Your Project #: 8126WCR-FULL
Your C.O.C. #: WI018220

Attention: Kevan Brehart

KempLake Waterworks District
KempLake Waterworks District
P.O. Box 465 Sooke
Sooke, BC
Canada V9Z 1H4

Report Date: 2020/01/27
Report #: R2837778
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C003650
Received: 2020/01/20, 10:25

Sample Matrix: Drinking Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH	1	N/A	2020/01/21	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry	1	N/A	2020/01/24	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Colour (True) by Kone Lab	1	N/A	2020/01/22	BBY6SOP-00057	SM 23 2120 C m
Conductivity @25C	1	N/A	2020/01/21	BBY6SOP-00026	SM 23 2510 B m
Fluoride	1	N/A	2020/01/22	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	1	N/A	2020/01/23	BBY WI-00033	Auto Calc
Mercury (Total) by CV	1	2020/01/22	2020/01/22	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2020/01/23	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	N/A	2020/01/23	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrogen (Total)	1	N/A	2020/01/24	BBY6SOP-00016	SM 23 4500-N C m
Ammonia-N (Total) (1)	1	N/A	2020/01/23	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate + Nitrite (N)	1	N/A	2020/01/22	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA	1	N/A	2020/01/22	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2020/01/22	BBY WI-00033	Auto Calc
Nitrogen (Tot. Organic) Calculation	1	N/A	2020/01/24	BBY WI-00033	Auto Calc
pH @25°C (3)	1	N/A	2020/01/21	BBY6SOP-00026	SM 23 4500-H+ B m
Sat. pH and Langelier Index (@ 4.4C)	1	N/A	2020/01/23	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C)	1	N/A	2020/01/23	BBY WI-00033	Auto Calc
Total Dissolved Solids (Filt. Residue)	1	2020/01/22	2020/01/24	BBY6SOP-00033	SM 23 2540 C m
Carbon (Total Organic) (1, 4)	1	N/A	2020/01/24	AB SOP-00087	MMCW 119 1996 m
Turbidity	1	N/A	2020/01/21	BBY6SOP-00027	SM 23 2130 B m
UV absorbance @254nm-Unfiltered (1, 5)	1	N/A	2020/01/23	CAL SOP-00274	SM 23 5910B m
UV transmittance @254nm-Unfiltered (1)	1	N/A	2020/01/23		Auto-Calc

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All

Your Project #: 8126WCR-FULL
Your C.O.C. #: WI018220

Attention: Kevan Brehart

KempLake Waterworks District
KempLake Waterworks District
P.O. Box 465 Sooke
Sooke, BC
Canada V9Z 1H4

Report Date: 2020/01/27
Report #: R2837778
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C003650
Received: 2020/01/20, 10:25

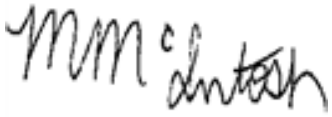
data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.
(4) TOC present in the sample should be considered as non-purgeable TOC.
(5) Sample(s) analyzed using methodologies that have been subjected to Bureau Veritas Laboratories' standard validation process for the submitted matrix however it is not an accredited method.

Encryption Key



Melissa McIntosh
Project Manager
28 Jan 2020 10:22:55

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bvlabs.com
Phone# (604) 734 7276

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VIHA PKG, SURFACE WATER - BURNABY (DRINKING WATER)

BV Labs ID					XG1566		
Sampling Date					2020/01/20 09:30		
COC Number					WI018220		
	UNITS	MAC	AO	OG	8126 WCR-FULL	RDL	QC Batch
Misc. Inorganics							
UV absorbance (254nm)	AU/cm	-	-	-	0.154	0.010	9742072
ANIONS							
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050	9740991
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	20.8	0.50	9738228
Nitrate (N)	mg/L	10	-	-	0.377	0.020	9738231
Total Organic Nitrogen (N)	mg/L	-	-	-	0.247	0.020	9738232
Transmittance at 254nm	%T/cm	-	-	-	70.2	N/A	9738236
Misc. Inorganics							
Conductivity	uS/cm	-	-	-	100	2.0	9739882
pH	pH	-	-	7.0:10.5	7.33	N/A	9739879
Total Organic Carbon (C)	mg/L	-	-	-	5.6	0.50	9741276
Total Dissolved Solids	mg/L	-	-	-	74	10	9740577
Anions							
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0	9739885
Alkalinity (Total as CaCO3)	mg/L	-	-	-	21	1.0	9739885
Bicarbonate (HCO3)	mg/L	-	-	-	25	1.0	9739885
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0	9739885
Dissolved Fluoride (F)	mg/L	1.5	-	-	<0.050	0.050	9740279
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0	9739885
Dissolved Chloride (Cl)	mg/L	-	250	-	16	1.0	9741907
Dissolved Sulphate (SO4)	mg/L	-	500	-	2.4	1.0	9741907
MISCELLANEOUS							
True Colour	Col. Unit	-	15	-	6.6	5.0	9740591
Nutrients							
Total Ammonia (N)	mg/L	-	-	-	0.025	0.015	9741187
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.377	0.020	9740989
Total Nitrogen (N)	mg/L	-	-	-	0.649	0.020	9742028
Physical Properties							
Turbidity	NTU	see remark	see remark	see remark	2.5	0.10	9739436
Elements							
Total Mercury (Hg)	ug/L	1	-	-	<0.0020	0.0020	9740297

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VIHA PKG, SURFACE WATER - BURNABY (DRINKING WATER)

BV Labs ID					XG1566		
Sampling Date					2020/01/20 09:30		
COC Number					WI018220		
	UNITS	MAC	AO	OG	8126 WCR-FULL	RDL	QC Batch
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	**168**	3.0	9740061
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50	9740061
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10	9740061
Total Barium (Ba)	ug/L	1000	-	-	1.9	1.0	9740061
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	9740061
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	9740061
Total Boron (B)	ug/L	5000	-	-	<50	50	9740061
Total Cadmium (Cd)	ug/L	5	-	-	<0.010	0.010	9740061
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0	9740061
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20	9740061
Total Copper (Cu)	ug/L	2000	1000	-	42.2	0.20	9740061
Total Iron (Fe)	ug/L	-	300	-	225	5.0	9740061
Total Lead (Pb)	ug/L	5	-	-	0.33	0.20	9740061
Total Manganese (Mn)	ug/L	120	20	-	**20.4**	1.0	9740061
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	9740061
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	9740061
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10	9740061
Total Silicon (Si)	ug/L	-	-	-	3740	100	9740061
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	9740061
Total Strontium (Sr)	ug/L	7000	-	-	14.6	1.0	9740061
Total Thallium (Tl)	ug/L	-	-	-	<0.010	0.010	9740061
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	9740061
Total Titanium (Ti)	ug/L	-	-	-	8.1	5.0	9740061
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10	9740061
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	9740061
Total Zinc (Zn)	ug/L	-	5000	-	9.2	5.0	9740061
Total Zirconium (Zr)	ug/L	-	-	-	0.18	0.10	9740061
Total Calcium (Ca)	mg/L	-	-	-	4.78	0.050	9738229
Total Magnesium (Mg)	mg/L	-	-	-	2.16	0.050	9738229
Total Potassium (K)	mg/L	-	-	-	0.425	0.050	9738229
Total Sodium (Na)	mg/L	-	200	-	11.0	0.050	9738229
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	9738229

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VIHA PKG, SURFACE WATER - BURNABY (DRINKING WATER)

BV Labs ID					XG1566		
Sampling Date					2020/01/20 09:30		
COC Number					WI018220		
	UNITS	MAC	AO	OG	8126 WCR-FULL	RDL	QC Batch
Calculated Parameters							
Langelier Index (@ 4.4C)	N/A	-	-	-	-2.56	N/A	9738235
Langelier Index (@ 60C)	N/A	-	-	-	-1.52	N/A	9738237
Saturation pH (@ 4.4C)	N/A	-	-	-	9.89	N/A	9738235
Saturation pH (@ 60C)	N/A	-	-	-	8.85	N/A	9738237

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table,June 2019.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.
Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C003650
Report Date: 2020/01/27

QUALITY ASSURANCE REPORT

KempLake Waterworks District
Client Project #: 8126WCR-FULL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9739436	Turbidity	2020/01/21			101	80 - 120	<0.10	NTU	11	20
9739879	pH	2020/01/21			102	97 - 103			0.71	N/A
9739882	Conductivity	2020/01/21			99	80 - 120	<2.0	uS/cm	5.5	10
9739885	Alkalinity (PP as CaCO3)	2020/01/21					<1.0	mg/L	NC	20
9739885	Alkalinity (Total as CaCO3)	2020/01/21	96	80 - 120	95	80 - 120	<1.0	mg/L	3.0	20
9739885	Bicarbonate (HCO3)	2020/01/21					<1.0	mg/L	3.0	20
9739885	Carbonate (CO3)	2020/01/21					<1.0	mg/L	NC	20
9739885	Hydroxide (OH)	2020/01/21					<1.0	mg/L	NC	20
9740061	Total Aluminum (Al)	2020/01/23	99	80 - 120	103	80 - 120	<3.0	ug/L		
9740061	Total Antimony (Sb)	2020/01/23	103	80 - 120	100	80 - 120	<0.50	ug/L		
9740061	Total Arsenic (As)	2020/01/23	105	80 - 120	100	80 - 120	<0.10	ug/L		
9740061	Total Barium (Ba)	2020/01/23	101	80 - 120	102	80 - 120	<1.0	ug/L		
9740061	Total Beryllium (Be)	2020/01/23	101	80 - 120	101	80 - 120	<0.10	ug/L		
9740061	Total Bismuth (Bi)	2020/01/23	96	80 - 120	104	80 - 120	<1.0	ug/L		
9740061	Total Boron (B)	2020/01/23	102	80 - 120	103	80 - 120	<50	ug/L		
9740061	Total Cadmium (Cd)	2020/01/23	100	80 - 120	100	80 - 120	<0.010	ug/L		
9740061	Total Chromium (Cr)	2020/01/23	95	80 - 120	102	80 - 120	<1.0	ug/L		
9740061	Total Cobalt (Co)	2020/01/23	92	80 - 120	99	80 - 120	<0.20	ug/L		
9740061	Total Copper (Cu)	2020/01/23	89	80 - 120	101	80 - 120	<0.20	ug/L		
9740061	Total Iron (Fe)	2020/01/23	98	80 - 120	107	80 - 120	<5.0	ug/L		
9740061	Total Lead (Pb)	2020/01/23	100	80 - 120	105	80 - 120	<0.20	ug/L	0.98	20
9740061	Total Manganese (Mn)	2020/01/23	96	80 - 120	103	80 - 120	<1.0	ug/L		
9740061	Total Molybdenum (Mo)	2020/01/23	104	80 - 120	104	80 - 120	<1.0	ug/L		
9740061	Total Nickel (Ni)	2020/01/23	94	80 - 120	102	80 - 120	<1.0	ug/L		
9740061	Total Selenium (Se)	2020/01/23	103	80 - 120	101	80 - 120	<0.10	ug/L		
9740061	Total Silicon (Si)	2020/01/23	NC	80 - 120	102	80 - 120	<100	ug/L		
9740061	Total Silver (Ag)	2020/01/23	96	80 - 120	101	80 - 120	<0.020	ug/L		
9740061	Total Strontium (Sr)	2020/01/23	103	80 - 120	102	80 - 120	<1.0	ug/L		
9740061	Total Thallium (Tl)	2020/01/23	99	80 - 120	103	80 - 120	<0.010	ug/L		
9740061	Total Tin (Sn)	2020/01/23	101	80 - 120	104	80 - 120	<5.0	ug/L		
9740061	Total Titanium (Ti)	2020/01/23	84	80 - 120	103	80 - 120	<5.0	ug/L		
9740061	Total Uranium (U)	2020/01/23	101	80 - 120	104	80 - 120	<0.10	ug/L		
9740061	Total Vanadium (V)	2020/01/23	98	80 - 120	102	80 - 120	<5.0	ug/L		

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9740061	Total Zinc (Zn)	2020/01/23	97	80 - 120	102	80 - 120	<5.0	ug/L		
9740061	Total Zirconium (Zr)	2020/01/23	103	80 - 120	101	80 - 120	<0.10	ug/L		
9740279	Dissolved Fluoride (F)	2020/01/22	96	80 - 120	98	80 - 120	<0.050	mg/L	NC	20
9740297	Total Mercury (Hg)	2020/01/22	91	80 - 120	90	80 - 120	<0.0020	ug/L	NC	20
9740577	Total Dissolved Solids	2020/01/24			99	80 - 120	<10	mg/L	2.1	20
9740591	True Colour	2020/01/22			104	80 - 120	<5.0	Col. Unit	NC	20
9740989	Nitrate plus Nitrite (N)	2020/01/22			108	80 - 120	<0.020	mg/L		
9740991	Nitrite (N)	2020/01/22			105	80 - 120	<0.0050	mg/L		
9741187	Total Ammonia (N)	2020/01/23	100	80 - 120	104	80 - 120	<0.015	mg/L	NC	20
9741276	Total Organic Carbon (C)	2020/01/24	110	80 - 120	112	80 - 120	<0.50	mg/L	NC	20
9741907	Dissolved Chloride (Cl)	2020/01/23	95	80 - 120	101	80 - 120	<1.0	mg/L	16	20
9741907	Dissolved Sulphate (SO4)	2020/01/23	92	80 - 120	101	80 - 120	<1.0	mg/L	11	20
9742028	Total Nitrogen (N)	2020/01/24			100	80 - 120	<0.020	mg/L		
9742072	UV absorbance (254nm)	2020/01/23			99	N/A	<0.010	AU/cm	0.52	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

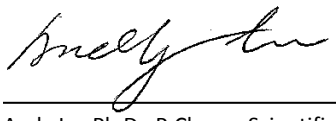
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

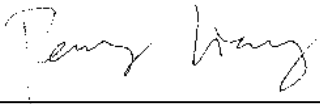
Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist



Harry (Peng) Liang, Senior Analyst

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386