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University of Waterloo WaterSTP Laboratory Seasonal Report

Spring 2020
Pacific Maritime

Table1- List of parameters measured for Water Treatability Study, method and instrument used for each measurement, and minimum reporting level and analysis precision.

Parameter	Method	Instrument	Minimum Reporting Level	Precision (±)
pH	B. Electrometric SM 4500-H^+ (1)	Fisherbrand, accumet AB250 pH/mV/Ion	-	0.1 pH
UV_{254}	Ultraviolet Absorption SM 5910B (2)	RealTech, UV254 P200B	0.005 cm^{-1}	0.001 cm^{-1}
DOC	High-Temperature Combustion SM 5310B (3)	Shimadzu, TOC-V CPH Total Organic Carbon Analyzer	0.1 mg/L	0.1 mg/L
Turbidity	Nephelometric Method SM 2130B (4)	HACH, 2100Q Portable Turbidimeter	0.05 NTU	0.01 NTU
Zeta Potential	Electrophoretic light scattering ISO 13099-2:2012 (5)	Malvern, Zetasizer ZEN2600WT	-	5 mV
DBPsFP	SM 5710 (6)	-	-	-
THMs	P&T/GC/MS method derived from USEPA SW-846, 5030B (7) and 8260C (8)	n/a*	0.37 ug/L	n/a*
HAAs	LLE/GC/MS method derived from USEPA 552.3 (9)	n/a*	5.3 ug/L	n/a*

* Samples were chlorinated by the WaterSTP group and are then sent to SGS for THMs and HAAs analysis.

Sample Identifier	pH	UV_{254} [cm^{-1}]	DOC [ppm]	Turbidity [NTU]	Zeta Potential [mV]	THMsFP [µg/L]	HAAsFP [µg/L]
12Nov19_PM-UBC-HMC_DCP.375	6.7	0.067	2.6	1.52	-15	160	202
12Nov19_PM-UBC-HMC_TUN.601	6.9	0.107	2.8	0.41	-8	243	370
12Nov19_PM-UBC-HMC_RTH.145	7.3	0.063	1.9	0.18	-11	176	201
12Nov19_PM-UBC-HMC_JDG.855	7.3	0.283	7.0	0.65	-15	615	1020
18FEB20_PM-UBC-HMC_DCP.517	6.5	0.108	3.1	1.70	-16	258	441
18FEB20_PM-UBC-HMC_TUN.863	6.4	0.084	2.2	0.36	-12	236	322
18FEB20_PM-UBC-HMC_RTH.123	6.7	0.047	4.3	0.19	-16	156	136
18FEB20_PM-UBC-HMC_JDG.007	6.8	0.108	5.7	0.38	-13	313	335

References:

(1) Standard Methods for the Examination of Water and Wastewater, 2017, pH VALUE, (4500-H+).

(2) Standard Methods for the Examination of Water and Wastewater, 2017, UV-Absorbing Organic Constituents, (5910B).

(3) Standard Methods for the Examination of Water and Wastewater, 2017, Total Organic Carbon, (5310B).

(4) Standard Methods for the Examination of Water and Wastewater, 2017, Turbidity, (2130B).

(5) International Organization for Standardization, 2012, Colloidal systems-Methods for zeta potential determination-Part 2: Optical methods, (ISO 13099-2:2012).

(6) Standard Methods for the Examination of Water and Wastewater, 2017, Formation of Trihalomethanes and Other Disinfection Byproducts, (5710).

(7) U.S. Environmental Protection Agency, 1996, Purge-and-Trap for Aqueous Samples, (SW-846 Test Method 5030B).

(8) U.S. Environmental Protection Agency, 2006, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, (Validated Test Method 8260C).

(9) U.S. Environmental Protection Agency, 2003, Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-Liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection, (552.3).