



## Notice of Meeting and Meeting Agenda Regional Water Supply Commission

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Wednesday, October 20, 2021

11:30 AM

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

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### Members:

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

### 1. TERRITORIAL ACKNOWLEDGEMENT

### 2. APPROVAL OF THE AGENDA

### 3. ADOPTION OF MINUTES

#### 3.1. [21-764](#) Draft Minutes of the July 21, 2021 Meeting

**Recommendation:** That the minutes of the July 21, 2021 meeting be adopted.

**Attachments:** [July 21, 2021 Draft Minutes](#)

### 4. CHAIR'S REMARKS

### 5. PRESENTATIONS/DELEGATIONS

*This meeting will be held by Live Webcast without the public present.*

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

### 6. GENERAL MANAGER'S REPORT

#### 6.1. Water Supply Outlook [Verbal]

### 7. WATER ADVISORY COMMITTEE UPDATE

### 8. COMMISSION BUSINESS

8.1. [21-770](#) Water Conservation Initiative - Once-Through Cooling Project Reduced Rebates Program

**Recommendation:** That staff be directed to advertise and administer a once-through cooling equipment replacement rebate program in the 2022-2026 budgets for a total amount of \$20,000 per year up to a maximum of \$2,500 per water account.  
(WA - Weighted vote of all Commissioners)

**Attachments:** [Staff Report: Water Conservation Initiative – Once-Through Cooling Project Rec](#)  
[Appendix A: Once-Through Cooling Rebates Program Formula](#)

8.2. [21-264](#) 2022 Service Planning - Water

**Recommendation:** The Regional Water Supply Commission recommends the Committee of the Whole recommend to the Capital Regional District Board:  
That Appendix A, Community Need Summary - Water be approved as presented and form the basis of the 2022-2026 Financial Plan.  
(NWA - Non-weighted vote of all Commissioners)

**Attachments:** [Staff Report: 2022 Service Planning - Water](#)  
[Appendix A: Community Need Summary – Water](#)  
[Appendix B: Capital Plan Report](#)  
[Appendix C: Initiatives Progress Report](#)

8.3. [21-765](#) Regional Water Supply Service 2022 Operating and Capital Budget

**Recommendation:** That the Regional Water Supply Commission recommends the Committee of the Whole recommends to the Capital Regional District Board to:

1. Approve the 2022 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2022 wholesale water rate of \$0.7332 per cubic metre;
3. Approve the 2022 agricultural water rate of \$0.2105 per cubic metre;
4. Direct staff to balance the 2021 actual revenue and expense on the transfer to the water capital fund; and
5. Direct staff to amend the Water Rates Bylaw accordingly.

(WA - Weighted vote of all Commissioners)

**Attachments:** [Staff Report: Regional Water Supply Service 2022 Operating and Capital Budget](#)  
[Appendix A: 2022 Regional Water Supply Service Budget](#)  
[Appendix B: Long Term Debt Obligations Summary](#)  
[Appendix C: Agricultural Water Volumes and Rate Payments for 2011 – 2020](#)  
[Appendix D: Wholesale Water Rate History and Projection](#)

8.4. [21-769](#) Water Quality Summary Report for Greater Victoria Drinking Water System - April to June 2021

**Recommendation:** That the Regional Water Supply Commission receives the Water Quality Summary Report for the Greater Victoria Drinking Water System - April to June 2021 for information.  
(NWA - Non-weighted vote of all Commissioners)

**Attachments:** [Staff Report: Water Quality Summary Report for Greater Victoria Drinking Water](#)  
[Appendix A: Water Quality Summary Report - April to June 2021](#)

**8.5.      [21-766](#)      Summary of Recommendations from Other Water Commissions**

**Recommendation:** That the Regional Water Supply Commission receives the summary of recommendations from other water commissions for information.  
(NWA - Non-weighted vote of all Commissioners)

**Attachments:**      [Summary of Recommendations from Other Water Commissions](#)

**8.6.      [21-767](#)      Water Watch Report**

**Recommendation:** That the Regional Water Supply Commission receives the October 11, 2021 water watch report for information.  
(NWA - Non-weighted vote of all Commissioners)

**Attachments:**      [Water Watch Report](#)

**9. NOTICE(S) OF MOTION****10. NEW BUSINESS****11. MOTION TO CLOSE THE MEETING****11.1.      21-768      Motion to Close the Meeting**

**Recommendation:** That the meeting be closed in accordance with the Community Charter, Part 4, Division 3 for  
1. Land Acquisition/Disposition under Section 90 (1)(e)  
2. Personal Information under Section 90 (1)(a)

**12. RISE AND REPORT****13. ADJOURNMENT**

To ensure quorum, please contact Denise Dionne at [ddionne@crd.bc.ca](mailto:ddionne@crd.bc.ca) or 250.360.3087 if you or your alternate cannot attend.

**Voting Key:**

**NWA - Non-weighted vote of all Commissioners**

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

**WA - Weighted vote of all Commissioners**

**WP - Weighted vote of participants (as listed)**

## Meeting Minutes

### Regional Water Supply Commission

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Wednesday, July 21, 2021

11:30 AM

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

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Regional Water Supply Commission

Meeting Minutes

July 21, 2021

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#### PRESENT:

L. Szpak (Chair); G. Baird (Vice Chair); Z. de Vries(12:25 pm) (EP); S. Dubow (EP); S. Duncan;  
K. Harper (EP); M. Hicks (EP); B. Isitt (EP)(11:51 am); K. Kahakauwila (EP); G. Logan (EP);  
J. Loveday; R. Mersereau(EP); T. Morrison (EP); J. Rogers (EP); C. Stock; N. Taylor;  
R. Wade (EP); E. Paterson (for E. Wood Zhelka) (EP); G. Young

#### STAFF:

R. Lapham, CAO; T. Robbins, General Manager; A. Constabel, Senior Manager, Watershed Protection;  
I. Jesney, Senior Manager, Infrastructure Engineering; G. Harris, Senior Manager, Environmental  
Protection; J. Ussery, Manager, Resource Planning; S. Carey, Manager, Legal Services; D. Dionne,  
Administrative Coordinator; T. Duthie, Manager, Administrative Services; S. Orr, Senior Committee  
Clerk (Recorder)

REGRETS: N. Chambers, C. Graham, E. Wood Zhelka

EP – Electronic Participation

The meeting was called to order at 11:30 a.m.

#### 1. TERRITORIAL ACKNOWLEDGEMENT

Vice-Chair Baird provided the Territorial Acknowledgement.

#### 2. APPROVAL OF THE AGENDA

**MOVED** by Commissioner Stock, **SECONDED** by Commissioner Loveday,  
That the agenda be approved as circulated.

**CARRIED**

#### 3. ADOPTION OF MINUTES

- 3.1. [21-528](#) Adoption of the June 16, 2021 Regional Water Supply Commission Minutes

**Attachments:** [Draft Minutes - June 16, 2021](#)

**MOVED by Commissioner Baird, SECONDED by Commissioner St-Pierre,  
That the minutes of the June 16, 2021 meeting be adopted.**

**CARRIED**

#### 4. REPORT OF THE CHAIR

Chair Szpak expressed her appreciation to the staff that clean and prepare the meeting rooms.

#### 5. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

#### 6. GENERAL MANAGER'S REPORT

##### 6.1. Water Supply Outlook [Verbal]

T. Robbins reported that:

- Sooke Lake Reservoir is currently at 81% of full storage capacity.
- The heat wave drove high consumption.
- Water supply is being monitored and staff continue to encourage residents to use water wisely.
- Local Service Areas are at Stage 3 water conservation levels and are being closely monitored.
- Under the BC Wildfire Service support agreement with the Province of BC, Capital Regional District (CRD) initial attack crews have been on stand-by for wildfire service and were dispatched to Muir Creek fire last Friday night.
- Staff continue to monitor fire risk within the watershed on a daily basis which is priority before committing staff under the support agreement.

Staff answered questions from staff regarding:

- Heat wave effects on vegetation in the watershed

#### 7. WATER ADVISORY COMMITTEE BUSINESS

- 7.1. [21-533](#) Draft minutes of the June 22, 2021 Water Advisory Committee special meeting.

**Attachments:** [Draft Water Advisory Committee Minutes - June 22](#)

**MOVED by Commissioner Baird, SECONDED by Commissioner Stock,  
That the draft minutes of the June 22, 2021 Water Advisory Committee  
special meeting be received for information.**

**CARRIED**

**8. COMMISSION BUSINESS****8.1. [21-499](#) Regional pH & Corrosion Study Update**

**Attachments:** [Staff Report: Regional pH & Corrosion Study Update](#)  
[Appendix A: Lead Sampling Procedure](#)

G. Harris spoke to Item 8.1.

Staff answered questions regarding:

- Budget requirements
- Local government involvement
- Aging infrastructure and lead exposure

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

**CARRIED**

**8.2. [21-478](#) Greater Victoria Water Supply Area Wildlife Program**

**Attachments:** [Staff Report: GVWSA Wildlife Program](#)  
[Appendix A: Canada Goose and American Bullfrog figures](#)  
[Appendix B: Letter from Chief Medical Health Officer regarding beaver](#)  
[Appendix C: GVWSA Protected Lands on Southern Vancouver Island](#)  
[Appendix D: SARA Listed Species Expected in the GVWSA](#)

A. Constabel spoke to Item 8.2.

**MOVED by Commissioner Stock, SECONDED by Commissioner St-Pierre,  
That the Regional Water Supply Commission receive the report for  
information.**

**CARRIED**

**8.3. [21-571](#)** Water Conservation Initiative - Once-Through Cooling Project

**Attachments:** [Staff Report: Water Conservation Initiative - Once-Through Cooling Project](#)

G. Harris spoke to Item 8.3.

Staff answered question from the Commission regarding:

- BC Building Code
- Applying for exemption similar to Metro Vancouver
- Commercial use (hotels and grocery store)
- Rebate program
- Cost increase
- Associating costs of OTC water use at properties and setting rates for that use
- Financing climate action related initiatives
- Compliance with unit replacement

Staff to follow up on whether new once-through cooling units continue to be installed.

Alternative 2 in the staff report was moved with a modification to Part 2 of the recommendation lowering the proposed \$40,000 per year amount to \$20,000 per year.

**MOVED by Commissioner Rogers, SECONDED by Commissioner Loveday,**

**That staff be directed to:**

- 1. Continue with the Regional Water Supply Demand Management Program Outreach, specifically the commercial sector based free water use assessments, that provide custom business cases for the replacement of inefficient fixtures, including once-through cooling equipment; and**
- CARRIED**

**MOVED by Commissioner Rogers, SECONDED by Commissioner Loveday,**

**That staff be directed to:**

- 2. Include a once-through cooling equipment replacement rebate program in the 2022-2026 budgets, in the amount of \$20,000 per year.**

**CARRIED**

**OPPOSED: Baird, De Vries, Duncan, Harper, Mersereau, Morrison, Stock, Young**

Discussion ensued regarding:

- Current education program
- Provincial allowances may shift
- Budgetary amount and allocation of funds
- Union of BC Municipalities (UBCM) Resolution
- Hotel definition

**MOVED** by Commissioner Young, **SECONDED** by Commissioner Baird,  
That staff recommend a program of reduced rebates to fit within the  
approved \$20,000 per year budget.

**CARRIED**

**OPPOSED:** Duncan

**8.4.     [21-529](#)**           Summary of Recommendations from Other Water Commissions

**Attachments:**   [Summary of Recommendations from Other Water Commissions](#)

Staff answered questions regarding the Financial implications from Seagirt  
Improvement District Conversion.

**MOVED** by Commissioner Stock, **SECONDED** by Commissioner St-Pierre,  
That the summary of recommendations from other water commissions be  
received for information.

**CARRIED**

**8.5.     [21-530](#)**           Water Watch Report

**Attachments:**   [July 12, 2021 Water Watch Report](#)

**MOVED** by Commissioner Stock, **SECONDED** by Commissioner St-Pierre,  
That the water watch reports be received for information.

**CARRIED**

**9. NOTICE(S) OF MOTION**

**9.1.     [21-531](#)**           Motion with Notice (June 16, 2021) - Commissioner Isitt

**Attachments:**   [Motion with Notice: Land Acquisition Priorities](#)

**MOVED** by Commissioner Isitt, **SECONDED** by Commissioner St-Pierre,  
That the Regional Water Supply Commission direct staff to provide a  
report, in a closed meeting, on land acquisition priorities.

**CARRIED**

Commissioners Harper and Wade left the meeting at 12:42 p.m.

**10. NEW BUSINESS**

There was no new business.

**11. MOTION TO CLOSE THE MEETING**



11.1. [21-482](#)

Motion to Close the Meeting

**MOVED** by Commissioner Stock, **SECONDED** by Commissioner St-Pierre,  
That the meeting be closed for Legal Advice in accordance with Section  
90 (1)(i) of the Community Charter.

**CARRIED**

The Regional Water Supply Commission moved into closed session at 12:46  
p.m.

## 12. RISE AND REPORT

The Regional Water Supply Commission rose from its closed session at 1:02  
p.m. without report.

## 13. ADJOURNMENT

**MOVED** by Commissioner Baird, **SECONDED** by Commissioner Stock,  
That the July 21, 2021 meeting of the Regional Water Supply Commission  
be adjourned at 1:02 p.m.

**CARRIED**

\_\_\_\_\_  
Chair

\_\_\_\_\_  
Recorder

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, OCTOBER 20, 2021**

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**SUBJECT**     **Water Conservation Initiative - Once-Through Cooling Project Reduced Rebates Program**

**ISSUE SUMMARY**

To recommend a program of reduced Once-Through Cooling rebates to fit within the approved budget.

**BACKGROUND**

Water conservation is a key focus of the demand management program in support of delivering the regional drinking water service. Staff have recently addressed once-through cooling units (OTCs) with targeted outreach and education. These units, which transfer heat to a continuously running supply of cold water, account for as much as 6% of the water consumption in the region. Typical OTC appliances include air conditioners, refrigerators and ice machines. Best estimates indicate that approximately 150-200 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. At the July 21, 2021 Regional Water Supply Commission meeting, staff were directed to report back on recommendations for a reduced OTC rebate program to fit within the approved \$20,000 per year budget.

The Capital Regional District's (CRD) previous rebate program which ran from 2007-2014 resulted in the replacement of 202 units and saved an estimated 746,000 m<sup>3</sup> of potable water per year, or the equivalent average annual water consumption of 3,600 homes. The CRD distributed approximately \$262,000 in rebates during the program: a one-time cost of \$0.35/m<sup>3</sup> of water saved annually. Rebate amounts were calculated based on cooling capacity, up to a maximum of \$5,000 per water account. Few of the rebates reached the maximum, averaging about \$2,000 per applicant.

A similar program can be administered now using the same formula that was used previously, but with a reduced maximum rebate given per individual water account. The program would be promoted through advertising to sectors identified as likely to use OTC, direct mail-outs to businesses confirmed to have OTC, and refrigeration service providers.

**ALTERNATIVES**

*Alternative 1*

That staff be directed to advertise and administer a once-through cooling equipment replacement rebate program in the 2022-2026 budgets for a total amount of \$20,000 per year up to a maximum of \$2,500 per water account.

*Alternative 2*

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

## **IMPLICATIONS**

### *Environmental Implications*

Removal of OTC units from the region will lead to a significant reduction in the amount of water consumed. A typical 1-tonne (12,000 British Thermal Unit) refrigeration-condensing unit uses 1,600 m<sup>3</sup> of potable water/year. Depending on the ice machine, a water-cooled unit could use between 200 and 600 m<sup>3</sup>/year. Based on the estimate of 150 units, and assuming 30% of the estimated number of units remaining are coolers and the rest ice machines, known OTC use could be approximately 110,000-120,000 m<sup>3</sup>/year.

### *Financial Implications*

An additional budget of \$20,000 per year has been prioritized in the 2022-2026 operational budget for the reduced OTC rebate program. Administration and advertising for the new program is possible within the existing Demand Management operating budget. The program will also continue to provide free water use assessments for targeted business sectors, outreach and education, and engagement with provincial staff on a potential regional ban.

### *Environmental & Climate Implications*

Reducing water use from OTC equipment is a cost-effective and proactive approach to water conservation that helps to mitigate the effects of climate change and regional growth by protecting the region's water supply, and deferring the need for expansion by promoting water conservation and lower demand. For reference, these efforts also link to reduced wastewater conveyance volumes, as well as protecting future treatment capacity.

## **CONCLUSION**

The reduction and elimination of once-through cooling units (OTC) is a key component of the water conservation strategy for the regional water service. Efforts to date have reduced the number of units and resulted in significant water savings. Staff will continue to use education and outreach to promote free water assessments that support the business case to replace these units, as well as pursuing a potential ban on these units with the provincial government. Additionally, the approved \$20,000 per year in the 2022-2026 operational budgets will be used to administer a rebate program using existing allocated staff time to further encourage replacement of OTC units.

## **RECOMMENDATION**

That staff be directed to advertise and administer a once-through cooling equipment replacement rebate program in the 2022-2026 budgets for a total amount of \$20,000 per year up to a maximum of \$2,500 per water account.

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: Once -Through Cooling Rebates Program Formula

## ONCE-THROUGH COOLING REBATES PROGRAM FORMULA

October 2021

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The formula used for the rebate program that ran from 2007 to 2014 to determine the rebate amount was \$0.10/BTU\*/h (for a packaged condensing unit) or \$0.20/BTU/h (for an icemaker), with a maximum of \$5000 per water user account.

A program could be administered using a similar formula with a reduced amount per BTU. For example, \$0.05/BTU/h (for a packaged condensing unit) or \$0.10/BTU/h (for an icemaker) up to a maximum of \$2,500 per water account. Under this program, a typical 12,000 BTU condenser would see a rebate of \$600 and a typical ice machine replacement would receive a rebate of \$300. This formula would allow a reasonable quantity of rebates to be issued per year (approximately 33 condensing units or 66 ice machines), but each individual rebate would be small.

\* *British Thermal Unit*

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, OCTOBER 20, 2021**

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**SUBJECT     2022 Service Planning - Water**

**ISSUE SUMMARY**

To provide the Regional Water Supply Commission with an overview of core service levels, new and progressing initiatives and performance metrics related to the Water Community Need. These activities are undertaken by the Integrated Water Services Department and deliver on approved Board Strategic Priorities and the Capital Regional District (CRD) Corporate Plan.

**BACKGROUND**

The CRD Board identified its strategic priorities in early 2019. Subsequently, staff prepared the 2019-2022 CRD Corporate Plan to align with this direction. The CRD Corporate Plan presents the work the CRD needs to deliver over the Board term to meet the region's fifteen most important needs (community needs). These initiatives are delivered in conjunction with the mandated core services and regulatory requirements that the CRD is accountable for delivering. The priorities were re-confirmed by the CRD Board at the annual check-ins on May 13, 2020 and May 12, 2021.

At the start of the Board term, staff identified that the ambitious plan for the region would require a significant amount of effort and resources to action and implement Board and Corporate Priorities and to keep pace with the anticipated increase in service demands, primarily driven by population growth and construction activity. The general level of effort deployed by the organization has been increasing to keep pace since the direction was set and in some cases emerging trends and changes in economic activity has had a significant impact on the demand for services driving additional resource requirements.

This is the final year of service plan and budget approvals for this CRD Board as well as the final year of implementation of its strategic priorities. For 2022, staff are recommending a significant package of work to finalize the delivery of the strategic priorities and CRD Corporate Plan. Implementation timeframes for much of the work initiated in 2022 will carry into 2023.

2022 is a transition year for the CRD Board. Staff anticipate that any service planning requests for 2023 will be focused on operational adjustments while the Board is determining its strategic priorities for the 2023-2026 term.

The Community Need Summary Report (Appendix A) provides an overview of the strategic context for service areas by department, core service levels for services, new initiatives and a summary of the business model and performance metrics associated with targeted outcomes.

## **ALTERNATIVES**

### *Alternative 1*

The Regional Water Supply Commission recommends the Committee of the Whole recommend to the Capital Regional District Board:

That Appendix A, Community Need Summary – Water, be approved as presented and form the basis of the 2022-2026 Financial Plan.

### *Alternative 2*

The Regional Water Supply Commission recommends the Committee of the Whole recommend to the Capital Regional District Board:

That Appendix A, Community Need Summary – Water, be approved as amended and form the basis of the 2022-2026 Financial Plan.

## **IMPLICATIONS**

The Executive Leadership Team (ELT) is taking steps to mitigate the financial impacts resulting from the work. ELT has reviewed the phasing of the work for 2022 to ensure that the activities and resources are allocated as efficiently as possible. Phasing out the initiatives over a longer period of time helps avoid delays which can occur when staff are too thinly spread across projects. Additionally, timing initiatives to start mid-year will also reduce the impact in 2022, but will have an incremental annualization impact in 2023 for ongoing impacts.

The CRD continues to look for ways to fund its services in a manner that relieves affordability pressure for the taxpayer. This is reflected in the policy for reserve balance measures and gaps/surplus which was approved by the CRD Board on July 14, 2021. The CRD has had other funding successes optimizing capital funding and leveraging grant funding in a more aggressive way than ever before.

Finally, where feasible, an incremental change management strategy has been adopted for larger projects. This means that divisions are testing out the objectives and delivery approach with a proof-of-concept and then deploying out more broadly, if the benefits can be demonstrated. This has been a successful strategy adopted for our enterprise asset management strategy deployment, for example.

A comprehensive overview of the resources required to advance the initiatives listed in all Community Need Summaries, including all proposed staffing changes, will be presented to the Committee of the Whole at the 2022 provisional budget review.

### **New Integrated Water Services initiatives proposed for 2022:**

Staff have identified three initiatives in support of this community need that will have budget implications in 2022 (Table 1). The key drivers for this work are:

1. Responding to an increase in demand or workload for an existing service: the significant on-going capital investment in the drinking water systems is generating an important asset base which has to be managed and maintained. The utility asset management scope includes oversight for 45,000+ equipment records for 35 water and wastewater services spread across 320+ sites. On-boarding new assets following design and construction is the first step in establishing an operations and maintenance plan for a new asset; then monitoring the asset performance and condition will determine a replacement schedule. In addition, the scope of

the overall utility capital program is such that a full time Contracts Coordinator is required; the role was previously split with a Committee Clerk role.

2. Advancing a Board Strategic Priority: the CRD, in line with the Climate Action & Environmental Stewardship priority, monitors the environment of the Greater Victoria Water Supply Area (GVWSA) to detect trends and events of interest to climate change.

Table 1: Water Community Need Initiatives

#	Initiative	Description	Year(s)	FTE impacts (2022)	Cost impacts (2022)	Funding source
10a-2	Infrastructure Integration Technician	On-board new assets and proactively monitor and manage asset conditions with operations and engineering teams	2022	+1.0 FTE* regular	\$65K	Allocation (Split between regional/sub-regional Water and Wastewater Services)
10d-3	Watershed Hydrology Monitoring*	Expand and increase watershed hydrology monitoring in the Greater Victoria Water Supply Area	2022 (Year 3 of 5)	--	\$150K	Fee-for-service (Regional Water Supply)
10e-1	IWS Contracts Coordinator	Departmental contract coordination and support for corporate & legislated procurement policies & procedures	2022	+1.0 FTE ongoing	\$94K	Allocation (Split between regional/sub-regional Water and Wastewater Services)

*Blue highlighted areas are initiatives that directly address a Board Priority.*

*\* Also includes minor support service(s) adjustment*

This information reflects the business case costs which the executive leadership team reviewed as part of their annual assessment of initiatives.

#### 10a-2 Infrastructure Integration Technician

There is currently a delay in receiving and recording new and updated asset information (on-boarding new assets) in the system and developing preventative maintenance plans, in line with the Corporate Asset Management Strategy. Proactively monitoring and managing asset condition is a crucial part of improving the reliability of the water and wastewater infrastructure and service.

Initiative 10a-2 seeks to create a new ongoing position (+1.0 FTE) in the Customer & Technical Services division to follow-up on capital programs and corrective maintenance actions and gather

and record information about assets in a manner that supports the development of future maintenance programs and decision-making. The resource will also build a program for performing on-site audits of critical facilities.

This initiative will also increase demand and requirements for support services (e.g. asset information, asset management support, technical support, etc.). This initiative, alongside others, will result in a small adjustment to the Financial Services and Information Technology & GIS staffing model to accommodate the demand. To provide full transparency, the financial impact of the initiative reflects the whole cost of delivering the work, including flow-down impacts on support services. The position funding will be shared across the regional/sub-regional water and wastewater services.

#### 10d-3 Watershed Hydrology Monitoring

The CRD monitors the environment (hydrology and meteorology) of the GVWSA to detect trends and events of interest to climate change (e.g. forest change, wildfires). This directly supports the Climate Action & Environmental Stewardship Board Priority.

The data also informs and supports decision-making in relation to infrastructure upgrades and data modelling about current and future water quality and supply. The existing monitoring of the Sooke and Goldstream water supply areas, as well as the newly instrumented Leech water supply area, require increased or new monitoring and maintenance efforts.

Initiative 10d-3 seeks to renew the annual specialist service contract to install, modify and maintain hydromet instrumentation as well as collect, quality assure and analyze hydromet data. The contract was funded through a single supplementary budget increase request in 2020 and 2021. In year 2024, staff will determine the on-going requirement.

#### 10e-1 Contracts Coordinator

The Integrated Water Services department has experienced growth in capital projects being delivered across all of the water and wastewater utility services as well as additional demand for support required for the expanded core area wastewater service. This has resulted in a material increase in contract management activities.

Initiative 10e-1 seeks to create a new position (+1.0 FTE) in the Integrated Water Services Administrative Services division to provide cross-departmental contract coordination and support corporate and local government procurement policies and procedures. The function was previously included under a committee clerk role. This initiative results in a dedicated Contracts Coordinator role.

#### *Alignment with Board & Corporate Priorities*

The direction given to staff was to bring forward work that is of essential nature. This was defined as:

- Initiatives that provide for public health and safety and/or deliver on a regulatory requirement
- Initiatives that are required to deliver the Board Strategic Priorities
- Initiatives that will prevent the materialization of significant negative impacts on service customers, partners, the region, local services or the CRD's finances



- Initiatives that minimise the materialization of financial, reputational or other risks and liabilities for the CRD by ensuring the organisation is keeping pace with expectations and demand
- There is an imperative to deliver the work immediately and/or quickly

The Executive Leadership Team has reviewed and assessed all business cases against the criteria. The consolidated package of work is appropriate and commensurate to the challenge facing the organization.

### **CONCLUSION**

Staff have been progressing initiatives and actions identified in the Capital Regional District (CRD) Corporate Plan, including Board Strategic Priorities. The CRD Board determines resourcing through its annual review and approval of financial plans. As per previous years, to support the Board's decision-making, staff are providing recommendations on funding, timing and service levels through the service and financial planning processes.

### **RECOMMENDATION**

The Regional Water Supply Commission recommends the Committee of the Whole recommend to the Capital Regional District Board:

That Appendix A, Community Need Summary – Water, be approved as presented and form the basis of the 2022-2026 Financial Plan.

Submitted:	Ted Robbins, B. Sc., C. Tech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

### **ATTACHMENTS**

Appendix A: Community Need Summary – Water

Appendix B: Capital Plan Report

Appendix C: Initiatives Progress Report

# Community Need

2022 Summary

## Water

### Strategy

#### Target Outcome

We envisage a sustainable and resilient water supply.

#### Strategic Context

##### Strategies

- [Regional Water Supply Strategic Plan](#)
- [Regional Growth Strategy](#)
- [Special Task Force on First Nations Relations](#)
- [Statement of Reconciliation](#)

##### Trends, risks and issues

- **Security and patrols:** there have been an increased number of security incursions/recreational pressure into the Greater Victoria Water Supply Area (GVWSA) from Sooke Hills Wilderness Regional Park and from the rapidly developing residential area around Langford and Goldstream. This is putting additional pressure on the Watershed team.
- **Climate Action:** the most significant risks for water services relate to climate and environmental changes. Predicted trends of drier, hotter summers will impact the water services in a number of ways:
  - Demand for water, including for local agricultural activities – this is monitored closely and evaluated against historical trends. Model predictions are updated for areas exhibiting higher than predicted demands, this will inform future infrastructure upgrades to meet growing demands.
  - Water quality may be affected due to increased biological growth in the source water and distribution system; expecting to see increasing pressure to include filtration as a step in the RWS treatment process
  - In the GVWSA, increasing periods of elevated wildfire risk, peak flows from winter storms, drought stress on trees which could lead to increased mortality and forest pests/diseases
  - Increased risk of power outages
- **Infrastructure Vulnerability, resiliency, and Emergency Preparedness:** we are seeing increases in operation and maintenance demand from a growing region combined with aging infrastructure. An updated Water Management Plan for water supply will identify a strategy to address supply (quantity) and critical delivery infrastructure (redundancy) needs
- **Asset Management:** the ongoing trend in reviewing, updating and completing asset management plans and the continuous upgrading, replacement and growth of assets in the water and wastewater systems

# Community Need

## 2022 Summary

rely on having an up-to-date asset registry as well as an asset onboarding process. Both the Scottish Water Review in 2018 and the EMA Readiness Assessment of 2020 highlighted the need for a reliable asset registry for Water and Wastewater.

- The risk of assets not being maintained, replaced in a timely manner and failing could impact the CRD's ability to provide the expected water and wastewater level of service and could even result in environmental and public safety risks.
- The asset registry is an important step in ensuring that assets are captured in the Maintenance Management System and Preventative Maintenance Plans are developed. This information is also critical with regards to capital and financial planning for the utility services.

## Services

Core Services Levels	
Service	Levels
<b>Regional Water Supply (RWS), Juan de Fuca (JdF) Water Distribution, Saanich Peninsula Water and Small Water Systems in the Electoral Areas (EAs)</b> Wholesale water supply to the 370,000 consumers in Greater Victoria and residents in three municipalities on the Saanich Peninsula, water distribution system within Langford, Sooke, View Royal, Colwood, East Sooke, Metchosin and Highlands and the small water systems in the EAs supported through following key service areas:	
<b>Water Systems Operations and Maintenance</b> Water treatment, supply and distribution system operation and monitoring. System and facility maintenance, consumables management and preventative maintenance	<ul style="list-style-type: none"> <li>• 24/7 water treatment operations for two facilities for Greater Victoria              ➔ Service level adjusted (absorbed), assessment following recent reclassification of two facilities to level III treatment plants showed need to increase staffing levels &amp; operator certification level; addressed through internal staffing shifts</li> <li>• Supply and distribution system operation</li> <li>• System monitoring</li> <li>• Customer service</li> <li>• System and facility maintenance</li> <li>• Consumables management</li> <li>• Component preventative maintenance</li> </ul>
<b>Emergency Response/System Failure</b> Water main breaks	<ul style="list-style-type: none"> <li>• 24/7 emergency response to water main breaks and other system emergencies</li> </ul>
<b>Infrastructure Planning</b>	<ul style="list-style-type: none"> <li>• Asset management and capital planning              ➔ Service level adjusted, see IBC 10a-2</li> </ul>

# Community Need

## 2022 Summary

Strategic asset management for all services/systems including modeling and capacity analysis, vulnerability assessment, infrastructure renewal plans.	<ul style="list-style-type: none"> <li>• Adjust plans for 15 water services</li> <li>• System expansion and growth planning</li> </ul>
<b>Capital Project Delivery and Works</b> Project design, procurement and delivery of capital projects annually on time/budget. Main installations, dam upgrades, equipment replacement and capital projects support	<ul style="list-style-type: none"> <li>• Capital program delivery</li> <li>• Water main installations and equipment replacement</li> <li>• Dam maintenance and upgrade projects</li> <li>• Capital project support &amp; contract management              → Service level adjusted, see IBC 10e-1</li> </ul>
<b>Engineering Services</b> Development referrals, survey and mapping, engineering support to utility operations, and dam safety inspections and administration.	<ul style="list-style-type: none"> <li>• Engineering support of utility operations for the 15 water services.</li> </ul>
<b>Watershed Protection</b> Forest land management of the 20,550 hectares of the Greater Victoria Water Supply Area to ensure high-quality source drinking water for the Regional Water Supply System through following service areas:	
<b>Wildfire, Security &amp; Emergency Response:</b> Watershed security, and wildfire and spill preparedness, prevention and response	<ul style="list-style-type: none"> <li>• 24/7 watershed emergency duty officer standby</li> <li>• Security/wildfire patrols (weekends and holidays; daily during elevated fire conditions)</li> <li>• Wildfire detection air patrol during high and extreme fire hazard</li> </ul>
<b>Watershed Operations</b> Silviculture, forest health and forest fuel management; invasive plant management; vegetation management and road maintenance, upgrades and rehabilitation	<ul style="list-style-type: none"> <li>• Winter/summer road maintenance</li> <li>• Culvert and bridge upgrades to accommodate higher peak flows to higher standards and changing climate</li> <li>• Fuel management treatment and fire smarting maintenance</li> <li>• Brushing around facilities, dams, for tree release</li> <li>• Danger tree assessment and removal along roads and powerlines</li> <li>• Invasive plant management</li> </ul>
<b>Resource Planning</b> Wildlife management, ecological inventories and analyses, risk assessment and management, and GIS and data management	<ul style="list-style-type: none"> <li>• Development of a comprehensive hydrology monitoring program</li> <li>• Annual forest health survey</li> <li>• Partnering in climate change and other research in the GVWSA</li> <li>• Management of beaver, Canada geese and bullfrogs</li> <li>• Public tours of the Water Supply Area and facilities</li> </ul>

# Community Need

## 2022 Summary

<b>Environmental Protection</b> Regulatory and non-regulatory services and a support role across the organization that focuses on enhanced integration of drinking water quality protection programs and integration of communication initiatives.	
<b>Water Quality</b> Monitoring, assessment, reporting and technical advice to meet water quality regulatory requirements	<ul style="list-style-type: none"> <li>• Source water and distribution system monitoring, assessment and reporting</li> <li>• Physical, chemical and biological analytical services, assessment and reporting</li> </ul>
<b>Demand Management</b> Research and data to inform capital planning, water conservation, and communications and education	<ul style="list-style-type: none"> <li>• Accurate data</li> <li>• Per capita targets (residential and ICI)</li> </ul>
<b>Cross Connection Control</b> Oversight, monitoring and reporting of potential sources of contamination that may flow in a reverse direction into the Regional Water Supply	<ul style="list-style-type: none"> <li>• Contamination prevention through facility inspections, testing and education for backflow prevention devices</li> <li>• Monitor and track (&gt;28,000) backflow prevention devices</li> </ul>
<b>Communications &amp; Environmental Education</b> Public education and engagement in the region to promote sustainable behavior through campaigns, initiatives and services	<ul style="list-style-type: none"> <li>• Increased public awareness of CRD messages and subsequent behavior changes (declining trend in per capita and per sector water use)</li> </ul>
<b>Support Services</b>	
<b>Support Services</b> The core services listed rely on the support of several corporate and support divisions to effectively operate on a daily basis. These services are reported on in the Accountability Community Need Summary.	<ul style="list-style-type: none"> <li>• Services include Human Resources &amp; Corporate Safety, Corporate Communications, Asset Management, Financial Services, Information Technology &amp; GIS, Information Services, Legislative Services, Facility Management, Fleet Management, Legal Services, Risk &amp; Insurance and Real Estate Services.</li> </ul>

# Community Need

## 2022 Summary



Initiatives					
Ref	Initiative	Description	Year(s)	2022 impacts	
10a-2	Infrastructure Integration Technician	Proactively monitor and manage of assets conditions and develop preventative maintenance plans	2022	+1.0 FTE regular	\$65K allocation
10d-3	Watershed Hydrology Monitoring*	Expand and increase watershed hydrology monitoring in the Greater Victoria Water Supply Area	2022	--	\$150K fee-for-service
10e-1	IWS Contracts Coordinator	Departmental contract coordination and support for corporate & legislated procurement policies & procedures	2022	+1.0 FTE ongoing	\$94K allocation

# Community Need

2022 Summary



## Business Model

### Funding

#### Who contributes

##### Water Supply and Distribution:

- Regional Water Supply: All Municipalities, JdF EA, First Nations (via Distribution Systems)
- Saanich Peninsula Water Supply: Municipalities (Central Saanich, North Saanich, Sidney)
- JdF Water Distribution: Langford, Colwood, View Royal, Metchosin, Highlands, Sooke, JdF EA
- Local Water Service Areas in the EAs

##### Environmental Protection

- Water Quality Service: Allocation from Integrated Water Services and Local Service Areas (LSA) from municipalities of RWS area, JdF and various local service areas, Sidney, North Saanich, Central Saanich and Peninsula First Nations
- Demand Management, Cross Connection Control Services: water rate from all Municipalities and EAs
- Communications and Environmental Education: all Municipalities and EAs

##### Support Services

- Varies per service

#### Funding Sources

- Regional Water Supply: Bulk water sales revenue
- JdF Water Distribution System: Retail water sales revenue in West Shore Municipalities
- Saanich Peninsula Water: Wholesale water sales revenue
- Environmental Protection services: water rate and requisition

# Community Need

## 2022 Summary

### Reporting Structure

[Regional Water Supply Commission](#) – [Water Advisory Committee](#) – [Saanich Peninsula Water Commission](#) – [JDF Water Distribution Commission](#) – [Various LSA Commissions](#) (Port Renfrew, Lyall Harbour/Boot Cove, Magic Lake Estates, Skana, Beddis, Cedar Lane, Cedars of Tuam, Fernwood, Fulford, Highland, Sticks Allison, Surfside Park, Wilderness Mountain)

### Performance

Definition and Source	Service	2020 Actual	2021 Forecast	2022 Target
<b>Metric 1: Regulatory Compliance</b> Non-compliance with Island Health, provincial and federal regulatory requirements and operational certificates that result in Boil Water Advisories or Do Not Consume Events	Regional Water Supply	None	None	None
	JDF Water Distribution	None	None	None
	Saanich Peninsula Water Supply	None	None	None
	Local Services	6	4	None
<b>Metric 2A: Water Quality Sampling – Raw water</b> Water quality samples analyzed annually from source reservoirs (raw water)	Regional Water Supply	12,090	12,585	15,392
	Local Services	4,181	3,670	3,670
<b>Metric 2B: Water Quality Sampling – treated water</b> Water quality samples analyzed annually from transmission/distribution systems (treated water)	Regional Water Supply	1,753	1,787	1,787
	JDF Water Distribution	7,675	7,531	7,531
	Saanich Peninsula Water Supply	1,979	2,102	2,102
	Local Services	31,216	24,903	24,904
<b>Metric 3: Average day per capita water use (litres per capita per day)</b>	Regional Water Supply	340	337	334
	JDF Water Distribution	301	299	297
	Saanich Peninsula Water Supply	435	424	413



# Community Need

## 2022 Summary

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	Local Services	215	192	202
<b>Metric 4:</b> Annual operating cost per megaliter of drinking water treated and supplied/distributed	Regional Water Supply	\$93.80	\$100.00	\$100.00
<b>Metric 5:</b> Annual Energy use (kWh) per megaliter of drinking water treated and supplied/distributed	Regional Water Supply	66	66	66
<b>Metric 6:</b> Volume of raw water released annually from RWS watersheds to rivers to support fish habitat (megaliters)	Regional Water Supply	11,489	10,500	12,200
<b>Metric 7:</b> Number of watermain leak repairs and service line leaks annually per 100 kilometers of pipe (distribution systems)	JDF Water Distribution	0.9	0.9	<1
	Local Services	33.2	35	<30
<b>Metric 8:</b> Preventative maintenance completed	Regional Water Supply	85%	97%	100%
	JDF Water Distribution	91%	96%	100%
	Saanich Peninsula Water Supply	95%	100%	100%
	Local Services	79%	99%	100%

# Community Need

## Capital Plan Report

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### Water

#### Highlights since 2019

- The CRD has allocated **\$87M since 2019** on projects across the region that advance the Water Community Need. This was primarily funded through water fees, reserves and capital funds at hand.
- Some of the projects included:
  - Replacing aged infrastructure including asbestos cement pipes in the Juan de Fuca Water Distribution Service Area, and intake tower screening equipment at Sooke Lake Reservoir
  - Replacement of Lubbe Dam and rehabilitation of Butchart Dam number 5 and a safety review and resulting improvements at Sooke Lake Dam in the Regional Water Supply Service
  - Constructing new infrastructure to support growth related capacity needs under the Juan de Fuca Water Distribution development cost charge program
  - Completing the Regional Water Supply Master Plan update to determine long term water supply needs for the Greater Victoria Area
  - Various studies, renewals and replacement projects to support numerous local services including Beddis Water, Cedar Lane Water, Cedars of Tuam Water, Fulford Water, Highland & Fernwood Water, Highland Water, Lyall Harbort Boot Cove, Magic Lake Estates, Port Renfrew Water, Skana Water, Sticks Allison Water, Surfside Park Estates and Wilderness Mountain Water Service.

#### Planned for 2022

- The CRD will allocate **\$36M in 2022** on projects across the region that advance the Water Community Need. Projects to be undertaken include:

# Community Need



## Capital Plan Report

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- Upgrading the Rocky Point pump station, reservoir and piping and replacing aged infrastructure including asbestos cement pipes on Goldstream Avenue and several other streets throughout the Juan de Fuca Water Distribution Service
  - Planning for upgrades to vulnerable transmission main sections of the Regional Water Supply and Saanich Peninsula Water System, including Transmission Main No.4 and Main No.3
  - Replace the Ultra Violet system at the Goldstream Water Treatment Plant, the primary disinfection facility for the Regional Water Supply System
  - Undertaking design and construction of a new Watershed Operations Field Office to replace the temporary trailers currently in use
  - Replacement of vehicle and equipment used for day-to-day operations and maintenance of water systems
  - Various studies, renewals and replacement projects to support numerous local services including Beddis Water, Cedar Lane Water, Cedars of Tuam Water, Florence Lake Water System, Fulford Water, Highlands & Fernwood Water, Juan de Fuca Water Distribution, Lyall Harbour Boot Cove Water, Magic Lake Estates Water, Port Renfrew Water, Saanich Peninsula Water Supply, Skana Water, Sticks Allison Water, Surfside Park Estates and Wilderness Mountain Water.
- This work is funded through the water rates and some reserves (including equipment reserve fund) and capital funds on hand.

# Community Need

## Initiative Progress Report



### Water

Initiatives approved in 2020 and 2021			
Ref	Initiative	% Complete	Progress to date
10a-0.1	Watershed Security Position	--	Lead: Watershed Protection (2021) Not started - pending union bargaining
10a-1	Post-Disaster Water Supply Plan	On-going	Lead: Infrastructure Engineering (2020) Progressing – continued implementation of resilient infrastructure including hardened hydrants, restrained pipe and seismic valves, as well as acquisition of emergency distribution supplies. Additional education and coordination with municipal distributors and emergency services planned for 2021.
10a-2	Water Infrastructure Resilience	On-going	Lead: Infrastructure Operations Water (2020) Progressing – Infrastructure renewal programs continue with appropriate funding levels; recruitment of new staffing approved in 2020 complete.
10a-2.1	Water Infrastructure Resilience	100%	Lead: Infrastructure Operations Water (2021) Part of core services - Recruitment of new staff for 2021 is now complete and work is progressing.
10a-3	RWSSP Update	100%	Lead: Infrastructure Engineering (2020) Part of core services – continuing progress on strategic plan initiatives; progress report was presented to RWSC in October 2020.
10a-4	Cross Connection Control Inspector	100%	Lead: Environmental Protection (2021) Part of core services
10a-5	Water Billing	100%	Lead: Financial Services (2020) Part of core services - recruitment completed
10a-7	SSI + SGI Water Operations	100%	Lead: Infrastructure Operations Water (2020) Part of core services
10b-1	Water Conservation through Demand Management	100%	Lead: Environmental Protection (2020) Part of core services

# Community Need

## Initiative Progress Report

Initiatives approved in 2020 and 2021			
Ref	Initiative	% Complete	Progress to date
10c-1	Agricultural Water Subsidy	50%	Lead: Infrastructure Operations Water (2020) Progressing - Agricultural land use inventory and agricultural water demand model completed and presented to Commissions in 2020. Agricultural water rate review will be completed in 2021/2022.
10d-1	Future Water Supply + Infrastructure	70%	Lead: Infrastructure Engineering (2020) Progressing – Consultant has been retained to complete the Regional Water Master Plan Update with completion in 2021 with a focus on long term water supply and infrastructure.
10d-2	Leech River Water Quality Operations	80%	Lead: Environmental Protection (2021) Progressing - sampling completed; report being developed for Q3 2021 which will be considered in Drinking Water master Planning project
10d-4	SSI Watershed Protection	--	Lead: Environmental Protection (2020) On hold
10d-3	Watershed Hydrology Monitoring	100%	Lead: Watershed Protection (2020) Completed – funding spent on: hydrology station upgrades, stream discharge measurements, and snow analysis.
10d-3	Watershed Hydrology Monitoring	60%	Lead: Watershed Protection (2021) Progressing - continuing on from 2020 IBC into 2022, renewal of contracts to be completed on budget approval – hydrology station upgrades and discharge measurements

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, OCTOBER 20, 2021**

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**SUBJECT     Regional Water Supply Service - 2022 Operating and Capital Budget**

**ISSUE SUMMARY**

To provide an overview of the draft 2022 Regional Water Supply Service budget, highlighting the changes from the 2021 budget and the proposed 2022 budget figures. The report generally follows the information provided in the attached draft budget document (Appendix A).

**BACKGROUND**

The draft 2022 Regional Water Supply Service budget has been prepared for the Regional Water Supply Commission's (Commission) consideration. The Commission will make budget recommendations to the Capital Regional District (CRD) Board through the Committee of the Whole in October, in order to establish the wholesale water rate and approve the rate by year end through adopting a rate bylaw. As in previous years, the draft 2022 Regional Water Supply Service budget has been prepared considering the CRD Board's 2022 service planning and financial expectations, which include identifying opportunities to realign or reallocate resources and seek potential efficiencies between departments and services, reviewing service levels and adjustments related to regulatory compliance, and undertaking infrastructure improvements and upgrades to maintain service levels within the region. The following sets out the key components of the budget.

**2021 Year End Financial Projections**

Year end revenue and expenditure projections have been established and estimated variances are summarized as follows:

Budget Item	Variance (\$)	Variance (%)
Supply System operating expenditures	-\$430,174	-2.8%
Agricultural water rate funding	\$100,000	6.3%
Capital fund transfers	\$2,281,609	23.7%
Debt servicing - principal and interest expenditures	\$35,748	-0.4%
Revenue	\$1,915,687	5.5%

The lower than budgeted operating expenditures were primarily due to labour costs associated with delays/deferrals in backfilling vacant staff positions during the year. The additional revenue is a result of the unseasonal weather during the spring and summer resulting in higher water demand than budgeted. It is proposed to transfer the revenue surplus to the capital reserve fund and reduce the borrowing requirement in 2022.

## **2022 Budget**

### **Rate Base**

The rate base for 2022 has increased by \$4,706,828 from 2021. This increase relates to physical plant additions, including the final capitalization the Lubbe Dam improvements and Sooke Lake Intake Tower Screen replacement. The changes in physical plant and work in progress are listed on page 3 of the budget document and are used to project the 2021 year end total physical plant value and determine the 2022 rate base.

### **Revenue Requirement**

The revenue requirement for 2022 has increased by \$1,619,597. This is resulting from an increase in operational expenses of \$808,081, an increase in depreciation expenses of \$897,416, net of expired depreciation on existing assets, offset by a decrease in the return on the rate base of \$85,900. Although the asset base continues to grow, the decrease in the return on the rate base for 2022 occurs due to lower debt levels in the service.

### **Operating Budget**

The 2022 operating budget reflects an inflationary increase in non-discretionary expenses such as negotiated wage/salary increases, departmental support service allocation increases, and other operating expense adjustments such as chemical and electricity costs. The net core 2022 operating budget increase is \$391,081, plus additional budget requests for one-time and on-going expenditures in the amounts of \$175,000 and \$142,000 respectively. These budget adjustments are summarized as follows:

- \$25,000 one-time funding (year five of five) to support the on-going National Science and Engineering Research Council (NSERC) watershed research.
- \$150,000 one-time funding for field sampling/consulting services to establish baseline water quality and hydrology data in the Leech River – consulting contracts were funded through 2020 and 2021 one-time budget increases; in year 2024, staff will determine the on-going requirement.
- \$55,000 labour budget increase (Regional Water Supply share) for FTE (full time equivalent staff position) – Infrastructure Integration Technician to on-board new assets and develop asset plans for the service life of the assets in accordance with the Corporate Asset Management Strategy.
- \$438,000 labour budget increase for reassignment of 3.0 FTEs from the Capital Program to Goldstream Water Treatment Operations – this reassignment is in order to meet Provincial Environmental Operator Certification Program requirements and minimum staffing levels for continuous operations; the labour costs are now associated with the operating budget rather than the capital budget.
- \$87,000 labour budget increase (Regional Water Supply share) for FTE – Contracts Coordinator to provide cross-departmental contract coordination and support corporate procurement policies and procedures for construction and service contracts; the function was previously included under a committee clerk role so this initiative results in a dedicated Contracts Coordinator role.

The budgets for drinking water quality sampling, testing and reporting, as well as the cross connection control and demand management programs for the Regional Water Supply Service are included in the overall operating budget.

Operating budget forecasts for 2023-2026 have been presented for information.

#### Capital Budget

There are a number of capital projects planned for 2022 with a total value of \$26,697,250, including \$9,946,000 in carry forward projects, most of which are in-stream, multi-year projects such as the Butchart Dam No. 5 project, continuing dam safety related capital work including instrumentation integration and upgrades, and the Transmission Main No.4 segment replacement project. There is also \$2,240,000 in projects cost-shared with the Juan de Fuca Water Distribution Service (pages 11-47 of the budget document). The major projects in 2022, aside from the carry forward projects, include replacing the gatehouse at the Goldstream entrance to the water supply area and beginning the process of designing and constructing a new watershed field operations building, replacement of the ultraviolet disinfection equipment at the Goldstream Water Treatment Plant, and starting detailed design work for the Transmission Main No. 3 segment replacement project.

A five year capital plan has been presented for information. The value of the five-year (2022-2026) capital plan is currently \$99,898,250, plus \$3,800,000 in projects cost-shared with the Juan de Fuca Water Distribution Service.

#### Capital and Debt Expenditures

The 2022 capital expenditures will be partially funded through a transfer to the water capital fund budgeted at \$10,152,385, with the balance funded from existing cash reserves and borrowed funds. See pages 11-12 of the budget document for the funding source summary. 2022 debt expenditures for existing debt servicing are budgeted to be \$8,292,927. Debt servicing expenditures will decrease by \$40,740 over 2021. Additional projected water sales revenue and corresponding capital reserve fund transfer will reduce the borrowing needs in 2022. A new loan authorization in the amount of \$46,000,000 was approved this year to allow continued partial funding of the five year capital plan. The upcoming debt retirements on existing borrowings are summarized as follows:

Loan Number	Retirement Date	Loan Amount
LA3419-103	April 2023	\$7,000,000
LA3451-103	April 2023	\$60,000,000
LA3419-104	November 2023	\$8,000,000
LA3419-105	June 2024	\$9,000,000
LA3419-106	October 2024	\$1,000,000
LA3661-112	October 2025	\$6,500,000
LA3661-116	April 2026	\$1,500,000
LA3661-118	April 2027	\$4,500,000
LA3661-124	April 2028	\$1,700,000
LA3902-131	April 2030	\$3,000,000
LA3902-137	April 2031	\$1,500,000
LA3902-145	April 2033	\$5,000,000
LA4382-15X	April 2038-2040	\$23,000,000



The long term debt obligations are summarized on the attached graphs (Appendix B).

When assessing key financial health indicators, the service maintains an affordable level of debt over the next five years. The percentage of revenue dedicated to debt costs is forecast to be between 8-23%, which is less than an annual benchmark rate of 25%, albeit close to the upper recommended limit until the Leech Water Supply Area land acquisition debt is retired in 2023. Additionally, the debt funding for capital investment over the next five years does not exceed 40%. A summary indicator table is provided below:

Year	% Revenue for Debt	Capital Funded by Debt
2022	22.7%	0%
2023	20.2%	38.4%
2024	8.7%	32.3%
2025	8.2%	28.1%
2026	7.9%	0.0%

A \$314,181 transfer to the vehicle/equipment replacement fund is planned in 2022. The reserve fund balance is estimated at \$2,700,884 at year end 2021 (See reserve schedule – Page 48 of the budget document).

#### Agricultural Water Rate Funding

The total budget for the agricultural water rate funding has been increased by \$100,000 to \$1,700,000. The 2022 agricultural water rate has been maintained at the 2021 rate of \$0.2105 per cubic metre. The Regional Water Supply agricultural water rate budget funds the difference between the municipal retail water rate and the CRD agricultural water rate. As directed by the Commission, an agricultural water rate review and options study will be undertaken in 2021/2022. A summary of the agricultural water volumes and agricultural water rate payments for 2011 to 2020 is attached for information (Appendix C).

#### Water Demand

Total water demand across the Region has generally continued to increase year over year recently due to the continued rate of development and growth. This trend, combined with one of the hottest and driest years on record, is expected to result in actual demand exceeding budget demand in 2021; the 2021 year-end demand is projected to be 2,500,000 cubic metres over budget at 50,500,000 cubic metres.

The recommended 2022 water rate has been calculated using a budget demand of 49,000,000 cubic metres (Page 8 of the budget document), which is 1,000,000 cubic metres more than the volume used in the 2021 budget.

#### Proposed 2022 Wholesale Water Rate

The recommended wholesale water rate has taken into consideration the revenue required to meet operating and capital expenditures, including debt obligations and the budget demand volume established for 2022. The proposed 2022 wholesale rate is \$0.7332 per cubic metre, a

2.57% increase over the 2021 rate. The increase in annual bulk water cost for the average household using 235 cubic metres per year would be \$4.32 (Page 9 of the budget document).

#### Wholesale Water Rate History and Projection

The wholesale water rate history and projection is attached (Appendix D). The rates may be adjusted in the future to reflect actual revenue and expenditure circumstances and water demand volumes.

#### *Alternative 1*

That the Regional Water Supply Commission recommends the Committee of the Whole recommends to the Capital Regional District Board to:

1. Approve the 2022 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2022 wholesale water rate of \$0.7332 per cubic metre;
3. Approve the 2022 agricultural water rate of \$0.2105 per cubic metre;
4. Direct staff to balance the 2021 actual revenue and expense on the transfer to the water capital fund; and
5. Direct staff to amend the Water Rates Bylaw accordingly.

#### *Alternative 2*

That the Regional Water Supply Commission recommends the Committee of the Whole recommends to the Capital Regional District Board to:

1. Approve the 2022 Operating and Capital Budget and the Five Year Capital Plan as amended;
2. Approve the 2022 wholesale water rate as amended (amended rate);
3. Approve the 2022 agricultural water rate of \$0.2105 per cubic metre;
4. Direct staff to balance the 2021 actual revenue and expense on the transfer to the water capital fund; and
5. Direct staff to amend the Water Rates Bylaw accordingly.

#### **IMPLICATIONS**

If the proposed budget is amended, the implications could vary depending on how the budget is amended and the impact on specific initiatives (i.e. new initiatives), on-going operations, or the capital work program. 'One-time' reductions in reserve fund contributions could be considered by the Commission to help mitigate the budget and rate increases, but additional capital financing could result in the longer term. Although, staff have not recommended amending the agricultural water rate for 2022, the rate and rate methodology is under review this year and the Commission will consider the rate review recommendations in 2022.

Any changes in the recommended wholesale water rate would have to be incorporated in the Juan de Fuca Water Distribution Service and Saanich Peninsula Water Service budgets and rates; the Juan de Fuca Water Distribution Commission has approved their proposed 2022 budget and rate and the Saanich Peninsula Water Commission will consider their 2022 budget on October 21.

## **CONCLUSION**

The draft 2022 Regional Water Supply Service budget has been prepared for the Regional Water Supply Commission's consideration. The budget has been prepared considering the Commission and CRD Board's 2022 service planning and financial expectations. A proposed increase in operating and capital funding combined with an adjusted revenue budget, is resulting in a recommended wholesale water rate of \$0.7332 per cubic metre, a 2.57% increase over the 2021 rate.

## **RECOMMENDATION**

That the Regional Water Supply Commission recommends the Committee of the Whole recommends to the Capital Regional District Board to:

1. Approve the 2022 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2022 wholesale water rate of \$0.7332 per cubic metre;
3. Approve the 2022 agricultural water rate of \$0.2105 per cubic metre;
4. Direct staff to balance the 2021 actual revenue and expense on the transfer to the water capital fund; and
5. Direct staff to amend the Water Rates Bylaw accordingly.

Submitted by:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

## **ATTACHMENTS**

Appendix A: 2022 Regional Water Supply Service Budget  
Appendix B: Long Term Debt Obligations Summary  
Appendix C: Agricultural Water Volumes and Rate Payments for 2011 – 2020  
Appendix D: Wholesale Water Rate History and Projection

# **CAPITAL REGIONAL DISTRICT**

## **2022 BUDGET**

### **Regional Water Supply**

#### **COMMISSION REVIEW**

OCTOBER 2021

**Service:** 2.670 Regional Water Supply

**Commission:** Regional Water Supply

#### DEFINITION:

To finance, install, operate and maintain a water supply local service in the Capital Regional District, as per the Water Supply Local Service Establishment Bylaw No. 2537.

The establishment and operation of a Regional Water Supply Commission is done by Bylaw No. 2539.

#### SERVICE DESCRIPTION:

Regional Water Supply is responsible for the water supply, treatment and transmission system for the Greater Victoria region, providing wholesale water to municipalities that operate municipal distribution systems. The service administration and operation is provided by the Integrated Water Services Department.

#### PARTICIPATION:

City of Victoria  
District of Oak Bay  
District of Saanich  
Township of Esquimalt  
District of Central Saanich

Town of Sidney  
District of North Saanich  
Town of View Royal  
City of Colwood  
City of Langford

District of Metchosin  
District of Sooke  
Juan de Fuca Electoral Area  
District of Highlands

#### MAXIMUM LEVY:

No stated limit in establishment bylaw and no ability to requisition.

#### MAXIMUM CAPITAL DEBT:

Authorized:		\$137,700,000 Pre - (Consolidated MFA Loan Authorizations - Regional Water Supply Water Works Facilities)
Borrowed:		\$91,400,000 Pre - (Consolidated amounts borrowed - Regional Water Supply Water Works Facilities)
Remaining:	Expired	\$46,300,000
Authorized:		\$60,000,000 (MFA Bylaw No. 3451 - Regional Water Supply Land Acquisition)
Borrowed:		\$60,000,000 (MFA Bylaw No. 3451 - Regional Water Supply Land Acquisition)
Authorized:		\$12,500,000 2014 - (MFA Bylaw No. 3902 - Regional Water Supply Water Works Facilities)
Borrowed:		\$9,500,000
Remaining:	Expired	\$3,000,000
Authorized:		\$46,000,000 2021 - (MFA Bylaw No. 4382 - Regional Water Supply Water Works Facilities)
Borrowed:		\$0
Remaining:		\$46,000,000

#### FUNDING:

Costs are recovered through the sale of bulk water.

## Rate Base for 2022 Revenue Year

	<u>2020</u> <u>Application</u>	<u>2021</u> <u>Application</u>	<u>End of 2021</u> <u>for '22 Applic.</u>	<u>Change</u>	
<b>Wholesale System</b>					
Physical Plant	\$ 231,437,695	\$ 231,156,835	\$ 233,870,414	\$ 2,713,579	Note 1
Construction Work In Progress	6,285,937	8,055,763	9,949,386	1,893,623	Note 1
Cash Working Capital	1,991,738	2,088,652	2,188,278	99,626	
Inventory	<u>225,000</u>	<u>225,000</u>	<u>225,000</u>	<u>-</u>	
Total Wholesale Rate Base	\$ 239,940,370	\$ 241,526,250	\$ <b>246,233,078</b>	\$ 4,706,828	

Note 1: Refer to the Schedule of Change in Physical Plant & work in Progress for details.

## Revenue Requirements for 2022 Year

	2020 Application	2021 Application	2022 Application	Change
<b>Wholesale</b>				
Operations & maintenance	\$ 16,155,207	\$ 16,941,286	\$ 17,749,367	\$ 808,081
Depreciation	6,243,311	6,694,087	7,591,503	\$ 897,416
Return on rate base	<u>11,626,400</u>	<u>11,252,300</u>	<u>11,166,400</u>	<u>\$ (85,900)</u> Note 1
Subtotal of above	\$ 34,024,918	\$ 34,887,673	\$ 36,507,270	\$ 1,619,597
Non-rate revenue including unaccounted water revenue	<u>(582,060)</u>	<u>(582,060)</u>	<u>(582,060)</u>	<u>\$ -</u>
Total wholesale	\$ 33,442,858	\$ 34,305,613	\$ 35,925,210	\$ 1,619,597

Note 1: Return on rate base is calculated with reference to the long term Canada bond rate & the average debt rate.

## Schedule of Change in Physical Plant & Work In Progress

### Wholesale

Projected Asset Additions	Projected Assets Capitalized	Projected Construction Work In Progress (CWIP)	Projected Assets CWIP
Lubbe Dam Safety Improvements	\$ 2,975,025	Sooke Intake Screens	\$ 1,492,315
Sooke Intake Screens Condition Assessment/Replacement	2,136,485	Butchart Dam #5 Remediation	1,240,935
Land Acquisition - Grant Lake Parcel	655,432	Post Disaster Emergency Water Supply	737,173
Meter Replacement	386,353	Sooke Dam Safety Improvements	647,152
Kapoor Tunnel Repairs	365,848	Dam Safety Review	605,023
Watershed Security Enhancements	335,000	SCADA Repairs and Equipment Replacement	400,000
Goldstream Water Supply Area Bridge	325,000	Dam Actuators	264,966
Stelly's Pump Station Assessment	308,637	Radio Upgrades	250,000
Leech River Restoration	300,231	Dam Improvements	200,000
Valve Chamber Upgrades	300,000	Lab Information Management System	200,000
Japan Gulch Treatment Plant Upgrades	275,000	Treatment Plant Communications Upgrade	200,000
Gravel Crushing	220,000	Cathodic Protection Program	192,362
Major Main Repairs	200,000	SCADA Repairs and Equipment Replacement	189,810
SCADA	160,000	Strategic Asset Management Plan	179,380
Watershed Culvert Replacement	145,000	Critical Equip Storage Building	152,759
Sooke Spillway Gate Standby Power	143,852	Risk and Resilience Assessment	150,698
Water Supply Eqpt Upgrades	130,000	Japan Gulch Treatment Plant Upgrades	150,000
Building Modification	120,211	Water Quality Main Lab Renovation	140,140
Water Supply Equipment Upgrades	120,000	Flowcam Imaging System	140,000
Air Curtain Burner	100,000	Hydraulic Capacity Assessment	136,602
Post Disaster Emergency Water Supply	96,272	Meter Replacement	122,353
Transmission System Component Replacement	95,000	Reservoir Log Boom Replacement	111,759
Goldstream Field Operations Centre	89,082	Goldstream Field Operations Centre	100,000
Goldstream Gate Upgrade	75,000	Treatment Plant Emergency Automation	100,000
Meter Station Backflow Installation	75,000	SCADA Integration	97,967
Sooke River Road Disinfection Facility Upgrade	75,000	Dam Emergency Plan & Manual Updates	90,593
Cathodic Protection Program	74,625	Dam Decommissioning	84,874
Watershed Facilities Upgrade	64,932	Water Quality Database Upgrade	80,022
Gravel Road Compactor	60,000	Building Modification	79,415
Corrosion Protection	50,000	Seismic Assessment	75,532
Humpback Overflow Channel Assessment	50,000	Supply System Vulnerability Assessment	75,464
Other Projects (15 minor projects under \$50k)	224,704	Asset Reconciliation/Transfer agreement study	70,171
Total projected assets capitalized	\$ 10,731,689	Saddle Dam Piezometer	66,936
Less: current year's depreciation	(6,408,545)	High Level Output Valve Replacement	65,874
Less: change in prior year forecast addition estimates, & disposals	(1,609,565)	Goldstream Chlorination System Removal	60,000
Change in Physical Plant	\$ 2,713,579	Sooke Lake Dam Spillway Hoist	60,000
		Transmission system component upgrades	55,151
		Leech River Restoration	55,000
		Valve Replacement	50,618
		Pump Stations	50,000
		Sooke Lake Hydrodynamic Model	50,000
		Other Projects (43 minor projects under \$50k)	678,342
		Projected CWIP	\$ 9,949,386
		Less Prior year's projected CWIP	(8,055,763)
		Change in CWIP	\$ 1,893,623



**Schedule A**  
**Asset Useful Life Assignments - PSAB**

<u>Classes:</u>	<u>Code</u>	<u>Asset Categories</u>	<u>Useful Life, Years</u>
<b>Land</b>	LAND	Land & Rights of Way * (Note 1)	N/A
<b>Building</b>	BLDG	Building, Permanent	50
	BLOT	Building, Temporary/ Portable	20
	BLFX	Building fixture ( <i>sprinklers</i> )	20
<b>Equipment</b>	BOAT	Boats & Marine Equipment	10
	COMP	Computer Equipment ( <i>includes software</i> )	5
	ELEC	Electronic Equipment( <i>hydromet, weather stn eqpt</i> )	5
	FIRE	Fire & Safety Equipment	10
	GENT	Generator	20
	HYDR	Hydrants and Standpipes	20
	HYDY	Hydrology	10
	MTRS	Meters	20
	OFFE	Office Equipment	5
	OFFF	Office Furniture	10
	SCDA	SCADA Equipment	10
	SCRN	Intake Screens/Membranes ( <i>stop logs</i> )	20
	SHOP	Shop Equipment	10
	TELE	Telecommunication Eqpt ( <i>radios, phone systems</i> )	10
	WEQP	Water Works Eqpt( <i>W. Quality lab, Wshed eqpt</i> )	10
	NEW GRP	Weather stn & communication tower	15
<b>Vehicle</b>	VEHC	Vehicles	8
<b>Engineering</b>	BRDG	Bridge	50
<b>Structure</b>	CANL	Canal	50
	DAMS	Dam Structures	100
	PIPE	Pipelines, includes Vaults, Kiosks, Valve chambers	75
	PIPF	Pipelines, fittings	20
	PLPV	Parking lot paved	40
	PSEQ	Pump Station Equipment	20
	PSHS	Pump Station Housing	50
	PRVS	Valves, Flushes & PRV's	20
	RDGR	Roads gravel	20
	RDPV	Roads paved	40
	RESS	Reservoirs (steel & concrete)	50
	REST	Reservoirs (tower/tank)	35
	TANK	Storage tank	40
	TELP	Telephone and Power Lines	50
	TUNN	Tunnel, Culvert and Diversions	50
	WATP	Water Treatment Plant	25
	WELL	Wet well/ Well	50
<b>Other Assets</b>	CSTU	Capital Management Studies	5
	FENC	Fences	15
	LIMP	Land & Yard Improvements	20

Note 1: Land is not depreciated so a useful life assignment is not applicable.

**Change in Budget 2021 to 2022****Service: 2.670 Regional Water Supply****Total Expenditure****Comments****2021 Budget****34,921,283****Change in Salaries:**

Change in Labour	438,000	Repurpose 3.0 FTEs from Capital to Operating
1.0 FTE Infrastructure Integration Technician	55,000	IBC 10a-2 Infrastructure Integration Technician
1.0 FTE Contracts Coordinator	87,000	IBC 10e-1 IWS Administrative Contracts Coordinator
Other Labour	81,207	
Total Change in Salaries	661,207	

**Other Changes:**

Transfer to Capital Fund	850,646	
Contract for Services	(25,000)	2021 NSERC funding
Contract for Services	25,000	2022 NSERC funding
Contract for Services	(150,000)	IBC 10d-3 2021 Watershed Hydrology Monitoring
Contract for Services	150,000	IBC 10d-3 2022 Watershed Hydrology Monitoring
Principal & Interest Payments	(40,740)	
Agriculture Water Rate Funding	100,000	
Other Costs	46,874	
Total Other Changes	956,780	

**2022 Budget****36,539,270**

% expense increase from 2021:

**4.6%****Overall 2021 Budget Performance**

(expected variance to budget and surplus treatment)

*Favourable water sales variance of \$1,792,000 (5.1%) due to higher than budgeted water sales largely a result of increased temperatures. There is an additional favourable operating variance of \$529,000 (1.5%) largely due to reduced staffing costs from vacant positions. The net surplus of \$2,300,000 will be transferred to the services' Water Capital Fund.*

### 2022 Demand Estimate

#### Wholesale Demand

Years	Actual Demand cu.metre	Budgeted Demand cu.metre
2017	46,515,000	45,000,000
2018	48,300,036	45,000,000
2019	47,734,121	46,500,000
2020	48,730,475	48,000,000
2021	50,500,000*	48,000,000
<b>2022 Demand Estimate</b>	<b>49,000,000</b>	

\* Projected consumption for 2021

### Summary of Wholesale Water Rates

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Change</u>
<b>Wholesale water rate</b>						
Unit cost per cu.m.	\$0.6644	\$0.6775	\$0.6968	\$0.7148	\$0.7332	\$0.0184

### Wholesale Water Rate Increase Impact on Residential Water Bill

Average Annual Consumption : 235.0 cubic metres

<u>Charge for Twelve Months Consumption</u>		<u>Annual Charge</u>	<u>2022 Annual Change \$</u>
Average Consumption	2021 Year	\$ 167.98	
	2022	\$ 172.30	\$ 4.32
Half Average Consumption	2021 Year	\$ 83.99	
	2022	\$ 86.15	\$ 2.16
Twice Average Consumption	2021 Year	\$ 335.96	
	2022	\$ 344.60	\$ 8.65

# APPENDIX A

## CAPITAL REGIONAL DISTRICT

Program Group: CRD-Regional Water Supply

SUMMARY	2021 BOARD BUDGET 2	2021 ESTIMATED ACTUAL 3	2022 BUDGET REQUEST				FUTURE PROJECTIONS			
			2022 CORE BUDGET 4	2022 ONGOING 5	2022 ONE-TIME 6	TOTAL (COL 4, 5 & 6) 7	2023 8	2024 9	2025 10	2026 11
1	2	3	4	5	6	7	8	9	10	11
<b><u>GENERAL PROGRAM EXPENDITURES:</u></b>										
WATERSHED PROTECTION	5,568,054	5,396,029	5,515,703	-	175,000	5,690,703	5,626,017	5,738,538	5,853,308	5,970,374
WATER MANAGEMENT	5,610,530	5,562,367	6,272,411	-	-	6,272,411	6,397,555	6,525,042	6,654,842	6,787,485
WATER QUALITY	1,830,256	1,932,040	1,862,117	-	-	1,862,117	1,894,732	1,934,572	1,975,240	2,016,770
CROSS CONNECTION	737,690	736,076	754,239	-	-	754,239	769,271	784,643	800,308	816,283
DEMAND MANAGEMENT	686,034	659,157	705,184	-	-	705,184	719,221	733,564	748,216	763,160
INFRASTRUCTURE ENGINEERING	486,900	529,130	496,982	-	-	496,982	506,930	517,070	527,420	537,960
FLEET OPERATION & MAINTENANCE	(297,540)	(240,433)	(314,181)	-	-	(314,181)	(320,470)	(326,880)	(333,420)	(340,090)
CUSTOMER TECHNICAL SERVICES & GM SUPPORT *	719,362	336,746	439,912	142,000	-	581,912	594,126	606,618	619,364	632,350
<b>TOTAL OPERATING EXPENDITURES</b>	15,341,286	14,911,112	15,732,367	142,000	175,000	16,049,367	16,187,382	16,513,167	16,845,278	17,184,292
<i>Percentage increase over prior year's board budget</i>			2.55%			4.62%	0.86%	2.01%	2.01%	2.01%
<b>AGRICULTURAL WATER RATE FUNDING</b>	1,600,000	1,700,000	1,700,000	-	-	1,700,000	1,750,000	1,800,000	1,850,000	1,900,000
			6.25%			6.25%	2.94%	2.86%	2.78%	2.70%
<b><u>CAPITAL EXPENDITURES &amp; TRANSFERS</u></b>										
TRANSFER TO WATER CAPITAL FUND	9,297,180	11,596,789	10,152,385	-	-	10,152,385	11,650,000	16,950,000	18,600,000	19,800,000
TRANSFER TO EQUIPMENT REPLACEMENT FUND	297,540	297,540	314,181	-	-	314,181	320,465	326,874	333,411	340,080
TRANSFER TO DEBT RESERVE FUND	51,610	33,610	30,410	-	-	30,410	127,410	101,410	93,810	30,410
<b>TOTAL CAPITAL EXPENDITURES &amp; TRANSFERS</b>	9,646,330	11,927,939	10,496,976	-	-	10,496,976	12,097,875	17,378,284	19,027,221	20,170,490
<b><u>DEBT SERVICING</u></b>										
DEBT - INTEREST & PRINCIPAL	8,333,667	8,297,919	8,292,927	-	-	8,292,927	7,592,710	3,408,010	3,379,253	3,357,424
<b>TOTAL DEBT EXPENDITURES</b>	8,333,667	8,297,919	8,292,927	-	-	8,292,927	7,592,710	3,408,010	3,379,253	3,357,424
<b><u>DEFICIT TRANSFERRED TO FOLLOWING YR</u></b>										
TRANSFER TO FOLLOWING YEAR DEFICIT CARRY FORWARD										
<b>TOTAL EXPENDITURES</b>	34,921,283	36,836,970	36,222,270	142,000	175,000	36,539,270	37,627,967	39,099,461	41,101,752	42,612,206
<b><u>SOURCES OF FUNDING</u></b>										
REVENUE - SALES	(34,305,613)	(36,097,400)	(35,609,800)	(142,000)	(175,000)	(35,926,800)	(37,015,497)	(38,486,991)	(40,489,282)	(41,999,736)
REVENUE - OTHER	(615,670)	(739,570)	(612,470)	-	-	(612,470)	(612,470)	(612,470)	(612,470)	(612,470)
<b>TOTAL SOURCE OF FUNDING FROM OPERATIONS</b>	(34,921,283)	(36,836,970)	(36,222,270)	(142,000)	(175,000)	(36,539,270)	(37,627,967)	(39,099,461)	(41,101,752)	(42,612,206)
TRANSFER FROM PRIOR YEAR	-	-	-	-	-	-	-	-	-	-
TRANSFER TO FOLLOWING YEAR SURPLUS CARRY FORWARD										
<b>TOTAL SOURCES OF FUNDING</b>	(34,921,283)	(36,836,970)	(36,222,270)	(142,000)	(175,000)	(36,539,270)	(37,627,967)	(39,099,461)	(41,101,752)	(42,612,206)
<i>Percentage increase over prior year's board budget</i>			3.73%			4.63%	2.98%	3.91%	5.12%	3.67%

**CAPITAL REGIONAL DISTRICT**  
**FIVE YEAR CAPITAL EXPENDITURE PLAN SUMMARY - 2022 to 2026**

<b>Service No.</b>	<b>2.670</b>	<b>Carry Forward from 2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>TOTAL</b>
	<b>Regional Water Supply</b>							

**EXPENDITURE**

Buildings	\$510,000	\$5,110,000	\$3,020,000	\$20,000	\$0	\$0	\$8,150,000
Equipment	\$1,060,000	\$7,115,000	\$2,970,000	\$940,000	\$760,000	\$610,000	\$12,395,000
Land	\$445,000	\$1,495,000	\$895,000	\$590,000	\$430,000	\$235,000	\$3,645,000
Engineered Structures	\$7,525,000	\$11,550,000	\$17,735,000	\$19,925,000	\$20,725,000	\$3,000,000	\$72,935,000
Vehicles	\$406,000	\$1,427,250	\$406,000	\$290,000	\$450,000	\$200,000	\$2,773,250
	<b>\$9,946,000</b>	<b>\$26,697,250</b>	<b>\$25,026,000</b>	<b>\$21,765,000</b>	<b>\$22,365,000</b>	<b>\$4,045,000</b>	<b>\$99,898,250</b>

**SOURCE OF FUNDS**

Capital Funds on Hand	\$9,655,000	\$22,952,000	\$12,420,000	\$14,375,000	\$15,575,000	\$3,845,000	\$69,167,000
Debenture Debt (New Debt Only)	\$0	\$0	\$9,700,000	\$7,100,000	\$6,340,000	\$0	\$23,140,000
Equipment Replacement Fund	\$291,000	\$1,205,250	\$406,000	\$290,000	\$450,000	\$200,000	\$2,551,250
Grants (Federal, Provincial)	\$0	\$40,000	\$0	\$0	\$0	\$0	\$40,000
Donations / Third Party Funding	\$0	\$2,500,000	\$2,500,000	\$0	\$0	\$0	\$5,000,000
Reserve Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$9,946,000</b>	<b>\$26,697,250</b>	<b>\$25,026,000</b>	<b>\$21,765,000</b>	<b>\$22,365,000</b>	<b>\$4,045,000</b>	<b>\$99,898,250</b>

**CAPITAL REGIONAL DISTRICT**  
**FIVE YEAR CAPITAL EXPENDITURE PLAN SUMMARY - 2022 to 2026**

<b>Service No.</b>	<b>2.670/2.680 Regional Water Supply &amp; JDF Water Distribution Combo</b>	<b>Carry Forward from 2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>TOTAL</b>
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**EXPENDITURE**

Buildings	\$0	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$400,000
Equipment	\$800,000	\$2,160,000	\$330,000	\$330,000	\$330,000	\$330,000	\$250,000	\$3,400,000
Land	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Engineered Structures	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Vehicles	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$800,000</b>	<b>\$2,240,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$330,000</b>	<b>\$3,800,000</b>

**SOURCE OF FUNDS**

Capital Funds on Hand	\$800,000	\$2,240,000	\$410,000	\$410,000	\$410,000	\$410,000	\$330,000	\$3,800,000
Debenture Debt (New Debt Only)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Equipment Replacement Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grants (Federal, Provincial)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Donations / Third Party Funding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reserve Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$800,000</b>	<b>\$2,240,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$410,000</b>	<b>\$330,000</b>	<b>\$3,800,000</b>

CAPITAL REGIONAL DISTRICT  
5 YEAR CAPITAL PLAN  
2022 - 2026

<b>Project Number</b> 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, 22-01 is a project planned to start in 2022.  For projects in previous capital plans, use the same project numbers previously assigned.	<b>Capital Project Description</b> 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 is built current energy standards, designed to minimize maintenance and have an expected service life of 35 years".	<b>Carryforward from 2021</b> Input the carryforward amount from the 2021 capital plan that is remaining to be spent. Forecast this spending in 2022 to 2026.	<b>Project Drivers</b> <b>Maintain Level of Service</b> = Project maintains existing or improved level of service. <b>Advance Board or Corporate Priority</b> = Project is a Board or Corporate priority. <b>Emergency</b> = Project is required for health or safety reasons. <b>Cost Benefit</b> = Economic benefit to the organization.
<b>Capital Expenditure Type</b> <b>Study</b> - Expenditure for feasibility and business case report. <b>New</b> - Expenditure for new asset only <b>Renewal</b> - Expenditure upgrades an existing asset and extends the service ability or enhances technology in delivering that service <b>Replacement</b> - Expenditure replaces an existing asset	<b>Total Project Budget</b> Provide the total project budget, even if it extends beyond the 5 years of this capital plan.	<b>Funding Source Codes</b> 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 SLoan = Short Term Loans WU = Water Utility If there is more than one funding source, use additional rows for the project.	<b>Long-term Planning</b> <b>Master Plan / Servicing Plan</b> = Plan that identifies new assets required to meet future needs. <b>Asset Management Plan / Sustainable Service Delivery Plan</b> = Integrated plan that identifies asset replacements based on level of service, criticality, condition, risk, replacement costs as well as external impacts. <b>Replacement Plan</b> = Plan that identifies asset replacements based primarily on asset age or asset material/type. <b>Condition Assessment</b> = Assessment that identifies asset replacements based on asset condition.
<b>Capital Project Title</b> Input title of project. For example "Asset Name - Roof Replacement", "Main Water Pipe Replacement".	<b>Asset Class</b> <b>L</b> - Land <b>S</b> - Engineering Structure <b>B</b> - Buildings <b>V</b> - Vehicles	<b>Cost Estimate Class</b> 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.	

Service #: 2.670

Service Name: Regional Water Supply

Project List and Budget														
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2021	2022	2023	2024	2025	2026	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	\$166,000	B	WU	-	\$10,000	\$20,000	\$20,000	-	-	\$50,000	
17-04	New	Water Supply Area - Fish Stream Assessments	Inventory and assessment of fish, fish habitat, and stream channel stability in priority streams in the GVWSA.	\$325,000	L	WU	\$18,000	\$18,000	-	-	-	-	\$18,000	
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	\$8,000	\$8,000	\$50,000	-	-	-	\$58,000	
19-30	Study	Leech WSA Lakes/Tributaries Assessment	An assessment of the physical, chemical and biological parameters of the lakes in the Leech WSA.	\$75,000	L	WU	\$50,000	\$50,000	-	-	-	-	\$50,000	
20-05	Renewal	Leech WSA Terrestrial Ecosystem Mapping & Wetland Classification/Mapping	Classification and mapping of terrestrial ecosystems and wetlands and integration with Sooke and Goldstream data.	\$180,000	L	WU	-	\$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	\$24,000	\$24,000	\$10,000	\$10,000	\$10,000	\$10,000	\$64,000	
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.	\$260,000	L	WU	\$75,000	\$145,000	\$50,000	-	-	-	\$195,000	
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	\$65,000	\$160,000	\$60,000	-	-	-	\$220,000	
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	\$75,000	\$75,000	-	-	-	-	\$75,000	
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	\$10,000	\$110,000	\$100,000	\$100,000	-	-	\$310,000	
22-03	Study	GVWSA Land Exchange/Acquisition	Land surveys, appraisals to support decisions regarding land exchange to increase catchment area or buffer water supply areas.	\$180,000	L	WU	-	\$60,000	\$60,000	\$60,000	-	-	\$180,000	
23-02	Renewal	GVWSA LIDAR Mapping	Detailed contour mapping of ground, vegetation and tree cover (3D scanning)	\$120,000	L	WU	-	-	\$120,000	-	-	-	\$120,000	
22-04	Renewal	GVWSA Orthophotography	Annual contribution to capture of regional digital orthophotography for baseline mapping and monitoring.	\$95,000	L	WU	-	\$15,000	\$15,000	\$20,000	\$20,000	\$25,000	\$95,000	
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	-	\$50,000	-	-	-	-	\$50,000	
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	-	-	-	\$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	-	\$50,000	-	-	-	-	\$50,000	
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	\$25,000	\$225,000	\$200,000	\$200,000	\$200,000	-	\$825,000	
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	\$310,000	\$1,710,000	-	-	-	-	\$1,710,000	
16-06	Renewal	Goldstream IWS Field Office <sup>1</sup>	Renewal of Water Quality field office, lab and equipment and supplies storage and Watershed Protection office, training space and equipment storage at Goldstream entrance, replacing longstanding temporary facilities.	\$1,500,000	B	WU	\$200,000	\$850,000	\$500,000	-	-	-	\$1,350,000	
16-06				\$5,000,000	B	Other	-	\$2,500,000	\$2,500,000	-	-	-	\$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	\$0	E	WU	\$80,000	\$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	\$50,000	\$150,000	\$100,000	\$100,000	\$100,000	\$100,000	\$550,000	
19-02	New	Whiskey Creek Bridge Replacement (Sooke WSA)	Replacement of the existing undersized bridge with a longer and higher concrete structure.	\$300,000	S	WU	-	-	\$300,000	-	-	-	\$300,000	
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.	\$170,000	E	WU	\$50,000	\$50,000	-	-	-	-	\$50,000	
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.	\$560,000	S	WU	-	\$400,000	\$160,000	-	-	-	\$560,000	
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	
21-01	New	31N Bridge to Replace Undersized Culvert (Goldstream WSA)	Replacement of the existing undersized and failing culvert with a bridge structure.	\$325,000	S	WU	\$25,000	\$25,000	-	-	-	-	\$25,000	



# APPENDIX A

Service #: 2.670  
Service Name: Regional Water Supply

Project List and Budget													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2021	2022	2023	2024	2025	2026	5 - Year Total
21-26	New	Road Deactivation/Rehabilitation in the GVWSA	Deactivate or rehabilitate unneeded roads in the Sooke and Goldstream WSAs.	\$520,000	L	WU	-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000
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.	\$800,000	S	WU	-	\$250,000	\$300,000	-	-	-	\$550,000
21-28	New	GVWSA Land Acquisition Priorities	Acquisition of land parcel near Grant Lake and security installations.	\$750,000	L	WU	\$45,000	\$45,000	-	-	-	-	\$45,000
22-02	New	Muckpile Bridge Supply and Install (Deception)	Replacement of undersized culverts with bridge which will allow for fish and western load migration.	\$325,000	S	WU	-	-	-	-	\$325,000	-	\$325,000
23-04	Renewal	17S/Sooke Main Bridge Replacement	Undersized bridge replacement	\$300,000	S	WU	-	-	-	-	-	\$300,000	\$300,000
24-01	Renewal	6M/Judge Creek Culvert Replacement (Sooke WSA)	Undersized culvert replacement	\$200,000	S	WU	-	-	-	\$200,000	-	-	\$200,000
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	-	\$40,000	-	-	-	-	\$40,000
22-12	Renewal	Replace Zodiac for Sooke Lake Reservoir	The zodiac for nearshore work in Sooke Lake Reservoir is at end-of-life and requires replacement.	\$10,000	E	WU	-	\$10,000	-	-	-	-	\$10,000
22-13	Renewal	Replace Storage Sheds with Containers	The existing storage shed does not provide proper storage for supplies and should be replaced with rodent proof sea containers.	\$50,000	E	WU	-	\$20,000	-	-	-	-	\$20,000
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	Second Wildfire Camera for Leech WSA	A secondary wildfire camera to monitor for heat and smoke signatures in the Leech WSA during fire season.	\$50,000	E	WU	-	-	\$50,000	-	-	-	\$50,000
WaterShed Protection Sub-Total				\$22,437,000			\$1,110,000	\$7,440,000	\$4,855,000	\$810,000	\$755,000	\$735,000	\$14,595,000
INFRASTRUCTURE ENGINEERING AND OPERATIONS													
Planning													
16-10	New	Post Disaster Emergency Water Supply	Identify and procure emergency systems for post disaster preparedness.	\$2,050,000	S	WU	-	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
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	\$100,000	\$100,000	-	-	-	-	\$100,000
20-10	Study	Condition & Vulnerability Assessment	Conduct a condition assessment of critical supply infrastructure and assess its possibility of risk.	\$200,000	S	WU	\$200,000	\$200,000	-	-	-	-	\$200,000
20-11	Study	Develop Master Plan	Develop a long term strategic plan to anticipate water demand, water treatment, and future siting of facilities.	\$500,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
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
Capital													
18-07	New	Replacement of UV System	Replacement of the UV system at the Goldstream Water Treatment Plant	\$5,400,000	E	WU	\$100,000	\$3,100,000	\$1,800,000	-	-	-	\$4,900,000
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	\$100,000	\$300,000	\$200,000	\$200,000	\$150,000	-	\$850,000
18-15	Renewal	Corrosion Protection Program	Study deficiencies in the current material protection and implement recommendations.	\$1,150,000	S	WU	\$50,000	\$200,000	\$150,000	\$150,000	\$150,000	\$150,000	\$800,000
18-18	Replacement	Main No.3 Segment Replacement	Replacement of segments of Main No. 3 based upon previous studies.	\$15,600,000	S	WU	\$150,000	\$600,000	\$4,900,000	\$4,900,000	\$4,900,000	\$4,900,000	\$15,300,000
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	-	-	-	\$100,000	-	-	\$100,000
19-23	New	Critical Spare Equipment Storage & Pipe Yard	Plan, design and construct a critical equipment storage building.	\$600,000	S	WU	\$200,000	\$200,000	\$300,000	-	-	-	\$500,000
20-16	Replacement	Cecelia Meter Replacement	Replacement of the Cecelia billing meter as well as its enclosure.	\$1,000,000	S	WU	-	\$450,000	\$450,000	-	-	-	\$900,000
20-17	Replacement	Decommission Smith Hill Site	Plan and decommission the abandoned Smith Hill reservoir site.	\$800,000	S	WU	-	\$150,000	-	\$500,000	-	-	\$650,000
20-32	New	pH Adjustment Facility	Design and construct a pH adjustment facility based upon the results of the pH and corrosion study.	\$2,500,000	S	WU	-	\$100,000	\$2,400,000	-	-	-	\$2,500,000
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.	\$275,000	E	WU	-	\$200,000	-	-	-	-	\$200,000
21-07	Replacement	Goldstream Water Treatment Plant Communications Upgrade	Increase reliability and resilience of data and voice communications between the UV Plant, Sodium Hypochlorite Building, Ammonia Building.	\$250,000	S	WU	\$50,000	\$50,000	-	-	-	-	\$50,000
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.	\$650,000	E	WU	\$50,000	\$500,000	-	-	-	-	\$500,000
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	\$1,500,000	\$6,300,000	\$11,400,000	\$13,500,000	\$900,000	\$33,600,000
21-12	New	SRRDF Upgrade	Increased water flows in the Sooke region have resulted in an additional sodium hypochlorite dosing pump and automation for summer flows.	\$425,000	E	WU	-	\$350,000	-	-	-	-	\$350,000
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
22-15	New	Microwave Radio Upgrades	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed.	\$300,000	S	WU	-	\$300,000	-	-	-	-	\$300,000
22-16	Renewal	Goldstream WTP Drainage Improvements	Construct drainage improvements for the Goldstream Water Treatment Plant and assess	\$200,000	S	WU	-	\$200,000	-	-	-	-	\$200,000
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	-	\$200,000	-	-	-	-	\$200,000
Infrastructure Engineering and Operations Sub-Total				\$69,900,000			\$3,150,000	\$9,600,000	\$16,700,000	\$17,450,000	\$18,900,000	\$1,250,000	\$63,900,000
DAM SAFETY PROGRAM													
				(Database)									
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	\$75,000	-	-	\$425,000
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	\$2,000,000	-	-	-	-	\$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	\$500,000	\$500,000	-	-	-	-	\$500,000
18-19	New	Sooke Lake Dam - Instrumentation System Improvements	Complete dam performance instrumentation system/surveillance improvements for the Sooke Lake Dam.	\$1,300,000	S	WU	\$500,000	\$600,000	\$100,000	\$100,000	-	-	\$800,000
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	\$500,000	-	-	-	-	\$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.	\$1,100,000	E	WU	\$500,000	\$1,000,000	-	-	-	-	\$1,000,000
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	\$500,000	-	\$100,000	-	-	-	\$500,000
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	\$100,000	\$150,000	\$50,000	\$50,000	-	-	\$250,000

# APPENDIX A

Service #: **2.670**  
Service Name: **Regional Water Supply**

Project List and Budget													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2021	2022	2023	2024	2025	2026	5 - Year Total
20-19	Replacement	Goldstream System High Level Outlet Valve Replacements	The Goldstream and Butchart high level outlet valves have been identified as requiring replacement.	\$200,000	S	WU	\$50,000	\$150,000	-	-	-	-	\$150,000
21-03	New	Deception Dam - Dam Safety Review 2021 & Improvements	Conduct a Dam Safety Review and improvements for the Deception Dam.	\$300,000	S	WU	\$100,000	\$200,000	-	-	-	-	\$200,000
21-04	New	Saddle Dam - Dam Safety Review 2021 & Improvements	Conduct a Dam Safety Review and improvements for the Saddle Dam.	\$200,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
21-21	Replacement	Goldstream Dams - 4 Low Level Gate Improvements	Logistics planning in 2021, installation in 2022	\$150,000	S	WU	\$100,000	\$100,000	-	-	-	-	\$100,000
21-22	Study	Charters Dam - Dam Safety Review 2021	Legislated obligation to conduct Dam Safety Review.	\$250,000	S	WU	\$50,000	\$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	\$300,000	-	-	-	\$450,000
23-01	New	Sooke Lake Dam Update Seismic Assessment	Conduct a seismic assessment of the Sooke Lake Dam as per the previous Dam Safety Reviews.	\$150,000	E	WU	-	-	\$150,000	-	-	-	\$150,000
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 & Addressing Implications	Conduct a Dam Safety Review (recommended 10 year review cycle)	\$800,000	S	WU	-	-	\$200,000	\$300,000	\$300,000	-	\$800,000
25-01	Study	Goldstream Dam - Dam Safety Review 2025 & Addressing Implications	Conduct a Dam Safety Review in 2023 (recommended 10 year review cycle)	\$350,000	S	WU	-	-	-	-	\$150,000	\$200,000	\$350,000
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				\$13,335,000			\$5,200,000	\$5,875,000	\$1,275,000	\$1,475,000	\$600,000	\$200,000	\$9,425,000
WATER QUALITY													
20-04	New	Sooke Lake HyDy Model Development	Critical data collection, model building+calibration, model utilization for 3 different scenarios	\$340,000	E	WU	\$80,000	\$260,000	\$30,000	\$30,000	-	-	\$320,000
21-13	New	Flowcam Imaging System	Utilize semi-automated algal analysis to meet increased demands without increasing FTEs	\$150,000	E	WU	-	\$10,000	-	-	-	-	\$10,000
21-29	Renewal	Microbiological plate power	Automation of manual process to increase capacity/worker safety	\$30,000	E	WU	-	-	-	-	-	-	\$0
22-05	New	WQ Lab Capital Improvements	Building improvements in the lab	\$40,000	B	WU	-	\$40,000	-	-	-	-	\$40,000
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	-	\$100,000	-	-	-	-	\$100,000
22-07	Study	Bulk-Water Connection Backflow Protection Study	Investigate all bulk-water connections to CRD or municipal systems and identify the need for backflow protection	\$50,000	S	WU	-	\$50,000	-	-	-	-	\$50,000
23-06	Study	GVOWS Nitrification Study	Investigate nitrification occurrence and potential impacts on drinking water quality	\$50,000	S	WU	-	-	\$50,000	-	-	-	\$50,000
22-19	New	Microbiological Media Preparator	Microbiological media preparator for automation of manual/hazardous tasks	\$45,000	E	WU	-	\$45,000	-	-	-	-	\$45,000
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
Water Quality Sub-Total				\$865,000			\$80,000	\$565,000	\$80,000	\$30,000	\$0	\$0	\$675,000
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	\$150,000	\$100,000	\$100,000	\$650,000
17-29	Replacement	Water Supply Area Equipment Replacement	Hydrometeorological, fireweather and wildfire suppression equipment replacement.	\$425,000	E	WU	-	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000	\$425,000
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 items 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	\$100,000	E	WU	-	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$125,000
Annual Provisional Sub-Total				\$8,375,000			\$0	\$1,710,000	\$1,710,000	\$1,710,000	\$1,660,000	\$1,660,000	\$8,450,000
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.	\$2,495,000	V	ERF	\$291,000	\$1,205,250	\$406,000	\$290,000	\$450,000	\$200,000	\$2,551,250
20-22	New	Vehicle for the Dam Safety Program	New Transit Van	\$80,000	V	WU	\$35,000	\$80,000	-	-	-	-	\$80,000
20-23	New	Vehicle for the CSE Support Program	New Transit Van	\$62,000	V	WU	\$45,000	\$80,000	-	-	-	-	\$80,000
21-30	New	Vehicle for Warehouse Operations	New pick up	\$62,000	V	WU	\$35,000	\$62,000	-	-	-	-	\$62,000
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
22-18					E	Grant	-	\$40,000	-	-	-	-	\$40,000
Customer and Technical Services Sub-Total				\$2,779,000			\$406,000	\$1,507,250	\$406,000	\$290,000	\$450,000	\$200,000	\$2,853,250
GRAND TOTAL				\$11,691,000			\$9,946,000	\$26,697,250	\$25,026,000	\$21,765,000	\$22,365,000	\$4,045,000	\$99,898,250

## CAPITAL REGIONAL DISTRICT 5 YEAR CAPITAL PLAN 2022 - 2026

<b>Project Number</b> 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, 22-01 is a project planned to start in 2022.  For projects in previous capital plans, use the same project numbers previously assigned.	<b>Capital Project Description</b> Briefly describe project scope and service benefits. For example: <i>"Full Roof Replacement of a 40 year old roof above the swimming pool area; The new roofing system is built current energy standards, designed to minimize maintenance and have an expected service life of 35 years".</i>	<b>Carryforward from 2021</b> Input the carryforward amount from the 2021 capital plan that is remaining to be spent. Forecast this spending in 2022 to 2026.	<b>Project Drivers</b> <b>Maintain Level of Service</b> = Project maintains existing or improved level of service. <b>Advance Board or Corporate Priority</b> = Project is a Board or Corporate priority. <b>Emergency</b> = Project is required for health or safety reasons. <b>Cost Benefit</b> = Economic benefit to the organization.
<b>Capital Expenditure Type</b> <b>Study</b> - Expenditure for feasibility and business case report. <b>New</b> - Expenditure for new asset only <b>Renewal</b> - Expenditure upgrades an existing asset and extends the service ability or enhances technology in delivering that service <b>Replacement</b> - Expenditure replaces an existing asset	<b>Total Project Budget</b> Provide the total project budget, even if it extends beyond the 5 years of this capital plan.	<b>Funding Source Codes</b> 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.	<b>Long-term Planning</b> <b>Master Plan / Servicing Plan</b> = Plan that identifies new assets required to meet future needs. <b>Asset Management Plan / Sustainable Service Delivery Plan</b> = Integrated plan that identifies asset replacements based on level of service, criticality, condition, risk, replacement costs as well as external impacts. <b>Replacement Plan</b> = Plan that identifies asset replacements based primarily on asset age or asset material/type. <b>Condition Assessment</b> = Assessment that identifies asset replacements based on asset condition.
<b>Capital Project Title</b> Input title of project. For example "Asset Name - Roof Replacement", "Main Water Pipe Replacement".	<b>Asset Class</b> <b>L</b> - Land <b>S</b> - Engineering Structure <b>B</b> - Buildings <b>V</b> - Vehicles	<b>Cost Estimate Class</b> 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.	

Service #: 2.670/2.680

Service Name: Regional Water Supply & JDF Water Distribution Combo

Project List and Budget													
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2021	2022	2023	2024	2025	2026	5 - Year Total
<b>SYSTEM REPLACEMENT AND UPGRADES THAT BENEFIT REGIONAL WATER SUPPLY AND JUAN DE FUCA DISTRIBUTION</b>													
16-01	Renewal	Upgrades to Buildings at 479 Island Highway	Maintenance and changes to buildings and office layouts.	\$320,000	B	WU	\$0	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$400,000
17-01	Renewal	Voice Radio Upgrade	Replacement of end of life voice radio system repeaters, office, vehicle and handheld radios.	\$1,560,000	E	WU	\$600,000	\$1,250,000	\$0	\$0	\$0	\$0	\$1,250,000
20-01	New	Portable Pump Station	Portable pump station and generator to provide backup when a pump station is offline, in construction or to bypass a section of pipe.	\$750,000	E	WU	\$200,000	\$550,000	\$0	\$0	\$0	\$0	\$550,000
<b>Sub-Total System Replacement and Upgrades That Benefit Regional Water Supply and Juan de Fuca Distribution</b>				\$2,630,000			\$800,000	\$1,880,000	\$80,000	\$80,000	\$80,000	\$80,000	\$2,200,000
<b>ANNUAL PROVISIONAL CAPITAL ITEMS</b>													
17-03	Replacement	Office Equipment, Upgrades and Replacements	Upgrade and replacement of office equipment as required.	\$225,000	E	WU	\$0	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$225,000
17-04	Replacement	Computer Upgrades	Annual upgrade and replacement program for computers, copiers, printers, network equipment as required.	\$850,000	E	WU	\$0	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$850,000
17-05	New	Development of the Maintenance Management Systems	Develop maintenance management system.	\$100,000	E	WU	\$0	\$50,000	\$20,000	\$20,000	\$20,000	\$20,000	\$130,000
17-06	Replacement	Small Equipment & Tool Replacement (Water Operations)	Replacement of tools and small equipment for Water Operations as required.	\$400,000	E	WU	\$0	\$80,000	\$80,000	\$80,000	\$80,000	\$0	\$320,000
17-07	Replacement	Small Equipment & Tool Replacement (Corporate Fleet)	Replacement of tools and small equipment for Fleet as required.	\$75,000	E	WU	\$0	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000
<b>Sub-Total for Annual Provisional Capital Items</b>				\$1,650,000			\$0	\$360,000	\$330,000	\$330,000	\$330,000	\$250,000	\$1,600,000
<b>GRAND TOTAL</b>				\$4,280,000			\$800,000	\$2,240,000	\$410,000	\$410,000	\$410,000	\$330,000	\$3,800,000

Service: 2.670 Regional Water Supply			
Project Number	17-01	Capital Project Title	Historic Goldstream Powerhouse Building
		Capital Project Description	Repairs of historic Goldstream Powerhouse building and work toward making the site accessible to the public
Project Rationale	<p>Located near the Japan Gulch Treatment Plant and the Great Trail (Trans Canada Trail), is an 1897 brick hydroelectric powerplant that served Victoria (notably the streetcars) for approx. 60 years. The Powerhouse has its own Wikipedia entry: <a href="http://en.wikipedia.org/wiki/Lubbe_Powerhouse">http://en.wikipedia.org/wiki/Lubbe_Powerhouse</a> and has captured public interest as a unique structure in BC history. An engineering condition assessment including engineered drawings, site plan and approximate cost of repairs was conducted in 2017. A major repair in the masonry on the north side of the building was completed in 2018. <b>Further masonry and major crack repair was completed on the south side in 2019 (\$10,000). A successful grant application is being used to replace the roof membrane/envelope in 2021 (\$76,000). Funds are requested in 2022, 2023 and 2024 to plan and then implement security and basic public interpretation signage working toward a goal to make the site available to the public from the nearby Sooke Hills Wilderness Trail. Grant funding, partnership and volunteering opportunities to conserve the building and share its history will continue to be sought.</b></p>		
Project Number	17-04	Capital Project Title	Water Supply Area - Fish Stream Assessments
		Capital Project Description	Inventory and assessment of fish, fish habitat, and stream channel stability in priority streams in the GVWSA.
Project Rationale	<p>Presence or absence of fish as well as fish habitat information has only been collected in the Water Supply Areas on an as-needed basis related to specific road projects. In order to adequately plan and manage for fish habitat and water quality a systematic inventory and assessment of fish habitat, stream channel stability, and the hydrological condition of stream corridors will be conducted over three field seasons. The funding for 2019 is insufficient to conduct fish stream assessments in the entire Leech Water Supply Area. An additional \$100,000 in 2020 will allow for fish stream surveys to be carried out in the western and northern portions of the Leech which cannot be completed in 2019.</p>		
Project Number	18-10	Capital Project Title	Species-at-Risk Wildlife Habitat
		Capital Project Description	Assessments (office and field) and planning for managing wildlife habitat, in particular species-at-risk habitat, in the GVWSA.
Project Rationale	<p>An assessment (office and field) and conservation plan for managing wildlife habitat, in particular species-at-risk habitat, in the GVWSA. Funds in 2018 (\$35,000) will be used for compilation of existing knowledge of species, distribution, habitat, research. Funds in 2019 and 2020 (\$50,000 each) will be used to field verify species, critical habitat and movement corridors. Funds added in 2021 (\$25,000) are to develop a GVWSA specific conservation plan based on the office and field investigations. <b>Funds added in 2023 are in anticipation of future habitat mapping required to address BC Species-at-Risk legislation (currently being developed).</b></p>		

Service: <b>2.670</b> <b>Regional Water Supply</b>			
<b>Project Number</b>	19-30	<b>Capital Project Title</b>	Leech WSA Lakes/Tributaries Assessment
<b>Capital Project Description</b>	An assessment of the physical, chemical and biological parameters of the lakes in the Leech WSA.		
<b>Project Rationale</b>	To assess restoration of the Leech Water Supply Area and prepare for use of Leech River water to supplement Sooke Lake Reservoir, baseline monitoring of the hydrological, physical, chemical and biological parameters of the main Leech WSA source waterbodies will be conducted. The work will be undertaken in conjunction with the Water Quality division. (Action from the 2017 Strategic Plan for Regional Water Supply).		
<b>Project Number</b>	20-05	<b>Capital Project Title</b>	Leech WSA Terrestrial Ecosystem Mapping & Wetland Classification/Mapping
<b>Capital Project Description</b>	Classification and mapping of terrestrial ecosystems and wetlands and integration with Sooke and Goldstream data.		
<b>Project Rationale</b>	The existing Leech WSA terrestrial ecosystem mapping received from the previous landowner is not consistent with that of Sooke and Goldstream WSAs. The project is to renew the ecosystem mapping to a standard that matches Sooke and Goldstream for consistent data and analysis. There has been no detailed mapping of Leech WSA wetlands. The project is to conduct detailed wetland mapping in the Leech WSA to a standard that matches Sooke and Goldstream for consistent data and analysis. The projects have been combined (ecosystem mapping (20-05) and wetland mapping (20-06) and moved forward from 2020 to 2021. The project has been further moved forward from 2021 to 2022.		
<b>Project Number</b>	20-06	<b>Capital Project Title</b>	Addressing mining in Leech WSA (impacts, agreements)
<b>Capital Project Description</b>	Funding to support work to reduce the impact of mining claims in the Leech WSA		
<b>Project Rationale</b>	Assessment and/or studies and/or funds to buy and cancel mining claims to mitigate impacts from mining activities and with the goal of reducing mining claims in the Leech Water Supply		
<b>Project Number</b>	20-27	<b>Capital Project Title</b>	GVWSA Forest Resilience - wildfire/forest modelling and forest management field trials
<b>Capital Project Description</b>	Modelling forest and wildfire risk under climate change scenarios & forest/fuel management field trials.		
<b>Project Rationale</b>	Projects to: a). model impact of climate change on forests, forest fuel types, and associated wildfire behavior and probability and potential effects of management options; and b). trial forest and fuel management treatments that reduce wildfire risk, such as prescribed fire and stand diversification, in the Leech WSA prior to considering those treatment options in Sooke or Goldstream WSAs.		

Service: 2.670 Regional Water Supply			
Project Number	20-28	Capital Project Title	GVWSA Forest Resilience - Assessments of forest health and resilience
Capital Project Description	Field assessments to better understand current forest health and resilience.		
Project Rationale	Field assessments to better understand current forest health and resilience including: increasing pine mortality, increase in bark beetle killed trees, existing advance regeneration in the understory, sedimentation sources from roads. The project funding for 2021 and 2022 is moved forward by one year to 2022 and 2023.		
Project Number	21-19	Capital Project Title	Lakes Assessment Sooke and Goldstream WSAs
Capital Project Description	An assessment of the physical, chemical and biological parameters of the natural lakes in Sooke and Goldstream WSAs		
Project Rationale	Small lakes in the Sooke and Goldstream WSAs influence both watershed hydrology and water quality in downstream creeks and supply reservoirs. While basic water quality sampling has been undertaken in some of these water bodies, there is a need to map the bathymetry, calculate water volumes, and conduct more comprehensive sampling of the chemical and biological parameters and aquatic vegetation of these lakes. This will facilitate comparisons of these parameters with lakes in the Leech WSA and water quality in existing and future water supply lands.		
Project Number	21-20	Capital Project Title	West Leech Road
Capital Project Description	Plan followed by construction of a road to access the western portion of the Leech WSA.		
Project Rationale	A large portion of the western Leech WSA currently has overgrown unassessed roads. Brushing, upgrade, re-surfacing and some new road construction is required to provide access to this area for wildfire response, security patrols and forest management. <b>Funds to implement plans have been added for 2022-2024.</b>		
Project Number	22-03	Capital Project Title	GVWSA Land Exchange/Acquisition
Capital Project Description	Land surveys, appraisals to support decisions regarding land exchange to increase catchment area or buffer water supply areas.		
Project Rationale	There are opportunities to increase the catchment and critical buffer areas of Sooke, Goldstream and the Leech WSA by purchase or land exchange with surrounding land owners. Funds would be used to undertake appraisals, legal surveys, and legal fees for work to develop agreements to purchase or exchange lands.		

Service: 2.670 Regional Water Supply					
<div><div><div>Project Number</div><div>23-02</div></div><div><div>Capital Project Title</div><div>GVWSA LiDAR Mapping</div></div><div><div>Capital Project Description</div><div>Detailed contour mapping of ground, vegetation and tree cover (3D scanning)</div></div></div> <div><div>Project Rationale</div><div>LiDAR (which stands for Light Detection and Ranging) uses light in the form of a pulsed laser to measure ranges (distances). LiDAR can be acquired when orthophotography or other data is collected from the air. LiDAR provides three-dimensional information about the forest stand structure which can be used by GIS (Geographic Information Systems). LiDAR data can be used to quantify forest structure, canopy biomass, and the size and configuration of forest openings to improve understanding of forest fuel loadings and watershed disturbance processes.</div></div>					
<div><div><div>Project Number</div><div>22-04</div></div><div><div>Capital Project Title</div><div>GVWSA Orthophotography</div></div><div><div>Capital Project Description</div><div>Annual contribution to capture of regional digital orthophotography for baseline mapping and monitoring.</div></div></div> <div><div>Project Rationale</div><div>Every two years CRD coordinates with municipalities and other levels of government to update aerial photography of the combined areas of interest in the region and develop an overall digital mosaic image. The images of the Greater Victoria Water Supply Area are used to monitor forest disturbances and adjacent land use activities and update spatial databases. To date these funds have come from Operating budgets, making it difficult to undertake other projects in the years when the photography is being flown. Annual funding will provide an ongoing contribution to this overall project.</div></div>					
<div><div><div>Project Number</div><div>22-09</div></div><div><div>Capital Project Title</div><div>GVWSA Powerlines Wildfire Risk Mitigation Plan</div></div><div><div>Capital Project Description</div><div>A detailed assessment, options and plan to reduce the risk of wildfire start from tree fall onto CRD powerlines in the GVWSA.</div></div></div> <div><div>Project Rationale</div><div>A powerline that supplies Sooke Dam, the Head Tank, and associated infrastructure runs along the forested slopes on the east side of Sooke Lake Reservoir. Power interruption from tree fall is an ongoing concern. Tree fall on the powerline during the summer months could start a wildfire. While the forest along the line is actively managed to reduce tree fall hazard, concerns about fire starts has prompted a call to investigate the option of clearing a much wider area along the line. Funds will be used to carry out an assessment of the feasibility and impacts of this option.</div></div>					
<div><div><div>Project Number</div><div>22-10</div></div><div><div>Capital Project Title</div><div>GVWSA/RWS Educational Videos</div></div><div><div>Capital Project Description</div><div>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.</div></div></div> <div><div>Project Rationale</div><div>The Watershed Protection division provides educational tours of the GVWSA and Regional Water Supply infrastructure. During the COVID pandemic, operating funds dedicated to tours were instead used to develop an educational video to replace or supplement tours. Going forward, there is a desire to provide further educational material on specific topics of current public interest such as: climate change and regional water supply; GVWSA wildfire management; and the Master Plan update for regional water supply. The funding request is for development of one video per year for 2022 and 2023.</div></div>					

Service: 2.670 Regional Water Supply			
Project Number	23-05	Capital Project Title	Spill Management Plan and Implementation
Capital Project Description	Review, assessment and re-development of a spill management plan for the GVWSA along with potential procurement of additional equipment or supplies.		
Project Rationale	The existing spill preparedness plan to protect water quality and other resources in the GVWSA is more than 15 years old. An external review, assessment and re-development of a more comprehensive spill management plan for the GVWSA that considers improved materials, technology and strategies is required. Funding may allow for procurement of recommended spill supplies, or a separate funding request may follow in a subsequent year.		
Project Number	09-01	Capital Project Title	Leech River Watershed Restoration
Capital Project Description	A 17 year project to restore the Leech WSA lands for water supply.		
Project Rationale	A 17 year project to 2025 to restore the Leech WSA lands for water supply. An update of projects completed and planned was provided in June 2019 (RWSC Report #19-13). Funding allocated by end of 2025 will be \$5,517,000; however total capital expenditure in the Leech WSA is higher when separate projects to install major bridges is considered.		
Project Number	16-01	Capital Project Title	Replace Gatehouse at Goldstream Entrance
Capital Project Description	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.		
Project Rationale	Enhanced security is required at the Goldstream entrance to the Water Supply Area. The existing gatehouse/first aid trailer has reached end of life and is unsuitable and located inside the secured area. A site design and purpose built facility with in/out roads, fencing and upgraded autogates (17-09) is planned requiring funding consistent with the project. The scope and scale of this project has increased since the current location is no longer considered feasible/advantageous for the upgrade. Preliminary design and cost estimates have been completed indicating the requested funding. The design and cost includes roadway changes and asphalt, automated gates, and the custom building.		
Project Number	16-06	Capital Project Title	0
Capital Project Description	Renewal of Water Quality field office, lab and equipment and supplies storage and Watershed Protection office, training space and equipment storage at Goldstream entrance, replacing		
Project Rationale	Watershed Protection staff (26 FTE and 8 seasonal auxiliaries) are currently located in 2 trailers and a house at the Goldstream Gate entrance to the water supply area, and in office space at the Integrated Water Services office in View Royal. The trailers were considered temporary office space since their implementation over 15 years ago. The trailers are old, prone to leaks and a concern for mold. Water Quality field staff are located in another old converted facility in the Goldstream area. In addition, there are insufficient facilities for training, equipment storage, emergency management and public education. The separation of staff between various Goldstream facilities and the View Royal location causes inefficiencies and organizational difficulties. The IWS office is also above capacity and moving Watershed Protection staff out will extend the existing office space. An initial investment in 2016 was used to develop a needs assessment for the building and surrounding Goldstream entrance area and cost estimates. Carry forward funds from 2020 will be used to develop a design with building and site construction planned for 2022 and 2023. The disposition of the IWS gravel pit in Goldstream is expected to largely fund the new building.		



Service: 2.670 Regional Water Supply			
Project Number	17-02	Capital Project Title	Leech River HydroMet System
Capital Project Description	Installation of a network of hydrometeorological stations to collect water quantity and quality information for the Leech WSA.		
Project Rationale	A 17 year \$ 5.756 M capital plan is being carried out to restore the Leech Water Supply Area (Project #09-01) to prepare for future water needs. Currently only one hydrological measuring station is capturing flow and turbidity measurements 3.8 km downstream of the future water intake on the Leech River. In order to understand and predict the effect of precipitation, storm events and various restoration management measures on Leech River water quality and quantity, a network of hydrological measuring stations is needed further upstream in the Leech River watershed. This capital project first funded a design study of the most effective and efficient monitoring system that could be implemented (\$10,000) prior to funding implementation beginning in 2018 (\$80,000). Additional funding requests of \$30,000 in 2020 (new total \$100,000) and \$10,000 in 2021 (new total \$25,000) to provide assistance in accessing and addressing safety issues at new weather and hydrology monitoring sites and installing the equipment. Funding requests reflect difficult terrain and access to reach monitoring locations.		
Project Number	18-05	Capital Project Title	GVWSA Forest Fuel Management/FireSmart Activities
Capital Project Description	Implementation of forest fuel management and FireSmart actions in strategic locations for wildfire risk management in the GVWSA.		
Project Rationale	Wildfire is the greatest threat to water quality in the GVWSA. In 2014 - 2018 CRD staff completed two new fuel reduction corridor projects. Funding to tender contract projects is required in order to complete priority fuel management projects over and above existing staff effort which will be focused on maintenance of existing fuel managed sites. A requested increase from \$75,000 to \$100,000 annually reflects costs experienced in the first year of tendering fuel management work. The need for fuel management to address priority areas will be ongoing and funding is required annually for the 5 year period.		
Project Number	19-02	Capital Project Title	Whiskey Creek Bridge Replacement (Sooke WSA)
Capital Project Description	Replacement of the existing undersized bridge with a longer and higher concrete structure.		
Project Rationale	Whiskey Creek bridge is located on the Leechtown Main Road, one of the main access routes to Sooke Lake Dam and other critical IWS infrastructure. Whiskey Creek requires a larger bridge as it has been overtopped by storm events in the past and this poses water quality, environmental and safety risks. The project has been moved forward from 2022 to 2023 to allow higher priorities to be addressed first.		
Project Number	19-19	Capital Project Title	Hydromet Upgrades Sooke and Goldstream
Capital Project Description	Install additional hydrology monitoring sites on Sooke Lake Reservoir inflow streams and increase instrumentation on meteorological stations in Sooke and Goldstream watersheds.		
Project Rationale	Only the main tributary inflows into Sooke Lake Reservoir are monitored. To better understand the hydrology of the Sooke watershed, additional hydrology monitoring sites are required. The existing meteorological stations in Sooke and Goldstream watersheds have only basic instrumentation and would benefit from additional sensors and upgrades to improve the quality of the meteorological data. The proposed funds for 2020 have been increased by \$20,000 to cover the costs associated with site preparation, addressing site safety issues and assistance with station installation.		

Service: 2.670 Regional Water Supply			
Project Number	20-01	Capital Project Title	Kapoor Main Mile 1 Bridge and Asphalt Upgrade
Capital Project Description	Replacement of the existing undersized culvert with a large bridge as well as subsequent 500 m road asphalt replacement.		
Project Rationale	The existing culvert at Mile 1 on Kapoor Main is undersized, has evidence of buried organics in the fill material and has oversteepened, unstable banks. The culvert will be removed and a bridge installed to improve water carrying capacity at peak flows, fish passage and bank stability. The asphalt section uphill of the bridge will also be repaired or replaced as a component of the project. <b>The project has been moved forward from 2021 to 2022 to allow higher priorities to be addressed first. The project has been phased to replace the bridge in 2022 and replace the asphalt in 2023 with an increased budget allowance.</b>		
Project Number	20-29	Capital Project Title	GVWSA Gravel Crushing
Capital Project Description	Production of gravel at existing quarries in Sooke and Goldstream WSAs.		
Project Rationale	Production of 19 mm road surfacing gravel from GVWSA quarries are required every few years to maintain roads. Gravel production needs are anticipated in 2023 and 2026.		
Project Number	21-01	Capital Project Title	31N Bridge to Replace Undersized Culvert (Goldstream WSA)
Capital Project Description	Replacement of the existing undersized and failing culvert with a bridge structure.		
Project Rationale	The undersized and failing culvert on the 31N Road in the Goldstream Water Supply Area requires replacement with a bridge structure in 2021. Funding has been increased to reflect an estimated cost for bridge supply and install of \$325,000.		
Project Number	21-26	Capital Project Title	Road Deactivation/Rehabilitation in the GVWSA
Capital Project Description	Deactivate or rehabilitate unneeded roads in the Sooke and Goldstream WSAs.		
Project Rationale	A review was undertaken to identify roads in the Sooke and Goldstream WSAs that could be rehabilitated and removed from the road network without undue impact to operations, wildfire response and security. Funding is required over the 5 year period to make progress on the roads identified to be deactivated/rehabilitated.		

Service: 2.670 Regional Water Supply					
Project Number	21-27	Capital Project Title	Autogate Installations on Primary Access Routes	Capital Project Description	Install autogates on the main access routes where the Sooke Hills Wilderness Trail and E&N rail line cross to improve security
Project Rationale	Continued residential growth and corresponding increasing recreational pressure bring the public close to critical works (Goldstream Treatment Plant, and Ammonia Injection building). Recreational use of the Sooke Hills Wilderness Trail and Park also generate trespass into the GVWSA, and Drinking Water Protection Zone. <b>One autogate is being installed in 2021, with three subsequent autogates to be installed during 2022 and 2023.</b> The proposed autogates improve security by 24 hour recorded keycard access operation and improved location to increase security.				
Project Number	21-28	Capital Project Title	GVWSA Land Acquisition Priorities	Capital Project Description	Acquisition of land parcel near Grant Lake and security installations.
Project Rationale	Funding to support acquisition of priority GVWSA catchment and buffer lands near Grant Lake; and integrate the lands into the GVWSA through signage, fencing and gates or barriers.				
Project Number	22-02	Capital Project Title	Muckpile Bridge Supply and Install (Deception)	Capital Project Description	Replacement of undersized culverts with bridge which will allow for fish and western toad migration.
Project Rationale	Replacement of undersized culverts with a concrete deck L100 bridge which will also improve fish passage and western toad migration.				
Project Number	23-04	Capital Project Title	17S/Sooke Main Bridge Replacement	Capital Project Description	Undersized bridge replacement
Project Rationale	The current structure (3 concrete culverts side-by-side with a concrete deck) does not allow adequate room to pass potential storm debris. The most recent engineering inspection stated this recycled structure is in fair shape, with spalling of the concrete. The structure is planned to be replaced with a free span concrete bridge. <b>The project has been moved forward from 2023 to 2025 to allow higher priorities to be addressed first.</b>				

Service: <b>2.670</b> <b>Regional Water Supply</b>			
<b>Project Number</b>	24-01	<b>Capital Project Title</b>	6M/Judge Creek Culvert Replacement (Sooke WSA)
<b>Capital Project Description</b>	Undersized culvert replacement		
<b>Project Rationale</b>	This culvert is very undersized on a slow moving section of creek, which seasonally can be overtopped and unpassable for vehicles. This culvert will be replaced with a larger, fish-friendly structure.		
<b>Project Number</b>	22-11	<b>Capital Project Title</b>	Additional Boom Anchors for Sooke Lake Reservoir debris boom
<b>Capital Project Description</b>	The log boom protecting the Sooke Lake Reservoir Intake Tower from floating woody debris is inadequately anchored and requiring two additional anchors.		
<b>Project Rationale</b>	The debris boom on Sooke Lake Reservoir with the existing anchors has the capacity to strike the Intake Tower if the boom breaks. It is recommended to add two additional anchors to ensure that if the boom breaks it will not damage the Intake Tower.		
<b>Project Number</b>	22-12	<b>Capital Project Title</b>	Replace Zodiac for Sooke Lake Reservoir
<b>Capital Project Description</b>	The zodiac for nearshore work in Sooke Lake Reservoir is at end-of-life and requires replacement.		
<b>Project Rationale</b>	The current Zodiac (rigid inflatable), is near end of life and is not holding air. It is used for near shore work on the primary reservoir, and spill response or rescue in the event of a boat incident on Sooke Lake Reservoir. The existing trailer and engine are in acceptable condition, so only a new hull is required.		
<b>Project Number</b>	22-13	<b>Capital Project Title</b>	Replace Storage Sheds with Containers
<b>Capital Project Description</b>	The existing storage shed does not provide proper storage for supplies and should be replaced with rodent proof sea containers		
<b>Project Rationale</b>	The existing storage facility (sheds) in the Pipeyard used for Infrastructure Operations and Watershed Protection equipment and supplies is enclosed but not sealed from the elements or rodents with a gravel bottom; and is nearing end of life. Due to health and safety concerns, the sheds are to be replaced with basic seacan storage containers that can be sealed and readily moved as needs change.		

Service: 2.670 Regional Water Supply			
Project Number	23-10	Capital Project Title	Work platform for Sooke Lake Reservoir
Capital Project Description	A towable work platform for conducting stationary on-water work activities such as boom and intake tower maintenance and spill response.		
Project Rationale	This request is for a non-powered towable dock or barge that can be moved to various project sites as required. It allows workers to easily access work on the water from a stable platform, and can allow small equipment (pumps or generators) to be operated on appropriate spill containment, and to be left in place for extended periods of time.		
Project Number	23-11	Capital Project Title	Second Wildfire Camera for Leech WSA
Capital Project Description	A secondary wildfire camera to monitor for heat and smoke signatures in the Leech WSA during fire season.		
Project Rationale	Rapid detection is key to taking action when fires are still small and controllable. An infrared camera network, supported by software to identify potential ignitions, can be monitored by staff and an after hours service to rapidly provide an alert to new fire starts. This allows response staff to arrive before the fire has a chance to dig in and start to spread quickly. There is an existing camera at Mount Healy that "sees" large portions of the Sooke WSA. The Leech WSA is the most remote and least visible area (to the public and staff) and there is a strong benefit to early detection. The camera may need to be supported with a tower and communications upgrades.		
Project Number	16-10	Capital Project Title	Post Disaster Emergency Water Supply
Capital Project Description	Identify and procure emergency systems for post disaster preparedness.		
Project Rationale	In the event of a disaster, it is proposed to have in place the ability to source, treat (if required) and distribute drinking water during the initial and sustained response and recovery phases to the public. This item will see the study of the issue in 2016 and 2017 with the anticipated purchase of one or more emergency distribution systems in 2017. Initial investigation has highlighted areas, such as having hardened hydrants/standpipes that the CRD should be investing in. Additional funds are required to start implementing these additional works.		
Project Number	17-13	Capital Project Title	Asset Management Plan
Capital Project Description	Development of a plan to inform future areas of study and highlight critical infrastructure improvements.		
Project Rationale	This plan will bring various components together from items 14-01, 16-07, 16-08, 16-09, 16-10 and 16-11 and form a strategic plan that will identify future study and construction requirements with capital replacement budgets and schedules. Additional funds are required to complete additional investigations highlighted in the 2017 study.		

Service: 2.670 Regional Water Supply			
Project Number	19-15	Capital Project Title	Hydraulic Capacity Assessment and Transient Pressure Analysis
Capital Project Description	Determine the existing level-of-service for the RWSC transmission system and conduct a transient pressure analysis		
Project Rationale	The RWSC transmission is complex with all the connection points to it. Funding is required to determine the available pressures and flows throughout the transmission system and whether it is susceptible to transient pressure waves.		
Project Number	20-08	Capital Project Title	Regional Water DCC Program
Capital Project Description	Design of a Regional DCC Program		
Project Rationale	The municipalities are developing and growing and may result in upgrades to maintain the level of service due to development. Funds are required to design a Regional Water Development Cost Charge program.		
Project Number	20-10	Capital Project Title	Condition & Vulnerability Assessment
Capital Project Description	Conduct a condition assessment of critical supply infrastructure and assess its possibility of risk.		
Project Rationale	The RWSC is a large system with infrastructure of various ages and condition. Funding is required to conduct a condition assessment of critical infrastructure, such as Humpback PRV, and assess their risk of failure and provide a high level timeline for replacement/renewal.		
Project Number	20-11	Capital Project Title	Develop Master Plan
Capital Project Description	Develop a long term strategic plan to anticipate water demand, water treatment, and future siting of facilities.		
Project Rationale	The RWSC is providing water to an increasing population in the CRD. Due to the size and complexity of the supply system, improvements to increase capacity has to be identified and planned out well in advance of the need for the additional water. Funding is required to assess water demand vs available water supply, assess water treatment and future siting of facilities that may be required.		

<b>Service:</b> 2.670 Regional Water Supply			
<b>Project Number</b> 21-05	<b>Capital Project Title</b> Level of Service Agreement	<b>Capital Project Description</b> From #19-15 & #20-11, develop level-of-service agreements for participating municipalities to address hydraulic capacity of infrastructure.	<b>Project Rationale</b> The RWSC supplies water directly and indirectly to 12 municipalities. Based upon Capital Projects #19-15 and #20-11, level-of-service agreements for participating municipalities will be developed to address hydraulic capacity of infrastructure.
<b>Project Number</b> 18-07	<b>Capital Project Title</b> Replacement of UV System	<b>Capital Project Description</b> Replacement of the UV system at the Goldstream Water Treatment Plant	<b>Project Rationale</b> Two 24" UV disinfection units that were decommissioned from the old Charters Creek plant are required to be installed at the JG plant along with electrical and control connections. Inlet and outlet valves are in place, but require 24" stainless steel piping to insert units into place. Funding is required to relocate existing UV disinfection units to the JG plant and provide electrical & control and piping connections. Construction has been spread over two years to correspond with construction over the winter period.
<b>Project Number</b> 18-08	<b>Capital Project Title</b> Bulk Supply Meter Replacement Program	<b>Capital Project Description</b> Planned replacement of aging bulk meter replacement based upon a condition assessment and water audit.	<b>Project Rationale</b> This item is to replace, upgrade and install new bulk water meters and related equipment that measure flow and volumes of water delivered to the wholesale customers. Many of the meter stations are in need of upgrading. Funding is required to replace the flow meter and appurtenances. Funding is required for Blue Ridge, Alderly, Holland and Maplewood replacements.
<b>Project Number</b> 18-15	<b>Capital Project Title</b> Corrosion Protection Program	<b>Capital Project Description</b> Study deficiencies in the current material protection and implement recommendations.	<b>Project Rationale</b> This item is to assess, design and implement cathodic protection for the various infrastructure, including steel pipes, that are susceptible to corrosion. The supply system has various implementations of cathodic protection ranging from interior/exterior coatings for pipe and passive anodes to impressed current systems with variable results and condition. Funding is required to retain a specialist to conduct a high level assessment of existing infrastructure with recommendations for additional investigation or areas that require immediate attention.

<b>Service:</b> <b>2.670</b> <b>Regional Water Supply</b>			
<b>Project Number</b> 18-18	<b>Capital Project Title</b> Main No.3 Segment Replacement	<b>Capital Project Description</b> Replacement of segments of Main No. 3 based upon previous studies.	<b>Project Rationale</b> The existing Main No. 3 is approximately 70 years old. Some section of the 22 km main are steel pipe in known potentially corrosive soils. It is proposed to eventually replace a segment or Main #3 on Wale Road, Island Hwy. and Adams Place in Colwood and View Royal. Conceptual design and options analysis will be undertaken in 2018 with detailed design and construction commencing in 2019 to 2022. Funding is required to retain a consultant to undertake design and to construct a replacement to Main No. 3.
<b>Project Number</b> 19-05	<b>Capital Project Title</b> Repairs - Kapoor Shutdown	<b>Capital Project Description</b> 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.	<b>Project Rationale</b> During the 2016 Kapoor Tunnel inspection numerous deficiencies were noted. Some of the repairs were made and inspected in 2017. Funds are required to complete remaining identified repairs as well as conduct other works, such as head tank valve maintenance, dive inspection of the Intake Tower, hydraulic actuator line replacement, that can only be conducted when the Kapoor Tunnel is offline.
<b>Project Number</b> 19-23	<b>Capital Project Title</b> Critical Spare Equipment Storage & Pipe Yard	<b>Capital Project Description</b> Plan, design and construct a critical equipment storage building.	<b>Project Rationale</b> Additional and accessible storage is required at the pipe yard for critical spare equipment such as repair bands and clamps. Funds are required to plan, design and construct an equipment storage building accessible by loading vehicles.
<b>Project Number</b> 20-16	<b>Capital Project Title</b> Cecelia Meter Replacement	<b>Capital Project Description</b> Replacement of the Cecelia billing meter as well as its enclosure.	<b>Project Rationale</b> The St Giles and Cecelia meters are aging and in hard to maintain locations. Funding is required to construct new meter sites and decommission and demolition the old sites.



Service: 2.670 Regional Water Supply			
Project Number	20-17	Capital Project Title	Decommission Smith Hill Site
Capital Project Description	Plan and decommission the abandoned Smith Hill reservoir site.		
Project Rationale	The Smith Hill reservoir has not been in operation for many years. Funds are required to plan for decommission the site in 2020 and then carry out decommissioning in 2023.		
Project Number	20-32	Capital Project Title	pH Adjustment Facility
Capital Project Description	Design and construct a pH adjustment facility based upon the results of the pH and corrosion study.		
Project Rationale	From the 2019 Capital Project, pH and Corrosion Study, a new facility to adjust pH in the transmission system will be designed and constructed.		
Project Number	21-06	Capital Project Title	Sooke Lake Dam Spillway Hoist and Stop Log Replacement
Capital Project Description	Replacement of the sluice gate spillway hoist and stop logs at Sooke Lake Dam.		
Project Rationale	The Sooke Lake Dam Spillway Hoist is at it's end of life and poses a risk of failure when required for use of lowering the high level gate barriers. Funds are required to replace the hoist.		
Project Number	21-07	Capital Project Title	Goldstream Water Treatment Plant Communications Upgrade
Capital Project Description	Increase reliability and resilience of data and voice communications between the UV Plant, Sodium Hypochlorite Building, Ammonia Building.		
Project Rationale	The communications systems between the UV Plant, Sodium Hypochlorite Building and Ammonia Building operate on separate systems, requiring additional time and processes to access one from the other. Funds are required to optimize the communications system to increase reliability and resilience of data and voice communications between the facilities.		

Service: 2.670 Regional Water Supply			
Project Number	21-09	Capital Project Title	Goldstream Water Chlorination Gas System Removal
Capital Project Description	Plan and construct provisions for removal of chlorination system		
Project Rationale	The Goldstream Water Treatment Plant has undergone numerous upgrades and updates, both large and small since its initial construction. There are numerous vestigial mechanical and electrical assets that require planned removal. Funds are required to plan and remove unused assets that affect maintenance of the system.		
Project Number	21-10	Capital Project Title	SCADA Masterplan and System Upgrades
Capital Project Description	Update the SCADA Master Plan in conjunction with the Juan de Fuca Water Distribution, Saanich Peninsula Water and Wastewater, and Core Area Wastewater Services.		
Project Rationale	The SCADA and radio system utilized by the RWS comprises of components ranging from 2-25 years in age. A planned replacement of assets, to be coordinated with the Juan de Fuca Water Distribution and Saanich Peninsula Water & Wastewater Systems is required to create a more resilient and cohesive communications system		
Project Number	21-11	Capital Project Title	RWS Supply Main No. 4 Upgrade
Capital Project Description	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.		
Project Rationale	Sections of RWS Supply Main No. 4 have been identified as being vulnerable due to age and material type during a seismic event and require replacement. To support replacement of the Goldstream section of Main No. 4, improvements to RWS Supply Main No. 1 are required, such as replacement of approximately 40 m of transmission Main #1 at Watkiss Way and upgrade of the Watkiss PRV, upgrade of the Millstream PRV, modifications to the Humpback PRV and construction of five new pressure control stations. This project is part of a project partnered with the Saanich Peninsula Water System to increase the resilience of the water system by replacing vulnerable sections of transmission mains. The budget breakdown of the works: Goldstream section of Main #4 \$21,975,000; Watkiss Way section of Main #1 \$950,000; Watkiss PRV \$1,250,000; Millstream PRV \$1,350,000; Humpback PRV improvements \$825,000; Five new PRVs \$9,050,000.		

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Project Number	21-12	Capital Project Title	SRRDF Upgrade
Capital Project Description	Increased water flows in the Sooke region have resulted in an additional sodium hypochlorite dosing pump and automation for summer flows.		
Project Rationale	Due to increased water flows in the Sooke region, an additional sodium hypochlorite dosing pump and automation is required. Funds are required to carry out the upgrades.		
Project Number	22-14	Capital Project Title	Sooke River Intake Feasibility
Capital Project Description	A feasibility study for an intake from Sooke River to replace the Main No. 15 salmon fishery contribution, for a variety of reasons.		
Project Rationale	The feasibility to construct an intake from Sooke River to replace the Main No. 15 salmon fishery contribution.		
Project Number	22-15	Capital Project Title	Microwave Radio Upgrades
Capital Project Description	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed.		
Project Rationale	Supports current and future fire detection cameras.		
Project Number	22-16	Capital Project Title	Goldstream WTP Drainage Improvements
Capital Project Description	Construct drainage improvements for the Goldstream Water Treatment Plant and assess		
Project Rationale	Multiple facilities throughout the CRD RWS system require additional bandwidth to allow for proper monitoring and control. This project will enable the initial design and preliminary installation of a high bandwidth microwave backbone that will be able to be leveraged by multiple CRD operational groups. The installation of this backbone will be coordinated with the other IWS service areas.		

Service: 2.670 Regional Water Supply			
Project Number	22-17	Capital Project Title	Goldstream WTP Safety Improvements
Capital Project Description	Construct employee and public safety improvements such as a trail notification system if there was an ammonia spill.		
Project Rationale	The Goldstream Dams Dam Safety Review was initiated in 2015 and delivered in 2016 and the review provided recommendations for dam safety improvements for the 11 dams in the Goldstream Watershed. The dam deficiencies and related projects are identified in the Dam Safety Database.		
Project Number	16-16	Capital Project Title	Implications from Goldstream Dam Safety Review
Capital Project Description	Conduct dam improvements at the Goldstream dams that resulted for the Dam Safety Review and routine inspections (refer to the Dam Safety Database).		
Project Rationale	The Goldstream Dams Dam Safety Review was initiated in 2015 and delivered in 2016 and the review provided recommendations for dam safety improvements for the 11 dams in the Goldstream Watershed. The dam deficiencies and related projects are identified in the Dam Safety Database.		
Project Number	16-17	Capital Project Title	Butchart Dam No. 5 Remediation Planning & Construction
Capital Project Description	Phase 1 Rehabilitation (grouting) of Butchart Dam No. 5 and planning for Phase 2.		
Project Rationale	Butchart Dam #5 was observed to have a sinkhole on the downstream slope. The earthfill dam was founded on limestone in the about 1905 and seepage issues have occurred since that time. A geotechnical investigation was conducted in 2016, and remediation has been recommended by geotechnical consultant. It is proposed to complete detailed design of remediation in 2018 and construction of repairs in 2019.		
Project Number	17-25	Capital Project Title	Implications from Sooke Lake Dam Safety Review
Capital Project Description	Conduct dam improvements at the Sooke Lake Dam that resulted from the Dam Safety Review and routine inspections (refer to the Dam Safety Database)		
Project Rationale	The 2016 Dam Safety Review Audit was completed and provided a list of recommended improvements. Upcoming capital work to be completed is identified in the dam safety database.		

<b>Service:</b> 2.670 Regional Water Supply			
<b>Project Number</b> 18-19	<b>Capital Project Title</b> Sooke Lake Dam - Instrumentation System Improvements	<b>Capital Project Description</b> Complete dam performance instrumentation system/surveillance improvements for the Sooke Lake Dam.	<b>Project Rationale</b> The 2016 Dam Safety Review identified and recommended various dam safety surveillance instrumentation improvements including piezometers, weirs, seismometers, etc. An Instrumentation system plan was completed and includes a prioritized list of improvement projects.
<b>Project Number</b> 18-20	<b>Capital Project Title</b> Sooke Lake Dam - Breach Risk Reduction Measures	<b>Capital Project Description</b> Implement measures to reduce Sooke Lake Dam breach implications in the unlikely event of dam failure (refer to the NHC Consulting study).	<b>Project Rationale</b> A Dam Breach Assessment and Inundation Zone Mapping project was completed in 2017 by an engineering consultant and risk mitigation measures included structural and non-structural measures to lower risk should a dam breach occur. The measures are captured in the Dam Safety Database.
<b>Project Number</b> 19-07	<b>Capital Project Title</b> Integrate Dam Performance and Hydromet to SCADA	<b>Capital Project Description</b> Integrate the dam safety instrumentation/surveillance (i.e. piezometers and weirs) and HydroMet stations to report to WIO through the existing SCADA system.	<b>Project Rationale</b> Based on capital project 18-19, dam performance piezometers and weirs and Hydromet/Dam Safety Instrumentation stations will be integrated through the SCADA system.
<b>Project Number</b> 19-09	<b>Capital Project Title</b> Cabin Pond Dams Decommissioning	<b>Capital Project Description</b> The Cabin Pond Dams (x2) have been retired from drinking water service, plan to decommission.	<b>Project Rationale</b> The two Cabin Pond Dams has been retired from drinking water service with no other interested owners. Funds are required to plan and implement decommissioning of the dams.

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Project Number	19-12	Capital Project Title	Goldstream Dams Instrumentation Improvements
Capital Project Description	Conduct dam safety instrumentation/surveillance improvements (refer to report from Thurber Engineering).		
Project Rationale	Thurber completed a study on the Goldstream Dam instrumentation and found numerous deficiencies with respect to dam safety. Funds are required to design and implement improvements to the Goldstream Dam instrumentation.		
Project Number	19-13	Capital Project Title	Dam Safety Instrumentation
Capital Project Description	The existing dam safety instrumentation/surveillance equipment is getting older and will need to be replaced/rehabilitated (does not include pending SCADA effort).		
Project Rationale	Aging Hydromet/Dam Safety Instrumentation stations maintained by Infrastructure Engineering require replacement so that ongoing monitoring within the watersheds can be maintained. Funds are required for upgrades and replacement of existing Hydromet Stations.		
Project Number	20-19	Capital Project Title	Goldstream System High Level Outlet Valve Replacements
Capital Project Description	The Goldstream and Butchart high level outlet valves have been identified as requiring replacement.		
Project Rationale	Through dam safety inspections and routine operations, the Goldstream and Butchart high level outlet valves have been identified as requiring replacement. Funds are required to design and replace the valves.		
Project Number	21-03	Capital Project Title	Deception Dam - Dam Safety Review 2021 & Improvements
Capital Project Description	Conduct a Dam Safety Review and improvements for the Deception Dam.		
Project Rationale	Deception Dam has a consequence classification of "very high" and a dam safety review is required to be completed every ten years under the current B.C. Dam Safety Regulation. The last dam safety review was completed in 2011. The dam safety review is anticipated to be an "audit-style" assessment of the physical condition of the dam, operations, maintenance, surveillance, identification of dam safety deficiencies and recommendations for dam safety improvements. Project includes budget for subsequent year to complete recommended dam safety improvements.		

Service: 2.670 Regional Water Supply			
Project Number	21-04	Capital Project Title	Saddle Dam - Dam Safety Review 2021 & Improvements
		Capital Project Description	Conduct a Dam Safety Review and improvements for the Saddle Dam.
Project Rationale	Saddle Dam has a consequence classification of "very high" and a dam safety review is required to be completed every ten years under the current B.C. Dam Safety Regulation. The last dam safety review was completed in 2011. The dam safety review is anticipated to be an "audit-style" assessment of the physical condition of the dam, operations, maintenance, surveillance, identification of dam safety deficiencies and recommendations for dam safety improvements. Project includes budget for subsequent year to complete recommended dam safety improvements.		
Project Number	21-21	Capital Project Title	Goldstream Dams - 4 Low Level Gate Improvements
		Capital Project Description	Logistics planning in 2021, installation in 2022
Project Rationale	Several of the water control gates related to the Goldstream dams are in need of repair and possibly replacement.		
Project Number	21-22	Capital Project Title	Charters Dam - Dam Safety Review 2021
		Capital Project Description	Legislated obligation to conduct Dam Safety Review.
Project Rationale	Charters Dam has a consequence classification of "high" and a dam safety review is required to be completed every ten years under the current B.C. Dam Safety Regulation. The last dam safety review was completed in 2011. The dam safety review is anticipated to be an "audit-style" assessment of the physical condition of the dam, operations, maintenance, surveillance, identification of dam safety deficiencies and recommendations for dam safety improvements. A dam decommissioning study is in progress and the DSR will only proceed if needed, as determined by the Dam Safety officer.		
Project Number	22-08	Capital Project Title	Deception Dam Surveillance Improvements
		Capital Project Description	Replace and supplement the Dam Safety Instrumentation at Deception Dam.
Project Rationale	The latest engineering data review identified deficiencies with the existing piezometers and seepage weir. It is proposed to prepare a system improvement plan and thereafter complete repairs, improvemtn and install supplementary dam performance instrumentation.		

<b>Service:</b> 2.670 Regional Water Supply			
<b>Project Number</b>	23-01	<b>Capital Project Title</b>	Sooke Lake Dam Update Seismic Assessment  <b>Capital Project Description</b> Conduct a seismic assessment of the Sooke Lake Dam as per the previous Dam Safety Reviews.
<b>Project Rationale</b>	The Sooke Lake Dam requires periodic seismic assessment updates. Funds are required to retain a consultant to conduct an update to the Sooke Lake Dam Seismic Assessment.		
<b>Project Number</b>	23-07	<b>Capital Project Title</b>	Sooke Lake Dam Spillway and Gates Retrofit  <b>Capital Project Description</b> Detail and construct seismic retrofits for the existing structures initially focusing on the spillway and gates structures.
<b>Project Rationale</b>	The seismic assessment completed in 2017 included recommendations for seismic retrofits for Sooke Lake Dam including seismic anchoring of the spillway, gate structure and the intake tower bridge.		
<b>Project Number</b>	23-08	<b>Capital Project Title</b>	Regional Watershed Dams – Flood Forecasting System  <b>Capital Project Description</b> Update the existing flood forecasting system (WD4Cast) to a modern version including Standard Operating Procedures and training for staff.
<b>Project Rationale</b>	The 2016 Dam Safety Review included a recommendation to improve the flood forecasting system, which is becoming more important with Climate Change. This item will update the existing flood forecasting system from WD4Cast to a modern version including Standard Operating Procedures and training for staff.		
<b>Project Number</b>	23-09	<b>Capital Project Title</b>	Sooke Lake Dam - Dam Safety Review 2023 & Addressing Implications  <b>Capital Project Description</b> Conduct a Dam Safety Review (recommended 10 year review cycle)
<b>Project Rationale</b>	Sooke Lake Dam has a consequence classification of "extreme" and a dam safety review is required to be completed every seven years under the current B.C. Dam Safety Regulation. The last dam safety review was completed in 2016. The dam safety review is anticipated to be an "audit-style" assessment of the physical condition of the dam, operations, maintenance, surveillance, identification of dam safety deficiencies and recommendations for dam safety improvements. Project includes budget for subsequent years to complete recommended dam safety improvements.		



Service: 2.670 Regional Water Supply			
Project Number	25-01	Capital Project Title	Goldstream Dam - Dam Safety Review 2025 & Addressing Implications
		Capital Project Description	Conduct a Dam Safety Review in 2023 (recommended 10 year review cycle)
Project Rationale	The Goldstream Watershed Dams have a consequence classification of "low" to "high" and a dam safety review is required to be completed every ten years under the current B.C. Dam Safety Regulation. The last dam safety review was completed in 2015. The dam safety review is anticipated to be an "audit-style" assessment of the physical condition of the dam, operations, maintenance, surveillance, identification of dam safety deficiencies and recommendations for dam safety improvements. Project includes budget for subsequent years to complete recommended dam safety improvements.		
Project Number	25-02	Capital Project Title	Probable Maximum Flood and Inflow Design Flood Updates
		Capital Project Description	Update the previous edition from 2015 (recommended 10 year review cycle).
Project Rationale	The various Dam Safety Reviews and Canadian Dam Safety Guideline recommend updating the reservoir inflow design flood and freeboard analysis every ten years.		
Project Number	20-04	Capital Project Title	Sooke Lake HyDy Model Development
		Capital Project Description	Critical data collection, model building+calibration, model utilization for 3 different scenarios
Project Rationale	This project consists of the following different phases: 2020/2021 Procurement/Rental of monitoring equipment to fill critical data gaps; 2022 Consulting contract to build the hydrodynamic lake model and calibrate it against existing data; 2022 Consulting contract to run the model for a North Basin intake scenario; 2023 Consulting Contract to run the model for investigating impacts of a diversion of Leech River water into Sooke Lake; 2024 Consulting Contract for investigating impacts of wind induced seiches in Sooke Lake.		
Project Number	21-13	Capital Project Title	Flowcam Imaging System
		Capital Project Description	Utilize semi-automated algal analysis to meet increased demands without increasing FTEs
Project Rationale	Demand for algal monitoring of the watershed areas has increased due to the monitoring of the Leech Watershed Area and overall increased monitoring due to the potential effects of climate change on the water supply for Greater Victoria. The Flowcam imaging system is a semiautomated flow cytometer imaging system that can increase sample analysis capacity substantially to meet the demand without increasing FTEs in an expert role. Water Quality also analyzes algal samples for CRD-operated local service area drinking water sources and recovers costs through internal charges back to RWS.		

Service: 2.670 Regional Water Supply			
Project Number	21-29	Capital Project Title	Microbiological plate pourer
Capital Project Description	Automation of manual process to increase capacity/worker safety		
Project Rationale	Currently microbiological media is heated to melting on a hotplate and manually poured into Petri dishes, and sample workload has increased such that staff spend a significant amount of time on this potentially hazardous activity. This piece of equipment automates the process to eliminate the risk of burn injuries from handling hot, sterilized media in glassware.		
Project Number	22-05	Capital Project Title	WQ Lab Capital Improvements
Capital Project Description	Building improvements in the lab		
Project Rationale	Replacement of floor covering and wooden cabinetry original to the building due to deterioration/ wear and tear.		
Project Number	22-06	Capital Project Title	Sooke Lake Food Web Study
Capital Project Description	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		
Project Rationale	CRD has been using predominantly algal data as an indicator for stream health and condition assessment in the source waters. To gain a better understanding of the source water conditions and how they may change over time it is necessary to expand this indicator system for other trophic levels in the food web. Sooke Lake Reservoir is of particular interest as the primary and critical water source for the GVDWS and therefore a aquatic food web study will be commissioned on this lake.		
Project Number	22-07	Capital Project Title	Bulk-Water Connection Backflow Protection Study
Capital Project Description	Investigate all bulk-water connections to CRD or municipal systems and identify the need for backflow protection		
Project Rationale	While the CRD has a new policy requiring backflow considerations for the design of new connections to CRD supply mains, there are a number of existing connections that are unprotected or that are unknown if protected. Also, there are numerous bulk-water connections to municipal mains (Stratas, First Nation lands, federal lands) that may be unprotected. This study is to create an inventory of all bulk-water connections to public water systems in the GVDWS and to assess the risk of backflow.		

Service: 2.670 Regional Water Supply			
Project Number	23-06	Capital Project Title	GVDWS Nitrification Study
Capital Project Description	Investigate nitrification occurrence and potential impacts on drinking water quality		
Project Rationale	With the operation of the upgraded Goldstream disinfection process (liquid NH3 and hypo) the volatility of the residual products and potential for nitrification in the distribution systems needs to be studied to assess any potential impacts to the drinking water quality.		
Project Number	22-19	Capital Project Title	Microbiological Media Preparator
Capital Project Description	Microbiological media preparator for automation of manual/hazardous tasks		
Project Rationale	Staff spend many manual hours preparing and pouring molten microbiological media for use in water and waste water testing. In 2021, a plate pourer was added for safety reasons (to minimize staff exposure to handling hot liquids) and the preparator will provide further automation and safety benefits, greatly reducing potential for staff injury due to burns or musculoskeletal injuries.		
Project Number	24-02	Capital Project Title	Boat Motor Replacement with Electric Outboards (Sooke and Goldstream Boats)
Capital Project Description	50hp and 15hp motor replacement due to age and water quality concerns, large electric outboards are already available from Torqeedo for instance		
Project Rationale	When the existing boat motors are due for replacement they shall be replaced with electric outboard motors to reduce emissions and to provide clean propulsion of CRD boats on the drinking water source lakes. This will reduce the risk of fuels spills and eliminate combustion exhausts entering the water.		

<b>Service:</b> 2.670 Regional Water Supply			
<b>Project Number</b>	17-27	<b>Capital Project Title</b>	Watershed Bridge and Culvert Replacement
<b>Capital Project Description</b>	Replacement of small culverts and bridges throughout the GVWSA.		
<b>Project Rationale</b>	This provides annual funding for the replacement of culverts and bridges that have reached end of life and/or are undersized given present knowledge of potential peak water flows and anticipated climate change effects. With the completion of peak flow modelling of all major structures in the Sooke and Goldstream WSAs in 2017, additional funds are required beginning in 2018 to upgrade identified structures to current standards. Costs of upgrades have increased significantly in the last 5 years.		
<b>Project Number</b>	17-28	<b>Capital Project Title</b>	Watershed Security Infrastructure Upgrade and Replacement
<b>Capital Project Description</b>	New, upgrade and replacement of security infrastructure in the GVWSA.		
<b>Project Rationale</b>	The outer boundary of the Leech, Sooke and Goldstream Water Supply Areas is approximately 119 kilometers in length. Main access roads are gated and there are 11 kilometers of existing security fencing. A constant effort is needed to maintain a Closed Watershed Policy. Through monitoring, high incident areas are identified, security plans are developed, and security infrastructure (fencing, gates and signage) is installed or upgraded where required. The uplift in provisional funding requested in 2017 has been reduced given full integration of the Weeks Lake area within the GVWSA, completion of fencing and gates related to the Sooke Hills Wilderness Trail and with separate capital projects for autogates.		
<b>Project Number</b>	17-29	<b>Capital Project Title</b>	Water Supply Area Equipment Replacement
<b>Capital Project Description</b>	Hydrometeorological, fireweather and wildfire suppression equipment replacement.		
<b>Project Rationale</b>	This provides annual funding for the replacement or upgrading of equipment for wildfire suppression and spill response, fire weather stations, hydro-meteorological monitoring and water quality sampling and monitoring equipment. Given an expansion of the hydrology and meteorology network of stations and sensors, an additional \$50,000 per year is added in 2020 and going forward. In 2021 and going forward, funding is reduced by \$20,000 as water quality equipment will be funded under a separate line item (21-17).		
<b>Project Number</b>	17-30	<b>Capital Project Title</b>	Transmission Main Repairs
<b>Capital Project Description</b>	Emergency repairs to the transmission mains.		
<b>Project Rationale</b>	Each year a visual inspection of this critical supply tunnel is carried out by CRD staff. This capital item allows for minor repairs that are discovered during these inspections. This also allows for annual funding for repair of emergency breaks on large diameter supply mains.		

Service: 2.670 Regional Water Supply			
Project Number	17-31	Capital Project Title	Transmission System Components Replacement
Capital Project Description	Replacement and repair of transmission components.		
Project Rationale	This is an annual allowance for the capital costs for the replacement and repair of supply system components that fail under normal operation and maintenance during the year.		
Project Number	17-33	Capital Project Title	Disinfection Equipment Parts Replacement
Capital Project Description	Replacement of incidental equipment and parts associated with the disinfection system.		
Project Rationale	The annual work includes the replacement of the plastic gas feed piping that has become very brittle, installing air valves on the ammonia solution lines, installing and replacing shut off valves on the booster pumps supply piping, installing indicator stems on UV cooling water valves, relocating the UV cooling water feed pipes, improving the landscaping around the UV building to reduce dust and other minor upgrades.		
Project Number	17-34	Capital Project Title	Supply System Computer Model Update
Capital Project Description	Annual update of the regional hydraulic model.		
Project Rationale	This item is to allow for staff and consultant time each year to keep the hydraulic computer model current.		
Project Number	19-16	Capital Project Title	Dam Improvements
Capital Project Description	Items not covered by Dam Safety Reviews, but brought up in Dam Safety Inspections and Dam Safety Reviews and address items in the dam safety database/risk registry		
Project Rationale	Dam Safety Inspections are carried out throughout the year and result in minor improvements at each dam annually. These improvements are minor in nature and are typically not covered in the Dam Safety Review. Funds are required to carry out the dam safety improvements resulting from Dam Safety Inspections.		

Service: 2.670 Regional Water Supply			
Project Number	19-22	Capital Project Title	SCADA Repairs & Equipment Replacement
Capital Project Description	Items not covered by the SCADA Replacement and SCADA Master Plan, but integral in maintaining the SCADA System and revenue meter system.		
Project Rationale	This item is to allow for unplanned SCADA repairs and equipment replacement not covered by the capital projects SCADA Replacement.		
Project Number	21-15	Capital Project Title	Corrosion Protection
Capital Project Description	Replace corrosion protection assets, such as coatings, for the transmission system when identified.		
Project Rationale	There are numerous assets with varying levels of corrosion protection throughout the RWS system. Funds are required to ensure that corrosion protection assets are replaced or rehabilitated when identified.		

Service: 2.670 Regional Water Supply			
Project Number	21-16	Capital Project Title	Valve Chamber Upgrades
Capital Project Description	Replace failing valves and appurtenances along the RWS supply system.		
Project Rationale	The RWS system has numerous isolation and air valves along the transmission system, usually in underground chambers. Funds are required for replacement of valves and chamber upgrades as they are identified.		
Project Number	21-17	Capital Project Title	Water Quality Equipment Replacement
Capital Project Description	Replacement of water quality equipment for the water quality lab and water quality operations		
Project Rationale	This provides annual funding for the replacement or upgrading of equipment for the water quality lab, sampling, and operations. Of this provisional budget, \$20,000 was previously included in item 17-29 (Water Supply Area annual provisional budget)		
Project Number	21-18	Capital Project Title	LIMS support
Capital Project Description	Support for LIMS database		
Project Rationale	Provides for support for the laboratory information management system		
Project Number	17-35	Capital Project Title	Vehicle & Equipment Replacement (Funding from Replacement Fund)
Capital Project Description	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.		
Project Rationale	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. The Equipment Replacement Fund is used to fund the expenditure. The requests have been adjusted to align with the pricing for electric vehicles.		

Service: 2.670 Regional Water Supply			
Project Number	20-22	Capital Project Title	Vehicle for the Dam Safety Program
Capital Project Description	New Transit Van		
Project Rationale	An additional pick up is required for the dam safety program. The request has been adjusted to align with the pricing for an electric Transit Van.		
Project Number	20-23	Capital Project Title	Vehicle for the CSE Support Program
Capital Project Description	New Transit Van		
Project Rationale	A new Transit van is required to support the Confined Space Entry Support program. The request has been adjusted to align with the pricing for an electric Transit Van.		
Project Number	21-30	Capital Project Title	Vehicle for Warehouse Operations
Capital Project Description	New pick up		
Project Rationale	For use of the warehouse worker to source supplies and materials in support of the remote sites. This warehouse worker will maintain wastewater stores and will travel and transport as required items between stores locations. A pickup truck will be required. The request has been aligned with the pricing for an electric Pick Up.		
Project Number	22-18	Capital Project Title	Electric Vehicle Charging Stations
Capital Project Description	7 Dual charging stations at 479 Island Hwy and 1 Dual charging station at the Watershed Protection FOC		
Project Rationale	EV Charging Stations Are required at 479 Island Hwy and the Watershed Protection FOC in order to charge the EV's being purchased during 2021, 2022 and future budget periods. The installation costs per charger is reduced when more than one is installed at a time. There are grants available that will cover approx. 50% of all costs.		



Service: 2.670/2.680 Regional Water Supply & JDF Water Distribution Combo			
Project Number	16-01	Capital Project Title	Upgrades to Buildings at 479 Island Highway
Capital Project Description	Maintenance and changes to buildings and office layouts.		
Project Rationale	<p>The budget includes the following funds to upgrade and renew the buildings at 479 Island Highway:</p> <ul style="list-style-type: none"> <li>• Repairs, upgrades and changes to the buildings (provisional \$50,000)</li> <li>• Painting of the buildings. (provisional \$10,000 annually)</li> <li>• Repair and replacement of carpets, floors and walls. (provisional \$10,000 annually)</li> <li>• Repair, refurbishment and replacement of equipment and property. (provisional \$10,000 annually)</li> </ul>		
Project Number	17-01	Capital Project Title	Voice Radio Upgrade
Capital Project Description	Replacement of end of life voice radio system repeaters, office, vehicle and handheld radios.		
Project Rationale	<p>Service Life and projected replacement:</p> <ul style="list-style-type: none"> <li>• The service life of the mobile and portable units was forecast as 10 years at minimum, 15 years at maximum in 2005.</li> <li>• The present radio models used in the system have just been taken out of production by the manufacturer, there will be no new units available for purchase as of July 1, 2015.</li> <li>• Support for repairs and maintenance of the present radio will continue for the next 3 years at least.</li> <li>• There are no pressing issues with equipment maintenance or repairs, present repair rates suggest we can maintain the system for the next few years, and perhaps reach a 12-15 year lifespan on the present equipment.</li> </ul>		
Project Number	20-01	Capital Project Title	Portable Pump Station
Capital Project Description	Portable pump station and generator to provide backup when a pump station is offline, in construction or to bypass a section of pipe.		
Project Rationale	<p>The RWS and JdF operation numerous water mains and pump stations. There are situations, when a pump station fails, construction of a pump station or bypassing a section of pipe, where a portable pump station <b>with a generator</b> is required to maintain the level of service. Funds will be used in 2020 to design and in 2021 to procure a portable pump station <b>and generator</b>.</p>		
Project Number	17-03	Capital Project Title	Office Equipment, Upgrades and Replacements
Capital Project Description	Upgrade and replacement of office equipment as required.		
Project Rationale	<p>Funds will be used for the replacement and upgrading of office equipment and furniture, as required.</p>		

<b>Service:</b> 2.670/2.680 Regional Water Supply & JDF Water Distribution Combo			
<b>Project Number</b>	17-04	<b>Capital Project Title</b>	Computer Upgrades
<b>Capital Project Description</b>	Annual upgrade and replacement program for computers, copiers, printers, network equipment as required.		
<b>Project Rationale</b>	<p><i>This is an annual upgrading and replacement program of computers, photocopiers, network, monitoring and associated equipment, as required. This item has been increased from \$160,000 to \$170,000 annually to reflect actual costs.</i></p> <p><i>Capital Budget</i>  <i>Network Switch Maintenance \$10,000</i>  <i>Additional Wireless Access Points and Maintenance \$15,000</i>  <i>Photocopier Replacement \$20,000</i>  <i>Additional Data Storage \$15,000</i>  <i>Replacement Computers \$75,000</i>  <i>Equipment Maintenance (contingency) \$23,000</i>  <i>Replace Access Control System - Gates/ Video Cameras \$12,000</i>  <i>Total Capital \$170,000</i></p>		
<b>Project Number</b>	17-05	<b>Capital Project Title</b>	Development of the Maintenance Management Systems
<b>Capital Project Description</b>	Develop maintenance management system.		
<b>Project Rationale</b>	<p><i>The maintenance management system needs further development to meet user needs and to facilitate reporting. It is proposed that funds be approved for the following projects:- Develop and Asset onboarding process and a fault code reporting process for the CMMS.</i></p>		
<b>Project Number</b>	17-06	<b>Capital Project Title</b>	Small Equipment & Tool Replacement (Water Operations)
<b>Capital Project Description</b>	Replacement of tools and small equipment for Water Operations as required.		
<b>Project Rationale</b>	<p>Funds will be used for replacement of a variety of Operations and Welding equipment such as cutting saws, portable generators, gas detectors, Hilti drills, plasma cutter, wire welder, etc.</p>		
<b>Project Number</b>	17-07	<b>Capital Project Title</b>	Small Equipment & Tool Replacement (Corporate Fleet)
<b>Capital Project Description</b>	Replacement of tools and small equipment for Fleet as required.		
<b>Project Rationale</b>	<p>Funds will be used for replacement of a variety of Fleet small equipment and tools as required. This includes provision to replace the Vehicle OBD reader for reading engine codes and the shop air compressor.</p>		

**2.670 Regional Water Supply**  
**Asset/ Reserve Schedule**  
**2022 - 2026 Financial Plan**

**Asset Profile**

**Regional Water Supply**

System assets include the lands, dams and source water reservoirs within the water supply areas, intake and source conduits, two water treatment plants, pressure regulating facilities, nine supply mains, three balancing reservoirs and revenue water meters in the water transmission system.

**Equipment Replacement Reserve Schedule**

**Reserve Fund: 2.670 Regional Water Supply Equipment Replacement Reserve (covered by CRD-ERF Bylaw)**

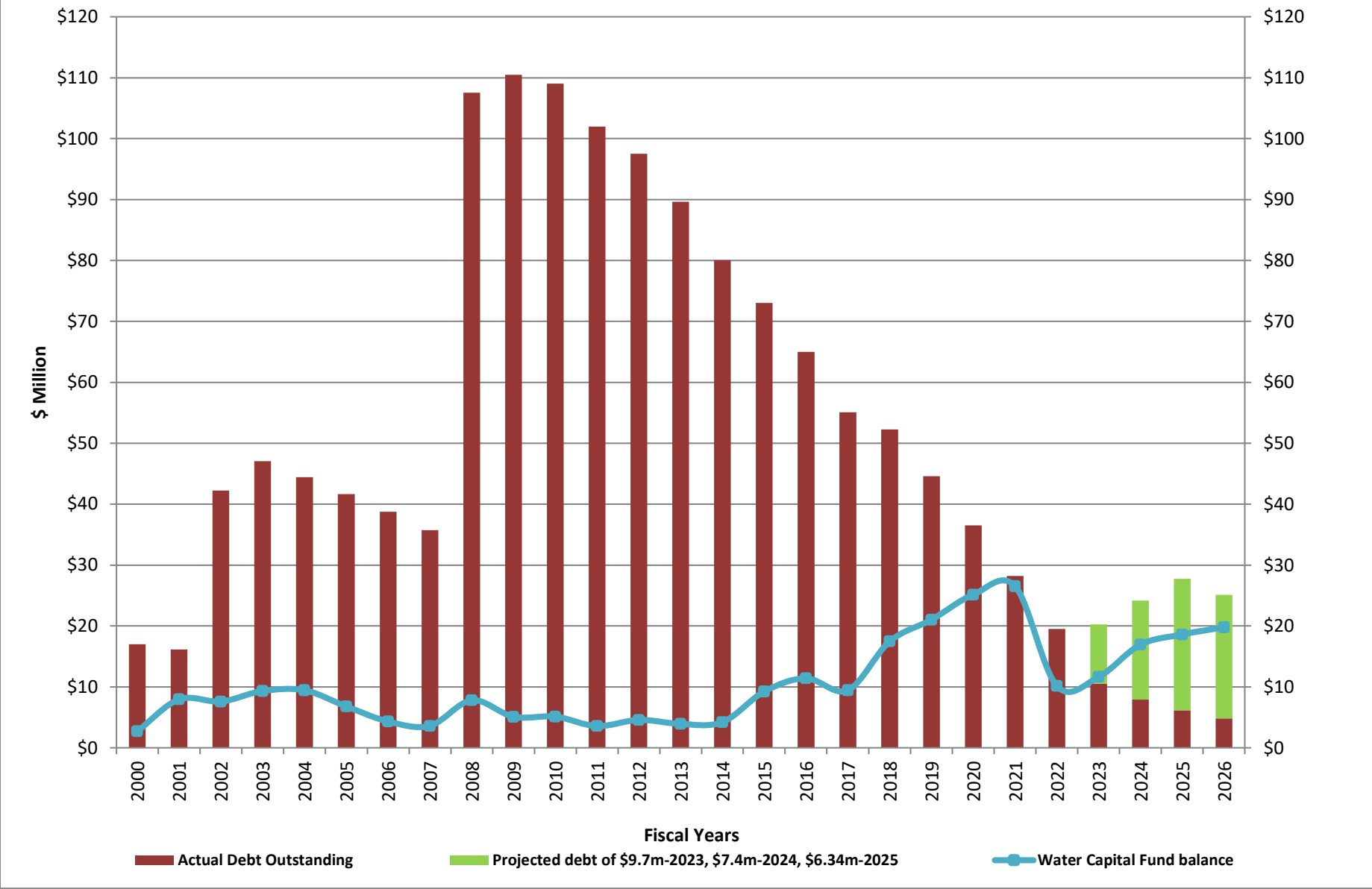
Fund: 1022 Fund Center: 101454	Actual	Estimate	Budget				
	2020	2021	2022	2023	2024	2025	2026
<b>Beginning Balance</b>	2,031,817	2,364,344	2,700,884	1,990,603	1,965,968	2,046,342	1,997,253
<b>Equipment purchases (Based on Capital Plan)</b>	(27,153)	(19,000)	(1,205,250)	(406,000)	(290,000)	(450,000)	(200,000)
<b>Transfer from Operating Budget</b>	299,294	297,540	314,181	320,465	326,874	333,411	340,080
<b>Proceeds on disposals</b>	40,475	38,000	180,788	60,900	43,500	67,500	30,000
<b>Interest Income*</b>	19,911	20,000					
<b>Ending Balance \$</b>	<b>2,364,344</b>	<b>2,700,884</b>	<b>1,990,603</b>	<b>1,965,968</b>	<b>2,046,342</b>	<b>1,997,253</b>	<b>2,167,333</b>

General Comments:

Reserve Fund is used for the purpose of replacing fleet vehicles including heavy equipment and associated mobile components, as outlined in the capital plan. Proceeds from disposals are estimated at 15% of replacement equipment purchases. Note not all vehicles are sold within the year in which they are replaced.

\* Interest should be included in determining the estimated ending balance for the current year. Interest in planning years nets against inflation which is not included.

# Regional Water Supply Service (Greater Victoria) Debt Outstanding vs Water Capital Fund Balance



**REGIONAL WATER SUPPLY COMMISSION**  
**Agricultural Water Rate Funding Comparisons 2011 - 2020**

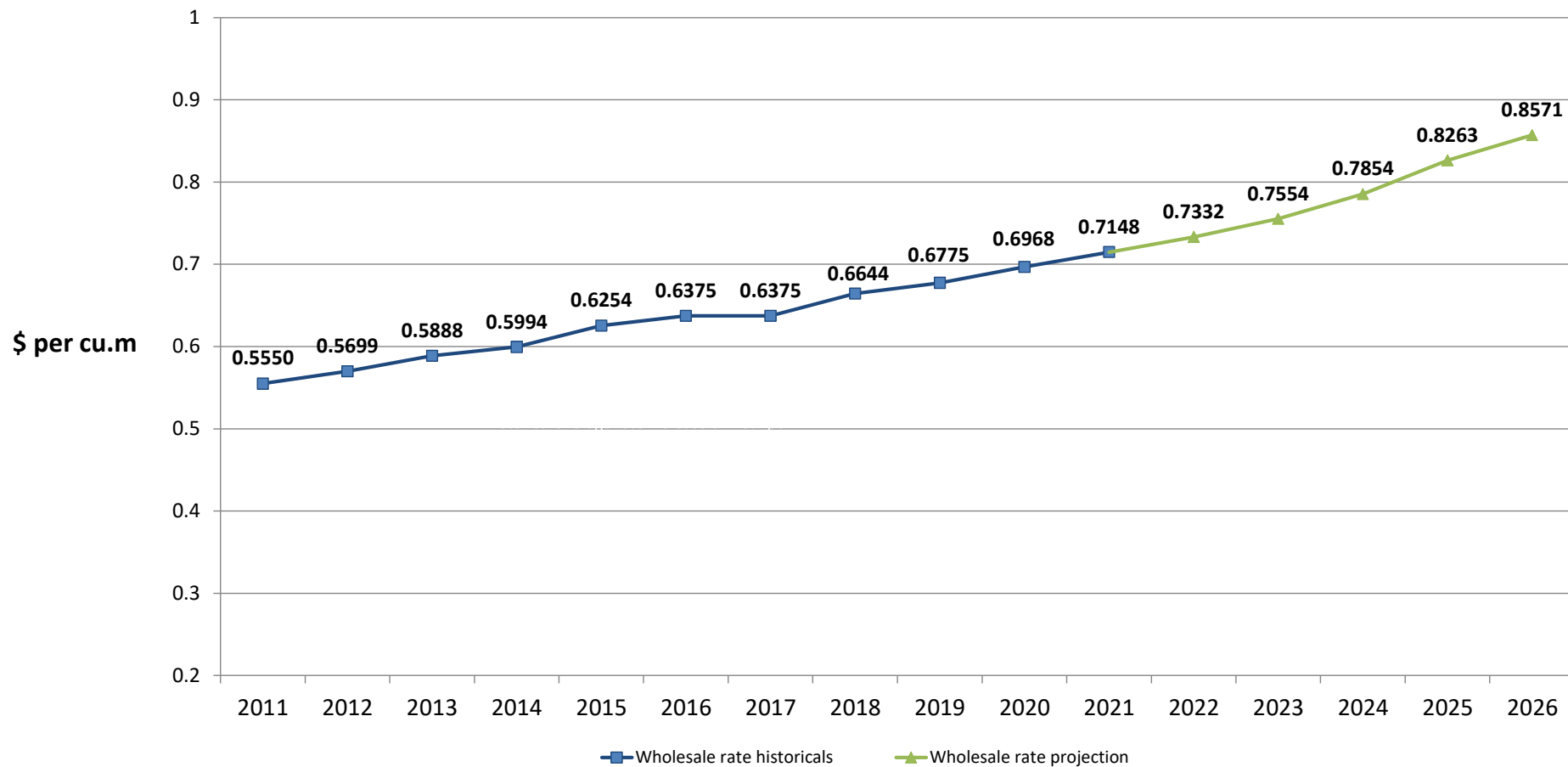
		No. of AR Accounts	No. of AG Accounts	AR Volume m3	AG Volume m3	Avg AR Volume m3 (Vol/Accts)	Avg AG Volume m3	Agri Rate Consumption Costs	Agri Fixed Charge Costs	Total Agri Subsidy Paid out (Cons + Fixed)	Avg Agri Cost \$ (Paid/Accts)	%age of Total Paid out	Rate Differential		
													Municipal Rate m3 A	Agri Rate m3 B	Muni-CRD Diff m3 A - B
Western Communities & Sooke *															
	2020	84	15	42,432	51,118	505	3,408	\$ 187,605	\$ -	\$ 187,605	\$ 1,895	11.9%	\$ 2,2159	\$ 0,2105	\$ 2,0054
	2019	86	14	36,598	50,277	426	3,591	\$ 165,297	\$ -	\$ 165,297	\$ 1,653	11.1%	\$ 2,1132	\$ 0,2105	\$ 1,9027
	2018	95	18	40,657	19,669	428	1,093	\$ 112,411	\$ -	\$ 112,411	\$ 995	7.9%	\$ 2,0739	\$ 0,2105	\$ 1,8634
	2017	81	11	33,458	11,628	413	1,057	\$ 76,754	\$ -	\$ 76,754	\$ 834	5.6%	\$ 1,9129	\$ 0,2105	\$ 1,7024
	2016	80	11	41,248	8,652	516	787	\$ 84,950	\$ -	\$ 84,950	\$ 934	5.9%	\$ 1,9129	\$ 0,2105	\$ 1,7024
	2015	79	11	33,537	7,078	425	643	\$ 64,968	\$ -	\$ 64,968	\$ 722	5.1%	\$ 1,8101	\$ 0,2105	\$ 1,5996
	2014	79	11	29,419	9,074	372	825	\$ 60,769	\$ -	\$ 60,769	\$ 675	5.6%	\$ 1,7892	\$ 0,2105	\$ 1,5787
	2013	80	11	25,532	5,578	319	507	\$ 46,438	\$ -	\$ 46,438	\$ 510	4.7%	\$ 1,7032	\$ 0,2105	\$ 1,4927
	2012	79	13	23,617	5,932	299	456	\$ 40,828	\$ -	\$ 40,828	\$ 444	4.3%	\$ 1,5922	\$ 0,2105	\$ 1,3817
	2011	75	11	27,910	4,893	372	445	\$ 43,641	\$ -	\$ 43,641	\$ 507	5.2%	\$ 1,5409	\$ 0,2126	\$ 1,3283
Central Saanich															
	2020	278	49	375,646	233,214	1,351	4,759	\$ 873,579	\$ 6,768	\$ 880,347	\$ 2,692	56.0%	\$ 1,8047	\$ 0,2105	\$ 1,5942
	2019	276	47	421,804	210,499	1,528	4,479	\$ 862,430	\$ 2,162	\$ 864,592	\$ 2,677	58.0%	\$ 1,7260	\$ 0,2105	\$ 1,5155
	2018	278	49	378,593	297,433	1,362	6,070	\$ 866,699	\$ 7,003	\$ 873,702	\$ 2,672	61.3%	\$ 1,6350	\$ 0,2105	\$ 1,4245
	2017	296	49	398,087	298,522	1,345	6,092	\$ 792,125	\$ 7,003	\$ 799,128	\$ 2,316	58.7%	\$ 1,5575	\$ 0,2105	\$ 1,3470
	2016	297	51	446,241	303,419	1,502	5,949	\$ 879,396	\$ 7,191	\$ 886,587	\$ 2,548	61.1%	\$ 1,5139	\$ 0,2105	\$ 1,3034
	2015	294	51	412,060	246,292	1,402	4,829	\$ 739,282	\$ 7,144	\$ 746,426	\$ 2,164	58.4%	\$ 1,4582	\$ 0,2105	\$ 1,2477
	2014	294	49	361,801	190,895	1,231	3,896	\$ 596,515	\$ 6,808	\$ 603,323	\$ 1,759	55.7%	\$ 1,4033	\$ 0,2105	\$ 1,1928
	2013	296	45	321,518	194,848	1,086	4,330	\$ 542,837	\$ 4,186	\$ 547,023	\$ 1,604	55.7%	\$ 1,3799	\$ 0,2105	\$ 1,0525
	2012	280	41	325,663	210,906	1,163	5,144	\$ 518,454	\$ 5,658	\$ 524,112	\$ 1,633	55.6%	\$ 1,2841	\$ 0,2105	\$ 0,9662
	2011	210	38	312,702	169,206	1,489	4,453	\$ 462,183	\$ 5,244	\$ 467,427	\$ 1,885	56.1%	\$ 1,2867	\$ 0,2126	\$ 0,9667
North Saanich **															
	2020	102	16	57,433	108,453	563	6,778	\$ 223,532	\$ -	\$ 223,532	\$ 1,894	14.2%	\$ 1,5580	\$ 0,2105	\$ 1,3475
	2019	94	15	58,278	95,030	620	6,335	\$ 201,370	\$ -	\$ 201,370	\$ 1,847	13.5%	\$ 1,5240	\$ 0,2105	\$ 1,3135
	2018	100	16	97,574	70,666	976	4,417	\$ 220,982	\$ -	\$ 220,982	\$ 1,905	15.5%	\$ 1,5240	\$ 0,2105	\$ 1,3135
	2017	100	13	151,773	53,551	1,518	4,119	\$ 245,456	\$ -	\$ 245,456	\$ 2,172	18.0%	\$ 1,4643	\$ 0,2105	\$ 1,2538
	2016	100	12	148,450	36,774	1,485	3,065	\$ 230,697	\$ -	\$ 230,697	\$ 2,060	15.9%	\$ 1,4560	\$ 0,2105	\$ 1,2455
	2015	106	14	151,656	38,066	1,431	2,719	\$ 230,948	\$ -	\$ 230,948	\$ 1,925	18.1%	\$ 1,4278	\$ 0,2105	\$ 1,2173
	2014	98	14	133,853	30,372	1,366	2,169	\$ 194,919	\$ -	\$ 194,919	\$ 1,740	18.0%	\$ 1,3974	\$ 0,2105	\$ 1,1869
	2013	102	13	141,845	30,647	1,391	2,357	\$ 200,004	\$ -	\$ 200,004	\$ 1,739	20.4%	\$ 1,3700	\$ 0,2105	\$ 1,1595
	2012	99	13	117,497	45,227	1,187	3,479	\$ 188,679	\$ -	\$ 188,679	\$ 1,685	20.0%	\$ 1,3700	\$ 0,2105	\$ 1,1595
	2011	101	13	106,393	34,921	1,053	2,686	\$ 163,558	\$ -	\$ 163,558	\$ 1,435	19.6%	\$ 1,3700	\$ 0,2126	\$ 1,1574
Saanich															
	2020	68	53	40,416	144,443	594	2,725	\$ 268,877	\$ 10,867	\$ 279,745	\$ 2,312	17.8%	\$ 1,6650	\$ 0,2105	\$ 1,4545
	2019	68	51	37,086	140,512	545	2,755	\$ 249,436	\$ 10,278	\$ 259,714	\$ 2,182	17.4%	\$ 1,6150	\$ 0,2105	\$ 1,4045
	2018	70	49	37,503	111,896	536	2,284	\$ 208,786	\$ 9,996	\$ 218,782	\$ 1,839	15.3%	\$ 1,5910	\$ 0,2105	\$ 1,3805
	2017	80	50	38,201	132,092	478	2,642	\$ 229,604	\$ 9,719	\$ 239,324	\$ 1,841	17.6%	\$ 1,5600	\$ 0,2105	\$ 1,3495
	2016	71	53	36,409	139,764	513	2,637	\$ 237,745	\$ 10,056	\$ 247,802	\$ 1,998	17.1%	\$ 1,5600	\$ 0,2105	\$ 1,3495
	2015	75	51	74,841	129,225	998	2,534	\$ 226,276	\$ 9,727	\$ 236,003	\$ 1,873	18.5%	\$ 1,5420	\$ 0,2105	\$ 1,3315
	2014	72	53	46,230	177,633	642	3,352	\$ 213,981	\$ 9,883	\$ 223,863	\$ 1,791	20.7%	\$ 1,4560	\$ 0,2105	\$ 1,2455
	2013	65	50	35,745	122,456	550	2,449	\$ 179,004	\$ 9,655	\$ 188,659	\$ 1,641	19.2%	\$ 1,3420	\$ 0,2105	\$ 1,1315
	2012	68	47	38,212	138,455	562	2,946	\$ 180,466	\$ 9,235	\$ 189,701	\$ 1,650	20.1%	\$ 1,2320	\$ 0,2105	\$ 1,0215
	2011	71	46	101,235	121,896	1,426	2,650	\$ 149,584	\$ 9,118	\$ 158,703	\$ 1,356	19.0%	\$ 1,1530	\$ 0,2126	\$ 0,9404
Totals															
	2020	532	133	515,927	537,228	970	4,039	\$ 1,553,594	\$ 17,635	\$ 1,571,229	\$ 2,363	100%			
	2019	524	127	553,766	496,318	1,057	3,908	\$ 1,478,533	\$ 12,440	\$ 1,490,973	\$ 2,290	100%			
	2018	543	132	554,327	499,664	1,021	3,785	\$ 1,408,879	\$ 16,999	\$ 1,425,878	\$ 2,112	100%			
	2017	557	123	621,519	495,793	1,116	4,031	\$ 1,343,940	\$ 16,722	\$ 1,360,663	\$ 2,001	100%			
	2016	548	127	672,348	488,609	1,227	3,847	\$ 1,432,788	\$ 17,247	\$ 1,450,036	\$ 2,148	100%			
	2015	554	127	672,094	420,661	1,213	3,312	\$ 1,261,474	\$ 16,871	\$ 1,278,344	\$ 1,877	100%			
	2014	543	127	571,304	407,973	1,052	3,212	\$ 1,066,184	\$ 16,691	\$ 1,082,874	\$ 1,616	100%			
	2013	543	119	524,640	353,529	966	2,971	\$ 968,283	\$ 13,841	\$ 982,124	\$ 1,484	100%			
	2012	526	114	504,989	400,520	960	3,513	\$ 928,426	\$ 14,893	\$ 943,320	\$ 1,474	100%			
	2011	457	108	548,240	330,916	1,200	3,064	\$ 818,967	\$ 14,362	\$ 833,329	\$ 1,475	100%			

\* Western Communities do not charge a fixed charge

\*\* North Saanich charges the fixed charge on property taxes

\*\*\* AR - Agriculture/Residential customers receive a rebate on consumption over 455 cubic meters annual as the meter feeds both premise and land.  
AG - Agriculture customers receive a rebate on the entire consumption annually as the meter is dedicated only for land.

Regional Water Supply Service (Greater Victoria) Wholesale Water Rate Historicals &amp; Projections



**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, OCTOBER 20, 2021**

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**SUBJECT**     **Water Quality Summary Report for Greater Victoria Drinking Water System  
– April to June 2021**

**ISSUE SUMMARY**

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

**BACKGROUND**

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

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

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

Appendix A summarizes the monitoring results for raw water in Sooke Lake Reservoir, the treated water at the two water treatment plants and for the treated water in various parts of the supply and distribution systems for the spring period from April to June 2021.

**IMPLICATIONS**

*Environmental Implications*

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.

Unusually dry and warm weather conditions in late spring and early summer did not have any measurable adverse impact on the water quality in Sooke Lake Reservoir or within the drinking water distribution systems.

#### *Intergovernmental Implications*

The CRD provides compliance monitoring and reporting of the municipal systems within the region 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.

#### *Social Implications*

The full disclosure of water quality monitoring data maintains public confidence in the CRD managing the regional drinking water supply effectively. The data and reports are available online through the CRD public website. Staff respond to 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.

### **CONCLUSIONS**

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 spring 2021 indicate good water quality overall, and all parameters indicate stable general conditions.

### **RECOMMENDATION**

The Regional Water Supply Commission receives the Water Quality Summary Report for the Greater Victoria Drinking Water System – April to June 2021 for information.

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

### **ATTACHMENT**

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



## WATER QUALITY SUMMARY REPORT FOR THE GREATER VICTORIA DRINKING WATER SYSTEM APRIL TO JUNE 2021

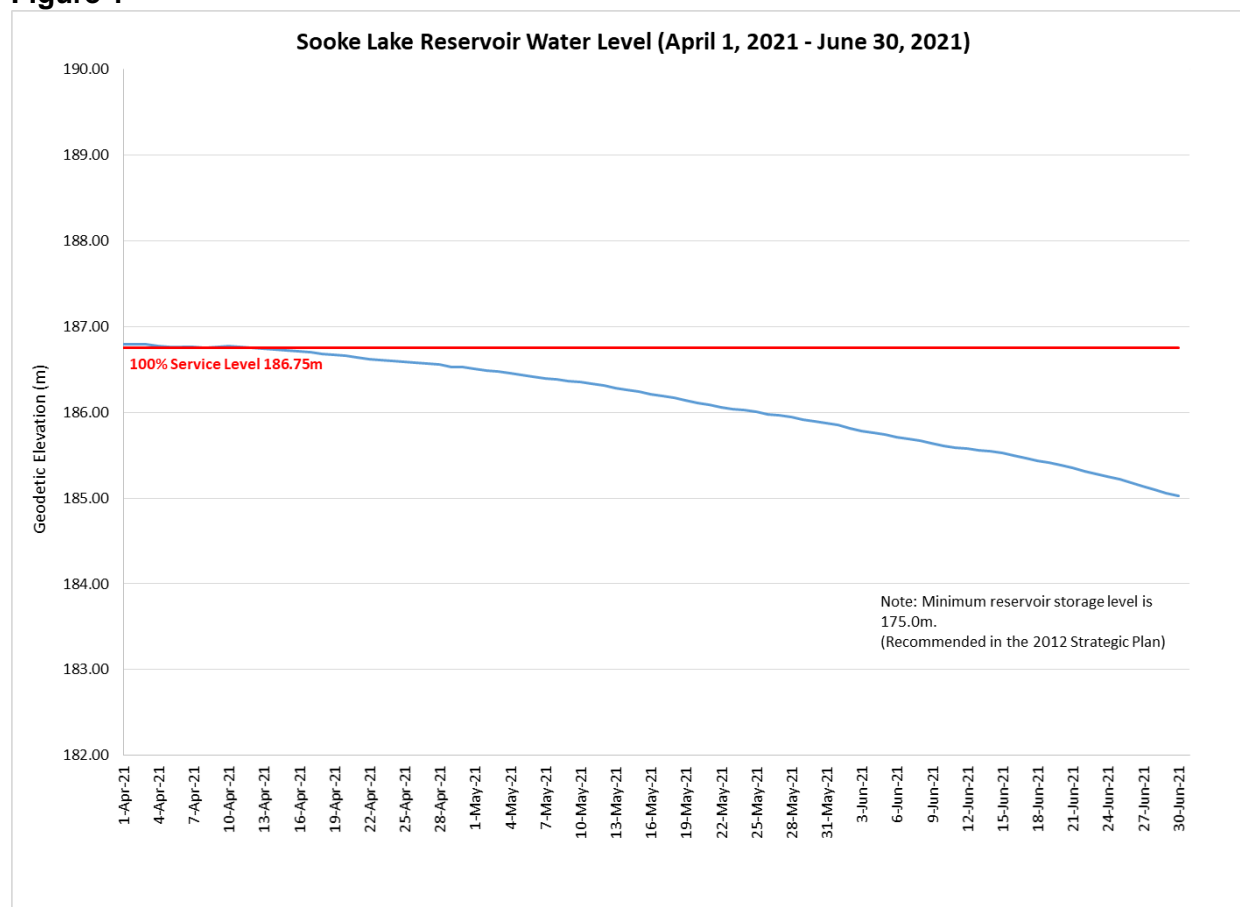
October 2021

### SOURCE WATER – SOOKE LAKE RESERVOIR

#### Physical Parameters

**Water Levels.** Sooke Lake Reservoir was at 100% of full capacity at the start of this reporting period on April 1, 2021 and remained at full level until April 12 (Figure 1). This is in line with the historical reservoir levels at that time of year. Subsequently, reservoir levels continuously fell until the end of the reporting period. On June 30, 2021, the reservoir had 86.7% of its full storage capacity. This is fairly typical for this date but 1% - 2.5% lower than in the last 3 years.

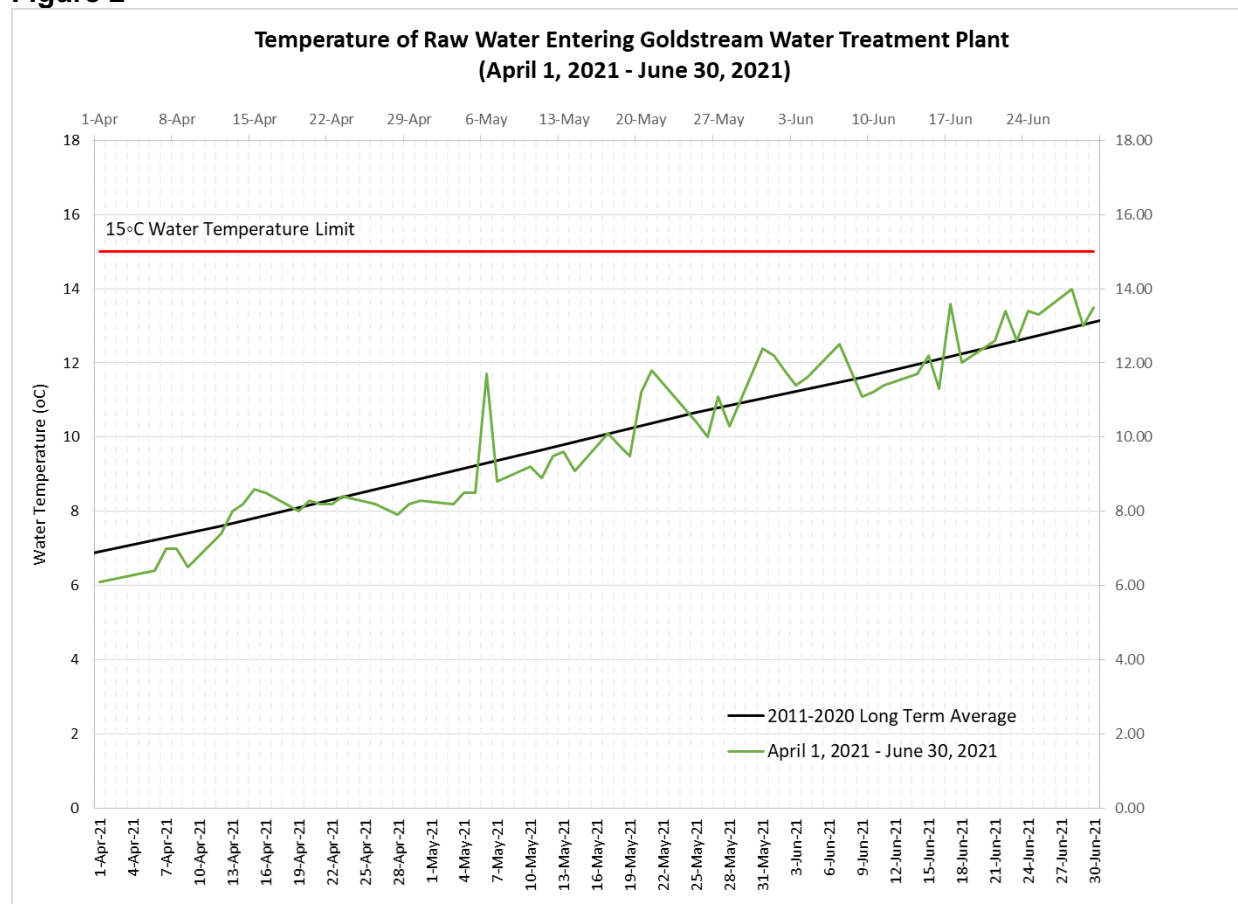
**Figure 1**



**Water Temperature.** The raw water temperature measured at the Goldstream Water Treatment Plant fluctuated closely around the long-term average trend until the middle of June. With the onset of an unusual heat wave in BC at the end of June, the water temperature entering the plant began to move slightly higher than the long-term trend (Figure 2). The water being extracted from the cool water column below the thermocline in the Sooke Lake south basin, and the passage

through the deep and cool Kapoor Tunnel certainly buffered any larger water temperature impact by this extreme heat wave.

**Figure 2**



**Turbidity.** Turbidity in the lake near the intake tower remained well below the 1.0 Nephelometric Turbidity Unit (NTU) limit for the entire reporting period (Table 1). Rainfall or higher algal activity in late spring 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
<b>Turbidity</b>	7	NTU	0.2	0.40	0.27

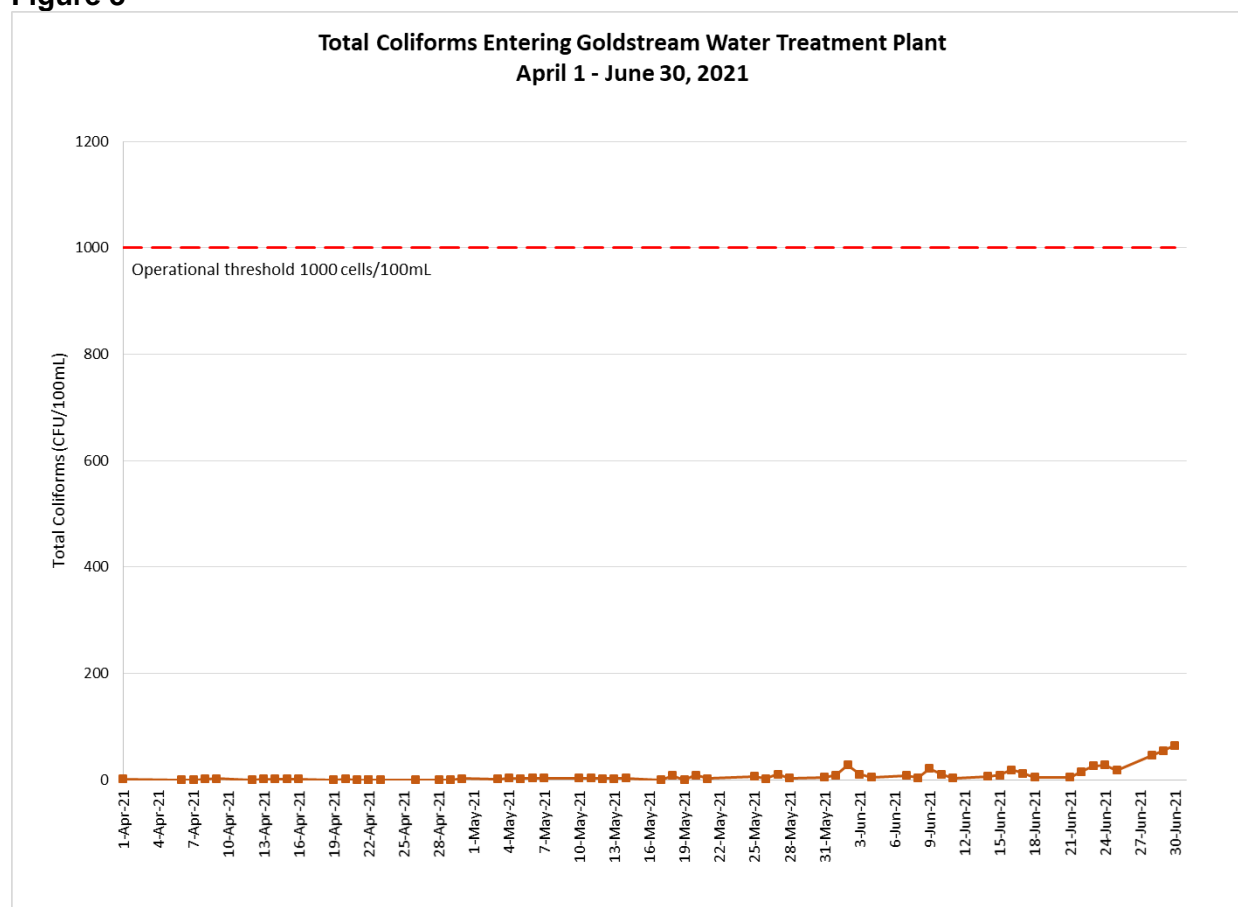
**Water Transparency.** The transparency of the lake water measured with the Secchi Disc in the lake was high (between 6 and 9 m) and consistent with the long-term average. Moderate algal events throughout the reporting period accounted for periods with slightly lower transparency but with no measurable impact on the treatability of the water.

**Dissolved Oxygen.** The dissolved oxygen concentrations at three lake sampling stations have been consistently between 9-10 mg/L from surface to bottom. This well-oxygenated state prevents internal nutrient loading or metal releases from lake sediments during summer lake stratification, and is another indicator of the oligotrophic status of Sooke Lake.

## Bacteria

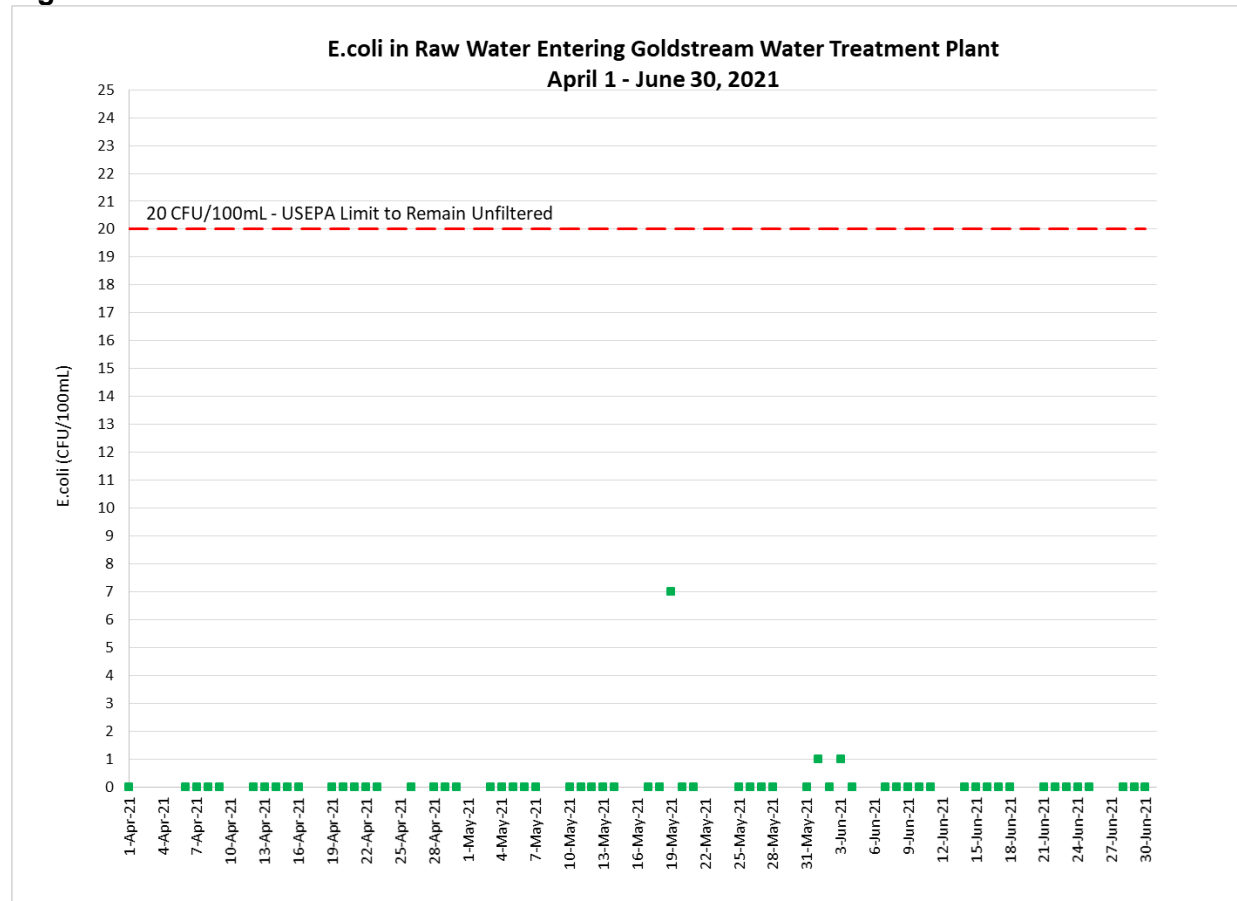
**Total Coliform Bacteria and *E. coli*.** The total coliform concentrations in the raw source water entering the Goldstream Water Treatment Plant remained low throughout the entire reporting period (Figure 3), with the typical increase coinciding with the warming of the lake water, which naturally leads to higher bio-activity levels. The United States Environmental Protection Agency (USEPA) Surface Water Treatment Rule for avoiding filtration has a non-critical total coliform criteria of maximum 100 CFU/100 mL at the 90<sup>th</sup> percentile of a six-month sample set. The 90<sup>th</sup> percentile of total coliform concentrations in the raw water between April and June 2021 was 26.4 CFU/100 mL and was therefore compliant with USEPA filtration exemption criteria.

**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). These results are very typical for Sooke Lake Reservoir during the summer and fall season.

Figure 4



## Nutrients

In general, the nutrient concentrations during the reporting period confirmed the ultra-oligotrophic status of Sooke Lake Reservoir, which is indicative of very low productivity in an upland lake with a virtually undisturbed catchment. This lake status is demonstrated by very low overall nutrient concentrations with a high nitrogen:phosphorus ratio and dissolved organic nitrogen being the dominant constituent of the total nitrogen. These conditions allow only limited biological activity in the lake, thus ensuring a good quality source for unfiltered drinking water. Some nutrient input occurs during rain-induced runoff events in the spring. These naturally-added nutrients are then quickly consumed by aquatic organisms, especially in the spring when warming water temperatures and plenty of sunlight usually stimulate algae growth in Sooke Lake Reservoir. This natural cycle is an indication of a healthy and functioning food chain in the lakes 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	3	ug/L	87	125	107
Total Phosphorus	3	ug/L	<1	<1	<1

Table 3

Sooke Reservoir, North Basin (1m) - SOL-04-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	3	ug/L	87	126	110
Total Phosphorus	3	ug/L	<1	<2	1.33

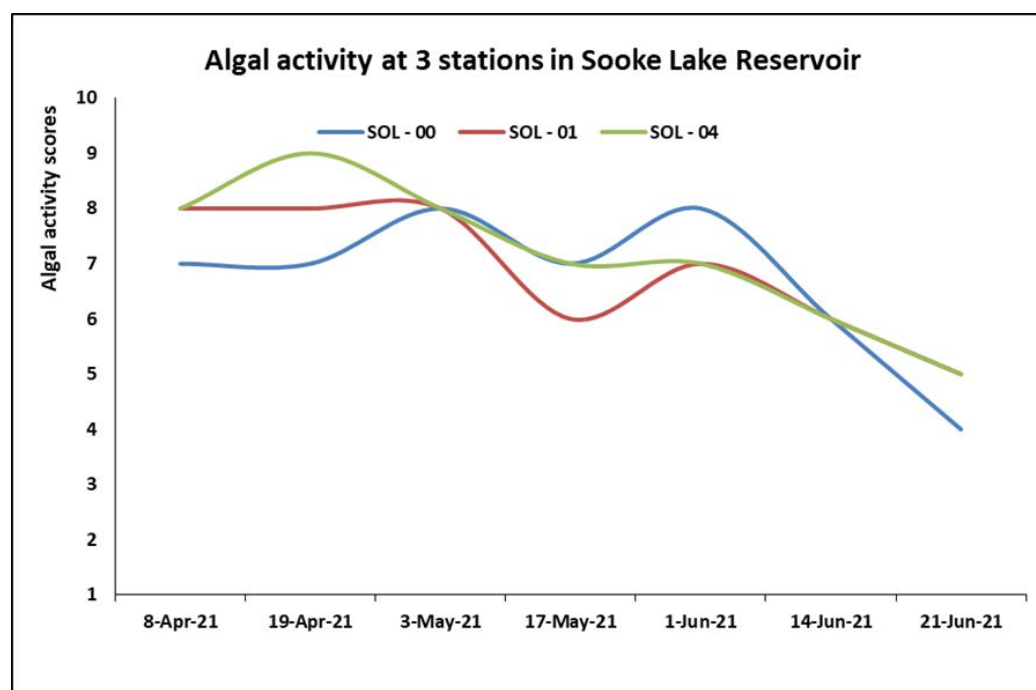
### Protozoan Parasites

In two tests during this reporting period of the raw water entering the Goldstream Water Treatment Plant, no *Cryptosporidium* oocysts and no *Giardia* cysts were found.

### Algae

To provide a general picture of the algae activity in Sooke Lake Reservoir, algal activity scores were applied, ranging from 1 to 10, which are assessed via towed samples collected biweekly at three stations. In general, the algal activity was high in April and through the first part of May, which is a typical seasonal occurrence. Later in May and until the end of June, the algal activity tended to decrease, which was likely due to nutrient limitation, as a result of low precipitation and therefore little runoff and nutrient influx during that period. The Greater Victoria region experienced one of the driest springs with two heatwaves recorded, receiving less than a third of the normal rainfall. The dominant algal taxa were either the diatom *Asterionella formosa* or the golden algae *Dinobryon* spp., which could cause taste & odor and filter clogging issues when in blooms. In spring 2021, there were no water-quality concerns related to algae in Sooke Lake Reservoir.

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



## WATER TREATMENT PLANTS

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

*Turbidity.* The raw water entering the Goldstream Water Treatment Plant was generally well below 1 NTU during the reporting period (Table 4). On June 2, 2021, the turbidity exceeded 1 NTU for about three hours, as a result of high watering demand and peak flows that mobilized pipe sediments in the mains just upstream of the treatment plant. This event reached a peak turbidity of 3.1 NTU for a short period of time. These early summer turbidity excursions are known to staff and regulator and are being addressed annually through springtime flushing of the responsible main sections. A more rigorous flushing procedure in the spring of 2021 was able to limit the turbidity excursions > 1 NTU to just this one event until the end of this reporting period. That is a significant reduction from previous years. Indicator bacteria concentrations were very low during this one turbidity excursion and parasite concentrations have been non-detect throughout the entire reporting period. Therefore the risk to public health from this short-term turbidity excursion was low.

**Table 4**

Goldstream Water Treatment Plant Turbidity - Raw Water	
Samples Collected	61
Minimum	0.15 NTU
Maximum	1.20 NTU
Mean	0.30 NTU

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

At the Main #4 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant, no samples tested positive for total coliform bacteria during the entire reporting period.

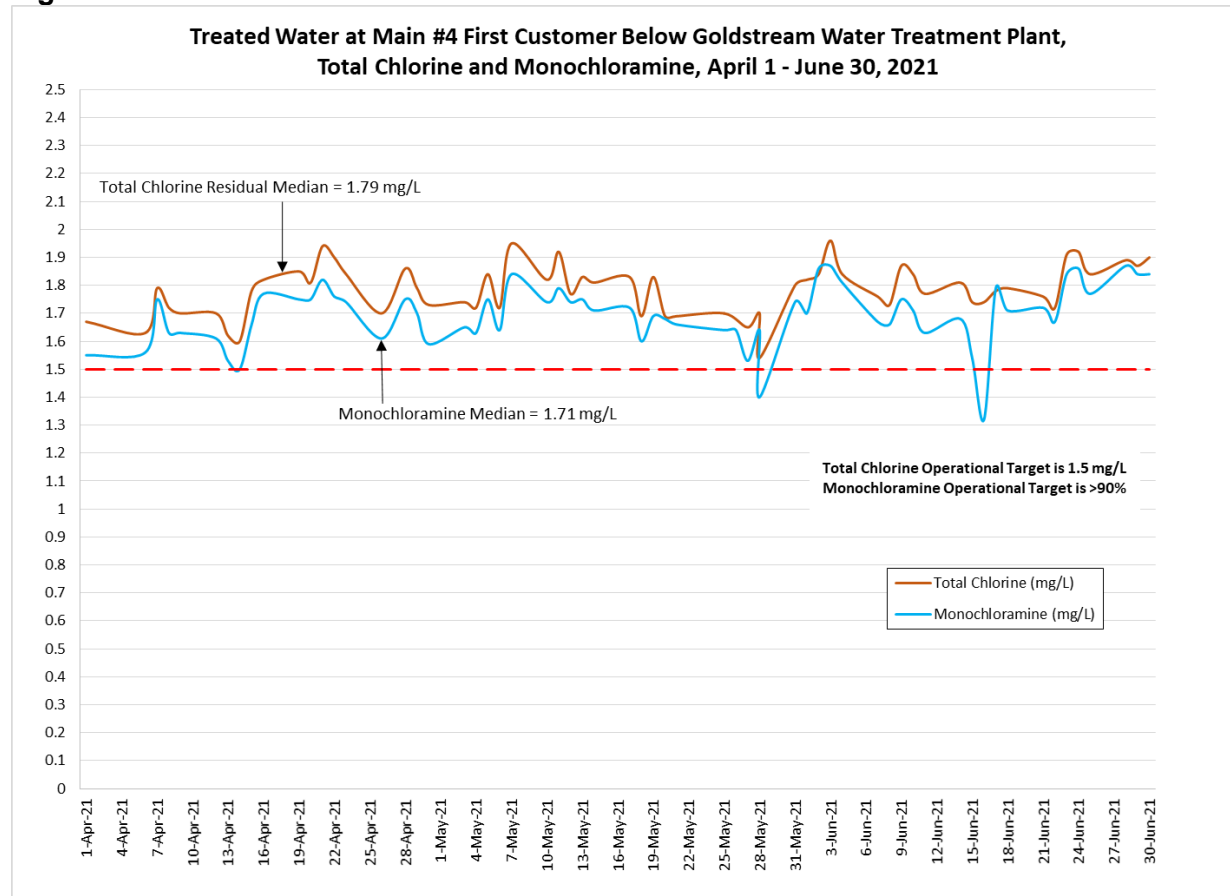
#### *Main #5 First Customer Sampling Station Total Coliform Bacteria and E. Coli*

At the Main #5 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant, no samples tested positive for total coliform bacteria during the entire reporting period.

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

*Secondary Disinfection.* Figure 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 consistently achieved except for a short period in June. This high rate of compliance was possible due to the newly commissioned hypochlorite chlorination equipment (online since March 2021). Adequate and effective secondary disinfection was provided across the entire system throughout the reporting period.

Figure 7



## Sooke River Road Water Treatment Plant

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

Table 5

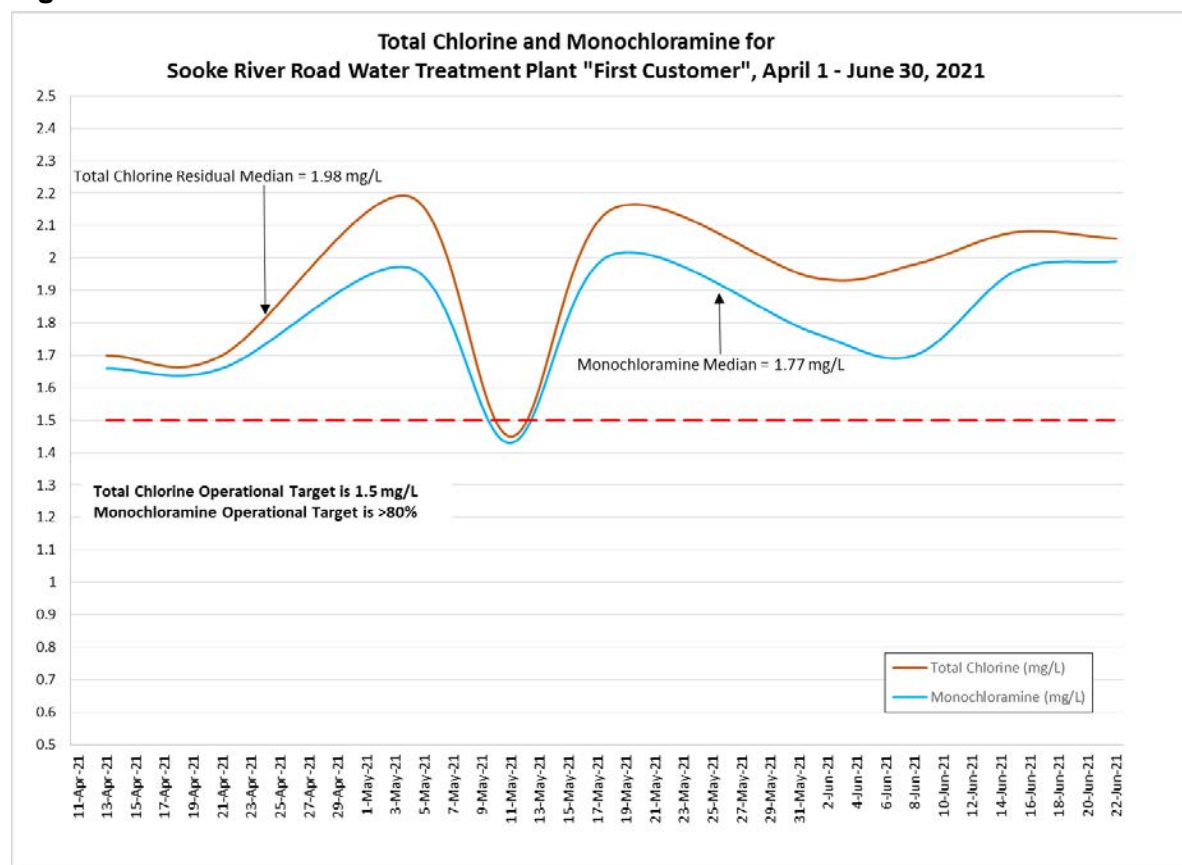
Sooke River Road Water Treatment Plant Turbidity - Raw Water	
Samples Collected	9
Minimum	0.20 NTU
Maximum	0.35 NTU
Mean	0.22 NTU

## Sooke First Customer Sampling Station Total Coliform Bacteria and *E. Coli*

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

*Secondary Disinfection.* Figure 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 consistently achieved during the reporting period, except for one short period in early May. The slightly lower target ratio of 80% monochloramine for this facility was consistently achieved throughout the reporting period. The residual concentrations were adequate to provide effective secondary disinfection across this much smaller distribution system.

**Figure 8**



## DISTRIBUTION SYSTEMS

### Goldstream (Japan Gulch) 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		
Apr-21	346	1	0.3	0	0	0	53	1	1.46	9.9
May-21	332	2	0.6	0	0	0	47	0	1.47	12.3
Jun-21	369	1	0.3	0	0	0	51	0	1.50	14.9
<b>Total:</b>	<b>1047</b>	<b>4</b>	<b>0.4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>151</b>	<b>1</b>	<b>1.46</b>	<b>9.0</b>



***Total Coliform Bacteria and E. Coli.*** Only 4 out of 1,047 distribution system samples, or 0.4% of all bacteriological samples during the reporting period, tested positive for total coliform bacteria. No samples registered a total coliform concentration of > 10 CFU/100 mL. In all four cases, the resample was free of total coliform bacteria, indicating that no actual water contamination was the cause of these coliform hits. No *E.coli* bacteria were found (Table 6).

***Turbidity.*** One of the 151 turbidity samples registered higher than 1 NTU (Table 6), likely as a result of water main flushing activities in the spring. Overall, these results are an indication of good drinking water quality.

***Total Chlorine Residual.*** A median total chlorine residual concentration of 1.46 mg/L across the system indicates an effective secondary disinfection protecting the potability of the treated drinking water as it flows throughout the system (Table 6).

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

***Water Chemistry.*** The average pH of the drinking water in the Goldstream Service Area was 7.8 during the reporting period. The pH ranged from 7.1 to 8.6, which is typical when operating the hypochlorite chlorination equipment. The average alkalinity was 16.8 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**

<b>Disinfection Byproducts - Greater Victoria Distribution System</b>						
<b>Parameter</b>	<b>Samples Collected</b>	<b>Unit of Measure</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>MAC (Maximum Acceptable Concentration)</b>
Haloacetic Acids (HAAs)	4	ug/L	16.0	22.0	18.0	80
Trihalomethanes (THMs)	4	ug/L	17.0	24.0	20.8	100
NDMA	4	ng/L	<2.0	<2.0	<2.0	40

***Metals.*** A comprehensive metals analysis was conducted every second month at four different locations in the Goldstream Service Area: (1) where treated water enters the Victoria/Esquimalt System, (2) the Oak Bay System, (3) one in Langford and (4) one in North Saanich. Out of the 32 tested metals, five are monitored particularly closely: iron, manganese, lead, aluminium and copper. All metal concentrations were below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 8). The sampling station in North Saanich (Deep Cove Pump Station) exhibited slightly higher lead concentrations than in the past (2.1 µg/L). CRD Operations staff then replaced the old copper sampling line upon which the lead concentrations dropped to background levels (0.35 and 0.2 µg/L) well below the health limit.

Table 8

Metals - Greater Victoria Distribution System								
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	AO (Aesthetic Objective)		MAC (Maximum Acceptable Concentration)
Aluminum	9	ug/L	8.6	56.6	21.2		100	2900
Copper	9	ug/L	2.8	49.4	18.2	1000		2000
Iron	9	ug/L	13.8	14.2	15.0	300		
Lead	9	ug/L	<0.02	2.1	0.9			5
Manganese	9	ug/L	1.4	10.3	3.2	20		120

## Sooke Service Area

Table 9

Sooke River Road Water Treatment Plant Service Area										
Month/Year	Samples Collected	Total Coliforms (CFU/mL)				E.coli (CFU/100mL) Samples > 0	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10		Samples Collected	Adverse > 1 NTU	Median mg/L as CL2	Median °C
Apr-21	24	0	0.0	0	0	0	6	0	1.29	9.9
May-21	30	0	0.0	0	0	0	7	0	1.35	12.2
Jun-21	36	0	0.0	0	0	0	9	1	1.08	14.9
<b>Total:</b>	90	0	0.0	0	0	0	22	1	1.29	8.6

**Total Coliform Bacteria and E. Coli.** In all 90 bacteriological samples during the reporting period, no sample tested positive for total coliform bacteria. No sample contained *E.coli* bacteria (Table 9).

**Turbidity.** Only 1 of 22 turbidity samples registered above 1 NTU (Table 8). This is an indication of good drinking water quality.

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

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

**Water Chemistry.** The average pH of the drinking water in the Sooke Service Area was 7.7 during the reporting period. The pH ranged from 7.5 to 8.2 and is typically very stable and consistent across this system. The average alkalinity was 16.6 mg/L.

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

Table 10

Disinfection Byproducts - Sooke Distribution System						
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	MAC (Maximum Acceptable Concentration)
Haloacetic Acids (HAAs)	1	ug/L	25.0	25.0	25.0	80
Trihalomethanes (THMs)	1	ug/L	33.0	33.0	33.0	100
NDMA	1	ng/L	<2.0	<2.0	<2.0	40

*Metals.* A comprehensive metals analysis was conducted every second month in one location in the Sooke Service Area: at the end of the distribution system near Whiffen Spit. Out of the 32 tested metals, five are monitored particularly closely: iron, manganese, lead, aluminium 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 Distribution System								
Parameter	Samples Collected	Unit of Measure	Minimum	Maximum	Mean	AO (Aesthetic Objective)	OG (Operational Guideline)	MAC (Maximum Acceptable Concentration)
Aluminum	1	ug/L	17.6	17.6	17.6		100	2900
Copper	1	ug/L	4.7	4.7	4.7	1000		2000
Iron	1	ug/L	24.9	24.9	24.9	300		
Lead	1	ug/L	<0.2	<0.2	<0.2			5
Manganese	1	ug/L	1.8	1.8	1.8	20		120

## CONCLUSION

During this spring reporting period (April-June 2021), all parameters from source water to treated water indicate stable conditions and good water quality. All trends are in line with historic data and confirm the adequacy of existing water treatment and performance of all major infrastructure components. The unusually dry and warm conditions during the late spring period did not have any measurable adverse impact on the water quality. The multi-barrier approach applied to the Greater Victoria Drinking Water System ensures the excellent drinking water quality achieved during the reporting period.



**JUAN DE FUCA WATER DISTRIBUTION COMMISSION**  
**Tuesday, September 7, 2021 at 12 PM**

**MEETING HOTSHEET**  
**(ACTION LIST)**

---

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

**3. ADOPTION OF MINUTES**

That the minutes of the July 6, 2021 meeting be adopted.

**CARRIED**

**7. COMMISSION BUSINESS**

**7.1. Rocky Point Water Upgrades Tender – Recommendation to Award**

That the Juan de Fuca Water Distribution Commission approves the award of Contract 2019-537, Rocky Point Water Upgrades, to Industra Construction Corp. in the amount of \$7,927,793.44 plus GST.

**CARRIED**

**7.2. Summary of Other Water Commission Recommendations**

That the summary of other water commission recommendations be received for information.

**CARRIED**

**7.3. Water Watch Report**

That the August 30, 2021 water watch report be received for information.

**CARRIED**



**JUAN DE FUCA WATER DISTRIBUTION COMMISSION**  
**Tuesday, October 5, 2021 at 12 PM**

**MEETING HOTSHEET**  
**(ACTION LIST)**

---

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

**3. ADOPTION OF MINUTES**

That the minutes of the September 7, 2021 meeting be adopted.

**CARRIED**

**7. COMMISSION BUSINESS**

**7.1. 2022 Service Planning – Water**

The Juan de Fuca Water Distribution Commission recommends the Committee of the Whole recommend to the Capital Regional District Board:  
That Appendix A, Community Need Summary – Water, be approved as presented and form the basis of the 2022-2026 Financial Plan.

**CARRIED**

**7.2. Juan de Fuca Water Distribution Service 2022 Operating and Capital Budget**

That the Juan de Fuca Water Distribution Commission recommends the Committee of the Whole recommend to the Capital Regional District Board to:

1. Approve the 2022 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2022 Juan de Fuca Water Distribution Service retail water rate of \$2.4024 per cubic metre, adjusted if necessary by any change in the Regional Water Supply wholesale water rate; and
3. Direct staff to amend the Water Distribution Local Service Conditions, Fees and Charges Bylaw accordingly.

**CARRIED**

**7.3. Water Watch Report**

That the Water Watch Report be received for information.

**CARRIED**

# CAPITAL REGIONAL DISTRICT - INTEGRATED WATER SERVICES

## Water Watch

Issued October 12, 2021

### Water Supply System Summary:

#### 1. Useable Volume in Storage:

Reservoir	October 31 5 Year Ave		October 31/20		October 10/21		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	64,863	14,270	66,475	14,625	60,310	13,268	65.0%
Goldstream	5,687	1,251	6,994	1,539	6,945	1,528	70.0%
Total	70,549	15,521	73,469	16,163	67,255	14,796	65.6%

#### 2. Average Daily Demand:

For the month of October	116.7 MLD	25.66 MIGD
For week ending October 10, 2021	116.1 MLD	25.54 MIGD
Max. day October 2021, to date:	122.1 MLD	26.87 MIGD

#### 3. Average 5 Year Daily Demand for October

Average (2016 - 2020)	110.0 MLD <sup>1</sup>	24.19 MIGD <sup>2</sup>
-----------------------	------------------------	-------------------------

<sup>1</sup>MLD = Million Litres Per Day      <sup>2</sup>MIGD = Million Imperial Gallons Per Day

#### 4. Rainfall October:

Average (1914 - 2020):	169.6 mm
Actual Rainfall to Date	28.3 mm (17% of monthly average)

#### 5. Rainfall: Sep 1- Oct 10

Average (1914 - 2020):	104.8 mm
2021	214.1 mm (204% of average)

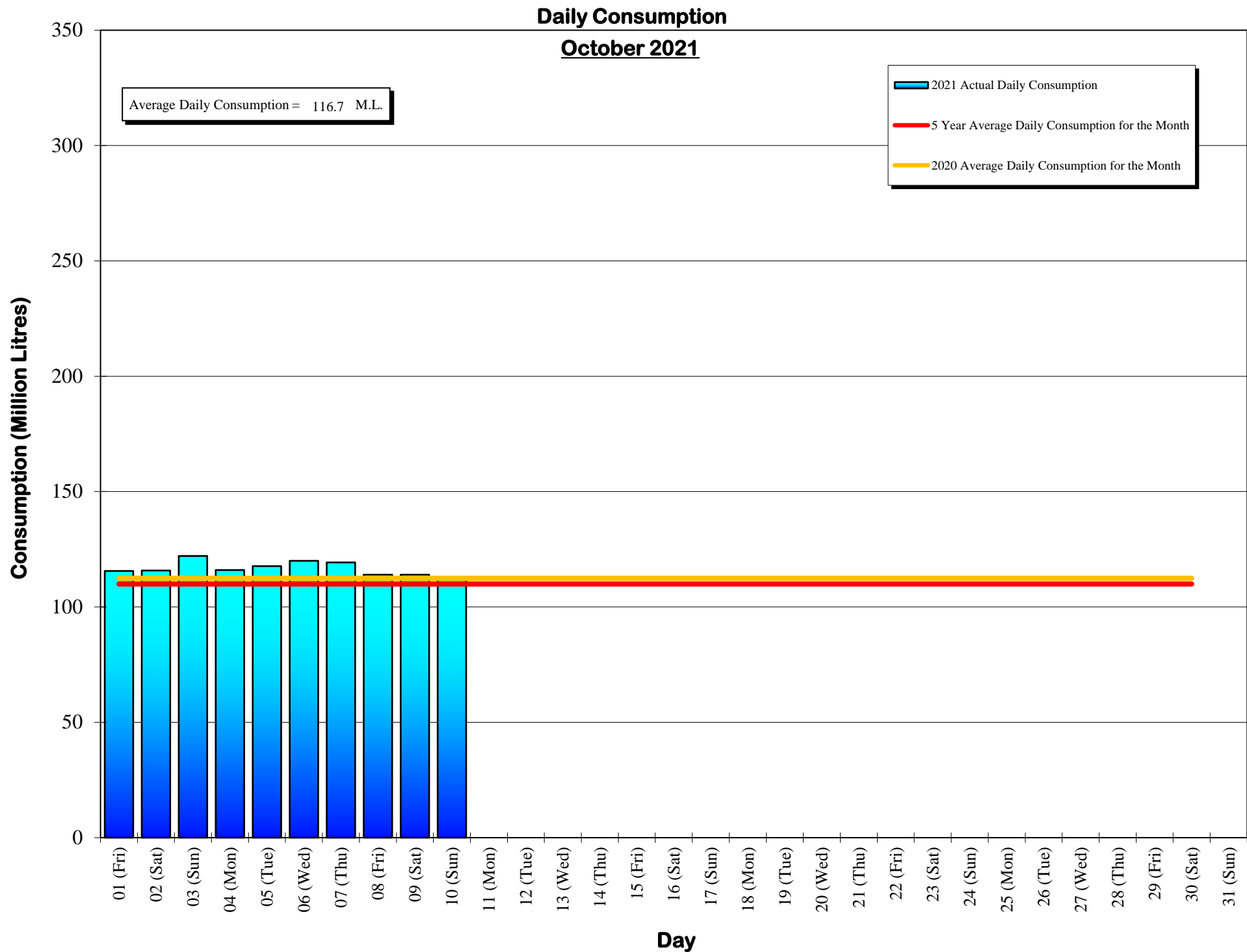
#### 6. Water Conservation Action Required:

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

If you require further information, please contact:

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

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



## Daily Consumptions: - October 2021

Date	Total Consumption		Air Temperature @ Japan Gulch		Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am			
	(ML) <sup>1.</sup>	(MIG) <sup>2.</sup>	High (°C)	Low (°C)		Rainfall (mm)	Snowfall <sup>3.</sup> (mm)	Total Precip.	
01 (Fri)	115.6		25.4	14	7	Sunny / P. Cloudy / Showers	0.3	0.0	0.3
02 (Sat)	115.8		25.5	17	9	Sunny / P. Cloudy / Showers	0.3	0.0	0.3
03 (Sun)	122.1	<=Max	26.9	16	8	Sunny / P. Cloudy / Showers	2.5	0.0	2.5
04 (Mon)	116.0		25.5	15	6	Sunny / P. Cloudy	0.0	0.0	0.0
05 (Tue)	117.7		25.9	13	6	Sunny / P. Cloudy / Showers	6.4	0.0	6.4
06 (Wed)	120.0		26.4	11	6	Sunny / P. Cloudy / Showers	5.1	0.0	5.1
07 (Thu)	119.3		26.2	12	4	Sunny / P. Cloudy	0.0	0.0	0.0
08 (Fri)	114.0		25.1	13	6	Sunny / P. Cloudy	0.0	0.0	0.0
09 (Sat)	114.0		25.1	11	5	Cloudy / Showers / P. Sunny	12.2	0.0	12.2
10 (Sun)	112.0	<=Min	24.6	12	4	Sunny / P. Cloudy / Showers	1.5	0.0	1.5
11 (Mon)									
12 (Tue)									
13 (Wed)									
14 (Thu)									
15 (Fri)									
16 (Sat)									
17 (Sun)									
18 (Mon)									
19 (Tue)									
20 (Wed)									
21 (Thu)									
22 (Fri)									
23 (Sat)									
24 (Sun)									
25 (Mon)									
26 (Tue)									
27 (Wed)									
28 (Thu)									
29 (Fri)									
30 (Sat)									
31 (Sun)									
TOTAL	1166.5 ML		256.62 MIG				28.3	0	28.3
MAX	122.1		26.87	17	9		12.2	0	12.2
AVG	116.7		25.66	13.4	6.1		2.8	0	2.8
MIN	112.0		24.64	11	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 October (1914-2020)	169.6 mm
Actual Rainfall: October	28.3 mm
% of Average	17%
Average Rainfall (1914-2020): Sept 01 - Oct 10	104.8 mm
Actual Rainfall (2021): Sept 01 - Oct 10	214.1 mm
% of Average	204%

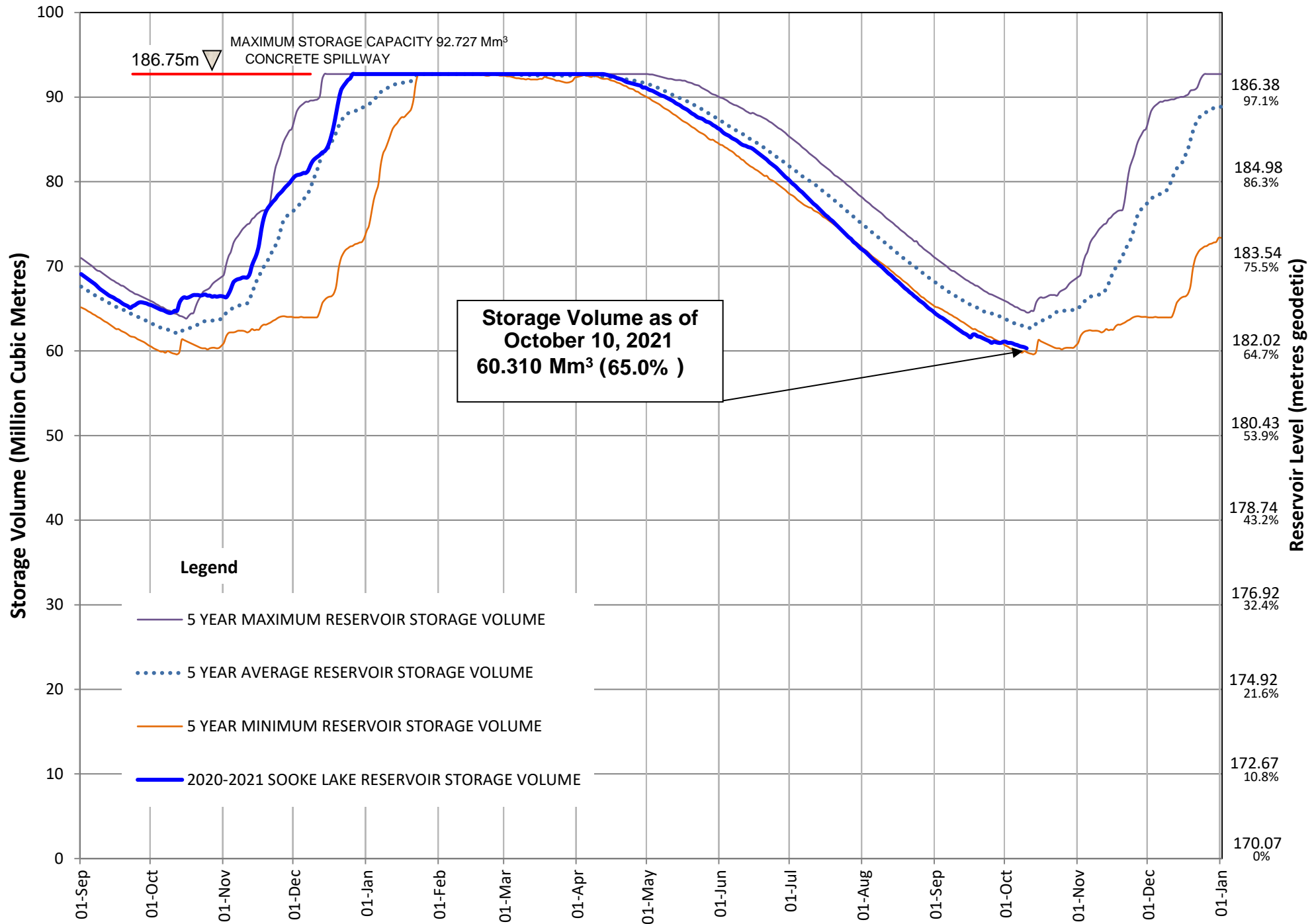
Number days with precip. 0.2 or more
7

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



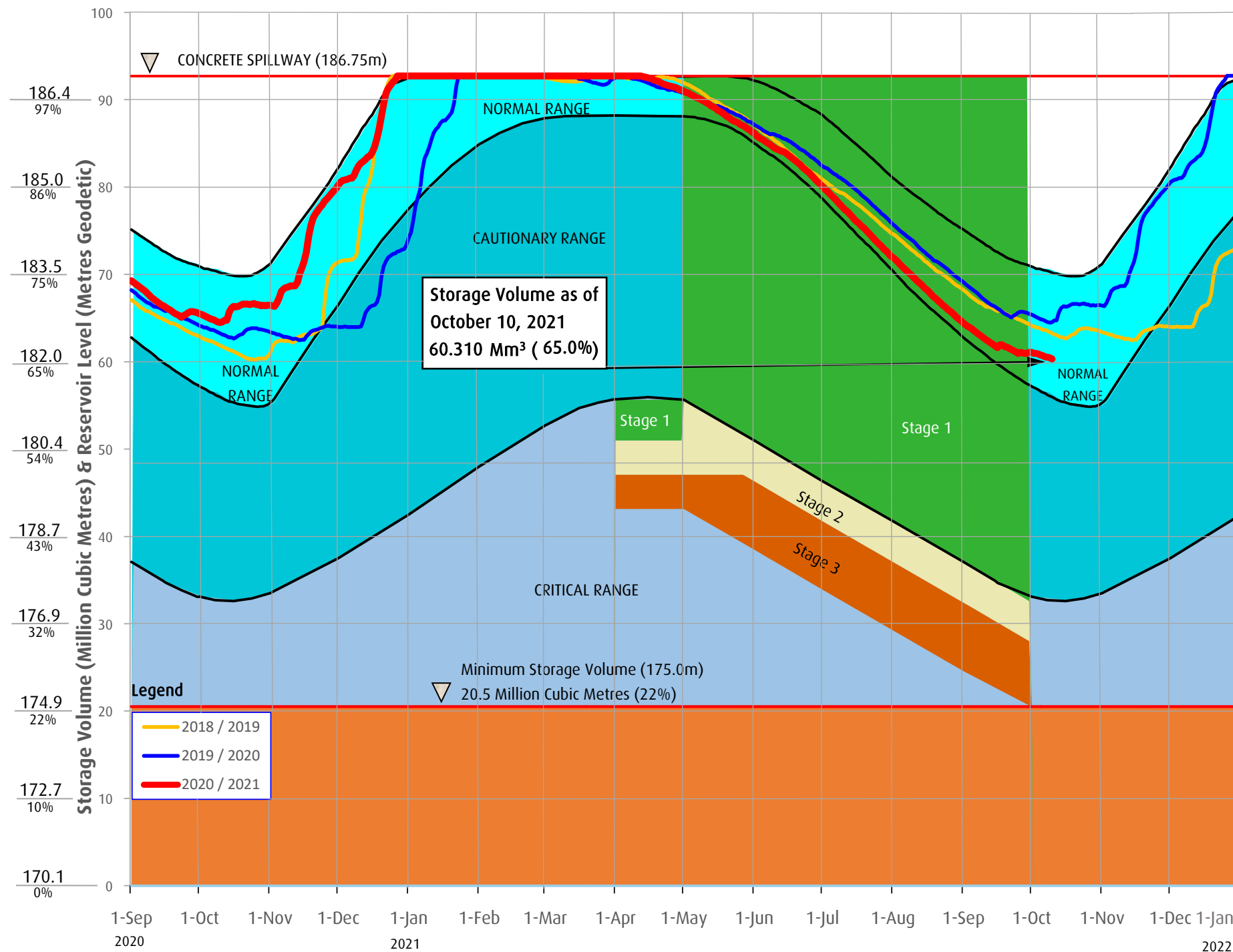
# SOOKE LAKE RESERVOIR STORAGE SUMMARY

## 2020 / 2021



# 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](http://www.crd.bc.ca/drinkingwater)

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Useable Reservoir Volumes in Storage for October 10, 2021

