island health

DRINKING WATER SYSTEM ANNUAL REPORT

Reporting Period: January 1st to December 31st, 2023 (year)

Water System Arbutus Mountain Estates Water System

Water System Owner Cowichan Valley Regional District

Primary Contact Name (Operator or Manager) Vanessa Thomson

Phone Number (Operator or Manager) 250-746-2535

E-mail (Operator or Manager) Vanessa.Thomson@cvrd.bc.ca

DESCRIBE YOUR WATER SUPPLY SYSTEM

What is the Source(s) of Raw Water?

☒ Deep Well ☐ Shallow Well ☐ Surface Water ☐ Other

If other, specify details:

Does the Drinking Water System have Primary Disinfection? ☒ Yes ☐ No

☒ Chlorination ☐ Ultraviolet Light ☐ Ozone ☐ Other

If other, specify details:

Does the Drinking Water System have Secondary Disinfection? ☒ Yes ☐ No

☒ Chlorination ☐ Other

If other, specify details:

Does the Drinking Water System have Filtration? ☐ Yes ☒ No

Check all boxes that apply

☐ Cartridge Filter(s) ☐ Carbon Filter ☐ Sand Filtration ☐ Reverse Osmosis ☐ Other

If other, specify details:

PUBLIC REPORTING

Emergency Response & Contingency Plan (ERCP)

Is your ERCP up to Date? ☒ Yes ☐ No

How do you Inform the System Users of the ERCP?

☒ Hand Delivered ☒ Bulletin Board ☒ Newspaper ☐ Utility Bill Insert ☒ Website

☒ Other (specify details) Radio, Social Media

Drinking Water System Annual Report

How do you Inform the System Users of the Annual Report?

☐ Hand Delivered ☐ Bulletin Board ☐ Newspaper ☐ Utility Bill Insert ☒ Website

☐ Other (specify details)

COMPLIANCE WITH OPERATING PERMIT

List the conditions of your Operating Permit (Contact the DWO for a copy if needed):

Are you in compliance with your Operating Permit? ☒ Yes ☐ No

BACTERIOLOGICAL TESTING AND DRINKING WATER PROTECTION REGULATION WATER QUALITY STANDARDS

How many bacteriological samples were collected during this reporting period? 53

What is the minimum required sampling frequency for this system? (#samples/month) 4 samples/month

Additional sampling details:

Was the minimum required sampling frequency achieved? ☒ Yes ☐ No

Comments:

Bacteriological summary attached to this report? ☒ Yes ☐ No

If no, how do the users of the system view the results?

WATER QUALITY STANDARDS FOR POTABLE WATER

Parameter:	***Standard:***	**Did this system meet standard?**	
Escherichia coli (for all samples)	No detectable *Escherichia coli* per 100ml	☒ Yes	☐ No
Total Coliform Bacteria *(if only 1 sample collected in a 30 day period)*	No detectable total coliform bacteria per 100ml	☒ Yes	☐ No
Total Coliform Bacteria *(if more than 1 sample collected in a 30 day period)*	No more than 10% of samples contain total coliform bacteria, **and** No sample has more than 10 total coliform bacteria per 100ml	☒ Yes	☐ No

If the system did not meet any of above Drinking Water Protection Regulation standards, record the results in the table below; attach additional sheets if necessary.

Date	TC/100ml	E.coli/100ml	Reason	Corrective Action

CHEMICAL SAMPLING COMPLETED DURING THIS REPORTING PERIOD

Was any chemical sampling conducted during reporting period?	■ Yes	☐ No
If no, when were the last chemical samples conducted for this system? (date)		☐ Don't know
If yes, attach a list of the chemical results Full Spectrum Report for Distribution and Source - January and February 2023		
If any water samples did not meet the Guidelines for Canadian Drinking Water Quality, record the results in the table below; attach additional sheets if necessary.		
Next scheduled full chemical test (date) Distribution - June 2024		

Parameter	Result	Corrective Action / Treatment / Comments
Total Coliforms	1CFU/100mL	Likely lab error. No E. Coli or Total Coliform in Island Health sample
		from the same day and sampling location

ADDITIONAL TESTING

Does the system have analyzers for continuous monitoring? ■ Yes ☐ No

If yes, check all boxes that apply:

■ Chlorine ☐ Turbidity ☐ Other (details)

Are the results available on request? Yes

If any additional testing or sampling was conducted, record results in the table below; attach additional sheets if necessary.

Additional Testing & Reason for Sampling	Corrective Action Taken

WATER QUALITY COMPLAINTS

Were there any water quality complaints in this reporting period? (e.g. taste, odour, colour etc.) ☐ Yes ■ No

If yes, complete the table below; attach additional sheets if necessary.

Date	Water Quality Complaint	Corrective Action / Treatment

OPERATIONAL PROBLEMS

Were there any operational problems during this reporting period? (e.g. insufficient water supply, malfunction of disinfection equipment, line breaks, elevated turbidity etc.). ☐ Yes ■ No

If yes, complete the table below; attach additional sheets if necessary.

Incident Date	Type of Operational Problem	Corrective Action Taken

MAJOR UPGRADES/REPAIRS & EXPENSES

Were there any major upgrades/repairs or any major costs incurred during this reporting period? ■ Yes ☐ No

If yes, complete the table below; attach additional sheets if necessary.

Major Upgrades/Expenses	Details
Improvements required by DWO	
Additions/changes to system	
Purchase or install new equipment	
Equipment repair or replacement	Replaced booster jockey pump
Annual maintenance of system	System flushing, hydrant maintenance, and servicing of fire pump, genset and chlorination equip
Specialist report	
Other	

FUTURE IMPROVEMENTS

Are there any plans for future improvements? ☐ Yes ■ No

If yes, complete the table below; attach additional sheets if necessary.

Future Upgrades or Improvements	Estimated Date of Completion

Click here to enter a date. February 8, 2024 **DATE COMPLETED:**	Tai Williams **COMPLETED BY:**

Arbutus Mountain Estates Water System

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
S3 Reservoir Treated Water	18-Dec-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	11-Dec-2023	LT1	LT1
S2 Groundwater Well 3 RAW	04-Dec-2023	6.3	LT1
S5 1056 Skylar Circle	04-Dec-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	27-Nov-2023	LT1	LT1
S5 1056 Skylar Circle	20-Nov-2023	LT1	LT1
S5 1056 Skylar Circle	14-Nov-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	07-Nov-2023	LT1	LT1
S3 Reservoir Treated Water	30- Oct-2023	LT1	LT1
S5 1056 Skylar Circle	23- Oct-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	16- Oct-2023	LT1	LT1
S3 Reservoir Treated Water	10- Oct-2023	LT1	LT1
S5 1056 Skylar Circle	04- Oct-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	25-Sep-2023	LT1	LT1
S3 Reservoir Treated Water	18-Sep-2023	LT1	LT1
S5 1056 Skylar Circle	11-Sep-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	05-Sep-2023	LT1	LT1
S3 Reservoir Treated Water	29-Aug-2023	LT1	LT1
S5 1056 Skylar Circle	22-Aug-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	14-Aug-2023	LT1	LT1
S3 Reservoir Treated Water	08-Aug-2023	LT1	LT1
S5 1056 Skylar Circle	01-Aug-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	25-Jul-2023	LT1	LT1
S3 Reservoir Treated Water	18-Jul-2023	LT1	LT1
S5 1056 Skylar Circle	11-Jul-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	04-Jul-2023	LT1	LT1
S5 1056 Skylar Circle	27-Jun-2023	LT1	LT1
S3 Reservoir Treated Water	20-Jun-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	12-Jun-2023	LT1	LT1
S1 Groundwater Well 1	05-Jun-2023	LT1	LT1
S5 1056 Skylar Circle	05-Jun-2023	LT1	LT1
S3 Reservoir Treated Water	29-May-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	23-May-2023	LT1	LT1
S5 1056 Skylar Circle	16-May-2023	LT1	LT1
S3 Reservoir Treated Water	08-May-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	01-May-2023	LT1	LT1
S5 1056 Skylar Circle	25-Apr-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	17-Apr-2023	LT1	LT1
S3 Reservoir Treated Water	11-Apr-2023	LT1	LT1

Arbutus Mountain Estates Water System

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
S5 1056 Skylar Circle	03-Apr-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	27-Mar-2023	LT1	LT1
S3 Reservoir Treated Water	21-Mar-2023	LT1	LT1
S5 1056 Skylar Circle	13-Mar-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	07-Mar-2023	LT1	LT1
S3 Reservoir Treated Water	01-Mar-2023	LT1	LT1
S5 1056 Skylar Circle	21-Feb-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	13-Feb-2023	LT1	LT1
S3 Reservoir Treated Water	06-Feb-2023	LT1	LT1
S5 1056 Skylar Circle	31-Jan-2023	LT1	LT1
S3 Reservoir Treated Water	24-Jan-2023	LT1	LT1
S4 Lot No. 30 1108 Fitzgerald Rd	17-Jan-2023	LT1	LT1
S3 Reservoir Treated Water	10-Jan-2023	LT1	LT1
S5 1056 Skylar Circle	03-Jan-2023	LT1	LT1

ARBUTUS MOUNTAIN ESTATES WATER SYSTEM

SOURCE - S2 (Well 3)

DISTRIBUTION - S4

			Sample ID	S4-1108 Fitzgerald Rd (WTX 27AB9)	S2-WELL 3 (WTX 27AB8)
			Sampling Date	01/31/23	02/07/23
			Sampling Time	09:20 AM	12:10 PM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***
Nitrite (N)	1		mg/L	<0.0050	<0.0050
Nitrate (N)	10		mg/L	0.327	0.293
Conductivity			uS/cm	210	200
pH			pH	7.73	7.75
Total Dissolved Solids		500	mg/L	110	110
Alkalinity (PP as CaCO3)			mg/L	<1.0	<1.0
Alkalinity (Total as CaCO3)			mg/L	73	74
Bicarbonate (HCO3)			mg/L	89	90
Carbonate (CO3)			mg/L	<1.0	<1.0
Hydroxide (OH)			mg/L	<1.0	<1.0
Chloride (Cl)		250	mg/L	6.7	4.9
Sulphate (SO4)		500	mg/L	18	17
True Colour		15	Col. Unit	<5.0	<5.0
Nitrate plus Nitrite (N)			mg/L	0.327	0.293
Langelier Index (@ 20C)			N/A	-0.389	-0.488
Langelier Index (@ 4C)			N/A	-0.709	-0.808
Saturation pH (@ 20C)			N/A	8.28	8.24
Saturation pH (@ 4C)			N/A	8.6	8.56
Dissolved Fluoride (F)	1.5		mg/L	<0.050	<0.050
Tannins and Lignins			mg/L	<0.2	<0.2
Turbidity	see remark	see remark	NTU	<0.10	0.3
Total Hardness (CaCO3)			mg/L	90.4	98.8
Total Aluminum (Al)	2900		ug/L	4	9.7
Total Antimony (Sb)	6		ug/L	<0.50	<0.50
Total Arsenic (As)	10		ug/L	<0.10	<0.10
Total Barium (Ba)	2000		ug/L	<1.0	<1.0
Total Beryllium (Be)			ug/L	<0.10	<0.10
Total Bismuth (Bi)			ug/L	<1.0	<1.0
Total Boron (B)	5000		ug/L	<50	<50
Total Cadmium (Cd)	7		ug/L	<0.010	<0.010
Total Chromium (Cr)	50		ug/L	<1.0	<1.0
Total Cobalt (Co)			ug/L	<0.20	<0.20
Total Copper (Cu)	2000	1000	ug/L	8.2	0.5
Total Iron (Fe)		300	ug/L	<5.0	<5.0
Total Lead (Pb)	5		ug/L	<0.20	<0.20
Total Manganese (Mn)	120	20	ug/L	<1.0	<1.0
Total Molybdenum (Mo)			ug/L	<1.0	1.4
Total Nickel (Ni)			ug/L	<1.0	2
Total Selenium (Se)	50		ug/L	0.48	0.45
Total Silicon (Si)			ug/L	6300	6450
Total Silver (Ag)			ug/L	<0.020	<0.020
Total Strontium (Sr)	7000		ug/L	38.6	41.3

ARBUTUS MOUNTAIN ESTATES WATER SYSTEM

SOURCE - S2 (Well 3)

DISTRIBUTION - S4

			Sample ID	S4-1108 Fitzgerald Rd (WTX 27AB9)	S2-WELL 3 (WTX 27AB8)
			Sampling Date	01/31/23	02/07/23
			Sampling Time	09:20 AM	12:10 PM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***
Total Thallium (Tl)			ug/L	<0.010	<0.010
Total Tin (Sn)			ug/L	<5.0	<5.0
Total Titanium (Ti)			ug/L	<5.0	<5.0
Total Uranium (U)	20		ug/L	0.12	0.13
Total Vanadium (V)			ug/L	<5.0	<5.0
Total Zinc (Zn)		5000	ug/L	9.1	<5.0
Total Zirconium (Zr)			ug/L	<0.10	<0.10
Total Calcium (Ca)			mg/L	28.4	30.8
Total Magnesium (Mg)			mg/L	4.75	5.34
Total Potassium (K)			mg/L	0.248	0.255
Total Sodium (Na)		200	mg/L	4.12	3.29
Total Sulphur (S)			mg/L	5.8	6.1
Total Mercury (Hg)	1		ug/L	<0.0019	<0.0019
Total Total Kjeldahl Nitrogen (Calc)			mg/L	<0.020	<0.020
Total Organic Carbon (C)			mg/L	<0.50	<0.50
Total Nitrogen (N)			mg/L	0.317	0.3
Total Ammonia (N)			mg/L	<0.015	<0.015
Sulphide (as H2S)		0.05	mg/L	<0.0020	<0.0020
Total Sulphide		0.05	mg/L	<0.0018	<0.0018
Total Coliforms	0		CFU/100mL	**1**	0
E. coli	0		CFU/100mL	0	0
Heterotrophic Plate Count			CFU/mL	<1.0	2
Fecal Coliforms			CFU/100mL	0	<1
Non-Coliform (Background)			CFU/100mL	<1	<1
Iron Bacteria			CFU/mL	<25	25
Sulphate reducing bacteria			CFU/mL	<75	<75
Total Trihalomethanes	100		ug/L	6.7	
Bromodichloromethane			ug/L	2.5	
Bromoform			ug/L	<1.0	
Dibromochloromethane			ug/L	1.3	
Chloroform			ug/L	2.9	
Dalapon			ug/L	<5.0	
Monochloroacetic Acid			ug/L	<5.0	
Monobromoacetic Acid			ug/L	<5.0	
Dichloroacetic Acid			ug/L	<5.0	
Trichloroacetic Acid			ug/L	<5.0	
Bromochloroacetic Acid			ug/L	<5.0	
Dibromoacetic Acid			ug/L	<5.0	
Total Haloacetic Acids	80		ug/L	<5.0	