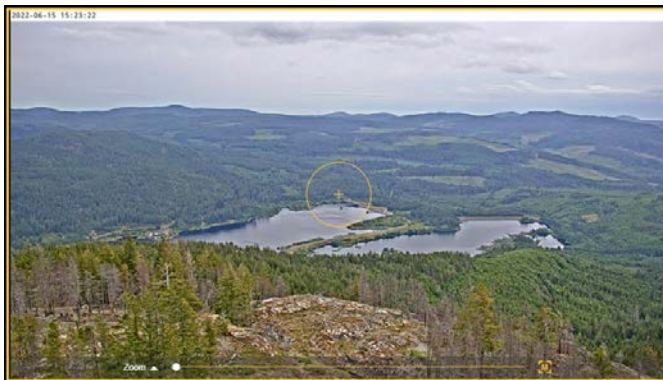
2022 Wildfire Management Photos

Staff Training



Hover Exit Certification for Type 1 Firefighters at BCWS Cobble Hill Fire Base

New Mt Healey Infrared Wildfire Detection Camera



Views looking toward Sooke Lake dam – regular and infrared view

New Nomex Fire Resistant PPE



Microdrones for Wildfire Patrol



Panoramic view from microdrone

First Use of the Air Curtain Burner (“BurnBoss”)



Prescribed Burn Trial Area



Ecological Restoration Thinning Trial Area



2022

APPENDIX B GREATER VICTORIA WATER SUPPLY AREA

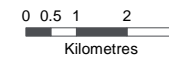


Wildfire Management



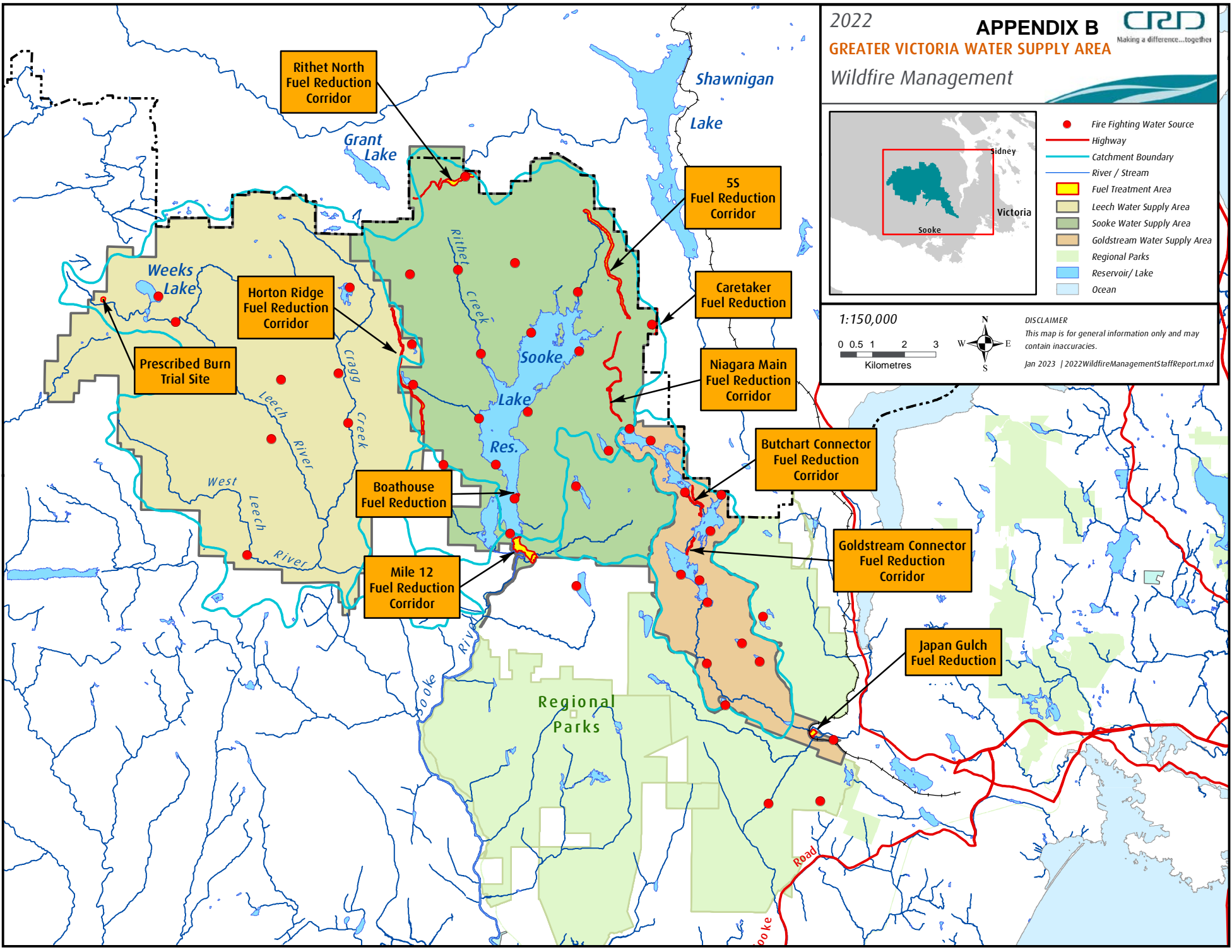
- Fire Fighting Water Source
- Highway
- Catchment Boundary
- River / Stream
- Fuel Treatment Area
- Leech Water Supply Area
- Sooke Water Supply Area
- Goldstream Water Supply Area
- Regional Parks
- Reservoir / Lake
- Ocean

1:150,000



DISCLAIMER
This map is for general information only and may contain inaccuracies.

Jan 2023 | 2022WildfireManagementStaffReport.mxd





**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 15, 2023**

SUBJECT Water Conservation Initiative – Once-Through Cooling Project Reduced Rebates Program – Environmental Benefits

ISSUE SUMMARY

To report on the environmental benefits of the Once-Through Cooling (OTC) equipment replacement program, including energy costs comparisons between OTC versus air-cooled technology.

BACKGROUND

The Regional Water Supply Commission requested additional background information to understand and support the OTC rebate program. OTC units transfer waste heat to a continuously running supply of cold potable water. Typical OTC appliances include air conditioners, walk-in coolers, freezers and ice machines. Staff estimate that approximately 150 units remain in the region and they are often used in small commercial cooling applications. Although they are inexpensive to install, the costs associated with constantly running water through the unit are higher than readily available alternative cooling methods.

Water conservation is a key focus of the demand management program in support of delivering the regional drinking water service. High water users and key sectors or businesses are identified for targeted programs, which have included a multi-year outreach and education campaign targeted at OTC. In early 2021, \$20,000 per year was approved for an OTC rebate program to further encourage replacement of these units. Legal review for reinstating the Capital Regional District (CRD) Water Conservation Bylaw’s ban on the use of OTC devices is now complete and staff plan to move forward with the bylaw amendment to ban these devices, following a three-year grace period, in 2023.

Efficiency of a specific system depends on several factors, including the seasonal temperature, venting, insulation of the unit and cooled area, and other details of the installation. Therefore, determining the energy difference of switching from an OTC system to an air-cooled system varies significantly depending on the specific scenario, equipment and its usage.

When comparing an OTC versus an air-cooled unit, the water utility costs will be significantly higher than the electricity costs. In the example below, the annual utility bills for a typical one tonne (12,000 British Thermal Unit) water-cooled compressor for a walk-in cooler are compared to an air-cooled unit at 2022 rates.

Condenser Type	Water-Cooled	Air-Cooled
Estimated Annual Electricity Costs (BC Hydro)	\$457	\$540
Estimated Annual Water Costs (City of Victoria)*	\$6,840	\$0
Total Annual Utility Costs	\$7,297	\$540

* Assuming a conservative estimate of 1,600 m³ of potable water/year or approximately 4,400 L/day

While ice machines use less water than walk-in coolers, a water-cooled ice machine would also have significantly higher total utility costs than an air-cooled ice machine. It should be noted that according to Natural Resources Canada, only air-cooled ice machines are eligible for Energy Star qualification.

Elimination of OTC equipment is a cost-effective and proactive step towards efficient use of regional water resources, which in turn will contribute to the CRD's planning to ensure an adequate supply of water is available for all users into the future.

CONCLUSION

The reduction and elimination of once-through cooling units is a component of the water conservation strategy for the regional water service. The business case to replace these units is excellent due to the high utility cost of water. Efforts to reduce water consumption will also reduce pressures on capital investments and operating costs, as well as providing resilience against climate change.

RECOMMENDATION

There is no recommendation. This report is for information only.

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

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, FEBRUARY 15, 2023**

SUBJECT **Water Quality Summary Report for Greater Victoria Drinking Water System
– July to December 2022**

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. The CRD also provides compliance monitoring and reporting of the municipal systems, in addition to its regional commitments, to deliver effective and efficient oversight of water quality within the overall water system. Any issues that may arise remain the responsibility of the municipalities.

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. 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 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 direct customer concerns and questions, 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.

Appendix A summarizes the monitoring results for raw water in the 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 summer and fall period from July to December 2022.

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/fall 2022 indicate good water quality overall, and all critical parameters indicate stable general conditions.

RECOMMENDATION

There is no recommendation. This report is for information only.

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
– July to December 2022

WATER QUALITY SUMMARY REPORT FOR THE GREATER VICTORIA DRINKING WATER SYSTEM JULY TO DECEMBER 2022

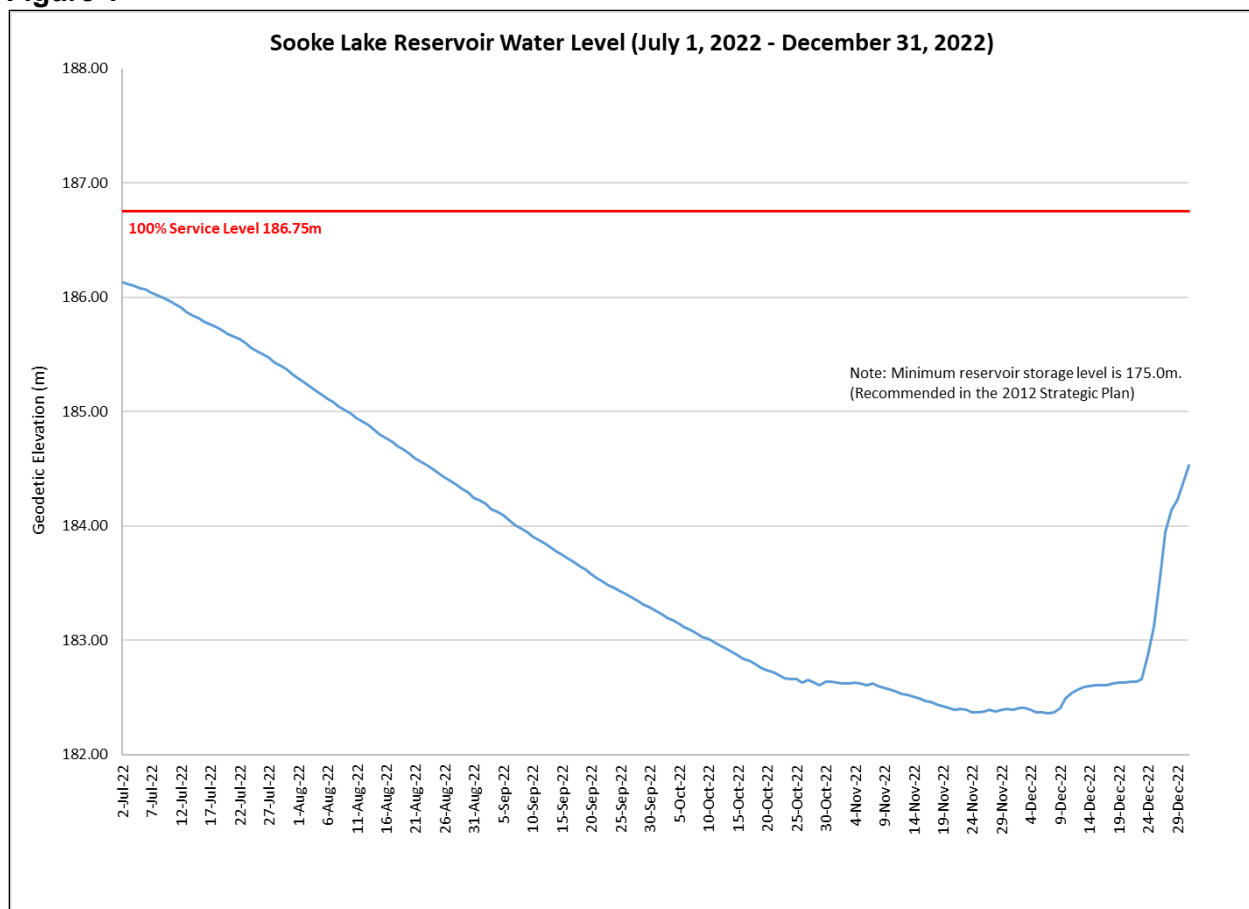
February 2023

1. SOURCE WATER – SOOKE LAKE RESERVOIR

(a) Physical Parameters

Water Levels. Sooke Lake Reservoir was at 95% of full capacity at the start of this reporting period on July 1, 2022, which is almost 10% more than in four out of the last five years (Figure 1). This was the result of an unusually wet and cool spring and early summer. The water levels then receded almost continuously until early December when the recharge period began with the onset of rainfall and, later in December, also heavy snowfall. Besides 2005, this was the latest onset of reservoir recharge since the reservoir expansion in 2003-2004. On December 31, the reservoir levels had recovered to 83%. In many previous years, Sooke Lake Reservoir had been at 100% capacity at that time.

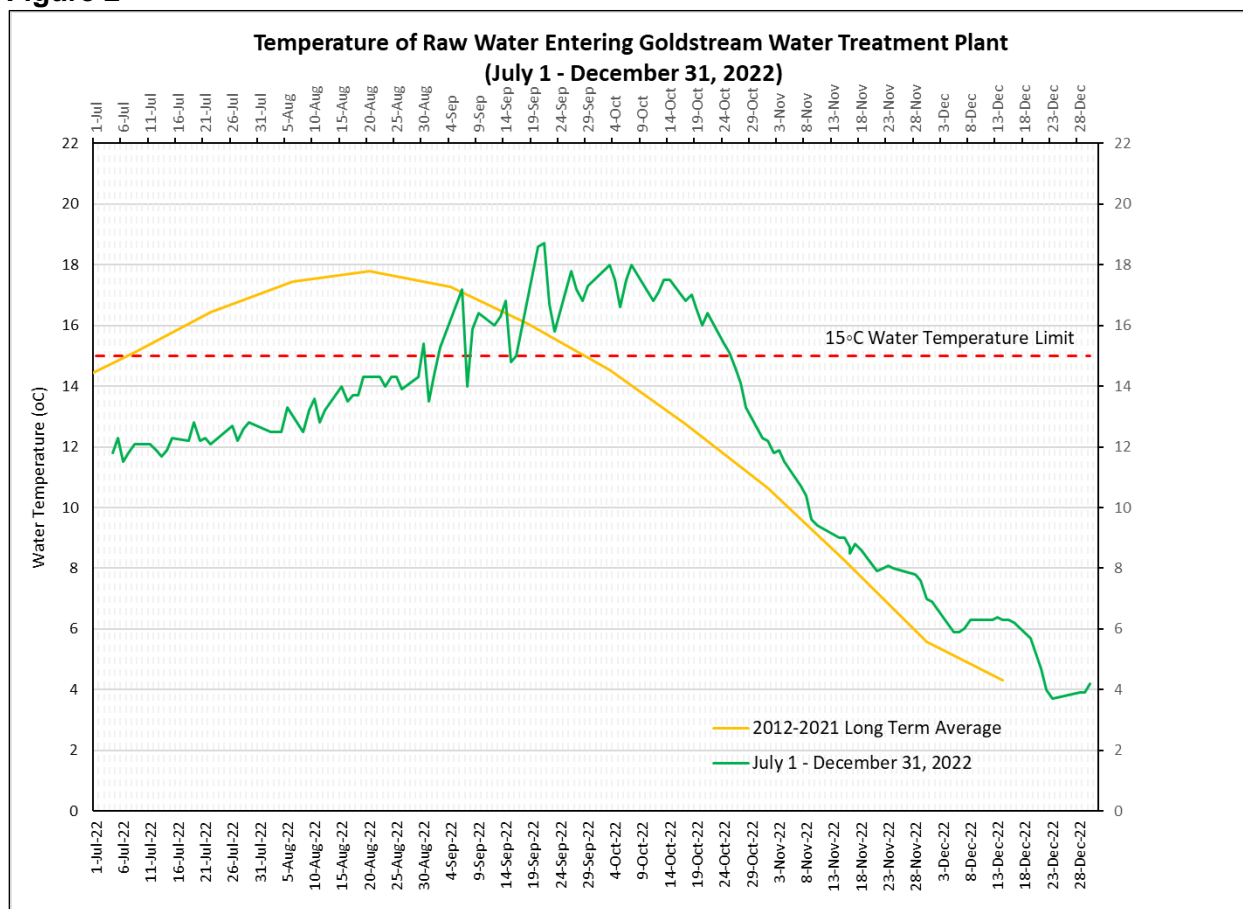
Figure 1



Water Temperature. The raw water temperature measured at the Goldstream Water Treatment Plant was significantly different this reporting period compared to the almost 10-year average trend. Due to the cool and wet early summer weather and the much higher than usual reservoir level throughout the summer months, the water temperature entering the plant remained much cooler until mid-September. Thereafter, the continued dry and warm weather throughout the fall, combined with low reservoir levels, had the opposite effect in that the water temperatures entering

the plant tracked significantly above the long-term average trend. The 15°C aesthetic objective for drinking water temperature per *Guidelines for Canadian Drinking Water Quality* was exceeded between the end of August and the end of October. This exceedance has a similar duration but was delayed by approximately one month compared to most previous years.

Figure 2



Turbidity. Turbidity in the lake near the intake tower remained well below the 1.0 Nephelometric Turbidity Unit (NTU) limit and fairly consistent for the entire reporting period (Table 1). Early summer rainfall events or higher algal activity episodes, as well as the unusual weather patterns and reservoir levels, had no significant 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 ultraviolet 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	9	NTU	0.20	0.30	0.25

Water Transparency. The transparency of the lake water measured with the Secchi Disc in the lake was high (between 6.0 and 10.0 m) and consistent with the long-term average. Fluctuating algal abundance throughout the reporting period accounted for periods with slightly lower transparency

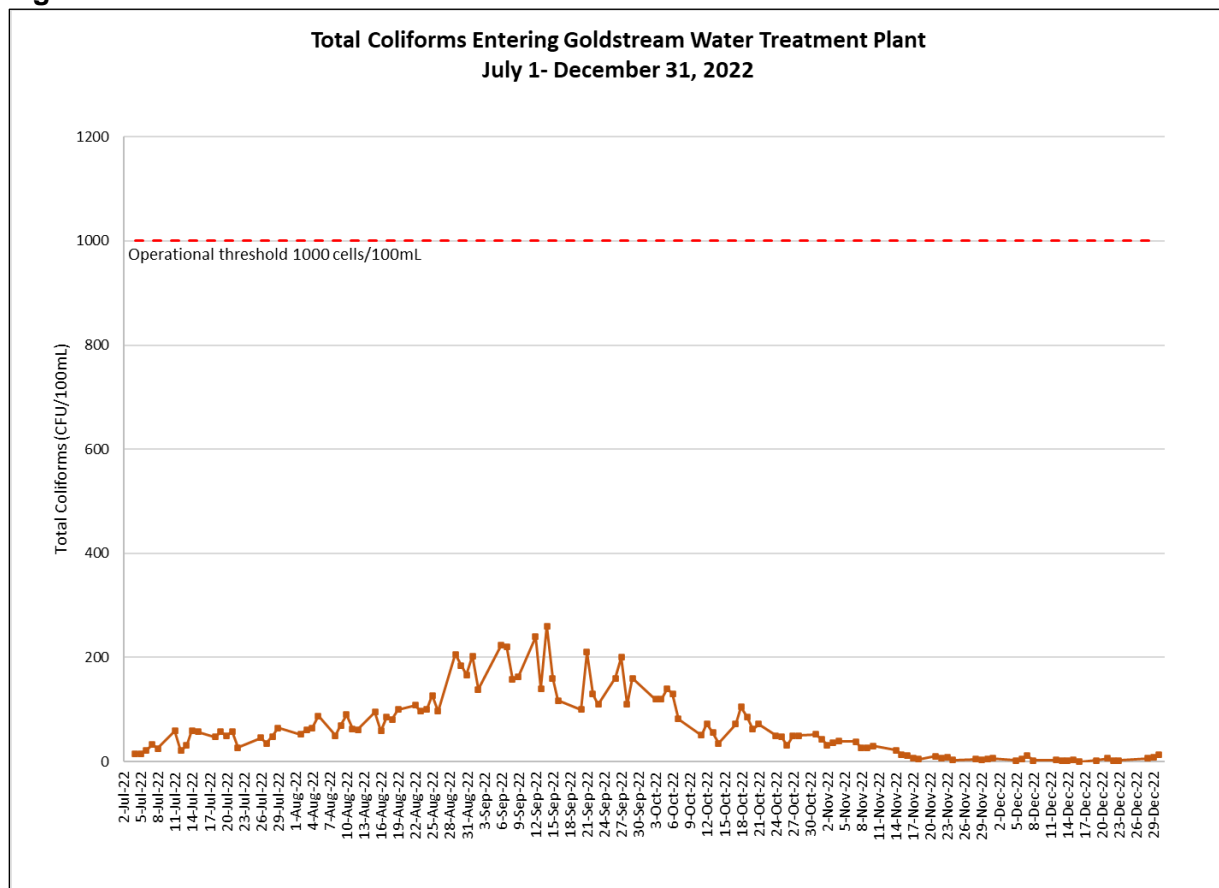
(higher algal abundance during cool period in early July) but with no measurable impact on the treatability of the water.

Dissolved Oxygen. The dissolved oxygen concentrations at three lake sampling stations have been consistently between 7.5-9.5 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.

(b) Bacteria

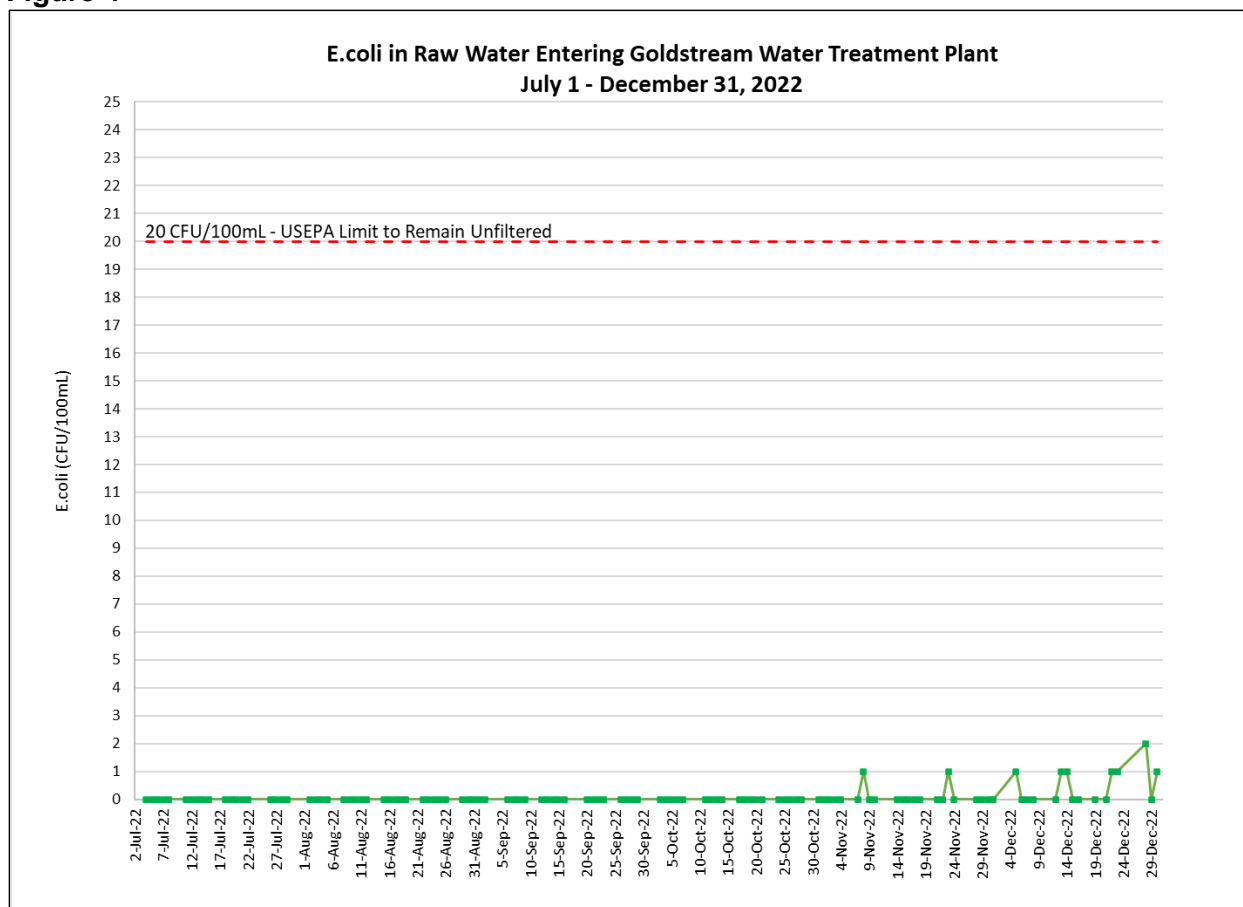
Total Coliform Bacteria and E. coli. The total coliform concentrations in the raw source water entering the Goldstream Water Treatment Plant increased at the beginning of the reporting period with the warming of the raw water (Figure 3). The total coliform concentrations further increased when the thermal stratification in the Sooke Lake south basin dissipated in September and raw water temperatures reached their peak. This is a normal and natural trend directly related to increased bioactivity during the warm water period. In previous years, this peak state was usually reached in August. The United States Environmental Protection Agency (USEPA) Surface Water Treatment Rule for avoiding filtration has a non-critical total coliform criterion of maximum 100 CFU/100 mL at the 90 percentile of a six-month sample set. The 90 percentile of total coliform concentrations in the raw water between July and December 2022 was 160 CFU/100 mL and was therefore in exceedance with this non-critical USEPA filtration exemption criterion. In context, while the total coliform concentrations increased during the warm water period, which extended deep into the fall months, they were overall still relatively low and do not indicate any unusual activity or water contamination.

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 USEPA filtration exemption criteria for surface water used for drinking water supply (Figure 4). Meeting this criterion means compliance with the USEPA Surface Water Treatment Rule for avoiding filtration. The *E. coli* concentrations were also well below the benchmark used in the 2020 BC Source Drinking Water Quality Guidelines (90 percentile *E. coli* ≤ 10 CFU/100 mL). During the rain and snow-melt event at the end of December, the highest *E. coli* concentrations (2 CFU/100 mL) of the reporting period were recorded. These results are typical for Sooke Lake Reservoir during the summer and fall season.

Figure 4



(c) 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. Rain-induced runoff events at the beginning of July were responsible for pulses of nutrient input and temporary upticks of nutrient concentrations in the lake (especially phosphorus in concentrations of > 4 $\mu\text{g/L}$). These naturally added nutrients were then quickly consumed by aquatic organisms. This natural cycle is an indication of a healthy and functioning food chain in the lake’s ecosystem (Tables 2 and 3).

Table 2

Sooke Reservoir, South Basin (1m) - SOL-00-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	4	ug/L	82	132	103
Total Phosphorus	4	ug/L	1.90	4.20	2.63

Table 3

Sooke Reservoir, North Basin (1m) - SOL-04-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	4	ug/L	82	118	98
Total Phosphorus	4	ug/L	1.20	4.20	2.45

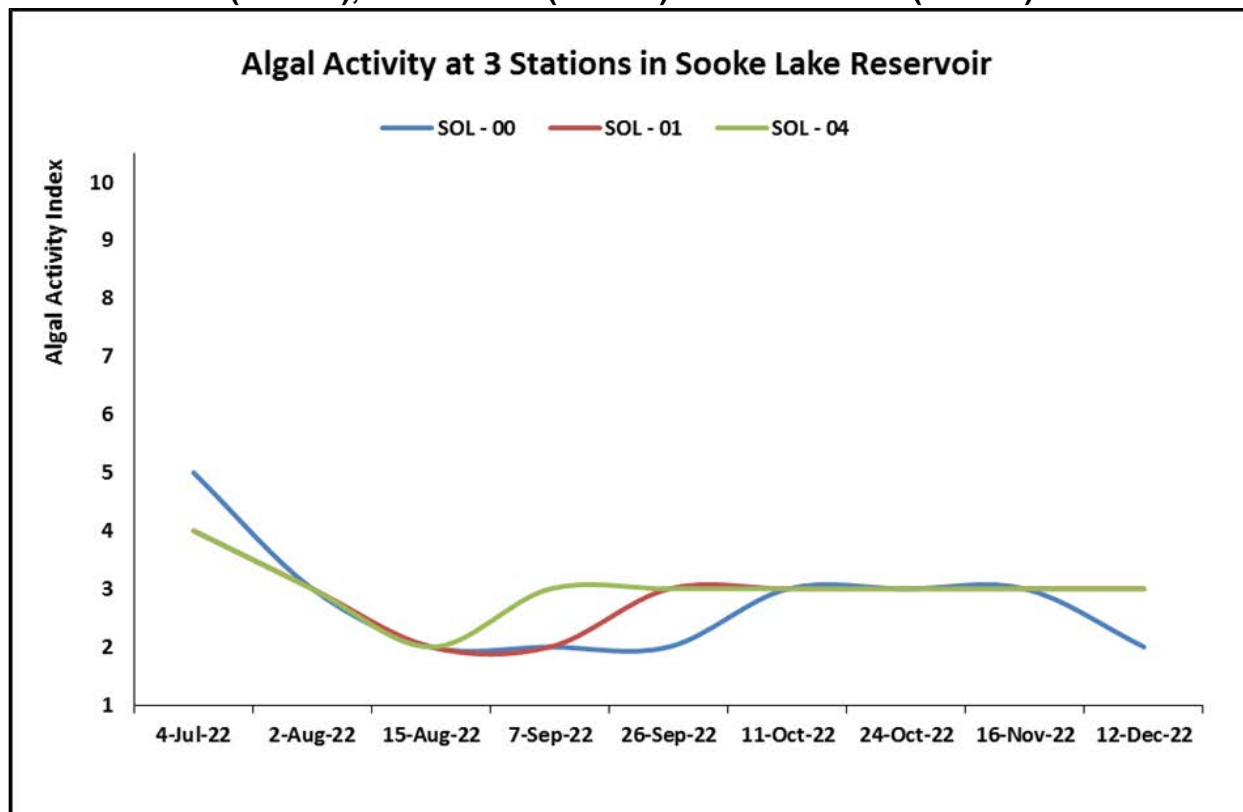
(d) Protozoan Parasites

In four test sets during this reporting period on the raw water entering the Goldstream Water Treatment Plant, no *Cryptosporidium* oocysts and no *Giardia* cysts were found.

(e) Algae

To provide a general picture of the algae activity in Sooke Lake Reservoir, an algal activity index (AA Index) was applied, ranging from 1 to 10 (1 – lowest, 10 – highest activity), which is assessed via towed samples collected biweekly at three stations. The reporting period in July began with a moderately high AA Index, in response to the continued influx of nutrients from rain-induced runoff. Once the rain and runoff ceased and the nutrients were used up by August, the AA decreased to a low level for the remainder of the reporting period. The lack of nutrient input throughout the fall prevented, despite favourable warm and sunny weather conditions, any significant algal activity during this normally active season. The dominant taxa were golden algae or diatoms, e.g., *Dinobryon* spp. and *Tabellaria fenestrata*, respectively, which are commonly found in Sooke Lake and can cause taste and odour and/or clogging issues when in bloom. While dominant throughout most of the reporting period, these algae species never reached the bloom stage. Therefore, the algae-related water quality risk remained low, and no adverse water quality effect was recorded.

Figure 5: Algal Activity Index (AA Index) from July-December 2022, Sooke Lake Reservoir, Intake Location (SOL-00), South Basin (SOL-01) and North Basin (SOL-04)



2. WATER TREATMENT PLANTS

(a) Goldstream Water Treatment Plant

Turbidity. The raw water entering the Goldstream Water Treatment Plant was generally well below 1 Nephelometric Turbidity Unit (NTU) during the reporting period (Table 4). Typically, on Wednesdays, during high watering demand and peak flows, a short-term and minor turbidity increase was recorded due to remobilized pipe sediments in the mains just upstream of the treatment plant. During these events within this reporting period, the turbidity never exceeded 1 NTU. This was likely facilitated by lower than typical watering demands in early July due to the unusually cool and wet weather.

On December 20, the turbidity at the plant exceeded 1 NTU for 10 minutes and peaked briefly at 1.1 NTU. This was the result of very high flows in Main #10 and #11 the evening before, when due to a power outage and genset failure, the Head Tank partially drained and then refilled very rapidly. Completed repairs and improvements to the genset should prevent such an event in the future. The risk to public health during this event was very low.

Table 4

Goldstream Water Treatment Plant Turbidity - Raw Water	
Samples Collected	118
Minimum	0.15 NTU
Maximum	0.65 NTU
Mean	0.29 NTU

Main #4 First Customer Sampling Station Total Coliform Bacteria and E. coli

The Main #4 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant is sampled daily to monitor the efficacy of the disinfection treatment process. Only one sample (July 29) tested positive for total coliform bacteria during the entire reporting period. A resample did not confirm any water contamination or treatment breakthrough. No *E. coli* bacteria were found in any sample collected from this site.

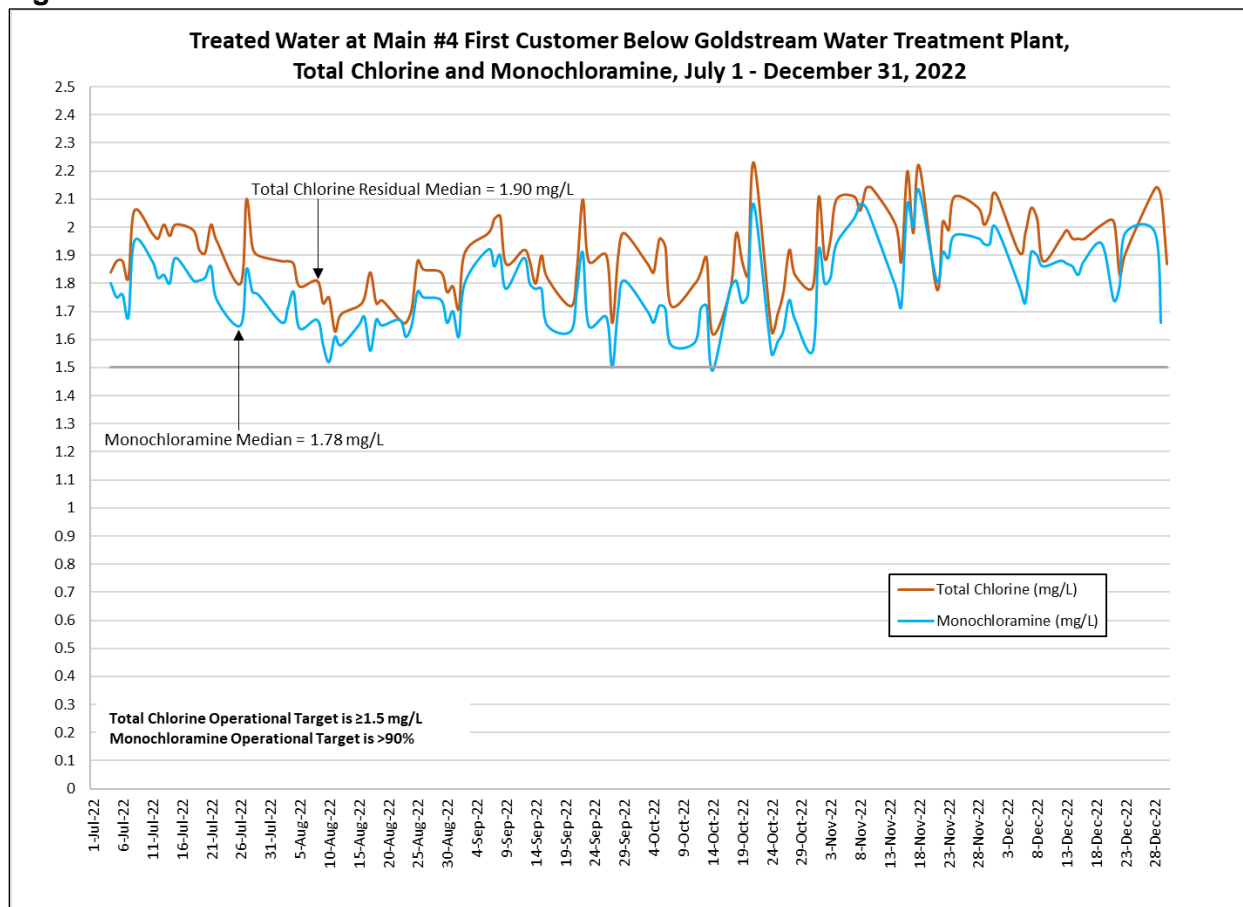
Main #5 First Customer Sampling Station Total Coliform Bacteria and E. coli

The Main #5 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant is also sampled daily to monitor the efficacy of the disinfection treatment process. Three samples (August 29, September 29 and October 3) tested positive for total coliform bacteria (each at 1 CFU/100mL) during the entire reporting period. All resamples did not confirm any water contamination or treatment breakthrough. No *E. coli* bacteria were found in any sample collected from this site.

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

Secondary Disinfection. Figure 7 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. The target ratio of 90% monochloramine was also consistently achieved. Adequate and effective secondary disinfection was provided across the entire system throughout the reporting period.

Figure 7



(b) Sooke River Road Water Treatment Plant

Turbidity. The raw water entering the Sooke River Road Water Treatment Plant was generally well under 1 NTU (Table 5). On December 20, the turbidity at the plant exceeded 1 NTU for 50 minutes and peaked briefly at 1.5 NTU. This was the result of very high flows in Main #10 and #11 the evening before, when due to a power outage and genset failure, the Head Tank partially drained and then refilled very rapidly. Completed repairs and improvements to the genset should prevent such an event in the future. The risk to public health during this event was very low.

Table 5

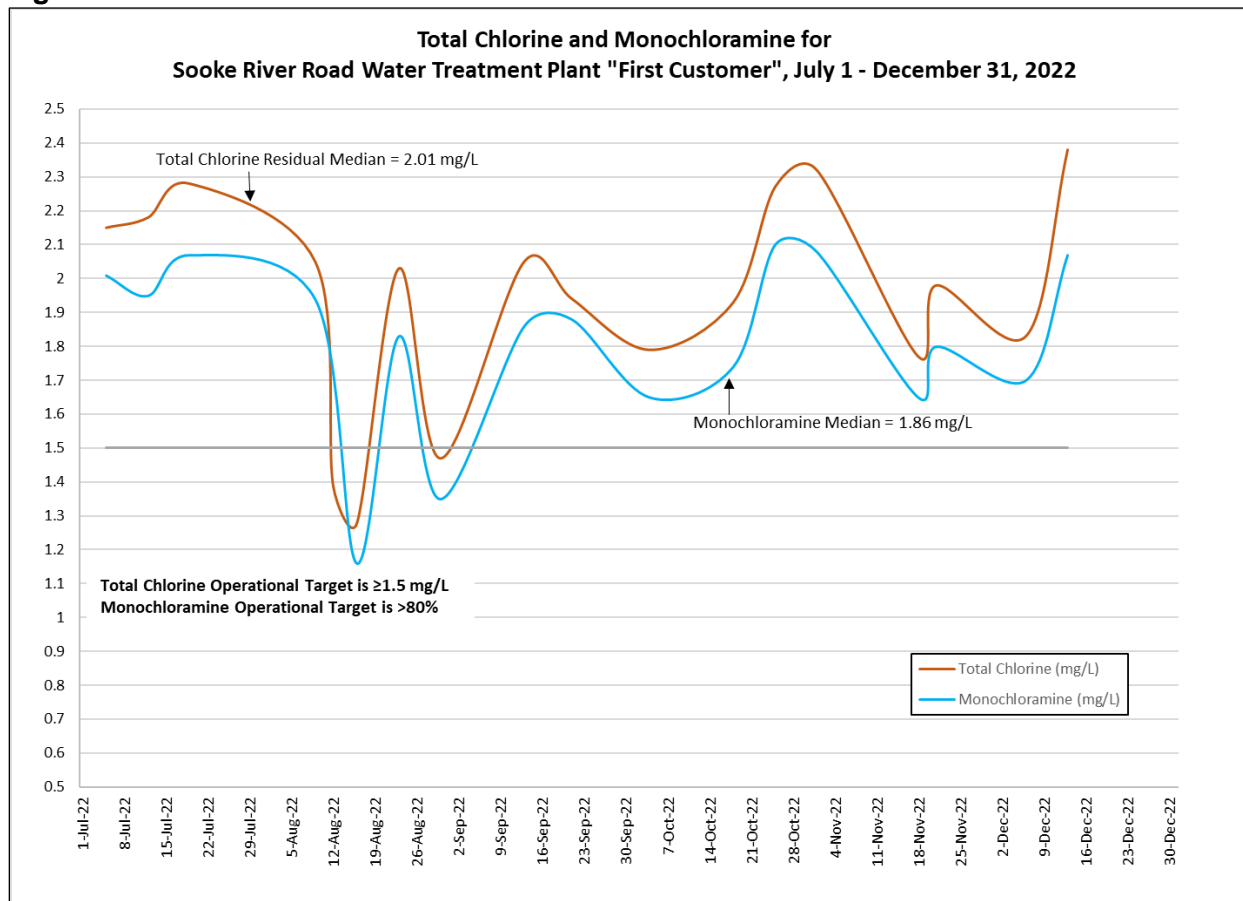
Sooke River Road Water Treatment Plant Turbidity - Raw Water	
Samples Collected	17
Minimum	0.15 NTU
Maximum	0.90 NTU
Mean	0.29 NTU

Sooke First Customer Sampling Station Total Coliform Bacteria and E. coli

The Sooke First Customer Sampling Station immediately downstream of the Sooke Water Treatment Plant is sampled weekly to monitor the efficacy of the disinfection treatment process. Only one sample (August 9) tested positive for total coliform bacteria (1 CFU/100 mL) during the entire reporting period. Resamples did not confirm any water contamination or treatment breakthrough in this case.

Secondary Disinfection. Figure 8 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 generally achieved during the reporting period with the exception of two short periods in August. In response to these chlorine concentration declines, the plant operators recalculated the chlorine/ammonia demand and adjusted the dosage. While the chloramine concentrations leaving the Sooke River Road Water Treatment Plant fluctuated more than at the Goldstream Water Treatment Plant due to the different technology used and the obviously smaller size of the water system, the monochloramine/total chlorine ratio remained consistently above the target of 80%. The slightly lower target ratio of 80% monochloramine compared to the 90% for the Goldstream Water Treatment Plant is accounting for the advanced age and different technology associated with this plant. A low monochloramine/total chlorine ratio could result in adverse taste and odour in the drinking water and a rapid chlorine decay in the system. Overall, the residual concentrations were adequate to provide effective secondary disinfection across this much smaller distribution system.

Figure 8



3. DISTRIBUTION SYSTEMS

(a) Goldstream Service Area

Table 6

Goldstream Water Treatment Plant Service Area										
Month/Year	Samples Collected	Total Coliforms (CFU/mL)				E.coli (CFU/100mL) Samples > 0	Turbidity		Chlorine Residual Median mg/L as CL2	Water Temp. Median °C
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10		Samples Collected	Adverse > 1 NTU		
Jul-22	364	14	3.8	0	2	0	43	1	1.44	15.3
Aug-22	411	10	2.4	0	5	0	45	0	1.36	16.8
Sep-22	382	2	0.5	0	0	0	36	0	1.41	18.2
Oct-22	362	0	0.0	0	0	0	40	0	1.34	17.0
Nov-22	392	4	1.0	0	0	0	45	0	1.53	11.0
Dec-22	337	1	0.3	0	0	0	28	0	1.61	7.5
Total:	2248	31	1.4	0	7	0	237	1	1.43	16.1

Total Coliform Bacteria and E. coli. 31 out of 2,248 distribution system samples, or 1.4% of all bacteriological samples during the reporting period, tested positive for total coliform bacteria. Seven samples registered a total coliform concentration of > 10 CFU/100 mL. In all cases, the resample was free of total coliform bacteria, indicating that no actual water contamination was the cause of these coliform hits. Most of these positive hits were recorded in July and August, randomly across many sampling stations. Because this constituted an unusually high number of total coliform hits in Greater Victoria, investigations into possible causes were initiated. Because of the randomness of the timing and location of these hits and the negative results of all immediate resamples, an actual water contamination was ruled out. Staff investigated sampling and laboratory procedures but were unable to identify a cause for these hits. Investigations into a potential sample bottle batch contamination also yielded inconclusive answers. By September, this string of inexplicable total coliform hits ceased, and the following bacteriological results were again in line with historical trends and statistical expectations. While the numeric distribution of positive total coliform results in July and August were still well within the requirements of the *BC Drinking Water Protection Regulation* (<10% of monthly samples positive for total coliforms), the seven samples with a >10 CFU/100mL total coliform concentration constitute a non-compliance for these two months. No *E. coli* bacteria were found (Table 6).

Turbidity. One of the 237 turbidity samples registered higher than 1 NTU (Table 6). Overall, these results are an indication of good drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 1.43 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 was above the aesthetic objective in the *Canadian Drinking Water Quality Guidelines* between July and October. This resulted in higher operational efforts to maintain good water quality in the distribution systems and left customers with the unpleasant experience of lukewarm tap water throughout the summer and early fall months.

Water Chemistry. The average pH of the drinking water in the Goldstream Service Area was 7.4 during the reporting period. The pH ranged from 6.8 to 8.0, which is typical when operating the hypochlorite chlorination equipment. The average alkalinity was 17.3 mg/L. Both pH and alkalinity have increased since the commissioning of the hypochlorite chlorination equipment.

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 Goldstream Service Area (Table 7).

Table 7

Disinfection Byproducts - Goldstream WTP Service Area						
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	MAC (Maximum Acceptable Concentration)
Haloacetic Acids (HAAs)	12	ug/L	<5	17.0	12.4	80
Trihalomethanes (THMs)	12	ug/L	12.0	19.0	16.9	100
NDMA	11	ng/L	<1.9	3.30	2.18	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, five are monitored particularly closely: iron, manganese, lead, aluminum and copper. All metal concentrations were below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 8).

Table 8

Metals - Goldstream WTP Service Area								
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	AO (Aesthetic Objective)	OG (Operational Guideline)	MAC (Maximum Acceptable Concentration)
Aluminum	16	ug/L	5.00	12.20	8.14		100	2900
Copper	16	ug/L	1.38	34.60	10.80	1000		2000
Iron	16	ug/L	17.80	42.10	26.61	300		
Lead	16	ug/L	<0.2	0.43	0.24			5
Manganese	16	ug/L	3.80	11.20	5.42	20		120

(b) 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) Samples > 0	Turbidity		Chlorine Residual Median mg/L as CL ₂	Water Temp. Median °C
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10		Samples Collected	Adverse > 1 NTU		
Jul-22	30	0	0.0	0	0	9	0	1.04	15.5	
Aug-22	48	3	6.3	0	0	11	0	0.99	17.2	
Sep-22	25	0	0.0	0	0	7	0	0.53	17.3	
Oct-22	31	0	0.0	0	0	7	1	0.68	15.3	
Nov-22	31	0	0.0	0	0	9	0	0.83	9.8	
Dec-22	19	0	0.0	0	0	5	0	1.10	7.2	
Total:	184	3	1.6	0	0	48	1	0.91	15.4	

Total Coliform Bacteria and E. coli. 3 out of 184 distribution system samples, or 1.6% of all bacteriological samples during the reporting period, tested positive for total coliform bacteria. No sample registered a total coliform concentration of > 10 CFU/100 mL. In all 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 9). These results are in full compliance with the requirements of the *BC Drinking Water Protection Regulation*.

Turbidity. One of the 48 turbidity samples registered above 1 NTU (Table 9). This is an indication of good drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 0.91 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 Sooke Service Area was above the aesthetic objective in the *Canadian Drinking Water Quality Guidelines* between July and October. This resulted in higher operational efforts to maintain good water quality in the distribution system and left customers with the unpleasant experience of lukewarm tap water throughout the summer and early fall months.

Water Chemistry. The average pH of the drinking water in the Sooke Service Area was 7.3 during the reporting period. The pH ranged from 7.0 to 8.0 and is typically very stable and consistent across this system. The average alkalinity was 17.0 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 River Road WTP Service Area						
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	MAC (Maximum Acceptable Concentration)
Haloacetic Acids (HAAs)	3	ug/L	18.0	22.0	20.3	80
Trihalomethanes (THMs)	3	ug/L	21.0	29.0	25.0	100
NDMA	3	ng/L	<2.0	4.3	2.9	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, five are monitored particularly closely: iron, manganese, lead, aluminum and copper. All metal concentrations were well below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 11).

Table 11

Metals - Sooke River Road WTP Service Area								
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	AO (Aesthetic Objective)	OG (Operational Guideline)	MAC (Maximum Acceptable Concentration)
Aluminum	3	ug/L	4.90	14.60	8.90		100	2900
Copper	3	ug/L	6.31	15.80	9.55	1000		2000
Iron	3	ug/L	39.20	91.50	63.8	300		
Lead	3	ug/L	<0.2	0.75	0.39			5
Manganese	3	ug/L	2.80	4.90	3.77	20		120

CONCLUSION

During this summer/fall reporting period (July-December 2022), 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. The unusually wet and cool conditions during the early summer period and the following extremely dry and warm fall period did not have any adverse impact on the water quality. Aside from a minor and very short turbidity event at both treatment plants on December 20 due to the malfunctioning of a backup power generator at the Head Tank, there have been no water quality affecting events or emergencies during this reporting period. The multi-barrier approach applied to the Greater Victoria Drinking Water System ensures the excellent drinking water quality achieved during the reporting period.



Capital Regional District

HOTSHEET AND ACTION LIST

Saanich Peninsula Water Commission

Thursday, January 19, 2023

9:30 AM

Sidney Community Safety Building
2245 Oakville Ave
Sidney BC

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. A name has been identified beside each item for further action and follow-up.

2. ELECTION OF CHAIR

David Kelbert was acclaimed as Chair.

3. ELECTION OF VICE CHAIR

Mike Doehnel was acclaimed as Vice Chair

5. ADOPTION OF MINUTES

That the minutes of the September 22, 2022 meeting be adopted.

CARRIED

9. COMMISSION BUSINESS

9.2. Appointment of Representative to the Water Advisory Committee

Recommendation: That the Saanich Peninsula Water Commission appoint the Vice Chair to the Water Advisory Committee for a one-year term ending December 31, 2023.

CAPITAL REGIONAL DISTRICT - INTEGRATED WATER SERVICES**Water Watch**

Issued February 06, 2023

Water Supply System Summary:**1. Useable Volume in Storage:**

Reservoir	February 28 5 Year Ave		February 28/22		February 5/23		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	92,688	20,391	92,727	20,400	84,744	18,644	91.4%
Goldstream	8,144	1,792	9,825	2,162	9,905	2,179	99.9%
Total	100,831	22,183	102,552	22,561	94,649	20,823	92.2%

2. Average Daily Demand:

For the month of February	99.8 MLD	21.97 MIGD
For week ending February 05, 2023	100.5 MLD	22.11 MIGD
Max. day February 2023, to date:	103.1 MLD	22.68 MIGD

3. Average 5 Year Daily Demand for February

Average (2018 - 2022)	102.0 MLD ¹	22.43 MIGD ²
-----------------------	------------------------	-------------------------

¹MLD = Million Litres Per Day ²MIGD = Million Imperial Gallons Per Day**4. Rainfall February:**

Average (1914 - 2022):	190.3 mm
Actual Rainfall to Date	20.7 mm (11% of monthly average)

5. Rainfall: Sep 1- Feb 5

Average (1914 - 2022):	1,104.0 mm
2022/2023	654.8 mm (59% of average)

6. Water Conservation Action Required:

To avoid possible leaks this spring, now is the time to winterize your sprinkler system.
Visit our website at www.crd.bc.ca/water for more information.

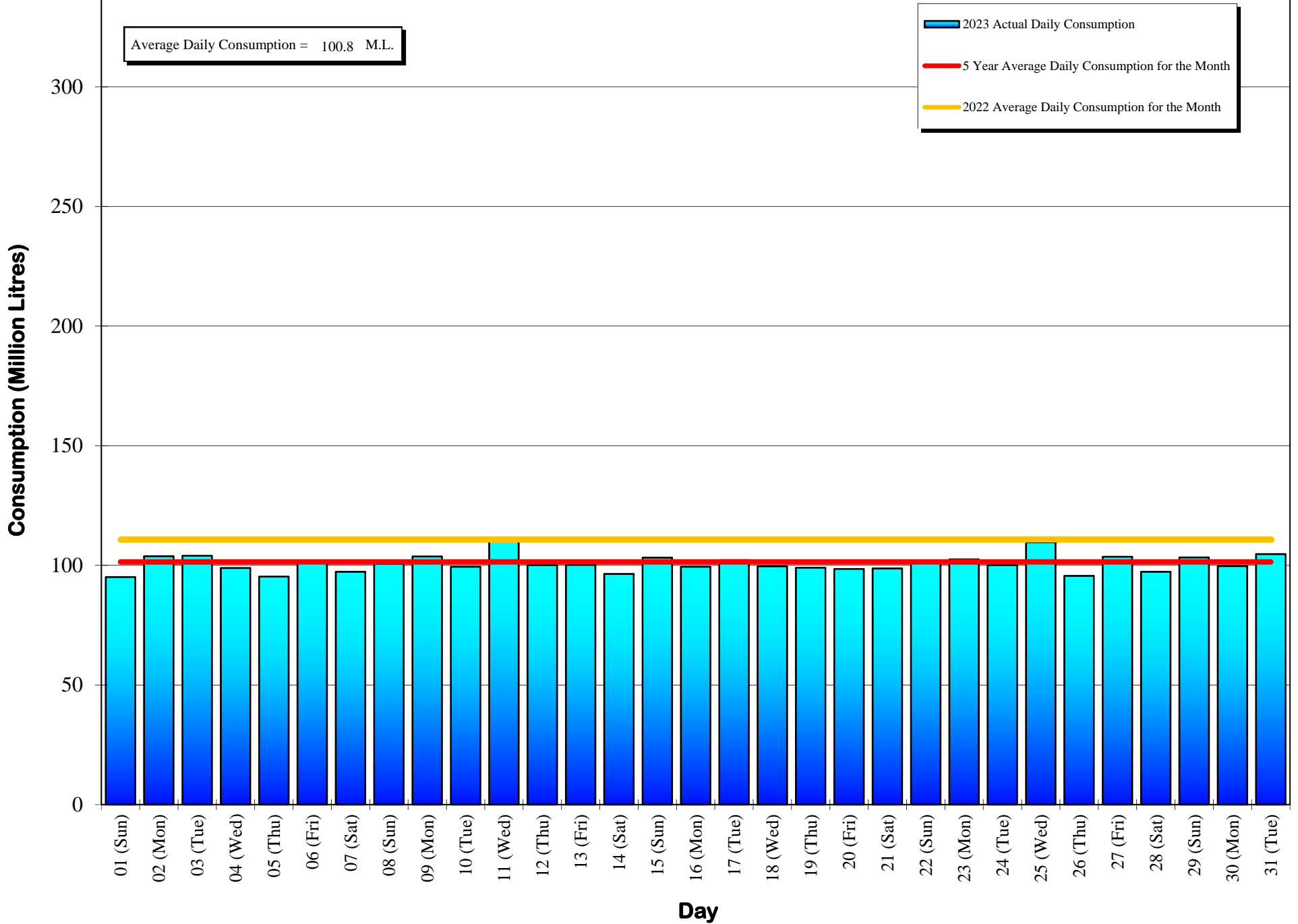
If you require further information, please contact:

Ian Jesney, P. Eng.
Acting 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

Daily Consumption

January 2023



Daily Consumptions: - January 2023

Date	Total Consumption		Air Temperature @ Japan Gulch		Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am			
	(ML) ¹	(MIG) ²	High (°C)	Low (°C)		Rainfall (mm)	Snowfall ³ (mm)	Total Precip.	
01 (Sun)	95.1	<=Min	20.9	6	1	Cloudy	0.0	0.0	0.0
02 (Mon)	103.8		22.8	5	2	Sunny / P. Cloudy	0.0	0.0	0.0
03 (Tue)	104.0		22.9	6	2	Sunny / P. Cloudy / Showers	0.5	0.0	0.5
04 (Wed)	98.9		21.7	7	3	Cloudy / Showers	2.3	0.0	2.3
05 (Thu)	95.3		21.0	11	5	Cloudy / Showers	1.8	0.0	1.8
06 (Fri)	101.7		22.4	9	3	Cloudy / Showers	5.1	0.0	5.1
07 (Sat)	97.3		21.4	7	4	Cloudy / Showers	6.3	0.0	6.3
08 (Sun)	100.6		22.1	7	4	Cloudy / Showers	5.3	0.0	5.3
09 (Mon)	103.7		22.8	8	4	Cloudy / Showers	10.9	0.0	10.9
10 (Tue)	99.4		21.9	7	3	Cloudy / Showers / P. Sunny	3.6	0.0	3.6
11 (Wed)	110.3	<=Max	24.3	9	2	Cloudy / Showers / P. Sunny	2.5	0.0	2.5
12 (Thu)	100.1		22.0	9	7	Cloudy / Rain	37.1	0.0	37.1
13 (Fri)	100.2		22.0	10	7	Cloudy / Showers	11.4	0.0	11.4
14 (Sat)	96.4		21.2	9	6	Cloudy / Showers / P. Sunny	0.8	0.0	0.8
15 (Sun)	103.2		22.7	9	4	Cloudy / Showers / P. Sunny	5.8	0.0	5.8
16 (Mon)	99.4		21.9	8	4	Cloudy / Showers / P. Sunny	0.5	0.0	0.5
17 (Tue)	102.2		22.5	6	4	Cloudy / Showers	4.1	0.0	4.1
18 (Wed)	99.6		21.9	6	1	Cloudy / Showers / P. Sunny	4.3	0.0	4.3
19 (Thu)	99.0		21.8	5	0	Sunny / P. Cloudy / Showers	0.8	0.0	0.8
20 (Fri)	98.5		21.7	5	2	Cloudy / P. Sunny	0.0	0.0	0.0
21 (Sat)	98.7		21.7	4	0	Cloudy / Showers	2.8	0.0	2.8
22 (Sun)	101.6		22.3	5	0	Cloudy / P. Sunny	0.0	0.0	0.0
23 (Mon)	102.5		22.6	6	2	Cloudy / Showers / P. Sunny	1.5	0.0	1.5
24 (Tue)	100.1		22.0	9	4	Sunny / P. Cloudy / Showers	0.8	0.0	0.8
25 (Wed)	109.7		24.1	7	5	Sunny / P. Cloudy	0.0	0.0	0.0
26 (Thu)	95.6		21.0	8	5	Sunny / P. Cloudy / Showers	1.3	0.0	1.3
27 (Fri)	103.6		22.8	9	6	Sunny / P. Cloudy	0.0	0.0	0.0
28 (Sat)	97.3		21.4	7	1	Sunny / P. Cloudy	0.0	0.0	0.0
29 (Sun)	103.3		22.7	2	-3	Sunny	0.0	0.0	0.0
30 (Mon)	99.7		21.9	2	-4	Cloudy / P. Sunny	0.0	0.0	0.0
31 (Tue)	104.7		23.0	2	0	Cloudy / Flurries / Showers	1.3	17.7	3.1
TOTAL	3125.5 ML		687.57 MIG				110.8	18	112.6
MAX	110.3		24.27	11	7		37.1	18	37.1
AVG	100.8		22.18	6.8	2.7		3.6	1	3.6
MIN	95.1		20.93	2	-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 January (1914-2022)	274.7 mm
Actual Rainfall: January	112.6 mm
% of Average	41%
Average Rainfall (1914-2022): Sept 01 - Feb 05	1,104.0 mm
Actual Rainfall (2022/23): Sept 01 - Feb 05	654.8 mm
% of Average	59%

Number days with precip. 0.2 or more
22

Water spilled at Sooke Reservoir to date (since Sept. 1) = 0.00 Billion Imperial Gallons
 = 0.00 Billion Litres

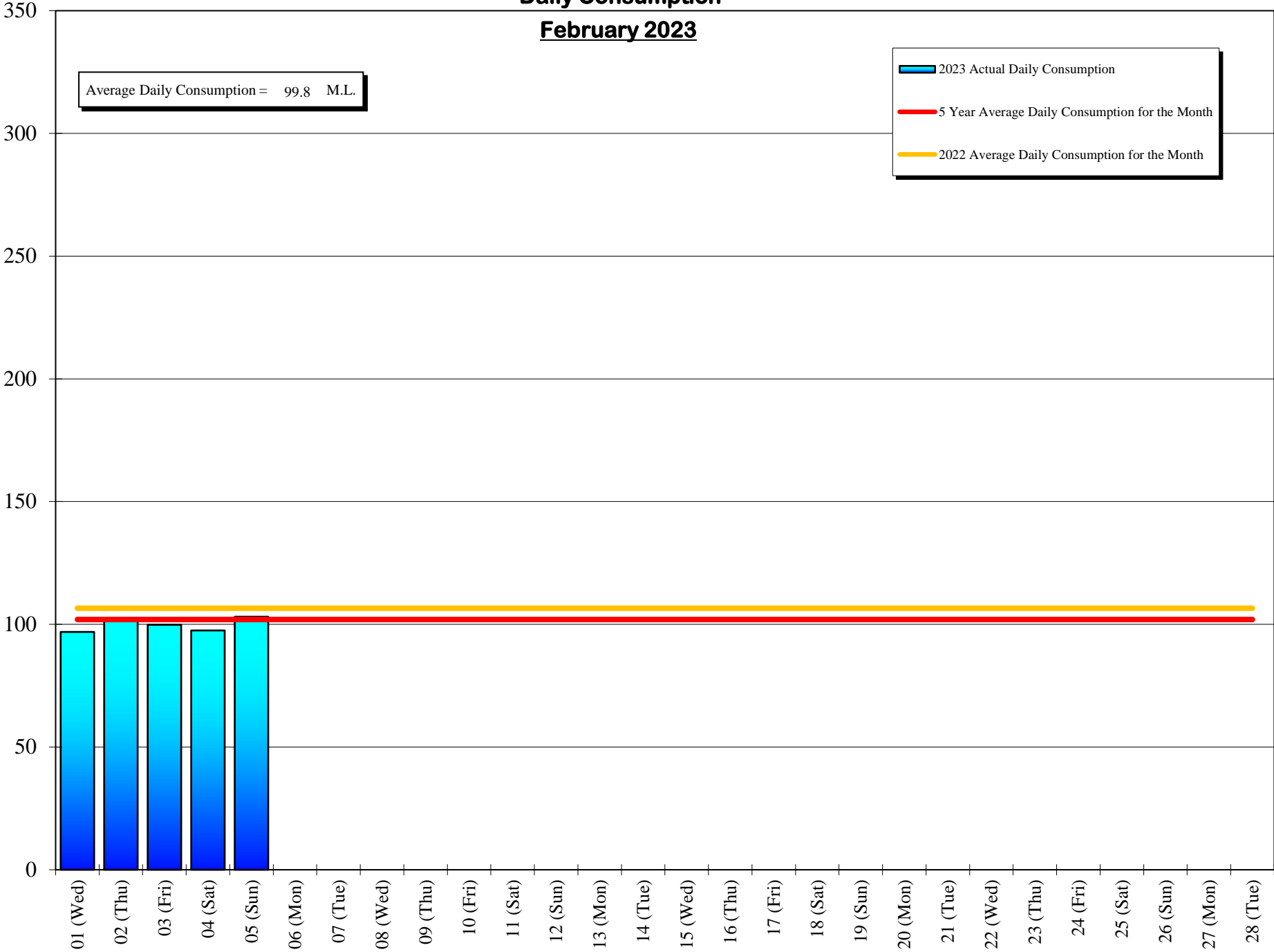
Daily Consumption

February 2023

Consumption (Million Litres)

Average Daily Consumption = 99.8 M.L.

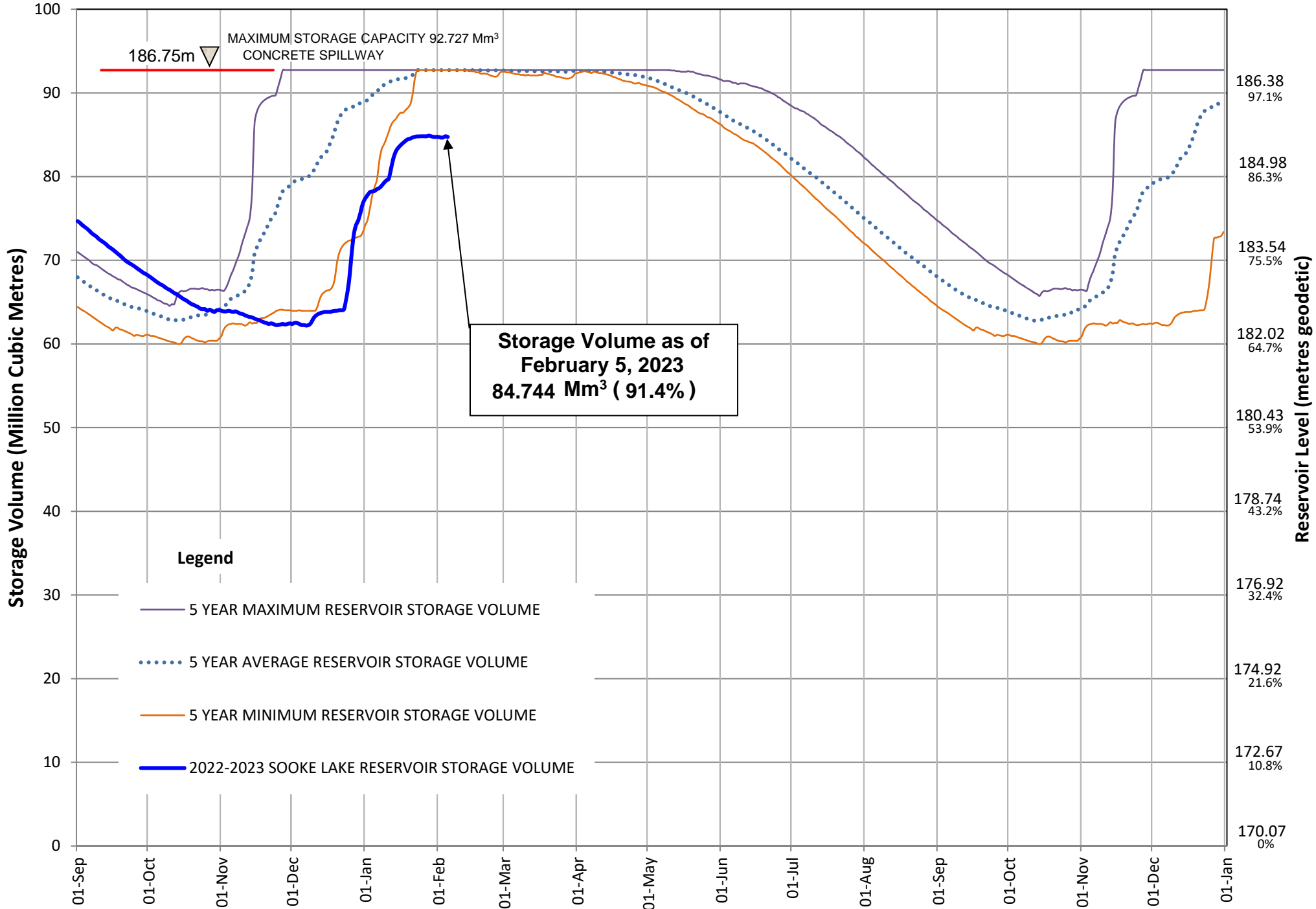
- 2023 Actual Daily Consumption
- 5 Year Average Daily Consumption for the Month
- 2022 Average Daily Consumption for the Month



Day

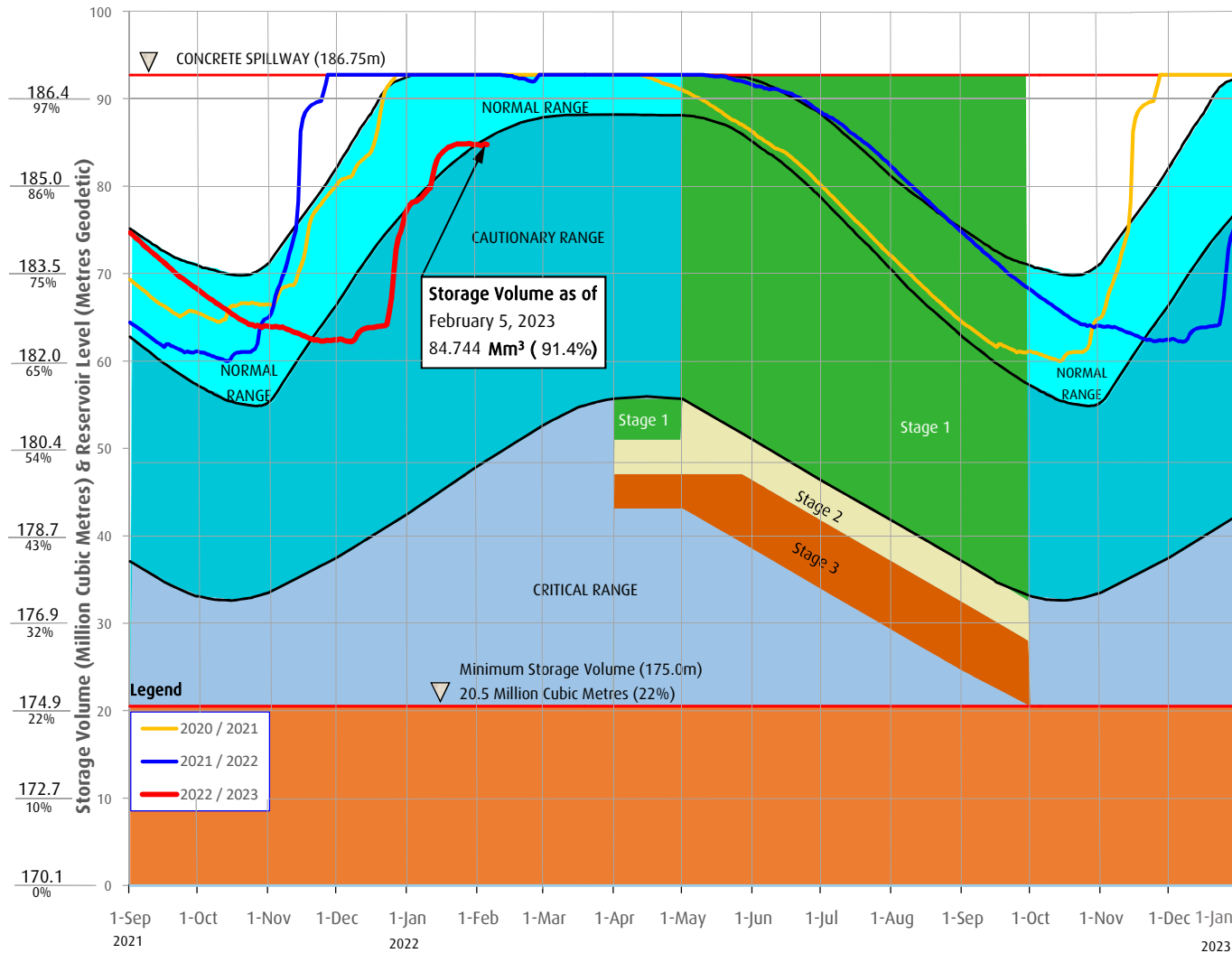
SOOKE LAKE RESERVOIR STORAGE SUMMARY

2022 / 2023



Sooke Lake Reservoir Storage Level

Water Supply Management Plan



FAQs

How are water restriction stages determined?

Several factors are considered when determining water use restriction stages, including,

1. Time of year and typical seasonal water demand trends;
2. Precipitation and temperature conditions and forecasts;
3. Storage levels and storage volumes of water reservoirs (Sooke Lake Reservoir and the Goldstream Reservoirs) and draw down rates;
4. Stream flows and inflows into Sooke Lake Reservoir;
5. Water usage, recent consumption and trends; and customer compliance with restriction;
6. Water supply system performance.

The Regional Water Supply Commission will consider the above factors in making a determination to implement stage 2 or 3 restrictions, under the Water Conservation Bylaw.

At any time of the year and regardless of the water use restriction storage, customers are encouraged to limit discretionary water use in order to maximize the amount of water in the Regional Water Supply System Reservoirs available for nondiscretionary potable water use.

Stage 1 is normally initiated every year from May 1 to September 30 to manage outdoor use during the summer months. During this time, lawn watering is permitted twice a week at different times for even and odd numbered addresses.

Stage 2 is initiated when it is determined that there is an acute water supply shortage. During this time, lawn water is permitted once a week at different times for even and odd numbered addresses.

Stage 3 is initiated when it is determined that there is a severe water supply shortage. During this time, lawn watering is not permitted. Other outdoor water use activities are restricted as well.

For more information, visit www.crd.bc.ca/drinkingwater

Useable Reservoir Volumes in Storage for February 05, 2023

