



# Capital Regional District

## Notice of Meeting and Meeting Agenda Magic Lake Estates Water and Sewer Committee

---

Tuesday, June 11, 2024

9:30 AM

Goldstream Conference Room, 479 Island  
Highway, Victoria, BC

---

Members of the public can watch the live meeting via MS Teams link: [Click here](#)  
Alternatively, you can listen by dialing in via phone: +1 778-402-9211, Participant Code 22643452 followed by #. Audio and video participation is disabled for both.

### MEMBERS:

M. Fossil (Chair); J. Deschenes; P. Brent (EA Director); M. Rondeau; A. Cyr (Vice-chair);  
D. Reed; R. Sullivan

### 1. Approval of Agenda

### 2. Adoption of Minutes

2.1 [24-586](#) Minutes of the April 9, 2024 Magic Lake Estates Water and Sewer  
Committee Meeting

**Recommendation:** That the minutes of the April 9, 2024 meeting be adopted.

**Attachments:** [Minutes - April 9, 2024](#)

### 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 Magic Lake Estates Water and Sewer 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

### 6. Committee Business

**6.1**      [24-557](#)      Magic Lake Estates Secondary Dwelling Unit Capacity

**Recommendation:** That staff be directed to:  
1. Allow up to three new secondary dwelling unit connections to the Magic Lake Estates water and sewer service system, subject to meeting all other applicable regulatory requirements including bylaws, and;  
  
2. Monitor and report back the number of new connections to each system and assess system capacity trends annually prior to allowing further connections.

**Attachments:**      [Staff Report: MLE Secondary Dwelling Unit Capacity](#)  
[Appendix A](#)

**6.2**      [24-578](#)      2023 Annual Report

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

**Attachments:**      [Staff Report: 2023 Annual Report](#)  
[Appendix A](#)

**6.3**      [24-556](#)      Capital Project Status Reports and Operational Updates - June 2024

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

**Attachments:**      [Staff Report: Project and Operations Update June 2024](#)

**7. Correspondence**

**8. New Business**

**9. Adjournment**

Next Meeting: Tuesday, July 9, 2024

**MINUTES OF A MEETING OF THE Magic Lake Estates Water and Sewer Committee, held Tuesday, April 9, 2024 at 9:30 a.m., In the Goldstream Conference Room, 479 Island Highway, Victoria, BC**

---

**PRESENT: Committee Members:** M. Fossil (Chair); P. Brent (EA Director) (EP); M. Rondeau (EP); R. Sullivan (EP)

**Staff:** J. Marr, Senior Manager, Infrastructure Engineering; J. Kelly, Manager, Capital Projects; D. Robson, Manager, Saanich Peninsula & Gulf Islands Operations; M. Cowley, Manager, Wastewater Engineering & Planning; M. Risvold (Recorder)

**REGRETS:** J. Deschenes; D. Reed; A. Cyr

EP = Electronic Participation

The meeting was called to order at 9:34 am.

**1. APPROVAL OF AGENDA**

The following items were added to the agenda as new business:

- Magic Lake Estates Property Owners Society (MLPOS) meeting discussions
- Correspondence from Magic Lake Estates resident

**MOVED** by P. Brent, **SECONDED** by M. Rondeau,  
That the agenda be approved as amended.

**CARRIED**

**2. ADOPTION OF MINUTES**

**MOVED** by P. Brent, **SECONDED** by M. Rondeau,  
That the minutes of the February 13, 2024 meeting be adopted.

**CARRIED**

**3. CHAIR'S REMARKS**

The Chair made no remarks.

**4. PRESENTATIONS/DELEGATIONS**

There were no presentations or delegations.

**5. SENIOR MANAGER'S REPORT**

J. Marr provided the following updates:

**Water conservation:** To mitigate the risk of potential water shortages, a Stage 1 watering schedule will be in effect from May 1 until September 30, 2024 unless more stringent water conservation measures are required. Stage 1 watering is permitted once per week between the hours of 4-10am or 7-10pm.

**Properties with zero water usage:** In the first quarter, there were approximately 103 users with zero water flow. In the third quarter, the service had approximately 50 users with zero water flow.

**Secondary suite capacity:** A formal assessment has not yet been completed. Internal discussion is currently underway. Both the water treatment plant and sewer treatment plant were designed for full build-out. Additional information was provided:

- There are 1,196 folios within the water service area. 1,072 folios are serviced with water meters at the beginning of 2024. Approximately 124 lots can be connected. There was a total of 13 new lots in 2023.
- There are approximately 709 folios within the sewer service area, with 651 current connections. There are approximately 58 lots that could be connected to the system.
- Based on previous years and new homes built, there is approximately 10 years until potentially reaching full build-out. Water demands would need to be reviewed; however, the sewer plant has been designed to add additional membranes if needed.

Discussion ensued regarding:

- The number of secondary suites anticipated.
- A report that was prepared by the Capital Regional District (CRD) in 2021 regarding a Southern Gulf Islands housing strategy.
- Managing capacity to deliver housing needs.
- Adding 10 secondary suites over the next 10 years seeming to be a low risk.

**MOVED** by P. Brent **SECONDED** by M. Rondeau,  
That staff provide a report as to how Magic Lake Estates may be able to accommodate secondary accessory dwelling units.

**CARRIED**

**Leak detection and condition of the distribution system:** Staff are planning to provide an asset management report card with leak detection options to the committee in September.

**Ivy removal:** Staff advised that utilizing volunteers for removing ivy has been reviewed and discussed internally, noting that hazards have been identified where the ivy is growing. Due to the identified hazards, it is too high of a risk for volunteers to perform the work. Staff would like to have the work done by the end of the year, but it is dependent on capital work being completed and contractor availability.

## **6. COMMITTEE BUSINESS**

### **6.1. Project and Operations Update**

J. Marr spoke to item 6.1.

Staff responded to the following questions:

- Whether the advanced early warning system is hardware, software, or both. Staff advised it is a water loss management software tool that will be used as an advanced early warning system for water leaks.
- Geese landing on the floating intake. Staff advised bird spikes and wires have been installed on the floating intake and railings added to deter geese and birds.

## 7. CORRESPONDENCE

D. Robson advised that CRD received correspondence from a resident within the Magic Lake Estates water service area requesting access to potable water through a bulk water connection from the Magic Lake Estates water treatment system, for water delivery to CRD residents that are outside of the service area. There is currently no bulk water connection for the service. Staff noted the following topics for the committee to consider relating to the request:

- Water License review
- Service establishment bylaw
- Water filling station design and construction
- Fees and charges bylaw revision
- Capacity review

Discussion ensued regarding:

- Potential water conservation program
- Ability to provide emergency water services
- Engaging and socializing with the community regarding this request at a future date

The committee discussed focusing on the secondary dwelling unit issue before engaging in further discussions regarding bulk water sales, noting a community discussion would be beneficial.

**MOVED** by M. Rondeau, **SECONDED** by M. Rondeau,  
That bulk water sales not be considered at this time.

**CARRIED**

## 8. NEW BUSINESS

### 8.1. Magic Lake Estates Property Owners Society (MLPOS) meeting discussions

M. Rondeau advise the Committee that correspondence was received at a MLPOS meeting regarding the new floating adjustable intake on Magic Lake.

Discussion ensued with staff responding to the following questions:

- Whether permits were required to allow the permanent floating intake structure.
- What can be done to beautify the intake structure.
- Communication with the community and the Committee.
- Possible opportunity to have “water stewards”.
- There will be visible infrastructure to support the services within the community.

The Electoral Area Director advised that he would respond to the correspondence.

### 8.2. Correspondence from Magic Lake Estates resident

The chair advised that as of this meeting, the wastewater treatment plant project is on budget. There have been seven non-compliances at the Schooner wastewater treatment plant and nine at the Cannon pump station in 2024, with the numbers expected to go down once the work commences.

Staff advised that the new treatment plant will have a standby generator which would eliminate all non-compliances related to power outages. Upgrading treatment plants and storage will allow wastewater to be treated once storms subside. The project has been designed for typical storm events, and accommodating storage greatly exceeds pipe replacement. Private leaks can have an impact as well and are not controllable. Upgrading the treatment plant and pump stations will help mitigate issues, however, exceedances can still occur due to climate change and other factors. The next step is to complete further Closed-Circuit Television (CCTV) inspection of all the sewers to determine if they are continuing to deteriorate. Pipes will be replaced as needed and if they break.

Staff to report back whether permits were obtained for the floating intake on Magic Lake.

**9. ADJOURNMENT**

**MOVED** by R. Sullivan, **SECONDED** by M. Rondeau,  
That the April 9, 2024 meeting be adjourned at 11 am.

**CARRIED**

\_\_\_\_\_  
**CHAIR**

\_\_\_\_\_  
**SECRETARY**



Making a difference...together

**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE  
MEETING OF TUESDAY, JUNE 11, 2024**

---

**SUBJECT**     **Magic Lake Estates Secondary Dwelling Unit Capacity**

**ISSUE SUMMARY**

To provide the Magic Lake Estates Water and Sewer Committee with information related to secondary dwelling unit capacity within the Magic Lake Estates water and sewer systems.

**BACKGROUND**

At its April 9, 2024 meeting, the Magic Lake Estates Water and Sewer Committee (Committee) directed Capital Regional District (CRD) staff to investigate the implications of allowing secondary dwelling units within the Magic Lake Estates (MLE) water and sewer service areas, due to a lack of affordable housing on Pender Island. The recent BC Housing secondary suite incentive program provides up to \$40,000 for 50% of the building costs of new affordable housing suites.

The MLE water and sewer systems and service areas are located on the south shore of North Pender Island in the Southern Gulf Islands Electoral Area. Not all lots within the MLE service areas are connected and there remains capacity for additional connections within each system. Each system's capacity and connection status are presented in Table 1.

*Table 1: MLE Water and Sewer Systems Service Area Connectivity and Capacity*

	Water	Sewer	
Design Build Out Capacity (Connections)	1,206	722	(a)
Current Taxable Lots	1,196	709	(b)
Current Connections	1,072	651	(c)
Remaining Capacity (Connections)	134	71	(a)-(c)
Remaining Taxable Lots to be connected	124	58	(a)-(b)

Both the water and wastewater treatment plants were designed for full lot build out within their respective service areas. Each lot build out represented one connection and the design build out did not include an allowance for secondary dwelling units. Note that one connection represents one Single Family Equivalent (SFE). All lots within the service areas are charged an annual parcel tax fee but only the lots connected to either the water or sewer system are charged an annual fixed use fee based on number of SFEs. Lots connected to the water system are also charged a water consumption fee based on water volume used. If all lots are built out with one connection to each system, there remains capacity for approximately 10 additional water connections and 13 additional sewer connections. If more than 10 or 13 secondary dwelling units are connected to the respective water and or sewer system before all lots within the service area have one connection, the system capacity will be reached before lots already paying parcel taxes can connect.

Historical data from 2012 to present, included in Appendix A, indicates that the number of new connections within the service areas has been increasing. The average number of new SFE connections (one per lot) over the last 5 years within the water and sewer service areas is approximately 9 and 6 per year, respectively. Based on the remaining capacity, and the 5-year average of annual new connections, there are approximately 15 years and 12 years before the water and sewer service areas will reach their design capacity.

## **ALTERNATIVES**

### *Alternative 1*

That staff be directed to:

1. Allow up to three new secondary dwelling unit connections to the Magic Lake Estates water and sewer service system, subject to meeting all other applicable regulatory requirements including bylaws, and;
2. Monitor and report back the number of new connections to each system and assess system capacity trends annually prior to allowing further connections.

### *Alternative 2*

That staff be directed not to allow secondary dwelling unit connections to the Magic Lake Estates water and wastewater system.

## **IMPLICATIONS**

### *Alignment with Board & Corporate Priorities*

Allowing secondary dwelling units supports the CRD Board priorities on housing and reflects the initiative to increase supply of housing in the region.

### *Service Delivery Implications*

There is currently enough capacity to allow additional connections to both the MLE water and sewer systems. Limiting secondary dwelling unit connections initially to three connections will allow opportunity to assess impact and a gradual system build-out. Monitoring new connections and system capacity will facilitate planning for any infrastructure upgrades required to support additional growth and confirm system limits.

### *Social Implications*

If demand for secondary dwelling connections exceeds the demand for new lot connections, there is risk that the systems connection capacity will be reached before non-connected lots, already paying parcel taxes, can connect. The implication of this is that lot owners paying parcel tax, and thus contributing to funding the systems, would be denied connection to the systems as capacity would be used up by lots with secondary dwelling connections. Limiting secondary dwelling connections initially while assessing the systems capacities would allow for a managed approach to the expansion.



**CONCLUSION**

The Magic Lake Estates Water and Sewer Committee directed CRD staff to investigate the implications of allowing secondary dwelling units within the Magic Lake estates water and sewer service area due to a lack of affordable housing on Pender Island. The water and sewer systems currently have capacity to facilitate additional connections and, based on average annual new connections, there are approximately 15 years and 12 years before the water and sewer service areas will reach their respective design capacity. Current data supports allowing secondary dwelling units to be connected to both water and sewer systems; however, limiting connections to three secondary dwelling units for each service system and assessing system capacity prior to allowing any further connections is recommended.

**RECOMMENDATION**

That staff be directed to:

1. Allow up to three new secondary dwelling unit connections to the Magic Lake Estates water and sewer service system, subject to meeting all other applicable regulatory requirements including bylaws, and;
2. Monitor and report back the number of new connections to each system and assess system capacity trends annually prior to allowing further connections.

Submitted by:	Natalie Tokgoz, P.Eng., Manager, Water Distribution Engineering and Planning
Submitted by:	Joseph Marr, P.Eng., Senior Manager, Infrastructure Engineering
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services

**ATTACHMENT(S)**

Appendix A: Historical data for Magic Lake Estates Water and Sewer Service Areas

### Appendix A - Historical data for Magic Lake Estates Water and Sewer Service Areas

WATER				
Year	Taxable Folios	Single Family Equivalents Connected to Water System	New SFE Connections	Rolling 5 year average
2012	1206	1005	-	
2013	1206	1008	3	
2014	1206	1011	3	
2015	1206	1012	1	
2016	1205	1015	3	
2017	1203	1020	5	3
2018	1203	1020	0	2.4
2019	1203	1028	8	3.4
2020	1202	1034	6	4.4
2021	1202	1043	9	5.6
2022	1199	1050	7	6
2023	1196	1059	9	7.8
2024	1196	1072	13	8.8

SEWER				
Year	Taxable Folios	Single Family Equivalents Connected to Sewer System	New SFE Connections	Rolling 5 year average
2012	714	617	-	
2013	714	621	4	
2014	714	620	-1	
2015	714	621	1	
2016	714	623	2	
2017	713	623	0	1.2
2018	713	623	0	0.4
2019	173	623	0	0.6
2020	714	630	7	1.8
2021	714	635	5	2.4
2022	712	639	4	3.2
2023	709	642	3	3.8
2024	709	651	9	5.6

# Magic Lake Estates Water and Sewer System

## 2023 Annual Report

### CRD | Drinking Water and Wastewater

#### Introduction

This report provides a summary of the Magic Lake Estates (MLE) Water and Sewer Service for 2023 and provides a description of the water and sewer services including: summary of the water supply, demand and production, drinking water quality, wastewater treatment flows, effluent quality, operations highlights, capital project updates and financial report.

#### WATER SYSTEM

##### Water Service Description

The community of Magic Lake Estates is primarily a rural residential development with some community properties located on Pender Island in the Southern Gulf Islands Electoral Area which was originally serviced by a private water utility and in 1981 the service converted to the Capital Regional District (CRD). The Magic Lake Estates water service is made up of 1,196 parcels, of which there are 1,059 single family equivalents (or approximately the same amount of customers) obtaining service from the water system.

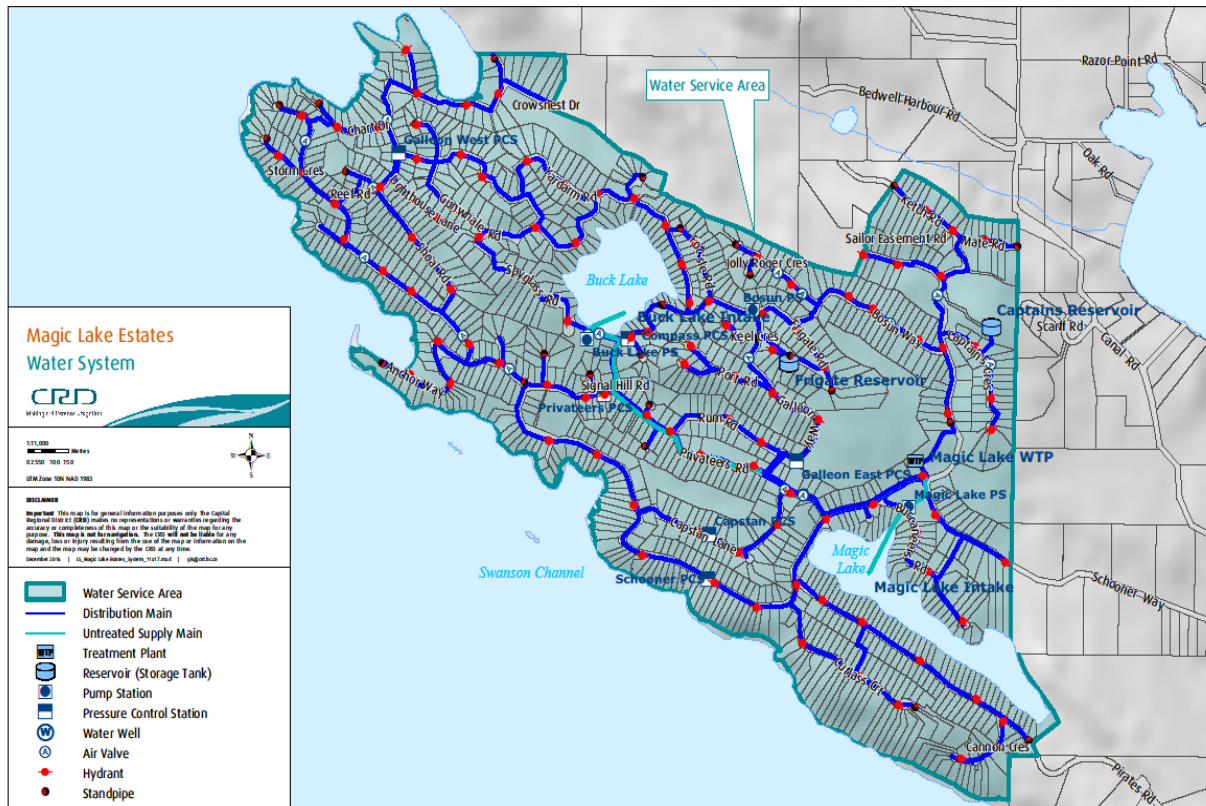


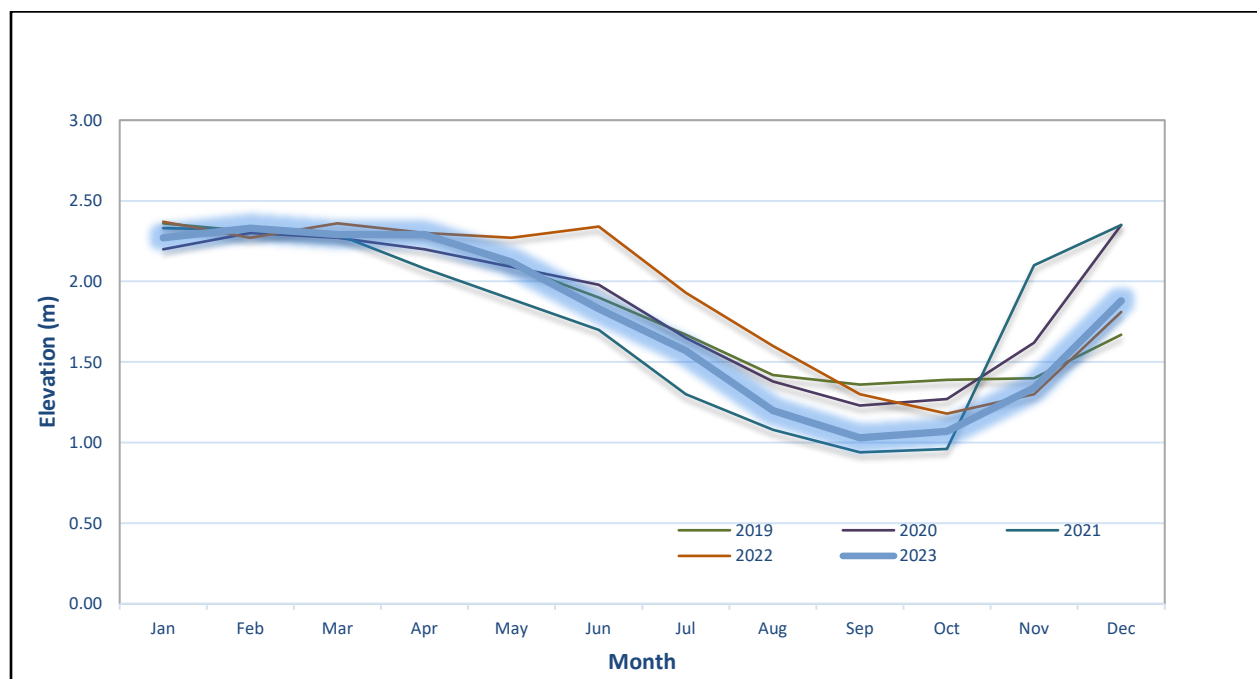
Figure 1: Map of Magic Lake Estates Water System

The Magic Lake Estates water system is primarily comprised of:

- Two raw water sources; Buck Lake (primary source) and Magic Lake (secondary source).
- Four earthen dam structures (two at Buck Lake and two at Magic Lake).
- Two raw water pump stations, one each related to the raw water supplies, with pretreatment oxidation equipment to treat and control dissolved manganese and iron in the raw water source.
- Centralized water treatment plant consisting of a dual process including dissolved air flotation (DAF), filtration, ultraviolet light disinfection, and chlorine disinfection.
- One booster pump station / pressure reducing station (Bosun).
- Two steel storage tanks, Frigate and Captains (volumes: Frigate 750 cubic meters or 200,000 USg and Captains 341 cubic meters or 90,000 USg).
- Supervisory Control and Data Acquisition (SCADA) system.
- Distribution system and supply pipe network (in excess of 27 kilometers of water mains).
- Other water system assets: water service connections and meters, approximately 70 fire hydrants, 6 pressure reducing valve stations, 100 gate valves and standpipes.

## Water Supply

Surface water supply monthly water levels are provided in Figures 2 and 3 for Buck Lake and Magic Lake respectively. It is important to note that under normal operating conditions, Buck Lake provides 80% and Magic Lake provides 20% of the annual raw water demand for the service. However, due to an algae event in Magic Lake, Buck Lake provided 100% of the raw water supply for the month of August.



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

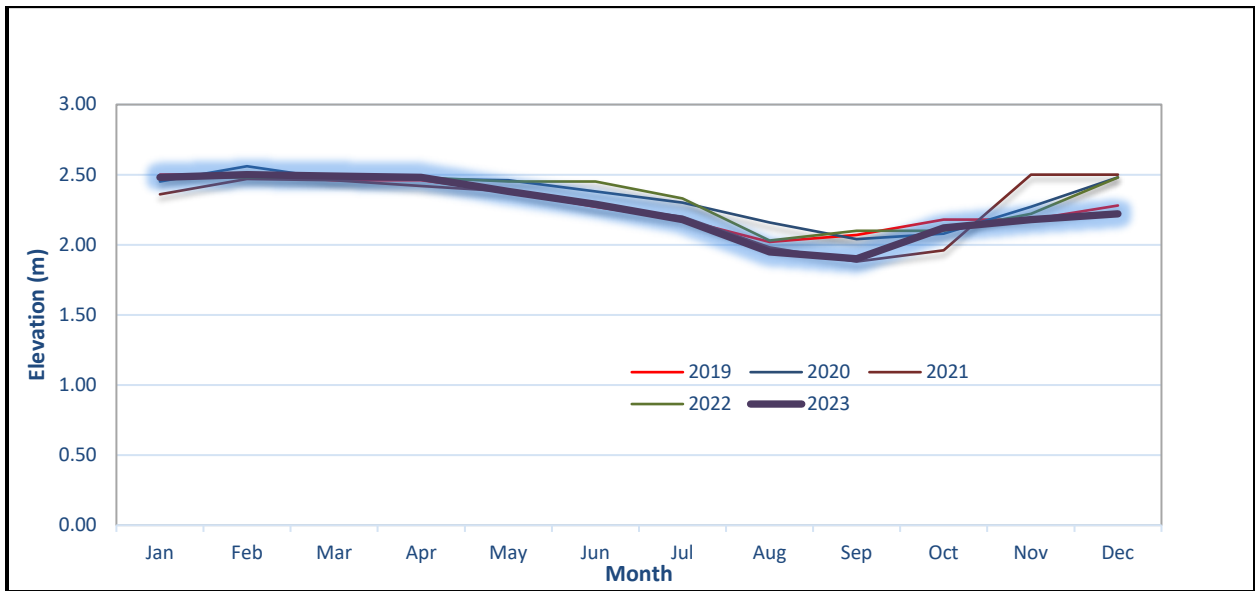


Figure 3: Magic Lake Monthly Water Level

### Water Production and Demand

Referring to Figure 4, 211,644 cubic meters of water was extracted (water production) from both Buck Lake and Magic Lake water sources in 2023; a 16% increase from the previous year and an 3% increase in the rolling five-year average. Water demand (customer water billing) for the service totaled 130,226 cubic meters of water; a 9% decrease from the previous year and a 15% increase from the rolling five-year average.

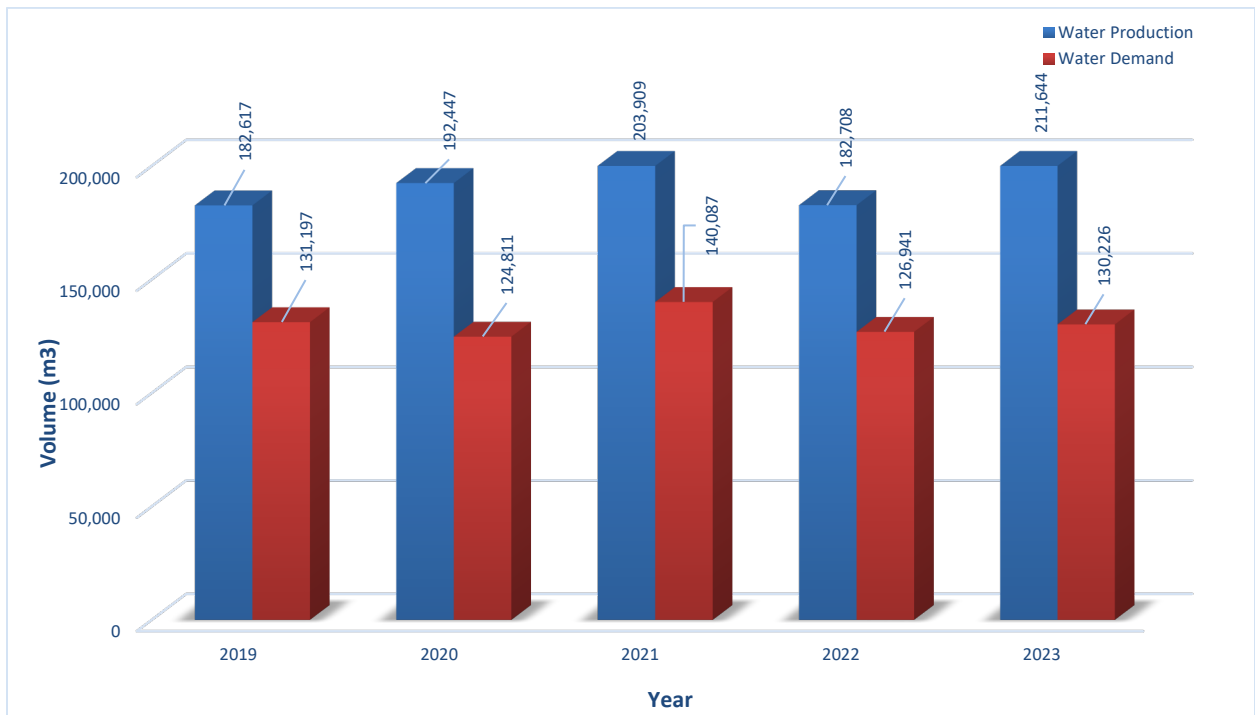
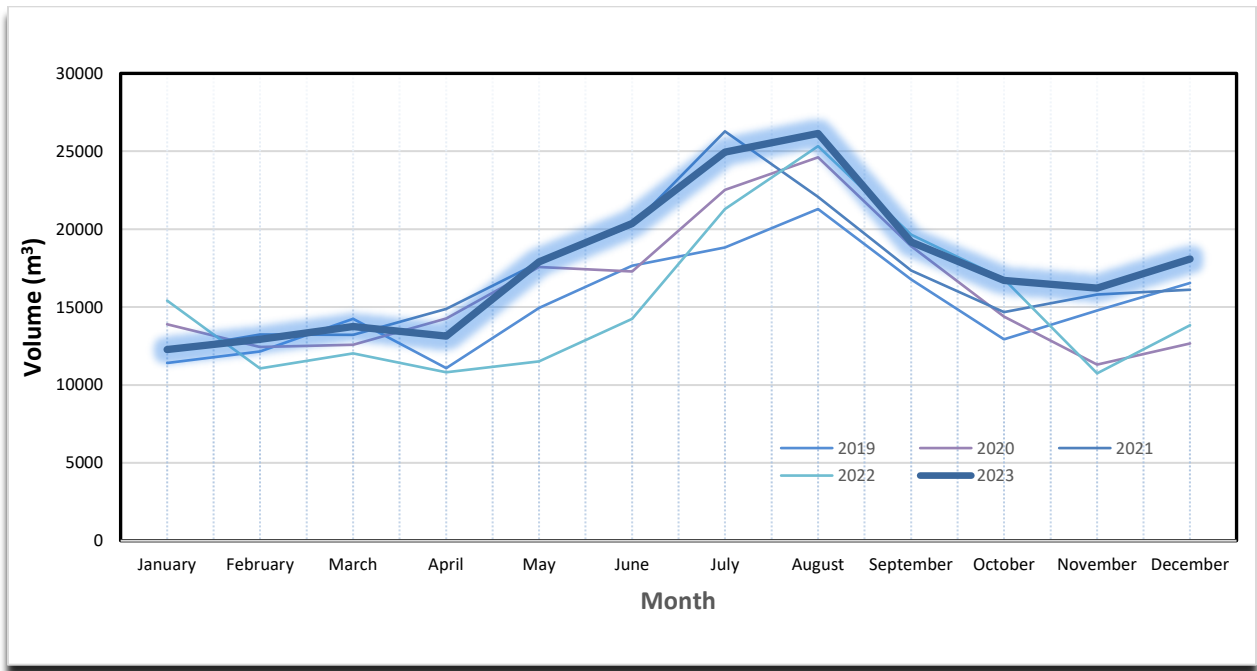


Figure 4: Magic Lake Estates Water System Annual Water Production and Demand

The difference between annual water production and annual customer water 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 2023 non-revenue water (81,418 cubic meters) represents about 39% of the total water production for the service area. However, approximately 5,000 cubic meters of the non-revenue water can be attributed to operational use. Therefore, the non-revenue water associated with system losses is approximately 36% which is an increase from the previous year is considered to be high for a water distribution system the size of Magic Lake Estates. Effort to determine the reason for the increase in non-revenue water including leak detection activities is required.

Figure 5 below illustrates the monthly water production for Magic Lake Estates for the past five years. The monthly water production trends are typical for smaller water systems such as Magic Lake Estates. In review of water production for 2023 (highlighted below), the monthly trend for August through December is higher than the previous years and is likely the result of water system leak or leaks developing in the system.



**Figure 5: Magic Lake Estates Water System Monthly Water Production.**

**Drinking Water Quality**

Two intake lines from Buck Lake and Magic Lake provided blended source water to the DAF treatment plant. The typical intake blending ratio in 2023 was 80/20 Buck/Magic Lake. Magic Lake experienced a cyanobacteria bloom in May and June with the peak at the end of June. Fortunately, no cyanotoxins were detected in the source water throughout this algal event. Buck Lake did not experience a cyanobacteria bloom in 2023. The drinking water supplied to the service area was safe for consumption throughout the year.

The existing multi-barrier treatment system was able to deal with several algal events as well as high manganese events in both source lakes throughout the year.

The treatment system was also able to reduce the total organic carbon (TOC) concentration by >50%; however, the high organic loading of the raw water still resulted in a high organic carbon concentration in the treated drinking water, which can have taste/odour/colour implications and can potentially lead to high disinfection by-product concentrations. Testing for total trihalomethanes in the treated water demonstrated levels in compliance with the GCDWQ. As in previous years, operations staff successfully mitigated localized adverse water quality events due to aging and stagnant water through spot-flushing.

Overall Magic Lake Estates drinking water quality characteristics for 2023 are summarized below.

#### Raw Water:

- Both lake sources exhibited low concentrations of total coliform bacteria throughout the winter months but higher concentration during the warm water period. In Magic Lake, the peak total coliform bacteria concentration was 3,300 CFU/100mL in mid-September. This was in line with previous summers. Buck Lake saw a total coliform spike of 410 CFU/100 mL at the end of June, which was much lower than last year.
- E. coli bacteria concentrations were generally low in both lakes throughout the year. During the summer months the concentrations were slightly higher than during the rest of the year. This is a typical pattern for lakes.
- Raw water from both sources was medium hard (61 – 65 mg/L CaCO<sub>3</sub>).
- Buck Lake exhibited a raw water turbidity range from 0.4 to 2.1 nephelometric turbidity units (NTU) with an annual median of 0.65 NTU, and Magic Lake a range from 1.1 to 4.1 NTU with an annual median of 1.9 NTU. The higher turbidity occurred typically during the winter period, but also occasionally in summer periods with increased algal activity. The turbidity in both lakes was generally consistent with historical turbidity trends.
- Buck Lake, with an annual median total organic carbon (TOC) of 7.5 mg/L, and Magic Lake, with a median TOC of 9.9 mg/L, are considered mesotrophic lakes (medium productivity). TOC levels have been rising over the last few years, which could be an indication of increasing lake productivity.
- Buck Lake has higher colour results during the winter period. Magic Lake's water exceeds the aesthetic objective for water colour all year. This indicates elevated concentration of organics in the water.
- Both lakes exhibited seasonally elevated iron and manganese concentrations which reached peaks of 246 µg/L (Fe) in May and 53.6 µg/L (Mn) in May in Magic Lake, and 195 µg/L (Fe) in February and 206 µg/L (Mn) in November in Buck Lake. These metal concentrations were in line with long term trends.

#### Treated Water:

- Treated water was bacteriologically safe to drink with no E. coli bacteria found in the treated water. Only two samples from the distribution system recorded very low concentrations of total coliform bacteria (both in March). Immediate resamples from the same sampling stations did not confirm an actual drinking water contamination.
- Treated water turbidity (cloudiness) was typically well below the Guidelines for Canadian Drinking Water Quality (GCDWQ) limit of 1 NTU except for a very few isolated samples exceeding this limit, mostly associated with operational activities such as flushing or pipe repairs.
- Total organic carbon (TOC median 3.6 mg/L) was consistent with results in previous years. A 59% reduction of TOC compared with the source water TOC concentrations indicates a



satisfactory performance of the DAF plant. TOC concentrations of > 4 mg/L are considered a strong precursor for disinfection by-product formation and potential guidelines exceedance.

- Metals were below maximum acceptable concentration (MAC) and consistently below the aesthetic objective (AO) limits, confirming the efficacy of the potassium permanganate treatment system in removing in particular iron and manganese.
- Disinfection by-products such as total trihalomethanes (TTHM) were in compliance with the annual average requirement in the GCDWQ; no individual samples did exceed the GCDWQ limit of 100 µg/L. TTHM concentrations fluctuated between 52 and 87 µg/L for an annual average of 67 µg/L. Haloacetic acids (HAA) were not tested in 2023 but are typically low when TTHM are low.
- Periods with algal blooms or high algal activity in the source lakes affected occasionally the taste and odour of the drinking water.
- The water temperature exceeded the GCDWQ aesthetic limit of 15°C between September and mid-October.
- The newly established GCDWQ MAC for aluminum was at no time in 2023 exceeded.

The attached Table 1 and 2 provide a summary of the 2023 raw and treated water test results. Water Quality data collected from this drinking water system can be reviewed on the CRD website:

<https://www.crd.bc.ca/about/data/drinking-water-quality-reports>

### **Water System Operational Highlights**

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

- Water Treatment Plant:
  - Corrective maintenance filter rinse tank to recycle water pump 460 coupling replacement.
  - Corrective maintenance Train 2 DAF skimmer chain and sprockets replacements.
  - Replacement of failed chlorine analyzer equipment.
  - Replacement of failed clarification tank level transducer.
- Water system leak/break repairs:
  - Ketch Road – February 7
  - Gunwhale Road – July 25
  - Ketch Road – August 13
  - Intersection of Privateers and Doubloon (standpipe riser cracked) – July 31
- Captains Reservoir (Tank) Metal thickness assessment - April
- Emergency response due to extended freezing weather event. The exposed pipe to Captains Reservoir froze.

### **Water System Capital Project Updates**

The Capital Projects that were in progress or completed in 2023 included:

1. Buck Lake and Magic Lake Adjustable Intakes – A construction contract was in place and fabrication of the floating intake platforms was completed. Installation was pushed into 2024.
2. Buck Lake Dam Repairs – Phase 1 – Dam breach analysis finalized. Seepage weir project initiated.

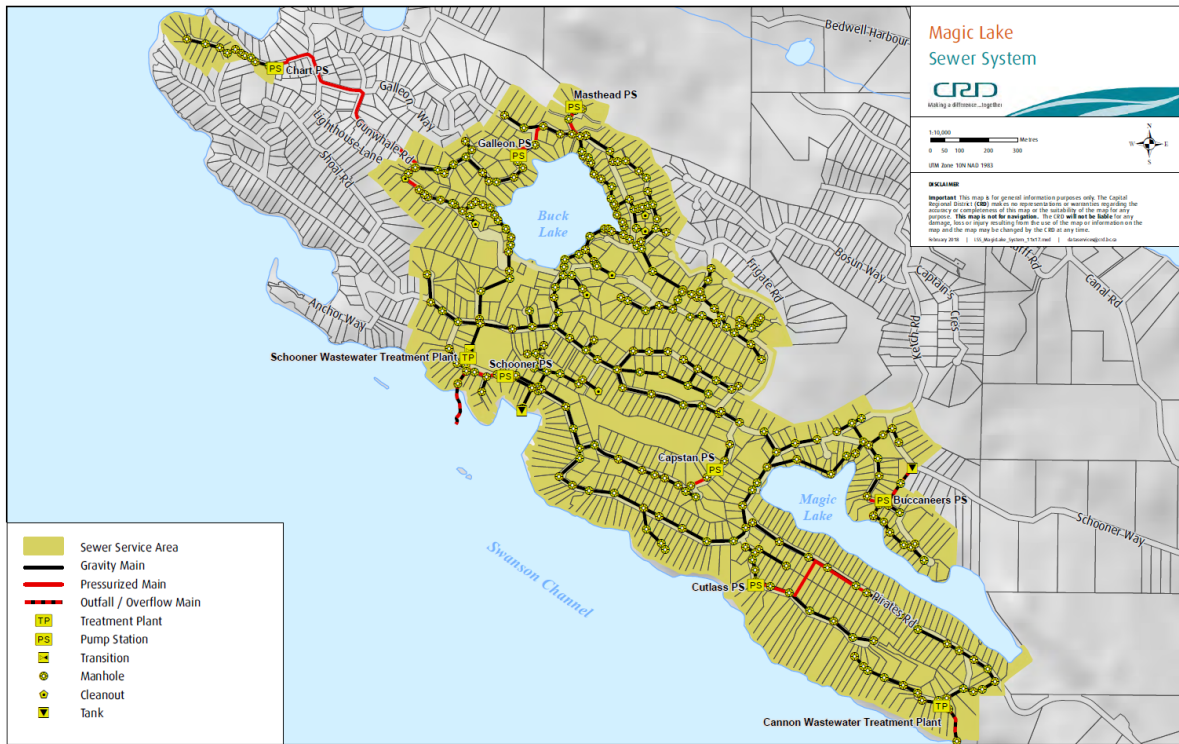


- 3. Failed valve replacements – valves replaced.
- 4. EV Charging Station – completed.

## **SEWER SYSTEM**

### **Service Description**

The community of Magic Lake Estates is primarily a rural residential development located on Pender Island in the Southern Gulf Islands Electoral Area which was originally serviced by a private sewer utility and in 1981 the service converted to the CRD. The sewer service is approximately 210 hectares in size and includes 709 parcels of which 642 are serviced. Some of the sewer infrastructure includes: 16 km of sewer pipe, 316 manholes, seven pump stations, and two treatment plants each with an outfall into Swanson Channel.



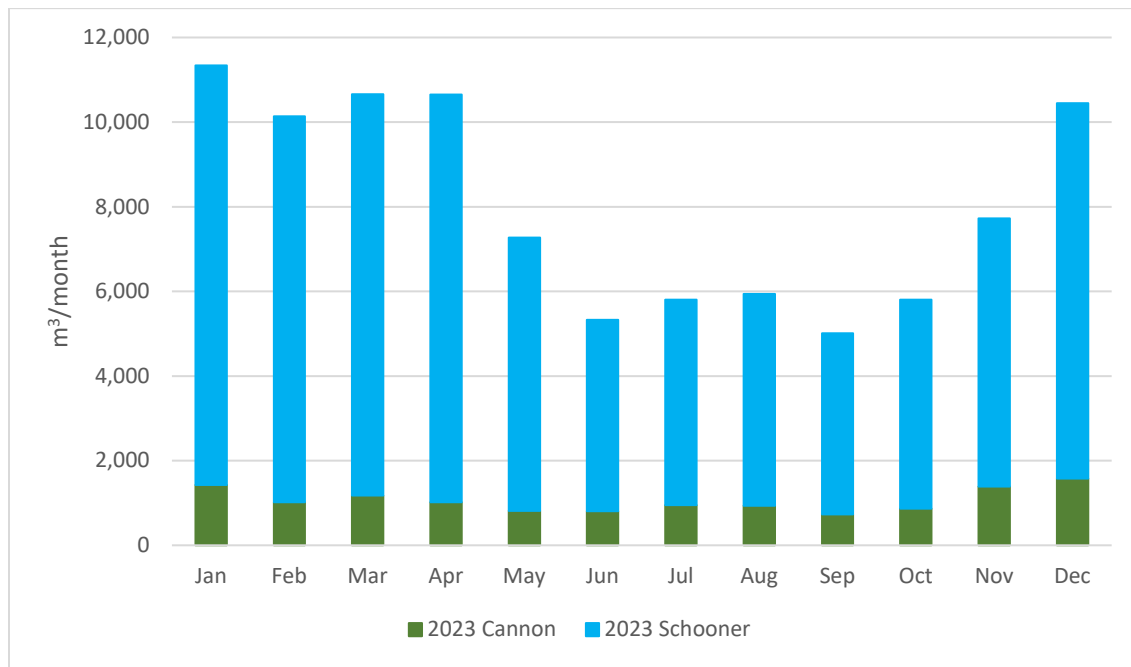
**Figure 5: Map of Magic Lake Estates Sewer System**

### **Wastewater Flows**

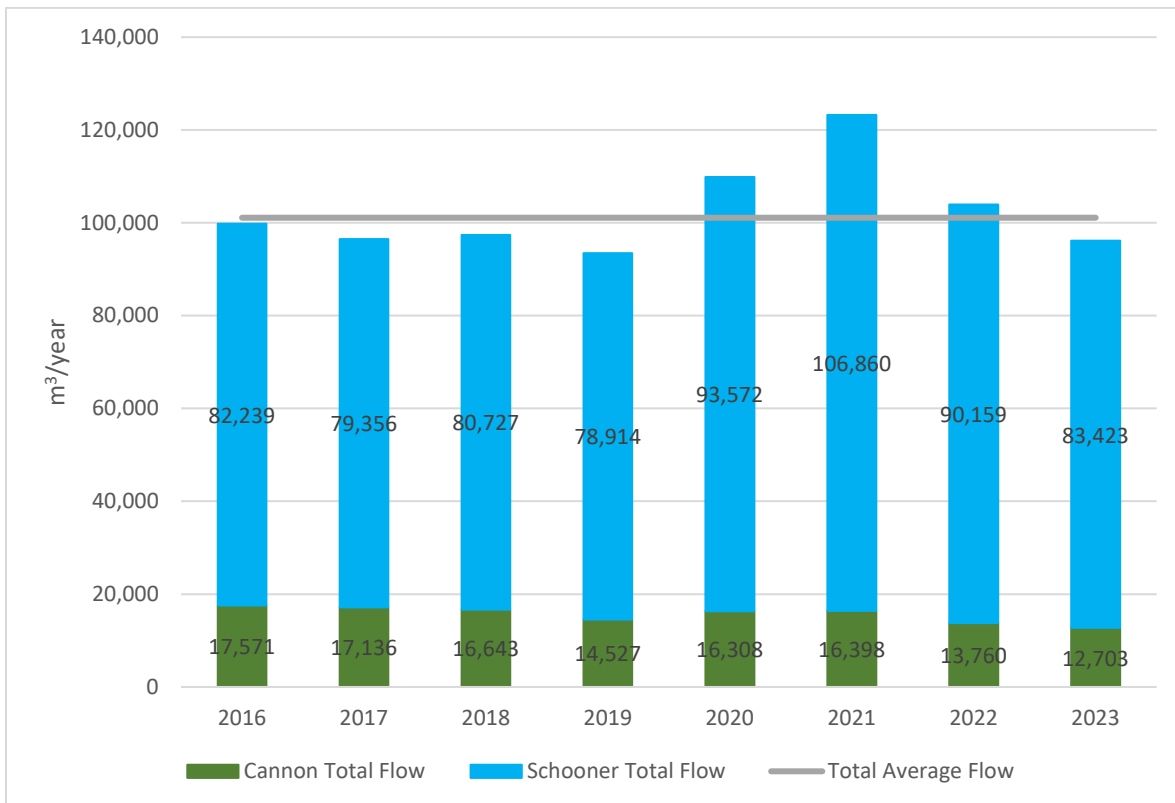
The total monthly and 8-year total annual flows are shown in Figures 6 and 7 below. The graphs indicate that the 2023 wastewater flows were about 7% lower than 2022 and about 5% lower than the 8-year average. The monthly flows show lowest flows in the summer months when there is less rain, but the more significant variation occurs in the winter due to inflow and infiltration (where January had 2 times the flow as July).

The Municipal Wastewater Regulation (MWR) contains requirements for the treatment, reuse and discharge of municipal wastewater effluent. The regulation includes a requirement that sewer flows reaching treatment plants should not exceed 2.0 times “average dry weather flow” during storm events with less than a 5-year return period. Based on the measured flow rates, the Magic Lake Estates sewer system does not meet that requirement.

The peak winter flows have also resulted in a number of total daily flow exceedances at each treatment plant as shown in Figure 8 below.



**Figure 6: Total Monthly Flows (m³/month)**



**Figure 7: Total Wastewater Flows (m³/year)**

**Treated Effluent – Regulatory Compliance**

Flow and effluent quality are assessed for compliance with the federal regulatory limits (Schooner only) and provincial discharge permits (both Schooner and Cannon) on a daily and monthly basis, respectively. In 2023, treated wastewater from Cannon met all regulatory limits for total suspended solids (TSS) and carbonaceous biochemical oxygen demand (CBOD), but had 6 flow exceedances.

At Schooner, there were 9 presumed or documented compliance exceedances due to power outages, as well as 2 sewer line breaks and 1 flow exceedance. Flow exceedances at both plants occurred during storm events when inflow and infiltration occurs and because neither plant has equalization tanks to attenuate the peak flows. Figure 8 shows the number of exceedances at each plant along with the annual precipitation. In 2023 there were fewer flow exceedances than previous years, with 1 at Schooner and 6 at Cannon (totaling 7 in 2023 versus 16 in 2022, and 73 in 2021). This was primarily due to decreasing precipitation compared to previous years. The British Columbia Ministry of Environment and Climate Change Strategy has issued non-compliance warning letters for these two treatment facilities and is expecting upgrades to bring them back into compliance.

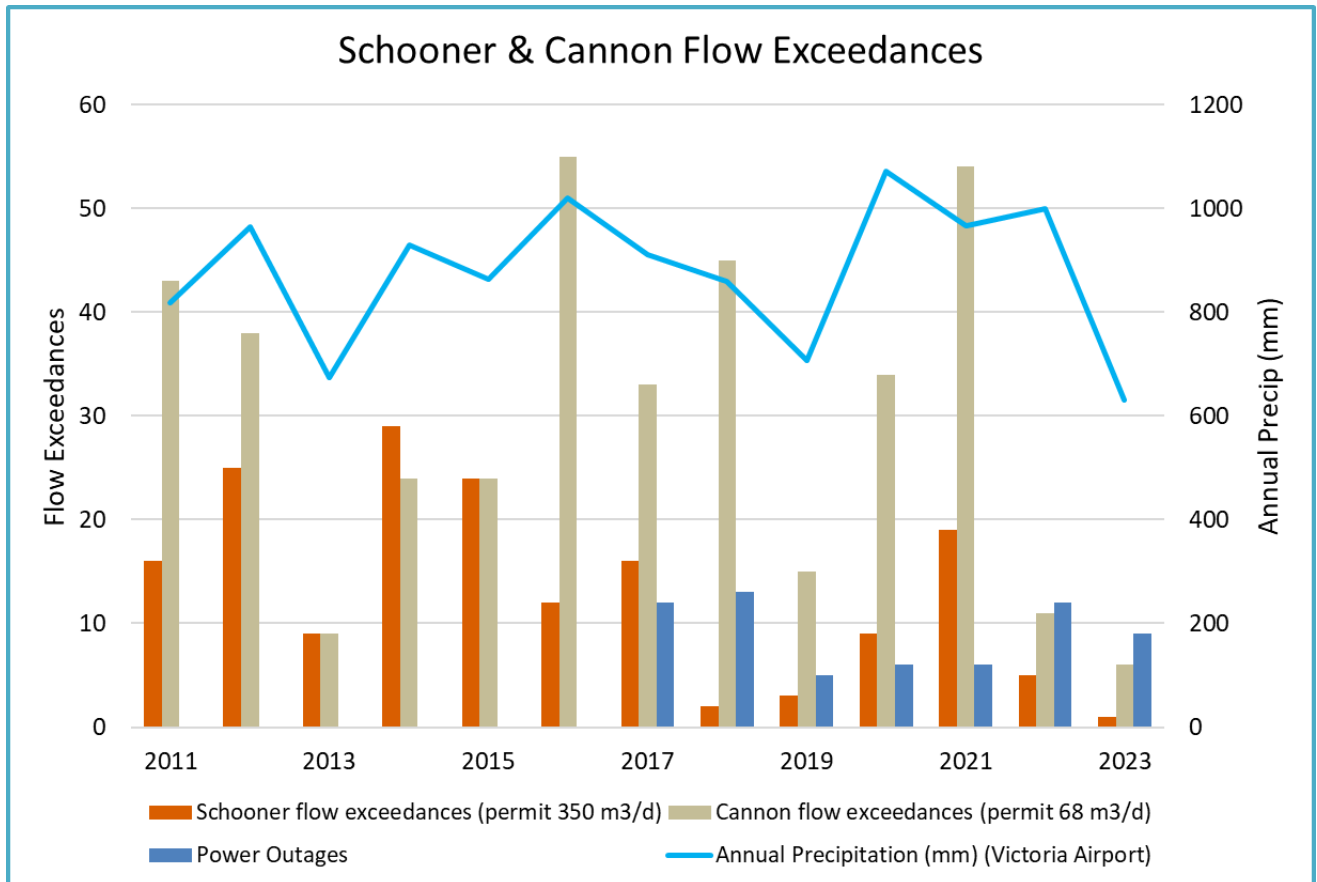


Figure 8: Schooner and Cannon Wastewater Treatment Plant (WWTP) Flow Exceedances

### Receiving Water

Routine receiving water monitoring was last required for both Magic Lake Estates Wastewater Treatment Plants in 2020 and will be next required in 2024 unless there are planned bypasses, plant failures/overflows, or wet weather overflows that exceed three days duration in the winter or one day duration in the summer. Bypass or overflow sampling is only required once per season for events that are similar in nature as long as the first seasonal sampling confirms results were within guidelines set to protect human primary contact for recreation.

There was no overflow/emergency receiving water sampling conducted in 2023.

### Sewer Service Operational Highlights

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

- Schooner Wastewater Treatment Plant

- Replacement of damaged valves due to freezing during January cold weather event; installation of additional freeze protection equipment
- Masthead Pump Station communications failure. The root cause of the failure was identified to be on the Telus infrastructure. Corrective maintenance was completed by Telus.
- Masthead Pump Station corrective maintenance that included troubleshooting and replacement of pumping control system equipment.
- Cutlass Court Pump Station corrective maintenance that included removing and de-ragging (removing obstructions) of the pumps.
- Buccaneers Pump Station corrective maintenance that included responding to a pump electrical overload condition. The pumps required removal for further troubleshooting and repairs.
- Operations assistance at the Schooner Wastewater Treatment Plant Capital Project upgrades on July 11 when the contractor inadvertently struck and damaged an active sewer pipe infrastructure resulting in a sewage spill.
- Emergency response to sewer blockage on Cannon Crescent. Sewer blockage determined to be on a service lateral connection.
- Chart Drive sewage pump station pump corrective maintenance that included the replacement of a failed pump.

### **Sewer Service Capital Project Updates**

After public consultation, a referendum was held on November 23, 2019 to borrow up to \$6 million to use along with a \$5.65 million “Investing in Canada Infrastructure” grant to complete some sewer replacement; and renewal of some pump stations and the Schooner WWTP.

The Capital Projects that were in progress or completed in 2023 included:

1. Wastewater Infrastructure Renewal – Sewer Replacement (Phase 1)

In 2021-2022 about 3km of sewer pipe and 35 manholes were replaced in various locations in the sewer service area.

2. Wastewater Infrastructure Renewal – Pump Station and Treatment Plant Upgrades (Phase 2 & 3)

In June of 2023, construction commenced on the following items:

- Renew Galleon, Schooner pump station with new mechanical and electrical equipment including new standby generators;
- Install a brand-new pump station at Cannon to pump to Schooner WWTP and decommission the old Cannon WWTP; and
- Complete several upgrades at Schooner WWTP including, new headworks, equalization tank, membrane bioreactor treatment processes, sludge holding tank, a new operations building with blowers, pumps, electrical room, and control room.

The project was about 50% complete at the end of 2023 and it is anticipated to be substantially complete by the end of summer of 2024.

Refer to the website <https://www.crd.bc.ca/project/capital-projects/magic-lake-estates-wastewater-system-infrastructure-replacement-project-infrastructure-replacement-project> for more information.

In the near future, upgrades will have to be made to Buccaneer, Capstan, Cutlass and Masthead Pump Stations and additional sewer pipe replacement. An asset management plan will be updated in 2024 to reflect the current status of all the wastewater infrastructure.

## 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), interest on savings (Interest earnings), a transfer from the maintenance reserve account, 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 other costs to administer and operate the water and sewer systems, 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., Senior Manager, Infrastructure Engineering
	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
	Angela Linwood, CPA, CA, Controller, Financial Services
Concurrence:	Luisa Jones, MBA, General Manager, Parks, Recreation & Environmental Services
	Alicia Fraser, P.Eng., General Manager, Integrated Water Services

Attachments: Table 1  
Table 2  
2023 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: 2023 Summary of Raw Water Test Results, Magic Lake Estates Water System										
PARAMETER		2023 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2013 - 2022 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum Maximum		≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum Maximum	
(ND means Not Detected by analytical method used)										
<b>Physical/Biological Parameters</b>										
<b>Buck Lake</b>										
Carbon, Total Organic	mg/L	7.45	12	6.6	8.2		6.61	90	5.3	9.84
Colour, True	TCU	14	17	9	24	≤ 15 AO	12	132	7	29
Hardness as CaCO <sub>3</sub>	mg/L	65.15	4	62.3	71.6	No Guideline Required	64.85	40	50.4	91.9
pH	pH units	Not tested in 2023				7.0 - 10.5 AO	7.67	27	6.86	8.78
Turbidity	NTU	0.65	17	0.4	2.1		1	163	0.36	10
<b>Magic Lake</b>										
Carbon, Total Organic	mg/L	9.9	12	8.4	11		8.6	86	6.4	11
Colour, True	TCU	25	15	16	43	≤ 15 AO	24	125	6	50
Hardness as CaCO <sub>3</sub>	mg/L	60.85	4	56	67.7	No Guideline Required	59.7	37	48.7	96
pH	pH units	7.66	1	7.66	7.66	7.0 - 10.5 AO	7.4	21	6.9	8.13
Turbidity	NTU	1.9	15	1.1	4.1		1.52	148	0.19	24.5
<b>Non-Metallic Inorganic Chemicals</b>										
<b>Buck Lake</b>										
Silicon	mg/L as Si	5190	4	4980	5350		5125	40	4.6	11900
<b>Magic Lake</b>										
Silicon	mg/L as Si	1295	4	540	1630		1290	37	281	5760
<b>Metals</b>										
<b>Buck Lake</b>										
Aluminum	ug/L as Al	9.9	4	< 3	10.2	2900 MAC / 100 OG	< 10	40	< 3	95.6
Antimony	ug/L as Sb	< 0.5	4	< 0.5	< 0.5	6 MAC	< 0.5	40	0.041	< 0.5
Arsenic	ug/L as As	0.345	4	0.31	0.44	10 MAC	0.4	40	0.31	0.654
Barium	ug/L as Ba	9.85	4	8	12.1	1000 MAC	9.95	40	7.5	21.9
Beryllium	ug/L as Be	< 0.1	4	< 0.1	< 0.1		< 0.1	40	< 0.01	< 3
Bismuth	ug/L as Bi	< 1	4	< 1	< 1		< 1	36	0.074	< 1
Boron	ug/L as B	< 50	4	< 50	< 50	5000 MAC	< 50	40	< 50	262
Cadmium	ug/L as Cd	< 0.01	4	< 0.01	< 0.01	7 MAC	< 0.01	40	< 0.005	< 0.1
Calcium	mg/L as Ca	17.75	4	16.9	19.9	No Guideline Required	17.85	40	13.6	21.4
Chromium	ug/L as Cr	< 1	4	< 1	< 1	50 MAC	< 1	40	< 0.1	< 10
Cobalt	ug/L as Co	< 0.2	4	< 0.2	< 0.2		< 0.2	40	0.089	0.2
Copper	ug/L as Cu	0.525	4	0.41	0.57	2000 MAC / ≤ 1000 AO	1.07	40	0.35	37.3
Iron	ug/L as Fe	55.05	4	22.4	195	≤ 300 AO	68.9	40	14.2	507
Lead	ug/L as Pb	< 0.2	4	< 0.2	< 0.2	5 MAC	< 0.2	40	< 0.2	3.7
Lithium	ug/L as Li	< 2	4	< 2	< 2		< 2	22	< 2	< 2
Magnesium	mg/L as Mg	5.07	4	4.84	5.33	No Guideline Required	4.955	40	4	9.34
Manganese	ug/L as Mn	49.15	4	16.3	206	120 MAC / ≤ 20 AO	40.25	40	11	506
Molybdenum	ug/L as Mo	< 1	4	< 1	< 1		< 1	40	0.065	< 20
Nickel	ug/L as Ni	< 1	4	< 1	1.6		< 1	40	< 0.5	< 50
Potassium	mg/L as K	1.245	4	1.18	1.28		1.16	40	0.509	1.38
Selenium	ug/L as Se	< 0.1	4	< 0.1	< 0.1	50 MAC	< 0.1	40	0.047	< 0.5
Silver	ug/L as Ag	< 0.02	4	< 0.02	< 0.02	No Guideline Required	< 0.02	40	< 0.001	< 10
Sodium	mg/L as Na	11	4	10.3	12	≤ 200 AO	11	40	8.75	12.7
Strontium	ug/L as Sr	122	4	115	126	7000 MAC	117	40	81	134
Sulphur	mg/L as S	< 3	4	< 3	< 3		< 3	36	< 3	4.1
Tin	ug/L as Sn	< 5	4	< 5	< 5		< 5	40	< 0.2	< 20
Titanium	ug/L as Ti	< 5	4	< 5	< 5		< 5	40	< 0.5	< 10
Thallium	ug/L as Tl	< 0.01	4	< 0.01	< 0.01		< 0.01	36	< 0.002	< 0.05
Uranium	ug/L as U	< 0.1	4	< 0.1	< 0.1	20 MAC	< 0.1	36	0.012	< 0.1
Vanadium	ug/L as V	< 5	4	< 5	< 5		< 5	40	0.28	< 10
Zinc	ug/L as Zn	< 5	4	< 5	< 5	≤ 5000 AO	< 5	40	< 1	205
Zirconium	ug/L as Zr	< 0.1	4	< 0.1	< 0.1		< 0.1	36	< 0.1	< 0.5
<b>Magic Lake</b>										
Aluminum	ug/L as Al	15.85	4	3.6	34.6	2900 MAC / 100 OG	22.3	37	< 0.01	713
Antimony	ug/L as Sb	< 0.5	4	< 0.5	< 0.5	6 MAC	< 0.5	37	< 0.5	< 0.5
Arsenic	ug/L as As	0.47	4	0.39	0.7	10 MAC	< 0.5	37	0.35	2.75
Barium	ug/L as Ba	14.6	4	13.5	17.9	1000 MAC	15	37	< 9	84.9
Beryllium	ug/L as Be	< 0.1	4	< 0.1	< 0.1		< 0.1	37	< 0.1	< 3
Bismuth	ug/L as Bi	< 1	4	< 1	< 1		< 1	33	< 1	< 1
Boron	ug/L as B	< 50	4	< 50	< 50	5000 MAC	< 50	37	< 50	240
Cadmium	ug/L as Cd	< 0.01	4	< 0.01	< 0.01	7 MAC	< 0.01	37	< 0.01	0.01
Calcium	mg/L as Ca	15.4	4	13.9	17.3	No Guideline Required	15	37	12	19.8
Chromium	ug/L as Cr	1.1	4	< 1	8.6	50 MAC	< 1	37	< 1	< 10
Cobalt	ug/L as Co	< 0.2	4	< 0.2	< 0.2		< 0.2	37	< 0.2	< 20
Copper	ug/L as Cu	0.885	4	0.28	1.22	2000 MAC / ≤ 1000 AO	1.41	37	0.41	8.12
Iron	ug/L as Fe	178	4	89.8	246	≤ 300 AO	224	37	48.6	4260
Lead	ug/L as Pb	< 0.2	4	< 0.2	< 0.2	5 MAC	< 0.2	37	< 0.2	0.69
Lithium	ug/L as Li	< 2	4	< 2	< 2		< 2	24	< 2	< 2
Magnesium	mg/L as Mg	5.415	4	5.18	5.93	No Guideline Required	5.47	37	4.5	11.5
Manganese	ug/L as Mn	39.55	4	9.1	53.6	120 MAC / ≤ 20 AO	42.3	37	2.8	5000
Molybdenum	ug/L as Mo	1.1	4	< 1	8.3		< 1	37	< 1	< 20
Nickel	ug/L as Ni	3.05	4	< 1	36.5		< 1	37	< 1	< 50
Potassium	mg/L as K	1.435	4	1.17	1.53		1.12	37	0.17	1.62
Selenium	ug/L as Se	< 0.1	4	< 0.1	< 0.1	50 MAC	< 0.1	37	< 0.1	< 0.5
Silver	ug/L as Ag	< 0.02	4	< 0.02	< 0.02	No Guideline Required	< 0.02	37	< 0.02	< 10
Sodium	mg/L as Na	12	4	10.5	12.7	≤ 200 AO	11.2	37	9.02	15.4
Strontium	ug/L as Sr	104	4	102	134	7000 MAC	108	37	75	158
Sulphur	mg/L as S	< 3	4	< 3	< 3		< 3	33	< 3	3.7
Tin	ug/L as Sn	< 5	4	< 5	< 5		< 5	37	< 5	< 20
Titanium	ug/L as Ti	< 5	4	< 5	< 5		< 5	37	< 5	22
Thallium	ug/L as Tl	< 0.01	4	< 0.01	< 0.01		< 0.01	33	< 0.01	< 0.05
Uranium	ug/L as U	< 0.1	4	< 0.1	< 0.1	20 MAC	< 0.1	33	< 0.1	0.19
Vanadium	ug/L as V	< 5	4	< 5	< 5		< 5	37	< 5	< 10
Zinc	ug/L as Zn	< 5	4	< 5	< 5	≤ 5000 AO	< 5	37	< 1	215
Zirconium	ug/L as Zr	< 0.1	4	< 0.1	< 0.1		< 0.1	33	< 0.05	< 0.5
<b>Microbial Parameters</b>										
<b>Indicator Bacteria (Buck Lake)</b>										
Coliform, Total	CFU/100 mL	85	17	6	410	0 MAC	75	187	< 1	4700
<i>E. coli</i>	CFU/100 mL	< 1	17	< 1	3	0 MAC	3	187	< 1	200
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2023				No Guideline Required	1345	64	330	A 5800
<b>Indicator Bacteria (Magic Lake)</b>										
Coliform, Total	CFU/100 mL	320	15	25	3300	0 MAC	411	143	< 1	7600
<i>E. coli</i>	CFU/100 mL	< 1	15	< 1	16	0 MAC	< 2	151	< 1	115
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2023				No Guideline Required	2600	59	370	G 20000
<b>Parasites (Buck Lake)</b>										
<i>Cryptosporidium</i> , Total oocysts	oocysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	14	< 1	1.45
<i>Giardia</i> , Total cysts	cysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	14	< 1	< 1
<b>Parasites (Magic Lake)</b>										
<i>Cryptosporidium</i> , Total oocysts	oocysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	15	< 1	5.3
<i>Giardia</i> , Total cysts	cysts/100 L	< 1	2	< 1	< 1	Zero detection desirable	< 1	15	< 1	< 1



**Table 2**

Table 2: 2023 Summary of Treated Water Test Results, Magic Lake Estates Water System										
PARAMETER		2023 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2013 - 2022 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										
<b>Physical Parameters</b>										
Carbon, Total Organic	mg/L as C	3.6	20	3.4	4.4		#/NA	#/NA	#/NA	#/NA
Colour, True	TCU	< 2	52	< 2	11	15 AO	< 2	628	< 2	5
Hardness as CaCO3	mg/L	65.4	12	60	71.4		64.9	85	58.1	72.1
pH	No units	Not tested in 2023				7.0-10.5 AO	7.16	29	6.89	7.7
Turbidity	NTU	0.2	53	0.05	13	1 MAC and ≤ 5 AO	0.16	964	0.11	4.4
Water Temperature	Degrees C	11.1	319	5.6	24.7	≤ 15 C°	8.6	5315	3.9	24
<b>Microbial Parameters</b>										
<b>Indicator Bacteria</b>										
Coliform, Total	CFU/100 mL	< 1	192	< 1	1	0 MAC	< 1	1458	< 1	45
<i>E. coli</i>	CFU/100 mL	< 1	192	< 1	< 1	0 MAC	< 1	1460	< 1	< 1
Hetero. Plate Count, 7 day	CFU/1 mL	50	8	< 10	610	No Guideline Required	< 10	168	< 10	6700
<b>Disinfectants</b>										
<b>Disinfectants</b>										
Chlorine, Free Residual	mg/L as Cl2	0.54	321	0	1.95	No Guideline Required	0.32	5342	0.02	4.9
Chlorine, Total Residual	mg/L as Cl2	0.71	211	0.11	2.2	No Guideline Required	0.66	5703	0.1	3.8
<b>Disinfection By-Products</b>										
<b>Trihalomethanes (THMs)</b>										
Bromodichloromethane	ug/L	17	8	12	21		18.5	57	11.2	24
Bromoform	ug/L	< 1	8	< 1	< 1		< 1	57	< 0.1	< 1
Chloroform	ug/L	45.5	8	37	62		54.5	57	18.8	100
Chlorodibromomethane	ug/L	3.05	8	2.4	3.7		3.25	56	< 0.1	4.9
Total Trihalomethanes	ug/L	66.5	8	52	87	100 MAC	#/NA	#/NA	#/NA	#/NA
<b>Haloacetic Acids (HAAs)</b>										
HAA5	ug/L	Not tested in 2023				80 MAC	33.5	12	< 0.1	46
<b>Metals</b>										
Aluminum	ug/L as Al	20.25	12	15	48.8	2900 MAC / 100 OG	25.7	85	11.7	186
Antimony	ug/L as Sb	< 0.5	12	< 0.5	< 0.5	6 MAC	< 0.5	85	0.033	< 0.5
Arsenic	ug/L as As	0.23	12	0.19	0.28	10 MAC	0.22	85	0.14	0.36
Barium	ug/L as Ba	8.6	12	8	10.2	1000 MAC	< 7.8	85	6	10.7
Beryllium	ug/L as Be	< 0.1	12	< 0.1	< 0.1		< 0.1	85	< 0.01	0.1
Bismuth	ug/L as Bi	< 1	12	< 1	< 1		< 1	85	< 0.005	1
Boron	ug/L as B	< 50	12	< 50	< 50	5000 MAC	< 50	85	< 50	52
Cadmium	ug/L as Cd	< 0.01	12	< 0.01	0.035	7 MAC	< 0.01	85	< 0.005	< 0.01
Calcium	mg/L as Ca	17.65	12	16	19.8	No Guideline Required	17.5	85	15.8	19.8
Chromium	ug/L as Cr	< 1	12	< 1	< 1	50 MAC	< 1	85	< 0.1	< 1
Cobalt	ug/L as Co	< 0.2	12	< 0.2	< 0.2		< 0.2	85	0.02	< 0.5
Copper	ug/L as Cu	9.975	12	0.23	24.3	2000 MAC / ≤ 1000 AO	9.75	85	0.25	23.3
Iron	ug/L as Fe	8.2	12	< 5	58.9	≤ 300 AO	8.3	85	2.4	34.5
Lead	ug/L as Pb	0.515	12	< 0.2	1.41	5 MAC	0.84	85	< 0.2	1.67
Lithium	ug/L as Li	< 2	12	< 2	< 2		< 5	42	0.85	< 5
Magnesium	mg/L as Mg	5.19	12	4.82	5.46	No Guideline Required	5.08	85	4.31	5.7
Manganese	ug/L as Mn	1.7	12	< 1	16.8	120 MAC / ≤ 20 AO	3.8	85	< 1	190
Molybdenum	ug/L as Mo	< 1	12	< 1	< 1		< 1	85	0.05	< 1
Nickel	ug/L as Ni	< 1	12	< 1	< 1		< 1	85	0.309	2.8
Potassium	mg/L as K	1.39	12	1.36	1.5		1.37	85	1.17	1.63
Selenium	ug/L as Se	< 0.1	12	< 0.1	< 0.1	50 MAC	< 0.1	85	< 0.04	0.11
Silicon	ug/L as Si	4075	12	3780	4300		4070	85	4.13	5140
Silver	ug/L as Ag	< 0.02	12	< 0.02	< 0.02	No Guideline Required	< 0.02	85	< 0.005	< 0.02
Sodium	mg/L as Na	14.25	12	12.9	15.3	≤ 200 AO	13.9	85	11.6	14.9
Strontium	ug/L as Sr	118.5	12	111	132	7000 MAC	119	85	102	133
Sulphur	mg/L as S	< 3	12	< 3	< 3		< 3	85	< 3	4.5
Tin	ug/L as Sn	< 5	12	< 5	< 5		< 5	85	< 0.2	< 5
Titanium	ug/L as Ti	< 5	12	< 5	< 5		< 5	85	< 0.5	< 5
Thallium	ug/L as Tl	< 0.01	12	< 0.01	< 0.01		< 0.01	85	< 0.002	< 0.05
Uranium	ug/L as U	< 0.1	12	< 0.1	< 0.1	20 MAC	< 0.1	85	< 0.002	< 0.1
Vanadium	ug/L as V	< 5	12	< 5	< 5		< 5	85	< 0.2	< 5
Zinc	ug/L as Zn	6.55	12	< 5	21.9	≤ 5000 AO	5.1	85	2.02	39.7
Zirconium	ug/L as Zr	< 0.1	12	< 0.1	< 0.1		< 0.1	84	< 0.1	< 0.5

## CAPITAL REGIONAL DISTRICT

### MAGIC LAKE ESTATE WATER Statement of Operations (Unaudited) For the Year Ended December 31, 2023

	2023	2022
<b>Revenue</b>		
Transfers from government	580,000	579,148
User Charges	382,615	355,431
Water Sales	23,360	16,770
Leases	8,100	7,714
Fees and Charges	1,443	1,354
Other revenue from own sources:		
Interest earnings	1,021	945
Transfer from Operating Reserve	10,000	16,150
Insurance Claim Reimbursement	-	871
Other revenue	2,992	2,165
<b>Total Revenue</b>	<b>1,009,531</b>	<b>980,548</b>
<b>Expenses</b>		
General government services	33,368	33,911
Contract for Services	14,778	34,391
CRD Labour and Operating costs	435,874	501,743
Capital Purchases	11,082	16,276
Debt Servicing Costs	209,147	194,588
Other expenses	212,595	199,639
<b>Total Expenses</b>	<b>916,844</b>	<b>980,548</b>
<b>Net revenue (expenses)</b>	<b>92,687</b>	<b>-</b>
Transfers to own funds:		
Capital Reserve Fund	82,687	-
Operating Reserve Fund	10,000	-
<b>Annual surplus/(deficit)</b>	<b>-</b>	<b>-</b>
Accumulated surplus/(deficit), beginning of year	-	-
<b>Accumulated surplus/(deficit), end of year</b>	<b>\$ -</b>	<b>-</b>



## CAPITAL REGIONAL DISTRICT

### MAGIC LAKE ESTATE WATER Statement of Reserve Balances (Unaudited) For the Year Ended December 31, 2023

	Capital Reserves	
	2023	2022
<b>Beginning Balance</b>	1,121,385	1,151,915
Transfer from Operating Budget	82,687	-
Transfer from Completed Capital Projects	40,786	28,585
Transfer to Capital Projects	(120,000)	(90,000)
Insurance settlement Funds Received	-	-
Interest Income	51,392	30,885
<b>Ending Balance</b>	<b>1,176,250</b>	<b>1,121,385</b>

	Operating Reserve	
	2023	2022
<b>Beginning Balance</b>	45,504	59,516
Transfer from Operating Budget	10,000	-
Transfer to Operating Budget	(10,000)	(16,150)
Interest Income	2,307	2,138
<b>Ending Balance</b>	<b>47,811</b>	<b>45,504</b>

## CAPITAL REGIONAL DISTRICT

### MAGIC LAKE ESTATE SEWER Statement of Operations (Unaudited) For the Year Ended December 31, 2023

	2023	2022
<b>Revenue</b>		
Transfers from government	586,010	586,010
User Charges	271,133	261,145
Allocation recovery revenue	11,200	10,870
Other revenue from own sources:		
Interest earnings	2,353	1,908
Transfer from Operating Reserve	-	25,000
Other revenue	4,350	3,419
<b>Total Revenue</b>	<b>875,046</b>	<b>888,352</b>
<b>Expenses</b>		
General government services	31,122	29,375
Contract for Services	124,045	106,037
CRD Labour and Operating costs	341,401	341,378
Debt Servicing Costs	174,635	174,477
Waste Sludge Disposal	86,435	77,303
Repairs & Maintenance	22,110	25,913
Other expenses	90,554	82,695
<b>Total Expenses</b>	<b>870,302</b>	<b>837,178</b>
<b>Net revenue (expenses)</b>	<b>4,744</b>	<b>51,174</b>
Transfers to own funds:		
Capital Reserve Fund	-	37,914
Operating Reserve Fund	4,744	13,260
<b>Annual surplus/(deficit)</b>	<b>-</b>	<b>-</b>
Accumulated surplus/(deficit), beginning of year	-	-
<b>Accumulated surplus/(deficit), end of year</b>	<b>\$ -</b>	<b>-</b>

## CAPITAL REGIONAL DISTRICT

### MAGIC LAKE ESTATE SEWER-DEBT (\$6M) Statement of Operations (Unaudited) For the Year Ended December 31, 2023

	2023	2022
<b>Revenue</b>		
Transfers from government	234,106	211,616
Other revenue	2,631	1,445
<b>Total Revenue</b>	<b>236,737</b>	<b>213,061</b>
<b>Expenses</b>		
Debt Servicing Costs	232,208	209,818
<b>Total Expenses</b>	<b>232,208</b>	<b>209,818</b>
<b>Net revenue (expenses)</b>	<b>4,529</b>	<b>3,243</b>
<b>Annual surplus/(deficit)</b>	<b>4,529</b>	<b>3,243</b>
Accumulated surplus/(deficit), beginning of year	(4,529)	(7,772)
<b>Accumulated surplus/(deficit), end of year</b>	<b>\$ -</b>	<b>(4,529)</b>

## CAPITAL REGIONAL DISTRICT

### MAGIC LAKE ESTATE SEWER Statement of Reserve Balances (Unaudited) For the Year Ended December 31, 2023

	Capital Reserve	
	2023	2022
<b>Beginning Balance</b>	374,653	306,661
Transfer from Operating Budget	-	37,914
Transfer from Completed Capital Projects	-	20,646
Transfer to Capital Projects	-	-
Interest Income	18,732	9,432
<b>Ending Balance</b>	<b>393,385</b>	<b>374,653</b>

	Operating Reserve	
	2023	2022
<b>Beginning Balance</b>	23,075	33,825
Transfer from Operating Budget	4,744	13,260
Transfer to Operating Budget	-	(25,000)
Interest Income	1,422	990
<b>Ending Balance</b>	<b>29,241</b>	<b>23,075</b>



**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE  
MEETING OF TUESDAY, JUNE 11, 2024**

**SUBJECT     Capital Project Status Reports and Operational Updates – June 2024**

**ISSUE SUMMARY**

To provide the Magic Lake Estates Water and Sewer Committee with capital project status reports and operational updates up to and including May 31, 2024.

**BACKGROUND**

The Magic Lake Estates (MLE) Water and Sewer Systems are located on the south shore of North Pender Island in the Southern Gulf Islands Electoral Area and provides drinking water and wastewater services to approximately 1,072 customers. Capital Regional District (CRD) Integrated Water Services is responsible for the overall operation of the water and wastewater systems with day-to-day operation, maintenance, design and construction of water and wastewater system facilities provided by the CRD Infrastructure Engineering and Operations Divisions. The quality of drinking water provided to customers in the Magic Lake Estates Water System is overseen by the CRD Water Quality Section.

**CAPITAL PROJECT UPDATE**

**Magic Lake Estates Water**

**23-03 | SCADA and Radio Communication Upgrades**

**Project Description:** Replace SCADA Communication infrastructure with modern radio system based on Radio Pathway Study completed under wastewater capital project 21-01.

**Project Rationale:** Upgrade communication equipment at water facilities as part of the wastewater upgrades (under Project 21-01) to make the entire system more secure and reliable.

**Project Update and Milestones:**

- The scope of work for the SCADA and Radio upgrades was included in the Wastewater Upgrade Tender.
- Contract 2022-846 - Magic Lake Estates Wastewater Pump Station and Treatment Plant Upgrades was awarded to Coast Utility Contracting Ltd. in April 2023.
- Radio upgrades have been completed at Lively Peak/Captains Reservoir and the Water Treatment Plant.
- The remaining radios will be installed commissioned in July/August.

Milestone	Completion Date
Detailed Design	January 2023
Tender	March 2023
Construction	May 2023 – July 2024
Commissioning (Substantial Completion)	July 2024
Warranty	July 2025

**Magic Lake Estates Water and Sewer Committee – June 11, 2024**  
**Capital Project Status Reports and Operational Updates – June 2024**

2

**21-02 | Design and Construction Buck Lake and Magic Lake Adjustable Intakes (Complete)**

**Project Description:** Detailed design and construction of adjustable intakes to inform future capital works to maintain water quality.

**Project Rationale:** Both the Buck and Magic Lake adjustable intakes are unsafe to clean and adjust without employing divers. Funds are required to design and construct adjustable intakes.

**Project Update and Milestones:**

- A consultant was retained in November 2021, and they produced a draft design report summarizing design requirements for the intakes and floats on December 6, 2021.
- Design was completed.
- Tendering closed on June 29, 2022, but no bids were received.
- CRD had discussions with potential bidders who may be interested in providing quotations for this scope, only Pacific Industrial Marine (PIM) was interested in bidding.
- Recommendation to Award to PIM was signed off on November 4, 2022.
- Contract was executed on February 1, 2023, and Notice to Proceed was provided on February 7, 2023.
- Shop drawings have been reviewed and returned to Contractor to commence off-site construction.
- The stipulated Substantial Completion date is September 30, 2023, but this was permitted to extend to Q1 2024 based on Contractor deliverables and operational coordination requirements (e.g. lower water demand period in fall, frozen water in January and need for pre-launch dive inspection). Installations were completed the week of March 18, 2024, and the Contractor had demobilized by March 22, 2024.
- Discussions with Committee to continue with respect to any desired aesthetic improvement works to be pursued.

<b>Milestone</b>	<b>Completion Date</b>
Consultant retained	November 12, 2021
Draft conceptual design report received	December 6, 2021
Design submitted to Front Counter BC for notification	April 21, 2022
Original Tender Closing (no bids)	June 29, 2022
Subsequent bid and Recommendation to Award to PIM	November 4, 2022
Contract Executed	February 1, 2023
Notice to Proceed	February 7, 2023
Shop Drawing Review	August 22, 2023
Off-Site Dock Construction Complete	Q4, 2024
Pre-Dive Installation Inspection	Feb 2, 2024
Installations Complete	March 22, 2024

**21-04 | Buck Lake Dam Repairs - Phase 1**

**Project Description:** Conduct additional inspections, minor repairs, and performance analysis highlighted in the 2019 Dam Safety Review. Phase 2 dam improvements to be completed in the following five years.

**Project Rationale:** Resulting from the Hatch 2019 Dam Safety Review, funds are required to conduct additional inspections, minor dam repairs, and performance analysis. Phase 2 dam improvements to be completed in the following five years.

**Magic Lake Estates Water and Sewer Committee – June 11, 2024**  
**Capital Project Status Reports and Operational Updates – June 2024**

3

The November 26, 2020 staff report outlines the detailed expenditure plan for Phase 1.

**Project Update and Milestones:**

- Detailed scope of work and acceptable options for preventing high live loads at Buck Lake Dam's west dam have been developed. This was reviewed during the 2022 annual inspection and a scope for warning signage is being proposed to be installed in 2023.
- Consultant was retained to conduct a dam breach analysis for both dams to confirm the dam flood area and improve the dam emergency plan. This report was finalized January 2023.
- Operations to coordinate with CRD Protective Services so that dam emergencies are part of CRD's Public Alert Notification System (PANS).
- CRD staff have started compiling required information for the dam emergency plan and operating and maintenance manuals. Updates were completed January 2023.
- In 2023, engineering is assessing options for installation of a v-notch weir to monitor lower flow seepage rates and will continue with design work into 2024.

<b>Milestone</b>	<b>Completion Date</b>
Consultant retained to conduct dam breach analysis	December 20, 2021
Draft Dam Breach Analysis Complete and Comments returned	July 14, 2022
Final Dam Breach Analysis Complete	January 2023
Design of Seepage Weir on West Dam	Ongoing

**WATER SYSTEM OPERATIONAL UPDATE**

This is a water system operational update report for April and May 2024.

- Water Service line leak repair near Frigate Road.
- Water Treatment Plant computer network corrective maintenance.
- Magic Lake South Dam corrective maintenance: replacement of failed outlet channel log boom and installation of outlet channel sandbags to prevent erosion.
- Operational support for SCADA and Radio Communications upgrades capital project.
- Hydrant MLE069 corrective maintenance.
- Ongoing operational water usage review with the focus to determine actual water system losses.

**Magic Lake Estates Sewer Utility**

**21-01 | Wastewater Improvements – Pump Station and Treatment Plant Upgrades**

**Project Description:**

1. Renew Galleon and Schooner Pump Stations (upgrade communications at Buccaneer, Capstan, Cutlass and Masthead Pump Stations).
2. Replace Cannon Wastewater Treatment Plant (WWTP) with a new pump station.
3. Upgrade Schooner WWTP.

**Project Rationale:** Successfully received an Infrastructure Canada grant to complete upgrades on pump stations, install a new pump station at Cannon to pump to Schooner WWTP, and upgrade Schooner WWTP to treat flow from Cannon and renew many components to bring the wastewater system into compliance with environmental regulations.

**Magic Lake Estates Water and Sewer Committee – June 11, 2024**  
**Capital Project Status Reports and Operational Updates – June 2024**

4

Project Update and Milestones:

- Notice to Proceed for Contract 2022-846 was issued to Coast Utility Contracting Ltd. In May 2023. The contractor mobilized in late June/early July.
- **Schooner WWTP**
  - Operations building is complete and electrical mechanical equipment is being installed (blowers, pumps, motor control center, etc.).
  - Concrete tanks are complete and electrical and mechanical equipment is being installed (diffusers, submersible pumps, membranes, etc.).
  - Inlet screen, washer/compactor, and standby generator is installed.
  - Yard piping and electrical conduits are being installed for new BC Hydro service.
  - Structural steel for tank walkway is installed.
  - Remaining equipment will be installed in June/July and ready for testing and commissioning by the end of July.
- **Cannon Pump Station**
  - Wet well pumps and piping is complete.
  - Lock block walls and site grading work is commencing.
  - Concrete slab for electrical kiosk will be formed and poured.
  - Electrical kiosk will be installed by late June.
- **Schooner Pump Station**
  - Bypass pumping is planned for June 3-7 to complete all mechanical work inside the pump station wet well.
  - The new equipment will be tested and commissioned on June 7.
- **Galleon Pump Station**
  - This pump station is substantially complete and was commissioned on May 27.
  - Final restoration and clean-up remains to be completed.
- The Habitat Restoration Plan for compensation of disturbing the wetland area adjacent to Schooner WWTP has been submitted to the Ministry of Forests, Land, Natural Resource Operations and Rural Development (FLNRORD). A sign and info sheet has been prepared to explain the restoration work.
- Overall, the project is about 85% complete.
- The total project cost is anticipated to be completed within the revised project scope budget of \$9,379,909.
- As of April 30, 2024, we have received a total of \$3,681,851 of the total eligible grant amount of \$5,653,266. Another grant claim will be submitted in July.
- See the milestone table and photos below showing some of the progress.

Milestone	Completion Date
Preliminary Design (30%)	September 2022
Detailed Design (90%)	December 2022
Tender Period	January 27 – March 14, 2023
Construction Period	May 2023 – July 2024
Substantial Completion	July - August 2024
Warranty Period	July – August 2025





Schooner WWTP Tanks and Operations Building in Background



Schooner WWTP Genset



MBR Tanks – Structural Steel



Electrical Room Panels



Blowers



Lab and Control Room



Permeate Pumps





**Cannon PS – Pumps and Piping**



**Galleon PS – Kiosk and Genset**



**Schooner PS - Kiosk**

### **WASTEWATER SYSTEM OPERATIONAL UPDATE**

This is a wastewater system operational update report for April and May 2024.

- Safe removal of large tree, by tree removal contractor, that fell next to the Cannon Wastewater Treatment Plant. Tree caused minimal damage to the facility.
- Replacement of wastewater collection system manhole odour control carbon media. These manholes locations are known locations having odour issues.

IWSS-297445977-11430

**Magic Lake Estates Water and Sewer Committee – June 11, 2024  
Capital Project Status Reports and Operational Updates – June 2024**

- Schooner WWTP air blower #2 corrective maintenance:
- Ongoing operational support for the sewer improvement capital project.

**Table 1: Operating Permit Regulatory Non-compliance reporting for April and May 2024**

Facility	April and May Reports Issued	Reports YTD 2024	Total Reports 2023	Cause
<b>Schooner WWTP</b>	0	7	10	Environmental Incidence Reports are issued typically as a result of: 1. Facility power outage causing loss of UV disinfection resulting in exceedance of fecal coliform (FC) regulatory requirements (permit <200 cfu/100ml). 2. Exceedance of permitted daily maximum flows (< 640m <sup>3</sup> /day). Flow exceedances are due to excessive collection system inflow and infiltration (I&I). 3. Exceedance of permitted total suspended solids (TSS) (<45mg/l). This is type of exceedance is the result of high I&I.
<b>Schooner Pump Station</b>	0	0	0	Typically, these are overflow events into the marine environment (Boat Nook) due to extended power failures in the area. There is no standby power at the facility.
<b>Cannon WWTP</b>	0	9	5	Exceeding maximum daily flows due to storm water entering through I&I. However other non-compliances can be: <ul style="list-style-type: none"> <li>• Permit exceedance: total suspended solids (TSS) (&lt;60mg/l) and carbonaceous biochemical oxygen demand (CBOD) (&lt;45mg/l)</li> <li>• Toxicity testing</li> </ul>

**RECOMMENDATION**

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

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