island health

DRINKING WATER SYSTEM ANNUAL REPORT

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

Water System Woodley Range 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? 61

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
			Results attached	below

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 Source and Distribution	
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)	Source and Distribution - April 2024	

Parameter	Result	Corrective Action / Treatment / Comments
		Results attached below
		Note: due to water quality issues and influence in Well 26, Well 49 is not online

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
January 17	Line Valve Damage	Repaired
June	Well Line Break	Repaired

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	System flushing, hydrant maintenance, servicing genset and chlorine 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
Well work	Ongoing

Click here to enter a date. February 12, 2024 **DATE COMPLETED:**	Tai Williams **COMPLETED BY:**

WOODLEY RANGE WATER SYSTEM

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
Woodley Site 2 5120 Aho Road	19-Dec-2023	LT1	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	19-Dec-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	11-Dec-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	05-Dec-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	05-Dec-2023	866.4	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	27-Nov-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	22-Nov-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	15-Nov-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	06-Nov-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	31- Oct-2023	410.6	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	24- Oct-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	17- Oct-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	10- Oct-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	03- Oct-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	03- Oct-2023	GR241	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	26-Sep-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	19-Sep-2023	LT1	LT1
Woodley Site 7 5005 Aho Road	19-Sep-2023	GR241	LT1
Woodley Site 1 4966 Aho Road	13-Sep-2023	LT1	LT1
Woodley Site 6 RAW Water Well 26	13-Sep-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	05-Sep-2023	LT1	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	29-Aug-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	21-Aug-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	15-Aug-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	09-Aug-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	31-Jul-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	31-Jul-2023	GR241	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	24-Jul-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	17-Jul-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	10-Jul-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	05-Jul-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	05-Jul-2023	686.7	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	26-Jun-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	19-Jun-2023	QRWRT	QRWRT
Woodley Site 1 4966 Aho Road	13-Jun-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	06-Jun-2023	QRWRT	QRWRT
Woodley Site 4 Lot 53 Henry Roethel Road	30-May-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	24-May-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	15-May-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	08-May-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	02-May-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	02-May-2023	> 2419.6	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	24-Apr-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	18-Apr-2023	LT1	LT1

WOODLEY RANGE WATER SYSTEM

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
Woodley Site 1 4966 Aho Road	11-Apr-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	04-Apr-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	04-Apr-2023	816.4	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	28-Mar-2023	QRWRT	QRWRT
Woodley Site 2 5120 Aho Road	20-Mar-2023	LT1	LT1
Woodley Site 6 RAW Water Well 26	20-Mar-2023	365.4	LT1
Woodley Site 8 RAW Water Well 49	20-Mar-2023	6.3	LT1
Woodley Site 1 4966 Aho Road	13-Mar-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	06-Mar-2023	GR241	LT1
Woodley Site 3 4828 Judiths Run	01-Mar-2023	LT1	LT1
Woodley Site 2 5120 Aho Road	14-Feb-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	06-Feb-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	30-Jan-2023	LT1	LT1
Woodley Site 5 RAW Water Well 67 Aho Road	30-Jan-2023	GR241	LT1
Woodley Site 4 Lot 53 Henry Roethel Road	23-Jan-2023	LT1	LT1
Woodley Site 1 4966 Aho Road	09-Jan-2023	LT1	LT1
Woodley Site 3 4828 Judiths Run	04-Jan-2023	LT1	LT1

WOODLEY RANGE WATER SYSTEM

Date	*TC/100 mL*	*E. Coli/100 mL*	*Reason*	*Corrective Action*
January 30	GR241	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
March 6	GR241	LT1	Raw Water (well)	Distribution levels (previous and following week) LT1 Total Coliform.
March 20	6.3	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
March 20	365.4	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
April 4	816.4	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
May 2	2419.6	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
July 5	686.7	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
July 31	GR241	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
September 19	GR241	LT1	-	Distribution levels (same-day, other location) LT1 Total Coliform.
October 3	GR241	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform
October 31	410.6	LT1	Raw Water (well)	Distribution levels (previous and following week) LT1 Total Coliform.
December 5	866.4	LT1	Raw Water (well)	Distribution levels (same-day) LT1 Total Coliform

WOODLEY RANGE WATER SYSTEM

SOURCE - Wells 26, 49 and 67

DISTRIBUTION - S2

			Sample ID	S2 4828 Judith Run (WTX 3252A)	Well 67 Henry Roethl Rd (WTX 32868)	Well 26 Magdalena Dr (WTX 32864)	Well 49 Aho Rd (WTX 32866)
			Sampling Date	03/20/23	03/20/23	03/20/23	03/20/23
			Sampling Time	09:20 AM	10:00 AM	10:10 AM	10:45 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***	***Result3***	***Result4***
Nitrite (N)	1		mg/L	<0.0050	<0.0050	<0.0050	<0.0050
Nitrate (N)	10		mg/L	<0.020	<0.020	<0.020	<0.020
Conductivity			uS/cm	510	370	540	360
pH			pH	8.09	8.32	8.17	7.54
Total Dissolved Solids		500	mg/L	310	220	330	220
Alkalinity (PP as CaCO3)			mg/L	<1.0	<1.0	<1.0	<1.0
Alkalinity (Total as CaCO3)			mg/L	190	140	210	160
Bicarbonate (HCO3)			mg/L	240	170	250	190
Carbonate (CO3)			mg/L	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)			mg/L	<1.0	<1.0	<1.0	<1.0
Chloride (Cl)		250	mg/L	11	30	5	5.3
Sulphate (SO4)		500	mg/L	51	3.8	61	22
True Colour		15	Col. Unit	<5.0	<5.0	<5.0	<5.0
Nitrate plus Nitrite (N)			mg/L	<0.020	<0.020	<0.020	<0.020
Langelier Index (@ 20C)			N/A	-0.082	0.216	0.239	-0.598
Langelier Index (@ 4C)			N/A	-0.402	-0.104	-0.081	-0.918
Saturation pH (@ 20C)			N/A	8.22	8.58	8.16	8.17
Saturation pH (@ 4C)			N/A	8.54	8.9	8.48	8.49
Dissolved Fluoride (F)	1.5		mg/L	0.34	1.5	0.28	0.27
Tannins and Lignins			mg/L	<0.2	<0.2	<0.2	0.3
Turbidity	see remark	see remark	NTU	0.51	5.6	0.58	140
Total Hardness (CaCO3)			mg/L	35.9	21.8	38.7	51.8
Total Aluminum (Al)	2900		ug/L	16.3	72.2	12.2	1200
Total Antimony (Sb)	6		ug/L	<0.50	<0.50	<0.50	<0.50
Total Arsenic (As)	10		ug/L	0.31	<0.10	0.31	1.18
Total Barium (Ba)	2000		ug/L	27.9	14.2	31.9	57.6

WOODLEY RANGE WATER SYSTEM

SOURCE - Wells 26, 49 and 67

DISTRIBUTION - S2

			Sample ID	S2 4828 Judith Run (WTX 3252A)	Well 67 Henry Roethl Rd (WTX 32868)	Well 26 Magdalena Dr (WTX 32864)	Well 49 Aho Rd (WTX 32866)
			Sampling Date	03/20/23	03/20/23	03/20/23	03/20/23
			Sampling Time	09:20 AM	10:00 AM	10:10 AM	10:45 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***	***Result3***	***Result4***
Total Beryllium (Be)			ug/L	<0.10	<0.10	<0.10	<0.10
Total Bismuth (Bi)			ug/L	<1.0	<1.0	<1.0	<1.0
Total Boron (B)	5000		ug/L	194	591	170	100
Total Cadmium (Cd)	7		ug/L	<0.010	<0.010	<0.010	0.024
Total Chromium (Cr)	50		ug/L	<1.0	<1.0	3.3	3
Total Cobalt (Co)			ug/L	<0.20	<0.20	<0.20	0.51
Total Copper (Cu)	2000	1000	ug/L	19.3	<0.20	<0.20	22.8
Total Iron (Fe)		300	ug/L	26.5	56.1	32.3	**6020**
Total Lead (Pb)	5		ug/L	0.26	<0.20	<0.20	**28.5**
Total Manganese (Mn)	120	20	ug/L	5.7	**36.6**	**40.1**	**186**
Total Molybdenum (Mo)			ug/L	<1.0	<1.0	3.9	<1.0
Total Nickel (Ni)			ug/L	<1.0	<1.0	13.5	2.3
Total Selenium (Se)	50		ug/L	<0.10	1.22	0.26	1.81
Total Silicon (Si)			ug/L	5510	6300	5480	8270
Total Silver (Ag)			ug/L	<0.020	<0.020	<0.020	<0.020
Total Strontium (Sr)	7000		ug/L	259	82.9	292	281
Total Thallium (Tl)			ug/L	<0.010	<0.010	<0.010	<0.010
Total Tin (Sn)			ug/L	<5.0	<5.0	<5.0	<5.0
Total Titanium (Ti)			ug/L	<5.0	<5.0	<5.0	49.2
Total Uranium (U)	20		ug/L	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)			ug/L	<5.0	<5.0	<5.0	<5.0
Total Zinc (Zn)		5000	ug/L	33.4	<5.0	<5.0	**6430**
Total Zirconium (Zr)			ug/L	<0.10	<0.10	<0.10	0.35
Total Calcium (Ca)			mg/L	13.5	7.74	14.6	18.3
Total Magnesium (Mg)			mg/L	0.548	0.6	0.538	1.51
Total Potassium (K)			mg/L	0.285	0.147	0.295	0.505

WOODLEY RANGE WATER SYSTEM

SOURCE - Wells 26, 49 and 67

DISTRIBUTION - S2

			Sample ID	S2 4828 Judith Run (WTX 3252A)	Well 67 Henry Roethl Rd (WTX 32868)	Well 26 Magdalena Dr (WTX 32864)	Well 49 Aho Rd (WTX 32866)
			Sampling Date	03/20/23	03/20/23	03/20/23	03/20/23
			Sampling Time	09:20 AM	10:00 AM	10:10 AM	10:45 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***	***Result3***	***Result4***
Total Sodium (Na)		200	mg/L	97.8	72.9	104	59.2
Total Sulphur (S)			mg/L	16.8	9.3	21.9	18.7
Total Mercury (Hg)	1		ug/L	<0.0019	<0.0019	<0.0019	<0.0019
Total Total Kjeldahl Nitrogen (Calc)			mg/L	0.083	0.108	0.125	0.884
Total Organic Carbon (C)			mg/L	0.85	0.7	0.72	1.9
Total Nitrogen (N)			mg/L	0.083	0.108	0.125	0.884
Total Ammonia (N)			mg/L	<0.015	0.063	0.08	0.32
Sulphide (as H2S)		0.05	mg/L	<0.0020	**3**	**0.31**	**1.7**
Total Sulphide		0.05	mg/L	<0.0018	**2.9**	**0.29**	**1.6**
Total Coliforms	0		CFU/100mL	0	**330**	**190**	**44**
E. coli	0		CFU/100mL	0	0	0	0
Heterotrophic Plate Count			CFU/mL	<1.0	39	4	220
Fecal Coliforms			CFU/100mL	0	<1	<1	<1
Non-Coliform (Background)			CFU/100mL	<1	60	2	25000
Iron Bacteria			CFU/mL	<25	<25	<25	25
Sulphate reducing bacteria			CFU/mL	<75	<75	<75	<75
Total Trihalomethanes	100		ug/L	30			
Bromodichloromethane			ug/L	9.1			
Bromoform			ug/L	<1.0			
Dibromochloromethane			ug/L	3.8			
Chloroform			ug/L	17			
Dalapon			ug/L	<5.0			
Monochloroacetic Acid			ug/L	<5.0			
Monobromoacetic Acid			ug/L	<5.0			
Dichloroacetic Acid			ug/L	7.1			
Trichloroacetic Acid			ug/L	5.7			

WOODLEY RANGE WATER SYSTEM

SOURCE - Wells 26, 49 and 67

DISTRIBUTION - S2

			Sample ID	S2 4828 Judith Run (WTX 3252A)	Well 67 Henry Roethl Rd (WTX 32868)	Well 26 Magdalena Dr (WTX 32864)	Well 49 Aho Rd (WTX 32866)
			Sampling Date	03/20/23	03/20/23	03/20/23	03/20/23
			Sampling Time	09:20 AM	10:00 AM	10:10 AM	10:45 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***	***Result3***	***Result4***
Bromochloroacetic Acid			ug/L	<5.0			
Dibromoacetic Acid			ug/L	<5.0			
Total Haloacetic Acids	80		ug/L	13			

WOODLEY RANGE WATER SYSTEM

			Sample ID	Well 67 Henry Roethl Rd (WTX 32868)	Well 26 Magdalena Dr (WTX 32864)	Well 49 Aho Rd (WTX 32866)	Corrective Action / Treatment / Comments
			Sampling Date	03/20/23	03/20/23	03/20/23	
			Sampling Time	10:00 AM	10:10 AM	10:45 AM	
Parameter Name	***MAC***	***AO***	***Units***	***Result2***	***Result3***	***Result4***	
Total Iron (Fe)		300	ug/L	56.1	32.3	**6020**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Total Lead (Pb)	5		ug/L	<0.20	<0.20	**28.5**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Total Manganese (Mn)	120	20	ug/L	**36.6**	**40.1**	**186**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Total Zinc (Zn)		5000	ug/L	<5.0	<5.0	**6430**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Sulphide (as H2S)		0.05	mg/L	**3**	**0.31**	**1.7**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Total Sulphide		0.05	mg/L	**2.9**	**0.29**	**1.6**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.
Total Coliforms	0		CFU/100mL	**330**	**190**	**44**	Raw water (source). Chemically clean wells and re-sample in Spring 2024. Distribution within limits.