

DRINKING WATER SYSTEM ANNUAL REPORT

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

Water System

Water System Owner

Primary Contact Name (Operator or Manager)

Phone Number (Operator or Manager)

E-mail (Operator or Manager)

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) CVRD Engineering Services, 175 Ingram Street, Duncan, BC

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?

What is the minimum required sampling frequency for this system? (#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 <i>Escherichia coli</i> per 100ml	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Total Coliform Bacteria (if only 1 sample collected in a 30 day period)	No detectable total coliform bacteria per 100ml	<input type="checkbox"/> Yes	<input type="checkbox"/> 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	<input type="checkbox"/> Yes	<input type="checkbox"/> 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

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)

Parameter	Result	Corrective Action / Treatment / Comments

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?

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	
Annual maintenance of system	
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.

DATE COMPLETED:

COMPLETED BY:



ARBUTUS MOUNTAIN ESTATES WATER SYSTEM

Facility Location:

1051 South Shawnigan Road
Shawnigan Lake

Facility Information:

Facility Type: DWC

Facility Sampling History:

Location	Date	Total Coliform	E.Coli
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	18-Dec-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	11-Dec-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	4-Dec-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	26-Nov-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	20-Nov-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	13-Nov-2018	L1	L1
S-2 Groundwater Well #3 - RAW, S-2 Well #3 - RAW	5-Nov-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	5-Nov-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	22-Oct-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	16-Oct-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	10-Oct-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	2-Oct-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	25-Sep-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	18-Sep-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	11-Sep-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	5-Sep-2018	L1	L1



S-3 Reservoir - Treated Water, S-3 Reservoir Treated	28-Aug-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	21-Aug-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	14-Aug-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	8-Aug-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	23-Jul-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	16-Jul-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	9-Jul-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	3-Jul-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	27-Jun-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	18-Jun-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	12-Jun-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	4-Jun-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	23-May-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	14-May-2018	L1	L1
S-1 Groundwater Well #1, Well #1	7-May-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	7-May-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	30-Apr-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	24-Apr-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	16-Apr-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	10-Apr-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	3-Apr-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	19-Mar-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	13-Mar-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	5-Mar-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	26-Feb-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	19-Feb-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	13-Feb-2018	L1	L1
S-3 Reservoir - Treated Water, S-3 Reservoir Treated	5-Feb-2018	L1	L1
S-4 Lot No. 30 - 1108 Fitzgerald Road, S-4 Arbutus Mountain Estates	22-Jan-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	16-Jan-2018	L1	L1



S-3 Reservoir - Treated Water, S-3 Reservoir Treated	8-Jan-2018	L1	L1
S-5 1056 Skylar Circle, S-5 1056 Skylar Circle	2-Jan-2018	L1	L1

Laboratory Report

ALS Environmental

Report For: Cowichan Valley Regional District
Received: 09/05/2018 15:25
Report ID: L2146066
Report Name: ALS Final Results Report

Sample ID: L2146066-1
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S1-Well #1 (1-1-SR, 27AB7)
Comment: S-1-WELL #1
Sampled: 08/13/2018 12:10

INORGANIC		Criteria & Type		Status
Aluminum (total)	< 0.010 mg/L	<=0.1	Operational - Conventional	Final
Ammonia (total, as N)	< 0.0050 mg/L			Final
Antimony (total)	< 0.00050 mg/L	<=0.006	MAC	Final
Arsenic (total)	0.00017 mg/L	<=0.01	MAC	Final
Barium (total)	< 0.010 mg/L	<=1	MAC	Final
Beryllium (total)	< 0.0050 mg/L			Final
Bismuth (total)	< 0.20 mg/L			Final
Boron (total)	< 0.10 mg/L	<=5	MAC	Final
Bromide	< 0.050 mg/L			Final
Cadmium (total)	< 0.00020 mg/L	<=0.005	MAC	Final
Calcium (total)	29.1 mg/L			Final
Chloride	3.55 mg/L	<=250	AO	Final
Chromium (total)	< 0.0020 mg/L	<=0.05	MAC	Final
Cobalt (total)	< 0.010 mg/L			Final
Copper (total)	< 0.0010 mg/L	<=1	AO	Final
Fluoride	0.032 mg/L	<=1.5	MAC	Final
* Iron (total)	3.05 mg/L	<=0.3	AO	Final
Lead (total)	< 0.00050 mg/L	<=0.005	MAC	Final
Lithium (total)	< 0.010 mg/L			Final
Magnesium (total)	5.00 mg/L			Final
Manganese (total)	0.0032 mg/L	<=0.12	MAC	Final
Mercury (total)	< 0.00020 mg/L	<=0.001	MAC	Final
Molybdenum (total)	< 0.030 mg/L			Final
Nickel (total)	< 0.050 mg/L			Final
Nitrate (as N)	0.103 mg/L	<=10	MAC	Final
Nitrate + Nitrite (as N)	0.103 mg/L	<=10	User-Defined	Final
Nitrite (as N)	< 0.0010 mg/L	<=1	MAC	Final
Phosphorus (total)	< 0.30 mg/L			Final
Potassium (total)	0.25 mg/L			Final
Selenium (total)	< 0.0010 mg/L	<=0.05	MAC	Final
Silicon (total, as Si)	5.70 mg/L			Final
Silver (total)	< 0.010 mg/L			Final

Laboratory Report

ALS Environmental

Report Name: ALS Final Results Report

Sample ID: L2146066-1 (continued)
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S1-Well #1 (1-1-SR, 27AB7)
Comment: S-1-WELL #1
Sampled: 08/13/2018 12:10

INORGANIC

		Criteria & Type		Status
Sodium (total)	3.1 mg/L	<=200	AO	Final
Strontium (total)	0.0360 mg/L			Final
Sulphate	13.1 mg/L	<=500	AO	Final
Sulphide (total, as S)	< 0.018 mg/L			Final
Thallium (total)	< 0.20 mg/L			Final
Tin (total)	< 0.030 mg/L			Final
Titanium (total)	< 0.010 mg/L			Final
Vanadium (total)	< 0.030 mg/L			Final
Zinc (total)	0.0735 mg/L	<=5	AO	Final

MICROORGANISMS

		Criteria & Type		Status
Background Bacteria	< 1 CFU/100ml	<=200,OG	User-Defined	Final
Escherichia coli / E. coli (counts)	< 1 CFU/100ml	<=0,P	Microbiological Standard	Final
Fecal (thermal tolerant) Coliforms (counts)	< 1 CFU/100ml	<=0,OG	Microbiological Standard	Final
Heterotrophic Plate Count / HPC	4 CFU/ml	<=5	User-Defined	Final
Iron Bacteria (MPN / PA)	SC			Final
Sulfate Reducing Bacteria	SC			Final
Total Coliforms (counts)	< 1 CFU/100ml	<=0,OG	User-Defined	Final

ORGANIC

		Criteria & Type		Status
Tannins and Lignins	0.21 mg/L			Final
Total Kjeldahl Nitrogen / TKN	< 0.050 mg/L			Final
Total Organic Carbon / TOC	< 0.50 mg/L			Final

PHYSICAL

		Criteria & Type		Status
Alkalinity (bicarbonate, as CaCO3)	80.3 mg/L			Final
Alkalinity (carbonate, as CaCO3)	< 1.0 mg/L			Final
Alkalinity (hydroxide, as CaCO3)	< 1.0 mg/L			Final
Alkalinity (total, as CaCO3)	80.3 mg/L			Final
Colour	11.6 CU	<=15	AO	Final
Conductivity	191 uS/cm			Final
Hardness (total, as CaCO3)	93.2 mg/L			Final
Langelier Index	-0.13			Final
Langelier Index (@ 20 C)	11			Final
pH	7.99		Current Level	Final

Laboratory Report

ALS Environmental

Report Name: ALS Final Results Report

Sample ID: L2146066-1 (continued)
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S1-Well #1 (1-1-SR, 27AB7)
Comment: S-1-WELL #1
Sampled: 08/13/2018 12:10

PHYSICAL

pH 7.1
Temperature 11 degrees C
Total Dissolved Solids / TDS 128 mg/L
*** Turbidity 11.5 NTU**

Criteria & Type

Status

Current Level Final
AO Final
AO Final
User-Defined Final

RADIONUCLIDES

Uranium (total) 0.00014 mg/L

Criteria & Type

Status

MAC Final

Sample ID: L2146066-2
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S2-Well #3 (1-2-SR, 27AB8)
Comment: S-2-WELL #3
Sampled: 08/13/2018 12:10

INORGANIC

Aluminum (total) < 0.010 mg/L
Ammonia (total, as N) < 0.0050 mg/L
Antimony (total) < 0.00050 mg/L
Arsenic (total) 0.00011 mg/L
Barium (total) < 0.010 mg/L
Beryllium (total) < 0.0050 mg/L
Bismuth (total) < 0.20 mg/L
Boron (total) < 0.10 mg/L
Bromide < 0.050 mg/L
Cadmium (total) < 0.00020 mg/L
Calcium (total) 28.7 mg/L
Chloride 4.35 mg/L
Chromium (total) < 0.0020 mg/L
Cobalt (total) < 0.010 mg/L
Copper (total) < 0.0010 mg/L
Fluoride 0.033 mg/L
Iron (total) < 0.030 mg/L
Lead (total) < 0.00050 mg/L

Criteria & Type

Status

Operational - Conventional Final
MAC Final
MAC Final
MAC Final
MAC Final
MAC Final
MAC Final
MAC Final
MAC Final
AO Final
MAC Final
AO Final
MAC Final
AO Final
MAC Final

Laboratory Report

ALS Environmental

Report Name: ALS Final Results Report

Sample ID: L2146066-2 (continued)
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S2-Well #3 (1-2-SR, 27AB8)
Comment: S-2-WELL #3
Sampled: 08/13/2018 12:10

INORGANIC

		Criteria & Type		Status
Lithium (total)	< 0.010 mg/L			Final
Magnesium (total)	5.14 mg/L			Final
Manganese (total)	< 0.0020 mg/L	<=0.12	MAC	Final
Mercury (total)	< 0.00020 mg/L	<=0.001	MAC	Final
Molybdenum (total)	< 0.030 mg/L			Final
Nickel (total)	< 0.050 mg/L			Final
Nitrate (as N)	0.190 mg/L	<=10	MAC	Final
Nitrate + Nitrite (as N)	0.190 mg/L	<=10	User-Defined	Final
Nitrite (as N)	< 0.0010 mg/L	<=1	MAC	Final
Phosphorus (total)	< 0.30 mg/L			Final
Potassium (total)	0.27 mg/L			Final
Selenium (total)	< 0.0010 mg/L	<=0.05	MAC	Final
Silicon (total, as Si)	6.10 mg/L			Final
Silver (total)	< 0.010 mg/L			Final
Sodium (total)	3.2 mg/L	<=200	AO	Final
Strontium (total)	0.0392 mg/L			Final
Sulphate	16.2 mg/L	<=500	AO	Final
Sulphide (total, as S)	< 0.018 mg/L			Final
Thallium (total)	< 0.20 mg/L			Final
Tin (total)	< 0.030 mg/L			Final
Titanium (total)	< 0.010 mg/L			Final
Vanadium (total)	< 0.030 mg/L			Final
Zinc (total)	0.0204 mg/L	<=5	AO	Final

MICROORGANISMS

		Criteria & Type		Status
Background Bacteria	< 1 CFU/100ml	<=200,OG	User-Defined	Final
Escherichia coli / E. coli (counts)	< 1 CFU/100ml	<=0,P	Microbiological Standard	Final
Fecal (thermal tolerant) Coliforms (counts)	< 1 CFU/100ml	<=0,OG	Microbiological Standard	Final
Heterotrophic Plate Count / HPC	< 1 CFU/ml	<=5	User-Defined	Final
Iron Bacteria (MPN / PA)	SC			Final
Sulfate Reducing Bacteria	SC			Final
Total Coliforms (counts)	< 1 CFU/100ml	<=0,OG	User-Defined	Final

ORGANIC

		Criteria & Type		Status
Tannins and Lignins	0.23 mg/L			Final
Total Kjeldahl Nitrogen / TKN	0.053 mg/L			Final

Laboratory Report

ALS Environmental

Report Name: ALS Final Results Report

Sample ID: L2146066-2 (continued)
Water System: Arbutus Mountain Estates Water (AMEW)
Source: Wells
Facility: Wells
Sampling Pt: S2-Well #3 (1-2-SR, 27AB8)
Comment: S-2-WELL #3
Sampled: 08/13/2018 12:10

ORGANIC		Criteria & Type		Status
Total Organic Carbon / TOC	< 0.50 mg/L			Final
PHYSICAL		Criteria & Type		Status
Alkalinity (bicarbonate, as CaCO ₃)	76.3 mg/L			Final
Alkalinity (carbonate, as CaCO ₃)	< 1.0 mg/L			Final
Alkalinity (hydroxide, as CaCO ₃)	< 1.0 mg/L			Final
Alkalinity (total, as CaCO ₃)	76.3 mg/L			Final
* Colour	17.0 CU	<=15	AO	Final
Conductivity	193 uS/cm			Final
Hardness (total, as CaCO ₃)	92.7 mg/L			Final
Langelier Index	-0.16			Final
Langelier Index (@ 20 C)	10			Final
pH	8.01		Current Level	Final
pH	7		Current Level	Final
Temperature	10 degrees C	<=15	AO	Final
Total Dissolved Solids / TDS	129 mg/L	<=500	AO	Final
Turbidity	< 0.10 NTU	<=5	User-Defined	Final
RADIONUCLIDES		Criteria & Type		Status
Uranium (total)	0.00015 mg/L	<=0.02	MAC	Final

Result Legend

P=present, A=absent, PR=presumptive, ND=non-detect, OR=over-range, OG=overgrown, Y=yes, N=no,
TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment
< means less than lower detection limit shown

> means greater than upper detection limit shown

« means detected & less than number shown

» means detected & greater than number shown

* Indicates Criteria is exceeded