



TOWN OF LAKE COWICHAN WATER TREATMENT PLANT



November 2020 Operations Performance Report



Permit to Operate

Operated water treatment plant under Operate Permit dated September 21, 2020.

Certified Operators

The Vancouver Island Health Authority Operational Permit requires that the Town of Cowichan have a certified operator to match or exceed the Water Treatment Plant Certification, which is a level III plant. The Town of Cowichan has three certified operators on staff which agreements in place to call upon additional resources as required.

Operator	Title	Staff/Contractor	Certification
Mike Hewitt	Chief Water Operator	Staff (Public Works)	WT4, WD2
David Campbell	Water Operator	Staff (Public Works)	WT2, WD2, WWT1, WWC2
Terry McMahan	Water Operator	Staff (Public Works)	WT1, WD1
Scott Jameson	Professional Operator	Contractor (C2EP)	WT4
Joe Woolls	Professional Operator	Contractor (IFC Water)	WT1, WD3

Notable Events

Monday, November 2 – HMI program updated to include pH on Overview screen. Completed low end of coagulant dosing for the zeta testing process.

Tuesday, November 3 – Paul McRae (Tritech) uploaded new HMI program (soda ash LEAD/LAG configuration, polymer capacity factor for intermittent dosing, added screen titles, color-coded chemical lines to tanks, rescaled vertical axis for pH trending, corrected inlet gate for filter #2).

Thursday, November 4 – Filters in extended filter-to-waste mode; coagulant tank level at 576 kg. Second occurrence later during month in similar circumstances requires procedure to refill coagulant tank at 600 kg due to pumps potentially air-locking/insufficient discharge pressure.

Tuesday, November 10 – Tightened pressure gauges above air dampeners. Appears to have eliminated the slow pressure loss requiring frequent manual pressurizing using hand pump.

Thursday, November 19 – Electrician onsite to look at air blower EF4_C (near soda ash system) and the burned-out fluorescent light fixture above the filter deck.

Friday, November 20 – COVID-19 protocols established at water plant. Binder of procedures and forms placed at entrance in electrical room.

Tuesday, November 24 – Monthly water sampling completed.



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Thursday, November 26 – Backflow preventor inspector onsite for annual certifications.

Friday, November 27 – Fire extinguisher technician onsite for annual inspection; calibrated and replaced desiccant in TU5300 low-range turbidity meters for filter effluent.

Monday, November 30 – Coagulant pumps giving low pressure warning alarms. Weight of coagulant in tank was 547.2 kg. Transferred product to day tank, primed both pumps through the calibration tube. Will create a procedure that the day tank level is to be refilled when approaching 600 kg to prevent reoccurrence. See also Nov 4.

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</i> and <i>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

Chlorine Contact Time Calculations

Step 1: Calculate Theoretical Detention Time ($TDT = V / Q$)

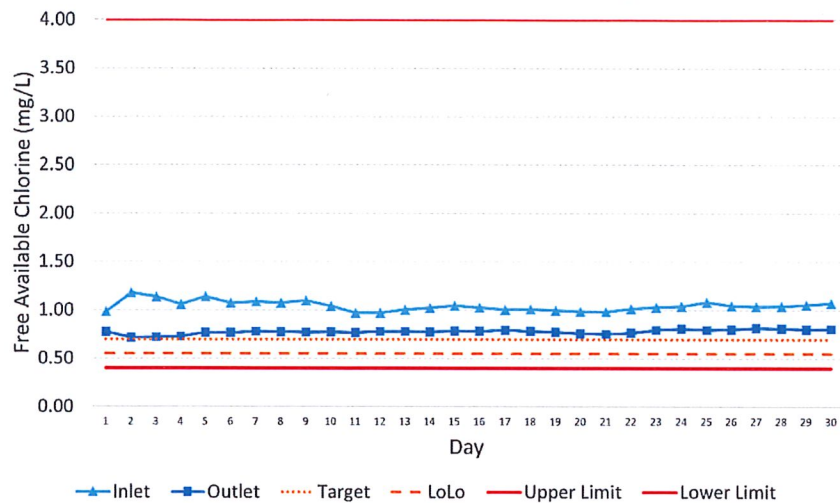
5,400 m³ and peak flow of 62 L/s for a total retention time of 24.2 hours



Individual Parameter Charts

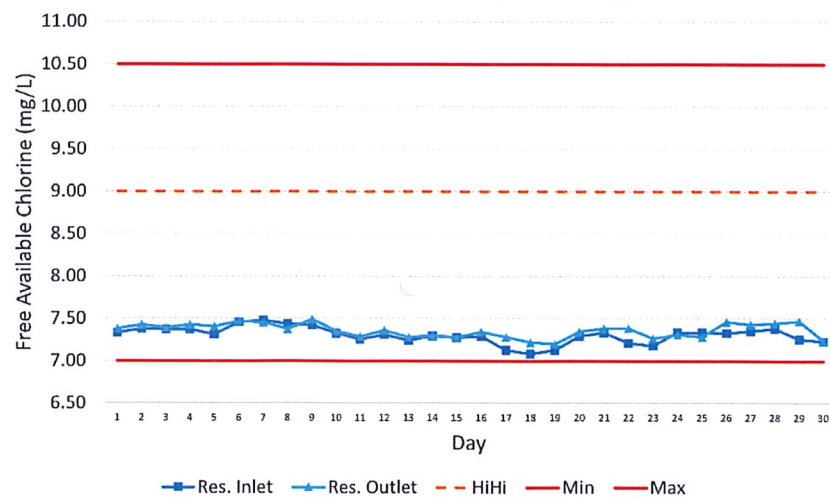
Free Available Chlorine (Nov 2020)

Source: SCADA Daily Averages



Reservoir pH (Nov 2020)

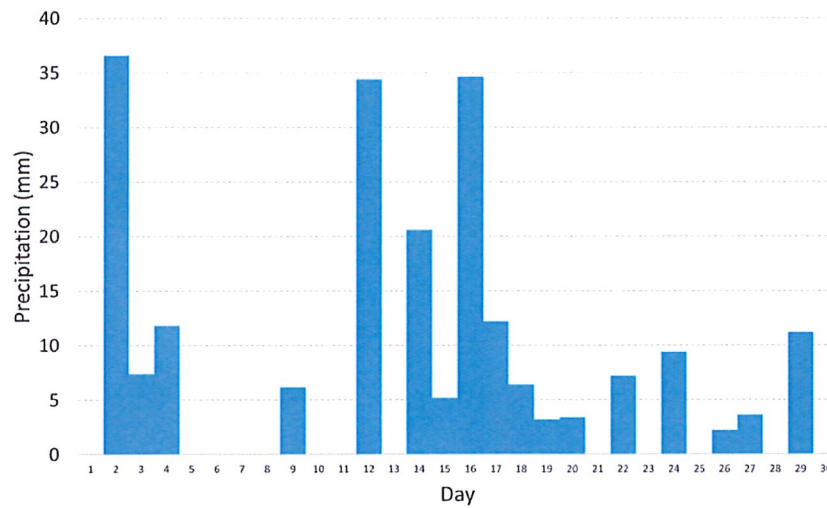
Source: SCADA Daily Averages





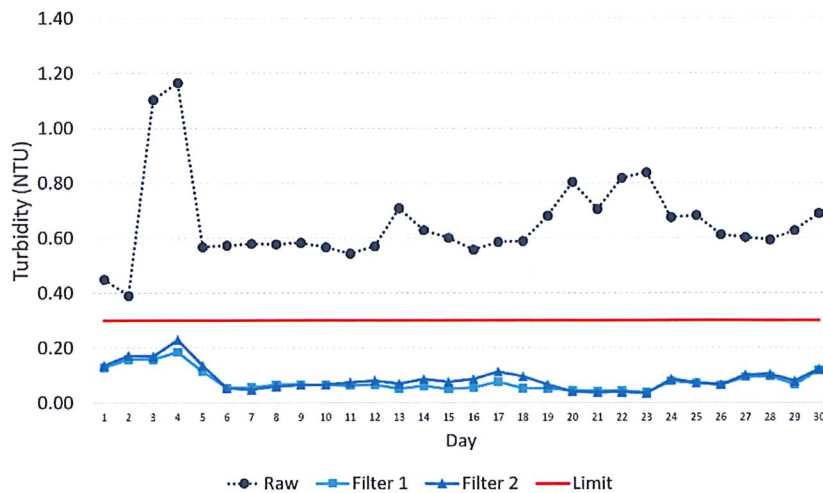
Total Precipitation (Nov 2020)

Source: Environment Canada - North Cowichan Station



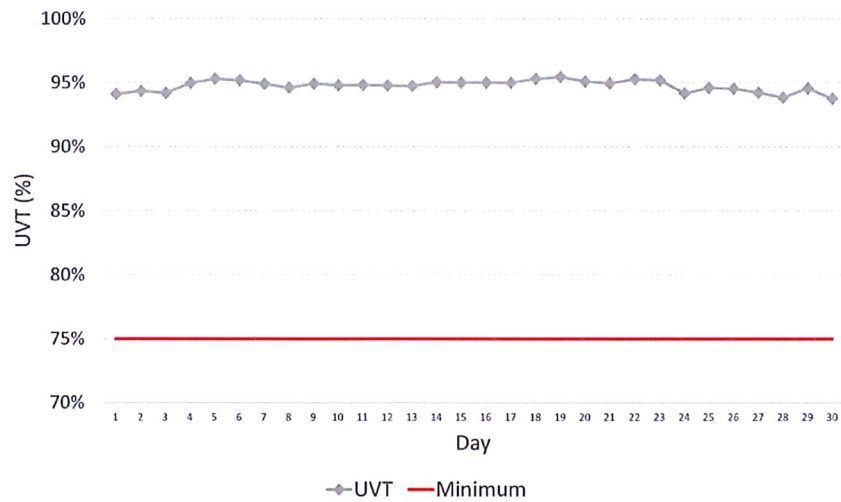
Turbidity (Nov 2020)

Source: SCADA Daily Averages





UV Transmittance (Nov 2020) Source: SCADA Daily Averages



UV Dosage (Nov 2020) Source: SCADA Daily Averages

