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## LYALL HARBOUR BOOT COVE WATER LOCAL SERVICE COMMITTEE

Notice of Meeting on **Thursday, June 15, 2023 at 9:30 a.m.**

Goldstream Conference Room, 479 Island Highway, Victoria, BC

For members of the **public who wish to listen to the meeting** via telephone please call **1-833-353-8610** and enter the **Participant Code 1911461 followed by #**. You will not be heard in the meeting room but will be able to listen to the proceedings.

J. Crerar (Chair)  
A. Olsen

J. Money (Vice Chair)  
T. McLeod

P. Brent (EA Director)  
I. Rowe

### AGENDA

#### 1. APPROVAL OF AGENDA

#### 2. ADOPTION OF MINUTES .....3

*Recommendation: That the minutes of the February 9, 2023 meeting be adopted.*

#### 3. CHAIR'S REMARKS

#### 4. PRESENTATIONS/DELEGATIONS

*Delegations will have the option to participate electronically. Please complete the [online](#) application for "Addressing the Board" on our website and staff will respond with details.*

*Alternatively, you may email your comments on an agenda item to the Lyall Harbour Boot Cove Water Local Service Committee at [iwsadministration@crd.bc.ca](mailto:iwsadministration@crd.bc.ca).*

*Requests must be received no later than 4:30 p.m. two calendar days prior to the meeting.*

#### 5. SENIOR MANAGER'S REPORT

- Electoral Areas Water Conservation Bylaw No. 1, 2022 (Bylaw No. 4492) – Update

#### 6. COMMITTEE BUSINESS

##### 6.1. 2022 Annual Report.....7

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

##### 6.2. Project and Operations Update .....18

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

#### 7. CORRESPONDENCE

*To ensure quorum, advise [IWSAdministration@crd.bc.ca](mailto:IWSAdministration@crd.bc.ca) if you cannot attend.*

**Lyall Harbour Boot Cove Water Local Service Committee  
Agenda – June 15, 2023**

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**8. NEW BUSINESS**

**9. ADJOURNMENT**

**Next Meeting:** Thursday, November 9, 2023 at 2:00pm



Making a difference...together

**MINUTES OF A MEETING OF THE Lyall Harbour Boot Cove Water Local Service Committee, held Thursday, February 9, 2023 at 9:30 a.m., In the Goldstream Meeting Room, 479 Island Highway, Victoria, BC**

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**PRESENT: Committee Members:** Jeanne Crerar (Chair); J. Money (Vice Chair); P. Brent (Electoral Area Director); T. McLeod (EP) A. Olsen; I. Rowe (EP)

**Staff:** J. Marr, Acting Senior Manager, Infrastructure Engineering; J. Dales, Senior Manager, Wastewater Infrastructure Operations; J. Kelly, Manager, Capital Projects; C. Moch, Manager, Water Quality Operations; L. Xu, Manager, Finance Services (EP); T. Duthie, Manager, Administrative Services; M. Risvold, Committee and Administrative Clerk (Recorder)

EP = Electronic Participation

The meeting was called to order at 9:32.

## **1. ELECTION OF CHAIR**

The Acting Senior Manager called for nominations for the position of Chair of the Lyall Harbour/Boot Cove Water Local Service Committee for the term ending December 31, 2023.

J. Money nominated J. Crerar. J. Crerar accepted the nomination.

The Acting Senior Manager called for nominations a second time.

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

Hearing no further nominations, the Acting Senior Manager declared J. Crerar Chair of the Lyall Harbour/Boot Cove Water Local Service Committee for the term ending December 31, 2023 by acclamation.

## **2. ELECTION OF VICE CHAIR**

The Chair called for nominations for the position of Vice Chair of the Lyall Harbour/Boot Cove Water Local Service Committee for the term ending December 31, 2023.

A. Olsen nominated J. Money. J. Money accepted the nomination.

The Chair called for nominations a second time.

The Chair called for nominations a third and final time.

Hearing no further nominations, the Chair declared J. Money Vice Chair of the Lyall Harbour/Boot Cove Water Local Service Committee for the term ending December 31, 2023 by acclamation.

### 3. APPROVAL OF AGENDA

**MOVED** by J. Crerar, **SECONDED** by J. Money,  
That the agenda be approved.

**CARRIED**

### 4. ADOPTION OF MINUTES

**MOVED** by P. Brent, **SECONDED** by J. Money,  
That the minutes of the November 22, 2022 meeting be adopted.

**CARRIED**

### 5. CHAIR'S REMARKS

The Chair thanked staff for:

- Quickly identifying the leak on December 25, 2022
- The timely and informative communication of work in progress
- Advising users when the work was complete

The Chair welcomed T. McLeod to the Committee.

Discussion ensued regarding the recent well transfer with Natures Trust.

### 6. PRESENTATIONS/DELEGATIONS

There were none.

### 7. SENIOR MANAGER'S REPORT

Staff thanked J. Money for organizing the ground water well transfer with Natures Trust and advised the statutory right-of-way (SRW) is being modified to list the well as a Capital Regional District (CRD) asset. The well will be registered with the Province of British Columbia and necessary steps will be taken so the water service can use the well in the future.

Discussion ensued regarding:

- Quality of water produced by the acquired well
- Alternative Approval Process (AAP)
- Source water validity study
- Grant funding

### 8. COMMITTEE BUSINESS

#### 8.1. Presentation – Lyall Harbour/Boot Cove Water Local Service Committee Orientation

Staff presented the orientation and responded to questions from the committee regarding:

- The ability for adjustments to be made to an approved budget. Staff advised the approved motion provides direction to staff, and the budget presented to the committee in the fall is a projection for the upcoming year. The fee and charges bylaw provides the ability to adjust the rates. A special meeting would be required to discuss moving funds.

- Completing a well analysis in 2023 with capital project 22-02 Dam Improvements & Regulatory requirements. Staff advised they are not comfortable with completing the well analysis with this capital project as the project cost is undetermined, and an appropriate consultant would need to be contracted.
- Community Works Funds (CWF) from the Electoral Area Director and AAP. Staff advised if CWF can be used for the well analysis, the budget would not likely need to be amended. Staff noted that CWF cannot be used to pay for staff time so a consultant would need to be hired.
- Concern regarding the water quality and boil water advisories (BWA's). Staff advised the water treatment plant upgrades and AAP are to resolve the BWA's.
- Sediment buildup. Staff advised if the pipes are stagnant for a period of time sediment can build up and appear when the water is turned back on.

J. Money left the meeting at 11:02 am.

Requests from the committee:

- Staff to determine how many parcels are not currently connected to the service but could be in the future.
- Staff to investigate CRD's responsibility of the watershed property located around the lake.
- Staff to confirm the funding source for the turbidity pilot project and advise the committee of the estimated delivery times.
- Staff to contact legislative services to determine if committee Chairs can have a CRD email address for communication with the Local Service residents.

The committee thanked staff for the presentation.

## **8.2. Project and Operations Update**

Staff provided updates on capital projects and service operations.

Discussion ensued regarding:

- Leak detection
- Notifications to homeowners regarding leaks on properties
- Zone meters for detecting leaks
- On-island staff

## **8.3. Referral From Electoral Areas Committee – Electoral Areas Water Conservation Bylaw No. 1, 2022 (Bylaw No. 4492)**

The committee provided the following feedback:

- Would like a communication plan that includes what the bylaw is.
- Would like to see an incentive side as well as a penalty side.

## 9. LYALL HARBOUR/BOOT COVE WATER LOCAL SERVICE COMMITTEE MEETING SCHEDULE

Regular meetings of the Lyall Harbour/Boot Cove Water Local Service Committee shall be held in the Goldstream Conference Room, 479 Island Highway, Victoria, BC on Thursday, February 9, Thursday, June 15 and a date to be determined in November to approve the Operating and Capital Budget. Meetings will commence at 9:30 am unless otherwise determined. Additional meetings are at the call of the Chair, and a special meeting would be required to amend the budget.

## 10. CORRESPONDENCE

There was none.

## 11. NEW BUSINESS

There was none.

## 12. ADJOURNMENT

**MOVED** by P. Brent, **SECONDED** by I. Rowe,  
That the meeting be adjourned at 11:38.

**CARRIED**

\_\_\_\_\_  
CHAIR

\_\_\_\_\_  
SECRETARY

# Lyall Harbour/Boot Cove Water Service

## 2022 Annual Report

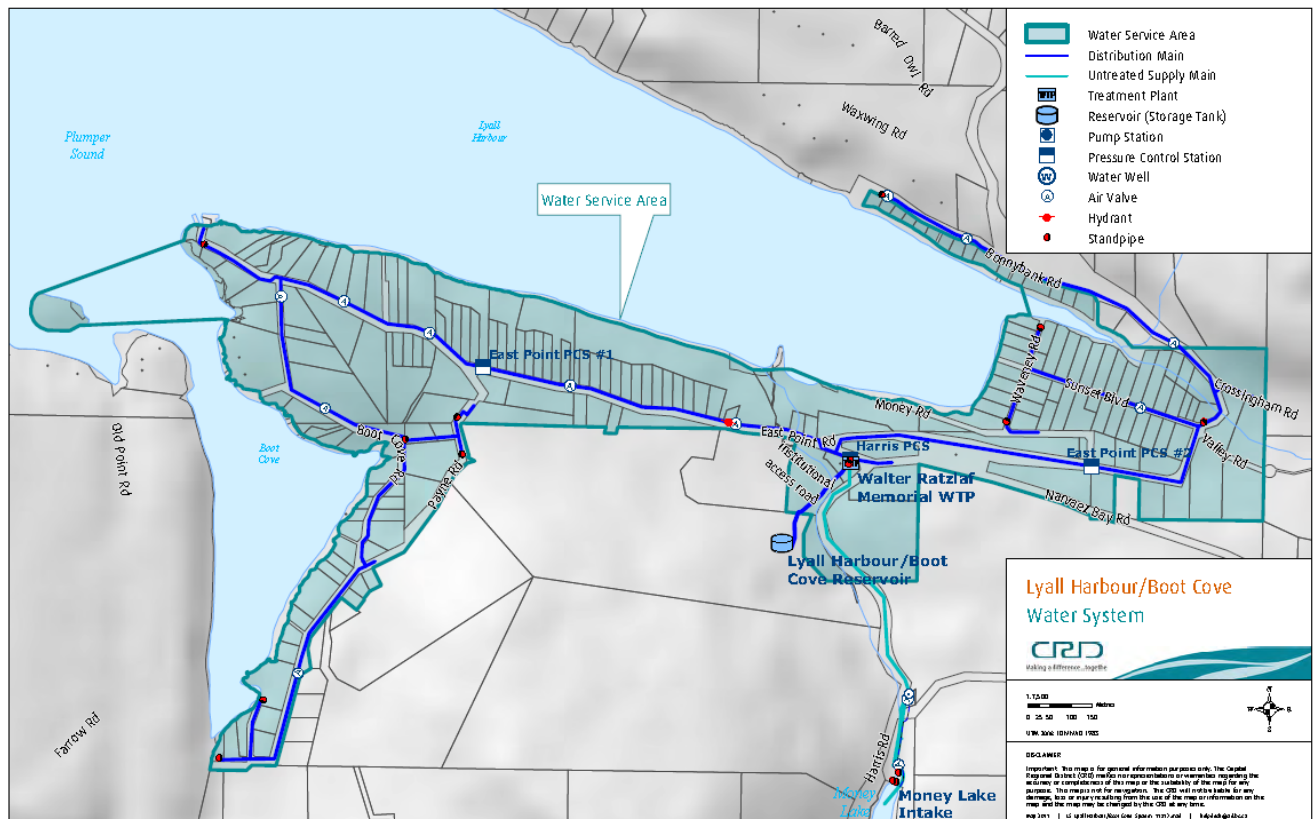


### Introduction

This report provides a summary of the Lyall Harbour/Boot Cove Water Service for 2022 and 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

The community of Lyall Harbour/Boot Cove is primarily a rural residential development with community and commercial properties located on Saturna Island in the Southern Gulf Islands Electoral Area which was originally serviced by a private water utility and in 1978 the service converted to the Capital Regional District (CRD). The Lyall Harbour/Boot Cove water service is made up of 171 parcels (Figure 1) encompassing a total area of approximately 100 hectares. Of the 171 parcels, 155 properties (164 Single Family Equivalent's) are connected to the water system.



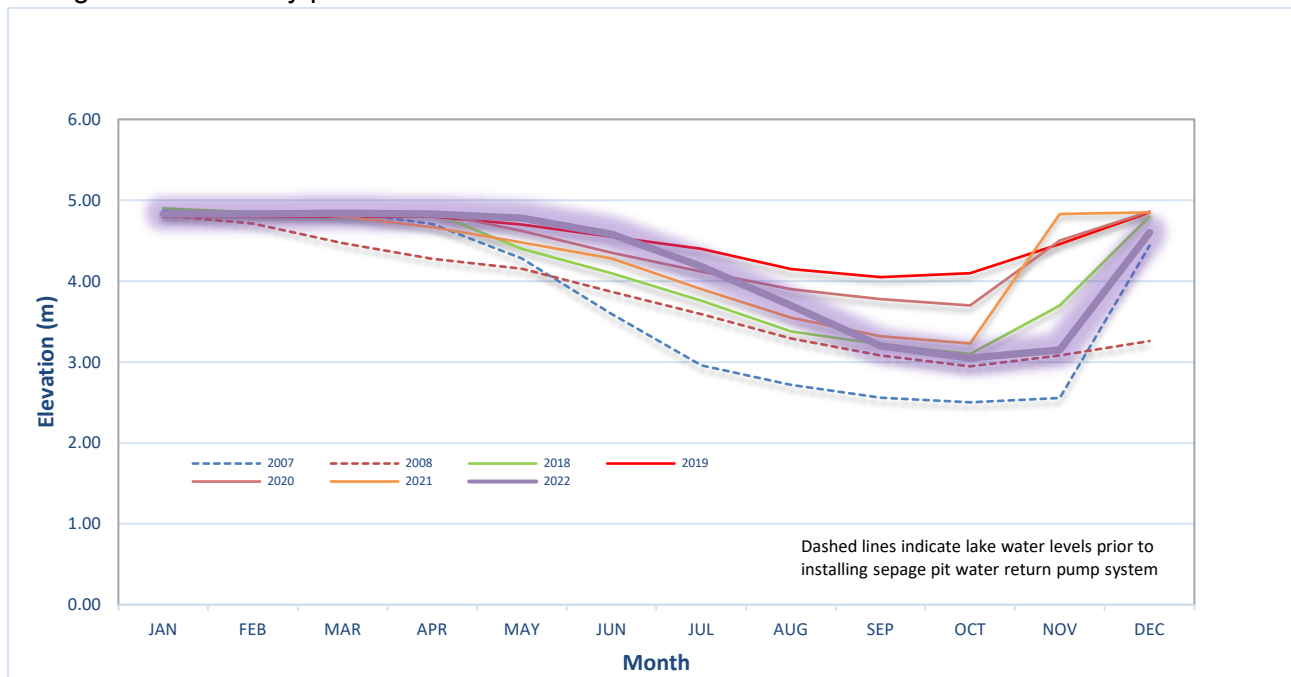
**Figure 1: Map of Lyall Harbour/Boot Cove Water System**

The Lyall Harbour/Boot Cove water system is primarily comprised of:

- Two raw water sources:
  - Money Lake, a small, impounded, surface water body that lies within a 94 hectare (230 acre) watershed on private and public lands.
  - Ground water spring (seepage pit) located near the base of Money Lake Dam.
- One earthen dam structure, Money Lake Dam No. 1.
- Treatment equipment including ozonation (currently offline), two stages of filtration (granular and absorption), ultraviolet light disinfection and chlorine disinfection.
- One steel storage tank (total volume 136 cubic meters or 36,000 US gallons).
- Supervisory Control and Data Acquisition (SCADA) system.
- Distribution system and supply pipe network (8,390 meters of water mains).
- Other water system assets: water service connections and meters, three pressure reducing valve stations, 50 gate valves, 12 standpipes and a small auxiliary generator.

## Water Supply

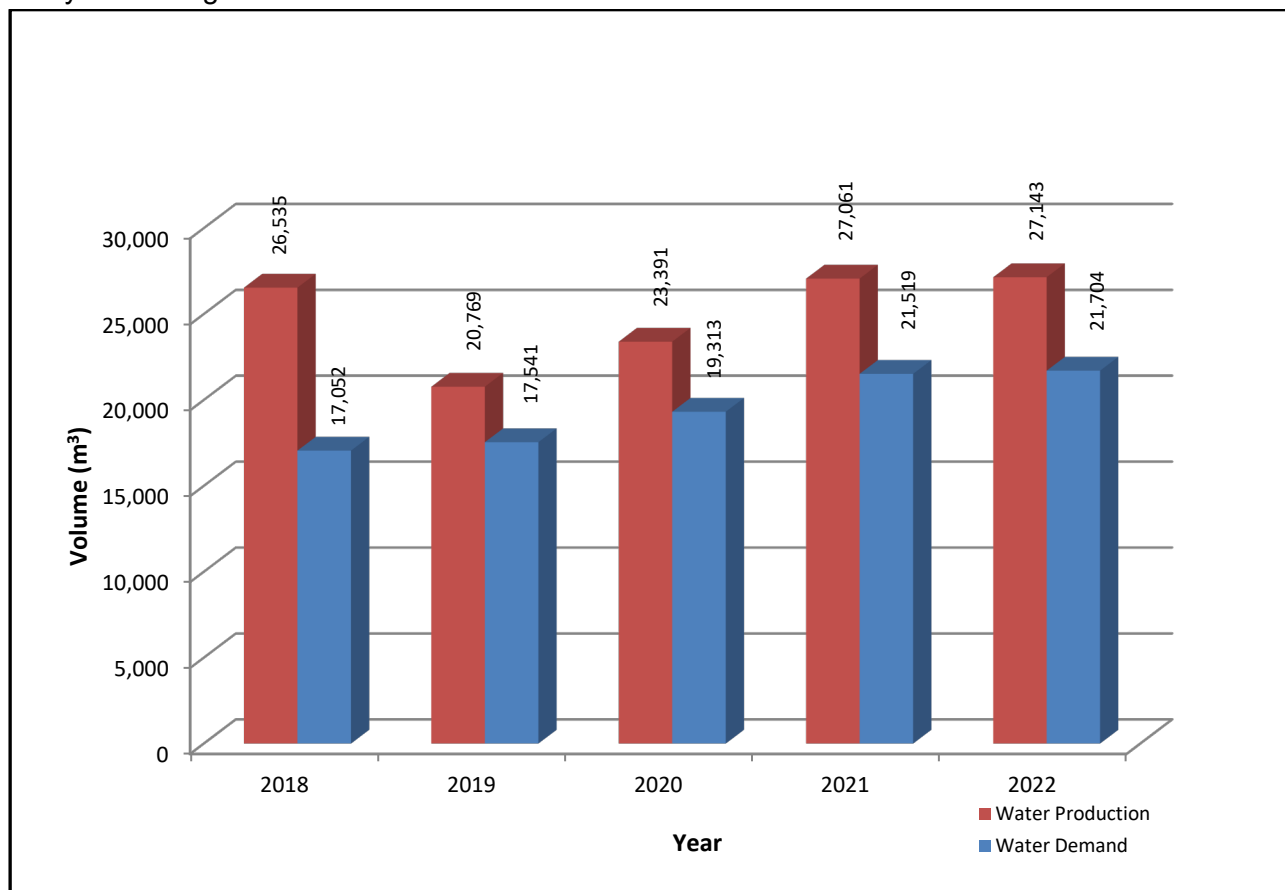
Referring to Figure 2 below, Money Lake monthly water levels are highlighted for 2022. It is important to note that water supply levels in Money Lake, prior to 2008, were historically lower during the summer period. An upgrade to mitigate the low water levels involved the installation of a groundwater seepage spring recirculation pumping system. Excess water from the seepage spring is pumped back to Money Lake in order to keep the Lake as full as possible. The groundwater seepage spring water level is not monitored; however the seepage spring weekly flow rate is monitored to confirm production rate. The seepage spring typically provides 100% of the winter water system demand for the community. Money Lake water is used periodically to supplement seepage spring flows, typically during the summer dry period.



**Figure 2: Money Lake Monthly Water Level**

## Water Production and Demand

Referring to Figure 3, 27,143 cubic meters of water was extracted (water production) from the seepage spring and Money Lake Reservoir in 2022; a 1% increase from the previous year and a 9% increase from the five year average. Water demand (customer water billing) for the service totaled 21,704 cubic meters of water; 1% increase from the previous year and an 18% increase from the five year average.

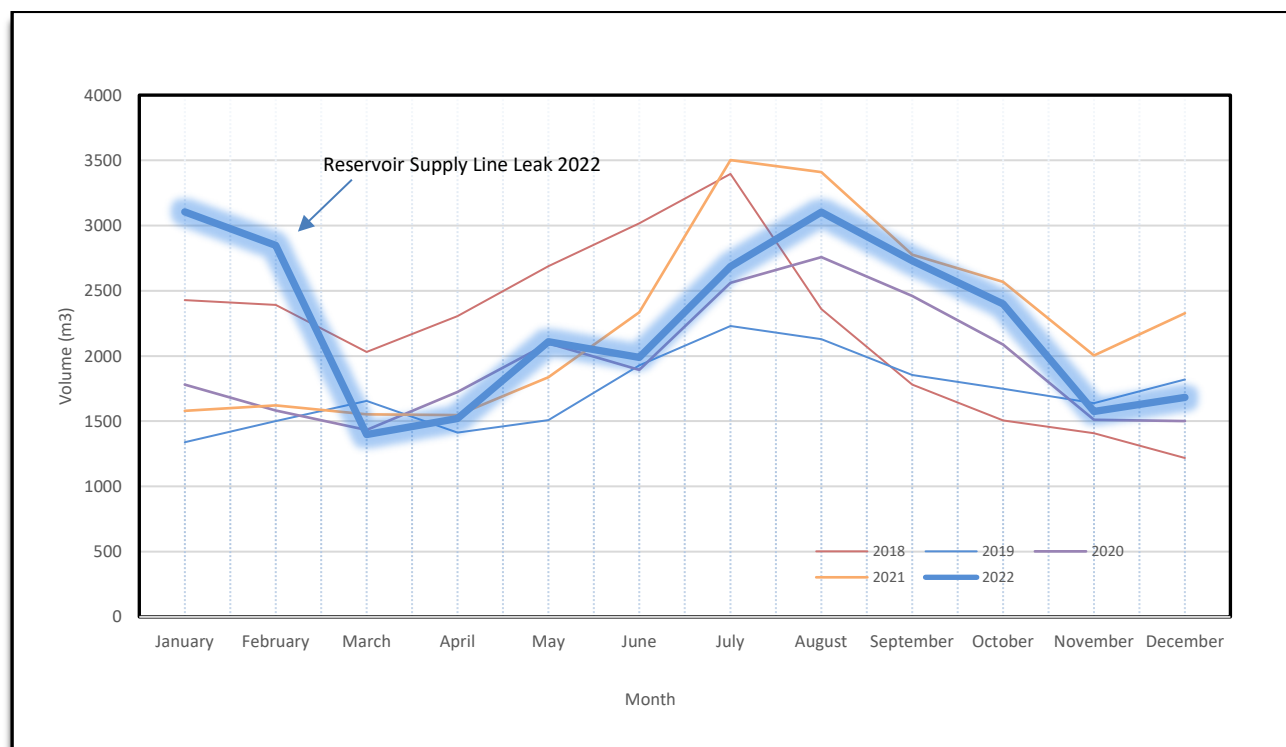


**Figure 3: Lyall Harbour/Boot Cove Water System Annual Water Production and Demand**

The difference between annual water production and annual customer demand is referred to as non-revenue water and can include water system leaks, water system maintenance and operational use (e.g. water main flushing, filter system backwashing), potential unauthorized use and fire-fighting use.

The 2022 non-revenue water (5,439 cubic meters) represents about 20% of the total water production for the service area. However, almost 12% of the non-revenue water can be attributed to operational use which includes water main flushing to keep chlorine residuals at acceptable levels at the extremities of the water system and water treatment filtration system backwashing activities. Therefore, the non-revenue water associated with system losses is approximately 8% which is considered acceptable for small water systems.

Figure 4 illustrates the monthly water production for 2022 along with the historical water production information. The monthly water production trends are typical for small water systems such as the Lyall Harbour/Boot Cove water system. However, in further review the January and February monthly water production for 2022 is much higher than normal. This is the result of a significant water system leak on the reservoir fill line which was identified and isolated from the system.



**Figure 4: Lyall Harbour/Boot Cove Water Service Monthly Water Production**

## Drinking Water Quality

The Lyall Harbour/Boot Cove Water System uses predominantly seepage water collected from below the Money Lake dam as the primary raw water source. During the summer months this source is supplemented or completely replaced with flows from Money Lake. During summer and early fall 2022, all source water was supplied by Money Lake only, as the seepage water collection system ran dry. There is sufficient evidence to conclude that the seepage water is hydraulically connected to the lake source.

The Lyall Harbour/Boot Cove Water System experienced another challenging year in 2022. In total, it was under boil water advisories (BWA) for 160 days throughout the year. The first BWA was a continuation of a turbidity related event that has now developed into an annual pattern which sees the treated water turbidity starting to exceed one Nephelometric Turbidity Unit (NTU) in late fall and remaining above this threshold until the spring; typically until March. In 2022, this turbidity related BWA lasted until March 26. On October 18, this annual winter turbidity pattern set in again and necessitated another BWA that lasted into 2023. CRD staff, in collaboration with scientists at the University of Victoria, concluded in a 2022 study that turbidity measurement interference likely contributes to this annual turbidity and BWA pattern. The study found evidence that dissolved organic matter interferes with the turbidity readings. CRD staff is working on a solution to this issue.

Between June 27 and September 7, Money Lake experienced a strong cyanobacteria bloom. Multiple cyanotoxin tests did not detect microcystin toxins in the raw water during this bloom. This bloom did not pose a public health risk through the drinking water supplied. The annual average concentration for both regulated disinfection by-products, total Trihalomethanes (TTHM) and Haloacetic Acids (HAA), remained below the maximum acceptable concentration (MAC) in the Guidelines for Canadian Drinking Water Quality (GCDWQ).

The data below provides a summary of the water quality characteristics in 2022:

#### Raw Water:

- The raw water exhibited overall low concentrations of total coliform bacteria, with higher concentrations during the summer and early fall months when lake water was the primary water source and water temperatures were high. Throughout most of the year, the raw water entering the treatment plant contained either none or only very low concentrations of *E. coli* bacteria.
- The raw water turbidity ranged from 0.85 to 9.69 NTU. The highest raw water turbidity period was during fall and winter (October to December) coinciding with the wet season. It is suspected that a higher concentration of dissolved organic matter during the wet season is a factor in the higher turbidity measurements. The median annual raw water turbidity was 3.51 NTU. During the spring and summer months the raw water turbidity was consistently lower between 1 and 2.5 NTU.
- No *Giardia* cysts and no *Cryptosporidium* oocysts were detected in two sample sets in 2022.
- The raw water had naturally high concentrations of iron and manganese especially during the fall season. Elevated iron and manganese concentrations are typically released during the fall turnover event in Money Lake and can be compounded by the ground passage of the seepage water. Iron concentrations were especially high on November 16, likely as a result of the lake turnover event and in the wake of the first significant post-summer rainfalls in late October and early November.
- The raw water was slightly hard (median hardness 39.8 mg/L CaCO<sub>3</sub>).
- The natural total organic carbon (TOC) in the source water was moderately high (median 4.5 mg/L).

#### Treated Water:

- Outside the periods with a BWA, the treated water was bacteriologically safe to drink. No treated water sample from the distribution system tested positive for total coliform or *E. coli* bacteria.
- The treated water turbidity was regularly > 1 NTU and caused the three periods with BWAs. Investigations are underway to determine if the turbidity measurements could be affected by dissolved organic matter and whether such effect constitutes a risk to the safety of the drinking water or not.
- The treated water TOC was periodically high within a range from 3.9 to 9.7 mg/L. The annual mean was 4.9 mg/L. There is currently no guideline in the GCDWQ for TOC levels, however TOC levels > 2 mg/L indicate a potential for disinfection by-product exceedances. TOC levels > 4 mg/L are usually a precursor for high disinfection by-product concentrations.
- As a result of a chlorination optimization process, the disinfection by-product (DBP) concentrations remained below the GCDWQ health limits. The annual average TTHM and HAA concentrations were 83 µg/L and 56 µg/L respectively and therefore well below the MAC (100 µg/L and 80 µg/L respectively).

- Iron concentrations in exceedance of the aesthetic objective were found in a distribution system sample from November 16. This was a result of high iron concentrations in the raw water and the lack of adequate treatment for metals. Manganese concentrations, while elevated in the raw water, were consistently low in the treated water. Elevated iron concentrations are not a health concern but can lead to discolouration of the drinking water which can be a nuisance for the customers. The newly established GCDWQ MAC for aluminum was not exceeded in 2022.

Table 1 and 2 below provide a summary of the 2022 raw and treated water test results.

Water quality data collected from this drinking water system can be also reviewed on the 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:

- Unplanned work related to the water treatment plant filtering system carbon media augmentation to address treated water turbidity issues related to the boil water advisory issued in late 2021.
- Several leak investigations that resulted in identifying a significant leak on the reservoir supply line and several leaks identified on the private side of the system.
- Operational effort due to the boil water advisory issued on October 9, 2021 and rescinded on March 26, 2022.
- Replacement of the Money Lake recirculation feed pump due to freezing from the extreme cold weather event in early 2022.
- Service line leak repair on East Point Road.
- Emergency response to a low chlorine alarm. Chlorine line piping was found to be cracked likely as a result of the cold weather event in late December. Additional heating was provided in the chlorine storage space.
- System leak detection activities performed in November because of low reservoir alarms due to high water demands. As a result, several leaks were identified to be on the private side of the system.
- Emergency response to a water system leak(s) by several Saanich Peninsula operations staff beginning December 24 and continued through December 26. Several leaks were found on the private side of the water system because of lengthy freezing weather conditions and improper winterization of external plumbing. The combination of several leaks occurring at the same time resulted in much higher water system demands that resulted in the water tank reaching a critical level. Although the water system did not drain completely the risk was extremely high for this to occur during the emergency response. Emergency bottled water was also delivered to site in the event water service was completely interrupted.

## Capital Project Updates

The Capital Projects that were in progress or completed in 2022 included:

1. Completion of the 2022 Dam Safety Review (Audit) Report. This work was funded by Community Works Funds.

2. Dam Improvements – Geotechnical analysis was underway by Thurber Engineering. A seismic performance assessment as well as design memo for filtration blanket were progressed, both of which will be finalized in 2023. Once these deliverables are finalized and reviewed, further assessment will be required to determine construction opportunities and budget availability to execute the suggested works. This work was funded by Community Works Funds.

## Financial Report

Please refer to the attached 2022 Statement of Operations and Reserve Balances.

Revenue includes parcel taxes (Transfers from Government), fixed user fees (User Charges), interest on savings Interest earnings), transfer 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 include budget preparation, financial management, utility billing and risk management services. CRD Labour and Operating Costs include CRD staff time as well as the cost 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 are added to any surplus or deficit carry forward from the prior year, yielding an Accumulated Surplus (or deficit) that is carried forward to the following year.

Submitted by:	Jason Dales, B.Sc., WD IV, Senior Manager, Wastewater Infrastructure Operations
	Joseph Marr, P.Eng., Acting Senior Manager, Infrastructure Engineering
	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Ian Jesney, P.Eng., Acting General Manager, Integrated Water Services
	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

Attachments: Table 1 - 2022 Summary of Raw Water Test Results  
 Table 2 - 2022 Summary of Treated Water Test Results  
 2022 Statement of Operations and Reserve Balances

For questions related to this Annual Report please email [IWSAdministration@crd.bc.ca](mailto:IWSAdministration@crd.bc.ca)

Table 1

Table 1: 2022 Summary of Raw Water Test Results, Lyall Harbour / Boot Cove Water System										
PARAMETER		2022 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2012-2021 ANALYTICAL RESULTS			
Parameter	Units of Measure	Annual Median	Samples Analyzed	Range		≤ = Less than or equal to	Median	Samples Analyzed	Range	
Name	Measure	Median	Analyzed	Minimum	Maximum		Median	Analyzed	Minimum	Maximum
ND means Not Detected by analytical method used										
Physical/Biological Parameters										
Carbon, Total Organic	mg/L as C	4.5	12	3.2	6.2		5.4	102	3.27	18
Colour, True	TCU	24	16	10	59		19	46	11	71
Hardness as CaCO <sub>3</sub>	mg/L	39.8	4	39.2	45.2	No Guideline Required	43	69	34.7	52.2
pH	pH units	7.2	1	7.2	7.2	7.0 - 10.5 AO	6.81	27	6.4	7.52
Turbidity, Field Tests	NTU	4.21	112	1.28	9.69		4.04	2	3.43	4.65
Turbidity, Grab Samples	NTU	2.8	17	0.85	6.5		1.95	110	0.2	20.3
Water Temperature	Degrees C	10.5	63	-0.1	24	15°C AO	11	383	4	25.5
Metals										
Aluminum	ug/L as Al	38	4	27.9	156	2900 MAC / 100 OG	77.1	69	8.7	739
Antimony	ug/L as Sb	< 0.5	4	< 0.5	< 0.5	6 MAC	< 0.5	69	0.042	< 0.5
Arsenic	ug/L as As	0.395	4	0.31	0.55	10 MAC	0.4	69	0.22	7.49
Barium	ug/L as Ba	2.75	4	2.1	3.1	1000 MAC	3.4	69	1.47	40.4
Beryllium	ug/L as Be	< 0.1	4	< 0.1	< 0.1		< 0.1	69	< 0.01	< 3
Bismuth	ug/L as Bi	< 1	4	< 1	< 1		< 1	63	0.017	< 1
Boron	ug/L as B	< 50	4	< 50	< 50	5000 MAC	< 50	69	11	420
Cadmium	ug/L as Cd	< 0.01	4	< 0.01	< 0.01	5 MAC	< 0.01	69	< 0.01	< 0.1
Calcium	mg/L as Ca	10.25	4	9.86	11.7	No Guideline Required	10.8	69	8.65	13.2
Chromium	ug/L as Cr	< 1	4	< 1	< 1	50 MAC	< 1	69	0.15	< 10
Cobalt	ug/L as Co	< 0.2	4	< 0.2	< 0.2		< 0.2	69	0.022	< 20
Copper	ug/L as Cu	2.81	4	2.52	3.21	2000 MAC / ≤ 1000 AO	4.17	69	1.34	285
Iron	ug/L as Fe	258	4	125	943	≤ 300 AO	273	71	25.6	1960
Lead	ug/L as Pb	0.3	4	0.25	0.34	5 MAC	0.24	69	0.24	105
Lithium	ug/L as Li	< 2	4	< 2	< 2		< 2	35	< 2	20.1
Magnesium	mg/L as Mg	3.55	4	3.32	3.89	No Guideline Required	3.82	69	2.98	4.67
Manganese	ug/L as Mn	24.75	4	12.2	42.7	120 MAC / ≤ 20 AO	31.35	70	< 1	1370
Molybdenum	ug/L as Mo	< 1	4	< 1	< 1		< 1	69	0.065	< 20
Nickel	ug/L as Ni	< 1	4	< 1	< 1		< 1	69	0.353	< 50
Potassium	mg/L as K	0.642	4	0.494	0.729		0.663	69	0.387	1.36
Selenium	ug/L as Se	< 0.1	4	< 0.1	< 0.1	50 MAC	< 0.1	69	< 0.04	< 0.5
Silicon	mg/L as Si	6915	4	5930	8850		7310	69	2750	19800
Silver	ug/L as Ag	< 0.02	4	< 0.02	< 0.02	No Guideline Required	< 0.02	69	< 0.005	< 40
Sodium	mg/L as Na	8.55	4	8.38	9.19	≤ 200 AO	9.17	69	6.44	13.2
Strontium	ug/L as Sr	92.9	4	87.2	98.4	7000 MAC	96.8	69	70	120
Sulfur	mg/L as S	< 3	4	< 3	3.3		< 3	63	< 3	6.1
Tin	ug/L as Sn	< 5	4	< 5	< 5		< 5	69	0.46	65
Titanium	ug/L as Ti	< 5	4	< 5	8.4		< 5	69	1.44	65
Thallium	ug/L as Tl	< 0.01	4	< 0.01	< 0.01		< 0.01	63	0.008	< 0.05
Uranium	ug/L as U	< 0.1	4	< 0.1	< 0.1	20 MAC	< 0.1	63	0.007	< 0.1
Vanadium	ug/L as V	< 5	4	< 5	< 5		< 5	69	0.5	< 10
Zinc	ug/L as Zn	8.95	4	5.3	11.4	≤ 5000 AO	9.1	69	< 1	258
Zirconium	ug/L as Zr	0.105	4	< 0.1	0.23		0.18	63	< 0.1	0.57
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	62.5	14	9	1000		230	110	<1	9200
<i>E. coli</i>	CFU/100 mL	< 1	14	< 1	1		< 1	112	< 1	29
Hetero. Plate Count, 35C (2 day)	CFU/1 mL	Not tested in 2022					2200	2	1100	3300
Parasites										
<i>Cryptosporidium</i> , Total oocysts	oocysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	5	< 1	< 1
<i>Giardia</i> , Total cysts	cysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	5	< 1	< 1
Algal Toxins										
Microcystin	ug/L	Not tested in 2022				1.5 ug/L MAC	<1	27	<1	<1

Table 2

Table 2: 2022 Summary of Treated Water Test Results, Lyall Harbour / Boot Cove Water System										
PARAMETER		2022 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2012-2021 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Min. Max.		≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum Maximum	
ND means Not Detected by analytical method used										
Physical Parameters										
Carbon, Total Organic	mg/L as C	4.15	16	2.8	7.2		4.50	140	1.1	66.9
Colour, True	TCU	8.50	22	< 2	31		6.00	38	<2	40
pH	No units	6.90	2	6.5	6.9	7.0 - 10.5 AO	6.80	18	6.3	8
Hardness	mg/L as CaCO3	39.35	8	38.9	47		43.50	55	37.2	50.1
Turbidity	NTU	0.98	36	0.25	3.7	1 MAC and ≤ 5 AO	0.60	177	0.18	5.3
Turbidity, Field Tests	NTU	0.78	8	0.69	1.1		0.35	8	0.23	0.91
Water Temperature	Degrees C	8.70	151	4.9	18.7	≤ 15 AO	10.50	1787	3	20.8
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	120	< 1	< 1	0 MAC	< 1	752	< 1	460
E. coli	CFU/100 mL	< 1	120	< 1	< 1	0 MAC	< 1	753	< 1	1
Hetero. Plate Count, 7 day	CFU/1 mL	805	18	20	15,000	No Guideline Required	3000	101	<10	24000
Algal Toxins										
Algal Toxins										
Microcystin	ug/L			Not tested in 2022		1.5 ug/L MAC	<1	3	<1	<1
Disinfectants										
Disinfectants										
Chlorine, Free Residual	mg/L as Cl2	0.40	149	0.02	5.80	No Guideline Required	0.42	1812	0.01	8.8
Chlorine, Total Residual	mg/L as Cl2	0.53	56	0.10	4.90	No Guideline Required	0.49	1536	0.01	8.8
Disinfection By-Products										
Haloacetic Acids										
HAA5	ug/L	58	4	14	94	80 MAC	52.00	25	< 0.1	160
Trihalomethanes (THMs)										
Bromodichloromethane	ug/L	15.0	4	11.0	18.0		19	44	0.643	40.6
Bromoform	ug/L	< 1	4	< 1	< 1		< 1	44	< 0.1	< 1
Chloroform	ug/L	71.5	4	46.0	82.0		76	44	7.26	250
Chlorodibromomethane	ug/L	1.6	4	1.1	2.0		3	44	<0.1	31
Total Trihalomethanes	ug/L	87.5	4	57.0	100.0	100 MAC	99	44	7.9	280
Metals										
Aluminum	ug/L as Al	16.1	8	7.3	118	2900 MAC / 100 OG	18.5	55	7.3	138
Antimony	ug/L as Sb	< 0.5	8	< 0.5	< 0.5	6 MAC	< 0.5	55	0.035	< 50
Arsenic	ug/L as As	0.35	8	0.25	0.43	10 MAC	0.34	55	0.2	0.8
Barium	ug/L as Ba	2.85	8	2.5	3.1	1000 MAC	2.37	55	1.5	16.1
Beryllium	ug/L as Be	< 0.1	8	< 0.1	< 0.1		< 0.1	55	< 0.01	< 0.1
Bismuth	ug/L as Bi	< 1	8	< 1	< 1		< 1	55	0.005	< 1
Boron	ug/L as B	< 50	8	< 50	< 50	5000 MAC	< 50	55	13	< 50
Cadmium	ug/L as Cd	< 0.01	8	< 0.01	< 0.01	5 MAC	< 0.01	55	< 0.005	0.087
Calcium	mg/L as Ca	10.15	8	9.8	12.3	No Guideline Required	11.1	55	9.55	13.2
Chromium	ug/L as Cr	< 1	8	< 1	< 1	50 MAC	< 1	55	< 0.1	< 10
Cobalt	ug/L as Co	< 0.2	8	< 0.2	0.21		< 0.2	55	0.01	< 0.5
Copper	ug/L as Cu	29.1	8	11.1	52.9	2000 MAC / ≤ 1000 AO	31.7	55	2.14	595
Iron	ug/L as Fe	119.7	8	41	714	≤ 300 AO	118	57	28.8	EXG 1670
Lead	ug/L as Pb	1.025	8	0.5	2.21	5 MAC	0.915	55	< 0.2	25.8
Lithium	ug/L as Li	< 2	8	< 2	< 2		< 2	26	1.74	< 5
Magnesium	mg/L as Mg	3.505	8	3.28	3.97	No Guideline Required	3.89	55	3.2	4.53
Manganese	ug/L as Mn	1.95	8	< 1	4.8	120 MAC / ≤ 20 AO	1.6	57	< 1	26.3
Molybdenum	ug/L as Mo	< 1	8	< 1	< 1		< 1	55	0.076	< 1
Nickel	ug/L as Ni	< 1	8	< 1	2.2		1.6	55	0.288	80.9
Potassium	mg/L as K	0.632	8	0.48	0.78		0.681	55	0.479	0.956
Selenium	ug/L as Se	< 0.1	8	< 0.1	< 0.1	50 MAC	< 0.1	55	< 0.04	0.12
Silicon	mg/L as Si	6930	8	5980	8700		7220	55	2970	8850
Silver	ug/L as Ag	< 0.02	8	< 0.02	< 0.02	No Guideline Required	< 0.02	55	< 0.005	< 0.02
Sodium	mg/L as Na	10.6	8	9.95	12.3	≤ 200 AO	11.7	55	9.26	15.6
Strontium	ug/L as Sr	91.9	8	84.8	103	7000 MAC	96.6	55	81.5	121
Sulfur	mg/L as S	< 3	8	< 3	3.5		< 3	55	< 3	5.6
Tin	ug/L as Sn	< 5	8	< 5	< 5		< 5	55	< 0.2	47.8
Titanium	ug/L as Ti	< 5	8	< 5	7.5		< 5	55	0.79	9.3
Thallium	ug/L as Tl	< 0.01	8	< 0.01	< 0.01		< 0.01	55	< 0.002	< 0.05
Uranium	ug/L as U	< 0.1	8	< 0.1	< 0.1	20 MAC	< 0.1	55	0.008	< 0.1
Vanadium	ug/L as V	< 5	8	< 5	< 5		< 5	55	0.48	< 5
Zinc	ug/L as Zn	26.75	8	20.2	44.6	≤ 5000 AO	26.6	55	< 5	102
Zirconium	ug/L as Zr	0.11	8	< 0.1	0.3		0.14	55	< 0.1	0.66

## CAPITAL REGIONAL DISTRICT

### LYALL HARBOUR BOOT COVE WATER

#### Statement of Operations (Unaudited)

For the Year Ended December 31, 2022

	2022	2021
<b>Revenue</b>		
Transfers from government	131,060	127,738
User Charges	112,637	109,460
Other revenue from own sources:		
Interest earnings	415	23
Provincial Grant (Surplus Return)	-	(2,153)
Transfer from Operating Reserve	-	7,000
Insurance Claim Reimbursement	2,463	2,606
Other revenue	4,084	1,289
<b>Total Revenue</b>	<b>250,659</b>	<b>245,963</b>
<b>Expenses</b>		
General government services	8,301	7,731
CRD Labour and Operating costs	153,774	157,903
Debt Servicing Costs	30,210	30,177
Other expenses	36,210	32,786
<b>Total Expenses</b>	<b>228,495</b>	<b>228,597</b>
<b>Net revenue (expenses)</b>	<b>22,164</b>	<b>17,366</b>
Transfers to own funds:		
Capital Reserve Fund	7,427	-
Operating Reserve Fund	10,000	-
<b>Annual surplus/(deficit)</b>	<b>4,737</b>	<b>17,366</b>
Accumulated surplus/(deficit), beginning of year	(4,737)	(22,103)
<b>Accumulated surplus/(deficit), end of year</b>	<b>\$ -</b>	<b>(4,737)</b>

## CAPITAL REGIONAL DISTRICT

### LYALL HARBOUR BOOT COVE WATER Statement of Reserve Balances (Unaudited) For the Year Ended December 31, 2022

	<b>Capital Reserve</b>	
	<b>2022</b>	<b>2021</b>
<b>Beginning Balance</b>	23,956	23,490
Transfer from Operating Budget	7,427	-
Transfer from Completed Capital Projects	-	-
Transfer to Capital Projects	-	-
Interest Income	788	466
<b>Ending Balance</b>	<b>32,171</b>	<b>23,956</b>

	<b>Operating Reserve</b>	
	<b>2022</b>	<b>2021</b>
<b>Beginning Balance</b>	815	7,592
Transfer from Operating Budget	10,000	-
Transfer to Operating Budget	-	(7,000)
Interest Income	116	223
<b>Ending Balance</b>	<b>10,931</b>	<b>815</b>

## REPORT TO LYALL HARBOUR/BOOT COVE WATER LOCAL SERVICE COMMITTEE MEETING OF THURSDAY, JUNE 15, 2023

### **SUBJECT**     Capital Project Status Reports and Operational Updates

### **ISSUE SUMMARY**

To provide the Lyall Harbour/Boot Cove Water Local Service Committee with capital project status reports and operational updates.

### **BACKGROUND**

The Lyall Harbour/Boot Cove Water System is located on the west side of Saturna Island in the Southern Gulf Islands Electoral Area and provides drinking water to approximately 155 customers. Capital Regional District (CRD) Integrated Water Services is responsible for the overall operation of the water system with day-to-day operation, maintenance, design and construction of water system facilities provided by the CRD Infrastructure Engineering and Operations Divisions. The quality of drinking water provided to customers in the Lyall Harbour/Boot Cove Water System is overseen by the CRD Water Quality Section.

### **CAPITAL PROJECT UPDATE**

#### **19-02 | Pressure Release Valve (PRV) Bypass Assembly Replacement**

**Project Description:** Construct bypasses on the East Point, Narvaez and Boot Cove PRV stations to maintain system operation while the PRV's undergo maintenance.

**Project Rationale:** The inlet and outlet piping at the East Point, Narvaez and Boot Cove Pressure Reducing Valve (PRV) stations are very corroded and there is no way to isolate the stations to replace or maintain the PRVs. It is proposed that new inlet and outlet piping be installed with 100-millimeter gate valves and bypass piping so that customers are not without water when PRV's are being serviced.

**Project Update and Milestones:**

- Operations to undertake the works.
- Construction commenced in May with Narvaez PRV bypass work 50% completed.
- Scheduling of the remaining work and completion will be in the fall during lower water demands on the system.

#### **22-02 | Dam Improvements & Regulatory Requirements**

**Project Description:** Seismic reinforcement of Money Lake Dam based upon the 2016 Dam Safety Review. Includes seepage pit construction and Dam Safety Review.

**Project Rationale:** This is a continuation of project 18-03, where seismic reinforcement of the Money Lake Dam will commence. Funds are required to retain a contractor to undertake the works and retain a consultant to conduct the dam safety review.

**Lyall Harbour Boot Cove Water Local Service Committee – June 15, 2023**  
**Capital Project Status Reports and Operational Updates**

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**Project Update and Milestones:**

- The Community Works Funds (CWF) were approved in 2021 for design work to start in 2022.
- Staff are currently engaging consultants to provide quotes for design and construction services.
- Geotechnical Engineer (Thurber) has conducted more detailed 3D analysis of the dam to better assess seismic risks and are reviewing the results and recommendations with CRD.
- Geotechnical Engineer (Thurber) has drafted a downstream toe filter design memo and are reviewing the results and recommendations with CRD.
- Assessment of constructability of recommendations is underway.

<b>Milestone</b>	<b>Completion Date</b>
CWF Approval	October 10, 2021
Consultant Contract Award	July 27, 2022
Consultant field investigation	August 31, 2022
Draft Dam Safety Review submission and CRD review meeting	Jan 27, 2023
Dam Safety Review Report - Final	March 15, 2023
Toe Filter Design Memo - Draft	March 27, 2023
Seismic Stability Assessment - Draft	April 21, 2023

**OPERATIONAL UPDATE**

This is an operational update reporting period from February 2023 through May 2023.

- Money Lake raw water service line connection repair at the toe of Money Lake Dam. This was a significant repair project due to location, depth of excavation and ground water ingress.
- Chlorine contact tank corrective maintenance. The chlorine contact tank was scheduled for inspection last year however this work was deferred due to two failed valves that isolate the contact tank from the system. This was a significant repair effort due to location, soil conditions and depth of excavation. The chlorine contact tank is scheduled for inspection in the fall.
- Preventative maintenance completed on the raw water system that including flushing of the lake line and cleaning of the surge tank in preparation for spring and summer flow requirements in an effort to minimize anticipated water turbidity concerns.
- Preventative maintenance (inspection) completed on the water treatment plant filtration system. Inspection included confirming depths of filtration media and taking media samples for analysis.
- Replacement of the Money Lake recirculation system pump that failed last year. The pump was purchased last year under an insurance claim and the installation of the pump was completed during this reporting period.
- Corrective maintenance completed on raw water standpipe, located next to the water treatment building, due to a failed isolation valve. The work was significant due to location, depth of excavation and soil conditions.
- Rescinding of the Boil Water Advisory (BWA) on April 21, 2023 that was issued on October 18, 2022 due to elevated turbidity.
- Several hours performing leak detection efforts due to high daily water production during the reporting period. Increased water demand was primarily the result of leaks identified on private property. Water was shut off to these properties and the residents notified.

**Lyall Harbour Boot Cove Water Local Service Committee – June 15, 2023**  
**Capital Project Status Reports and Operational Updates**

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- Confined space hazard assessments completed by CRD Corporate Safety Team and Operations Team of various sites on the water system specifically focused on the three pressure regulating stations within the water distribution system. The assessment will determine safety controls as required by WorkSafeBC regulatory requirements to safely enter these spaces to perform regular maintenance on the system.
- Installation of a water service connection for a property within the service area during this reporting period. All costs for the installation are paid by the property owner.

**RECOMMENDATION**

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

Submitted by:	Jared Kelly, P.Eng., Manager, Capital Projects
Submitted by:	Dan Robson, A.Sc.T., Manager, Saanich Peninsula and Gulf Islands Operations
Concurrence:	Joseph Marr, P.Eng., Acting Senior Manager, Infrastructure Engineering
Concurrence:	Jason Dales, B.Sc., WD IV., Senior Manager, Wastewater Infrastructure Operations
Concurrence:	Ian Jesney, P.Eng., Acting General Manager, Integrated Water Services