

# MEMORANDUM

October 12, 2020

TO: Historical Memo

FM: Pete Carter / Matt Macdonald

RE: Vashon Wastewater Treatment Plant – September 2020

The Vashon Plant performed well in September 2020. Effluent Biochemical Oxygen Demand (BOD<sub>5</sub>) averaged 3.7-mg/l and Total Suspended Solids (TSS) averaged 3.5-mg/l. BOD<sub>5</sub> and TSS removals were 99.1% and 98.9% respectively. All required analytical testing was completed.

Influent flow averaged 0.099 million gallons per day (MGD). A total of 2.86-inches of precipitation fell in September as measured at the West Judd Creek rain gauge; the Seatac Airport rain gage measured 2.60-inches. Most of the monthly rainfall occurred between September 23 and 25 with a max-day precipitation of 1.18-inches on September 23. The max-day flow of 0.156-MGD occurred on September 23 with a peak hour flow of 0.274-MGD. Daily average effluent turbidity remained low (<5 NTU) during the high flows.

Flow was stored in the equalization basin on Sept. 16 to enable influent line cleaning. Sampling for the day was abandoned because the influent samples were not representative of the day. Equalized flows were pumped back to headworks and treated on September 16 and 17. In response, additional sampling was performed on September 18.

The oxidation ditch was operated at an average sludge retention time of 14-days. The MLSS concentration was in the range of 2,150 to 2,540 mg/L. The sludge volume index (SVI), which measures the MLSS's settling characteristics, averaged 74-mL/g. An estimated 5400 dry pounds of waste activated sludge were hauled to South Plant for further treatment in August.

One set of samples was collected this month (Sept. 14) for nutrient and alkalinity analysis. Total nitrogen (N) removal was 91%, with an effluent total inorganic-N level of 3.3-mg/L (0.1-mg/L NH<sub>3</sub>-N and 3.2-mg/L NO<sub>2</sub>+NO<sub>3</sub> as N). Effluent phosphorus (P) was 5.8-mg/L, resulting in a Total-P removal of 54%. A total of 170-lbs of soda ash was added to the ditch in September for pH adjustment. The lowest effluent pH of the month was pH 6.9.

One of the two clarifiers (#2) was in service the entire month of September; only one clarifier is needed during the dry season. The other is removed from service for maintenance and energy savings. The UV system operated with both stages in AUTO.

Vashon – September 2020  
Process Summary

Table 1. Summary of Monthly Flow & Rain

Monthly Total Flow Volume, MG	Monthly Average Flow, MGD	Minimum Daily Flow, MGD	Maximum Daily Flow, MGD	Total Rainfall, Inches
2.984	0.099	0.079	0.156	2.86

Table 2. Summary of Monthly Compliance/Exceptions

Biochemical Oxygen Demand 5-day			Total Suspended Solids			Fecal Coliform (no./100 mL)	
Permit mg/L	Actual mg/L	Rem %	Permit mg/L	Actual mg/L	Rem %	Permit	Actual
30	3.7	99.1	30	3.5	98.9	200	E1.0

Table 3. Summary of Weekly Compliance/Exceptions

	Biochemical Oxygen Demand (mg/L)		Total Suspended Solids (mg/L)		Fecal Coliforms (Organisms/100 mL)	
	Permit	Actual	Permit	Actual	Permit	Actual
Week 1	45	3.4	45	2.7	400	<1
Week 2	45	3.4	45	3.0	400	E0.8
Week 3	45	3.9	45	3.3	400	E0.8
Week 4	45	4.2	45	4.7	400	E1.0
Week 5	45	3.2	45	4.0	400	E2.6