



Notice of Meeting and Meeting Agenda Regional Water Supply Commission

Wednesday, May 21, 2025

1:30 PM

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

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

The Capital Regional District strives to be a place where inclusion is paramount and all people are treated with dignity. We pledge to make our meetings a place where all feel welcome and respected.

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

- 3.1. [25-0511](#) Minutes of the Regional Water Supply Commission Meeting of April 16, 2025

Recommendation: That the minutes of the Regional Water Supply Commission meeting of April 16, 2025 be adopted as circulated.

Attachments: [Minutes - April 16, 2025](#)

4. CHAIR'S REMARKS

5. PRESENTATIONS/DELEGATIONS

The public are welcome to attend CRD meetings in-person.

Delegations will have the option to participate electronically. Please complete the online application at www.crd.ca/address no later than 4:30 pm two days before the meeting and staff will respond with details.

Alternatively, you may email your comments on an agenda item to the Commission at legserv@crd.bc.ca.

6. CONSENT AGENDA

- 6.1. [25-0508](#) Water Watch Report

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

Attachments: [Water Watch Report - May 12, 2025](#)

7. COMMISSION BUSINESS**7.1. [25-0453](#) General Manager's Verbal Update - May**

Recommendation: There is no recommendation. This verbal update is for information only.

7.2. [25-0509](#) Regional Water Supply Strategic Plan - Public Engagement Summary

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

Attachments: [Staff Report: RWS Strategic Plan - Public Engagement Summary](#)
 [Appendix A: What We Heard Report](#)
 [Appendix B: Sample Letter - Request for Input](#)
 [Presentation: RWS 2025 Strategic Plan](#)

7.3. [25-0510](#) Main No. 4 Upgrade and Bear Hill Trunk Extension - Tariffs Update

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

Attachments: [Staff Report: Main No. 4 and Bear Hill - Tariffs Update](#)
 [Appendix A: SPWS/RWS Transmission Main Project Coordination Schematic](#)

7.4. [25-0523](#) Greater Victoria Drinking Water Quality - 2024 Annual Report

Recommendation: The Regional Water Supply Commission recommends to the Capital Regional District Board:
 That the Greater Victoria Drinking Water Quality 2024 Annual Report be approved.

Attachments: [Staff Report: Greater Victoria Drinking Water Quality 2024 Annual Report](#)
 [Appendix A: Greater Victoria Drinking Water Quality 2024 Annual Report](#)

8. NOTICE(S) OF MOTION**9. NEW BUSINESS****10. ADJOURNMENT**

The next meeting is June 18, 2025.

To ensure quorum, please advise Megan MacDonald (mmmacdonald@crd.bc.ca) if you or your alternate cannot attend.

Voting Key:

NWA - Non-weighted vote of all Directors

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

WA - Weighted vote of all Directors

WP - Weighted vote of participants (as listed)

Meeting Minutes

Regional Water Supply Commission

Wednesday, April 16, 2025

1:30 PM

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

PRESENT:

Commissioners: G. Baird (Chair), K. Harper (Vice Chair), J. Caradonna (1:32), N. Chambers, C. Coleman, Z. de Vries, C. Graham (1:33) (EP), S. Gray, C. Green (EP), K. Guiry, S. Hammond (EP), K. Jordison (EP), S. Kim (EP), T. Morrison (EP), K. Pearson (EP), T. Phelps Bondaroff (1:34) (EP), J. Rogers, C. Stock, M. Wagner, M. Westhaver

Staff: T. Robbins, Chief Administrative Officer, A. Fraser, General Manager, Infrastructure and Water Services; S. Irg, Senior Manager, Water Infrastructure; J. Marr, Senior Manager, Infrastructure Planning and Engineering; J. Kelly, Manager, Infrastructure and Water Services Capital Projects; M. Lagoa, Deputy Corporate Officer; S. Orr, Senior Committee Clerk, M. MacDonald, Legislative Services Coordinator (Recorder)

EP – Electronic Participation

Regrets: Commissioners: Duncan, Wickheim

The meeting was called to order at 1:30 pm.

1. TERRITORIAL ACKNOWLEDGEMENT

Chair Baird provided a Territorial Acknowledgement.

2. APPROVAL OF THE AGENDA

MOVED by Commissioner Coleman, **SECONDED** by Commissioner Stock,
That the agenda for the Regional Water Supply Commission meeting of April 16,
2025 be approved.
CARRIED

Commissioner Graham joined the meeting electronically at 1:33 pm.

3. ADOPTION OF MINUTES

- 3.1. [25-0448](#) Minutes of the Regional Water Supply Commission Meeting of March 19, 2025

MOVED by Commissioner Stock, **SECONDED** by Commissioner Harper,
That the minutes of the Regional Water Supply Commission meeting of March 19,
2025 be adopted as circulated.
CARRIED

Commissioner Phelps Bondaroff joined the meeting electronically at 1:34 pm.

4. CHAIR'S REMARKS

The Regional Water Service (RWS) is responsible for supplying water to over 400,000 residents of this Region. This is a critical and complex service that is integral to the liveability of our communities. In recent years we have seen the impacts of more and more service disruptions in other water utilities across the country each year due to water shortages and infrastructure failures. Even here we have had a couple of significant transmission main failures and a wildfire only 5kms from the watershed, though we have been fortunate to avoid an impact to service.

Complex utilities that provide essential services must have evidence-based long-term planning. The RWS is successful because it employs a strong evidence-based approach to guide its long-term planning horizon. In the last 8yrs, alot of work has been done to identify our system risks including the Dam Safety Requirements, development of an Infrastructure Master plan that address our resiliency, redundancy gaps and growth needs. In addition, direction from our regulator influence our non-discretionary planning horizon - there is a lot of preliminary work required.

We also recognize the importance of commitments outlined in the 2025 Strategic Plan and the priorities and actions required to achieve those commitments. As the commission, we have a responsibility to ensure the service meets its commitments and maintains our service level to the public. This includes keeping pace with replacements of our aging infrastructure and moving forward with the objectives set out in the long-term plans.

In May, staff will present the budget guidelines to the Board for approval, however there has already been a commitment to the Board that this will include a staffing freeze for 2026.

The implications of the proposed full time equivalent staffing freeze on service delivery could limit our ability to achieve the goals we have set to prepare for growth and improve the reliability and resiliency of our water supply. In addition, waiting will only make these infrastructure investments more expensive. I would like the commission to consider this proposed freeze and if we should further consider the possible impacts it may have on project timelines for the Strategic Plan and Master Plan.

On April 30th I will present to the Committee of the Whole on the Regional Water Service.

If the Commission has concerns about the implications of a staffing freeze and feels that it is important to inform the Board during the April 30th review then I would recommend same day consideration, but if not received, the motion will be considered at the May meeting and there would be no implications on staff's ability to have it prepared for the July meeting.

5. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

6. CONSENT AGENDA

**MOVED by Commissioner Coleman, SECONDED by Commissioner Wagner,
That consent agenda items 6.1. and 6.2. be approved.
CARRIED**

- 6.1. [25-0449](#) Summary of Recommendations from Other Water Commissions

This report was received for information.

- 6.2. [25-0450](#) Water Watch Report

This report was received for information.

7. COMMISSION BUSINESS

- 7.1. [25-0393](#) General Manager's Verbal Update

A. Fraser presented Item 6.1. and provided information related to the Strategic Plan, the Master Plan and a Water Advisory Committee workshop scheduled for May 1, 2025.

- 7.2. [25-0451](#) Goldstream Water Treatment Plant Ultraviolet and Controls Upgrade Project Update and Capital Plan Amendment

A. Fraser spoke to item 7.2.

Discussion ensued on the following:

- finishing this project on time and under budget is commendable
- importance of sharing the success of this project with the public
- professional pictures were taken and will be included in the Master Plan and other water service related marketing opportunities
- members of the public will be able to see the upgrades during watershed tours
- reallocating remaining resources to continue progress on related projects

**MOVED by Commissioner Chambers, SECONDED by Commissioner Stock,
That the Regional Water Supply Commission recommends to the Capital
Regional District Board:**

**That the 2025 Regional Water Supply Five Year Capital Plan be amended to
reallocate the \$750,000 of remaining budget from Capital Project
#18-07-Replacement of Ultraviolet System and Controls Upgrades to a new
Capital Project, #25-24-Water Treatment Plant Improvements Program.**

CARRIED

8. NOTICE(S) OF MOTION

Chair Baird proposed the following Notice of Motion with same day consideration:

"That staff be directed to report back on the 5 year staffing requirements for meeting the commitments outlined in the 2025 Strategic Plan and advise the implications of a 2026 staffing freeze on service delivery and project timelines."

**MOVED by Commissioner Westhaver, SECONDED by Commissioner Stock,
That same day consideration be applied to the Notice of Motion.
CARRIED**

Discussion ensued regarding the urgency of understanding the impact of the staffing freeze on service delivery.

**MOVED by Chair Baird, SECONDED by Commissioner Caradonna,
That staff be directed to report back on the 5 year staffing requirements for meeting the commitments outlined in the 2025 Strategic Plan and advise the implications of a 2026 staffing freeze on service delivery and project timelines.**

Discussion ensued regarding:

- importance providing clear direction to the Board at its April 30 strategic planning session
- the Commission's responsibility to plan ahead to ensure service levels are not impacted
- RWS is fully funded by user service fees
- it may not be possible to achieve the goals of the Master Plan on time if new staff positions are not hired
- importance of understanding all potential impacts of the staffing freeze
- long term planning has taken place, it would be short sighted to impede progress of important plans without considering long term implications

The question was called:

**That staff be directed to report back on the 5 year staffing requirements for meeting the commitments outlined in the 2025 Strategic Plan and advise the implications of a 2026 staffing freeze on service delivery and project timelines.
CARRIED**

9. NEW BUSINESS

There was no new business.

10. MOTION TO CLOSE THE MEETING

10.1. [25-0454](#) Motion to Close the Meeting

MOVED by Commissioner Chambers, **SECONDED** by Commissioner Harper,
That the meeting be closed for intergovernmental negotiations in accordance
with Section 90(2)(b) of the Community Charter.
CARRIED

The Regional Water Supply Commission moved to the Closed Session at 2:11 pm.

11. ADJOURNMENT

MOVED by Commissioner Guiry, **SECONDED** by Commissioner Stock,
That the Regional Water Supply Commission meeting of April 16, 2025 be
adjourned at 2:33 pm.
CARRIED

CHAIR

RECORDER

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

Issued May 12, 2025

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

Reservoir	May 31 5 Year Ave		May 31/24		May 11/25		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	88,115	19,385	87,123	19,167	89,522	19,695	96.5%
Goldstream	9,147	2,012	9,627	2,118	9,733	2,141	98.2%
Total	97,262	21,398	96,750	21,285	99,255	21,836	96.7%

2. Average Daily Demand:

For the month of May	160.1 MLD	35.22 MIGD
For week ending May 11, 2025	164.3 MLD	36.15 MIGD
Max. day May 2025, to date:	170.5 MLD	37.51 MIGD

3. Average 5 Year Daily Demand for May

Average (2020 - 2024)	148.2 MLD ¹	32.61 MIGD ²
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¹MLD = Million Litres Per Day ²MIGD = Million Imperial Gallons Per Day

4. Rainfall May:

Average (1914 - 2024):	47.2 mm
Actual Rainfall to Date	1.5 mm (3% of monthly average)

5. Rainfall: Sep 1- May 11

Average (1914 - 2024):	1,516.0 mm
2024/2025	1,360.0 mm (90% of average)

6. Water Conservation Required Action:

Did you know that the 2024 change to the Water Conservation Bylaw recommends that landowners and residents switch timing of residential irrigation systems from 4:00 am to an expanded window anytime between 12:01 am to 10:00 am on established watering days? Please go to Water Conservation Bylaw Changes | Capital Regional District to get informed and do your part to help protect our regional water supply system.

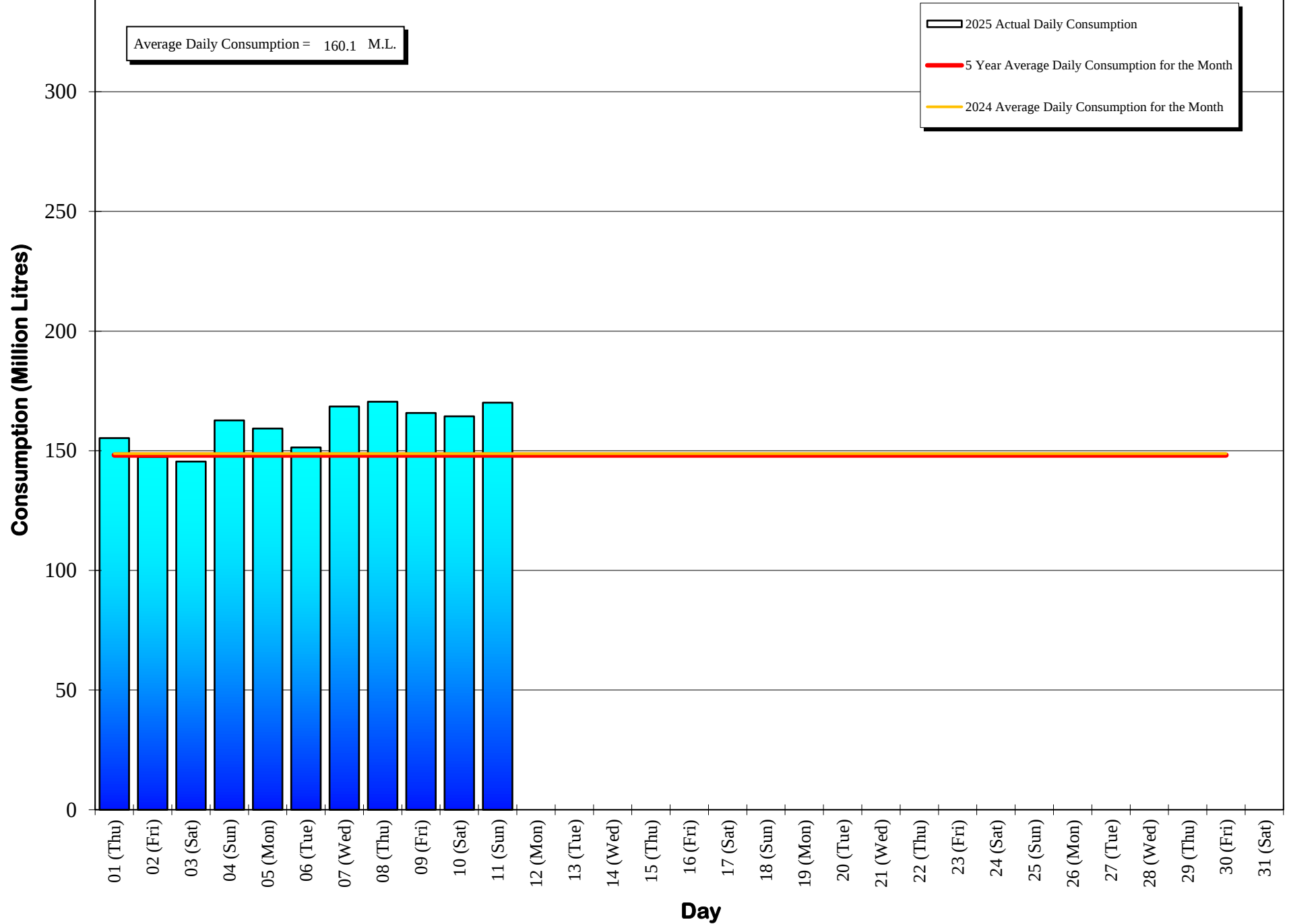
Website: <https://www.crd.ca/news/water-conservation-bylaw-changes>

If you require further information, please contact:

Alicia Fraser, P. Eng.
General Manager, CRD - Integrated Water Services
or
Glenn Harris, Ph D., RPBio
Senior Manager - Environmental Protection

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

Daily Consumption
May 2025



Daily Consumptions: - May 2025

Date	Total Consumption		Air Temperature @ Japan Gulch		Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am		
	(ML) ^{1.}	(MIG) ^{2.}	High (°C)	Low (°C)		Rainfall (mm)	Snowfall ^{2.} (mm)	Total Precip.
01 (Thu)	155.3		20	5	Sunny	0.0	0.0	0.0
02 (Fri)	147.4		21	8	Sunny / P. Cloudy / Showers	1.5	0.0	1.5
03 (Sat)	145.5	<=Min	14	4	Sunny / P. Cloudy	0.0	0.0	0.0
04 (Sun)	162.7		16	4	Sunny / P. Cloudy	0.0	0.0	0.0
05 (Mon)	159.3		19	5	Cloudy / P. Sunny	0.0	0.0	0.0
06 (Tue)	151.4		23	7	Cloudy / P. Sunny	0.0	0.0	0.0
07 (Wed)	168.5		17	8	Cloudy / P. Sunny	0.0	0.0	0.0
08 (Thu)	170.5	<=Max	16	5	Sunny / P. Cloudy	0.0	0.0	0.0
09 (Fri)	165.8		19	6	Cloudy	0.0	0.0	0.0
10 (Sat)	164.4		17	9	Cloudy / P. Sunny	0.0	0.0	0.0
11 (Sun)	170.1		16	8	Cloudy / P. Sunny	0.0	0.0	0.0
12 (Mon)								
13 (Tue)								
14 (Wed)								
15 (Thu)								
16 (Fri)								
17 (Sat)								
18 (Sun)								
19 (Mon)								
20 (Tue)								
21 (Wed)								
22 (Thu)								
23 (Fri)								
24 (Sat)								
25 (Sun)								
26 (Mon)								
27 (Tue)								
28 (Wed)								
29 (Thu)								
30 (Fri)								
31 (Sat)								
TOTAL	1760.9 ML	387.43 MIG				1.5	0	1.5
MAX	170.5	37.51	23	9		1.5	0	1.5
AVG	160.1	35.22	18.0	6.3		0.1	0	0.1
MIN	145.5	32.01	14	4		0.0	0	0.0

1. ML = Million Litres

2. 10% of snow depth applied to rainfall figures for snow to water equivalent.

Average Rainfall for May (1914-2024)	47.2 mm
Actual Rainfall: May	1.5 mm
% of Average	3%
Average Rainfall (1914-2024): Sept 01 - May 11	1,516.0 mm
Actual Rainfall (2023/24): Sept 01 - May 11	1,360.0 mm
% of Average	90%

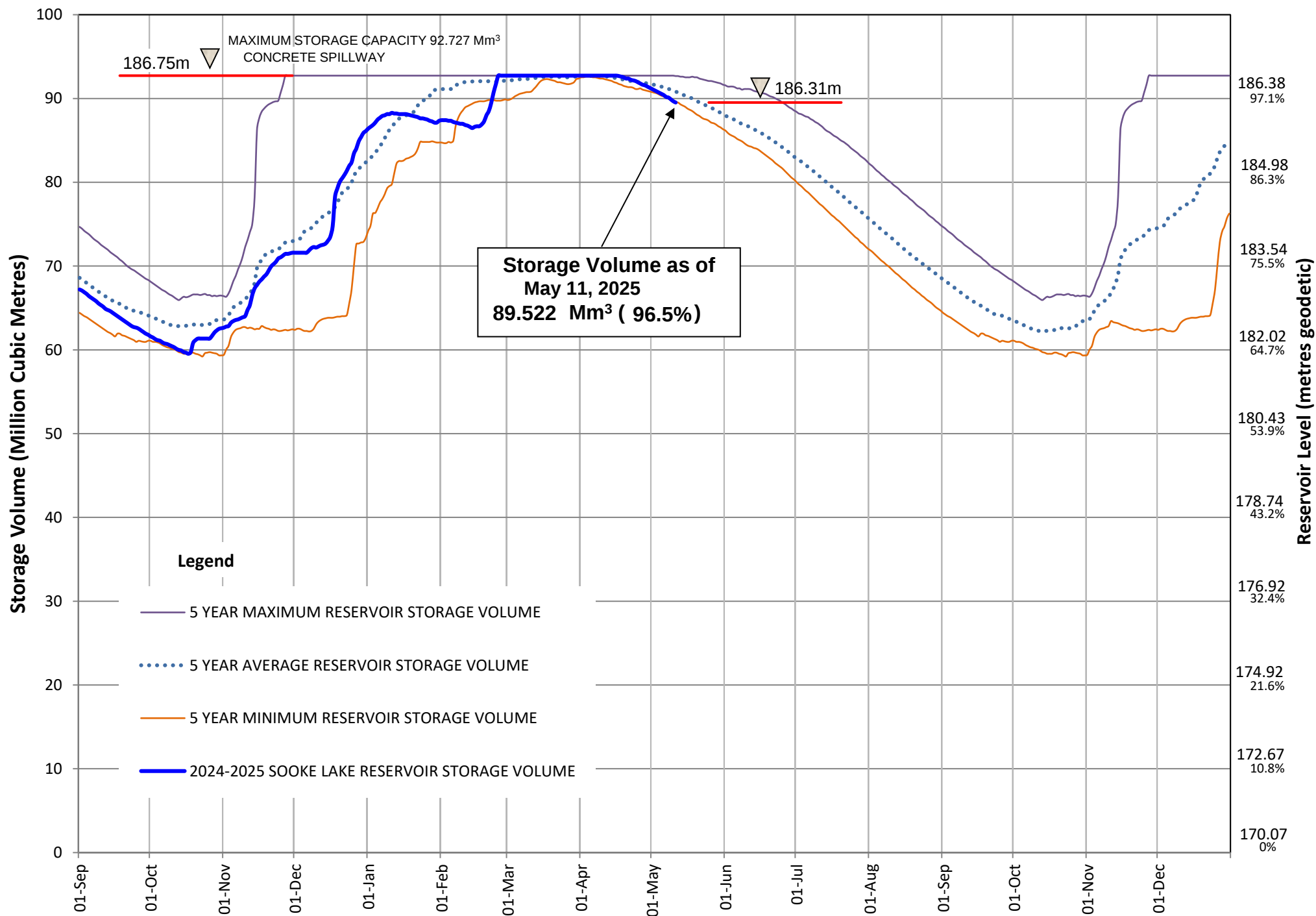
Number days with precip. 0.2 or more
1

Water spilled at Sooke Reservoir to date (since Sept. 1) =

3.33 Billion Imperial Gallons
15.10 Billion Litres

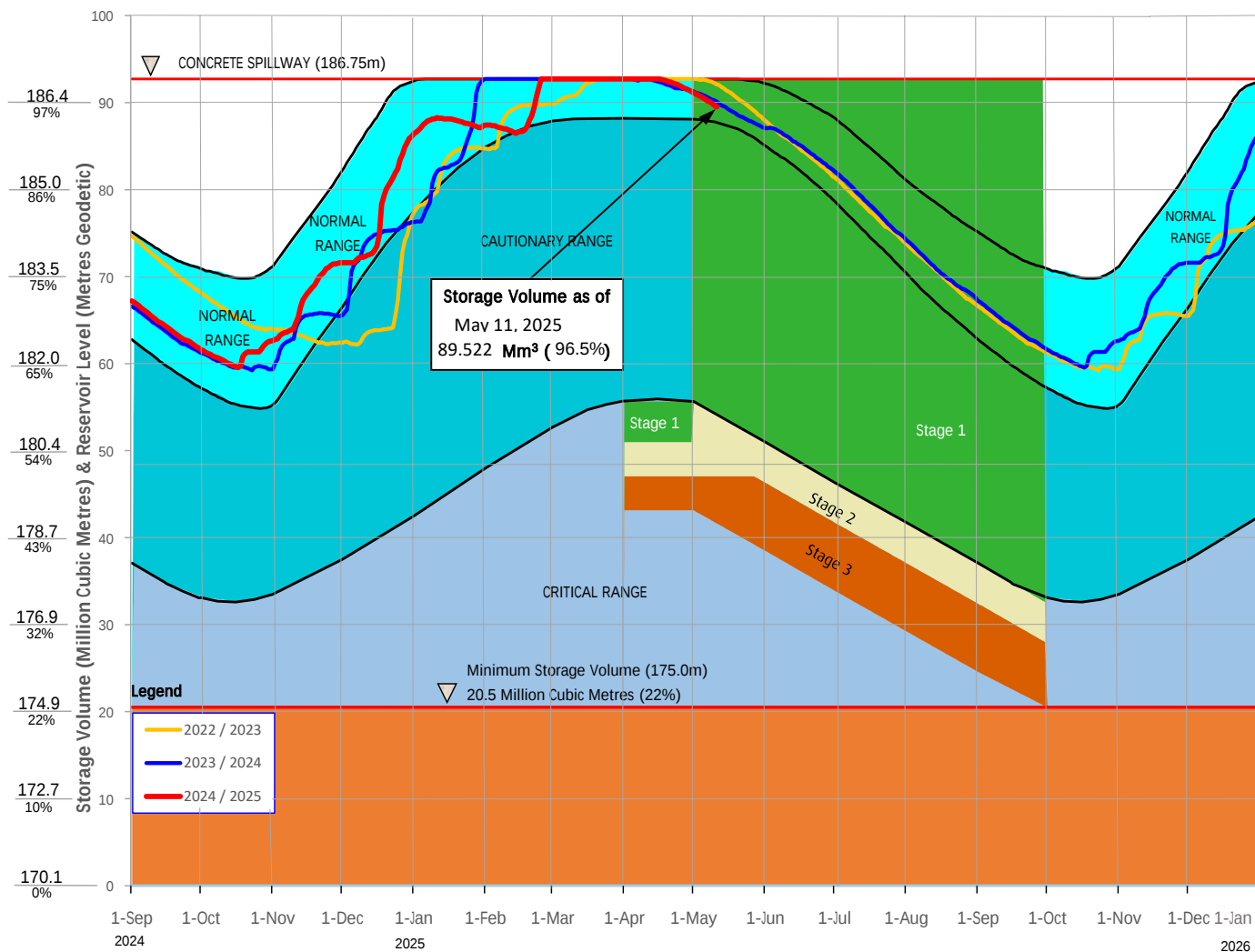
SOOKE LAKE RESERVOIR STORAGE SUMMARY

2024 / 2025



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.

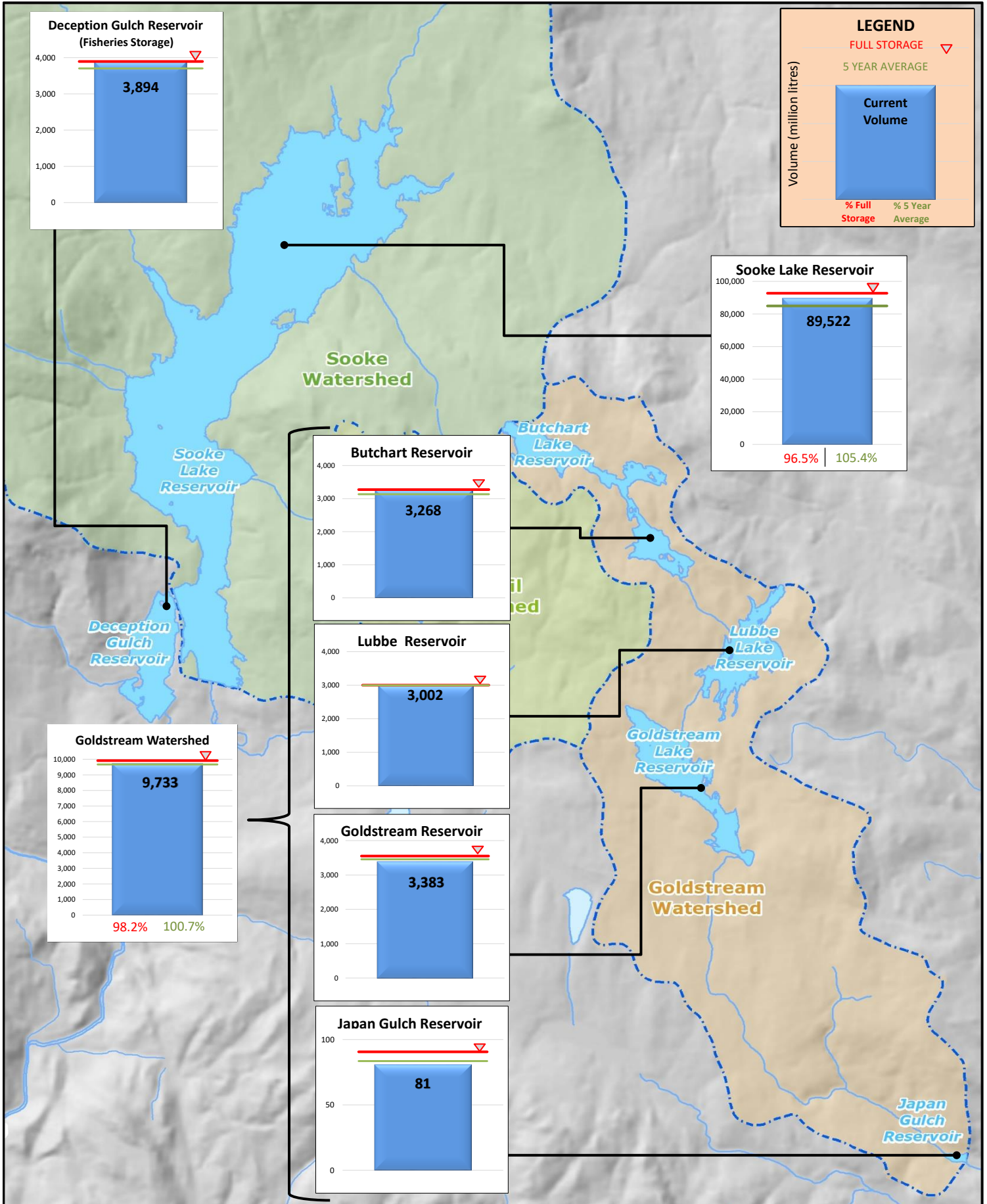
Stage 2 is initiated when it is determined that there is an acute water supply shortage. During this time, lawn watering is permitted once a week at different times for even and odd numbered addresses.

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

CRD
Making a difference...together

Useable Reservoir Volumes in Storage for May 11, 2025



**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MAY 21, 2025**

SUBJECT **Regional Water Supply Strategic Plan – Public Engagement Summary**

ISSUE SUMMARY

To present a summary of the feedback received from engagement activities with the public and interested parties related to the 2025 Draft Regional Water Supply Strategic Plan and provide an update on next steps.

BACKGROUND

At the July 17, 2024 Regional Water Supply Commission (Commission) meeting, staff presented the draft 2025 Regional Water Supply Strategic Plan (Strategic Plan), along with the engagement plan. Feedback from the Commission was incorporated, and at the September 25, 2024 Commission meeting, the Commission endorsed the revised draft Strategic Plan and directed staff to proceed with a two phased engagement plan.

The first phase of engagement ran from August to September 2024 and focused on informing the public about the planning framework, understanding community priorities and asking for feedback on preferred ways to participate (in-person or virtual). At the November 20, 2024 Commission meeting, staff provided an update on Community Input (Phase 1) and indicated how the results would shape their approach to Community Feedback (Phase 2) and next steps.

The second phase of engagement ran from February 18, 2025 to March 31, 2025, during which time 452 survey responses were received. Overall, public responses to both phases of engagement indicate strong public support for the strategic plan commitments. Phase 2 also indicated strong public support for investments in: clean, safe and reliable water, adaptation to climate change, watershed management, and associated infrastructure investments. The public and municipal engagement activities and feedback is summarized in the Water We Heard Report (Appendix A).

In addition, on February 24, 2025, a municipal information and engagement session was held for regional engineers and Chief Administrative Officers.

The Capital Regional District (CRD) is also committed to engaging and involving First Nations in the development of the Strategic Plan. On March 4, 2025 the CRD sent letters to 14 First Nations whose traditional territory lies within the Regional Water Supply Area. The letter highlighted the CRD's intent to collaborate with First Nations on managing the water supply area and included a request to meet and provide feedback directly. Responses have been received from seven First Nations. A sample letter is attached (Appendix B).

Further discussions are required and are being scheduled with one First Nation. One First Nation has indicated they will be providing feedback, but staff have yet to receive their comments.

Next Steps

Public feedback from both phases of engagement along with the inputs from the First Nation consultation will be considered and incorporated in the final revisions of the 2025 Regional Water Supply Strategic Plan.

The final draft of the 2025 Regional Water Supply Strategic Plan will be presented to the Regional Water Supply Commission for review and approval later in 2025 and if approved, will be posted to the CRD website and Get Involved project page.

CONCLUSION

The Regional Water Supply Commission (Commission) endorsed the draft 2025 Regional Water Supply Strategic Plan (Strategic Plan) and directed staff to proceed with the engagement plan in September 2024. The public engagement period has now ended, and feedback from the public and interested parties has been provided for the Commission's consideration. Once input from interested First Nations have been received, feedback will be incorporated in the final revisions of the 2025 Regional Water Supply Strategic Plan and brought back to the Commission for approval later in 2025.

RECOMMENDATION

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

Submitted by:	Alicia Fraser, P. Eng., General Manager, Infrastructure and Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT(S)

Appendix A: What We Heard Report

Appendix B: Sample Letter - Request for Input

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Background

The 2017 Regional Water Supply Strategic Plan set the overall direction and objectives for Infrastructure & Water Services for the past seven years. The 2017 Strategic Plan considered many of the trends, challenges and values that are still relevant today, such as providing high quality, safe drinking water, providing an adequate long-term supply of drinking water and providing an efficient, effective and innovative transmission system. At the same time, many things have changed in the region since the adoption of the 2017 Strategic Plan. For example, climate action and reconciliation with First Nations are key priorities of the CRD and need to be more robustly reflected in the 2025 Strategic Plan.

At the July 17, 2024, Regional Water Supply Commission (RWSC) meeting, staff proposed to undertake a two-stage public engagement process to gain feedback on the 2025 draft Regional Water Supply Strategic Plan. Phase 1 engagement ran from August to September 2024 and focused on informing the public about the planning framework, understanding community priorities and asking for feedback on preferred ways to participate (in person or virtual). For information on our Phase 1 engagement, check out our [What We Heard Report](#). Phase 2 engagement ran from February 18 to March 31, 2025, and focused on seeking feedback from interested parties regarding the proposed mission, commitments, priorities and actions in the draft Strategic Plan that will guide Infrastructure & Water Services over the next decade.

The CRD is committed to involving the public in the development of the Regional Water Supply Strategic Plan. The aim of the engagement process was to inform interested parties and the public about the Regional Water Supply Strategic Plan update process and to seek input and information from affected individuals and groups to assist the CRD with setting the future direction for the Regional Water Supply Strategic Plan. Other goals of the engagement process included information sharing, dialogue and discussion, building ongoing relationships, developing understanding and trust and producing a Strategic Plan that reflects organizational needs and public interests. The engagement process allowed interested individuals to actively contribute to the Strategic Plan ahead of a final draft to be brought forward later in 2025 for approval by the RWSC.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

The CRD is also committed to engaging and involving First Nations in the development of the Regional Water Supply Strategic Plan. First Nations engagement is underway and will be reported on separately from this report.

This report includes a summary of the engagement processes and responses received along with a Conclusion & Next Steps. Feedback received from the engagement process is highlighted in Appendix B.

Engagement Approach

Several tools and approaches were used to raise awareness about the Strategic Plan and invite participation, including:

- A series of pop-up information booths at SEAPARC, Panorama and Esquimalt Recreation Centres
- Participation in UVic's World Water Day event on March 20 to advertise the Regional Water Supply Strategic Plan and upcoming watershed tours
- A public information session via Zoom on March 6, 2025
- Print ads
- Social media
- [Interview](#) with Times Colonist Newspaper
- Media releases and email to Get Involved subscribers sent out on August 29, 2024 & February 18, 2025
- A [project web page](#) was established on the CRD's Get Involved online platform on August 29, 2024, with information and a survey for Phase 1 engagement that ran from August 29 – September 30, 2024. The page was subsequently updated on February 18, 2025, with additional information, the draft strategic plan and the Phase 2 survey that ran from February 18 – March 31, 2025
- Samples of engagement materials are provided in **Appendix A**

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Project Web Page & Survey

The project webpage includes an overview of the Regional Water Supply, a high-level overview of the Strategic Plan, our new mission statement, our commitments to customers, CRD staff contact information, frequently asked questions (FAQs) and key documents and videos informing the Strategic Plan update. Between February 18 and March 31, 2025, there were approximately 1,580 visitors to the Get Involved project page, of those who visited, 452 completed the survey.

The survey was open to all members of the public including residents, businesses, homeowners, tenants, farmers etc. The survey included 16 questions, with a mixture of quantitative and qualitative questions. Close-ended questions were measured through a five-point rating scale ranging from strongly agree to strongly disagree or by offering pre-determined categories. Close-ended questions were used to reduce the response burden for participants. Open-ended questions were also included to allow respondents the option to offer additional comments and clarify their responses. Questions about participants' demographic characteristics such as age and what municipality they live in were also included in the questionnaire. For a detailed analysis of the survey results, please refer to Appendix B.

Community Pop-up Information Booths

A series of pop-up community information booths were held between February 18-27 CRD at SEAPARC, Panorama and Esquimalt Recreation Centres. Each recreation centre had two days of staffed booths where the public was able to engage with CRD staff ask questions about the Regional Water Supply, the Strategic Plan and the feedback survey. Between staffed times, the informational booths were left static with brochures and information about the Strategic Plan. Additionally, general water conservation information sheets and brochures were also available for the public to take.

To celebrate World Water Day on March 22, UVic reached out to the CRD to participate in their World Water Day Event. A community informational booth was set up at this one-day event on March 20 to advertise the Regional Water Supply Strategic Plan and upcoming watershed tours.

In total, the community informational booths reached approximately 130-200 people; this number does not include the number of passive engagements for recreation centre information booths. Passive engagements are defined as people visiting the information booth while it was unstaffed.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Municipal Partners Information Session

On February 24, 2025, a municipal information session was held for regional engineers and Chief Administrative Officers. In total, 15 municipal staff attended the information session, with representation from Colwood, Langford, Highlands, Sidney, Esquimalt, Central Saanich, North Saanich, Saanich, Victoria, View Royal and Oak Bay. The information session consisted of an overview of the proposed 2025 Regional Water Supply Strategic Plan, a question-and-answer session and an opportunity to provide feedback. Generally, the participants were supportive of the proposed Strategic Plan, but highlighted the importance of engaging key partners in managing communications with the public regarding Master Plan investments.

Virtual Information Session

One online information session was held via Zoom on March 6, 2025. The one-hour information session provided an overview and context about the CRD Regional Water Supply Service, the proposed Strategic Plan and was followed by a question-and-answer session. A total of 5 participants attended the information session. The information session was recorded and posted to the Get Involved platform, for those unable to attend the information session.

Emails

A project email account was created for receiving comments and inquiries about the Strategic Plan update, waterplanning@crd.bc.ca and 2 emails were received from members of the public. Delegations and written submissions provided to the CRD Board are not included in this report.

Social Media

Weekly social media posts on CRD's Facebook, Instagram and LinkedIn accounts were posted between February 18 and March 31, 2025, directing people to the project webpage and online survey. Two social media posts were boosted (paid ad spend) to generate greater reach. The boosted posts generated 56,665 reaches (unique viewers) and 253,677 impressions (total number of times the ads were seen). In addition, the municipalities of North Saanich and View Royal and the Quadra Cedar Hill Community Association created social media posts encouraging their residents to take the Regional Water Supply Strategic Plan survey.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Advertising

A media release was issued by the CRD on February 18, 2025, to announce Phase 2 engagement opportunities for the Regional Water Supply Strategic Plan update and engagement process and encouraged the public to complete the online survey. Multiple news outlets received the media release and it was picked up by [Oak Bay News](#), [The District of Sooke](#) and [Township of View Royal](#). Additionally, the General Manager of Infrastructure & Water Services did an [interview](#) with the Times Colonist on March 20, 2025 to help raise awareness about the Regional Water Supply Strategic Plan engagement survey.

Print ads were published in all Black Press Newspapers and the Times Colonist Newspaper as per the publication chart below. The ads directed readers to the project webpage to complete the online survey via a QR code and URL.

Publication	Date
Times Colonist	February 22 & March 1, 2025
Saanich News	February 19 & 26, 2025
Victoria News	February 20 & 27, 2025
Goldstream Gazette	February 19 & 26, 2025
Sooke Mirror	February 20 & 27, 2025
Peninsula News Review	February 20 & 27, 2025

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Conclusion & Next Steps

Overall, public responses to both phases of engagement indicate strong public support for the strategic plan commitments. Responses received from phase one of engagement indicated strong public support for the commitments and helped shape engagement in phase two. Results of Phase 1 engagement are available on our [project web page](#) and a summary of findings from Phase 2 engagement are available in Appendix B of this report.

Feedback about the draft strategic plan in Phase 2 also indicates strong public support for investments in: clean, safe and reliable water, adaptation to climate change, watershed management and associated infrastructure investments, with most respondents indicating that the above investments or values were very important or important to them. Additionally, when considering the value, importance and benefit of clean, drinkable water, most respondents felt that their water rates were “just right” in terms of pricing.

Comments and responses also revealed key themes related to shared commitments to resilience, good governance and sustainable planning. A consistent message was the desire for continued engagement and transparent communication as initiatives related to the strategic plan move forward.

Public feedback from both phases of engagement along with the inputs from the First Nation consultation will be considered and incorporated in the final revisions of the 2025 Regional Water Supply Strategic Plan.

The final draft of the 2025 Regional Water Supply Strategic Plan will be presented to the Regional Water Supply Commission for review and approval later in 2025 and if approved, will be posted to the CRD website and Get Involved project page.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Appendix A: Engagement Materials

CRD
Making a difference...together

Together we provide reliable, high-quality drinkable water to help ensure the health and sustainability of the growing communities we serve today and in the future.

Flip over to learn more

2025 Regional Water Supply Strategic Plan Update Overview

- 1 More than 430,000 people in the region rely on clean, drinkable water every day.
- 2 The CRD is updating a long-range strategic plan to ensure the delivery of safe, reliable high-quality water to the region for generations to come.
- 3 This plan will guide water-related decisions for the next 30 years. Your voice is important to us.

DID YOU KNOW?

50,500 MEGALITRES
treated on average per year

=

252 MILLION BATHTUBS

Don't take your drinking water for granted, have your say!

Join us for a virtual info session or take the online survey. Share your feedback by scanning the QR code or visiting getinvolved.crd.bc.ca/regional-water-supply-strategic-plan

Figure 1: Public Engagement Postcard

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)

Capital Regional District | May 2025

Mission Statement
"Together we provide reliable, high-quality drinkable water to help ensure the health and sustainability of the growing communities we serve today and in the future."

**Regional Water Supply
DRAFT STRATEGIC PLAN**

Don't take your drinking water for granted, have your say!
Share your feedback by scanning the QR code or visiting getinvolved.crd.bc.ca/regional-water-supply-strategic-plan

Commitments and Priorities

COMMITMENT 1:	COMMITMENT 2:	COMMITMENT 3:
Provide high quality, safe drinkable water	Provide an adequate, reliable, long-term supply of drinkable water	Provide efficient, effective and innovative operations of our water system infrastructure
PRIORITY 1 Protect and manage the watershed to ensure sustainable high-quality source water. PRIORITY 2 Ensure drinking water quality with a multi-barrier risk-based approach. PRIORITY 3 Advance our understanding of the water supply area and source water to prepare for the future.	PRIORITY 1 Continuously plan and prepare for future water supply needs. PRIORITY 2 Enhance public connection to, confidence in and responsibility for water supply and value of water. PRIORITY 3 Optimize our available water supply through water conservation. PRIORITY 4 Implement a sustainable and equitable long-term financial plan.	PRIORITY 1 Make evidence-based and community-responsive infrastructure decisions to ensure reliable system performance and sustainability. PRIORITY 2 Assure sustainability and capacity of water management operations through sufficient resources, robust processes, strategic partnerships, effective tools, and continuous innovation. PRIORITY 3 Enhance the security and sustainability of the water supply by effectively managing risks and enhancing emergency response capabilities. PRIORITY 4 Attract, develop, and retain a diverse, knowledgeable and empowered workforce.

DID YOU KNOW?
50,500 = 252
MEGALITRES = MILLION BATHTUBS
(based on average per year)

Don't take your drinking water for granted, have your say!
Share your feedback by scanning the QR code or visiting getinvolved.crd.bc.ca/regional-water-supply-strategic-plan

Figure 2: Public Engagement Trifold Brochure

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

CRD REGIONAL WATER SUPPLY 2025 STRATEGIC PLAN UPDATE

The draft plan outlines proposed strategic priorities that are intended to ensure the Regional Water Supply Service is responsive to challenges and opportunities facing the system while maintaining focus on the three long term commitments:

1

Provide high quality, safe drinkable water

2

Provide an adequate, reliable, long-term supply of drinkable water

3

Provide efficient, effective and innovative operations of our water system infrastructure

Engagement & Implementation

A key part of the development of the Strategic Plan is to engage with the public to share the plan, answer questions you may have on our system and gather your feedback on your priorities related to your drinking water.

The current draft strategic plan is available for feedback on our engagement platform and we are hosting a virtual information session in early March. The feedback deadline is March 31, 2025. The revised final Strategic Plan incorporating feedback from our public engagement will be presented to the Regional Water Supply Commission for approval in Spring of 2025.

Don't take your drinking water for granted, have your say!
Visit getinvolved.crd.bc.ca/regional-water-supply-strategic-plan for more information.




Figure 3: Public Engagement Display Board

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025



Planning for Our Ongoing Drinking Water Needs

The Capital Regional District (CRD) is updating its long-range Strategic Plan to ensure the delivery of safe, reliable and high quality water to the region for generations to come.

More than 430,000 people in the region rely on clean, drinkable water every day. A key part of the development of the Strategic Plan is to engage with the public to share the plan, answer questions, and gather feedback on your priorities related to your drinking water.

The current draft Strategic Plan is available for feedback on our engagement platform. We are also hosting a virtual information session in early March.

Don't take drinking water for granted. Have your say!

Give your feedback on the proposed strategic plan using the link or code below. Please provide your comments by **March 31, 2025.**

getinvolved.crd.bc.ca/regional-water-supply-strategic-plan



Scan to learn more!



Figure 4: Black Press Newspaper Ad

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025



Planning for Our Ongoing Drinking Water Needs

The Capital Regional District (CRD) is updating its long-range Strategic Plan to ensure the delivery of save, reliable and high quality water to the region for generations to come.

More than 430,000 people in the region rely on clean, drinkable water every day. A key part of the development of the Strategic Plan is to engage with the public to share the plan, answer questions you may have on our system, and gather your feedback on your priorities related to your drinking water.

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Don't take drinking water for granted. Have your say!

Give your feedback on the proposed strategic plan using the link or code below. Please provide your comments by **March 31, 2025**.

getinvolved.crd.bc.ca/regional-water-supply-strategic-plan



Scan to
learn more!



Figure 5: Times Colonist Newspaper Ad

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Appendix B: Regional Water Strategic Plan Survey Summary

Prepared by: Catapult Strategy for the Capital Regional District - April 2025

A total of 452 online surveys were completed between February 18, 2025, and March 31, 2025. Below is a summary of the online survey responses.

Section 1: Demographics

Q1: Where do you live?

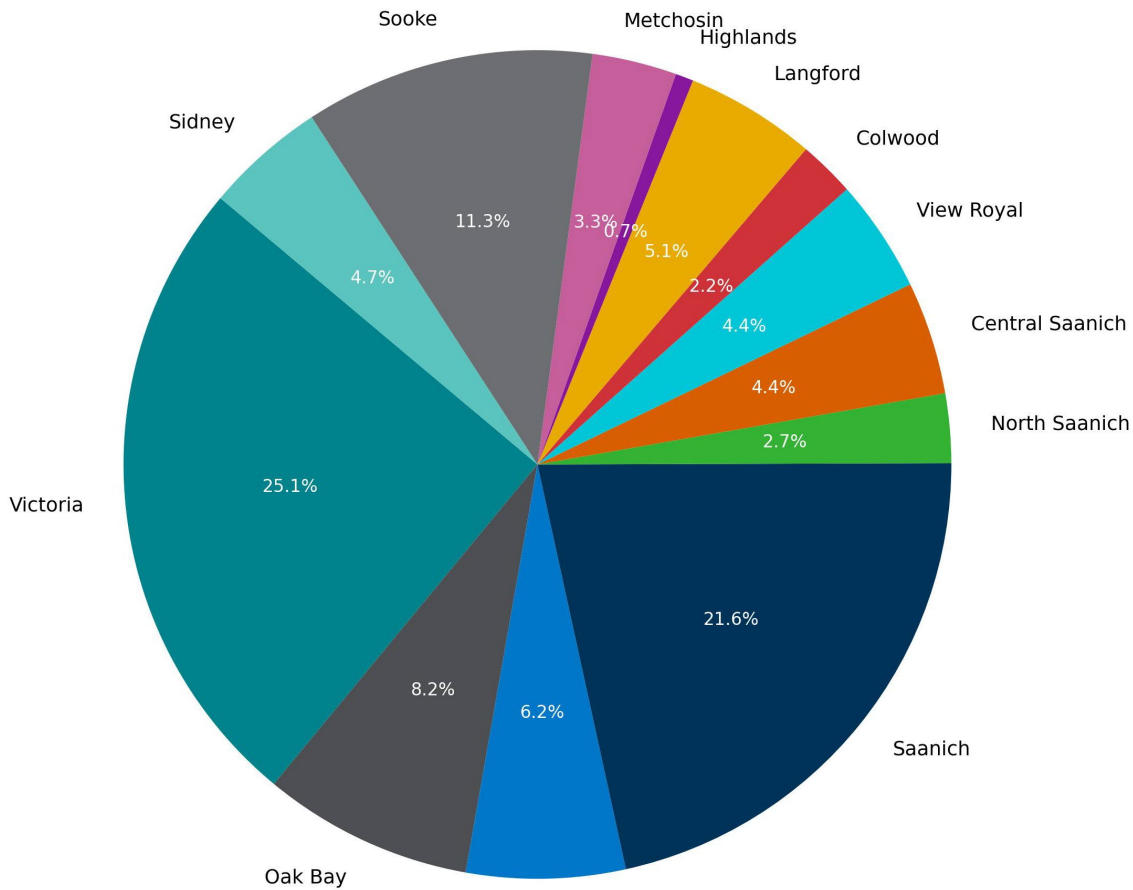
The survey reached residents across the region, with strong participation from Victoria at 25.1% and Saanich at 21.6%. The respondent distribution suggests a well-rounded geographic representation although Sooke at 11.3% and Oak Bay at 8.2% are slightly overrepresented and Langford at 5.1% are slightly underrepresented relative to their population.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025



What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Community	# Responses	% Responses
Central Saanich	20	4.4%
Colwood	10	2.2%
Esquimalt	28	6.2%
Langford	23	5.1%
Metchosin	15	3.3%
North Saanich	12	2.7%
Oak Bay	37	8.2%
Saanich	97	21.6%
Sidney	21	4.7%
Sooke	51	11.3%
Victoria	113	25.1%
View Royal	20	4.4%
Highlands	3	0.7%

What We Heard Report

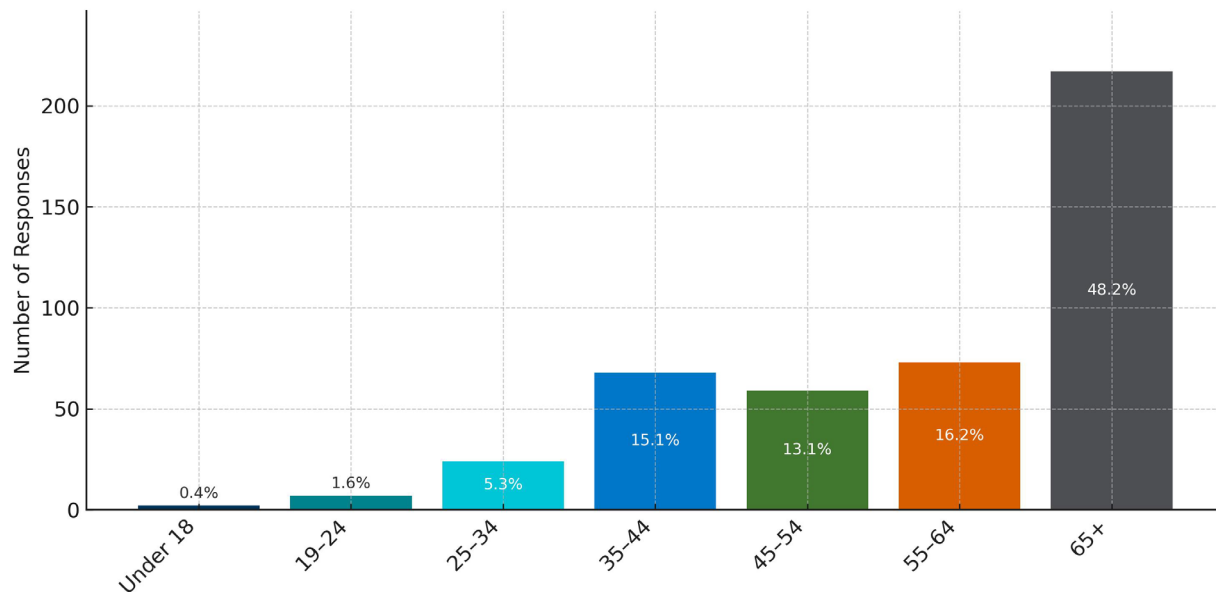
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



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Q2: What is your age range?

Survey respondents skewed older, with nearly half 48.2% of respondents being aged 65+, followed by 55–64 years at 16.2% and 35–44 years at 15.1%. This strong engagement from older residents likely reflects a high level of interest in infrastructure, planning and regional services among retirees and long-term community members as well as availability of time to complete the survey.



What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



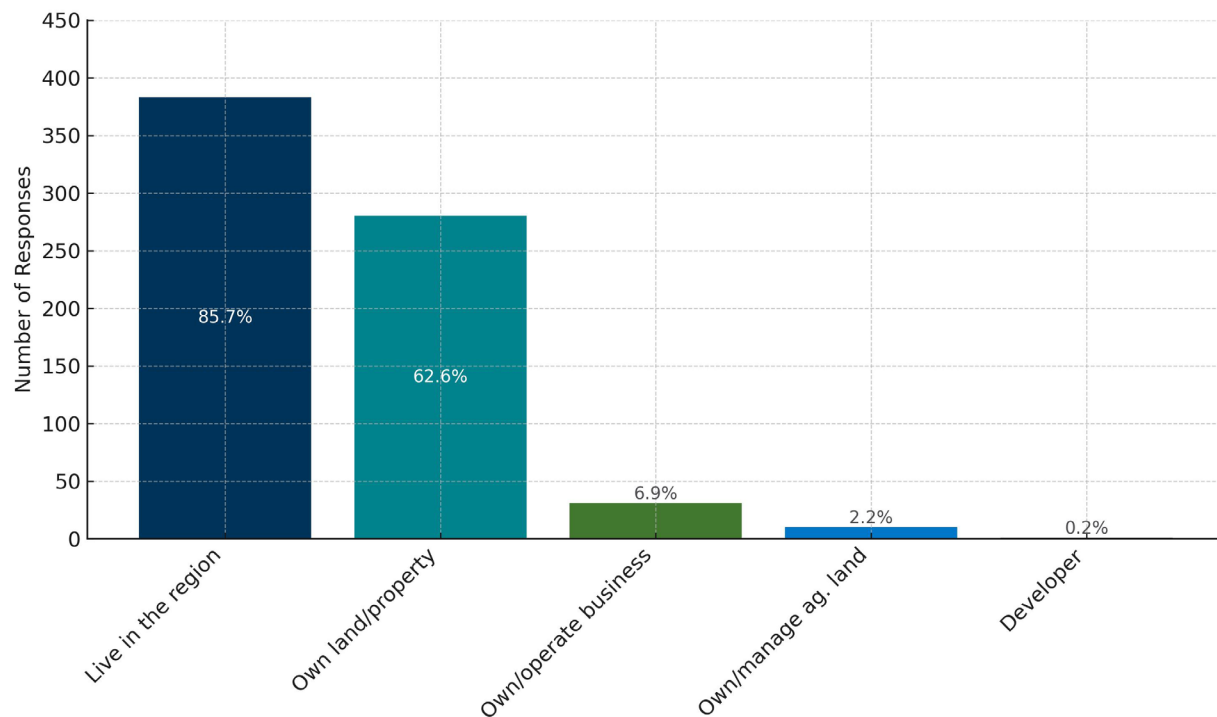
Capital Regional District | May 2025

Q3: How would you best describe your connection(s) to the Regional Water Supply Service?
(Respondents checked all responses that were applicable to them).

The vast majority of survey respondents (85.7%) indicated they live in the region, with 62.6% stating they also own land or property.

Smaller segments of the population reported owning or operating a business (6.9%) or managing agricultural land (2.2%). Less than 1% identified as developers.

These results suggest the feedback largely reflects residential perspectives, with business and agricultural viewpoints comparatively underrepresented.



What We Heard Report

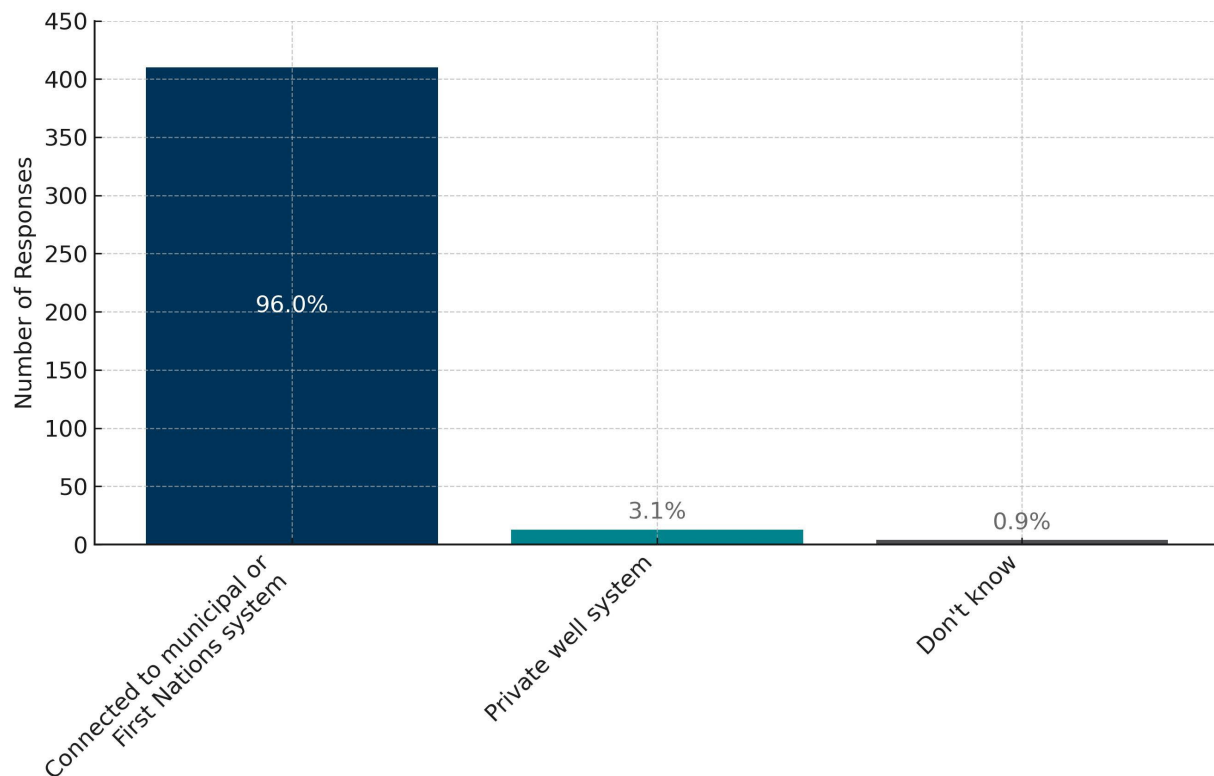
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q4: What is your current drinking water source?

The vast majority of respondents 96% report being connected to a municipal or First Nations drinking water system. A smaller portion 3.1% use a private well system, while 0.9% indicated they were unsure of their source. This suggests most respondents have consistent access to regulated systems, although private well users may face different challenges around supply and safety.



What We Heard Report

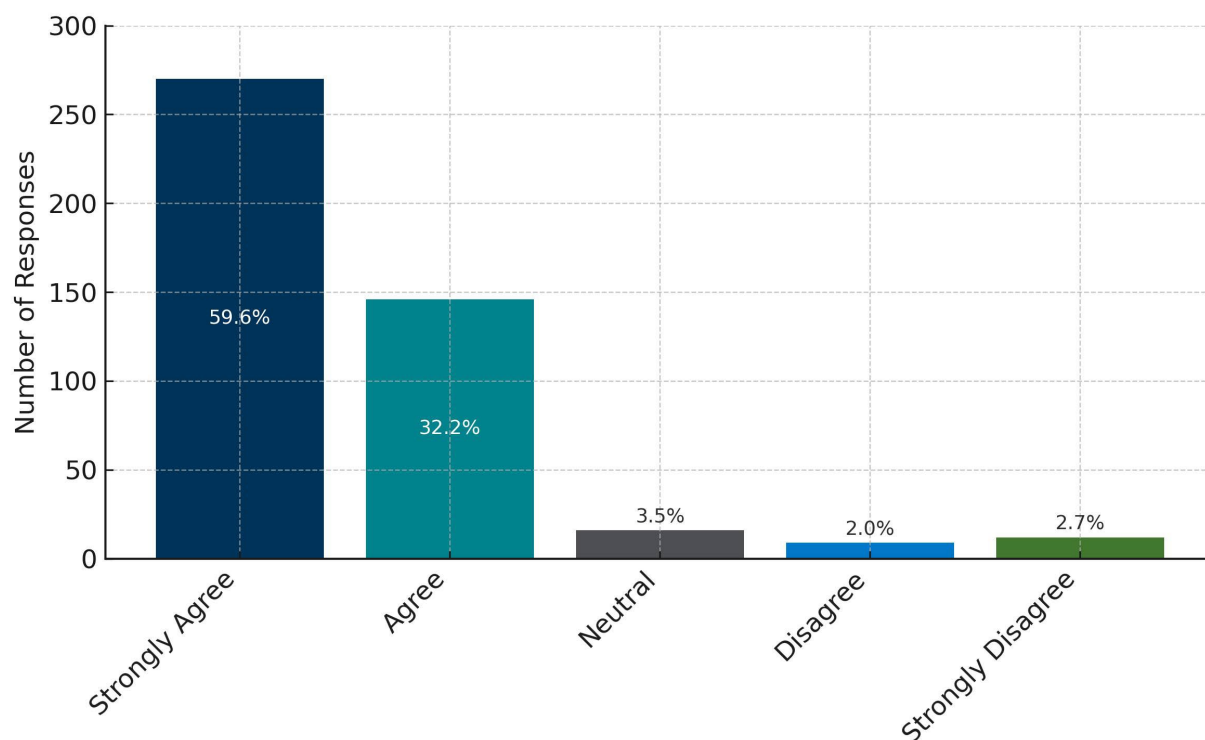
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q5. Rate your level of agreement or disagreement: “Historically, the Regional Water Supply Service has met my expectations.”

A strong majority of participants expressed confidence in the historical performance of the Regional Water Supply Service, with 91.8% either strongly or somewhat agreeing that it met their expectations. An additional 3.5% were neutral, suggesting a relatively modest portion of uncertainty or disengagement. Very few respondents indicated dissatisfaction, with only 4.7% expressing disagreement. These results reflect a generally positive perception of the service's historical delivery.



What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)

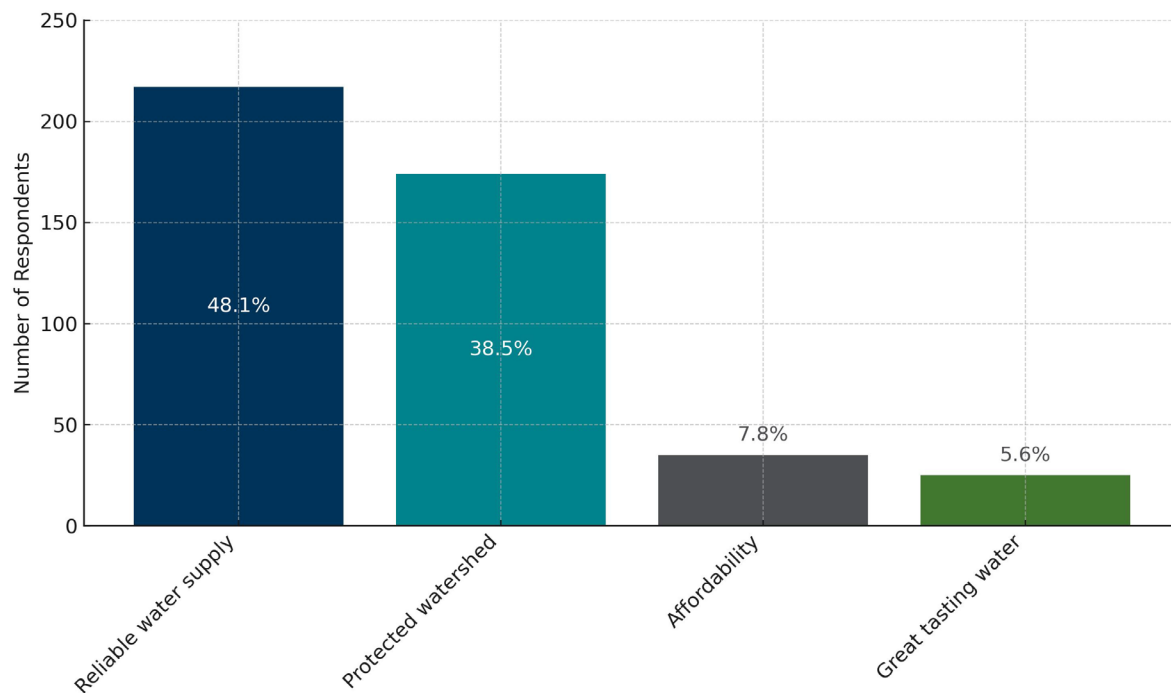


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Q6. Rank what aspect of the Regional Water Supply Service you value the most.

(Respondents ranked from 1-5 with 1 being most valued).

A clear majority of respondents 48.1% selected a reliable water supply as their top priority followed by a protected watershed at 38.5%. Fewer respondents ranked affordability and great tasting water as their top priorities. The results highlight a strong focus on core services and environmental protection.



What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



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Q7. Are there other aspects of the Regional Water Supply Service you value that were not mentioned in the previous question? If yes, please explain.

Responses were grouped in the common themes noted below.

- **Water Quality Testing and Monitoring**

Some respondents mentioned their appreciation for regular water quality testing and real-time data sharing, reinforcing their trust in the system.

- **Emergency Preparedness**

A few respondents emphasized the importance of robust planning and system redundancy to handle emergencies like earthquakes, wildfires, or system failures.

- **Equity in Access and Planning for Growth**

There were remarks related to ensuring equitable access across communities (urban and rural) and incorporating future population growth into infrastructure planning.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)

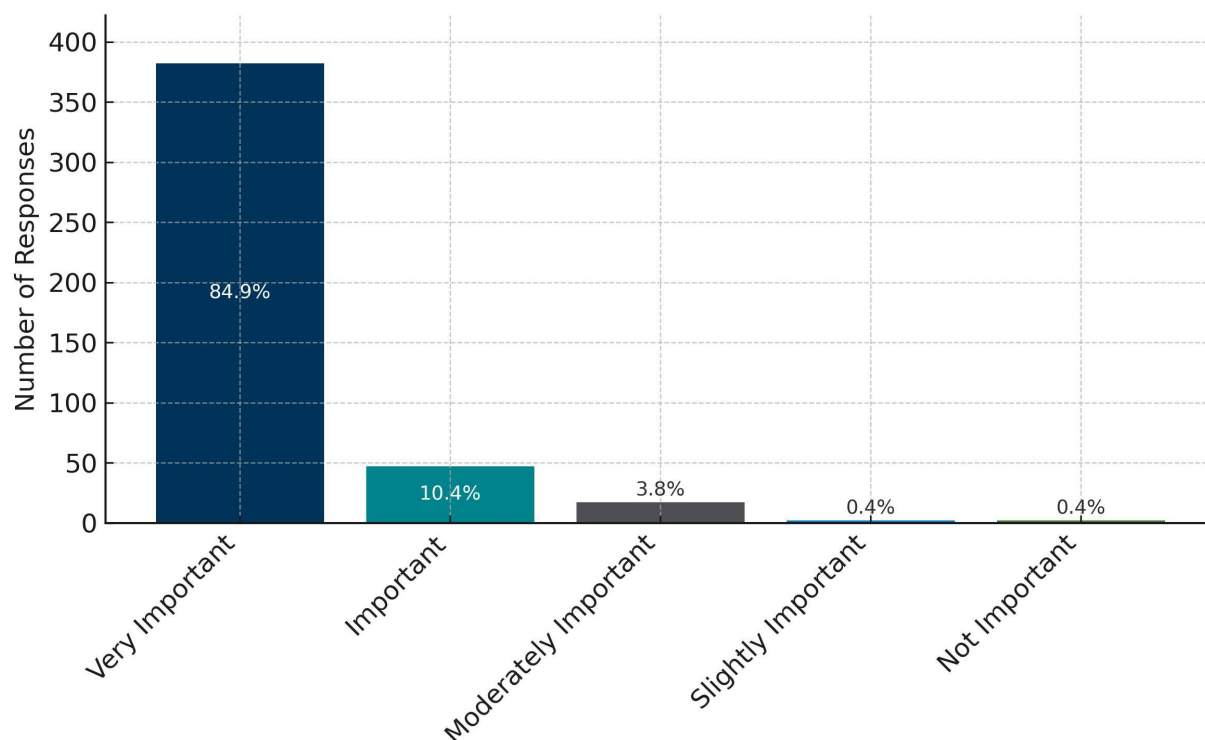


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Section 2: Priorities

Q8: Reflecting on our current water supply and future water needs, how important is it that the CRD continues to invest in high quality, safe and reliable drinkable water?

There is near-universal agreement on the importance of continuing investment in safe and reliable drinking water. An overwhelming 95.3% of respondents said it is either very important or important for the CRD to continue investing in safe and reliable drinking water. This confirms exceptionally strong regional support for core infrastructure maintenance and renewal.



What We Heard Report

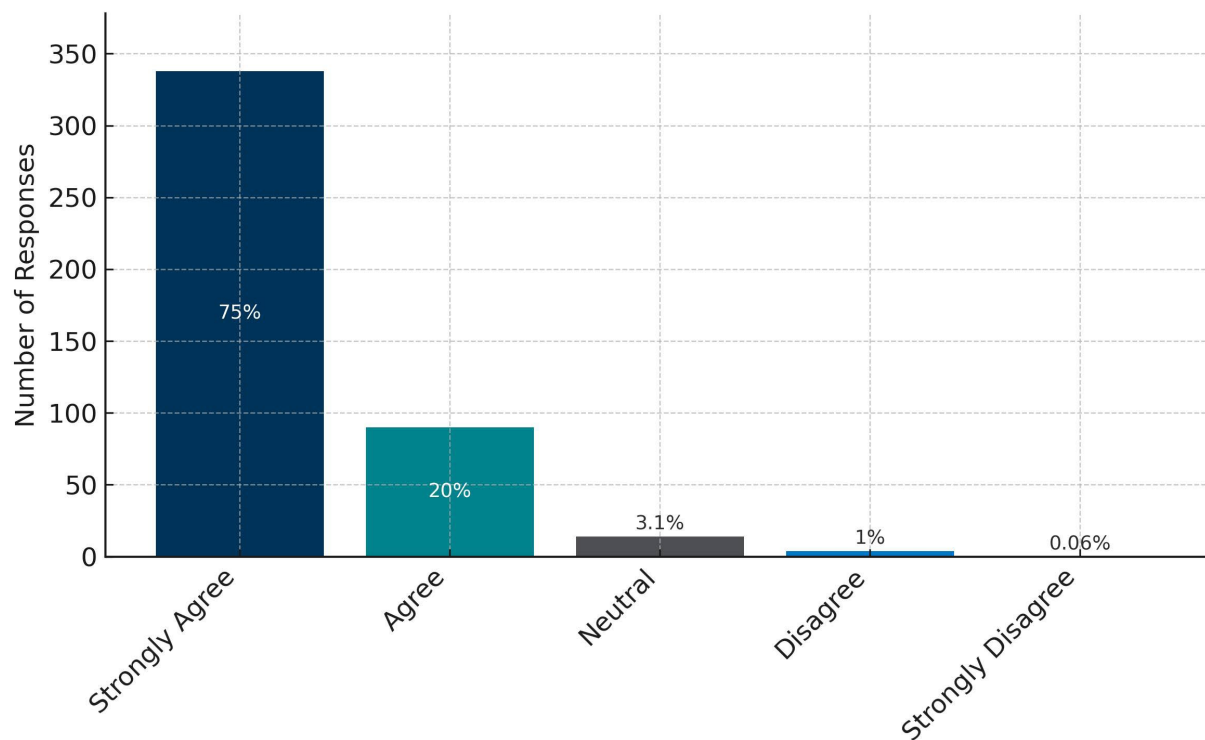
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



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Q9: Ensuring clean, safe and reliable water is a complex process involving investments in watershed management, reservoirs, underground infrastructure, treatment, safety protocols and more. Do you believe the above long-term investments are good for the region?

The vast majority 95% of participants strongly agree or agree that long-term investments in water systems are beneficial. This reinforces public support for strategic planning and budgeting that takes future needs into account.



What We Heard Report

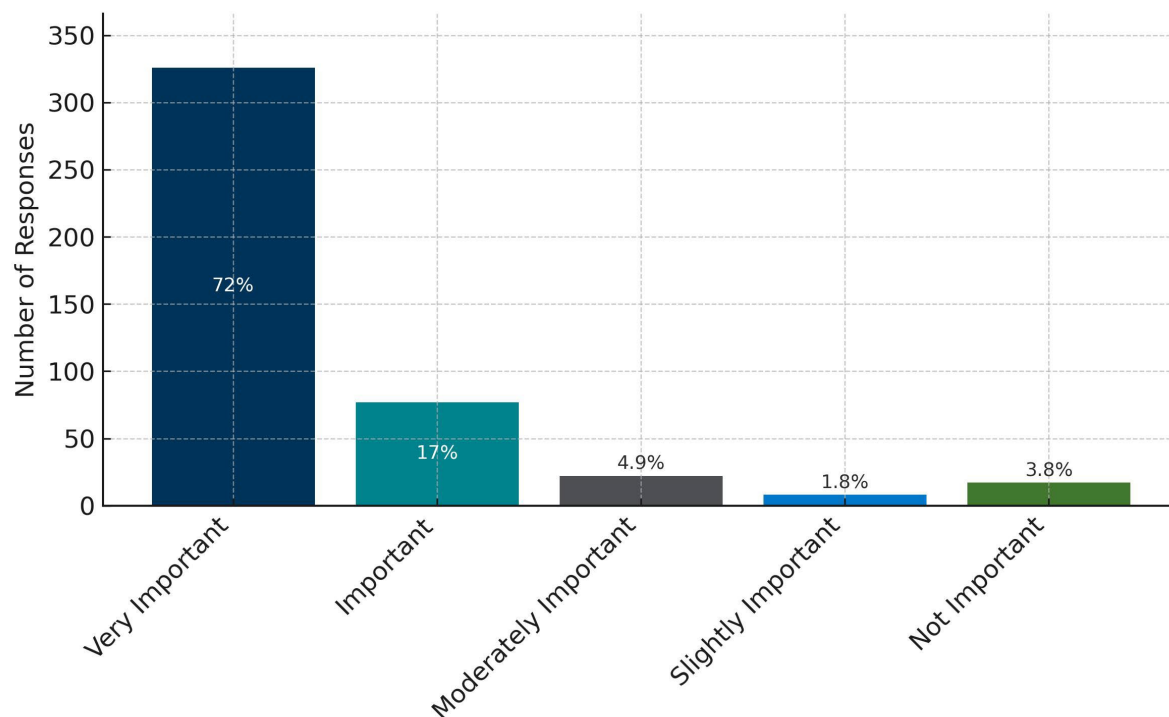
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



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Q10: Changing weather patterns, warming temperatures and a growing population are changing the supply, demand and usage of water. How important is it to you that the CRD adapts to climate change and prioritizes investments in long-term strategies to ensure a reliable water supply for future generations?

The vast majority 93.9% of respondents consider climate adaptation very important, important, or moderately important with only 3.8% rating it as not important. This indicates broad awareness of how climate impacts may affect water security and strong endorsement of future-focused strategies.



What We Heard Report

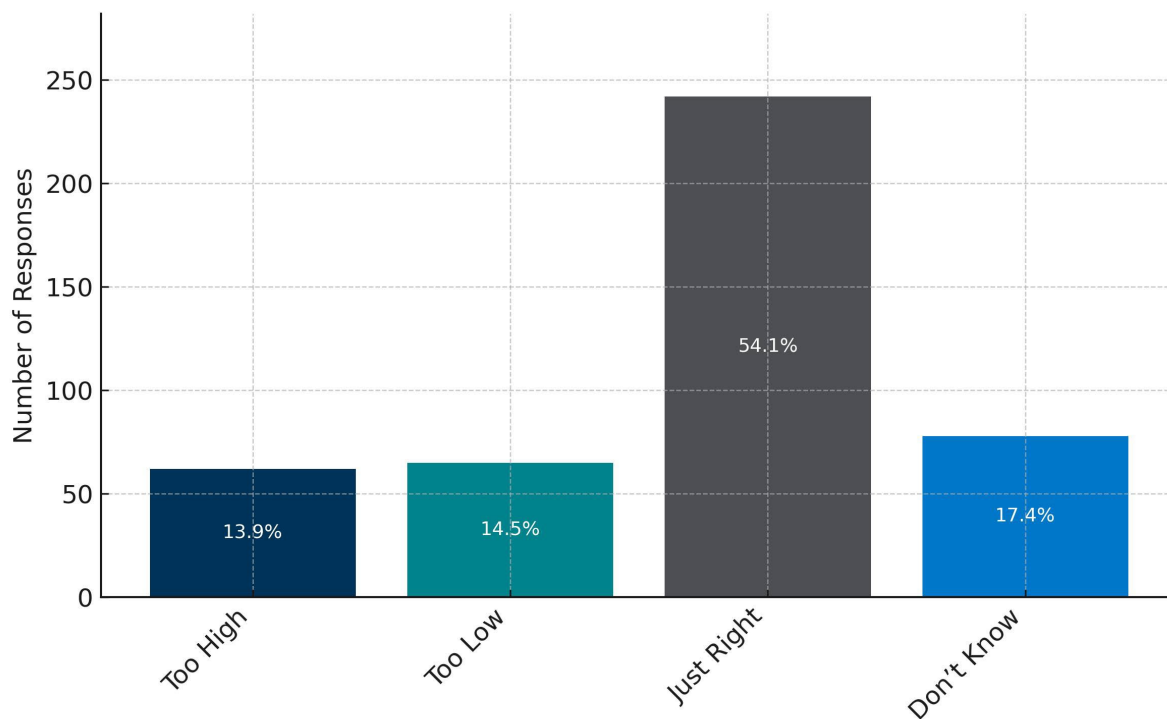
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q11: To keep costs affordable, the draft Strategic Plan balances infrastructure investments and continuous innovation with fiscal responsibility and efficiency. When you consider the value, importance and benefit of clean, drinkable water, would you say the current costs for your home or business are:

A majority of respondents 54.1% felt that current costs were just right, while a smaller share viewed rates as either too high or too low. Notable 17.4% were unsure, suggesting some uncertainty or lack of awareness around pricing. Overall, affordability does not appear to be a major barrier to support for continued investment.



What We Heard Report

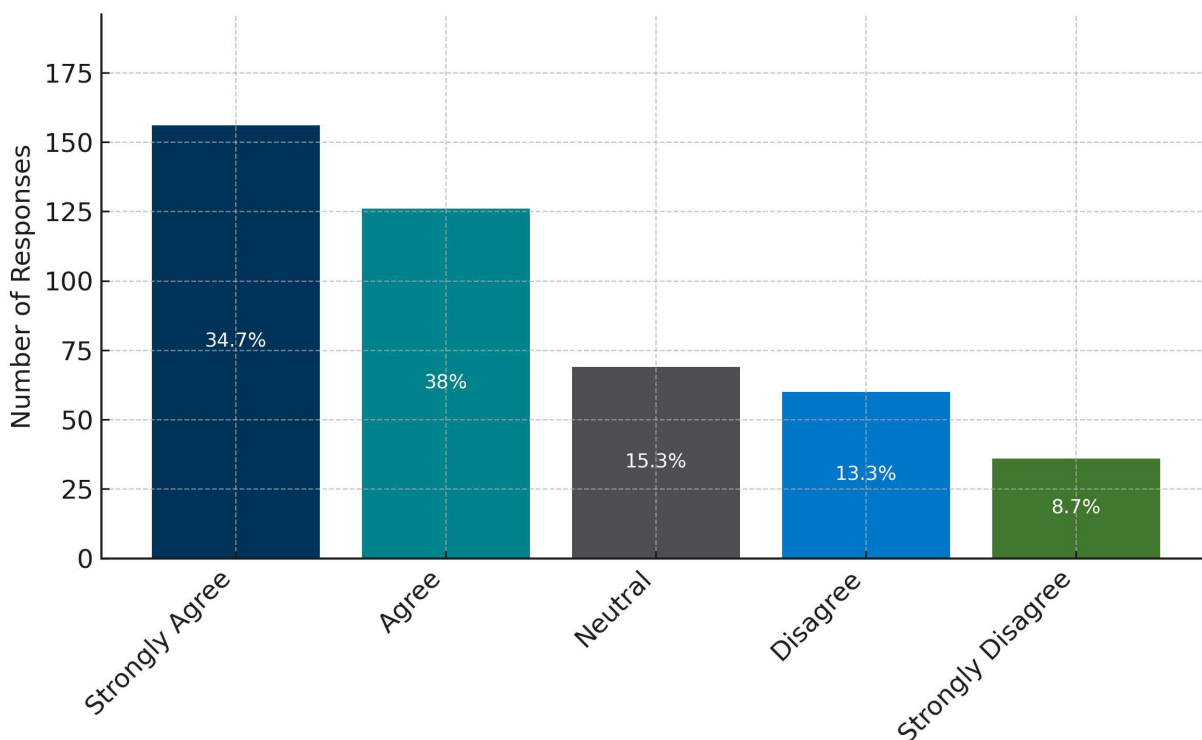
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



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Q12: Please rate your level of agreement or disagreement: "The CRD should promote and enforce year-round water conservation, even when water shortages are not expected."

Support for conservation is generally strong, with 72.7% of respondents either agreeing or strongly agreeing with the initiative. A smaller share 15.3% were neutral, while 22% expressed some level of disagreement. While overall support is high, the level of consensus is somewhat lower than seen in other areas, indicating room for continued public education or engagement.



What We Heard Report

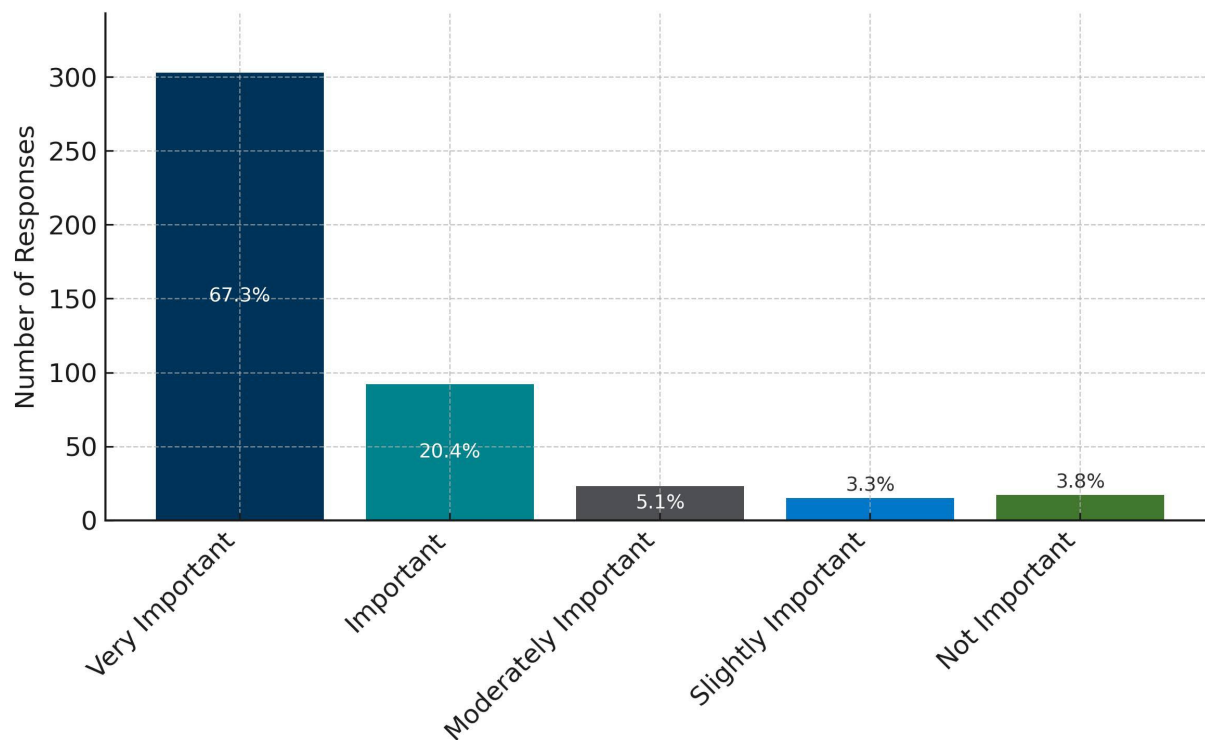
Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q13: For years, the CRD has been investing in measures to safeguard the region from potential water shortages or water supply interruptions resulting from natural disasters and impacts from climate change. How important is this to you?

Investment in emergency preparedness is widely supported. Residents recognize the value in proactively mitigating future risks and ensuring resilience to climate events or infrastructure failure. Most respondents 92.8% feel that emergency preparedness is very important, important or moderately important. These results suggest high public support for proactive planning to handle risks related to climate and infrastructure failure.



What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q14: If there were something you could improve about the Regional Water Supply Service, what would it be?

When asked what could be improved, respondents most frequently pointed to a need for clearer communication and greater transparency, particularly regarding water quality and decision-making. Others suggested enhancing rural service equity, investing in leak detection and infrastructure renewal, and doing more to protect watersheds and prepare for future climate challenges. A few also expressed confusion over water taste and chlorine use, asking for more public education.

A. Planning for Growth & Future Demand

Several respondents called for more clarity on how the CRD is planning for population growth and future water demand:

"Is the service able to meet future water demands in light of urban expansion and climate change?"

B. Emergency Preparedness & Resilience

There is strong interest in knowing how the CRD will provide water in emergencies or during major infrastructure failure:

"Yes, how do you provide water in the event of a critical pipe break or disaster?"

C. Accountability & Oversight of Development Impacts

Some residents expressed concern about how new developments are affecting water supply and infrastructure resilience.

"I've been hearing a lot about how development is straining infrastructure. Is anyone measuring that?"

D. Transparency & Public Communication

Many respondents asked for better access to information about forecasts, planning metrics and rationale for infrastructure priorities. Billing was a recurring concern, with several asking for more transparency in how water bills are calculated and what the charges represent.

"Better clarity on water billing. The charges are confusing and not well explained?"

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)

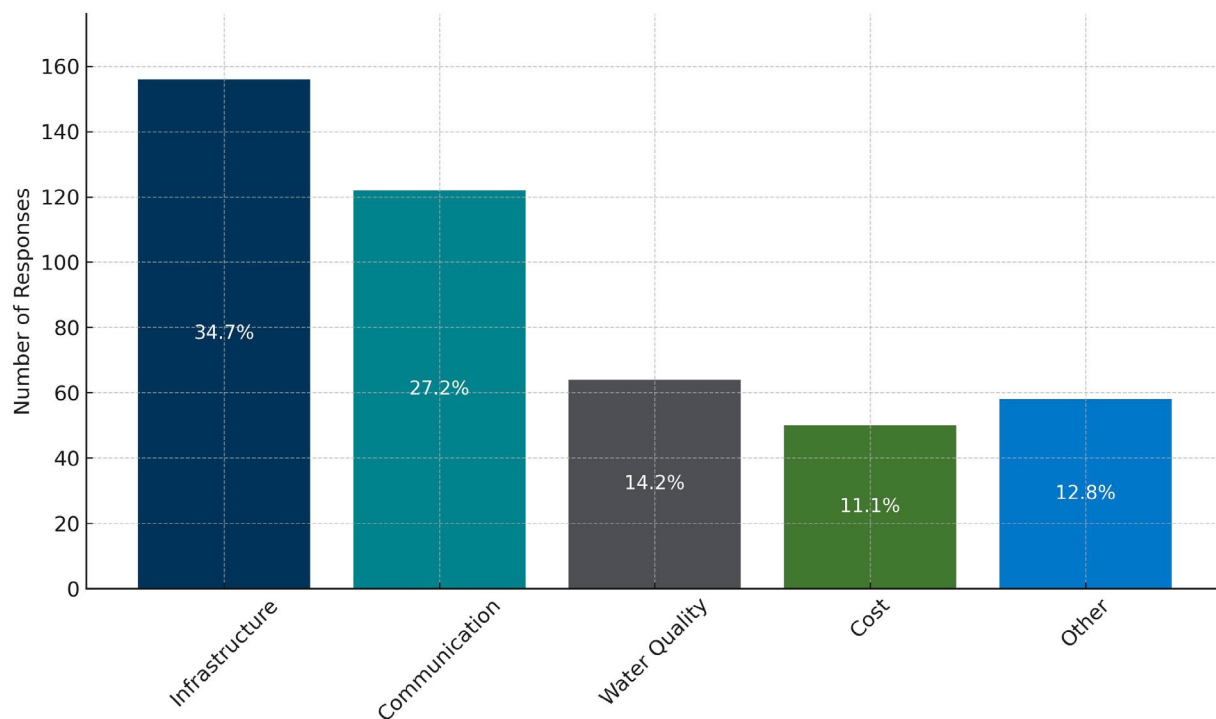


Capital Regional District | May 2025

E. Innovation and Infrastructure Investment

A smaller but vocal group called for more innovative thinking, including alternative sources like desalination or upgrades to aging systems:

"Are there any plans for constructing a desalination plant or better storage reservoirs?"



This chart above summarizes key themes that emerged from respondents' written comments. Responses were coded based on recurring topics such as cost, communication, water quality, transparency and infrastructure needs.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Q15: Is there any other feedback you would like to provide about the Regional Water Supply Service, the draft Regional Water Supply Strategic Plan or this engagement?

Overall, respondents echoed many of the themes found throughout the survey, including a shared commitment to resilience, good governance and sustainable planning. A consistent message was the desire for continued engagement and transparent communication as planning moves forward.

Several respondents praised the quality of the water system and CRD's foresight:

"Overall, the quality and supply of water in Greater Victoria is very well done. Keep it up."

"We very much appreciate the CRD's past and present foresight regarding our regional water supply."

Others emphasized the need for future-focused investment and infrastructure resilience:

"Install a second main from the reservoir to prevent shortages like Calgary experienced in 2024."

"In the next 50 years, water is going to be the new oil/gold. We need to spend the money to invest in our supply."

There were also suggestions for increased public education, clearer communication and alternative engagement methods:

"Communicate more proactively. I only hear about water issues when something goes wrong."

"We need a regional approach to water supply and less fragmentation between jurisdictions."

A few voices urged spending caution or budget transparency, reflecting a desire for balance between ambition and fiscal prudence:

"The CRD needs to be more transparent about where water-related funds are going."

"Before raising costs, show us how current budgets are being used to improve service."

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

16. What additional information or ongoing communication would help you better understand and support the CRD's decisions related to water?

A. Transparency on Water Bills & Costs

Respondents want clearer explanations of how their water rates are calculated and how funds are being used. There is interest in understanding what influences their bills and how they relate to infrastructure investments.

"More clarity on water billing. The charges are confusing and not well explained."

"Break down of what's included in our water costs and how they're determined."

B. Communication About Planning & Future Projects

Several participants requested ongoing updates about infrastructure upgrades, water demand forecasts and long-term strategic planning.

"Updates on where the CRD plans to expand or improve the system."

"Better communication about how climate change is factored into planning."

C. Real-Time or Frequent Water Usage & Quality Data

There was repeated mention of wanting more immediate or routine updates on water quality and consumption trends.

"A dashboard showing daily water use or system status would be helpful."

"Share water quality testing results more regularly."

D. Education & Engagement Opportunities

Some respondents asked for more public education, including explanations of CRD priorities, conservation tips and how residents can participate in decision-making.

"Workshops or online sessions explaining water systems and plans."

"Simple guides on what people can do to support conservation."

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

E. Coordination with Local Municipalities

A few expressed confusion about whether communication should come from CRD or their local municipality, suggesting room for clarification and collaboration.

"Sometimes hard to tell what's municipal vs CRD. Make it clearer who does what."

Key Survey Themes

Insight: Strong Support for Investment in Safe, Reliable Water

Nearly all respondents view continued investment in safe and reliable drinkable water as critically important. Over 95% rated it as very important or important.

Quote: *"Grateful that the CRD is engaging citizens! The groundwork laid by earlier generations needs to be maintained and improved."*

Demographic Note: This sentiment is consistently high across all age groups and locations, showing strong regional consensus.

Insight: Clear Consensus on Adapting to Climate Change

A large portion of respondents 93.9% emphasized the importance of the CRD adapting to climate change and planning for long-term water supply needs.

Quote: *"We've inherited an incredible legacy from previous generations. Let's make sure we leave future generations with the same security."*

Demographic Note: Support for climate adaptation is strong across all age ranges with all age categories having an average rating of 4.4 or higher on a 5-point Likert scale.

Insight: Most Believe Water Costs Are Reasonable

A majority of respondents 68.6% felt that current water rates are either just right or too low, indicating that most people believe they're receiving good value for the cost.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Quote: *"I think our water is priced fairly given the quality and security. I'm ok with paying for the Infrastructure that keeps it that way."*

Demographic Note: Younger respondents under 35 were slightly more price sensitive, but even among this age group, affordability concerns were relatively low.

Insight: Year-Round Water Conservation Garner's Moderate Support

While many agree with the idea of year-round water conservation, enthusiasm is more mixed. Responses show a wider range, with 34.7% strongly agreeing and 27.3% rating as neutral, disagree or strongly disagree reflecting a range of comfort levels with permanent restrictions.

Quotes:

- *"I strongly agree with year-round restrictions — we can't assume the water will always be there." (High Support)*
- *"I support conservation but don't think heavy restrictions make sense when reservoirs are full. Education is a better first step." (Moderate Support)*
- *"Neutral — I think it depends on whether there's actually a drought." (Mixed/Neutral)*
- *"It feels performative when there's clearly no shortage." (Critical View)*

Demographic Note: Support for year-round conservation was consistent overall. Younger respondents under 35 (4.0 average rating) were slightly more likely to strongly agree, while older age groups expressed a broader mix of views (65+ average rating 3.67).

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

Insight: High Value Placed on Disaster Preparedness

Most respondents see value in CRD's investments to mitigate risks from disasters and climate events. It's seen as a responsible and future-facing strategy.

Quote: *"A clear indicator to users of how much water they're using daily would help. People are more likely to prepare if they understand their own usage."*

Demographic Note: This priority was expressed across all age ranges.

Demographic Insights

Insight: Perspectives by Age Group

While all age groups find water cost reasonable, younger residents aged 25-34 years and older respondents aged 65+ tend to be slightly more critical of costs but the difference across age groups is relatively minor. However, they still support water safety investment.

- Ages 65+: Cost rating = 1.99
- Ages 25-34: Cost rating = 2.11

Insight: Location Matters — But Mostly Reinforces Broader Themes

No single municipality dramatically departs from the regional averages on investment, conservation, or climate priorities. Saanich, Victoria and Oak Bay respondents show nearly identical support for investment in water safety and climate readiness, this indicates broad regional alignment, which is useful for the CRD in justifying a cohesive approach to water planning.

What We Heard Report

Regional Water Supply 2025 Strategic Plan: Community Engagement (Phase 2)



Capital Regional District | May 2025

NOTE: Understanding Average Scores

Average scores such as '2.15' or '2.53' represent the mean response on a 5-point Likert scale (or in select questions a 4-point scale). For example, when respondents were asked how they would describe the current cost of water for their home or business, the response scale was:

Likert Scale

- 1 = Too high
- 2 = Just right
- 3 = Too low
- 4 = Don't know

So, an average of 1.99 indicates that most respondents selected between *too high* and *just right*.

March 7, 2025

File: 0400-60



By Email:

Dear

RE: 2025 REGIONAL WATER SUPPLY DRAFT STRATEGIC PLAN – REQUEST FOR INPUT

The Capital Regional District (the “CRD”) is updating its Regional Water Supply Strategic Plan (the “Plan”) to guide the long-term management of drinking water for the region. We recognize that the Regional Water Supply Area lies within the territories of several First Nations, including yours, and we value your insights in shaping this Plan.

The Plan aims to ensure a reliable, high-quality drinking water supply through key initiatives that protect and manage the water supply area, enhance infrastructure, improve water quality, and support long-term sustainability. This update specifically addresses urgent and emerging challenges such as climate change, population growth, and evolving regulations, and proposes new initiatives for managing the water supply area in collaboration with First Nations.

We are particularly interested in working with your Nation on the management of the water supply area. The draft Plan outlines potential actions, but we welcome your input on whether these align with your priorities or if there are other initiatives you would like to see included.

The draft Plan is available online at <https://getinvolved.crd.bc.ca/regional-water-supply-strategic-plan>, and you can also access it via the QR code below. For your convenience, we have also attached a list of FAQs.

We would appreciate the opportunity to meet with you to discuss the draft Plan and gather your feedback directly. If your Nation is interested in providing input, please let us know by March 31 along with your availability for a meeting at your earliest convenience. We look forward to your input and to continue building a collaborative relationship. If you would like to speak with me directly, I can be reached at aafraser@crd.bc.ca or 250.360.3061.



[REDACTED] - March 7, 2025

2025 Regional Water Supply Draft Strategic Plan – Request for Input

2

Thank you for your time and consideration.

Sincerely,



Alicia Fraser, P.Eng.
General Manager
Infrastructure and Water Services

cc: Caitlyn Vernon, Manager, First Nations Relations, Capital Regional District

Attachments: 1

- Regional Water Supply FAQs



Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

What is the CRD Regional Water Supply Strategic Plan?

The Capital Regional District (CRD) Regional Water Supply Strategic Plan is a long-term framework designed to ensure the sustainable management, maintenance, and protection of the region's water supply and transmission system. It outlines key commitments, strategic priorities and actions that guide the CRD in delivering safe, high-quality drinking water to Greater Victoria residents. The plan helps address future water supply challenges, including population growth, climate change impacts and infrastructure needs. It also ensures that water services align with regional priorities and regulatory requirements.

What is the Planning Horizon for the Regional Water Supply Strategic Plan?

The Strategic Plan focuses on medium-term actions for the next five to ten years with a long-term planning horizon extending to 2055.

Why is a strategic plan necessary for our water supply?

A strategic plan is essential to ensure the long-term security, reliability and sustainability of the Regional Water Supply System. Water is a critical resource and factors such as climate change, urban expansion and aging infrastructure require careful long-term planning. This plan provides a structured approach to decision-making, ensuring that Greater Victoria residents continue to have access to safe, clean, and reliable drinkable water. By setting clear commitments and strategic actions, the plan allows the CRD to:

- Proactively address challenges such as water demand fluctuations, infrastructure, maintenance and emergency preparedness
- Ensure regulatory compliance with health and safety guidelines for drinking water
- Plan for future investments in water infrastructure and watershed protection
- Promote conservation and sustainability through demand management strategies

Regional Water Supply Strategic Plan



Frequently Asked Questions

Capital Regional District | February 2025

Who does the CRD supply drinking water to?

The CRD Regional Water Supply Service provides wholesale drinking water to approximately 430,000 residents in Greater Victoria. Water is supplied to the following communities:

- Esquimalt
- Oak Bay
- Saanich
- Victoria
- Saanich Peninsula Water Service (Central Saanich, North Saanich and Sidney)
- Juan de Fuca Water System (View Royal, Colwood, Lanford, Metchosin, Highlands, Sooke and portions of East Sooke)
- Sc'ianew (Beecher Bay First Nation)
- x^wsepsem (Esquimalt First Nation)

Additionally, First Nations communities receive water through various municipal distribution systems and the CRD ensures that the water delivered to these communities meets or exceeds Canadian drinking water standards.

How often is the Strategic Plan updated?

The CRD updates the Regional Water Supply Strategic Plan approximately every five to ten years to ensure that it remains relevant and responsive to emerging environmental, technological and regulatory changes. The first plan was developed in 1999, with updates in 2004, 2012 and 2017.

The 2004 & 2012 updates focused on:

- Water quality and watershed protection
- Demand management in response to projected population growth
- Infrastructure planning and priorities

The 2017 update focused on:

- Infrastructure investment planning for long-term system resilience
- Climate change adaptation strategies

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

- Emergency and post-disaster water supply planning
- Planning for the use of the Leech Water Supply Area, our future water supply source

The 2025 update will focus on:

- Building on previous efforts from past plans
- Implementing long-term planning efforts developed as part of the previous plan
- Continued focus on adapting to climate change, aging infrastructure and population growth
- Emergency preparedness, response and mitigation

What are the main threats to water quality?

Several natural and human-made factors can threaten the quality of the Regional Water Supply, including:

- **Climate Change:** Rising temperatures, changing precipitation patterns and extreme weather events (such as droughts and heavy storms) can affect water availability and quality
- **Wildfires:** Fires in the watershed could introduce ash, debris and contaminants into the water supply
- **Land Use Activities:** Unauthorized activities in the watershed, such as recreation or development can introduce pollutants
- **Infrastructure Challenges:** Aging infrastructure can increase the risk of leaks or contamination

How does the CRD ensure water quality?

The CRD utilizes a multi-barrier approach to maintain high water quality standards. This approach ensures that drinking water is safe, clean and meets or exceeds regulatory standards. These measures work together to safeguard drinking water quality and ensure public health.

Key measures to ensure water quality include:

- **Source Water Protection:** The CRD protects the Sooke Lake Reservoir and watershed lands from contamination through strict land use policies, environmental management and management of access to the area

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

- **Water Treatment:** The water undergoes primary disinfection using ultraviolet (UV) light and secondary disinfection using chloramination, which provides long-lasting protection as the water travels through the transmission system
- **Regular Monitoring & Sampling:** Water quality is continuously monitored at key points throughout the system and water samples are tested for microbiological, chemical and physical parameters to ensure compliance with the Guidelines for Canadian Drinking Water Quality
- **Infrastructure Maintenance:** The CRD ensures that water transmission infrastructure is properly maintained to prevent contamination and service disruptions
- **Cross-connection control:** The CRD implements a cross-connection control program to prevent backflow contamination and protect the drinking water supply from potential pollutants

Does the CRD oversee private wells?

The Strategic Plan only applies to the CRD's Regional Water Supply System and does **not** cover private wells, which operate independently under provincial regulations. Private well owners are responsible for maintaining their wells, testing water quality and ensuring compliance with provincial regulations.

The CRD encourages well owners to:

- Test water regularly for contaminants such as bacteria and nitrates
- Follow best practices for well maintenance and protection
- Report any concerns about groundwater contamination to the appropriate provincial authorities

What is the difference between the CRD Regional Water Supply Service and municipal water distribution services?

The CRD Regional Water Supply Service is responsible for sourcing, treating and transmitting bulk drinking water to municipalities and First Nations and managing key infrastructure such as reservoirs, treatment plants and large transmission mains. Once water from the Regional Water Supply reaches municipal boundaries or bulk water meters, local municipalities are responsible for the water supply through their distribution systems. Municipal

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

distribution services are responsible for local water mains, fire hydrants, meters, delivery of water to homes and businesses and water conservation programs and regulations.

NOTE: The CRD directly manages and is the municipal provider for the Juan de Fuca Water Distribution System, which serves all Westshore communities, including: View Royal, Colwood, Langford, Metchosin, Highlands, Sooke and portions of the Juan de Fuca Electoral Area.

Will there be enough water for future generations?

The CRD is committed to ensuring a sustainable and reliable water supply for future generations. The Regional Water Supply Strategic Plan includes several key initiatives to balance current and future water demands including:

Water Conservation & Demand Management: The CRD promotes water conservation programs, sets long-term water use targets and develops policies to optimize water supply. These initiatives help reduce unnecessary water use and ensure that existing resources are used efficiently.

Infrastructure Investments: The CRD is upgrading treatment facilities, transmission systems and reservoirs to improve the system's capacity and efficiency. These improvements help ensure that water can be reliably delivered to meet current and future demands.

Watershed Management: Protecting source water is a top priority. The CRD is implementing wildfire prevention programs, enhancing forest resilience strategies and strengthening biosecurity measures to protect water quality at its source.

Future Water Sources: The Leech Water Supply Area is being prepared as a future supplemental water source. Based on climate change modeling and population growth projections, it is expected that additional sources of water may be needed by 2045.

Assessing Water Supply Capacity & Land Acquisition: The CRD continues to evaluate the maximum capacity of existing water sources and assess potential land acquisitions to expand the long-term water supply beyond 2055 if necessary.

By implementing the above strategies, the CRD is ensuring that future generations will have a safe and reliable water supply, despite climate change and regional growth.

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

How can I help conserve water?

Residents play a key role in helping to protect and conserve the region's water supply. Some of the best ways to reduce water consumption include:

- **Checking for and Repairing Leaks:** A small leak can waste thousands of liters of water per year
- **Installing Water-Efficient Fixtures & Appliances:** Look for low-flow showerheads, toilets and ENERGY STAR-certified dishwashers and washing machines
- **Follow Seasonal Watering Restrictions:** Outdoor watering uses a significant amount of water; by following watering schedules and restrictions you help conserve water throughout the dry months
- **Reducing Outdoor Water Use:** Plant drought-resistant plants and use rain barrels or drip irrigation to help reduce your outdoor water use
- **Being Mindful of Daily Water Use:** Simple actions, such as turning off the tap while brushing teeth or running full loads of laundry and dishes, can make a significant difference

For more tips and tricks on how to conserve water, visit our resource page.

Does climate change impact our water supply?

Yes, climate change has a direct impact on the region's water supply and requires proactive management. Climate change was expected to most influence the wildfire, drought, and aquatic invasive species threats due to warmer temperatures and longer dry spells. Some key climate-related challenges include:

Changing Precipitation Patterns: More rainfall may come in short, intense periods rather than being evenly distributed throughout the year, affecting reservoir levels. In addition, this also can result increased turbidity in the source water as a result of more intense runoff.

Increased Drought Frequency: Longer dry seasons and higher temperatures can lead to reduced water availability in the summer months.

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

Increased Temperatures: Warm water temperatures can result in increased algal growth (depending on nutrient availability, a limiting factor). This increased algal growth may impact treatment processes and impacting water quality.

Extreme Weather Events: Storms, flooding, and wildfires pose risks to water infrastructure and source water quality.

How is the CRD addressing climate change impacts on our water supply?

Climate change is an ongoing challenge, but the CRD is continuously updating its plans, infrastructure and policies to mitigate risks and ensure a resilient water supply. The CRD is addressing climate related risks to our water supply by:

- Increasing the redundancy within our system by investigating the addition of a deep north intake
- Planning for the addition of filtration to enhance resiliency of the currently unfiltered water source in the event water quality is compromised as a result of wildfire, flood, landslides, contamination or algal blooms
- Improvements to the Goldstream secondary water sources to reduce reliance on a single supply of water during emergencies
- Enhancing reservoir storage capacity to better manage seasonal water fluctuations
- Mitigating the risk of wildfire by expanding wildfire prevention strategies and utilizing early detection technologies for wildfire including infrared technology and drone monitoring
- Implementing forest fuel management strategies, such as prescribed burning and selective thinning, to reduce fire hazards and strengthening biosecurity measures to prevent invasive species and pathogens that could harm water quality from entering the watersheds
- Implementing demand management strategies to ensure water use remains sustainable.
- Continuing to study and model climate change impacts to ensure that the water supply system remains resilient and sustainable for future generations

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

What is the difference between the CRD's Regional Water Supply Strategic Plan and the Regional Water Supply Master Plan?

The Strategic Plan is a high-level framework that defines the commitments, priorities, and actions required to manage the water supply system over the next 5 to 10 years. It sets the policy direction for water management and outlines initiatives such as water conservation, watershed protection and emergency preparedness.

The Master Plan is a detailed, long-term infrastructure specific roadmap that extends to 2050. It identifies 21 major infrastructure projects necessary to meet population growth, climate change adaptation and water treatment needs.

Will my water bill increase because of the Strategic Plan?

The CRD strives to balance necessary infrastructure investments with financial responsibility to minimize impacts on water rates. The short and medium-term actions identified in the Strategic Plan are already included in the CRD's operating and five-year capital plan. Costs for longer-term actions will be refined and budgeted in future years. Once determined, these costs will be incorporated into the annual budget through the CRD's financial planning process.

Each year the Regional Water Supply Commission and the CRD Board approve the operating and capital budget and associated bulk water rates. The budget approval process follows a structured governance model. CRD staff prepare budget recommendations based on operational needs, financial forecasts and funding sources. The Regional Water Supply Commission, consisting of elected officials from municipalities and electoral areas, reviews and recommends the budget. The final approval rests with the CRD Board, which ensures financial decisions align with long-term water management goals.

How is the CRD funding Strategic Plan projects?

The CRD uses multiple funding sources to support infrastructure investments and operational needs. By leveraging these funding sources, the CRD minimizes financial impacts on ratepayers while ensuring necessary upgrades and maintenance are completed. Funding sources include:

Water User Rates: Charges paid by residents and businesses for water services

Regional Water Supply Strategic Plan



Frequently Asked Questions

Capital Regional District | February 2025

Development Cost Charges (DCCs): Fees collected from new developments to help fund water infrastructure expansion

Provincial and Federal Grants: The CRD actively seeks grant funding opportunities to offset costs

Reserve Funds and Borrowing: In some cases, the CRD may use financial reserves or borrowing to finance long-term capital projects

How can I stay informed about the Strategic Plan?

Public engagement ensures that residents are informed and that community concerns and priorities are reflected in decision-making. The CRD provides several ways for residents to stay up to date on the Strategic Plan, including:

Get Involved Platform: The most recent updates, reports and information about the Strategic Plan are available online on our Get Involved Platform

Email Notifications: Residents can subscribe to receive email notifications about the Strategic Plan through the Get Involved Platform

Virtual Information Session: Residents wishing to learn more about the Strategic Plan can join our online information session on March 6 @ 6 PM

Pop-up Informational Booths: Between February 18-27, the public can learn more about the Strategic Plan through our community pop-up informational booths located at SEAPARC, Panorama and Esquimalt Recreation Centres

Social Media: Residents can follow us on our social media channels [Facebook](#) | [X](#) | [Instagram](#) | [LinkedIn](#) to see relevant posts about engagement opportunities related to the Strategic Plan

Newspaper: Ads will run in February in the Times Colonist and all local newspaper throughout the region notifying the public about engagement opportunities related to the Strategic Plan

Regional Water Supply Strategic Plan

Frequently Asked Questions



Capital Regional District | February 2025

How can the public provide input on water management decisions?

The CRD encourages public participation in shaping the future of the Regional Water Supply system. By participating in public engagement efforts, residents help shape policies, priorities, and investments for the region's water supply. Opportunities for residents to provide input include:

Surveys: The CRD is currently inviting feedback on the draft Regional Water Supply Strategic Plan through an online survey available until March 31, 2025, at 11:55 PM. Input collected from residents will help refine the final version of the Strategic Plan.

Virtual Information Session: A public information session is scheduled for March 6, 2025 @ 6:00 PM. This session will provide an overview of the plan and allow residents to ask questions. This session will also be recorded and available for viewing for those that cannot attend.

Water Advisory Committee (WAC) & Regional Water Supply Commission (RWSC): Residents can attend the public open forum portions of the WAC or RWSC meetings in person or virtually to learn more about water related planning, infrastructure and key decisions about the water supply system.

NOTE: Elected representatives from municipalities and electoral areas sit on both the WAC and RWSC and residents are encouraged to engage with these representatives.

Regional Water Supply 2025 Strategic Plan

What We Heard Report
May 2025

Agenda

1. Draft Strategic Plan Overview
2. Engagement Process
3. Survey Highlights
4. Summary
5. Next Steps



Mission Statement

“Together we provide reliable, high-quality drinkable water to help ensure the health and sustainability of the growing communities we serve today and in the future”



Commitments

CRD REGIONAL WATER SUPPLY 2025 STRATEGIC PLAN UPDATE

The draft plan outlines proposed strategic priorities that are intended to ensure the Regional Water Supply Service is responsive to challenges and opportunities facing the system while maintaining focus on the three long term commitments:



Provide high quality,
safe drinkable water



Provide an adequate, reliable,
long-term supply of drinkable water



Provide efficient, effective
and innovative operations of our
water system infrastructure

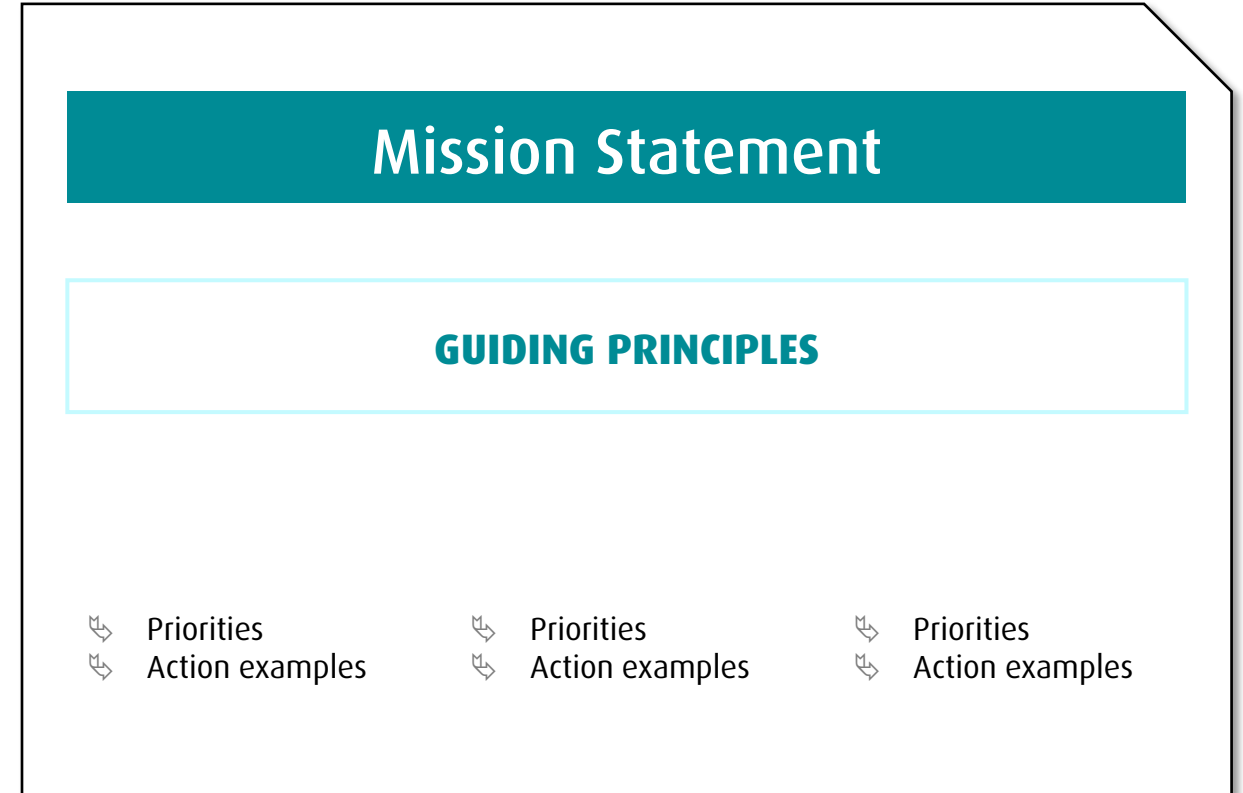
Strategic Plan Components

The **Mission Statement** lays out our overarching purpose, intention and objectives.

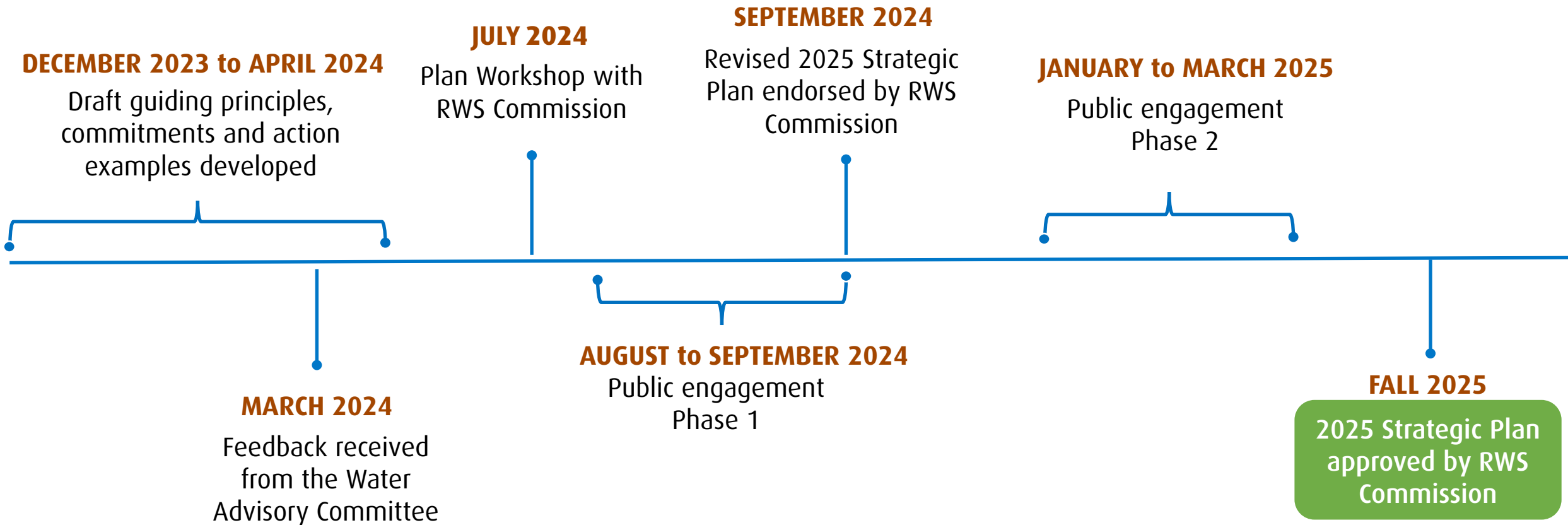
Guiding Principles reflect the current context and the factors we consider when we make decisions about all actions we take.

Commitments are three long-term promises that are foundational to achieving our service mandate. They remain stable across plans.

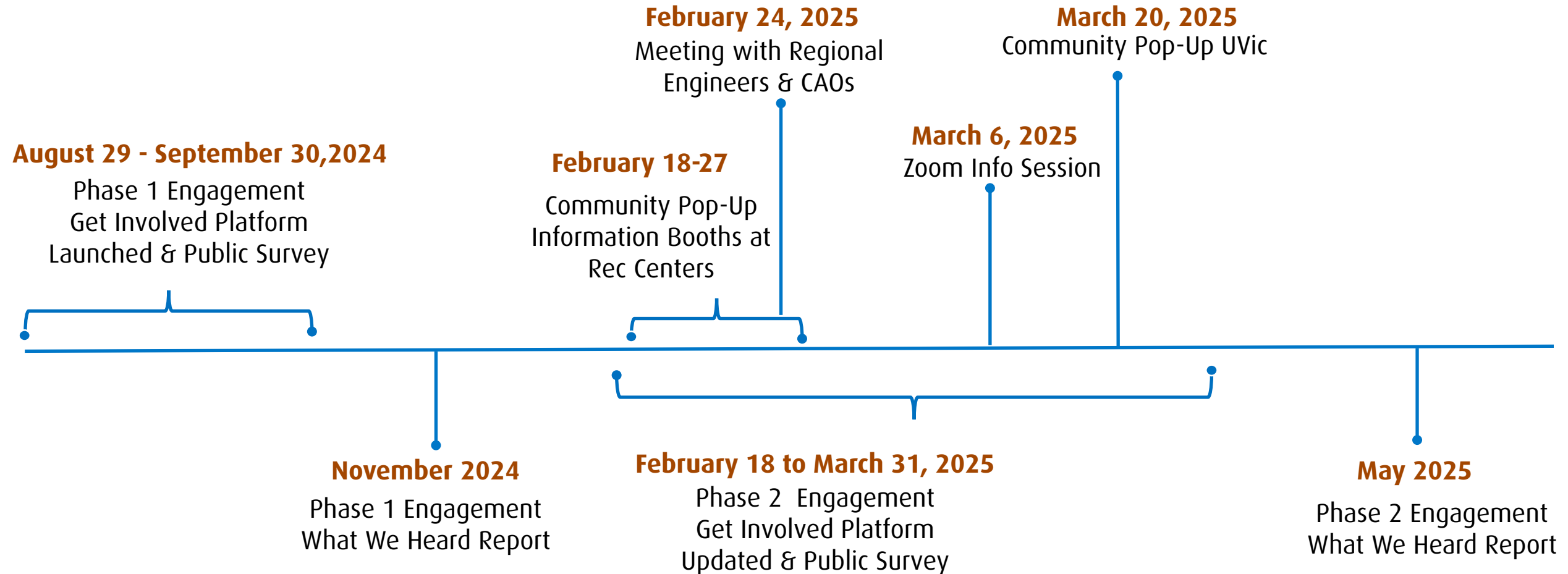
Each commitment is supported by Priorities and Actions which are reviewed every five to 10 years.



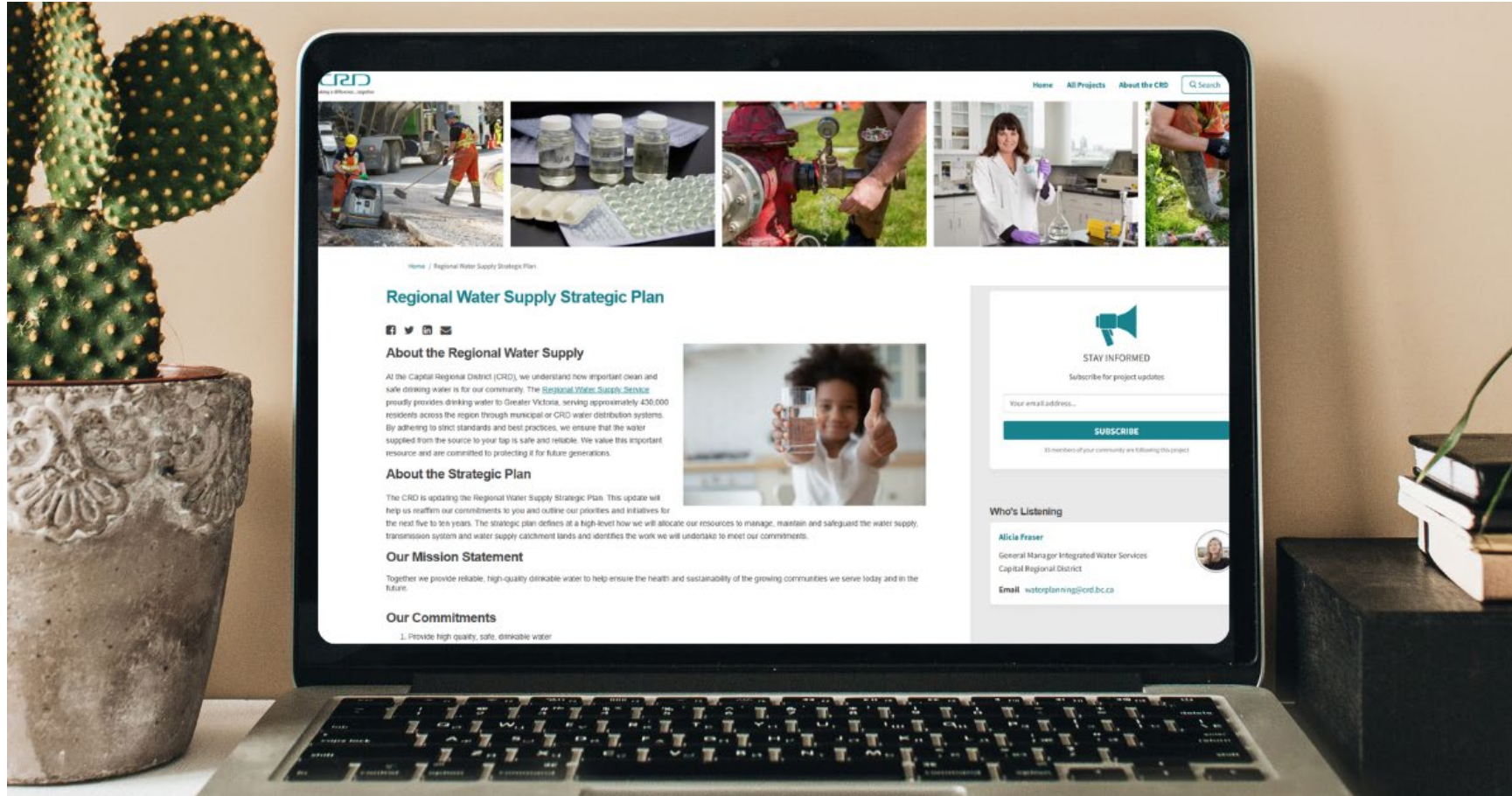
Strategic Plan Development Timeline



Overview of Engagement Process



Engagement Platform



Engagement Numbers



1,580

Visits to project webpage



450

Completed surveys



253,677

Impressions through paid posts on social media



130 – 200*

Approximate people reached through community information booths



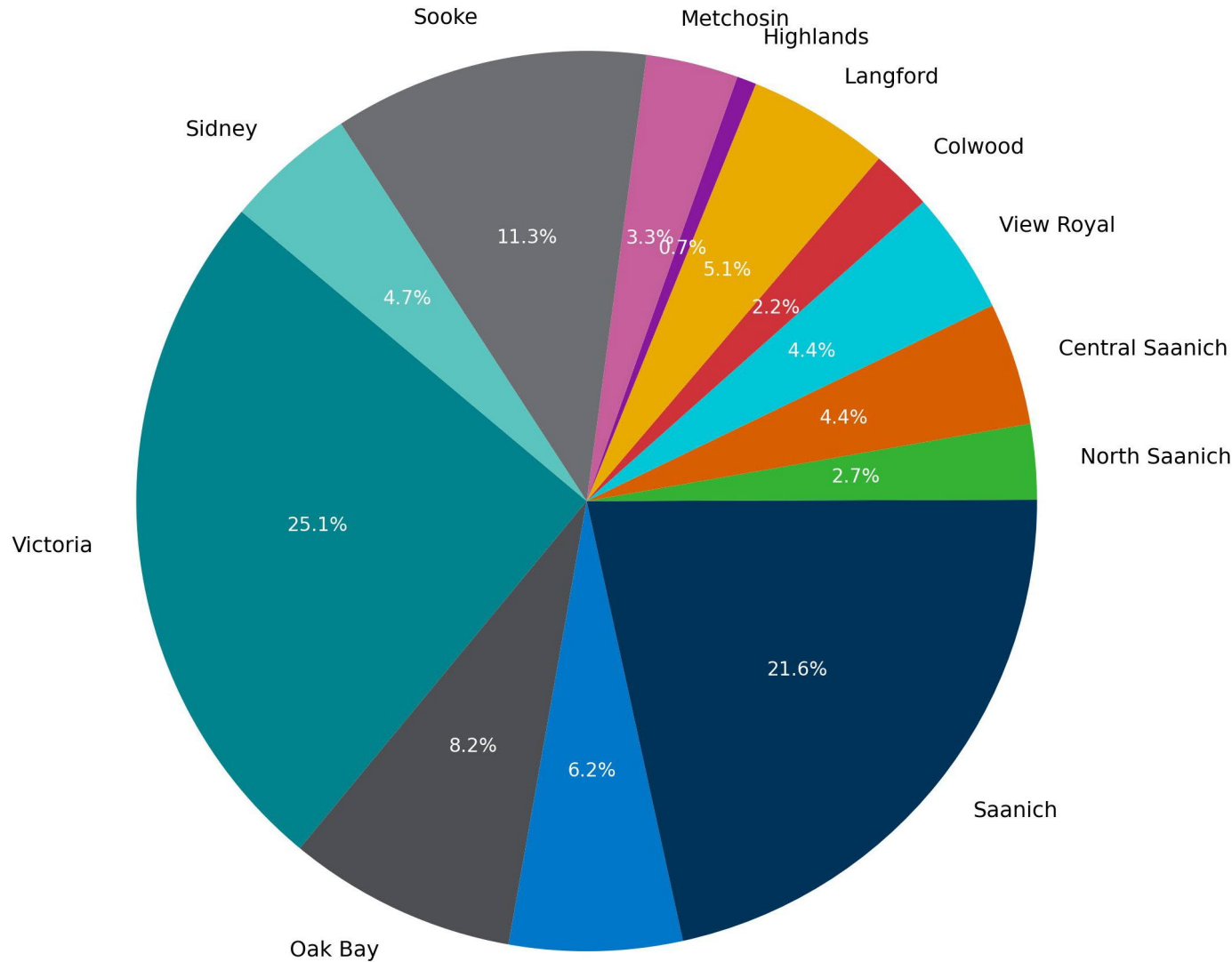
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Attendants to online information session
(session was recorded and posted online)



Survey Highlights

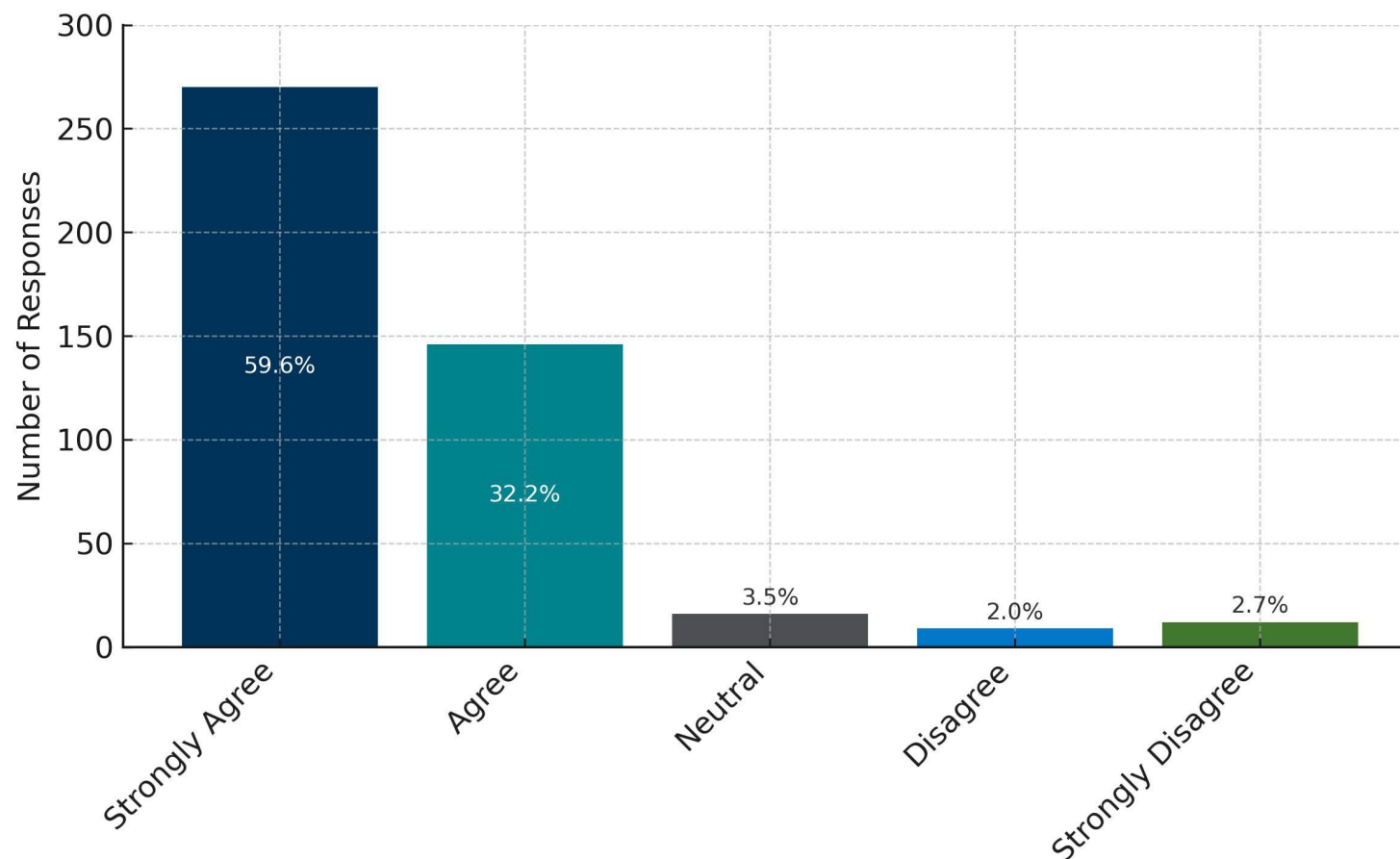
Community Participation



Community	# Responses	% Responses
Central Saanich	20	4.4%
Colwood	10	2.2%
Esquimalt	28	6.2%
Langford	23	5.1%
Metchosin	15	3.3%
North Saanich	12	2.7%
Oak Bay	37	8.2%
Saanich	97	21.6%
Sidney	21	4.7%
Sooke	51	11.3%
Victoria	113	25.1%
View Royal	20	4.4%
Highlands	3	0.7%

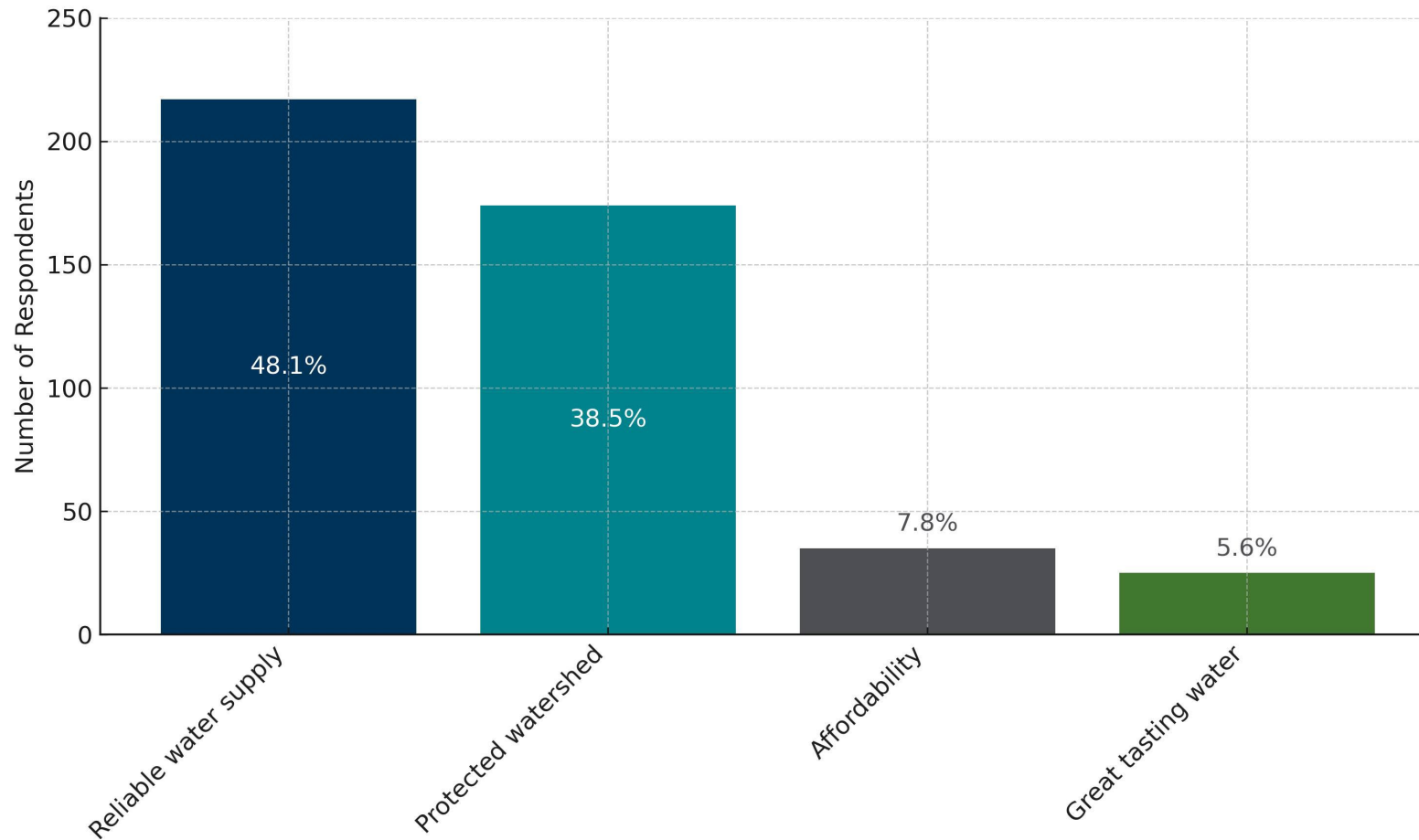
Meeting Expectations

Rate your level of agreement or disagreement with the statement below:
“Historically, the Regional Water Supply Service has met my expectations.”



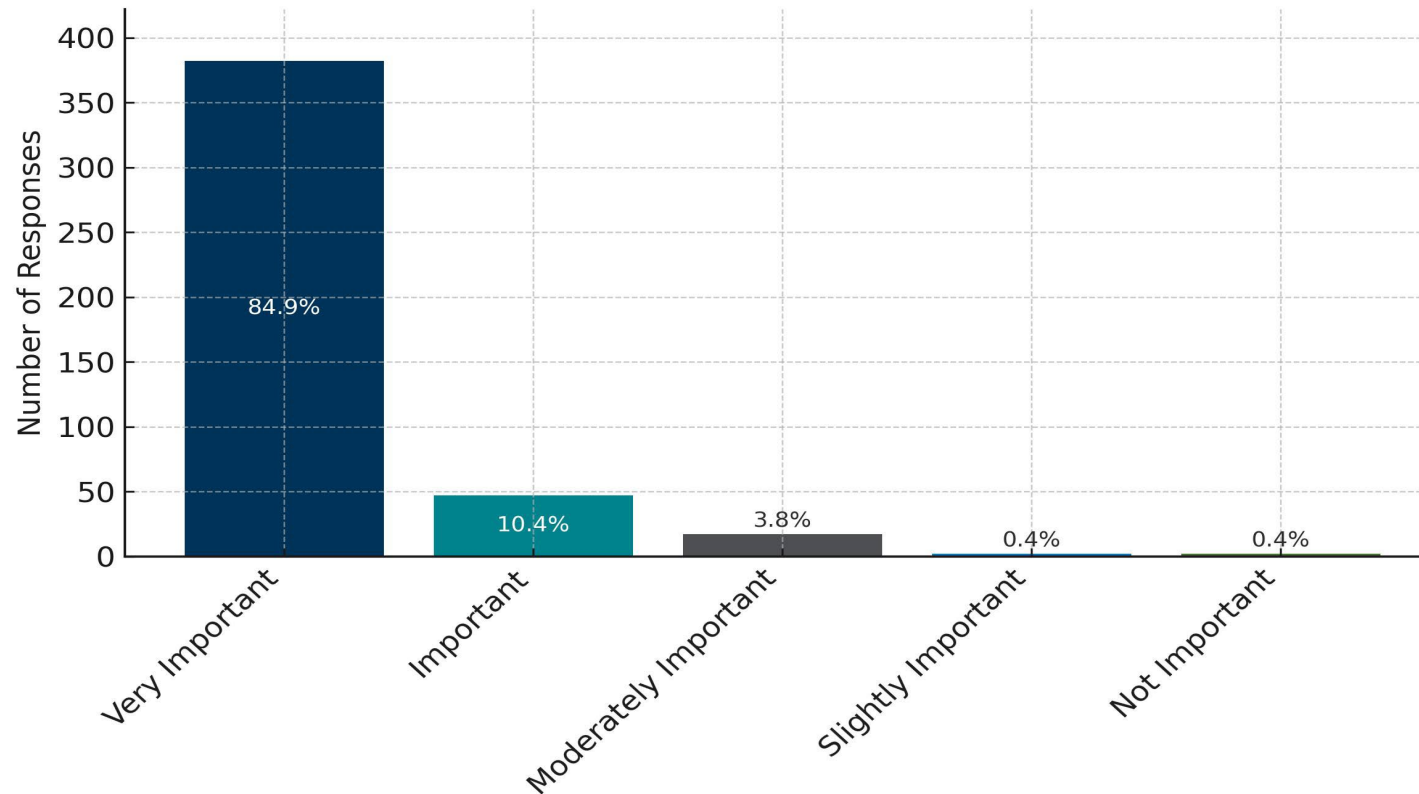
What Do You Value Most

Rank what aspect of the Regional Water Supply Service you value the most.



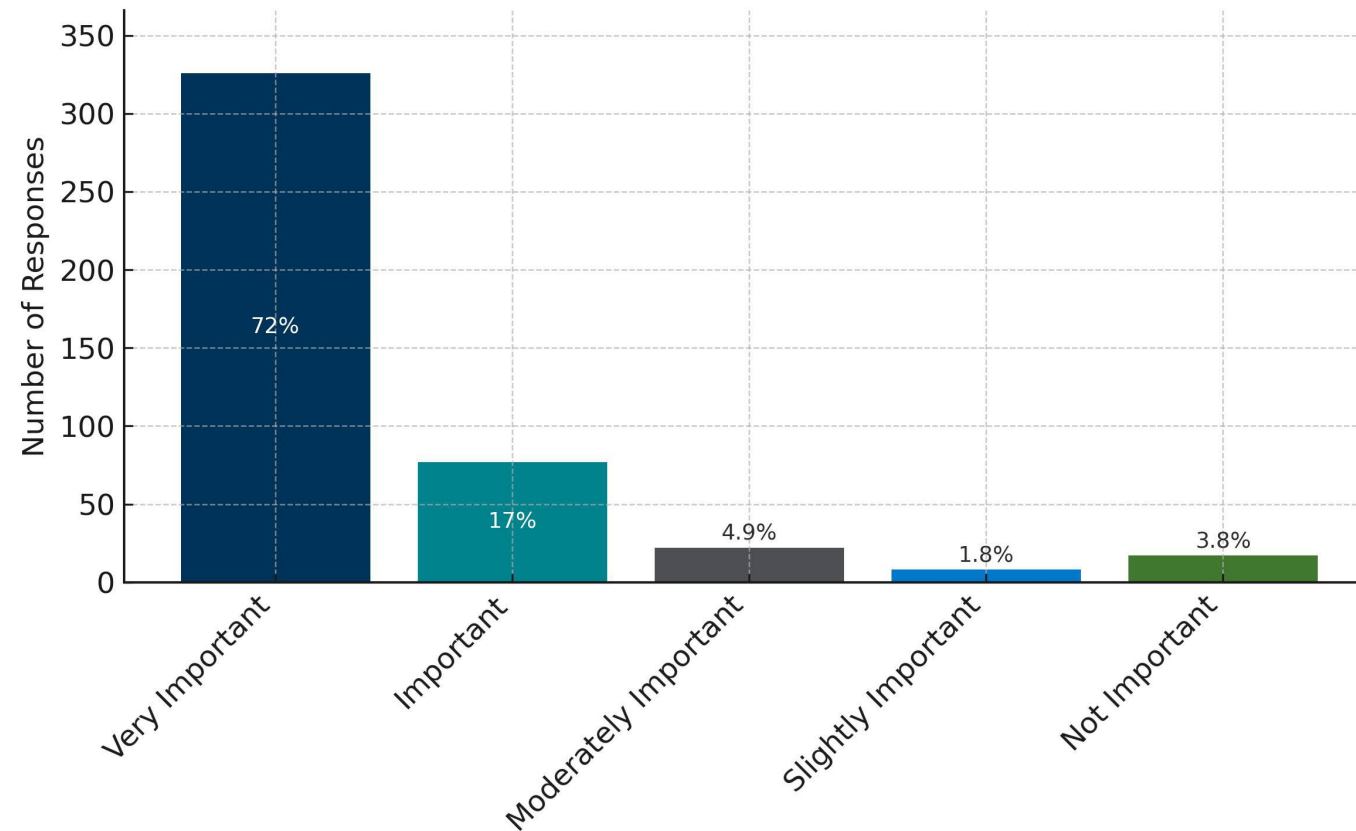
Investment in High Quality, Safe & Reliable Drinkable Water

Reflecting on our current water supply and future water needs, how important is it that the CRD continues to invest in high quality, safe and reliable drinkable water?



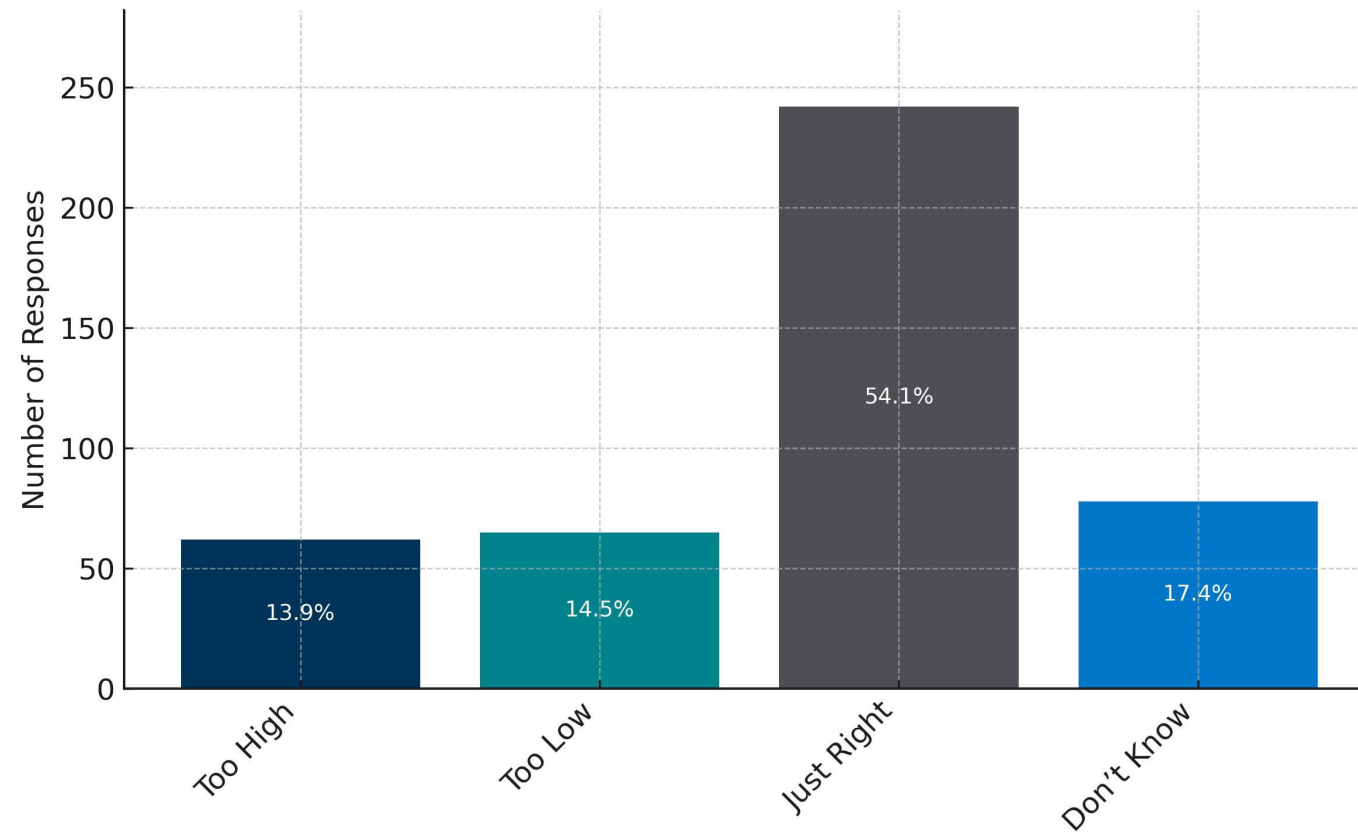
Environmental Impacts

Changing weather patterns, warming temperatures and a growing population are changing the supply, demand and usage of water. How important is it to you that the CRD adapts to climate change and prioritizes investments in long-term strategies to ensure a reliable water supply for future generations?



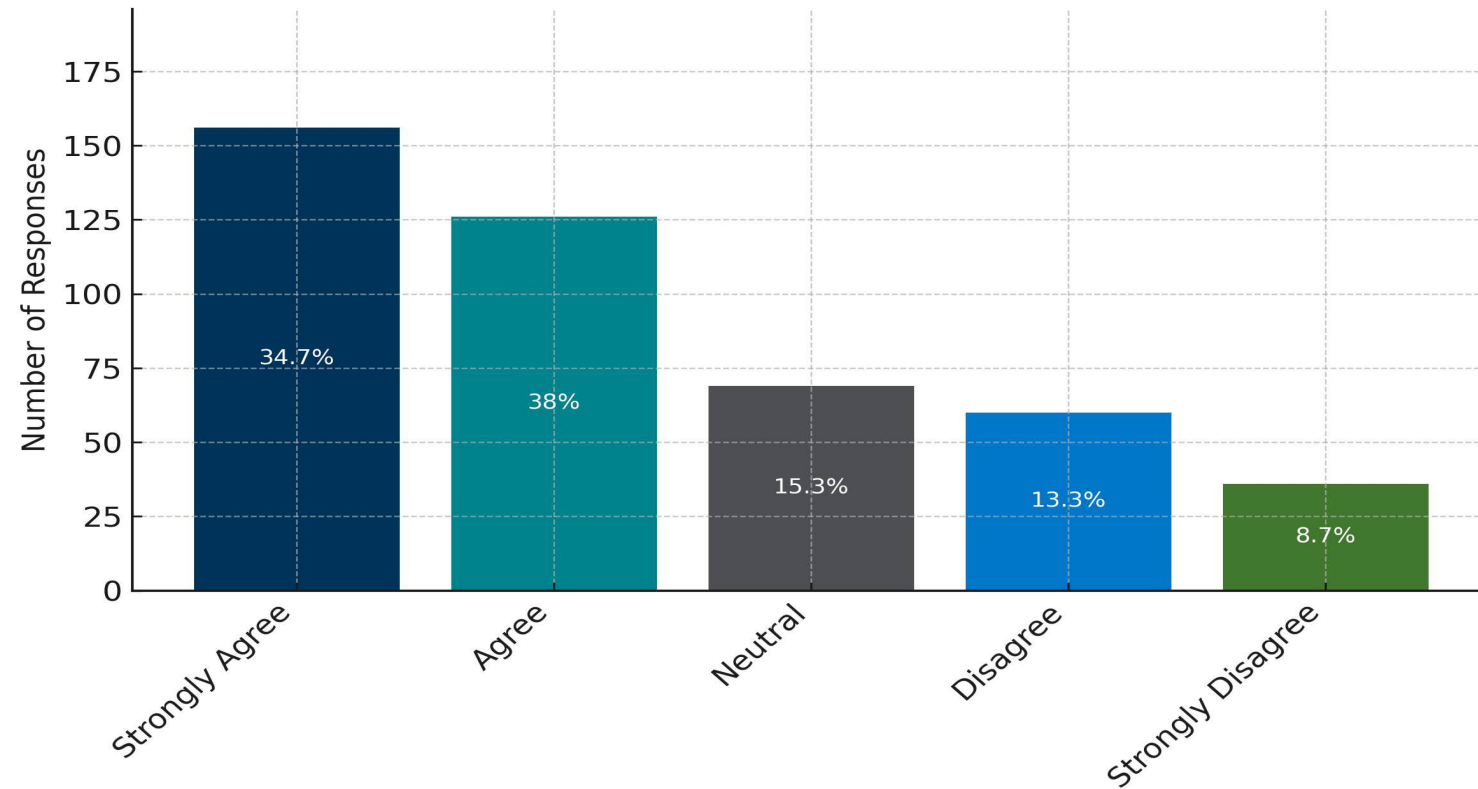
Affordability

To keep costs affordable, the draft Strategic Plan balances infrastructure investments and continuous innovation with fiscal responsibility and efficiency. When you consider the value, importance and benefit of clean, drinkable water, would you say the current costs for your home or business are:



Water Conservation

Please rate your level of agreement or disagreement with the following statement: "The CRD should promote and enforce year-round water conservation, even when water shortages are not expected."



Areas for Growth

If there were something you could improve about the Regional Water Supply Service, what would it be?

Summary of Themes

1. Planning for Growth and Future Demand
2. Emergency Preparedness and Resilience
3. Accountability and Oversight of Development Impacts
4. Transparency and Public Communication
5. Innovation and Infrastructure Investment



Summary

1

91.8% of respondents expressed confidence in the historical performance of the Regional Water Supply Service which aligns with CRD's Regional Resident Experience Survey that showed 92.4% of respondents rated CRD water service delivery as moderately to highly effective

2

Strong public support for all commitments

3

Strong public support for the direction of the 2025 Strategic Plan in terms of investments in:

- infrastructure, clean, safe and reliable water
- watershed management
- affordability of water rates





Next Steps

Final revisions to the 2025 Regional Water Supply Strategic Plan will incorporate:

- Public feedback
- First Nation input
- Staff expertise

Final draft will be presented to the Regional Water Supply Commission for review and approval in the Fall of 2025.



Questions?



crd.ca



Capital Regional District



CRDVictoria

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MAY 21, 2025**

SUBJECT **Main No. 4 Upgrade and Bear Hill Trunk Extension – Tariffs Update**

ISSUE SUMMARY

To update the Regional Water Supply Commission (RWSC) on the Bear Hill Trunk Extension project and advise on CRD staff's approach to dealing with United States of America/Canada tariff impacts on this capital project.

BACKGROUND

The Main No. 4 Segment Upgrade and Bear Hill Trunk Extension are being delivered through a combination of Regional Water Supply Capital Project 23-17 and Saanich Peninsula Water Supply Capital Project 21-05. The Bear Hill Trunk Extension will extend the existing water trunk main to Dean Park Lower Water Tank from its current terminus at East Saanich Road and Wallace Drive. Once completed, this project will provide a secondary water feed that greatly improves water resiliency to the Saanich Peninsula. Providing this additional redundancy will also allow the CRD to co-deliver the replacement of a segment of Regional Water Supply (RWS) Main No. 4 from Island View Rd and Lochside Drive to Central Saanich Road and Mt Newton Cross Road. A more detailed overview of the delivery of this project and the cost sharing between SPWC, RWS, District of Central Saanich and District of North Saanich was outlined in the September 25, 2024 RWSC Meeting. A schematic of the two project components has been attached as Appendix A.

Recent trade disputes with the United States of America (USA) have created market uncertainty and price escalation on certain materials. Of particular significance to this project are the 25% counter-tariffs that the Government of Canada has placed on iron and steel pipe materials, of which the vast majority is procured from the USA. In response, CRD has widened the specifications to allow materials from other markets, subject to demonstrating quality standards are met; however, there is still a high likelihood that American-made pipe could remain the most cost competitive option. To try and mitigate against Contractors passing on all the cost uncertainty risk with their bid submissions, CRD have worked with external legal counsel to utilize a Construction Request for Proposals (RFP) template in lieu of a standard form Tender, which will give staff greater flexibility in evaluating submissions, negotiating on pricing, and require Contractors to stipulate their plans for mitigating the effect of tariffs. Additionally, the CRD has implemented risk-sharing contract language to demonstrate to bidders that they will not bear all the cost risk associated with potential future changes in tariffs, with a regime that generally includes:

- If a Retaliatory Tariff Change in Law occurs after the bid submission date:
 - the Contractor must use reasonable efforts to mitigate any costs or delays resulting from a “Retaliatory Tariff Change in Law”;
 - the Contractor can suggest substitute goods for the Owner’s approval;
 - the Contract Price will be adjusted (both up and down) to reflect any increase or decrease in actual costs related to a Retaliatory Tariffs (without mark-up for overhead or profit); and
 - if substitute goods are approved by the Owner, there is a regime to capture the increased cost (excluding any tariffs) of the substitute good and any schedule delay.

- Any adjustments to the Contract Price or Contract Time pursuant to this new regime will be made via a Change Order.
- Contractor will not be entitled to any adjustment to the Contract price arising out of general market escalation that are not specifically a result of changes in retaliatory tariffs.

Further, the Government of Canada has announced a program that purchasers of goods, which are otherwise not available domestically or through foreign markets other than the USA, may seek reimbursement of the amounts paid for a retaliatory tariff. If pipe must be purchased from the USA and a retaliatory tariff paid, CRD staff will submit a request under this program and the proposed contract language requires the successful proponent to participate as needed by CRD in this process.

CONCLUSION

The above will not eliminate the cost escalation and price uncertainty related to current trade disputes, however it shares risk in an equitable way. In general commercial contracts, CRD as the “owner” would pay import duties and fees in any event, and not pass those prices on to vendors. It also encourages vendors to look to foreign or non-USA markets (with appropriate quality standards), if “best value” pricing is there. Despite the increased uncertainty, staff believe it is in the best interest of the CRD to proceed with this critical infrastructure project, as the costs of further delay are expected to exceed the costs currently expected from tariffs. The availability of the reimbursement program is helpful, but CRD cannot guarantee the Government of Canada will reimburse the retaliatory tariffs, and CRD is looking to commercially reasonable compromises in its contract terms to ensure successful capital project delivery and maintain the confidence of the vendor community.

Subject to delays in the procurement period, CRD endeavor to provide an update at the July Commission Meeting with recommendations following close of the Construction Procurement process.

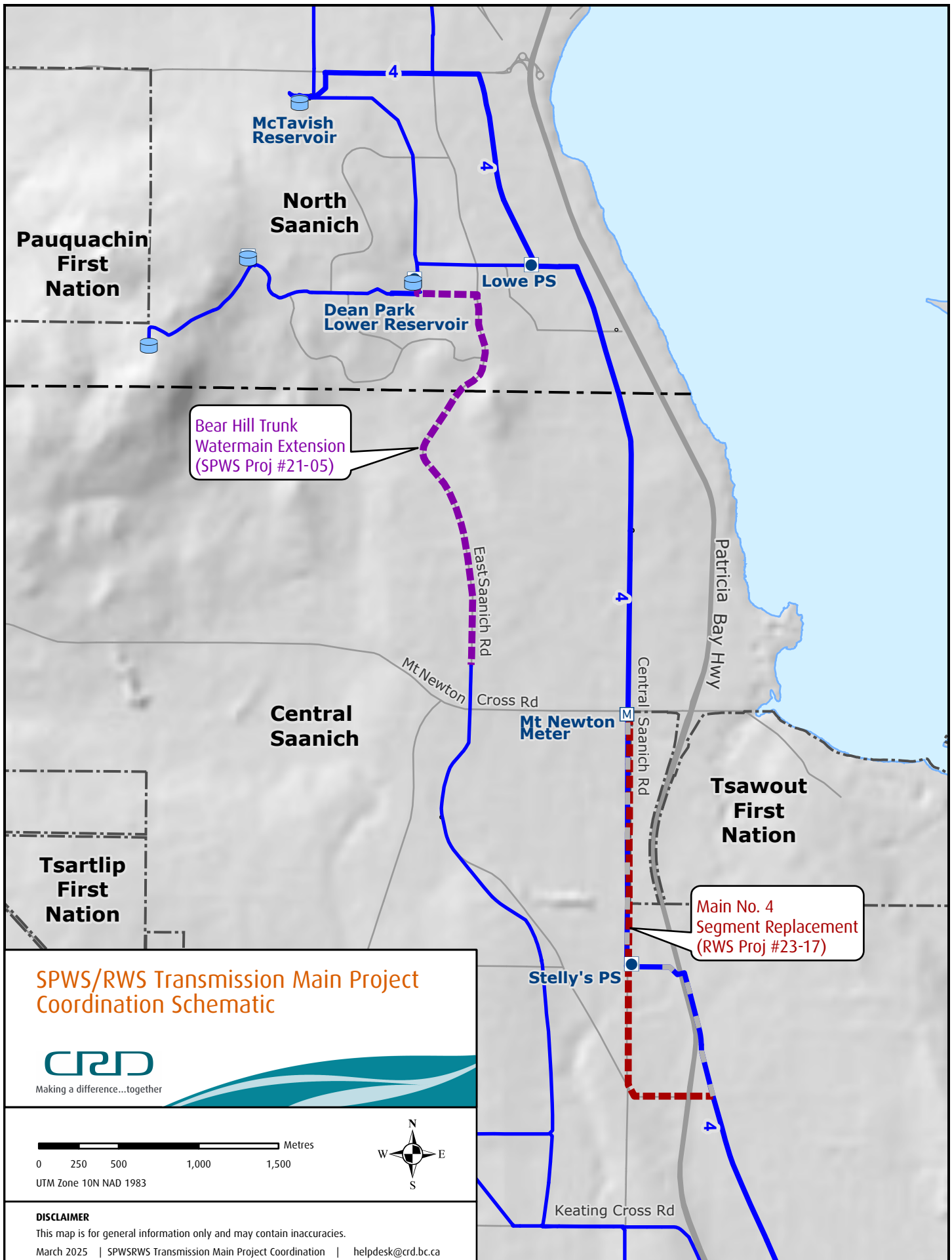
RECOMMENDATION

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

Submitted by:	Joseph Marr, P. Eng., Senior Manager, Infrastructure Engineering
Concurrence:	Alicia Fraser, P. Eng., General Manager, Infrastructure and Water Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer, GM Finance & IT
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT(S)

Appendix A: SPWS/RWS Transmission Main Project Coordination Schematic



**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MAY 21, 2025**

SUBJECT **Greater Victoria Drinking Water Quality – 2024 Annual Report**

ISSUE SUMMARY

To present the Greater Victoria Drinking Water Quality 2024 Annual Report to the Regional Water Supply Commission prior to submission to the provincial regulator.

BACKGROUND

The Capital Regional District (CRD) undertakes a comprehensive water quality monitoring program as part of its multi-barrier approach to provide a safe drinking water supply to the region. This Water Quality Monitoring Program is directly linked to CRD's commitment to "safe drinking water and a resilient water supply" in the 2023-2026 Corporate Plan. The program reports water trends on a regular basis to the Regional Water Supply Commission, along with a comprehensive annual report for each calendar year. The Greater Victoria Drinking Water Quality 2024 Annual Report (Appendix A) presents the most recent findings and analysis. Water suppliers in BC are responsible for monitoring and providing an annual report to the provincial regulator (i.e., Island Health). To assist in meeting these responsibilities, the CRD has prepared this report, which will be distributed to Island Health, all municipal water suppliers and posted on the CRD website.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2024 Annual Report be approved.

Alternative 2

That the Regional Water Supply Commission direct staff to provide further information.

IMPLICATIONS

Environmental & Climate Implications

The report indicates that our source water remains in good condition and there is good drinking water quality in all system components of the Greater Victoria Drinking Water System. The system is monitored for physical, chemical and biological water quality parameters. Overall, trends are relatively stable and indicate good conditions; however, there were three events of note in 2024:

- For the second time since 2017, Sooke Lake Reservoir was affected by a total coliform bacteria event in the summer. Test results indicated that during the period of highest bacterial

load in raw water, short-term bacterial breakthroughs (the treatment plant failed to inactivate all indicator bacteria) occurred on seven days during peak water demand periods. The breakthroughs were limited to a few morning hours, in low concentrations and only immediately downstream of the Goldstream Water Treatment Plant (GWTP) and prior to the first customer. Working together with Island Health, the risk to public health was assessed as low throughout this event and no public advisory was required. The cause and mechanism of these total coliform events remains unclear and will be studied further.

- On September 27, a turbidity event occurred at the Sooke Water Treatment Plant. The event was caused by a break in Main #15, the sole supply main for raw water to the Sooke plant. A fallen tree was the cause for the main break. The Sooke system was supplied with treated water from storage reservoirs while the complex repair was successfully completed without water quality impacts to customers.
- Peak watering demands in early summer caused several turbidity exceedances at the GWTP. Staff are taking measures to manage these events through an annual springtime main flushing program and working with communities and industry sectors to reduce peak outdoor watering demands.

Monitoring results indicate the CRD continues to meet guidelines for maintaining an unfiltered source water supply. Further monitoring within the distribution system indicates a good balance between managing bacterial growth and ensuring good water quality with low concentrations of disinfection byproducts.

Financial and Regulatory Implications

The reporting function is included within the overall budget for the Water Quality Monitoring Program. This task ensures there is adequate information to inform and work with Island Health officials, meet provincial regulatory requirements and federal guidelines, and ensure CRD staff have sufficient information to maintain proper oversight of the water supply system.

The CRD continues to provide compliance monitoring of the municipal systems within the region to deliver effective and efficient oversight for both monitoring and reporting of water quality within the overall distribution system. Responsibility for any issues that may arise in the municipal infrastructure remains with local governments.

Social Implications

The full disclosure of water quality monitoring data maintains public confidence that the CRD is effectively managing the regional drinking water supply. The data and reports are available online through the CRD public website. Staff respond directly to any customer concerns or 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.

CONCLUSION

The Water Quality Monitoring Program remains an essential component in the delivery of a safe drinking water supply to the region. Monitoring results summarized in the Greater Victoria Drinking Water Quality 2024 Annual Report indicate that overall water quality was good and has been effectively managed through the CRD's multi-barrier approach. Once the report is approved by the Board, it will be submitted to Island Health, as per the requirement under the BC Drinking Water Protection Act.

RECOMMENDATION

The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2024 Annual Report be approved.

Submitted by:	Peter Kickham, M.E.T., R.P.Bio., Acting Senior Manager, Environmental Protection
Concurrence:	Russ Smith, Acting General Manager, Parks, Recreation & Environmental Services
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT

Appendix A: Greater Victoria Drinking Water Quality – 2024 Annual Report

Greater Victoria Drinking Water Quality 2024 Annual Report

Parks, Recreation & Environmental Services Department

Environmental Protection



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May 2025

Greater Victoria Drinking Water Quality 2024 Annual Report

BACKGROUND

This report provides the annual overview of the Capital Regional District (CRD) Water Quality Monitoring Program and 2024 water quality results within the Greater Victoria Drinking Water System (GVDWS) and its individual system components (see Map 1). The results indicate that Greater Victoria's drinking water continues to be of good quality and is safe to drink.

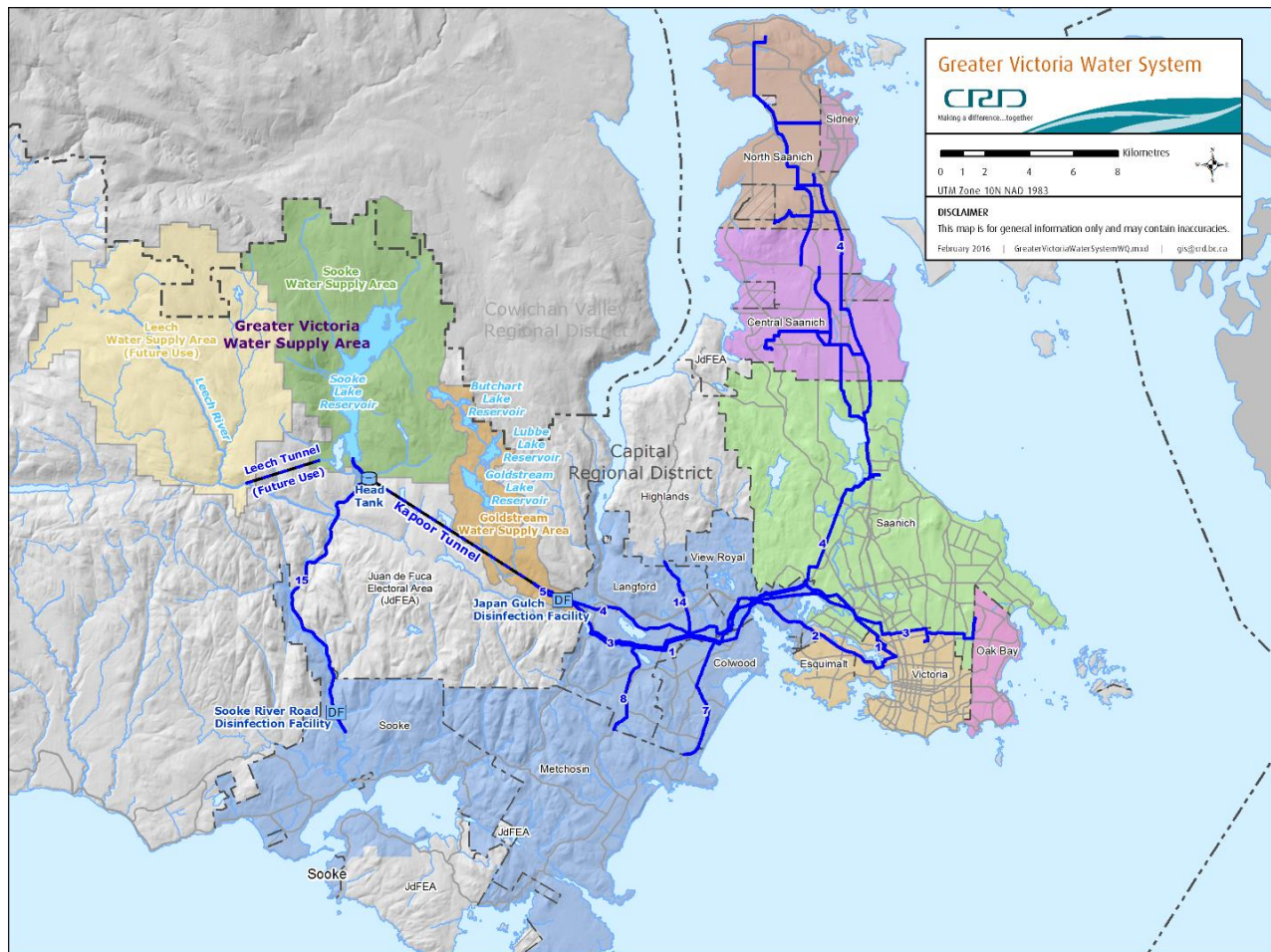
The monitoring program is designed to meet the requirements of the provincial regulatory framework, which is defined by the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*, and to follow the federal guidelines for drinking water quality.

The approximately 11,000 hectares of the Sooke and Goldstream watersheds comprise the source of our regional drinking water supply area. Water flows from the reservoirs to the Sooke and Goldstream water treatment plants and then through large-diameter transmission mains and a number of storage reservoirs into eight different distribution systems, which in turn deliver drinking water to the consumers. The monitoring program covers the entire system to anticipate any issues (i.e., source water monitoring), ensure treatment is effective (i.e., monitoring at the treatment facilities), and confirm a safe conveyance of the treated water to customers (i.e., transmission and distribution system monitoring). It also enables CRD staff to address any concerns or questions by the general public. The program adopts a multiple-lines-of-evidence approach (biological, chemical and physical) to ensure all aspects of water quality are considered. The program is comprehensive, collecting approximately 6,000 samples and conducting approximately 60,000 individual analyses annually. The results are discussed with Island Health, which oversees compliance with drinking water standards, and with CRD operations and municipal staff, who rely on the information to properly operate and maintain the system components.

The source water reservoirs, with established and intact ecosystems, provide raw water of good water quality that can be utilized unfiltered for the preparation of potable water. Water quality monitoring in the watersheds serves several purposes: 1) to verify that the CRD continues to comply with the criteria for an unfiltered surface water source; 2) to understand the quality of the water flowing into the reservoirs; 3) to ensure that staff are aware of the presence and absence of water quality-relevant organisms, including specific pathogens in the lakes, prior to any treatment; 4) to confirm that the water quality parameters remain within the effectivity range of the disinfection treatment; and 5) to detect any taste and odour or other aesthetic concerns that could then pass through the system.

This annual water quality report separates the water system components that are the CRD's responsibility from system components that are the responsibility of the municipalities. The CRD provides water quality sampling and testing services for compliance purposes to all municipal water systems. Each water distribution system was assessed for compliance with the regulatory requirements. This annual report contains the compliance summary for the CRD and municipal water distribution systems in the GVDWS.

Map 1. Greater Victoria Drinking Water System



**Greater Victoria Drinking Water Quality
2024 Annual Report**

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List of Acronyms and Units of Measurement

<	Less than	IEC	International Electrotechnical Commission
≤	Less than or equal to	ISO	International Organization for Standardization
=	Equal to	km	Kilometers
>	Greater than	m ³	Cubic Meter
°C	Degrees Celsius	M	Million
µg/L	Micrograms per litre	MAC	Maximum Acceptable Concentration
µS/cm	Microsiemens per centimeter	Median	Middle point of all values
AC pipe	Asbestos Cement pipe	mg/L	Milligrams per litre
AO	Aesthetic Objective	mJ	Millijoules
BCWWA	British Columbia Water and Wastewater Association	mL	Milliliters
CaCO ₃	Calcium Carbonate	mm	Millimeters
CALA	Canadian Association for Laboratory Accreditation	ND	Not Detected
CCC	Cross Connection Control Program	NDMA	Nitrosodimethylamine
CFU	Colony-Forming Units	ng/L	Nanograms per litre
Cl ₂	Chlorine	NTU	Nephelometric Turbidity Unit
Cm	Centimeter	NU	Natural Units
cm ₂	Square centimeter	PFAS	Per- and Polyfluoroalkyl Substances
CRD	Capital Regional District	pH	potential of Hydrogen
CT	Concentration x Contact Time	PRV	Pressure Regulating Valve
CWWA	Canadian Water and Wastewater Association	PVC	Polymerizing Vinyl Chloride
DI	Ductile Iron	QA	Quality Assurance
E. coli	Escherichia coli	QC	Quality Control
GVDWS	Greater Victoria Drinking Water System	SCADA	Supervisory Control and Data Acquisition
ha	Hectares	SOL	Sooke Lake Reservoir
HAA/HAA5	Haloacetic acid	TC	Total Coliform Bacteria
HPC	Heterotrophic Plate Count	TCU	True Colour Units
		TTHM	Total Trihalomethane
		USEPA	United States Environmental Protection Agency
		UV	Ultraviolet

Greater Victoria Drinking Water Quality 2024 Annual Report

1.0 INTRODUCTION

This report is the annual overview of the results from water quality samples collected in 2024 from the Greater Victoria Drinking Water System (GVDWS) (see Map 1). The report summarizes data from the Capital Regional District (CRD) owned and operated water infrastructure that includes the source reservoirs, the Regional Transmission System and the Juan de Fuca Water Distribution System, as well as data from the municipal distribution systems. Monthly and weekly summary reports on water quality data are posted on the CRD's website at: <https://www.crd.ca/about/data/drinking-water-quality-reports>.

2.0 WATER SYSTEM DESCRIPTION

In 2024, the GVDWS supplied drinking water to approximately 425,000 people and is the third-largest drinking water system operating in British Columbia. It comprises two separate service areas:

1. The **Goldstream Service Area** that supplies water to approximately 407,000 people in Victoria, Saanich, Oak Bay, Esquimalt, Central Saanich, North Saanich, Sidney, Highlands, Colwood, Langford and Metchosin via the Goldstream Water Treatment Plant.
2. The **Sooke Service Area** that supplies water to approximately 18,000 people in Sooke and East Sooke via the Sooke River Road Water Treatment Plant.

2.1 Source Water Systems

Drinking water for the GVDWS comes from protected watersheds called the Greater Victoria Water Supply Area (see Map 1). This CRD-owned and managed area, which is approximately 20,500 hectares (ha) in size, is located about 30 km northwest of Victoria and encompasses about 98% of Sooke Lake, 98% of Goldstream Lake and 92% of the Leech River catchment areas. The Goldstream and Sooke watersheds, with 11,000 ha area, comprise the active water supply area, whereas 9,500 ha of the Leech watershed are currently inactive and designated for future water supply.

Goldstream Service Area

The five reservoirs in the supply area have been used as a source of drinking water since the early 1900's. The Sooke Lake Reservoir, the largest of the reservoirs, is the primary water source for this system, supplying typically between 98% and 100% of Greater Victoria's drinking water. In 2024, Sooke Lake Reservoir supplied 100% of the source water. The four reservoirs in the Goldstream system (Butchart, Lubbe, Goldstream and Japan Gulch) are typically off-line and are used only as a backup water supply. Controlled releases from the Goldstream watershed provide water for salmon enhancement in the lower Goldstream River. The Leech River watershed does not yet contribute to the water supply for the GVDWS.

Water at the southern end of Sooke Lake Reservoir enters two of the variable depth gates in the intake tower and is screened through a stainless-steel travelling screen (openings of 0.5 mm). From the intake tower, the water passes through two 1,200 mm-diameter pipelines to the head tank and then through the 8.8 km-long, 2.3 m-diameter Kapoor Tunnel and then into 1,525 mm- and 1,220 mm-diameter pipes connecting the Kapoor Tunnel to the Goldstream Water Treatment Plant, where it is disinfected.

During occasional brief periods of use (typically used only when the Kapoor Tunnel is out of service for inspection by CRD staff), water in the Goldstream Watershed is released from Goldstream Reservoir and flows down the upper reaches of Goldstream River into Japan Gulch Reservoir. Water from Japan Gulch Reservoir enters the Japan Gulch intake tower through a low-level and a high-level intake, passing through a 14-mesh, stainless steel screen and is then carried in a 1,320 mm-diameter pipe into the Goldstream Water Treatment Plant.

Sooke Service Area

Drinking water for the Sooke Service Area is only supplied from Sooke Lake Reservoir but travels a different route. This water is passed through a 14.5 km-long (9 miles), 600 mm-diameter PVC and ductile iron pipe from a point just above the head tank to the Sooke River Road Water Treatment Plant. The Sooke Service Area has no backup water source.

2.2 Water Disinfection

The drinking water of the GVDWS is only treated by a multi-stage disinfection process. Further treatment such as filtration is not required due to compliance with the BC Ministry of Health requirements for a Filtration Exemption (Drinking Water Treatment Objectives for Surface Water Supplies in BC). A Filtration Exemption is also supported by meeting the United States Environmental Protection Agency (USEPA) requirements under the Surface Water Treatment Rules for unfiltered water systems. The disinfection process in the GVDWS is both simple and effective and uses two water treatment plants to provide disinfected drinking water to the two main service areas.

Both water treatment plants utilize the same disinfection concepts and process methods. The Goldstream Water Treatment Plant uses delivered liquid sodium hypochlorite and liquid ammonia for the disinfection process. The Sooke River Road Water Treatment Plant generates sodium hypochlorite on site and injects delivered liquid ammonia to achieve the disinfection effect.

At both water treatment plants, the water passes through a three-part disinfection process in sequential order - two primary disinfection steps that provide disinfection of the water entering the system, followed by a secondary disinfection step that provides continuing disinfection throughout the transmission system and the distribution systems:

1. **UV Disinfection.** Ultraviolet (UV) disinfection provides the first step in the primary disinfection process (disinfection of the raw source water entering the plants) and inactivates parasites, such as *Giardia* and *Cryptosporidium* [3-log (99.9%) inactivation], as well as reducing the level of bacteria in the water. Based on the consistently applied high UV dosage at the Goldstream plant (50-90 mJ/cm²), it can be assumed that it is also effective in inactivating certain viruses (66-99% rotavirus inactivation). The newer Sooke River Road Water Treatment Plant applies a much lower dosage of UV (15-25 mJ/cm²), in accordance with the Operating Permit requirements and current industry standards.
2. **Free Chlorine Disinfection.** Free chlorine disinfection provides the second step in the primary disinfection process, using a free chlorine dosage of approximately 1.5-2.5 mg/L and a minimum of 10-minute (depending upon flow) contact time between the free chlorine and the water. By achieving the minimum CT (Concentration x Contact Time) of 12 (chlorine concentration multiplied by contact time) at all times, the free chlorine disinfection step inactivates bacteria and provides a 4-log (99.99%) reduction of viruses.
3. **Ammonia Addition.** The secondary disinfection process consists of the addition of ammonia to form chloramines at a point downstream where the water has been in contact with the free chlorine for approximately 10 minutes or more. The ammonia is added at a ratio of approximately one part ammonia to four-five parts chlorine. In the water, these chemicals combine to produce a chloramine residual (measured as total chlorine). Monochloramine is the desired residual product, which typically represents 90% of the total chlorine when leaving the plants. This residual remains in the water and continues to protect the water from bacterial contamination (secondary disinfection), as it travels throughout the pipelines of the distribution systems.

In East Sooke, at the Iron Mine Reservoir, the CRD re-chloraminates the water to boost the chlorine residual provided to the extremities of that system. In Metchosin, at Rocky Point Reservoir, the CRD maintains another re-chloramination station, which has not been in service for approximately eight years. It has been deemed unnecessary for maintaining adequate residuals. Currently, there are no provisions to re-chloramine the water at the far reaches of the distribution system on the Saanich Peninsula; however, emergency re-chlorination stations are provided at Upper Dean Park Reservoir and Deep Cove pump station, supplying Cloake Hill Reservoir. These re-chlorination stations are able to add free chlorine to the system if the total chlorine residuals were to drop to inadequate levels or during water quality emergencies.

2.3 CRD Transmission System

The CRD Transmission System comprises a number of large-diameter transmission mains and several connected supply storage reservoirs. Almost all of the supply storage reservoirs are on the Saanich Peninsula, leaving the Core Area municipalities without any supply storage. Using a series of large-diameter transmission mains, the CRD supplies treated water to its downstream customers. These large-diameter transmission mains are sorted into three sections:

1. Regional Transmission System, that supplies the Westshore and Core Area municipalities, and up to the Saanich Peninsula boundary;
2. The Saanich Peninsula Trunk Water Distribution System that receives water at two points on the Saanich Peninsula from the Regional Transmission System and supplies it to the three municipalities and other customers on the Saanich Peninsula; and
3. The Sooke Supply Main.

2.3.1 Regional Transmission System

The CRD currently uses eight large-diameter transmission mains to supply drinking water to the municipal distribution systems in the Goldstream Service Area. These transmission mains range in diameter from 1,525 mm (60") down to 300 mm (12") and transfer water from the Goldstream Water Treatment Plant to the distribution systems listed in Section 2.4.

- Main #1 is a 1,067 mm-diameter (42") cement mortar-lined, welded steel pipe that starts at the Humpback pressure regulating valve (PRV) below the Humpback Reservoir Dam and ends at the David Street vault. This transmission main provides water primarily to the City of Victoria, but also services portions of Saanich and the Westshore communities.
- Main #2 is a 910 (36") to 780 mm-diameter (31") steel and ductile iron pipe, which starts at the Colwood overpass and runs primarily through View Royal, Esquimalt and Vic West along the Old Island Highway and Craigflower Road. Main #2 joins Main #1 at the David Street vault after crossing the Bay Street Bridge. This supply main is 7.6 km in length and provides water to View Royal, Victoria and Esquimalt.
- Main #3 is primarily a 990 mm-diameter (39") steel pipe that supplies water from the Humpback PRV and terminates at the CRD's Mt. Tolmie Reservoir. There are several sections in this line that include 1,220 mm-diameter (48") and 810 mm-diameter (32") pipes. The 810 mm-diameter pipe terminates at the Oak Bay meter vault. This supply main is 21.3 km in length and provides water to the Westshore communities, Saanich, Victoria and Oak Bay.
- Main #4, a high-pressure transmission main, is primarily a 1,220 mm-diameter (48") welded steel pipe that supplies water from the Goldstream Water Treatment Plant primarily to Saanich and the Saanich Peninsula. There are two small sections of 1,320 mm (52") and 1,372 mm (54") reinforced concrete pipe. This transmission main is 26.2 km in length and terminates near the Saanich-Central Saanich boundary, where it transfers water to the 762 mm (30") trunk main, which extends to McTavish Reservoir. It supplies the municipalities on the Saanich Peninsula and to Bear Hill Reservoir and Hamsterly pump station, near Elk Lake.
- Main #5 is a 1,524 mm-diameter (60") pipe that connects the Kapoor Tunnel via the Goldstream Water Treatment Plant to the Humpback PRV just below the old Humpback Reservoir dam. It is approximately 1.6 km in length and provides water to mains #1 and #3.
- Main #7 is a 610 mm-diameter (24") steel pipe that runs from Goldstream and Whitehead Road to Metchosin and Duke Road. It is 4 km in length and provides water to portions of Colwood, Langford and Metchosin.
- Main #8 is a 457 mm-diameter (18") steel and asbestos cement pipe that runs from Glen Lake School, primarily along Happy Valley Road to Happy Valley and Glen Forest Way. It is 3.6 km in length and provides water to Langford, Colwood and Metchosin.
- Main #16 is a 300 mm-diameter (12") ductile iron pipe that comes off Main #2 at the intersection Island

Highway and Admirals Road and follows Admirals Road until its terminus at Maple Bank Road where it transitions to the Victoria/Esquimalt distribution system. It was formerly part of the Juan de Fuca Water Distribution System but recently transferred to the CRD Regional Water Service and included in the Regional Transmission System.

There are three active inter-connections between the high-pressure Main #4 and the low pressure mains #1 and #3, where water can be transferred from Main #4 to the other two mains via PRV stations. These stations are located at Watkiss Way, Millstream at Atkins, Goldstream/Veteran's Memorial Parkway, and Burnside at Wilkinson Road. There is also a series of inter-connections between mains #1 and #3, with the major inter-connections being at Price, Station, Tillicum and Dupplin roads.

2.3.2 Saanich Peninsula Trunk Water Distribution System

The Saanich Peninsula Trunk Water Distribution System receives water at two points on the Saanich Peninsula from the Regional Transmission System and supplies it to four customers on the Saanich Peninsula: the municipalities of Central Saanich, North Saanich, Sidney and the Agricultural Research Station. Several First Nations distribution systems are supplied via a short proxy-connection by either the Central Saanich or North Saanich municipality.

The Saanich Peninsula Trunk Water Distribution System is comprised of 46 km of transmission mains, including the 762 mm (30") Bear Hill Main, the 400 mm (16") Martindale Main, the 300 to 400 mm (12"-16") Dean Park Main and the 250-500 mm (10-20") Saanich Peninsula mains.

The McTavish Reservoir is the terminus of the Regional Transmission System and Main #4, a 610 mm-diameter (24") concrete cylinder pipe. The Saanich Peninsula Trunk Water Distribution System begins with pipes from or bypassing McTavish Reservoir, which then continue further along the peninsula. In the vicinity of the airport at Mills Road, the main from McTavish Reservoir reduces from a 500 mm (20") to a 406 mm-diameter (16") asbestos cement pipe that terminates at the Deep Cove pump house. A dedicated 300 mm-diameter (12") ductile iron (DI) supply main from Deep Cove pump station transitions at the end of Hillgrove Road to 250 PVC pipe just before it connects with Cloake Hill Reservoir. A 457 mm-diameter (18") AC (asbestos cement) pipe along Mills Road connects the trunk main to the northwest end of the Sidney Distribution System.

The CRD also operates five major pumping stations located at Hamsterly, Lowe Road, Dean Park Lower, Dean Park Middle and Deep Cove, along with one minor pumping station located at Dawson Upper Reservoir, which are all considered part of the transmission system.

2.3.3 Sooke Supply Main

The Sooke Drinking Water Service Area is supplied by Main #15, a 600 mm pipe (upper section, PVC; lower high-pressure section, ductile iron) that conveys raw water from Sooke Lake Reservoir to the Sooke River Road Water Treatment Plant. Main #15 feeds directly into the Sooke Distribution System downstream of the water treatment plant.

2.3.4 Supply Storage Reservoirs

A number of supply storage reservoirs are considered part of the transmission system, even though most of them technically operate as a distribution reservoir with all of its typical functions: balancing, fire and emergency storage.

The only CRD-owned and operated transmission system storage reservoir in the Regional Transmission System is:

- Mt. Tolmie Reservoir, a two-cell concrete in-ground reservoir, 27,300 m³ (6M gallon), located on Mt. Tolmie at the terminus of Main #3 near the Oak Bay-Saanich boundary.

Haliburton Reservoir, a one-cell concrete in-ground reservoir, 22,700 m³ (5M gallon), located off Haliburton Road in Saanich, has been disconnected from the system (off Main #4) and is empty. It is anticipated that this reservoir will not be used for drinking water purposes again.

The CRD-owned and operated transmission system storage reservoirs in the Saanich Peninsula Trunk Water Distribution System are:

- Bear Hill Reservoir, a two-cell concrete above-ground reservoir, 4,546 m³ (1M gallon), located on Bear Hill in Saanich.
- Cloake Hill Reservoir, a one-cell, 4,546 m³ (1M gallon) reservoir located on Cloake Hill in North Saanich.
- Dawson Upper Reservoir, a one-cell, 455 m³ (100,000 gallon) reservoir located off Benvenuto Avenue in Central Saanich.
- Dean Park Lower Reservoir, a two-cell concrete above-ground reservoir, 4,546 m³ (1M gallon), located beside Dean Park Road in North Saanich.
- Dean Park Middle Reservoir, two cylindrical concrete above-ground tanks, 2,730 m³ (600,000 gallon), located near the bottom of Dean Park in North Saanich.
- Dean Park Upper Reservoir, a two-cell concrete partly in-ground reservoir, 4,546 m³ (1M gallon), located near the top end of Dean Park in North Saanich.
- McTavish Reservoir, a two-cell concrete in-ground reservoir, 6,820 m³ (1.5M gallon), located on the south side of McTavish Road in North Saanich.

2.4 Distribution Systems

The GVDWS contains eight individual distribution systems. Six distribution systems are separately owned and operated by the municipalities of Central Saanich, North Saanich, Oak Bay, Saanich, Sidney and Victoria. Victoria owns and operates the distribution system in Esquimalt. Two distribution systems are owned by the CRD and operated by the CRD Infrastructure & Water Services Department. These latter two systems include the combined distribution system in the Westshore communities of Langford, Colwood, Metchosin, View Royal and a small portion of the Highlands, and a separate system supplying water to Sooke and parts of East Sooke. Each distribution system owner/operator is defined as a water supplier and is responsible for providing safe water to their individual customers and meeting all the requirements under the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

2.4.1 Juan de Fuca Water Distribution System – CRD

In 2024, water was supplied to the Juan de Fuca Water Distribution System primarily from mains #1 and #3. In this report, the Juan de Fuca Water Distribution System does not include Sooke. For Sooke/East Sooke, see Section 2.4.2 Sooke/East Sooke Distribution system below. Parts of Langford and View Royal were supplied from Main #4. The development at Bear Mountain in Langford was supplied by Main #4. The Westhills development, serviced by its own privately-operated distribution system, was supplied via mains #1 and #3. In the Juan de Fuca Water Distribution System, water flowed generally in a northerly and southerly direction away from the supply mains. The federal William Head Institution and the Beecher Bay meter vault are located at the southern extremities of this system. The Beecher Bay meter registers flows to the Sc'ianew First Nation community water system.

The Juan de Fuca Water Distribution System includes the following distribution reservoirs:

- Bear Mountain Reservoir #1, a two-cell, 1,250 m³ (275,000 gallon) reservoir located on the lower slopes of the Bear Mountain development in Langford.
- Deer Park Reservoir, a one-cell, 1,657 m³ (365,000 gallon) reservoir located downstream of Rocky Point Reservoir re-chloramination station near the extremity of the water system off of Deer Park Trail in Metchosin (new in 2022).
- Fulton Reservoir, a two-cell, 4,580 m³ (1,007,459 gallon) reservoir located at the end of Fulton Road in Colwood.

- Rocky Point Reservoir, a three-cell, 546 m³ (120,000 gallon) reservoir located near the end of Rocky Point Road in Metchosin.
- Skirt Mountain Reservoir, a three-cell, 6,525 m³ (1,435,300 gallon) reservoir located near the top of Skirt Mountain in the Bear Mountain development in Langford.
- Stirrup Place Reservoir, a two-cell, 242 m³ (53,300 gallon) reservoir located off of Stirrup Place Road in Metchosin.
- Walfred Reservoir, a three-cell, 560 m³ (123,180 gallon) reservoir located on Triangle Mountain in Colwood.
- Flint North Reservoir, currently one-cell steel tank with area for proposed and future tanks (current cell 2,750 m³ (605,000 gallons), (new in 2023).

Peacock Reservoir, consisting of two steel tanks with a total storage volume of 583.8 m³ (128,420 gallon), located north of the Trans-Canada Highway off of Peacock Place in Langford, was drained and taken offline in early 2025. It is anticipated that this now redundant asset including its former supply pump station (Gourman Pump Station) will be dismantled and removed from the system in the near future. The former Peacock zone is now being supplied from another zone through a newly looped connection.

2.4.2 Sooke/East Sooke Distribution System – CRD

The Sooke/East Sooke Distribution System begins downstream of the Sooke River Road Water Treatment Plant, at the end of Main #15 on Sooke River Road, where the ammonia storage and metering building is located. The primary water supply main to the community follows Sooke River Road downstream and splits at Milne's Landing going east toward Saseenos and west toward the central area of Sooke. Near the eastern and the southern ends of the distribution system, two parts of the T'Sou-ke First Nation community are being supplied. Two underwater pipelines across Sooke Basin, one at and another just east of Billings Spit, supply East Sooke. Sunriver Estates came on-line in 2006 and is serviced by a 300 mm (12") pipeline on Phillips Road and the Sunriver Reservoir complex consisting of a two-cell concrete plus a one-cell steel tank. In 2020, the water main along West Coast Road was extended to connect the formerly self-sufficient Kemp Lake Waterworks District to the Sooke/East Sooke Distribution System. At this most western extremity of the Sooke/East Sooke Distribution system, the CRD now supplies bulk water to the Kemp Lake District. The CRD infrastructure ends with a meter station on West Coast Road before a Kemp Lake District-owned and operated pump station supplies their distribution system.

The Sooke/East Sooke Distribution System includes the following distribution reservoirs:

- Coppermine Reservoir, a one-cell concrete partly in-ground reservoir, 455 m³ (100,000 gallon), located off of Coppermine Road in East Sooke.
- Helgesen Reservoir, a four-cell concrete partly in-ground reservoir, 6,973 m³ (1,533,850 gallon), located at the west end of Helgesen Road in Sooke.
- Henlyn Reservoir, a one-cell steel tank tower, 224 m³ (49,270 gallon), located off of Henlyn Drive in Sooke.
- Silver Spray Reservoir, a two-cell cylindrical concrete tank, 841 m³ (185,000 gallon), located off of Silver Spray Drive in East Sooke.
- Sunriver Reservoir, a two-cell concrete above-ground reservoir, 1,800 m³ (395,944 gallon) plus a single cell 1,355 m³ (300,000 gallon) steel tank (new in 2022), located off of Sunriver Way in Sooke.

2.4.3 Central Saanich Distribution System – District of Central Saanich

In 2024, drinking water was supplied to the Central Saanich Distribution System via ten pressure zones (seven off the Bear Hill main and three off the Martindale Valley main). The Bear Hill main supplied the Tanner Ridge area by direct feed, the central area in one pressure zone through three PRVs, the Saanichton area in two pressure zones through two PRVs, the Brentwood Bay area, and the Tsartlip First Nation through a PRV. Five smaller pressure zones served the rest of Central Saanich. Dawson Upper Reservoir (CRD-owned and operated) supplied a small area of higher elevation residences in Brentwood Bay. Martindale metering station supplied an agricultural area in the southeast corner of the municipality. The Island View Road area was supplied by the Lochside metering station. The Mount Newton metering station provided water to the northeast corner and to the Tsawout First Nation lands. A municipally-owned pump station on Oldfield Road serviced a small area in the southwest corner.

Bear Hill Reservoir (CRD-owned and operated) has the largest service population in Central Saanich, providing approximately 80% of Central Saanich's water. It is the primary supply to most of Central Saanich (south of Haldon Road), including Brentwood Bay.

The Central Saanich Distribution System has technically no balancing, fire or emergency storage, but relies on the CRD Transmission System infrastructure to provide this. One CRD-owned reservoir (Dawson Upper) in Central Saanich, that is considered part of the transmission system, functions as a distribution reservoir for the Central Saanich Distribution System.

2.4.4 North Saanich Distribution System – District of North Saanich

In 2024, drinking water was supplied to the North Saanich Distribution System from a number of points along the Saanich Peninsula Trunk Water Distribution System. This included Dean Park via the Lowe Road pump station, Dean Park pump stations and Dean Park Reservoirs (all CRD-owned and operated), Deep Cove/Lands End area via connections upstream of the Deep Cove pump station, Cloake Hill Reservoir via Deep Cove pump station (all CRD-owned and operated), and Swartz Bay. In the North Saanich Distribution System, Cloake Hill Reservoir (CRD-owned and operated) was the largest pressure zone. Water flowed generally in an easterly direction through the Dean Park pressure zone, northwest into the Deep Cove/Lands End area and northeast to the Swartz Bay area. Dean Park Upper Reservoir (CRD-owned and operated) supplied a small portion of the Dean Park Estates.

The North Saanich Distribution System has technically no balancing, fire or emergency storage, but relies on the CRD Transmission System infrastructure to provide this. Several CRD-owned reservoirs in North Saanich, which are considered part of the transmission system, function as distribution reservoirs for the North Saanich Distribution System.

North Saanich provides water to the Victoria Airport Authority via the water main on the south side and the east side of the airport. As water quality in the airport distribution system falls under federal jurisdiction, it was not monitored by the CRD in 2024 and is, therefore, not included in this report.

2.4.5 Oak Bay Distribution System – District of Oak Bay

In 2024, drinking water was supplied to the Oak Bay Distribution System at Lansdowne and Foul Bay roads from Main #3. The water flowed in a west to east direction across Lansdowne with north and south branches. Oak Bay conveys water via a 406 mm main, which crosses Oak Bay diagonally from northwest to southeast. Water was distributed from the north end to the south end via the 406 mm main. Oak Bay has an outer loop flow on Beach Drive to the Victoria boundary. The Oak Bay Distribution System has no balancing, fire or emergency storage and the CRD Transmission System infrastructure has limited provisions for this.

Oak Bay used four local pressure zones supplied by booster pumps. Sylvan Lane pump station supplied the Barkley-Sylvan area; Plymouth supplied the north Henderson area; Foul Bay supplied the south Henderson area; and Uplands pump station (seasonal) supplied the Uplands area. There are two inter-connections with the Victoria/Esquimalt Distribution System, which are normally closed, but can be used in emergencies.

2.4.6 Saanich Distribution System – District of Saanich

In 2024, drinking water was supplied to the Saanich Distribution System at a number of points from the CRD's transmission mains. Water was supplied from Main #1 at Dupplin, Wilkinson and Marigold, Holland/Burnside and Admirals/Burnside; from Main #3 at Douglas, Tillicum, Admirals, Shelbourne, Richmond, Foul Bay, Mt. Tolmie and Maplewood pump house; and from Main #4 at Burnside, Blue Ridge, Roy Road, Markham, Layritz, Cherry Tree Bend and Sayward. In the Saanich Distribution System, water flowed generally in a northerly direction from mains #1 and #3 and both east and west from Main #4.

There are four major pumping systems in the Saanich Distribution System. Maplewood pumps water north from Main #3, ending in the Gordon Head area. Cherry Tree Bend pumps from Main #4 to Wesley Reservoir and the west central high elevation area. The Mt. Tolmie/Plymouth pump station pumps water from Main #3 and the CRD Mt. Tolmie Reservoir to Saanich's Mt. Tolmie Reservoir and the Gordon Head area via a 610 mm-diameter (24") main.

Water from Sayward supplies the north end of the Saanich Distribution System via Main #4 with a southerly flow through Cordova Bay. Saanich also has a number of other small pressure zones controlled by pump stations.

The Saanich Distribution System includes some storage for balancing, fire and emergency purposes. The following distribution reservoirs are owned and operated by Saanich:

- Hartland Reservoir, a one-cell, 769 m³ (170,000 gallon) reservoir located on Hartland Road in Saanich. This new one-cell steel tank reservoir was constructed in 2020 to replace the smaller old reservoir.
- Mt. Tolmie Reservoir (Saanich), a one-cell, 4,545 m³ (1M gallon) reservoir located on the east side of the summit of Mt. Tolmie near Cromwell Reservoir in Saanich.
- Rithet Reservoir, a one-cell, 16,807 m³ (3.7M gallon) reservoir located at the end of Perez Drive in Broadmead in Saanich.
- Wesley Reservoir, a two-cell, 3,182 m³ (700,000 gallon) reservoir located at the end of Wesley Road on Haliburton Ridge in Saanich.

2.4.7 Sidney Distribution System – Township of Sidney

In 2024, drinking water was supplied to the northern portion of the Sidney Distribution System from the 457 mm CRD transmission main on Mills Road from upstream of the Deep Cove pump station. The southern portion of the distribution system is supplied from a 300 to 400 mm ductile iron main that is connected to the CRD Transmission System and McTavish Reservoir. Within the Sidney Distribution System, water flowed generally from the west via Mills Road and from the south via McTavish Reservoir and met in the middle of the distribution system, with approximately 60% of the water coming from the Mills Road supply.

The Sidney Distribution System has no balancing, fire or emergency storage, but rather relies on the CRD Transmission System infrastructure to provide this.

2.4.8 Victoria/Esquimalt Distribution System – City of Victoria/Township of Esquimalt

Note: The City of Victoria also owns and operates the Water Distribution System in the Township of Esquimalt.

In 2024, drinking water was supplied to the Victoria/Esquimalt Distribution System from mains #1 and #2 at David Street/Gorge Road and David Street/Rock Bay Avenue. From these supply points, the system divides into several smaller looped water mains within the distribution system. Water was also supplied to Victoria from Main #3 at Cook Street/Mallek Crescent, Somerset Street/Tolmie Avenue, Douglas Street/Tolmie Avenue and Shelbourne Street/North Dairy Road. In general, water flows from a north to south direction.

Water was supplied at multiple locations to Vic West and Esquimalt from Main #2. These locations include

Tyee Road/Bay Street, Burleith Crescent/Craigflower Road, Garthland Road/Craigflower Road and Admirals Road/Maple Bank Road.

The Victoria/Esquimalt Distribution System has no balancing, fire or emergency storage and the CRD Transmission System infrastructure has limited provisions for this.

3.0 MULTIPLE BARRIER APPROACH TO WATER QUALITY

The CRD and the municipalities that operate their distribution systems use a multiple barrier approach to prevent the drinking water in the GVDWS from becoming contaminated. Multiple barriers can include procedures, operations, processes and physical components. In a drinking water system, any individual contamination barrier used in isolation has an inherent risk of failure and may result in contamination of the drinking water. However, if a number of individual barriers are used together in combination with each other and, especially if they are arranged so that they complement each other, these multiple barriers are a very powerful means of preventing drinking water contamination. All CRD-owned and operated, and most other large drinking water utilities, use the multiple barrier approach to prevent drinking water contamination. The exact types and applications of barriers are unique for each system, to address the system-specific risks.

The following barriers are used in the GVDWS to prevent the drinking water from becoming contaminated:

1. **Good Water System Design.** Good water system design is one of the preeminent barriers to drinking water contamination, as it allows all of the other components within the water system to operate in an optimal fashion and does not contribute to the deterioration of the quality of the drinking water contained within the system. Good water system design includes such aspects as: drinking water treatment plants that are easy to operate; piping appropriately sized to the number of users being supplied; and the use of appropriate pipe materials. All new designs are designed by qualified professionals registered in BC, reviewed and approved by qualified CRD or municipal staff, and approved and permitted by a Public Health Engineer from Island Health. This acts as a multiple check on good system design.
2. **Source Water Protection.** The CRD uses what is considered the ultimate source water protection: ownership of the catchment (watershed) lands surrounding the source reservoirs. This land area is called the Greater Victoria Drinking Water Supply Area. Within this area, no public access, commercial logging, farming, mining or recreation is permitted, and no use of herbicides, pesticides or fertilizers is allowed. This source water protection barrier eliminates many of the organic and inorganic chemicals that can contaminate the source water and virtually eliminates the potential for human disease agents being present. Very few drinking water utilities in Canada and the United States can claim this type of protection. In addition, the CRD Watershed Protection Division operates a complete and comprehensive watershed management program that provides additional protection to the quality of Greater Victoria's source water.
3. **Water Treatment/Disinfection.** The GVDWS is an unfiltered drinking water system that continues to meet the provincial, as well as the stringent USEPA criteria, to remain an unfiltered surface water supply. The treatment process consists of primary disinfection (ultraviolet light and free chlorine) of the raw source water entering the treatment plant, and secondary disinfection (chloramination) that provides a disinfectant residual throughout the transmission and distribution systems. Although the water treatment barrier used in Greater Victoria is not as rigorous as that provided by most drinking water utilities using a surface water supply, the microbiological quality of the source water is exceptionally good and the chief medical health officer for Island Health has approved this treatment process as providing safe drinking water for the public.

In 2022, the CRD released the new Regional Water Supply Master Plan, which identified the need for additional water treatment, in the form of filtration, to increase resiliency from future water quality risks. In February 2024, the chief medical health officer for Island Health issued a statement concurring with the requirement for water filtration in the mid-to-long term perspective.

4. **Distribution System Maintenance.** All water suppliers in the GVDWS provide good distribution system maintenance, including activities such as annual water main flushing, hydrant maintenance, valve exercising, leak detection, and reservoir cleaning and disinfection. This barrier helps to promote good water quality within the distribution systems.

5. **Infrastructure Replacement.** The timely replacement of aging water system infrastructure is an important mechanism to prevent the deterioration of water quality in the pipes and provides a continual renewal of the water system. The CRD's water infrastructure replacement program is informed by its asset management system thereby ensuring that critical components are replaced before their end of service life.
6. **Well Trained and Experienced Staff.** All water system operators must receive regular training and be certified to operate water system components. In addition, the laboratory staff cannot analyze drinking water samples in accordance with the *BC Drinking Water Protection Regulation* unless the laboratory has been inspected by representatives of the BC Ministry of Health and issued an operating certificate. CRD and municipal staff meet these requirements.
7. **Cross Connection Control.** Cross connection control provides a barrier to contamination by assisting in the detection of conditions that have the potential to introduce contaminants into the drinking water from another type of system. Therefore in 2005, in cooperation with the other water suppliers, the CRD implemented a regional Cross Connection Control Program throughout the GVDWS. 2008 saw the implementation of the first CRD Cross Connection Control Bylaw for the GVDWS. This bylaw was reviewed and updated last in 2019 to its current form as CRD Bylaw No. 3516.
8. **Water Quality Monitoring.** Rigorous water quality monitoring can be considered a barrier not only because it verifies the satisfactory operation of other barriers and detects contaminations quickly, but comprehensive monitoring data may also allow water suppliers to see trends and react proactively, before a contamination occurs. The CRD has designed and executes a comprehensive water quality monitoring program for the GVDWS that collects daily bacteriological samples across the entire region for compliance purposes (on CRD water infrastructure and in the municipal water distribution systems). This CRD water quality monitoring program tests for water quality parameters beyond the legislated requirements to verify good drinking water quality in the GVDWS.

4.0 WATER QUALITY REGULATIONS

The CRD and the municipal water suppliers in the GVDWS must comply with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*. The regulation stipulates the following water quality and sampling criteria for water supply systems:

- No detectable *Escherichia coli* (*E.coli*) per 100 milliliters (mL)
- At least 90% of samples have no detectable total coliform bacteria per 100 mL and no sample has more than 10 total coliform bacteria per 100 mL
- 5,000-90,000 population served: one sample per month per 1,000 population served
- >90,000 population served: 90 + 1 samples per month per 10,000 in excess of 90,000 population served

In addition to the aforementioned water quality monitoring criteria by the *Drinking Water Protection Regulation*, as due diligence to ensure public safety and maintain public trust, the CRD Water Quality Monitoring Program also uses the much larger group of water quality parameters listed in the current version of the *Guidelines for Canadian Drinking Water Quality* (the Canadian guidelines) for compliance purposes. These limits are provided in Appendix A, Tables 1 to 5, under the column titled 'Canadian Guidelines'. The water quality limits in the Canadian guidelines¹ fall into one of the following five categories:

1. **Maximum Acceptable Concentration.** This is a health-related limit and lists the maximum acceptable concentration (MAC) of a substance that is known or suspected to cause adverse effects on health. Thus, an exceedance of a MAC can be quite serious and requires immediate action by the water supplier.

¹ (see: <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html>)

2. **Aesthetic Objectives.** These limits apply to certain substances or characteristics of drinking water that can affect its acceptance by consumers or interfere with treatment practices for supplying good quality drinking water. These limits are generally not health related, unless the substance is well above the aesthetic objectives (AO).
3. **Parameters Without Guidelines.** Some chemical and physical substances have been identified as not requiring a numerical guideline because data currently available indicate that it poses no health risk nor aesthetic problem at the levels currently found in drinking water in Canada. These substances are listed as 'No Guideline Required' in Appendix A, Tables 1 to 5.
4. **Archived Parameters.** Guidelines are archived for parameters that are no longer found in Canadian drinking water supplies at levels that could pose a risk to human health, including pesticides that are no longer registered for use in Canada, and for mixtures of contaminants that are addressed individually. Some of these parameters are still being included in the current water quality monitoring program because the analytical laboratory includes them in their scans. These parameters are listed as 'Guideline Archived' in Appendix A, Tables 1 to 5.
5. **Operational Guidance.** The limit was established based on operational considerations and listed as an operational guidance value. For example, the limit for aluminum is designed to apply only to drinking water treatment plants using aluminum-based coagulants.

It should be noted that not all of the water quality parameters analyzed by the CRD Water Quality Monitoring Program have the Canadian guidelines' limits, since some of these parameters are used for operational purposes. Where the Canadian guidelines are silent for a particular parameter, the limit for that parameter is left blank in Appendix A, Tables 1 to 5.

In addition to the Canadian provincial regulations and federal guidelines, on a voluntary basis, the CRD also complies with most of the USEPA rules and regulations. Some of the limits in the USEPA rules are used as the basis for the CRD's water treatment goals.

The GVDWS, as an unfiltered surface water system, must meet the provincial Drinking Water Treatment Objectives for Surface Water Supplies in BC, which includes similar criteria as the conditions for filtration exemption in the Canadian guidelines. In summary, the applicable criteria are:

- 4-log inactivation of viruses (met with chlorination)
- 3-log removal or inactivation of parasites (*Giardia* and *Cryptosporidium*) (met with UV disinfection)
- Two forms of disinfection (UV and chlorination)
- Water entering disinfection facilities has an average daily turbidity of <1 Nephelometric Turbidity Unit (NTU) and not more than two days/year with an average daily turbidity of >5 NTU
- No *E. coli* or total coliform in treated water
- A watershed control program to minimize fecal, parasite and viral contamination of source water (in place)
- Detectable disinfectant residual in distribution system
- *E. coli* in source water ≤ 20 CFU/100 mL

5.0 OPERATIONAL CHANGES AND EVENTS – CRD SYSTEMS

5.1 Use of Goldstream Water

In 2024, the Goldstream Supply System was not used at all. A Kapoor Tunnel inspection project, necessitating a switch to the Goldstream Supply System, was not scheduled for 2024. The last time this project was conducted was in 2017. Throughout 2024, the Goldstream System remained filled and ready for emergency use.

5.2 Main #15 Break

During the early morning hours of September 27, a dead tree fell down a steep embankment upstream of the Sooke Water Treatment Plant and penetrated the shallow buried Main #15 which supplies the Sooke plant with raw water from Sooke Lake. The pipe break resulted in a sudden increase of flows which dislodged sediments in this raw water main. This caused a sudden turbidity spike at the Sooke plant and the plant was shut off after the turbidity reached 3.6 NTU within a few minutes. While staff investigated and planned the repair, the Sooke system was supplied with treated water from the storage reservoirs within the distribution system. Then the main was flushed to remove any pipe sediments that could cause another turbidity excursion. Upon completion of the flushing the turbidity dropped to < 1 NTU and remained under this threshold for the entire period required to refill all Sooke storage reservoirs. At noon on September 28, the Sooke plant was shut off again to begin the repair works on Main #15. At midnight, the repair works were successfully completed and the Sooke plant was turned on again without any further turbidity excursion.

5.3 Mt. Tolmie Reservoir Roof Leaks

Potential water quality risks related to structural damage at the Mount Tolmie Reservoir that were identified in the 2023 Annual Water Quality Report have been mitigated. Repairs to leaks identified in the roof structure have been spot sealed.

5.4 Chlorine Dosage

In 2024, the CRD made some minor adjustments to the chlorine dosage rate at both plants, based on daily or weekly monitoring results. The goal of chlorine dosing is to use just enough chlorine to ensure both effective primary and secondary disinfection, while minimizing the amount of chemicals used to manage both cost and aesthetics.

For primary disinfection, it is essential to meet the required CT value (the product of chlorine concentration and contact time). This target was consistently met at both water treatment plants in 2024.

For secondary disinfection, a high ratio of monochloramine to total chlorine is important. The Goldstream Water Treatment Plant consistently maintained ratios above 90%, while the Sooke River Road Plant generally maintained ratios between 85% and 95%.

During the unusual total coliform event in July and August (see Section 7.1 below), UV and chlorination dosages were temporarily increased to maximize disinfection efficacy. During expected turbidity excursions on peak watering days, the UV dosage was increased to compensate for the negative impact of elevated turbidity on the disinfection process.

5.5 CRD Reservoir Maintenance

The CRD has followed the reservoir cleaning schedule developed through the reservoir review project led by CRD Water Quality Operations. This schedule is based on a thorough water quality data review for each CRD-owned and operated transmission or distribution reservoir and is regularly updated based on new data and information. Following this cleaning schedule has resulted in improved water quality conditions and operational efficiencies in a number of reservoirs.

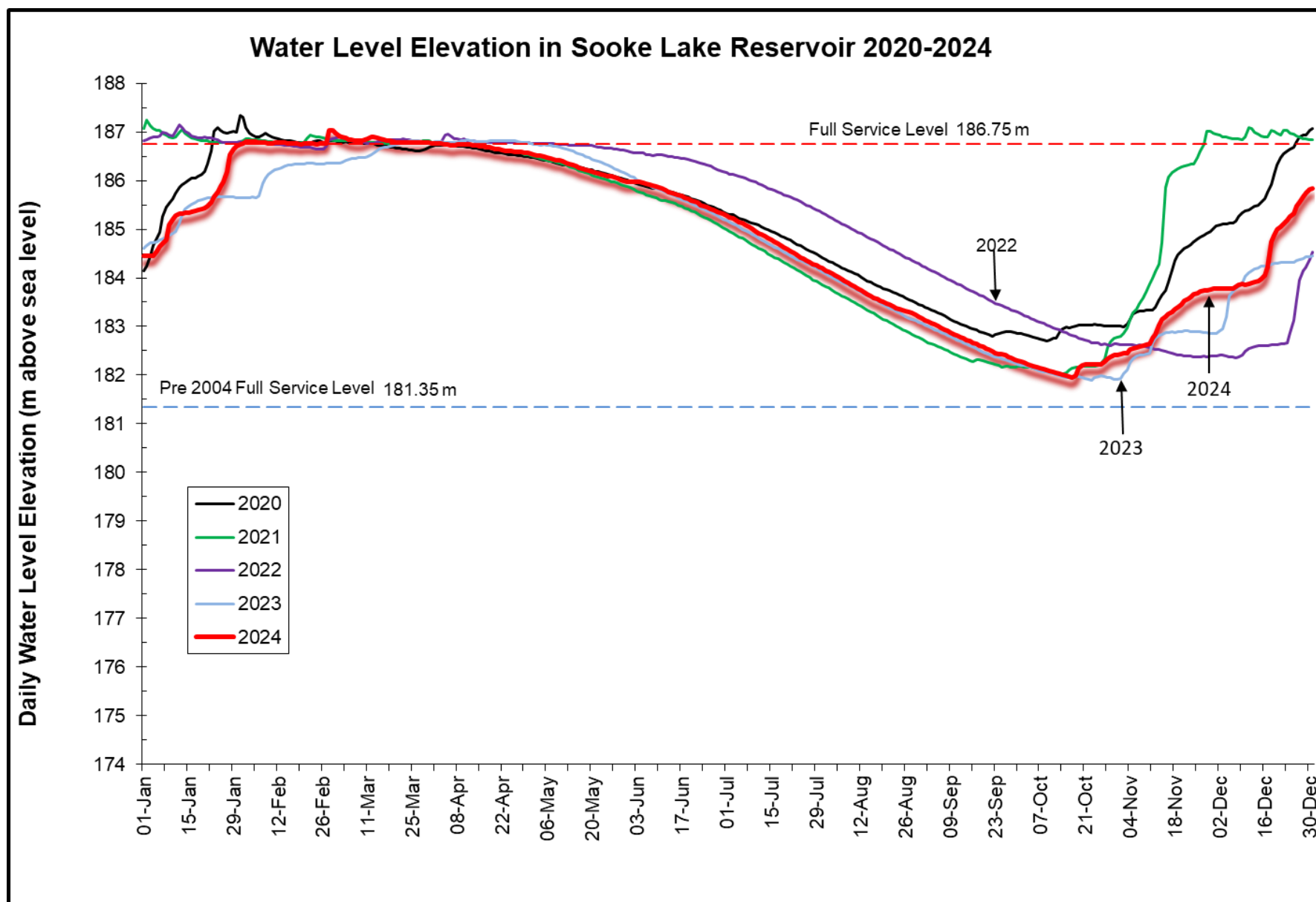


Figure 1 Water Level Elevation in Sooke Lake Reservoir 2020-2024

6.0 WATER QUALITY MONITORING

The CRD Water Quality Program includes the collection, analysis and reporting of water quality information in all CRD-owned and operated portions of the GVDWS from the source reservoirs to the point of delivery (typically the water meter) to each consumer. While the municipal water suppliers are responsible for water quality and any potential corrective measures within their particular distribution system, CRD staff provide water sampling and testing for regulatory compliance monitoring to these municipalities.

The CRD Water Quality Program has dedicated professional staff who are trained to collect water samples from source water and treated water sampling locations across the region, as well as technical staff trained to analyze and interpret water quality data in support of operational decisions. The CRD Laboratory is certified for a number of water quality test methods and is staffed with highly-trained laboratory technicians. The CRD Aquatic Ecology Laboratory has professional staff specialized to analyze phyto- and zooplankton in lake water, periphyton communities in lakes and streams, to test for cyanotoxins and understand the source water limnology. The Cross Connection Control division includes certified plumbing and cross connection control inspectors, as well as staff trained to process data in order to administer the requirements of the BC Building Code and the CRD Cross Connection Bylaw No. 3516.

6.1 CRD Water Quality Monitoring Program

The CRD Water Quality Monitoring Program consists of the following three components that provide direction for the collection and analysis of water quality samples from the water systems:

- **Compliance Monitoring:** The goal of the compliance monitoring is to ensure that water quality from source to consumer meets the relevant drinking water regulations and guidelines. Island Health, as the provincial regulator, has issued the CRD two operating permits (for CRD water infrastructure in the Goldstream Service Area and in the Sooke Drinking Water Service Area). These operating permits require, in addition to the water quality and sampling criteria, as per the *Drinking Water Protection Regulation*, continuous monitoring of turbidity. The CRD Water Quality Operations Section, therefore, conducts bacteriological monitoring on the raw water entering the treatment plants, treated water after leaving the plants, at the first customer sampling locations, sampling locations on the large transmission mains and sampling locations in the CRD-owned distribution systems, including distribution reservoirs. Bacteriological samples are collected at a frequency that meets the regulatory requirements and provides a consistent and day-to-day system-wide water quality oversight. Continuous turbidity monitoring, as per operating permits, is accomplished by on-line turbidity meters (monitored via Supervisory Control and Data Acquisition (SCADA)) at each water treatment plant (at each plant: two analyzers in line to provide redundancy). Part of the compliance monitoring program are the services provided by the CRD to the municipal water suppliers where CRD staff collect and analyze bacteriological samples from inside the municipal water distribution systems, report monthly results on the CRD website and include the results and findings in this annual report.

Island Health has granted the GVDWS an exemption from filtration treatment, the conventional water treatment requirement for surface water source users in BC, based on the evidence of year-round high source water quality. However, it is expected that the CRD closely monitors a number of water quality parameters, in addition to the criteria listed in the regulations and in the operating permits. As a result, the CRD has included in its compliance monitoring program a number of water quality parameters that are regularly tested on the raw, as well as on the treated water to verify compliance with the Canadian guidelines and USEPA rules and regulations. Such parameters in the raw water include parasites, organic and inorganic compounds, including metals and various water chemistry and physical parameters. On the treated water, these include disinfection byproducts, metals and water chemistry and physical parameters that are used to verify good drinking water quality.

- **Aquatic Ecology Monitoring:** The goal of the aquatic ecology monitoring is to understand and document the components that affect or may affect the natural cycles of the source streams and reservoirs. The source reservoirs and streams in the Greater Victoria Water Supply Area (see Map 1) are monitored according to the recommendations by the CRD Aquatic Ecology Section, as there are

no legislated requirements for either sampling frequency or parameter selection for these water bodies. It is, however, important for the CRD, as the supplier of unfiltered surface water, to have a comprehensive understanding of the natural processes taking place in the source waters and potential implications for the drinking water quality in the GVDWS. Depending on the season, the source lakes and their tributaries are sampled at a frequency ranging from quarterly to weekly for parameters such as algal species, distribution and concentrations, zooplankton species and concentrations, chlorophyll-a concentrations and nutrient concentrations. Additional samples may be collected based on risk management decisions, for instance, as a response to severe weather conditions or unusual observations.

- **Operational Water Quality Monitoring:** The CRD Water Quality Monitoring Program provides an audit function on all water quality-related aspects of the GVDWS, including performance monitoring of the treatment plants and distribution systems. Specific sampling and testing occurs to support operational decisions by the CRD and municipal system operators. Daily field tests of chloramine residual concentrations are conducted to verify the efficiency of the secondary disinfection region-wide. A number of qualitative (e.g., taste and odour) and quantitative tests [e.g., heterotrophic plate count (HPC), turbidity] are regularly performed on samples across the region to verify the need for specific system maintenance. The customer inquiry program is also part of this monitoring program component, as a water quality complaint or observation by the public can give clues to ongoing system issues or identify water quality risks in the system. Water samples are occasionally collected from taps within individual houses or facilities, in response to inquiries from customers about the quality of water being received at their address.

The CRD Water Quality Monitoring Program also monitors for emerging contaminants that may be highlighted by Health Canada, industry associations such as the British Columbia Water and Wastewater Association (BCWWA), Canadian Water and Wastewater Association (CWWA) or other agencies as a possible risk to public health and drinking water safety. Sometimes, media attention to a certain water quality topic increases customers' desire for additional data and information. Such monitoring may then occur ad hoc and temporary, or long-term in the regular sampling plans. For instance, the CRD has been monitoring Per- and Polyfluoroalkyl Substances (PFAS) in the source water since 2020.

- **Drinking Water Safety Plan:** In 2018, CRD Water Quality Operations developed a Drinking Water Safety Plan, following the principle of a method developed by the Alberta Ministry of Environment for all drinking water systems in Alberta. This plan is a comprehensive water quality risk assessment and registry in the GVDWS. Identified risks have been documented and are being tracked as the CRD Integrated Water Services Department addresses them. At the end of 2024, the Drinking Water Safety Plan included 24 High Risks and 179 Moderate Risks to water quality; 23 and 181 respectively in 2023, for comparison.

6.2 Sampling Plans

The efforts to collect the required number of samples for the CRD Water Quality Monitoring Program are organized into three distinct sampling plans:

1. The **Watershed Sampling Plan** manages the sampling frequency, schedule and parameter list for the source water lakes and tributaries and is based on an up-to-date risk to water quality assessment. Sooke Lake Reservoir is sampled from a boat at three dedicated lake sampling stations from weekly in the summer to bi-weekly in the winter (see Figure 2). Goldstream Reservoir is sampled monthly from a boat at two dedicated lake sampling stations. Tributary creeks to Sooke Lake Reservoir are sampled monthly near their mouths. Significant tributary lakes in the Sooke Lake watershed, as well as Butchart Lake and Japan Gulch Reservoir in the Goldstream System, are sampled quarterly by boat. The Leech watershed is currently sampled monthly in four different locations, following a more comprehensive sampling/testing project in 2019-2020.

2. The **Treatment Plant Sampling Plan** includes the daily samples collected at the Goldstream Water Treatment Plant and the two first customer locations (for mains #4 and #5), the weekly samples collected at the Sooke River Road Water Treatment Plant and the Sooke first customer location. This plan is designed to verify adequate treatment at both treatment plants and to detect unusual water quality conditions, before they spread across the systems.
3. The **Transmission and Distribution System Sampling Plan** is a designed sampling plan that manages sampling at approximately 200 permanent sampling stations across the GVDWS, including all municipal systems. These permanent sampling stations are installed on transmission mains, storage reservoirs, distribution mains, booster pump stations and meter or valve stations. The plan is designed to achieve an evenly distributed two-week rotation for most sampling stations, while providing a representative snapshot of the entire Goldstream Service Area on each business day. The Sooke Drinking Water Service Area is sampled once per week. Samples collected on the daily runs, as part of this plan, are primarily used for compliance monitoring, but also for operational purposes.

When total coliform-positive bacteriological results are found in a CRD-owned system, CRD sampling staff resample those locations and, depending upon the situation, may direct CRD operators to flush the affected mains and/or drain and clean affected storage reservoirs. Consecutive total coliform positive results in one or more locations trigger the emergency response procedures. When total coliform-positive bacteriological results are found in a municipal system, the CRD sampling staff resample those locations and notify the municipal operators of the results. If a sample tests positive for *E.coli*, Island Health is notified immediately, and emergency response procedures are followed.

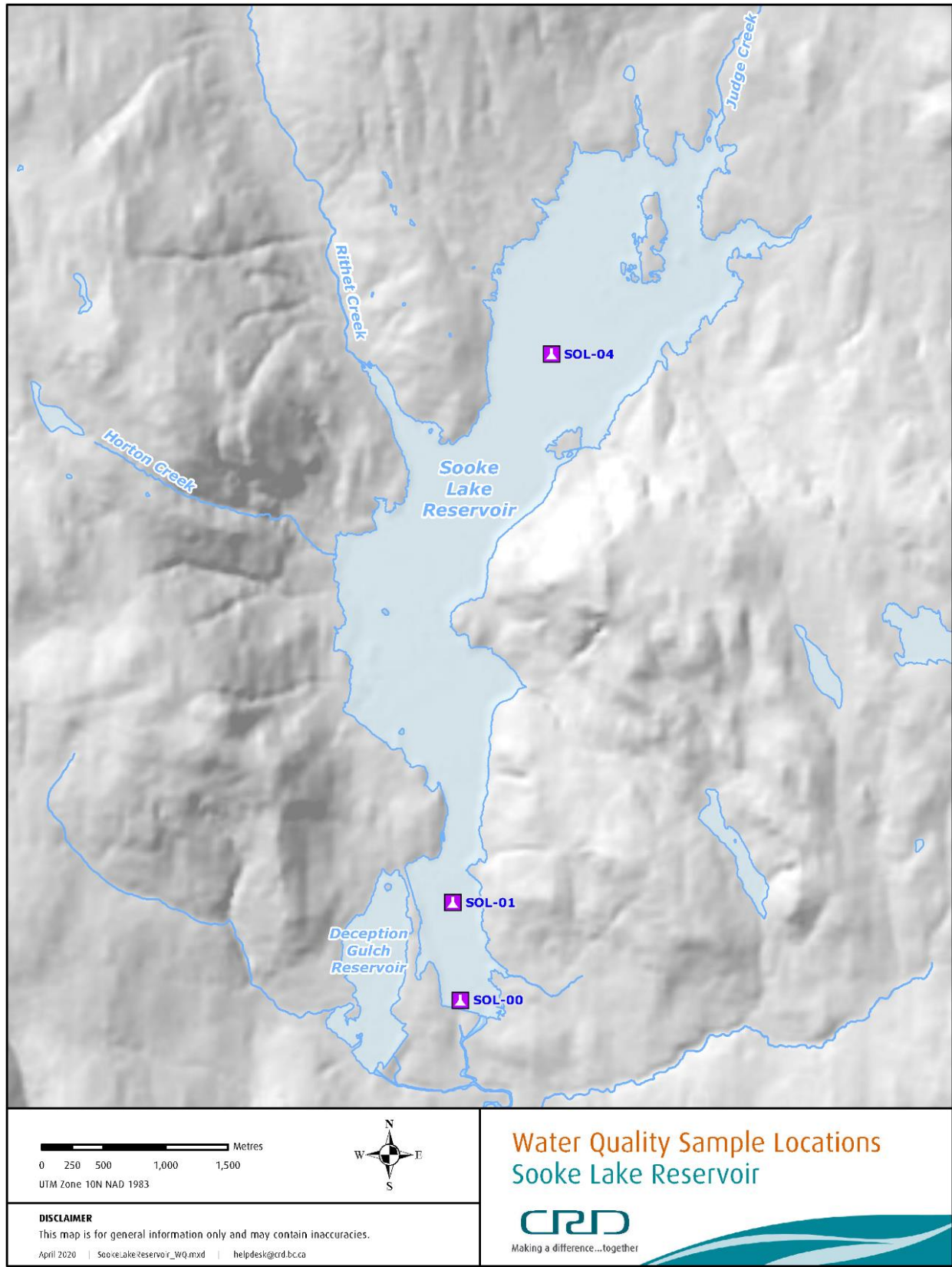


Figure 2 Sooke Lake Reservoir Water Sampling Stations

6.3 Bacteriological Analyses

Outlined below are descriptions of bacteriological parameters used in the CRD Water Quality Monitoring Program and the regulatory limits that were in place in 2024.

Total Coliform Bacteria

Total coliforms. The total coliform bacteria group include those found abundantly in human and animal intestinal (fecal) wastes and in water that has been contaminated with fecal material. Because this coliform are also environmentally ubiquitous (found naturally in water, soil, vegetation), in the absence of *Escherichia (E.) coli*, total coliform detection may indicate surface water infiltration, biofilm sloughing, or the presence of decaying organic matter. Because of its superior survival characteristics, the total coliform group is used as an indicator for treatment efficacy and microbial conditions in drinking water systems.

Test Method. In 2024, the CRD Water Quality Laboratory analyzed total coliform bacteria using the membrane filtration method with Chromocult Coliform Agar. This medium was incubated at 36-38°C for 21-24 hours. Test results were expressed as colony-forming units (CFU) per 100 mL of water. This testing method utilizes dual chromagen, defined substrate technology, leveraging the presence of the enzyme β -galactosidase in coliforms. This enzyme cleaves a chromogenic substrate, releasing a coloured compound that facilitates quantification. The CRD Water Quality Monitoring Program conducts these tests in accordance with regulations to ensure the effectiveness of water treatment and ongoing monitoring.

Regulatory Limits. Based on the requirements in the *Drinking Water Protection Regulation* and the *Guidelines for Canadian Drinking Water Quality*, the maximum acceptable concentration for the GVDWS is summarized as follows:

- No sample should contain more than 10 total coliform organisms per 100 mL.
- No consecutive sample from the same site should show the presence of coliform organisms.
- Not more than 10% of the samples based on a minimum of 10 samples should show the presence of coliform organisms.

Escherichia coli

E. coli. *E. coli* is a common member of the total coliform group and is abundant in the feces of humans and warm-blooded animals. *E. coli* is not naturally found in the environment and can be easily and quickly detected in water, making it an ideal indicator for fecal contamination. Although most members of this species are considered harmless, some strains of *E. coli* can be pathogenic. The presence of *E. coli* in water indicates recent fecal contamination and the possible presence of intestinal disease-causing bacteria, viruses and protozoa. The absence of *E. coli* in drinking water generally indicates that the water is free of intestinal disease-causing bacteria.

Test Method. In 2024, *E. coli* was analyzed using the same medium and method as in total coliforms above. The *E. coli* test measures bacteria possessing the enzymes β -galactosidase and β -glucuronidase.

Regulatory Limits. In disinfected drinking water, the maximum acceptable concentration of *E. coli* (both federal and provincial limits) is zero *E. coli* per 100 mL.

Heterotrophic Plate Count Bacteria

Heterotrophic Plate Count. Microorganisms, such as bacteria, moulds, and yeasts that require organic carbon for growth, are known as heterotrophs and many bacteria associated with drinking water systems are heterotrophs. Heterotrophic plate count (HPC) bacteria are used to monitor trends in water treatment and distribution systems. Under increasing nutrient conditions and/or a reduction in the concentration of chlorine residual, the heterotrophic bacteria are usually the first group to increase and provide an early warning of the potential regrowth of coliforms. In addition, an increase in HPC bacteria in the distribution system will promote more rapid decomposition of chloramines. The CRD Water Quality Monitoring Program uses HPC to monitor treatment efficacy at the disinfection plants and to track the decline in chlorine

residuals in the distribution system and storage reservoirs.

Test Method. In 2024, samples were analyzed for HPC by the CRD Water Quality Laboratory using membrane filtration onto R2A medium and incubated at 21-28°C for seven days. HPC can be measured in several different ways; in this test method, the low incubation temperature and long incubation time improves the recovery of stressed and chlorine-tolerant bacteria. HPC testing was carried out on raw water samples, water leaving the treatment plant, and treated water samples with low chlorine residual levels (below 0.2 mg/L).

Regulatory Limits. There is no federal or provincial regulatory limit for heterotrophic bacteria in drinking water. However, the USEPA Surface Water Treatment Rule considers 500 CFU/mL of heterotrophic bacteria as an indicator for a “detectable chlorine residual” when using membrane filtration onto Standard Methods agar incubated at 35°C for 48 hours. Therefore, in the absence of a Canadian regulatory limit, the CRD Water Quality Monitoring Program uses the USEPA value as a monitoring criterion to trigger site-specific operational measures for assessing and mitigating drinking water quality.

6.4 Certification and Audits

To ensure that analytical testing is carried out to the highest possible standard, the CRD Water Quality Laboratory participates in several types of external quality assurance and quality control (QA/QC) programs, in addition to rigorous internal QA/QC procedures that are included as part of the methodology and are a normal component of good laboratory practice.

6.4.1 Certification

All laboratories analyzing drinking water samples for total coliforms and *E. coli* according to the Drinking Water Protection Act/Regulation are required by the Province of BC to be approved in writing by the Provincial Health Officer. Laboratory approval requires both an approval certificate and a proficiency testing certificate, as noted below:

- **Water Bacteriology Testing Laboratory Approval Certificate.** This certificate is issued by the BC Provincial Health Officer for bacteriological testing of drinking water in the Province of BC. This certificate is renewed every three years via an on-site inspection (audit) of the analytical laboratory.
- **Canadian Microbiology Proficiency Testing Program Certificate of Participation.** This certificate is issued by the Advisory Committee for Water Bacteriology Laboratories, which is operated by the Department of Pathology and Laboratory Medicine at the University of British Columbia. Satisfactory performance is required to maintain laboratory certification. Three rounds of proficiency tests are carried out per year.

6.4.2 Accreditation

In 2017, the CRD Water Quality Laboratory attained accreditation to the global ISO/IEC 17025 standard used by testing and calibration laboratories. The accreditation has management, quality and technical requirements. Accreditation is maintained by successful reassessment every two years by an accrediting body (Canadian Association for Laboratory Accreditation; CALA) and satisfactory participation in an external proficiency testing program for all methods (two rounds per year). The CRD Water Quality Lab was last assessed in 2023 and will be recertified in 2025.

7.0 WATER QUALITY RESULTS

The overview results of the 2024 CRD Water Quality Monitoring Program for the GVDWS are provided below. Water quality data are listed in Appendix A (Tables 1, 2 and 3). Note that the median (middle value between the high and low) is used in these tables rather than the average value, as the median eliminates the effect of extreme values (very high or very low) on the average value and provides a more realistic representation of typical conditions.

7.1 Source Water Quality Results

Total Coliform Bacteria (TC). Similar to previous years, the raw (untreated) source water entering both plants exhibited generally a very low concentration of total coliform bacteria, in particular during the colder seasons (Figure 3). Usually, between July and October, when the Sooke Lake south basin is destratified and fully mixed with warm water, total coliform concentrations in the raw water increase and can reach levels of a few hundred CFU/100 mL. In 2024, the total coliform concentrations suddenly rose on July 16 and spiked to 15,000 CFU/100 mL by the end of July and early August. This unusual but not unprecedented total coliform event lasted until August 16 when the total coliform concentrations fell below the operational alert level of 1,000 CFU/100 mL. A similar total coliform event occurred in 2017, and a subsequent investigation concluded that internal seiches in Sooke Lake Reservoir were likely the cause. Previous studies have shown that Sooke Lake is prone to internal seiche events during the summer and early fall period when the stratification in the south basin breaks down due to hypolimnetic water extraction. It is assumed that the 2024 total coliform event was caused by the same hydrodynamic mechanism although clear evidence for this has not been found yet. The Department of Biochemistry and Microbiology at the University of Victoria conducted a genomic sequencing on a sample collected during the peak of the total coliform event and determined that the species responsible for the high total coliform concentrations was *Lelliottia nimipressurali*, a common decomposing bacteria species that is not known to pose any risk to human health. This finding provided assurance that this total coliform event was not a result of a source water contamination and that the risk to public health was low.

With 244 samples from water entering the Goldstream Water Treatment Plant analyzed in 2024, the total coliform concentration ranged from 0-15,000 CFU/100 mL, with a median value of 5 CFU/100 mL (Appendix A, Table 1).

The USEPA *Surface Water Treatment Rule* for unfiltered systems has a non-critical total coliform criterion of maximum 100 CFU/100 mL at the 90th percentile of a six-month sample set. The 90th percentile of total coliform concentrations in the raw water between January and June 2024 was 6 CFU/100 mL, and between July and December 2024 it was 1,600 CFU/100 mL. Therefore, the source water was compliant with this non-critical USEPA filtration exemption criteria in the first half of 2024 but not in the second half. This is a typical pattern for Sooke Lake Reservoir but the magnitude of exceedances in the second half of 2024 was exacerbated by the occurrence of the total coliform event in July and August. While this is a secondary non-critical filtration assessment criterion, it indicates a vulnerability of the water quality with rising temperatures due to climate change.

E. coli Bacteria. During more than three decades of monitoring bacteria within the GVDWS, it has been found that virtually 100% of the fecal coliform bacteria detected in the source water and the distribution system are *E. coli*. In 2024, as in previous years, the low detection of *E. coli* bacteria indicated that the raw water entering the Goldstream Water Treatment Plant from Sooke Lake Reservoir was good quality source water and complied with the primary criteria in the USEPA *Surface Water Treatment Rule* to remain an unfiltered drinking water supply (Figure 4).

In 2024, about 10.2% of the 245 samples collected from the raw source water contained *E. coli* and those that were positive for *E. coli* had levels well below 20 CFU/100 mL. The concentration ranged from 0-10 CFU/100 mL, with a median value of 0 CFU/100 mL. The low occurrence, as well as the low concentrations of *E. coli* bacteria in Sooke Lake, are in line with long-term historical bacteria concentrations. These results do not indicate a particular source of *E. coli* bacteria, but rather point to low levels of naturally occurring fecal matter in a healthy and unproductive aquatic ecosystem. The few sporadic *E. coli* hits are typically the result of the rainfall and runoff into Sooke Lake, which transported organic matter accumulated

in the watershed to the lake. In years with a Kapoor Tunnel Inspection Project, a slight *E. coli* concentration increase in mid-December can be attributed to the supply from the Goldstream system. In 2024, the Goldstream system was not used as a drinking water source.

***Giardia and Cryptosporidium* Parasites.** In 2024, parasite samples were collected eight times as part of the CRD's routine monitoring program. This sampling frequency was set after an evaluation of long-term data showed extremely low detection of these organisms. The first five parasite samples were collected from the raw water sampling location at the Goldstream Water Treatment Plant while the last three samples in 2024 were collected with a portable pump directly from Sooke Lake Reservoir in 1 m depth in the south basin near the intake tower. This sampling location change was necessary due to the construction works in the UV treatment building which impacted the original parasite sampling location. All samples were shipped for analysis to an external laboratory. It should be noted that the efficiency of the analysis for detecting *Giardia*, and especially *Cryptosporidium*, is quite low (typically in the 15-25% range).

In 2024, no *Giardia* cysts and no *Cryptosporidium* oocysts were detected in all samples on the raw water entering the Goldstream Water Treatment Plant. The 10-year median value for total *Giardia* cyst and total *Cryptosporidium* oocyst concentrations is 0/100 L; however, historical data shows that occasionally very low concentrations of parasites can be found in the raw water from Sooke Lake. While these are extremely low values for a surface water supply, the addition of UV disinfection provides assurance that no infective parasites can enter the GVDWS.

The treatment target specified by the Canadian federal and provincial regulations, as well as the USEPA *Surface Water Treatment Rule*, require 3-log (99.9%) parasite inactivation to meet the filtration exemption criteria for surface water systems. Both CRD disinfection facilities provide UV treatment that, in conjunction with the CRD's drinking watershed management concept, is able to meet these targets and, therefore, adequately protects the public from waterborne parasitic illnesses.

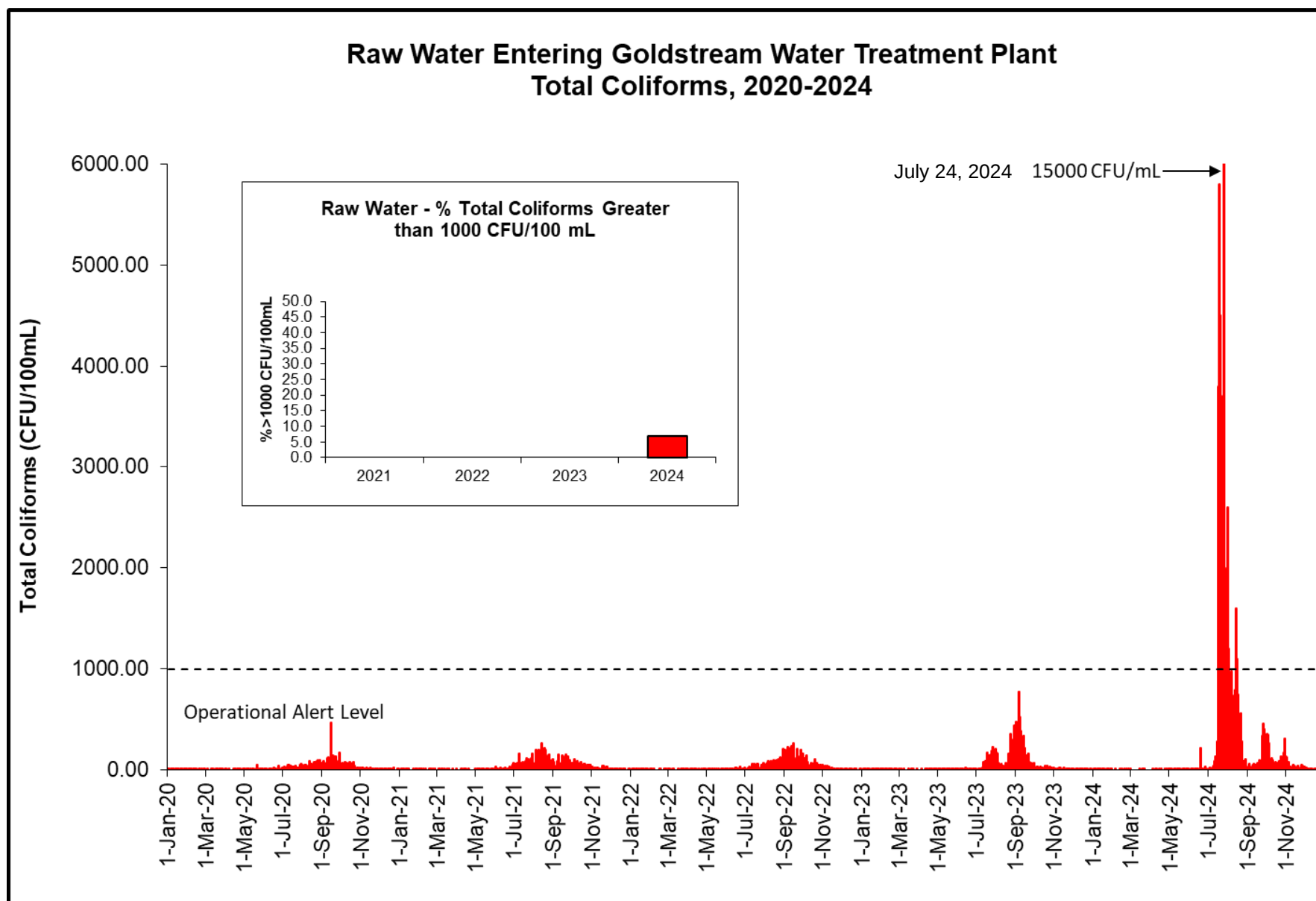


Figure 3 Raw Water Entering Goldstream Water Treatment Plant Total Coliforms 2020-2024

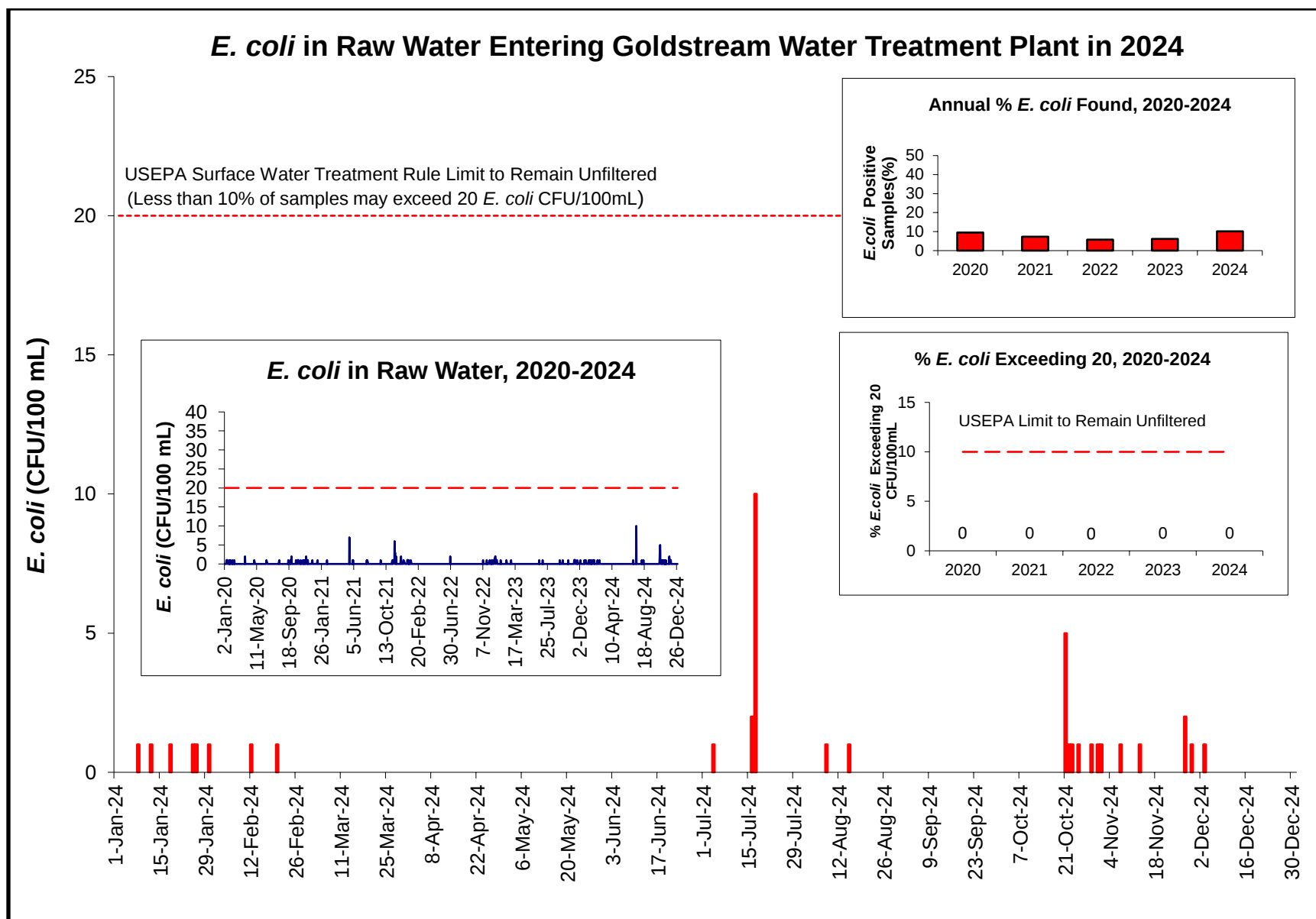


Figure 4 *E. coli* in Raw Water Entering Goldstream Water Treatment Plant in 2024

Algae – Sooke Lake Reservoir (SOL). In the first half of 2024, the algal dynamics were generally in line with the long-term trend. The typical spring peak occurred in April when several taxa drove up the algae abundance (Chrysophytes, Bacillariophytes – also called Diatoms). This spring peak usually marks the highest algal activity in the year in Sooke Lake Reservoir and this was true again for 2024 (Figure 5, Figure 6 and Figure 7). While the algae concentrations during the spring period were still generally in line with the long-term historical trend, the summer period exhibited notably higher algal concentrations compared to the long-term average trendline. This was much more pronounced in 2024 but already visible in a few previous summers. There appears to be a trend towards generally higher algal activity between July and October. The increase in 2024 was approximately 200% compared to the long-term average. While this increase seems significant, the overall summer algae concentration of 1,500 NU/mL or less is still below bloom conditions for any algae species. While the typical spring peak in algae concentrations is due to favourable environmental conditions such as warming water and increased sunshine, coupled with the availability of freshly introduced nutrients after the reservoir recharge, the increased summer algae concentrations could be due to a growing influence of climate change associated with warmer water temperatures and extended warm water conditions. Sooke Lake water warmed particularly early in 2024 and therefore exhibited the longest warm water season since raising the dam in 2004. Algae have a remarkable ability to quickly adapt to environmental factors, such as temperature, nutrient availability and light intensity. Coincidental with the sudden increase in algal concentration in mid-July is a sudden increase in total nitrogen concentrations in the south basin. The timing of this is interesting as it also coincides with the onset of the unusual total coliform event (see page 21 above). It is possible that these events are linked and that the hydromechanical factors (internal seiches) that may have caused the total coliform event also kicked up nitrogen nutrients from the lake sediments and brought them higher up into the water column where they then induced a spike in algal activity. This theory is supported by the fact that seiche effects are usually limited to the south basin and that the total nitrogen increase is also only recorded in the south basin. The responding algal biomass increase was also most prominent in the south basin, although, with several weeks delay, this higher algal activity seemed to have propagated also towards the north basin, likely as a result of dispersion through wind and wave action.

Sooke Lake Reservoir did not experience an actual bloom of a specific algae species in 2024, which demonstrates the robustness of an intact ecosystem with a balanced and diverse algae population. Sooke Lake exhibited, as in previous years, a high algal diversity, ranging from green algae to diatoms, with some taxa that could potentially have adverse impact on water quality (Figure 8, Figure 9 and Figure 10). For example, the potential cyanotoxin producer *Dolichospermum/Anabaena* spp. was present in Sooke Lake during most months in 2024, in particular during late summer and fall. But the highest cell count for these cyanobacteria was still well below the critical threshold recommended by Health Canada (2017), (i.e., 2,000 cells/mL).

In June, CRD staff received reports from customers related to filter clogging issues. The analysis revealed that these incidents were caused mainly by the big-size diatom of *Lindavia / Cyclotella bodanica* (Figure 11). This is a common diatom in Sooke Lake Reservoir. Quantitative analysis showed that the abundance of this diatom started to increase in the middle of May and peaked in June, then decreased significantly in early July. Due to the nature of its rigid silica cell wall, diatoms like this taxon tend to be more concentrated at lower depths and are therefore situated close to the typically used low intake gate in the south basin (Figure 12).

For consistency with historical data, our analysis did not include some small-size single cell algae which do not contribute significantly to the overall algal biomass.

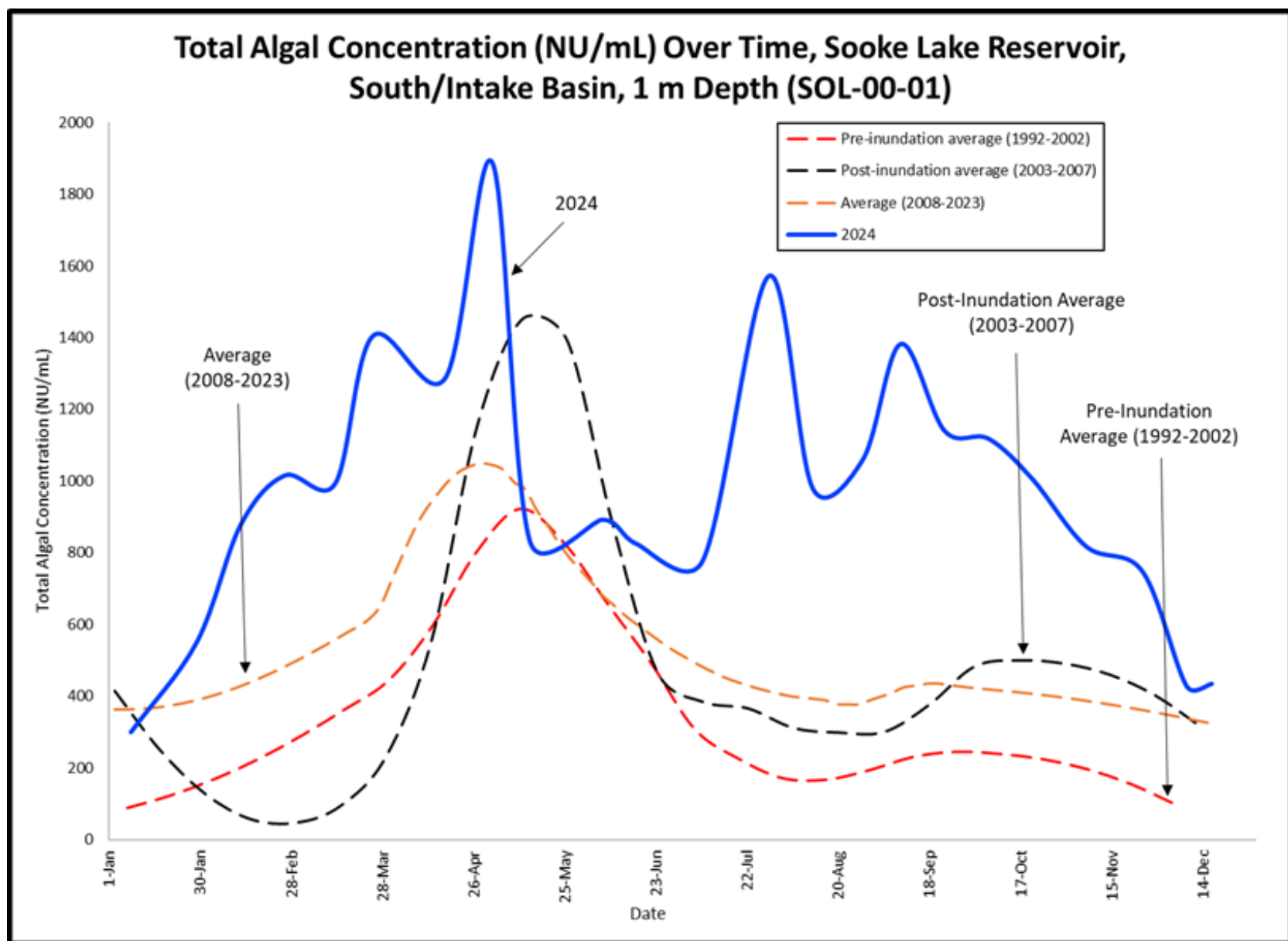


Figure 5 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, South/Intake Basin, 1 m depth (SOL-00-01)

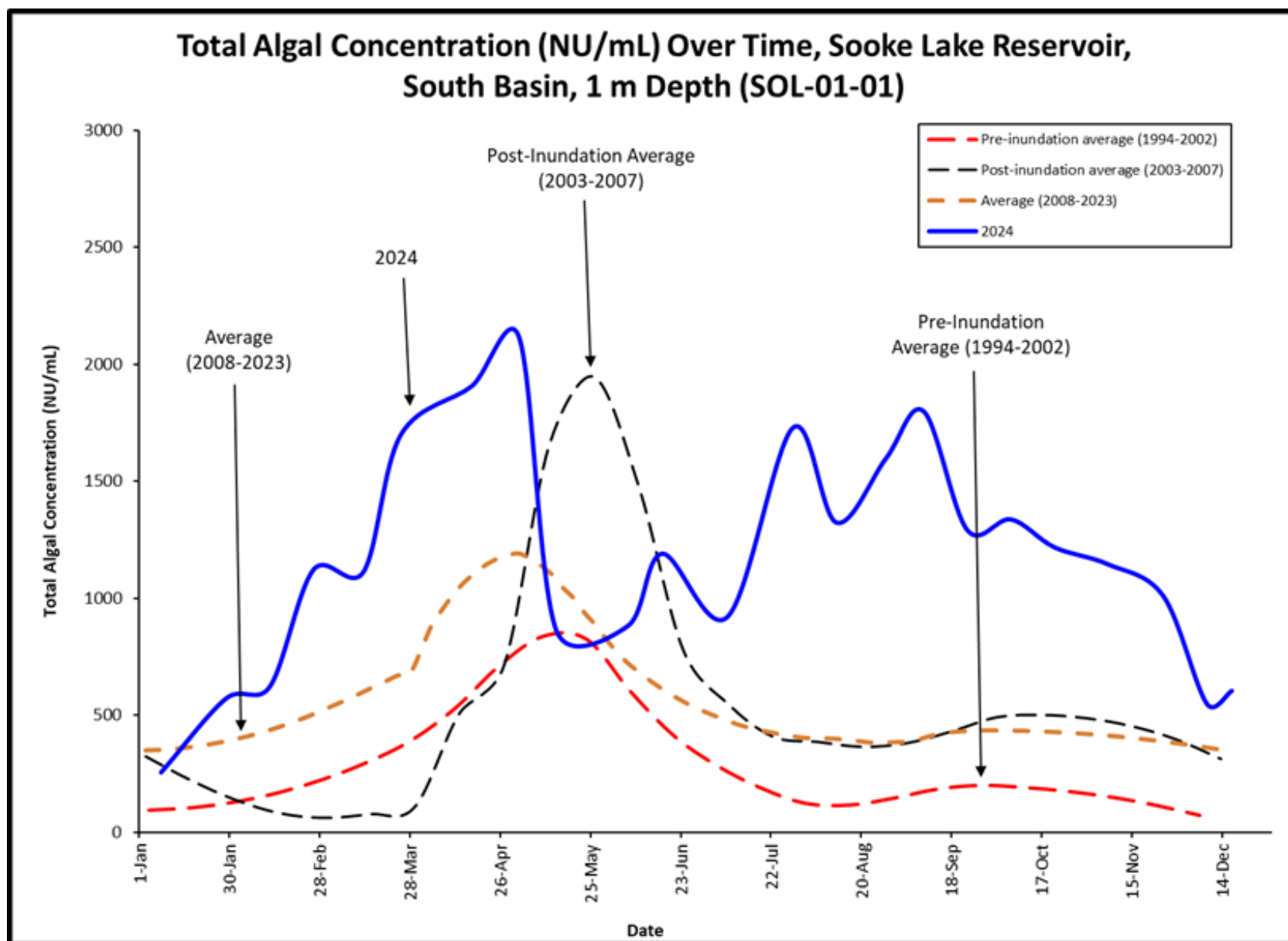


Figure 6 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

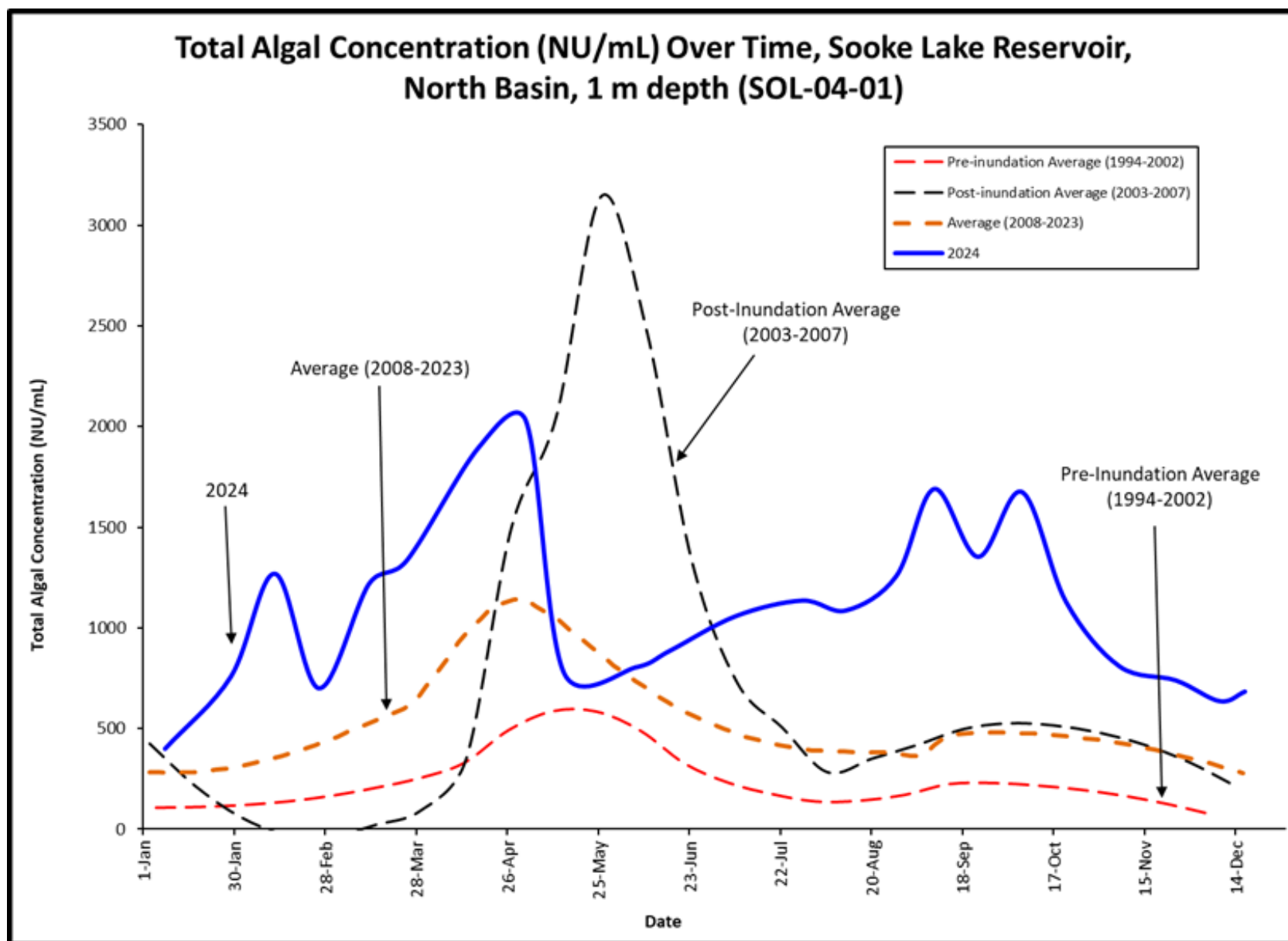


Figure 7 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

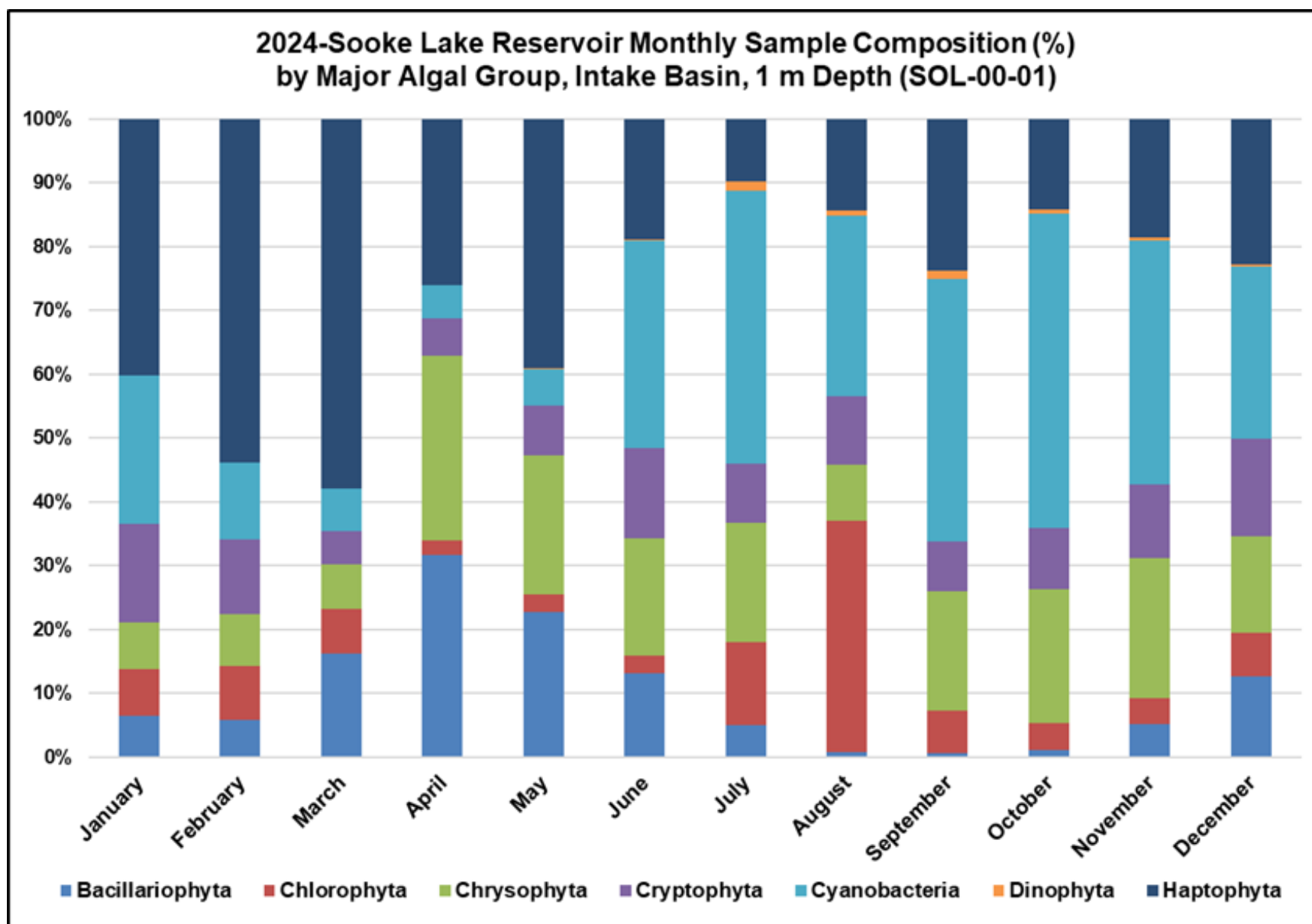


Figure 8 Monthly Abundance Percent of Different Algal Groups, Intake Basin, 1 m depth, SOL-00-01, 2024

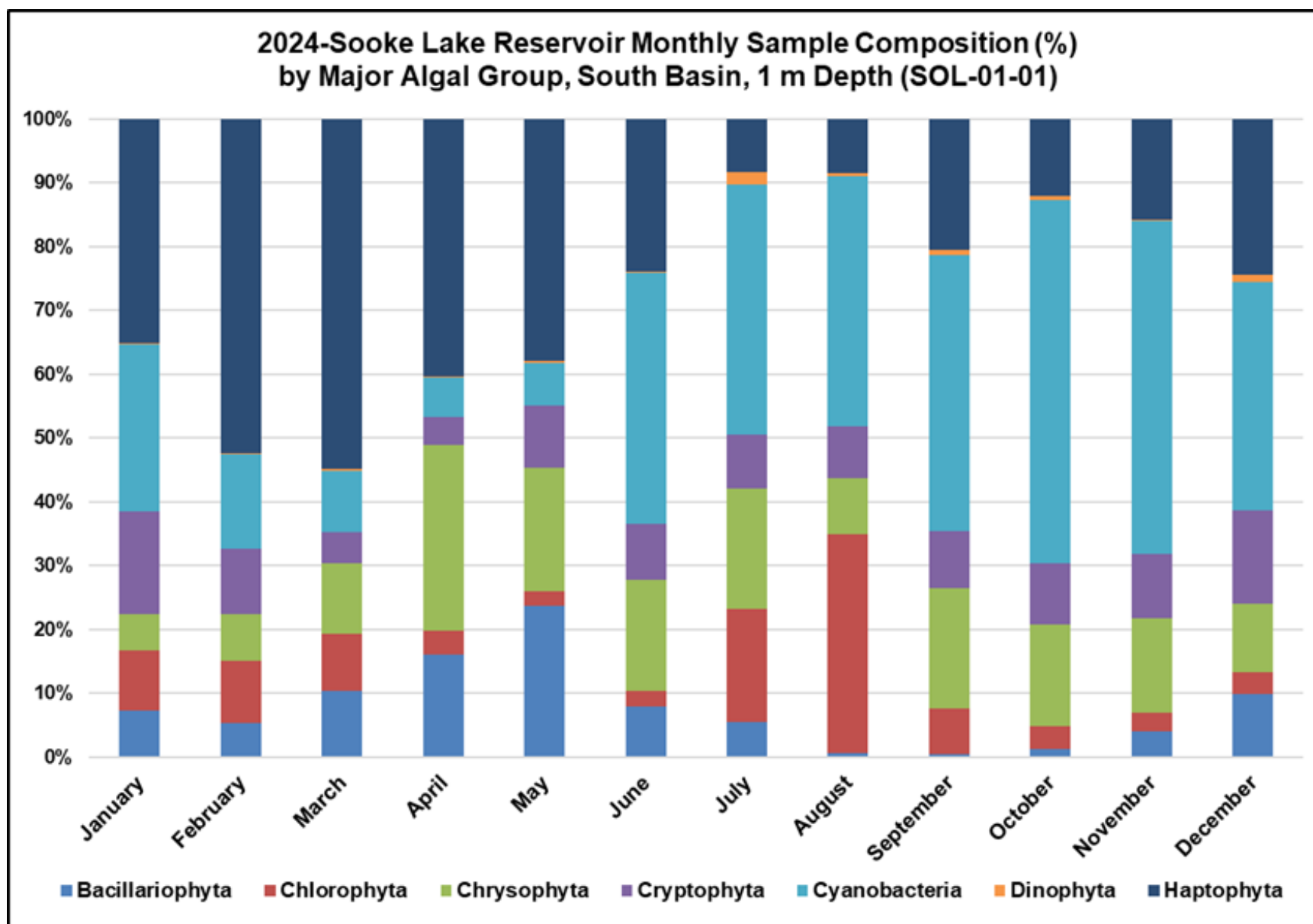


Figure 9 Monthly Abundance Percent of Different Algal Groups, South Basin, 1 m depth, SOL-01-01, 2024

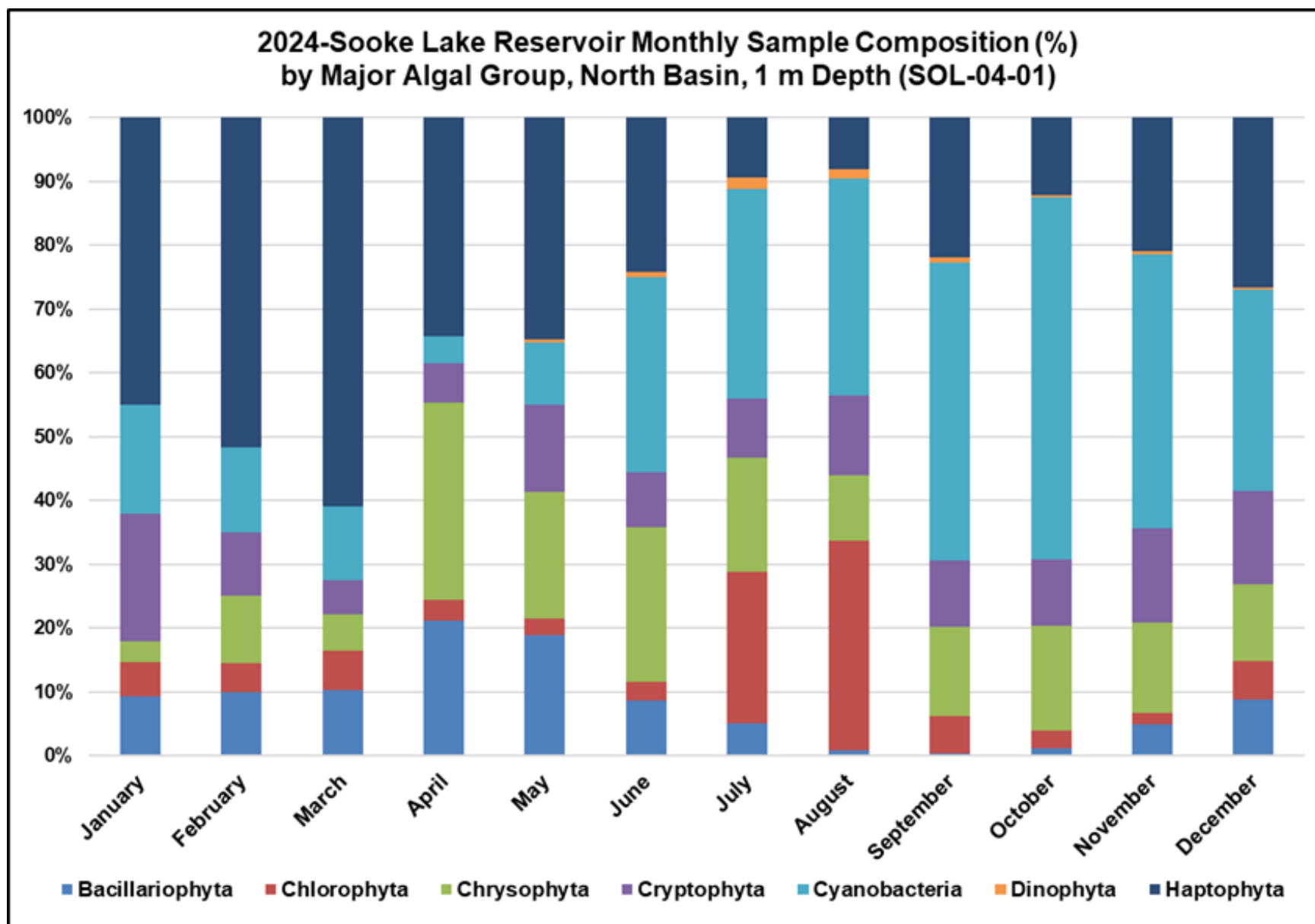


Figure 10 Monthly Abundance Percent of Different Algal Groups, North Basin, 1 m depth, SOL-04-01, 2024

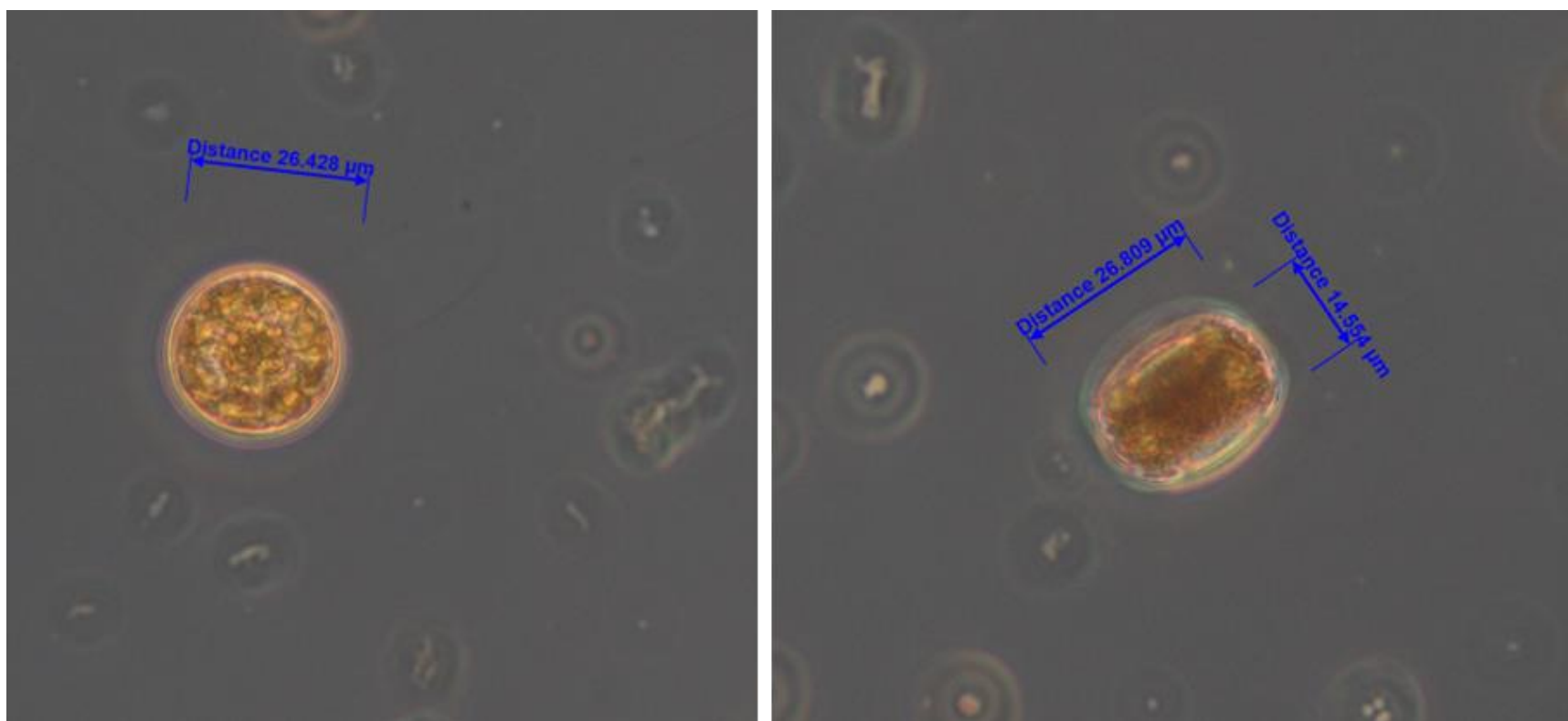


Figure 11 Diatom *Lindavia bodanica* in Sooke Lake in June 2024: Left - top view; Right - side view

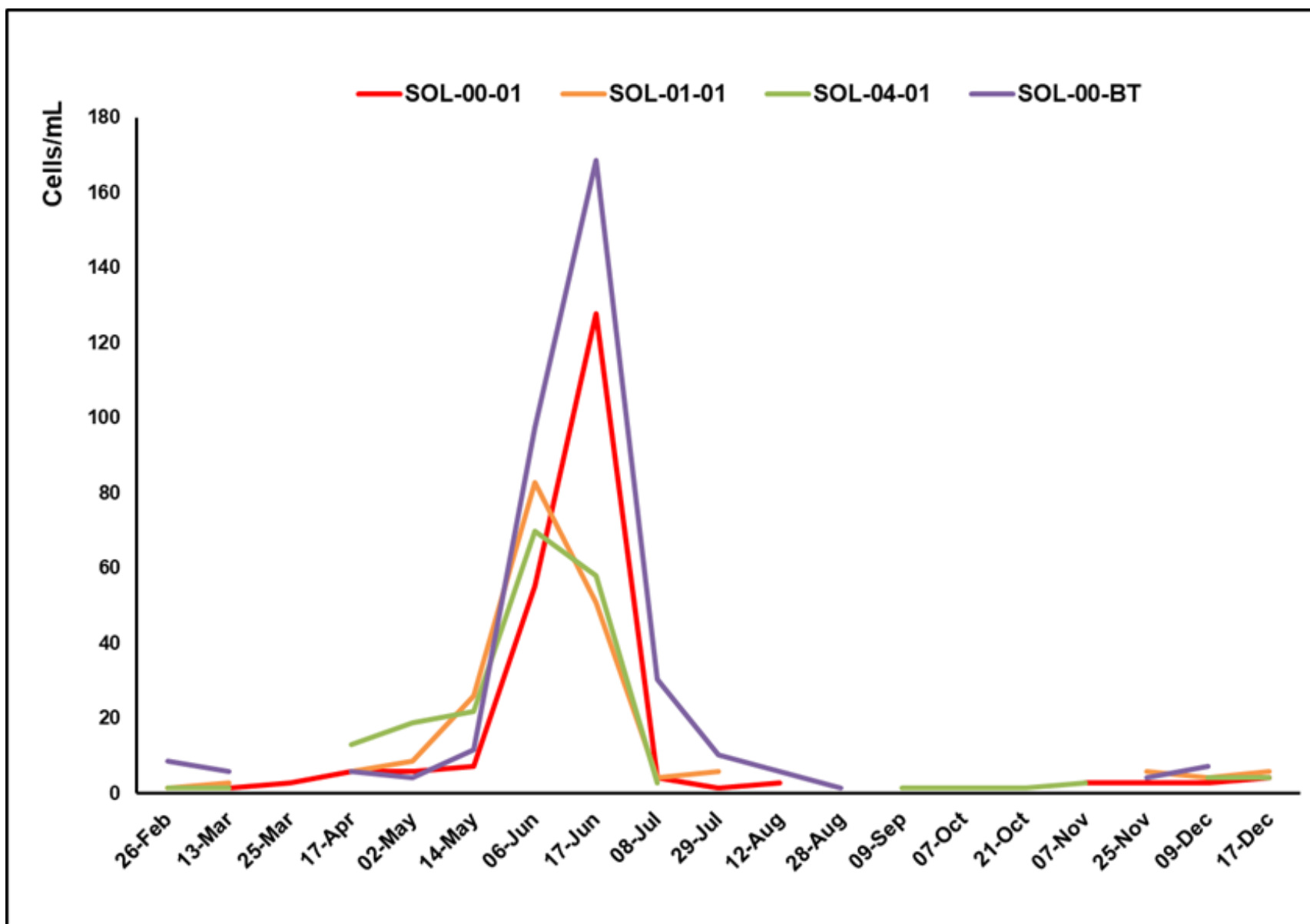


Figure 12 Abundance of *Lindavia bodanica* in Sooke Lake at 3 stations near surface, and at bottom near Intake Tower, 2024

Zooplankton – Sooke Lake Reservoir (SOL). Zooplankton play an important role as an intermediate trophic stage, ensuring the energy flow from primary producers to higher trophic levels, e.g., macroinvertebrates, fish and other aquatic animals in aquatic ecosystems. Previous studies have shown that fish in Sooke Lake Reservoir predominantly rely on zooplankton for forage. Because of this important biological role, the CRD has included a regular zooplankton analysis to its source water monitoring program. Zooplanktonic species themselves can be herbivores, carnivores or omnivores. Studies have shown that any change of zooplankton species composition or densities or both could influence not only the trophic structure, but also physiochemical parameters in the ecosystems. There are three main zooplankton groups: Rotifera, Copepoda and Cladocera. Other aquatic invertebrates found in the collected samples included water mites, insect larvae, and rarely nematodes or tardigrades. In the ecosystems, phytoplankton are considered as a main food source for zooplankton and, therefore, phytoplankton dynamics can significantly reflect the changes of zooplankton and *vice versa*. The peak of zooplankton abundance normally occurs after the peak of phytoplankton. In general, zooplankton tend to have higher density during the spring-to-fall period than in winter.

In Sooke Lake Reservoir, zooplankton mainly consist of Rotifera and Copepoda, although Cladocera taxa, such as *Daphnia* spp., can be occasionally recorded. In 2024, these three main zooplankton groups were recorded in Sooke Lake. Rotifera was the most dominant group. Abundances of Rotifera and Copepoda were consistent with the long-term trends. Cladocera zooplankton, on the other hand, was less common and only observed in some discrete samples and was therefore excluded from the analysis.

As rotifers are considered one of the main food sources for copepods, these two groups might show opposite abundance trends. One of the main food sources of rotifers is phytoplankton and therefore they normally reach the highest density after the peak of phytoplankton. Zooplankton dynamics in Sooke Lake are also regulated by other higher trophic organisms, such as macroinvertebrates and fish.

Zooplankton trends in Sooke Lake Reservoir are typical of ecological succession models. 2024 zooplankton activity was consistent with long-term trends (Figure 13 to 18).

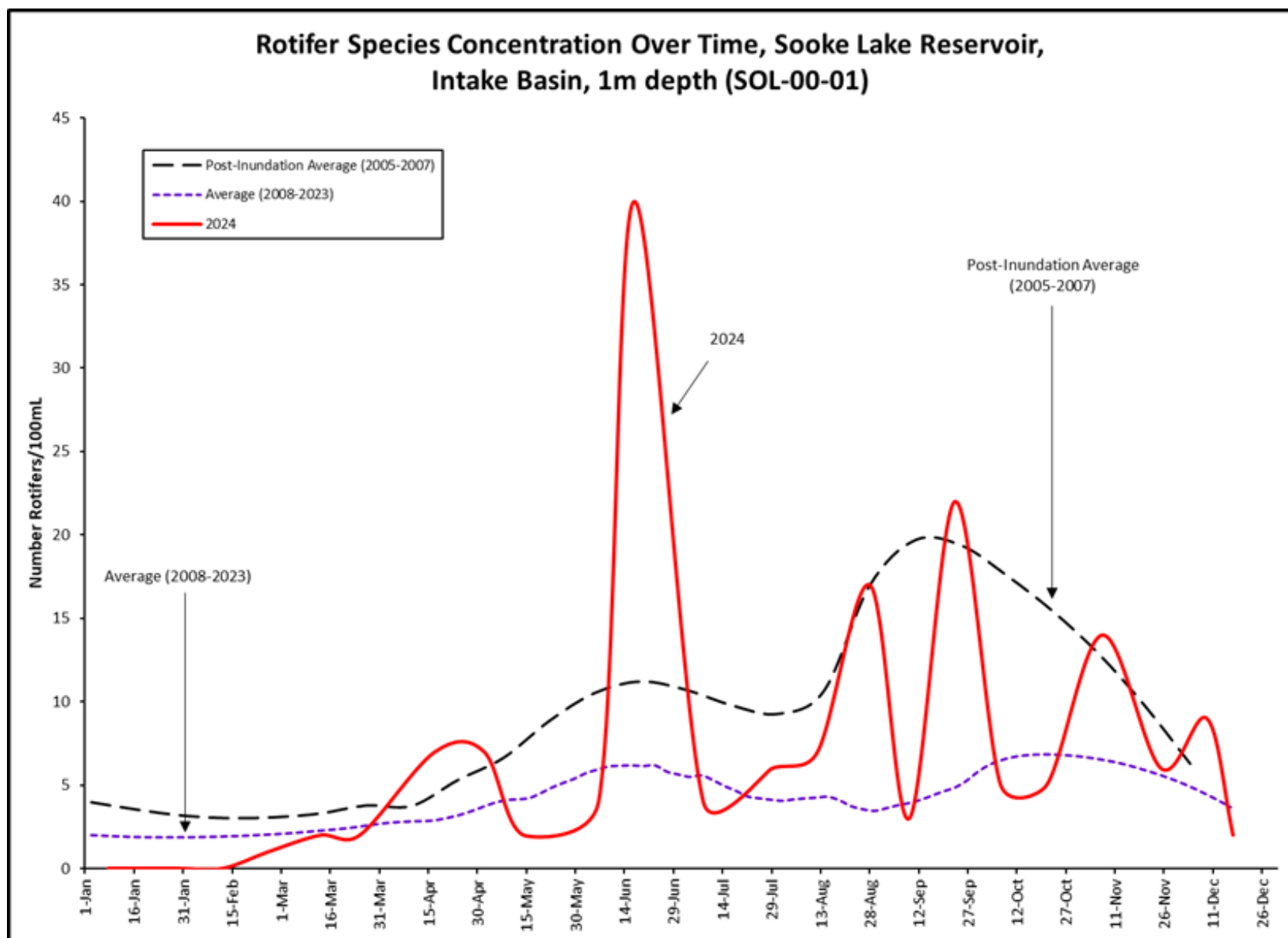


Figure 13 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, Intake Basin, 1 m depth (SOL-00-01)

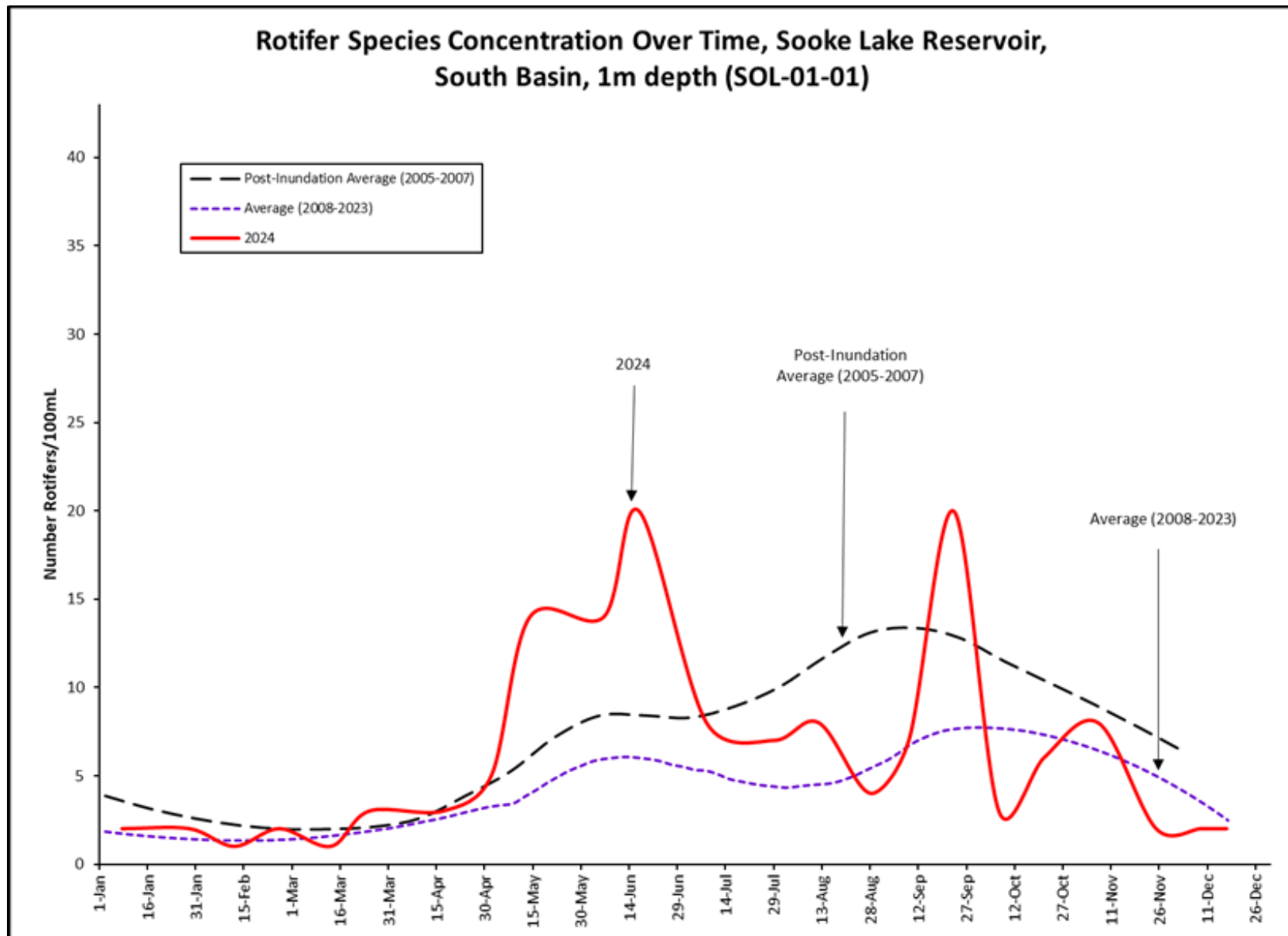


Figure 14 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

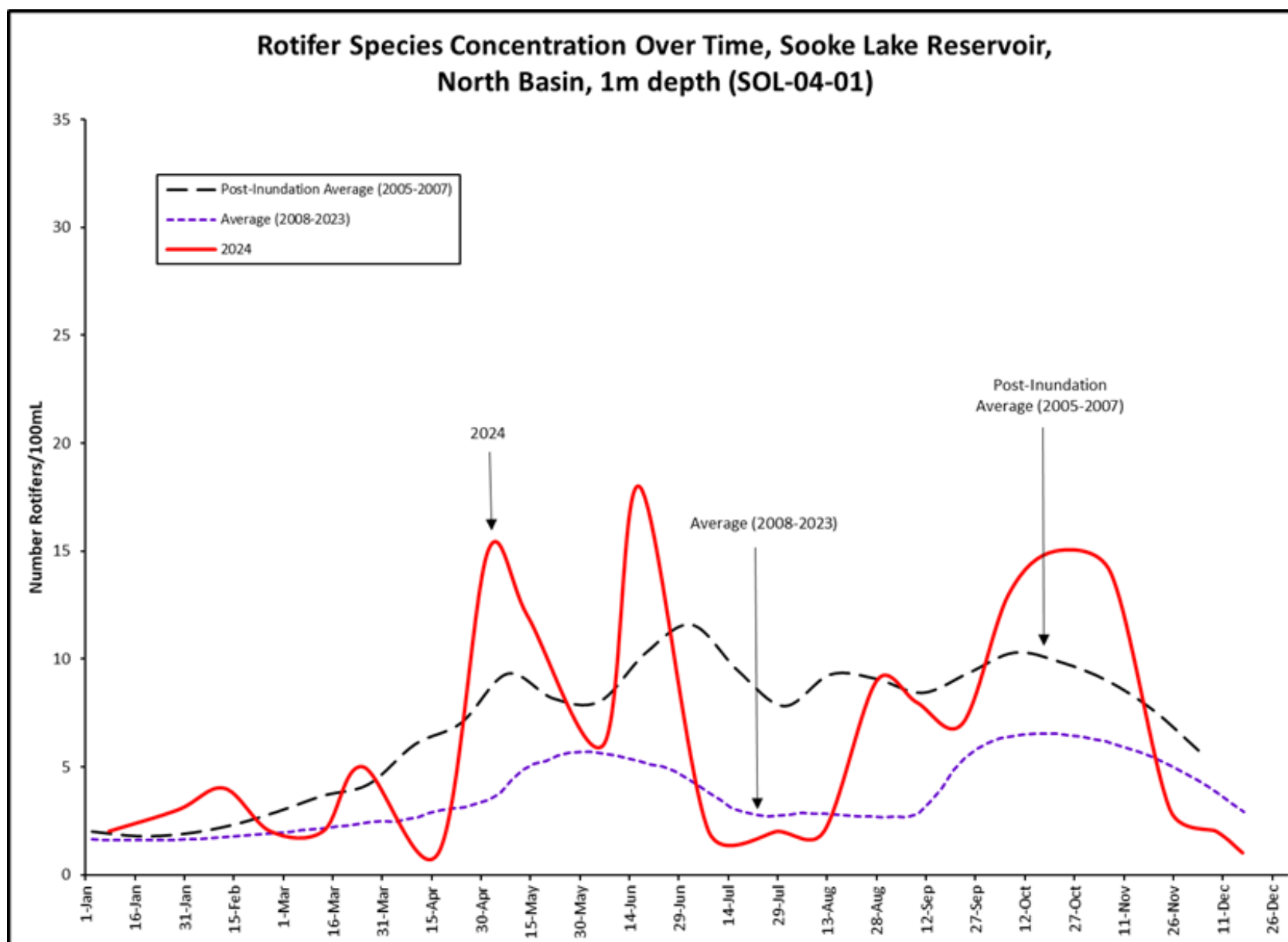


Figure 15 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

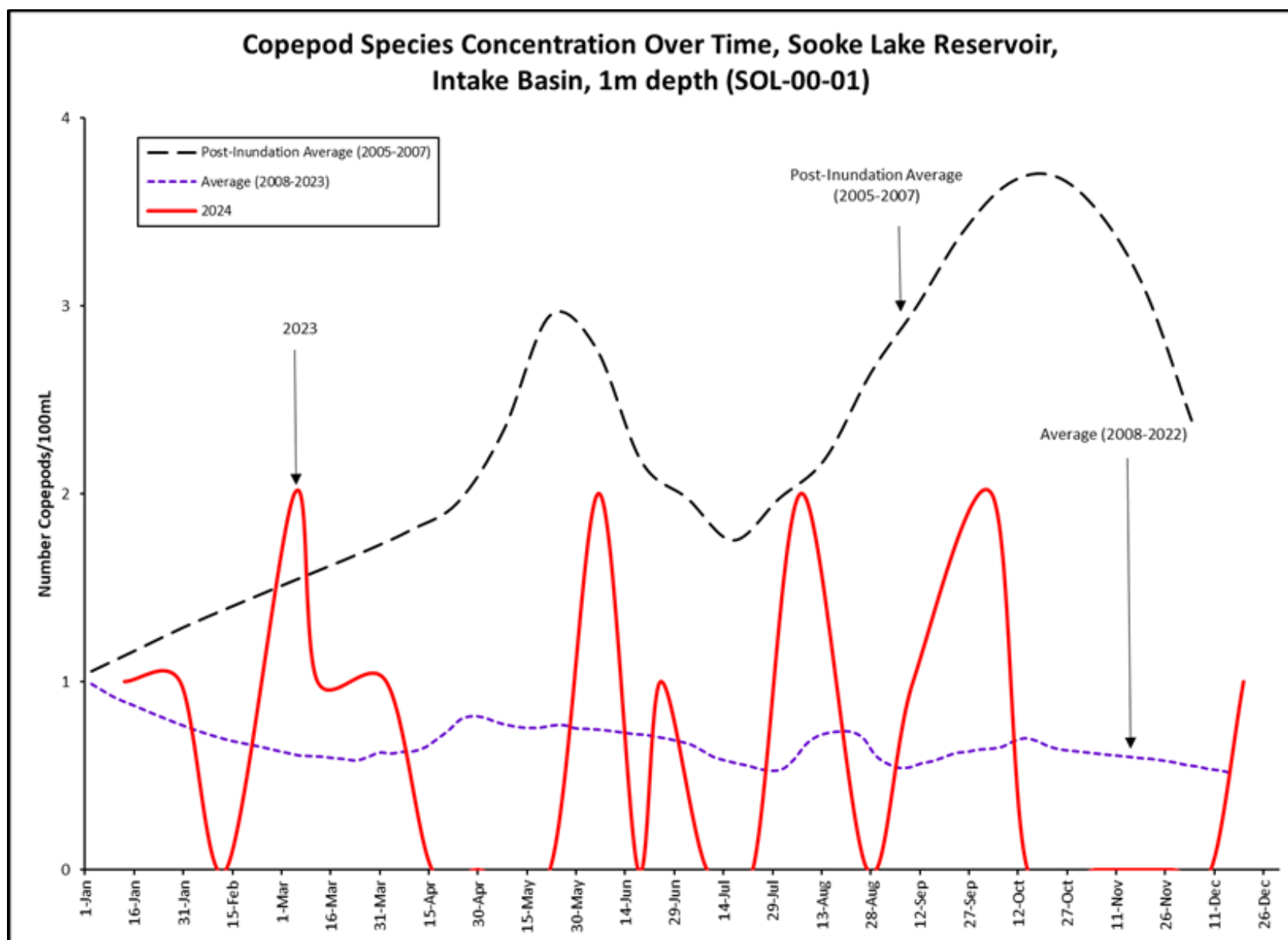


Figure 16 The Total Number of Copepods Over Time, Sooke Lake Reservoir, Intake Basin, 1 m depth (SOL-00-01)

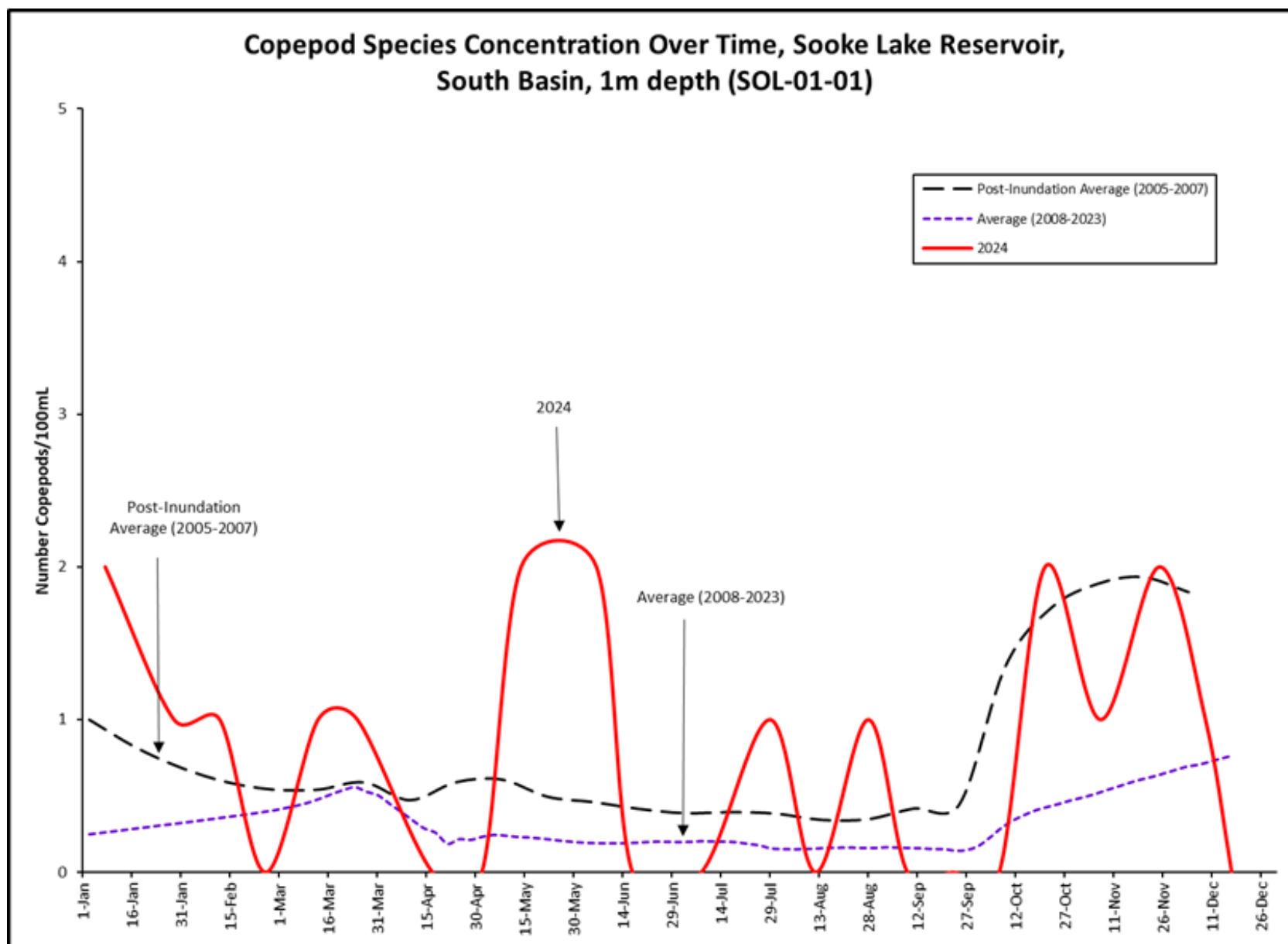


Figure 17 The Total Number of Copepods Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

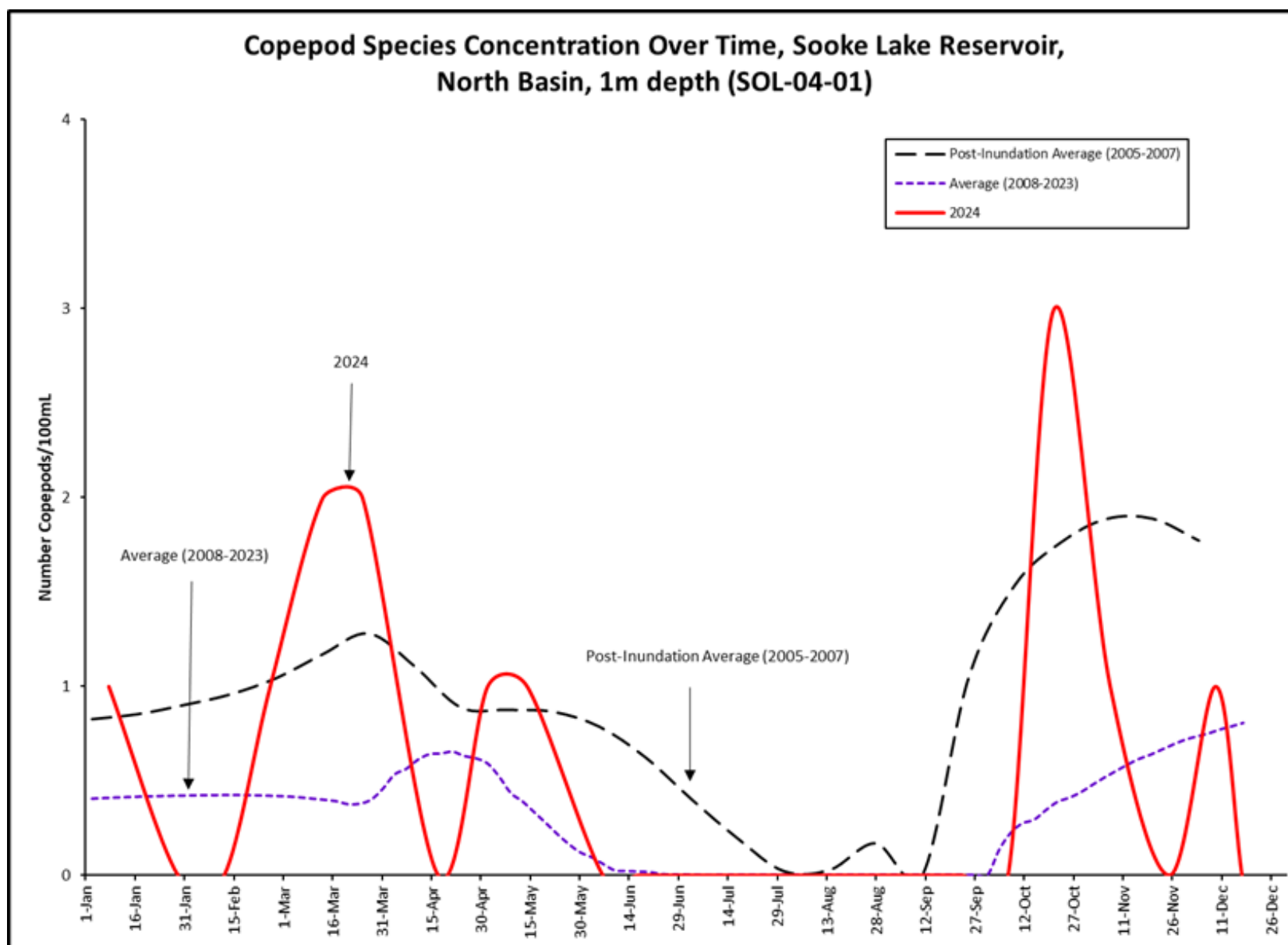


Figure 18 The Total Number of Copepods Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

Stratification: The 2024 thermal stratification pattern in Sooke Lake Reservoir was consistent with historical trends, as stratification occurred during spring, summer and early fall months. This phenomenon happens when the water column is divided into three layers from top to bottom, including: *epilimnion* (atop, warm, circulating and fairly turbulent), *metalimnion* (characterized by a steep thermal gradient or rapid temperature change) and *hypolimnion* (bottom, denser and colder water with little temperature change). The stratification reflects the vertical heat distribution in the water column and, therefore, might have a significant association with the dynamics of plankton communities. The stratified layers can function as barriers for exchanging of heat, chemicals, and nutrients, whereas mixing events could release nutrients from bottom and therefore favour algal growth, as often seen in the fall. CRD staff use a lake profiler with a temperature probe to create a vertical temperature profile once per month at the three usual Sooke Lake sampling stations (Intake Basin, South Basin and North Basin). In 2024, thermistor chains installed in four locations in the lake have provided an even more refined understanding of the reservoir's stratification processes and allowed for a precise determination of when established criteria for stratification were reached in different parts of the reservoir.

The stratification onset and breakdown dates across four distinct lake locations are provided in Table 1 below. It stands out that the reservoir South Basin seems to stratify later than all other more northern parts of the reservoir. In turn, the stratification breaks down earliest in the South Basin. The new data from the profiler seemed to indicate that the area near the intake tower behaves differently from the South Basin overall in that a thermal stratification never really established itself in this location. It appears that the so-called Intake Basin remained fully mixed throughout. This may be due to the submerged old dam (original 1915 dam) acting as a hydraulic barrier in the hypolimnetic zone and the continuous and permanent extraction of the deep cold water from the low-level intake gates prevented a thermal stratification to set in. When the current dam was built in 1970, only one or two small gaps were blasted in the old dam structure to provide some but very limited hydraulic connection below the old dam crest elevation of about 174.50 m above sea level. CRD staff will continue to collect relevant data to study this phenomenon.

While the South Basin began to de-stratify by approximately mid-October and was fully mixed in early November, the North Basin retained its stratification until December 3. These are patterns typical for Sooke Lake Reservoir.

Table 1 2024 Sooke Lake Reservoir Stratification Timing

	Stratification Onset	Stratification Breakdown
Intake Basin*	n/a**	n/a**
South Basin	May 11	October 19
Mid Basin	April 18	October 30
North Basin - Rithet Creek	April 13	December 1
North Basin - Deep Part	April 4	December 3

* Intake Basin is the most southern part of the South Basin, right adjacent to the intake tower

**Based on monthly data sets it appears there was no stratification in this location

Turbidity. The turbidity is continuously measured at both water treatment plants and at the Sooke Lake intake tower, but also sampled and lab tested daily from the Goldstream Water Treatment Plant and weekly at the Sooke River Road Water Treatment Plant. Figure 19 shows that the source water turbidity was generally well under 1 NTU throughout 2024; however, on five early summer days with peak flows due to outdoor water demand, sediments in the raw water mains downstream of the Kapoor Tunnel were dislodged and caused short-period turbidity excursions above 1 NTU (May 31 peak at 3.3 NTU) at the Goldstream Water Treatment Plant. Similar events in the past have usually occurred on Wednesdays or Thursdays from 4 am to approximately 10 am or 11 am during the beginning of the peak summer demand times, only at the Goldstream and not at the Sooke River Road Water Treatment Plant. Supervisory Control and Data Acquisition monitoring data shows that the average daily turbidity was still well below 1 NTU on these turbidity event days. Also, the UV transmittance, a measure of how much ultraviolet light can pass through

the water, was always around 90% during these events and the UV dose at least 60 mJ/cm², ensuring effective UV treatment.

The 2024 turbidity exceedance events coincide with the increase in peak demands at the start of the outdoor watering season. During these periods, high velocity in the two raw water mains (Main #4 and #5) between the Kapoor tunnel and the Goldstream plant stir up settled sediment resulting in increased turbidity. The CRD is working to mitigate these exceedances in two ways:

- **Reducing Peak Demands:** The CRD has implemented changes to the Water Conservation Bylaw and the associated watering rules in 2024 to reduce peak water demands. While this seemed to have limited success in 2024, it is hoped that further refinement and additional public education will eventually reduce extreme demand peaks and therefore the risk of turbidity excursions at the Goldstream plant.
- **Flushing Program:** Annual flushing of Main #4 and #5 in the springtime to remove pipe sediments prior to the high demand watering season. In 2024, flushing could not be completed due to a valve failure. This has subsequently been repaired and flushing was completed in spring of 2025.

The short duration of these turbidity events, low natural pathogen concentrations in the raw water, the fact that these events were not caused by an actual water contamination, and fully functional treatment processes during these events were the main criteria for assessing these events as very low risks to public health.

Overall, Sooke Lake water was very clear in 2024, and turbidity of the raw water was at no time a factor of concern to the drinking water quality in the GVDWS.

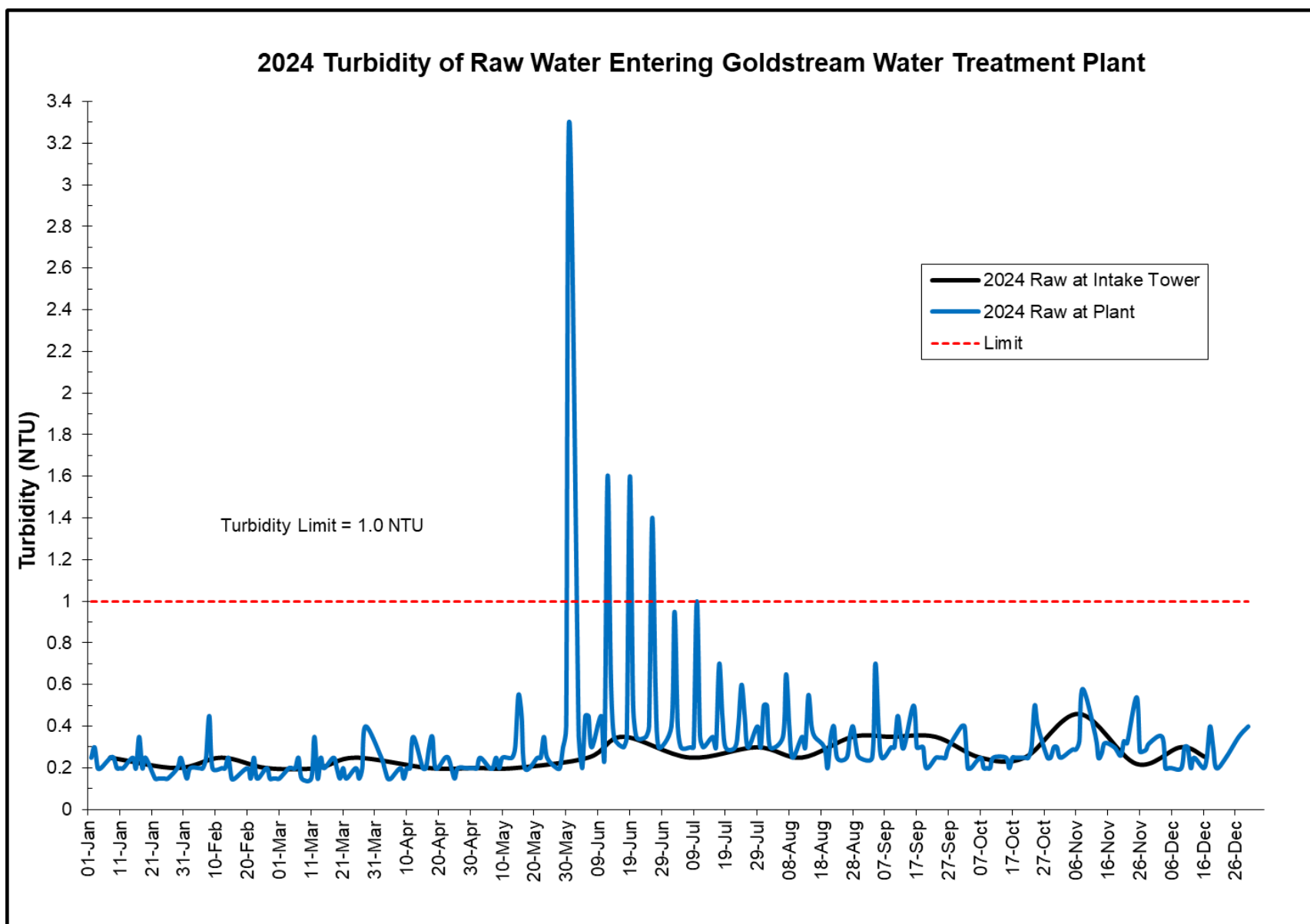


Figure 19 2024 Turbidity of Raw Water Entering Goldstream Water Treatment Plant (from Grab Sampling)

Raw Water Temperature. Cool water is beneficial in a distribution system because it reduces the potential for losses of chlorine residual and regrowth of bacteria. Warm water can also facilitate undesired chemical and biochemical processes during water treatment and in the piping system. It is also unpleasant for customers to consume warm tap water. For these reasons, the Canadian guidelines suggest a temperature limit of 15°C as an aesthetic objective.

In contrast to 2023, the temperature of the water entering the Goldstream Water Treatment Plant in 2024 was notably higher than the long-term average trend line during spring and summer (Figure 20). The trend of warmer water than usual started already in February but was especially pronounced from May to September. Unusually early warm weather conditions resulted in the exceedance of the 15°C aesthetic objective approximately four weeks earlier at the end of June compared with the long-term trend. With about 14 weeks of water temperatures above 15°C, 2024 was likely the year with the longest lasting exceedance of this aesthetic objective since the dam was raised in 2004. The temperature peaked several times at over 20°C throughout July and August. In the fall, the water temperatures were slightly cooler than the long-term trend.

The permanent usage of the lowest intake gates prevented the establishment of a thermal stratification in the Intake Basin and the hydraulic restriction through the old, submerged dam limited the inflow of deep and cool water stored in the hypolimnion of the South Basin. This allowed unusually warm weather conditions to quickly warm the entire water column in the Intake Basin and resulted in the unusually early and high water temperatures during the 2024 summer.

High raw water temperatures during the summer are not a new problem for the CRD. Before the expansion of the Sooke Lake Reservoir in 2004, the water temperature entering the plant reached 15°C as early as mid-June. Warmer and longer summers, as a result of climate change, will likely exacerbate this problem in the future. The cool water stored in the hypolimnion of the much deeper North Basin is currently inaccessible for the CRD with the existing infrastructure. But the CRD Water Supply Master Plan considers a deep North Basin intake in the future which could address this water temperature issue.

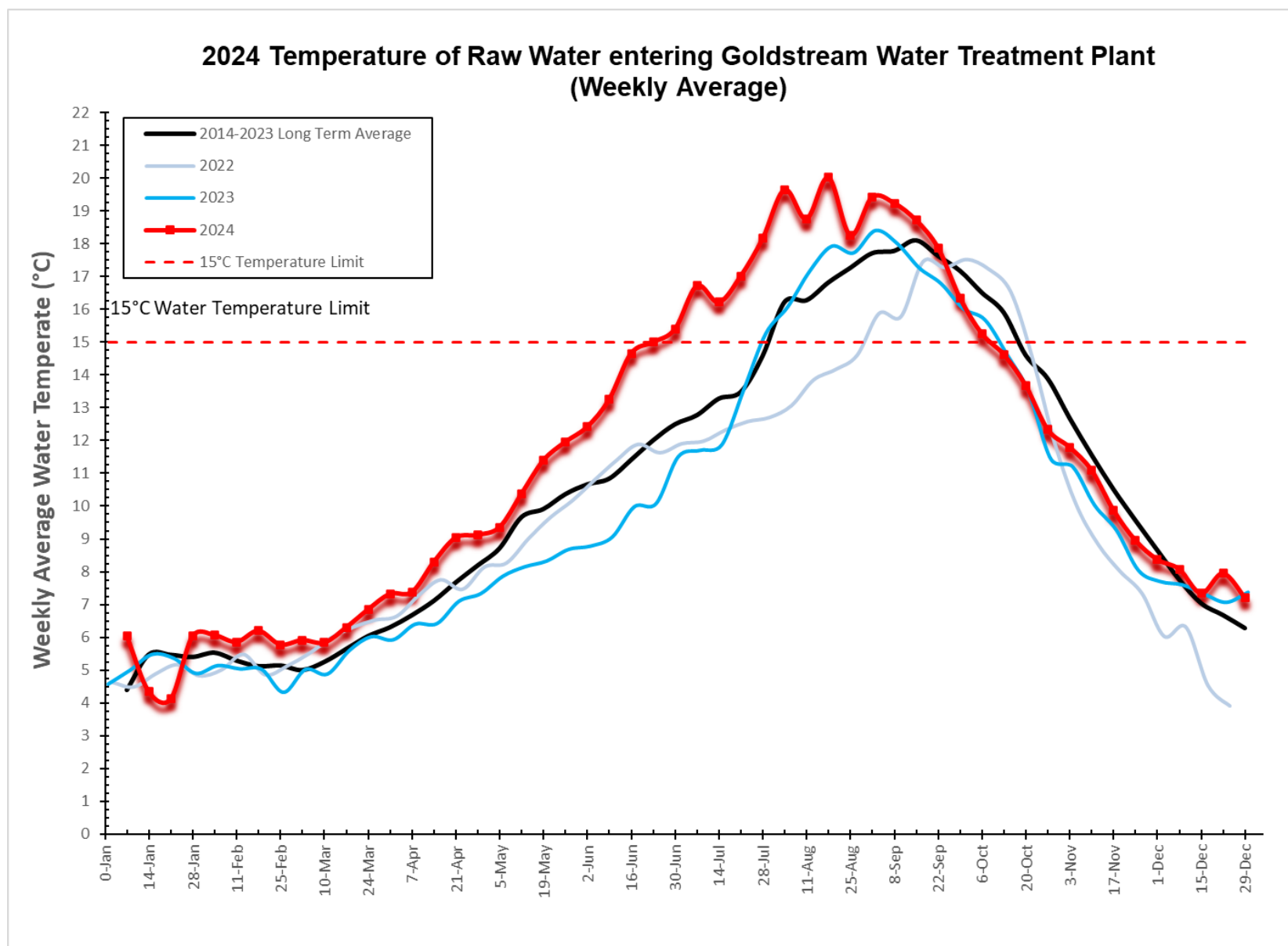


Figure 20 2024 Temperature of Raw Water Entering Goldstream Water Treatment Plant (Weekly Average)

Physical/Chemical Parameters. The raw water entering the Goldstream Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.2
- Median CaCO₃ Hardness: 16.80 mg/L
- Median Alkalinity: 15.9 mg/L
- Median Colour: 6.0 True Colour Units (TCU)
- Median Total Organic Carbon: 1.90 mg/L
- Median Conductivity (25°C): 43.40 µS/cm

The values of the parameters above are consistent with those of previous years.

Inorganics/Metals. Table 1 in Appendix A lists all the inorganic and metal parameters tested in the source water in 2024. No unusual or concerning levels or trends have been detected.

Organics/Radionuclides. Table 1 in Appendix A lists all the organic radiological parameters tested in the source water in 2024. Most of them were not detected or were in insignificant concentrations. These results confirm the high level of protection from any anthropogenic impacts on the supply watershed.

Emerging Contaminants.

- Per- and Polyfluoroalkyl Substances (PFAS): CRD staff have been testing the raw water entering the Goldstream Water Treatment Plant two times per year since December 2020 for PFAS parameters. Since December 2023, all PFAS tests were conducted with a lower lab detection limit of 2 ng/L and following the proposed new Health Canada guidelines and USEPA method 537.1 that includes a total of 28 individual PFAS parameters. Results are compared to a MAC of 30 ng/L for the sum of all these 28 tested parameters. All tests to date yielded non-detectable results. Currently, with a protected watershed, the only pathway for PFAS to enter the source water is via rain and air. As there is currently no industrial PFAS emitter in the region or in British Columbia, this will guarantee very low, or as currently non-detectable, PFAS concentrations in the source water.

Several PFAS tests were also conducted on treated water samples from various distribution systems across Greater Victoria. A few samples recorded results with low concentrations of one particular PFAS compound. The concentrations found were well below the current MAC. CRD staff will conduct more PFAS testing in the distribution systems in 2025.

- Microplastics: The CRD has not been testing the raw water entering the Goldstream Water Treatment Plant for microplastics because there are no commercial laboratories in Canada performing this analysis yet. Also, Health Canada and other regulatory agencies have not yet formulated any health guidelines for microplastic concentrations. The state of California has developed a standard operating procedure that will allow the state to begin issuing laboratory accreditation to qualified labs. CRD staff continue to investigate this emerging issue and will conduct testing when feasible. But comparable to many other anthropogenic contaminants, with a protected watershed with very limited human activity, the only viable pathway for microplastics to enter the source water is via rain and air.

Nutrients. Figure 21 to 24 show the total nitrogen and the total phosphorus concentrations in both the South and North Basins at 1 m depths in Sooke Lake Reservoir. Total phosphorus concentrations at both stations trended near or below the long-term average. In both lake basins, the total phosphorus concentration dropped at times near levels of the detection limit of 1 µg/L, which indicates that biological activity in the lake used up almost all available phosphorus nutrients. The lack of phosphorus in the middle of spring was a result of increased algal activity prior to this period. Substantial rainfall during the first few days of June likely contributed to the slightly higher phosphorus availability in early summer and may have facilitated the higher algal productivity during the summer of 2024. Nitrogen concentrations have been consistent with the long-term average trend in the North Basin but featured two distinct concentration spikes in the South Basin in July and September. These two total nitrogen spikes correlate well with simultaneous algae concentration spikes which indicates that any availability of nutrients immediately drives up

phytoplankton activity in this otherwise nutrient-poor ecosystem. The triggers of the two nitrogen spikes are currently unknown. Because the nitrogen spikes seemed to be limited only to the South Basin and occurred during the same timeframe when the South Basin experienced the unusual and extreme total coliform event, it could be assumed that there is a correlation. CRD staff will monitor these parameters closely and conduct further investigations into possible interactions and correlations. In general, most of the identified nitrogen was present in the form of organic nitrogen and likely remained available for biological uptake due to the growth limitation dictated by the lack of phosphorus. This confirms previous conclusions that Sooke Lake Reservoir is extremely phosphorus limited.

In general, the nutrient concentrations confirm the ultra-oligotrophic status (extremely unproductive, phosphorus limited) of Sooke Lake Reservoir, which is positive for a drinking water supply source.

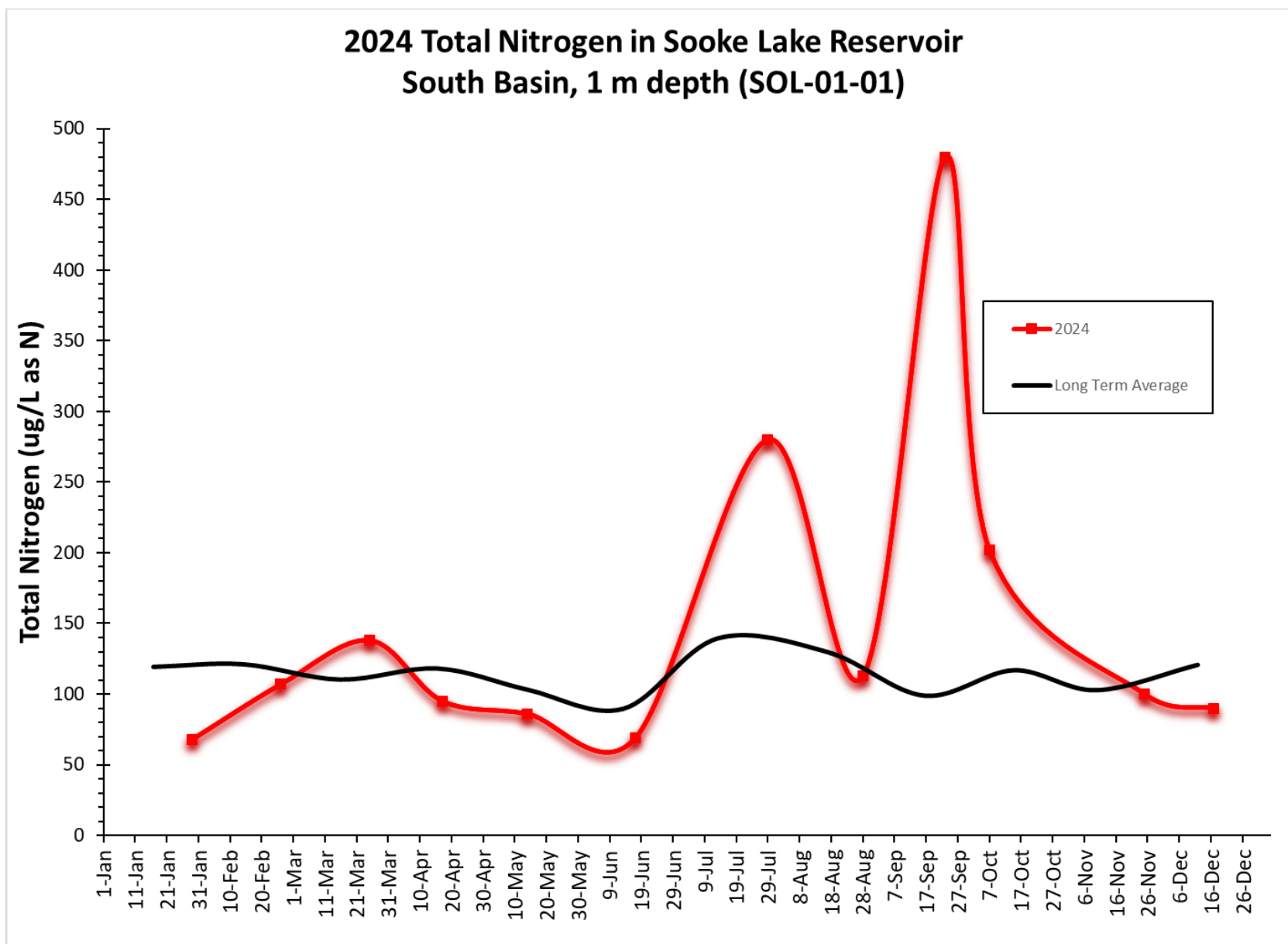


Figure 21 Total Nitrogen in Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

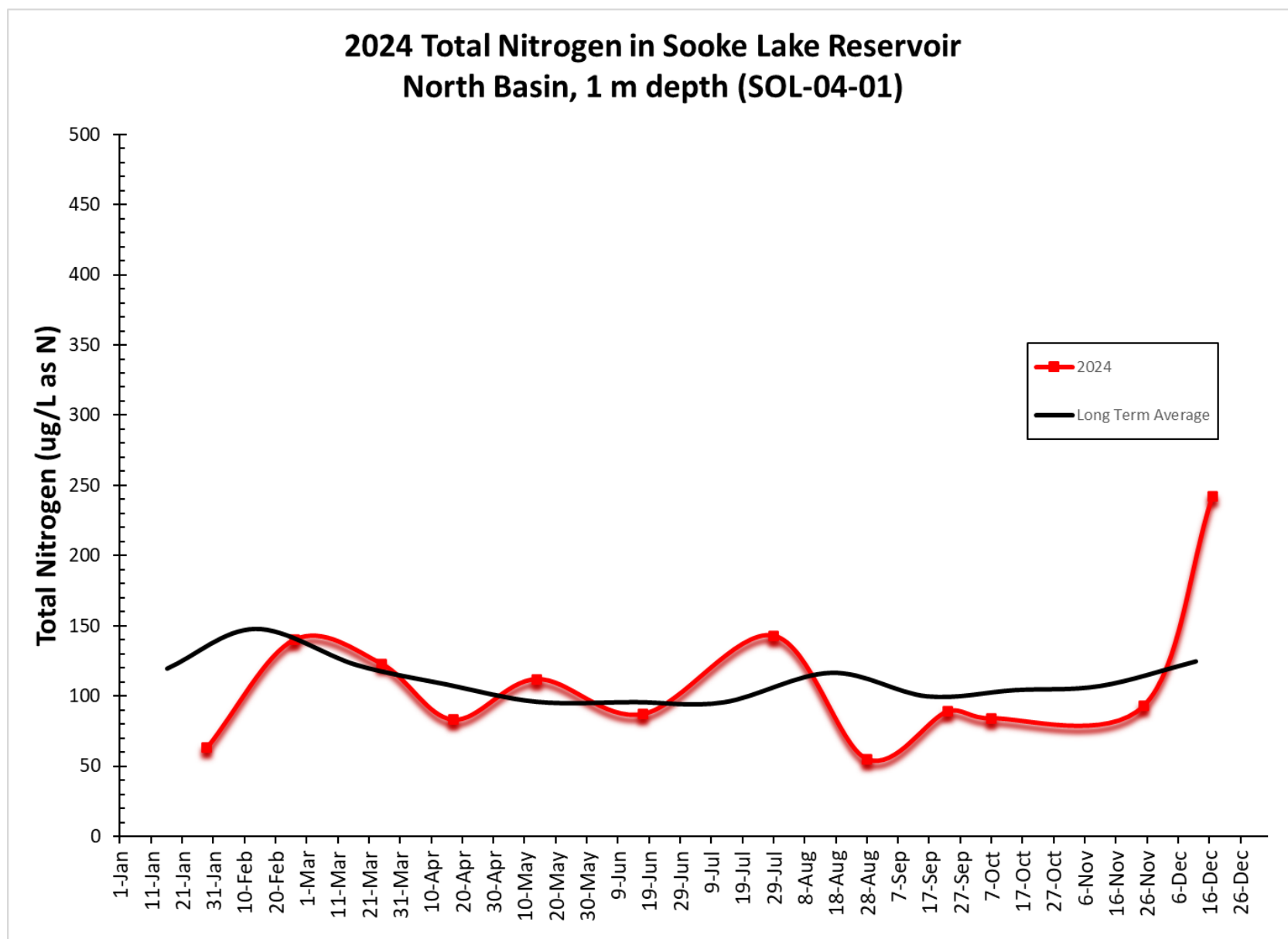


Figure 22 Total Nitrogen in Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

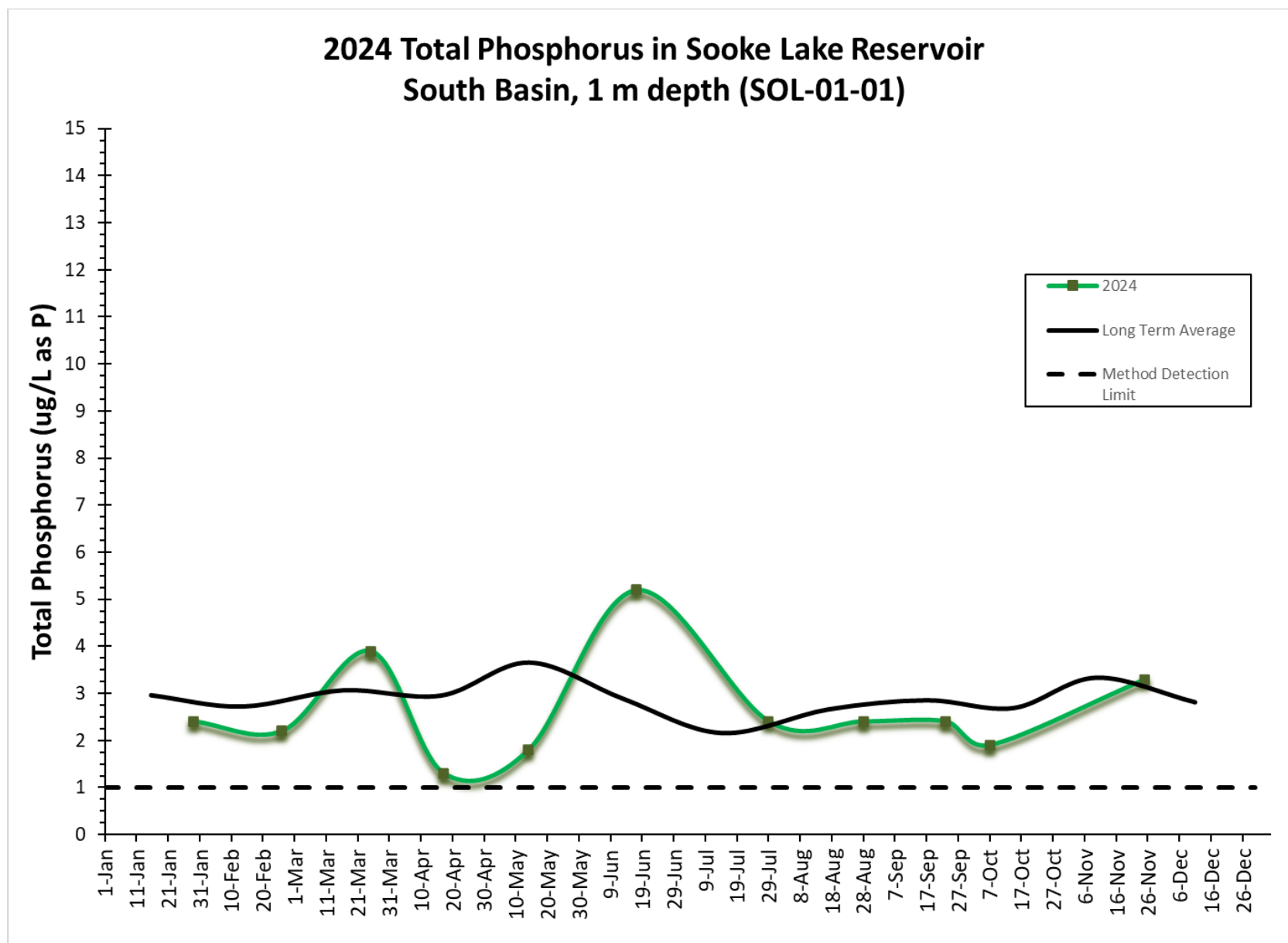


Figure 23 Total Phosphorus in Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

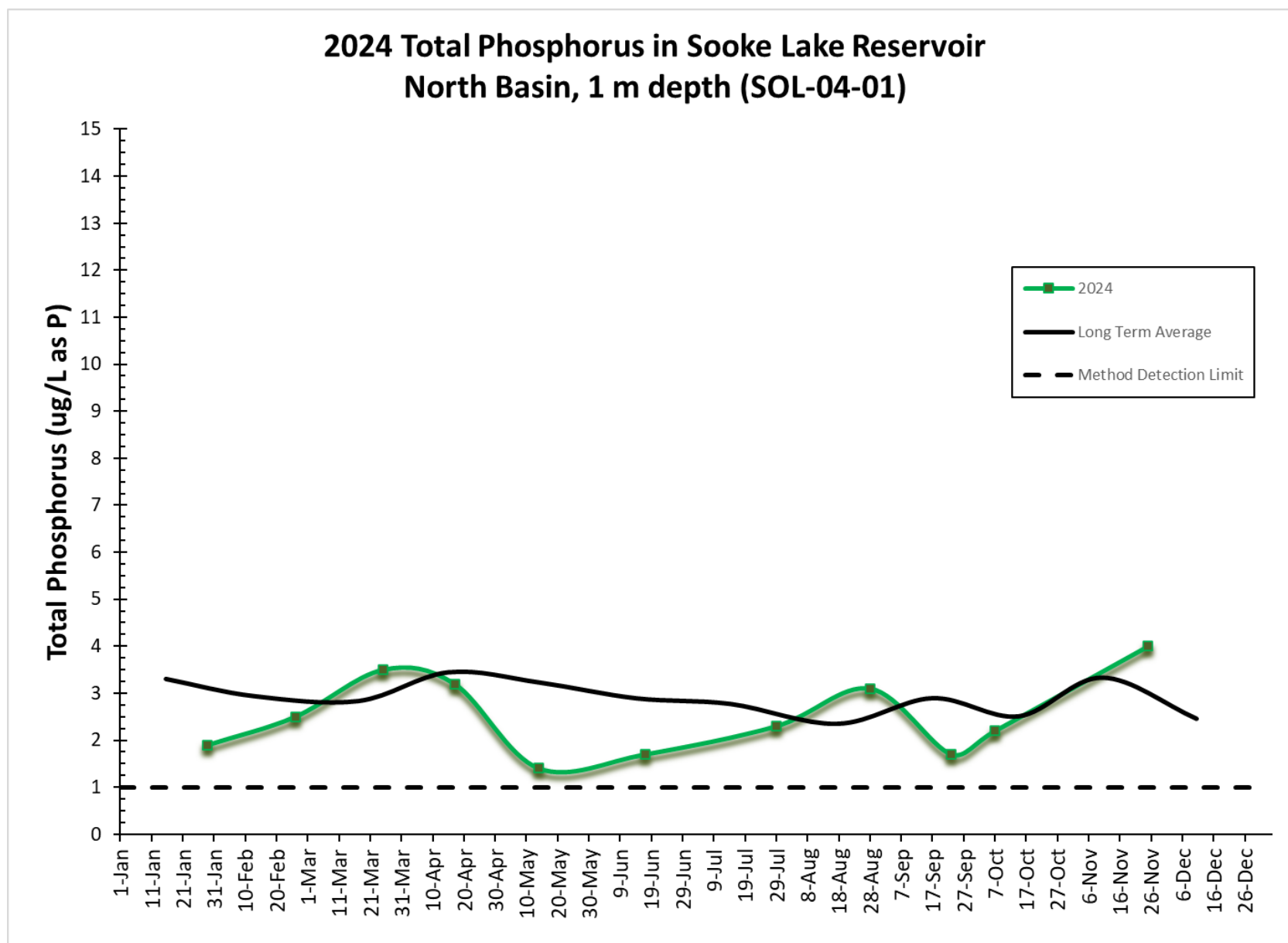


Figure 24 Total Phosphorus in Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

7.2 Treatment Monitoring Results

The following sections summarize the water quality data collected and analyzed to monitor and verify the effectiveness of the disinfection process at both CRD disinfection facilities in the GVDWS.

7.2.1 Goldstream Water Treatment Plant

Bacteriological Results after UV Treatment. Figure 25 shows the results from 243 samples collected and analyzed just downstream of the UV reactors. The results indicate that the UV treatment is capable of greatly reducing the *E.coli* and total coliform concentrations. On ten occasions, mostly during the total coliform event in July and August, and only in low concentrations, have total coliform bacteria been found downstream of the UV treatment. The UV treatment is followed up by chlorination disinfection, designed to kill viruses and bacteria. These multiple disinfection stages are important components of the multi-barrier concept, which eliminates the reliance on only one module to achieve compliance.

Turbidity. The Goldstream Water Treatment Plant experienced five adverse turbidity events in 2024 (see Figure 19).

May 31, 2024: Fridays are not typical watering days. Therefore, this turbidity event was not related to the peak demand issue on watering days. On that day, a grab sample from the treated water turbidity after treatment recorded a turbidity of 3.3 NTU. Investigations into this event were unable to determine a cause, mainly because both online turbidity analyzers at the Goldstream Water Treatment Plant showed no indication of any unusual turbidity trend that day. It was therefore concluded that this was most likely not a real event, but an erroneous result caused by a sampling error.

June 12, 2024: First high-demand watering day (Wednesday) of the year. With peak demand and high flows due to outdoor watering, sediments in Main #4 and #5 between the Kapoor Tunnel and the Goldstream plant were dislodged and caused a short-period turbidity excursion to above 1 NTU (4.5 hours exceedance with a peak of 2.5 NTU according to SCADA). Lab results of the daily grab sample recorded 1.6 NTU.

June 19, 2024: Second high-demand watering day (Wednesday) of the year. With peak demand and high flows due to outdoor watering, sediments in Main #4 and #5 between the Kapoor Tunnel and the Goldstream plant were dislodged and caused a short-period turbidity excursion to above 1 NTU (4.75 hours exceedance with a peak of 2.2 NTU according to SCADA). Lab results of the daily grab sample recorded 1.6 NTU.

June 26, 2024: Third high-demand watering day (Wednesday) of the year. With peak demand and high flows due to outdoor watering, sediments in Main #4 and #5 between the Kapoor Tunnel and the Goldstream plant were dislodged and caused a short-period turbidity excursion to above 1 NTU (3.5 hours exceedance with a peak of 1.9 NTU according to SCADA). Lab results of the daily grab sample recorded 1.4 NTU.

July 3, 2024: Fourth high-demand watering day (Wednesday) of the year. With peak demand and high flows due to outdoor watering, sediments in Main #4 and #5 between the Kapoor Tunnel and the Goldstream plant were dislodged and caused a short-period turbidity excursion to above 1 NTU (2.5 hours in and out of exceedance with a peak of 1.4 NTU according to SCADA). Lab results of the daily grab sample recorded below 1.0 NTU.

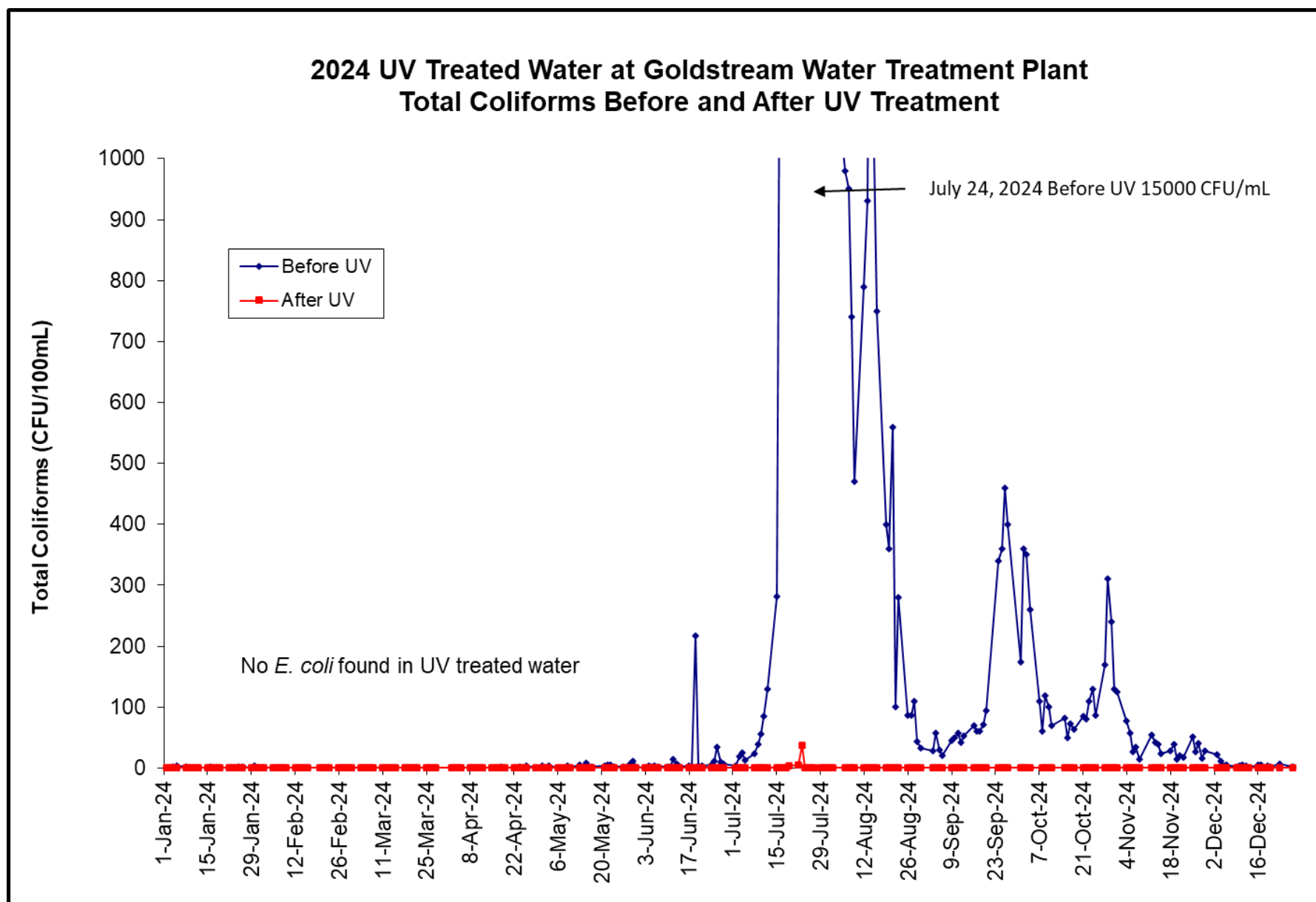


Figure 25 2024 UV Treated Water at Goldstream Water Treatment Plant Total Coliforms Before and After UV Treatment

Treated Water at Both First Customer Sampling Locations. The data collected from the two treated water sampling locations near the first customers below the Goldstream Water Treatment Plant (one at Main #4 and one at Main #5) indicated that the bacteriological quality of the disinfected water was good in all months except in July when approximately 15% of the bacteriological samples from those two locations indicated a presence of total coliform bacteria (Figure 26 and Appendix A, Table 2). This exceedance of the regulatory threshold (10%) in July was caused by the unusual total coliform event in Sooke Lake during which mostly low concentrations of coliform bacteria broke through the disinfection treatment at times of peak demands and flows (watering day mornings). In total, 292 samples were collected from the Main #4 first customer location and 307 samples from the Main #5 first customer location, for a combined total of 599 samples in 2024.

There were only eight total coliform-positive samples from both sampling stations throughout the year. But all adverse results occurred during the peak of the total coliform event at the end of July into early August. Five positive samples registered at the Main #5 first customer sampling station and three at the Main #4 station. Two results had high total coliform concentrations (July 23: 52 CFU/100 mL; July 30: 330 CFU/100 mL). Several of these positive results had a subsequent resample that also tested positive for total coliform bacteria. These are indicators of a limited breakthrough at the Goldstream Water Treatment Plant during the peak of the total coliform event.

Six total coliform-positive results alone in July at both first customer locations led to the exceedance of the 10% threshold for the monthly totals. Two of the positive results were in exceedance of the 10 CFU/100 mL maximum coliform limit, as per *Drinking Water Protection Regulation*. While the regulations require 90% of all monthly samples in the entire system to be free of total coliform bacteria, the CRD monitors the first customer locations based on even more stringent criteria, where water quality is gauged on the bacteriological results of these two first customer locations only.

The total chlorine residual ranged from 1.59-3.14 mg/L (Appendix A, Table 2), with a median value of 2.04 mg/L (Figure 26). During the total coliform event in July and August, the total chlorine dosage was increased to maximum level at the Goldstream plant which resulted in a short-term spike in residuals at both first customer sampling stations of up to 3.14 mg/L.

The treated water leaving the Goldstream Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.6
- Median Alkalinity: 17.90 mg/L
- Median Colour: 4.0 TCU
- Median Total Organic Carbon: 1.90 mg/L
- Median Conductivity (25°C): 55.10 µS/cm
- Median Turbidity: 0.25 NTU

The values of the parameters above are consistent with those of previous years.

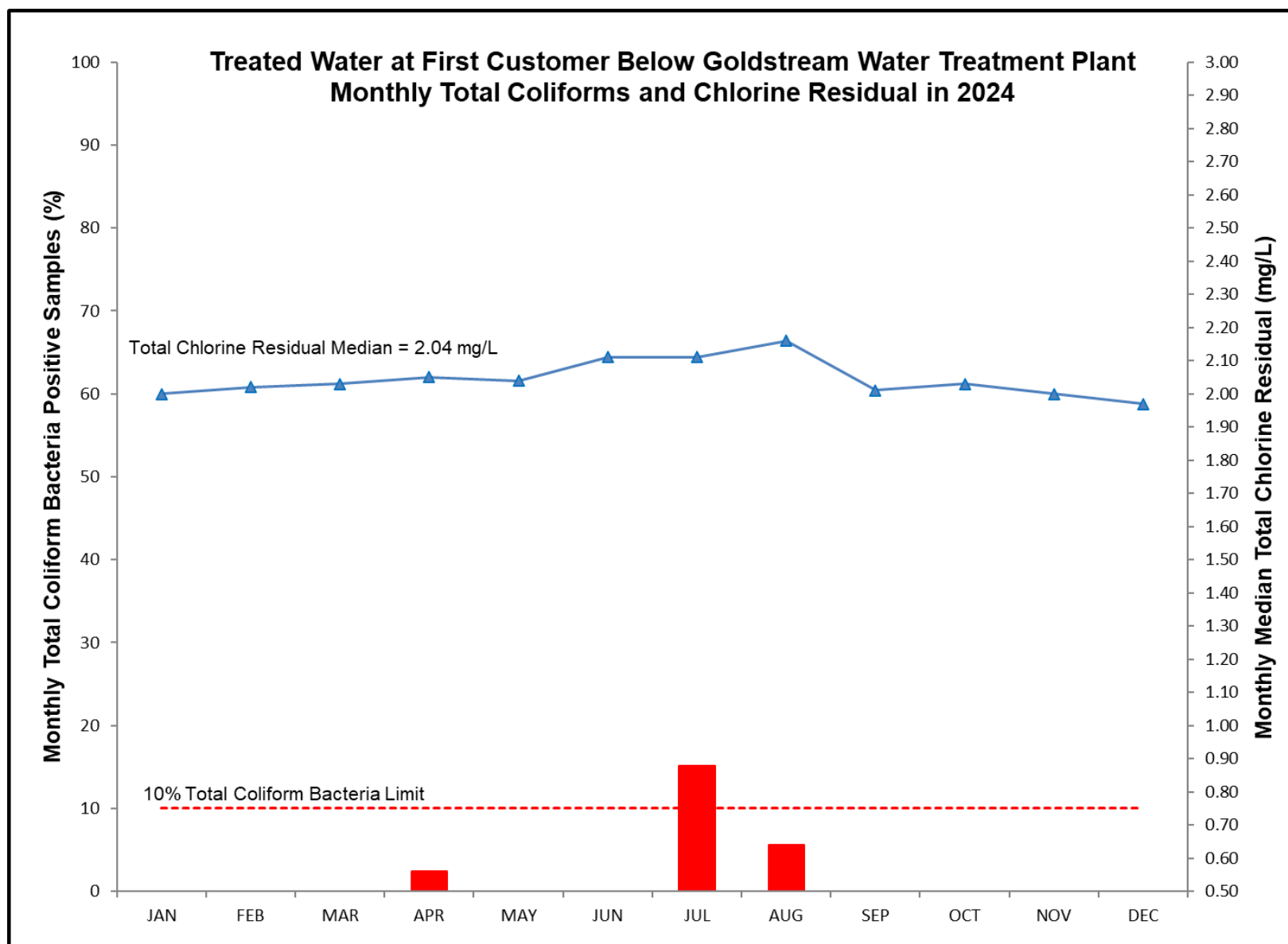


Figure 26 Treated Water at First Customer Locations below Goldstream Water Treatment Plant; Monthly Total Coliforms and Chlorine Residual in 2024

7.2.2 Sooke River Road Water Treatment Plant

Bacteriological Results after UV Treatment. Figure 27 shows the results from 36 samples collected and analyzed just downstream of the UV reactors. The results indicate that the UV treatment is capable of greatly reducing the *E. coli* and total coliform concentrations. There were only two occasions when total coliform bacteria had been found downstream of the UV treatment. This is evidence of a very effective UV disinfection stage at this plant. The UV treatment is followed up by chlorination disinfection, designed to kill viruses and bacteria. These multiple disinfection stages are important components of the multi-barrier concept, which eliminates the reliance on only one module to achieve compliance.

Turbidity. The Sooke River Road Water Treatment Plant experienced one adverse turbidity event in 2024.

September 27: Turbidity suddenly spiked up to 3.6 NTU caused by a break in Main #15 which is detailed in Section 5.2.

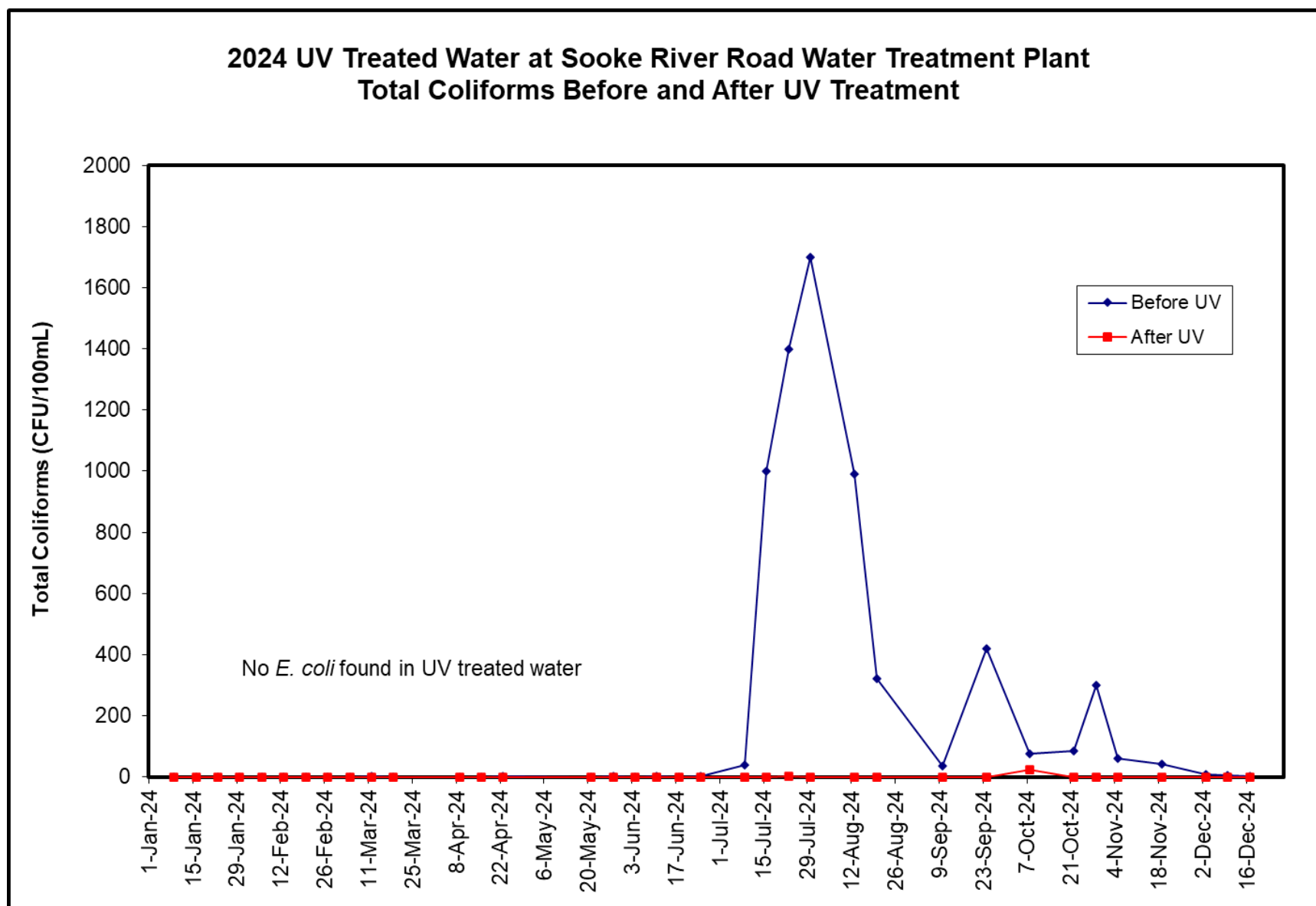


Figure 27 2024 UV Treated Water at Sooke River Road Water Treatment Plant Total Coliforms Before and After UV Treatment

Treated Water at First Customer. The data collected from the treated water sampling location near the first customer below the Sooke River Road Water Treatment Plant indicated that the bacteriological quality of the treated water met Canadian guidelines in all months of 2024 (Figure 28). Even throughout the unusual total coliform event with extremely high bacteria concentrations in the raw water, no bacteria breakthrough was observed at the Sooke plant; in fact, no total coliform bacteria were even registered post UV but before chlorination during this event. This demonstrates the efficacy of the disinfection process at the Sooke plant and highlights the risk posed by the sudden and large flow fluctuations experienced at the Goldstream plant during peak demand times, which showed brief periods of bacterial breakthrough during total coliform event.

No total coliform bacteria were detected in all 44 samples from this sampling station in 2024.

With no total coliform positive results in 2024, this part of the system was in full compliance with the *Drinking Water Protection Regulation*. While the regulations require 90% of all monthly samples in the entire system to be free of total coliform bacteria, the CRD monitors the first customer locations based on even more stringent criteria, where water quality is gauged on the bacteriological results of this first customer locations only.

The total chlorine residual ranged from 1.80-2.30 mg/L with a median value of 2.05 mg/L.

The treated water leaving the Sooke River Road Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.7
- Median Alkalinity: 18.10 mg/L
- Median Colour: 4.0 TCU
- Median Conductivity (25°C): 59.70 µS/cm
- Median Turbidity: 0.25 NTU

The values of the parameters above are consistent with those of previous years.

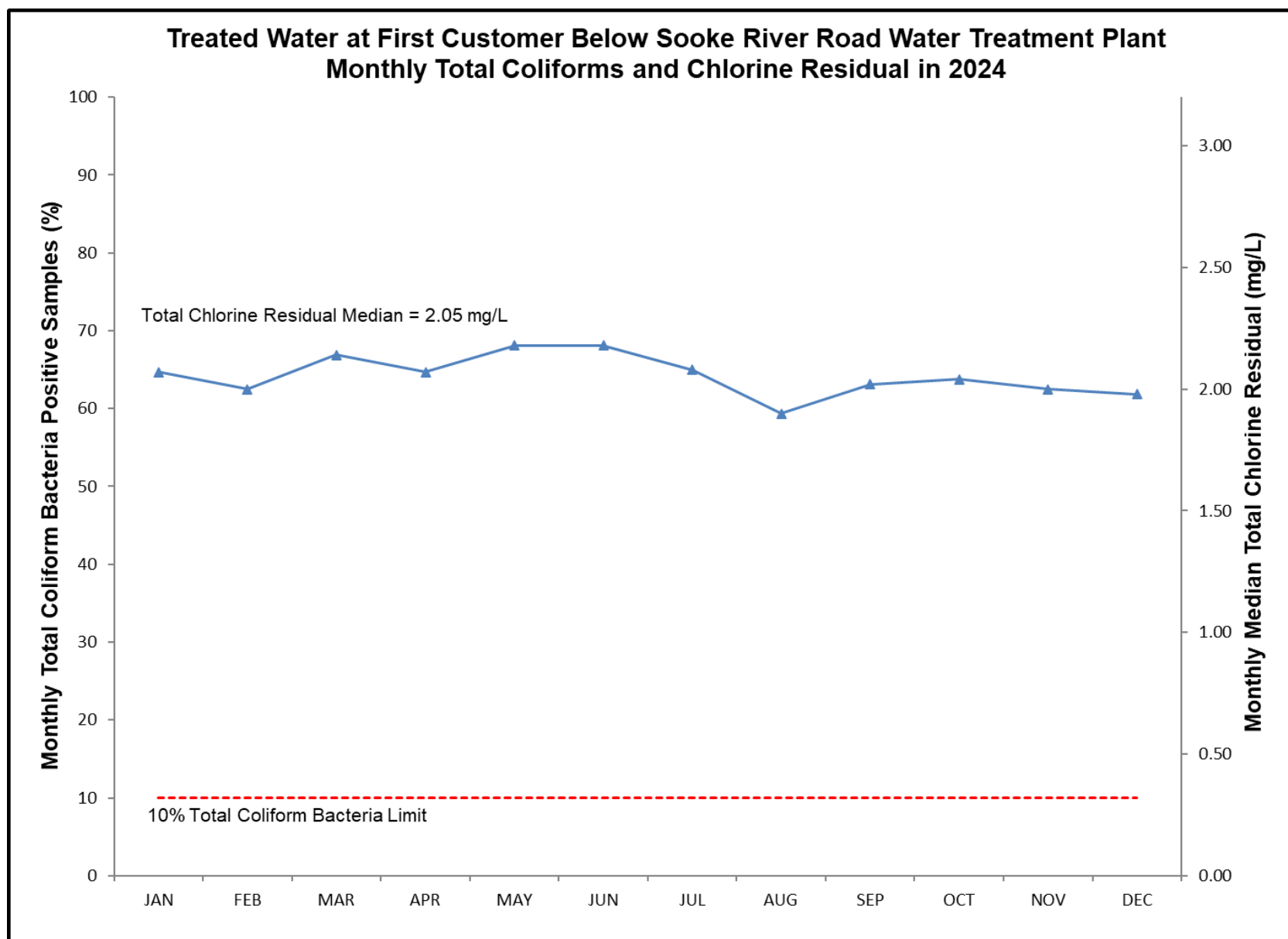


Figure 28 Treated Water at First Customer below Sooke River Road Water Treatment Plant, Monthly Total Coliforms and Chlorine

7.3 CRD Transmission System Results

The following sections summarize the water quality data collected and analyzed for monitoring and verifying the safety of the drinking water conveyed through the transmission system before it reaches the municipal distribution systems. Bacteriological results of the samples collected in the transmission system are considered for compliance purposes. There is no applicable requirement for monthly sample numbers for a transmission system. The number of samples collected monthly from the CRD Transmission System infrastructure was based on a water quality risk assessment and based on professional judgement.

7.3.1 Transmission Mains

The CRD transmission mains were sampled in 19 different sampling locations. The sampling locations for CRD transmission mains also include the Main #4 and Main #5 first customer sampling stations. In 2024, a total of 995 bacteriological and 897 water chemistry samples were collected and analyzed.

Bacteriological Results. Table 2 and Figure 29 show the results from 879 CRD transmission main samples collected and analyzed in 2024. In general, the results indicate that the water delivered through the transmission mains was bacteriologically safe. Outside of July, only a few and only low concentrations of total coliform bacteria were detected. In July, during the unusual total coliform event in Sooke Lake, over 10% of all collected bacteriological samples tested positive for total coliform bacteria. Three samples recorded total coliform concentrations over 10 CFU/100 mL. There were also three consecutive positive samples in July, and one in August. While these results are in exceedance of the regulatory thresholds for a drinking water system, they are over-amplified due to the disproportionate sampling effort during the total coliform event.

There were no *E. coli* or total coliform positive samples in 2024.

Chlorine Residual. Table 2 and Figure 29 demonstrate that the annual median total chlorine concentration in the transmission mains was 1.83 mg/L and, therefore, provided for adequate secondary disinfection within the transmission system and within most areas of the downstream municipal distribution systems.

Water Temperature. The annual median water temperature in the transmission mains was 11.0°C, with monthly medians ranging between 6.0°C (January) and 18.8°C (September) (Table 2). Based on these results, the water temperatures in the transmission mains were slightly higher than in 2023 and previous years.

Table 2 2024 Bacteriological Quality of the CRD Transmission Mains

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E. coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as	Median ° C
JAN	79	0	0	0	0	0	43	0	1.77	6.0
FEB	77	0	0	0	0	0	41	0	1.84	6.3
MAR	72	0	0	0	0	0	42	0	1.8	6.5
APR	76	1	1.3	0	0	0	42	0	1.79	8.3
MAY	75	0	0	0	0	0	46	0	1.76	10.9
JUN	70	0	0	0	0	0	41	3	1.84	13.7
JUL	93	10	10.8	3	3	0	45	0	1.83	16.4
AUG	102	4	3.9	0	1	0	44	0	1.89	18.7
SEP	100	0	0	0	0	0	40	0	1.77	18.8
OCT	112	0	0	0	0	0	46	0	1.83	14.5
NOV	72	0	0	0	0	0	40	0	1.88	11.0
DEC	67	0	0	0	0	0	30	0	1.82	8.2
Total:	995	15	1.5	3	4	0	500	3	1.83	11.0

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. The CRD collected six sets of samples for a disinfection byproduct analysis from a transmission main at Mills Road. The annual average total trihalomethane (TTHM) and annual average total haloacetic acid (HAA) concentrations were 21.2 and 16.7 µg/L, respectively, well below the MAC (TTHM = 100 and HAA = 80 µg/L) stipulated in the Canadian guidelines. These annual averages are in-line with the historical disinfection byproduct concentrations. At the beginning of 2021, the GVDWS was switched to free chlorine for about one month, which resulted in higher disinfection byproduct concentrations (see [2021 Annual Report](#)). While this was a short-term effect and concentrations remained below the health limits, these results have demonstrated the importance of using chloramines for secondary disinfection for the purpose of disinfection byproduct management. This sampling location was also sampled and tested for the disinfection byproduct Nitrosodimethylamine (NDMA), a parameter that is classified as “probably carcinogenic” by Health Canada and associated with disinfection using chloramines. The Canadian guidelines MAC for NDMA is 40 ng/L. All NDMA results at this location were below the detection limit of 1.9 ng/L.

The Mills Road main was the only transmission main where disinfection byproduct samples were collected (bi-monthly). The CRD disinfection byproduct monitoring focuses on locations with higher potential for disinfection byproduct formation, such as system extremities with high water age or areas downstream of re-chlorination stations (free chlorine).

Metals. The CRD Water Quality Monitoring Program for the CRD Transmission System included regular metals tests in four strategic locations: at the beginning of the transmission system at the Main #4 first customer location, and three locations where the water transitions from the CRD Transmission System to a downstream distribution system. In particular, the CRD pays attention to metals commonly found in drinking water, such as iron, manganese, copper and lead. All metal results were below the Canadian guideline.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Physical/Chemical Parameters. The drinking water in the regional transmission mains had the following physical and chemical characteristics:

- Median pH: 7.6
- Median CaCO₃ Hardness: 16.9 mg/L
- Median Alkalinity: 17.90 mg/L
- Median Colour: 4.0 TCU
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 55.10 µS/cm

Compliance Status. The transmission mains of the CRD Transmission System were in compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* **except** for July with 10.8% of the monthly samples with the presence of total coliform bacteria - three samples were in exceedance of 10 CFU/100 mL, consecutive coliform positive results occurred on three occasions, and in August with consecutive coliform positive results on one occasion. These non-compliances were directly related to the total coliform event in July and August (see Section 5.2).

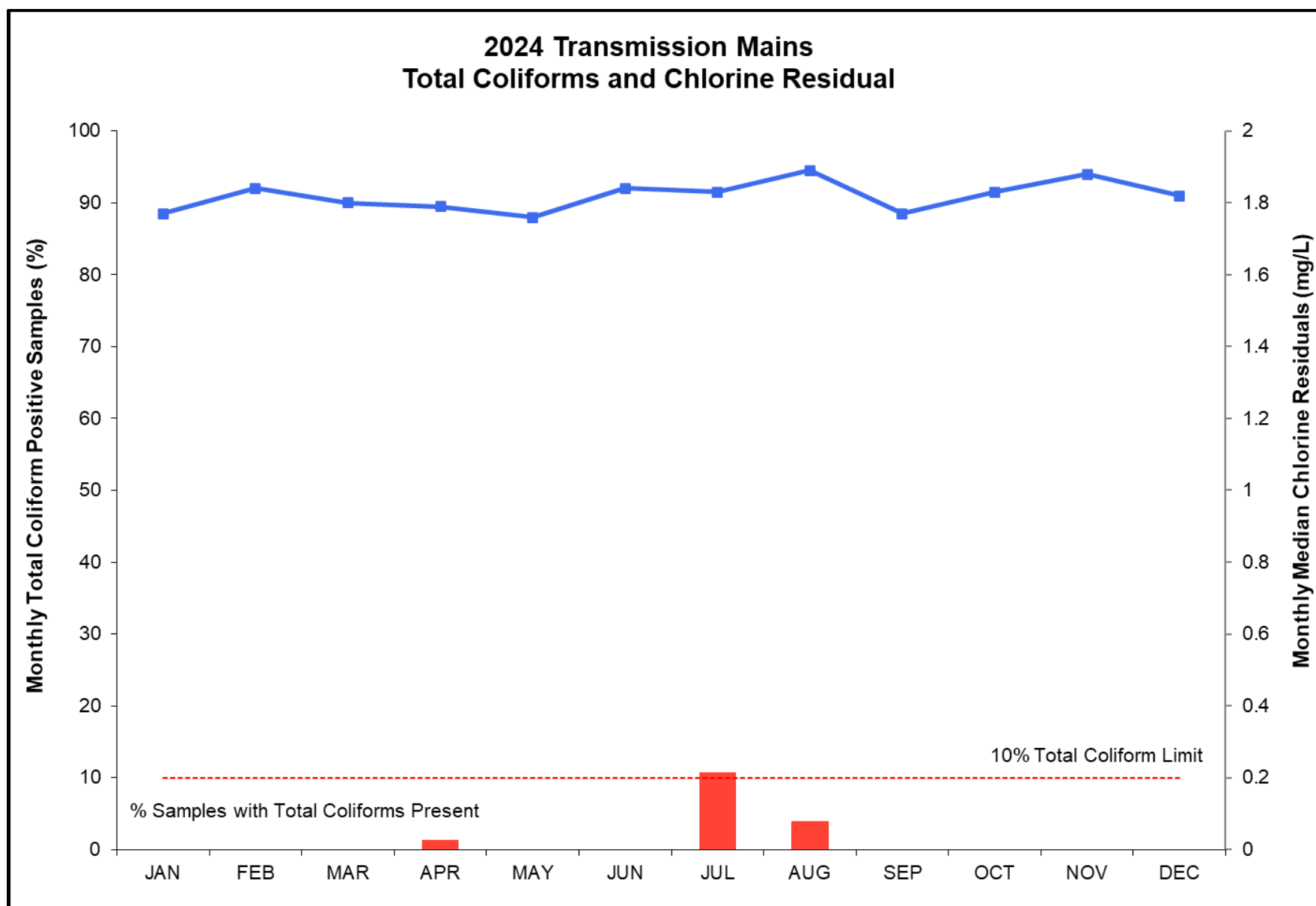


Figure 29 Transmission Mains Total Coliforms and Chlorine Residual in 2024

7.3.2 Supply Storage Reservoirs

The CRD supply storage reservoirs were sampled in seven different sampling locations. In 2024, a total of 182 bacteriological and 82 water chemistry samples were collected and analyzed.

Bacteriological Results. Typically, storage reservoirs are vulnerable to bacteria regrowth and potential contamination, due to the long retention times and generally lower chlorine residual concentrations. Because of the higher risks to water quality in reservoirs compared to pipes, the CRD typically monitors the water quality closely in all of its storage reservoirs and follows a rigorous maintenance schedule at these facilities.

Figure 29 and Table 3 show the 2024 results from the samples on the CRD supply storage reservoirs that are considered part of the CRD Transmission System. No total coliform bacteria were found in any sample from the supply storage reservoirs in 2024. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months.

There were no *E. coli* or total coliform positive samples in 2024.

Table 3 2024 Bacteriological Quality of Storage Reservoirs

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E. coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10	Samples > 0	Samples Collected	Samples > 1 NTU	Median mg/L as CL ₂	Median °C
JAN	14	0	0	0	0	0	1	0	1.67	7.3
FEB	13	0	0	0	0	0	1	0	1.67	6.8
MAR	14	0	0	0	0	0	1	0	1.66	7.4
APR	15	0	0	0	0	0	1	0	1.61	9.1
MAY	16	0	0	0	0	0	1	0	1.57	11.5
JUN	16	0	0	0	0	0	1	0	1.5	14.3
JUL	18	0	0	0	0	0	1	0	1.54	16.7
AUG	19	0	0	0	0	0	1	0	1.72	18.7
SEP	16	0	0	0	0	0	1	0	1.49	18.7
OCT	14	0	0	0	0	0	1	0	1.22	15.4
NOV	11	0	0	0	0	0	1	0	1.55	12.4
DEC	16	0	0	0	0	0	1	0	1.48	8.9
Total:	182	0	0.0	0	0	0	12	0	1.56	12.0

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*; Cl₂ = chlorine, NTU = Nephelometric turbidity unit
 > = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Chlorine Residual. Table 3 and Figure 30 indicate that the median total chlorine concentration in the storage reservoirs ranged from 1.22-1.67 mg/L, with an annual median total chlorine concentration of 1.56 mg/L. These results demonstrate adequate secondary disinfection within the Supply Storage Reservoirs.

Water Temperature. The annual median water temperature in the storage reservoirs was 10.3°C, with monthly medians ranging between 6.8°C (February) and 18.7°C (July and August) (Table 3).

Disinfection Byproducts. The CRD collected a total of 30 samples for a disinfection byproduct analysis. The samples were collected at two storage reservoirs in the CRD Transmission System (Cloake Hill and Upper Dean Park reservoirs). Upstream of both locations, the CRD maintains a re-chlorination station that can boost free chlorine concentrations, if the residuals fall below 0.2 mg/L. While this procedure is rarely exercised, any free chlorine concentration can lead to an increase in disinfection byproduct formation. The annual average TTHM and HAA concentrations were 21.2 and 16.0 µg/L at Cloake Hill and 18.2 and 5.3 µg/L at Upper Dean, respectively, well below the MAC (TTHM = 100 and HAA = 80 µg/L) stipulated in the Canadian guidelines. These annual averages are in-line with historical disinfection byproduct

concentrations. At the beginning of 2021, the GVDWS was switched to free chlorine for about one month, which resulted in higher disinfection byproduct concentrations (see [2021 Annual Report](#)). While this was a short-term effect and concentrations remained below the health limits, these results have demonstrated the importance of using chloramines for secondary disinfection for the purpose of disinfection byproduct management. In all samples, the NDMA concentrations at both locations were below the detection limit (1.9 ng/L) and therefore well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the regional supply storage reservoirs had the following physical and chemical characteristics in 2024:

- Median pH: 7.8
- Median Alkalinity: 17.6 mg/L
- Median Colour: 4.0 TCU
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 56.40 µS/cm

Metals. No data for 2024.

Nitrification. Nitrification occurs in many chloraminated water systems. It is a complex bacteriological process in which ammonia is oxidized initially to nitrite and then to nitrate and is caused by two groups of bacteria that have low growth rates relative to other bacteria. Water temperature seems to be a critical factor for nitrification in distribution systems, as it has been almost exclusively associated with warm water temperatures. Nitrification is also associated with high water age (reservoirs, dead ends, low-flow pipes) and with sediment biofilms.

Monitoring for nitrifying bacteria directly is inefficient; however, the extent of nitrification in the distribution system can be monitored by measuring chlorine residuals and nitrite (also nitrate, free ammonia). When the chlorine residuals drop (in the absence of any pipe break or plant disinfection failure), accompanied by increases of nitrite, then nitrification is occurring. Since Greater Victoria's source water has no background nitrite, the presence of nitrite in the distribution system is the best indicator of nitrification.

The control of nitrification in a chloraminated distribution system involves limiting the excess free ammonia leaving the disinfection plant, maintaining an adequate chlorine residual throughout the distribution system, minimizing water age in storage facilities and in the low-flow areas of the distribution system, and maintaining annual flushing routines to limit the accumulation of sediment and biofilm in the distribution system piping. CRD Water Quality Operations staff, in conjunction with Infrastructure & Water Services Department Operations and Engineering staff, are undertaking projects to optimize the reservoir and pipe-cleaning schedules to address nitrification and other water quality affecting processes throughout the distribution systems. The new hypochlorite plant at the Goldstream Water Treatment Plant has improved the chemical dosing system and reduced the potential for free ammonia in the treated water.

CRD staff will be completing a nitrification study in the GVDWS in 2025 to determine the extent of occurrence, possible water quality or operational impacts and potential mitigation.

Compliance Status. The CRD-owned and operated supply storage reservoirs in the CRD Transmission System were in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

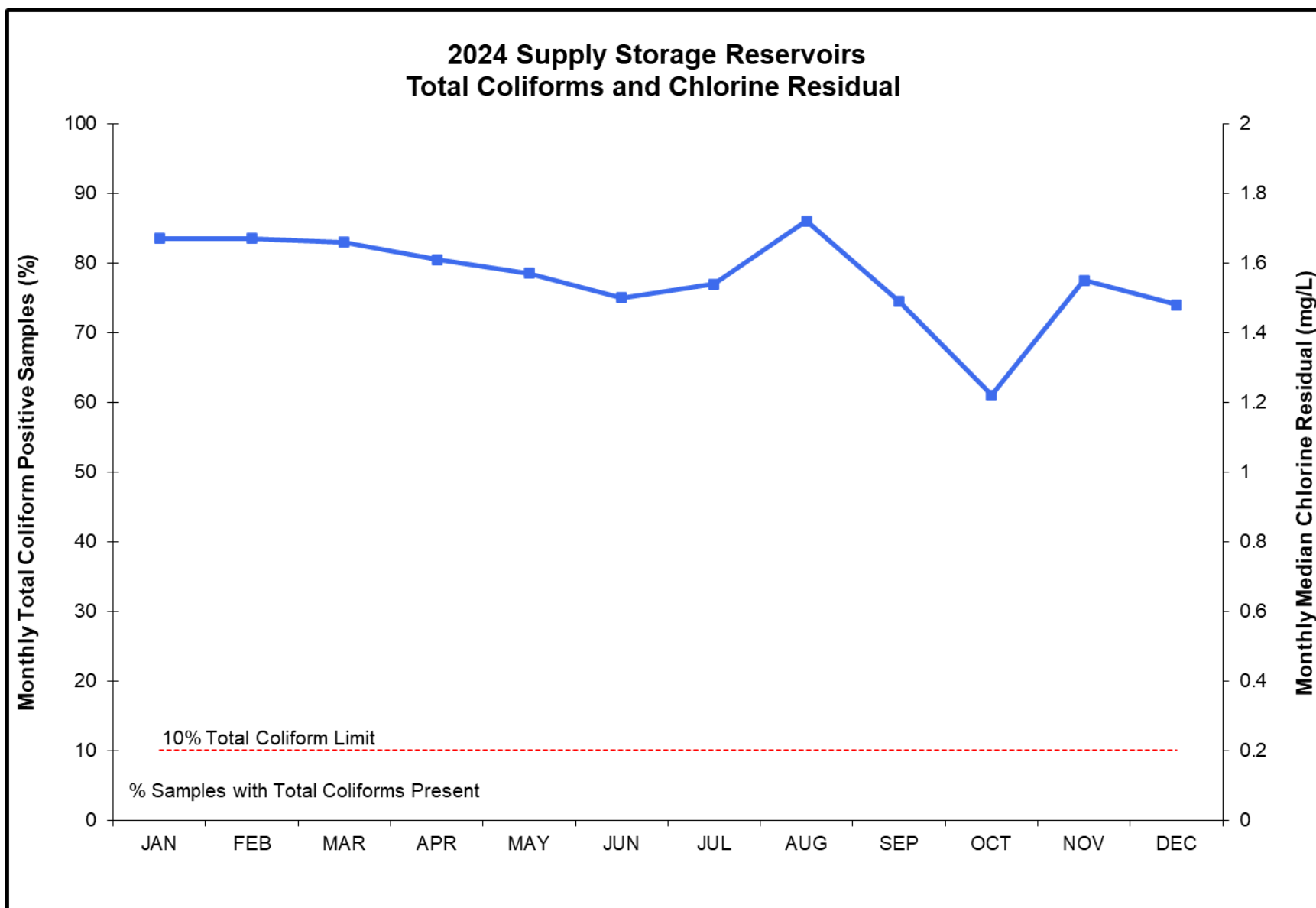


Figure 30 Supply Storage Reservoirs Total Coliforms and Chlorine Residual in 2024

7.4 Distribution System Results

The following sections summarize the water quality monitoring results within the various distribution systems and indicate the compliance status of each system.

7.4.1 Juan de Fuca Water Distribution System – Westshore Municipalities (Owned and Operated by the CRD)

In 2024, 37 distribution system sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Westshore system.

Sample Collection. In 2024, 1,115 bacteriological and 277 water chemistry samples were collected from the Juan de Fuca Water Distribution System (Table 4). Based on current population data for the Westshore municipalities, 82 samples are required for bacteria testing each month. Table 4 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Total coliforms were found in 15 samples throughout the year. All resamples, immediately collected after a total coliform positive result, were free of total coliform bacteria. One sample exceeded the 10 CFU/100 mL total coliform concentration threshold (August 6). A resample the following day was free of total coliforms but operators were instructed to spot-flush this dead end pipe section weekly to lower water age. This system complied with the 10% total coliform-positive limit for all months of the year during 2024. The annual total coliform positive percentage was well below the 10% limit at 1.3% (Table 4).

There were no *E. coli*-positive samples in 2024.

Table 4 2024 Bacteriological Quality of the Juan de Fuca Distribution System – Westshore Municipalities (CRD)

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E. coli</i> CFU/100mL	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	88	0	0	0	0	0	5	0	1.61	7.0
FEB	97	0	0	0	0	0	5	0	1.55	7.3
MAR	85	0	0	0	0	0	5	0	1.44	8.0
APR	99	0	0	0	0	0	5	0	1.34	9.7
MAY	95	0	0	0	0	0	5	0	1.31	12.2
JUN	84	0	0	0	0	0	5	0	1.21	14.7
JUL	107	4	3.7	0	0	0	6	0	1.06	17.4
AUG	89	5	5.6	0	1	0	4	0	1.26	19.1
SEP	87	1	1.1	0	0	0	4	0	1.32	18.6
OCT	110	2	1.8	0	0	0	4	0	1.38	15.0
NOV	86	2	2.3	0	0	0	8	0	1.41	11.0
DEC	88	1	1.1	0	0	0	5	0	1.45	8.7
Total:	1115	15	1.3	0	1	0	61	0	1.36	11.6

Notes:

TC = Total Coliforms, *E. coli* = Escherichia coli, Cl₂ = chlorine, NTU = Nephelometric turbidity unit

> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Chlorine Residual. The annual median chlorine residual in the Westshore municipalities of the Juan de Fuca Water Distribution System was 1.36 mg/L (Table 4). The lowest monthly median was in July (1.06 mg/L) and the maximum monthly median was in January (1.61 mg/L) (Figure 31, Table 4).

Water Temperature. The annual median water temperature in the Juan de Fuca Water Distribution System was 11.6°C, with monthly medians ranging between 7.0°C (January) and 19.1°C (August) (Table 4).

Disinfection Byproducts. One location in the Juan de Fuca Water Distribution System had 18 samples collected for disinfection byproducts. The annual average TTHM and haloacetic acid (HAA5) concentrations in six samples each were 14.7 µg/L and 8.9 µg/L, respectively, far below the Canadian guideline MAC (TTHM = 100; HAA5 = 80). In three of six samples, the NDMA concentrations were below the detection limit of 1.9 ng/L. Three samples registered low NDMA concentrations of up to 2.8 ng/L, well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the Westshore municipalities of the Juan de Fuca Water Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.5
- Median CaCO₃ Hardness: 17.2 mg/L
- Median Alkalinity: 17.60 mg/L
- Median Colour: 5.0 TCU
- Median Conductivity (25°C): 57.40 µS/cm
- Median Turbidity: 0.25 NTU

No regular grab sample from this distribution system exhibited an elevated turbidity of >1 NTU all year (Table 4). This indicates good drinking water quality in general.

Metals. One sampling station in this system was sampled for metals bi-monthly. All metals were below the Canadian guideline limits.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Westshore municipalities of the Juan de Fuca Water Distribution System were in compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024 except for August 6, with one total coliform-positive result in exceedance of 10 CFU/100 mL. In this singular case, an immediate resample confirmed the safety of the drinking water.

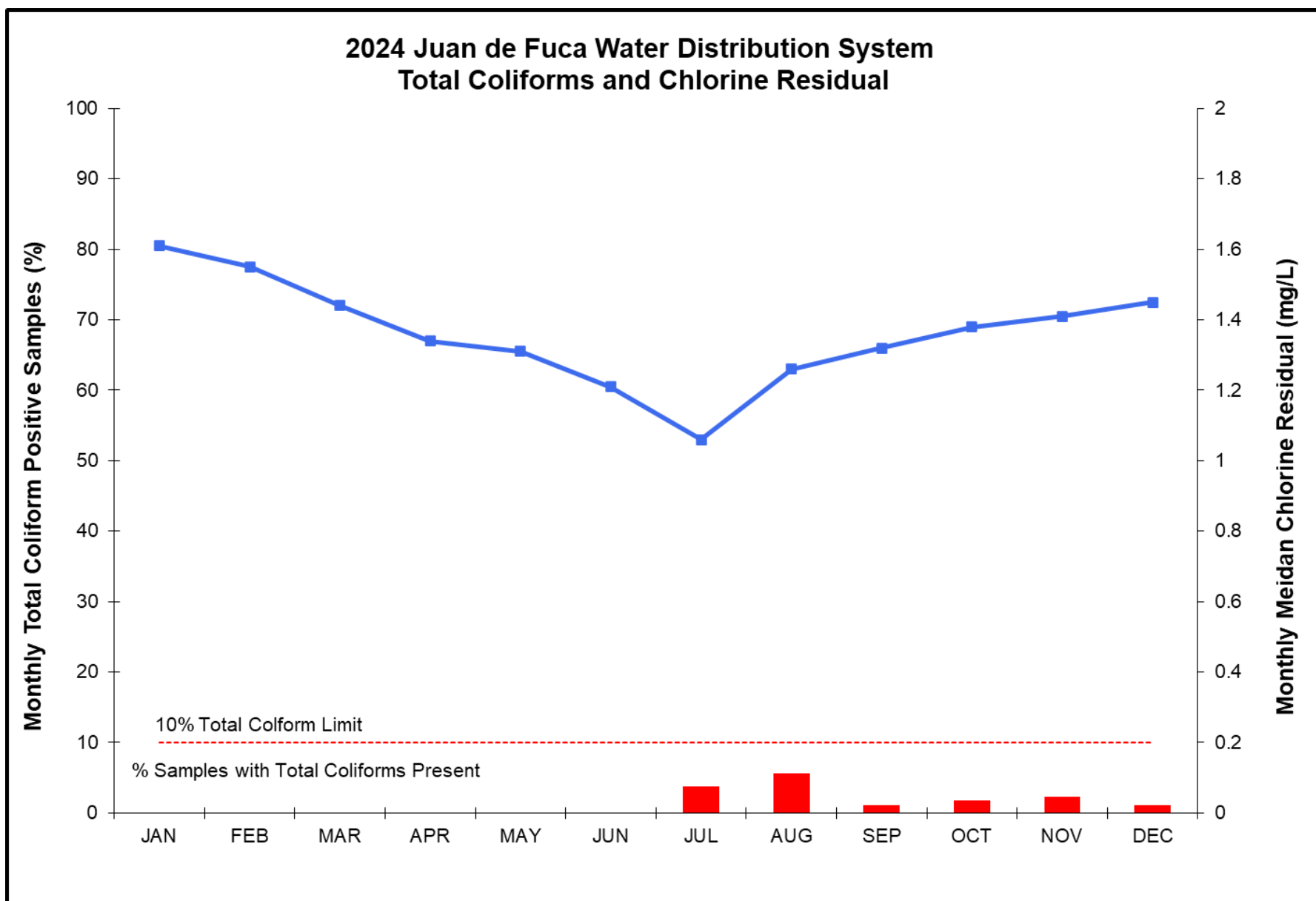


Figure 31 Juan de Fuca – Westshore Distribution System Total Coliforms and Chlorine Residual in 2024

7.4.2 Sooke/East Sooke Distribution System (Owned and Operated by the CRD)

In 2024, 21 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in Sooke/East Sooke system. Half of all Sooke/East Sooke sampling stations were typically sampled once per week for a bi-weekly sampling frequency of all stations.

Sample Collection. In 2024, 389 bacteriological and 227 water chemistry samples were collected from the Sooke/East Sooke Distribution System (Table 5). Based on current population data for the District of Sooke, 17 samples are required for bacteria testing each month. Table 5 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Total coliforms were found in one sample throughout the year; in October. A resample, immediately collected after a total coliform positive result, was free of total coliform bacteria. The same sample also exceeded the 10 CFU/100 mL total coliform concentration threshold. This system complied with the 10% total coliform-positive limit for all months of the year during 2024. The annual total coliform positive percentage was well below the 10% limit at 0.3% (Table 5).

No *E. coli* bacteria were found in any sample collected in 2024 (Table 5).

Table 5 2024 Bacteriological Quality of the Sooke/East Sooke Distribution System (CRD)

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E.coli</i> CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10		Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2
JAN	35	0	0	0	0	0	6	0	1.31	7.1
FEB	37	0	0	0	0	0	8	0	1.26	7.5
MAR	33	0	0	0	0	0	6	0	1.26	7.7
APR	30	0	0	0	0	0	7	0	1.39	9.9
MAY	30	0	0	0	0	0	7	0	1.4	12.7
JUN	42	0	0	0	0	0	8	0	1.11	14.8
JUL	44	0	0	0	0	0	9	0	1.11	18.2
AUG	26	0	0	0	0	0	6	0	0.83	17.9
SEP	24	0	0	0	0	0	6	0	0.54	16.8
OCT	33	1	3	0	1	0	7	0	1.21	13.5
NOV	24	0	0	0	0	0	6	0	1.27	11
DEC	31	0	0	0	0	0	7	0	1.15	8.7
Total:	389	1	0.3	0	1	0	83	0	1.24	11.9

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Chlorine Residual. The annual median chlorine residual in the Sooke/East Sooke Distribution System was 1.24 mg/L (Table 5, Figure 32). The lowest monthly median was in September (0.54 mg/L), and the maximum monthly median was in April (1.39 mg/L). The Sooke/East Sooke system performed satisfactory in 2024 in terms of maintaining good chlorine residuals during the early fall period when the chlorine demand is typically highest due to warm water conditions.

Water Temperature. The annual median water temperature in the Sooke/East Sooke Distribution System was 11.9°C, with monthly medians ranging between 7.1°C (January) and 18.2°C (July) (Table 5).

Disinfection Byproducts. One location in the Sooke distribution system had 18 samples collected for disinfection byproducts. The annual average TTHM and HAA5 concentrations from six samples each were 30.2 and 22.2 µg/L, respectively, far below the Canadian guideline MAC (TTHM = 100; HAA5 = 80). In all six samples, the NDMA concentrations were below the detection limit of 1.9 ng/L and therefore well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the Sooke/East Sooke Distribution System had the following physical and chemical characteristics:

- Median pH: 7.6
- Median CaCO₃ Hardness: 17.4 mg/L
- Median Colour: 4.0 TCU
- Median Alkalinity: 17.80 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 60.80 µS/cm

No regular grab sample from this distribution system exhibited an elevated turbidity of >1 NTU all year (Table 5). This indicates good drinking water quality in general.

Metals. The CRD Water Quality Monitoring Program for the Sooke/East Sooke system included bi-monthly metal tests in two strategic locations in 2024: first customer sampling station on Sooke River Road, and Whiffen Spit Road. All metallic parameters, including lead, were well below the Canadian guideline limits.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Sooke/East Sooke Distribution System was in compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024 **except** for October, with one total coliform-positive results in exceedance of 10 CFU/100 mL. In this singular case, an immediate resample confirmed the safety of the drinking water.

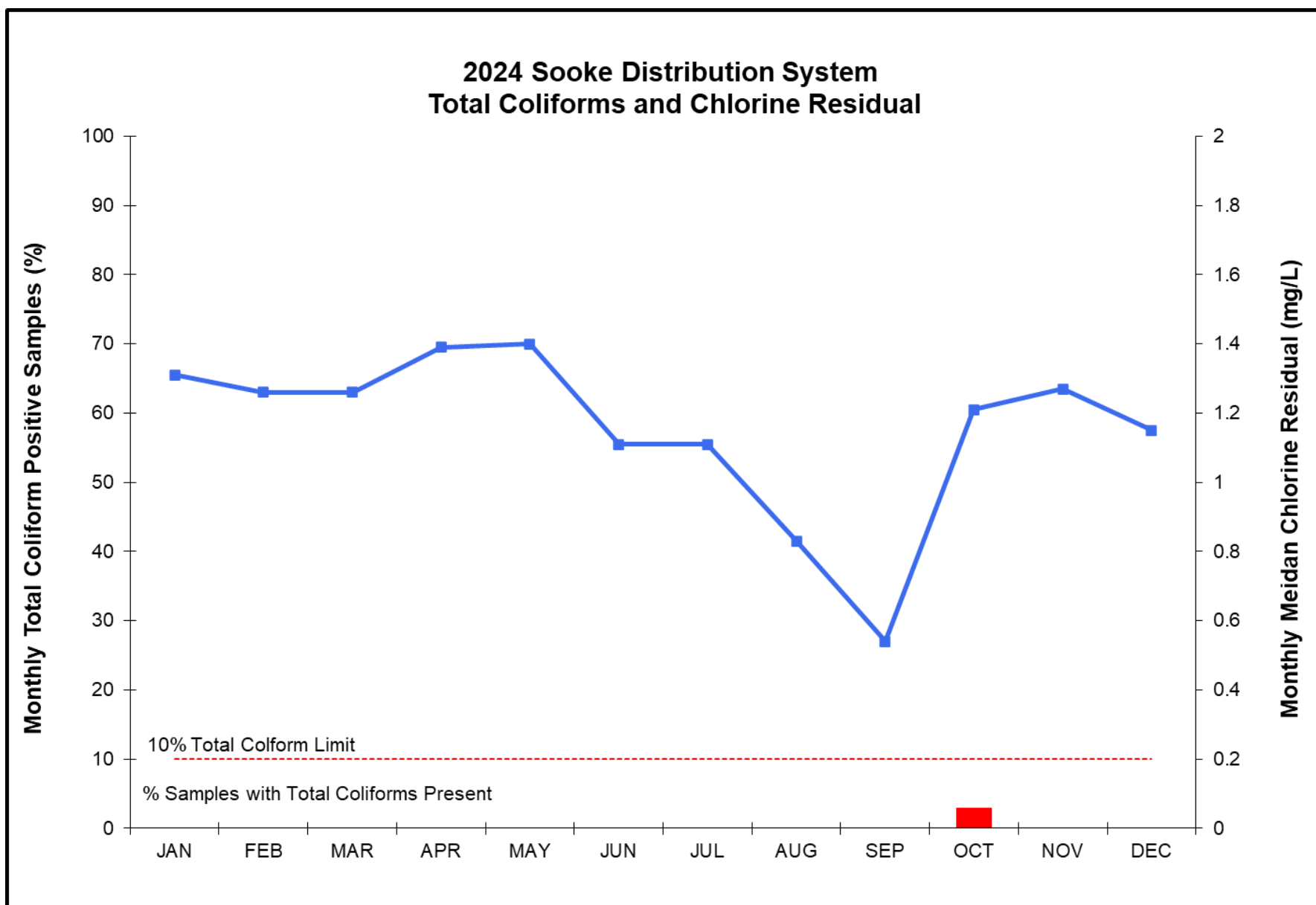


Figure 32 Sooke/East Sooke Distribution System Total Coliforms and Chlorine Residual in 2024

7.4.3 Central Saanich Distribution System (Owned and Operated by the District of Central Saanich)

In 2024, 11 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Central Saanich Distribution System. Central Saanich sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2024, 273 bacteriological and 207 water chemistry samples were collected from the Central Saanich Distribution System (Table 6). Based on current population data for the District of Central Saanich, 17 samples are required for bacteria testing each month. Table 6 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample from the Central Saanich Distribution System in 2024. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 6).

Chlorine Residual. The annual median chlorine residual in the Central Saanich Distribution System was 1.62 mg/L (Table 6). The lowest monthly median was in October (1.48 mg/L) and the maximum monthly median was in March and July (1.68 mg/L) (Figure 33, Table 6).

Water Temperature. The annual median water temperature in the Central Saanich Distribution System was 12.5°C, with monthly medians ranging between 7.9°C (January) and 19.5°C (August) (Table 6).

Table 6 2024 Bacteriological Quality of the Central Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E. coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median °C
JAN	25	0	0	0	0	0	8	0	1.59	7.9
FEB	21	0	0	0	0	0	8	0	1.62	8
MAR	23	0	0	0	0	0	8	0	1.68	8.2
APR	23	0	0	0	0	0	8	0	1.62	10.2
MAY	25	0	0	0	0	0	8	0	1.62	12.7
JUN	22	0	0	0	0	0	8	0	1.65	15.2
JUL	24	0	0	0	0	0	8	0	1.68	18.2
AUG	24	0	0	0	0	0	9	1	1.66	19.5
SEP	20	0	0	0	0	0	8	0	1.56	18.5
OCT	25	0	0	0	0	0	9	0	1.48	15
NOV	20	0	0	0	0	0	10	2	1.52	12.3
DEC	21	0	0	0	0	0	7	0	1.59	9.4
Total:	273	0	0.0	0	0	0	99	3	1.62	12.5

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
 > = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2024.

Physical/Chemical Parameters. The drinking water in the Central Saanich Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.7
- Median Turbidity: 0.30 NTU
- Median Colour: 4.0 TCU
- Median Alkalinity: 18.00 mg/L
- Median Conductivity (25°C): 56.30 µS/cm

Three samples in August and November exhibited an elevated turbidity of >1 NTU (Table 6). All three adverse samples came from the same sampling station at 1701 Verling Avenue, which is prone to

accumulating sediments in the long sampling line. Hence, this sampling line requires extensive flushing before sample collection, and sampling staff were reminded of this again.

Metals. No data for 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Central Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

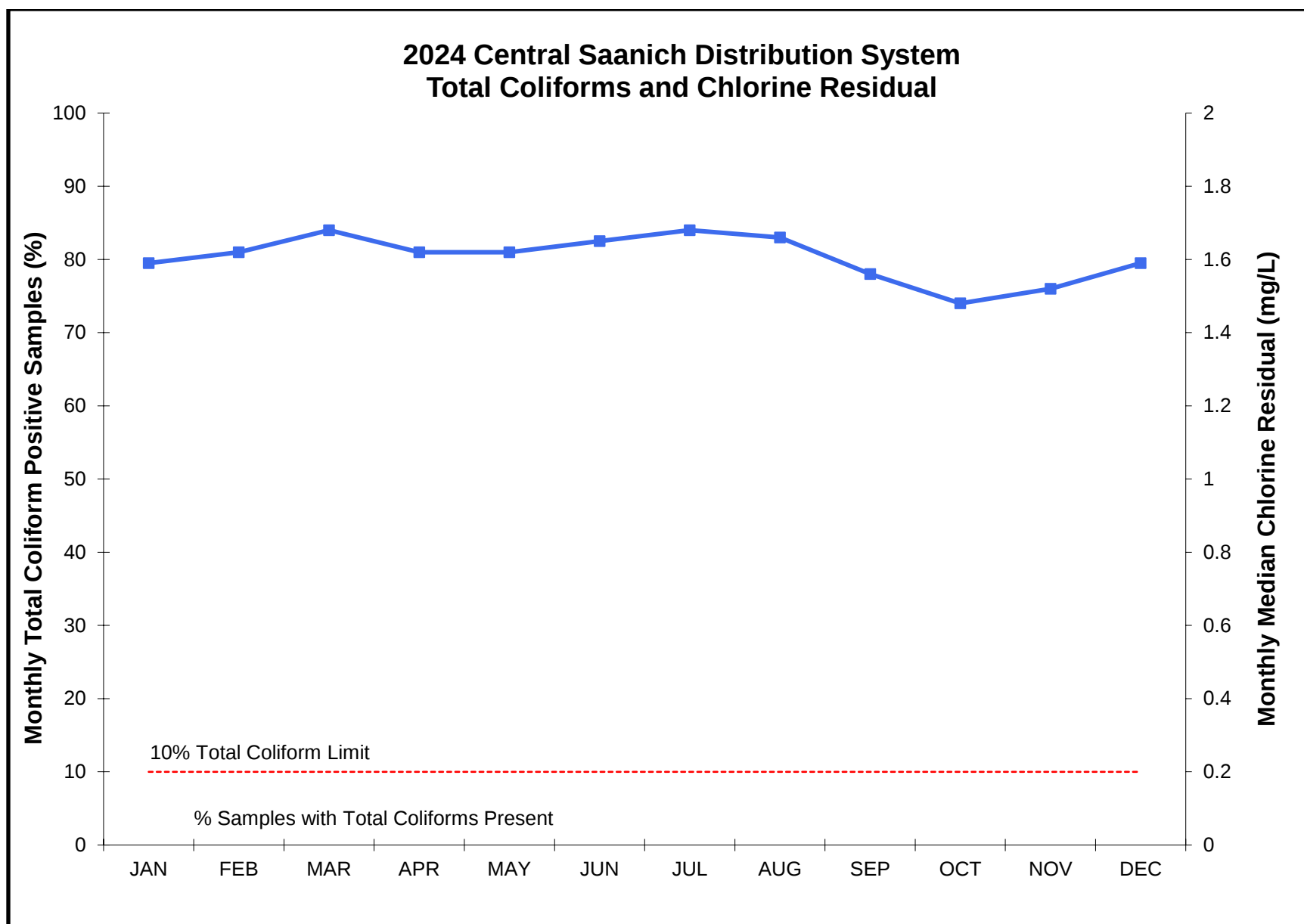


Figure 33 Central Saanich Distribution System Total Coliforms and Chlorine Residual in 2024

7.4.4 North Saanich Distribution System (Owned and Operated by the District of North Saanich)

In 2024, eight sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the North Saanich Distribution System. North Saanich sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2024, 225 bacteriological and 91 water chemistry samples were collected from the North Saanich Distribution System (Table 7). Based on current population data for the District of North Saanich, 13 samples are required for bacteria testing each month. Table 7 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample from the North Saanich Distribution System in 2024. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 7).

None of the samples contained *E. coli* in 2024 (Table 7).

Table 7 2024 Bacteriological Quality of the North Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E.coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10		Samples Collected	Samples >1 NTU	Median mg/L as CL ₂	Median ° C
JAN	19	0	0	0	0	0	2	0	1.19	8.1
FEB	17	0	0	0	0	0	1	0	1.35	8.2
MAR	19	0	0	0	0	0	1	0	1.48	8.2
APR	19	0	0	0	0	0	1	0	1.46	10.1
MAY	22	0	0	0	0	0	1	0	1.41	12.2
JUN	18	0	0	0	0	0	1	0	1.4	14.8
JUL	18	0	0	0	0	0	1	0	1.39	17.7
AUG	19	0	0	0	0	0	1	0	1.43	18.7
SEP	17	0	0	0	0	0	1	0	1.35	18.4
OCT	21	0	0	0	0	0	1	0	1.2	15.3
NOV	18	0	0	0	0	0	2	0	1	12.4
DEC	18	0	0	0	0	0	1	0	1.15	9.9
Total:	225	0	0.0	0	0	0	14	0	1.37	12.3

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Chlorine Residual. The annual median chlorine residual in the North Saanich Distribution System was 1.37 mg/L (Table 7). The lowest monthly median was in November (1.00 mg/L) and the maximum monthly median was in March (1.48 mg/L) (Figure 34, Table 7).

Water Temperature. The annual median water temperature in the North Saanich Distribution System was 12.3°C, with monthly medians ranging between 8.1°C (January) and 18.7°C (August) (Table 7).

Disinfection Byproducts. No data in 2024.

Physical/Chemical Parameters. The drinking water in the North Saanich Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.9
- Median Colour: 4.5 TCU
- Median Turbidity: 0.24 NTU
- Median Alkalinity: 18.50 mg/L
- Median Conductivity (25°C): 57.80 µS/cm

No regular grab sample from this distribution system exhibited an elevated turbidity of >1 NTU all year (Table 7). This indicates good drinking water quality in general.

Metals. No data in 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The North Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

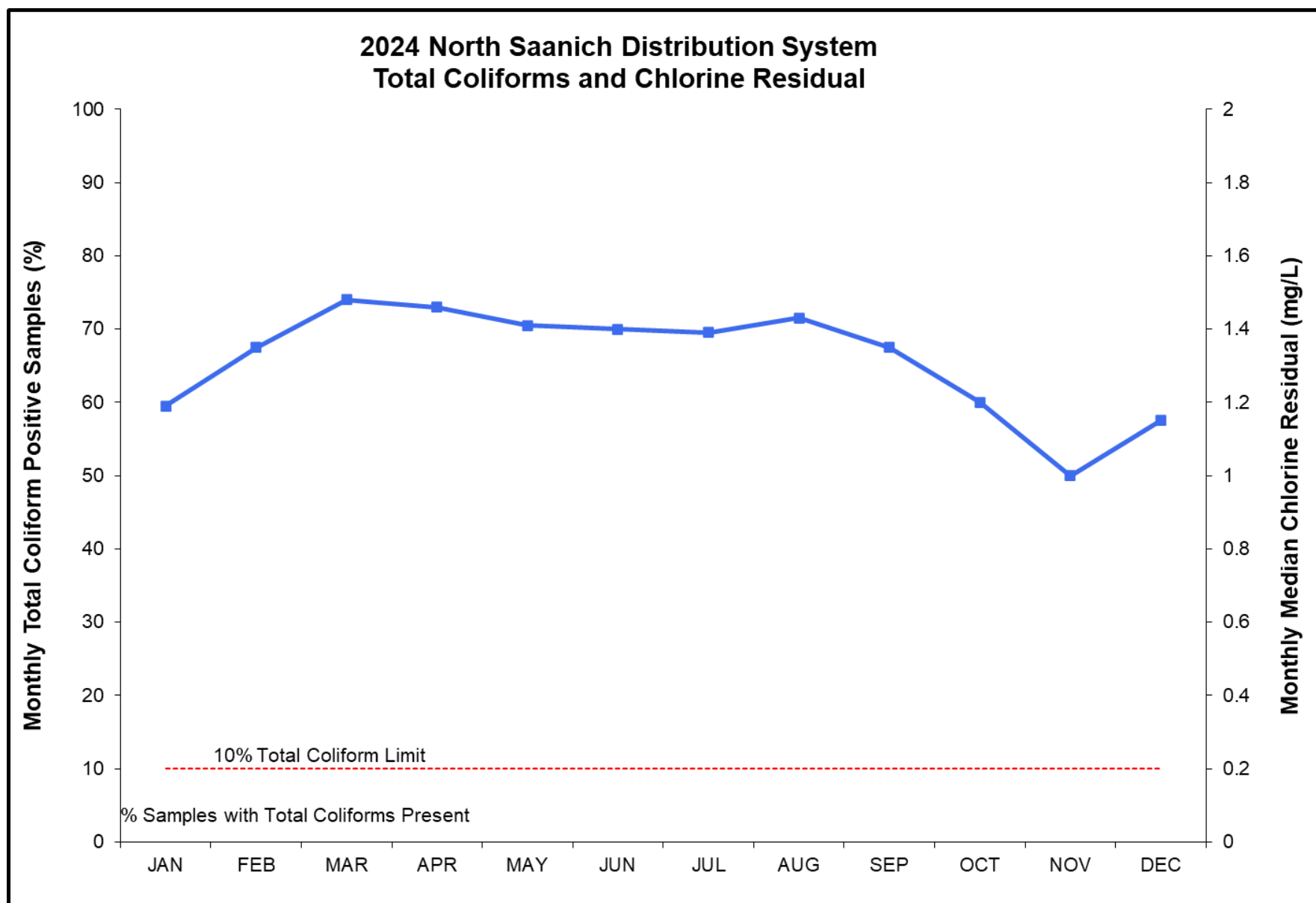


Figure 34 North Saanich Distribution System Total Coliforms and Chlorine Residual in 2024

7.4.5 Oak Bay Distribution System (Owned and Operated by the District of Oak Bay)

In 2024, eight sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Oak Bay Distribution System. Oak Bay sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2024, 284 bacteriological and 147 water chemistry samples were collected from the Oak Bay Distribution System (Table 8). Based on current population data for the District of Oak Bay, 20 samples are required for bacteria testing each month. Table 8 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample throughout the year. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 8).

No *E. coli* bacteria were found in any sample collected in 2024 (Table 8).

Chlorine Residual. The annual median chlorine residual in the Oak Bay Distribution System was 1.68 mg/L (Table 8). The lowest monthly median was in October (1.60 mg/L) and the maximum monthly median was in August (1.87 mg/L) (Figure 35).

Water Temperature. The annual median water temperature in the Oak Bay Distribution System was 12.7°C, with monthly medians ranging between 8.2°C (January/February) and 19.6°C (August) (Table 8).

Table 8 2024 Bacteriological Quality of the Oak Bay Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E.coli</i> (CFU/100mL) Samples >0	Turbidity		Chlorine Residual Median mg/L as CL ₂	Water Temp. Median °C
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10		Samples Collected	Samples >1 NTU		
JAN	23	0	0	0	0	0	3	0	1.63	8.2
FEB	24	0	0	0	0	0	2	0	1.68	8.2
MAR	22	0	0	0	0	0	2	0	1.7	8.6
APR	25	0	0	0	0	0	2	0	1.7	10.8
MAY	24	0	0	0	0	0	2	0	1.67	12.8
JUN	22	0	0	0	0	0	2	0	1.78	15.9
JUL	25	0	0	0	0	0	2	0	1.71	18
AUG	25	0	0	0	0	0	2	0	1.87	19.6
SEP	22	0	0	0	0	0	2	0	1.67	19.3
OCT	27	0	0	0	0	0	3	0	1.6	15.6
NOV	22	0	0	0	0	0	2	0	1.65	12.6
DEC	23	0	0	0	0	0	2	0	1.68	9.4
Total:	284	0	0.0	0	0	0	26	0	1.68	12.7

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit

> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2024.

Physical/Chemical Parameters. The drinking water in the Oak Bay Distribution System had the following physical and chemical characteristics:

- Median pH: 7.9
- Median Alkalinity: 18.00 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 57.10 µS/cm
- Median Colour: 5.0 TCU

No regular grab sample from this distribution system exhibited an elevated turbidity of >1 NTU all year (Table 8). This indicates good drinking water quality in general.

Metals. No data in 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Oak Bay Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

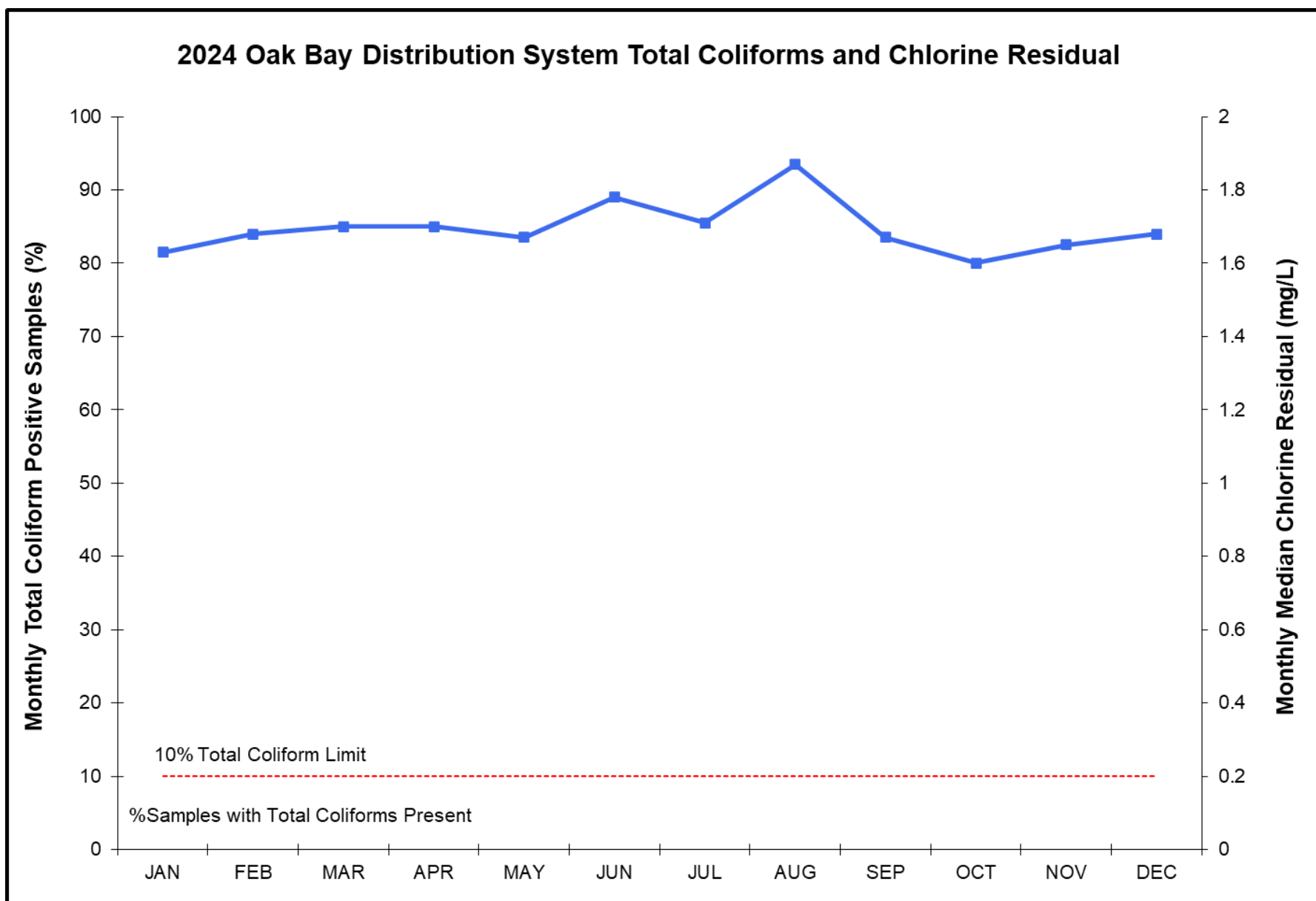


Figure 35 Oak Bay Distribution System Total Coliforms and Chlorine Residual in 2024

7.4.6 Saanich Distribution System (Owned and Operated by the District of Saanich)

In 2024, 66 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Saanich Distribution System. Saanich sampling stations were part of the daily distribution sampling runs by CRD staff and a weekly run by Saanich staff.

Sample Collection. In 2024, 1,180 bacteriological and 172 water chemistry samples were collected from the Saanich Distribution System (Table 9). Based on current population data for the District of Saanich, 94 samples are required for bacteria testing each month. Table 9 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample throughout the year. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 9).

No *E. coli* bacteria were found in any sample collected in 2024 (Table 9).

Chlorine Residual. The annual median chlorine residual in the Saanich Distribution System was 1.59 mg/L (Table 9). The lowest monthly median was in October (1.42 mg/L) and the maximum monthly median was in April (1.81 mg/L) (Figure 36).

Water Temperature. The annual median water temperature in the Saanich Distribution System was 12.3°C, with monthly medians ranging between 7.5°C (January) and 19.5°C (August) (Table 9).

Table 9 2024 Bacteriological Quality of the Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E. coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10		Samples Collected	Samples >1 NTU	Median mg/L as CL ₂	Median °C
JAN	98	0	0	0	0	0	4	1	1.62	7.5
FEB	96	0	0	0	0	0	5	0	1.67	8.1
MAR	96	0	0	0	0	0	4	0	1.7	7.8
APR	97	0	0	0	0	0	4	0	1.61	10.3
MAY	105	0	0	0	0	0	4	0	1.57	12.6
JUN	95	0	0	0	0	0	3	0	1.66	15.1
JUL	97	0	0	0	0	0	4	0	1.56	17.8
AUG	99	0	0	0	0	0	4	0	1.63	19.5
SEP	96	0	0	0	0	0	4	0	1.53	19
OCT	105	0	0	0	0	0	6	1	1.42	14.8
NOV	98	0	0	0	0	0	2	0	1.43	11.9
DEC	98	0	0	0	0	0	3	0	1.56	9.2
Total:	1180	0	0.0	0	0	0	47	2	1.59	12.3

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
 > = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2024.

Physical/Chemical Parameters. The drinking water in the Saanich Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.8
- Median Alkalinity: 18.0 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 56.40 µS/cm
- Median Colour: 5.0 TCU

Two samples in January and October exhibited an elevated turbidity of >1 NTU (Table 9). These two incidents coincided with the timing of municipal water main flushing activities and were likely caused by this.

Metals. No data in 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

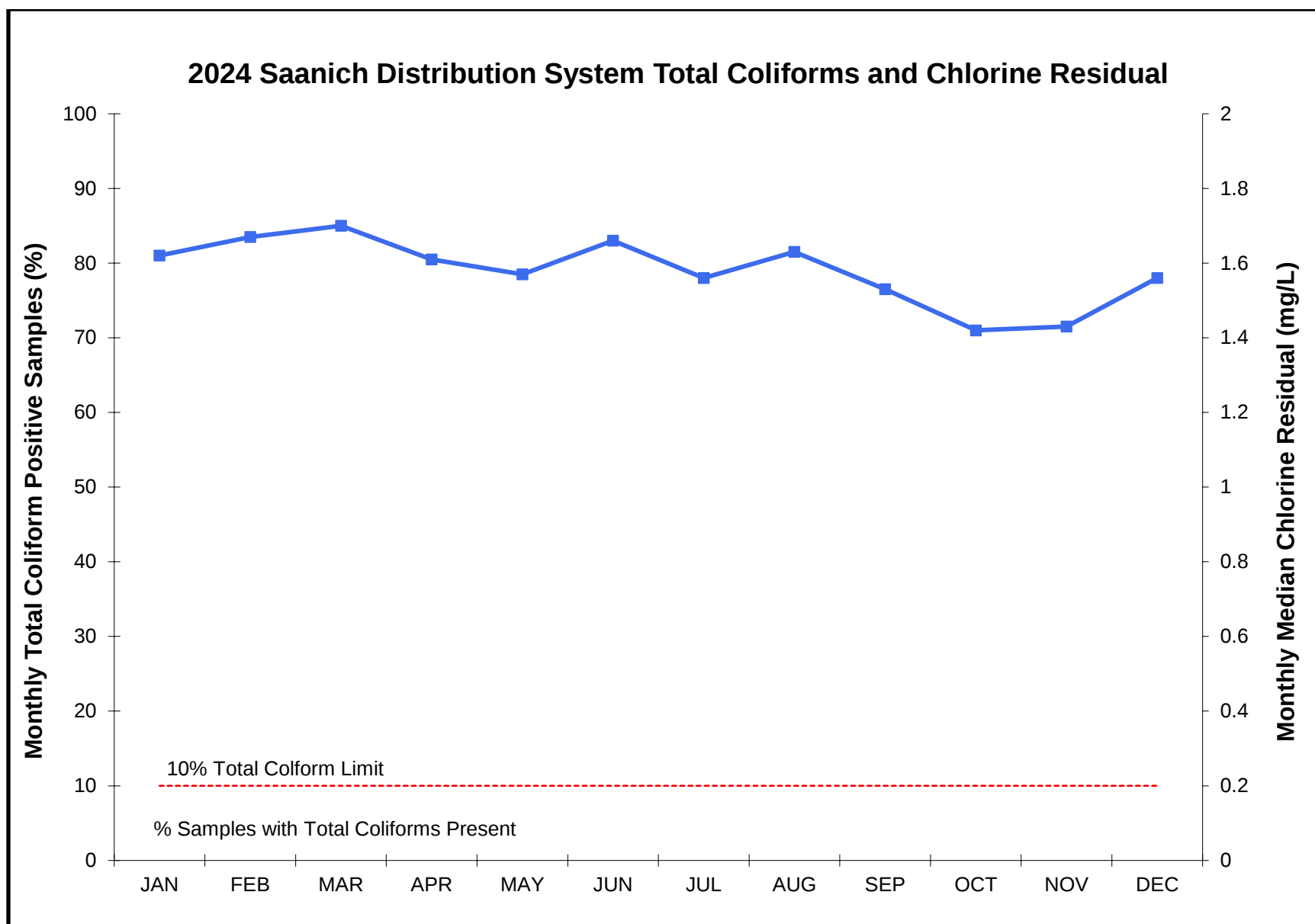


Figure 36 Saanich Distribution System Total Coliforms and Chlorine Residuals in 2024

7.4.7 Sidney Distribution System (Owned and Operated by the Town of Sidney)

In 2024, eight sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Sidney Distribution System. Sidney sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2024, 211 bacteriological and 85 water chemistry samples were collected from the Sidney Distribution System (Table 10). Based on current population data for the Town of Sidney, 14 samples are required for bacteria testing each month. Table 10 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample throughout the year. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 10).

No sample tested positive for *E. coli* in 2024 (Table 10).

Chlorine Residual. The annual median chlorine residual in the Sidney Distribution System was 1.52 mg/L (Table 10). The lowest monthly median was in July/October (1.42 mg/L) and the maximum monthly median was in March (1.70 mg/L) (Figure 37).

Water Temperature. The annual median water temperature in the Sidney Distribution System was 12.6°C, with monthly medians ranging between 7.5°C (January) and 19.4°C (October) (Table 10).

Table 10 2024 Bacteriological Quality of the Sidney Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E.coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL ₂	Median ° C
JAN	18	0	0	0	0	0	1	0	1.52	7.5
FEB	20	0	0	0	0	0	7	1	1.62	8.1
MAR	17	0	0	0	0	0	1	0	1.7	8.2
APR	18	0	0	0	0	0	1	0	1.62	10.3
MAY	19	0	0	0	0	0	1	0	1.51	12.5
JUN	16	0	0	0	0	0	1	0	1.66	15.3
JUL	18	0	0	0	0	0	2	0	1.42	18
AUG	17	0	0	0	0	0	1	0	1.57	19.4
SEP	15	0	0	0	0	0	1	0	1.47	19
OCT	20	0	0	0	0	0	1	0	1.42	15.6
NOV	16	0	0	0	0	0	2	0	1.51	12.6
DEC	17	0	0	0	0	0	1	0	1.5	10
Total:	211	0	0.0	0	0	0	20	1	1.52	12.6

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit
 > = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2024.

Physical/Chemical Parameters. The drinking water in the Sidney Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.8
- Median Alkalinity: 17.70 mg/L
- Median Turbidity: 0.26 NTU
- Median Conductivity (25°C): 56.60 µS/cm
- Median Colour: 3.0 TCU

One sample in February exhibited an elevated turbidity of >1 NTU (Table 10). This incident coincided with the timing of municipal water main flushing activities and was likely caused by this.

Metals. No data in 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Sidney Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

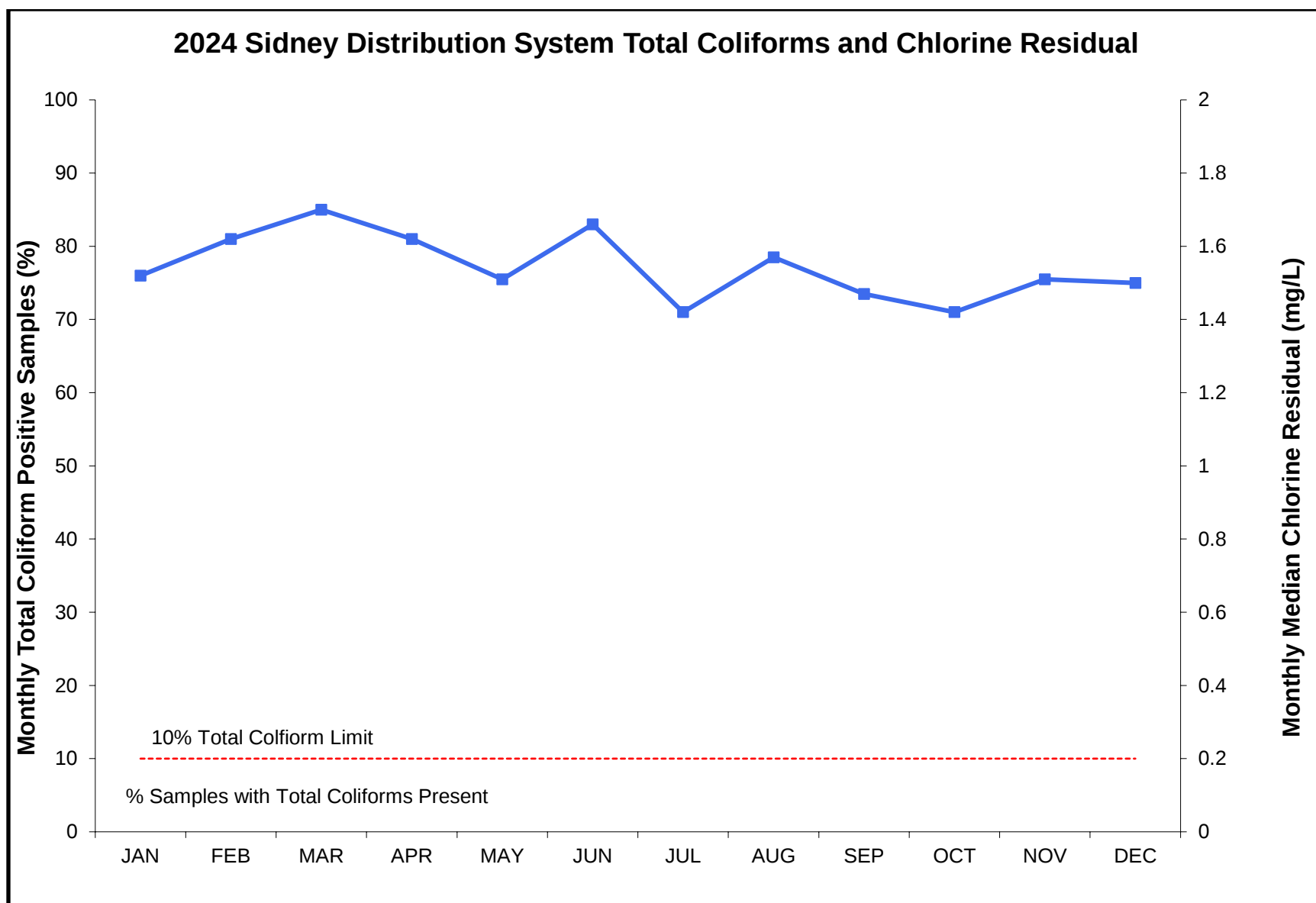


Figure 37 Sidney Distribution System Total Coliforms and Chlorine Residuals in 2024

7.4.8 Victoria/Esquimalt Distribution System (Owned and Operated by the City of Victoria)

In 2024, 17 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Victoria/Esquimalt Distribution System. Victoria/Esquimalt sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2024, 1,234 bacteriological and 222 water chemistry samples were collected from the Victoria/Esquimalt Distribution System (Table 11). Based on current population data for Victoria and Esquimalt, 93 samples are required for bacteria testing each month. Table 11 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No total coliform bacteria were found in any sample throughout the year. This system therefore complied with the 10% total coliform-positive limit and the 10 CFU/100 mL maximum limit for all months (Table 11).

No *E. coli* was detected in any sample in 2024 (Table 11).

Chlorine Residual. The annual median chlorine residual in the Victoria/Esquimalt Distribution System was 1.63 mg/L (Table 11). The lowest monthly median was in September/October (1.57 mg/L) and the maximum monthly median was in March (1.71 mg/L) (Figure 38).

Water Temperature. The annual median water temperature in the Victoria/Esquimalt Distribution System was 13.1°C, with monthly medians ranging between 7.9°C (January) and 20.1°C (August) (Table 11).

Table 11 2024 Bacteriological Quality of the Victoria Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				<i>E.coli</i> (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL ₂	Median °C
JAN	109	0	0	0	0	0	7	0	1.65	7.9
FEB	97	0	0	0	0	0	6	0	1.7	8.3
MAR	99	0	0	0	0	0	5	0	1.71	8.6
APR	107	0	0	0	0	0	8	0	1.63	11.1
MAY	107	0	0	0	0	0	7	0	1.6	14
JUN	94	0	0	0	0	0	6	0	1.61	16.9
JUL	105	0	0	0	0	0	7	0	1.6	19.5
AUG	108	0	0	0	0	0	6	0	1.67	20.1
SEP	97	0	0	0	0	0	6	0	1.57	19.6
OCT	118	0	0	0	0	0	8	0	1.57	15.9
NOV	96	0	0	0	0	0	7	0	1.63	12.2
DEC	97	0	0	0	0	0	6	0	1.66	9.2
Total:	1234	0	0.0	0	0	0	79	0	1.63	13.1

Notes:

TC = Total Coliforms, *E. coli* = *Escherichia coli*, Cl₂ = chlorine, NTU = Nephelometric turbidity unit

> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2024.

Physical/Chemical Parameters. The drinking water in the Victoria/Esquimalt Distribution System had the following physical and chemical characteristics in 2024:

- Median pH: 7.8
- Median Alkalinity: 18.10 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25°C): 57.10 µS/cm
- Median Colour: 5.0 TCU

No regular grab sample from this distribution system exhibited an elevated turbidity of >1 NTU all year (Table 11). This indicates good drinking water quality in general.

Metals. No data in 2024.

The Greater Victoria pH & Corrosion Study completed in 2021 concluded that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Victoria/Esquimalt Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2024.

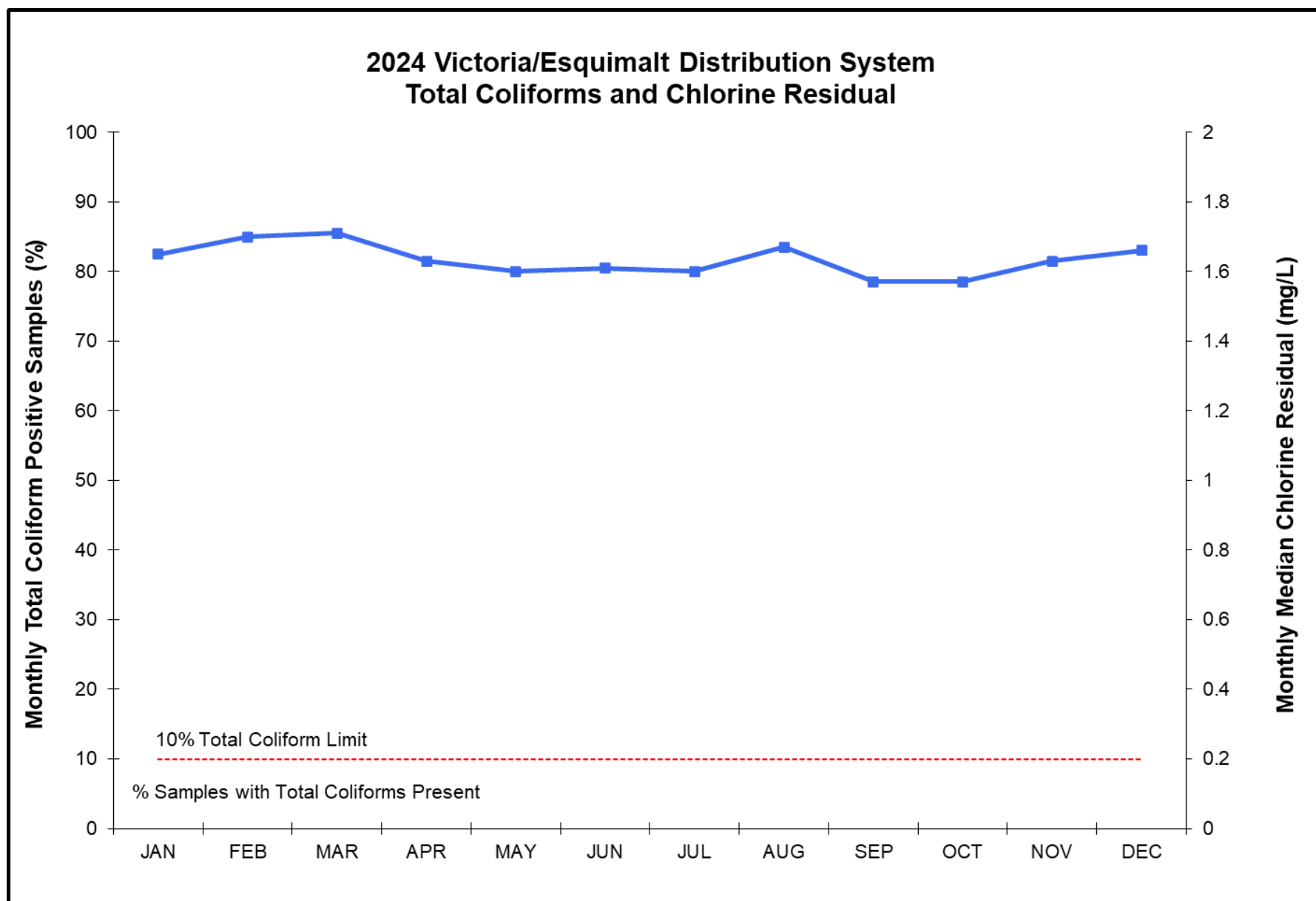


Figure 38 Victoria/Esquimalt Distribution System Total Coliforms and Chlorine Residuals in 2024

7.5 Water Quality Inquiry Program

Records of customer inquiries, including complaints about drinking water quality, have been maintained since 1992. In 2024, with 299 customer inquiries in total, it was typical compared to previous years with no single category represented proportional over another. Figure 39 depicts the distribution of topics and categories of received customer inquiries in 2024.

11% of customer inquiries that CRD staff received were from people concerned about the general safety of their drinking water. These concerns were addressed individually and, in general, most customers are content to know that CRD staff are actively sampling both the source water and the treated drinking water being delivered to their homes. For those people wanting to know more about the composition of their drinking water, they were either provided with the annual tables or directed to the CRD website.

Coloured water inquiries encompassed 21%, which was an increase from 15% in 2023. Sediments in pipes can become stirred up during periods of water main flushing activities (January-May, September-December) in the distribution systems, fire hydrant inspections and other operational duties that may change the speed or the direction of the water flow. During such operational procedures, customers may experience over a short time cloudy or coloured water at their taps. CRD proactively communicates large and scheduled procedures, such as the annual water main flushing program, to customers in newspapers and social media. Coloured water can also be caused by seasonal source water quality events. Water can be tinged green in the spring due to an increase in algal activity or tinged yellow in the fall due to tannins in the leaves that have dropped. Some customers noticed the slight increase in water colour during the summer of 2024 which was likely related to the unusual high algal activity during the warm water season.

Customer inquiries regarding water pressure, service line leaks and water meter inquiries were directed to the Infrastructure & Water Services' operators. Similarly, customers requesting information on how and where to have their water tested were provided with contact information for external laboratories.

Throughout the year, several inquiries or complaints regarding taste and odour were received. Taste and odour complaints vary from concerns about chlorine to stale, musty, metallic and/or fishy characteristics. There are a variety of reasons for taste and odour issues. High chlorine taste and odour could be due to high water demand or the annual flushing program. Other tastes and odours observed may be due to natural fluctuations in the source water algal communities or areas in the distribution system that have a higher water age.

CRD staff have communicated regularly with Island Health hospital facility management staff to provide useful water quality information to these facilities. No hospital staff complaints or concerns were raised in 2024.

Metals inquiries, primarily lead, decreased from 6% in 2023 to 2% in 2024. External laboratory information was provided to customers who wanted to have a test completed at their private home. In 2024, customer inquiries about laboratory testing increased from 7% to 11%. CRD staff also provided information to customers inquiring about the potential for lead in their tap water and recommended the steps to take to verify lead levels at the tap. This includes support to customers in interpreting tap sample results.

Newly emerging topics in customer inquiries were related to potential contamination of the drinking water with microplastics and forever chemicals (per- and polyfluoroalkyl substances (PFAS)), both topics that have had a strong presence in the media. About 5% of all inquiries were related to these topics. A few questions to staff were also related to a potential addition of fluoride to the drinking water, with some customers strongly against and some in favour.

2024 Customer Inquiries Summary

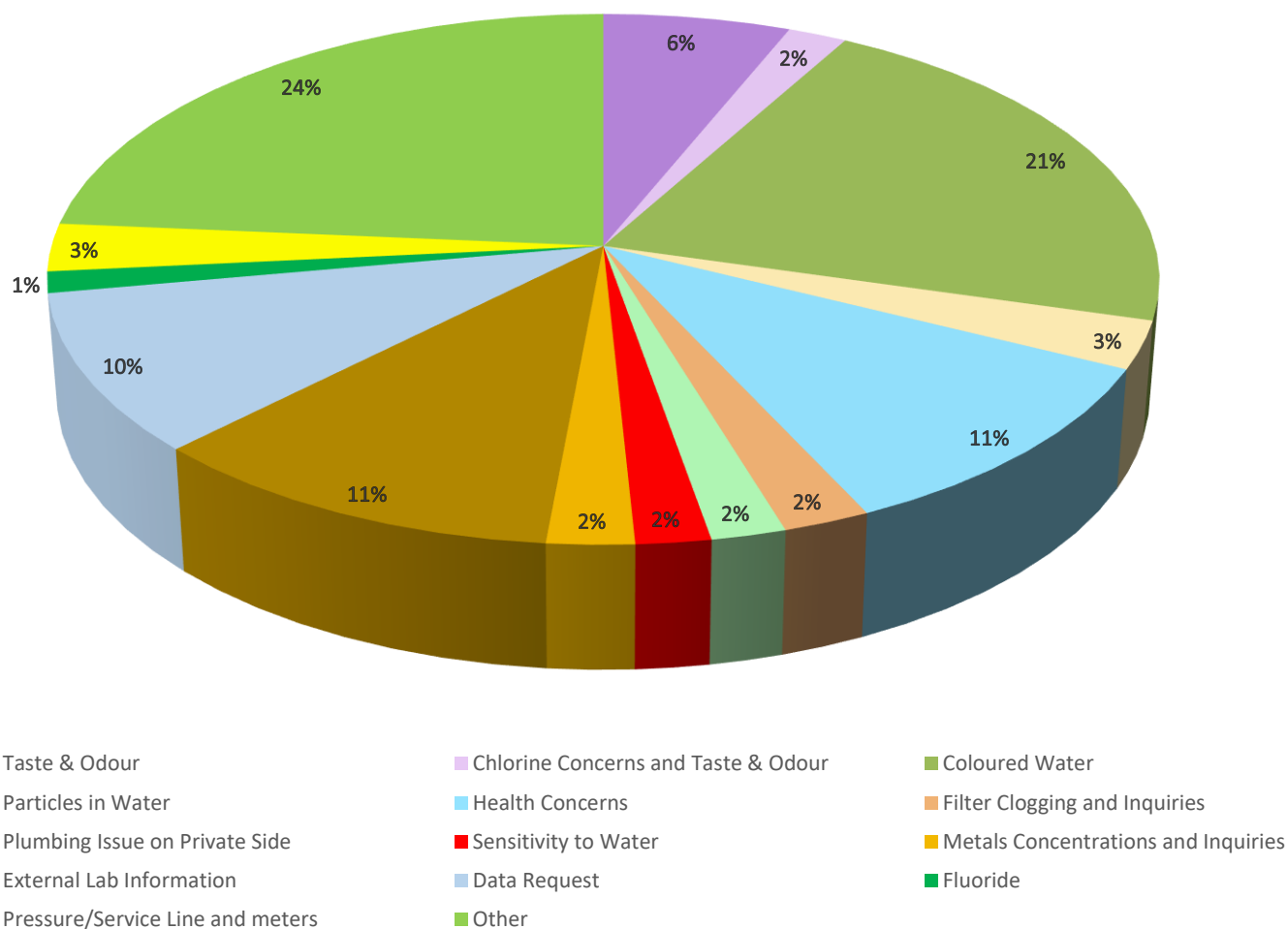


Figure 39 Summary of Customer Inquiries Categories in 2024

7.6 Cross Connection Control Program

2006, the CRD was mandated by the Chief Medical Health Officer from Island Health to design, implement and maintain a Cross Connection Control Program (CCC) on behalf of all the municipalities currently connected to the CRD's Greater Victoria Drinking Water system. Since then, it has become exemplary for an effective and efficient cross connection control program in Canada. Operating under Cross Connection Control Bylaw No. 3516, this program has been referenced as an example of industry standards in the water and wastewater industry, recognized by the BCWWA, local trades and training institutions.

The program is an important component of the multi-barrier concept in the Greater Victoria Drinking Water System. Working alongside Island Health, 13 municipalities and participating electoral areas, the objective of this program is to identify, eliminate and prevent cross connections within the Greater Victoria Drinking Water System that could lead to drinking water contaminations.

CRD CCC staff have taken an active and leading role in the industry to promote cross connection control science and practice and to inform existing industry standards and regulatory requirements. In 2024, CRD CCC staff participated in several industry committees, presenting at local training institutes, trades companies, and most notably hosting the annual CRD Regional Inspectors Roundtable event.

The program met its objectives by enforcing backflow prevention requirements referenced in the *National Building Code* and the Canadian Standard Association's CSAB64 series. This was achieved through facility audits, management of a backflow assembly registry, enforcing required testing and public education. In 2024, the CCC inspections team conducted audits of 408 moderate and 301 severe hazard facilities. Continued focus was on construction sites, agricultural connections and, in addition, medical, manufacturing and educational facilities.

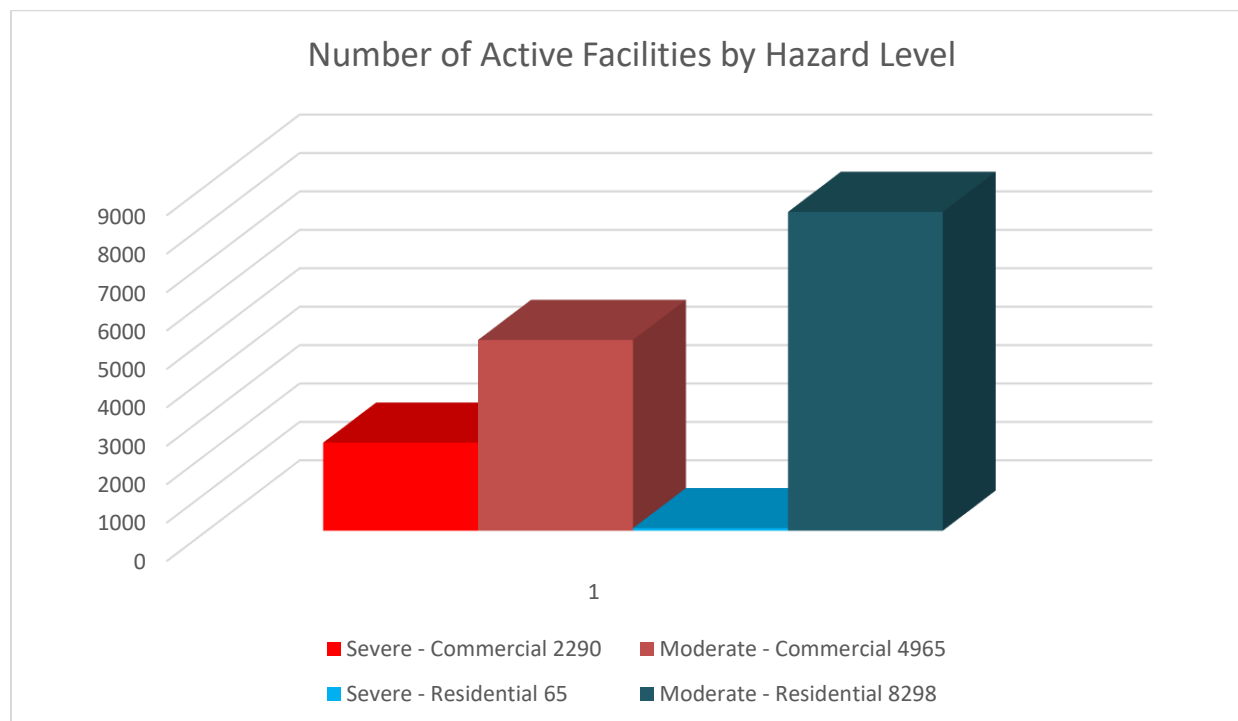


Figure 40 Facilities of Different Hazard Levels in Greater Victoria

In addition to Bylaw No. 3516, one of the key tools used by the CRD CCC program was the Cross Connection & Regional Source Control Information Management System (2016) paired up with the CRD CCC online website portal. In 2025 this data system is expected to be improved with additional features to assist CCC staff monitor the increasing number of connections and hazards due to expected growth in the region.

In 2024, CCC staff processed close to 20,000 assembly test report submissions. Of these, 12,000 (60%) were processed through the CRD CCC online portal and the remaining 8,000 (40%) were manually entered from paper test report submissions, achieving an overall 75% compliance rate. With a planned “Get on The Portal” campaign in 2025, staff expect higher test compliance with the expectations to become a paperless program in 2025.

Simplified Active Backflow Assemblies by ICIA Sectors

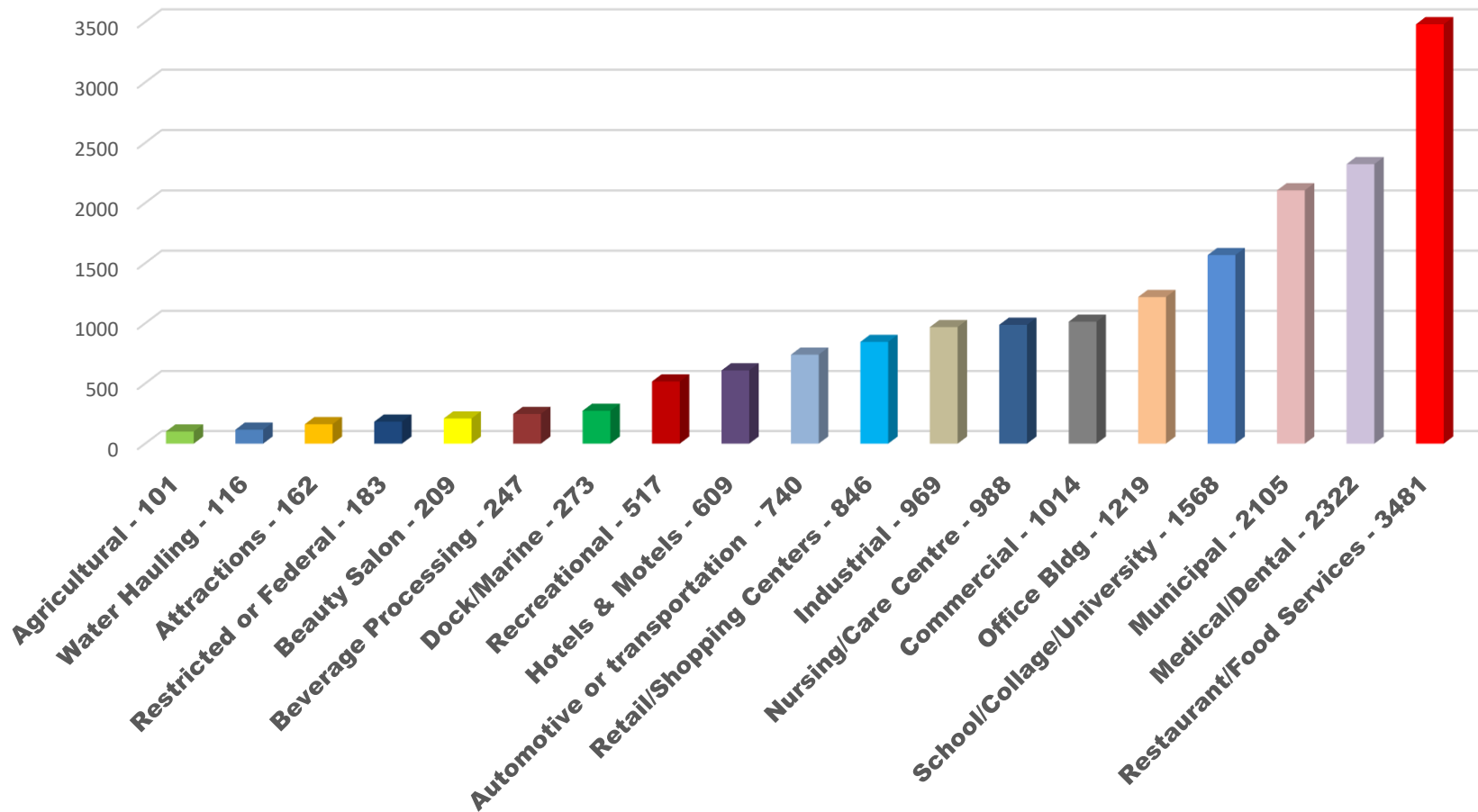


Figure 41 Backflow Devices in Greater Victoria according to their Type and Hazard Category ICIA Facilities

8.0 CONCLUSIONS

1. The water quality data collected in 2024 indicates that the drinking water in Greater Victoria was of good quality and safe to drink. The drinking water temperature exceeded the aesthetic objective of 15°C between the end of June and early October, and with approximately 14 weeks of exceedance of this aesthetic objective, the summer of 2024 recorded the warmest water conditions in Sooke Lake Reservoir since the dam was raised in 2004. This exceedance did have some minor operational implications for the local water suppliers and was a temporary unpleasant experience for the customers.
2. Sooke Lake Reservoir experienced an elevated total coliform event from July 16 to August 16. This is the second time that such a total coliform event was recorded since the inception of the Water Quality program in 1988. The first event occurred in 2017. During this event, total coliform concentrations increased rapidly in mid-July, reaching a maximum concentration of 15,000 CFU/100 mL on July 25. The bacteria concentrations stayed unusually elevated until mid-August. On seven days with high morning water demand, there were indications for brief bacteria breakthroughs at the Goldstream Water Treatment Plant. Test results showed that post-treatment bacterial concentrations remained low and were confined to the area immediately downstream of the Goldstream plant. While the exact mechanisms of this event remain unclear, it is assumed such infrequent events are related to hydrodynamic effects linked to thermal stratification in the reservoir (internal seiches). CRD staff are in the process of developing a hydrodynamic computer model of Sooke Lake Reservoir which will also improve the understanding of such processes and events. The CRD Transmission System was not in full compliance with the *BC Drinking Water Protection Regulation* in July and August due to exceedances of several total coliform rules. The cause of these exceedances was the unusual total coliform event in Sooke Lake which caused short-term and limited breakthroughs at the Goldstream Water Treatment Plant. Due to the limited reach of the breakthrough and the nature of the bacteria involved, the risk to public health was low.
3. *E. coli* bacterial levels in the raw source water were very low for the entire year.
4. Sooke Lake Reservoir experienced higher algal concentrations during the summer, especially in the South Basin. This could be related to the warmer water conditions during the summer of 2024. Coincidental with the total coliform event in July and August, the South Basin also exhibited spikes of nitrogen concentrations, which likely contributed to increased algal growth. The algal species that were active, and relatively abundant in 2024, belonged to known and low-risk (non-toxin producing) algal species. Cyanobacteria, with the potential to produce harmful cyanotoxins under bloom conditions, were present, as usual, throughout the year. However, a stable and nutrient-poor ecosystem, such as the Sooke Lake Watershed, does currently not provide conditions needed for cyanobacteria or other adverse algal blooms with serious implications for the drinking water quality. These natural nutrient-poor conditions limit the biological productivity in Sooke Lake Reservoir, which is very favourable for a drinking water source.
5. Greater Victoria continues to enjoy a water supply in which *Giardia* and *Cryptosporidium* parasites are well below the levels commonly considered by the health authorities to be responsible for disease outbreaks. For many years, including 2024, all tests conducted on Sooke Lake samples did not detect any *Giardia* and *Cryptosporidium* parasites.
6. On four occasions in 2024, the Goldstream Water Treatment Plant experienced turbidity exceedances during peak demand periods on watering days (typically Wednesday). The turbidity events were caused by peak flows dislodging pipe sediments in the raw water mains upstream of the treatment plant. During these events, disinfection capacities were increased to compensate the negative effects of turbidity on the disinfection process.
7. Consumers in the GVDWS received drinking water that had very low disinfection byproducts. Overall levels of trihalomethanes and haloacetic acids remain below the Canadian guideline limits and the USEPA limits. The newly-monitored disinfection byproduct, Nitrosodimethylamine, was, if detected at all, only in concentrations well below the current MAC in the Canadian guidelines.

8. The CRD tested the source water for emerging contaminants such as 28 PFAS compounds and did not have any detections at detection limits of 2 ng/L. Several PFAS tests were also conducted on treated water samples from various distribution systems across Greater Victoria. A few samples recorded results with low concentrations of one particular PFAS compound. The concentrations found were well below the current Health Canada MAC.
9. Greater Victoria's drinking water exhibited a slightly higher colour rating in 2024 compared to 2023, but similar to years prior. This was related to the higher than usual algal activity during the summer. Some retail water customers also noticed this change.
10. CRD staff had to deal with a few operational challenges with water quality impact potential, such as the Main #15 break repair in Sooke. Careful consideration of any water quality risks during planning of any work procedure, as well as water quality monitoring during and after repair activities, has ensured that the safety of the drinking water remained protected and the risk to public health was low. Island Health was informed and consulted during this event.
11. The number of water quality inquiries and complaints received by CRD staff in 2024 was comparable to previous years. Staff noticed more complaints and inquiries about the water colour or noticeable water discolouration. Approximately 5% of all inquiries were related to potential health risks from emerging contaminants, such as PFAS or microplastics.
12. The CRD Juan de Fuca System was non-compliant in August due to one sample containing total coliform concentrations higher than the limit of 10 CFU/100 mL, and CRD Sooke/East Sooke System was non-compliant in October due to one sample exceeding the total coliform limit of 10 CFU/100 mL. In all cases, no evidence of an actual drinking water contamination was found, and it was concluded that no risk to public health existed.
13. The CRD Supply Storage Reservoirs, Sidney, Central Saanich, North Saanich, Saanich, Oak Bay and Victoria/Esquimalt systems were in full compliance with the *BC Drinking Water Protection Regulation*.
14. All systems did meet the monthly sampling requirements, as per *BC Drinking Water Protection Regulation*.
15. The analytical results in all CRD and municipal water systems show that the drinking water was of good quality and was safe for consumption throughout 2024.

APPENDIX A
TABLE 1. 2024 UNTREATED (RAW) WATER QUALITY ENTERING GOLDSTREAM WATER TREATMENT PLANT
(Guideline values provide reference only for untreated water)

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Physical Parameters (ND means less than instrument can detect)											
Alkalinity, Total	mg/L	15.85	16	14.00	19.00		15.20	139	8.84 - 17.1	12/year	
Carbon, Dissolved Organic	mg/L as C	1.90	12	1.60	2.40		1.70	116	< 0.5 - 4	12/year	
Carbon, Total Organic	mg/L as C	1.90	12	1.70	2.30	Guideline Archived	1.83	117	0.82 - 3.9	12/year	
Colour, True	TCU	6.00	53	3.00	10.00	≤15 AO	6.00	512	< 2 - 19	52/year	
Conductivity @ 25 C	uS/cm	43.40	53	40.60	49.50		42.35	508	28.2 - 62.9	52/year	
Hardness as CaCO ₃	mg/L	16.75	6	16.20	17.00	No Guideline Required	17.20	107	11.7 - 20.9	6/year	
pH	pH units	7.20	47	6.27	7.80	7.0 - 10.5 AO	7.30	543	6.45 - 7.94	52/year	
Tannins and Lignins	mg/L	< 0.2	2	< 0.2	0.20	Guideline Archived	< 0.2	23	< 0.1 - 0.38	2/year	
Total Dissolved Solids	mg/L	37.00	12	24.00	46.00	≤500 AO	26.8	113	<10 - 58	12/year	
Total Suspended Solids	mg/L	< 1	12	< 1	2.00		<1.0	116	0.16 - < 4	12/year	
Total Solids	mg/L	37.00	12	16.00	72.00		28	109	1.7 - 110	12/year	
Turbidity, Grab Samples	NTU	0.25	241	0.15	RC 3.3	1.0 MAC	0.30	2,408	0.15 - 3.1	250/year	
Ultraviolet Absorption, 5 cm	Abs.@ 254 nm	0.24	51	0.19	0.28		0.26	503	0.133 - 88.2	52/year	
Ultraviolet Transmittance	%	89.10	52	87.60	92.00		88.70	503	0.20 - 94.4	52/year	
Water Temp., Grab Samples	degrees C	11.00	248	3.90	21.50	≤15 AO	10.00	2,453	2.7 - 21.0	250/year	
Non-Metallic Inorganic Chemicals (ND means less than instrument can detect)											
Bromide	ug/L as Br	< 0.01	4	< 0.01	0.01		< 0.01	45	0.000011 - 0.013	4/year	
Chloride	mg/L as Cl	1.50	2	1.40	1.60	≤ 250 AO	2.35	30	< 0.045 - < 10	4/year	
Cyanide	mg/L as Cn	< 0.0005	4	< 0.0005	0.00	0.2 MAC	< 0.0005	30	< 0.0005 - < 0.006	4/year	
Fluoride	mg/L as F	< 0.05	4	< 0.05	< 0.05	1.5 MAC	< 0.05	31	< 0.007 - < 0.05	4/year	
Iodide, dissolved	mg/L as I	< 0.1	2	< 0.1	< 0.1		< 0.1	14	< 0.1 - < 0.1	4/year	
Nitrate, Dissolved	ug/L as N	< 20	12	< 20	28.00	45000 MAC	< 20	110	0.3 - 46.4	12/year	
Nitrite, Dissolved	ug/L as N	< 5	12	< 5	< 5	3000 MAC	< 5	109	< 0.3 - < 10	12/year	
Nitrate + Nitrite	ug/L as N	< 20	12	< 20	28.00		< 20	111	0.3 - 46.4	12/year	
Nitrogen, Ammonia	ug/L as N	< 15	12	< 15	< 15	No Guideline Required	< 15	115	0.079 - 130	12/year	
Nitrogen, Total Kjeldahl	ug/L as N	119.00	12	83.00	227.00		105.44	110	59 - 820	12/year	
Nitrogen, Total	ug/L as N	128.00	12	83.00	227.00		118.00	115	49.4 - 610	12/year	
Phosphate, Ortho, Dissolved	ug/L as P	< 1	12	< 1	1.60		< 3	111	0.1 - 24.3	12/year	
Phosphate, Total, Dissolved	ug/L as P	1.45	12	< 1	4.20		2.30	114	0.35 - 31	12/year	
Phosphate, Total	ug/L as P	3.20	11	1.90	7.80		3.00	115	<1.0 - <10	12/year	
Silica	mg/L as SiO ₂	4.35	12	1.60	5.50		4.17	103	2.96 - 5.6	12/year	
Silicon	ug/L as Si	1935.00	6	1590.00	2450.00		1940.00	72	1550 - 2520	6/year	
Sulphate	mg/L as SO ₄	1.10	12	< 1	2.50	≤ 500 AO	1.40	113	< 0.5 - < 10	12/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Sulphide	mg/L as H ₂ S	< 0.0018	12	< 0.0018	< 0.0018	≤ 0.05 AO	< 0.0018	35	< 0.0018 - < 0.0019	12/year	
Sulphur	mg/L as S	< 3	6	< 3	< 3		< 3	71	< 3 - < 3	6/year	
Metallic Inorganic Chemicals (ND means less than instrument can detect)											
Aluminum	ug/L as Al	10.80	6	5.60	22.40	2900 MAC / 100 OG	15.10	72	3.4 - 52.3	6/year	
Antimony	ug/L as Sb	< 0.5	6	< 0.5	< 0.5	6 MAC	< 0.5	72	< 0.5 - < 5	6/year	
Arsenic	ug/L as As	< 0.1	6	< 0.1	0.10	10 MAC	< 0.1	72	< 0.1 - 0.24	6/year	
Barium	ug/L as Ba	3.70	6	3.30	3.90	2000 MAC	3.80	72	3.3 - 5.3	6/year	
Beryllium	ug/L as Be	< 0.1	6	< 0.1	< 0.1		< 0.1	72	< 0.1 - < 10	6/year	
Bismuth	ug/L as Bi	< 1	6	< 1	< 1		< 1	72	< 1 - < 10	6/year	
Boron	ug/L as B	< 50	6	< 50	< 50	5000 MAC	< 50	72	< 50 - < 50	6/year	
Cadmium	ug/L as Cd	< 0.01	6	< 0.01	0.01	7 MAC	< 0.01	72	< 0.01 - 0.07	6/year	
Calcium	mg/L as Ca	4.88	6	4.65	4.96	No Guideline Required	4.90	72	4.32 - 6.13	6/year	
Chromium	ug/L as Cr	< 1	6	< 1	< 1	50 MAC	< 1	72	< 1 - 5.1	6/year	
Cobalt	ug/L as Co	< 0.2	6	< 0.2	< 0.2		< 0.2	72	< 0.2 - < 0.5	6/year	
Copper	ug/L as Cu	0.84	6	0.37	1.44	2000 MAC / ≤ 1000 AO	1.19	72	0.61 - 13.9	6/year	
Iron	ug/L as Fe	25.35	6	11.20	45.00	≤ 100 AO	24.00	72	12 - 217	6/year	
Lead	ug/L as Pb	< 0.2	6	< 0.2	0.24	5 MAC	< 0.2	72	< 0.2 - 0.3	6/year	
Lithium	ug/L as Li	< 2	6	< 2	< 2		< 5	53	< 2 - 10.4	6/year	
Magnesium	mg/L as Mg	1.13	6	1.05	1.13	No Guideline Required	1.16	72	1.01 - 1.42	6/year	
Manganese	ug/L as Mn	7.10	6	1.30	15.80	120 MAC / ≤ 20 AO	4.75	72	1.4 - 81.8	6/year	
Mercury, Total	ug/L as Hg	< 0.0019	6	< 0.0019	< 0.03	1.0 MAC	< 0.01	71	< 0.0019 - < 10	6/year	
Molybdenum	ug/L as Mo	< 1	6	< 1	< 1		< 1	72	< 1 - 4.9	6/year	
Nickel	ug/L as Ni	< 1	6	< 1	< 1		< 1	72	< 1 - 21.5	6/year	
Potassium	mg/L as K	0.13	6	0.12	0.14		0.13	72	0.117 - 0.214	6/year	
Selenium	ug/L as Se	< 0.1	6	< 0.1	< 0.1	50 MAC	< 0.1	72	< 0.1 - < 0.1	6/year	
Silver	ug/L as Ag	< 0.02	6	< 0.02	< 0.02	No Guideline Required	< 0.02	72	< 0.02 - 0.071	6/year	
Sodium	mg/L as Na	1.61	6	1.50	1.63	≤ 200 AO	1.67	72	1.41 - 2.91	6/year	
Strontium	ug/L as Sr	14.35	6	13.60	15.30	7000 MAC	15.10	72	13.2 - 21.8	6/year	
Thallium	ug/L as Tl	< 0.01	6	< 0.01	< 0.01		< 0.01	72	< 0.01 - < 0.05	6/year	
Tin	ug/L as Sn	< 5	6	< 5	< 5		< 5	72	< 5 - < 5	6/year	
Titanium	mg/L as Ti	< 5	6	< 5	< 5		< 5	72	< 5 - < 5	6/year	
Uranium	ug/L as U	< 0.1	6	< 0.1	< 0.1	20 MAC	< 0.1	72	<0.01-<0.1	6/year	
Vanadium	ug/L as V	< 5	6	< 5	< 5		< 5	72	<5 - <5	6/year	
Zinc	ug/L as Zn	< 5	6	< 5	6.30	≤ 5000 AO	< 5	72	<5.0 - 82.9	6/year	
Zirconium	ug/L as Zr	< 0.1	6	< 0.1	< 0.1		< 0.1	72	<0.1 - <0.5	6/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range	
				Minimum	Maximum				Minimum	
Microbial Parameters										
Coliform Bacteria										
Coliforms, Total	Coliforms/100 mL	5.00	244	< 1	15000.00		10.00	2,413	0 - 24200	250/year
E. coli	E. coli/100 mL	< 1	244	< 1	< 10		< 1	2,415	0 - 13	250/year
Heterotrophic / Other Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	370.00	218	23.00	A 3900		340.00	2,300	< 10 - 7200	250/year
Cyanobacterial Toxins										
Anatoxin a	ug/L	Analyzed as required - last analyzed in 2005					Analyzed as required - last analyzed in 2005			
Microcystin-LR	ug/L	Analyzed as required - last analyzed in 2011				1.5 MAC (Total Microcystins)	Analyzed as required - last analyzed in 2011			
Parasites										
Cryptosporidium, Total oocysts	oocysts/100 L	< 0.1	8	< 0.1	< 0.1	Zero detection desirable	< 0.1	90	<1 - 2	8/year
Giardia, Total cysts	cysts/100 L	< 0.1	8	< 0.1	< 0.1	Zero detection desirable	<0.1	84	<1 - 2	8/year
Radiological Parameters (ND means less than instrument can detect)										
Gross alpha radiation	Bq/L	< 0.02	2	< 0.02	0.02	0.5 (Screening Value)	< 0.02	15	< 0.02 - 0.06	2/year
Gross beta radiation	Bq/L	< 0.02	2	< 0.02	0.02	1.0 (Screening Value)	< 0.02	15	< 0.02 - 0.07	2/year
Iodine-131	Bq/L	0.30	2	< 0.2	< 0.4	6 Bq/L	< 0.2	15	< 0.1 - < 0.4	Special
Cesium-137	Bq/L	0.14	2	< 0.08	< 0.2	10 Bq/L	< 0.1	15	< 0.04 - < 0.2	Special
Organic Parameters (ND means less than instrument can detect)										
Pesticides/Herbicides										
1,4-DDD	ug/L	<0.001	2	<0.001	<0.001	Guideline Archived	< 0.001	11	< 0.001 - < 0.005	2/year
1,4'-DDE	ug/L	<0.001	2	<0.001	<0.001	Guideline Archived	< 0.001	11	< 0.001 - < 0.005	2/year
1,4'-DDT	ug/L	<0.001	2	<0.001	<0.001	Guideline Archived	< 0.001	11	< 0.001 - < 0.005	2/year
2,4,5-T	ug/L	< 0.08	2	< 0.08	< 0.08	Guideline Archived	< 1	19	<0.08 - <1	2/year
2,4,5-TP (Silvex)	ug/L	< 0.08	2	< 0.08	< 0.08	Guideline Archived	0.3	14	<0.01 - <1.0	2/year
2,4-D (2,4-Dichlorophenoxyacetic acid)	ug/L	< 0.05	2	< 0.05	< 0.05	100 MAC	< 0.1	15	< 0.05 - < 0.5	2/year
2,4-D (BEE)	ug/L	< 0.5	2	< 0.5	< 0.5		< 2	23	< 0.5 - < 2	2/year
2,4-DP (Dichlorprop)	ug/L	< 0.08	2	< 0.08	< 0.08		< 1	18	<0.08 - <1.0	2/year
4,4'-DDD	ug/L	< 0.001	2	< 0.001	< 0.001	Guideline Archived	< 0.001	16	<0.001 - <0.005	2/year
4,4'-DDE	ug/L	< 0.001	2	< 0.001	< 0.001	Guideline Archived	< 0.001	16	<0.001 - <0.005	2/year
4,4'-DDT	ug/L	< 0.001	2	< 0.001	< 0.001	Guideline Archived	< 0.001	16	<0.001 - <0.005	2/year
Alachlor	ug/L	Not analyzed in 2024				Guideline Archived	< 0.5	4	< 0.5 - < 0.5	2/year
Aldicarb	ug/L	< 0.1	2	< 0.1	< 0.1	Guideline Archived	< 0.1	20	< 0.1 - < 5	2/year
Aldrin	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	18	< 0.003 - < 0.005	2/year
Aldrin + Dieldrin	ug/L	<0.003	2	<0.003	<0.003	Guideline Archived	< 0.003	16	< 0.003 - < 0.005	2/year
Atrazine	ug/L	< 0.05	2	< 0.05	< 0.05	5 MAC	< 0.1	13	< 0.05 - < 0.5	2/year

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range	
				Minimum	Maximum				Minimum Maximum	
Azinphos-methyl	ug/L	< 0.2	2	< 0.2	< 0.2	Guideline Archived	<0.01	13	<0.001 - <2	2/year
BHC (alpha)	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year
BHC (beta)	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year
BHC (delta)	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.5	2/year
Bendiocarb	ug/L	< 0.1	2	< 0.1	< 0.1	Guideline Archived	< 0.1	20	< 0.1 - < 2	Irregular
Bromacil	ug/L	< 0.05	2	< 0.05	< 0.05		< 0.1	19	< 0.05 - < 0.1	2/year
Bromoxynil	ug/L	< 0.02	2	< 0.02	< 0.02	30 MAC	< 0.1	20	< 0.02 - < 0.1	2/year
Captan	ug/L	< 0.1	2	< 0.1	< 0.1		< 0.1	17	< 0.003 - < 1	2/year
Carbaryl	ug/L	< 0.1	2	< 0.1	< 0.1	Guideline Archived	< 0.1	20	< 0.1 - < 5	2/year
Carbofuran	ug/L	< 0.1	2	< 0.1	< 0.1	Guideline Archived	< 0.1	20	< 0.1 - < 5	2/year
Chlordane (alpha)	ug/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	18	< 0.003 - < 0.005	2/year
Chlordane (gamma)	ug/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	18	< 0.003 - < 0.005	2/year
Chlorpyearifos (Dursban)	ug/L	< 0.01	2	< 0.01	< 0.01	90 MAC	< 0.01	21	< 0.0008 - < 1	2/year
Chlorothalonil	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	17	< 0.003 - < 0.05	2/year
Cyanazine (Bladex)	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.1	20	< 0.05 - < 1	2/year
Demeton	ug/L	< 2	2	< 2	< 2		< 2	16	< 2 - < 2	2/year
Diazinon	ug/L	< 0.02	2	< 0.02	< 0.02	Guideline Archived	< 0.02	21	< 0.002 - < 1	2/year
Dicamba	ug/L	< 0.005	2	< 0.005	< 0.005	110 MAC	< 0.006	20	< 0.005 - < 1	2/year
Diclofop-methyl	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.05	19	< 0.0007 - < 0.9	2/year
Dichlorvos	ug/L	< 2	2	< 2	< 2		< 2	19	< 2 - < 2	2/year
Dieldrin	ug/L	< 0.002	2	< 0.002	< 0.002		< 0.002	18	< 0.002 - < 0.005	2/year
Dimethoate	ug/L	< 0.05	2	< 0.05	< 0.05	20 MAC	< 0.05	8	< 0.05 - < 0.05	2/year
Dinoseb (DNBP)	ug/L	< 0.02	2	< 0.02	< 0.02	Guideline Archived	< 0.05	9	< 0.02 - < 0.05	2/year
Diquat	ug/L	< 7	2	< 7	< 7	50 MAC	< 7	19	< 7 - < 350	2/year
Endosulfan I	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	18	< 0.003 - < 0.005	2/year
Endosulfan II	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	18	< 0.003 - < 0.005	2/year
Endosulfan Sulphate	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year
Endosulfan (Total)	ug/L	<0.003	2	<0.003	<0.003		< 0.003	17	<0.003 - <0.005	2/year
Endrin	ug/L	< 0.005	2	< 0.005	< 0.005	Guideline Archived	< 0.005	18	< 0.005 - < 0.005	2/year
Endrin Aldehyde	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year
Endrin Ketone	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year
Ethion	ug/L	< 1	2	< 1	< 1		< 1	20	<0.5 - <1	2/year
Parathion Ethyl	ug/L	Not analyzed in 2024					<1	13	<1.0 - <2.0	2/year
Fenchlorophos (Ronnel)	ug/L	< 2	2	< 2	< 2		< 2	19	< 0.5 - < 2	2/year
Fenthion	ug/L	< 1	2	< 1	< 1		< 1	19	< 0.5 - < 1	2/year
Fonofos	ug/L	< 2	2	< 2	< 2		< 2	19	< 0.5 - < 2	2/year
Glyphosate	ug/L	< 10	2	< 10	< 10	280 MAC	< 10	19	< 10 - < 10	2/year
Heptachlor	ug/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	18	< 0.003 - < 0.005	2/year
Heptachlor Epoxide	ug/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	18	< 0.003 - < 0.005	2/year

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Imazapyear	ug/L	< 0.1	2	< 0.1	< 0.1		< 0.1	16	< 0.1 - < 0.1	2/year	
IPBC	ug/L	< 0.1	2	< 0.1	< 0.1		< 0.1	16	< 0.1 - < 0.1	2/year	
Malathion	ug/L	< 0.05	2	< 0.05	< 0.05	190 MAC	< 0.05	21	< 0.002 - < 2	2/year	
MCPA	ug/L	0.02	2	< 0.02	0.02	350 MAC	< 0.025	27	< 0.02 - < 2	2/year	
MCPP	ug/L	< 0.08	2	< 0.08	< 0.08		< 2	20	< 0.08 - < 2	2/year	
Methoxychlor	ug/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	18	< 0.003 - < 0.01	2/year	
Methyl Parathion	ug/L	< 2	2	< 2	< 2	Guideline Archived	< 2	19	< 0.1 - < 2	2/year	
Metolachlor	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.1	20	< 0.05 - < 0.5	2/year	
Metribuzin (Sencor)	ug/L	< 0.1	2	< 0.1	< 0.1	80 MAC	< 0.1	21	< 0.0004 - < 5	2/year	
Mevinphos	ug/L	< 2	2	< 2	< 2		< 2	19	< 0.5 - < 2	2/year	
Mirex	mg/L	< 0.003	2	< 0.003	< 0.003	Guideline Archived	< 0.003	19	< 0.003 - < 0.005	2/year	
Nitrilotriacetic acid (NTA)	ug/L	< 0.05	2	< 0.05	< 0.05	400 MAC	< 0.05	19	< 0.05 - 0.099	Irregular	
Oxychlordane	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	17	< 0.003 - < 0.005	2/year	
Parathion	ug/L	<0.05	2	< 0.05	<0.05	Guideline Archived	< 0.05	27	< 0.0004 - < 2	2/year	
Paraquat (ion)	ug/L	< 1	2	< 1	< 1	Guideline Archived	< 1	19	< 1 - < 1	2/year	
Permethrin	ug/L	< 0.05	2	< 0.05	< 0.05		< 0.04	17	< 0.0005 - < 3.3	2/year	
Phorate (Thimet)	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.05	21	< 0.0003 - < 1	2/year	
Phosmet	ug/L	< 2	2	< 2	< 2		< 2	19	< 0.5 - < 2	2/year	
Picloram	ug/L	< 0.08	2	< 0.08	< 0.08	Guideline Archived	<0.1	20	<0.08 - <5.0	2/year	
Prometryn	ug/L	< 1	2	< 1	< 1		< 1	17	< 0.25 - < 1	Irregular	
Simazine	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.1	20	< 0.05 - < 1	2/year	
Tebuthiuron	ug/L	< 0.1	2	< 0.1	< 0.1		< 0.1	16	< 0.1 - < 0.1	2/year	
Temephos	ug/L	Not analyzed in 2024				Guideline Archived	< 10	5	< 10 - < 10	2/year	
Terbufos	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.05	21	< 0.0002 - < 0.5	2/year	
Toxaphene	ug/L	< 0.2	2	< 0.2	< 0.2	Guideline Archived	< 0.2	8	< 0.2 - < 0.2	2/year	
Trifluralin	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.05	21	< 0.0003 - < 1	2/year	
Polycyclic Aromatic Hydrocarbons (PAH's)											
Acenaphthene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.03	20	< 0.01 - < 0.2	2/year	
Acenaphthylene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.03	20	< 0.01 - < 0.2	2/year	
Anthracene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.01	20	< 0.01 - < 0.1	2/year	
Benzo(a)anthracene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.01	20	< 0.01 - < 0.1	2/year	
Benzo(a)pyrene	ug/L	< 0.005	2	< 0.005	< 0.005	0.04 MAC	< 0.005	20	< 0.005 - < 0.05	2/year	
Benzo(b)fluoranthene	ug/L	<0.01	2	<0.01	<0.01	Guideline Archived	0.04	12	< 0.01 - < 0.2	2/year	
Benzo(g,h,i)perylene	ug/L	< 0.02	2	< 0.02	< 0.02	Guideline Archived	0.03	20	< 0.02 - < 0.2	2/year	
Benzo(b&j)fluoranthene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.01	6	< 0.01 - < 0.04	2/year	
Benzo(k)fluoranthene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.03	20	< 0.01 - < 0.2	2/year	
Chrysene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.02	20	< 0.01 - < 0.15	2/year	
Dibenz(a,h)anthracene	ug/L	< 0.02	2	< 0.02	< 0.02	Guideline Archived	< 0.02	20	< 0.003 - < 0.2	2/year	
Fluoranthene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.02	20	< 0.01 - < 0.1	2/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Fluorene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.02	20	< 0.01 - < 0.15	2/year	
Indeno(1,2,3-c,d)pyrene	ug/L	< 0.02	2	< 0.02	< 0.02	Guideline Archived	0.04	20	< 0.02 - < 0.3	2/year	
Naphthalene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.04	19	< 0.01 - < 2.5	2/year	
Phenanthrene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	0.03	20	< 0.01 - < 0.15	2/year	
Pyrene	ug/L	< 0.01	2	< 0.01	< 0.01	Guideline Archived	< 0.02	20	< 0.01 - < 0.15	2/year	
Volatile Hydrocarbons	ug/L	< 300	4	< 300	< 300	Guideline Archived	< 300	29	< 300 - < 300	2/year	
Phenols											
2,3,4,5-Tetrachlorophenol	ug/L	0.45	2	< 0.4	< 0.5		< 0.5	16	< 0.1 - < 1	2/year	
2,3,4,6-Tetrachlorophenol	ug/L	0.45	2	< 0.4	< 0.5	Guideline Archived	< 0.5	19	< 0.1 - < 1	2/year	
2,3,5,6-Tetrachlorophenol	ug/L	0.45	2	< 0.4	< 0.5		< 0.5	16	< 0.1 - < 1	2/year	
2,4,6-Trichlorophenol	ug/L	0.45	2	< 0.4	< 0.5	5.0 MAC and ≤ 2.0 AO	< 0.5	20	< 0.1 - < 2	2/year	
2,4-Dichlorophenol	ug/L	< 0.5	2	< 0.5	< 0.5	Guideline Archived	< 0.1	7	< 0.1 - < 0.5	2/year	
2,4-Dimethylphenol	ug/L	2.25	2	< 2	< 2.5		<0.05	19	<0.05 - <10.0	2/year	
2,4-Dinitrophenol	ug/L	5.85	2	< 5.2	< 6.5		< 6.5	20	< 0.05 - < 26	2/year	
2-Chlorophenol	ug/L	0.45	2	< 0.4	< 0.5		< 0.5	20	< 0.1 - < 2	2/year	
2-Nitrophenol	ug/L	2.25	2	< 2	< 2.5		< 0.5	13	< 0.5 - < 2.5	2/year	
4,6-Dinitro-2-Methylphenol	ug/L	2.25	2	< 2	< 2.5		< 2.5	20	< 0.5 - < 10	2/year	
4-Chloro-3-Methylphenol	ug/L	< 0.25	2	< 0.25	< 0.25		< 0.2	13	< 0.2 - < 1	2/year	
4-Nitrophenol	ug/L	2.25	2	< 2	< 2.5		< 2.5	20	< 0.5 - < 10	2/year	
Alpha-Terpineol	ug/L	4.50	2	< 4	< 5		< 5	20	< 1 - < 20	2/year	
Pentachlorophenol	ug/L	0.45	2	< 0.4	< 0.5	60 MAC and ≤ 30 AO	< 0.5	20	< 0.1 - < 2	2/year	
Phenol	ug/L	2.25	2	< 2	< 2.5	Guideline Archived	< 1.5	28	< 0.5 - < 10	2/year	
Polychlorinated Biphenyls (PCBs)											
PCB-1016	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1221	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1232	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1242	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1248	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1254	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	17	< 0.00005 - < 0.0001	Irregular	
PCB-1260	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	18	< 0.00005 - < 0.0001	Irregular	
PCB-1262	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	13	< 0.00005 - < 0.0001	Irregular	
PCB-1268	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	13	< 0.00005 - < 0.0001	Irregular	
Total PCBs	ug/L	< 0.00005	2	< 0.00005	< 0.00005	Guideline Archived	< 0.00005	18	< 0.00005 - < 0.0001	Irregular	
Other Synthetic Chemicals											
1,1,1-Trichloroethane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	20	< 0.5 - < 0.5	2/year	
1,1,1,2-Tetrachloroethane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	20	< 0.5 - < 0.5	2/year	
1,1,2,2-Tetrachloroethane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	19	< 0.5 - < 0.5	2/year	
1,1,2-Trichloroethane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	20	< 0.5 - < 0.5	2/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
1,1-Dichloroethane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	20	< 0.5 - < 0.5	2/year	
1,1-Dichloroethene (1,1-Dichloroethylene)	ug/L	< 0.5	2	< 0.5	< 0.5	14 MAC	< 0.5	18	< 0.5 - < 0.5	2/year	
1,2,3-Trichlorobenzene	ug/L	< 2	2	< 2	< 2		< 2	20	< 2 - < 2	2/year	
1,2,4-Trichlorobenzene	ug/L	< 2	2	< 2	< 2		< 2	20	< 0.04 - < 2	2/year	
1,2-Dibromoethane	ug/L	< 0.2	2	< 0.2	< 0.2		< 0.2	20	< 0.2 - < 0.2	2/year	
1,2-Dichlorobenzene	ug/L	< 0.5	2	< 0.5	< 0.5	Guideline Archived	< 0.5	20	< 0.5 - < 0.5	2/year	
1,2-Dichloroethane	ug/L	< 0.5	2	< 0.5	< 0.5	5.0 MAC	< 0.5	20	< 0.5 - < 0.5	2/year	
1,2-Dichloroethene (cis)	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
1,2-dichloroethene (trans)	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
1,2-Dichloropropane	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	20	< 0.5 - < 0.5	2/year	
1,2-Diphenylhydrazine	ug/L	0.05	2	< 0.04	< 0.05		< 0.05	20	< 0.01 - < 0.2	2/year	
1,3-Dichlorobenzene	ug/L	< 0.5	2	< 0.5	< 0.5		< 0.5	19	< 0.5 - < 0.5	2/year	
1,3-Dichloropropene (cis)	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
1,3-Dichloropropene (trans)	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
1,4-Dichlorobenzene	ug/L	< 0.5	2	< 0.5	< 0.5	5.0 MAC and ≤ 1.0 AO	< 0.5	20	< 0.5 - < 0.5	2/year	
1,4-Dioxane	ug/L	< 1	2	< 1	< 1					2/year	
2,4-Dinitrotoluene	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1.3	2/year	
2,6-Dinitrotoluene	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
2-Chloronaphthalene	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
1-Methylnaphthalene	ug/L	< 0.01	2	< 0.01	< 0.01		< 0.01	12	< 0.01 - < 0.05	2/year	
2-Methylnaphthalene	ug/L	< 0.01	2	< 0.01	< 0.01		0.02	20	< 0.01 - 0.16	2/year	
3,3'-Dichlorobenzidene	ug/L	0.45	2	< 0.4	< 0.5		< 0.5	20	< 0.1 - < 2	2/year	
4-Bromophenyl-phenylether	ug/L	0.05	2	< 0.04	< 0.05		< 0.05	20	< 0.01 - < 0.2	2/year	
4-Chlorophenyl-phenylether	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
Atrazine	ug/L	< 0.05	2	< 0.05	< 0.05	5.0 MAC	< 0.1	20	< 0.05 - < 0.5	2/year	
Benzene	ug/L	< 0.4	4	< 0.4	< 0.4	5.0 MAC	< 0.4	30	< 0.4 - < 0.4	2/year	
Benzidine	ug/L	Not analyzed in 2024					< 10	7	< 10 - < 50	2/year	
Bis(-2-chloroethoxy) methane	ug/L	Not analyzed in 2024					< 0.25	1	< 0.25 - < 0.25	2/year	
Bis(-2-chloroethyl) ether	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
Bis(2-chloroisopropyl) ether	ug/L	Not analyzed in 2024					< 0.25	1	< 0.25 - < 0.25	2/year	
Bis(2-ethylhexyl) phthalate	ug/L	4.50	2	< 4	< 5	Guideline Archived	< 5	20	< 1 - < 20	2/year	
Bromodichloromethane	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Bromobenzene	ug/L	< 2	2	< 2	< 2		< 2	18	< 2 - < 2	2/year	
Bromoform	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Bromomethane	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Butylbenzyl phthalate	ug/L	Not analyzed in 2024				Guideline Archived	< 0.5	13	< 0.5 - < 2.5	2/year	
Carbon Tetrachloride (Tetrabromomethane)	ug/L	< 0.5	2	< 0.5	< 0.5	2.0 MAC	< 0.5	20	< 0.5 - < 0.5	2/year	
Chloroform	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Chloroethane	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Chloromethane	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Desethyl Atrazine	ug/L	< 0.05	2	< 0.05	< 0.05		< 0.1	15	< 0.05 - < 0.5	2/year	
Dibromochloromethane	ug/L	< 1	2	< 1	< 1		< 1	20	< 1 - < 1	2/year	
Dichlorodifluoromethane	ug/L	< 2	2	< 2	< 2		< 2	20	< 2 - < 2	2/year	
Dichloromethane	ug/L	< 2	2	< 2	< 2	50 MAC	< 2	19	< 2 - < 2	2/year	
Diethyl phthalate	ug/L	< 0.25	2	< 0.25	< 0.25	Guideline Archived	< 0.25	19	< 0.05 - 1	2/year	
Dimethyl phthalate	ug/L	0.23	2	< 0.2	< 0.25	Guideline Archived	< 0.25	19	< 0.05 - < 1	2/year	
Di-n-butyl phthalate	ug/L	Not analyzed in 2024				Guideline Archived	< 2.5	18	< 0.05 - < 10	2/year	
Di-n-ocyl phthalate	ug/L	0.23	2	< 0.2	< 0.25	Guideline Archived	< 0.25	19	< 0.05 - < 1	2/year	
Diuron	ug/L	< 0.1	2	< 0.1	< 0.1	Guideline Archived	< 0.1	20	< 0.1 - < 10	2/year	
Ethylbenzene	ug/L	< 0.4	4	< 0.4	< 0.4	140 MAC and ≤ 1.6 AO	< 0.4	30	< 0.4 - < 0.4	2/year	
Formaldehyde	ug/L	< 10	2	< 10	< 10	No Guideline Required	< 10	18	< 10 - < 10	2/year	
Hexachlorobenzene	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.5	2/year	
Hexachlorobutadiene	ug/L	0.38	4	< 0.2	< 0.5		< 0.25	29	< 0.004 - < 1	2/year	
Hexachlorocyclopentadiene	ug/L	0.23	2	< 0.2	< 0.25		< 0.05	21	< 0.01 - < 1	2/year	
Hexachloroethane	ug/L	0.23	2	< 0.2	< 0.25		< 0.05	21	< 0.003 - < 1	2/year	
Isophorone	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
Methyltertiarybutylether (MTBE)	ug/L	< 4	4	< 4	< 4	15 AO	< 4	36	< 4 - < 4	2/year	
Monochlorobenzene	ug/L	< 0.5	2	< 0.5	< 0.5	Guideline Archived	< 0.5	20	< 0.5 - < 0.5	2/year	
N-Nitrosodimethylamine (NDMA)	ug/L	0.90	2	< 0.8	< 1	0.04 MAC	< 0.2	14	< 0.2 - < 1	2/year	
Nitrobenzene	ug/L	0.23	2	< 0.2	< 0.25		< 0.25	20	< 0.05 - < 1	2/year	
N-nitroso-di-n-propylamine	ug/L	0.90	2	< 0.8	< 1		< 1	20	<0.2 - <4	2/year	
N-nitrosodiphenylamine	ug/L	0.90	2	< 0.8	< 1		< 1	6	< 1 - < 4	2/year	
Octachlorostyrene	ug/L	< 0.003	2	< 0.003	< 0.003		< 0.003	19	< 0.003 - < 0.005	2/year	
Styrene	ug/L	0.45	4	< 0.4	< 0.5		< 0.5	30	< 0.4 - < 0.5	2/year	
Tetrachloroethene	ug/L	< 0.5	2	< 0.5	< 0.5	10 MAC	< 0.5	20	< 0.5 - < 0.5	2/year	
Toluene	ug/L	< 0.4	4	< 0.4	< 0.4	60 MAC and ≤ 24 AO	< 0.4	30	< 0.4 - < 0.4	2/year	
Triallate	ug/L	< 0.05	2	< 0.05	< 0.05	Guideline Archived	< 0.05	21	< 0.0003 - < 1	2/year	
Trichloroethylene	ug/L	< 0.5	2	< 0.5	< 0.5	5.0 MAC	< 0.5	17	< 0.5 - < 0.5	2/year	
Trichlorofluoromethane	ug/L	< 4	2	< 4	< 4		< 4	20	< 4 - < 4	2/year	
Trichlorotrifluoroethane	ug/L	< 2	2	< 2	< 2		< 2	16	< 2 - < 2	2/year	
Vinyl Chloride (Chloroethene)	ug/L	< 0.5	2	< 0.5	< 0.5	2.0 MAC	< 0.5	20	< 0.5 - < 0.5	2/year	
o-Xylene	ug/L	< 0.4	4	< 0.4	< 0.4		< 0.4	30	< 0.4 - < 0.4	2/year	
m&p-Xylene	ug/L	< 0.4	4	< 0.4	< 0.4		< 0.4	30	< 0.4 - < 1	2/year	
Xylenes (Total)	ug/L	< 0.4	4	< 0.4	< 0.4	90 MAC and ≤ 20 AO	< 0.4	30	< 0.4 - < 0.4	2/year	
Miscellaneous											
Perfluoropentanoic Acid (PFPeA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year	
Perfluorohexanoic Acid (PFHxA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year	
Perfluoroheptanoic Acid (PFHpA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year	

Appendix A, Table 1 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range	
				Minimum	Maximum				Minimum Maximum	
Perfluorooctanoic Acid (PFOA)	ng/L	< 2	2	< 2	< 2	200 MAC	< 20	7	< 2 - < 20	2/year
Perfluorononanoic Acid (PFNA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorododecanoic acid (PFDoA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorodecanoic Acid (PFDA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluoroundecanoic Acid (PFUnA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorotridecanoic Acid (PFTRDA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorotetradecnoic Acid (PFTEDA)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorobutanesulfonic Acid (PFBS)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluoropentanesulfonic Acid (PFPes)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorohexanesulfonic Acid (PFHxS)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluoroheptanesulfonic Acid (PFHpS)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorooctanesulfonic Acid (PFOS)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorononane sulfonic Acid (PFNS)	ng/L	< 2	2	< 2	< 2	600 MAC	< 20	7	< 2 - < 20	2/year
Perfluorodecanesulfonic Acid (PFDS)	ng/L	< 2	2	< 2	< 2		< 20	7	< 2 - < 20	2/year
Perfluorooctane Sulfonamide (PFOSA)	ng/L	< 4	2	< 4	< 4		< 20	7	< 4 - < 20	2/year
4:2 Flurotelomer Sulfonic Acid	ng/L	< 4	2	< 4	< 4		<20	7	<4 - <20	2/year
6:2 Flurotelomer Sulfonic Acid	ng/L	< 4	2	< 4	< 4		<20	7	<4 - <20	2/year
8:2 Flurotelomer Sulfonic Acid	ng/L	< 4	2	< 4	< 4		<20	7	<4 - <20	2/year

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A
TABLE 2. 2024 TREATED WATER QUALITY AFTER GOLDSTREAM WATER TREATMENT PLANT

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Physical Parameters (ND means less than instrument can detect)											
Alkalinity, Total	mg/L	17.85	20	15.4	23		13.90	135	6.92-18.3	12/year	
Carbon, Dissolved Organic	mg/L	1.9	11	1.6	2.6		1.80	113	< 0.5-370	12/year	
Carbon, Total Organic	mg/L	1.9	11	1.6	2.5	Guideline Archived	1.80	113	0.93 - 4.99	12/year	
Colour, True	TCU	4	52	< 2	12	≤ 15 AO	3.40	498	< 1.4-17	52/year	
Conductivity @ 25 C	uS/cm	55.1	53	50	65.5		46.95	496	31.1-98.6	52/year	
Hardness as CaCO ₃	mg/L	16.4	11	15.7	18.6	No Guideline Required	17.10	144	12-22.1	12/year	
Odour	Odour Profile	1	221	1	1	Inoffensive	1.00	2,286	1-1	250/year	
pH	pH units	7.6	56	6.42	8.33	7.0-10.5 AO	7.13	523	6.54-8.24	52/year	
Taste	Flavour Profile	1	220	1	1	Inoffensive	1.00	2,274	1-1	250/year	
Total Dissolved Solids	mg/L	30	11	26	50	≤500 AO	28.00	102	<10 - 78.0	12/year	
Total Suspended Solids	mg/L	< 1	11	< 1	2		< 1	112	0.1-10.9	12/year	
Total Solids	mg/L	44	11	30	70		32.00	98	<1 - 110	12/year	
Turbidity, Grab Samples	NTU	0.25	239	0.1	1.4	1.0 MAC	0.30	2,340	2.5-21.1	250/year	
Water Temp., Grab Samples	degrees C	11.4	253	3.7	21.1	≤ 15 AO	10.40	2,343	0.00	250/year	
Non-Metallic Inorganic Chemicals (ND means less than instrument can detect)											
Bromate	mg/L as BrO3	< 0.0095	8	< 0.0095	< 0.0095	0.01 MAC	< 0.0095	33	< 0.0095-0.011	12/year	
Bromide	ug/L as Br	0.101	4	0.093	0.256		< 0.01	44	0.000018-0.046	4/year	
Chloride	mg/L as Cl	4.75	2	4.4	5.1	≤ 250 AO	4.20	31	< 0.045-< 10	4/year	
Chlorate, dissolved	mg/L as ClO2	< 0.1	10	< 0.1	0.38	1 MAC	< 0.1	39	< 0.1-< 0.1	4/year	
Chlorite, dissolved	mg/L as ClO3	Not analyzed in 2024				1 MAC	< 0.1	10	< 0.1-< 0.1	12/year	
Cyanide	mg/L as Cn	< 0.0005	4	< 0.0005	< 0.0005	0.2 MAC	< 0.0005	30	< 0.0005-< 0.006	4/year	
Fluoride	mg/L as F	< 0.05	4	< 0.05	< 0.05	1.5 MAC	<0.02	27	<0.02 - <0.05	4/year	
Nitrate, Dissolved	ug/L as N	< 20	17	< 20	26	45000 MAC	< 20	109	< 0.02-47.5	12/year	
Nitrite, Dissolved	ug/L as N	< 5	17	< 5	< 5	3000 MAC	< 5	108	< 0.3-5	12/year	
Nitrate + Nitrite	ug/L as N	< 20	17	< 20	26	-	< 20	109	2.9-47.5	12/year	
Nitrogen, Ammonia	ug/L as N	250	11	170	370	No Guideline Required	210.00	113	0.11-760	12/year	
Nitrogen, Total Kjeldahl	ug/L as N	460	11	332	590		367.50	108	74-950	12/year	
Nitrogen, Total	ug/L as N	460	11	352	590		360.00	113	75.6-976	12/year	
Phosphate, Ortho, Dissolved	ug/L as P	< 1	11	< 1	3		< 3	109	0.1-6.2	12/year	
Phosphate, Total, Dissolved	ug/L as P	1.8	11	1.1	6.7		2.60	113	0.8 - 18	12/year	
Phosphate, Total	ug/L as P	2.6	11	<1.6	5.5		2.89	102	<1 - 14	12/year	
Silica	mg/L as SiO2	4.4	11	4	5.5		4.16	103	2.91-5.2	12/year	
Silicon	ug/L as Si	1930	11	1620	2360		1960.00	114	1400-2740	12/year	
Sulphate	mg/L as SO4	1.2	11	< 1	1.6	≤ 500 AO	1.40	111	0.8-< 10	12/year	

Appendix A, Table 2 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Sulphide	mg/L as H2S	< 0.0018	11	< 0.0018	< 0.0018	≤ 0.05 AO	< 0.0018	35	< 0.0018-0.027	12/year	
Sulphur	mg/L as S	< 3	11	< 3	< 3		< 3	114	< 3-< 3	12/year	
Metallic Inorganic Chemicals (ND means less than instrument can detect)											
Aluminum	ug/L as Al	11.5	11	5.9	22.2	2900 MAC / 100 OG	15.85	114	3.6-67.7	12/year	
Antimony	ug/L as Sb	< 0.5	11	< 0.5	< 0.5	6 MAC	< 0.5	114	< 0.02-< 0.5	12/year	
Arsenic	ug/L as As	< 0.1	11	< 0.1	0.13	10 MAC	< 0.1	114	0.04-0.17	12/year	
Barium	ug/L as Ba	3.6	11	3.3	4.2	2000 MAC	3.80	114	3.3-4.8	12/year	
Beryllium	ug/L as Be	< 0.1	11	< 0.1	< 0.1		< 0.1	113	< 0.01-< 0.1	12/year	
Bismuth	ug/L as Bi	< 1	11	< 1	< 1		< 1	114	< 0.005-< 1	12/year	
Boron	ug/L as B	< 50	11	< 50	< 50	5000 MAC	< 50	114	< 10-50	12/year	
Cadmium	ug/L as Cd	< 0.01	11	< 0.01	< 0.01	7 MAC	< 0.01	114	< 0.005-< 0.1	12/year	
Calcium	mg/L as Ca	4.76	11	4.55	5.37	No Guideline Required	4.90	114	4.18-6.82	12/year	
Chromium	ug/L as Cr	< 1	11	< 1	< 1	50 MAC	< 1	114	< 0.1-1.2	12/year	
Cobalt	ug/L as Co	< 0.2	11	< 0.2	< 0.2		< 0.2	114	0.023-< 0.5	12/year	
Copper	ug/L as Cu	1.65	11	1.07	3.72	2000 MAC / ≤ 1000 AO	8.62	114	1.03-202	12/year	
Iron	ug/L as Fe	17.4	11	10.4	52	≤ 100 AO	24.60	114	10.5-198	12/year	
Lead	ug/L as Pb	< 0.2	11	< 0.2	1.94	5 MAC	< 0.2	114	0.017-0.92	12/year	
Lithium	ug/L as Li	< 2	11	< 2	< 2		< 2	76	< 0.5-13.5	12/year	
Magnesium	mg/L as Mg	1.1	11	0.997	1.26	No Guideline Required	1.14	114	0.146-1.41	12/year	
Manganese	ug/L as Mn	4.5	11	1.3	17.3	120 MAC / ≤ 20 AO	4.50	114	1.4-51.1	12/year	
Mercury, Total	ug/L as Hg	< 0.0019	11	< 0.0019	< 0.03	1.0 MAC	< 0.002	112	< 0.0019-< 10	12/year	
Molybdenum	Ug/L as Mo	< 1	11	< 1	< 1		< 1	114	< 0.05-< 1	12/year	
Nickel	mg/L as Ni	< 1	11	< 1	< 1		< 1	114	0.206-2	12/year	
Potassium	mg/L as K	0.126	11	0.115	0.136		0.13	114	0.111-0.216	12/year	
Selenium	ug/L as Se	< 0.1	11	< 0.1	< 0.1	50 MAC	< 0.1	114	< 0.04-0.21	12/year	
Silver	ug/L as Ag	< 0.02	11	< 0.02	< 0.02	No Guideline Required	< 0.02	114	< 0.005-0.058	12/year	
Sodium	mg/L as Na	3.7	11	3.51	4.49	≤ 200 AO	1.75	114	1.39-4.17	12/year	
Strontium	ug/L as Sr	14.4	11	13.1	15.8	7000 MAC	14.95	114	13-19.7	12/year	
Thallium	ug/L as Tl	< 0.01	11	< 0.01	< 0.01		< 0.01	114	< 0.002-< 0.05	12/year	
Tin	ug/L as Sn	< 5	11	< 5	< 5		< 5	114	< 0.2-< 5	12/year	
Titanium	ug/L as Ti	< 5	11	< 5	< 5		< 5	114	< 0.05-< 5	12/year	
Uranium	ug/L as U	< 0.1	11	< 0.1	< 0.1	20 MAC	< 0.1	114	0.004-< 0.1	12/year	
Vanadium	ug/L as V	< 5	11	< 5	< 5		< 5	114	<0.2-<5	12/year	
Zinc	ug/L as Zn	< 5	11	< 5	< 5	≤ 5000 AO	< 5	114	0.37-54.1	12/year	
Zirconium	ug/L as Zr	< 0.1	11	< 0.1	< 0.1		< 0.1	114	<0.1-<0.5	12/year	
Microbial Parameters (ND means less than method or instrument can detect)											
Coliform Bacteria											
Coliforms, Total	CFU/100 mL	< 1	307	< 1	330	0 MAC	<1	2,358	<1 - 200	250/year	

Appendix A, Table 2 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range	
				Minimum	Maximum				Minimum	
E. coli	CFU/100 mL	< 1	307	< 1	< 1	0 MAC	<1	2,356	<1 - <1	250/year
Heterotrophic/Other Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	< 10	221	< 1	360		< 10	2,212	<1 - 770	250/year
Disinfectants (ND means less than instrument can detect)										
Total Residual Chlorine	mg/L as Cl ₂	2.01	242	1.59	3.14	No Guideline Required	1.89	1,154	0.8 - 2.33	250/year
Monochloramine	mg/L as Cl ₂	1.86	242	1.29	3.09	No Guideline Required	1.75	1,139	0-2.22	250/year

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A
TABLE 3. 2024 TREATED WATER QUALITY AFTER SOOKE RIVER ROAD WATER TREATMENT PLANT

Parameter	2024 Analytical Results					Canadian Guidelines	Ten Year Results (2014-2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Physical Parameters (ND means less than instrument can detect)											
Alkalinity, Total	mg/L	18.1	17	15.7	20.0		16.4	116	7.1-19	12/year	
Colour, True	TCU	4.0	37	< 2	9.0	≤ 15 AO	3.0	328	1-11.3	52/year	
Conductivity @ 25 C	uS/cm	59.7	37	54.5	63.1		56.6	325	26.4-71.6	52/year	
Hardness as CaCO ₃	mg/L	17.1	6	16.1	18.0	No Guideline Required	16.6	49	14.8-23.9	6/year	
Odour	Flavour Profile	1.0	35	1.0	1.0	Inoffensive	1.0	341	1-1	52/year	
pH	pH units	7.7	36	6.9	8.0	7.0-10.5 AO	7.5	321	7-8.32	52/year	
Taste	Flavour Profile	1.0	35	1.0	1.0	Inoffensive	1.0	342	1-2	52/year	
Turbidity, Grab Samples	NTU	0.3	37	0.2	0.4	1 MAC	0.3	353	0.15 - 0.95	52/year	
Water Temp., Grab Samples	degrees C	11.5	38	4.6	19.0	≤ 15 AO	10.5	355	1.19-20	52/year	
Microbial Parameters (ND means less than instrument can detect)											
Coliform Bacteria											
Coliforms, Total	CFU/100 mL	< 1	43	< 1	< 1	0 MAC	< 1	357	<1 - 1	52/year	
<i>E. coli</i>	CFU/100 mL	< 1	43	< 1	< 1	0 MAC	< 1	358	<1 - <1	52/year	
Heterotrophic Bacteria											
<i>Hetero. Plate Count, 28C (7 day)</i>	CFU/1 mL	< 10	35.0	< 1	29.0		< 10	314	<1 - 210	52/year	
Disinfectants (ND means less than instrument can detect)											
Disinfectants											
Total Residual Chlorine	mg/L as Cl ₂	2.1	37.0	1.8	2.3	No Guideline Required	1.9	187	1.27-2.4	52/year	
Monochloramine	mg/L as Cl ₂	1.9	37.0	1.5	2.1	No Guideline Required	1.7	186	1.15-2.16	52/year	
Metallic Inorganic Chemicals (ND means less than instrument can detect)											
Aluminum	ug/L as Al	7.9	6.0	5.0	14.9	2900 MAC / 100 OG	11.7	49	4.4-22.7	6/year	
Antimony	ug/L as Sb	< 0.5	6.0	< 0.5	< 0.5	6 MAC	< 0.5	49	< 0.5-< 0.5	6/year	
Arsenic	ug/L as As	< 0.1	6.0	< 0.1	< 0.1	10 MAC	< 0.1	49	< 0.1-< 0.1	6/year	
Barium	ug/L as Ba	3.6	6.0	3.4	3.9	2000 MAC	3.7	49	3.2-4.2	6/year	
Beryllium	ug/L as Be	< 0.1	6.0	< 0.1	< 0.1		< 0.1	49	< 0.1-< 0.1	6/year	
Bismuth	ug/L as Bi	< 1	6.0	< 1	< 1		< 1	49	< 1-< 1	6/year	
Boron	ug/L as B	< 50	6.0	< 50	< 50	5000 MAC	< 50	49	< 50-< 50	6/year	
Cadmium	ug/L as Cd	< 0.01	6.0	< 0.01	< 0.01	7 MAC	< 0.01	49	< 0.01-0.015	6/year	
Calcium	mg/L as Ca	5.0	6.0	4.7	5.2	No Guideline Required	4.8	51	4.29-7.67	6/year	
Chromium	ug/L as Cr	< 1	6.0	< 1	< 1	50 MAC	< 1	49	< 1-5	6/year	
Cobalt	ug/L as Co	< 0.2	6.0	< 0.2	< 0.2		< 0.2	49	< 0.2-< 0.5	6/year	
Copper	ug/L as Cu	34.0	6.0	23.6	45.6	2000 MAC / ≤ 1000 AO	28.7	49	10.9-80.4	6/year	
Iron	ug/L as Fe	16.0	6.0	10.9	26.3	≤ 100 AO	22.9	49	12-53	6/year	

Appendix A, Table 3 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Lead	ug/L as Pb	0.2	6.0	< 0.2	0.3	5 MAC	< 0.2	51	< 0.2-0.64		6/year
Lithium	ug/L as Li	< 2	6.0	< 2	< 2		< 2	31	< 2-< 5		6/year
Magnesium	mg/L as Mg	1.1	6.0	1.1	1.2	No Guideline Required	1.1	49	0.982-1.34		6/year
Manganese	ug/L as Mn	3.1	6.0	1.4	5.5	120 MAC / ≤ 20 AO	3.4	49	1.3-10		6/year
Mercury, Total	ug/L as Hg	< 0.0019	6.0	< 0.0019	< 0.0019	1.0 MAC	< 0.002	49	< 0.0019-< 0.01		6/year
Molybdenum	ug/L as Mo	< 1	6.0	< 1	< 1		< 1	49	< 1-4.7		6/year
Nickel	ug/L as Ni	< 1	6.0	< 1	< 1		< 1	49	< 1-20.3		6/year
Potassium	mg/L as K	0.1	6.0	0.1	0.1		0.1	49	0.115-0.247		6/year
Selenium	ug/L as Se	< 0.1	6.0	< 0.1	< 0.1	50 MAC	< 0.1	49	< 0.1-0.1		6/year
Silver	ug/L as Ag	< 0.02	6.0	< 0.02	< 0.02	No Guideline Required	< 0.02	49	< 0.02-< 0.02		6/year
Sodium	mg/L as Na	4.3	6.0	3.9	4.6	≤ 200 AO	4.4	49	3.24-7.02		6/year
Strontium	ug/L as Sr	14.6	6.0	13.9	15.7	7000 MAC	14.7	49	13.2-17.1		6/year
Thallium	ug/L as Tl	< 0.01	6.0	< 0.01	< 0.01		< 0.01	49	< 0.01-< 0.05		6/year
Tin	ug/L as Sn	< 5	6.0	< 5	< 5		< 5	49	< 5-< 5		6/year
Titanium	ug/L as Ti	< 5	6.0	< 5	< 5		< 5	49	< 5-< 5		6/year
Uranium	ug/L as U	< 0.1	6.0	< 0.1	< 0.1	20 MAC	< 0.1	49	< 0.1-< 0.1		6/year
Vanadium	ug/L as V	< 5	6.0	< 5	< 5		< 5	49	< 5-< 5		6/year
Zinc	ug/L as Zn	< 5	6.0	< 5	5.4	≤ 5000 AO	< 5	49	< 5-79.4		6/year
Zirconium	ug/L as Zr	< 0.1	6.0	< 0.1	< 0.1		< 0.1	49	< 0.1-< 0.5		6/year

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A
TABLE 4. 2024 TREATED WATER QUALITY TRANSMISSION / DISTRIBUTION SYSTEMS GOLDSTREAM SERVICE AREA

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		Target Sampling Frequency
				Minimum	Maximum				Minimum	Maximum	
Metals (ND means less than instrument can detect)											
Mercury, Total	ug/L as Hg	< 0.0019	24	< 0.0019	< 0.03	1 MAC	< 0.002	184	< 0.0019-< 0.01	24/year	
Aluminum	ug/L as Al	11.1	24	5.7	16.1	2900 MAC / 100 OG	13.1	202	5-61	24/year	
Antimony	ug/L as Sb	< 0.5	24	< 0.5	< 0.5	6 MAC	< 0.5	202	< 0.5-5.59	24/year	
Arsenic	ug/L as As	< 0.1	24	< 0.1	0.22	10 MAC	< 0.1	202	< 0.1-1.55	24/year	
Barium	ug/L as Ba	3.6	24	3	4.1	2000 MAC	3.8	202	1.6-4.7	24/year	
Boron	ug/L as B	< 50	24	< 50	< 50	5000 MAC	< 50	202	< 50-50	24/year	
Cadmium	ug/L as B	< 0.01	24	< 0.01	< 0.01	7 MAC	< 0.01	202	< 0.01-0.468	24/year	
Chromium	ug/L as Cr	< 1	24	< 1	< 1	50 MAC	< 1	202	< 0.1-1.3	24/year	
Copper	mg/L as Cu	6.81	24	2.33	25.7	2000 MAC / 1000 AO	19.25	202	0.66-12400	24/year	
Iron	ug/L as Fe	24	24	9.7	42.6	≤ 100 AO	23.7	202	8.2-359	24/year	
Lead	ug/L as Pb	< 0.2	24	< 0.2	0.38	5 MAC	0.32	350	< 0.2-1570	24/year	
Manganese	ug/L as Mn	4.55	24	1.7	8.5	120 MAC / 20 AO	4	202	1.4-35.1	24/year	
Selenium	ug/L as Se	< 0.1	24	< 0.1	< 0.1	50 MAC	< 0.1	202	< 0.1-< 0.1	24/year	
Strontium	ug/L as Sr	15.15	24	13.3	17.7	7000 MAC	15.15	202	11.1-20.1	24/year	
Uranium	ug/L as U	< 0.1	24	< 0.1	< 0.1	20 MAC	< 0.1	202	< 0.1-< 0.1	24/year	
Zinc	ug/L as Zn	< 5	24	< 5	6.4	≤ 5000 MAC	< 5	202	< 5-1660	24/year	
Sodium	mg/L as Na	3.735	24	3.21	4.32	≤ 200 AO	1.85	201	1.46-13	24/year	
Disinfection Byproducts Parameters (ND means less than method or instrument can detect)											
Nitrosamines											
N-Nitrosodiethylamine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	143	0.000375-3.8	24/year	
N-Nitrosodimethylamine	ng/L	< 1.9	24	< 1.9	2.8	40 MAC	< 2	149	0.235-6.3	24/year	
N-Nitroso-di-n-butylamine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	138	< 0.157-42	24/year	
N-nitroso-di-n-propylamine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	129	< 0.0671-< 2.2	24/year	
N-Nitrosoethylmethylamine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	137	0-< 2.2	24/year	
N-Nitrosomorpholine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	138	0.00102-4.6	24/year	
N-nitrosopiperidine	ng/L	< 1.9	24	< 1.9	< 2.1		< 2	136	< 0.0357-< 10	24/year	
N-Nitrosopyrrolidine	ng/L	< 1.9	24	< 1.9	< 2.1		< 1.9	137	< 0.0662-< 8	24/year	
Haloacetic Acids (HAAs)											
Total Haloacetic Acids	ug/L	15	24	< 5	19	80 MAC	15	196	< 5-104	24/year	
Monobromoacetic Acid (MBAA)	ug/L	< 5	24	< 5	< 5		< 5	197	< 0.2-15.04	24/year	
Dichloroacetic Acid (DCAA)	ug/L	9.65	24	< 5	13		9.1	197	1.2-30	24/year	
Trichloroacetic Acid (TCAA)	ug/L	5.45	24	< 5	6.7		6.3	197	1.3-56	24/year	
Bromochloroacetic Acid (BCAA)	ug/L	< 5	24	< 5	< 5		< 5	197	< 0.2-< 5	24/year	
Dibromoacetic Acid (DBAA)	ug/L	< 5	24	< 5	< 5		< 5	197	< 0.2-5.6	24/year	
Monochloroacetic Acid (MCAA)	ug/L	< 5	24	< 5	< 5		< 5	197	0.22-< 5	24/year	

Appendix A, Table 4 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Trihalomethanes (TTHMs)											
Total Trihalomethanes	ug/L	18.5	24	12	27	100 MAC	18.9	200	11-77.9	24/year	
Bromodichloromethane	ug/L	1.9	24	1.3	3.2		2	17	1.2-2.9	24/year	
Bromoform	ug/L	< 1	24	< 1	< 1		< 1	200	< 0.1-< 2	24/year	
Chlorodibromomethane	ug/L	< 1	24	< 1	< 1		< 1	200	< 0.1-< 3	24/year	
Chloroform	ug/L	16	24	10	24		17	200	9.6-77.9	24/year	

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A
TABLE 5. 2024 TREATED WATER QUALITY DISTRIBUTION SYSTEM SOOKE SERVICE AREA

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Metals (ND means less than instrument can detect)											
Mercury, Total	ug/L as Hg	< 0.0019	6	< 0.0019	< 0.0019	1 MAC	< 0.002	48	< 0.0019-< 0.05	6/year	
Aluminum	ug/L as Al	9	6	4.7	14.8	2900 MAC / 100 OG	12.8	50	4.6-242	6/year	
Antimony	ug/L as Sb	< 0.5	6	< 0.5	< 0.5	6 MAC	< 0.5	50	< 0.5-< 0.5	6/year	
Arsenic	ug/L as As	< 0.1	6	< 0.1	< 0.1	10 MAC	< 0.1	50	< 0.1-0.24	6/year	
Barium	ug/L as Ba	3.65	6	3.3	3.9	2000 MAC	3.7	50	3.2-4.6	6/year	
Boron	ug/L as B	< 50	6	< 50	< 50	5000 MAC	< 50	50	< 50-< 50	6/year	
Cadmium	ug/L as B	< 0.01	6	< 0.01	0.03	7 MAC	< 0.01	50	< 0.01-0.075	6/year	
Chromium	ug/L as Cr	< 1	6	< 1	< 1	50 MAC	< 1	50	< 1-< 1	6/year	
Copper	mg/L as Cu	7.295	6	5.76	9.55	2000 MAC / 1000 AO	6.235	56	0.85-417	6/year	
Iron	ug/L as Fe	27.55	6	24.2	35.6	≤ 100 AO	40.4	50	19.5-278	6/year	
Lead	ug/L as Pb	0.245	6	< 0.2	0.33	5 MAC	< 0.2	104	< 0.2-EXG 22.5	6/year	
Manganese	ug/L as Mn	2.65	6	1.8	6.2	120 MAC / 20 AO	2.8	57	< 0.01-1760	6/year	
Selenium	ug/L as Se	< 0.1	6	< 0.1	< 0.1	50 MAC	< 0.1	49	< 0.1-< 0.1	6/year	
Strontium	ug/L as Sr	15.75	6	15	17.1	7000 MAC	18	49	14.9-21.5	6/year	
Uranium	ug/L as U	< 0.1	6	< 0.1	< 0.1	20 MAC	< 0.1	50	0	6/year	
Zinc	ug/L as Zn	< 5	6	< 5	5.4	≤ 5000 MAC	< 5	50	0	6/year	
Sodium	mg/L as Na	4.39	6	3.82	5.02	≤ 200 AO	4.42	49	3.36-6.08	6/year	
Disinfection Byproducts Parameters (ND means less than method or instrument can detect)											
Nitrosamines											
N-Nitrosodiethylamine	ng/L	< 1.9	6	< 1.9	< 1.9		1.95	38	0.0000625-3.22	6/year	
N-Nitrosodimethylamine	ng/L	< 1.9	6	< 1.9	< 1.9	40 MAC	< 2	39	< 1-4.3	6/year	
N-Nitroso-di-n-butylamine	ng/L	< 1.9	6	< 1.9	< 1.9		< 2	35	< 0.268-< 3	6/year	
N-nitroso-di-n-propylamine	ng/L	<1.9	5	<1.9	<2		<2	29	<0.019 - <2.1	6/year	
N-Nitrosoethylmethylamine	ng/L	< 1.9	6	< 1.9	< 1.9		< 2	35	< 0.082-< 2.1	6/year	
N-Nitrosomorpholine	ng/L	< 1.9	6	< 1.9	< 1.9		1.95	36	< 0.257-< 6.6	6/year	
N-nitrosopiperidine	ng/L	< 1.9	6	< 1.9	< 1.9		< 2	35	< 0.0806-< 25.9	6/year	
N-Nitrosopyrrolidine	ng/L	< 1.9	6	< 1.9	< 1.9		< 2	35	< 0.0806-< 141	6/year	
Haloacetic Acids (HAAs)											
Total Haloacetic Acids	ug/L	21	6	19	27	80 MAC	25	40	16-34	6/year	
Monobromoacetic Acid (MBAA)	ug/L	< 5	6	< 5	< 5		< 5	40	< 5-< 5	6/year	
Dichloroacetic Acid (DCAA)	ug/L	11.5	6	11	15		13	40	9.3-19	6/year	
Trichloroacetic Acid (TCAA)	ug/L	9.5	6	8.5	12		12	40	7-18	6/year	
Bromochloroacetic Acid (BCAA)	ug/L	< 5	6	< 5	< 5		< 5	40	< 5-< 5	6/year	
Dibromoacetic Acid (DBAA)	ug/L	< 5	6	< 5	< 5		< 5	40	< 5-< 5	6/year	

Appendix A, Table 5 continued

PARAMETER	2024 ANALYTICAL RESULTS					CANADIAN GUIDELINES	TEN YEAR RESULTS (2014 2023)			Target Sampling Frequency	
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ Less than or equal to	10 Year Median	Samples Analyzed	Range		
				Minimum	Maximum				Minimum		Maximum
Monochloroacetic Acid (MCAA)	ug/L	< 5	6	< 5	< 5		< 5	40	< 5-< 5	6/year	
Trihalomethanes (TTHMs)											
Total Trihalomethanes	ug/L	30	6	26	35	100 MAC	32	40	0	6/year	
Bromodichloromethane	ug/L	2.85	6	2	3.9		2.8	40	< 1-5	6/year	
Bromoform	ug/L	< 1	6	< 1	< 1		< 1	40	< 1-< 1	6/year	
Chlorodibromomethane	ug/L	< 1	6	< 1	< 1		< 1	40	< 1-< 1	6/year	
Chloroform	ug/L	27	6	24	31		29	40	21-45	6/year	

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values