

Your Project #: ANNUAL CHEMICAL
Your C.O.C. #: WI005739

Attention: Dan McGill

UNION BAY IMPROVEMENT DISTRICT
PO BOX 70
UNION BAY, BC
CANADA V0R 3B0

Report Date: 2016/11/15
Report #: R2300421
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B699533

Received: 2016/11/07, 14:00

Sample Matrix: DRINKING WATER
Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity - Water (1)	1	2016/11/09	2016/11/09	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry (1)	1	N/A	2016/11/09	BBY6SOP-00011	SM 22 4500-Cl- E m
Colour (True) by Kone Lab (1)	1	N/A	2016/11/08	BBY6SOP-00057	SM 22 2120 C m
Fluoride (1)	1	N/A	2016/11/09	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO ₃) (1)	1	N/A	2016/11/10	BBY WI-00033	Auto Calc
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	2016/11/07	2016/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total) (1)	1	2016/11/09	2016/11/10	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Nitrate + Nitrite (N) (1)	1	N/A	2016/11/08	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2016/11/08	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2016/11/10	BBY6SOP-00010	SM 22 4500-NO3 I m
pH Water (1, 2)	1	N/A	2016/11/09	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry (1)	1	N/A	2016/11/09	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids (Filt. Residue) (1)	1	2016/11/08	2016/11/10	BBY6SOP-00033	SM 22 2540 C m
Tannin & Lignin (Total) (1)	1	N/A	2016/11/09	BBY6SOP-00023	SM-5550B m
Turbidity (1)	1	N/A	2016/11/08	BBY6SOP-00027	SM 22 2130 B m
UV absorbance @254nm-Unfiltered (1)	1	N/A	2016/11/10	BBY6SOP-00055	SM 22 5910 B
UV transmittance @254nm-Unfiltered (1)	1	N/A	2016/11/10	BRN SOP-00246	SM-5910 B
VOCs, VH, F1, LH in Water by HS GC/MS (1)	1	2016/11/09	2016/11/10	BBY8SOP-00009	EPA 8260c R3 m

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 Maxxam Vancouver

(2) The BC-MOE and APHA Standard Method require 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 BC-MOE/APHA Standard Method holding time.

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Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
BC Env Customer Service, BC Environmental Customer Service
Email: Enviro.CS.BC@maxxam.ca
Phone# (250) 338 7786

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This report has been generated and distributed using a secure automated process.

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Maxxam Job #: B699533
Report Date: 2016/11/15

UNION BAY IMPROVEMENT DISTRICT
Client Project #: ANNUAL CHEMICAL

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Maxxam ID					PZ1360		
Sampling Date					2016/11/07 13:00		
COC Number					WI005739		
	UNITS	MAC	AO	OG	MCLEOD RES-PUMPHOUSE	RDL	QC Batch
CONVENTIONALS							
Transmittance at 254nm	%T/cm	-	-	-	80.8	N/A	8463018
Misc. Inorganics							
UV absorbance (254nm)	AU/cm	-	-	-	0.093	0.010	8467114
ANIONS							
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050	8465273
Calculated Parameters							
Nitrate (N)	mg/L	10	-	-	0.086	0.020	8462644
Misc. Inorganics							
Fluoride (F)	mg/L	1.5	-	-	0.025	0.010	8466011
Alkalinity (Total as CaCO3)	mg/L	-	-	-	4.13	0.50	8465363
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<0.50	0.50	8465363
Bicarbonate (HCO3)	mg/L	-	-	-	5.04	0.50	8465363
Carbonate (CO3)	mg/L	-	-	-	<0.50	0.50	8465363
Hydroxide (OH)	mg/L	-	-	-	<0.50	0.50	8465363
Anions							
Dissolved Sulphate (SO4)	mg/L	-	500	-	2.75	0.50	8465919
Dissolved Chloride (Cl)	mg/L	-	250	-	5.3	0.50	8465917
MISCELLANEOUS							
True Colour	Col. Unit	-	15	-	17.8	5.0	8464093
Tannins and Lignins	mg/L	-	-	-	0.30	0.10	8465659
Nutrients							
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.086	0.020	8465271
Physical Properties							
pH	pH	-	6.5:8.5	-	6.47		8465355
Physical Properties							
Total Dissolved Solids	mg/L	-	500	-	16	10	8464455
Turbidity	NTU	see remark	see remark	see remark	1.70	0.10	8463849
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
N/A = Not Applicable							

Maxxam Job #: B699533
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CSR TOTAL METALS IN WATER (DRINKING WATER)

Maxxam ID					PZ1360		
Sampling Date					2016/11/07 13:00		
COC Number					WI005739		
	UNITS	MAC	AO	OG	MCLEOD RES-PUMPHOUSE	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	9.18	0.50	8462641
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	154	3.0	8465553
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50	8465553
Total Arsenic (As)	ug/L	10	-	-	0.12	0.10	8465553
Total Barium (Ba)	ug/L	1000	-	-	6.4	1.0	8465553
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8465553
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8465553
Total Boron (B)	ug/L	5000	-	-	<50	50	8465553
Total Cadmium (Cd)	ug/L	5	-	-	<0.010	0.010	8465553
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0	8465553
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8465553
Total Copper (Cu)	ug/L	-	1000	-	33.7	0.50	8465553
Total Iron (Fe)	ug/L	-	300	-	169	10	8465553
Total Lead (Pb)	ug/L	10	-	-	0.44	0.20	8465553
Total Lithium (Li)	ug/L	-	-	-	<5.0	5.0	8465553
Total Manganese (Mn)	ug/L	-	50	-	4.8	1.0	8465553
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	8465553
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8465553
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10	8465553
Total Silicon (Si)	ug/L	-	-	-	2880	100	8465553
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8465553
Total Strontium (Sr)	ug/L	-	-	-	16.9	1.0	8465553
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8465553
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8465553
Total Titanium (Ti)	ug/L	-	-	-	8.4	5.0	8465553
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10	8465553
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8465553
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8465553
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8465553
Total Calcium (Ca)	mg/L	-	-	-	2.57	0.050	8462642
Total Magnesium (Mg)	mg/L	-	-	-	0.674	0.050	8462642
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							

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CSR TOTAL METALS IN WATER (DRINKING WATER)

Maxxam ID					PZ1360		
Sampling Date					2016/11/07 13:00		
COC Number					WI005739		
	UNITS	MAC	AO	OG	MCLEOD RES- PUMPHOUSE	RDL	QC Batch
Total Potassium (K)	mg/L	-	-	-	0.242	0.050	8462642
Total Sodium (Na)	mg/L	-	200	-	2.29	0.050	8462642
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	8462642
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							

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TRIHALOMETHANES (THM) IN WATER

Maxxam ID		PZ1360		
Sampling Date		2016/11/07 13:00		
COC Number		WI005739		
	UNITS	MCLEOD RES- PUMPHOUSE	RDL	QC Batch
Volatiles				
Chloroform	ug/L	62	1.0	8466061
Chlorodibromomethane	ug/L	<1.0	1.0	8466061
Bromodichloromethane	ug/L	2.3	1.0	8466061
Bromoform	ug/L	<1.0	1.0	8466061
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	99		8466061
4-Bromofluorobenzene (sur.)	%	89		8466061
D4-1,2-Dichloroethane (sur.)	%	93		8466061
RDL = Reportable Detection Limit				

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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, October 2014.

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.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8463849	CGP	Spiked Blank	Turbidity	2016/11/08		97	%	80 - 120
8463849	CGP	Method Blank	Turbidity	2016/11/08	<0.10		NTU	
8463849	CGP	RPD [PZ1360-01]	Turbidity	2016/11/08	2.4		%	20
8464093	IC4	Spiked Blank	True Colour	2016/11/08		104	%	80 - 120
8464093	IC4	Method Blank	True Colour	2016/11/08	<5.0		Col. Unit	
8464093	IC4	RPD	True Colour	2016/11/08	NC		%	20
8464455	CGP	Matrix Spike	Total Dissolved Solids	2016/11/10		NC	%	80 - 120
8464455	CGP	Spiked Blank	Total Dissolved Solids	2016/11/10		90	%	80 - 120
8464455	CGP	Method Blank	Total Dissolved Solids	2016/11/10	<10		mg/L	
8464455	CGP	RPD	Total Dissolved Solids	2016/11/10	4.2		%	20
8465271	IW1	Matrix Spike	Nitrate plus Nitrite (N)	2016/11/08		99	%	80 - 120
8465271	IW1	Spiked Blank	Nitrate plus Nitrite (N)	2016/11/08		105	%	80 - 120
8465271	IW1	Method Blank	Nitrate plus Nitrite (N)	2016/11/08	<0.020		mg/L	
8465271	IW1	RPD	Nitrate plus Nitrite (N)	2016/11/08	NC		%	25
8465273	IW1	Matrix Spike	Nitrite (N)	2016/11/08		98	%	80 - 120
8465273	IW1	Spiked Blank	Nitrite (N)	2016/11/08		101	%	80 - 120
8465273	IW1	Method Blank	Nitrite (N)	2016/11/08	<0.0050		mg/L	
8465273	IW1	RPD	Nitrite (N)	2016/11/08	NC		%	20
8465355	MM3	Spiked Blank	pH	2016/11/09		102	%	97 - 103
8465355	MM3	RPD	pH	2016/11/09	1.1		%	N/A
8465363	MM3	Matrix Spike	Alkalinity (Total as CaCO3)	2016/11/09		98	%	80 - 120
8465363	MM3	Spiked Blank	Alkalinity (Total as CaCO3)	2016/11/09		97	%	80 - 120
8465363	MM3	Method Blank	Alkalinity (Total as CaCO3)	2016/11/09	<0.50		mg/L	
			Alkalinity (PP as CaCO3)	2016/11/09	<0.50		mg/L	
			Bicarbonate (HCO3)	2016/11/09	<0.50		mg/L	
			Carbonate (CO3)	2016/11/09	<0.50		mg/L	
			Hydroxide (OH)	2016/11/09	<0.50		mg/L	
8465363	MM3	RPD	Alkalinity (Total as CaCO3)	2016/11/09	NC		%	20
			Alkalinity (PP as CaCO3)	2016/11/09	NC		%	20
			Bicarbonate (HCO3)	2016/11/09	NC		%	20
			Carbonate (CO3)	2016/11/09	NC		%	20
			Hydroxide (OH)	2016/11/09	NC		%	20
8465553	AD5	Matrix Spike [PZ1360-01]	Total Aluminum (Al)	2016/11/10		NC	%	80 - 120
			Total Antimony (Sb)	2016/11/10		101	%	80 - 120
			Total Arsenic (As)	2016/11/10		104	%	80 - 120
			Total Barium (Ba)	2016/11/10		NC	%	80 - 120
			Total Beryllium (Be)	2016/11/10		106	%	80 - 120
			Total Bismuth (Bi)	2016/11/10		98	%	80 - 120
			Total Boron (B)	2016/11/10		101	%	80 - 120
			Total Cadmium (Cd)	2016/11/10		101	%	80 - 120
			Total Chromium (Cr)	2016/11/10		105	%	80 - 120
			Total Cobalt (Co)	2016/11/10		102	%	80 - 120
			Total Copper (Cu)	2016/11/10		NC	%	80 - 120
			Total Iron (Fe)	2016/11/10		NC	%	80 - 120
			Total Lead (Pb)	2016/11/10		101	%	80 - 120
			Total Lithium (Li)	2016/11/10		102	%	80 - 120
			Total Manganese (Mn)	2016/11/10		102	%	80 - 120
			Total Molybdenum (Mo)	2016/11/10		105	%	80 - 120
			Total Nickel (Ni)	2016/11/10		102	%	80 - 120
			Total Selenium (Se)	2016/11/10		106	%	80 - 120
			Total Silver (Ag)	2016/11/10		98	%	80 - 120
			Total Strontium (Sr)	2016/11/10		NC	%	80 - 120
			Total Thallium (Tl)	2016/11/10		99	%	80 - 120
			Total Tin (Sn)	2016/11/10		100	%	80 - 120
			Total Titanium (Ti)	2016/11/10		NC	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8465553	AD5	Spiked Blank	Total Uranium (U)	2016/11/10		105	%	80 - 120
			Total Vanadium (V)	2016/11/10		103	%	80 - 120
			Total Zinc (Zn)	2016/11/10		106	%	80 - 120
			Total Aluminum (Al)	2016/11/10		102	%	80 - 120
			Total Antimony (Sb)	2016/11/10		100	%	80 - 120
			Total Arsenic (As)	2016/11/10		102	%	80 - 120
			Total Barium (Ba)	2016/11/10		97	%	80 - 120
			Total Beryllium (Be)	2016/11/10		102	%	80 - 120
			Total Bismuth (Bi)	2016/11/10		94	%	80 - 120
			Total Boron (B)	2016/11/10		102	%	80 - 120
			Total Cadmium (Cd)	2016/11/10		96	%	80 - 120
			Total Chromium (Cr)	2016/11/10		102	%	80 - 120
			Total Cobalt (Co)	2016/11/10		103	%	80 - 120
			Total Copper (Cu)	2016/11/10		103	%	80 - 120
			Total Iron (Fe)	2016/11/10		106	%	80 - 120
			Total Lead (Pb)	2016/11/10		99	%	80 - 120
			Total Lithium (Li)	2016/11/10		100	%	80 - 120
			Total Manganese (Mn)	2016/11/10		105	%	80 - 120
			Total Molybdenum (Mo)	2016/11/10		101	%	80 - 120
			Total Nickel (Ni)	2016/11/10		104	%	80 - 120
			Total Selenium (Se)	2016/11/10		104	%	80 - 120
			Total Silver (Ag)	2016/11/10		85	%	80 - 120
			Total Strontium (Sr)	2016/11/10		101	%	80 - 120
			Total Thallium (Tl)	2016/11/10		100	%	80 - 120
			Total Tin (Sn)	2016/11/10		97	%	80 - 120
			Total Titanium (Ti)	2016/11/10		94	%	80 - 120
			Total Uranium (U)	2016/11/10		103	%	80 - 120
Total Vanadium (V)	2016/11/10		104	%	80 - 120			
Total Zinc (Zn)	2016/11/10		103	%	80 - 120			
8465553	AD5	Method Blank	Total Aluminum (Al)	2016/11/10	<3.0		ug/L	
			Total Antimony (Sb)	2016/11/10	<0.50		ug/L	
			Total Arsenic (As)	2016/11/10	<0.10		ug/L	
			Total Barium (Ba)	2016/11/10	<1.0		ug/L	
			Total Beryllium (Be)	2016/11/10	<0.10		ug/L	
			Total Bismuth (Bi)	2016/11/10	<1.0		ug/L	
			Total Boron (B)	2016/11/10	<50		ug/L	
			Total Cadmium (Cd)	2016/11/10	<0.010		ug/L	
			Total Chromium (Cr)	2016/11/10	<1.0		ug/L	
			Total Cobalt (Co)	2016/11/10	<0.50		ug/L	
			Total Copper (Cu)	2016/11/10	<0.50		ug/L	
			Total Iron (Fe)	2016/11/10	<10		ug/L	
			Total Lead (Pb)	2016/11/10	<0.20		ug/L	
			Total Lithium (Li)	2016/11/10	<5.0		ug/L	
			Total Manganese (Mn)	2016/11/10	<1.0		ug/L	
			Total Molybdenum (Mo)	2016/11/10	<1.0		ug/L	
			Total Nickel (Ni)	2016/11/10	<1.0		ug/L	
			Total Selenium (Se)	2016/11/10	<0.10		ug/L	
			Total Silicon (Si)	2016/11/10	<100		ug/L	
			Total Silver (Ag)	2016/11/10	<0.020		ug/L	
			Total Strontium (Sr)	2016/11/10	<1.0		ug/L	
Total Thallium (Tl)	2016/11/10	<0.050		ug/L				
Total Tin (Sn)	2016/11/10	<5.0		ug/L				
Total Titanium (Ti)	2016/11/10	<5.0		ug/L				
Total Uranium (U)	2016/11/10	<0.10		ug/L				
Total Vanadium (V)	2016/11/10	<5.0		ug/L				

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8465553	AD5	RPD [PZ1360-01]	Total Zinc (Zn)	2016/11/10	<5.0		ug/L	
			Total Zirconium (Zr)	2016/11/10	<0.50		ug/L	
			Total Aluminum (Al)	2016/11/10	7.5		%	20
			Total Antimony (Sb)	2016/11/10	NC		%	20
			Total Arsenic (As)	2016/11/10	NC		%	20
			Total Barium (Ba)	2016/11/10	1.7		%	20
			Total Beryllium (Be)	2016/11/10	NC		%	20
			Total Bismuth (Bi)	2016/11/10	NC		%	20
			Total Boron (B)	2016/11/10	NC		%	20
			Total Cadmium (Cd)	2016/11/10	NC		%	20
			Total Chromium (Cr)	2016/11/10	NC		%	20
			Total Cobalt (Co)	2016/11/10	NC		%	20
			Total Copper (Cu)	2016/11/10	0.68		%	20
			Total Iron (Fe)	2016/11/10	7.3		%	20
			Total Lead (Pb)	2016/11/10	NC		%	20
			Total Lithium (Li)	2016/11/10	NC		%	20
			Total Manganese (Mn)	2016/11/10	NC		%	20
			Total Molybdenum (Mo)	2016/11/10	NC		%	20
			Total Nickel (Ni)	2016/11/10	NC		%	20
			Total Selenium (Se)	2016/11/10	NC		%	20
			Total Silicon (Si)	2016/11/10	4.3		%	20
			Total Silver (Ag)	2016/11/10	NC		%	20
			Total Strontium (Sr)	2016/11/10	3.4		%	20
			Total Thallium (Tl)	2016/11/10	NC		%	20
			Total Tin (Sn)	2016/11/10	NC		%	20
			Total Titanium (Ti)	2016/11/10	NC		%	20
			Total Uranium (U)	2016/11/10	NC		%	20
			Total Vanadium (V)	2016/11/10	NC		%	20
Total Zinc (Zn)	2016/11/10	NC		%	20			
Total Zirconium (Zr)	2016/11/10	NC		%	20			
8465659	JSG	Matrix Spike	Tannins and Lignins	2016/11/09		92	%	80 - 120
8465659	JSG	Spiked Blank	Tannins and Lignins	2016/11/09		100	%	80 - 120
8465659	JSG	Method Blank	Tannins and Lignins	2016/11/09	<0.10		mg/L	
8465659	JSG	RPD	Tannins and Lignins	2016/11/09	NC		%	20
8465917	BB3	Matrix Spike	Dissolved Chloride (Cl)	2016/11/09		99	%	80 - 120
8465917	BB3	Spiked Blank	Dissolved Chloride (Cl)	2016/11/09		102	%	80 - 120
8465917	BB3	Method Blank	Dissolved Chloride (Cl)	2016/11/09	<0.50		mg/L	
8465917	BB3	RPD	Dissolved Chloride (Cl)	2016/11/09	0.64		%	20
			Dissolved Chloride (Cl)	2016/11/09	0.047		%	20
8465919	BB3	Matrix Spike	Dissolved Sulphate (SO4)	2016/11/09		NC	%	80 - 120
8465919	BB3	Spiked Blank	Dissolved Sulphate (SO4)	2016/11/09		102	%	80 - 120
8465919	BB3	Method Blank	Dissolved Sulphate (SO4)	2016/11/09	<0.50		mg/L	
8465919	BB3	RPD	Dissolved Sulphate (SO4)	2016/11/09	6.5		%	20
			Dissolved Sulphate (SO4)	2016/11/09	0.72		%	20
8466011	DC6	Matrix Spike	Fluoride (F)	2016/11/09		95	%	80 - 120
8466011	DC6	Spiked Blank	Fluoride (F)	2016/11/09		96	%	80 - 120
8466011	DC6	Method Blank	Fluoride (F)	2016/11/09	0.012, RDL=0.010		mg/L	
8466011	DC6	RPD	Fluoride (F)	2016/11/09	NC		%	20
8466061	KL	Matrix Spike [PZ1360-03]	1,4-Difluorobenzene (sur.)	2016/11/10		99	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/11/10		95	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/11/10		94	%	70 - 130
			Chloroform	2016/11/10		NC	%	70 - 130
			Chlorodibromomethane	2016/11/10		76	%	70 - 130
			Bromodichloromethane	2016/11/10		85	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8466061	KL	Spiked Blank	Bromoform	2016/11/10		75	%	70 - 130
			1,4-Difluorobenzene (sur.)	2016/11/10		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/11/10		93	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/11/10		90	%	70 - 130
			Chloroform	2016/11/10		72	%	70 - 130
			Chlorodibromomethane	2016/11/10		75	%	70 - 130
			Bromodichloromethane	2016/11/10		77	%	70 - 130
8466061	KL	Method Blank	Bromoform	2016/11/10		74	%	70 - 130
			1,4-Difluorobenzene (sur.)	2016/11/10		108	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/11/10		88	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/11/10		95	%	70 - 130
			Chloroform	2016/11/10	<1.0		ug/L	
			Chlorodibromomethane	2016/11/10	<1.0		ug/L	
			Bromodichloromethane	2016/11/10	<1.0		ug/L	
8466061	KL	RPD	Bromoform	2016/11/10	<1.0		ug/L	
			Chloroform	2016/11/10	NC		%	30
			Chlorodibromomethane	2016/11/10	NC		%	30
			Bromodichloromethane	2016/11/10	NC		%	30
8467114	PSA	Method Blank	Bromoform	2016/11/10	NC		%	30
			Chloroform	2016/11/10	NC		%	30
8467114	PSA	Method Blank	UV absorbance (254nm)	2016/11/10	<0.010		AU/cm	
8467114	PSA	RPD [PZ1360-01]	UV absorbance (254nm)	2016/11/10	0.32		%	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.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

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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

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

