



HEMMERA ENVIROCHEM INC.
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Date Received: 22-JUN-15
Report Date: 02-JUL-15 11:54 (MT)
Version: FINAL

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1630559
Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.08
C of C Numbers: 1
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1630559-1	L1630559-2	L1630559-3	L1630559-4	L1630559-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	17-JUN-15	17-JUN-15	17-JUN-15	18-JUN-15	18-JUN-15
		Sampled Time	15:10	16:25	18:15	14:10	15:30
		Client ID	MW14-02D	MW14-02S	PW14-01	MW14-03	MW14-05
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (uS/cm)		557	162	808	895	5180
	Hardness (as CaCO3) (mg/L)		229	73.4	344	460	3930
	pH (pH)		6.54	7.72	6.63	8.00	7.17
	Total Suspended Solids (mg/L)		14.8	11.2	28.7	13.2	128
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		121	2.9	123	8.2	76.1
	Alkalinity, Total (as CaCO3) (mg/L)		215	69.3	337	394	591
	Chloride (Cl) (mg/L)		<0.50	<0.50	<1.0 ^{DLA}	6.3	16
	Sulfate (SO4) (mg/L)		73.0	9.56	106	96.6	3270
Total Metals	Aluminum (Al)-Total (mg/L)						
	Antimony (Sb)-Total (mg/L)						
	Arsenic (As)-Total (mg/L)						
	Barium (Ba)-Total (mg/L)						
	Beryllium (Be)-Total (mg/L)						
	Bismuth (Bi)-Total (mg/L)						
	Boron (B)-Total (mg/L)						
	Cadmium (Cd)-Total (mg/L)						
	Calcium (Ca)-Total (mg/L)						
	Cesium (Cs)-Total (mg/L)						
	Chromium (Cr)-Total (mg/L)						
	Cobalt (Co)-Total (mg/L)						
	Copper (Cu)-Total (mg/L)						
	Iron (Fe)-Total (mg/L)						
	Lead (Pb)-Total (mg/L)						
	Lithium (Li)-Total (mg/L)						
	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Phosphorus (P)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Rubidium (Rb)-Total (mg/L)						
	Selenium (Se)-Total (mg/L)						
	Silicon (Si)-Total (mg/L)						
Silver (Ag)-Total (mg/L)							
Sodium (Na)-Total (mg/L)							
Strontium (Sr)-Total (mg/L)							
Sulfur (S)-Total (mg/L)							

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1630559-6	L1630559-7	L1630559-8	L1630559-9
		Description	Water	Water	Water	Water
		Sampled Date	18-JUN-15	19-JUN-15	18-JUN-15	
		Sampled Time	18:15	13:00	15:10	
		Client ID	MW14-04S	PW14-07	DUP-08	TRIP BLANK 3
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	5280	1000	564	<2.0	
	Hardness (as CaCO3) (mg/L)	4010	432	230	<0.50	
	pH (pH)	7.61	6.44	6.54	5.50	
	Total Suspended Solids (mg/L)	944	16.8	14.8	<1.0	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	76.3	183	97.3	1.3	
	Alkalinity, Total (as CaCO3) (mg/L)	998	236	216	<1.0	
	Chloride (Cl) (mg/L)	11	<1.0 ^{DLA}	<0.50	<0.50	
	Sulfate (SO4) (mg/L)	3140	306	73.4	<0.30	
Total Metals	Aluminum (Al)-Total (mg/L)				<0.0030	
	Antimony (Sb)-Total (mg/L)				<0.00010	
	Arsenic (As)-Total (mg/L)				<0.00010	
	Barium (Ba)-Total (mg/L)				<0.000050	
	Beryllium (Be)-Total (mg/L)				<0.00010	
	Bismuth (Bi)-Total (mg/L)				<0.000050	
	Boron (B)-Total (mg/L)				<0.010	
	Cadmium (Cd)-Total (mg/L)				<0.000050	
	Calcium (Ca)-Total (mg/L)				<0.050	
	Cesium (Cs)-Total (mg/L)				<0.000010	
	Chromium (Cr)-Total (mg/L)				<0.00010	
	Cobalt (Co)-Total (mg/L)				<0.00010	
	Copper (Cu)-Total (mg/L)				<0.00050	
	Iron (Fe)-Total (mg/L)				<0.010	
	Lead (Pb)-Total (mg/L)				<0.000050	
	Lithium (Li)-Total (mg/L)				<0.0010	
	Magnesium (Mg)-Total (mg/L)				<0.0050	
	Manganese (Mn)-Total (mg/L)				<0.00010	
	Molybdenum (Mo)-Total (mg/L)				<0.000050	
	Nickel (Ni)-Total (mg/L)				<0.00050	
	Phosphorus (P)-Total (mg/L)				<0.050	
	Potassium (K)-Total (mg/L)				<0.050	
	Rubidium (Rb)-Total (mg/L)				<0.00020	
	Selenium (Se)-Total (mg/L)				<0.000050	
	Silicon (Si)-Total (mg/L)				<0.050	
	Silver (Ag)-Total (mg/L)				<0.000010	
Sodium (Na)-Total (mg/L)				<0.050		
Strontium (Sr)-Total (mg/L)				<0.00020		
Sulfur (S)-Total (mg/L)				<0.50		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1630559-1 Water 17-JUN-15 15:10 MW14-02D	L1630559-2 Water 17-JUN-15 16:25 MW14-02S	L1630559-3 Water 17-JUN-15 18:15 PW14-01	L1630559-4 Water 18-JUN-15 14:10 MW14-03	L1630559-5 Water 18-JUN-15 15:30 MW14-05
Grouping	Analyte					
WATER						
Total Metals	Tellurium (Te)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
	Thorium (Th)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Tungsten (W)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0437	0.0055	0.0371	0.0020	0.0119
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	0.00252	<0.00050 ^{DLA}
	Arsenic (As)-Dissolved (mg/L)	0.00216	0.00035	0.00136	0.0114	0.00149
	Barium (Ba)-Dissolved (mg/L)	0.0335	0.0419	0.117	0.0994	0.0452
	Beryllium (Be)-Dissolved (mg/L)	0.00096	<0.00010	0.00033	<0.00010	<0.00050 ^{DLA}
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00025 ^{DLA}
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.050 ^{DLA}
	Cadmium (Cd)-Dissolved (mg/L)	0.000105	0.0000231	0.0000779	<0.000050	<0.00025 ^{DLA}
	Calcium (Ca)-Dissolved (mg/L)	58.3	21.4	94.6	128	342
	Cesium (Cs)-Dissolved (mg/L)	0.000017	0.000015	0.000221	0.000026	0.000944
	Chromium (Cr)-Dissolved (mg/L)	0.00116	0.00142	0.00067	0.00076	0.00161
	Cobalt (Co)-Dissolved (mg/L)	0.00457	<0.00010	0.00998	0.00338	0.00366
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00090	0.00057	<0.00020	<0.0010 ^{DLA}
	Iron (Fe)-Dissolved (mg/L)	16.0	0.044	31.2	1.23	13.4
	Lead (Pb)-Dissolved (mg/L)	0.000381	0.000098	0.000220	<0.000050	<0.00025 ^{DLA}
	Lithium (Li)-Dissolved (mg/L)	0.0402	0.0025	0.0194	0.0370	0.0759
	Magnesium (Mg)-Dissolved (mg/L)	20.3	4.86	26.2	33.8	748
	Manganese (Mn)-Dissolved (mg/L)	1.03	0.0217	4.55	0.368	1.84
	Molybdenum (Mo)-Dissolved (mg/L)	0.000197	0.000655	0.000242	0.0495	0.00055
	Nickel (Ni)-Dissolved (mg/L)	0.0129	0.00130	0.0125	0.0203	0.0216
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25 ^{DLA}
	Potassium (K)-Dissolved (mg/L)	2.77	0.633	2.73	6.96	10.3
	Rubidium (Rb)-Dissolved (mg/L)	0.00842	0.00101	0.00991	0.00197	0.0112
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000282	0.000089	0.000120	<0.00025 ^{DLA}
	Silicon (Si)-Dissolved (mg/L)	11.7	4.31	12.2	8.11	9.42
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050 ^{DLA}

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1630559-6 Water 18-JUN-15 18:15 MW14-04S	L1630559-7 Water 19-JUN-15 13:00 PW14-07	L1630559-8 Water 18-JUN-15 15:10 DUP-08	L1630559-9 Water TRIP BLANK 3
Grouping	Analyte				
WATER					
Total Metals	Tellurium (Te)-Total (mg/L)				<0.00020
	Thallium (Tl)-Total (mg/L)				<0.000010
	Thorium (Th)-Total (mg/L)				<0.00010
	Tin (Sn)-Total (mg/L)				<0.00010
	Titanium (Ti)-Total (mg/L)				<0.00030
	Tungsten (W)-Total (mg/L)				<0.00010
	Uranium (U)-Total (mg/L)				<0.000010
	Vanadium (V)-Total (mg/L)				<0.00050
	Zinc (Zn)-Total (mg/L)				<0.0030
	Zirconium (Zr)-Total (mg/L)				<0.00030
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0089	0.0903	0.0423	
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00050 ^{DLA}	0.00330	0.00213	
	Barium (Ba)-Dissolved (mg/L)	0.0257	0.0559	0.0327	
	Beryllium (Be)-Dissolved (mg/L)	<0.00050 ^{DLA}	0.00085	0.00089	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00025 ^{DLA}	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.050 ^{DLA}	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.000197	0.0000688	0.000102	
	Calcium (Ca)-Dissolved (mg/L)	544	104	58.0	
	Cesium (Cs)-Dissolved (mg/L)	0.000300	0.000123	0.000016	
	Chromium (Cr)-Dissolved (mg/L)	<0.00050 ^{DLA}	0.00076	0.00115	
	Cobalt (Co)-Dissolved (mg/L)	0.00122	0.00619	0.00466	
	Copper (Cu)-Dissolved (mg/L)	0.0014	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.050 ^{DLA}	28.5	16.3	
	Lead (Pb)-Dissolved (mg/L)	<0.00025 ^{DLA}	0.000247	0.000262	
	Lithium (Li)-Dissolved (mg/L)	0.0781	0.0453	0.0380	
	Magnesium (Mg)-Dissolved (mg/L)	644	42.0	20.7	
	Manganese (Mn)-Dissolved (mg/L)	0.910	1.46	1.02	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00145	0.000124	0.000187	
	Nickel (Ni)-Dissolved (mg/L)	0.0120	0.0184	0.0130	
	Phosphorus (P)-Dissolved (mg/L)	<0.25 ^{DLA}	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	14.5	3.40	2.80	
	Rubidium (Rb)-Dissolved (mg/L)	0.0057	0.00886	0.00857	
	Selenium (Se)-Dissolved (mg/L)	0.00055	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	12.3	13.1	11.4	
	Silver (Ag)-Dissolved (mg/L)	<0.000050 ^{DLA}	<0.000010	<0.000010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1630559-1 Water 17-JUN-15 15:10 MW14-02D	L1630559-2 Water 17-JUN-15 16:25 MW14-02S	L1630559-3 Water 17-JUN-15 18:15 PW14-01	L1630559-4 Water 18-JUN-15 14:10 MW14-03	L1630559-5 Water 18-JUN-15 15:30 MW14-05
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	8.83	1.70	7.07	7.82	12.2
	Strontium (Sr)-Dissolved (mg/L)	0.370	0.0891	0.450	0.647	1.54
	Sulfur (S)-Dissolved (mg/L)	26.4	3.50	37.9	35.6	1210
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010 ^{DLA}
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000024	<0.000010	<0.000050 ^{DLA}
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050 ^{DLA}
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050 ^{DLA}
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015 ^{DLA}
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050 ^{DLA}
	Uranium (U)-Dissolved (mg/L)	0.000567	0.000702	0.00401	0.0766	0.192
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025 ^{DLA}
	Zinc (Zn)-Dissolved (mg/L)	0.781	0.0324	0.682	0.0649	0.743
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	0.00032	0.00031	0.0017

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1630559-6 Water 18-JUN-15 18:15 MW14-04S	L1630559-7 Water 19-JUN-15 13:00 PW14-07	L1630559-8 Water 18-JUN-15 15:10 DUP-08	L1630559-9 Water TRIP BLANK 3
Grouping	Analyte				
WATER					
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	14.1	10.6	9.10	
	Strontium (Sr)-Dissolved (mg/L)	2.43	0.526	0.374	
	Sulfur (S)-Dissolved (mg/L)	1120	102	25.5	
	Tellurium (Te)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00020	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)	<0.000050 ^{DLA}	<0.000010	<0.000010	
	Thorium (Th)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00010	<0.00010	
	Tin (Sn)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.0015 ^{DLA}	<0.00030	<0.00030	
	Tungsten (W)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00010	<0.00010	
	Uranium (U)-Dissolved (mg/L)	0.261	0.000352	0.000579	
	Vanadium (V)-Dissolved (mg/L)	<0.0025 ^{DLA}	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0543	1.40	0.804	
	Zirconium (Zr)-Dissolved (mg/L)	<0.0015 ^{DLA}	<0.00030	<0.00030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Antimony (Sb)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Beryllium (Be)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Boron (B)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Copper (Cu)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Lead (Pb)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Phosphorus (P)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Selenium (Se)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Silver (Ag)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Tellurium (Te)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Thallium (Tl)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Thorium (Th)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Tin (Sn)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Titanium (Ti)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Tungsten (W)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Vanadium (V)-Dissolved	DLA	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sulfate (SO4)	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1630559-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.			
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.			
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

CL-IC-N-WR Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

SO4-IC-N-WR Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TSS-LOW-WR Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.