



TOWN OF LAKE COWICHAN WATER TREATMENT PLANT



August 2021 Operations Performance Repo



Timeline

Monday, August 2 – Reduce chlorine dosage from 1.55 to 1.45 mg/L.

Tuesday, August 3 – Monthly sampling for aluminum, nitrogen, phosphorus, and microscytin.

Tuesday, August 10 – Soda Ash Mixer Motor #1 fails to start. Opened both mixing tank discharge valves to make common for Soda Ash system #2 to use.

Tuesday, August 17 – Realigned level sensor for reservoir. Had slipped to an angle and was delivering inconsistent readings. Additional sampling for aluminum, nitrogen, phosphorus, and microscytin.

Tuesday, August 21 – New Soda Ash Mixer Motor #1 installed and System #1 returned into service.

Thursday, August 23 – Barrels cleaned, labels removed and palletized for return.

Performance Standards

The Operating Permit for the Town of Lake Cowichan Water System dated October 21, 2020 stipulates the following performance requirements:

PARAMETER		GUIDELINE
Turbidity		≤ 0.3 NTU in ≥ 95% of samples
		Never to exceed 1 NTU
<i>Giardia and Cryptosporidium</i>		2.5-Log (99.7%) removal coagulation, flocculation and filtration
		1-Log (90%) inactivation via UV
Viruses		1-Log (90%) removal coagulation, flocculation and filtration
		3-Log (99.9%) inactivation via UV
Free Available Chlorine		Sufficient for CT _{CALC} and not to exceed 4.0 mg/L
Trihalomethane (THM)		≤ 0.100 mg/L
Haloacetic Acid (HAA)		≤ 0.080 mg/L
Total Aluminum		≤ 0.1 mg/L
pH		Be between 7.0 and 10.5
Microcystin-LR		≤ 1.5 µg/L
Perfect (plug flow)	1.0	Very high length-to-width ratio (pipeline flow), perforated inlet, outlet, and intra-basin baffles



UV Dose Log Inactivation Credits

Table 1 - UV Dose Log Inactivation Values for *Cryptosporidium*, *Giardia*, and Viruses

Log Inactivation	UV dose (mJ/cm ²)		
	<i>Cryptosporidium</i>	<i>Giardia</i>	Viruses*
0.5	1.6	1.5	39
1.0	2.5	2.1	58
1.5	3.9	3.0	79
2.0	5.8	5.2	100
2.5	8.5	7.7	121
3.0	12	11	143
3.5	15	15	163
4.0	22	22	186

* Based on adenovirus inactivation.

Water Quality Results

Monthly Testing Results

	Raw Al (mg/L)	Treated Al (mg/L)	TN (mg/L)	TP (µg/L)	Microcystin (µg/L)	THM (µg/L)	HAA (µg/L)
OG/MAC		0.10				100	80.0
Oct 27, 2020	-	0.049	0.047	4.70	0.06	20.4	10.71
Nov 24, 2020	-	0.157	-	-	-	-	-
Dec 08, 2020	-	0.264	0.380	2.47	-	-	-
Jan 05, 2021	0.190	0.196	0.175	3.70	0.00	27.3	10.9
Jan 19, 2021	0.104	0.129	-	-	-	-	-
Feb 16, 2021	0.095	0.136	0.111	4.50	0.00	-	-
Mar 02, 2021	0.136	0.242	0.069	23.50	0.00	29.6	2.29
Mar 16, 2021	0.129	0.171	-	-	-	-	-
Mar 31, 2021	0.125	0.352	-	-	-	-	-
Apr 13, 2021	0.130	0.255	0.011	8.00	0.00	<0.100	<0.100
May 11, 2021	0.119	0.171	0.034	-	-	-	-
Jun 8, 2021	0.074	0.150	0.030	6.00	ND	ND	ND
Jul 6, 2021	0.074	0.065	ND	12.6	-	-	-
Aug 3, 2021	0.087	0.181	0.028	11.2	ND	-	-
Aug 17, 2021	0.096	0.239	0.017	9.40	ND	-	-

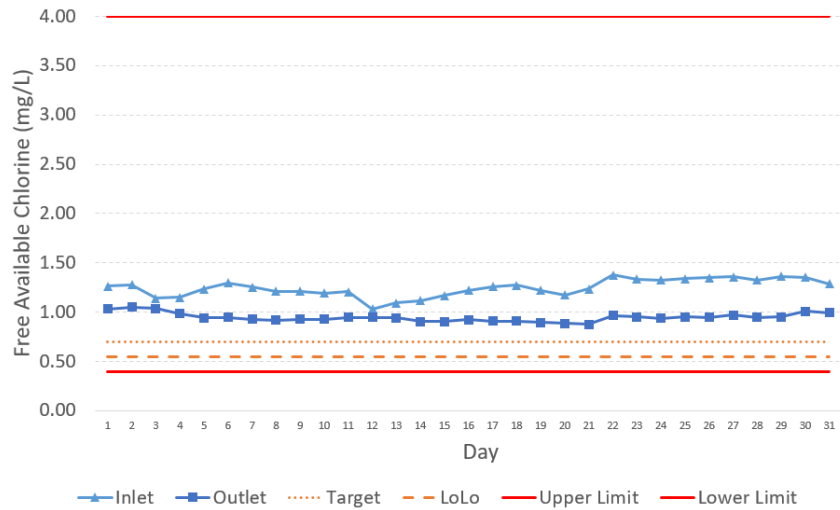
ND – Not detected



Individual Parameter Charts

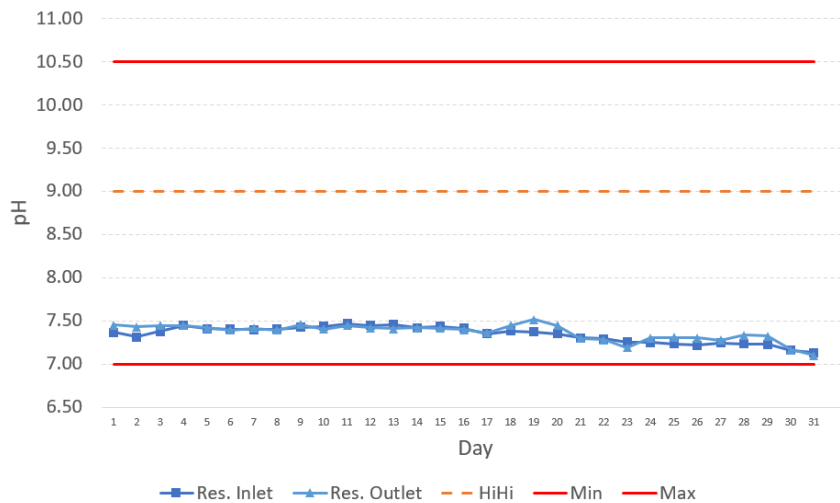
Free Available Chlorine (Aug 2021)

Source: SCADA Daily Averages



Reservoir pH (Aug 2021)

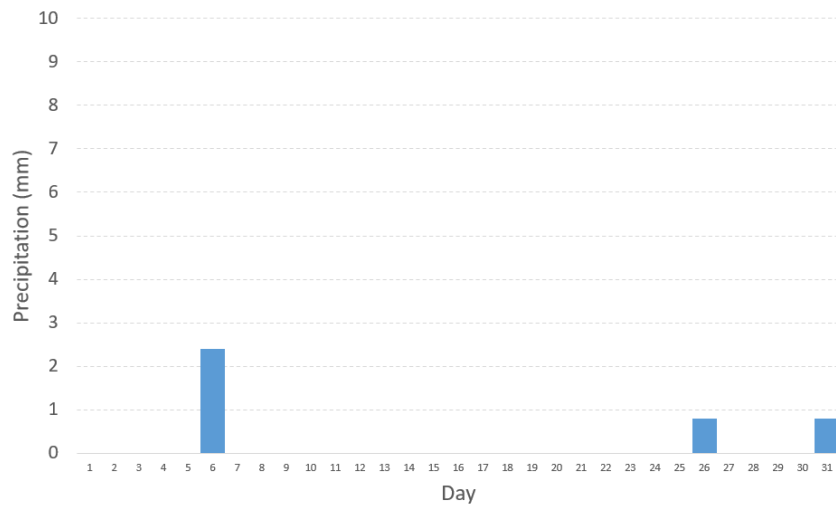
Source: SCADA Daily Averages





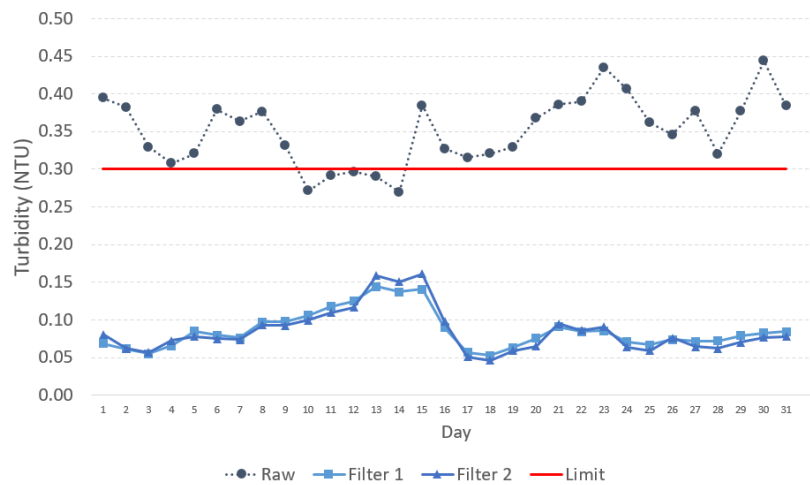
Total Precipitation (Aug 2021)

Source: Environment Canada - North Cowichan Station



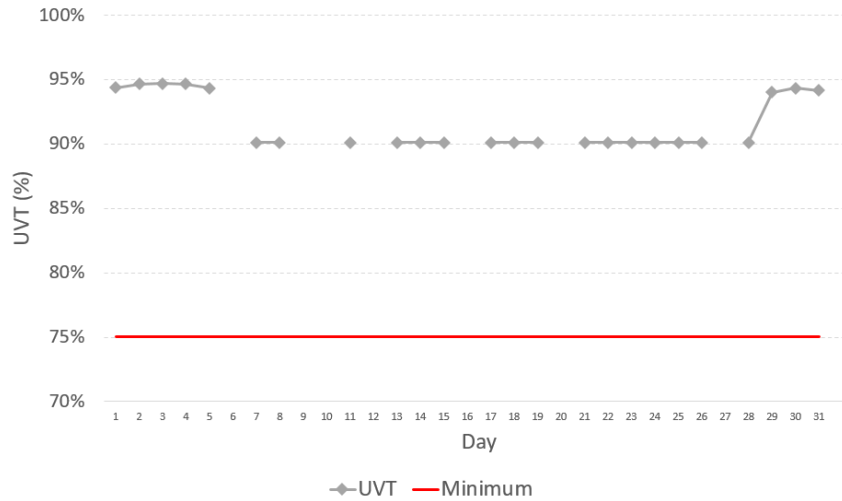
Turbidity (Aug 2021)

Source: SCADA Daily Averages





UV Transmittance (Aug 2021) Source: Manual and SCADA Averages



Note: Manually recorded UVT values from July 7 to July 28.

UV Dosage (Aug 2021) Source: SCADA Daily Averages

