

Greater Vernon Water (GVW) Water Quality Report for September 2024

The following is the water quality summary for the Greater Vernon Water (GVW) utility.

1. Potable Sources

GVW has two sources that are used for potable water. The two sources are Duteau Creek and Kalamalka Lake. Raw (untreated) water samples are taken at the intakes of Duteau Creek and Kalamalka Lake once per week. Tables 1 and 2 summarize the results for bacteria and turbidity.

Table 1 Duteau Creek Intake

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
E.coli²	Caro	MPN/100 mL	4	-----	3	17	8
E.coli²	RDNO Lab	MPN/100 mL	8	-----	10.0	16.1	12.8
Total Coliform	Caro	MPN/100 mL	4	-----	2420	2430	2423.3 ⁴
Total Coliform	RDNO Lab	MPN/100 mL	8	-----	1860.0	2909.0	2305.9 ⁴
Turbidity	GVW WQ Tech	NTU	4	-----	1.24	1.68	1.47
Turbidity	SCADA ¹ Daily Average ³	NTU	30 Days	-----	1.16	1.47	1.29

¹SCADA: Supervisory Control and Data Acquisition.

²Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia (Sec 4.3): The number of E. coli in raw water samples should not exceed 20/100 mL in at least 90% of the weekly samples from the previous six months.

³SCADA data for this online analyzer is a 24 hour average taken every 10 minutes

⁴One >2420 was reported from the CARO lab and one >2419.6 was reported from the RDNO Lab. Values of 2420 and 2419.6 were used for the average calculation

Table 2 Kalamalka Lake Intake

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
E.coli ³	Caro	MPN/100 mL	4	-----	1	16	6
E.coli ³	RDNO Lab	MPN/100 mL	8	-----	1.0	13.5	6.1
Total Coliform	Caro	MPN/100 mL	4	-----	10	56	30
Total Coliform	RDNO Lab	MPN/100 mL	8	-----	6.3	63.1	26.6
Turbidity ²	GVW WQ Tech	NTU	4	-----	1.05	2.35	1.72
Turbidity ²	SCADA ¹ Average ⁴	NTU	30 Days	-----	0.93	2.12	1.57

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan, turbidity <3 NTU.

³Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia (Sec 4.3): The number of E. coli in raw water samples should not exceed 20/100 mL in at least 90% of the weekly samples from the previous six months.

⁴SCADA data for this online analyzer is a 24 hour average with readings taken every 15 seconds.

2. Agriculture/ Irrigation Sources

The sources used for irrigation supply include Duteau Creek, King Edward/Deer Creek, Goose Lake, Coldstream Ranch Well #2 and Well #3. Table 3 summarizes the daily flows for each irrigation system.

The majority of the Duteau Creek water (approx. 85%) is treated. The other sources are separated from the potable system and are not chlorinated.

The irrigation season is from April 15 to September 15. Irrigation water used during the off season is used mainly for livestock watering. This water comes from Ranch Well #2, Ranch Well #3, King Edward and Duteau Creek.

Table 3 Irrigation Volumes for Irrigation Sources over the Month

Irrigation Sources	DCWTP	Well 3	Well 2	King Edward
Min (ML/Day)	0.00	0.00	0.00	0.00
Max (ML/Day)	7.59	3.16	1.01	4.63
Average (ML/Day)	1.44	0.57	0.12	2.33
Monthly Total (ML)	44.68	17.56	3.86	72.16

3. Treatment Plants

GVW has two treatment plants: Duteau Creek Water Treatment Plant (DCWTP) and Mission Hill Water Treatment Plant (MHWTP). At the DCWTP, water is treated with a coagulant and mixed to create a floc before clarification is achieved by Dissolved Air Flotation (DAF). Chlorine is added after clarification to ensure contact time for the removal of viruses, followed by Ultra-violet (UV) disinfection. Finally, an additional dose chlorine is added before entering the distribution system to maintain a set point for the residual chlorine value. MHWTP uses a dual disinfection process of UV and chlorine.

Tables 4 and 6 summarize results for chlorine, bacteria, turbidity, and UV Transmittance (UVT). Table 5 summarizes the log removal of viruses at the DCWTP.

Table 4 Duteau Creek Water Treatment Plant Reservoir

Parameter	Laboratory	Units	# of Samples	# of Deviations	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	30 Days	-----	1.83	2.04	1.91
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	30 Days	-----	0.23	0.32	0.27
Pre UVT ³	SCADA ¹ Daily Average	%	30 Days	-----	82.65	86.73	85.29

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan, free chlorine >1.0 mg/L, turbidity <1.0 NTU.

³UVT is monitored pre-UV treatment which is used to determine UV dosage.

This month, 0 m³ of off-spec water occurred at DCWTP.

Table 5 DCWTP – Log Removal of Viruses

Log Removal of Viruses ¹	
Days Monitored	30 Days
Days 4-Log Removal Achieved	30 Days

¹4-log virus removal logged by the minute on SCADA.

Table 6 Mission Hill Water Treatment Plant

Parameter	Laboratory	Units	# of Samples	# of Deviations	Min	Max	Average
Free Chlorine	SCADA ¹ Daily Average	mg/L	30 Days	-----	0.93	2.12	1.57
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	6	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	6	-----	<1	<1	<1
Turbidity²	SCADA ¹ Daily Average	NTU	30 Days	-----	0.96	2.27	1.60
Pre UVT	SCADA ¹ Daily Average	%	30 Days	-----	90.58	92.34	91.96

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan, free chlorine >0.8 mg/L, turbidity <3.0 NTU.

This month, no off-spec water occurred at MHWTP.

4. Distribution

GVW has two distribution systems that interconnect: Duteau System typically supplied by Duteau Creek and Kalamalka System typically supplied by Kalamalka Lake. GVW has approximately 23,000 service connections.

Table 7 summarizes the daily flow for each distribution system. The Duteau and Kalamalka systems have many locations where they can be interconnected. This means there are areas where there is a blend of water quality and can be identified by the conductivity of the water.

Table 7 Volumes for GVW Distribution Systems over the Month

Volumes	DCWTP	MHWTP
Min (ML/Day)	8.40	14.83
Max (ML/Day)	61.20	25.61
Average (ML/Day)	30.32	20.29
Monthly Total (ML)	909.50	608.74

Tables 8 and 9 summarize results for chlorine, bacteria, and turbidity for each distribution system. These systems are monitored by handheld instruments weekly.

Table 8 Duteau Distribution

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
Free Chlorine¹	Operator Grab Samples	mg/L	55	8 ³	0.02	1.98	0.85
Total Chlorine	Operator Grab Samples	mg/L	55	4 ⁴	0.10	2.30	1.07
E.coli	Caro	CFU/100 mL	24	-----	<1	<1	<1
E.coli	RDNO lab	MPN/100 mL	36	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	24	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	36	-----	<1	<1	<1
Turbidity¹	Operator Grab Samples	NTU	55	3 ²	0.2	2.13	0.45

¹GVW WQ Deviation Response Plan: free chlorine >0.20 mg/L, turbidity <1 NTU.

²Three samples had turbidity >1 NTU but below the 5 NTU upper threshold outline in the RDNO Deviation Response Plan. All other parameters were within range.

^{3,4}Six of the eight free chlorine sites and all four total chlorine sites are part of the GVW flushing program. All samples with low CI were sampled for Total Coliform and E.Coli and had acceptable results.

Table 9 Kalamalka Distribution

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
Free Chlorine¹	Operator Grab Samples	mg/L	63	-----	0.40	1.93	1.29
Total Chlorine	Operator Grab Samples	mg/L	63	-----	0.62	2.20	1.57
E.coli	Caro	CFU/100 mL	41	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	29	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 ml	41	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	29	-----	<1	<1	<1
Turbidity¹	Operator Grab Samples	NTU	63	-----	0.54	2.63	1.49

¹Operation Guidelines: free chlorine >0.20 mg/L, turbidity <3 NTU.

The GVW distribution system contains six sampling sites (Table 10) that frequently have free chlorine <0.2 mg/L due to the sample sites being located at the end of the distribution line. Measures are currently in place to mitigate this issue including regular monitoring and flushing. The three sites at Boss Creek represent a localized area.

Table 10 Low Chlorine Sites and Mitigation Measures

Frequent Low Free Chlorine Sites	Mitigation Measures
O’Keefe Ranch SS	On a localized Water Quality Advisory
9007 Aberdeen Rd SS	Regular monitoring and flushing
Noble Canyon B/O	Regular monitoring and flushing
Boss Creek PH 1 (Lower) Return/Inlet	Regular monitoring
Boss Creek PH 2 (Upper) Discharge/Outlet	Regular monitoring
Boss Creek PH 2 (Upper) return/inlet	Regular monitoring

5. Water Quality and Customer Calls and Notifications

Water Quality Customer calls within the GVW Service area are tracked and recorded. There was a total of 6 customer calls this month.

Table 11 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
1	Issue	Pink slime on pipes and foul smell in drains	No	Explained to customer that pink rings are typically airborne bacteria and not in the water. Explained that smells coming from sink is typically from grime in the p-trap when it is rehydrated. Advised customer to call back if problems persist.
1	Issue	One house in strata seeing sediment in their water and black, slimy material on their tap	No	No other homes in the community seeing similar issues. Suggested complex and home be flushed by running a couple of taps.
1	Issue	Water smelled fishy. Problems on and off all summer.	Yes	RDNO employee sampled home. Low chlorine and high turbidity was noted. Customer was the last house in the pressure zone creating a dead end. Hydrant outside customer house was flushed and they were placed on a flushing program.

1	Information	Water in the toilet was clear but water in sink was yellow	No	Customer was asked if they had filtration at the residence. Suggest that they speak to strata.
1	Information	Questions about water hardness	No	Gave customer information on GVW water hardness and explained our system and treatment process. Directed customer to the RDNO website for more information.
1	Issue	Sediment clogging customer water filter within a couple of months. Plumber stated filter should last one year.	No	Customer was informed that GVW does not have filtration at the treatment plants and turbidity ranged from 0.35 NTU to 1.66 NTU with an average of 0.80 NTU over the past eight months. Suggested filter performance is dependent on the source water.

6. Operational or Maintenance Activity

Operational activity within the GVW service area are tracked and recorded using an online database. There were a total of 30 operational activities this month outlined in Table 12.

Table 12 Monthly operational work and maintenance for the City of Vernon

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Hydrant Maintenance – Corrective
0	New Hydrant Install
3	Water Service GIS Locate
5	Water Main Break Repair
3	Property Damage Repair
1	Water Valve Maintenance
5	Water Valve Repair
1	Water Service Install
12	Water Service Repair
0	Reservoirs Cleaned
0	New Hydrant Sticker Install

7. Localized WQA's and Other Activity

Water quality events are tracked and recorded below. There were a total of 1 Water Quality Advisories and 2 Boil Water Notices outlined below.

On September 6, 2024, the WQA that was issued August 30 to customers supplied by GVW in the areas of Coldstream Creek Rd west of McClounie Rd, Hillside Rd, Priest Valley Dr, Summit Dr, Wyatt Way, Palfrey Dr W, Palfrey Dr E, Upper Summit Dr, Lochhaven Dr, Marwood Pl, Cunliffe Rd and Kidston Rd was rescinded.

On August 9, 2024, the BWN that was issued for Fairweather Pl on August 30, 2024 was rescinded.

On September 12, 2024, the BWN that was issued on August 30 to some customers in the areas of 32 Ave between Alexis Park Dr and Bella Vista Rd and 38 St between 32 Ave and 30 Ave was rescinded.

On September 13, 2024, a BWN was issued to customers in the area of 38 St between 20 Ave and 32 Ave as well as 2709 30 Ave due to a rupture in the water main.

On September 16, 2024, a WQA was issued for Canary Place due to a main break. This WQA was rescinded on September 18, 2024.

On September 24, 2024, the BWN issued September 13 to customers along 32 Ave between Alexis Park Dr and Bella Vista Rd and 38 St between 32 Ave and 30 Ave was downgraded to a WQA to accommodate water work in the area on September 25, 2024. This WQA was in effect until October 1, 2024.