Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Fernwood and Highland Water Service Commission

Monday, November 4, 2024 | **10:00 AM** | **SIMS Boardroom, 124 Rainbow Road, Salt Spring Island BC**

Annual General Meeting

MS Teams Link: Click here

G. Holman, B. Travelbea, L. Travelbea, and C. Wentworth

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.

Purpose of the Annual General Meeting

The agenda for the Annual General Meeting (AGM) is approved by the members of the Commission. The purposes (and hence the agenda items) of the meeting are:

• To have the last year's AGM minutes approved (by Commission members), and to present reports on the work of the Commission on the past year's operation, maintenance, capital upgrades and financial information of the service to the service residents and owners,
• To nominate members for appointment to the Commission, and
• To enable the public to share comments on subjects which relate to the work of the Commission. The Commission can identify (under "new business") issues on which it wants feedback at the meeting. Motions raised by the public at the AGM will be considered by the commission at a subsequent regular meeting.

The Annual General Meeting is for the 2023 fiscal year

1. Territorial Acknowledgment

2. Approval of Agenda

3. Adoption of Minutes

3.1. 24-1094 Minutes of June 08, 2023 and June 13, 2024 Fernwood and Highland Water Service Commission

Recommendation: That the minutes of the following meetings be adopted as presented:
-June 08, 2023 Annual General Meeting (AGM)
-June 13, 2024 Special Meeting

Attachments: Minutes: June 08, 2023 AGM

Minutes: June 13, 2024 Special Meeting

4. Director and Chair's Report

5. Report

5.1. 24-704 Fernwood and Highland Water Service Annual Report 2023

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

Attachments: Fernwood and Highland Annual Report 2023

Appendix A: 2023 Statement of Operations and Reserve Balances

6. Election of Commissioners

3 Positions

7. New Business

None

8. Outstanding Business

None

9. Adjournment

Next Meeting:

-Monday, November 04, 2024, at 11:00am in the Salt Spring Island Multi Space (SIMS) Boardroom, 124 Rainbow Road, Salt Spring Island, BC V8K 2V5

Making a difference...together

Minutes of the Annual General Meeting of the Fernwood and Highland Service Commission Held June 8, 2023 for the 2022 Fiscal Year at the Salt Spring Island Multi Space (SIMS) Boardroom, 124 Rainbow Road, Salt Spring Island, BC

DRAFT

Present: **Director:** Gary Holman
Commission Members: Laura Travelbea, Brian Travelbea and Carollin Wentworth (Via Zoom)
Staff: Dean Olafson, Manager SSI Engineering, Dan Robson, Manager, Saanich Peninsula and Gulf Islands Operations (Via Zoom), Lia Xu, Manager, Finance Services (Via Zoom), and Shayla Burnham, Recording Secretary

These minutes follow the order of the agenda although the sequence may have varied.

1. **Territorial Acknowledgement / Call Meeting to Order**

   A Territorial Acknowledgement was provided by Commissioner Travelbea and the meeting was called to order at 12:38pm.

2. **Election of Chair**

   Staff called for nominations from the floor. Commissioner B. Travelbea nominated Commissioner L. Travelbea as Chair. After calling three times and hearing no other nominations, Commissioner L. Travelbea was elected as Chair.

3. **Approval of Agenda**

   MOVED By Commissioner L. Travelbea, **SECONDED** by Director Holman, that the Fernwood and Highland Water Service Commission approve the Thursday, June 8, 2023 Annual General Meeting for the 2022 fiscal year as amended by adding item number 8.1 Project Updates and, to remove duplicated pages 21-28.

   CARRIED

4. **Adoption of Minutes of the 2021 Annual General Meeting held on June 20, 2022**

   MOVED By Commissioner B. Travelbea, **SECONDED** by Commissioner Wentworth, that the Fernwood and Highland Water Service Commission adopt the minutes of the 2021 Annual General Meeting held on June 3, 2022 as presented.

   CARRIED

   MOVED By Commissioner L. Travelbea, **SECONDED** by Commissioner Wentworth, that the Fernwood and Highland Water Service Commission adopt the Special minutes of the Thursday, April 6, 2023 presented.

   CARRIED

5. Director and Chairs Report

Director Holman briefly reported:

- Salt Spring Island Local Community Commission elected on Saturday, May 27, with the inaugural meeting scheduled on Tuesday, June 20, 2023.
- Islands Trust hosting Open Houses as part of the engagement process of Proposed Bylaw No. 530 – Accessory Dwelling Units on Tuesday, June 6 and Saturday, June 10, 2023.
- Salt Spring Island Watershed Protection Alliance (SSIWPA) budget approved.

Chair L. Travelbea – no report.

6. Report

6.1 Annual Report for the 2022 Fiscal Year

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

7. New Business – None

8. Outstanding Business

Lia Xu left the meeting at 1:39pm.

8.1 Project Updates

- Fernwood water tank does not obtain a liner.
- Staff working with BC Hydro on possible relocation of powerlines due to the close proximity to the Fernwood water tank.
- Staff confirmed tank cleaning will be coordinated with the tank assessment.

9. Next Meeting – TBD

10. Adjournment

MOVED By Commissioner Travelbea, that the Fernwood and Highland Water Service Commission adjourn the meeting at 2:03pm.

_____

CHAIR

_____

SENIOR MANAGER

Making a difference...together

Minutes of the Special Meeting of the Fernwood and Highland Water Services Commission Held Thursday, June 13, 2024 at the Salt Spring Island Multi-Space (SIMS) 124 Rainbow Rd, Salt Spring Island, BC V8K 2K3

DRAFT

Present: Commissioners: G. Holman, B. Travelbea, L. Travelbea, and C. Wentworth

Staff:, D. Ovington, Parks and Recreation Manager, SSI Admin, Dean Olafson, Manager Engineering, SSI Admin, M. Williamson, Committee Clerk, (Recorder)

These minutes follow the order of the agenda although the sequence may have varied.

The meeting was called to order at 11:02 am.

1. TERRITORIAL ACKNOWLEDGEMENT

Commissioner L. Travelbea provided a Territorial Acknowledgement.

2. Election of Chair

D. Ovington Parks and Recreation Manager, Salt Spring Island called for nominations for the position of Chair of the Fernwood and Highland Water Services Commission for 2024.

Commissioner B. Travelbea nominated Commissioner L. Travelbea, Commissioner L. Travelbea accepted the nomination.

D. Ovington called for nominations a second time.

D. Ovington called for nominations a third time.

Hearing no further nominations, D. Ovington Parks and Recreation Manager, Salt Spring Island declared Commissioner L. Travelbea, Chair of the Fernwood and Highland Water Services Commission by acclamation.

3. APPROVAL OF AGENDA

MOVED by Director Holman, **SECONDED** by Commissioner B. Travelbea,
That agenda for the June 13, 2024, Special meeting of the Fernwood and Highland Water Service Commission be approved as circulated.
CARRIED

4. DELEGATIONS/PRESENTATIONS

4.1. Presentations

There were no presentations.

4.2. Delegations

There were no delegations.

5. Special Meeting Matters

5.1. Request Additional Funds to Complete the Highland Fernwood Water Intake Project

MOVED by Commissioner L. Travelbea, **SECONDED** by Commissioner Wentworth,
That the Highland Fernwood Water Service Commission recommends to the Electoral Area Committee to recommend the Capital Regional District Board amend the Highland Fernwood Water Service 2024 Capital Plan by including the Highland Fernwood Water Intake Project (19-01) in the Capital Plan with $155,500 of carry forward from 2023 and increasing the budget by $67,000, resulting in the total project budget from $200,000 to $267,000 to be funded $27,000 from Capital Reserve Fund and $40,000 from Community Work Fund.
CARRIED

6. ADJOURNMENT

MOVED by Director Holman, **SECONDED** by Commissioner B. Travelbea,
That the Local Community Commission adjourn the meeting at 11:20 am.
CARRIED

_____
CHAIR

_____
SENIOR MANAGER

Fernwood and Highland Water Service

2023 Annual Report

CRD | Drinking Water

INTRODUCTION

This report provides a summary of the Fernwood and Highland Water Service for 2023. It includes a description of the service, summary of the water supply, demand and production, drinking water quality, operations highlights, capital project updates and financial report.

SERVICE DESCRIPTION

In 2010 the Highland and Fernwood water services merged to construct new water treatment plant to operate as a single water system. Both former water services hold legacy budgets to repay existing debt and outstanding capital works. The service obtains its drinking water from St. Mary Lake, which lies within an uncontrolled multi-use watershed. The Capital Regional District (CRD) holds five licenses to divert a total of up to 230,000 m^3 per year and store up to 30,800 m^3. St. Mary Lake is subject to seasonal water quality changes and is affected by periodic algae blooms.

The Highland service was first developed in the 1970's under the name Vesuvius Holdings and was converted to the Highland Water System in 1978. It then became a CRD service in 2004. The Fernwood service was created in the 1970's by a private developer and was converted to the Fernwood Improvement Water District in 1984. It then became a Capital Regional District (CRD) service in 1989. The Fernwood and Highland Water Service (Figure 1) is comprised of 333 parcels of land with 321 of those parcels connected to the service.

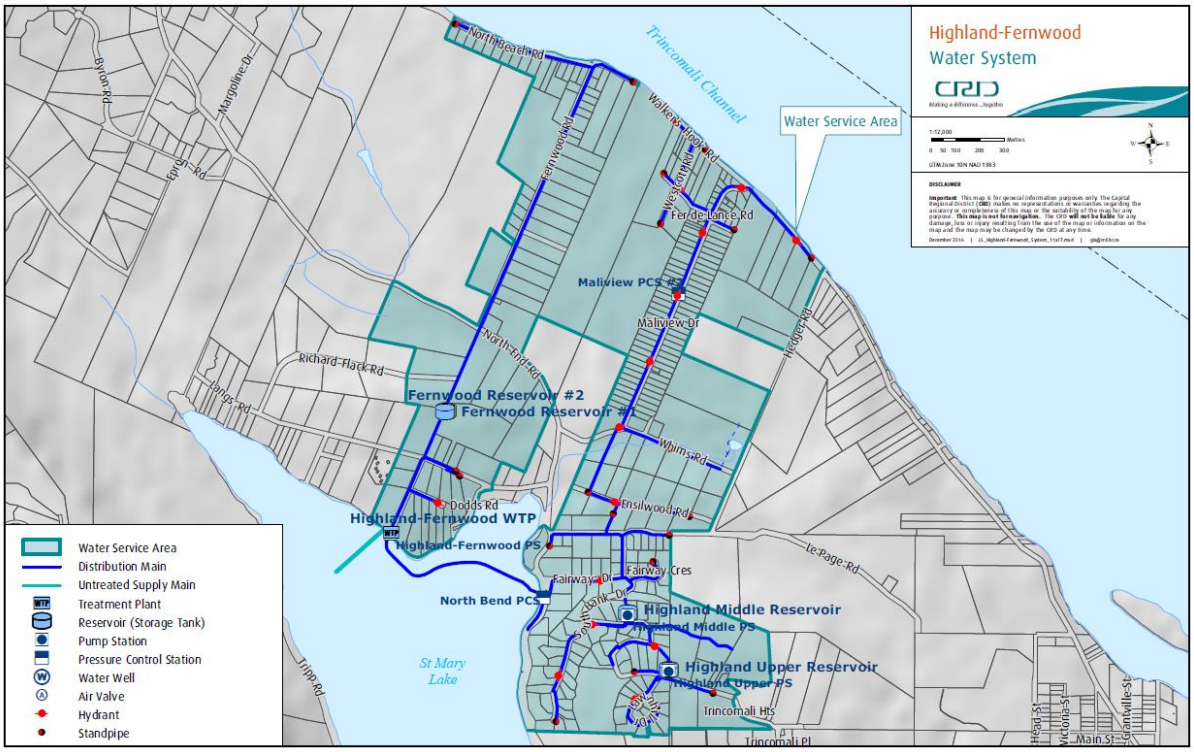

Figure 1: Fernwood and Highland Water Service

The Fernwood and Highland water system is primarily comprised of:

- a water treatment plant (WTP) that draws water from St. Mary Lake and treats it at a location on Maycock Road, adjacent to the lake. The water is treated using a rapid mix system, flocculation, dissolved air floatation (DAF) and filters, ultraviolet disinfection, then chlorination prior to being pumped, via the distribution system to two different reservoirs. The WTP design flow rate is 11.3 l/sec (150 Igpm);
- one raw water pump station on Maycock Road, adjacent to the lake. (flow rate of two pumps running is 4.6 l/sec (60 Igpm);
- approximately 12,000 m of water distribution pipe
- 4 water reservoirs – one 180 m^3 (40,000 Ig) on the Highland system, one 91 m^3 (20,000 Ig) on the Highland system, one 45 m^3 (10,000 Ig) on the Fernwood system and, one 91 m^3 (20,000 Ig) on the Fernwood system
- 2 water system booster pumps:
  - Highlands Middle Reservoir
  - Highlands Upper Reservoir
- fire hydrants, standpipes, and gate valves
- water service connections complete with water meters
- 2 pressure reducing valve stations - one on North End Road and one on Maliview Drive.

WATER PRODUCTION AND DEMAND

Referring to Figure 2, 69,859 cubic meters (m^3) of water was extracted (water production) from St. Marys Lake in 2023; a 8% decrease from the previous year and a 18% decrease from the five-year rolling average. Water demand (customer water billing) for the service totalled 54,610 m^3 of water; a 16% increase from the previous year and a 9% increase from the five-year rolling average.

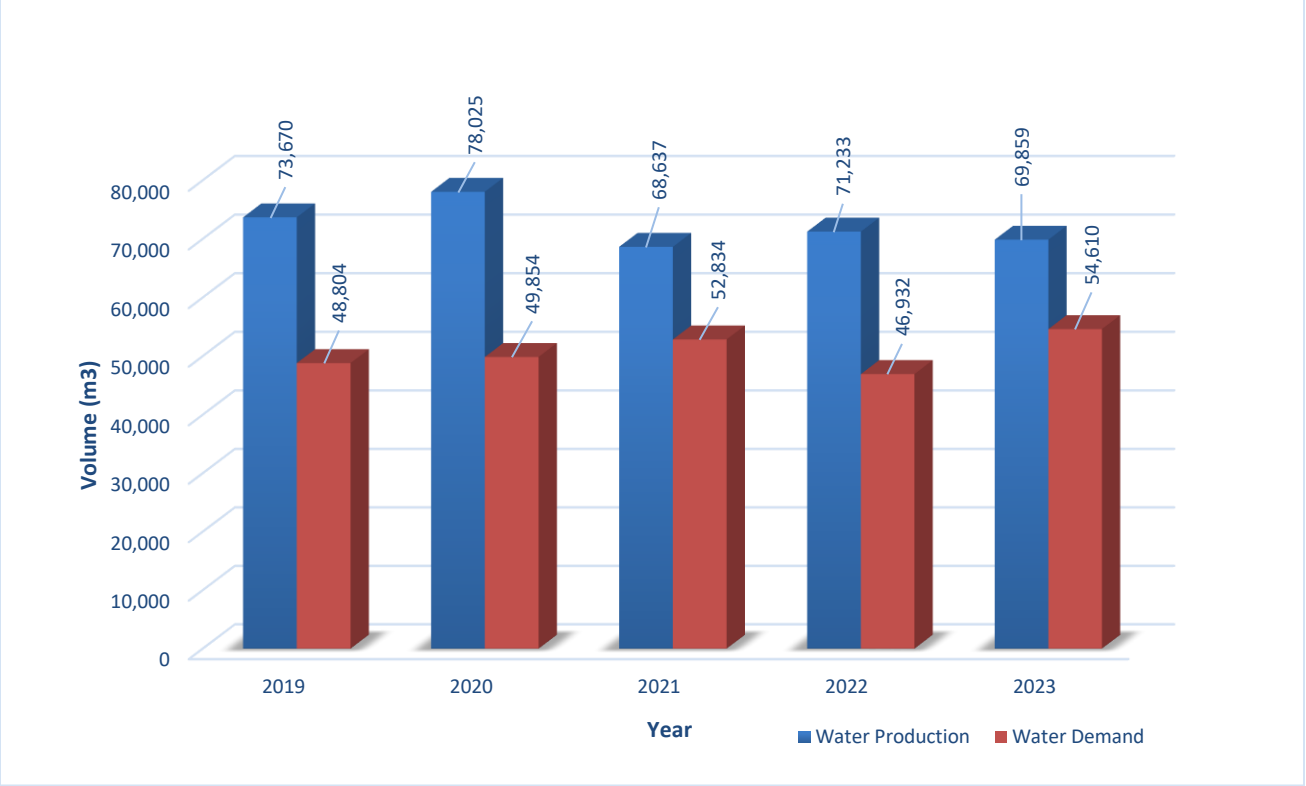

Figure 2: Fernwood and Highland Water Service Annual Water Production and Demand

Water production by month for the past five years is shown in Figure 3. As with most water systems, water consumption follows a typical diurnal pattern where the monthly total flow peaks during the summer months. The 2023 monthly flow information is indicative of this diurnal pattern. However, for prior years the monthly flow trending does not follow this pattern and is indicative of water system leaks that influence and skew monthly water production data, 2018 case in point.

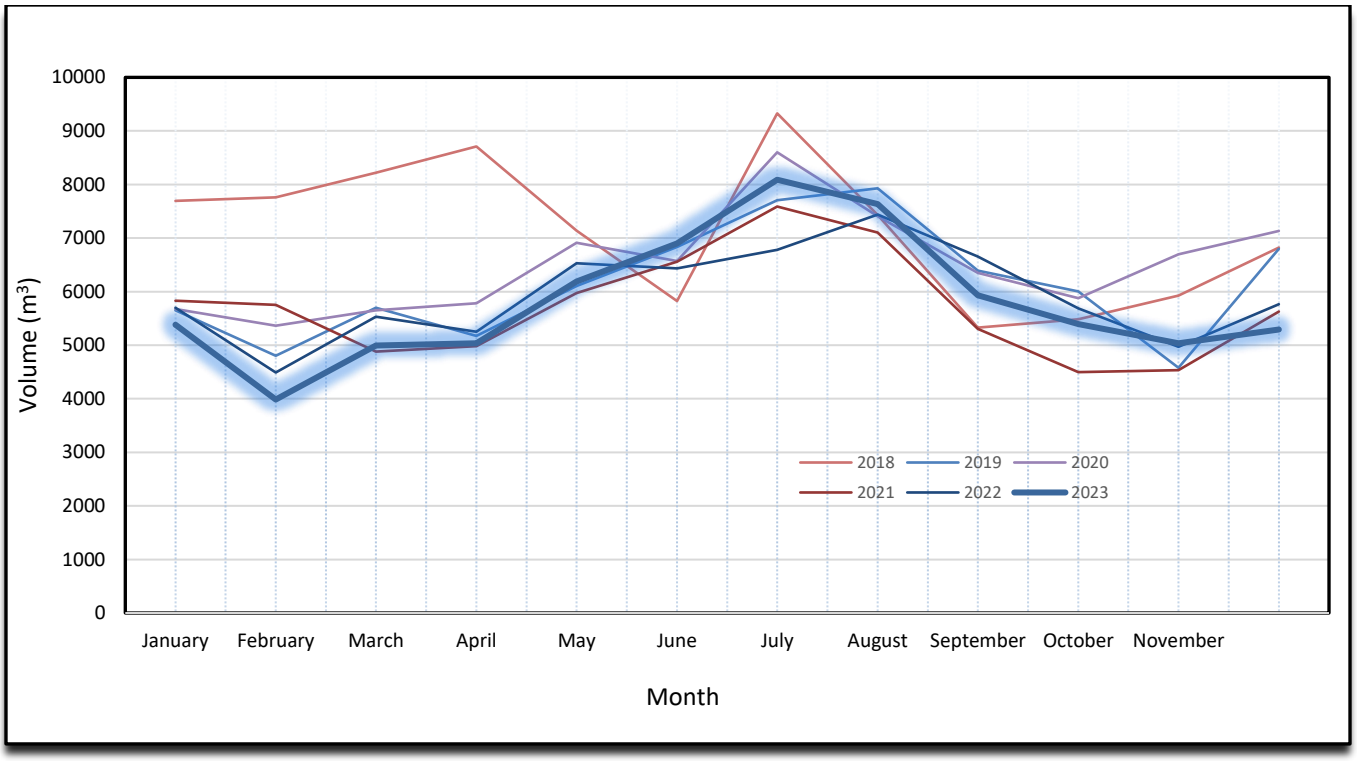

Figure 3: Fernwood and Highland Water Service Monthly Water Production

The Fernwood and Highland Water System is fully metered, and water meters are read quarterly. Water meters are manually read on a quarterly basis and the data enables water production and consumption to be compared to estimate leakage losses in the distribution system. The difference between water produced and water demand (total metered consumption) is called non-revenue water and includes distribution leaks, meter error, and unmetered uses such as fire hydrant usage, distribution system maintenance, and process water for the treatment plant. Non-revenue water is approximately 22%. Water loss is estimated to be approximately 19% which is considered low for a small water system such as Fernwood and Highland.

WATER QUALITY

In 2023, the analytical results (biological, chemical and physical parameters) of water samples collected from the Highland/Fernwood Water Systems indicated that the drinking water supplied to the customers was generally of good quality. The Highland distribution system experienced a water main break that led to a partial Boil Water Advisory (BWA) June 21 – 23). Also, St. Mary Lake experienced an almost continuous cyanobacteria bloom with particularly high activity in February and July. Various species of potentially toxin producing cyanobacteria were responsible for these blooms but all samples taken from the intake of the Highland/Fernwood Water System tested negative for microcystin, a cyanotoxin frequently associated with such blooms. During these algal events, the Highland/Fernwood water treatment plant was able to produce safe and good quality drinking water.

The data below provides a summary of the water quality characteristics in 2023:

Raw Water:

- The raw water exhibited typically low concentrations of total coliform and *E.coli* bacteria throughout the cold weather periods, but much higher spikes during the summer.
- No parasitic *Cryptosporidium* oocysts or *Giardia* cysts were detected.
- The analyses of raw water samples indicated low concentrations of iron and but elevated concentrations of manganese in the fall (November).
- The raw water was slightly hard (median hardness 37.45 mg/L $CaCO_3$).
- The raw water turbidity (cloudiness) was often below or near 1 NTU but occasionally higher during summer and fall months (July: up to 4 NTU, September: up to 3.9 NTU). These episodes of high raw water turbidity were the result of strong cyanobacteria blooms.
- A median annual total organic carbon (TOC) concentration of 4.15 mg/L confirms the mesotrophic (semi-productive) to eutrophic (productive) status of St. Mary Lake.
- Cyanobacteria blooms of various species occurred almost all year long in St Mary Lake. Despite the blooms of potentially toxin producing cyanobacteria species, no cyanotoxins (microcystin) were detected in the raw water entering the treatment plant.

Treated Water:

- The treated water was safe to drink outside the period with a BWA; no indicator bacteria were detected in any Fernwood Distribution System sample throughout the year, and only one sample from the Highland System registered a very low concentration of total coliform bacteria. An immediate resample from the same location did not detect any coliform bacterial.
- The treated water turbidity was typically well below the turbidity limit of 1.0 NTU throughout the year in most parts of the system. However, a few standpipes in the Fernwood and the Highland systems occasionally registered elevated turbidity. These low flow locations need to be flushed regularly to remove accumulated pipe sediments.
- The levels of regulated disinfection by-products trihalomethanes (THM) were well below the limits in the GCDWQ (100 µg/L) across the Fernwood and the Highland Distribution System. Haloacetic acids (HAA) were not tested for in 2023. As long as THM concentrations are low, HAA tests are only performed every 5 years to verify baseline conditions. The last HAA tests were done in 2021.
- The treated water total organic carbon concentration (TOC) in both distribution systems was similar to previous years, ranging from 1.7 to 2.0 mg/L in the Fernwood Distribution System, and 1.6 to 2.0 mg/L in the Highland Distribution System. There is currently no guideline in the GCDWQ for TOC levels, however the USEPA suggests a treated water TOC concentration of < 2 mg/L as confirmation of effective treatment and disinfection by-product control.
- Iron and/or manganese concentrations, which can lead to water discolouration if present in elevated concentrations, have been below the aesthetic guideline limits except for one sample in November from the Highland System with 21.1 µg/L. The location of this exceedance was a far extremity of the system and it is not unusual that manganese concentrations accumulate over time in such low flow locations. Operators try to mitigate this by periodic spot flushing.

Table 1, 2 and 3 below provide a summary of the 2023 raw and treated water test results.

Water Quality data collected from these two distribution systems can be reviewed on the following CRD website: https://www.crd.bc.ca/about/data/drinking-water-quality-reports

OPERATIONAL HIGHLIGHTS

The following is a summary of the major operational issues that were addressed by CRD Integrated Water Services staff in 2023:

- Emergency response to water system breaks at:
    - 200 Maliview Dr. watermain break (resulted in a BWA being issued).
    - 315 Fernwood Dr. service line repair
    - 134 Fairway Dr. service line repair
    - 190 Fernwood Dr. service line repair
    - 113 Fairway Dr. service line repair
    - 112 Maliview Dr. service line repair
    - 147 Maliview Dr. service line repair
    - 1216 North Beach Rd. service line repair
    - 120 Trincomali Hts service line repair
    - 160 Trincomalli Hts. service line repair
    - 162 Lawnhill Rd. service line repair
- Water Treatment Plant:
    - Continued to replace hand-off-auto (HOA) electrical switches.
    - Replaced backwash tank water level transmitter.
    - Extended temporary water intake pipe 40' into St. Mary's Lake.
    - Repair Pump House HVAC electrical controls.
    - Commenced replacement of Float Tank pump as part of approved capital work
    - Commenced upgrades to Float Tank pump electrical components as part of approved capital work.
    - Commenced replacement of failed raw water pump.
- Distribution System:
    - Maliview pressure regulating station pressure reducing valve replacement.

CAPITAL IMPROVEMENTS

Fernwood and Highland Water Capital Projects

The following is a summary of the major capital improvements, including year-end spending for 2023:

Water Intake and Screen (CE.677.7500): Fernwood water intake has not been performing as it should. Investigation and design of a new intake were commenced by a consultant engaged by the CRD. Detailed design is essentially complete with construction scheduled to take place in 2023.

Project	Spending
Budget	$200,000
Project Management	($16,540)
Designs	($28,076)
Balance Remaining	**$155,384**

Safe Work Procedures (CE.699.4501): The work scope includes reviewing and developing safe work procedures for operational and maintenance tasks. Ongoing as capital improvements necessitate.

Project	Spending
Budget	$17,000
Project Management	($444)
Contract	($3,493)
Supplies and Materials	($209)
Balance Remaining	**$12,854**

Waste Pump Design and Construction (CE.707.7501): The control panel and pump for the DAF waste pump at the Fernwood and Highland water treatment plant requires replacement. Investigation and design of a new waste pump will be completed by a consultant engaged by the CRD.

Project	Spending
Budget	$80,000
Project Management	($8,309)
Designs	($14,247)
Construction	($8,937)
Balance Remaining	**$48,507**

Highland Upper Reservoir (CE.360.4655): The Highland Upper Reservoir requires replacement. Investigation and design of a new reservoir is in progress by a consultant engaged by the CRD.

Project	Spending
Budget	$123,176
Project Management	($21,059)
Designs	($69,260)
Balance Remaining	**$32,857**

Power Generation Equipment - Design (CE.735.4501): Preliminary and detailed design for back-up power generation for the service. Additional project management time was required to coordinate the design of this project with the project to replace the Upper Reservoir (CE.360.4655). A staff report will be issued to the Commission to approve a revision to the Capital Plan.

Project	Spending
Budget	$49,000
Project Management	($14,468)
Designs	($38,861)
Balance Remaining	**($4,329)**

Safety Improvement (CE.677.4601): Design and install eyewash, safe access platform, roof access hatch.

Project	Spending
Budget	$40,000
Project Management	($471)
Installation	($0)
Balance Remaining	**$39,529**

2023 FINANCIAL REPORT

Please refer to the attached 2023 Statement of Operations and Reserve Balances.

Revenue includes parcel taxes (Transfers from Government), fixed user fees (User Charges), water sales (Sale-Water), interest on savings (Interest earnings), transfers from Operating Reserve Fund, and miscellaneous revenue such as late payment charges (Other revenue).

Expenses include all costs of providing the service. General Government Services includes budget preparation, financial management, utility billing and risk management services. CRD Labour and Operating Costs include CRD staff time as well as the costs of equipment, tools, and vehicles. Debt servicing costs are interest and principal payments on long-term debt. Other Expenses include all other costs to administer and operate the water system, including insurance, supplies, water testing and electricity.

The difference between Revenue and Expenses is reported as Net revenue (expenses). Any transfers to or from capital or reserve funds for the service (Transfers to own funds) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an Accumulated Surplus (or deficit). In alignment with Local Government Act Section 374 (11), any deficit must be carried forward and included in the next year's financial plan.

WATER SYSTEM PROBLEMS - WHO TO CALL:

To report any event or to leave a message regarding the Highland/Fernwood Water System, call either:

CRD water system *emergency* call centre: **1-855-822-4426 (toll free)**
1-250-474-9630 (toll)

CRD water system *general enquiries* (toll free): **1-800-663-4425**

When phoning with respect to an emergency, please specify to the operator, the service area in which the emergency has occurred.

Submitted by:	Jason Dales, Senior Manager B.Sc, WD IV, Infrastructure Operations
	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
	Dan Ovington, BBA , Senior Manager, Salt Spring Island Electoral Area
	Angela Linwood, CPA, CMA, Controller, Financial Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

Appendix A: 2023 Statement of Operations and Reserve Balances

For questions related to this Annual Report, please email saltspring@crd.bc.ca

Table 1: 2023 Summary of Raw Water Test Results, Highland / Fernwood Water System

PARAMETER		2023 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2013 - 2022 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum	Range Maximum	≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum	Range Maximum
ND means Not Detected by analytical method used										
Physical/Biological Parameters										
Carbon, Total Organic	mg/L as C	**4.15**	4	3.9	4.5		3.52	28	2.8	5.67
Colour, True	TCU	**7**	17	3	10		6.55	114	3	25
Hardness as $CaCO_3$	mg/L	**37.45**	4	36	38.8	No Guideline Required	38.8	33	28.1	46.1
pH	pH units	Not tested in 2023				7.0 - 10.5 AO	7.7	23	7.18	8.9
Turbidity	NTU	**1.5**	17	0.6	4		1.2	235	0.1	27.1
Water Temperature	°C	**15**	41	5	24	15°C AO	15	150	5	25
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	**180**	17	< 1	3600		86.5	190	<1	6000
E. coli	CFU/100 mL	**< 1**	17	< 1	6		< 1	191	<1	180
Hetero. Plate Count, 7 day	CFU/1 mL	Last analyzed in 2013								
Algal Toxins										
Microcystin (Abraxis)	ug/L	**<1**	38	<1	<1	1.5	<1	99	<1	<1
Cryptosporidium , Total oocysts	oocysts/100 L	**< 1**	2	< 1	< 1	Zero detection desirable	< 1	26	< 1	1.92
Giardia , Total cysts	cysts/100 L	**< 1**	2	< 1	< 1	Zero detection desirable	< 1	26	< 1	1.2
Metals										
Aluminum	ug/L as Al	**5**	4	3.8	16.6	2900 MAC / 100 OG	9.3	34	< 3	< 65
Antimony	ug/L as Sb	**< 0.5**	4	< 0.5	< 0.5	6 MAC	< 0.5	34	0.05	< 10
Arsenic	ug/L as As	**0.51**	4	0.39	0.62	10 MAC	< 0.5	34	0.32	0.85
Barium	ug/L as Ba	**12.35**	4	11.7	13.2	100 MAC	12.35	34	< 1	15.1
Beryllium	ug/L as Be	**< 0.1**	4	< 0.1	< 0.1		< 0.1	34	< 0.01	< 3
Bismuth	ug/L as Bi	**< 1**	4	< 1	< 1		< 1	30	< 0.005	< 1
Boron	ug/L as B	**< 50**	4	< 50	51	5000 MAC	< 50	34	43	343
Cadmium	ug/L as Cd	**< 0.01**	4	< 0.01	< 0.01	7 MAC	< 0.01	34	< 0.005	0.1
Calcium	mg/L as Ca	**9.69**	4	9.27	9.9	No Guideline Required	9.995	34	7.85	12.3
Chromium	ug/L as Cr	**< 1**	4	< 1	1.5	50 MAC	< 1	34	< 0.1	< 10
Cobalt	ug/L as Co	**< 0.2**	4	< 0.2	< 0.2		< 0.2	34	0.0264	< 20
Copper	ug/L as Cu	**1.255**	4	0.78	2.05	2000 MAC / ≤ 1000 AO	1.265	34	< 0.5	< 8
Iron	ug/L as Fe	**17.65**	4	16.2	21	≤ 300 AO	25.7	34	0.1	176
Lead	ug/L as Pb	**< 0.2**	4	< 0.2	< 0.2	5 MAC	< 0.2	34	0.0954	0.5
Lithium	ug/L as Li	**7.35**	4	7	8.3		8.05	18	6.4	11.5
Magnesium	mg/L as Mg	**3.21**	4	3.1	3.41	No Guideline Required	3.275	34	1.09	4.47
Manganese	ug/L as Mn	**26.9**	4	5.4	65.9	120 MAC / ≤ 20 AO	20.1	34	< 4	110
Molybdenum	ug/L as Mo	**< 1**	4	< 1	1.4		< 1	34	0.059	< 20
Nickel	ug/L as Ni	**< 1**	4	< 1	5.9		< 1	34	0.298	< 50
Potassium	mg/L as K	**0.842**	4	0.822	0.858		0.817	34	0.305	1.62
Selenium	ug/L as Se	**< 0.1**	4	< 0.1	< 0.1	50 MAC	< 0.1	34	< 0.04	0.5
Silicon	ug/L as Si	**2410**	4	1700	3030		1625	34	345	9530
Silver	ug/L as Ag	**< 0.02**	4	< 0.02	< 0.02	No Guideline Required	< 0.02	34	< 0.005	< 10
Sodium	mg/L as Na	**19.05**	4	18.1	20.4	≤ 200 AO	19.5	34	< 0.05	87.3
Strontium	ug/L as Sr	**92.45**	4	87.8	95.1	7000 MAC	95.25	34	36.7	116
Sulphur	mg/L as S	**3.9**	4	3.7	4		4.5	30	< 3	8.7
Tin	ug/L as Sn	**< 5**	4	< 5	< 5		< 5	34	< 0.2	< 20
Titanium	ug/L as Ti	**< 5**	4	< 5	< 5		< 5	34	0.82	< 10
Thallium	ug/L as Tl	**< 0.01**	4	< 0.01	< 0.01		< 0.01	30	< 0.002	< 0.05
Uranium	ug/L as U	**< 0.1**	4	< 0.1	< 0.1	20 MAC	< 0.1	30	0.0026	< 0.1
Vanadium	ug/L as V	**< 5**	4	< 5	< 5		< 5	34	< 0.2	< 10
Zinc	ug/L as Zn	**5.1**	4	< 5	7.7	≤ 5000 AO	< 5	33	1.98	136
Zirconium	ug/L as Zr	**< 0.1**	4	< 0.1	< 0.1		< 0.1	30	< 0.1	< 0.5

Table 2: 2023 Summary of Treated Water Test Results, Fernwood Distribution System										
PARAMETER		2023 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2013 - 2022 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum	Range Maximum	≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum	Range Maximum
ND means Not Detected by analytical method used										
Physical Parameters										
Hardness as $CaCO_3$	mg/L	**38.9**	8	36.6	41.7		39.9	39.9	43	35.1
Carbon, Total Organic	mg/L as C	**1.9**	4	1.7	2		1.84	1.84	33	< 0.3
Colour, True	TCU	**< 2**	17	< 2	5		< 2	< 2	34	< 2
pH	pH units	Not tested in 2023					7.7	7.7	2	7.3
Turbidity	NTU	**0.2**	19	0.1	1.8	1 MAC and ≤ 5 AO	0.3	0.3	219	0.1
Water Temperature	°C	**12**	68	6	20	15°C AO	14	14	348	4
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	**< 1**	53	< 1	< 1	0 MAC	< 1	< 1	342	<1
E. coli	CFU/100 mL	**< 1**	53	< 1	< 1	0 MAC	< 1	< 1	342	<1
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2022				No Guideline Required	< 10	< 10	73	0
Algal Toxins										
Microcystin (Abraxis)	ug/L	Not tested in 2023				1.5				
Anatoxin A	ug/L	Last analyzed in 2013					< 0.16	< 0.16	23	< 0.16
Cylindrospermopsin	ug/L	Last analyzed in 2013					< 0.1	< 0.1	23	< 0.1
Microcystin-RR	ug/L	Last analyzed in 2013					< 0.16	< 0.16	23	< 0.16
Microcystin-YR	ug/L	Last analyzed in 2013					< 0.16	< 0.16	23	< 0.16
Microcystin-LR	ug/L	Last analyzed in 2013				1.5 MAC	< 0.16	< 0.16	23	< 0.16
Microcystin-LA	ug/L	Last analyzed in 2013					< 0.16	< 0.16	22	< 0.16
Nodularin	ug/L	Last analyzed in 2013					< 0.1	< 0.1	23	< 0.1
Disinfectants										
Disinfectants										
Chlorine, Free Residual	mg/L as Cl2	**0.98**	67	0.28	1.64	No Guideline Required	1.05	1.05	935	0.2
Chlorine, Total Residual	mg/L as Cl_2	**1.62**	3	1.27	1.8	No Guideline Required	1.28	1.28	747	0.29
Disinfection By-Products										
Trihalomethanes (THMs)										
Bromodichloromethane	ug/L	**11.5**	4	8.3	13		13	36	6.94	20.6
Bromoform	ug/L	**< 1**	4	< 1	< 1		< 1	36	< 0.1	< 1
Chloroform	ug/L	**23.5**	4	20	25		22	36	12.7	45
Chlorodibromomethane	ug/L	**3.8**	4	2.9	4.4		4.6	36	2.19	32.1
Total Trihalomethanes	ug/L	**37.5**	4	34	42	100 MAC	40	35	23	73
Haloacetic Acids (HAAs)										
HAA5	ug/L	Not tested in 2023				80 MAC	15.8	10	< 0.1	26
Metals										
Aluminum	ug/L as Al	**4.75**	8	3.2	11.7	2900 MAC / 100 OG	8.2	43	3.3	389
Antimony	ug/L as Sb	**< 0.5**	8	< 0.5	< 0.5	7 MAC	< 0.5	43	< 0.5	< 0.5
Arsenic	ug/L as As	**0.32**	8	0.29	0.42	10 MAC	0.31	43	0.2	0.76
Barium	ug/L as Ba	**11.55**	8	10.6	13.6	100 MAC	12.1	43	9.9	16.4
Beryllium	ug/L as Be	**< 0.1**	8	< 0.1	< 0.1		< 0.1	43	< 0.1	< 0.1
Bismuth	ug/L as Bi	**< 1**	8	< 1	< 1		< 1	43	< 1	< 1
Boron	ug/L as B	**< 50**	8	< 50	51	5000 MAC	< 50	43	< 50	53
Cadmium	ug/L as Cd	**< 0.01**	8	< 0.01	< 0.01	7 MAC	< 0.01	43	< 0.01	0.016
Calcium	mg/L as Ca	**10.45**	8	9.54	11.6	No Guideline Required	10.7	43	8.9	15.3
Chromium	ug/L as Cr	**< 1**	8	< 1	< 1	50 MAC	< 1	43	< 1	< 1
Cobalt	ug/L as Co	**< 0.2**	8	< 0.2	< 0.2		< 0.2	43	< 0.2	0.7
Copper	ug/L as Cu	**10.55**	8	4.63	17.3	2000 MAC / ≤ 1000 AO	5.26	43	1.5	83.2
Iron	ug/L as Fe	**24.05**	8	18	46.8	≤ 300 AO	43.7	43	19.6	770
Lead	ug/L as Pb	**0.635**	8	< 0.2	1.12	5 MAC	0.54	47	< 0.2	78.1
Lithium	ug/L as Li	**7.35**	8	6.9	8.4		7.2	19	6.5	11.7
Magnesium	mg/L as Mg	**3.09**	8	2.81	3.35	No Guideline Required	3.07	43	2.52	3.57
Manganese	ug/L as Mn	**1.2**	8	< 1	11.9	120 MAC / ≤ 20 AO	2.3	43	< 1	150
Molybdenum	ug/L as Mo	**< 1**	8	< 1	< 1		< 1	43	< 1	< 1
Nickel	ug/L as Ni	**< 1**	8	< 1	< 1		< 1	43	< 1	< 1
Potassium	mg/L as K	**0.8315**	8	0.807	0.844		0.798	43	0.702	0.872
Selenium	ug/L as Se	**< 0.1**	8	< 0.1	< 0.1	50 MAC	< 0.1	43	< 0.1	< 0.1
Silicon	ug/L as Si	**2360**	8	1800	3390		1570	43	405	3700
Silver	ug/L as Ag	**< 0.02**	8	< 0.02	< 0.02	No Guideline Required	< 0.02	43	< 0.02	0.02
Sodium	mg/L as Na	**22**	8	20.4	24.1	≤ 200 AO	22	43	19.8	25.2
Strontium	ug/L as Sr	**93.6**	8	87.4	95.3	7000 MAC	96.2	43	85.9	106
Sulphur	mg/L as S	**3.65**	8	3.5	4		4.4	43	3.5	5.4
Tin	ug/L as Sn	**< 5**	8	< 5	< 5		< 5	43	< 5	< 5
Titanium	ug/L as Ti	**< 5**	8	< 5	< 5		< 5	43	< 5	< 5
Thallium	ug/L as Th	**< 0.01**	8	< 0.01	< 0.01		< 0.01	43	< 0.01	0.042
Uranium	ug/L as U	**< 0.1**	8	< 0.1	< 0.1	20 MAC	< 0.1	43	< 0.1	< 0.1
Vanadium	ug/L as V	**< 5**	8	< 5	< 5		< 5	43	< 5	< 5
Zinc	ug/L as Zn	**22.75**	8	12.3	37.8	≤ 5000 AO	20.2	43	5.6	76.2
Zirconium	ug/L as Zr	**< 0.1**	8	< 0.1	< 0.1		< 0.1	43	< 0.1	< 0.5

Table 3: 2023 Summary of Treated Water Test Results, Highland Distribution System										
PARAMETER		2023 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2013 - 2022 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum	Range Maximum	≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum	Range Maximum
ND means Not Detected by analytical method used										
Physical Parameters										
Hardness as $CaCO_3$	mg/L	**47.2**	4	39.8	52.4		45.9	27	40.8	54.9
Carbon, Total Organic	mg/L as C	**1.9**	8	1.6	2		1.8	63	< 0.3	8.12
Colour, True	TCU	**< 2**	34	< 2	4		< 2	70	0.7	2.1
pH	pH units	Not tested in 2023					7.35	4	7.2	8.1
Turbidity	NTU	**0.25**	34	0.1	1.1	1 MAC and ≤ 5 AO	0.39	356	0	37.8
Water Temperature	**°C**	**12**	187	5	22	15°C AO	12	850	4	23.5
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	**< 1**	145	< 1	1	0 MAC	< 1	1092	<1	209
E. coli	CFU/100 mL	**< 1**	145	< 1	< 1	0 MAC	< 1	1092	<1	1
Hetero. Plate Count 7 day	CFU/1 mL	Not tested in 2023				No Guideline Required	30	58	< 10	310
Algal Toxins										
Microcystin (Abraxis)	ug/L	Not tested in 2023				1.5				
Anatoxin A	ug/L	Last analyzed in 2013					< 0.16	24	< 0.16	< 0.16
Cylindrospermopsin	ug/L	Last analyzed in 2013					< 0.1	24	< 0.1	< 0.1
Microcystin-RR	ug/L	Last analyzed in 2013					< 0.16	23	< 0.16	< 0.16
Microcystin-YR	ug/L	Last analyzed in 2013					< 0.16	24	< 0.16	< 0.16
Microcystin-LR	ug/L	Last analyzed in 2013				1.5 MAC	< 0.16	24	< 0.16	< 0.16
Microcystin-LA	ug/L	Last analyzed in 2013					< 0.16	24	< 0.16	< 0.16
Nodularin	ug/L	Last analyzed in 2013					< 0.1	24	< 0.1	< 0.1
Disinfectants										
Disinfectants										
Chlorine, Free Residual	mg/L as Cl2	**0.83**	187	0.21	1.97	No Guideline Required	1.01	2674	0.06	4.2
Chlorine, Total Residual	mg/L as Cl_2	Not tested in 2023				No Guideline Required	1.22	2160	0.08	4.5
Disinfection By-Products										
Trihalomethanes (THMs)										
Bromodichloromethane	ug/L	**16**	8	13	21		15	71	<0.1	31.9
Bromoform	ug/L	**< 1**	8	< 1	< 1		< 1	70	< 0.1	4.2
Chloroform	ug/L	**34.5**	8	26	56		29	73	9.22	90.2
Chlorodibromomethane	ug/L	**5.35**	8	< 1	6.2		5.64	71	<0.1	15.5
Total Trihalomethanes	ug/L	**56.5**	8	42	80	100 MAC	50.85	68	21.4	128
Haloacetic Acids (HAAs)										
HAA5	ug/L	Not tested in 2023				80 MAC	19.5	20	9.21	37.7
Metals										
Aluminum	ug/L as Al	**10.25**	4	< 3	16.7	2900 MAC / 100 OG	16.4	27	4.5	58.8
Antimony	ug/L as Sb	**< 0.5**	4	< 0.5	< 0.5	6 MAC	< 0.5	27	< 0.5	< 0.5
Arsenic	ug/L as As	**0.325**	4	0.25	0.41	10 MAC	0.29	27	0.22	0.48
Barium	ug/L as Ba	**11.3**	4	10.1	12.8	100 MAC	10.7	27	6.7	14.3
Beryllium	ug/L as Be	**< 0.1**	4	< 0.1	< 0.1		< 0.1	27	< 0.1	< 0.1
Bismuth	ug/L as Bi	**< 1**	4	< 1	< 1		< 1	27	< 1	< 1
Boron	ug/L as B	**< 50**	4	< 50	52	5000 MAC	< 50	27	< 50	51
Cadmium	ug/L as Cd	**< 0.01**	4	< 0.01	< 0.01	7 MAC	< 0.01	27	< 0.01	< 0.01
Calcium	mg/L as Ca	**16.3**	4	11.6	18.5	No Guideline Required	15.8	27	11.1	19.1
Chromium	ug/L as Cr	**< 1**	4	< 1	< 1	50 MAC	< 1	27	< 1	< 1
Cobalt	ug/L as Co	**< 0.2**	4	< 0.2	< 0.2		< 0.2	27	< 0.2	< 0.2
Copper	ug/L as Cu	**4.27**	4	3.75	8.89	2000 MAC / ≤ 1000 AO	3.48	27	2.02	8.38
Iron	ug/L as Fe	**117.55**	4	61.8	151	≤ 300 AO	91.7	27	40.9	591
Lead	ug/L as Pb	**0.29**	4	0.25	0.4	5 MAC	0.24	27	< 0.2	1.35
Lithium	ug/L as Li	**7.2**	4	6.7	8.2		7.1	11	6.6	8.2
Magnesium	mg/L as Mg	**1.585**	4	1.52	2.63	No Guideline Required	1.9	27	0.95	3.16
Manganese	ug/L as Mn	**1.9**	4	1.6	21.1	120 MAC / ≤ 20 AO	2.8	27	< 1	57.9
Molybdenum	ug/L as Mo	**< 1**	4	< 1	< 1		< 1	27	< 1	< 1
Nickel	ug/L as Ni	**< 1**	4	< 1	< 1		< 1	27	< 1	< 1
Potassium	mg/L as K	**0.8**	4	0.765	0.868		0.788	27	0.721	0.902
Selenium	ug/L as Se	**< 0.1**	4	< 0.1	< 0.1	50 MAC	< 0.1	27	< 0.1	< 0.1
Silicon	ug/L as Si	**2840**	4	2150	3740		1880	27	1190	3490
Silver	ug/L as Ag	**< 0.02**	4	< 0.02	< 0.02	No Guideline Required	< 0.02	27	< 0.02	< 0.02
Sodium	mg/L as Na	**21.45**	4	20.3	22.9	≤ 200 AO	21.9	27	19.9	24.1
Strontium	ug/L as Sr	**97.6**	4	89.3	107	7000 MAC	101	27	92.9	115
Sulphur	mg/L as S	**3.6**	4	3.3	4		4.6	27	3.4	5.7
Tin	ug/L as Sn	**< 5**	4	< 5	< 5		< 5	27	< 5	< 5
Titanium	ug/L as Ti	**< 5**	4	< 5	< 5		< 5	27	< 5	< 5
Thallium	ug/L as Th	**< 0.01**	4	< 0.01	< 0.01		< 0.01	27	< 0.01	< 0.01
Uranium	ug/L as U	**< 0.1**	4	< 0.1	< 0.1	20 MAC	< 0.1	27	< 0.1	< 0.1
Vanadium	ug/L as V	**< 5**	4	< 5	< 5		< 5	27	< 5	< 5
Zinc	ug/L as Zn	**7.65**	4	5.5	60.7	≤ 5000 AO	7.9	27	< 5	17
Zirconium	ug/L as Zn	**< 0.1**	4	< 0.1	< 0.1		< 0.1	27	< 0.1	< 0.5

CAPITAL REGIONAL DISTRICT

HIGHLAND / FERNWOOD WATER
Statement of Operations (Unaudited)
For the Year Ended December 31, 2023

		2023	2022
Revenue			
Transfers from government		75,000	75,000
User Charges		390,378	379,589
Sale - Water		68,396	56,465
Other revenue from own sources:			
Interest earnings		529	139
Transfer from Operating Reserve Fund		-	27,000
Other revenue		1,531	1,459
Total Revenue		535,834	539,652
Expenses			
General government services		16,949	15,152
Contract for Services		14,074	18,065
CRD Labour and Operating costs		206,293	244,313
Capital Purchases		-	10,337
Debt Servicing Costs		34,399	34,337
Other expenses		121,429	101,263
Total Expenses		393,144	423,467
Net revenue (expenses)		142,690	116,185
Transfers to own funds:			
Capital Reserve Fund		75,000	38,016
Operating Reserve Fund		67,690	34,036
Annual surplus/(deficit)		-	44,133
Accumulated surplus/(deficit), beginning of year		-	(44,133)
Accumulated surplus/(deficit), end of year	$	-	-

CAPITAL REGIONAL DISTRICT

HIGHLAND / FERNWOOD WATER
Statement of Reserve Balances (Unaudited)
For the Year Ended December 31, 2023

	Capital Reserve 2023	2022
Beginning Balance	41,340	52,129
Transfer from Operating Budget	75,000	38,016
Transfer to Capital Project	(10,000)	(52,000)
Interest Income	5,104	3,195
Ending Balance	111,444	41,340

	Operating Reserve 2023	2022
Beginning Balance	30,566	22,784
Transfer from Operating Budget	67,690	34,036
Transfer to Operating Budget	-	(27,000)
Interest Income	2,845	746
Ending Balance	101,101	30,566

HIGHLAND WATER
Statement of Operations (Unaudited)
For the Year Ended December 31, 2023

		2023	2022
Revenue			
Transfers from government		31,795	30,832
Other revenue from own sources:			
Interest earnings		173	108
Other revenue		172	121
Total Revenue		32,140	31,061
Expenses			
General government services		43	103
Debt Servicing Costs		32,044	30,868
Total Expenses		32,087	30,971
Net revenue (expenses)		53	90
Annual surplus/(deficit)		53	90
Accumulated surplus/(deficit), beginning of year		119	29
Accumulated surplus/(deficit), end of year	$	172	119

FERNWOOD WATER
Statement of Operations (Unaudited)
For the Year Ended December 31, 2023

		2023	2022
Revenue			
Transfers from government		14,658	14,413
Other revenue from own sources:			
Interest earnings		70	44
Other revenue		85	59
Total Revenue		14,813	14,516
Expenses			
General government services		26	82
Debt Servicing Costs		14,763	14,402
Total Expenses		14,789	14,484
Net revenue (expenses)		24	32
Annual surplus/(deficit)		24	32
Accumulated surplus/(deficit), beginning of year		46	14
Accumulated surplus/(deficit), end of year	$	70	46