

Bureau Veritas ID		BAK846		
Sampling Date		2022/08/15 16:00		
COC Number		1 of 1		
	UNITS	SW22-03	RDL	QC Batch
Elements				
Total Cadmium (Cd)	mg/L	<0.000020	0.000020	A694356
Total Aluminum (Al)	mg/L	0.028	0.0030	A698072
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A698072
Total Arsenic (As)	mg/L	0.00064	0.00020	A698072
Total Barium (Ba)	mg/L	0.098	0.010	A698075
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A698072
Total Boron (B)	mg/L	<0.020	0.020	A698075
Total Calcium (Ca)	mg/L	39	0.30	A698075
Total Chromium (Cr)	mg/L	0.0013	0.0010	A698072
Total Cobalt (Co)	mg/L	<0.00030	0.00030	A698072
Total Copper (Cu)	mg/L	0.0023	0.0010	A698072
Total Iron (Fe)	mg/L	0.19	0.060	A698075
Total Lead (Pb)	mg/L	<0.00020	0.00020	A698072
Total Lithium (Li)	mg/L	<0.020	0.020	A698075
Total Magnesium (Mg)	mg/L	19	0.20	A698075
Total Manganese (Mn)	mg/L	0.014	0.0040	A698075
Total Molybdenum (Mo)	mg/L	0.0018	0.00020	A698072
Total Nickel (Ni)	mg/L	0.0024	0.00050	A698072
Total Phosphorus (P)	mg/L	<0.10	0.10	A698075
Total Potassium (K)	mg/L	<0.30	0.30	A698075
Total Selenium (Se)	mg/L	0.00039	0.00020	A698072
Total Silicon (Si)	mg/L	0.61	0.11	A698075
Total Silver (Ag)	mg/L	<0.00010	0.00010	A698072
Total Sodium (Na)	mg/L	26	0.50	A698075
Total Strontium (Sr)	mg/L	0.30	0.020	A698075
Total Sulphur (S)	mg/L	15	0.20	A698075
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A698072
Total Tin (Sn)	mg/L	0.0016	0.0010	A698072
Total Titanium (Ti)	mg/L	0.0015	0.0010	A698072
Total Uranium (U)	mg/L	0.00089	0.00010	A698072
Total Vanadium (V)	mg/L	<0.0010	0.0010	A698072
RDL = Reportable Detection	Limit			

REGULATED METALS (CCME/AT1) - TOTAL



Bureau Veritas ID		BAK846		
Sampling Date		2022/08/15 16:00		
COC Number		1 of 1		
	UNITS	SW22-03	RDL	QC Batch
Total Zinc (Zn)	mg/L	<0.0030	0.0030	A698072
RDL = Reportable Detection L	imit			

REGULATED METALS (CCME/AT1) - TOTAL



RESULTS OF CHEMICAL ANALYSES OF GROUND WATER

Bureau Veritas ID		BAK850		
Sampling Date		2022/08/16 16:00		
COC Number		1 of 1		
	LINUTC	DOC 7		000-4-4
	UNITS	P06-7	RDL	QC Batch
Misc. Inorganics	UNITS	P06-7	KDL	QC Batch
Misc. Inorganics Dissolved Organic Carbon (C)	mg/L	9.3	KDL	A695990



SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

Bureau Veritas ID		BAK847	BAK848	BAK848		
Someling Data		2022/08/16	2022/08/16	2022/08/16		
Sampling Date		17:00	17:20	17:20		
COC Number		1 of 1	1 of 1	1 of 1		
	UNITS	P19-06	P19-05	P19-05 Lab-Dup	RDL	QC Batch
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	ug/L	<0.010	<0.010	N/A	0.010	A693567
Acenaphthene	mg/L	<0.00010	0.00010	<0.00010	0.00010	A695930
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A695930
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A695930
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A695930
Benzo(a)anthracene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
Benzo(b&j)fluoranthene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
Benzo(k)fluoranthene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
Benzo(g,h,i)perylene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A695930
Benzo(a)pyrene	mg/L	<0.000075	<0.000075	<0.000075	0.0000075	A695930
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A695930
Chrysene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
Dibenz(a,h)anthracene	mg/L	<0.000075	<0.000075	<0.000075	0.0000075	A695930
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A695930
Fluorene	mg/L	<0.000050	0.00016	0.00015	0.000050	A695930
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085	<0.000085	<0.000085	0.0000085	A695930
1-Methylnaphthalene	mg/L	<0.00010	0.0014	0.0013	0.00010	A695930
2-Methylnaphthalene	mg/L	<0.00010	0.0061	0.0054	0.00010	A695930
Naphthalene	mg/L	<0.00010	0.0017	0.0016	0.00010	A695930
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A695930
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A695930
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A695930
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A695930
Surrogate Recovery (%)	· · · · ·		•	•		
D10-ANTHRACENE (sur.)	%	120	122	122	N/A	A695930
D8-ACENAPHTHYLENE (sur.)	%	100	102	106	N/A	A695930
D8-NAPHTHALENE (sur.)	%	67	72	74	N/A	A695930
RDL = Reportable Detection Limit					·	

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

Lab-Dup	Bureau Veritas ID		BAK847	BAK848	BAK848		
UNITS P19-06 P19-05 P19-05 RDL QC Ba	Sampling Date						
UNITS P19-06 P19-05 Lab-Dup RDL QC Ba	COC Number		1 of 1	1 of 1	1 of 1		
TERPHENYL-D14 (sur.) % 154 (1) 151 (1) 156 (1) N/A A6959		UNITS	P19-06	P19-05		RDL	QC Batch
	TERPHENYL-D14 (sur.)	%	154 (1)	151 (1)	156 (1)	N/A	A695930

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



RESULTS OF CHEMICAL ANALYSES OF SURFACE WATER

Bureau Veritas ID		BAK846		
Sampling Date		2022/08/15 16:00		
COC Number		1 of 1		
	LINUTC	01/22 02	501	OC Details
	UNITS	SW22-03	RDL	QC Batch
Misc. Inorganics	UNITS	SW22-03	KDL	QC Batch
Misc. Inorganics Dissolved Organic Carbon (C)	mg/L	SW22-03	RDL	A695990



Bureau Veritas ID		BAK849		
Sampling Date		2022/08/15		
		15:00		
COC Number		1 of 1		
	UNITS	SW22-02	RDL	QC Batch
Polycyclic Aromatics				
B[a]P TPE Total Potency Equivalents	ug/L	<0.010	0.010	A693567
Acenaphthene	mg/L	<0.00010	0.00010	A695930
Acenaphthylene	mg/L	<0.00010	0.00010	A695930
Acridine	mg/L	<0.000040	0.000040	A695930
Anthracene	mg/L	<0.000010	0.000010	A695930
Benzo(a)anthracene	mg/L	<0.000085	0.0000085	A695930
Benzo(b&j)fluoranthene	mg/L	<0.000085	0.0000085	A695930
Benzo(k)fluoranthene	mg/L	<0.000085	0.0000085	A695930
Benzo(g,h,i)perylene	mg/L	<0.000085	0.0000085	A695930
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	A695930
Benzo(a)pyrene	mg/L	<0.000075	0.0000075	A695930
Benzo(e)pyrene	mg/L	<0.000050	0.000050	A695930
Chrysene	mg/L	<0.000085	0.0000085	A695930
Dibenz(a,h)anthracene	mg/L	<0.000075	0.0000075	A695930
Fluoranthene	mg/L	<0.000010	0.000010	A695930
Fluorene	mg/L	<0.000050	0.000050	A695930
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085	0.0000085	A695930
1-Methylnaphthalene	mg/L	<0.00010	0.00010	A695930
2-Methylnaphthalene	mg/L	<0.00010	0.00010	A695930
Naphthalene	mg/L	<0.00010	0.00010	A695930
Phenanthrene	mg/L	<0.000050	0.000050	A695930
Perylene	mg/L	<0.000050	0.000050	A695930
Pyrene	mg/L	<0.000020	0.000020	A695930
Quinoline	mg/L	<0.00020	0.00020	A695930
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	122	N/A	A695930
D8-ACENAPHTHYLENE (sur.)	%	93	N/A	A695930
D8-NAPHTHALENE (sur.)	%	70	N/A	A695930
TERPHENYL-D14 (sur.)	%	153 (1)	N/A	A695930
RDL = Reportable Detection Limit N/A = Not Applicable				

SEMIVOLATILE ORGANICS BY GC-MS (SURFACE WATER)

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.0°C
Package 2	3.7°C
Package 3	5.3°C

Sample BAK847 [P19-06] : Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

Sample BAK848 [P19-05] : Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

ROUTINE WATER -LAB FILTERED (GROUND WATER) Comments

Sample BAK847 [P19-06] Elements by ICP-Dissolved-Lab Filtered: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A695924	GG3	Matrix Spike [BAK847-03]	O-TERPHENYL (sur.)	2022/08/28		99	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/28		114	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/28		103	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/28		98	%	60 - 140
A695924	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/08/27		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/27		100	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/27		103	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/27		100	%	60 - 140
A695924	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/27		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/27	<0.10		mg/L	
			F3 (C16-C34 Hydrocarbons)	2022/08/27	<0.10		mg/L	
			F4 (C34-C50 Hydrocarbons)	2022/08/27	<0.20		mg/L	
A695924	GG3	RPD [BAK848-03]	F2 (C10-C16 Hydrocarbons)	2022/08/27	6.4		%	30
			F3 (C16-C34 Hydrocarbons)	2022/08/27	2.3		%	30
			F4 (C34-C50 Hydrocarbons)	2022/08/27	NC		%	30
A695930	JC7	Matrix Spike [BAK849-01]	D10-ANTHRACENE (sur.)	2022/08/28		102	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/28		90	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/28		69	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/28		129	%	50 - 130
			Acenaphthene	2022/08/28		72	%	50 - 130
			Acenaphthylene	2022/08/28		76	%	50 - 130
			Acridine	2022/08/28		51	%	50 - 130
			Anthracene	2022/08/28		82	%	50 - 130
			Benzo(a)anthracene	2022/08/28		96	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/28		91	%	50 - 130
			Benzo(k)fluoranthene	2022/08/28		82	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/28		83	%	50 - 130
			Benzo(c)phenanthrene	2022/08/28		94	%	50 - 130
			Benzo(a)pyrene	2022/08/28		92	%	50 - 130
			Benzo(e)pyrene	2022/08/28		82	%	50 - 130
			Chrysene	2022/08/28		86	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/28		85	%	50 - 130
			Fluoranthene	2022/08/28		92	%	50 - 130
			Fluorene	2022/08/28		85	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/28		87	%	50 - 130
			1-Methylnaphthalene	2022/08/28		60	%	50 - 130
			2-Methylnaphthalene	2022/08/28		74	%	50 - 130
			Naphthalene	2022/08/28		73	%	50 - 130
			Phenanthrene	2022/08/28		85	%	50 - 130
			Perylene	2022/08/28		74	%	50 - 130
			Pyrene	2022/08/28		93	%	50 - 130
			Quinoline	2022/08/28		76	%	50 - 130
A695930	JC7	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/28		121	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/28		120	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/28		89	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/28		144 (1)	%	50 - 130
			Acenaphthene	2022/08/28		78	%	50 - 130
			Acenaphthylene	2022/08/28		85	%	50 - 130
			Acridine	2022/08/28		99	%	50 - 130
			Anthracene	2022/08/28		98	%	50 - 130
			Benzo(a)anthracene	2022/08/28		105	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/28		100	%	50 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(k)fluoranthene	2022/08/28		112	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/28		96	%	50 - 130
			Benzo(c)phenanthrene	2022/08/28		106	%	50 - 130
			Benzo(a)pyrene	2022/08/28		101	%	50 - 130
			Benzo(e)pyrene	2022/08/28		94	%	50 - 130
			Chrysene	2022/08/28		99	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/28		101	%	50 - 130
			Fluoranthene	2022/08/28		103	%	50 - 130
			Fluorene	2022/08/28		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/28		96	%	50 - 130
			1-Methylnaphthalene	2022/08/28		63	%	50 - 130
			2-Methylnaphthalene	2022/08/28		77	%	50 - 130
			Naphthalene	2022/08/28		81	%	50 - 130
			Phenanthrene	2022/08/28		94	%	50 - 130
			Perylene	2022/08/28		89	%	50 - 130
			Pyrene	2022/08/28		101	%	50 - 130
			Quinoline	2022/08/28		82	%	50 - 130
A695930	JC7	Method Blank	D10-ANTHRACENE (sur.)	2022/08/28		125	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/28		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/28		76	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/28		154 (1)	%	50 - 130
			Acenaphthene	2022/08/28	<0.00010		mg/L	
			Acenaphthylene	2022/08/28	<0.00010		mg/L	
			Acridine	2022/08/28	<0.000040		mg/L	
			Anthracene	2022/08/28	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/28	<0.000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/28	<0.000085		mg/L	
			Benzo(k)fluoranthene	2022/08/28	<0.000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/28	<0.000085		mg/L	
			Benzo(c)phenanthrene	2022/08/28	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/28	<0.000075		mg/L	
			Benzo(e)pyrene	2022/08/28	<0.000050		mg/L	
			Chrysene	2022/08/28	<0.000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/28	<0.000075		mg/L	
			Fluoranthene	2022/08/28	<0.000010		mg/L	
			Fluorene	2022/08/28	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/28	<0.000085		mg/L	
			1-Methylnaphthalene	2022/08/28	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/28	<0.00010		mg/L	
			Naphthalene	2022/08/28	<0.00010		mg/L	
			Phenanthrene	2022/08/28	<0.000050		mg/L	
			Perylene	2022/08/28	<0.000050		mg/L	
			Pyrene	2022/08/28	<0.000020		mg/L	
			Quinoline	2022/08/28	<0.00020		mg/L	
A695930	JC7	RPD [BAK848-03]	Acenaphthene	2022/08/28	1.0		%	30
			Acenaphthylene	2022/08/28	NC		%	30
			Acridine	2022/08/28	NC		%	30
			Anthracene	2022/08/28	NC		%	30
			Benzo(a)anthracene	2022/08/28	NC		%	30
			Benzo(b&j)fluoranthene	2022/08/28	NC		%	30
			Benzo(k)fluoranthene	2022/08/28	NC		%	30
			Benzo(g,h,i)perylene	2022/08/28	NC		%	30



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(c)phenanthrene	2022/08/28	NC		%	30
			Benzo(a)pyrene	2022/08/28	NC		%	30
			Benzo(e)pyrene	2022/08/28	NC		%	30
			Chrysene	2022/08/28	NC		%	30
			Dibenz(a,h)anthracene	2022/08/28	NC		%	30
			Fluoranthene	2022/08/28	NC		%	30
			Fluorene	2022/08/28	9.8		%	30
			Indeno(1,2,3-cd)pyrene	2022/08/28	NC		%	30
			1-Methylnaphthalene	2022/08/28	8.4		%	30
			2-Methylnaphthalene	2022/08/28	12		%	30
			Naphthalene	2022/08/28	6.9		%	30
			Phenanthrene	2022/08/28	NC		%	30
			Perylene	2022/08/28	NC		%	30
			Pyrene	2022/08/28	NC		%	30
			Quinoline	2022/08/28	NC		%	30
A695949	MEL	Spiked Blank	Alkalinity (Total as CaCO3)	2022/08/26		96	%	80 - 120
A695949	MEL	Method Blank	Alkalinity (PP as CaCO3)	2022/08/26	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2022/08/26	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/26	<1.0		mg/L	
			Carbonate (CO3)	2022/08/26	<1.0		mg/L	
			Hydroxide (OH)	2022/08/26	<1.0		mg/L	
A695949	MEL	RPD	Alkalinity (PP as CaCO3)	2022/08/26	NC		%	20
			Alkalinity (Total as CaCO3)	2022/08/26	5.1		%	20
			Bicarbonate (HCO3)	2022/08/26	5.1		%	20
			Carbonate (CO3)	2022/08/26	NC		%	20
			Hydroxide (OH)	2022/08/26	NC		%	20
A695955	MEL	Spiked Blank	рН	2022/08/26		100	%	97 - 103
A695955	MEL	RPD	рН	2022/08/26	0.84		%	N/A
A695956	MEL	Spiked Blank	Conductivity	2022/08/26		100	%	90 - 110
A695956	MEL	Method Blank	Conductivity	2022/08/26	<2.0		uS/cm	
A695956	MEL	RPD	Conductivity	2022/08/26	0.14		%	10
A695990	MDO	Matrix Spike	Dissolved Organic Carbon (C)	2022/08/26		118	%	80 - 120
A695990	MDO	Spiked Blank	Dissolved Organic Carbon (C)	2022/08/26		110	%	80 - 120
A695990	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/08/26	<0.50		mg/L	
A695990	MDO	RPD	Dissolved Organic Carbon (C)	2022/08/26	1.5		%	20
A696225	ACR	Matrix Spike	Nitrite (N)	2022/08/26		100	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/26		123 (1)	%	80 - 120
A696225	ACR	Spiked Blank	Nitrite (N)	2022/08/26		98	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/26		113	%	80 - 120
A696225	ACR	Method Blank	Nitrite (N)	2022/08/27	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/27	<0.010		mg/L	
A696225	ACR	RPD	Nitrite (N)	2022/08/27	NC		%	20
			Nitrate plus Nitrite (N)	2022/08/27	5.4		%	20
A696310	CTU	Matrix Spike	Chloride (Cl)	2022/08/27		NC	%	80 - 120
			Sulphate (SO4)	2022/08/27		102	%	80 - 120
A696310	CTU	Spiked Blank	Chloride (Cl)	2022/08/27		104	%	80 - 120
			Sulphate (SO4)	2022/08/27		102	%	80 - 120
A696310	CTU	Method Blank	Chloride (Cl)	2022/08/27	<1.0		mg/L	
			Sulphate (SO4)	2022/08/27	<1.0		mg/L	
A696310	CTU	RPD	Chloride (Cl)	2022/08/27	2.0		%	20
A696338	JAB	Matrix Spike	Dissolved Calcium (Ca)	2022/08/27		104	%	80 - 120
			Dissolved Iron (Fe)	2022/08/27		105	%	80 - 120

 Page 17 of 28

 Bureau Veritas
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Magnesium (Mg)	2022/08/27		104	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/27		107	%	80 - 120
			Dissolved Potassium (K)	2022/08/27		112	%	80 - 120
			Dissolved Sodium (Na)	2022/08/27		104	%	80 - 120
A696338	JAB	Spiked Blank	Dissolved Calcium (Ca)	2022/08/27		101	%	80 - 120
			Dissolved Iron (Fe)	2022/08/27		102	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/27		99	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/27		103	%	80 - 120
			Dissolved Potassium (K)	2022/08/27		108	%	80 - 120
			Dissolved Sodium (Na)	2022/08/27		101	%	80 - 120
A696338	JAB	Method Blank	Dissolved Calcium (Ca)	2022/08/27	<0.30		mg/L	
			Dissolved Iron (Fe)	2022/08/27	<0.060		mg/L	
			Dissolved Magnesium (Mg)	2022/08/27	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/27	< 0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/27	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/27	<0.50		mg/L	
A696338	JAB	RPD	Dissolved Calcium (Ca)	2022/08/27	1.9		%	20
			Dissolved Iron (Fe)	2022/08/27	0.96		%	20
			Dissolved Magnesium (Mg)	2022/08/27	4.0		%	20
			Dissolved Manganese (Mn)	2022/08/27	0		%	20
			Dissolved Potassium (K)	2022/08/27	NC		%	20
			Dissolved Sodium (Na)	2022/08/27	NC		%	20
A697055	WPK	Matrix Spike [BAK848-04]	1,4-Difluorobenzene (sur.)	2022/08/28		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/28		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/28		96	%	50 - 140
			Benzene	2022/08/28		91	%	50 - 140
			Toluene	2022/08/28		90	%	50 - 140
			Ethylbenzene	2022/08/28		89	%	50 - 140
			m & p-Xylene	2022/08/28		95	%	50 - 140
			o-Xylene	2022/08/28		93	%	50 - 140
			F1 (C6-C10)	2022/08/28		92	%	60 - 140
A697055	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/28		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/28		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/28		98	%	50 - 140
			Benzene	2022/08/28		92	%	60 - 130
			Toluene	2022/08/28		91	%	60 - 130
			Ethylbenzene	2022/08/28		92	%	60 - 130
			m & p-Xylene	2022/08/28		97	%	60 - 130
			o-Xylene	2022/08/28		95	%	60 - 130
			F1 (C6-C10)	2022/08/28		80	%	60 - 140
A697055	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/29		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/29		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/29		94	%	50 - 140
			Benzene	2022/08/29	<0.00040		mg/L	
			Toluene	2022/08/29	<0.00040		mg/L	
			Ethylbenzene	2022/08/29	<0.00040		mg/L	
			m & p-Xylene	2022/08/29	<0.0011 (2)		mg/L	
			o-Xylene	2022/08/29	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/29	<0.10		mg/L	
A697055	WPK	RPD [BAK847-04]	Benzene	2022/08/29	4.3		%	30
			Toluene	2022/08/29	NC		%	30
			Ethylbenzene	2022/08/29	8.8		%	30



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	-		m & p-Xylene	2022/08/29	12	/	%	30
			o-Xylene	2022/08/29	6.6		%	30
			F1 (C6-C10)	2022/08/29	0.79		%	30
A698072	STI	Matrix Spike	Total Aluminum (Al)	2022/08/30		104	%	80 - 120
			Total Antimony (Sb)	2022/08/30		99	%	80 - 120
			Total Arsenic (As)	2022/08/30		95	%	80 - 120
			Total Beryllium (Be)	2022/08/30		99	%	80 - 120
			Total Chromium (Cr)	2022/08/30		98	%	80 - 120
			Total Cobalt (Co)	2022/08/30		96	%	80 - 120
			Total Copper (Cu)	2022/08/30		95	%	80 - 120
			Total Lead (Pb)	2022/08/30		98	%	80 - 120
			Total Molybdenum (Mo)	2022/08/30		102	%	80 - 120
			Total Nickel (Ni)	2022/08/30		95	%	80 - 120
			Total Selenium (Se)	2022/08/30		96	%	80 - 120
			Total Silver (Ag)	2022/08/30		98	%	80 - 120
			Total Thallium (TI)	2022/08/30		102	%	80 - 120
			Total Tin (Sn)	2022/08/30		99	%	80 - 120
			Total Titanium (Ti)	2022/08/30		96	%	80 - 120
			Total Uranium (U)	2022/08/30		104	%	80 - 120
			Total Vanadium (V)	2022/08/30		99	%	80 - 120
			Total Zinc (Zn)	2022/08/30		94	%	80 - 120
A698072	STI	Spiked Blank	Total Aluminum (Al)	2022/08/30		98	%	80 - 120
			Total Antimony (Sb)	2022/08/30		99	%	80 - 120
			Total Arsenic (As)	2022/08/30		97	%	80 - 120
			Total Beryllium (Be)	2022/08/30		99	%	80 - 120
			Total Chromium (Cr)	2022/08/30		99	%	80 - 120
			Total Cobalt (Co)	2022/08/30		99	%	80 - 120
			Total Copper (Cu)	2022/08/30		99	%	80 - 120
			Total Lead (Pb)	2022/08/30		98	%	80 - 120
			Total Molybdenum (Mo)	2022/08/30		100	%	80 - 120
			Total Nickel (Ni)	2022/08/30		99	%	80 - 120
			Total Selenium (Se)	2022/08/30		102	%	80 - 120
			Total Silver (Ag)	2022/08/30		100	%	80 - 120
			Total Thallium (TI)	2022/08/30		100	%	80 - 120
			Total Tin (Sn)	2022/08/30		97	%	80 - 120
			Total Titanium (Ti)	2022/08/30		98	%	80 - 120
			Total Uranium (U)	2022/08/30		100	%	80 - 120
			Total Vanadium (V)	2022/08/30		99	%	80 - 120
			Total Zinc (Zn)	2022/08/30		97	%	80 - 120
A698072	STI	Method Blank	Total Aluminum (Al)	2022/08/30	<0.0030		mg/L	
			Total Antimony (Sb)	2022/08/30	<0.00060		mg/L	
			Total Arsenic (As)	2022/08/30	<0.00020		mg/L	
			Total Beryllium (Be)	2022/08/30	<0.0010		mg/L	
			Total Chromium (Cr)	2022/08/30	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/30	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/30	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/30	<0.00020		mg/L	
			Total Molybdenum (Mo)	2022/08/30	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/30	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/30	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/30	<0.00010		mg/L	
			Total Thallium (Tl)	2022/08/30	<0.00020		mg/L	

Page 19 of 28 Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	-		Total Tin (Sn)	2022/08/30	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/30	<0.0010		mg/L	
			Total Uranium (U)	2022/08/30	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/30	< 0.0010		mg/L	
			Total Zinc (Zn)	2022/08/30	<0.0030		mg/L	
A698072	STI	RPD	Total Aluminum (Al)	2022/08/30	6.9		%	20
			Total Antimony (Sb)	2022/08/30	NC		%	20
			Total Arsenic (As)	2022/08/30	6.0		%	20
			Total Beryllium (Be)	2022/08/30	NC		%	20
			Total Chromium (Cr)	2022/08/30	NC		%	20
			Total Cobalt (Co)	2022/08/30	NC		%	20
			Total Copper (Cu)	2022/08/30	NC		%	20
			Total Lead (Pb)	2022/08/30	1.7		%	20
			Total Molybdenum (Mo)	2022/08/30	NC		%	20
			Total Nickel (Ni)	2022/08/30	6.8		%	20
			Total Selenium (Se)	2022/08/30	1.4		%	20
			Total Silver (Ag)	2022/08/30	NC		%	20
			Total Thallium (TI)	2022/08/30	NC		%	20
			Total Tin (Sn)	2022/08/30	2.5		%	20
			Total Titanium (Ti)	2022/08/30	NC		%	20
			Total Uranium (U)	2022/08/30	3.5		%	20
			Total Vanadium (V)	2022/08/30	4.0		%	20
			Total Zinc (Zn)	2022/08/30	4.0		%	20
A698075	PC5	Matrix Spike	Total Barium (Ba)	2022/08/30		102	%	80 - 120
		maannopme	Total Boron (B)	2022/08/30		103	%	80 - 120
			Total Calcium (Ca)	2022/08/30		101	%	80 - 120
			Total Iron (Fe)	2022/08/30		102	%	80 - 120
			Total Lithium (Li)	2022/08/30		102	%	80 - 120
			Total Magnesium (Mg)	2022/08/30		100	%	80 - 120
			Total Manganese (Mn)	2022/08/30		100	%	80 - 120
			Total Phosphorus (P)	2022/08/30		99	%	80 - 120
			Total Potassium (K)	2022/08/30		104	%	80 - 120
			Total Silicon (Si)	2022/08/30		101	%	80 - 120
			Total Sodium (Na)	2022/08/30		NC	%	80 - 120
			Total Strontium (Sr)	2022/08/30		98	%	80 - 120
			Total Sulphur (S)	2022/08/30		95	%	80 - 120
A698075	PC5	Spiked Blank	Total Barium (Ba)	2022/08/30		102	%	80 - 120
1000070	1.00	Spined Blank	Total Boron (B)	2022/08/30		102	%	80 - 120
			Total Calcium (Ca)	2022/08/30		103	%	80 - 120
			Total Iron (Fe)	2022/08/30		103	%	80 - 120
			Total Lithium (Li)	2022/08/30		102	%	80 - 120
			Total Magnesium (Mg)	2022/08/30		104	%	80 - 120
			Total Manganese (Mn)	2022/08/30		102	%	80 - 120
			Total Phosphorus (P)	2022/08/30		99	%	80 - 120
			Total Potassium (K)	2022/08/30		105	%	80 - 120
			Total Silicon (Si)	2022/08/30		103	%	80 - 120 80 - 120
			Total Sodium (Na)	2022/08/30		102	%	80 - 120 80 - 120
			Total Strontium (Sr)	2022/08/30		103	%	80 - 120 80 - 120
			Total Sulphur (S)	2022/08/30		96	%	80 - 120 80 - 120
A698075	PC5	Method Blank	Total Barium (Ba)	2022/08/30	<0.010	50	% mg/L	00 - 120
HU30U/3	FCD		Total Barium (Ba) Total Boron (B)	2022/08/30	<0.010			
			Total Calcium (Ca)	2022/08/30	<0.020		mg/L mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Iron (Fe)	2022/08/30	<0.060		mg/L	
			Total Lithium (Li)	2022/08/30	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/30	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/30	< 0.0040		mg/L	
			Total Phosphorus (P)	2022/08/30	<0.10		mg/L	
			Total Potassium (K)	2022/08/30	<0.30		mg/L	
			Total Silicon (Si)	2022/08/30	<0.11		mg/L	
			Total Sodium (Na)	2022/08/30	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/30	<0.020		mg/L	
			Total Sulphur (S)	2022/08/30	<0.20		mg/L	
A698075	PC5	RPD	Total Barium (Ba)	2022/08/30	4.2		%	20
			Total Boron (B)	2022/08/30	4.0		%	20
			Total Calcium (Ca)	2022/08/30	1.1		%	20
			Total Iron (Fe)	2022/08/30	9.6		%	20
			Total Lithium (Li)	2022/08/30	1.8		%	20
			Total Magnesium (Mg)	2022/08/30	1.9		%	20
			Total Manganese (Mn)	2022/08/30	7.0		%	20
			Total Phosphorus (P)	2022/08/30	NC		%	20
			Total Potassium (K)	2022/08/30	1.5		%	20
			Total Silicon (Si)	2022/08/30	3.0		%	20
			Total Sodium (Na)	2022/08/30	1.4		%	20
			Total Strontium (Sr)	2022/08/30	2.0		%	20
			Total Sulphur (S)	2022/08/30	2.7		%	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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limit raised due to interferent.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Qiliang (Alex) Wu, Senior Analyst

Sandy Yuan, M.Sc., QP, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

1/monicatelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas 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.

COR FCD-00265 / 4 Page _____ of ____

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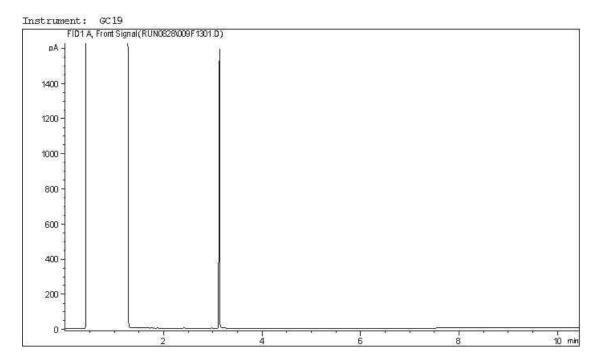
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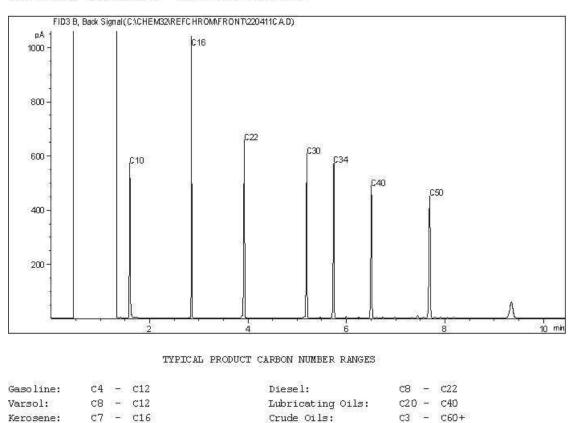
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Page 1 of			LAB USE ONLY - PLACE STICKER HERE	(), i var l'A	1 to 20:00	Rush Confirmation #:			19 20 21 22 Regular Turnaround Time (TAT)	. 📈 5 to 7 Day	Rush Turnaround Time (TAT) Curcharges apply	TIMBUS	а тои от а 0 иот а 1 4 Day	Hoto Date	Ema:	11.000	S	to far like co	59544	Received in Yellow hite	BV: J. Merria	NID 60 2003	AUD LE LULL	100 100 100	Temps 3 4 4	ELECT TO BUEAU VERTAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACCANOMLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH	Temperature	*C reading by:	Time	-	
LSS CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414-8100-8104	22525414-3000	NA NA	Parchell WEST CHANNEL, NF	NT		8 9 10 11 12 13 14 15 16 17 18		4	ed ed silt, clay)	kleten k kleten kletot - vlozsib - klocon klocsim klons % kleten	Mercury Mercury 4 5alinity 4 55eve (75		× ×	× ×	×	SX.							ING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDG	THE LABORATORY LISTED ABOVE TO OBTAIN A COPY LAB USE ONLY	Seal present Tes	Cooling media present Date	TO DD DD	N 28 08
Ż	voice)	S Quotation #:	:e P.O. #/ AFE#:	Project #:	Postal T2P 4K3 Site #: Code: T2P 4K3	Site Location:	D W5P.COM Site Location	1	1 2 3 4 5 6 7		(яедынег	:2 MUION SPERVEE	FIELD FIL FIELD PRI LAB FILTF BTEX F1-I PAA CHA3 BARIUM BARIUM		××		× × ×	Wxx W							ANDARD TERMS AND CONDITIONS. SIGNI	LIERMIS AND-CONDITIONS OR BY CALLING T	ç	Received by: (Signature/ Print)	0	2
hoose Location: Caligary, AB: 4000 13th St. NE, T2E 6F8 Toll Free (800) 386-7247 Edmonton, AB: 3331.46 St. Ti6B 2R4 Toll Free (800) 386-7247 Winnipet, MB: D-675 Berry St. R3H 1A7 Toll Free (866) 800-6208	Report Information (if differs from invoice)	Golder Associates	Aurelie Bellavance		Calgary AB	403-299-5600	Aucelic, Bollowance O	a tan Duspi		Drinking Water - Manitoba	Other	L DELIVERY TO BUREAU VERITAS	Date Sampled Time (24hr)	MM DD HH MM Matrix	08 15 16 00 Su	16 17 00 CW	16 17 20 GW	15 15 00 Su	× 16 16 00 0W							HAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS ST	LABLE FOR VIEWING AT WWW.BWNA.COM/ LAB USE ONLY YES YES	Seal intact	Cooling media present	MIM HL	
ion: .Β: 4000 19th Si .Λ, AB: 9331-48 , MB: D-675 Bet		Company:	Contact Name:	Street Address:	City:	Phone:	Email:	Copies:	teria de la como		ū	WPLING UNTIL	Date	*	2022		-		X							THIS CHAIN OF C		0	Date Date	-	
Choose Location: Coleany, A8: 4 Edmonton, A.A. Winnipes, W	nation Invoice to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Code:		Canada Account Payable		Regulatory Criteria	CCME Drinking Water - Canada	ichewan	SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO		Sample Identification	SW22-03	1	9-05	5W22-07	2-9001							- UNLESS OTHERWISE AGREED TO IN VIRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTORY IS - ADD ADD ADD ADD ADD ADD ADD ADD ADD AD	Yes No	<u>}</u>	by: (Signature/ Print) 1 12	6	
	Invoice Information	Company :	Contact Name:	Street Address:	City:	Phone:	Email:	Copies:		LTT DAT1	Saskatchewan	54			1 54	2 P10	3 1219	4 5 W	5 120	9	7	ø	6	10	11 12	*UNLESS OTHE	LAB USE ONLY	Seal present Seal intact	Relin	1	2

Page 24 of 28

CCME Hydrocarbons (F2-F4 in water) Chromatogram

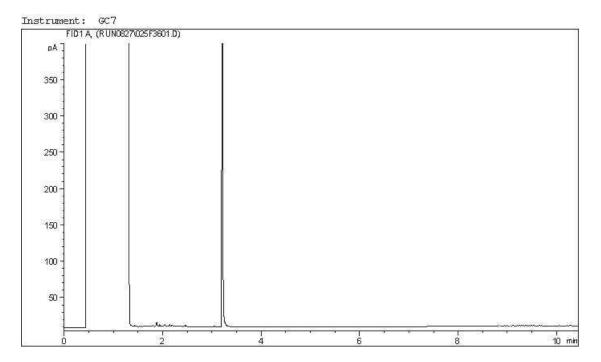


Carbon Range Distribution - Reference Chromatogram

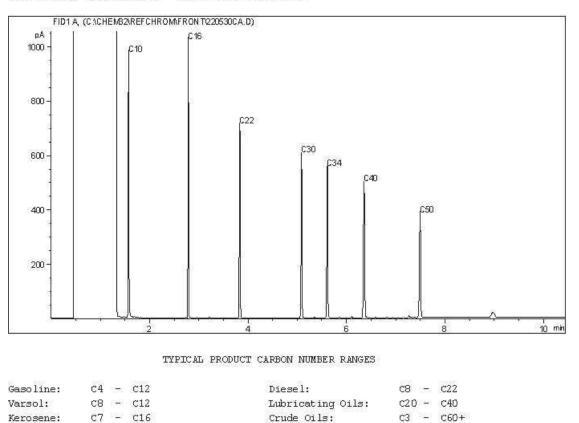


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in water) Chromatogram



Carbon Range Distribution - Reference Chromatogram

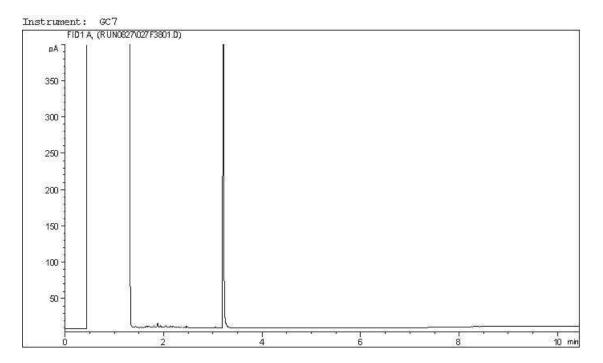


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

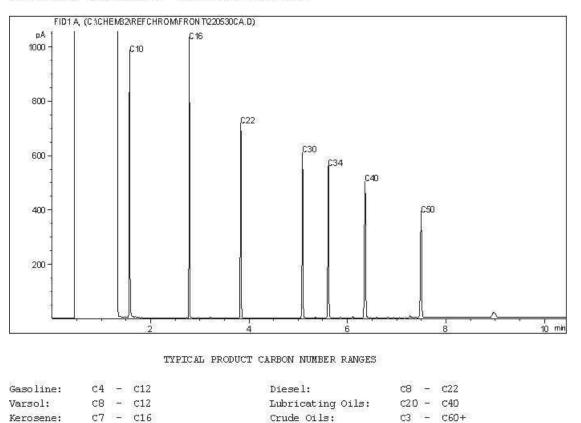
Kerosene:

GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL Client ID: P19-05

CCME Hydrocarbons (F2-F4 in water) Chromatogram



Carbon Range Distribution - Reference Chromatogram

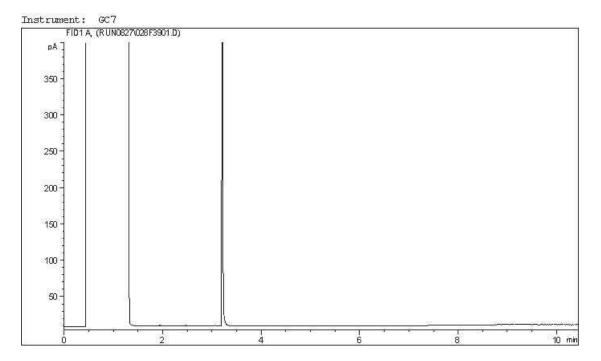


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

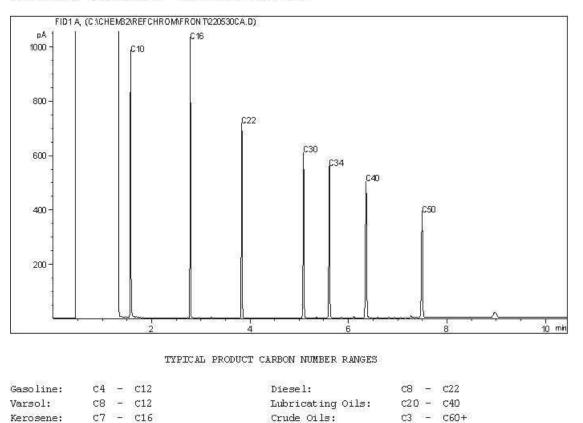
Kerosene:

Crude Oils:

CCME Hydrocarbons (F2-F4 in water) Chromatogram



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewo	ell, NT		_	Sampling Date: August 15 and 16, 2022
Golder Project Number: 2	252541	4-1000		Laboratory: Bureau Veritas Edmonton
Lab Submission Number: (264060		_	
Was the Cooler Received at the lab Was proper chain of custody of the Were sample temperatures accepta Were all samples analyzed and ext Has lab warranted all tests were in Was sufficient sample provided for Has lab warranted all samples were	samples ble wher cacted wi statistica the requ	s document they reach ithin hold t al control in uested anal	ted and key ned lab?: imes?: n CoA?: ysis?	pt? Yes Yes No Yes Yes
Are All Laboratory QC Within Acc	ceptance	Criteria (Y	es, No, N	lot Applicable)?
	Yes	No	NA	Comments
Surrogate Recovery		Х		All remaining laboratory QC results are within
Method Blank Concentration		Х		acceptance criteria, please see QA/QC
Laboratory Duplicate RPD	Х			appendix.
Matrix Spike Recovery		Х		
Blank Spike Recovery		Х		
Are All Field QC Samples Within	Alert Lir	nits (Yes, 1	No, Not A	pplicable)?
	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			Х	
Is data considered reliable (Yes/No If answer is "No" or "Suspect", des			ationale:	Yes
Data Reviewed by (Print): <u>A</u>	Anita Co	lbert	_	Data Reviewed by (Signature):
Date:	August	31, 2022	_	



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1100 Site Location: CAMP FAREWELL Your C.O.C. #: 1 OF 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232204 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C264062 Received: 2022/08/22, 10:15

Sample Matrix: Soil # Samples Received: 4

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	4	2022/09/03	2022/09/03	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	4	N/A	2022/08/31	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	4	N/A	2022/09/01		Auto Calc
Cation/EC Ratio (1)	4	N/A	2022/09/04		Auto Calc
Chloride (Soluble) (1)	4	2022/09/03	2022/09/04	AB SOP-00033 / AB SOP- 00020	SM 23-4500-Cl-E m
Hexavalent Chromium (1, 3)	4	2022/08/30	2022/08/31	AB SOP-00063	SM 23 3500-Cr B m
Conductivity @25C (Soluble) (1)	4	2022/09/04	2022/09/04	AB SOP-00033 / AB SOP- 00004	SM 23 2510 B m
CCME Hydrocarbons (F2-F4 in soil) (1, 4)	3	2022/08/26	2022/08/29	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 4)	1	2022/08/26	2022/08/30	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	4	2022/09/02	2022/09/03	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Sum of Cations, Anions (1)	4	N/A	2022/09/04		Auto Calc
Moisture (1)	4	N/A	2022/08/29	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (1)	4	N/A	2022/08/30		Auto Calc
PAH in Soil by GC/MS (1)	4	2022/08/29	2022/08/29	AB SOP-00036 / AB SOP- 00003	EPA 3540C/8270E m
pH @25C (1:2 Calcium Chloride Extract) (1)	4	2022/09/02	2022/09/02	AB SOP-00033 / AB SOP- 00006	SM 23 4500 H+B m
Sodium Adsorption Ratio (1)	4	N/A	2022/09/04		Auto Calc
Soluble lons (1)	4	2022/09/03	2022/09/04	AB SOP-00033 / AB SOP- 00042	EPA 6010d R5 m
Soluble Paste (1)	4	2022/09/03	2022/09/03	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	4	N/A	2022/08/29		Auto Calc
Theoretical Gypsum Requirement (1, 5)	4	N/A	2022/09/04		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1100 Site Location: CAMP FAREWELL Your C.O.C. #: 1 OF 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232204 Version: 2 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C264062 Received: 2022/08/22, 10:15

using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(3) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(4) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(5) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.



Bureau Veritas 14 Sep 2022 17:00:40

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAK857		BAK858		BAK859		BAK860		
Sampling Date		2022/08/15 09:00		2022/08/15 09:15		2022/08/15 09:30		2022/08/15 09:45		
COC Number		1 OF 1		1 OF 1		1 OF 1		1 OF 1		
	UNITS	BH22-54-01	RDL	BH22-54-02	RDL	BH22-55-01	RDL	BH22-55-02	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<24 (1)	24	16	10	<41 (1)	41	<35 (1)	35	A697045
F3 (C16-C34 Hydrocarbons)	mg/kg	340 (1)	120	310	50	600 (1)	210	350 (1)	170	A697045
F4 (C34-C50 Hydrocarbons)	mg/kg	<120 (1)	120	74	50	<210 (1)	210	<170 (1)	170	A697045
Reached Baseline at C50	mg/kg	Yes	N/A	Yes	N/A	Yes	N/A	Yes	N/A	A697045
Physical Properties						•		•		
Moisture	%	59	0.30	47	0.30	76	0.30	71	0.30	A697058
Volatiles	•		•		•	•		•		
Xylenes (Total)	mg/kg	<0.13	0.13	<0.045	0.045	<0.26	0.26	<0.21	0.21	A694842
F1 (C6-C10) - BTEX	mg/kg	<24	24	<10	10	<24	24	<24	24	A694842
Field Preserved Volatiles							-			
Benzene	mg/kg	<0.014 (2)	0.014	<0.0050	0.0050	<0.029 (2)	0.029	<0.023 (2)	0.023	A697156
Toluene	mg/kg	<0.050 (3)	0.050	<0.050	0.050	<0.059 (3)	0.059	<0.050 (3)	0.050	A697156
Ethylbenzene	mg/kg	<0.029 (2)	0.029	<0.010	0.010	<0.058 (2)	0.058	<0.046 (2)	0.046	A697156
m & p-Xylene	mg/kg	<0.12 (2)	0.12	<0.040	0.040	<0.23 (2)	0.23	<0.19 (2)	0.19	A697156
o-Xylene	mg/kg	<0.058 (2)	0.058	<0.020	0.020	<0.12 (2)	0.12	<0.093 (2)	0.093	A697156
F1 (C6-C10)	mg/kg	<24 (3)	24	<10	10	<24 (3)	24	<24 (3)	24	A697156
Surrogate Recovery (%)				-			-			
1,4-Difluorobenzene (sur.)	%	111	N/A	103	N/A	107	N/A	106	N/A	A697156
4-Bromofluorobenzene (sur.)	%	99	N/A	95	N/A	99	N/A	95	N/A	A697156
D10-o-Xylene (sur.)	%	104	N/A	95	N/A	106	N/A	100	N/A	A697156
D4-1,2-Dichloroethane (sur.)	%	92	N/A	95	N/A	91	N/A	89	N/A	A697156
O-TERPHENYL (sur.)	%	84	N/A	101	N/A	97	N/A	100	N/A	A697045
PDI - Papartable Detection Li	mit									

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limits raised based on sample weight used for analysis.

(3) Detection limit reported based on MDL and sample weight used for analysis.



SOIL SALINITY 4 (SOIL)

		BAK857		BAK858		BAK859		BAK860		
Sampling Date		2022/08/15 09:00		2022/08/15 09:15		2022/08/15 09:30		2022/08/15 09:45		
COC Number		1 OF 1		1 OF 1		1 OF 1		1 OF 1		
	UNITS	BH22-54-01	RDL	BH22-54-02	RDL	BH22-55-01	RDL	BH22-55-02	RDL	QC Batch
Calculated Parameters										
Anion Sum	meq/L	2.3	N/A	1.4	N/A	1.1	N/A	1.2	N/A	A694844
Cation Sum	meq/L	7.0	N/A	4.5	N/A	7.7	N/A	5.7	N/A	A694844
Cation/EC Ratio	N/A	11	0.10	12	0.10	12	0.10	11	0.10	A694843
Calculated Calcium (Ca)	mg/kg	67	1.7	47	1.8	240	5.2	130	3.6	A694837
Calculated Magnesium (Mg)	mg/kg	31	1.1	16	1.2	110	3.5	51	2.4	A694837
Calculated Sodium (Na)	mg/kg	41	2.9	38	3.0	98	8.7	69	6.1	A694837
Calculated Potassium (K)	mg/kg	10	1.5	2.0	1.6	56	4.5	10	3.2	A694837
Calculated Chloride (Cl)	mg/kg	48	11	23	12	58	35	44	24	A694837
Calculated Sulphate (SO4)	mg/kg	64	5.7	50	6.0	110	17	82	12	A694837
Soluble Parameters										
Soluble Chloride (Cl)	mg/L	42	10	20	10	17	10	18	10	A704934
Soluble Conductivity	dS/m	0.65	0.020	0.38	0.020	0.64	0.020	0.50	0.020	A704946
Soluble (CaCl2) pH	рН	6.72 (1)	N/A	6.74 (1)	N/A	6.52 (1)	N/A	6.25 (1)	N/A	A703530
Sodium Adsorption Ratio	N/A	0.96	0.10	1.1	0.10	0.71	0.10	0.84	0.10	A694824
Soluble Calcium (Ca)	mg/L	59	1.5	39	1.5	69	1.5	52	1.5	A704930
Soluble Magnesium (Mg)	mg/L	27	1.0	14	1.0	32	1.0	21	1.0	A704930
Soluble Sodium (Na)	mg/L	36	2.5	31	2.5	28	2.5	28	2.5	A704930
Soluble Potassium (K)	mg/L	9.1	1.3	1.7	1.3	16	1.3	4.2	1.3	A704930
Saturation %	%	110	N/A	120	N/A	350	N/A	240	N/A	A703514
Soluble Sulphate (SO4)	mg/L	56	5.0	42	5.0	32	5.0	34	5.0	A704930
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	<0.20	0.20	<0.20	0.20	<0.20	0.20	A694845

N/A = Not Applicable

(1) pH was done on a 10:1 Calcium Chloride to soil ratio due to the matrix of the sample.



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		BAK857		BAK858			BAK859			BAK860		
Sampling Date		2022/08/15 09:00		2022/08/15 09:15			2022/08/15 09:30			2022/08/15 09:45		
COC Number		1 OF 1		1 OF 1			1 OF 1			1 OF 1		
	UNITS	BH22-54-01	RDL	BH22-54-02	RDL	QC Batch	BH22-55-01	RDL	QC Batch	BH22-55-02	RDL	QC Batch
Elements												
Soluble (Hot water) Boron (B)	mg/kg	0.54	0.23	0.84	0.27	A704571	1.6	0.35	A704575	1.8	0.35	A704571
Hex. Chromium (Cr 6+)	mg/kg	<0.20 (1)	0.20	<0.080	0.080	A699535	<0.33 (1)	0.33	A699535	<0.080	0.080	A699535
Total Antimony (Sb)	mg/kg	<1.0	1.0	<1.0	1.0	A704187	<1.0	1.0	A704187	<1.0	1.0	A704187
Total Arsenic (As)	mg/kg	4.4	2.0	4.0	2.0	A704187	5.1	2.0	A704187	4.8	2.0	A704187
Total Barium (Ba)	mg/kg	250	2.0	280	2.0	A704187	490	2.0	A704187	380	2.0	A704187
Total Beryllium (Be)	mg/kg	<0.80	0.80	<0.80	0.80	A704187	<0.80	0.80	A704187	<0.80	0.80	A704187
Total Cadmium (Cd)	mg/kg	0.24	0.10	0.26	0.10	A704187	0.62	0.10	A704187	0.82	0.10	A704187
Total Chromium (Cr)	mg/kg	9.0	2.0	12	2.0	A704187	7.9	2.0	A704187	9.9	2.0	A704187
Total Cobalt (Co)	mg/kg	3.9	1.0	5.1	1.0	A704187	19	1.0	A704187	20	1.0	A704187
Total Copper (Cu)	mg/kg	6.4	2.0	6.6	2.0	A704187	11	2.0	A704187	19	2.0	A704187
Total Lead (Pb)	mg/kg	4.1	1.0	4.3	1.0	A704187	3.8	1.0	A704187	4.3	1.0	A704187
Total Mercury (Hg)	mg/kg	<0.10	0.10	<0.10	0.10	A704187	<0.10	0.10	A704187	<0.10	0.10	A704187
Total Molybdenum (Mo)	mg/kg	<0.80	0.80	<0.80	0.80	A704187	1.3	0.80	A704187	0.92	0.80	A704187
Total Nickel (Ni)	mg/kg	12	2.0	14	2.0	A704187	24	2.0	A704187	36	2.0	A704187
Total Selenium (Se)	mg/kg	<1.0	1.0	<1.0	1.0	A704187	<1.0	1.0	A704187	<1.0	1.0	A704187
Total Silver (Ag)	mg/kg	<0.40	0.40	<0.40	0.40	A704187	<0.40	0.40	A704187	<0.40	0.40	A704187
Total Thallium (Tl)	mg/kg	<0.20	0.20	<0.20	0.20	A704187	<0.20	0.20	A704187	<0.20	0.20	A704187
Total Tin (Sn)	mg/kg	<2.0	2.0	<2.0	2.0	A704187	<2.0	2.0	A704187	<2.0	2.0	A704187
Total Uranium (U)	mg/kg	0.50	0.40	0.74	0.40	A704187	0.94	0.40	A704187	1.8	0.40	A704187
Total Vanadium (V)	mg/kg	15	2.0	20	2.0	A704187	15	2.0	A704187	19	2.0	A704187
Total Zinc (Zn)	mg/kg	48	20	55	20	A704187	91	20	A704187	66	20	A704187

RDL = Reportable Detection Limit

(1) Detection limits raised due to high moisture content, samples contain => 50% moisture.



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BAK857		BAK858		BAK859		BAK860		
Sampling Date		2022/08/15		2022/08/15		2022/08/15		2022/08/15		
		09:00		09:15		09:30		09:45		
COC Number		1 OF 1		1 OF 1		1 OF 1		1 OF 1		
	UNITS	BH22-54-01	RDL	BH22-54-02	RDL	BH22-55-01	RDL	BH22-55-02	RDL	QC Batch
Polycyclic Aromatics										
Acenaphthene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
B[a]P TPE Total Potency Equivalents	mg/kg	<0.016	0.016	<0.0071	0.0071	<0.026	0.026	<0.022	0.022	A694874
Acenaphthylene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Acridine	mg/kg	0.032 (1)	0.022	<0.010	0.010	0.058 (1)	0.037	0.055 (1)	0.031	A697044
Anthracene	mg/kg	<0.0088 (1)	0.0088	<0.0040	0.0040	<0.015 (1)	0.015	<0.012 (1)	0.012	A697044
Benzo(a)anthracene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(b&j)fluoranthene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(k)fluoranthene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(g,h,i)perylene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(c)phenanthrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(a)pyrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Benzo(e)pyrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Chrysene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Dibenz(a,h)anthracene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Fluoranthene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Fluorene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Indeno(1,2,3-cd)pyrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
1-Methylnaphthalene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
2-Methylnaphthalene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Naphthalene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Phenanthrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Perylene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Pyrene	mg/kg	<0.011 (1)	0.011	<0.0050	0.0050	<0.019 (1)	0.019	<0.016 (1)	0.016	A697044
Quinoline	mg/kg	0.031 (1)	0.022	0.019	0.010	0.076 (1)	0.037	0.054 (1)	0.031	A697044
Surrogate Recovery (%)					•					
D10-ANTHRACENE (sur.)	%	106	N/A	102	N/A	102	N/A	106	N/A	A697044
D8-ACENAPHTHYLENE (sur.)	%	102	N/A	100	N/A	94	N/A	100	N/A	A697044
D8-NAPHTHALENE (sur.)	%	90	N/A	86	N/A	84	N/A	87	N/A	A697044
TERPHENYL-D14 (sur.)	%	108	N/A	98	N/A	98	N/A	103	N/A	A697044
RDL = Reportable Detection Limit										

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt Package 1 5.0°C Package 2 3.7°C Package 3 5.3°C Version 2: Report reissued to include Chromatogram review on sample BH22-55-01/BAK859 as per client request received 2022/09/07. HYDROCARBON RESEMBLANCE The reported hydrocarbon resemblance was obtained by visual comparison of the sample chromatogram with a library of reference product chromatograms. Since variables such as the degree and type of weathering and the presence of non-petrogenic hydrocarbons cannot be duplicated in reference spectra, the resemblance information must be regarded as approximate and qualitative and as such, Bureau Veritas Laboratories can assume no liability for any conclusions drawn from these data. Sample BAK859 [BH22-55-01] : The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil. **CCME REGULATED METALS - SOILS (SOIL) Comments** Sample BAK857 [BH22-54-01] Boron (Hot Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. Sample BAK857 [BH22-54-01] Elements by ICPMS - Soils: Detection limits raised due to sample matrix. Sample BAK858 [BH22-54-02] Boron (Hot Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. Sample BAK858 [BH22-54-02] Elements by ICPMS - Soils: Detection limits raised due to sample matrix. Sample BAK859 [BH22-55-01] Boron (Hot Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. Sample BAK859 [BH22-55-01] Elements by ICPMS - Soils: Detection limits raised due to sample matrix. Sample BAK860 [BH22-55-02] Boron (Hot Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. Sample BAK860 [BH22-55-02] Elements by ICPMS - Soils: Detection limits raised due to sample matrix. Results relate only to the items tested.



QUALITY ASSURANCE REPORT

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Lin
697044	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2022/08/29	Value	89	%	50 - 1
	NNO	maan op ne	D8-ACENAPHTHYLENE (sur.)	2022/08/29		86	%	50 - 1
			D8-NAPHTHALENE (sur.)	2022/08/29		77	%	50 - 1
			TERPHENYL-D14 (sur.)	2022/08/29		103	%	50 - 1
			Acenaphthene	2022/08/29		78	%	50 - 1
			Acenaphthylene	2022/08/29		80	%	50 - 1
			Acridine	2022/08/29		37 (1)	%	50 - 1
			Anthracene	2022/08/29		113	%	50 -
			Benzo(a)anthracene	2022/08/29		86	%	50 - 50 -
			Benzo(b&j)fluoranthene	2022/08/29		73	%	50 - 50 -
						68		
			Benzo(k)fluoranthene	2022/08/29			%	50 -
			Benzo(g,h,i)perylene	2022/08/29		57	%	50 -
			Benzo(c)phenanthrene	2022/08/29		82	%	50 -
			Benzo(a)pyrene	2022/08/29		75	%	50 -
			Benzo(e)pyrene	2022/08/29		61	%	50 -
			Chrysene	2022/08/29		72	%	50 -
			Dibenz(a,h)anthracene	2022/08/29		68	%	50 -
			Fluoranthene	2022/08/29		88	%	50 -
			Fluorene	2022/08/29		87	%	50 -
			Indeno(1,2,3-cd)pyrene	2022/08/29		70	%	50 -
			1-Methylnaphthalene	2022/08/29		69	%	50 -
			2-Methylnaphthalene	2022/08/29		90	%	50 -
			Naphthalene	2022/08/29		75	%	50 -
			Phenanthrene	2022/08/29		82	%	50 -
			Perylene	2022/08/29		60	%	50 -
			Pyrene	2022/08/29		84	%	50 -
			Quinoline	2022/08/29		94	%	50 -
97044	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/29		118	%	50 -
			D8-ACENAPHTHYLENE (sur.)	2022/08/29		118	%	50 -
			D8-NAPHTHALENE (sur.)	2022/08/29		101	%	50 -
			TERPHENYL-D14 (sur.)	2022/08/29		128	%	50 -
			Acenaphthene	2022/08/29		98	%	50 -
			Acenaphthylene	2022/08/29		108	%	50 -
			Acridine	2022/08/29		84	%	50 -
			Anthracene	2022/08/29		116	%	50 -
			Benzo(a)anthracene	2022/08/29		113	%	50 -
			Benzo(b&j)fluoranthene	2022/08/29		108	%	50 -
			Benzo(k)fluoranthene	2022/08/29		114	%	50 -
			Benzo(g,h,i)perylene	2022/08/29		105	%	50 -
			Benzo(c)phenanthrene	2022/08/29		105	%	50 -
			Benzo(a)pyrene	2022/08/29		110	%	50 -
			Benzo(e)pyrene	2022/08/29		93	%	50 -
			Chrysene	2022/08/29		93	%	50 -
			Dibenz(a,h)anthracene	2022/08/29		111	%	50 -
			Fluoranthene	2022/08/29		115	%	50 -
			Fluorene	2022/08/29		109	%	50 -
			Indeno(1,2,3-cd)pyrene	2022/08/29		119	%	50 -
			1-Methylnaphthalene	2022/08/29		85	%	50 -
			2-Methylnaphthalene	2022/08/29		111	%	50 -
			Naphthalene	2022/08/29		96	%	50 -
			Phenanthrene	2022/08/29		106	%	50 - 50 -
			Perylene	2022/08/29		100	%	50 - 50 -



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Pyrene	2022/08/29		112	%	50 - 130
			Quinoline	2022/08/29		88	%	50 - 130
A697044	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/29		103	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/29		98	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/29		86	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/29		119	%	50 - 130
			Acenaphthene	2022/08/29	<0.0050		mg/kg	
			Acenaphthylene	2022/08/29	<0.0050		mg/kg	
			Acridine	2022/08/29	<0.010		mg/kg	
			Anthracene	2022/08/29	<0.0040		mg/kg	
			Benzo(a)anthracene	2022/08/29	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2022/08/29	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2022/08/29	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2022/08/29	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2022/08/29	<0.0050		mg/kg	
			Benzo(a)pyrene	2022/08/29	<0.0050		mg/kg	
			Benzo(e)pyrene	2022/08/29	<0.0050		mg/kg	
			Chrysene	2022/08/29	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2022/08/29	<0.0050		mg/kg	
			Fluoranthene	2022/08/29	<0.0050		mg/kg	
			Fluorene	2022/08/29	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/08/29	<0.0050		mg/kg	
			1-Methylnaphthalene	2022/08/29	<0.0050		mg/kg	
			2-Methylnaphthalene	2022/08/29	<0.0050		mg/kg	
			Naphthalene	2022/08/29	<0.0050		mg/kg	
			Phenanthrene	2022/08/29	<0.0050		mg/kg	
			Perylene	2022/08/29	<0.0050		mg/kg	
			Pyrene	2022/08/29	<0.0050		mg/kg	
			Quinoline	2022/08/29	<0.010		mg/kg	
A697044	NK3	RPD	Acenaphthene	2022/08/29	NC		%	50
			Acenaphthylene	2022/08/29	NC		%	50
			Acridine	2022/08/29	NC		%	50
			Anthracene	2022/08/29	NC		%	50
			Benzo(a)anthracene	2022/08/29	NC		%	50
			Benzo(b&j)fluoranthene	2022/08/29	1.2		%	50
			Benzo(k)fluoranthene	2022/08/29	NC		%	50
			Benzo(g,h,i)perylene	2022/08/29	2.0		%	50
			Benzo(c)phenanthrene	2022/08/29	NC		%	50
			Benzo(a)pyrene	2022/08/29	21		%	50
			Benzo(e)pyrene	2022/08/29	8.7		%	50
			Chrysene	2022/08/29	9.5		%	50
			Dibenz(a,h)anthracene	2022/08/29	NC		%	50
			Fluoranthene	2022/08/29	1.0		%	50
			Fluorene	2022/08/29	5.8		%	50
			Indeno(1,2,3-cd)pyrene	2022/08/29	1.7		%	50
			1-Methylnaphthalene	2022/08/29	9.1		%	50
			2-Methylnaphthalene	2022/08/29	8.7		%	50
			Naphthalene	2022/08/29	9.4		%	50
			Phenanthrene	2022/08/29	8.7		%	50
			Perylene	2022/08/29	4.8		%	50
			Pyrene	2022/08/29	5.7		%	50
			Quinoline	2022/08/29	NC		%	50
			Page 0 o				,,,	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A697045	ZSN	Matrix Spike	O-TERPHENYL (sur.)	2022/08/29		76	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29		73	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/29		78	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/29		76	%	60 - 140
A697045	ZSN	Spiked Blank	O-TERPHENYL (sur.)	2022/08/29		76	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29		75	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/29		81	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/29		77	%	60 - 140
A697045	ZSN	Method Blank	O-TERPHENYL (sur.)	2022/08/29		80	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/29	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/29	<50		mg/kg	
A697045	ZSN	RPD	F2 (C10-C16 Hydrocarbons)	2022/08/29	15		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/29	7.6		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/29	11		%	40
A697058	MGL	Method Blank	Moisture	2022/08/29	<0.30		%	
A697058	MGL	RPD	Moisture	2022/08/29	13		%	20
A697156	LZ3	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/08/31		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/31		95	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/31		110	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/31		92	%	50 - 140
			Benzene	2022/08/31		102	%	50 - 140
			Toluene	2022/08/31		91	%	50 - 140
			Ethylbenzene	2022/08/31		98	%	50 - 140
			m & p-Xylene	2022/08/31		94	%	50 - 140
			o-Xylene	2022/08/31		92	%	50 - 140
			F1 (C6-C10)	2022/08/31		83	%	60 - 140
A697156	LZ3	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/31		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/31		93	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/31		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/31		90	%	50 - 140
			Benzene	2022/08/31		98	%	60 - 130
			Toluene	2022/08/31		87	%	60 - 130
			Ethylbenzene	2022/08/31		87	%	60 - 130
			m & p-Xylene	2022/08/31		88	%	60 - 130
			o-Xylene	2022/08/31		89	%	60 - 130
			F1 (C6-C10)	2022/08/31		73	%	60 - 140
A697156	LZ3	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/31		111	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/31		92	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/31		90	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/31		90	%	50 - 140
			Benzene	2022/08/31	<0.0050		mg/kg	
			Toluene	2022/08/31	<0.050		mg/kg	
			Ethylbenzene	2022/08/31	<0.010		mg/kg	
			m & p-Xylene	2022/08/31	<0.040		mg/kg	
			o-Xylene	2022/08/31	<0.020		mg/kg	
			F1 (C6-C10)	2022/08/31	<10		mg/kg	
A697156	LZ3	RPD	Benzene	2022/08/31	NC		%	50
			Toluene	2022/08/31	NC		%	50
			Ethylbenzene	2022/08/31	NC		%	50
			m & p-Xylene	2022/08/31	NC		%	50
			o-Xylene	2022/08/31	NC		%	50

 Page 10 of 20

 Bureau Veritas
 Edmonton: 9331 - 48th Street T6B 2R4
 Telephone (780)577-7100
 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Datem	mite	de type	F1 (C6-C10)	2022/08/31	NC	necovery	%	30
A699535	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/31		103	%	75 - 125
A699535	FMO	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/31		102	%	80 - 120
A699535	FMO	Method Blank	Hex. Chromium (Cr 6+)	2022/08/31	<0.080	102	mg/kg	00 120
A699535	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/31	<0.000 NC		%	35
A703514	HAP	QC Standard	Saturation %	2022/09/03	NC	95	%	75 - 125
A703514	HAP	RPD	Saturation %	2022/09/03	2.4	55	%	12
A703530	AL7	QC Standard	Soluble (CaCl2) pH	2022/09/02	2.4	100	%	97 - 103
A703530	AL7	Spiked Blank	Soluble (CaCl2) pH	2022/09/02		100	%	97 - 103
A703530	AL7	RPD	Soluble (CaCl2) pH	2022/09/02	0.12	100	%	N/A
A704187	MKJ	Matrix Spike	Total Antimony (Sb)	2022/09/03	0.12	93	%	75 - 125
A/0410/	IVINJ	Matrix Spike	Total Arsenic (As)	2022/09/03		89	%	75 - 125
			Total Barium (Ba)	2022/09/03		NC	%	75 - 125
			Total Beryllium (Be)	2022/09/03		89	%	75 - 125
			Total Cadmium (Cd)	2022/09/03		91	%	75 - 125
			Total Chromium (Cr)	2022/09/03		91	%	75 - 125
			(<i>'</i> ,	2022/09/03		91 90		75 - 125 75 - 125
			Total Cobalt (Co) Total Copper (Cu)	2022/09/03		90 89	% %	75 - 125 75 - 125
				2022/09/03				
			Total Lead (Pb) Total Mercury (Hg)	2022/09/03		89 87	% %	75 - 125 75 - 125
			Total Molybdenum (Mo)	2022/09/03		92		75 - 125 75 - 125
			, , ,			92 86	% %	75 - 125 75 - 125
			Total Nickel (Ni)	2022/09/03 2022/09/03		86 94	%	75 - 125 75 - 125
			Total Selenium (Se)					
			Total Silver (Ag)	2022/09/03		90	%	75 - 125
			Total Thallium (TI)	2022/09/03		88	%	75 - 125
			Total Tin (Sn)	2022/09/03		91	%	75 - 125
			Total Uranium (U)	2022/09/03		88	%	75 - 125
			Total Vanadium (V)	2022/09/03		107	%	75 - 125
4704407	N ALZ I		Total Zinc (Zn)	2022/09/03		87	%	75 - 125
A704187	MKJ	QC Standard	Total Antimony (Sb)	2022/09/03		107	%	15 - 182
			Total Arsenic (As)	2022/09/03		99	%	53 - 147
			Total Barium (Ba)	2022/09/03		99	%	80 - 119
			Total Cadmium (Cd)	2022/09/03		95	%	72 - 128
			Total Chromium (Cr)	2022/09/03		103	%	59 - 141
			Total Cobalt (Co)	2022/09/03		97	%	58 - 142
			Total Copper (Cu)	2022/09/03		105	%	83 - 117
			Total Lead (Pb)	2022/09/03		107	%	79 - 121
			Total Molybdenum (Mo)	2022/09/03		111	%	67 - 133
			Total Nickel (Ni)	2022/09/03		102	%	79 - 121
			Total Silver (Ag)	2022/09/03		93	%	47 - 153
			Total Tin (Sn)	2022/09/03		99	%	67 - 133
			Total Uranium (U)	2022/09/03		90	%	77 - 123
			Total Vanadium (V)	2022/09/03		104	%	79 - 121
			Total Zinc (Zn)	2022/09/03		101	%	79 - 121
A704187	MKJ	Spiked Blank	Total Antimony (Sb)	2022/09/03		96	%	80 - 120
			Total Arsenic (As)	2022/09/03		91	%	80 - 120
			Total Barium (Ba)	2022/09/03		91	%	80 - 120
			Total Beryllium (Be)	2022/09/03		89	%	80 - 120
			Total Cadmium (Cd)	2022/09/03		91	%	80 - 120
			Total Chromium (Cr)	2022/09/03		91	%	80 - 120
			Total Cobalt (Co)	2022/09/03		92	%	80 - 120
			Total Copper (Cu)	2022/09/03		91	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2022/09/03		90	%	80 - 120
			Total Mercury (Hg)	2022/09/03		93	%	80 - 120
			Total Molybdenum (Mo)	2022/09/03		93	%	80 - 120
			Total Nickel (Ni)	2022/09/03		90	%	80 - 120
			Total Selenium (Se)	2022/09/03		96	%	80 - 120
			Total Silver (Ag)	2022/09/03		92	%	80 - 120
			Total Thallium (Tl)	2022/09/03		90	%	80 - 120
			Total Tin (Sn)	2022/09/03		92	%	80 - 120
			Total Uranium (U)	2022/09/03		90	%	80 - 120
			Total Vanadium (V)	2022/09/03		91	%	80 - 120
			Total Zinc (Zn)	2022/09/03		91	%	80 - 120
A704187	MKJ	Method Blank	Total Antimony (Sb)	2022/09/03	<0.50		mg/kg	
			Total Arsenic (As)	2022/09/03	<1.0		mg/kg	
			Total Barium (Ba)	2022/09/03	<1.0		mg/kg	
			Total Beryllium (Be)	2022/09/03	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/09/03	<0.050		mg/kg	
			Total Chromium (Cr)	2022/09/03	<1.0		mg/kg	
			Total Cobalt (Co)	2022/09/03	<0.50		mg/kg	
			Total Copper (Cu)	2022/09/03	<1.0		mg/kg	
			Total Lead (Pb)	2022/09/03	<0.50		mg/kg	
			Total Mercury (Hg)	2022/09/03	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/09/03	<0.40		mg/kg	
			Total Nickel (Ni)	2022/09/03	<1.0		mg/kg	
			Total Selenium (Se)	2022/09/03	<0.50		mg/kg	
			Total Silver (Ag)	2022/09/03	<0.20		mg/kg	
			Total Thallium (Tl)	2022/09/03	<0.10		mg/kg	
			Total Tin (Sn)	2022/09/03	<1.0		mg/kg	
			Total Uranium (U)	2022/09/03	<0.20		mg/kg	
			Total Vanadium (V)	2022/09/03	<1.0		mg/kg	
			Total Zinc (Zn)	2022/09/03	<10		mg/kg	
A704187	MKJ	RPD	Total Antimony (Sb)	2022/09/03	NC		%	30
			Total Arsenic (As)	2022/09/03	13		%	30
			Total Barium (Ba)	2022/09/03	4.1		%	35
			Total Beryllium (Be)	2022/09/03	NC		%	30
			Total Cadmium (Cd)	2022/09/03	9.1		%	30
			Total Chromium (Cr)	2022/09/03	11		%	30
			Total Cobalt (Co)	2022/09/03	12		%	30
			Total Copper (Cu)	2022/09/03	1.4		%	30
			Total Lead (Pb)	2022/09/03	4.2		%	35
			Total Mercury (Hg)	2022/09/03	NC		%	35
			Total Molybdenum (Mo)	2022/09/03	21		%	35
			Total Nickel (Ni)	2022/09/03	7.8		%	30
			Total Selenium (Se)	2022/09/03	NC		%	30
			Total Silver (Ag)	2022/09/03	NC		%	35
			Total Thallium (Tl)	2022/09/03	NC		%	30
			Total Tin (Sn)	2022/09/03	NC		%	35
			Total Uranium (U)	2022/09/03	NC		%	30
			Total Vanadium (V)	2022/09/03	1.4		%	30
			Total Zinc (Zn)	2022/09/03	1.4		%	30
A704571	JAB	Matrix Spike	Soluble (Hot water) Boron (B)	2022/09/03		103	%	75 - 125
A704571	JAB	Spiked Blank	Soluble (Hot water) Boron (B)	2022/09/03		105	%	80 - 120
A704571	JAB	Method Blank	Soluble (Hot water) Boron (B)	2022/09/03	<0.10		mg/kg	



04/06

GOLDER ASSOCIATES LTD. Client Project #: 22525414-1100 Site Location: CAMP FAREWELL Your P.O. #: 22525414-1100-1104 Sampler Initials: JM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A704571	JAB	RPD	Soluble (Hot water) Boron (B)	2022/09/03	30		%	35
A704575	JAB	Matrix Spike	Soluble (Hot water) Boron (B)	2022/09/03		109	%	75 - 125
A704575	JAB	Spiked Blank	Soluble (Hot water) Boron (B)	2022/09/03		105	%	80 - 120
A704575	JAB	Method Blank	Soluble (Hot water) Boron (B)	2022/09/03	<0.10		mg/kg	
A704575	JAB	RPD	Soluble (Hot water) Boron (B)	2022/09/03	NC		%	35
A704930	JAB	Matrix Spike	Soluble Calcium (Ca)	2022/09/04		101	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/04		100	%	75 - 125
			Soluble Sodium (Na)	2022/09/04		99	%	75 - 125
			Soluble Potassium (K)	2022/09/04		101	%	75 - 125
A704930	JAB	QC Standard	Soluble Calcium (Ca)	2022/09/04		114	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/04		111	%	75 - 125
			Soluble Sodium (Na)	2022/09/04		110	%	75 - 125
			Soluble Potassium (K)	2022/09/04		103	%	75 - 125
			Soluble Sulphate (SO4)	2022/09/04		108	%	75 - 125
A704930	JAB	Spiked Blank	Soluble Calcium (Ca)	2022/09/04		102	%	80 - 120
			Soluble Magnesium (Mg)	2022/09/04		101	%	80 - 120
			Soluble Sodium (Na)	2022/09/04		100	%	80 - 120
			Soluble Potassium (K)	2022/09/04		101	%	80 - 120
A704930	JAB	Method Blank	Soluble Calcium (Ca)	2022/09/04	<1.5		mg/L	
			Soluble Magnesium (Mg)	2022/09/04	<1.0		mg/L	
			Soluble Sodium (Na)	2022/09/04	<2.5		mg/L	
			Soluble Potassium (K)	2022/09/04	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/09/04	<5.0		mg/L	
A704930	JAB	RPD	Soluble Calcium (Ca)	2022/09/04	5.7		%	30
			Soluble Magnesium (Mg)	2022/09/04	6.5		%	30
			Soluble Sodium (Na)	2022/09/04	15		%	30
			Soluble Potassium (K)	2022/09/04	14		%	30
			Soluble Sulphate (SO4)	2022/09/04	7.9		%	30
A704934	AFI	Matrix Spike [BAK858-01]	Soluble Chloride (Cl)	2022/09/04		110	%	75 - 125
A704934	AFI	QC Standard	Soluble Chloride (Cl)	2022/09/04		97	%	75 - 125
A704934	AFI	Spiked Blank	Soluble Chloride (Cl)	2022/09/04		107	%	80 - 120
A704934	AFI	Method Blank	Soluble Chloride (Cl)	2022/09/04	<10		mg/L	
A704934	AFI	RPD	Soluble Chloride (Cl)	2022/09/04	6.4		%	30
A704946	NQU	QC Standard	Soluble Conductivity	2022/09/04		110	%	75 - 125
A704946	NQU	Spiked Blank	Soluble Conductivity	2022/09/04		101	%	90 - 110
A704946	NQU	Method Blank	Soluble Conductivity	2022/09/04	<0.020		dS/m	
A704946	NQU	RPD	Soluble Conductivity	2022/09/04	5.4		%	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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Elizabeth Charko

Elizabeth Chacko, Senior Analyst, Organics

agent -sh

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Junzhi Gao

Janet Gao, B.Sc., QP, Supervisor, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

1/ennicatedk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas 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.

COR FCD-00265 / 4 Page ____ of

1155

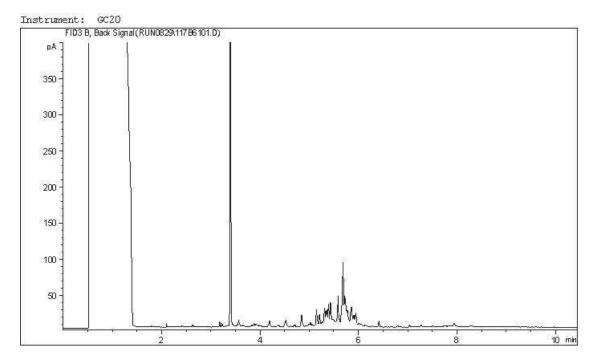
m m m e m m m m m TIME (HH:MM) 0 2 2 2 2 2 2 0 Ν 0 ADDITIONAL COOLER TEMPERATURE RECORD COOLER ID DOLFR I COOLER | TEMP TEMP TEMP TEMP TEMP TEMP TEMP TEMP TEMP COOLER COOLER TEMP COOLER OOLER DATE (YYYY/MM/DD) 26 4062 NO YES NO YES NO YES NO YES NO YES NO No YES NO NO 2 YES YES YES YES CHAIN-OF-CUSTODY RECORD MAXXAM JOB#: INTACT ICE PRESENT CUSTODY SEAL PRESENT ICE PRESENT CUSTODY SEAL PRESENT ICE PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT CUSTODY SEAL INTACT ICE PRESENT INTACT ICE PRESENT CUSTODY SEAL PRESENT PRESENT INTACT INTACT UCFDRESENT PRESENT PRESENT PRESENT PRESENT PRESENT CUSTODY SENT UCF PRESENT PRESENT INTACT ICE PRESENT PRESENT INTACT INTACT INTACT E PRESENT JSTODY SEAL **USTODY SEAL** 20 m Q S. m m m m m m m Q G, 01~ 2 2 N 2 2 0 d-57-M-*** COOLER ID YES NO COOLER IC TEMP TEMP COOLER II TEMP TEMP TEMP COOLER COOLER I TEMP TEMP COOLER JOLER TEMP TEMP COOLER TEMP OOLER Jose Menon RECEIVED BY (SIGN & PRINT) NO NO NO YES NO NO No YES NO NO QN YES COOLER OBSERVATIONS: YES YES YES YES YES YES ICE PRESENT CUSTODY SEAL PRESENT INTACT INTACT CUSTODY SEAL INTACT INTACT ICE PRESENT INTACT INTAC CUSTODY SEAL PRESENT CE PRESENT USTODY SEAL PRESENT E PRESENT STODY SEAL PRESENT E PRESENT STODY SEAL PRESENT INTACT USTODY SEAL PRESENT INTACT INTACT INTACT PRESENT TODY SEAL PRESENT INTACT INTACT INTACI PRESENT CE PRESENT CHAIN OF CUSTODY# SHELL Maxkam of J of of of of of of of of of đ of of of of of of of of of 38e aße age age age age age age 38e age age age age age age age age aße age age

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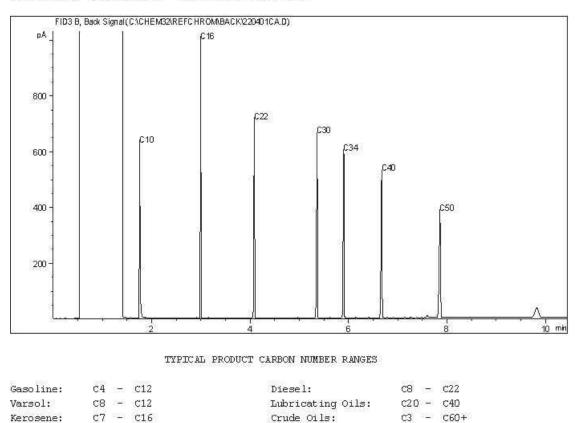
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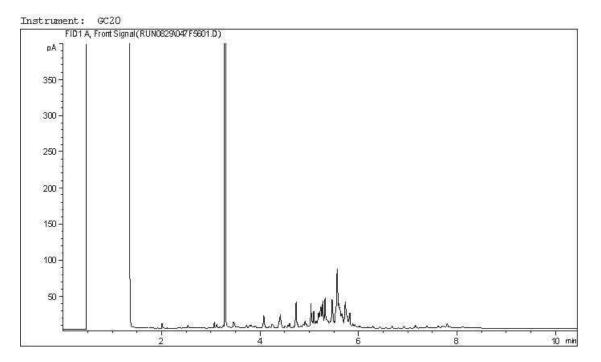
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	www.BVNA.com	Invo	Client #2	237 - 4		V Prov:		Canac			CCME			SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VE		Sample	BH22-54-0	BH22-54-02	8422-55-01	- 29-									'UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BI. ARE AVAILABLE FOR VIEWING AT W	Yes	77	7	Relinquished by: (Signature/ Print)	1.0,1	
	www.B	ormation				Calgary	-					Saskatchewan		SAMPLES			HZ:	HJZ	422	BH 22-55-									THERWISE A	LAB USE ONLY		Cooling media present	alinquished	1	
		Invoice Information	Company :	Contact	Street Address:	City:	Phone:	Email:	Copies:		□ AT1	Sas					= Pl	2 B	3 B.	4 BI	S	9	7	80	б	10	11	12	JNLESS O	LAB U Seal present	Seal intact	oling met	R		

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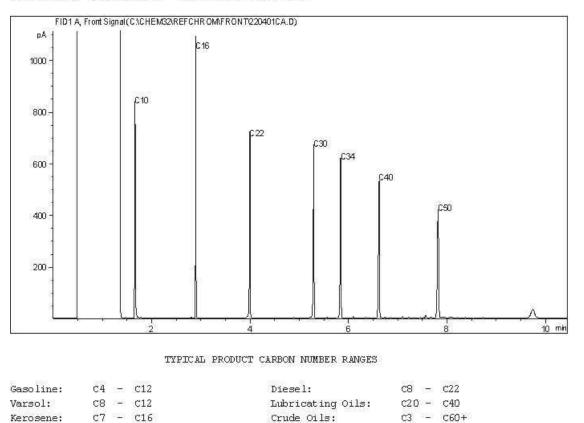


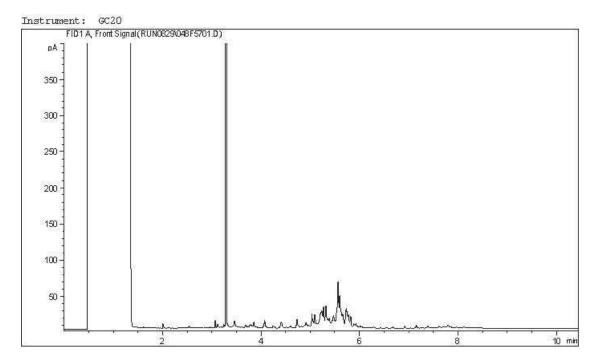
Carbon Range Distribution - Reference Chromatogram



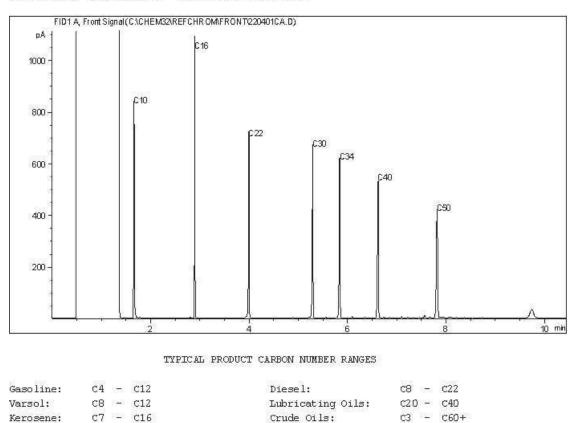


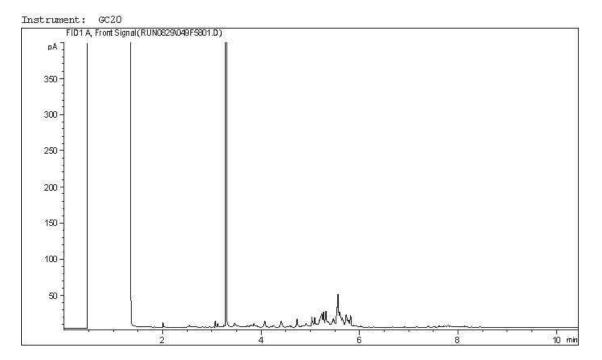
Carbon Range Distribution - Reference Chromatogram



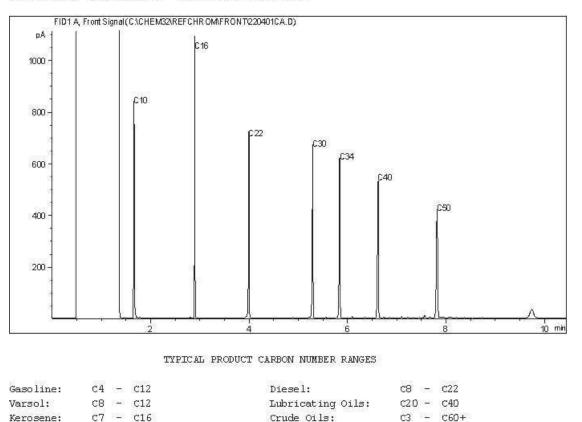


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Kerosene:

Crude Oils:

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewell, NT	Sampling Date: August 15, 2022
Golder Project Number: 22525414-1000	Laboratory: Bureau Veritas Edmonton
Lab Submission Number: C264062	-
Was the Cooler Received at the lab under a sealed and	
Was proper chain of custody of the samples document	-
Were sample temperatures acceptable when they reach	
Were all samples analyzed and extracted within hold the	
Has lab warranted all tests were in statistical control in	
Was sufficient sample provided for the requested analy	
Has lab warranted all samples were analyzed with limi	ited headspace present?: Yes
Are All Laboratory QC Within Acceptance Criteria (Y Yes No Surrogate Recovery X	Ves, No, Not Applicable)? NA Comments Matrix spike recovery for acridine (37%) below the
e ;	· · · · · ·
Method Blank Concentration X	acceptance criteria of (50-130%).
Laboratory Duplicate RPD X	All remaining laboratory QC results are within
Matrix Spike Recovery X	acceptance criteria.
Blank Spike Recovery X	
Are All Field QC Samples Within Alert Limits (Yes, N	No, Not Applicable)?
Yes No	NA Comments
Field Blank Concentration	X No field QC samples were collected.
Trip Blank Concentration	X
Field Duplicate RPD	X
Is data considered reliable (Yes/No/Suspect)?: If answer is "No" or "Suspect", describe and provide r	ationale:
Data Reviewed by (Print): Anita Colbert	Data Reviewed by (Signature):
Date: September 7, 2022	



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1100 Site Location: CAMP FAREWELL Your C.O.C. #: 1 OF 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/21 Report #: R3235930 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C264065 Received: 2022/08/22, 10:15

Sample Matrix: Soil # Samples Received: 6

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	2	2022/09/02	2022/09/02	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
Boron (Hot Water Soluble) (1)	4	2022/09/03	2022/09/03	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 3)	6	N/A	2022/08/31	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	6	N/A	2022/09/01		Auto Calc
Cation/EC Ratio (1)	6	N/A	2022/09/04		Auto Calc
Chloride (Soluble) (1)	2	2022/09/03	2022/09/03	AB SOP-00033 / AB SOP- 00020	SM 23-4500-Cl-E m
Chloride (Soluble) (1)	4	2022/09/03	2022/09/04	AB SOP-00033 / AB SOP- 00020	SM 23-4500-Cl-E m
Hexavalent Chromium (1, 4)	6	2022/08/30	2022/08/31	AB SOP-00063	SM 23 3500-Cr B m
Conductivity @25C (Soluble) (1)	2	2022/09/03	2022/09/03	AB SOP-00033 / AB SOP- 00004	SM 23 2510 B m
Conductivity @25C (Soluble) (1)	4	2022/09/04	2022/09/04	AB SOP-00033 / AB SOP- 00004	SM 23 2510 B m
Barium on ICP using Fusion Extraction (2)	1	N/A	2022/09/21		
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	3	2022/08/26	2022/08/29	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	3	2022/08/26	2022/08/30	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	2	2022/09/02	2022/09/02	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	4	2022/09/02	2022/09/03	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Sum of Cations, Anions (1)	6	N/A	2022/09/04		Auto Calc
Moisture (1)	6	N/A	2022/08/29	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (1)	1	N/A	2022/08/29		Auto Calc
Benzo[a]pyrene Equivalency (1)	5	N/A	2022/08/30		Auto Calc
PAH in Soil by GC/MS (1)	6	2022/08/29	2022/08/29	AB SOP-00036 / AB SOP- 00003	EPA 3540C/8270E m
pH @25C (1:2 Calcium Chloride Extract) (1)	6	2022/09/02	2022/09/02	AB SOP-00033 / AB SOP- 00006	SM 23 4500 H+B m
Sodium Adsorption Ratio (1)	6	N/A	2022/09/04		Auto Calc



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1100 Site Location: CAMP FAREWELL Your C.O.C. #: 1 OF 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/21 Report #: R3235930 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C264065 Received: 2022/08/22, 10:15

Sample Matrix: Soil # Samples Received: 6

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Soluble Ions (1)	2	2022/09/03	2022/09/03	AB SOP-00033 / AB SOP- 00042	EPA 6010d R5 m
Soluble lons (1)	4	2022/09/03	2022/09/04	AB SOP-00033 / AB SOP- 00042	EPA 6010d R5 m
Soluble Paste (1)	6	2022/09/03	2022/09/03	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	6	N/A	2022/08/29		Auto Calc
Theoretical Gypsum Requirement (1, 6)	6	N/A	2022/09/04		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) This test was performed by Element Materials Tech Canada, 7217 Roper Rd. , Edmonton, AB, T6B 3J4

(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(4) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(5) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the

Page 2 of 33



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1100 Site Location: CAMP FAREWELL Your C.O.C. #: 1 OF 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/21 Report #: R3235930 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C264065 Received: 2022/08/22. 10:15

reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(6) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.



Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Cynny Hagen, Key Account Soecialist Email: Cynny.HAGEN@bureauveritas.com

Phone# (403)735-2273

Encryption Key

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAK864	BAK865		BAK866	BAK866	BAK867		
Sampling Date		2022/08/15	2022/08/15		2022/08/15	2022/08/15	2022/08/15		
Sampling Date		11:00	11:15		11:30	11:30	11:45		
COC Number		1 OF 1	1 OF 1		1 OF 1	1 OF 1	1 OF 1		
	UNITS	BH22-51-01	BH22-51-02	QC Batch	BH22-52-01	BH22-52-01 Lab-Dup	BH22-52-02	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	69	23	A697045	16	18	20	10	A697045
F3 (C16-C34 Hydrocarbons)	mg/kg	230	240	A697045	150	160	170	50	A697045
F4 (C34-C50 Hydrocarbons)	mg/kg	64	70	A697045	50	56	54	50	A697045
Reached Baseline at C50	mg/kg	Yes	Yes	A697045	Yes	Yes	Yes	N/A	A697045
Physical Properties									
Moisture	%	23	26	A697058	26	N/A	25	0.30	A697058
Volatiles									
Xylenes (Total)	mg/kg	<0.045	0.10	A694666	<0.045	N/A	<0.045	0.045	A694842
F1 (C6-C10) - BTEX	mg/kg	<10	<10	A694666	<10	N/A	<10	10	A694842
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	A697159	<0.0050	N/A	<0.0050	0.0050	A697159
Toluene	mg/kg	<0.050	<0.050	A697159	0.080	N/A	<0.050	0.050	A697159
Ethylbenzene	mg/kg	<0.010	<0.010	A697159	<0.010	N/A	<0.010	0.010	A697159
m & p-Xylene	mg/kg	<0.040	0.065	A697159	<0.040	N/A	<0.040	0.040	A697159
o-Xylene	mg/kg	<0.020	0.037	A697159	<0.020	N/A	<0.020	0.020	A697159
F1 (C6-C10)	mg/kg	<10	<10	A697159	<10	N/A	<10	10	A697159
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	106	105	A697159	107	N/A	106	N/A	A697159
4-Bromofluorobenzene (sur.)	%	99	94	A697159	96	N/A	96	N/A	A697159
D10-o-Xylene (sur.)	%	83	101	A697159	108	N/A	102	N/A	A697159
D4-1,2-Dichloroethane (sur.)	%	89	93	A697159	89	N/A	88	N/A	A697159
O-TERPHENYL (sur.)	%	96	91	A697045	77	80	92	N/A	A697045
RDL = Reportable Detection Lir Lab-Dup = Laboratory Initiated		te							
N/A - Not Applicable	-								

N/A = Not Applicable



Bureau Veritas ID		BAK868	BAK869		
Sampling Date		2022/08/15	2022/08/15		
Sampling Date		12:00	12:15		
COC Number		1 OF 1	1 OF 1		
	UNITS	BH22-53-01	BH22-53-02	RDL	QC Batch
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/kg	20	16	10	A697045
F3 (C16-C34 Hydrocarbons)	mg/kg	290	210	50	A697045
F4 (C34-C50 Hydrocarbons)	mg/kg	71	58	50	A697045
Reached Baseline at C50	mg/kg	Yes	Yes	N/A	A697045
Physical Properties			•		
Moisture	%	35	24	0.30	A697058
Volatiles					
Xylenes (Total)	mg/kg	<0.045	<0.045	0.045	A694842
F1 (C6-C10) - BTEX	mg/kg	<10	<10	10	A694842
Field Preserved Volatiles					
Benzene	mg/kg	<0.0050	<0.0050	0.0050	A697159
Toluene	mg/kg	<0.050	<0.050	0.050	A697159
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	A697159
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	A697159
o-Xylene	mg/kg	<0.020	<0.020	0.020	A697159
F1 (C6-C10)	mg/kg	<10	<10	10	A697159
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	106	105	N/A	A697159
4-Bromofluorobenzene (sur.)	%	98	94	N/A	A697159
D10-o-Xylene (sur.)	%	86	106	N/A	A697159
D4-1,2-Dichloroethane (sur.)	%	90	87	N/A	A697159
O-TERPHENYL (sur.)	%	95	94	N/A	A697045
RDL = Reportable Detection Li	nit				
N/A = Not Applicable					

AT1 BTEX AND F1-F4 IN SOIL (VIALS)



SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		BAK864			BAK865			BAK866		
Sampling Date		2022/08/15 11:00			2022/08/15 11:15			2022/08/15 11:30		
COC Number		1 OF 1			1 OF 1			1 OF 1		
	UNITS	BH22-51-01	RDL	QC Batch	BH22-51-02	RDL	QC Batch	BH22-52-01	RDL	QC Batch
Calculated Parameters										
Anion Sum	meq/L	8.7	N/A	A694704	11	N/A	A694704	7.7	N/A	A694704
Cation Sum	meq/L	11	N/A	A694704	11	N/A	A694704	9.6	N/A	A694704
Cation/EC Ratio	N/A	10	0.10	A694642	11	0.10	A694642	9.1	0.10	A694642
Calculated Calcium (Ca)	mg/kg	59	0.79	A694837	77	0.88	A694837	53	0.91	A694837
Calculated Magnesium (Mg)	mg/kg	12	0.53	A694837	14	0.59	A694837	12	0.60	A694837
Calculated Sodium (Na)	mg/kg	37	1.3	A694837	35	1.5	A694837	48	1.5	A694837
Calculated Potassium (K)	mg/kg	2.6	0.68	A694837	2.7	0.77	A694837	3.5	0.78	A694837
Calculated Chloride (Cl)	mg/kg	47	5.3	A694837	54	5.9	A694837	95	6.0	A694837
Calculated Sulphate (SO4)	mg/kg	150	2.6	A694837	240	2.9	A694837	96	3.0	A694837
Soluble Parameters										
Soluble Chloride (Cl)	mg/L	89	10	A704744	91	10	A704934	160	10	A704744
Soluble Conductivity	dS/m	1.0	0.020	A704726	1.0	0.020	A704946	1.1	0.020	A704726
Soluble (CaCl2) pH	рН	7.65	N/A	A702735	7.58 (1)	N/A	A703530	7.49	N/A	A702735
Sodium Adsorption Ratio	N/A	1.6	0.10	A694824	1.3	0.10	A694824	2.0	0.10	A694824
Soluble Calcium (Ca)	mg/L	110	1.5	A704757	130	1.5	A704930	88	1.5	A704757
Soluble Magnesium (Mg)	mg/L	23	1.0	A704757	23	1.0	A704930	20	1.0	A704757
Soluble Sodium (Na)	mg/L	70	2.5	A704757	60	2.5	A704930	79	2.5	A704757
Soluble Potassium (K)	mg/L	4.9	1.3	A704757	4.6	1.3	A704930	5.8	1.3	A704757
Saturation %	%	53	N/A	A702729	59	N/A	A703514	60	N/A	A702729
Soluble Sulphate (SO4)	mg/L	290	5.0	A704757	400	5.0	A704930	160	5.0	A704757
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	A694611	<0.20	0.20	A694845	<0.20	0.20	A694845
RDL = Reportable Detection Limit								<u>.</u>		

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) pH was done on a 10:1 Calcium Chloride to soil ratio due to the matrix of the sample.



SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		BAK867		BAK868			BAK869	BAK869		
		2022/08/15		2022/08/15			2022/08/15	2022/08/15		
Sampling Date		11:45		12:00			12:15	12:15		
COC Number		1 OF 1		1 OF 1			1 OF 1	1 OF 1		
	UNITS	BH22-52-02	RDL	BH22-53-01	RDL	QC Batch	BH22-53-02	BH22-53-02 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Anion Sum	meq/L	12	N/A	0.75	N/A	A694704	0.73	N/A	N/A	A694844
Cation Sum	meq/L	14	N/A	4.4	N/A	A694704	5.4	N/A	N/A	A694844
Cation/EC Ratio	N/A	9.9	0.10	14	0.10	A694843	15	N/A	0.10	A694843
Calculated Calcium (Ca)	mg/kg	77	0.80	39	1.6	A694837	20	N/A	0.67	A694837
Calculated Magnesium (Mg)	mg/kg	15	0.53	17	1.1	A694837	8.5	N/A	0.44	A694837
Calculated Sodium (Na)	mg/kg	52	1.3	29	2.6	A694837	15	N/A	1.1	A694837
Calculated Potassium (K)	mg/kg	3.4	0.69	2.0	1.4	A694837	0.93	N/A	0.58	A694837
Calculated Chloride (Cl)	mg/kg	140	5.3	15	11	A694837	5.5	N/A	4.4	A694837
Calculated Sulphate (SO4)	mg/kg	110	2.7	17	5.3	A694837	8.1	N/A	2.2	A694837
Soluble Parameters										
Soluble Chloride (Cl)	mg/L	260	10	14	10	A704934	12	12	10	A704934
Soluble Conductivity	dS/m	1.4	0.020	0.31	0.020	A704946	0.35	0.33	0.020	A704946
Soluble (CaCl2) pH	рН	7.56	N/A	6.53 (1)	N/A	A703530	6.67	6.66	N/A	A703530
Sodium Adsorption Ratio	N/A	1.9	0.10	0.94	0.10	A694824	1.1	N/A	0.10	A694824
Soluble Calcium (Ca)	mg/L	150	1.5	38	1.5	A704930	45	42	1.5	A704930
Soluble Magnesium (Mg)	mg/L	29	1.0	16	1.0	A704930	19	18	1.0	A704930
Soluble Sodium (Na)	mg/L	97	2.5	27	2.5	A704930	34	30	2.5	A704930
Soluble Potassium (K)	mg/L	6.4	1.3	1.9	1.3	A704930	2.1	1.8	1.3	A704930
Saturation %	%	53	N/A	110	N/A	A703514	44	43	N/A	A703514
Soluble Sulphate (SO4)	mg/L	200	5.0	17	5.0	A704930	18	17	5.0	A704930
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	<0.20	0.20	A694845	<0.20	N/A	0.20	A694845

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) pH was done on a 10:1 Calcium Chloride to soil ratio due to the matrix of the sample.



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		BAK864			BAK865			BAK866		
Sampling Date		2022/08/15 11:00			2022/08/15 11:15			2022/08/15 11:30		
COC Number		1 OF 1			1 OF 1			1 OF 1		
	UNITS	BH22-51-01	RDL	QC Batch	BH22-51-02	RDL	QC Batch	BH22-52-01	RDL	QC Batch
Elements										
Soluble (Hot water) Boron (B)	mg/kg	<0.10	0.10	A703352	0.46	0.22	A704575	<0.10	0.10	A703352
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	A699535	<0.080	0.080	A699535	<0.080	0.080	A699700
Total Antimony (Sb)	mg/kg	0.61	0.50	A703446	0.56	0.50	A704187	0.67	0.50	A703446
Total Arsenic (As)	mg/kg	8.9	1.0	A703446	8.4	1.0	A704187	11	1.0	A703446
Total Barium (Ba)	mg/kg	520	1.0	A703446	400	1.0	A704187	410	1.0	A703446
Total Beryllium (Be)	mg/kg	0.54	0.40	A703446	0.63	0.40	A704187	0.69	0.40	A703446
Total Cadmium (Cd)	mg/kg	0.52	0.050	A703446	0.53	0.050	A704187	0.63	0.050	A703446
Total Chromium (Cr)	mg/kg	55	1.0	A703446	24	1.0	A704187	21	1.0	A703446
Total Cobalt (Co)	mg/kg	9.9	0.50	A703446	10	0.50	A704187	11	0.50	A703446
Total Copper (Cu)	mg/kg	23	1.0	A703446	22	1.0	A704187	25	1.0	A703446
Total Lead (Pb)	mg/kg	18	0.50	A703446	13	0.50	A704187	13	0.50	A703446
Total Mercury (Hg)	mg/kg	0.064	0.050	A703446	0.061	0.050	A704187	0.057	0.050	A703446
Total Molybdenum (Mo)	mg/kg	2.4	0.40	A703446	1.8	0.40	A704187	2.0	0.40	A703446
Total Nickel (Ni)	mg/kg	45	1.0	A703446	32	1.0	A704187	34	1.0	A703446
Total Selenium (Se)	mg/kg	0.74	0.50	A703446	0.74	0.50	A704187	0.88	0.50	A703446
Total Silver (Ag)	mg/kg	<0.20	0.20	A703446	<0.20	0.20	A704187	<0.20	0.20	A703446
Total Thallium (Tl)	mg/kg	0.19	0.10	A703446	0.18	0.10	A704187	0.19	0.10	A703446
Total Tin (Sn)	mg/kg	<1.0	1.0	A703446	<1.0	1.0	A704187	<1.0	1.0	A703446
Total Uranium (U)	mg/kg	0.82	0.20	A703446	0.83	0.20	A704187	0.85	0.20	A703446
Total Vanadium (V)	mg/kg	32	1.0	A703446	36	1.0	A704187	36	1.0	A703446
Total Zinc (Zn)	mg/kg	100	10	A703446	110	10	A704187	110	10	A703446
RDL = Reportable Detection Lin	nit									



CCME REGULATED METALS - SOILS (SOIL)

	BAK867		BAK868		BAK869	BAK869		
	2022/08/15		2022/08/15		2022/08/15	2022/08/15		
	11:45		12:00		12:15	12:15		
	1 OF 1		1 OF 1		1 OF 1	1 OF 1		
UNITS	BH22-52-02	RDL	BH22-53-01	RDL	BH22-53-02	BH22-53-02 Lab-Dup	RDL	QC Batch
mg/kg	0.29	0.10	0.55	0.35	0.14	N/A	0.10	A704575
mg/kg	<0.080	0.080	<0.080	0.080	<0.080	N/A	0.080	A699535
mg/kg	0.58	0.50	<1.0	1.0	<1.0	<1.0	1.0	A704187
mg/kg	9.2	1.0	5.4	2.0	6.9	7.8	2.0	A704187
mg/kg	370	1.0	290	2.0	210	200	2.0	A704187
mg/kg	0.62	0.40	<0.80	0.80	<0.80	<0.80	0.80	A704187
mg/kg	0.59	0.050	0.20	0.10	0.13	0.14	0.10	A704187
mg/kg	21	1.0	14	2.0	25	28	2.0	A704187
mg/kg	10	0.50	5.5	1.0	5.2	5.9	1.0	A704187
mg/kg	23	1.0	7.0	2.0	6.1	6.2	2.0	A704187
mg/kg	12	0.50	4.6	1.0	5.0	4.8	1.0	A704187
mg/kg	0.066	0.050	<0.10	0.10	<0.10	<0.10	0.10	A704187
mg/kg	1.8	0.40	0.81	0.80	1.1	1.4	0.80	A704187
mg/kg	32	1.0	14	2.0	19	21	2.0	A704187
mg/kg	0.78	0.50	<1.0	1.0	<1.0	<1.0	1.0	A704187
mg/kg	<0.20	0.20	<0.40	0.40	<0.40	<0.40	0.40	A704187
mg/kg	0.17	0.10	<0.20	0.20	<0.20	<0.20	0.20	A704187
mg/kg	<1.0	1.0	<2.0	2.0	<2.0	<2.0	2.0	A704187
mg/kg	0.87	0.20	<0.40	0.40	<0.40	<0.40	0.40	A704187
mg/kg	36	1.0	20	2.0	21	21	2.0	A704187
mg/kg	110	10	45	20	33	33	20	A704187
nit								
Duplica	te							
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2022/08/15 11:45 1 OF 1 UNITS BH22-52-02 mg/kg 0.29 mg/kg 0.29 mg/kg 0.58 mg/kg 9.2 mg/kg 0.52 mg/kg 0.52 mg/kg 0.52 mg/kg 0.52 mg/kg 0.59 mg/kg 10 mg/kg 10 mg/kg 12 mg/kg 0.066 mg/kg 0.066 mg/kg 0.20 mg/kg 0.20 mg/kg 0.20 mg/kg 0.17 mg/kg 0.87 mg/kg 0.87 mg/kg 36 mg/kg 36	2022/08/15 11:45 1 OF 1 UNITS BH22-52-02 RDL unifs Composition of the second of t	2022/08/15 11:45 2022/08/15 12:00 1 OF 1 1 OF 1 UNITS BH22-52-02 RDL BH22-53-01 mg/kg 0.29 0.10 0.55 mg/kg 0.29 0.10 0.55 mg/kg 0.58 0.50 <1.0	2022/08/15 11:45 2022/08/15 12:00 1 OF 1 1 OF 1 1 OF 1 1 OF 1 UNITS BH22-52-02 RDL BH22-53-01 RDL mg/kg 0.29 0.10 0.55 0.35 mg/kg 0.29 0.10 0.55 0.35 mg/kg 0.29 0.10 0.55 0.35 mg/kg 0.58 0.50 <1.0	2022/08/15 11:45 2022/08/15 12:00 2022/08/15 12:15 1 OF 1 1 OF 1 1 OF 1 UNITS BH22-52-02 RDL BH22-53-01 RDL BH22-53-02 mg/kg 0.29 0.10 0.55 0.35 0.14 mg/kg <0.80	2022/08/15 11:45 2022/08/15 12:00 2022/08/15 12:15 2022/08/15 12:15 1 OF 1 UNITS BH22-52-02 RDL BH22-53-01 RDL BH22-53-02 BH22-53-02 mg/kg 0.29 0.10 0.55 0.35 0.14 N/A mg/kg 0.29 0.10 0.55 0.35 0.14 N/A mg/kg 0.58 0.50 <1.0	2022/08/15 11:45 2022/08/15 12:00 2022/08/15 12:15 2022/08/15 12:15 2022/08/15 12:15 1 OF 1 UNITS BH22-52-02 RDL BH22-53-01 RDL BH22-53-02 BH2 BH22-53-02 Lab-Dup RDL mg/kg 0.29 0.10 0.55 0.35 0.14 N/A 0.10 mg/kg 0.58 0.50 <1.0

N/A = Not Applicable



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		BAK864	
Sampling Date		2022/08/15 11:00	
COC Number		1 OF 1	
	UNITS	BH22-51-01	QC Batch
Parameter			
Subcontract Parameter	N/A	ATTACHED	A725188



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BAK864	BAK865	BAK866	BAK866	BAK867	BAK868		
Sampling Date		2022/08/15	2022/08/15	2022/08/15	2022/08/15	2022/08/15	2022/08/15		
		11:00	11:15	11:30	11:30	11:45	12:00		
COC Number		1 OF 1	1 OF 1	1 OF 1	1 OF 1	1 OF 1	1 OF 1		
	UNITS	BH22-51-01	BH22-51-02	BH22-52-01	BH22-52-01 Lab-Dup	BH22-52-02	BH22-53-01	RDL	QC Batch
Polycyclic Aromatics									
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
B[a]P TPE Total Potency Equivalents	mg/kg	0.0080	0.017	0.014	N/A	0.013	<0.0071	0.0071	A693478
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
Acridine	mg/kg	<0.010	<0.010	<0.010 (1)	<0.010	<0.010	0.040	0.010	A697044
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	A697044
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
Benzo(b&j)fluoranthene	mg/kg	0.017	0.025	0.023	0.023	0.021	<0.0050	0.0050	A697044
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
Benzo(g,h,i)perylene	mg/kg	0.022	0.036	0.034	0.033	0.030	0.0093	0.0050	A697044
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
Benzo(a)pyrene	mg/kg	<0.0050	0.0095	0.0071	0.0087	0.0071	<0.0050	0.0050	A697044
Benzo(e)pyrene	mg/kg	0.018	0.029	0.028	0.031	0.025	<0.0050	0.0050	A697044
Chrysene	mg/kg	0.0087	0.013	0.013	0.012	0.011	<0.0050	0.0050	A697044
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A697044
Fluoranthene	mg/kg	0.0095	0.014	0.012	0.012	0.011	<0.0050	0.0050	A697044
Fluorene	mg/kg	0.012	0.015	0.012	0.011	0.011	<0.0050	0.0050	A697044
Indeno(1,2,3-cd)pyrene	mg/kg	0.0065	0.011	0.0083	0.0081	0.0075	<0.0050	0.0050	A697044
1-Methylnaphthalene	mg/kg	0.046	0.045	0.038	0.042	0.036	<0.0050	0.0050	A697044
2-Methylnaphthalene	mg/kg	0.069	0.073	0.064	0.070	0.061	<0.0050	0.0050	A697044
Naphthalene	mg/kg	0.026	0.035	0.027	0.030	0.026	<0.0050	0.0050	A697044
Phenanthrene	mg/kg	0.044	0.066	0.062	0.056	0.062	<0.0050	0.0050	A697044
Perylene	mg/kg	0.062	0.10	0.091	0.095	0.087	<0.0050	0.0050	A697044
Pyrene	mg/kg	0.019	0.025	0.023	0.025	0.022	<0.0050	0.0050	A697044
Quinoline	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.026	0.010	A697044
Surrogate Recovery (%)			!	!	!		!	•	
D10-ANTHRACENE (sur.)	%	96	103	94	96	92	98	N/A	A697044
D8-ACENAPHTHYLENE (sur.)	%	94	96	89	91	88	96	N/A	A697044
D8-NAPHTHALENE (sur.)	%	82	86	81	81	78	83	N/A	A697044
RDL = Reportable Detection Limit	,-							,.	

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Matrix spike exceeds acceptance limits due to probable matrix interference.



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BAK864	BAK865	BAK866	BAK866	BAK867	BAK868		
Sampling Date		2022/08/15 11:00	2022/08/15 11:15	2022/08/15 11:30	2022/08/15 11:30	2022/08/15 11:45	2022/08/15 12:00		
COC Number		1 OF 1	1 OF 1	1 OF 1	1 OF 1	1 OF 1	1 OF 1		
	UNITS	BH22-51-01	BH22-51-02	BH22-52-01	BH22-52-01 Lab-Dup	BH22-52-02	BH22-53-01	RDL	QC Batch
TERPHENYL-D14 (sur.)	%	100	106	109	107	98	99	N/A	A697044

N/A = Not Applicable



Bureau Veritas ID		BAK869		
Sampling Date		2022/08/15		
		12:15		
COC Number		1 OF 1		
	UNITS	BH22-53-02	RDL	QC Batch
Polycyclic Aromatics				
Acenaphthene	mg/kg	<0.0050	0.0050	A697044
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	0.0071	A693478
Acenaphthylene	mg/kg	<0.0050	0.0050	A697044
Acridine	mg/kg	0.029	0.010	A697044
Anthracene	mg/kg	<0.0040	0.0040	A697044
Benzo(a)anthracene	mg/kg	<0.0050	0.0050	A697044
Benzo(b&j)fluoranthene	mg/kg	<0.0050	0.0050	A697044
Benzo(k)fluoranthene	mg/kg	<0.0050	0.0050	A697044
Benzo(g,h,i)perylene	mg/kg	<0.0050	0.0050	A697044
Benzo(c)phenanthrene	mg/kg	<0.0050	0.0050	A697044
Benzo(a)pyrene	mg/kg	<0.0050	0.0050	A697044
Benzo(e)pyrene	mg/kg	<0.0050	0.0050	A697044
Chrysene	mg/kg	<0.0050	0.0050	A697044
Dibenz(a,h)anthracene	mg/kg	<0.0050	0.0050	A697044
Fluoranthene	mg/kg	<0.0050	0.0050	A697044
Fluorene	mg/kg	<0.0050	0.0050	A697044
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	0.0050	A697044
1-Methylnaphthalene	mg/kg	<0.0050	0.0050	A697044
2-Methylnaphthalene	mg/kg	<0.0050	0.0050	A697044
Naphthalene	mg/kg	<0.0050	0.0050	A697044
Phenanthrene	mg/kg	<0.0050	0.0050	A697044
Perylene	mg/kg	<0.0050	0.0050	A697044
Pyrene	mg/kg	<0.0050	0.0050	A697044
Quinoline	mg/kg	0.020	0.010	A697044
Surrogate Recovery (%)			-	
D10-ANTHRACENE (sur.)	%	99	N/A	A697044
D8-ACENAPHTHYLENE (sur.)	%	97	N/A	A697044
D8-NAPHTHALENE (sur.)	%	83	N/A	A697044
TERPHENYL-D14 (sur.)	%	97	N/A	A697044
RDL = Reportable Detection Limit				
N/A = Not Applicable				

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)



GENERAL COMMENTS

Each te	emperature is the a	verage of up to t	three cooler temperatures taken at receipt
	Package 1	5.0°C	
	Package 2	3.7°C	
	Package 3	5.3°C	
Versior	2: Report reissued	to include result	ts for Barium-True Total on sample BH22-51-01/BAK864 as per client request received 2022/09/07.
Sample	BAK864 [BH22-51-	-01] : Please see	e attachment for Barium on ICP using Fusion Extraction results.
			CCME REGULATED METALS - SOILS (SOIL) Comments
Sample accord		-02] Boron (Hot	Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted
Sample accord		-01] Boron (Hot	Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted
Sample	e BAK868 [BH22-53-	-01] Elements by	y ICPMS - Soils: Detection limits raised due to sample matrix.
Sample	e BAK869 [BH22-53-	-02] Elements by	y ICPMS - Soils: Detection limits raised due to sample matrix.
Result	s relate only to the	items tested.	



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A697044	NK3	Matrix Spike [BAK866-02]	D10-ANTHRACENE (sur.)	2022/08/29		89	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/29		86	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/29		77	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/29		103	%	50 - 130
			Acenaphthene	2022/08/29		78	%	50 - 130
			Acenaphthylene	2022/08/29		80	%	50 - 130
			Acridine	2022/08/29		37 (1)	%	50 - 130
			Anthracene	2022/08/29		113	%	50 - 130
			Benzo(a)anthracene	2022/08/29		86	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/29		73	%	50 - 130
			Benzo(k)fluoranthene	2022/08/29		68	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/29		57	%	50 - 130
			Benzo(c)phenanthrene	2022/08/29		82	%	50 - 130
			Benzo(a)pyrene	2022/08/29		75	%	50 - 130
			Benzo(e)pyrene	2022/08/29		61	%	50 - 130
			Chrysene	2022/08/29		72	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/29		68	%	50 - 130
			Fluoranthene	2022/08/29		88	%	50 - 130
			Fluorene	2022/08/29		87	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/29		70	%	50 - 130
			1-Methylnaphthalene	2022/08/29		69	%	50 - 130
			2-Methylnaphthalene	2022/08/29		90	%	50 - 130
			Naphthalene	2022/08/29		75	%	50 - 130
			Phenanthrene	2022/08/29		82	%	50 - 130
			Perylene	2022/08/29		60	%	50 - 130
			Pyrene	2022/08/29		84	%	50 - 130
			Quinoline	2022/08/29		94	%	50 - 130
A697044	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/29		118	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/29		118	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/29		101	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/29		128	%	50 - 130
			Acenaphthene	2022/08/29		98	%	50 - 130
			Acenaphthylene	2022/08/29		108	%	50 - 130
			Acridine	2022/08/29		84	%	50 - 130
			Anthracene	2022/08/29		116	%	50 - 130
			Benzo(a)anthracene	2022/08/29		113	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/29		108	%	50 - 130
			Benzo(k)fluoranthene	2022/08/29		114	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/29		105	%	50 - 130
			Benzo(c)phenanthrene	2022/08/29		105	%	50 - 130
			Benzo(a)pyrene	2022/08/29		110	%	50 - 130
			Benzo(e)pyrene	2022/08/29		93	%	50 - 130
			Chrysene	2022/08/29		93	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/29		111	%	50 - 130
			Fluoranthene	2022/08/29		115	%	50 - 130
			Fluorene	2022/08/29		109	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/29		119	%	50 - 130
			1-Methylnaphthalene	2022/08/29		85	%	50 - 130
			2-Methylnaphthalene	2022/08/29		111	%	50 - 130
			Naphthalene	2022/08/29		96	%	50 - 130
			Phenanthrene	2022/08/29		106	%	50 - 130
			Perylene	2022/08/29		100	%	50 - 130



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Pyrene	2022/08/29		112	%	50 - 130
			Quinoline	2022/08/29		88	%	50 - 130
A697044	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/29		103	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/29		98	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/29		86	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/29		119	%	50 - 130
			Acenaphthene	2022/08/29	<0.0050		mg/kg	
			Acenaphthylene	2022/08/29	<0.0050		mg/kg	
			Acridine	2022/08/29	<0.010		mg/kg	
			Anthracene	2022/08/29	<0.0040		mg/kg	
			Benzo(a)anthracene	2022/08/29	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2022/08/29	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2022/08/29	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2022/08/29	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2022/08/29	<0.0050		mg/kg	
			Benzo(a)pyrene	2022/08/29	<0.0050		mg/kg	
			Benzo(e)pyrene	2022/08/29	<0.0050		mg/kg	
			Chrysene	2022/08/29	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2022/08/29	<0.0050		mg/kg	
			Fluoranthene	2022/08/29	<0.0050		mg/kg	
			Fluorene	2022/08/29	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/08/29	<0.0050		mg/kg	
			1-Methylnaphthalene	2022/08/29	<0.0050		mg/kg	
			2-Methylnaphthalene	2022/08/29	<0.0050		mg/kg	
			Naphthalene	2022/08/29	<0.0050		mg/kg	
			Phenanthrene	2022/08/29	<0.0050		mg/kg	
			Perylene	2022/08/29	<0.0050		mg/kg	
			Pyrene	2022/08/29	<0.0050		mg/kg	
			Quinoline	2022/08/29	<0.010		mg/kg	
A697044	NK3	RPD [BAK866-02]	Acenaphthene	2022/08/29	NC		%	50
			Acenaphthylene	2022/08/29	NC		%	50
			Acridine	2022/08/29	NC		%	50
			Anthracene	2022/08/29	NC		%	50
			Benzo(a)anthracene	2022/08/29	NC		%	50
			Benzo(b&j)fluoranthene	2022/08/29	1.2		%	50
			Benzo(k)fluoranthene	2022/08/29	NC		%	50
			Benzo(g,h,i)perylene	2022/08/29	2.0		%	50
			Benzo(c)phenanthrene	2022/08/29	NC		%	50
			Benzo(a)pyrene	2022/08/29	21		%	50
			Benzo(e)pyrene	2022/08/29	8.7		%	50
			Chrysene	2022/08/29	9.5		%	50
			Dibenz(a,h)anthracene	2022/08/29	NC		%	50
			Fluoranthene	2022/08/29	1.0		%	50
			Fluorene	2022/08/29	5.8		%	50
			Indeno(1,2,3-cd)pyrene	2022/08/29	1.7		%	50
			1-Methylnaphthalene	2022/08/29	9.1		%	50
			2-Methylnaphthalene	2022/08/29	8.7		%	50
			Naphthalene	2022/08/29	9.4		%	50
			Phenanthrene	2022/08/29	8.7		%	50
			Perylene	2022/08/29	4.8		%	50
			Pyrene	2022/08/29	5.7		%	50
			Quinoline	2022/08/29	NC		%	50



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A697045	ZSN	Matrix Spike [BAK866-02]	O-TERPHENYL (sur.)	2022/08/29		76	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29		73	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/29		78	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/29		76	%	60 - 140
A697045	ZSN	Spiked Blank	O-TERPHENYL (sur.)	2022/08/29		76	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29		75	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/29		81	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/29		77	%	60 - 140
A697045	ZSN	Method Blank	O-TERPHENYL (sur.)	2022/08/29		80	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/29	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/29	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/29	<50		mg/kg	
A697045	ZSN	RPD [BAK866-02]	F2 (C10-C16 Hydrocarbons)	2022/08/29	15		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/29	7.6		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/29	11		%	40
A697058	MGL	Method Blank	Moisture	2022/08/29	< 0.30		%	
A697058	MGL	RPD	Moisture	2022/08/29	13		%	20
A697159	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/08/31		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/31		96	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/31		111	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/31		88	%	50 - 140
			Benzene	2022/08/31		99	%	50 - 140
			Toluene	2022/08/31		92	%	50 - 140
			Ethylbenzene	2022/08/31		94	%	50 - 140
			m & p-Xylene	2022/08/31		92	%	50 - 140
			o-Xylene	2022/08/31		92	%	50 - 140
			F1 (C6-C10)	2022/08/31		88	%	60 - 140
A697159	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/31		104	%	50 - 140
	-		4-Bromofluorobenzene (sur.)	2022/08/31		94	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/31		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/31		88	%	50 - 140
			Benzene	2022/08/31		107	%	60 - 130
			Toluene	2022/08/31		98	%	60 - 130
			Ethylbenzene	2022/08/31		98	%	60 - 130
			m & p-Xylene	2022/08/31		98	%	60 - 130
			o-Xylene	2022/08/31		97	%	60 - 130
			F1 (C6-C10)	2022/08/31		84	%	60 - 140
A697159	OW1	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/01		105	%	50 - 140
	Q.112		4-Bromofluorobenzene (sur.)	2022/09/01		99	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/01		94	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/01		89	%	50 - 140
			Benzene	2022/09/01	<0.0050		mg/kg	00 110
			Toluene	2022/09/01	<0.050		mg/kg	
			Ethylbenzene	2022/09/01	< 0.010		mg/kg	
			m & p-Xylene	2022/09/01	<0.010		mg/kg	
			o-Xylene	2022/09/01	<0.040		mg/kg	
			F1 (C6-C10)	2022/09/01	<10		mg/kg	
A697159	QW1	RPD	Benzene	2022/08/31	NC		//////////////////////////////////////	50
,,,,	Q 1 1 1		Toluene	2022/08/31	NC		%	50
			Ethylbenzene	2022/08/31	NC		%	50
			m & p-Xylene	2022/08/31	NC		%	50 50
			o-Xylene	2022/08/31	NC		%	50



01/06			· · · · · · · · · · · · · · · · · · ·					
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Datch	mitt	QC Type	F1 (C6-C10)	2022/08/31	0.96	Recovery	%	30
A699535	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/31	0.50	103	%	75 - 125
A699535	FM0	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/31		102	%	80 - 120
A699535	FMO	Method Blank	Hex. Chromium (Cr 6+)	2022/08/31	<0.080	102	mg/kg	00 - 120
A699535	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/31	<0.080 NC		//////////////////////////////////////	35
A699555 A699700	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/31	NC	95	%	
		-	Hex. Chromium (Cr 6+)			104	%	80 - 120
A699700	FM0	Spiked Blank	. ,	2022/08/31	-0.000	104		80 - 120
A699700	FM0	Method Blank	Hex. Chromium (Cr 6+)	2022/08/31	<0.080		mg/kg	25
A699700	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/31	NC	102	%	35
A702729	NQU	QC Standard	Saturation %	2022/09/03	7.0	102	%	75 - 125
A702729	NQU	RPD	Saturation %	2022/09/03	7.2		%	12
A702735	AL7	QC Standard	Soluble (CaCl2) pH	2022/09/02		100	%	97 - 103
A702735	AL7	Spiked Blank	Soluble (CaCl2) pH	2022/09/02		100	%	97 - 103
A702735	AL7	RPD	Soluble (CaCl2) pH	2022/09/02	0.18		%	N/A
A703352	PC5	Matrix Spike	Soluble (Hot water) Boron (B)	2022/09/02		97	%	75 - 125
A703352	PC5	Spiked Blank	Soluble (Hot water) Boron (B)	2022/09/02		98	%	80 - 120
A703352	PC5	Method Blank	Soluble (Hot water) Boron (B)	2022/09/02	<0.10		mg/kg	
A703352	PC5	RPD	Soluble (Hot water) Boron (B)	2022/09/02	NC		%	35
A703446	KGR	Matrix Spike	Total Antimony (Sb)	2022/09/02		111	%	75 - 125
			Total Arsenic (As)	2022/09/02		107	%	75 - 125
			Total Barium (Ba)	2022/09/02		NC	%	75 - 125
			Total Beryllium (Be)	2022/09/02		104	%	75 - 125
			Total Cadmium (Cd)	2022/09/02		111	%	75 - 125
			Total Chromium (Cr)	2022/09/02		NC	%	75 - 125
			Total Cobalt (Co)	2022/09/02		103	%	75 - 125
			Total Copper (Cu)	2022/09/02		103	%	75 - 125
			Total Lead (Pb)	2022/09/02		109	%	75 - 125
			Total Mercury (Hg)	2022/09/02		106	%	75 - 125
			Total Molybdenum (Mo)	2022/09/02		110	%	75 - 125
			Total Nickel (Ni)	2022/09/02		98	%	75 - 125
			Total Selenium (Se)	2022/09/02		113	%	75 - 125
			Total Silver (Ag)	2022/09/02		109	%	75 - 125
			Total Thallium (Tl)	2022/09/02		109	%	75 - 125
			Total Tin (Sn)	2022/09/02		113	%	75 - 125
			Total Uranium (U)	2022/09/02		106	%	75 - 125
			Total Vanadium (V)	2022/09/02		134 (1)	%	75 - 125
			Total Zinc (Zn)	2022/09/02		111	%	75 - 125
A703446	KGR	QC Standard	Total Antimony (Sb)	2022/09/02		113	%	15 - 182
		Qootanaana	Total Arsenic (As)	2022/09/02		106	%	53 - 147
			Total Barium (Ba)	2022/09/02		103	%	80 - 119
			Total Cadmium (Cd)	2022/09/02		99	%	72 - 128
			Total Chromium (Cr)	2022/09/02		95	%	59 - 141
			Total Cobalt (Co)	2022/09/02		97	%	58 - 142
			Total Copper (Cu)	2022/09/02		103	%	83 - 117
			Total Lead (Pb)	2022/09/02		105	%	79 - 121
			Total Molybdenum (Mo)	2022/09/02		102	%	67 - 133
			Total Nickel (Ni)	2022/09/02		102	%	67 - 133 79 - 121
			Total Silver (Ag)	2022/09/02		89	%	47 - 153
			Total Tin (Sn)	2022/09/02		101	%	67 - 133
			Total Uranium (U)	2022/09/02		102	%	77 - 123
			Total Vanadium (V)	2022/09/02		101	%	79 - 121
			Total Zinc (Zn)	2022/09/02		107	%	79 - 121



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A703446	KGR	Spiked Blank	Total Antimony (Sb)	2022/09/02		105	%	80 - 120
			Total Arsenic (As)	2022/09/02		98	%	80 - 120
			Total Barium (Ba)	2022/09/02		99	%	80 - 120
			Total Beryllium (Be)	2022/09/02		94	%	80 - 120
			Total Cadmium (Cd)	2022/09/02		102	%	80 - 120
			Total Chromium (Cr)	2022/09/02		95	%	80 - 120
			Total Cobalt (Co)	2022/09/02		96	%	80 - 120
			Total Copper (Cu)	2022/09/02		97	%	80 - 120
			Total Lead (Pb)	2022/09/02		102	%	80 - 120
			Total Mercury (Hg)	2022/09/02		106	%	80 - 120
			Total Molybdenum (Mo)	2022/09/02		101	%	80 - 120
			Total Nickel (Ni)	2022/09/02		96	%	80 - 120
			Total Selenium (Se)	2022/09/02		105	%	80 - 120
			Total Silver (Ag)	2022/09/02		100	%	80 - 120
			Total Thallium (TI)	2022/09/02		102	%	80 - 120
			Total Tin (Sn)	2022/09/02		102	%	80 - 120
			Total Uranium (U)	2022/09/02		102	%	80 - 120
			Total Vanadium (V)	2022/09/02		96	%	80 - 120 80 - 120
			Total Zinc (Zn)	2022/09/02		100	%	80 - 120
1702446	KCD	Method Blank	Total Antimony (Sb)		<0.50	100		80 - 120
A703446	KGR	Method Bidlik		2022/09/02 2022/09/02	<0.50		mg/kg	
			Total Arsenic (As) Total Barium (Ba)		<1.0		mg/kg	
			Total Beryllium (Be)	2022/09/02	<1.0 <0.40		mg/kg	
				2022/09/02			mg/kg	
			Total Cadmium (Cd)	2022/09/02	< 0.050		mg/kg	
			Total Chromium (Cr)	2022/09/02	<1.0		mg/kg	
			Total Cobalt (Co)	2022/09/02	<0.50		mg/kg	
			Total Copper (Cu)	2022/09/02	<1.0		mg/kg	
			Total Lead (Pb)	2022/09/02	<0.50		mg/kg	
			Total Mercury (Hg)	2022/09/02	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/09/02	<0.40		mg/kg	
			Total Nickel (Ni)	2022/09/02	<1.0		mg/kg	
			Total Selenium (Se)	2022/09/02	<0.50		mg/kg	
			Total Silver (Ag)	2022/09/02	<0.20		mg/kg	
			Total Thallium (Tl)	2022/09/02	<0.10		mg/kg	
			Total Tin (Sn)	2022/09/02	<1.0		mg/kg	
			Total Uranium (U)	2022/09/02	<0.20		mg/kg	
			Total Vanadium (V)	2022/09/02	<1.0		mg/kg	
			Total Zinc (Zn)	2022/09/02	<10		mg/kg	
A703446	KGR	RPD	Total Antimony (Sb)	2022/09/02	NC		%	30
			Total Arsenic (As)	2022/09/02	3.6		%	30
			Total Barium (Ba)	2022/09/02	7.2		%	35
			Total Beryllium (Be)	2022/09/02	NC		%	30
			Total Cadmium (Cd)	2022/09/02	9.2		%	30
			Total Chromium (Cr)	2022/09/02	41 (1)		%	30
			Total Cobalt (Co)	2022/09/02	0.43		%	30
			Total Copper (Cu)	2022/09/02	7.9		%	30
			Total Lead (Pb)	2022/09/02	4.5		%	35
			Total Mercury (Hg)	2022/09/02	NC		%	35
			Total Molybdenum (Mo)	2022/09/02	25		%	35
			Total Nickel (Ni)	2022/09/02	26		%	30
			Total Selenium (Se)	2022/09/02	NC		%	30
			Total Silver (Ag)	2022/09/02	NC		%	35



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Thallium (Tl)	2022/09/02	NC		%	30
			Total Tin (Sn)	2022/09/02	NC		%	35
			Total Uranium (U)	2022/09/02	4.7		%	30
			Total Vanadium (V)	2022/09/02	0.71		%	30
			Total Zinc (Zn)	2022/09/02	3.6		%	30
A703514	HAP	QC Standard	Saturation %	2022/09/03		95	%	75 - 125
A703514	HAP	RPD [BAK869-01]	Saturation %	2022/09/03	2.4		%	12
A703530	AL7	QC Standard	Soluble (CaCl2) pH	2022/09/02		100	%	97 - 103
A703530	AL7	Spiked Blank	Soluble (CaCl2) pH	2022/09/02		100	%	97 - 103
A703530	AL7	RPD [BAK869-01]	Soluble (CaCl2) pH	2022/09/02	0.12		%	N/A
A704187	MKJ	Matrix Spike [BAK869-01]	Total Antimony (Sb)	2022/09/03		93	%	75 - 125
			Total Arsenic (As)	2022/09/03		89	%	75 - 125
			Total Barium (Ba)	2022/09/03		NC	%	75 - 125
			Total Beryllium (Be)	2022/09/03		89	%	75 - 125
			Total Cadmium (Cd)	2022/09/03		91	%	75 - 125
			Total Chromium (Cr)	2022/09/03		91	%	75 - 125
			Total Cobalt (Co)	2022/09/03		90	%	75 - 125
			Total Copper (Cu)	2022/09/03		89	%	75 - 125
			Total Lead (Pb)	2022/09/03		89	%	75 - 125
			Total Mercury (Hg)	2022/09/03		87	%	75 - 125
			Total Molybdenum (Mo)	2022/09/03		92	%	75 - 125
			Total Nickel (Ni)	2022/09/03		86	%	75 - 125
			Total Selenium (Se)	2022/09/03		94	%	75 - 125
			Total Silver (Ag)	2022/09/03		90	%	75 - 125
			Total Thallium (Tl)	2022/09/03		88	%	75 - 125
			Total Tin (Sn)	2022/09/03		91	%	75 - 125
			Total Uranium (U)	2022/09/03		88	%	75 - 125
			Total Vanadium (V)	2022/09/03		107	%	75 - 125
			Total Zinc (Zn)	2022/09/03		87	%	75 - 125
A704187	MKJ	QC Standard	Total Antimony (Sb)	2022/09/03		107	%	15 - 182
			Total Arsenic (As)	2022/09/03		99	%	53 - 147
			Total Barium (Ba)	2022/09/03		99	%	80 - 119
			Total Cadmium (Cd)	2022/09/03		95	%	72 - 128
			Total Chromium (Cr)	2022/09/03		103	%	59 - 141
			Total Cobalt (Co)	2022/09/03		97	%	58 - 142
			Total Copper (Cu)	2022/09/03		105	%	83 - 117
			Total Lead (Pb)	2022/09/03		107	%	79 - 121
			Total Molybdenum (Mo)	2022/09/03		111	%	67 - 133
			Total Nickel (Ni)	2022/09/03		102	%	79 - 121
			Total Silver (Ag)	2022/09/03		93	%	47 - 153
			Total Tin (Sn)	2022/09/03		99	%	67 - 133
			Total Uranium (U)	2022/09/03		90	%	77 - 123
			Total Vanadium (V)	2022/09/03		104	%	79 - 121
			Total Zinc (Zn)	2022/09/03		101	%	79 - 121
A704187	MKJ	Spiked Blank	Total Antimony (Sb)	2022/09/03		96	%	80 - 120
			Total Arsenic (As)	2022/09/03		91	%	80 - 120
			Total Barium (Ba)	2022/09/03		91	%	80 - 120
			Total Beryllium (Be)	2022/09/03		89	%	80 - 120
			Total Cadmium (Cd)	2022/09/03		91	%	80 - 120
			Total Chromium (Cr)	2022/09/03		91	%	80 - 120
			Total Cobalt (Co)	2022/09/03		92	%	80 - 120
			Total Copper (Cu)	2022/09/03		91	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								-
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2022/09/03		90	%	80 - 120
			Total Mercury (Hg)	2022/09/03		93	%	80 - 120
			Total Molybdenum (Mo)	2022/09/03		93	%	80 - 120
			Total Nickel (Ni)	2022/09/03		90	%	80 - 120
			Total Selenium (Se)	2022/09/03		96	%	80 - 120
			Total Silver (Ag)	2022/09/03		92	%	80 - 120
			Total Thallium (Tl)	2022/09/03		90	%	80 - 120
			Total Tin (Sn)	2022/09/03		92	%	80 - 120
			Total Uranium (U)	2022/09/03		90	%	80 - 120
			Total Vanadium (V)	2022/09/03		91	%	80 - 120
			Total Zinc (Zn)	2022/09/03		91	%	80 - 120
A704187	MKJ	Method Blank	Total Antimony (Sb)	2022/09/03	<0.50		mg/kg	
			Total Arsenic (As)	2022/09/03	<1.0		mg/kg	
			Total Barium (Ba)	2022/09/03	<1.0		mg/kg	
			Total Beryllium (Be)	2022/09/03	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/09/03	<0.050		mg/kg	
			Total Chromium (Cr)	2022/09/03	<1.0		mg/kg	
			Total Cobalt (Co)	2022/09/03	<0.50		mg/kg	
			Total Copper (Cu)	2022/09/03	<1.0		mg/kg	
			Total Lead (Pb)	2022/09/03	<0.50		mg/kg	
			Total Mercury (Hg)	2022/09/03	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/09/03	<0.40		mg/kg	
			Total Nickel (Ni)	2022/09/03	<1.0		mg/kg	
			Total Selenium (Se)	2022/09/03	<0.50		mg/kg	
			Total Silver (Ag)	2022/09/03	<0.20		mg/kg	
			Total Thallium (TI)	2022/09/03	<0.10		mg/kg	
			Total Tin (Sn)	2022/09/03	<1.0		mg/kg	
			Total Uranium (U)	2022/09/03	<0.20		mg/kg	
			Total Vanadium (V)	2022/09/03	<1.0		mg/kg	
			Total Zinc (Zn)	2022/09/03	<10		mg/kg	
A704187	MKJ	RPD [BAK869-01]	Total Antimony (Sb)	2022/09/03	NC		%	30
///0110/	1111G		Total Arsenic (As)	2022/09/03	13		%	30
			Total Barium (Ba)	2022/09/03	4.1		%	35
			Total Beryllium (Be)	2022/09/03	NC		%	30
			Total Cadmium (Cd)	2022/09/03	9.1		%	30
			Total Chromium (Cr)	2022/09/03	11		%	30
			Total Cobalt (Co)	2022/09/03	12		%	30
			Total Copper (Cu)	2022/09/03	1.4		%	30
			Total Lead (Pb)	2022/09/03	4.2		%	35
			Total Mercury (Hg)	2022/09/03	NC		%	35
			Total Molybdenum (Mo)	2022/09/03			%	35
			Total Nickel (Ni)	2022/09/03	21			
			. ,		7.8		%	30
			Total Selenium (Se)	2022/09/03	NC		%	30
			Total Silver (Ag)	2022/09/03	NC		%	35
			Total Thallium (TI)	2022/09/03	NC		%	30
			Total Tin (Sn)	2022/09/03	NC		%	35
			Total Uranium (U)	2022/09/03	NC		%	30
			Total Vanadium (V)	2022/09/03	1.4		%	30
4704575	14.5	Materia Call	Total Zinc (Zn)	2022/09/03	1.4		%	30
A704575	JAB	Matrix Spike	Soluble (Hot water) Boron (B)	2022/09/03		109	%	75 - 125
A704575	JAB	Spiked Blank	Soluble (Hot water) Boron (B)	2022/09/03		105	%	80 - 120
A704575	JAB	Method Blank	Soluble (Hot water) Boron (B)	2022/09/03	<0.10		mg/kg	

 Page 21 of 33

 Bureau Veritas
 Edmonton: 9331 - 48th Street T6B 2R4
 Telephone (780)577-7100
 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

04/05			-	. ,				
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A704575	JAB	RPD	Soluble (Hot water) Boron (B)	2022/09/03	NC		%	35
A704726	NQU	QC Standard	Soluble Conductivity	2022/09/03		109	%	75 - 125
A704726	NQU	Spiked Blank	Soluble Conductivity	2022/09/03		99	%	90 - 110
A704726	NQU	Method Blank	Soluble Conductivity	2022/09/03	<0.020		dS/m	
A704726	NQU	RPD	Soluble Conductivity	2022/09/03	3.2		%	20
A704744	CTU	Matrix Spike	Soluble Chloride (Cl)	2022/09/03		107	%	75 - 125
A704744	CTU	QC Standard	Soluble Chloride (Cl)	2022/09/03		117	%	75 - 125
A704744	CTU	Spiked Blank	Soluble Chloride (Cl)	2022/09/04		107	%	80 - 120
A704744	CTU	Method Blank	Soluble Chloride (Cl)	2022/09/03	<10		mg/L	
A704744	CTU	RPD	Soluble Chloride (Cl)	2022/09/03	NC		%	30
A704757	JAB	Matrix Spike	Soluble Calcium (Ca)	2022/09/03		102	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/03		101	%	75 - 125
			Soluble Sodium (Na)	2022/09/03		98	%	75 - 125
			Soluble Potassium (K)	2022/09/03		104	%	75 - 125
A704757	JAB	QC Standard	Soluble Calcium (Ca)	2022/09/03		109	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/03		105	%	75 - 125
			Soluble Sodium (Na)	2022/09/03		101	%	75 - 125
			Soluble Potassium (K)	2022/09/03		115	%	75 - 125
			Soluble Sulphate (SO4)	2022/09/03		102	%	75 - 125
A704757	JAB	Spiked Blank	Soluble Calcium (Ca)	2022/09/03		103	%	80 - 120
			Soluble Magnesium (Mg)	2022/09/03		103	%	80 - 120
			Soluble Sodium (Na)	2022/09/03		98	%	80 - 120
			Soluble Potassium (K)	2022/09/03		104	%	80 - 120
A704757	JAB	Method Blank	Soluble Calcium (Ca)	2022/09/03	<1.5		mg/L	
			Soluble Magnesium (Mg)	2022/09/03	<1.0		mg/L	
			Soluble Sodium (Na)	2022/09/03	<2.5		mg/L	
			Soluble Potassium (K)	2022/09/03	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/09/03	<5.0		mg/L	
A704757	JAB	RPD	Soluble Calcium (Ca)	2022/09/03	6.9		%	30
			Soluble Magnesium (Mg)	2022/09/03	15		%	30
			Soluble Sodium (Na)	2022/09/03	6.1		%	30
			Soluble Potassium (K)	2022/09/03	7.7		%	30
			Soluble Sulphate (SO4)	2022/09/03	8.0		%	30
A704930	JAB	Matrix Spike [BAK869-01]	Soluble Calcium (Ca)	2022/09/04		101	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/04		100	%	75 - 125
			Soluble Sodium (Na)	2022/09/04		99	%	75 - 125
			Soluble Potassium (K)	2022/09/04		101	%	75 - 125
A704930	JAB	QC Standard	Soluble Calcium (Ca)	2022/09/04		114	%	75 - 125
			Soluble Magnesium (Mg)	2022/09/04		111	%	75 - 125
			Soluble Sodium (Na)	2022/09/04		110	%	75 - 125
			Soluble Potassium (K)	2022/09/04		103	%	75 - 125
			Soluble Sulphate (SO4)	2022/09/04		108	%	75 - 125
A704930	JAB	Spiked Blank	Soluble Calcium (Ca)	2022/09/04		102	%	80 - 120
			Soluble Magnesium (Mg)	2022/09/04		101	%	80 - 120
			Soluble Sodium (Na)	2022/09/04		100	%	80 - 120
			Soluble Potassium (K)	2022/09/04		101	%	80 - 120
A704930	JAB	Method Blank	Soluble Calcium (Ca)	2022/09/04	<1.5		mg/L	
			Soluble Magnesium (Mg)	2022/09/04	<1.0		mg/L	
			Soluble Sodium (Na)	2022/09/04	<2.5		mg/L	
			Soluble Potassium (K)	2022/09/04	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/09/04	<5.0		mg/L	
A704930	JAB	RPD [BAK869-01]	Soluble Calcium (Ca)	2022/09/04	5.7		%	30

 Page 22 of 33

 Bureau Veritas
 Edmonton: 9331 - 48th Street T6B 2R4
 Telephone (780)577-7100
 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Soluble Magnesium (Mg)	2022/09/04	6.5		%	30
			Soluble Sodium (Na)	2022/09/04	15		%	30
			Soluble Potassium (K)	2022/09/04	14		%	30
			Soluble Sulphate (SO4)	2022/09/04	7.9		%	30
A704934	AFI	Matrix Spike	Soluble Chloride (Cl)	2022/09/04		110	%	75 - 125
A704934	AFI	QC Standard	Soluble Chloride (Cl)	2022/09/04		97	%	75 - 125
A704934	AFI	Spiked Blank	Soluble Chloride (Cl)	2022/09/04		107	%	80 - 120
A704934	AFI	Method Blank	Soluble Chloride (Cl)	2022/09/04	<10		mg/L	
A704934	AFI	RPD [BAK869-01]	Soluble Chloride (Cl)	2022/09/04	6.4		%	30
A704946	NQU	QC Standard	Soluble Conductivity	2022/09/04		110	%	75 - 125
A704946	NQU	Spiked Blank	Soluble Conductivity	2022/09/04		101	%	90 - 110
A704946	NQU	Method Blank	Soluble Conductivity	2022/09/04	<0.020		dS/m	
A704946	NQU	RPD [BAK869-01]	Soluble Conductivity	2022/09/04	5.4		%	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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Elizabeth Charko

Elizabeth Chacko, Senior Analyst, Organics

agent -sh

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Junzhi Gao

Janet Gao, B.Sc., QP, Supervisor, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

1/ennicatedk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas 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.

COR FCD-00265 / 4 Page _____ of _____

NSS

m m m m m m m m m n, TIME (HH:MM) 2 2 2 2 2 0 2 2 2 2 -ADDITIONAL COOLER TEMPERATURE RECORD COOLER ID COOLER ID COOLER ID COOLER I TEMP TEMP TEMP TEMP COOLER TEMP TEMP TEMP TEMP TEMP OOLER TEMP COOLER OOLER COOLER DATE (YYYY/MM/DD) MAXXAM JOB#: YES NO ON ON NO YES NO NO YES NO N 9N NO YES YES YES YES YES YES YES CHAIN-OF-CUSTODY RECORD ICE PRESENT CUSTODY SEAL PRESENT INTACT CUSTODY SEAL PRESENT INTACT E PRESENT ISTODY SEAL PRESENT INTACT INTACT CE PRESENT USTODY SEAL PRESENT INTACT ICE PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT INTACT ICE PRESENT CUSTODY SEAL PRESENT PRESENT INTACT PRESENT USTODY SEAL USTODY SEAL CE PRESENT CE PRESENT 20 m Q S. m m m m m m m d a J' N~ 2 N N 2 c N 2 d-5 M , . YES, NO COOLER II TEMP COOLER IC COOLER I TEMP COOLER TEMP TEMP TEMP DOLER TEMP COOLER TEMP TEMP TEMP COOLER TEMP RECEIVED BY (SIGN & PRINT) ON NO QN NO NO YES NO NO YES NO NO COOLER OBSERVATIONS: YES YES YES YES YES YES YES INTACT ICE PRESENT CUSTODY SEAL PRESENT ICE PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT INTACT INTACT INTACT CE PRESENT INTACT CE PRESENT PRESENT PRESENT PRESENT USTODY SEAL PRESENT CUSTODY SEAL PRESENT INTACT CE PRESENT USTODY SEAL PRESENT INTACT INTACT USTODY SEAL PRESENT STODY SEAL PRESENT INTACT PRESENT TODY SEAL PRESENT INTACT INTACT PRESENT CE PRESENT CHAIN OF CUSTODY# SHELL Max Kam of ţ of of of of of of of of of 86 age age

10:15

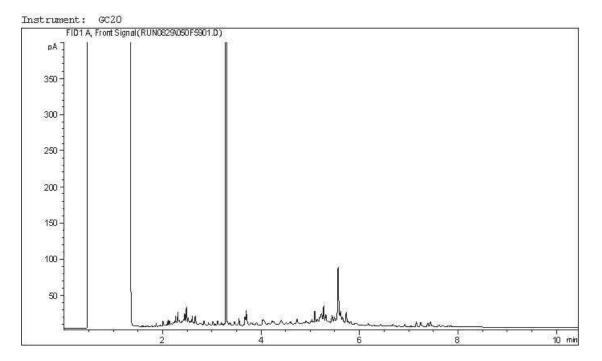
2022/08/22

Jose Merron

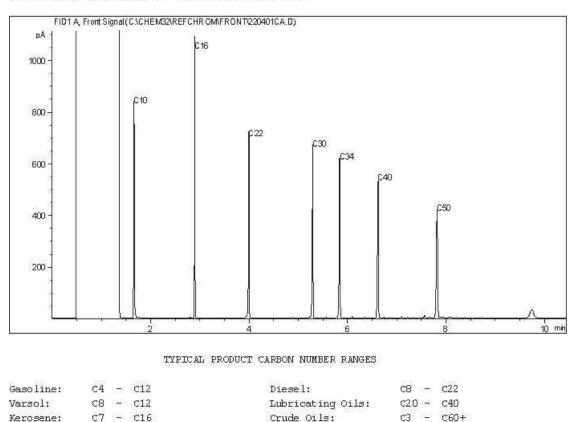
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Page 1 of 1	22-Aug-22 10:15	Cynny Hagen		C264065		AKY INS-0001	_		19 20 21 22 Regular Turnaround Time (TAT)					Date Date MM MITED	# 4	II dara	5 Gusp	1.1.5	x 5 41259544	XS. Vallowknife		~ e 10:15	AU5 2 2 2022	16e -4es/cc -4g	amo: 2 / 6 / F		JREAU VERITAS STAMDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH WW. BVNA COM/TERMS AND CONDITIONS OR BY CALING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY	No Temperature reading by:	Ç.	1 2 3	Time Special instructions		AND	
CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414-\$100-\$104	22525414-1000	I NA	DL	NT	JP, 55	11 12 13 14 15 16 17 18		(A) , silt, cla	vlossib noroin bnes è	ercury - t ercury - c sve (75 π xture (% store (%	PIS X	*	×	*	×		By:						NIN OF CUSTODY DOCUMENT IS ACKNOWLER IY LISTED ABOVE TO OBTAIN A COPY	LAB USE ONLY Yes	Seal present	edia pre	YY Date DD HH	7		
Ċ	Proje	Quotation #:	P.O. #/ AFE#:	Project #:	T2P 4K3 Site #: [Site Location:	Site Location	Sampled By: JM,	3 4 5 6 7 8 9 10			JATC	l SUE TC ater ater	EX F1-F4 EX F1-F4 EX F1-F2 EX F1-F2 F1 MUIA F1 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F4 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1-F4 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1-F4 F1 F1 F1-F4 F1 F1 F1-F4 F1 F1-F4 F1 F1 F1-F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F	18 × 49 × 88 × 88 × 80 × 80 ×	x x x	× × ×	x x x	X X X	XXXX							IS AND CONDITIONS. SIGNING OF THIS CH ONDITIONS OR BY CALLING THE LABORATOI		Seal p	1 2 3 Cooli	Received by: (Signature/ Print)	when Bull 2		
Calgary, A8: 4000 19th St. NE, T2E GPB Toll Free (800) 386-7247 Edmonton, A8: 9331-48 St. TGB 2A4 Toll Free (800) 386-7247 Winnipes, M8: D-675 Berry St. R3H 1A7 Toll Free (856) 800-5208	Report Information (if differs from invoice)	Golder Associates	Aurelie Bellavance		AB Postal T2F	03-299-5600	Bellanance @ WSP.com	WSD.CO	1 2 3	toba	a	titas		24hr) MM Matrix ELD FILTER ELD FILTER ILD PRESEI	Matrix גם הונדבת גם אונדכת	Soi/	12 I	30	45	00	15 2								Yes No	°.			Elizabesh Burden	
	Report Informat	Company:		Street Address:	Calgary		Email: Aurolie B	pies: Peter, t	Drinking Wate	Drinking Water - Manitoba	X other AMSR			H	15 11	1 1 1	11 1	11	12	L L V 12 1		41 					THIS CHAIN OF CUSTODY IS SUBJECT T ARE AVAILABLE FOR VIEWING A		C Seal present	Cooling media	Date Time Time MM DD HH MM	18 10		
Calgary, Ak Edmonton Winnipeg,	on Invoice to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Postal	in the second	Canada Account Payable			CCME Drinking Water - Canada	wan	SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VEI		Sample Identification	BH 72-51-01	BH 22-51-02	BH22-52-01	BH22-52-02	BH22-53-01	2-53-02						e	" UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO B ARE AVAILABLE FOR VIEWING AT W	Yes No	5 5 0 0	<u> </u>	by: (Signature/ Print) YY	V J. Macphail 2022		
MMN MAN	Invoice Information	Company :	Contact Name:	Street Address:			Email:	Copies:		TT1	Saskatchewan	SAMPI			1 BH 2	2 BH 2	= BH23	4 BH22	5 BH22	· BH22	7	8	6	10	п	12	- UNLESS OTHERWI	LAB USE ONLY	Seal present Seal intact	Cooling media present	Relinquis	1 - Chill	4.	

Page 26 of 33

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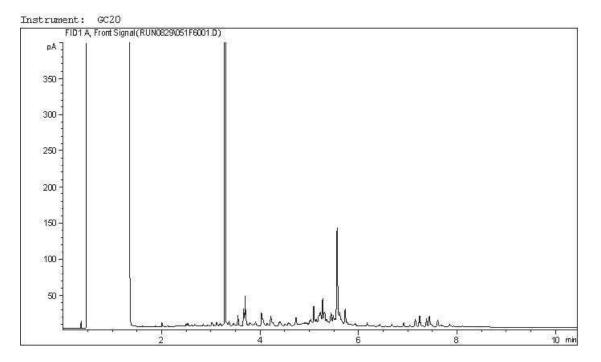
Carbon Range Distribution - Reference Chromatogram



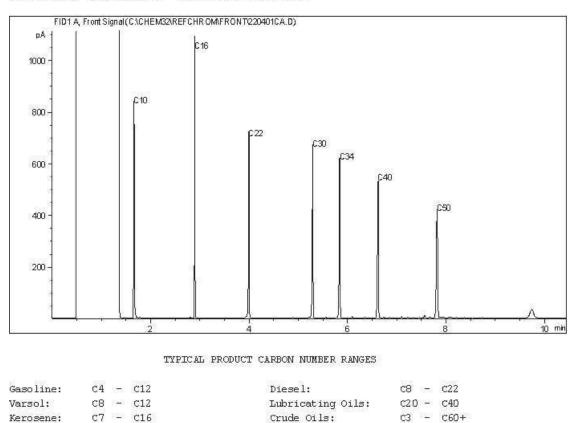
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

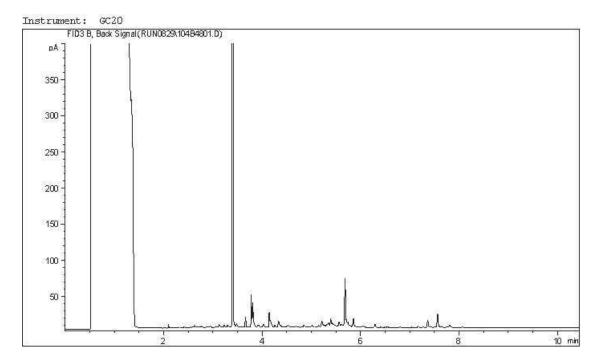
Kerosene:

Crude Oils:

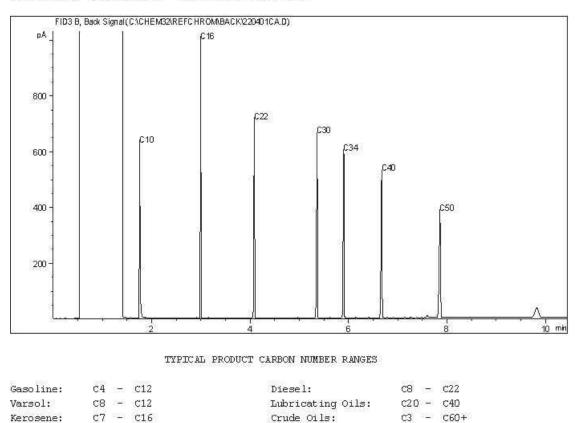


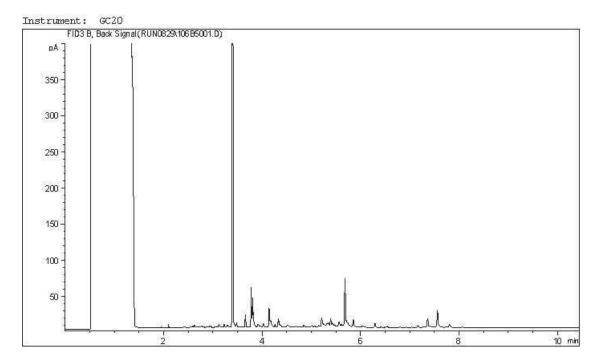
Carbon Range Distribution - Reference Chromatogram



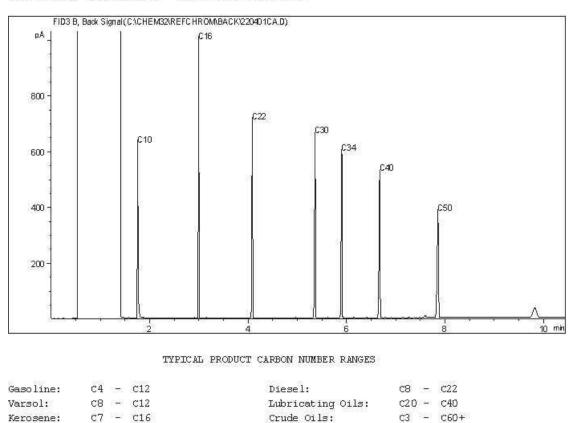


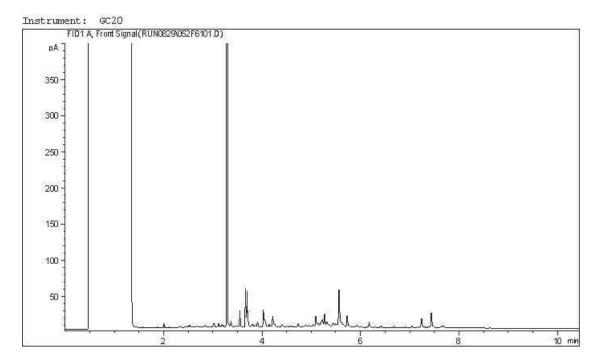
Carbon Range Distribution - Reference Chromatogram



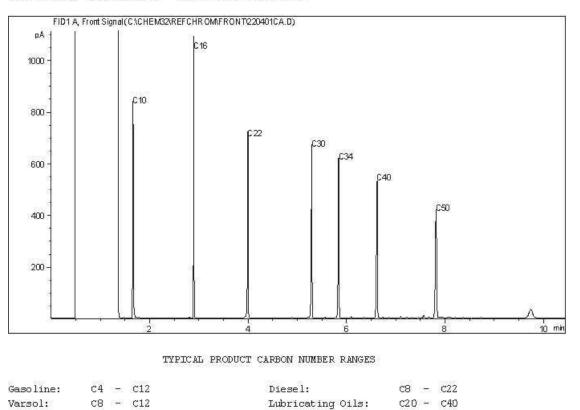


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



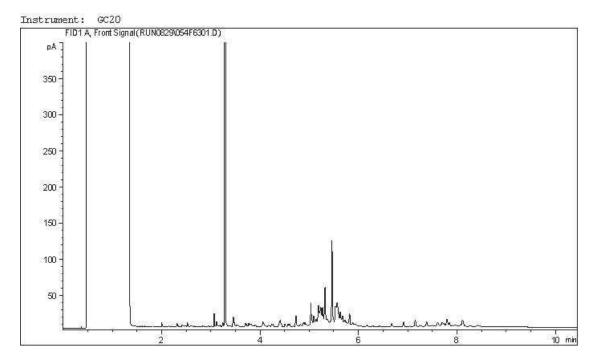
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

c7 - c16

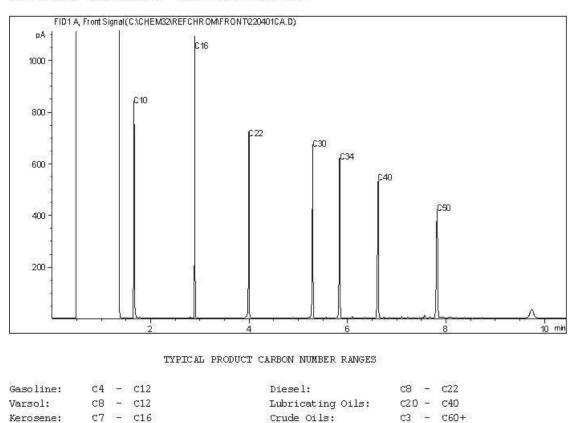
Kerosene:

Crude Oils:

C3 - C60+



Carbon Range Distribution - Reference Chromatogram





Report Transmission Cover Page

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itepoit indite		<i>a</i>	
Bill To: Attn: Sampled By: Company:	Bureau Veritas Canada (2 4606 Canada Way Burnaby, BC, Canada V5G 1K5 Cynny Hagen JM	2019) Project ID: Project Name: Project Location: LSD: P.O.: Proj. Acct. code:	C264065 Lot ID: 1598810 Control Number: Date Received: Sep 14, 2022 Date Reported: Sep 21, 2022 Report Number: 2786942
Contact	Company		Address
Accounts Payab	ole Bureau Veritas	s Canada (2019) Inc.	#500 1919 Minnesota Court
			Mississauga, ON L5N 0C9
			Phone: (866) 611-1118 Fax: (905) 288-2169
			Email: AP.865.INV.SUBMIT@bureauveritas.com
<u>Delivery</u>	<u> </u>	ormat	Deliverables
Email - Merge D	eliverables P	DF	COC / Invoice
Customer Solut	ions Bureau Veritas	s Canada (2019) Inc.	4606 Canada Way
			Burnaby, BC V5G 1K5
			Phone: (604) 734-7276 Fax: (604) 731-2386
			Email: customersolutionswest@bvlabs.com
Delivery	<u>F</u>	ormat	<u>Deliverables</u>
Email - Merge D	eliverables P	DF	COC / Test Report
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Cynny Hagen	Bureau Veritas	s Canada (2019) Inc.	4606 Canada Way
			Burnaby, BC V5G 1K5
			Phone: (604) 734-7276 Fax: (604) 731-2386
			Email: cynny.hagen@bureauveritas.com
<u>Delivery</u>		ormat	Deliverables
Email - Merge D	eliverables P	DF	COC / Test Report
Email - Single De	eliverable P	DF	COA

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Analyte		Units	Results	Results	Results	Nominal Detectio Limit
		Matrix	x Soil			
		Sample Description	n BAK864-BH22-51-01			
		Sample Location	า			
		Sample Time	e 11:00			
		Sample Date	e Aug 15, 2022			
		Reference Number	r 1598810-1			
Company:						
Sampled By:	JM	Proj. Acct. code:		·		
Attn:	Cynny Hagen	P.O.:		Report Number:		_
	V5G 1K5	LSD:		Date Reported:	•	
	Burnaby, BC, Canada	Project Location:		Date Received:	Sep 14 202	2
	4606 Canada Way	Project Name:		Control Number:	1000010	•
Bill To:	-	Project ID:	C264065	L of ID:	1598810	ו
Analytical Ro Bill To:	Bureau Veritas Canada (2019)	-)	C264065		1598810)

Barite Soil Analysis				
Barium	Fusion	mg/kg	1430	40

Anthony Weumann

General Manager

Approved by:

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS). Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.



Page 2 of 2 F: +1 (780) 438-5522 F: +1 (780) 434-8586 E: info.Edmonton@element.com W: www.element.com

Methodology	y and Notes				
Bill To: Attn: Sampled By: Company:	4606 Canada Way Burnaby, BC, Canada V5G 1K5 Cynny Hagen	Pro Pro LS P.(Lot ID: Control Number: Date Received: Date Reported: Report Number:	Sep 21, 2022
Method of A	nalysis				
Method Name	Ref	ference	Method	Date Analysis Started	Location
Barium (Fusion)	in soil AS	ТМ	 * Standard Practice for Dissolu Waste by Lithium Metaborate 		Element Edmonton - Roper Road

2008., D 4503-08 * Reference Method Modified

References

ASTM

Annual Book of ASTM Standards

	48.UFR.EAU
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Sent To: Element Materials Tech Canada 7217 Roper Rd. Edmonton, AB, T6B 314



Page 01 of 01 COC # C264065-EEXO-01-01

ABUREAU.	Tel: (780	Tel: (780) 438-5522														
REPORT INFORMATION	NO					-			ANA	ANALYSIS REQUESTED	EQUES	. CD				
Company:	Bureau Veritas					Π										
Audress:	4000 19St N.E. Calgary, Alberta, 12E 6P8	ta, 12E 6P8										╢		-		
							u									
Contact Name:	Cynny Hagen						oitos									
 Email:	Cynny. HAGEN@bureauveritas.com, Customersolutionswest@bureauveritas.co	is.com, Cust	omersolutio	nswest@bui	reauverita	s.cot	n Extr	-	_							
Phone:	(403) 735-2273						ioisu									
Lab Project #:	C264065						Brizu									
 # SAMPLE ID		MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	CONT.	1901 no muites								ADDITIONAL SAI	ADDITIONAL SAMPLE INFORMATION
1 BAK864-BH22-51-01	1-51-01	SOIL	2022/08/15	11:00	٩	, -	×					┢	╞		(P: 01)	
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REGULATORY CRITERIA	RIA		SPECIAL INSTRUCTIONS	RUCTIONS												TURNAROUND TIME
			 Please inform Bureau Veritas immediately if: You are not accredited for the requested test(s) The hold time is approaching for the requested te **Please return a copy of this form with the report.** 	 lease inform Bureau Veritas immediately if: You are not accredited for the requested test(s) The hold time is approaching for the requested test(s). Please return a copy of this form with the report.** 	tas immedia I for the req aching for t this form wi	itely if uester he rec th the	: d test(s) uested te report.**	st(s).								Rush Required 2022/09/21
																Date Required
COOLER ID:	YES NO	n	COOLER ID:		YES NO		-1	·.	۳. 	COOLER ID:	ä		YES NO			
 Custody Seal Present Custody Seal Intact Cooling Media Present	(°C)		Custody Seal Present Custody Seal Intact Cooling Media Present	esent tact Present		Temp: (°C)	ä			Custody Seal Present Custody Seal Intact Cooling Media Present	Seal Pro Seal Int Media F	ssent act resent		C C Temp	ار (عراق)	Please inform us if rush charges will be incurred.
RELINQUISHED BY: (SIGN & PRINT)	DATE: (DATE: (YYYY/MM/DD)	TIME: (HH:MM)	(MM:HI	RECEI	RECEIVED BY: (SIGN & PRINT)	IGN & P	RINT)				DATI	DATE: (YYYY/MM/DD)	F	T T
1. Hut Ber N.	Mick Bath	10200	1/20/0	\sim	00	i	ß	Ì		ľ			ဂိ	11 50 120C	111 5:35	
 2						Ň	:		5	,						

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewe	11. NT			Sampling Date: August 15, 2022
			-	· · · <u>- ·</u>
Golder Project Number: 2	2525414	4-1000	-	Laboratory: Bureau Veritas Edmonton
Lab Submission Number: <u>C</u>	264065		-	
Was the Cooler Received at the lab Was proper chain of custody of the Were sample temperatures acceptal Were all samples analyzed and extr Has lab warranted all tests were in a Was sufficient sample provided for Has lab warranted all samples were	samples ble when acted wi statistica the requ	documente a they reach ithin hold ti al control in aested analy	ed and ke ed lab?: mes?: CoA?: rsis?	ept? Yes Yes Yes Yes Yes
Are All Laboratory QC Within Acc	eptance	Criteria (Y	es, No, N	Not Applicable)?
Surrogate Recovery Method Blank Concentration Laboratory Duplicate RPD Matrix Spike Recovery Blank Spike Recovery Are All Field QC Samples Within A				
Field Blank Concentration	Yes	No	NA X	Comments
Trip Blank Concentration			X X	No field QC samples were collected.
Field Duplicate RPD			X	
Is data considered reliable (Yes/No If answer is "No" or "Suspect", des Data Reviewed by (Print): <u>A</u>	cribe and	d provide ra	ationale:	Yes Data Reviewed by (Signature):



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 of 2

Attention: AURELIE BELLAVANCE

GOLDER ASSOCIATES LTD CALGARY - NATIONAL CONTRACT 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232205 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266062

Received: 2022/08/30, 12:00

Sample Matrix: Soil # Samples Received: 13

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	13	N/A	2022/09/04	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	13	N/A	2022/09/08		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	3	2022/09/07	2022/09/08	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	10	2022/09/07	2022/09/09	AB SOP-00036	CCME PHC-CWS m
Moisture (1)	13	N/A	2022/09/08	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (1)	9	N/A	2022/09/09		Auto Calc
PAH in Soil by GC/MS (1)	9	2022/09/07	2022/09/09	AB SOP-00036 / AB SOP-	EPA 3540C/8270E m
				00003	

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(3) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 of 2

Attention: AURELIE BELLAVANCE

GOLDER ASSOCIATES LTD CALGARY - NATIONAL CONTRACT 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232205 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266062

Received: 2022/08/30, 12:00

reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key



Bureau Veritas 14 Sep 2022 16:45:11

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

					B 1 1 1 1 1 1 1 1			I	
	BAW656	BAW656		BAW657	BAW658	BAW658	BAW659		
	1 of 2			1 of 2	1 of 2		1 of 2		
UNITS	BH22-68-01	BH22-68-01 Lab-Dup	RDL	BH22-68-02	BH22-68-03	BH22-68-03 Lab-Dup	BH22-62-01	RDL	QC Batch
mg/kg	38 (1)	N/A	36	<10	<10	N/A	17	10	A707876
mg/kg	880 (1)	N/A	180	<50	<50	N/A	82	50	A707876
mg/kg	270 (1)	N/A	180	<50	<50	N/A	<50	50	A707876
mg/kg	Yes	N/A	N/A	Yes	Yes	N/A	Yes	N/A	A707876
%	73	N/A	0.30	13	18	18	N/A	0.30	A707826
mg/kg	<0.13	N/A	0.13	<0.045	<0.045	N/A	<0.045	0.045	A701402
mg/kg	<13	N/A	13	<10	<10	N/A	<10	10	A701402
					-				
mg/kg	<0.020 (2)	<0.020	0.020	<0.0050	<0.0050	N/A	<0.0050	0.0050	A702776
mg/kg	<0.060 (2)	<0.060	0.060	<0.050	<0.050	N/A	<0.050	0.050	A702776
mg/kg	<0.046 (2)	<0.046	0.046	<0.010	<0.010	N/A	<0.010	0.010	A702776
mg/kg	<0.10 (2)	<0.10	0.10	<0.040	<0.040	N/A	<0.040	0.040	A702776
mg/kg	<0.079 (2)	<0.079	0.079	<0.020	<0.020	N/A	<0.020	0.020	A702776
mg/kg	<13 (2)	<13	13	<10	<10	N/A	<10	10	A702776
%	95	97	N/A	96	95	N/A	96	N/A	A702776
%	97	96	N/A	98	99	N/A	98	N/A	A702776
%	112	114	N/A	111	120	N/A	112	N/A	A702776
%	91	91	N/A	91	91	N/A	92	N/A	A702776
%	97	N/A	N/A	96	95	N/A	92	N/A	A707876
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg % %	mg/kg 38 (1) mg/kg 880 (1) mg/kg 270 (1) mg/kg Yes % 73 mg/kg <0.13	10:40 10:40 1 of 2 1 of 2 UNITS BH22-68-01 BH22-68-01 Lab-Dup mg/kg 38 (1) N/A mg/kg 270 (1) N/A mg/kg 270 (1) N/A mg/kg Yes N/A mg/kg <0.13	10:40 10:40 1 of 2 1 of 2 UNITS BH22-68-01 BH22-68-01 mg/kg 38 (1) N/A 36 mg/kg 38 (1) N/A 180 mg/kg 270 (1) N/A 180 mg/kg 270 (1) N/A 180 mg/kg Yes N/A N/A % 73 N/A 0.30 mg/kg <0.13	10:40 10:40 10:50 1 of 2 1 of 2 1 of 2 UNITS BH22-68-01 BH22-68-01 RDL BH22-68-02 mg/kg 38 (1) N/A 36 <10	10:40 10:40 10:50 11:00 1 of 2 UNITS BH22-68-01 BH22-68-01 RDL BH22-68-02 BH22-68-03 mg/kg 38 (1) N/A 36 <10	10:40 10:40 10:50 11:00 11:00 1 of 2 UNITS BH22-68-01 BH22-68-01 Lab-Dup RDL BH22-68-02 BH22-68-03 BH22-68-03 mg/kg 38 (1) N/A 36 <10	10:40 10:40 10:50 11:00 11:00 11:30 1 of 2 UNITS BH22-68-01 BH22-68-02 BH22-68-03 BH22-68-03 BH22-68-03 BH22-68-03 BH22-62-01 mg/kg 38 (1) N/A 36 <10	10:40 10:50 11:00 11:00 11:30 1 of 2 1 of 2

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW659		BAW660	BAW661	BAW662	BAW663		
Sampling Date		2022/08/26 11:30		2022/08/26 11:40	2022/08/26 11:50	2022/08/26 13:15	2022/08/26 13:30		
COC Number		1 of 2		1 of 2	1 of 2	1 of 2	1 of 2		
	UNITS	BH22-62-01 Lab-Dup	QC Batch	BH22-62-02	BH22-62-03	BH22-61-01	BH22-61-02	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	16	A707876	18	16	17	20	10	A707848
F3 (C16-C34 Hydrocarbons)	mg/kg	85	A707876	77	77	100	82	50	A707848
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A707876	<50	<50	<50	<50	50	A707848
Reached Baseline at C50	mg/kg	Yes	A707876	Yes	Yes	Yes	Yes	N/A	A707848
Volatiles	•				•				
Xylenes (Total)	mg/kg	N/A	A701402	<0.045	<0.045	<0.045	<0.045	0.045	A701402
F1 (C6-C10) - BTEX	mg/kg	N/A	A701402	<10	<10	<10	16	10	A701402
Field Preserved Volatiles									
Benzene	mg/kg	N/A	A702776	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A702776
Toluene	mg/kg	N/A	A702776	<0.050	<0.050	<0.050	<0.050	0.050	A702776
Ethylbenzene	mg/kg	N/A	A702776	<0.010	<0.010	<0.010	<0.010	0.010	A702776
m & p-Xylene	mg/kg	N/A	A702776	<0.040	<0.040	<0.040	<0.040	0.040	A702776
o-Xylene	mg/kg	N/A	A702776	<0.020	<0.020	<0.020	<0.020	0.020	A702776
F1 (C6-C10)	mg/kg	N/A	A702776	<10	<10	<10	16	10	A702776
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	N/A	A702776	97	96	97	97	N/A	A702776
4-Bromofluorobenzene (sur.)	%	N/A	A702776	98	98	98	100	N/A	A702776
D10-o-Xylene (sur.)	%	N/A	A702776	119	121	113	111	N/A	A702776
D4-1,2-Dichloroethane (sur.)	%	N/A	A702776	91	91	93	89	N/A	A702776
O-TERPHENYL (sur.)	%	92	A707876	103	102	102	103	N/A	A707848
RDL = Reportable Detection Lir Lab-Dup = Laboratory Initiated		te							

N/A = Not Applicable



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW664		BAW665	BAW666	BAW667	BAW668		
Sampling Date		2022/08/26		2022/08/26	2022/08/26	2022/08/26	2022/08/26		
		13:45		14:00	14:10	14:20	14:30		
COC Number		1 of 2		1 of 2	1 of 2	1 of 2	2 of 2		
	UNITS	BH22-61-03	QC Batch	BH22-61-04	BH22-60-01	BH22-60-02	BH22-60-03	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	A707848	17	16	51	59	10	A707876
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	A707848	93	71	120	130	50	A707876
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A707848	<50	<50	<50	<50	50	A707876
Reached Baseline at C50	mg/kg	Yes	A707848	Yes	Yes	Yes	Yes	N/A	A707876
Physical Properties					-		-		
Moisture	%	N/A	N/A	N/A	N/A	N/A	33	0.30	A707826
Volatiles									
Xylenes (Total)	mg/kg	<0.045	A701402	<0.045	<0.045	<0.045	<0.045	0.045	A701402
F1 (C6-C10) - BTEX	mg/kg	<10	A701402	<10	<10	<10	<10	10	A701402
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	A702776	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A702776
Toluene	mg/kg	<0.050	A702776	<0.050	<0.050	<0.050	<0.050	0.050	A702776
Ethylbenzene	mg/kg	<0.010	A702776	<0.010	<0.010	<0.010	<0.010	0.010	A702776
m & p-Xylene	mg/kg	<0.040	A702776	<0.040	<0.040	<0.040	<0.040	0.040	A702776
o-Xylene	mg/kg	<0.020	A702776	<0.020	<0.020	<0.020	<0.020	0.020	A702776
F1 (C6-C10)	mg/kg	<10	A702776	<10	<10	<10	<10	10	A702776
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	94	A702776	95	94	95	96	N/A	A702776
4-Bromofluorobenzene (sur.)	%	98	A702776	100	98	98	98	N/A	A702776
D10-o-Xylene (sur.)	%	118	A702776	122	120	108	118	N/A	A702776
D4-1,2-Dichloroethane (sur.)	%	91	A702776	92	90	91	90	N/A	A702776
O-TERPHENYL (sur.)	%	101	A707848	96	92	91	94	N/A	A707876
RDL = Reportable Detection Li	nit								
N/A = Not Applicable									



PHYSICAL TESTING (SOIL)

Bureau Veritas ID		BAW659	BAW660	BAW661	BAW662	BAW663	BAW664	BAW665		
Sampling Date		2022/08/26	2022/08/26	2022/08/26	2022/08/26	2022/08/26	2022/08/26	2022/08/26		
		11:30	11:40	11:50	13:15	13:30	13:45	14:00		
COC Number		1 of 2	1 of 2							
	LINUTC	BU33 63 01	BU33 63 03	BU33 63 03	DUDD 61 01	DH33 61 03	BH22-61-03	DUDD 61 04	וחם	OC Batch
	UNITS	DH22-02-01	DHZZ-02-UZ	DHZZ-02-03	DH22-01-01	DU55-01-05	DUT72-01-02	DHZZ-01-04	RDL	QC Batti
Physical Properties		DH22-02-01	DH22-02-U2	DH22-02-03	DH22-01-01	DH22-01-02	DH22-01-03	DH22-01-04	KUL	QC Batch
Physical Properties Moisture	%	22	30	28	26	23	15		I	A707826

Bureau Veritas ID		BAW666	BAW667		
Sampling Data		2022/08/26	2022/08/26		
Sampling Date		14:10	14:20		
COC Number		1 of 2	1 of 2		
	UNITS	BH22-60-01	BH22-60-02	RDL	QC Batch
Physical Properties					
Moisture	%	25	23	0.30	A707826
RDL = Reportable Detection L	imit				



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BAW659	BAW659		BAW660	BAW661	BAW662		
Sampling Date		2022/08/26	2022/08/26		2022/08/26	2022/08/26	2022/08/26		
Sampling Date		11:30	11:30		11:40	11:50	13:15		
COC Number		1 of 2	1 of 2		1 of 2	1 of 2	1 of 2		
	UNITS	BH22-62-01	BH22-62-01 Lab-Dup	QC Batch	BH22-62-02	BH22-62-03	BH22-61-01	RDL	QC Batch
Polycyclic Aromatics									
B[a]P TPE Total Potency Equivalents	mg/kg	0.0090	N/A	A707096	0.016	0.015	0.015	0.0071	A707096
Naphthalene	mg/kg	0.026	0.027	A707875	0.028	0.032	0.031	0.0050	A707845
Surrogate Recovery (%)	•	•							
D10-ANTHRACENE (sur.)	%	95	91	A707875	109	105	104	N/A	A707845
D8-ACENAPHTHYLENE (sur.)	%	82	81	A707875	93	92	89	N/A	A707845
D8-NAPHTHALENE (sur.)	%	89	85	A707875	94	94	92	N/A	A707845
TERPHENYL-D14 (sur.)	%	104	99	A707875	109	112	111	N/A	A707845
N/A = Not Applicable		5.00000							
Bureau Veritas ID		BAW663	BAW664		BAW665	BAW666	BAW667		
		BAW663 2022/08/26 13:30	BAW664 2022/08/26 13:45		BAW665 2022/08/26 14:00		BAW667 2022/08/26 14:20		
Bureau Veritas ID		2022/08/26	2022/08/26		2022/08/26	2022/08/26	2022/08/26		
Bureau Veritas ID Sampling Date	UNITS	2022/08/26 13:30	2022/08/26 13:45	QC Batch	2022/08/26 14:00 1 of 2	2022/08/26 14:10	2022/08/26 14:20		QC Batch
Bureau Veritas ID Sampling Date	UNITS	2022/08/26 13:30 1 of 2	2022/08/26 13:45 1 of 2	QC Batch	2022/08/26 14:00 1 of 2	2022/08/26 14:10 1 of 2	2022/08/26 14:20 1 of 2		QC Batch
Bureau Veritas ID Sampling Date COC Number	UNITS	2022/08/26 13:30 1 of 2	2022/08/26 13:45 1 of 2	QC Batch	2022/08/26 14:00 1 of 2 BH22-61-04	2022/08/26 14:10 1 of 2	2022/08/26 14:20 1 of 2		
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics		2022/08/26 13:30 1 of 2 BH22-61-02	2022/08/26 13:45 1 of 2 BH22-61-03	1	2022/08/26 14:00 1 of 2 BH22-61-04	2022/08/26 14:10 1 of 2 BH22-60-01	2022/08/26 14:20 1 of 2 BH22-60-02	RDL	
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents	mg/kg	2022/08/26 13:30 1 of 2 BH22-61-02 0.015	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071	A707096	2022/08/26 14:00 1 of 2 BH22-61-04 0.015	2022/08/26 14:10 1 of 2 BH22-60-01 0.013	2022/08/26 14:20 1 of 2 BH22-60-02 0.013	RDL	A707096
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents Naphthalene	mg/kg	2022/08/26 13:30 1 of 2 BH22-61-02 0.015	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071	A707096	2022/08/26 14:00 1 of 2 BH22-61-04 0.015	2022/08/26 14:10 1 of 2 BH22-60-01 0.013	2022/08/26 14:20 1 of 2 BH22-60-02 0.013	RDL	A707096
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents Naphthalene Surrogate Recovery (%)	mg/kg mg/kg	2022/08/26 13:30 1 of 2 BH22-61-02 0.015 0.026	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071 <0.0050	A707096 A707845	2022/08/26 14:00 1 of 2 BH22-61-04 0.015 0.019	2022/08/26 14:10 1 of 2 BH22-60-01 0.013 0.022	2022/08/26 14:20 1 of 2 BH22-60-02 0.013 0.029	RDL 0.0071 0.0050	A707096 A707875
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents Naphthalene Surrogate Recovery (%) D10-ANTHRACENE (sur.)	mg/kg mg/kg %	2022/08/26 13:30 1 of 2 BH22-61-02 0.015 0.026 104	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071 <0.0050	A707096 A707845 A707845	2022/08/26 14:00 1 of 2 BH22-61-04 0.015 0.019 102	2022/08/26 14:10 1 of 2 BH22-60-01 0.013 0.022 102	2022/08/26 14:20 1 of 2 BH22-60-02 0.013 0.029 90	RDL 0.0071 0.0050 N/A	A707096 A707875 A707875
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents Naphthalene Surrogate Recovery (%) D10-ANTHRACENE (sur.) D8-ACENAPHTHYLENE (sur.)	mg/kg mg/kg %	2022/08/26 13:30 1 of 2 BH22-61-02 0.015 0.026 104 92	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071 <0.0050 -0.0050 106 91	A707096 A707845 A707845 A707845	2022/08/26 14:00 1 of 2 BH22-61-04 0.015 0.019 102 92	2022/08/26 14:10 1 of 2 BH22-60-01 0.013 0.022 102 92	2022/08/26 14:20 1 of 2 BH22-60-02 0.013 0.029 90 80	RDL 0.0071 0.0050 N/A N/A	A707096 A707875 A707875 A707875
Bureau Veritas ID Sampling Date COC Number Polycyclic Aromatics B[a]P TPE Total Potency Equivalents Naphthalene Surrogate Recovery (%) D10-ANTHRACENE (sur.) D8-ACENAPHTHYLENE (sur.) D8-NAPHTHALENE (sur.)	mg/kg mg/kg % %	2022/08/26 13:30 1 of 2 BH22-61-02 0.015 0.026 104 92 93	2022/08/26 13:45 1 of 2 BH22-61-03 <0.0071 <0.0050 	A707096 A707845 A707845 A707845 A707845	2022/08/26 14:00 1 of 2 BH22-61-04 0.015 0.019 102 92 99	2022/08/26 14:10 1 of 2 BH22-60-01 0.013 0.022 102 92 96	2022/08/26 14:20 1 of 2 BH22-60-02 0.013 0.029 90 80 83	RDL 0.0071 0.0050 N/A N/A N/A	A707096 A707875 A707875 A707875 A707875



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C
Package 2	3.7°C
Package 3	8.7°C
Package 4	3.3°C
Package 5	4.7°C
Package 6	4.0°C
Package 7	4.7°C

Version #3: Report reissued with chromatogram reviewed on sample BAW656 (BH22-68-01) as per client request 20220912

Change Request: Report to include results for Naphthalene & B(a)TPE on below samples as per client request received 2022/09/07. BH22-60-01/BAW666

BH22-60-02/BAW667 BH22-61-01/BAW667 BH22-61-02/BAW663 BH22-61-03/BAW663 BH22-61-04/BAW665 BH22-62-01/BAW665 BH22-62-02/BAW660 BH22-62-03/BAW661

HYDROCARBON RESEMBLANCE

The reported hydrocarbon resemblance was obtained by visual comparison of the sample chromatogram with a library of reference product chromatograms. Since variables such as the degree and type of weathering and the presence of non-petrogenic hydrocarbons cannot be duplicated in reference spectra, the resemblance information must be regarded as approximate and qualitative and as such, Bureau Veritas Laboratories can assume no liability for any conclusions drawn from these data.

Sample BAW656 [BH22-68-01] : The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A702776	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/04	value	79	%	50 - 140
A/02//0	VVIIX	[BAW656-02]		2022/05/04		75	70	50 - 140
		. ,	4-Bromofluorobenzene (sur.)	2022/09/04		82	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		78	%	50 - 140
			Benzene	2022/09/04		84	%	50 - 140
			Toluene	2022/09/04		80	%	50 - 140
			Ethylbenzene	2022/09/04		80	%	50 - 140
			m & p-Xylene	2022/09/04		80	%	50 - 140
			o-Xylene	2022/09/04		82	%	50 - 140
			F1 (C6-C10)	2022/09/04		98	%	60 - 140
A702776	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/04		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		96	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		118	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		90	%	50 - 140
			Benzene	2022/09/04		101	%	60 - 130
			Toluene	2022/09/04		97	%	60 - 130
			Ethylbenzene	2022/09/04		99	%	60 - 130
			m & p-Xylene	2022/09/04		97	%	60 - 130
			o-Xylene	2022/09/04		101	%	60 - 130
			F1 (C6-C10)	2022/09/04		105	%	60 - 140
A702776	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/04		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		96	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		89	%	50 - 140
			Benzene	2022/09/04	<0.0050		mg/kg	
			Toluene	2022/09/04	<0.050		mg/kg	
			Ethylbenzene	2022/09/04	<0.010		mg/kg	
			m & p-Xylene	2022/09/04	<0.040		mg/kg	
			o-Xylene	2022/09/04	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/04	<10		mg/kg	
A702776	WPK	RPD [BAW656-02]	Benzene	2022/09/04	NC		%	50
			Toluene	2022/09/04	NC		%	50
			Ethylbenzene	2022/09/04	NC		%	50
			m & p-Xylene	2022/09/04	NC		%	50
			o-Xylene	2022/09/04	NC		%	50
			F1 (C6-C10)	2022/09/04	NC		%	30
A707826	WLE	Method Blank	Moisture	2022/09/08	<0.30		%	
A707826	WLE	RPD [BAW658-01]	Moisture	2022/09/08	2.2		%	20
A707845	JU2	Matrix Spike	D10-ANTHRACENE (sur.)	2022/09/08		99	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/09/08		82	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/08		80	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/09/08		100	%	50 - 130
			Naphthalene	2022/09/08		77	%	50 - 130
A707845	JU2	Spiked Blank	D10-ANTHRACENE (sur.)	2022/09/08		111	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/09/08		93	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/08		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/09/08		123	%	50 - 130
			Naphthalene	2022/09/08		95	%	50 - 130
A707845	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/09/08		117	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/09/08		95	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/08		99	%	50 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			TERPHENYL-D14 (sur.)	2022/09/08		133 (1)	%	50 - 130
			Naphthalene	2022/09/08	<0.0050		mg/kg	
A707845	JU2	RPD	Naphthalene	2022/09/08	NC		%	50
A707848	CAU	Matrix Spike	O-TERPHENYL (sur.)	2022/09/09		99	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/09		94	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/09		97	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/09		93	%	60 - 140
A707848	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/09/09		100	%	60 - 140
	0,10	opined blank	F2 (C10-C16 Hydrocarbons)	2022/09/09		96	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/09		98	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/09		95	%	60 - 140
A707848	CAU	Method Blank	O-TERPHENYL (sur.)	2022/09/09		111	%	60 - 140
A/0/040	CAU	Wethou Blank	F2 (C10-C16 Hydrocarbons)	2022/09/09	<10		mg/kg	00 140
			F3 (C16-C34 Hydrocarbons)	2022/09/09	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/09	<50		mg/kg	
A707848	CAU	RPD	F2 (C10-C16 Hydrocarbons)	2022/09/09	NC		%	40
A707040	CAU	N D	F3 (C16-C34 Hydrocarbons)	2022/09/09	5.4		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/09	NC		%	40
A707875	JU2	Matrix Spike [BAW659-01]	D10-ANTHRACENE (sur.)	2022/09/09	ive in the second secon	94	%	50 - 130
		[5, 11, 000, 02]	D8-ACENAPHTHYLENE (sur.)	2022/09/09		84	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/09		90	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/09/09		104	%	50 - 130
			Naphthalene	2022/09/09		94	%	50 - 130
A707875	JU2	Spiked Blank	D10-ANTHRACENE (sur.)	2022/09/09		101	%	50 - 130
R/0/0/5	302	Spiked Blank	D8-ACENAPHTHYLENE (sur.)	2022/09/09		90	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/09		95	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/09/09		110	%	50 - 130
			Naphthalene	2022/09/09		96	%	50 - 130
A707875	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/09/09		101	%	50 - 130
A/0/0/J	302	Wethod Blank	D8-ACENAPHTHYLENE (sur.)	2022/09/09		89	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/09/09		95	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/09/09		113	%	50 - 130
			Naphthalene	2022/09/09	<0.0050	115	 mg/kg	50 - 150
A707875	JU2	RPD [BAW659-01]	Naphthalene	2022/09/09	3.4		тт <u>р</u> /к <u>р</u> %	50
A707875	CAU	Matrix Spike	O-TERPHENYL (sur.)	2022/09/09	5.4	87	%	60 - 140
A707870	CAU	[BAW659-01]						
			F2 (C10-C16 Hydrocarbons)	2022/09/08		86	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		85	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		84	%	60 - 140
A707876	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/09/08		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		93	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		94	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		90	%	60 - 140
A707876	CAU	Method Blank	O-TERPHENYL (sur.)	2022/09/08		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/08	<50		mg/kg	
A707876	CAU	RPD [BAW659-01]	F2 (C10-C16 Hydrocarbons)	2022/09/08	5.5		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/08	3.1		%	40



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC													
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits					
			F4 (C34-C50 Hydrocarbons)	2022/09/08	NC		%	40					
Duplicate	e: Paireo	d analysis of a sep	arate portion of the same sample. Used to evaluate	the variance in the measure	ment.								
Matrix S	pike: A s	ample to which a	known amount of the analyte of interest has been	added. Used to evaluate sam	ple matrix inte	erference.							
Spiked B	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 con	taining all reagents used in the analytical procedure	e. Used to identify laboratory	contamination	n.							
Surrogat	e: A pur	e or isotopically la	abeled compound whose behavior mirrors the analy	tes of interest. Used to eval	uate extraction	efficiency.							
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).													
(1) Reco	overy or	RPD for this par	ameter is outside control limits. The overall qua	ality control for this analys	is meets acce	ptability criteria	a.						



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Junzhi Gas

Janet Gao, B.Sc., QP, Supervisor, Organics

1/monicatedk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas 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.

COR FCD-00265 / 5 Page _1_ of _1_

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m TIME (HH:MM) 1510 2 N 2 2 N r N 2 e ADDITIONAL COOLER TEMPERATURE RECORD COOLER ID COOLER IL COOLER ID TEMP TEMP TEMP TEMP COOLER COOLER TEMP TEMP TEMP COOLER TEMP TEMP OOLER TEMP OOLFR DATE (YYYY/MM/DD) NO 2022/08/31 NO NO NO YES NO No NO N NO No YES YES YES YES YES YES YES YES CHAIN-OF-CUSTODY RECORD CUSTODY SEAL PRESENT INTACT :E PRESENT CUSTODY SEAL PRESENT INTACT ICE PRESENT JSTODY SEAL PRESENT CE PRESENT USTODY SEAL PRESENT INTACT PRESENT INTACT E PRESENT INTACT ODY SEAL INTACT INTACT CE PRESENT USTODY SEAL PRESENT PRESENT PRESENT INTACT PRESENT INTACT **USTODY SEAL** STODY SEAL INTACT **USTODY SEAL USTODY SEAL** PRESENT CE PRESENT PRESENT BV JOB#: HSON BL 2 3 O2 M. m m 1 0 0 m. ~ Ó 2-3 O~ M 0 1 N -J 0 D 0--3 5 0 -COOLER ID TEMP TEMP TEMP TEMP TEMP COOLER | TEMP TEMP COOLER TEMP COOLER TEMP DOLER COOLER COOLER TEMP RECEIVED BY (SIGN & PRINT) NO NO NO NO ON YES NO NO NO No NO COOLER OBSERVATIONS: YES YES YES YES YES YES YES YES YES 14 ICE PRESENT CUSTODY SEAL PRESENT INTACT E. PRESENT USTODY SEAL PRESENT INTACT PRESENT INTACT INTAC CUSTODY SEAL PRESENT PRESENT INTACT INTACT PRESENT TODY SEAL INTACT INTACT PRESENT STODY SEAL PRESENT PRESENT INTACT USTODY SEAL INTACT INTACT STODY SEAL TODY SEAL PRESENT CE PRESENT PRESENT PRESENT CE PRESENT CHAIN OF CUSTODY # 5 of B U R E A U age age age age age Be Be Be age ge age age age age age

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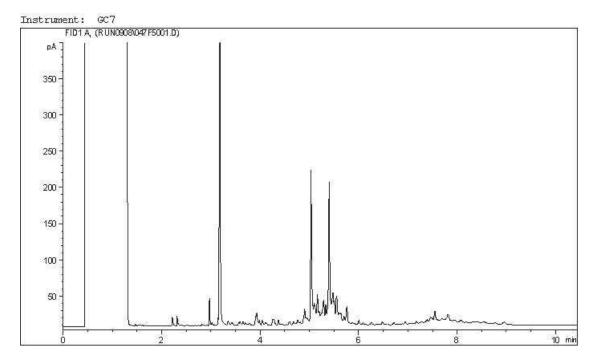
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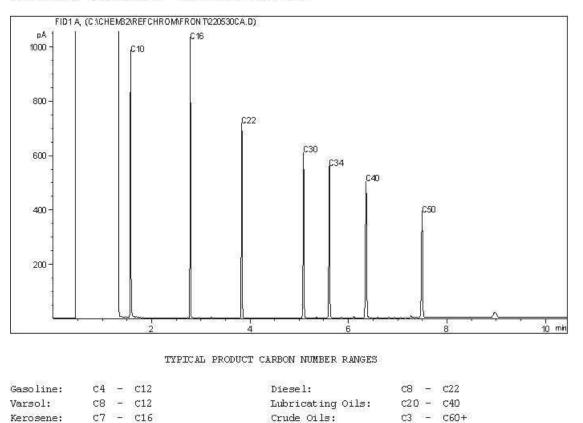
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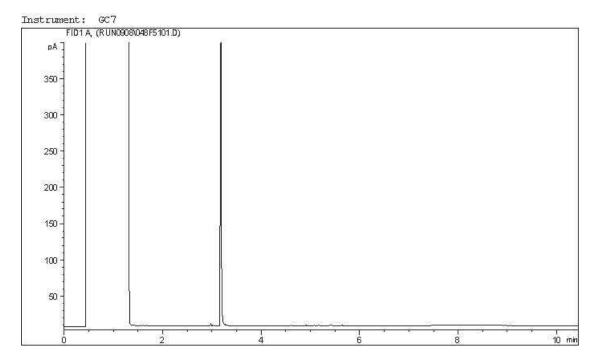
Page Z of Z		2	LAB USE ONLY - PLACE STICKER HERE			Rush Confirmation #:				1000	MBU2 25 BISYJANA		Date Required:	# M	USU QU	diol .	4		knife	(mat)		10000			ISTORY IS SUBJECT TO BURKLAVENTAS STADAMPTERMAADD COMDITIONS STATING OF THIS CANDITION STATING AND TOWN THAT AND CONDITIONS WHICH	No Temperature reading by:	E	
CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414-(100-)104	22525414-)000	NA	Lans Rerevell	NT	SV 4K		bevl	ر) ا, silt, cla	imetan total dissol dissol micror	egulated fercury - fercury 4 trinite 25) eve	11 15 15 N N 15 N N 15 N N 15 N N 15 N N 15 N N					Received in Yellow		ALIG 30 PUP?	ETV- T	Temp: C	4/0	TIOPY IS A RELEATED BUILDING TO A RELEASE AND COMPILINGS SOLUTION SOLUTION OF CLUSTORY DOCUMENT IS A REVIOUNCE WATE TO BUILDING AT YOUR WAAK SCHATTERS AND SCONDITIONS OF WAS THE FLANDARD OF CLUSTORY DOCUMENT IS A REVIOUNCE	Lab USE ONLY Seal present Seal Intect	Cooling media present Date VY MIM DD	12 22 08 31 0
		Quotation #:	P.O. #/ AFE#:	Project #:	Site #:	Site Location:	Site Location Province:	Sampled By:			JATO	T JUA	2HA 7-17 X3T T MUIRA	8											CONDITIONS SIGNI	 		Mes v PIT
16-7247 -7247 500-6208	iffers from involce)	Golder Associates	Aurelie Bellavance		Code: T2P 4K3	403-299-5600	Rellevence Quon con	Tar Que 50. Un 1 3 3 4		G3		avraz: Noita	Matri Tri Bio Bio Bio Bio Bio Bio Bio Bio Bio Bi	1 4											AU VERITAS STANJTARD TERMIS AND V. BVNA. COMPTERMS AND CONDITIE	Yes No	Regelved by//Signature/ Print)	Mul
16, T2E 6F8 Toll Free (800) 386-7247 T68 284 Toll Free (800) 386-7247 St. R3H JA7 Toll Free (806) 380-7247	Report Information (if differs from invoice)	Golder	Aurelie		Calgary AB	403-	wethe Bellave	eter . Tan Qu	Drinking Water - Manitoba	Worker ANSRO	ELIVERY TO BUREAU VERITAS	Time (24hr)	MM HH DD M	826 14 30											TODY IS SUBJECT TO BURE LE FOR VIEWING AT WWW	LAB USE ONLY Seal present Seal Intact	ing media present Time HH MM	16 00 1
000 19th St. A 3: 9331-48 St.		Company:	Contact Name:	Street Address:		Phone:	Email:	ples: ()		othe		Date Sampled	WM YY	22 0											HIS CHAIN OF CUS ARE AVAILAE		IH	03 74
Choose Lotation: Calgary, AB: 4 <u>Edmonton</u> , AE <u>Winnipes</u> , MI	nation Involce to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Code:		Canada Account Payable		International Conternation Conternation Conternation Conternation	🗌 Saskatchewan	SAMPLES MUST BE KEPT COOL (410°C) FROM TIME OF SAMPLING UNTIL D		Sample identification	BN-22-60-03												LAB USE ONLY Yes No ve	by: (Signature/ Print) 1 12	W/ Sontha Vorture 22
	Invoice Information	Company :	Contact Name:	Street Address:		Phone:	Email:	Coples:	□ AT1	Saskat	S	South States		1 BUS	2	3	4	S	9	7	8	6	10	= =	HTO SSILINU:	LAB US Seal present Seal intact	Cooling media present Relinquished	2 1 4

Page 16 of 30

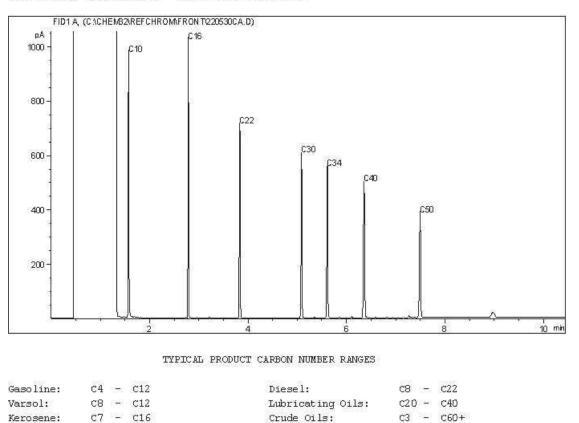


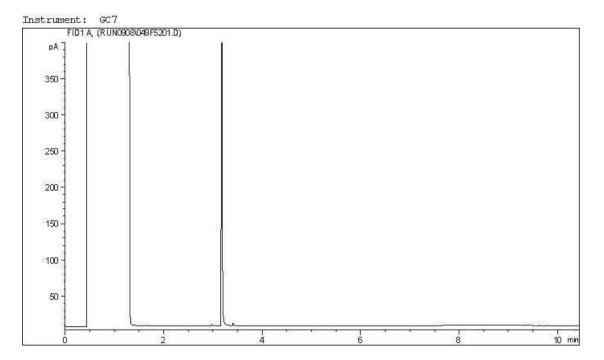
Carbon Range Distribution - Reference Chromatogram



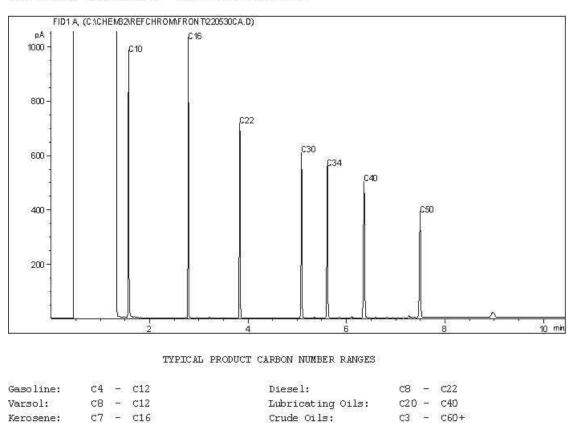


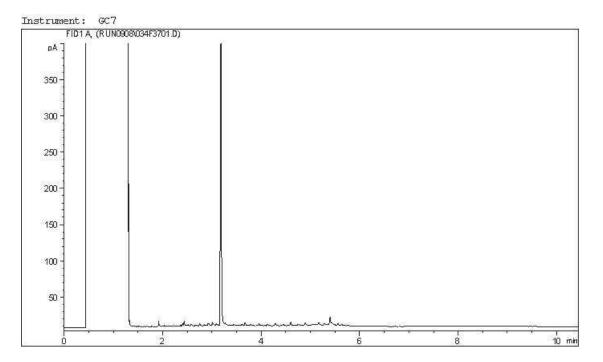
Carbon Range Distribution - Reference Chromatogram



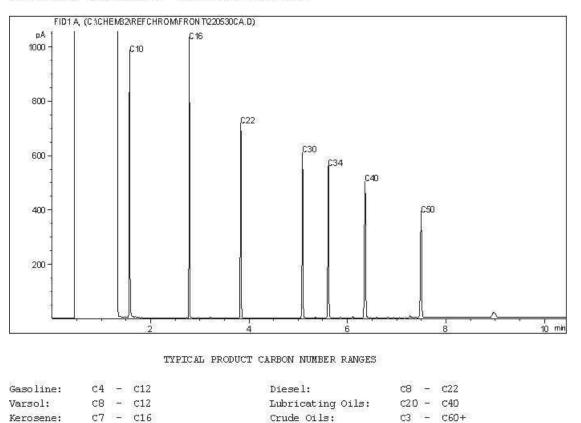


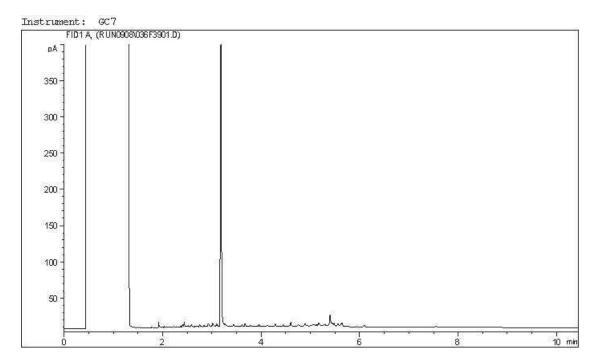
Carbon Range Distribution - Reference Chromatogram



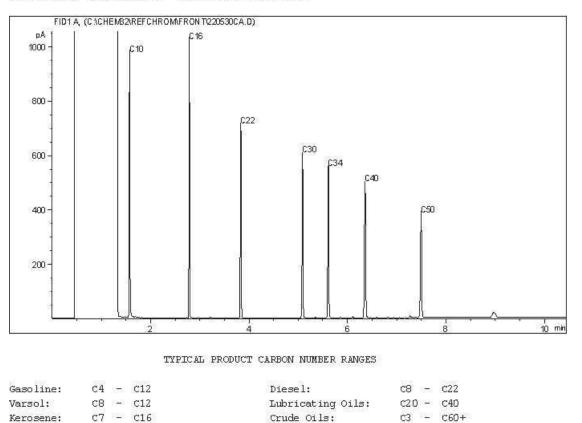


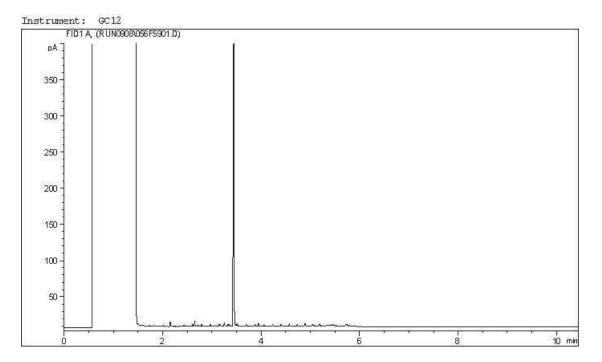
Carbon Range Distribution - Reference Chromatogram



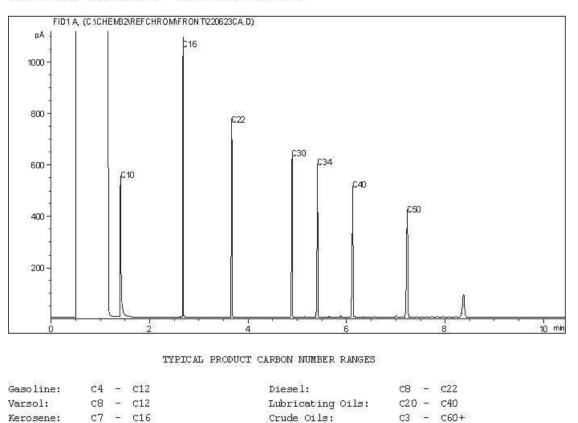


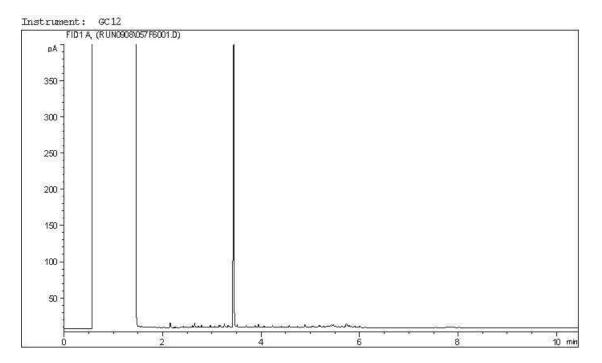
Carbon Range Distribution - Reference Chromatogram



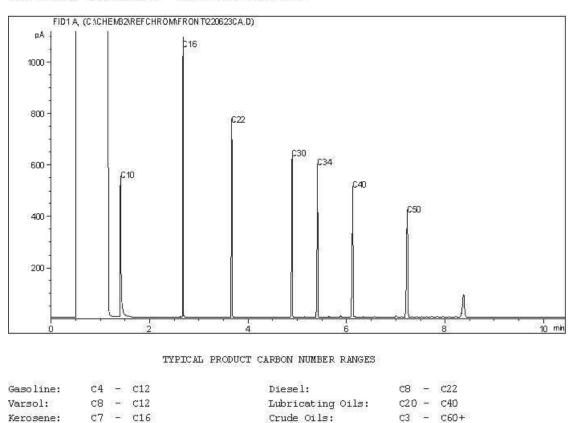


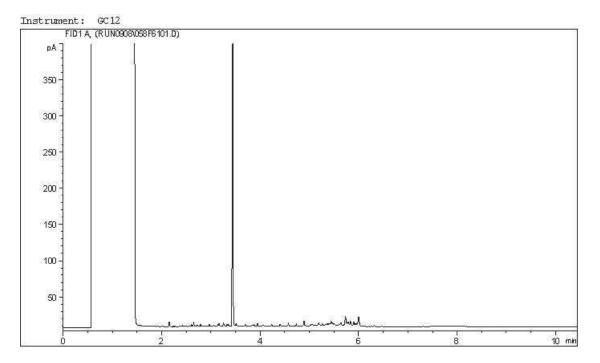
Carbon Range Distribution - Reference Chromatogram



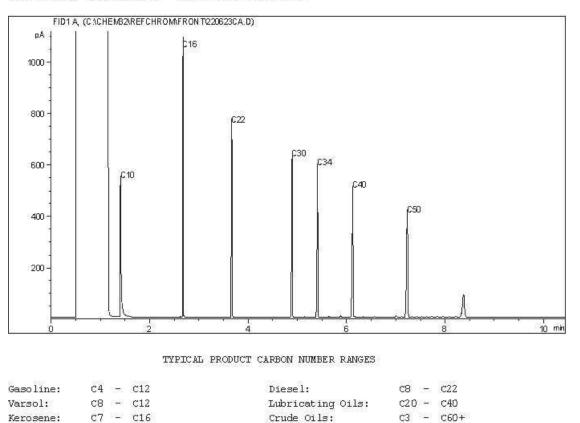


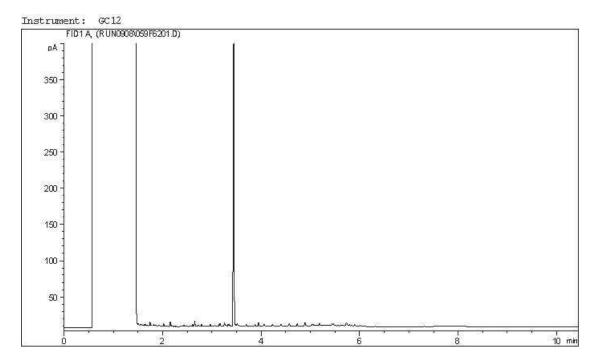
Carbon Range Distribution - Reference Chromatogram



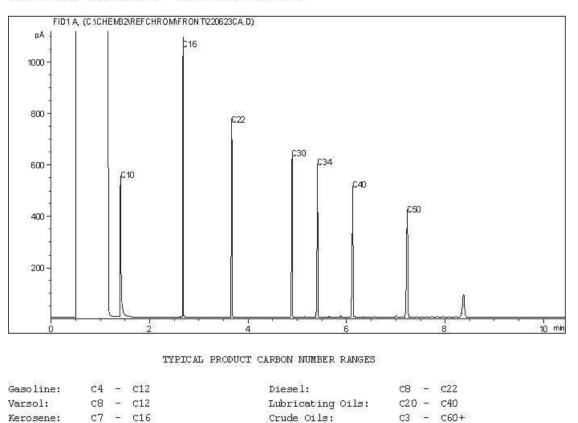


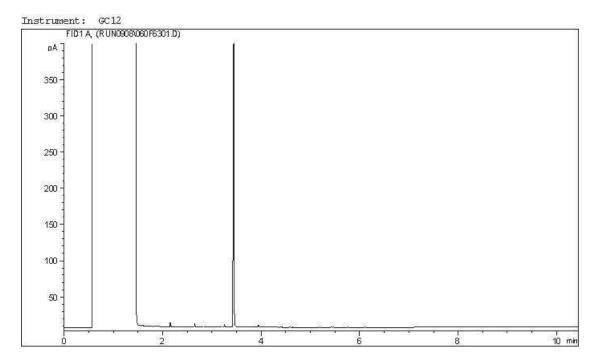
Carbon Range Distribution - Reference Chromatogram



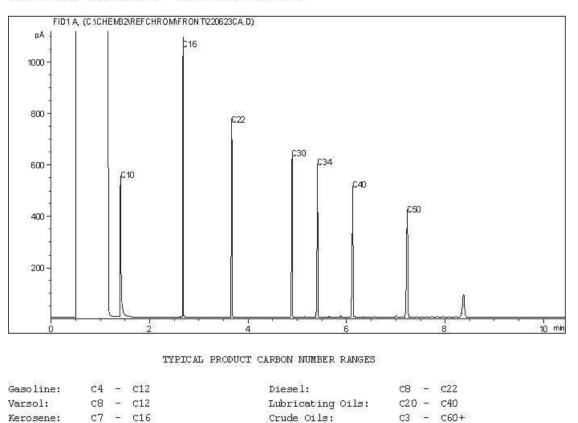


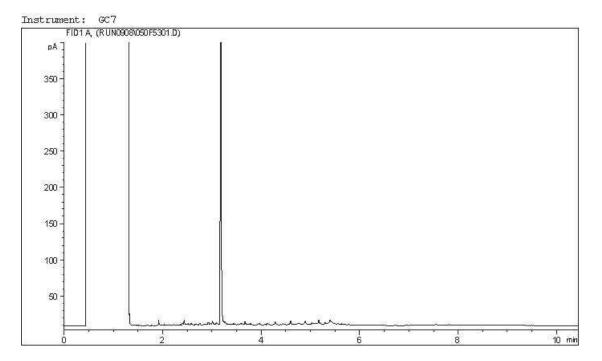
Carbon Range Distribution - Reference Chromatogram



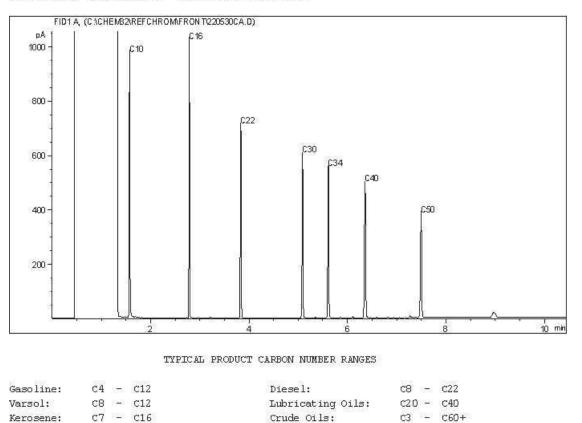


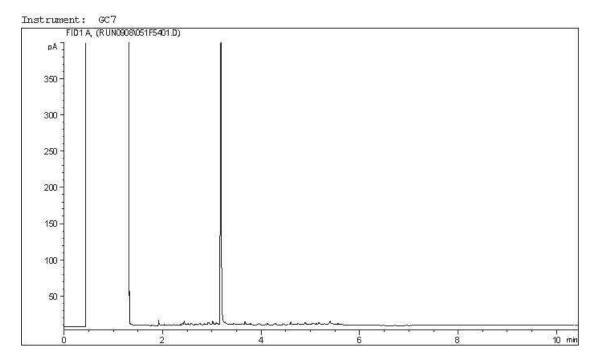
Carbon Range Distribution - Reference Chromatogram



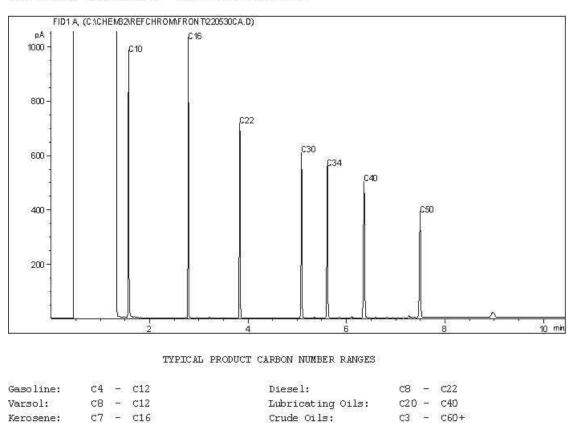


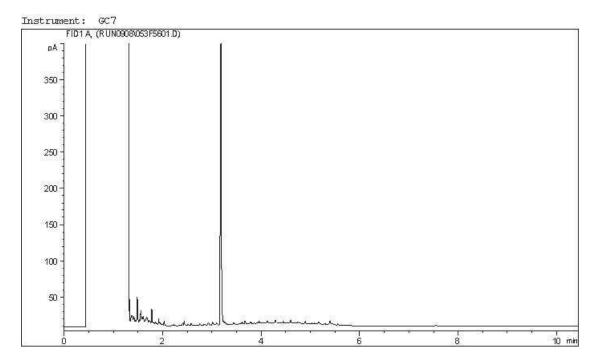
Carbon Range Distribution - Reference Chromatogram



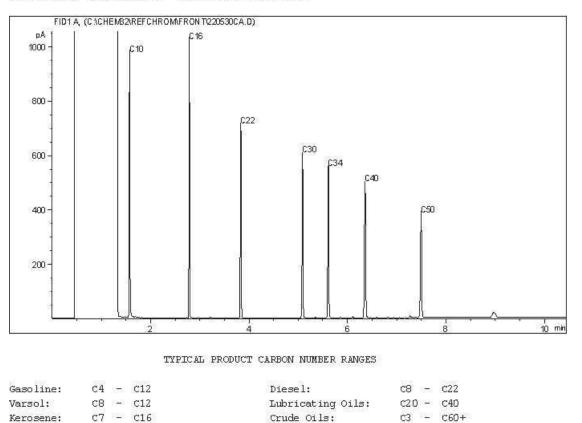


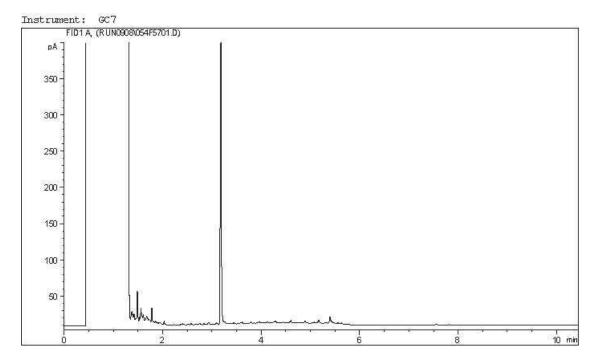
Carbon Range Distribution - Reference Chromatogram



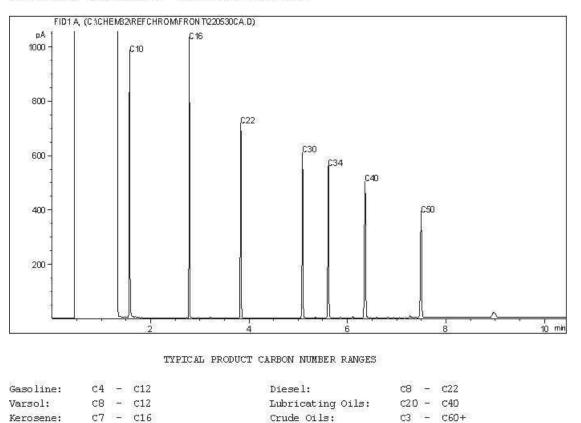


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



Cynny Hagen

From: Sent: To: Cc: Subject: MacLean, Colleen <Colleen_MacLean@golder.com> Monday, September 12, 2022 10:05 AM Cynny Hagen Bellavance, Aurelie RE: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

Be careful with this message: it is coming from an external sender

Do not open attachments nor click on links, unless you are sure that the content is safe

Yes, that sounds good.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

SOLDER

From: Cynny Hagen <cynny.hagen@bureauveritas.com>
Sent: September 12, 2022 10:01 AM
To: MacLean, Colleen <colleen.maclean@wsp.com>
Cc: Bellavance, Aurelie <aurelie.bellavance@wsp.com>
Subject: Re: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

EXTERNAL EMAIL

EXTERNAL EMAIL - We could not verify the authenticity of this message. Please be cautious when clicking on links or opening attachments.

Hi Colleen,

Absolutely I will add the analysis, for job C266077 would you like to have the additional report for both Bio-Toluene and Resemble for F2-F4 and the other jobs can be just add a comment in report. Please confirm.

Regards,

Cynny Hagen

Key Account Specialist Environmental Laboratories & Specialty Services - Western Canada Bureau Veritas Cell: 403-312-9070

www.BVNA.com Shaping a world of trust Emergency/Spills 365/7/24: 1-844-BVSPILL, <u>spills@bureauveritas.com</u> For urgent after-hours inquiries: 403 651 2436

On Mon, 12 Sep at 8:58 AM , MacLean, Colleen <colleen_maclean@golder.com> wrote:

Be careful with this message: it is coming from an external sender Do not open attachments nor click on links, unless you are sure that the content is safe

Hello,

Could you please complete chromatogram analysis and biogenic toluene (select samples) assessment for the samples below?

	BAW749	BH22-56-01	F1 to F4 and toluene
	BAW750	BH22-56-02	
C266077	BAW752	BH22-57-01	F1 to F4
	BAW753	BH22-57-02	F1 to F4 and toluene
	BAW756	BH22-59-01	F1 to F4 and toluene
	BAW742	BH22-63-01	F1 to F4
C266076	BAW738	BH22-64-01	F1 to F4
	BAW746	BH22-67-02	F1 to F4
C266062	BAW656	BH22-68-01	F1 to F4
C266081	BAW784	BH22-70-01	F1 to F4

Please let me know if you have any questions.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

237 – 4 Avenue SW, Suite 3300, Calgary, Alberta T2P 4K3, Canada **wsp.com** | **golder.com**

WSP and Golder have joined together to form the premier environmental consultancy in the industry. Together we are 14,000 strong, Future Ready©, and delivering innovative solutions to our clients around the globe.

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-LAEmHhHzdJzBlTWfa4Hgs7pbKl-BT-P365-c108p227-DayTwo-Disclaimer

This message contains confidential information. To know more, please click on the following link: https://disclaimer.bureauveritas.com

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewell, NT	Sampling Date: August 26, 2022
Golder Project Number: <u>22525414-1000</u>	Laboratory: Bureau Veritas Edmonton
Lab Submission Number: <u>C266062</u>	-
Was the Cooler Received at the lab under a sealed and Was proper chain of custody of the samples documente Were sample temperatures acceptable when they reach Were all samples analyzed and extracted within hold ti Has lab warranted all tests were in statistical control in Was sufficient sample provided for the requested analy Has lab warranted all samples were analyzed with limit	ed and kept?Yesed lab?:Yesmes?:YesCoA?:Yesyes?Yes
Are All Laboratory QC Within Acceptance Criteria (Y	es, No, Not Applicable)?
Yes No	NA Comments
Surrogate Recovery X	Method blank recovery for terphenyl-d14 (133%)
Method Blank Concentration X	exceeded the acceptance criteria of (50-130%).
Laboratory Duplicate RPD X	All remaining laboratory QC results are within
Matrix Spike Recovery X	acceptance criteria.
Blank Spike Recovery X	
Are All Field QC Samples Within Alert Limits (Yes, N	Io, Not Applicable)?
Yes No	NA Comments
Field Blank Concentration	X No field QC samples were collected.
Trip Blank Concentration	X
Field Duplicate RPD	X
Is data considered reliable (Yes/No/Suspect)?: If answer is "No" or "Suspect", describe and provide ra	Yesationale:
Data Reviewed by (Print): Anita Colbert	Data Reviewed by (Signature): Onits Callert
Date: September 9, 2022	-



Your P.O. #: 22525414-1100-1004 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 OF 2

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232206 Version: 2 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C266076 Received: 2022/08/30, 12:00

Sample Matrix: Soil # Samples Received: 14

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	6	N/A	2022/09/02	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	8	N/A	2022/09/04	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	14	N/A	2022/09/08		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	12	2022/09/07	2022/09/08	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	2	2022/09/07	2022/09/09	AB SOP-00036	CCME PHC-CWS m
Moisture (1)	14	N/A	2022/09/07	AB SOP-00002	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(3) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



Your P.O. #: 22525414-1100-1004 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 OF 2

Attention: Aurelie Bellavance

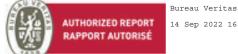
GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232206 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266076 Received: 2022/08/30, 12:00

Encryption Key



14 Sep 2022 16:19:28

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273 _____

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

				1		,			1	1
Bureau Veritas ID		BAW735	BAW736	BAW737	BAW738		BAW739	BAW739		
Sampling Date		2022/08/24	2022/08/24	2022/08/24	2022/08/24		2022/08/24	2022/08/24		
		15:10	15:25	15:40	15:50		16:00	16:00		
COC Number		1 of 2	1 of 2	1 of 2	1 of 2		1 of 2	1 of 2		
	UNITS	BH22-66-01	BH22-66-02	BH22-66-03	BH22-64-01	RDL	BH22-64-02	BH22-64-02 Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	51	<10	<10	380	10	<10	N/A	10	A707307
F3 (C16-C34 Hydrocarbons)	mg/kg	76	<50	<50	<50	50	<50	N/A	50	A707307
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	<50	N/A	50	A707307
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	Yes	N/A	N/A	A707307
Physical Properties		,;		•	•			•		,
Moisture	%	6.9	16	20	34	0.30	17	17	0.30	A707257
Volatiles				•				-		
Xylenes (Total)	mg/kg	<0.045	<0.045	<0.045	<0.045	0.045	<0.045	N/A	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	53	10	<22	N/A	22	A701342
Field Preserved Volatiles	•			•						
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	N/A	0.0050	A702730
Toluene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	N/A	0.050	A702730
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	N/A	0.010	A702730
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	<0.040	N/A	0.040	A702730
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	N/A	0.020	A702730
F1 (C6-C10)	mg/kg	<10	<10	<10	53	10	<22 (1)	N/A	22	A702730
Surrogate Recovery (%)				•				-		
1,4-Difluorobenzene (sur.)	%	103	105	105	103	N/A	107	N/A	N/A	A702730
4-Bromofluorobenzene (sur.)	%	91	89	97	98	N/A	95	N/A	N/A	A702730
D10-o-Xylene (sur.)	%	93	89	104	108	N/A	108	N/A	N/A	A702730
D4-1,2-Dichloroethane (sur.)	%	92	89	90	89	N/A	92	N/A	N/A	A702730
O-TERPHENYL (sur.)	%	107	104	107	103	N/A	105	N/A	N/A	A707307
RDL = Reportable Detection Lir	mit					·				
Lab-Dup = Laboratory Initiated	l Duplica	ite								
N/A = Not Applicable										
i de la constante de la constan										

(1) Detection limit raised due to interferent.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW740		BAW741	BAW741		BAW742		
Sampling Data		2022/08/24		2022/08/24	2022/08/24		2022/08/26		
Sampling Date		16:15		16:30	16:30		09:15		
COC Number		1 of 2		1 of 2	1 of 2		1 of 2		
	UNITS	BH22-64-03	QC Batch	BH22-64-04	BH22-64-04 Lab-Dup	RDL	BH22-63-01	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	A707563	<10	N/A	10	<29 (1)	29	A707307
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	A707563	<50	N/A	50	870 (1)	140	A707307
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A707563	<50	N/A	50	240 (1)	140	A707307
Reached Baseline at C50	mg/kg	Yes	A707563	Yes	N/A	N/A	Yes	N/A	A707307
Physical Properties			•			•			
Moisture	%	19	A707257	16	N/A	0.30	65	0.30	A707257
Volatiles	•		•		•				
Xylenes (Total)	mg/kg	<0.045	A701342	<0.045	N/A	0.045	<0.11	0.11	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	A701342	<10	N/A	10	<10	10	A701342
Field Preserved Volatiles					•				
Benzene	mg/kg	<0.0050	A702730	<0.0050	<0.0050	0.0050	<0.015 (2)	0.015	A702755
Toluene	mg/kg	<0.050	A702730	<0.050	<0.050	0.050	<0.050 (2)	0.050	A702755
Ethylbenzene	mg/kg	<0.010	A702730	<0.010	<0.010	0.010	<0.035 (2)	0.035	A702755
m & p-Xylene	mg/kg	<0.040	A702730	<0.040	<0.040	0.040	<0.080 (2)	0.080	A702755
o-Xylene	mg/kg	<0.020	A702730	<0.020	<0.020	0.020	<0.079 (3)	0.079	A702755
F1 (C6-C10)	mg/kg	<10	A702730	<10	<10	10	<10 (2)	10	A702755
Surrogate Recovery (%)					•				
1,4-Difluorobenzene (sur.)	%	109	A702730	98	100	N/A	98	N/A	A702755
4-Bromofluorobenzene (sur.)	%	94	A702730	95	97	N/A	96	N/A	A702755
D10-o-Xylene (sur.)	%	106	A702730	120	122	N/A	125	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	93	A702730	92	94	N/A	92	N/A	A702755
O-TERPHENYL (sur.)	%	102	A707563	104	N/A	N/A	98	N/A	A707307

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.

(3) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW743		BAW744	BAW745		BAW746		
Sampling Date		2022/08/26		2022/08/26	2022/08/26		2022/08/26		
		09:30		09:45	10:00		10:10		
COC Number		1 of 2		1 of 2	1 of 2		1 of 2		
	UNITS	BH22-63-02	QC Batch	BH22-63-03	BH22-67-01	RDL	BH22-67-02	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	A707307	<10	<10	10	51 (1)	25	A707307
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	A707307	<50	60	50	1000 (1)	130	A707307
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A707307	<50	<50	50	360 (1)	130	A707307
Reached Baseline at C50	mg/kg	Yes	A707307	Yes	Yes	N/A	Yes	N/A	A707307
Physical Properties									
Moisture	%	17	A707257	18	10	0.30	60	0.30	A707257
Volatiles			•		•			•	
Xylenes (Total)	mg/kg	<0.045	A701342	<0.045	<0.045	0.045	<0.10	0.10	A701402
F1 (C6-C10) - BTEX	mg/kg	<10	A701342	<10	<10	10	<10	10	A701402
Field Preserved Volatiles			•		•			•	
Benzene	mg/kg	<0.0050	A702755	<0.0050	<0.0050	0.0050	<0.014 (2)	0.014	A702755
Toluene	mg/kg	<0.050	A702755	<0.050	<0.050	0.050	<0.050 (2)	0.050	A702755
Ethylbenzene	mg/kg	<0.010	A702755	<0.010	<0.010	0.010	<0.033 (2)	0.033	A702755
m & p-Xylene	mg/kg	<0.040	A702755	<0.040	<0.040	0.040	<0.074 (2)	0.074	A702755
o-Xylene	mg/kg	<0.020	A702755	<0.020	<0.020	0.020	<0.073 (3)	0.073	A702755
F1 (C6-C10)	mg/kg	<10	A702755	<10	<10	10	<10 (2)	10	A702755
Surrogate Recovery (%)			•		•			•	
1,4-Difluorobenzene (sur.)	%	99	A702755	96	98	N/A	97	N/A	A702755
4-Bromofluorobenzene (sur.)	%	96	A702755	99	94	N/A	98	N/A	A702755
D10-o-Xylene (sur.)	%	116	A702755	125	122	N/A	125	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	94	A702755	91	93	N/A	91	N/A	A702755
O-TERPHENYL (sur.)	%	102	A707307	107	107	N/A	105	N/A	A707307

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.

(3) Detection limits raised based on sample weight used for analysis.



Bureau Veritas ID		BAW747	BAW748	BAW748		
Sampling Date		2022/08/26	2022/08/26	2022/08/26		
		10:20	10:30	10:30		
COC Number		2 OF 2	2 OF 2	2 OF 2		
	UNITS	BH22-67-03	BH22-67-04	BH22-67-04 Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	10	A707307
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	50	A707307
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	50	A707307
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	A707307
Physical Properties			•	•		
Moisture	%	18	19	N/A	0.30	A707257
Volatiles						
Xylenes (Total)	mg/kg	<0.045	<0.045	N/A	0.045	A701402
F1 (C6-C10) - BTEX	mg/kg	<10	<10	N/A	10	A701402
Field Preserved Volatiles						
Benzene	mg/kg	<0.0050	<0.0050	N/A	0.0050	A702755
Toluene	mg/kg	<0.050	<0.050	N/A	0.050	A702755
Ethylbenzene	mg/kg	<0.010	<0.010	N/A	0.010	A702755
m & p-Xylene	mg/kg	<0.040	<0.040	N/A	0.040	A702755
o-Xylene	mg/kg	<0.020	<0.020	N/A	0.020	A702755
F1 (C6-C10)	mg/kg	<10	<10	N/A	10	A702755
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	97	97	N/A	N/A	A702755
4-Bromofluorobenzene (sur.)	%	97	96	N/A	N/A	A702755
D10-o-Xylene (sur.)	%	118	129	N/A	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	93	93	N/A	N/A	A702755
O-TERPHENYL (sur.)	%	106	108	107	N/A	A707307
RDL = Reportable Detection Li	mit					
Lab-Dup = Laboratory Initiatec N/A = Not Applicable	l Duplica	te				

AT1 BTEX AND F1-F4 IN SOIL (VIALS)



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.0°C
Package 2	3.7°C
Package 3	8.7°C
Package 4	3.3°C
Package 5	4.7°C
Package 6	4.0°C
Package 7	4.7°C

Version #2: Additional Chromatogram review have been added on samples BAW738 (BH22-64-01), BAW742 (BH22-63-01) & BAW746 (BH22-68-02)as per request from client 20220912

HYDROCARBON RESEMBLANCE

The reported hydrocarbon resemblance was obtained by visual comparison of the sample chromatogram with a library of reference product chromatograms. Since variables such as the degree and type of weathering and the presence of non-petrogenic hydrocarbons cannot be duplicated in reference spectra, the resemblance information must be regarded as approximate and qualitative and as such, Bureau Veritas Laboratories can assume no liability for any conclusions drawn from these data.

Sample BAW738 [BH22-64-01] : The CCME F2-F4 chromatographic peak profile is consistent with a weathered middle distillate petroleum product (e.g. Diesel #1/Kerosene). These are typically characterized by evenly distributed peaks between C10 and C24, representing the simple straight chain aliphatic compounds (n-alkanes). These peaks will decrease in height, relative to the unresolved complex mixture (UCM or "hump") with increased weathering of the product material.

Sample BAW742 [BH22-63-01] : The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

Sample BAW746 [BH22-67-02] : The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A702730	RSU	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/02		107	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/02		97	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/02		109	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/02		92	%	50 - 140
			Benzene	2022/09/02		97	%	50 - 140
			Toluene	2022/09/02		85	%	50 - 140
			Ethylbenzene	2022/09/02		91	%	50 - 140
			m & p-Xylene	2022/09/02		89	%	50 - 140
			o-Xylene	2022/09/02		88	%	50 - 140
			F1 (C6-C10)	2022/09/02		80	%	60 - 140
A702730	RSU	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/02		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/02		92	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/02		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/02		90	%	50 - 140
			Benzene	2022/09/02		93	%	60 - 130
			Toluene	2022/09/02		86	%	60 - 130
			Ethylbenzene	2022/09/02		86	%	60 - 130
			m & p-Xylene	2022/09/02		85	%	60 - 130
			o-Xylene	2022/09/02		87	%	60 - 130
			F1 (C6-C10)	2022/09/02		70	%	60 - 140
A702730	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/02		111	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/02		97	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/02		78	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/02		97	%	50 - 140
			Benzene	2022/09/02	<0.0050		mg/kg	
			Toluene	2022/09/02	<0.050		mg/kg	
			Ethylbenzene	2022/09/02	<0.010		mg/kg	
			m & p-Xylene	2022/09/02	<0.040		mg/kg	
			o-Xylene	2022/09/02	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/02	<10		mg/kg	
A702730	RSU	RPD	Benzene	2022/09/02	NC		%	50
			Toluene	2022/09/02	NC		%	50
			Ethylbenzene	2022/09/02	NC		%	50
			m & p-Xylene	2022/09/02	NC		%	50
			o-Xylene	2022/09/02	NC		%	50
			F1 (C6-C10)	2022/09/02	NC		%	30
A702755	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/04		100	%	50 - 140
		[BAW741-02]	,	- , , -				
			4-Bromofluorobenzene (sur.)	2022/09/04		95	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		122	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		96	%	50 - 140
			Benzene	2022/09/04		104	%	50 - 140
			Toluene	2022/09/04		97	%	50 - 140
			Ethylbenzene	2022/09/04		97	%	50 - 140
			m & p-Xylene	2022/09/04		97	%	50 - 140
			o-Xylene	2022/09/04		98	%	50 - 140
			F1 (C6-C10)	2022/09/04		73	%	60 - 140
A702755	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/04		98	%	50 - 140
		- p	4-Bromofluorobenzene (sur.)	2022/09/04		99	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		110	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		93	%	50 - 140
				2022/09/04		93 98	%	50 - 140 60 - 130
			Benzene	2022/09/04		90	70	00 - 13

Page 8 of 29 Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Toluene	2022/09/04		95	%	60 - 130
			Ethylbenzene	2022/09/04		95	%	60 - 130
			m & p-Xylene	2022/09/04		96	%	60 - 130
			o-Xylene	2022/09/04		101	%	60 - 130
			F1 (C6-C10)	2022/09/04		108	%	60 - 140
A702755	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/04		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		98	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		114	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		93	%	50 - 140
			Benzene	2022/09/04	<0.0050		mg/kg	
			Toluene	2022/09/04	<0.050		mg/kg	
			Ethylbenzene	2022/09/04	<0.010		mg/kg	
			m & p-Xylene	2022/09/04	<0.040		mg/kg	
			o-Xylene	2022/09/04	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/04	<10		mg/kg	
A702755	WPK	RPD [BAW741-02]	Benzene	2022/09/04	NC		%	50
			Toluene	2022/09/04	NC		%	50
			Ethylbenzene	2022/09/04	NC		%	50
			m & p-Xylene	2022/09/04	NC		%	50
			o-Xylene	2022/09/04	NC		%	50
			F1 (C6-C10)	2022/09/04	NC		%	30
A707257	WLE	Method Blank	Moisture	2022/09/07	<0.30		%	
A707257	WLE	RPD [BAW739-01]	Moisture	2022/09/07	0.59		%	20
A707307	GG3	Matrix Spike [BAW748-01]	O-TERPHENYL (sur.)	2022/09/08		103	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		97	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		95	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		92	%	60 - 140
A707307	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/09/08		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		93	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		93	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		88	%	60 - 140
A707307	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/08		106	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/08	<50		mg/kg	
A707307	GG3	RPD [BAW748-01]	F2 (C10-C16 Hydrocarbons)	2022/09/08	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/08	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/08	NC		%	40
A707563	AAX	Matrix Spike	O-TERPHENYL (sur.)	2022/09/08		111	%	60 - 140
		·	F2 (C10-C16 Hydrocarbons)	2022/09/08		96	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		99	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		100	%	60 - 140
A707563	AAX	Spiked Blank	O-TERPHENYL (sur.)	2022/09/08		112	%	60 - 140
		·	F2 (C10-C16 Hydrocarbons)	2022/09/08		96	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		99	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		99	%	60 - 140
A707563	AAX	Method Blank	O-TERPHENYL (sur.)	2022/09/08		106	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08	<10	100	mg/kg	11 1.0
			F3 (C16-C34 Hydrocarbons)	2022/09/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/08	<50		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2022/09/08	NC		%	40



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
			F3 (C16-C34 Hydrocarbons)	2022/09/08	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/08	NC		%	40
Duplicat	te: Paire	d analysis of a separ	ate portion of the same sample. Used to evaluate	the variance in the measure	ment.			
Matrix S	Spike: A s	sample to which a ki	nown amount of the analyte of interest has been	added. Used to evaluate sam	ple matrix inte	erference.		
Spiked E	Blank: A b	olank matrix sample	to which a known amount of the analyte, usually	from a second source, has b	een added. Use	ed to evaluate m	ethod accu	iracy.
Method	l Blank: A	A blank matrix conta	ining all reagents used in the analytical procedure	e. Used to identify laboratory	contaminatior	۱.		
Surroga	te: A pui	re or isotopically lab	eled compound whose behavior mirrors the analy	rtes of interest. Used to eval	uate extraction	efficiency.		
· ·	olicate RP ice <= 2x	, 1	PD was not calculated. The concentration in the sa	mple and/or duplicate was t	oo low to perm	iit a reliable RPD	calculation	n (absolut



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Elizabeth Charko

Elizabeth Chacko, Senior Analyst, Organics

-17

Gita Pokhrel, Laboratory Supervisor

Junzhi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

Bureau Veritas 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.

COR FCD-00265 / 4 Page ____ of ____

AN

2

Maxiam

ADDITIONAL COOLER TEMPERATURE RECORD

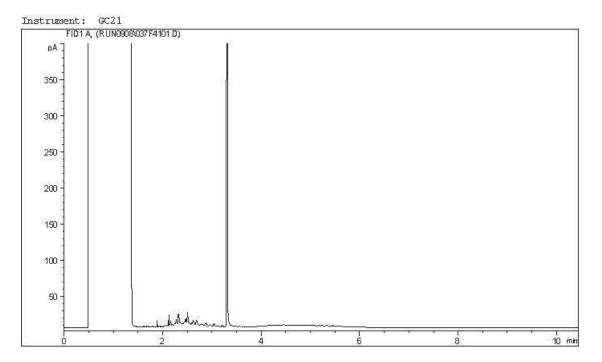
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CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414 1.00 1104	22525414 \000	NA	Lawn Farefull	NT		07 /7 07 CT +7 CT 77 77 77 07 C		bəvi	اہ - طَاعِدہ ved f, silt, cla f	katam b katam b teto t - totzeib - totzeib - microt microt microt microt microt film film film film film film film film	Regulate Regulate Mercury Mercury Stinity 4 Texture 1 Texture 1 Basic clas Basic clas									AUG 3	100-	lemn:		ани из развить и комплектиона споло такжи в сооранизации и практика со практи и соора и соорани такжи от сами и практика и от от такжи и практика и такжи и практика и практи	LAB USE ONLY Yes No Seal present Seal		Date Time MM DD HH	22 08 31 15 10				
Choose tocation: Calgary, AB: 4000 19th St. NE, T2E 6P8 Toll Free (800) 386-7247 Edimonton, AB: 9331-48 St. T68 2R4 Toll Free (800) 386-7247 Wrimpeg, MB: D-675 Berry St. R3H 1A7 Toll Free (866) 800-6208	Report Information (If differs from involce)	ociates Quotation #:	avance P.o. #/ AFE#:	Project #:	Postal T2P 4K3 Site #: Code:		Bellen war Bite Location) D D 1		1	ведин	ESERVE ANTION F4 F2 F2 F2 F2	É ОЗРОВИНИИ ОЗРОВИ		×											A.COM/TERMS AND CONDITIONS OR BY CALLING TH	No *C	1 2 3	Received by: (Signature/ Print)	1-76 ASEN/BIL				
		Company: Golder Associates	Contact Aurelie Bellavance Name:	Street Address:	city: Calgary AB					hone: 403-299-5600	Aurelie	1 1		Drinking Water - Manitoba	Dother AMSRP	NG UNTIL DELIVERY TO BUREAU VERITAS	Date Sampled Time (24hr)	YY MM DD HH MM Matrix	22 08 26 10 20 500	2 01 4 4												LAB USE ONLY Yes Seal present	Cooling media		03 27 16 00 1
	ation Involce to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Postal C		Canada Account Payable		Regulatory Griteria	CCME	chewan	SAMPLES MUST BE KEPT COOL («10°C) FROM TIME OF SAMPLING UNTIL		Sample Identification	2-67-63	-67-061										12 14 North State		LAB USE ONLY Yes No c X A		Refine the state of the state o	1 Contraction 22 0				
((((((((((((((Involce Information	Company :	Contact Name:	Street Address:		Phone:	Email:	Coples:		□ AT1	Saskatchewan	5			1 Bil22-67	2 BI 27-67	ß	4	ß	9	7	80	6	10	п	12		LAB US Seal present	Seal Intact Cooling media present	AL Ref	2/IHU				

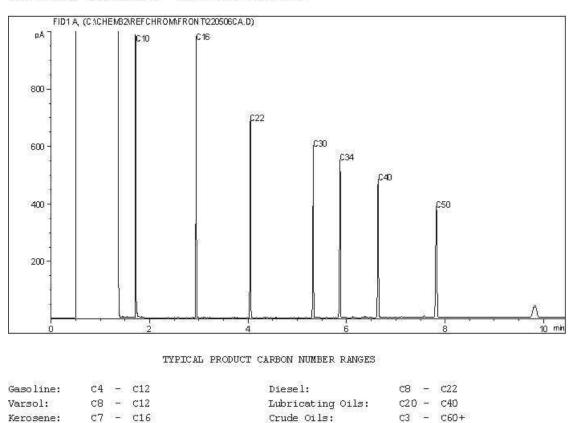
Page <u>1</u> of 2			LAB USE ONLY - PLACE STICKER HERE	220		Rush Confirmation #:		1	Turnaroun	Contraction 10 Day	work wereneene hand (FAL) Surcharges apply Land Day			Required: Comments	Also email report to	aldishelldonownew	AldieleguisQuerier								-		CEPTANCE OF OUR TERMS AND CONDITIONS WHICH	Temperature reading by:	 	pecial in		AND
			3						21		031111	NBUR 208N		# OF CON	M	M	M	5	N	3	M	M	M	M	N	3	I AND AC		П	MM	10	
CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414-1 100-100 L	22525414-1000	NA	Carro Percuell	NT	30/HK	10 11 12 13 14 15 16 17 18 19 20			hved ار, sitr, cla الثانا	- total - disso - disso - maicro - maic	Mercury Salinity 4 Sieve (75 Sieve (75)Sieve					Received in Yellowknife	BV: () Nercom >	(2,00 F	AUG 30 ZUZZ	1250 - 205 10241	Temp: 3/5/2			USTODY IS SUBJECT TO BUTENU VERTIAS STANDARD TEARS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTOPY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH UABLE FON MIXYING AT WWW.BWMA.COM/TERMS AND CONDITIONS. OR BY CAULING THE LARORATORY USEED ADOVE TO ORTANIA 5 COM	LAB USE ONLY Yes No	Seal Intact	Cooling media present I Im Date Date H I	31 1	
-	Pr								8 9 1		hard		stem l	v ənituoA əstelugəA													GMING OF THIS NG THE LABOR	0			RIL	
		Quotation #:	P.O. #/ AFE#:	Project #:		Site Location:	Site Location Province:	Sampled By:	5 6 7			JATOT		1-lt xətə Muiraə													DITTONS SI			/ Print)	ASON	
7247 47 +6208	Report Information (if differs from Invoice)	Golder Associates	Aurelie Bellavance P.o.	ProJ	Postal T2P 4K3 Site #: Code:		Rellevance Queso.com		1 2 3 4		ED		IVA32	Matrix X HELD FILI FIELD PRE FIELD FILI FIELD PRE FIELT FIELD FILI FIELD FIELT	Swí (X	X	X	×	×	×	×	X	X	×	X	× ×	USTODY IS SUBJECT TO BUTENU VERTIAS STANDARD TERAIS, AND CONDITIONS., SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKI HABLE FOR VIENING AT WWW.BWIAK COM/TERAIS AND CONDITIONS OF BY CALING THE LAUORATORY USFED ADOVE TO OBTAIN A COM	Yes No	, , ,	Received 574 (Signature/ Print)	2 Jet J	
46, T2E 6P8 Toll Free (800) 386-7247 T68 2R4 Toll Free (800) 386-7247 St. R3H 1A7 Toll Free (866) 800-6208		Golder	Aurelie		AB	403-2	1 0	91-		Drinking Water - Manitoba	AMSRP	DELIVERY TO BUREAU VERITAS	Time (24hr)	MM HH	15 10	15 25	15 40	15 50	00 91	10 15	16 30	51 60 0	09 30	09 45	00 01	10 10	VWW TA DRIWIN	LAB USE ONLY		Time MM		
NE, T2E 6P8 T6B 2R4 To St. R3H 1A7					Calgary		intotio	ster.		rinking Wate	ther <u>A</u>	DELIVERY TC	Sampled	dd MM	28 24	1 1			_		4	03 26				A A	CUSTODY IS ILABLE FOR	LAB U	Seal Intact	Time Time		
000 19th St. NE, : 9331-48 St. T6 : D-675 Berry St.	1	Company:	Contact Name:	Street Address:	City:	Phone:	Email:	Coples:	e sulta		Other .	FING UNTIL	Date	*	22			_	_		0	22				Þ	IS CHAIN OF A	9	/	E DD		
Choose Location: Calegory A34 4000 19th St. NE Calegory A34 4000 13th St. NE Winnipeg, MB: D-675 Borry S	tion Involce to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Code: C		Canada Account Payable		Regulatory Griteria	CCME	hewan	SAMPLES MUST BE KEPT COOL (~10°C) FROM TIME OF SAMPLING UNTIL		Sample Identification	1314 22-66-01	3422-66-02	BH22-66-03	BH 22-64-01	20-67-2248 =	BH 22 - 101-03	B122-66-09	3422-63-01	BH22-63-02	10 BU17- US- 03	10-t-9-121-18 m	12 Ph/12-67-02	VALUES OTHERVARE AGREED TO NUMBER AGORY SUBMITTED ON THE CHARM OF ANY	E ONLY Yes No Y		by: (Signature/ Print)	10 B2	
····	Invoice Information	Company :	Contact	Street	city: Ca		Email:	Coples:		LTA 🗌	Saskatchewan	SAN			1 BUZ	2 BH27	= BH22	4 BU 22	5 BH22.	6 BH 22.	75/22.	8 BUZ	22HZ 2	2 Byl 7.	12 R.M27	22/19 22	•UNLESS OTHE	LAB USE ONLY	Seal present Seal intact	Cooling media present	MAI/ F	2

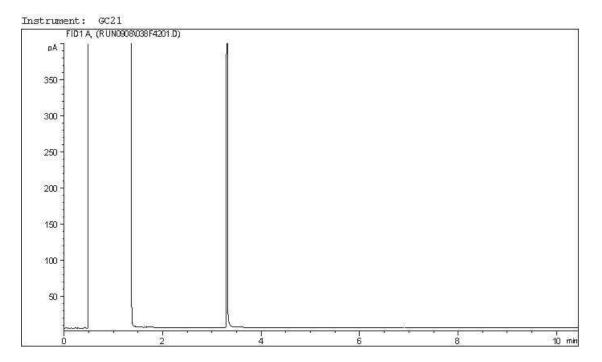
Page 14 of 29

.

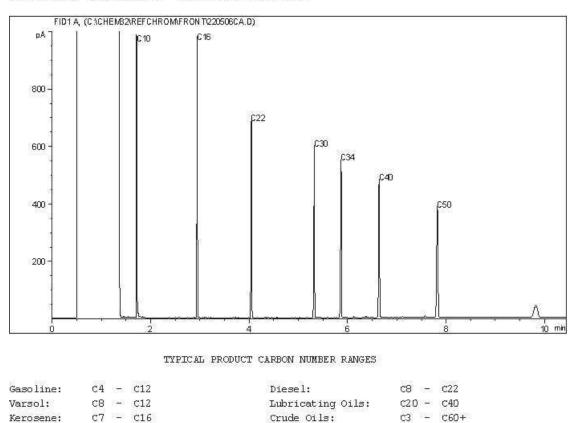


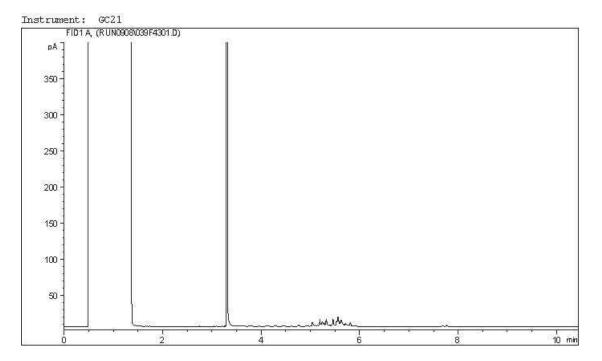
Carbon Range Distribution - Reference Chromatogram



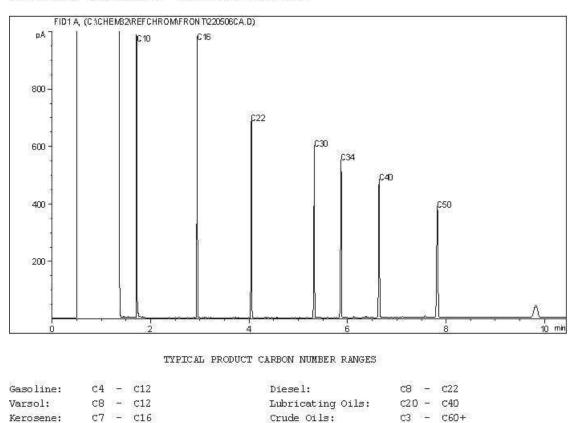


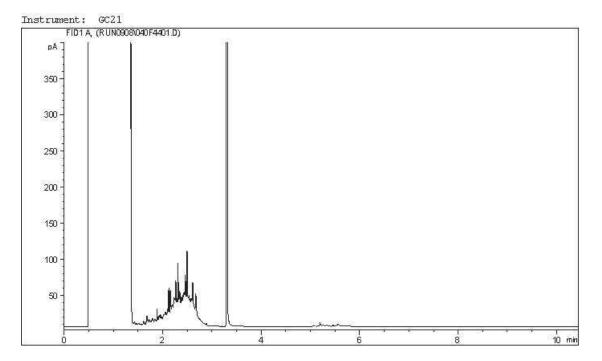
Carbon Range Distribution - Reference Chromatogram



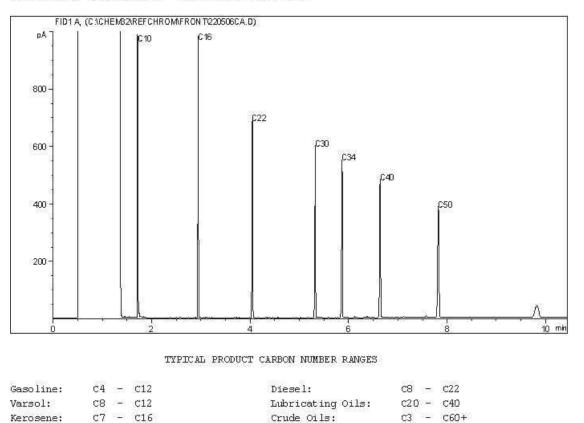


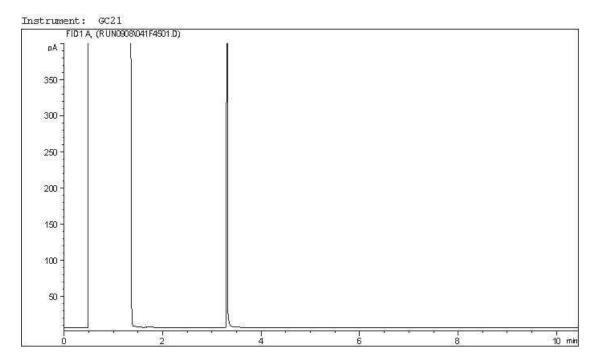
Carbon Range Distribution - Reference Chromatogram



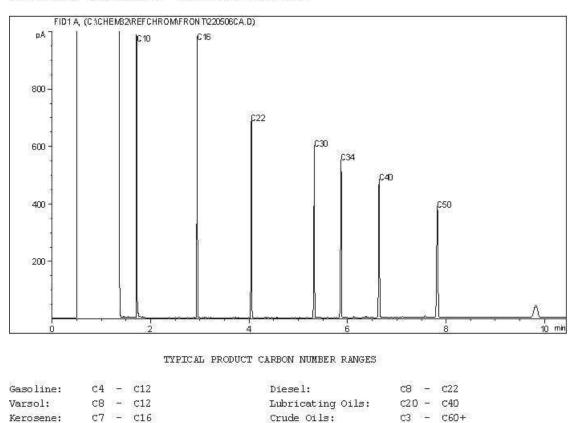


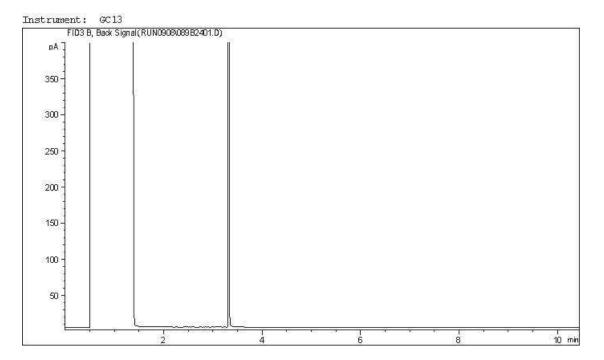
Carbon Range Distribution - Reference Chromatogram



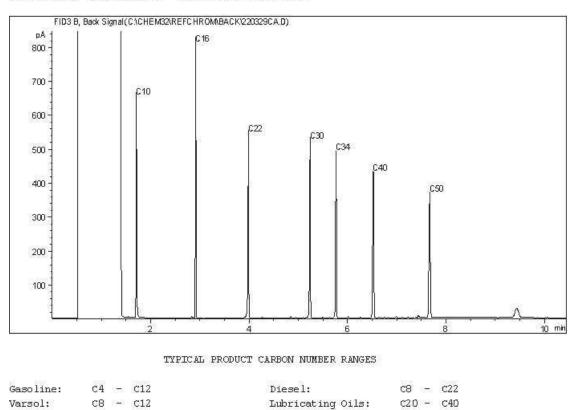


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



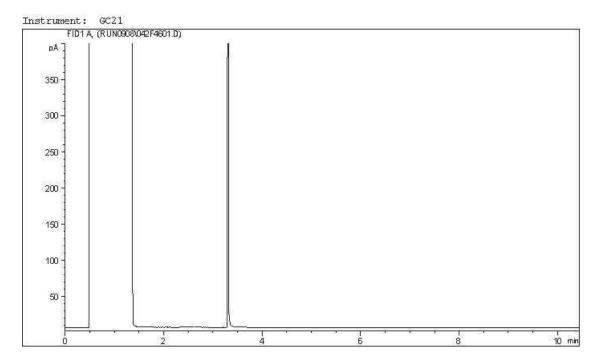
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

c7 - c16

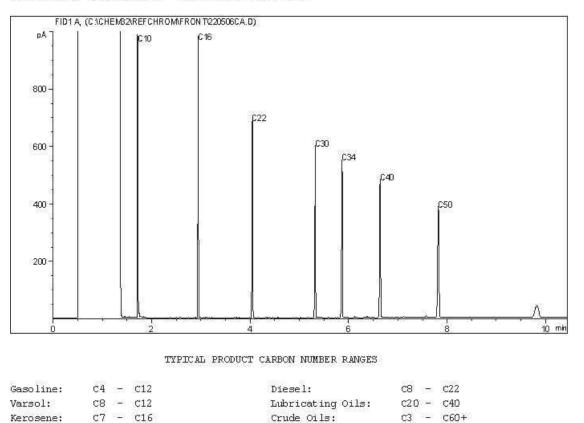
Kerosene:

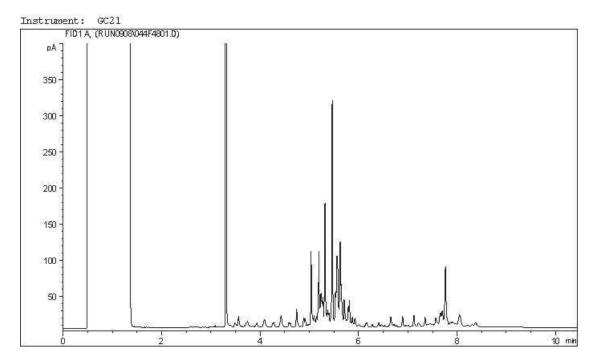
Crude Oils:

C3 - C60+

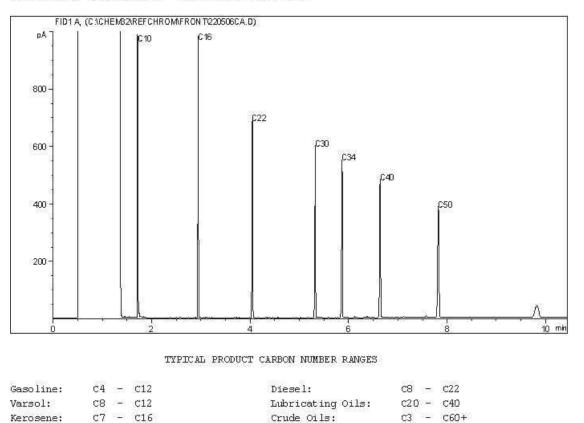


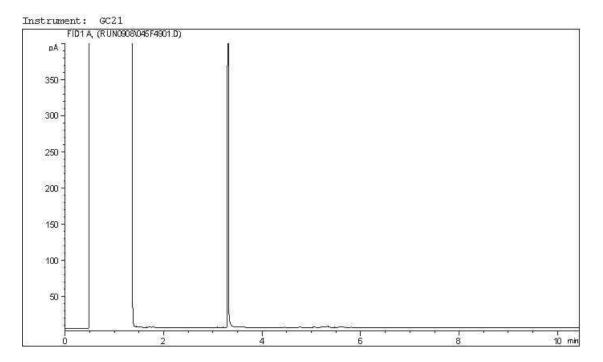
Carbon Range Distribution - Reference Chromatogram



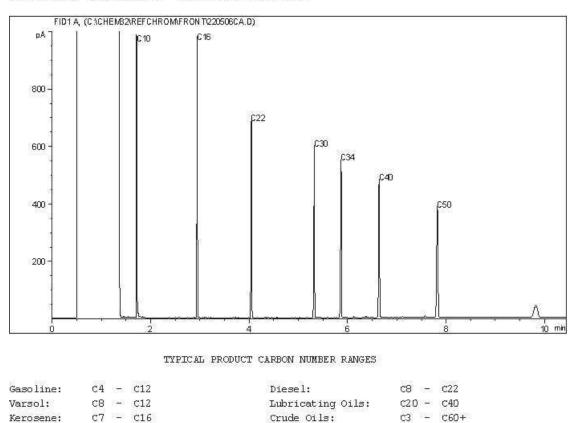


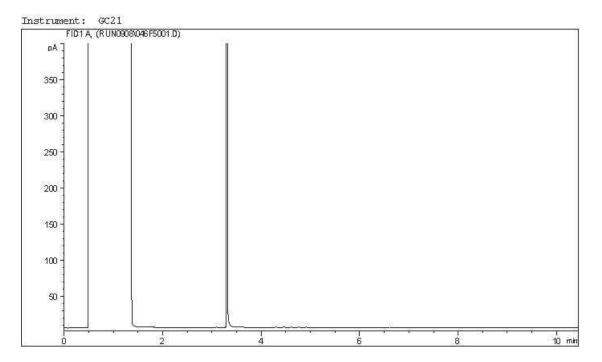
Carbon Range Distribution - Reference Chromatogram



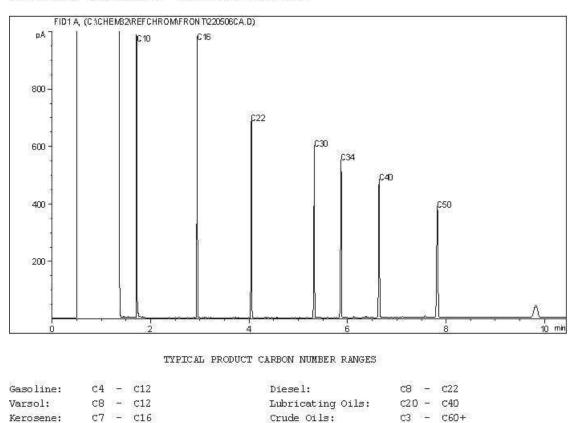


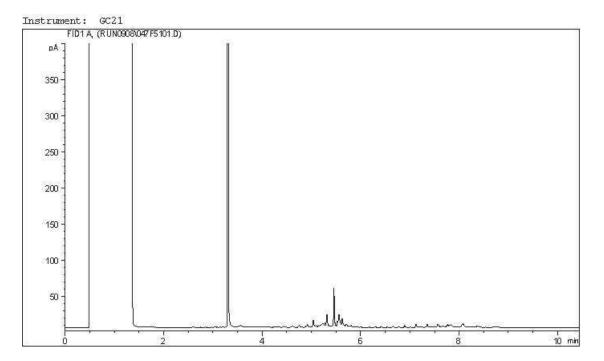
Carbon Range Distribution - Reference Chromatogram



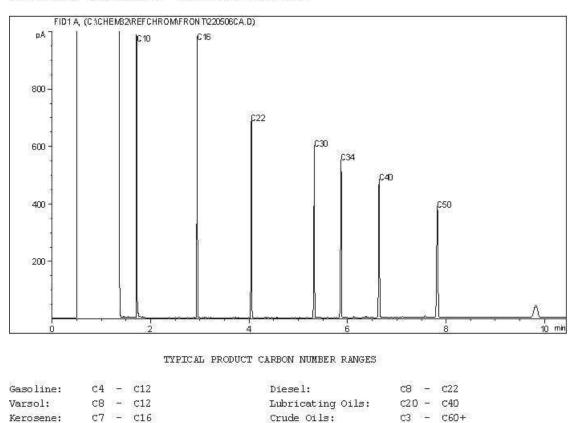


Carbon Range Distribution - Reference Chromatogram



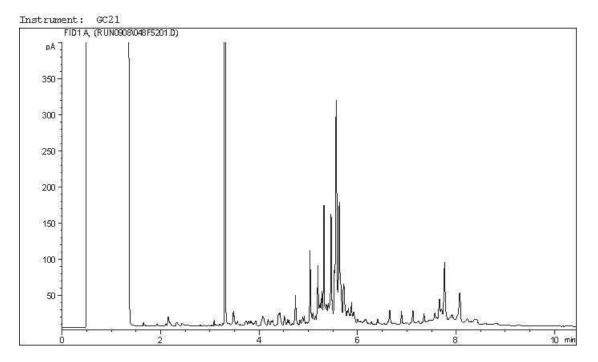


Carbon Range Distribution - Reference Chromatogram

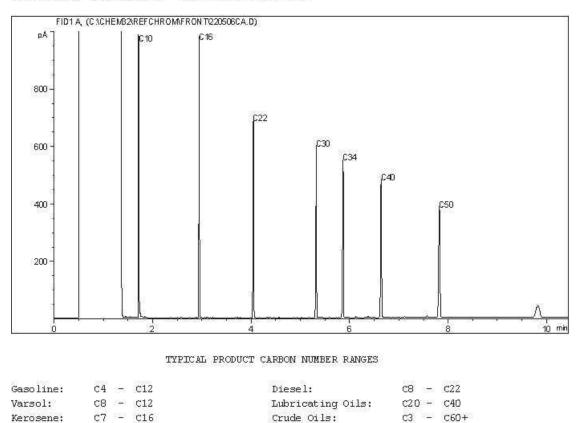


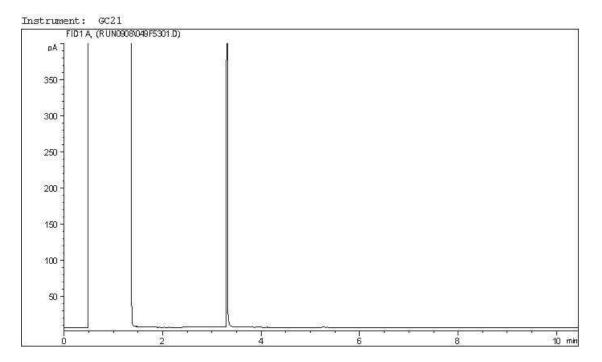
GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL Client ID: BH22-67-02

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

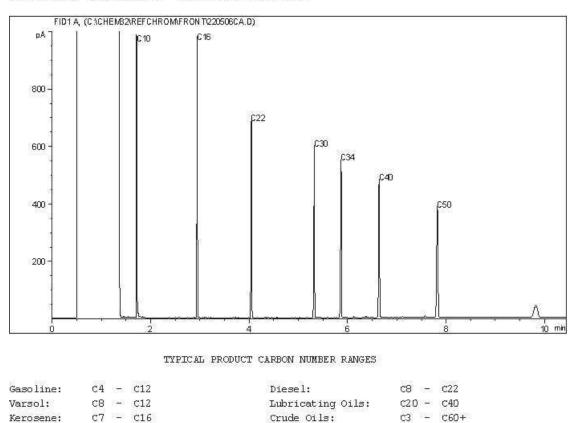


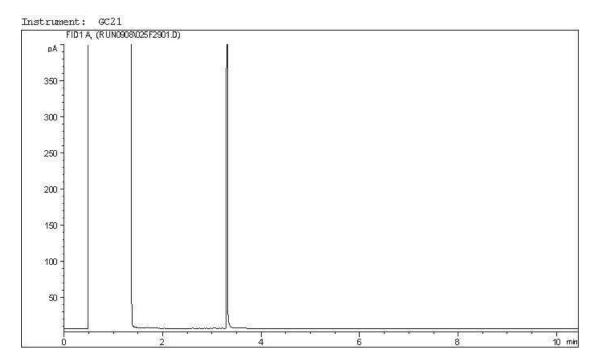
Carbon Range Distribution - Reference Chromatogram



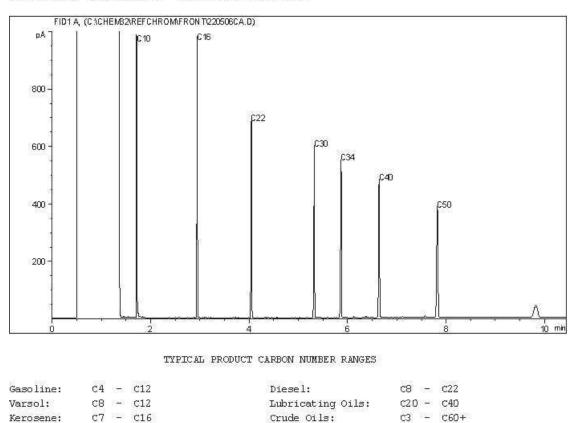


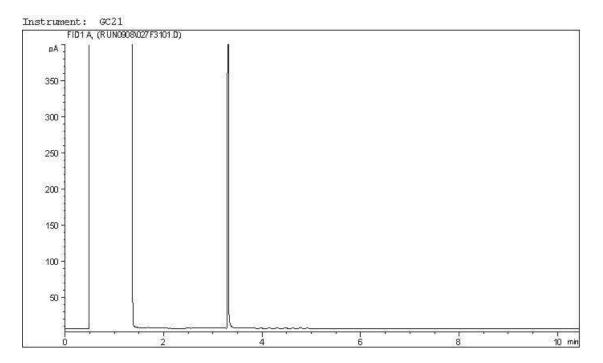
Carbon Range Distribution - Reference Chromatogram



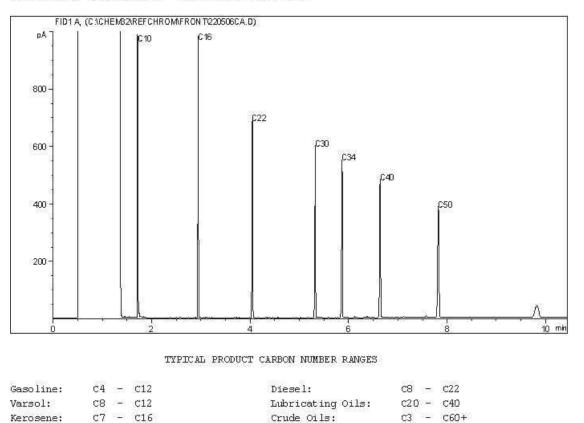


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



Cynny Hagen

From: Sent: To: Cc: Subject: MacLean, Colleen <Colleen_MacLean@golder.com> Monday, September 12, 2022 10:05 AM Cynny Hagen Bellavance, Aurelie RE: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

Be careful with this message: it is coming from an external sender

Do not open attachments nor click on links, unless you are sure that the content is safe

Yes, that sounds good.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

SOLDER

From: Cynny Hagen <cynny.hagen@bureauveritas.com>
Sent: September 12, 2022 10:01 AM
To: MacLean, Colleen <colleen.maclean@wsp.com>
Cc: Bellavance, Aurelie <aurelie.bellavance@wsp.com>
Subject: Re: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

EXTERNAL EMAIL

EXTERNAL EMAIL - We could not verify the authenticity of this message. Please be cautious when clicking on links or opening attachments.

Hi Colleen,

Absolutely I will add the analysis, for job C266077 would you like to have the additional report for both Bio-Toluene and Resemble for F2-F4 and the other jobs can be just add a comment in report. Please confirm.

Regards,

Cynny Hagen

Key Account Specialist Environmental Laboratories & Specialty Services - Western Canada Bureau Veritas Cell: 403-312-9070

www.BVNA.com Shaping a world of trust Emergency/Spills 365/7/24: 1-844-BVSPILL, <u>spills@bureauveritas.com</u> For urgent after-hours inquiries: 403 651 2436

On Mon, 12 Sep at 8:58 AM , MacLean, Colleen <colleen_maclean@golder.com> wrote:

Be careful with this message: it is coming from an external sender Do not open attachments nor click on links, unless you are sure that the content is safe

Hello,

Could you please complete chromatogram analysis and biogenic toluene (select samples) assessment for the samples below?

	BAW749	BH22-56-01	F1 to F4 and toluene		
	BAW750	BH22-56-02			
C266077	BAW752	BH22-57-01	F1 to F4		
	BAW753	BH22-57-02	F1 to F4 and toluene		
	BAW756	BH22-59-01	F1 to F4 and toluene		
	BAW742	BH22-63-01	F1 to F4		
C266076	BAW738	BH22-64-01	F1 to F4		
	BAW746	BH22-67-02	F1 to F4		
C266062	BAW656	BH22-68-01	F1 to F4		
C266081	BAW784	BH22-70-01	F1 to F4		

Please let me know if you have any questions.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

237 – 4 Avenue SW, Suite 3300, Calgary, Alberta T2P 4K3, Canada **wsp.com** | **golder.com**

WSP and Golder have joined together to form the premier environmental consultancy in the industry. Together we are 14,000 strong, Future Ready©, and delivering innovative solutions to our clients around the globe.

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-LAEmHhHzdJzBlTWfa4Hgs7pbKl-BT-P365-c108p227-DayTwo-Disclaimer

This message contains confidential information. To know more, please click on the following link: https://disclaimer.bureauveritas.com

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewo	ell, NT		_	Sampling Dat	e: August 24 and 26, 2022
Golder Project Number: 2	2525414	-1000		Laborator	y: Bureau Veritas Edmonton
Lab Submission Number: (-		
Was the Cooler Received at the lab Was proper chain of custody of the Were sample temperatures accepta Were all samples analyzed and ext Has lab warranted all tests were in Was sufficient sample provided for Has lab warranted all samples were	samples ble when racted wi statistical	documente they reach thin hold ti l control in ested analy	ed and kep led lab?: imes?: i CoA?: ysis?	ot?	Yes Yes Yes Yes Yes Yes
Are All Laboratory QC Within Aco	ceptance	Criteria (Y	es, No, N	ot Applicable)?	
	Yes	No	NA		Comments
Surrogate Recovery	Х			All laboratory	QC results are within
Method Blank Concentration	Х			acceptance crit	eria.
Laboratory Duplicate RPD	Х				
Matrix Spike Recovery	Х				
Blank Spike Recovery	Х				
Are All Field QC Samples Within	Alert Lin	nits (Yes, N	No, Not Aj	pplicable)?	
	Yes	No	NA		Comments
Field Blank Concentration			Х	No field OC sa	mples were collected.
Trip Blank Concentration			Х		1
Field Duplicate RPD			Х		
Is data considered reliable (Yes/No If answer is "No" or "Suspect", des	1 .	/	ationale:	Yes	
Data Reviewed by (Print): <u>A</u>	Anita Col	bert		Data Reviewed	by (Signature): Units Collect
Date:	Septemb	er 9, 2022	-		



Your P.O. #: 22525414-1100-1004 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 of 2

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2023/01/12 Report #: R3287448 Version: 3 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C266077 Received: 2022/08/30, 12:00

Sample Matrix: Soil # Samples Received: 15

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	15	N/A	2022/09/04	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	15	N/A	2022/09/08		Auto Calc
Toluene (13C/12C) CSIA	2	N/A	2023/01/10		See Attachment
CCME Hydrocarbons (F2-F4 in soil) (2)	15	2022/09/06	2022/09/07	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F4G in soil) (2)	2	2022/09/06	2022/09/08	AB SOP-00036	CCME PHC-CWS m
				AB SOP-00040	
Moisture	15	N/A	2022/09/07	AB SOP-00002	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



Your P.O. #: 22525414-1100-1004 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 2, 2 of 2

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2023/01/12 Report #: R3287448 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266077 Received: 2022/08/30, 12:00

Encryption Key

Brody Andersen Program Specialist-Emergency Spill Response 12 Jan 2023 14:40:16

Please direct all questions regarding this Certificate of Analysis to: Cynny Hagen, Key Account Soecialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW749			BAW750	BAW750			BAW751		
Comulia a Data		2022/08/24			2022/08/24	2022/08/24			2022/08/24		
Sampling Date		09:45			10:00	10:00			10:15		
COC Number		1 of 2			1 of 2	1 of 2			1 of 2		
	UNITS	BH22-56-01	RDL	QC Batch	BH22-56-02	BH22-56-02 Lab-Dup	RDL	QC Batch	BH22-56-03	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	88 (1)	29	A706375	49 (2)	71	16	A706375	<10	10	A706375
F3 (C16-C34 Hydrocarbons)	mg/kg	2600 (1)	150	A706375	1100 (3)	1400	70	A706375	<50	50	A706375
F4 (C34-C50 Hydrocarbons)	mg/kg	990 (1)	150	A706375	320 (3)	480	110	A706375	<50	50	A706375
Reached Baseline at C50	mg/kg	No	N/A	A706375	Yes	Yes	N/A	A706375	Yes	N/A	A706375
Physical Properties	•									•	
Moisture	%	66	0.30	A706397	86	N/A	0.30	A706313	18	0.30	A706397
Volatiles		•						•			
Xylenes (Total)	mg/kg	<0.14	0.14	A701342	<0.34	N/A	0.34	A701342	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<12	12	A701342	<33	N/A	33	A701342	<10	10	A701342
Field Preserved Volatiles							-				
Benzene	mg/kg	<0.018 (4)	0.018	A702755	<0.051 (4)	N/A	0.051	A702755	<0.0050	0.0050	A702755
Toluene	mg/kg	0.81 (4)	0.056	A702755	2.0 (5)	N/A	0.66	A702755	<0.050	0.050	A702755
Ethylbenzene	mg/kg	<0.043 (4)	0.043	A702755	<0.12 (4)	N/A	0.12	A702755	<0.010	0.010	A702755
m & p-Xylene	mg/kg	<0.097 (4)	0.097	A702755	<0.27 (4)	N/A	0.27	A702755	<0.040	0.040	A702755
o-Xylene	mg/kg	<0.096 (5)	0.096	A702755	<0.21 (4)	N/A	0.21	A702755	<0.020	0.020	A702755
F1 (C6-C10)	mg/kg	<12 (4)	12	A702755	<33 (4)	N/A	33	A702755	<10	10	A702755
Surrogate Recovery (%)							-				
1,4-Difluorobenzene (sur.)	%	100	N/A	A702755	98	N/A	N/A	A702755	98	N/A	A702755
4-Bromofluorobenzene (sur.)	%	96	N/A	A702755	96	N/A	N/A	A702755	96	N/A	A702755
D10-o-Xylene (sur.)	%	121	N/A	A702755	121	N/A	N/A	A702755	134	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	93	N/A	A702755	92	N/A	N/A	A702755	91	N/A	A702755
O-TERPHENYL (sur.)	%	90	N/A	A706375	86	81	N/A	A706375	85	N/A	A706375

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limits calculated based on method detection limits (MDLs) due to high moisture content, sample contains => 50% moisture. Uncertainty of values may be increased.

(3) Detection limits calculated based on method detection limits (MDLs) due to high moisture content, sample contains => 50% moisture. Uncertainty of values may be increased.

Matrix spike below acceptance limits due to probable matrix interference.

(4) Detection limit reported based on MDL and sample weight used for analysis.

(5) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW751			BAW752		BAW753		BAW754		
Sampling Date		2022/08/24 10:15			2022/08/24 10:45		2022/08/24 10:55		2022/08/24 11:10		
COC Number		1 of 2			1 of 2		1 of 2		1 of 2		
	UNITS	BH22-56-03 Lab-Dup	RDL	QC Batch	BH22-57-01	RDL	BH22-57-02	RDL	BH22-57-03	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	N/A	10	A706375	<50 (1)	50	<56 (1)	56	<10	10	A706375
F3 (C16-C34 Hydrocarbons)	mg/kg	N/A	50	A706375	470 (1)	250	600 (1)	280	<50	50	A706375
F4 (C34-C50 Hydrocarbons)	mg/kg	N/A	50	A706375	<250 (1)	250	<280 (1)	280	<50	50	A706375
Reached Baseline at C50	mg/kg	N/A	N/A	A706375	Yes	N/A	Yes	N/A	Yes	N/A	A706375
Physical Properties			•	•						•	
Moisture	%	18	0.30	A706397	80	0.30	82	0.30	18	0.30	A706313
Volatiles		•			•	-					
Xylenes (Total)	mg/kg	N/A	0.045	A701342	<0.23	0.23	<0.26	0.26	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	N/A	10	A701342	<23	23	47	26	<10	10	A701342
Field Preserved Volatiles	•	•			•						
Benzene	mg/kg	N/A	0.0050	A702755	<0.035 (2)	0.035	<0.039 (2)	0.039	<0.0050	0.0050	A702755
Toluene	mg/kg	N/A	0.050	A702755	<0.11 (2)	0.11	1.8 (3)	0.51	<0.050	0.050	A702755
Ethylbenzene	mg/kg	N/A	0.010	A702755	<0.081 (2)	0.081	<0.092 (2)	0.092	<0.010	0.010	A702755
m & p-Xylene	mg/kg	N/A	0.040	A702755	<0.18 (2)	0.18	<0.21 (2)	0.21	<0.040	0.040	A702755
o-Xylene	mg/kg	N/A	0.020	A702755	<0.14 (2)	0.14	<0.16 (2)	0.16	<0.020	0.020	A702755
F1 (C6-C10)	mg/kg	N/A	10	A702755	<23 (2)	23	49 (3)	26	<10	10	A702755
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	N/A	N/A	A702755	99	N/A	100	N/A	99	N/A	A702755
4-Bromofluorobenzene (sur.)	%	N/A	N/A	A702755	96	N/A	95	N/A	97	N/A	A702755
D10-o-Xylene (sur.)	%	N/A	N/A	A702755	133	N/A	125	N/A	134	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	N/A	N/A	A702755	93	N/A	95	N/A	93	N/A	A702755
O-TERPHENYL (sur.)	%	N/A	N/A	A706375	89	N/A	91	N/A	85	N/A	A706375

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.

(3) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Burroou Voritos ID		BAW755	BAW755		BAW756		BAW757		BAW758		1
Bureau Veritas ID	<u> </u>				-						
Sampling Date		2022/08/24 11:25	2022/08/24 11:25		2022/08/24 13:15		2022/08/24 13:30		2022/08/24 13:45		
COC Number		1 of 2	1 of 2		1 of 2		1 of 2		1 of 2		
	UNITS	BH22-58-01	BH22-58-01 Lab-Dup	RDL	BH22-59-01	RDL	BH22-59-02	RDL	BH22-59-03	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<23 (1)	N/A	23	60	10	<10	10	<10	10	A706375
F3 (C16-C34 Hydrocarbons)	mg/kg	300 (1)	N/A	110	1100	50	97	50	89	50	A706375
F4 (C34-C50 Hydrocarbons)	mg/kg	<110 (1)	N/A	110	400	50	<50	50	<50	50	A706375
Reached Baseline at C50	mg/kg	Yes	N/A	N/A	No	N/A	Yes	N/A	Yes	N/A	A706375
Physical Properties	•									•	
Moisture	%	56	55	0.30	43	0.30	27	0.30	30	0.30	A706313
Volatiles	•	•		•						•	•
Xylenes (Total)	mg/kg	<0.10	N/A	0.10	<0.092	0.092	<0.097	0.097	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	N/A	10	<21	21	<22	22	<10	10	A701342
Field Preserved Volatiles	-									-	
Benzene	mg/kg	<0.014 (2)	N/A	0.014	<0.0080 (2)	0.0080	<0.0080 (2)	0.0080	<0.0050	0.0050	A702755
Toluene	mg/kg	<0.050 (2)	N/A	0.050	0.86 (3)	0.10	<0.050 (2)	0.050	<0.050	0.050	A702755
Ethylbenzene	mg/kg	<0.033 (2)	N/A	0.033	<0.018 (2)	0.018	<0.020 (2)	0.020	<0.010	0.010	A702755
m & p-Xylene	mg/kg	<0.075 (2)	N/A	0.075	<0.082 (3)	0.082	<0.087 (3)	0.087	<0.040	0.040	A702755
o-Xylene	mg/kg	<0.073 (3)	N/A	0.073	<0.041 (3)	0.041	<0.043 (3)	0.043	<0.020	0.020	A702755
F1 (C6-C10)	mg/kg	<10 (2)	N/A	10	<21 (3)	21	<22 (3)	22	<10	10	A702755
Surrogate Recovery (%)										-	
1,4-Difluorobenzene (sur.)	%	100	N/A	N/A	97	N/A	99	N/A	99	N/A	A702755
4-Bromofluorobenzene (sur.)	%	97	N/A	N/A	97	N/A	98	N/A	99	N/A	A702755
D10-o-Xylene (sur.)	%	124	N/A	N/A	128	N/A	103	N/A	120	N/A	A702755
D4-1,2-Dichloroethane (sur.)	%	94	N/A	N/A	92	N/A	94	N/A	94	N/A	A702755
O-TERPHENYL (sur.)	%	67	N/A	N/A	70	N/A	85	N/A	88	N/A	A706375
PDI - Poportable Detection Li											

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.

(3) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW759	BAW760		BAW761		BAW762		
Sampling Date		2022/08/24	2022/08/24		2022/08/24		2022/08/24		
		14:00	14:10		14:20		14:30		
COC Number		1 of 2	1 of 2		2 of 2		2 of 2		
	UNITS	BH22-59-04	BH22-65-01	QC Batch	BH22-65-02	QC Batch	BH22-65-03	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	A706375	<10	A706375	<10	10	A706375
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	A706375	<50	A706375	<50	50	A706375
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	A706375	<50	A706375	<50	50	A706375
Reached Baseline at C50	mg/kg	Yes	Yes	A706375	Yes	A706375	Yes	N/A	A706375
Physical Properties									
Moisture	%	20	6.8	A706313	19	A706397	20	0.30	A706313
Volatiles									
Xylenes (Total)	mg/kg	<0.045	<0.045	A701342	<0.045	A701342	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	<10	A701342	<10	A701342	<10	10	A701342
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	A702755	<0.0050	A702776	<0.0050	0.0050	A702776
Toluene	mg/kg	<0.050	<0.050	A702755	<0.050	A702776	<0.050	0.050	A702776
Ethylbenzene	mg/kg	<0.010	<0.010	A702755	<0.010	A702776	<0.010	0.010	A702776
m & p-Xylene	mg/kg	<0.040	<0.040	A702755	<0.040	A702776	<0.040	0.040	A702776
o-Xylene	mg/kg	<0.020	<0.020	A702755	<0.020	A702776	<0.020	0.020	A702776
F1 (C6-C10)	mg/kg	<10	<10	A702755	<10	A702776	<10	10	A702776
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	99	99	A702755	95	A702776	97	N/A	A702776
4-Bromofluorobenzene (sur.)	%	97	98	A702755	101	A702776	98	N/A	A702776
D10-o-Xylene (sur.)	%	131	119	A702755	112	A702776	116	N/A	A702776
D4-1,2-Dichloroethane (sur.)	%	94	96	A702755	91	A702776	89	N/A	A702776
O-TERPHENYL (sur.)	%	88	83	A706375	86	A706375	91	N/A	A706375
RDL = Reportable Detection Li	mit								
N/A = Not Applicable									



Bureau Veritas ID		BAW763		
Sampling Date		2022/08/24 14:40		
COC Number		2 of 2		
	UNITS	BH22-65-04	RDL	QC Batch
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	A706375
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	A706375
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	A706375
Reached Baseline at C50	mg/kg	Yes	N/A	A706375
Physical Properties	•			•
Moisture	%	18	0.30	A706397
Volatiles			•	
Xylenes (Total)	mg/kg	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	10	A701342
Field Preserved Volatiles				
Benzene	mg/kg	<0.0050	0.0050	A702776
Toluene	mg/kg	<0.050	0.050	A702776
Ethylbenzene	mg/kg	<0.010	0.010	A702776
m & p-Xylene	mg/kg	<0.040	0.040	A702776
o-Xylene	mg/kg	<0.020	0.020	A702776
F1 (C6-C10)	mg/kg	<10	10	A702776
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	95	N/A	A702776
4-Bromofluorobenzene (sur.)	%	96	N/A	A702776
D10-o-Xylene (sur.)	%	115	N/A	A702776
D4-1,2-Dichloroethane (sur.)	%	91	N/A	A702776
O-TERPHENYL (sur.)	%	86	N/A	A706375
RDL = Reportable Detection Li	nit			
N/A = Not Applicable				

AT1 BTEX AND F1-F4 IN SOIL (VIALS)



Demonstration ID		DA14/740		
Bureau Veritas ID		BAW749	BAW750	
		2022/08/24	2022/08/24	
Sampling Date		09:45	10:00	
		09:45	10:00	
COC Number		1 of 2	1 of 2	
	UNITS	BH22-56-01	BH22-56-02	QC Batch
Parameter				
Subcontract Parameter	N/A	ATTACHED	ATTACHED	A849901

RESULTS OF CHEMICAL ANALYSES OF SOIL



PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		BAW749		BAW756						
Sampling Date		2022/08/24 09:45		2022/08/24 13:15						
COC Number		1 of 2		1 of 2						
	UNITS	BH22-56-01	RDL	BH22-59-01	RDL	QC Batch				
Ext. Pet. Hydrocarbon										
Ext. Pet. Hydrocarbon			-							
Ext. Pet. Hydrocarbon F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	4700 (1)	1500	2200	500	A708702				



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.0°C
Package 2	3.7°C
Package 3	8.7°C
Package 4	3.3°C
Package 5	4.7°C
Package 6	4.0°C
Package 7	4.7°C

Version #4:Toluene Stage 3 Assessment has been done on sample BAW749 & BAW750 as per client request on 20221117. Report is attached to this job.

Version 3: Report reissued to include Stage 2 Toluene assessment on below samples as per client request received 2022/09/20. BAW749/BH22-56-01

BAW750/BH22-56-02

Sample BAW749 [BH22-56-01] : Version #2: Additional analysis has been added as per request from client 20220912

Chromatogram and Toluene review on samples BAW749 (BH22-56-01), BAW750 (BH22-56-02), BAW753 (BH22-57-02) & BAW756 (BH22-59-01) Chromatogram review on sample BAW752 (BH22-57-01)

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A702755	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/04		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		95	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		122	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		96	%	50 - 140
			Benzene	2022/09/04		104	%	50 - 140
			Toluene	2022/09/04		97	%	50 - 140
			Ethylbenzene	2022/09/04		97	%	50 - 140
			m & p-Xylene	2022/09/04		97	%	50 - 140
			o-Xylene	2022/09/04		98	%	50 - 140
			F1 (C6-C10)	2022/09/04		73	%	60 - 140
A702755	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/04		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		99	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		110	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		93	%	50 - 140
			Benzene	2022/09/04		98	%	60 - 130
			Toluene	2022/09/04		95	%	60 - 130
			Ethylbenzene	2022/09/04		95	%	60 - 130
			m & p-Xylene	2022/09/04		96	%	60 - 130
			o-Xylene	2022/09/04		101	%	60 - 130
			F1 (C6-C10)	2022/09/04		108	%	60 - 140
A702755	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/04		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		98	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		114	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		93	%	50 - 140
			Benzene	2022/09/04	<0.0050		mg/kg	
			Toluene	2022/09/04	<0.050		mg/kg	
			Ethylbenzene	2022/09/04	<0.010		mg/kg	
			m & p-Xylene	2022/09/04	<0.040		mg/kg	
			o-Xylene	2022/09/04	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/04	<10		mg/kg	
A702755	WPK	RPD	Benzene	2022/09/04	NC		%	50
			Toluene	2022/09/04	NC		%	50
			Ethylbenzene	2022/09/04	NC		%	50
			m & p-Xylene	2022/09/04	NC		%	50
			o-Xylene	2022/09/04	NC		%	50
			F1 (C6-C10)	2022/09/04	NC		%	30
A702776	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/04		79	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		82	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		78	%	50 - 140
			Benzene	2022/09/04		84	%	50 - 140
			Toluene	2022/09/04		80	%	50 - 140
			Ethylbenzene	2022/09/04		80	%	50 - 140
			m & p-Xylene	2022/09/04		80	%	50 - 140
			o-Xylene	2022/09/04		82	%	50 - 140
			F1 (C6-C10)	2022/09/04		98	%	60 - 140
A702776	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/04		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		96	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		118	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		90	%	50 - 140
			Benzene	2022/09/04		101	%	60 - 130
			Toluene	2022/09/04		97	%	60 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Ethylbenzene	2022/09/04		99	%	60 - 130
			m & p-Xylene	2022/09/04		97	%	60 - 130
			o-Xylene	2022/09/04		101	%	60 - 130
			F1 (C6-C10)	2022/09/04		105	%	60 - 140
A702776	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/04		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		96	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		89	%	50 - 140
			Benzene	2022/09/04	<0.0050		mg/kg	
			Toluene	2022/09/04	<0.050		mg/kg	
			Ethylbenzene	2022/09/04	<0.010		mg/kg	
			m & p-Xylene	2022/09/04	<0.040		mg/kg	
			o-Xylene	2022/09/04	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/04	<10		mg/kg	
A702776	WPK	RPD	Benzene	2022/09/04	NC		%	50
			Toluene	2022/09/04	NC		%	50
			Ethylbenzene	2022/09/04	NC		%	50
			m & p-Xylene	2022/09/04	NC		%	50
			o-Xylene	2022/09/04	NC		%	50
			F1 (C6-C10)	2022/09/04	NC		%	30
A706313	KLG	Method Blank	Moisture	2022/09/07	<0.30		%	
A706313	KLG	RPD [BAW755-01]	Moisture	2022/09/07	2.5		%	20
A706375	GG3	Matrix Spike [BAW750-01]	O-TERPHENYL (sur.)	2022/09/07		88	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/07		73	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/07		23 (1)	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/07		59 (1)	%	60 - 140
A706375	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/09/07		85	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/07		79	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/07		84	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/07		80	%	60 - 140
A706375	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/07		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/07	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/07	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/07	<50		mg/kg	
A706375	GG3	RPD [BAW750-01]	F2 (C10-C16 Hydrocarbons)	2022/09/07	38		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/07	28		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/07	39		%	40
A706397	MGL	Method Blank	Moisture	2022/09/07	<0.30		%	
A706397	MGL	RPD [BAW751-01]	Moisture	2022/09/07	0		%	20
A708702	JB9	Spiked Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/09/08	C C	105	%	60 - 140



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC															
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits							
A708702	JB9	Method Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/09/08	<500		mg/kg								
Duplicate	e: Paire	d analysis of a separa	te portion of the same sample. Used to evaluate th	e variance in the measure	ment.										
Matrix Sp	oike: A s	ample to which a kn	own amount of the analyte of interest has been ad	ded. Used to evaluate sam	ple matrix inte	erference.									
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 E	Blank: A	blank matrix contain	ing all reagents used in the analytical procedure. U	Jsed to identify laboratory	contamination	۱.									
Surrogate	e: A pui	e or isotopically labe	led compound whose behavior mirrors the analyte	s of interest. Used to evalu	uate extraction	efficiency.									
NC (Dupli difference		, ,) was not calculated. The concentration in the sam	ple and/or duplicate was to	oo low to perm	nit a reliable RPD	calculatior	n (absolute							
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Junzhi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

Nadeem Cheema, Project Solutions Representative

Mermica felk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

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Page 17 of 34

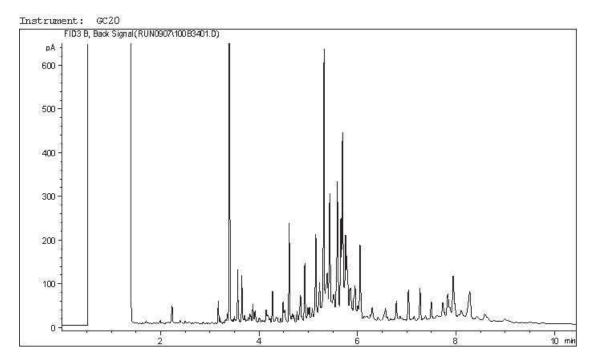
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hoose Location: cageny, AB: 3000 19th St. NE, TZE 6P8 Toil Free (800) 386-7247 Edmonton, AB: 933148 St. TGB ZPA Toil Free (800) 385-7247 nning AB: D-572 Stery St. R311 AJ7 Toil Free (860) 800-5208	Report Information (If differs from Involce)	Company: Golder Associates Quotation #:	Contact Aurelie Bellavance P.O. #/ AFE#:	Street Project #: Address:	clty: Calgary AB Postal T2P 4K3 Stee #: Code: T2P 4K3		Email: Aurelie Selladoned wshe wshe	Jes: Refer Juso was a sampled By	Childrine Writer - Manihota	Cottor DACRP		LIVERY TO BUREAU VERITAS (FED (FED)	38371 88323 88710 84710 84 84 84 84 84	PAHS 2HA9 -L7 X3T8 MUIRA8	22 08 24 14 ho Soft X	X 1 1 1 1 1 1 1 1 X	X 4 00/11 4 4									S CHARM OF CONSTORYES STUBLECT TO BURKAN VEHTAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACREMONITED REAL AND ACCIPTANCE OF OUR THANS AND COMULTIONS WHICH ACCIDENTIAL FOR WINYMARE FOR MINEMARKAN AND ACCIPTANCE OF OUR THANS AND COMULTIONS OF THIS FUNCTION OF CUSTODY DOCUMENT IS ACREMONITED REAL AND ACCIPTANCE OF OUR THANS AND COMULTIONS OF THIS FUNCTION OF CUSTODY DOCUMENT IS ACREMONITED REAL AND ACCIPTANCE OF OUR THANS AND COMULTIONS OF THIS FUNCTION OF CUSTODY DOCUMENT IS ACREMONITED REAL AND ACCIPTANCE OF OUR THANS AND COMULTIONS OF THE LADORATION OF CUSTODY TO PREVIDE ACTION AND ACCIPTANCE OF OUR THANS AND COMULTIONS OF ACCIDENTIONS OF ACCIDENTIAL AND ACCIPTANCE OF OUR THANS AND ACCIDENTIAL AND ACCIPTANCE OF OUR THANS AND ACCIDENTIAL AND ACCIPTANCE OF OUR THANS AND ACCIDENTIAL ACCIDANCE OF OUR THANS AND ACCIDENTIAL ACCIDANCE OF OUR THANS AND ACCIDENTIAL ACCIDANCE OF OUR THANS AND ACCIDANC	LAB USE ONLY Yes No	Seal present °C Seal interest °C 1 2 2 Constrained a present 1 2 2 Constrained a present 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	IF	08 25 16 00 1 Just Wernbur		5
Choose Location: Colean, AB: 4000 13th 5t. NE. Colean, AB: 4000 13th 5t. NE. Edmonton, AB: 3000 13th 5t. NE. Edmonton, AB: 30148 5t. 16 Edmonton, AB: 30575 Berl St. 55 Colean AB: 2000 13th 5t. 16 Colean AB: 2000 13th 5t. 15 Colean AB: 2000	Invoice Information Invoice to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Code:		Canada Account Payable	Coples: Co	Regulatory Criteria			SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DE		Sample Identification	1 [3422-65-02	2 3427-65-03	B RU 22-65-04	4	10	10	2	50	6	10	11	12 • UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CU	LAB USE ONLY YES NO NO	Seal Intact C 7 2	by: (Signature/ Print)	We 22	2	

C266077

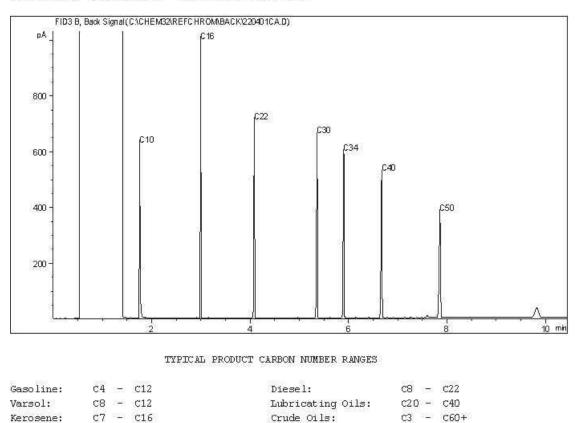
Page 18 of 34

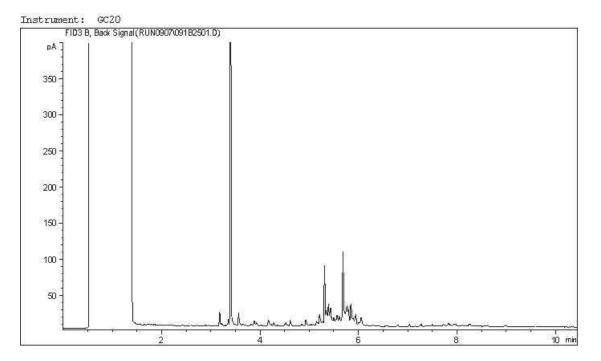
GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL Client ID: BH22-56-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

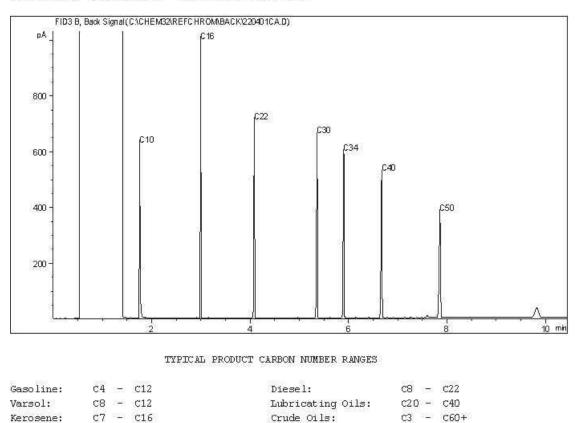


Carbon Range Distribution - Reference Chromatogram



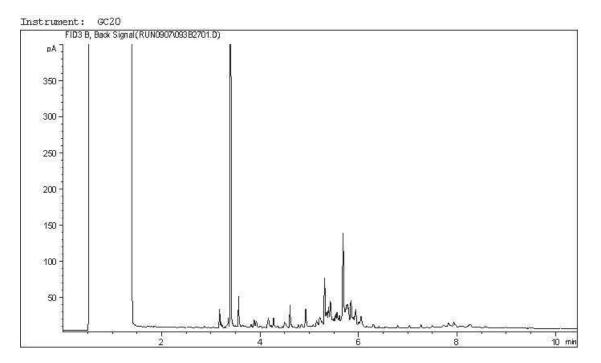


Carbon Range Distribution - Reference Chromatogram

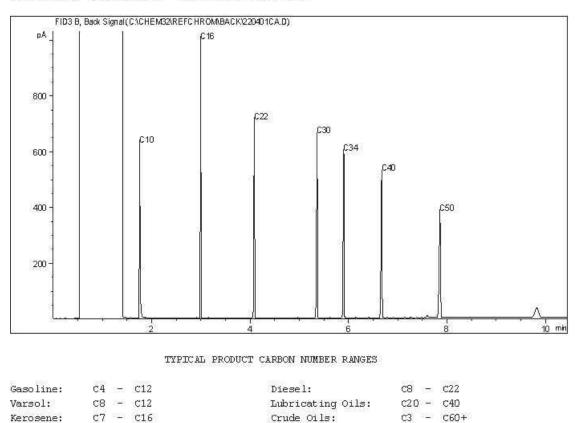


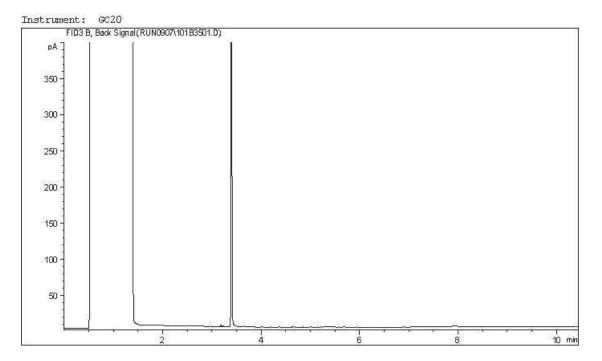
GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL Client ID: BH22-56-02

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

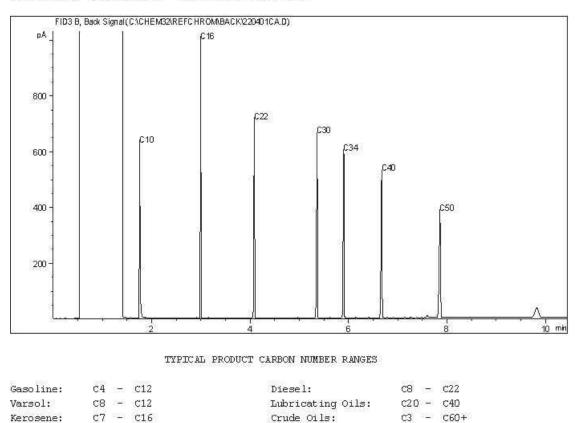


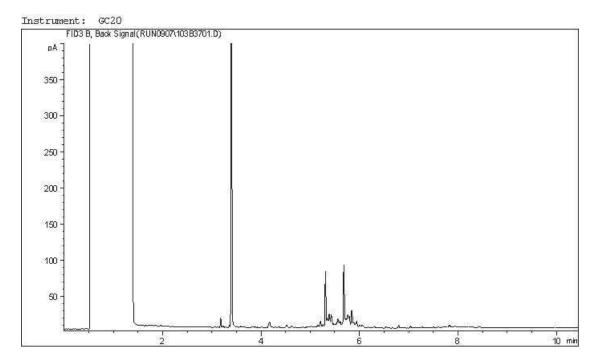
Carbon Range Distribution - Reference Chromatogram



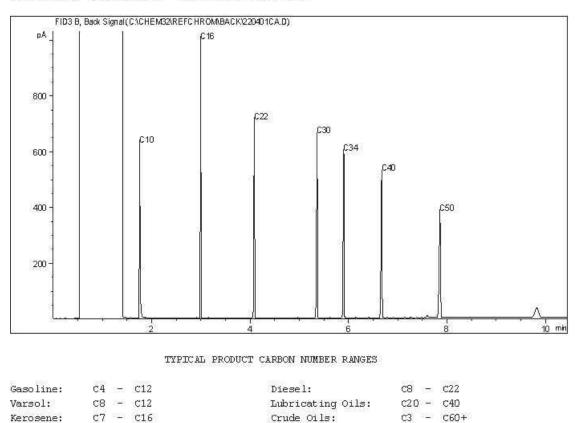


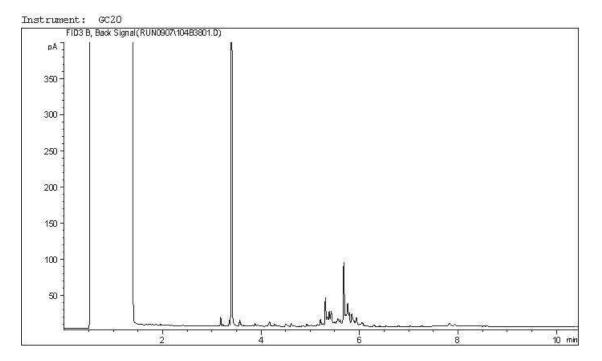
Carbon Range Distribution - Reference Chromatogram



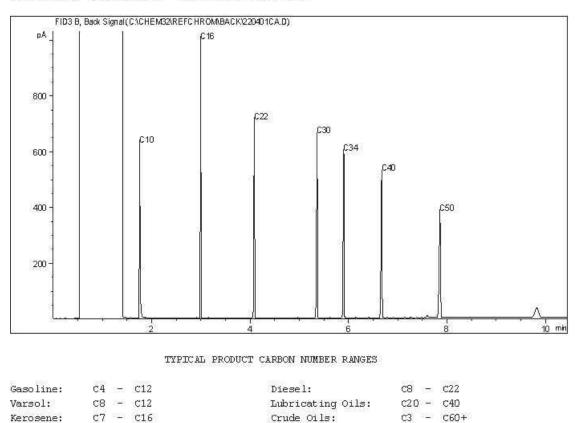


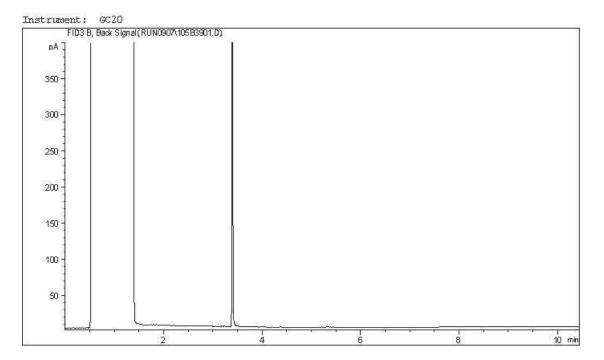
Carbon Range Distribution - Reference Chromatogram



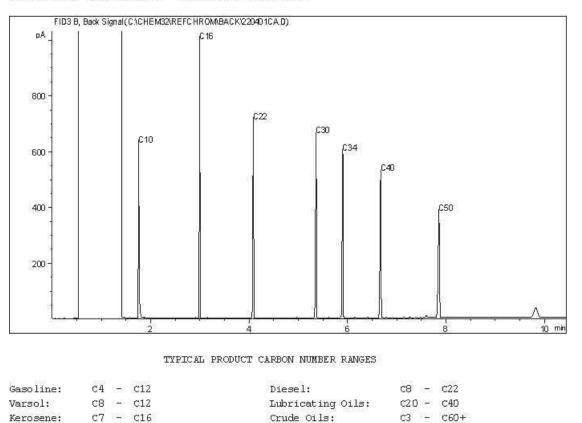


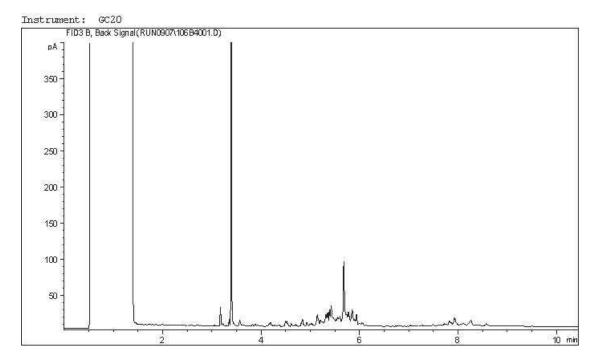
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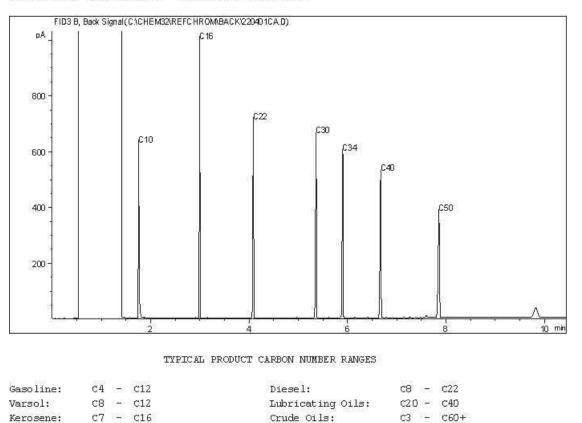


Carbon Range Distribution - Reference Chromatogram



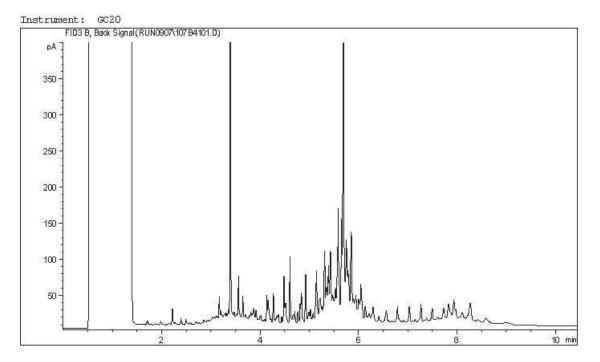


Carbon Range Distribution - Reference Chromatogram

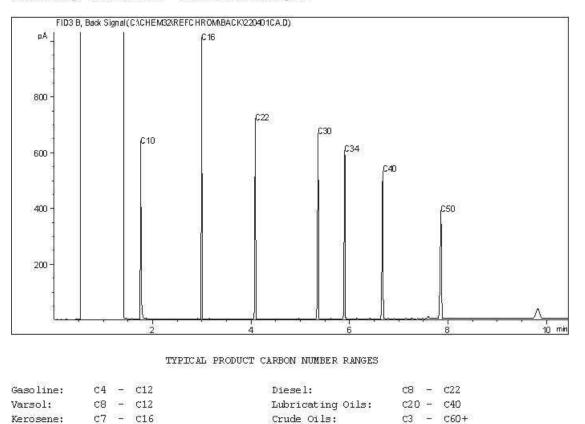


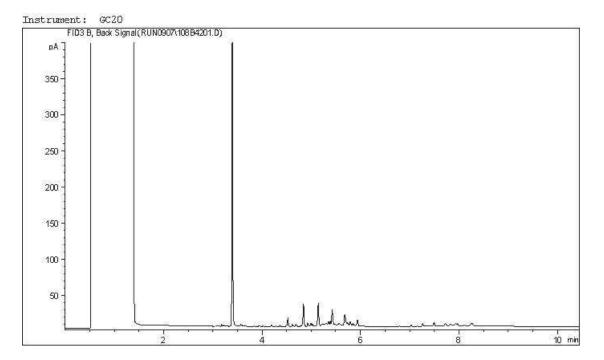
GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL Client ID: BH22-59-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

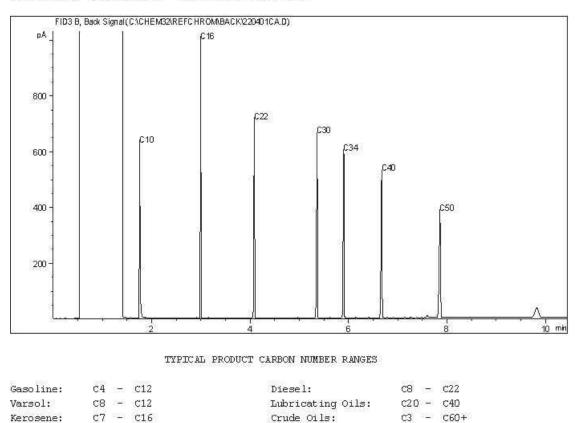


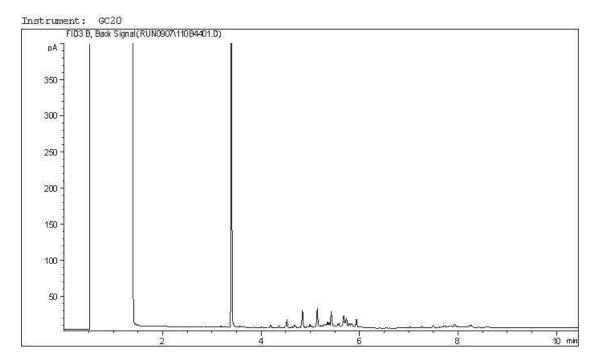
Carbon Range Distribution - Reference Chromatogram



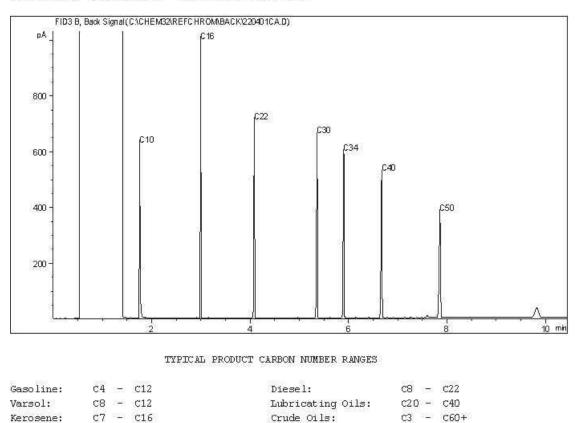


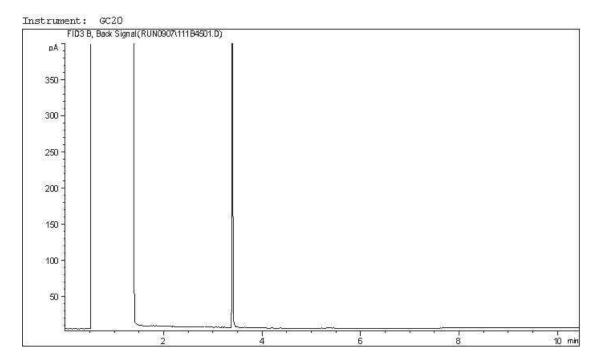
Carbon Range Distribution - Reference Chromatogram



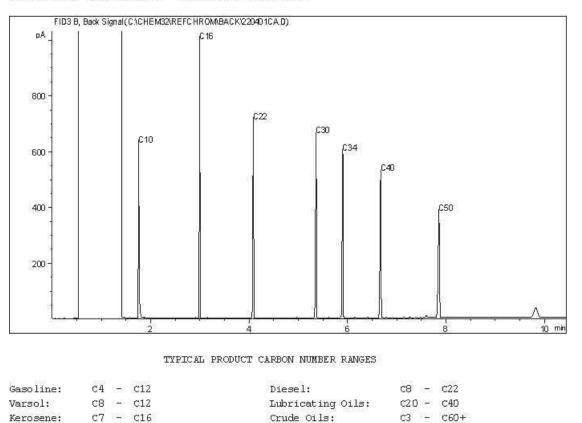


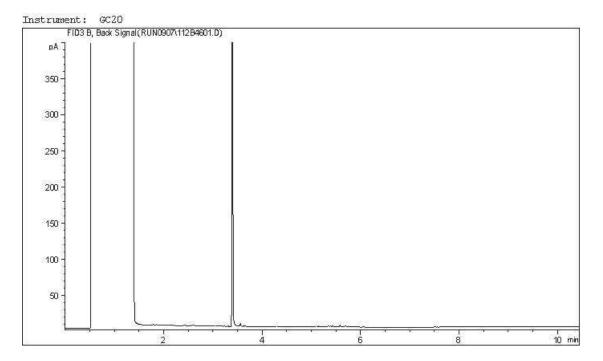
Carbon Range Distribution - Reference Chromatogram



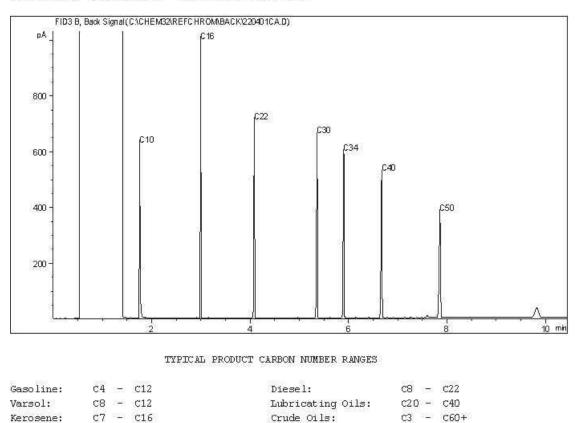


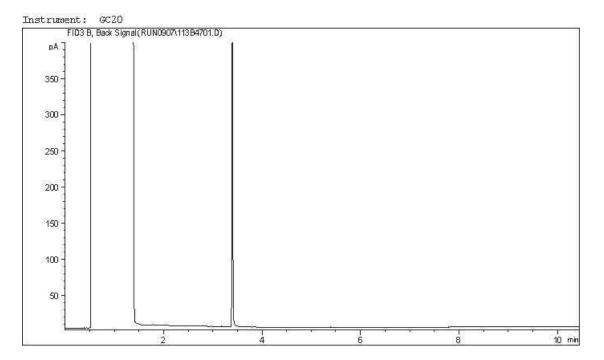
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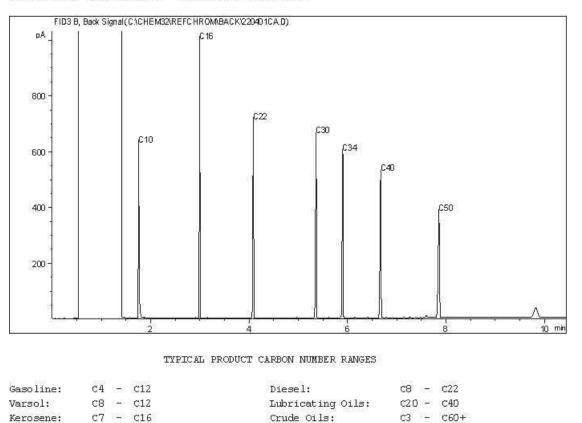


Carbon Range Distribution - Reference Chromatogram

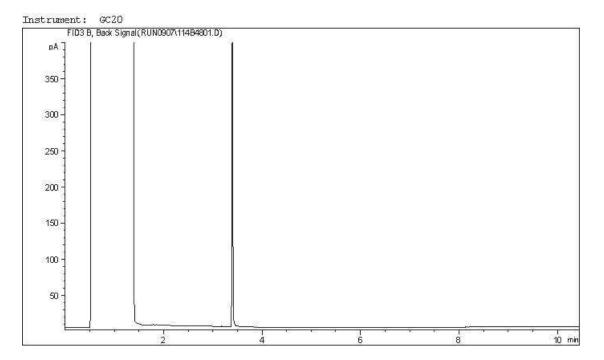




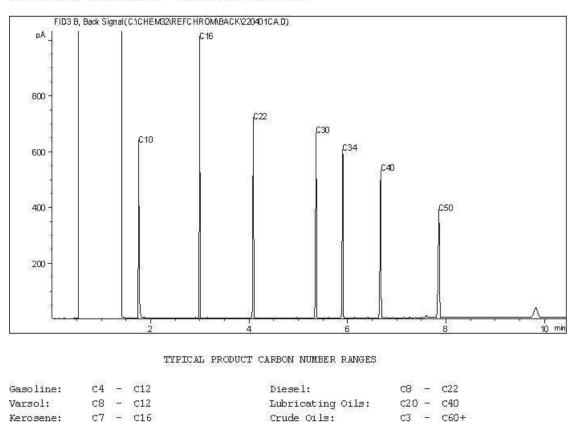
Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



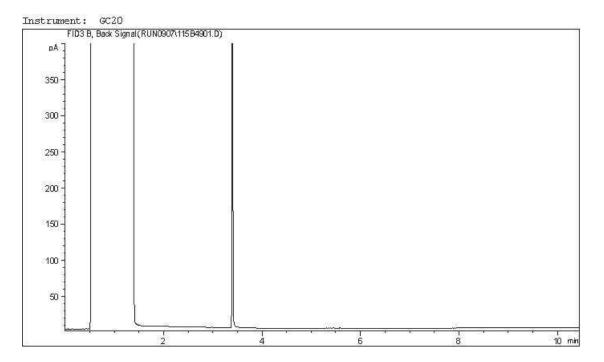
Carbon Range Distribution - Reference Chromatogram



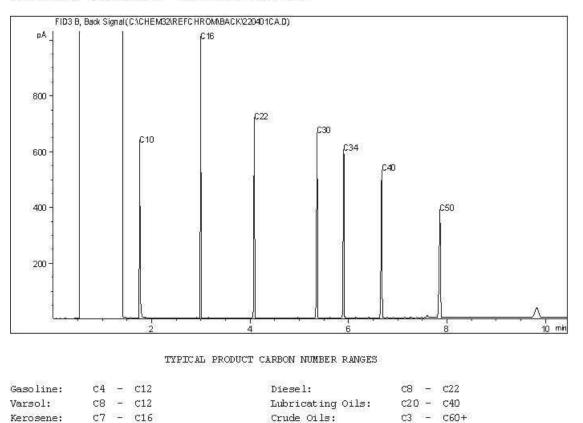
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Kerosene:

Crude Oils:



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Cynny Hagen

From: Sent: To: Cc: Subject: MacLean, Colleen <Colleen_MacLean@golder.com> Monday, September 12, 2022 10:05 AM Cynny Hagen Bellavance, Aurelie RE: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

Be careful with this message: it is coming from an external sender

Do not open attachments nor click on links, unless you are sure that the content is safe

Yes, that sounds good.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

SOLDER

From: Cynny Hagen <cynny.hagen@bureauveritas.com>
Sent: September 12, 2022 10:01 AM
To: MacLean, Colleen <colleen.maclean@wsp.com>
Cc: Bellavance, Aurelie <aurelie.bellavance@wsp.com>
Subject: Re: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

EXTERNAL EMAIL

EXTERNAL EMAIL - We could not verify the authenticity of this message. Please be cautious when clicking on links or opening attachments.

Hi Colleen,

Absolutely I will add the analysis, for job C266077 would you like to have the additional report for both Bio-Toluene and Resemble for F2-F4 and the other jobs can be just add a comment in report. Please confirm.

Regards,

Cynny Hagen

Key Account Specialist Environmental Laboratories & Specialty Services - Western Canada Bureau Veritas Cell: 403-312-9070

www.BVNA.com Shaping a world of trust Emergency/Spills 365/7/24: 1-844-BVSPILL, <u>spills@bureauveritas.com</u> For urgent after-hours inquiries: 403 651 2436

On Mon, 12 Sep at 8:58 AM , MacLean, Colleen <colleen_maclean@golder.com> wrote:

Be careful with this message: it is coming from an external sender Do not open attachments nor click on links, unless you are sure that the content is safe

Hello,

Could you please complete chromatogram analysis and biogenic toluene (select samples) assessment for the samples below?

	BAW749	BH22-56-01	F1 to F4 and toluene
	BAW750	BH22-56-02	
C266077	BAW752	BH22-57-01	F1 to F4
	BAW753	BH22-57-02	F1 to F4 and toluene
	BAW756	BH22-59-01	F1 to F4 and toluene
	BAW742	BH22-63-01	F1 to F4
C266076	BAW738	BH22-64-01	F1 to F4
	BAW746	BH22-67-02	F1 to F4
C266062	BAW656	BH22-68-01	F1 to F4
C266081	BAW784	BH22-70-01	F1 to F4

Please let me know if you have any questions.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

237 – 4 Avenue SW, Suite 3300, Calgary, Alberta T2P 4K3, Canada **wsp.com** | **golder.com**

WSP and Golder have joined together to form the premier environmental consultancy in the industry. Together we are 14,000 strong, Future Ready©, and delivering innovative solutions to our clients around the globe.

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-LAEmHhHzdJzBlTWfa4Hgs7pbKl-BT-P365-c108p227-DayTwo-Disclaimer

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September 14, 2022

GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Chromatogram Interpretation of CAMP FAREWELL; Project 22525414-1000 Bureau Veritas Job No.: C266077

Bureau Veritas was retained by Golder Associates Ltd. to provide hydrocarbon interpretations concerning the likely origin of hydrocarbons quantified within CCME fraction(s) F2, F3 and/or F4.

Analytical Method

Petroleum hydrocarbon analyses at Bureau Veritas are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Chromatogram Interpretation

A comprehensive qualitative assessment of the resultant gas chromatograms in the F2-F4 ranges was performed. The chromatograms were inspected for specific peak profiles that would indicate the possible origin of the hydrocarbons present in the sample. The presence and nature of specific aliphatic compounds (n-alkanes), the presence of characteristic unresolved complex mixtures (UCMs) or "humps" and the relative abundance (ratios) of specific compounds are reviewed as part of the evaluation.

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001



Data Interpretation

Table 1. Qualitative Data Summary – Chromatogram Interpretation

Lab ID	Sample ID	Chromatogram Interpretation
BAW749	BH22-56-01	The COME EQ EA observation ready profile is consistent with
BAW750	BH22-56-02	The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic
BAW752	BH22-57-01	organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile
BAW753	BH22-57-02	of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.
BAW756	BH22-59-01	

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Laboratories

Michael Sheppard, B.Sc., P.Bio., QP Consulting Scientist Environmental Services

t Canture

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Hydrocarbon Resemblance

Characterization by way of visual evaluation of the sample chromatogram may not be conclusive and is only indicative of substances that may be present. The resemblance information must be regarded as approximate and qualitative.

September 19, 2022



GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Biogenic Toluene Assessment of Camp Farewell; Project 22525414-1000 Bureau Veritas Job No.: C266077

Bureau Veritas Environmental & Specialty Services Laboratories (BV Labs) was retained by Golder Associated Ltd. to provide an interpretation concerning the likely origin of toluene quantified within CCME Fraction 1 (nC6-nC10).

Analytical Method

Petroleum hydrocarbon analyses at BV Labs are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Biogenic Toluene

The sample extract is analyzed by volatile organic compound (VOC) analysis in selected ion monitoring (SIM) mode to determine the origin of the quantified toluene. The presence of specific marker compounds, both biogenic and petrogenic, along with a series of associated parameters are reviewed as part of this evaluation. Diagnostic parameters of primary interest and the ranges typically associated with biogenic toluene samples are listed below²:

- Moisture: typically ≥70%
- Absence of an Unresolved Complex Mixture (UCM) within CCME Fractions F2 or F3.
- Presence of a "Biogenic Cluster" within CCME Fraction 3 (F3Bc); specifically F3B, nC32-nC34
- Presence of biogenic monoterpene compound(s)³
- Toluene ratio (T_{ratio}): Ratio between Toluene and sum of all BTEX compounds; typically >0.7
- Cymene ratio (Cratio): Ratio between p-Cymene and the sum of all three isomers; typically >0.8
- Additional diagnostic parameters may be included in the assessment if deemed beneficial (examples include: Carbon Preference Index (CPI), isoprenoid ratios, BIC, etc.)

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001

² Bureau Veritas Laboratories Canada: threshold values derived internally (assessment of long-term data set)

³ Target compounds: α/β -Pinene, Camphene, (+)-3-Carene, α-Terpinene, Limonene, o/m/p-Cymene, γ-Terpinene and α-Terpinolene (list may be amended from time-to-time without notice)



Data Interpretation

Lash ID	Community ID	Diagnostic Parameters ⁴						Conclusion⁵
Lab ID	Sample ID	Moist	UCM	F3Bc	Mono	Tratio	Cratio	Conclusion
BAW749	BH22-56-01	м	No	Yes	No	1.0	NC	Inconclusive (neither)
BAW750	BH22-56-02	Н	No	Yes	No	1.0	NC	Inconclusive (neither)
BAW753	BH22-57-02	н	No	Yes	Yes	1.0	NC	Biogenic Toluene
BAW756	BH22-59-01	м	No	Yes	Yes	1.0	1.0	Biogenic Toluene

Table 1. Data Summary - Biogenic Toluene Evaluation

NC: Unable to Calculate

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Environmental & Specialty Services Laboratories

Michael Sheppara, B.SC., P.Bio, QP Consulting Scientist Environmental Services

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Biogenic Toluene

A detailed assessment of Selective Ion Monitoring (SIM) GC-MS, and associated project data was completed to provide further information relating to the biogenic and/or petrogenic origin of compounds or fractions quantified as part of the CCME Tier I protocol. All statements must be regarded as approximate and qualitative.

⁴ Diagnostic Parameters

Moist: Moisture; H (≥70%), M (<70 & ≥20%), L (<20%) UCM: Presence/Position of Unresolved Complex Mixture F3Bc: Presence of a biogenic cluster within F3B Mono: Biogenic monoterpenes (excluding cymenes) T_{ratio} : Toluene Ratio (T/ Σ BTEX) C_{ratio} : Cymene Ratio (p-Cymene/ Σ Cymene isomers)

⁵ Conclusions

Biogenic Toluene: Quantified toluene likely of biogenic origin Petrogenic Toluene: Quantified toluene likely of petrogenic origin Inconclusive (both): Presence of both biogenic and petrogenic diagnostic parameters (CSIA recommended) Inconclusive (neither): Insufficient evidence to support Biogenic or Petrogenic origin (CSIA recommended)



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Client:	Cynny H Bureau V 2021 – 4		E		Phone:	4037352273
	Calgary, Canada	AB T2E 6P2	2		Fax:	
Identifier:	106TK		Date Rec:	11/28/2022	Re	port Date: 01/10/2023
Client Proj	ect #:	22525414-1	100-1104	Client Project	Name:	22525414-100, Camp Farewell, NT
Purchase (Order #:	C266077				
Test result	s provide	ed for:	CSIA			

Reviewed By:

fill the

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Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932 Tel. (865) 573-8188 Fax. (865) 573-8133

()					
Client:	Bureau Veritas			MI Project Number:	106TK
Project:	22525414-100, Camp	o Farewell, NT	Date Received:	11/28/2022	
Sample Info	ormation				
Client Sar	mple ID:	BAW749 (BH22-56	BAW750 -01) (BH22-56-07)	
Sample D	pate:	08/24/20	22 08/24/2022		
Analyst/Re	eviewer:	SB/MV	V SB/MW		
Carbon		Units			
¹³ C/ ¹² C Toluene (%	_w) δ ¹³ C	C, VPDB (‰) NA	-28.5		

CSIA

Legend:

NA= Not Analyzed NS=Not Sampled J= Estimated concentration below PQL but above LQL ND= Not Detected

Quality Assurance/Quality Control Data

Samples Received	11/23/2022					
_			Arrival	Positive Control		
Component	Date Prepared	Date Analyzed	Temperature	(‰ Std. Dev.)*	Blank	
¹³ C/ ¹² C Toluene (‰)	11/23/2022	01/09/2023	2.3 °C	0.5	Pass	

* $\overline{0}^{13}_{C}$ positive control values are within +- 0.5‰ of true value.



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

 Identifier:
 106TK
 Date Rec:
 11/28/2022
 Report Date:
 01/10/2023

 Client Project #:
 22525414-1100-1104
 Client Project Name:
 22525414-100, Camp Farewell, NT

 Purchase Order #:
 C266077

 Comments:
 An in-house screening method was used to estimate VOC concentrations. Compounds expected to be below the CSIA limit of detection after required dilutions were not analyzed (NA).



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Client:	Cynny H Bureau V 2021 – 4		E		Phone:	4037352273
	Calgary, Canada	AB T2E 6P2	2		Fax:	
Identifier:	105TK		Date Rec:	11/23/2022	Re	port Date: 01/10/2023
Client Proj	ect #:	22525414-1	100-1104	Client Project	Name:	22525414-100, Camp Farewell, NT
Purchase (Order #:	C262029				
Test result	s provide	ed for:	CSIA			

Reviewed By:

fill the

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Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

	arch Dr., Knoxville, T ′3-8188 Fax. (865) 57					CSIA
Client: Project:	Bureau Veritas 22525414-100, Ca	amp Farewell, I	NT	MI Project Number: Date Received:	105TK 11/23/2022	
Sample Info	ormation					
Client Sa	mple ID:		AZY178 (BH22-49-02)			
Sample D Analyst/R			09/13/2022 SB/MW			
Carbon ¹³ C/ ¹² C Toluene (%	~~~~~~	Units δ ¹³ C, VPDB (‰)	-29.8			

Legend: NA= Not Analyzed NS=Not Sampled J= Estimated concentration below PQL but above LQL ND= Not Detected

Quality Assurance/Quality Control Data

Samples Received	11/23/2022					
_			Arrival	Positive Control		
Component	Date Prepared	Date Analyzed	Temperature	(‰ Std. Dev.)*	Blank	
¹³ C/ ¹² C Toluene (‰)	11/23/2022	01/09/2023	2.3 °C	0.5	Pass	

* $\overline{0}^{13}_{C}$ positive control values are within +- 0.5‰ of true value.



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Identifier: 105TK	Date Rec:	11/23/2022	Report Date: 01/10/2023
Client Project #: 2	2525414-1100-1104	Client Project Name	: 22525414-100, Camp Farewell, NT
Purchase Order #:	C262029		
Comments:	An in-house screening me	ethod was used to estim	ate VOC concentrations.



January 12, 2023

GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Biogenic Toluene Assessment of Camp Farewell; Project 22525414-1000 Bureau Veritas Job No.: C266077

Bureau Veritas Environmental & Specialty Services Laboratories (BV Labs) was retained by Golder Associated Ltd. to provide an interpretation concerning the likely origin of toluene quantified within CCME Fraction 1 (nC6-nC10).

Analytical Method

Petroleum hydrocarbon analyses at BV Labs are conducted in accordance with the analytical specifications required by the prescriptive and performance-based elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples. Compound Specific Isotope Analyses (CSIA) are conducted by Microbial Insights Inc. utilizing Isotope Ratio Mass Spectroscopy (IRMS).

Biogenic Toluene

The biogenic toluene evaluation involved the analysis of two extracts. A methanol extract was analyzed by GC/MS in selected ion monitoring (SIM) mode for specific diagnostic volatile organic compounds (VOCs). A second sample aliquot extracted in organic-free deionized water was submitted for CSIA. The CSIA was selected to provide an additional line of evidence concerning which of two origins the sample's toluene is deemed most likely (biogenic or petrogenic).

The diagnostic parameters of primary interest and the ranges typically associated with biogenic toluene samples listed below²:

- Moisture: typically ≥70%
- Absence of an Unresolved Complex Mixture (UCM) within CCME Fractions F2 or F3.
- Presence of a "Biogenic Cluster" within CCME Fraction 3 (F3Bc); specifically F3B, nC32-nC34
- Presence of biogenic monoterpene compound(s)³
- Toluene ratio (T_{ratio}): Ratio between Toluene and sum of all BTEX compounds; typically >0.7
- Cymene ratio (Cratio): Ratio between p-Cymene and the sum of all three isomers; typically >0.8
- Additional diagnostic parameters may be included in the assessment if deemed beneficial
 (examples include: Carbon Preference Index (CPI), isoprenoid ratios, BIC, etc.)
- Toluene Compound Specific Isotope Analysis (CSIA): δ13C < -30‰

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001

² Bureau Veritas Laboratories Canada: threshold values derived internally (assessment of long-term data set)

³ Target compounds: α/β-Pinene, Camphene, (+)-3-Carene, α-Terpinene, Limonene, o/m/p-Cymene, γ-Terpinene and α-Terpinolene (list may be amended from time-to-time without notice)



Data Interpretation

Lab ID	Sample ID	Moist	UCM	F3Bc	Mono	T _{ratio}	Cratio	CSIA	Conclusion ⁵
BAW749	BH22-56-01	М	No	Yes	No	1.0	NC	NA	Inconclusive (neither)
BAW750	BH22-56-02	Н	No	Yes	No	1.0	NC	-28.5	Inconclusive (neither)
BAW753	BH22-57-02	Н	No	Yes	Yes	1.0	NC	NA	Biogenic Toluene
BAW756	BH22-59-01	М	No	Yes	Yes	1.0	1.0	NA	Biogenic Toluene

 Table 1. Data Summary – Biogenic Toluene Evaluation

NA: Not Analyzed

NC: Unable to Calculate (absence of Cymene isomers)

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, **Bureau Veritas Environmental & Specialty Services Laboratories**



Michael Sheppard, B.SC., P.Bio, QP **Consulting Scientist Environmental Services**

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager - Western Canada **Environmental Services**

Disclaimer

Biogenic Toluene

A detailed assessment of Selective Ion Monitoring (SIM) GC-MS, and associated project data was completed to provide further information relating to the biogenic and/or petrogenic origin of compounds or fractions quantified as part of the CCME Tier I protocol. All statements must be regarded as approximate and qualitative.

⁴ Diagnostic Parameters

Moist: Moisture; H (≥70%), M (<70 & ≥20%), L (<20%) UCM: Presence/Position of Unresolved Complex Mixture F3Bc: Presence of a biogenic cluster within F3B CSIA: Biogenic Toluene δ13C < -30‰; Petrogenic Toluene δ13C between -29.5‰ and -27.5‰

Mono: Biogenic monoterpenes (excluding cymenes) Tratio: Toluene Ratio (T/ΣBTEX)

Cratio: Cymene Ratio (p-Cymene/SCymene isomers) Reported value sourced from Microbial Insights Inc. report 106TK; dated 2023/01/10

⁵ Conclusions

Biogenic Toluene: Quantified toluene likely of biogenic origin Petrogenic Toluene: Quantified toluene likely of petrogenic origin Inconclusive (both): Presence of both biogenic and petrogenic diagnostic parameters Inconclusive (neither): Insufficient evidence to support Biogenic or Petrogenic origin

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewe	ll, NT			Sampling Date: August 24, 2022
1	,		_	
Golder Project Number: 2	2525414	4-1000	_	Laboratory: Bureau Veritas Calgary
	266077			
Lab Submission Number: <u>C</u>	266077		-	
Was the Cooler Received at the lab				*
Was proper chain of custody of the				
Were sample temperatures acceptable		•		Yes
Were all samples analyzed and extr				Yes
Has lab warranted all tests were in s				Yes
Was sufficient sample provided for				Yes
Has lab warranted all samples were	analyze	d with limi	ted heads	pace present?: Yes
Are All Laboratory QC Within Acc	Yes	Criteria (Y No	res, No, N NA	Comments
Surrogate Recovery	Х			Matrix spike recovery for F3 (23%) and F4 (59%)
Method Blank Concentration	Х			below the acceptance criteria of (60-140%).
Laboratory Duplicate RPD	Х			All remaining laboratory QC results are within
Matrix Spike Recovery		Х		acceptance criteria.
Blank Spike Recovery	Х			
Are All Field QC Samples Within A	Alert Lin	nits (Yes, N	No, Not Aj	oplicable)?
	Yes	No	NA	Comments
Field Blank Concentration			Х	No field QC samples were collected.
Trip Blank Concentration			Х	
Field Duplicate RPD			Х	
Is data considered reliable (Yes/No. If answer is "No" or "Suspect", dese			ationale:	Yes
Data Reviewed by (Print): <u>A</u>	nita Col	lbert	_	Data Reviewed by (Signature): Onits Collect
Date:	Septemb	er 9, 2022	_	



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232207 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266081 Received: 2022/08/30, 12:00

Sample Matrix: Soil # Samples Received: 7

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	7	N/A	2022/09/04	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	7	N/A	2022/09/08		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	5	2022/09/06	2022/09/07	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	1	2022/09/07	2022/09/08	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 3)	1	2022/09/07	2022/09/09	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F4G in soil) (1, 3)	1	2022/09/06	2022/09/08	AB SOP-00036	CCME PHC-CWS m
				AB SOP-00040	
Moisture (1)	7	N/A	2022/09/07	AB SOP-00002	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(3) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003.

Page 1 of 19



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/14 Report #: R3232207 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C266081

Received: 2022/08/30, 12:00

Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW780		BAW781	BAW781		BAW782	BAW783		
Sampling Date		2022/08/26		2022/08/26	2022/08/26		2022/08/26	2022/08/26		
		14:10		15:00	15:00		15:10	15:20		
COC Number		1 of 1		1 of 1	1 of 1		1 of 1	1 of 1		
	UNITS	BH22-69-01	QC Batch	BH22-69-02	BH22-69-02 Lab-Dup	QC Batch	BH22-69-03	BH22-69-04	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	56	A706459	65	73	A707844	12	17	10	A706459
F3 (C16-C34 Hydrocarbons)	mg/kg	130	A706459	140	160	A707844	85	110	50	A706459
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A706459	<50	<50	A707844	<50	<50	50	A706459
Reached Baseline at C50	mg/kg	Yes	A706459	Yes	Yes	A707844	Yes	Yes	N/A	A706459
Physical Properties	•		•		•	•				
Moisture	%	21	A706457	24	N/A	A707859	28	28	0.30	A706457
Volatiles									•	
Xylenes (Total)	mg/kg	<0.045	A701342	<0.045	N/A	A701342	<0.045	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<10	A701342	<10	N/A	A701342	<10	<10	10	A701342
Field Preserved Volatiles										
Benzene	mg/kg	<0.0050	A703344	<0.0050	N/A	A703344	<0.0050	<0.0050	0.0050	A703344
Toluene	mg/kg	<0.050	A703344	<0.050	N/A	A703344	<0.050	<0.050	0.050	A703344
Ethylbenzene	mg/kg	<0.010	A703344	<0.010	N/A	A703344	<0.010	<0.010	0.010	A703344
m & p-Xylene	mg/kg	<0.040	A703344	<0.040	N/A	A703344	<0.040	<0.040	0.040	A703344
o-Xylene	mg/kg	<0.020	A703344	<0.020	N/A	A703344	<0.020	<0.020	0.020	A703344
F1 (C6-C10)	mg/kg	<10	A703344	<10	N/A	A703344	<10	<10	10	A703344
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	96	A703344	98	N/A	A703344	98	99	N/A	A703344
4-Bromofluorobenzene (sur.)	%	104	A703344	106	N/A	A703344	109	112	N/A	A703344
D10-o-Xylene (sur.)	%	90	A703344	103	N/A	A703344	110	108	N/A	A703344
D4-1,2-Dichloroethane (sur.)	%	95	A703344	97	N/A	A703344	96	97	N/A	A703344
O-TERPHENYL (sur.)	%	97	A706459	112	118	A707844	101	102	N/A	A706459
RDL = Reportable Detection Lir Lab-Dup = Laboratory Initiated		te								

N/A = Not Applicable



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BAW784		BAW785		BAW786		
Sampling Date		2022/08/26 15:50		2022/08/26 16:00		2022/08/26 16:10		
COC Number		10.50		10.00 1 of 1		10.10 1 of 1		
					OC Datab			OC Datab
	UNITS	BH22-70-01	RDL	BH22-70-02	QC Batch	BH22-70-03	RDL	QC Batch
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	42	10	13	A706459	53	10	A707876
F3 (C16-C34 Hydrocarbons)	mg/kg	1200	50	84	A706459	61	50	A707876
F4 (C34-C50 Hydrocarbons)	mg/kg	490	50	<50	A706459	<50	50	A707876
Reached Baseline at C50	mg/kg	No	N/A	Yes	A706459	Yes	N/A	A707876
Physical Properties								
Moisture	%	44	0.30	16	A706457	10	0.30	A707859
Volatiles					•		•	
Xylenes (Total)	mg/kg	<0.096	0.096	<0.045	A701342	<0.045	0.045	A701342
F1 (C6-C10) - BTEX	mg/kg	<21	21	<10	A701342	<10	10	A701342
Field Preserved Volatiles					•			
Benzene	mg/kg	<0.0090 (1)	0.0090	<0.0050	A703344	<0.0050	0.0050	A703344
Toluene	mg/kg	0.52 (2)	0.11	<0.050	A703344	<0.050	0.050	A703344
Ethylbenzene	mg/kg	<0.017 (1)	0.017	<0.010	A703344	<0.010	0.010	A703344
m & p-Xylene	mg/kg	<0.086 (2)	0.086	<0.040	A703344	<0.040	0.040	A703344
o-Xylene	mg/kg	<0.043 (2)	0.043	<0.020	A703344	<0.020	0.020	A703344
F1 (C6-C10)	mg/kg	<21 (2)	21	<10	A703344	<10	10	A703344
Surrogate Recovery (%)					•			
1,4-Difluorobenzene (sur.)	%	97	N/A	98	A703344	97	N/A	A703344
4-Bromofluorobenzene (sur.)	%	107	N/A	107	A703344	108	N/A	A703344
D10-o-Xylene (sur.)	%	99	N/A	102	A703344	107	N/A	A703344
D4-1,2-Dichloroethane (sur.)	%	98	N/A	98	A703344	97	N/A	A703344
O-TERPHENYL (sur.)	%	104	N/A	84	A706459	104	N/A	A707876
BDL = Reportable Detection Li			· · · · · ·				ļ	L

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limit reported based on MDL and sample weight used for analysis.

(2) Detection limits raised based on sample weight used for analysis.



PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		BAW784		
Sampling Date		2022/08/26 15:50		
COC Number		1 of 1		
	UNITS	BH22-70-01	RDL	QC Batch
Ext. Pet. Hydrocarbon	UNITS	BH22-70-01	RDL	QC Batch
Ext. Pet. Hydrocarbon F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	1800	RDL 500	QC Batch



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.0°C
Package 2	3.7°C
Package 3	8.7°C
Package 4	3.3°C
Package 5	4.7°C
Package 6	4.0°C
Package 7	4.7°C

Version #2: Additional chromatogram reviewed has been addon sample BAW784 (BH22-70-01) as per request from client 20220912

HYDROCARBON RESEMBLANCE

The reported hydrocarbon resemblance was obtained by visual comparison of the sample chromatogram with a library of reference product chromatograms. Since variables such as the degree and type of weathering and the presence of non-petrogenic hydrocarbons cannot be duplicated in reference spectra, the resemblance information must be regarded as approximate and qualitative and as such, Bureau Veritas Laboratories can assume no liability for any conclusions drawn from these data.

Sample BAW784 [BH22-70-01] : The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A703344	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/09/04		84	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		118	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		142 (1)	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		113	%	50 - 140
			Benzene	2022/09/04		123	%	50 - 140
			Toluene	2022/09/04		122	%	50 - 140
			Ethylbenzene	2022/09/04		122	%	50 - 140
			m & p-Xylene	2022/09/04		130	%	50 - 140
			o-Xylene	2022/09/04		130	%	50 - 140
			F1 (C6-C10)	2022/09/04		90	%	60 - 140
A703344	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/09/04		85	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		117	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		124	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		113	%	50 - 140
			Benzene	2022/09/04		125	%	60 - 130
			Toluene	2022/09/04		122	%	60 - 130
			Ethylbenzene	2022/09/04		122	%	60 - 130
			m & p-Xylene	2022/09/04		129	%	60 - 130
			o-Xylene	2022/09/04		130	%	60 - 130
			F1 (C6-C10)	2022/09/04		94	%	60 - 140
A703344	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/04		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/04		112	%	50 - 140
			D10-o-Xylene (sur.)	2022/09/04		107	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/04		110	%	50 - 140
			Benzene	2022/09/04	<0.0050		mg/kg	
			Toluene	2022/09/04	<0.050		mg/kg	
			Ethylbenzene	2022/09/04	<0.010		mg/kg	
			m & p-Xylene	2022/09/04	<0.040		mg/kg	
			o-Xylene	2022/09/04	<0.020		mg/kg	
			F1 (C6-C10)	2022/09/04	<10		mg/kg	
A703344	WPK	RPD	Benzene	2022/09/04	NC		%	50
			Toluene	2022/09/04	NC		%	50
			Ethylbenzene	2022/09/04	NC		%	50
			m & p-Xylene	2022/09/04	NC		%	50
			o-Xylene	2022/09/04	NC		%	50
			F1 (C6-C10)	2022/09/04	NC		%	30
A706457	WIF	Method Blank	Moisture	2022/09/07	<0.30		%	
A706457	WLE		Moisture	2022/09/07	3.3		%	20
A706459	CAU	Matrix Spike	O-TERPHENYL (sur.)	2022/09/07	5.5	92	%	60 - 140
/// 00 135	0,10	matrix opine	F2 (C10-C16 Hydrocarbons)	2022/09/07		81	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/07		89	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/07		86	%	60 - 140
A706459	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/09/07		95	%	60 - 140 60 - 140
A700433	CAU	Spikeu blatik	F2 (C10-C16 Hydrocarbons)	2022/09/07		84	%	60 - 140 60 - 140
			F3 (C16-C34 Hydrocarbons)					
				2022/09/07 2022/09/07		92 90	%	60 - 140 60 - 140
1706450	CALL	Mothod Plank	F4 (C34-C50 Hydrocarbons)				%	
A706459	CAU	Method Blank	O-TERPHENYL (sur.)	2022/09/07	-10	108	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/07	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/07	<50		mg/kg	
		222	F4 (C34-C50 Hydrocarbons)	2022/09/07	<50		mg/kg	
A706459	CAU	RPD	F2 (C10-C16 Hydrocarbons)	2022/09/07	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/07	NC		%	40



04/06

GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Location: CAMP FAREWELL Your P.O. #: 22525414-1100-1104 Sampler Initials: JD

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F4 (C34-C50 Hydrocarbons)	2022/09/07	NC		%	40
A707844	GG3	Matrix Spike [BAW781-01]	O-TERPHENYL (sur.)	2022/09/08		121	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		111	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		108	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		106	%	60 - 140
4707844	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/09/08		125	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		120	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		115	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		110	%	60 - 140
4707844	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/08		131	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/08	<50		mg/kg	
4707844	GG3	RPD [BAW781-01]	F2 (C10-C16 Hydrocarbons)	2022/09/08	11		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/08	13		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/08	NC		%	40
A707859	ETS	Method Blank	Moisture	2022/09/07	<0.30		%	
A707859	ETS	RPD	Moisture	2022/09/07	0.65		%	20
4707876	CAU	Matrix Spike	O-TERPHENYL (sur.)	2022/09/08		87	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		86	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		85	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		84	%	60 - 140
A707876	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/09/08		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08		93	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/09/08		94	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/09/08		90	%	60 - 140
A707876	CAU	Method Blank	O-TERPHENYL (sur.)	2022/09/08		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/09/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/09/08	<50		mg/kg	
A707876	CAU	RPD	F2 (C10-C16 Hydrocarbons)	2022/09/08	5.5		%	40
			F3 (C16-C34 Hydrocarbons)	2022/09/08	3.1		%	40
			F4 (C34-C50 Hydrocarbons)	2022/09/08	NC		%	40
A708702	JB9	Spiked Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/09/08		105	%	60 - 140
A708702	JB9	Method Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/09/08	<500		mg/kg	

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 (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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Elizabeth Charko

Elizabeth Chacko, Senior Analyst, Organics

-1-

Gita Pokhrel, Laboratory Supervisor

Junchi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

Mermicafelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas 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.

COR FCD-00265 / 4 Page ____ of ____

AN

2

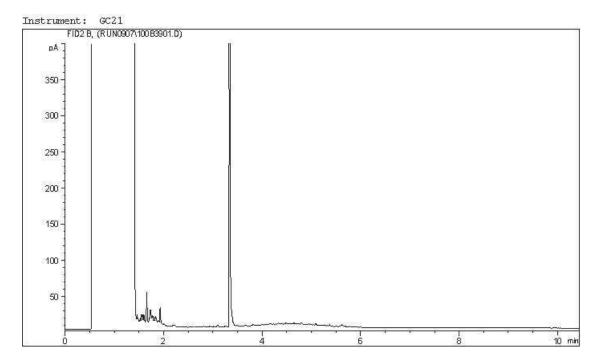
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ADDITIONAL COOLER TEMPERATURE RECORD

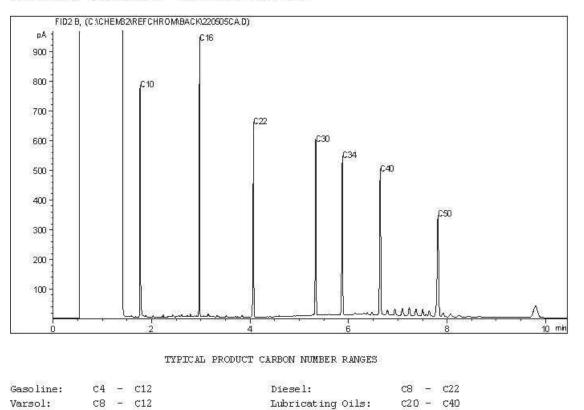
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Page 1 of			A B LICE ONLY - DLACE STICKED LIFE		1XDAD/	1000	Rush Confirmation #:			19 20 21 22 Reputar furnaround Time (TAT)	E to 7 Day	Rush Turnaround			NINE	005 CONTR 005 CONTR 10010-000	3 010.000	d. shell le	1 .	5	3		3					•	NT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH	No Temperature reading by:		me 1 2 3 me	CIIIIII		X.
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Edmonton, AB: 9331-4 Winnipeg, MB: D-675 E	ires report)	er Associates Company:			Postal Citure	Code:	Phone:	nt Payable Email:	Coples:	Regulatory Criteria			🗌 Drinking Water - Alberta	SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVER		<u> </u>	22						4						, WORK SUBMITTED ON THIS CHAIN CARE A		* 4C+	2 3 Date	72 03		
(() www.BVNA.com	invoice Information Invoice to (requires report)	Clien			iss: Calaani	Calgary Provi	Phone:	Email: Canada Account Payable	Coples:		TAT1 CCME Dr		Saskatchewan	SAMPLES MUST BE KEPT COOL (~		Sample Identification	1 BUZZ-69-01	20-19-22/18 2	= BU22-69-03	* B122-69-04	5 BU22-70-01	· Bil 22-70-02	BN/22-70-03						-UNLESS OTHERWISE AGREED TO IN WHITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY - AND AND ADLE FC	LAB USE ONLY Yes No	Seal present Seal Intact	Cooling media present	HUNT A Martine Print		

Page 11 of 19



Carbon Range Distribution - Reference Chromatogram



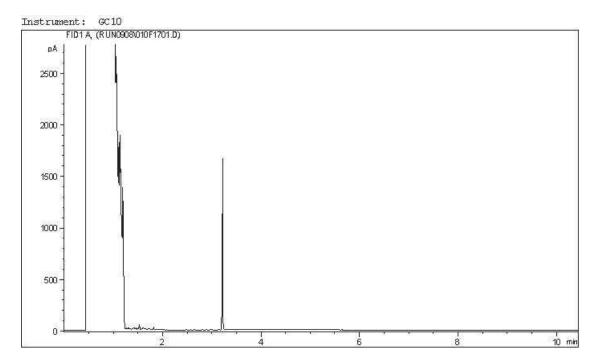
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

c7 - c16

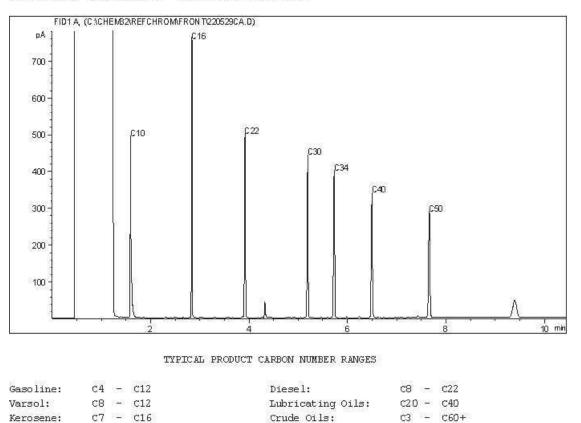
Kerosene:

Crude Oils:

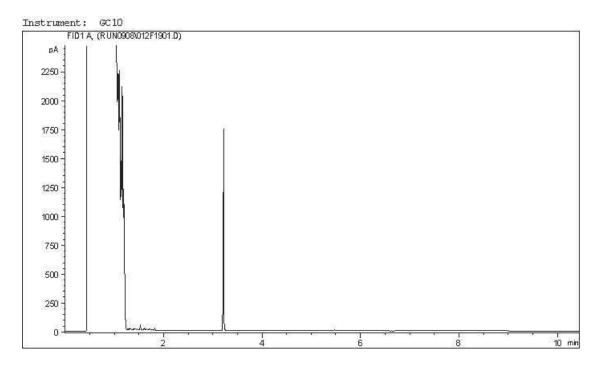
C3 - C60+



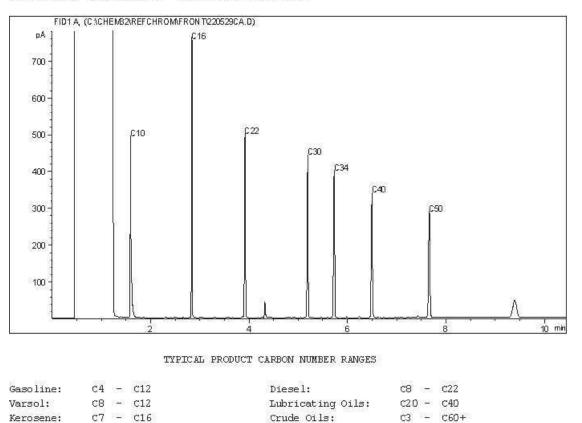
Carbon Range Distribution - Reference Chromatogram



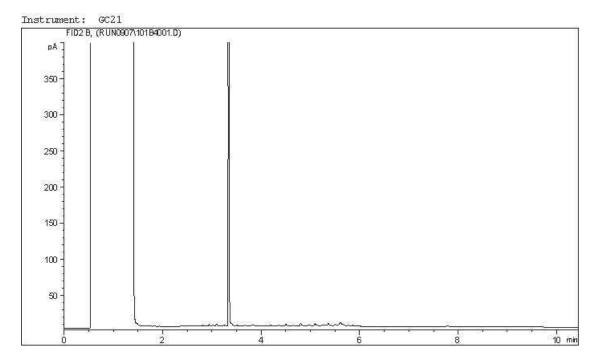
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



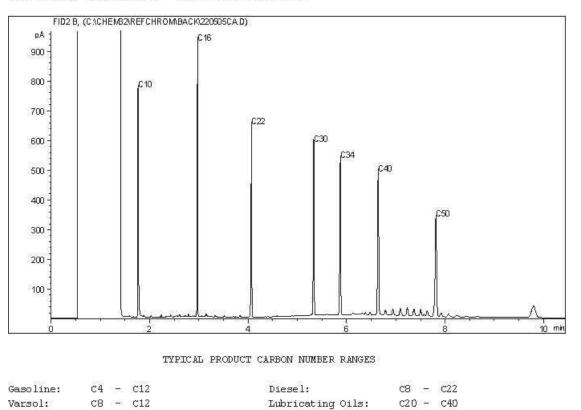
Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



Carbon Range Distribution - Reference Chromatogram



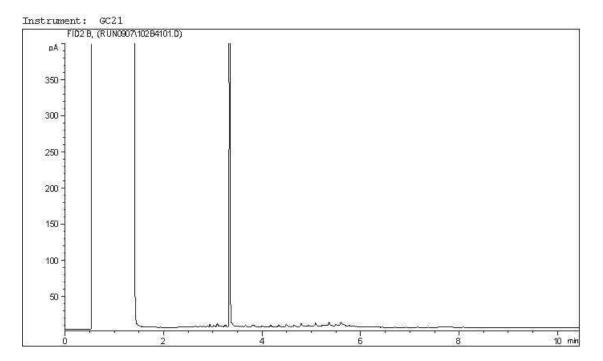
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c7 - c16

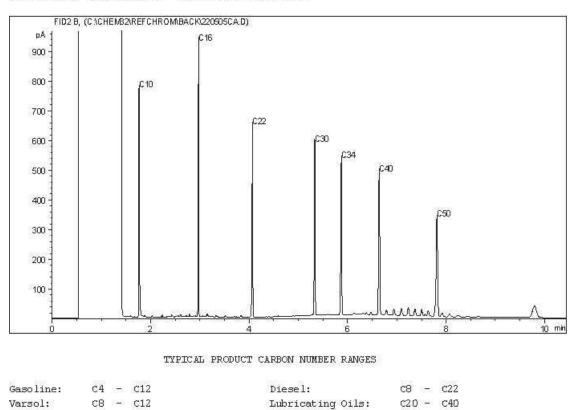
Kerosene:

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C3 - C60+



Carbon Range Distribution - Reference Chromatogram



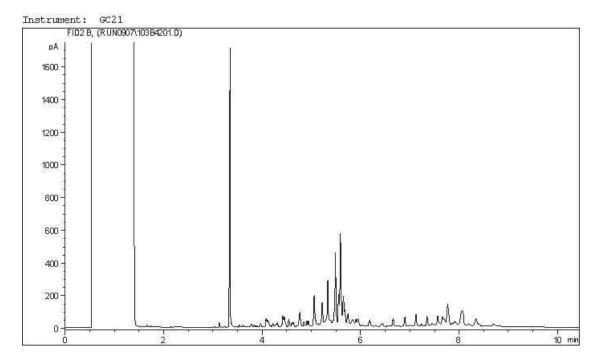
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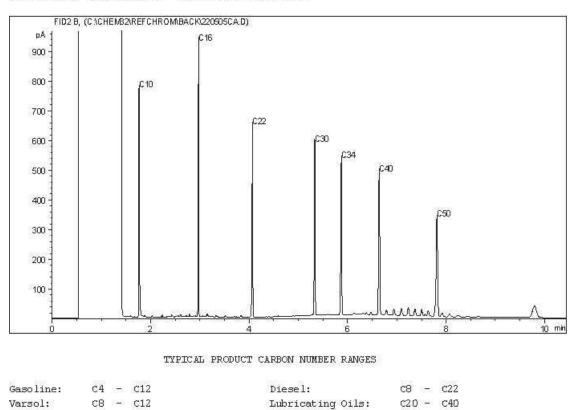
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C3 - C60+



Carbon Range Distribution - Reference Chromatogram



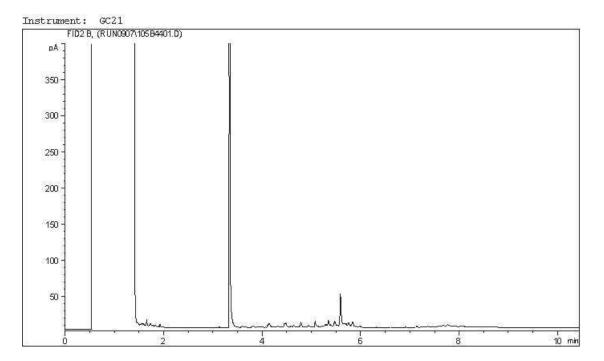
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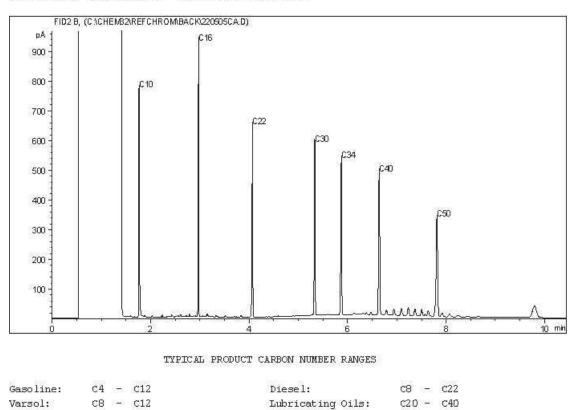
Kerosene:

Crude Oils:

C3 - C60+



Carbon Range Distribution - Reference Chromatogram



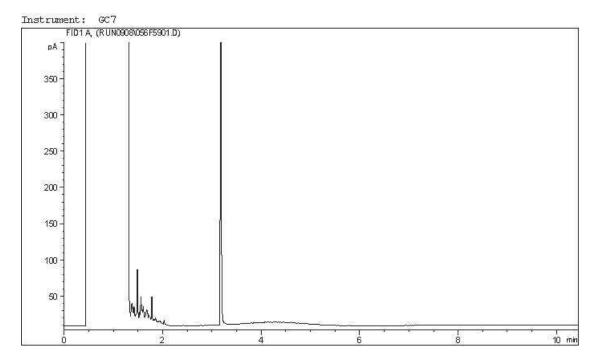
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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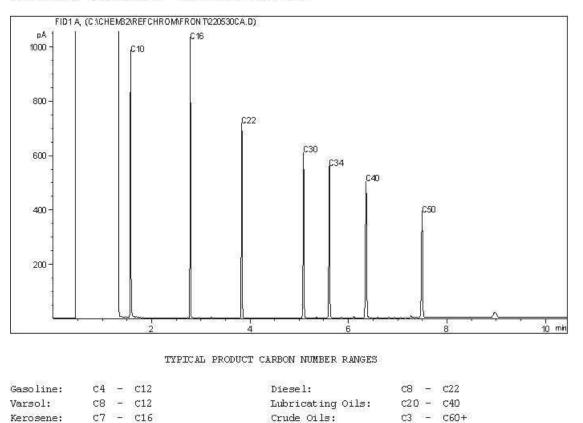
Kerosene:

Crude Oils:

C3 - C60+



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Cynny Hagen

From: Sent: To: Cc: Subject: MacLean, Colleen <Colleen_MacLean@golder.com> Monday, September 12, 2022 10:05 AM Cynny Hagen Bellavance, Aurelie RE: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

Be careful with this message: it is coming from an external sender

Do not open attachments nor click on links, unless you are sure that the content is safe

Yes, that sounds good.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

SOLDER

From: Cynny Hagen <cynny.hagen@bureauveritas.com>
Sent: September 12, 2022 10:01 AM
To: MacLean, Colleen <colleen.maclean@wsp.com>
Cc: Bellavance, Aurelie <aurelie.bellavance@wsp.com>
Subject: Re: Additional Analysis request - Camp Farewell -Prj: 22525414-1000, PO 22525414-1100-1104

EXTERNAL EMAIL

EXTERNAL EMAIL - We could not verify the authenticity of this message. Please be cautious when clicking on links or opening attachments.

Hi Colleen,

Absolutely I will add the analysis, for job C266077 would you like to have the additional report for both Bio-Toluene and Resemble for F2-F4 and the other jobs can be just add a comment in report. Please confirm.

Regards,

Cynny Hagen

Key Account Specialist Environmental Laboratories & Specialty Services - Western Canada Bureau Veritas Cell: 403-312-9070

www.BVNA.com Shaping a world of trust Emergency/Spills 365/7/24: 1-844-BVSPILL, <u>spills@bureauveritas.com</u> For urgent after-hours inquiries: 403 651 2436

On Mon, 12 Sep at 8:58 AM , MacLean, Colleen <colleen_maclean@golder.com> wrote:

Be careful with this message: it is coming from an external sender Do not open attachments nor click on links, unless you are sure that the content is safe

Hello,

Could you please complete chromatogram analysis and biogenic toluene (select samples) assessment for the samples below?

	BAW749	BH22-56-01	F1 to F4 and toluene				
	BAW750	BH22-56-02					
C266077	BAW752	BH22-57-01	F1 to F4				
	BAW753	BH22-57-02	F1 to F4 and toluene				
	BAW756	BH22-59-01	F1 to F4 and toluene				
	BAW742	BH22-63-01	F1 to F4				
C266076	BAW738	BH22-64-01	F1 to F4				
	BAW746	BH22-67-02	F1 to F4				
C266062	BAW656	BH22-68-01	F1 to F4				
C266081	BAW784	BH22-70-01	F1 to F4				

Please let me know if you have any questions.

Thanks!

Colleen MacLean, *She/her* Environmental Technologist, B.A., Dipl. EVT.

T: +1 403 299 5600 D: +1 403 299 5667

237 – 4 Avenue SW, Suite 3300, Calgary, Alberta T2P 4K3, Canada **wsp.com** | **golder.com**

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-LAEmHhHzdJzBlTWfa4Hgs7pbKl-BT-P365-c108p227-DayTwo-Disclaimer

This message contains confidential information. To know more, please click on the following link: https://disclaimer.bureauveritas.com

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Camp Farewe	II. NT		Sampling Date:	August 26, 2022				
1	,		1 8	6				
Golder Project Number: 2	2525414-1000		Laboratory:	Bureau Veritas Edmonton				
Lab Submission Number: C	266081							
Was the Cooler Received at the lab			•	Yes				
Was proper chain of custody of the	-		pt?	Yes				
Were sample temperatures acceptal	•			Yes				
Were all samples analyzed and extr				Yes				
Has lab warranted all tests were in s	statistical control	l in CoA?:		Yes				
Was sufficient sample provided for	the requested ar	nalysis?		Yes				
Has lab warranted all samples were	analyzed with li	imited heads	pace present?:	Yes				
Are All Laboratory QC Within Acc Surrogate Recovery Method Blank Concentration Laboratory Duplicate RPD	Yes No X X X X X X	NA						
Matrix Spike Recovery	X		acceptance criter	•				
Blank Spike Recovery	Х		1					
Are All Field QC Samples Within A	Alert Limits (Yes		pplicable)?					
_	Yes No	NA	-	Comments				
Field Blank Concentration		Х	No field QC sam	ples were collected.				
Trip Blank Concentration		Х						
Field Duplicate RPD		Х						
Is data considered reliable (Yes/No If answer is "No" or "Suspect", des		e rationale:	Yes	_				
Data Reviewed by (Print): <u>A</u>	nita Colbert		Data Reviewed by	(Signature): Units Callent				
Date:	September 9, 20	22						

APPENDIX F

Biogenic Petroleum Hydrocarbon Assessment

Evaluation for Biogenic Organic Compound Contributions

Petroleum hydrocarbon (PHC) fractions F2 to F4 and toluene data from the 2022 soil sampling event at the Site were reviewed for the presence of natural biogenic hydrocarbons. Chromatogram interpretations and biogenic toluene assessments were completed and reviewed to determine the likely origin of PHC and toluene exceedances in soil (biogenic or petrogenic).

Chromatograms

The chromatogram interpretations were requested on select samples which exceeded the Government of Northwest Territories (GNWT) guidelines for PHC fractions. The interpretations were completed by Bureau Veritas Laboratories in accordance with analytical specifications required by the prescriptive and performancebased elements of the Canadian Council of the Ministers of the Environment Tier 1 protocols (CCME 2001) for hydrocarbon determination in soil samples. The interpretation methods and chromatogram results are attached.

Biogenic Toluene Assessment

Biogenic toluene assessment was completed on selected soil samples with toluene concentrations exceeding the GNWT guideline. This assessment was completed in three stages, as necessary (BVL 2022, internet site).

- Stage 1 a review of general analytical results and soil moisture content;
- Stage 2 collection of additional lines of evidence including reviewing chromatograms and analyzing for biogenic biomarkers (monoterpenes); and
- Stage 3 compound-specific isotope analysis assessing the ratio between two stable isotopes of carbons (¹²C and ¹³C).

Summary of Results

The table below summarizes the results of the chromatogram and biogenic toluene analyses completed on select samples. Copies of the lab reports are attached.

BVL Job No.	Sample Name	Depth (mbgs)	Assessment	Result
C259075	BH22-45-01	0.0 to 0.42	F2 to F4 chromatogram	Biogenic
	BH22-46-01	0.0 to 0.35	F2 to F4 chromatogram	Biogenic
	BH22-41-01	0.0 to 0.46	F2 to F4 chromatogram	Biogenic
C259077	BH22-03-01	0.0 to 0.48	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
			Stage 3 toluene	Biogenic
	MW22-02-01	0.0 to 0.45	F2 to F4 chromatogram	Biogenic

BVL Job No.	Sample Name	Depth (mbgs)	Assessment	Result
	BH22-05-02	0.35 to 0.44	F2 to F4 chromatogram	Biogenic
	BH22-06-02	0.1 to 0.48	F2 to F4 chromatogram	Biogenic
	BH22-07-01	0.0 to 0.38	F2 to F4 chromatogram	Biogenic
	BH22-08-01	0.0 to 0.35	F2 to F4 chromatogram	Biogenic
C260013	BH22-19-03	1.0 to 1.3	F2 to F4 chromatogram	Biogenic
C260016	BH22-25-05	1.1 to 1.2	F2 to F4 chromatogram	Petrogenic (middle distillate)
	BH22-29-03	0.8 to 1.2	F2 to F4 chromatogram	Biogenic
C260031	BH22-20-03	1.0 to 1.5	F2 to F4 chromatogram	Mix of biogenic and petrogenic (middle distillate)
C262019	MW22-50-01	0.0 to 0.5	F2 to F4 chromatogram	Biogenic
C262029	MW22-09-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 3 toluene	Biogenic
	MW22-09-02	0.3 to 0.6	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 3 toluene	Inconclusive
	BH22-10-01	0.0 to 0.25	F2 to F4 chromatogram	Biogenic
	BH22-11-01	0.0 to 0.3	F2 to F4 chromatogram	Mix of biogenic and petrogenic (light distillate)
	BH22-48-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
	BH22-49-02	0.5 to 0.6	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
			Stage 3 toluene	Inconclusive
C262079	BH22-12-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
	BH22-12-02	0.3 to 0.8	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
	MW22-13-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
	MW22-13-02	0.3 to 0.8	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive

BVL Job No.	Sample Name	Depth (mbgs)	Assessment	Result
	BH22-14-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
	BH22-14-02	0.3 to 0.6	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
	BH22-14-03	0.6 to 0.9	F2 to F4 chromatogram	Biogenic
	BH22-15-01	0.0 to 0.4	F2 to F4 chromatogram	Biogenic
C266062	BH22-68-01	0.5 to 1.0	F2 to F4 chromatogram	Biogenic
C266076	BH22-63-01	0.1 to 0.7	F2 to F4 chromatogram	Biogenic
	BH22-64-01	0.0 to 1.2	F2 to F4 chromatogram	Petrogenic (middle distillate)
	BH22-67-02	0.5 to 1.4	F2 to F4 chromatogram	Biogenic
C266077	BH22-56-01	0.0 to 0.3	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
			Stage 3 toluene	Inconclusive
	BH22-56-02	0.3 to 0.5	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Inconclusive
			Stage 2 toluene	Inconclusive
			Stage 3 toluene	Inconclusive
	BH22-57-01	0.0 to 0.5	F2 to F4 chromatogram	Biogenic
	BH22-57-02	1.5 to 1.8	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Biogenic
	BH22-59-01	0.0 to 0.5	F2 to F4 chromatogram	Biogenic
			Stage 1 toluene	Biogenic
C266081	BH22-70-01	0.0 to 0.5	F2 to F4 chromatogram	Biogenic

Note: mbgs – metres below ground surface

References

Literature

CCME (Canadian Council of the Ministers of the Environment). 2001. Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method. 2001.

Internet Site

BVL (Bureau Veritas Laboratories). 2022. Biogenic Toluene Technical Bulletin. Available at: https://www.bvna.com/insight/biogenic-toluene. Accessed October 2022.



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL, NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/08/19 Report #: R3218837 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C259075 Received: 2022/08/09, 11:45

Sample Matrix: Soil # Samples Received: 8

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	4	2022/08/11	2022/08/11	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
Boron (Hot Water Soluble) (1)	2	2022/08/12	2022/08/12	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	8	N/A	2022/08/11	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	8	N/A	2022/08/11		Auto Calc
Cation/EC Ratio (1)	1	N/A	2022/08/11		Auto Calc
Cation/EC Ratio (1)	5	N/A	2022/08/12		Auto Calc
Chloride (Soluble) (1)	4	2022/08/11	2022/08/11	AB SOP-00033 / AB SOP- 00020	SM 23-4500-Cl-E m
Chloride (Soluble) (1)	2	2022/08/12	2022/08/12	AB SOP-00033 / AB SOP- 00020	SM 23-4500-Cl-E m
Hexavalent Chromium (1, 3)	6	2022/08/11	2022/08/11	AB SOP-00063	SM 23 3500-Cr B m
Conductivity @25C (Soluble) (1)	4	2022/08/11	2022/08/11	AB SOP-00033 / AB SOP- 00004	SM 23 2510 B m
Conductivity @25C (Soluble) (1)	2	2022/08/12	2022/08/12	AB SOP-00033 / AB SOP- 00004	SM 23 2510 B m
CCME Hydrocarbons (F2-F4 in soil) (1, 4)	8	2022/08/10	2022/08/11	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	1	2022/08/11	2022/08/11	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	3	2022/08/11	2022/08/12	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	2	2022/08/12	2022/08/12	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Sum of Cations, Anions (1)	1	N/A	2022/08/11		Auto Calc
Sum of Cations, Anions (1)	5	N/A	2022/08/12		Auto Calc
Moisture (1)	8	N/A	2022/08/11	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (1)	6	N/A	2022/08/11		Auto Calc
PAH in Soil by GC/MS (1)	6	2022/08/10	2022/08/11	AB SOP-00036 / AB SOP- 00003	EPA 3540C/8270E m
pH @25C (1:2 Calcium Chloride Extract) (1)	4	2022/08/11	2022/08/11	AB SOP-00033 / AB SOP- 00006	SM 23 4500 H+B m



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL, NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/08/19 Report #: R3218837 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C259075 Received: 2022/08/09, 11:45

Sample Matrix: Soil # Samples Received: 8

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
pH @25C (1:2 Calcium Chloride Extract) (1)	2	2022/08/12	2022/08/12	AB SOP-00033 / AB SOP- 00006	SM 23 4500 H+B m
Sodium Adsorption Ratio (1)	1	N/A	2022/08/11		Auto Calc
Sodium Adsorption Ratio (1)	5	N/A	2022/08/12		Auto Calc
Soluble lons (1)	4	2022/08/11	2022/08/11	AB SOP-00033 / AB SOP- 00042	EPA 6010d R5 m
Soluble lons (1)	2	2022/08/12	2022/08/12	AB SOP-00033 / AB SOP- 00042	EPA 6010d R5 m
Soluble Paste (1)	4	2022/08/11	2022/08/11	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Paste (1)	2	2022/08/12	2022/08/12	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	6	N/A	2022/08/11		Auto Calc
Theoretical Gypsum Requirement (1, 5)	1	N/A	2022/08/11		Auto Calc
Theoretical Gypsum Requirement (1, 5)	5	N/A	2022/08/12		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL, NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/08/19 Report #: R3218837 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C259075

Received: 2022/08/09, 11:45

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(3) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(4) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(5) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.



Please direct all questions regarding this Certificate of Analysis to your Project Manager. Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com

Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		AZF954	AZF954			AZF955		AZF956		
Sampling Date		2022/08/06	2022/08/06			2022/08/06		2022/08/06		
		14:50	14:50			14:55		16:10		
COC Number		1 of 1	1 of 1			1 of 1		1 of 1		
	UNITS	BH22-42-01	BH22-42-01 Lab-Dup	RDL	QC Batch	BH22-42-02	RDL	BH22-44-01	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<28 (1)	N/A	28	A676506	11	10	28 (1)	23	A676506
F3 (C16-C34 Hydrocarbons)	mg/kg	370 (1)	N/A	140	A676506	140	50	370 (1)	120	A676506
F4 (C34-C50 Hydrocarbons)	mg/kg	<140 (1)	N/A	140	A676506	<50	50	<120 (1)	120	A676506
Reached Baseline at C50	mg/kg	Yes	N/A	N/A	A676506	Yes	N/A	Yes	N/A	A676506
Physical Properties	•									
Moisture	%	64	N/A	0.30	A676508	29	0.30	57	0.30	A676514
Volatiles										
Xylenes (Total)	mg/kg	<0.25	N/A	0.25	A676395	<0.045	0.045	<0.23	0.23	A676395
F1 (C6-C10) - BTEX	mg/kg	<36	N/A	36	A676395	<10	10	<33	33	A676395
Field Preserved Volatiles										
Benzene	mg/kg	<0.028 (2)	<0.028	0.028	A676666	<0.0050	0.0050	<0.026 (2)	0.026	A676666
Toluene	mg/kg	<0.050 (3)	<0.050 (3)	0.050	A676666	<0.050	0.050	<0.050 (3)	0.050	A676666
Ethylbenzene	mg/kg	<0.057 (2)	<0.057	0.057	A676666	<0.010	0.010	<0.052 (2)	0.052	A676666
m & p-Xylene	mg/kg	<0.23 (4)	<0.23	0.23	A676666	<0.040	0.040	<0.21 (2)	0.21	A676666
o-Xylene	mg/kg	<0.11 (2)	<0.11	0.11	A676666	<0.020	0.020	<0.10 (2)	0.10	A676666
F1 (C6-C10)	mg/kg	<36 (3)	<36 (3)	36	A676666	<10	10	<33 (3)	33	A676666
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	97	95	N/A	A676666	122	N/A	96	N/A	A676666
4-Bromofluorobenzene (sur.)	%	90	81	N/A	A676666	90	N/A	86	N/A	A676666
D10-o-Xylene (sur.)	%	106	96	N/A	A676666	99	N/A	104	N/A	A676666
D4-1,2-Dichloroethane (sur.)	%	95	87	N/A	A676666	115	N/A	87	N/A	A676666
O-TERPHENYL (sur.)	%	101	N/A	N/A	A676506	97	N/A	101	N/A	A676506

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limits raised based on sample weight used for analysis.

(3) Detection limit reported based on MDL and sample weight used for analysis.

(4) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high. Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

-											-	
Bureau Veritas ID		AZF957		AZF958		AZF959		AZF960		AZF961		
Sampling Date		2022/08/06		2022/08/06		2022/08/07		2022/08/06		2022/08/06		
Sampling Date		15:35		16:20		08:40		14:10		14:10		
COC Number		1 of 1		1 of 1		1 of 1		1 of 1		1 of 1		
	UNITS	MW22-43-01	RDL	BH22-45-01	RDL	BH22-46-01	RDL	BH22-41-01	RDL	DUP A	RDL	QC Batch
Ext. Pet. Hydrocarbon												
F2 (C10-C16 Hydrocarbons)	mg/kg	14	10	120 (1)	23	340 (1)	34	<21 (1)	21	29	10	A676506
F3 (C16-C34 Hydrocarbons)	mg/kg	300	50	2100 (1)	110	2900 (1)	170	360 (1)	100	410	50	A676506
F4 (C34-C50 Hydrocarbons)	mg/kg	86	50	650 (1)	110	930 (1)	170	120 (1)	100	93	50	A676506
Reached Baseline at C50	mg/kg	Yes	N/A	Yes	N/A	Yes	N/A	Yes	N/A	Yes	N/A	A676506
Physical Properties												
Moisture	%	34	0.30	56	0.30	71	0.30	52	0.30	47	0.30	A676514
Volatiles	•										-	
Xylenes (Total)	mg/kg	<0.045	0.045	<0.14	0.14	<0.28	0.28	<0.14	0.14	<0.12	0.12	A676395
F1 (C6-C10) - BTEX	mg/kg	<10	10	<24	24	<40	40	<24	24	<24	24	A676395
Field Preserved Volatiles		•								•		
Benzene	mg/kg	<0.0050	0.0050	<0.016 (2)	0.016	<0.032 (2)	0.032	<0.016 (2)	0.016	<0.013 (2)	0.013	A676666
Toluene	mg/kg	<0.050	0.050	<0.050 (3)	0.050	<0.050 (3)	0.050	<0.050 (3)	0.050	<0.050 (3)	0.050	A676666
Ethylbenzene	mg/kg	<0.010	0.010	<0.032 (2)	0.032	<0.064 (2)	0.064	<0.031 (2)	0.031	<0.026 (2)	0.026	A676666
m & p-Xylene	mg/kg	<0.040	0.040	<0.13 (2)	0.13	<0.26 (2)	0.26	<0.13 (2)	0.13	<0.11 (2)	0.11	A676666
o-Xylene	mg/kg	<0.020	0.020	<0.065 (2)	0.065	<0.13 (2)	0.13	<0.063 (2)	0.063	<0.052 (2)	0.052	A676666
F1 (C6-C10)	mg/kg	<10	10	<24 (3)	24	<40 (3)	40	<24 (3)	24	<24 (3)	24	A676666
Surrogate Recovery (%)	•										-	
1,4-Difluorobenzene (sur.)	%	116	N/A	135	N/A	103	N/A	93	N/A	124	N/A	A676666
4-Bromofluorobenzene (sur.)	%	86	N/A	91	N/A	91	N/A	87	N/A	91	N/A	A676666
D10-o-Xylene (sur.)	%	107	N/A	107	N/A	114	N/A	104	N/A	111	N/A	A676666
D4-1,2-Dichloroethane (sur.)	%	109	N/A	124	N/A	101	N/A	89	N/A	116	N/A	A676666
O-TERPHENYL (sur.)	%	98	N/A	107	N/A	101	N/A	98	N/A	103	N/A	A676506
PDI - Poportable Detection Liv	mit	•	•			•		•		•	•	

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limits raised based on sample weight used for analysis.

(3) Detection limit reported based on MDL and sample weight used for analysis.



SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		AZF954		AZF955		AZF956			AZF957		
Sampling Date		2022/08/06 14:50		2022/08/06 14:55		2022/08/06 16:10			2022/08/06 15:35		
COC Number		1 of 1		1 of 1		1 of 1			1 of 1		
	UNITS	BH22-42-01	RDL	BH22-42-02	RDL	BH22-44-01	RDL	QC Batch	MW22-43-01	RDL	QC Batch
Calculated Parameters											
Anion Sum	meq/L	0.70	N/A	0.80	N/A	0.54	N/A	A676224	0.92	N/A	A676224
Cation Sum	meq/L	3.8	N/A	4.8	N/A	2.3	N/A	A676224	4.6	N/A	A676224
Cation/EC Ratio	N/A	16	0.10	18	0.10	13	0.10	A676346	16	0.10	A676346
Calculated Calcium (Ca)	mg/kg	29	1.2	39	1.2	39	2.9	A676399	35	1.2	A676399
Calculated Magnesium (Mg)	mg/kg	11	0.81	11	0.82	13	1.9	A676399	13	0.82	A676399
Calculated Sodium (Na)	mg/kg	17	2.0	23	2.0	32	4.8	A676399	21	2.0	A676399
Calculated Potassium (K)	mg/kg	2.7	1.1	1.1	1.1	4.3	2.5	A676399	1.7	1.1	A676399
Calculated Chloride (Cl)	mg/kg	12	8.1	12	8.2	21	19	A676399	11	8.2	A676399
Calculated Sulphate (SO4)	mg/kg	11	4.1	15	4.1	22	9.7	A676399	21	4.1	A676399
Soluble Parameters	•		,						•		
Soluble Chloride (Cl)	mg/L	14	10	15	10	11	10	A677413	13	10	A677512
Soluble Conductivity	dS/m	0.23	0.020	0.27	0.020	0.18	0.020	A677437	0.29	0.020	A677416
Soluble (CaCl2) pH	рН	6.71 (1)	N/A	6.98 (1)	N/A	6.43 (1)	N/A	A676771	6.77	N/A	A676662
Sodium Adsorption Ratio	N/A	0.76	0.10	0.93	0.10	0.80	0.10	A676396	0.86	0.10	A676396
Soluble Calcium (Ca)	mg/L	35	1.5	48	1.5	20	1.5	A677260	43	1.5	A677396
Soluble Magnesium (Mg)	mg/L	13	1.0	14	1.0	7.0	1.0	A677260	16	1.0	A677396
Soluble Sodium (Na)	mg/L	21	2.5	28	2.5	16	2.5	A677260	26	2.5	A677396
Soluble Potassium (K)	mg/L	3.4	1.3	1.4	1.3	2.2	1.3	A677260	2.0	1.3	A677396
Saturation %	%	81	N/A	82	N/A	190	N/A	A676768	82	N/A	A676660
Soluble Sulphate (SO4)	mg/L	14	5.0	18	5.0	12	5.0	A677260	26	5.0	A677396
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	<0.20	0.20	<0.20	0.20	A676350	<0.20	0.20	A676350
RDL = Reportable Detection Limit						· · · · · · · · · · · · · · · · · · ·					

N/A = Not Applicable

(1) pH was done on a 10:1 Calcium Chloride to soil ratio due to the matrix of the sample.

SUIL SAL		/1L)			
	AZF958		AZF959		
	2022/08/06		2022/08/07		
	16:20		08:40		
	1 of 1		1 of 1		
UNITS	BH22-45-01	RDL	BH22-46-01	RDL	QC Batch
meq/L	0.25	N/A	0.28	N/A	A676224
meq/L	2.7	N/A	2.9	N/A	A676224
N/A	16	0.10	16	0.10	A676346
mg/kg	37	2.3	72	4.0	A676399
mg/kg	14	1.5	25	2.6	A676399
mg/kg	22	3.8	40	6.6	A676399
mg/kg	3.8	2.0	10	3.4	A676399
mg/kg	<15	15	<26	26	A676399
mg/kg	18	7.6	35	13	A676399
mg/L	<10	10	<10	10	A678876
dS/m	0.17	0.020	0.18	0.020	A678998
рН	6.15	N/A	6.29	N/A	A677998
N/A	0.65	0.10	0.63	0.10	A676396
mg/L	24	1.5	28	1.5	A678849
mg/L	9.0	1.0	9.6	1.0	A678849
mg/L	15	2.5	15	2.5	A678849
mg/L	2.5	1.3	3.9	1.3	A678849
%	150	N/A	260	N/A	A677996
mg/L	12	5.0	13	5.0	A678849
tonnes/ha	<0.20	0.20	<0.20	0.20	A676350
	UNITS UNITS meq/L meq/L N/A mg/kg	AZF958 2022/08/06 16:20 1 of 1 UNITS BH22-45-01 meq/L 0.25 meq/L 2.7 N/A 16 mg/kg 37 mg/kg 14 mg/kg 22 mg/kg 3.8 mg/kg 410 dS/m 0.17 pH 6.15 N/A 0.65 mg/L 24 mg/L 9.0 mg/L 15 mg/L 150 mg/L 150 mg/L 150 mg/L 150 mg/L 12	2022/08/06 16:20 1 of 1 UNITS BH22-45-01 RDL meq/L 0.25 N/A meq/L 2.7 N/A N/A 16 0.10 mg/kg 37 2.3 mg/kg 14 1.5 mg/kg 1.4 1.5 mg/kg 0.17 0.020 pH 6.15 N/A N/A 0.65 0.10 mg/L 24 1.5 mg/L 9.0 1.0 mg/L 15 2.5 mg/L 2.5 1.3 % 150 N/A	AZF958 AZF959 2022/08/06 2022/08/07 16:20 08:40 1 of 1 1 of 1 UNITS BH22-45-01 RDL BH22-46-01 meq/L 0.25 N/A 0.28 meq/L 2.7 N/A 2.9 N/A 16 0.10 16 mg/kg 37 2.3 72 mg/kg 14 1.5 25 mg/kg 14 1.5 25 mg/kg 3.8 2.0 10 mg/kg 3.8 2.0 10 mg/kg 18 7.6 35 mg/L <10	AZF958 AZF959 2022/08/06 2022/08/07 1 of 1 1 of 1 UNITS BH22-45-01 RDL meq/L 0.25 N/A 0.28 Meq/L 2.7 N/A 2.9 N/A 16 0.10 16 0.10 mg/L 2.7 N/A 2.9 N/A N/A 16 0.10 16 0.10 mg/kg 37 2.3 72 4.0 mg/kg 14 1.5 25 2.6 mg/kg 18 2.0 10 3.4 mg/kg 18 2.0 10 3.4 mg/kg 3.8 2.0 10 3.4 mg/kg 18 7.6 35 13 mg/kg 18 7.6 35 13 mg/L <10

SOIL SALINITY 4 (SOIL)



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		AZF954		AZF955		AZF956			AZF957		
Sampling Date		2022/08/06		2022/08/06		2022/08/06			2022/08/06		
		14:50		14:55		16:10			15:35		
COC Number		1 of 1		1 of 1		1 of 1			1 of 1		
	UNITS	BH22-42-01	RDL	BH22-42-02	RDL	BH22-44-01	RDL	QC Batch	MW22-43-01	RDL	QC Batch
Elements											
Soluble (Hot water) Boron (B)	mg/kg	<0.10	0.10	0.28	0.10	<0.40 (1)	0.40	A677176	0.16	0.10	A677176
Hex. Chromium (Cr 6+)	mg/kg	<0.22 (2)	0.22	<0.080	0.080	<0.19 (2)	0.19	A677150	<0.080	0.080	A677150
Total Antimony (Sb)	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	0.50	A677124	<0.50	0.50	A676884
Total Arsenic (As)	mg/kg	4.9	1.0	4.5	1.0	6.9	1.0	A677124	5.8	1.0	A676884
Total Barium (Ba)	mg/kg	100	1.0	250	1.0	210	1.0	A677124	190	1.0	A676884
Total Beryllium (Be)	mg/kg	<0.40	0.40	<0.40	0.40	<0.40	0.40	A677124	<0.40	0.40	A676884
Total Cadmium (Cd)	mg/kg	0.083	0.050	0.17	0.050	0.10	0.050	A677124	0.079	0.050	A676884
Total Chromium (Cr)	mg/kg	5.9	1.0	7.6	1.0	8.9	1.0	A677124	10	1.0	A676884
Total Cobalt (Co)	mg/kg	3.1	0.50	4.3	0.50	2.7	0.50	A677124	3.7	0.50	A676884
Total Copper (Cu)	mg/kg	3.6	1.0	5.8	1.0	5.4	1.0	A677124	5.7	1.0	A676884
Total Lead (Pb)	mg/kg	3.0	0.50	3.7	0.50	3.4	0.50	A677124	5.1	0.50	A676884
Total Mercury (Hg)	mg/kg	<0.050	0.050	<0.050	0.050	0.053	0.050	A677124	<0.050	0.050	A676884
Total Molybdenum (Mo)	mg/kg	0.76	0.40	0.55	0.40	0.88	0.40	A677124	0.65	0.40	A676884
Total Nickel (Ni)	mg/kg	8.4	1.0	12	1.0	10	1.0	A677124	11	1.0	A676884
Total Selenium (Se)	mg/kg	<0.50	0.50	<0.50	0.50	0.55	0.50	A677124	<0.50	0.50	A676884
Total Silver (Ag)	mg/kg	<0.20	0.20	<0.20	0.20	<0.20	0.20	A677124	<0.20	0.20	A676884
Total Thallium (Tl)	mg/kg	<0.10	0.10	<0.10	0.10	<0.10	0.10	A677124	<0.10	0.10	A676884
Total Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	A677124	<1.0	1.0	A676884
Total Uranium (U)	mg/kg	0.30	0.20	0.39	0.20	0.41	0.20	A677124	0.37	0.20	A676884
Total Vanadium (V)	mg/kg	11	1.0	15	1.0	14	1.0	A677124	20	1.0	A676884
Total Zinc (Zn)	mg/kg	29	10	47	10	23	10	A677124	34	10	A676884

RDL = Reportable Detection Limit

(1) Detection limits raised based on sample weight used for analysis.

(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		AZF957			AZF958		AZF959	AZF959		
Sampling Date		2022/08/06			2022/08/06		2022/08/07	2022/08/07		
		15:35			16:20		08:40	08:40		
COC Number		1 of 1			1 of 1		1 of 1	1 of 1		
	UNITS	MW22-43-01 Lab-Dup	RDL	QC Batch	BH22-45-01	RDL	BH22-46-01	BH22-46-01 Lab-Dup	RDL	QC Batch
Elements										
Soluble (Hot water) Boron (B)	mg/kg	N/A	0.10	A677176	1.0 (1)	0.30	1.6 (1)	1.6	0.30	A678625
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	A677150	<0.18 (2)	0.18	<0.27 (2)	N/A	0.27	A677150
Total Antimony (Sb)	mg/kg	N/A	0.50	A676884	<1.0	1.0	<1.0	<1.0	1.0	A678276
Total Arsenic (As)	mg/kg	N/A	1.0	A676884	3.5	2.0	2.6	2.7	2.0	A678276
Total Barium (Ba)	mg/kg	N/A	1.0	A676884	230	2.0	250	260	2.0	A678276
Total Beryllium (Be)	mg/kg	N/A	0.40	A676884	<0.80	0.80	<0.80	<0.80	0.80	A678276
Total Cadmium (Cd)	mg/kg	N/A	0.050	A676884	0.12	0.10	0.18	0.18	0.10	A678276
Total Chromium (Cr)	mg/kg	N/A	1.0	A676884	8.6	2.0	9.0	11	2.0	A678276
Total Cobalt (Co)	mg/kg	N/A	0.50	A676884	3.0	1.0	2.3	2.4	1.0	A678276
Total Copper (Cu)	mg/kg	N/A	1.0	A676884	5.4	2.0	6.2	7.2	2.0	A678276
Total Lead (Pb)	mg/kg	N/A	0.50	A676884	4.0	1.0	3.0	3.1	1.0	A678276
Total Mercury (Hg)	mg/kg	N/A	0.050	A676884	<0.10	0.10	<0.10	<0.10	0.10	A678276
Total Molybdenum (Mo)	mg/kg	N/A	0.40	A676884	<0.80	0.80	0.91	1.0	0.80	A678276
Total Nickel (Ni)	mg/kg	N/A	1.0	A676884	9.7	2.0	9.0	11	2.0	A678276
Total Selenium (Se)	mg/kg	N/A	0.50	A676884	<1.0	1.0	<1.0	<1.0	1.0	A678276
Total Silver (Ag)	mg/kg	N/A	0.20	A676884	<0.40	0.40	<0.40	<0.40	0.40	A678276
Total Thallium (Tl)	mg/kg	N/A	0.10	A676884	<0.20	0.20	<0.20	<0.20	0.20	A678276
Total Tin (Sn)	mg/kg	N/A	1.0	A676884	<2.0	2.0	<2.0	<2.0	2.0	A678276
Total Uranium (U)	mg/kg	N/A	0.20	A676884	<0.40	0.40	<0.40	0.41	0.40	A678276
Total Vanadium (V)	mg/kg	N/A	1.0	A676884	15	2.0	11	12	2.0	A678276
Total Zinc (Zn)	mg/kg	N/A	10	A676884	<20	20	49	52	20	A678276

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised based on sample weight used for analysis.

(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

	-									
Bureau Veritas ID		AZF954		AZF955		AZF956		AZF957		
Sampling Date		2022/08/06 14:50		2022/08/06 14:55		2022/08/06 16:10		2022/08/06 15:35		
COC Number		1 of 1		1 of 1		1 of 1		1 of 1		
	UNITS	BH22-42-01	RDL	BH22-42-02	RDL	BH22-44-01	RDL	MW22-43-01	RDL	QC Batch
Polycyclic Aromatics										
Acenaphthene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
B[a]P TPE Total Potency Equivalents	mg/kg	<0.019	0.019	<0.0071	0.0071	<0.016	0.016	< 0.0071	0.0071	A676126
Acenaphthylene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Acridine	mg/kg	<0.027 (1)	0.027	0.015 (2)	0.010	0.026 (3)	0.023	<0.010	0.010	A673482
Anthracene	mg/kg	<0.011 (1)	0.011	<0.0040	0.0040	<0.0092 (1)	0.0092	<0.0040	0.0040	A673482
Benzo(a)anthracene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(b&j)fluoranthene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(k)fluoranthene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(g,h,i)perylene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(c)phenanthrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(a)pyrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Benzo(e)pyrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Chrysene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Dibenz(a,h)anthracene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Fluoranthene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Fluorene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	0.020 (1)	0.012	0.012	0.0050	A673482
Indeno(1,2,3-cd)pyrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
1-Methylnaphthalene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
2-Methylnaphthalene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Naphthalene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Phenanthrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	0.013 (1)	0.012	<0.0050	0.0050	A673482
Perylene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Pyrene	mg/kg	<0.014 (1)	0.014	<0.0050	0.0050	<0.012 (1)	0.012	<0.0050	0.0050	A673482
Quinoline	mg/kg	<0.027 (1)	0.027	<0.010	0.010	<0.023 (1)	0.023	<0.010	0.010	A673482
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	92	N/A	89	N/A	96	N/A	94	N/A	A673482
RDI - Reportable Detection Limit	•						•	-	•	

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

(3) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high. In addition, detection limits raised due to high moisture content, sample contains => 50% moisture.



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		AZF954		AZF955		AZF956		AZF957		
Sampling Date		2022/08/06 14:50		2022/08/06 14:55		2022/08/06 16:10		2022/08/06 15:35		
COC Number		1 of 1		1 of 1		1 of 1		1 of 1		
	UNITS	BH22-42-01	RDL	BH22-42-02	RDL	BH22-44-01	RDL	MW22-43-01	RDL	QC Batch
D8-ACENAPHTHYLENE (sur.)	%	87	N/A	85	N/A	90	N/A	90	N/A	A673482
D8-NAPHTHALENE (sur.)	%	80	N/A	76	N/A	81	N/A	81	N/A	A673482
TERPHENYL-D14 (sur.)	%	113	N/A	112	N/A	121	N/A	119	N/A	A673482



Bureau Veritas ID		AZF958			AZF959		
Sampling Date		2022/08/06			2022/08/07		
		16:20			08:40		
COC Number		1 of 1			1 of 1		
	UNITS	BH22-45-01	RDL	QC Batch	BH22-46-01	RDL	QC Batch
Polycyclic Aromatics							
Acenaphthene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
B[a]P TPE Total Potency Equivalents	mg/kg	<0.016	0.016	A676126	<0.024	0.024	A676126
Acenaphthylene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Acridine	mg/kg	<0.022 (1)	0.022	A673482	<0.034 (1)	0.034	A674718
Anthracene	mg/kg	<0.0088 (1)	0.0088	A673482	<0.014 (1)	0.014	A674718
Benzo(a)anthracene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Benzo(b&j)fluoranthene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Benzo(k)fluoranthene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Benzo(g,h,i)perylene	mg/kg	0.036 (1)	0.011	A673482	0.031 (1)	0.017	A674718
Benzo(c)phenanthrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Benzo(a)pyrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Benzo(e)pyrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Chrysene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Dibenz(a,h)anthracene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Fluoranthene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Fluorene	mg/kg	0.037 (1)	0.011	A673482	0.086 (1)	0.017	A674718
Indeno(1,2,3-cd)pyrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
1-Methylnaphthalene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
2-Methylnaphthalene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Naphthalene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Phenanthrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Perylene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Pyrene	mg/kg	<0.011 (1)	0.011	A673482	<0.017 (1)	0.017	A674718
Quinoline	mg/kg	<0.022 (1)	0.022	A673482	<0.034 (1)	0.034	A674718
Surrogate Recovery (%)		-					
D10-ANTHRACENE (sur.)	%	94	N/A	A673482	95	N/A	A674718
D8-ACENAPHTHYLENE (sur.)	%	89	N/A	A673482	89	N/A	A674718
D8-NAPHTHALENE (sur.)	%	89	N/A	A673482	86	N/A	A674718
RDL = Reportable Detection Limit							
N/A = Not Applicable							

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		AZF958			AZF959		
Sampling Date		2022/08/06 16:20			2022/08/07 08:40		
COC Number		1 of 1			1 of 1		
	UNITS	BH22-45-01	RDL	QC Batch	BH22-46-01	RDL	QC Batch
TERPHENYL-D14 (sur.)	%	134 (1)	N/A	A673482	136 (1)	N/A	A674718
RDL = Reportable Detection Limit	•						•

N/A = Not Applicable

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt
Package 17.3°C
Version #2: Report reissued to amend client sample ID on AZF957 from BH22-43-01 to MW22-43-01 as per the original Chain of Custody.
Version 3: Report reissued to include Chromatogram analysis on below samples as per client request received 2022/08/18. AZF958/BH22-45-01 AZF959/BH22-46-01
AZF961/DUP A
CCME REGULATED METALS - SOILS (SOIL) Comments
Sample AZF958 [BH22-45-01] Elements by ICPMS - Soils: Detection limits raised due to sample matrix.
Sample AZF959 [BH22-46-01] Elements by ICPMS - Soils: Detection limits raised due to sample matrix.
Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A673482	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2022/08/10		106	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/10		101	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/10		97	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/10		134 (1)	%	50 - 130
			Acenaphthene	2022/08/10		90	%	50 - 130
			Acenaphthylene	2022/08/10		88	%	50 - 130
			Acridine	2022/08/10		66	%	50 - 130
			Anthracene	2022/08/10		91	%	50 - 130
			Benzo(a)anthracene	2022/08/10		108	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/10		105	%	50 - 130
			Benzo(k)fluoranthene	2022/08/10		98	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/10		96	%	50 - 130
			Benzo(c)phenanthrene	2022/08/10		108	%	50 - 130
			Benzo(a)pyrene	2022/08/10		101	%	50 - 130
			Benzo(e)pyrene	2022/08/10		92	%	50 - 130
			Chrysene	2022/08/10		99	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/10		98	%	50 - 130
			Fluoranthene	2022/08/10		99	%	50 - 130
			Fluorene	2022/08/10		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/10		96	%	50 - 130
			1-Methylnaphthalene	2022/08/10		74	%	50 - 130
			2-Methylnaphthalene	2022/08/10		96	%	50 - 130
			Naphthalene	2022/08/10		88	%	50 - 130
		Phenanthrene	2022/08/10		93	%	50 - 130	
		Perylene	2022/08/10		85	%	50 - 130	
			Pyrene	2022/08/10		98	%	50 - 130
			Quinoline	2022/08/10		82	%	50 - 130
A673482	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/10		99	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/10		95	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/10		93	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/10		122	%	50 - 130
			Acenaphthene	2022/08/10		94	%	50 - 130
			Acenaphthylene	2022/08/10		92	%	50 - 130
			Acridine	2022/08/10		71	%	50 - 130
			Anthracene	2022/08/10		92	%	50 - 130
			Benzo(a)anthracene	2022/08/10		111	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/10		109	%	50 - 130
			Benzo(k)fluoranthene	2022/08/10		106	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/10		102	%	50 - 130
			Benzo(c)phenanthrene	2022/08/10		112	%	50 - 130
			Benzo(a)pyrene	2022/08/10		104	%	50 - 130
			Benzo(e)pyrene	2022/08/10		95	%	50 - 130
			Chrysene	2022/08/10		103	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/10		101	%	50 - 130
			Fluoranthene	2022/08/10		102	%	50 - 130
			Fluorene	2022/08/10		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/10		96	%	50 - 130
			1-Methylnaphthalene	2022/08/10		78	%	50 - 130
			2-Methylnaphthalene	2022/08/10		101	%	50 - 130
			Naphthalene	2022/08/10		92	%	50 - 130
			Phenanthrene	2022/08/10		98	%	50 - 130
			Perylene	2022/08/10		89	%	50 - 130



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Pyrene	2022/08/10		101	%	50 - 130
			Quinoline	2022/08/10		90	%	50 - 130
A673482	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/10		99	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/10		89	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/10		88	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/10		129	%	50 - 130
			Acenaphthene	2022/08/10	<0.0050		mg/kg	
			Acenaphthylene	2022/08/10	<0.0050		mg/kg	
			Acridine	2022/08/10	<0.010		mg/kg	
			Anthracene	2022/08/10	<0.0040		mg/kg	
			Benzo(a)anthracene	2022/08/10	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2022/08/10	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2022/08/10	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2022/08/10	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2022/08/10	<0.0050		mg/kg	
			Benzo(a)pyrene	2022/08/10	<0.0050		mg/kg	
			Benzo(e)pyrene	2022/08/10	<0.0050		mg/kg	
			Chrysene	2022/08/10	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2022/08/10	<0.0050		mg/kg	
			Fluoranthene	2022/08/10	<0.0050		mg/kg	
			Fluorene	2022/08/10	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/08/10	<0.0050		mg/kg	
			1-Methylnaphthalene	2022/08/10	<0.0050		mg/kg	
			2-Methylnaphthalene	2022/08/10	<0.0050		mg/kg	
			Naphthalene	2022/08/10	<0.0050		mg/kg	
			Phenanthrene	2022/08/10	<0.0050		mg/kg	
			Perylene	2022/08/10	<0.0050		mg/kg	
			Pyrene	2022/08/10	<0.0050		mg/kg	
			Quinoline	2022/08/10	<0.010		mg/kg	
A673482	NK3	RPD	Acenaphthene	2022/08/10	NC		%	50
			Acenaphthylene	2022/08/10	NC		%	50
			Acridine	2022/08/10	NC		%	50
			Anthracene	2022/08/10	NC		%	50
			Benzo(a)anthracene	2022/08/10	NC		%	50
			Benzo(b&j)fluoranthene	2022/08/10	NC		%	50
			Benzo(k)fluoranthene	2022/08/10	NC		%	50
			Benzo(g,h,i)perylene	2022/08/10	NC		%	50
			Benzo(c)phenanthrene	2022/08/10	NC		%	50
			Benzo(a)pyrene	2022/08/10	NC		%	50
			Benzo(e)pyrene	2022/08/10	NC		%	50
			Chrysene	2022/08/10	NC		%	50
			Dibenz(a,h)anthracene	2022/08/10	NC		%	50
			Fluoranthene	2022/08/10	NC		%	50
			Fluorene	2022/08/10	NC		%	50
			Indeno(1,2,3-cd)pyrene	2022/08/10	NC		%	50
			1-Methylnaphthalene	2022/08/10	NC		%	50 50
			2-Methylnaphthalene	2022/08/10	NC		%	50
			Naphthalene	2022/08/10	NC 24		%	50
			Phenanthrene	2022/08/10	34 NC		%	50
			Perylene	2022/08/10	NC 7.5		%	50 50
			Pyrene Quinoline	2022/08/10 2022/08/10			% %	50 50
			Quinoline		NC		70	50



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A674718	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2022/08/11		95	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/11		92	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/11		85	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/11		117	%	50 - 130
			Acenaphthene	2022/08/11		77	%	50 - 130
			Acenaphthylene	2022/08/11		80	%	50 - 130
			Acridine	2022/08/11		57	%	50 - 130
			Anthracene	2022/08/11		84	%	50 - 130
			Benzo(a)anthracene	2022/08/11		85	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/11		82	%	50 - 130
			Benzo(k)fluoranthene	2022/08/11		74	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/11		74	%	50 - 130
			Benzo(c)phenanthrene	2022/08/11		82	%	50 - 130
			Benzo(a)pyrene	2022/08/11		82	%	50 - 130
			Benzo(e)pyrene	2022/08/11		71	%	50 - 130
			Chrysene	2022/08/11		73	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/11		79	%	50 - 130
			Fluoranthene	2022/08/11		82	%	50 - 130
			Fluorene	2022/08/11		81	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/11		83	%	50 - 130
			1-Methylnaphthalene	2022/08/11		65	%	50 - 130
			2-Methylnaphthalene	2022/08/11		84	%	50 - 130
		Naphthalene	2022/08/11		75	%	50 - 130	
			Phenanthrene	2022/08/11		80	%	50 - 130
			Perylene	2022/08/11		69	%	50 - 130
			Pyrene	2022/08/11		80	%	50 - 130
			Quinoline	2022/08/11		86	%	50 - 130
A674718	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/11		101	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/11		97	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/11		88	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/11		129	%	50 - 130
			Acenaphthene	2022/08/11		78	%	50 - 130
			Acenaphthylene	2022/08/11		79	%	50 - 130
			Acridine	2022/08/11		61	%	50 - 130
			Anthracene	2022/08/11		84	%	50 - 130
			Benzo(a)anthracene	2022/08/11		89	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/11		83	%	50 - 130
			Benzo(k)fluoranthene	2022/08/11		80	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/11		78	%	50 - 130
			Benzo(c)phenanthrene	2022/08/11		87	%	50 - 130
			Benzo(a)pyrene	2022/08/11		88	%	50 - 130
			Benzo(e)pyrene	2022/08/11		75	%	50 - 130
			Chrysene	2022/08/11		78	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/11		79	%	50 - 130
			Fluoranthene	2022/08/11		83	%	50 - 130
			Fluorene	2022/08/11		83	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/11		80	%	50 - 130
			1-Methylnaphthalene	2022/08/11		65	%	50 - 130
			2-Methylnaphthalene	2022/08/11		83	%	50 - 130
			Naphthalene	2022/08/11		75	%	50 - 130
							,.	
			Phenanthrene	2022/08/11		80	%	50 - 130



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Pyrene	2022/08/11		81	%	50 - 130
			Quinoline	2022/08/11		87	%	50 - 130
A674718	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/11		102	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/11		95	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/11		90	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/11		124	%	50 - 130
			Acenaphthene	2022/08/11	<0.0050		mg/kg	
			Acenaphthylene	2022/08/11	<0.0050		mg/kg	
			Acridine	2022/08/11	<0.010		mg/kg	
			Anthracene	2022/08/11	<0.0040		mg/kg	
			Benzo(a)anthracene	2022/08/11	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2022/08/11	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2022/08/11	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2022/08/11	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2022/08/11	<0.0050		mg/kg	
			Benzo(a)pyrene	2022/08/11	<0.0050		mg/kg	
			Benzo(e)pyrene	2022/08/11	<0.0050		mg/kg	
			Chrysene	2022/08/11	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2022/08/11	<0.0050		mg/kg	
			Fluoranthene	2022/08/11	<0.0050		mg/kg	
			Fluorene	2022/08/11	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/08/11	<0.0050		mg/kg	
			1-Methylnaphthalene	2022/08/11	<0.0050		mg/kg	
			2-Methylnaphthalene	2022/08/11	<0.0050		mg/kg	
			Naphthalene	2022/08/11	<0.0050		mg/kg	
			Phenanthrene	2022/08/11	<0.0050		mg/kg	
			Perylene	2022/08/11	<0.0050		mg/kg	
			Pyrene	2022/08/11	<0.0050		mg/kg	
			Quinoline	2022/08/11	<0.010		mg/kg	
A674718	NK3	RPD	Acenaphthene	2022/08/11	NC		%	50
			Acenaphthylene	2022/08/11	NC		%	50
			Acridine	2022/08/11	NC		%	50
			Anthracene	2022/08/11	NC		%	50
			Benzo(a)anthracene	2022/08/11	NC		%	50
			Benzo(b&j)fluoranthene	2022/08/11	NC		%	50
			Benzo(k)fluoranthene	2022/08/11	NC		%	50
			Benzo(g,h,i)perylene	2022/08/11	NC		%	50
			Benzo(c)phenanthrene	2022/08/11	NC		%	50
			Benzo(a)pyrene	2022/08/11	NC		%	50
			Benzo(e)pyrene	2022/08/11	NC		%	50
			Chrysene	2022/08/11	NC		%	50
			Dibenz(a,h)anthracene	2022/08/11	NC		%	50
			Fluoranthene	2022/08/11	NC		%	50
			Fluorene	2022/08/11	NC		%	50
			Indeno(1,2,3-cd)pyrene	2022/08/11	NC		%	50
			1-Methylnaphthalene	2022/08/11	NC		%	50
			2-Methylnaphthalene	2022/08/11	12		%	50
			Naphthalene	2022/08/11	26		%	50
			Phenanthrene	2022/08/11	18		%	50
			Perylene	2022/08/11	NC		%	50
			Pyrene	2022/08/11	NC		%	50
			Quinoline	2022/08/11	NC		%	50
<u> </u>			Quinoine Dago 18 d		INC		/0	50



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A676506	CAU	Matrix Spike	O-TERPHENYL (sur.)	2022/08/11		140	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		141 (1)	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/11		134	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/11		140	%	60 - 140
A676506	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/08/11		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		88	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/11		93	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/11		93	%	60 - 140
A676506	CAU	Method Blank	O-TERPHENYL (sur.)	2022/08/11		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/11	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/11	<50		mg/kg	
A676506	CAU	RPD	F2 (C10-C16 Hydrocarbons)	2022/08/11	13		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/11	23		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/11	22		%	40
A676508	WLE	Method Blank	Moisture	2022/08/11	< 0.30		%	
A676508	WLE	RPD	Moisture	2022/08/11	2.5		%	20
A676514	WLE	Method Blank	Moisture	2022/08/11	<0.30		%	
A676514	WLE	RPD	Moisture	2022/08/11	11		%	20
A676660	NQU	QC Standard	Saturation %	2022/08/11		101	%	75 - 125
A676660	NQU	RPD	Saturation %	2022/08/11	8.0		%	12
A676662	LZ3	QC Standard	Soluble (CaCl2) pH	2022/08/11		98	%	97 - 103
A676662	LZ3	Spiked Blank	Soluble (CaCl2) pH	2022/08/11		100	%	97 - 103
A676662	LZ3	RPD	Soluble (CaCl2) pH	2022/08/11	0.29		%	N/A
A676666	WPK	Matrix Spike [AZF954-02]	1,4-Difluorobenzene (sur.)	2022/08/11		112	%	, 50 - 140
		··· · · · · · · · · · · · · · · · · ·	4-Bromofluorobenzene (sur.)	2022/08/11		80	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		107	%	50 - 140
			Benzene	2022/08/11		98	%	50 - 140
			Toluene	2022/08/11		89	%	50 - 140
			Ethylbenzene	2022/08/11		83	%	50 - 140
			m & p-Xylene	2022/08/11		81	%	50 - 140
			o-Xylene	2022/08/11		78	%	50 - 140
			F1 (C6-C10)	2022/08/11		101	%	60 - 140
A676666	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/11		121	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/11		100	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		117	%	50 - 140
			Benzene	2022/08/11		104	%	60 - 130
			Toluene	2022/08/11		99	%	60 - 130
			Ethylbenzene	2022/08/11		86	%	60 - 130
			m & p-Xylene	2022/08/11		93	%	60 - 130
			o-Xylene	2022/08/11		83	%	60 - 130
			F1 (C6-C10)	2022/08/11		112	%	60 - 140
A676666	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/11		130	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/11		93	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		127	%	50 - 140
			Benzene	2022/08/11	<0.0050	127	mg/kg	30 IHU
			Toluene	2022/08/11	<0.0050		mg/kg	
			Ethylbenzene	2022/08/11	<0.030		mg/kg	
			m & p-Xylene	2022/08/11	<0.010		mg/kg	
				2022/00/11	×0.0 4 0		116/16	

Page 19 of 37 Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			o-Xylene	2022/08/11	<0.020		mg/kg	
			F1 (C6-C10)	2022/08/11	<10		mg/kg	
A676666	WPK	RPD [AZF954-02]	Benzene	2022/08/11	NC		%	50
			Toluene	2022/08/11	NC (2)		%	50
			Ethylbenzene	2022/08/11	NC		%	50
			m & p-Xylene	2022/08/11	NC		%	50
			o-Xylene	2022/08/11	NC		%	50
			F1 (C6-C10)	2022/08/11	NC (2)		%	30
A676768	NQU	QC Standard	Saturation %	2022/08/11		99	%	75 - 125
A676768	NQU	RPD	Saturation %	2022/08/11	4.1		%	12
A676771	LZ3	QC Standard	Soluble (CaCl2) pH	2022/08/11		97	%	97 - 103
A676771	LZ3	Spiked Blank	Soluble (CaCl2) pH	2022/08/11		99	%	97 - 103
A676771	LZ3	RPD	Soluble (CaCl2) pH	2022/08/11	0.53		%	N/A
A676884	MKJ	Matrix Spike	Total Antimony (Sb)	2022/08/11		99	%	, 75 - 125
		•	Total Arsenic (As)	2022/08/11		96	%	75 - 125
			Total Barium (Ba)	2022/08/11		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/11		98	%	75 - 125
			Total Cadmium (Cd)	2022/08/11		97	%	75 - 125
			Total Chromium (Cr)	2022/08/11		128 (1)	%	75 - 125
			Total Cobalt (Co)	2022/08/11		95	%	75 - 125
			Total Copper (Cu)	2022/08/11		95	%	75 - 125
			Total Lead (Pb)	2022/08/11		94	%	75 - 125
			Total Mercury (Hg)	2022/08/11		100	%	75 - 125
			Total Molybdenum (Mo)	2022/08/11		102	%	75 - 125
			Total Nickel (Ni)	2022/08/11		104	%	75 - 125
			Total Selenium (Se)	2022/08/11		97	%	75 - 125
			Total Silver (Ag)	2022/08/11		97	%	75 - 125
			Total Thallium (TI)	2022/08/11		95	%	75 - 125
			Total Tin (Sn)	2022/08/11		99	%	75 - 125
			Total Uranium (U)	2022/08/11		91	%	75 - 125
			Total Vanadium (V)	2022/08/11		119	%	75 - 125
			Total Zinc (Zn)	2022/08/11		NC	%	75 - 125
A676884	MKJ	QC Standard	Total Antimony (Sb)	2022/08/11		127	%	15 - 182
/ 0/ 000 1	11110	Qe Standard	Total Arsenic (As)	2022/08/11		114	%	53 - 147
			Total Barium (Ba)	2022/08/11		113	%	80 - 119
			Total Cadmium (Cd)	2022/08/11		111	%	72 - 128
			Total Chromium (Cr)	2022/08/11		113	%	59 - 141
			Total Cobalt (Co)	2022/08/11		108	%	58 - 142
			Total Copper (Cu)	2022/08/11		112	%	83 - 117
			Total Lead (Pb)	2022/08/11		119	%	79 - 121
			Total Molybdenum (Mo)	2022/08/11		131	%	67 - 133
			Total Nickel (Ni)	2022/08/11		119	%	79 - 121
			Total Silver (Ag)	2022/08/11		146	%	47 - 153
			Total Tin (Sn)	2022/08/11		109	%	67 - 133
			Total Uranium (U)	2022/08/11		103	%	07 - 133 77 - 123
			Total Vanadium (V)	2022/08/11		101	%	79 - 121
			Total Zinc (Zn)	2022/08/11		115	%	79 - 121 79 - 121
A676884	MKJ	Spiked Blank	Total Antimony (Sb)	2022/08/11		105	%	80 - 120
1070004	IVINJ		Total Arsenic (As)	2022/08/11		97	%	80 - 120 80 - 120
			Total Barium (Ba)	2022/08/11		97	%	80 - 120 80 - 120
			Total Beryllium (Be)	2022/08/11 2022/08/11		98 96	%	80 - 120 80 - 120
			Total Cadmium (Cd)	2022/08/11				
				2022/08/11		97	%	80 - 120

Page 20 of 37 Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Chromium (Cr)	2022/08/11		97	%	80 - 120
			Total Cobalt (Co)	2022/08/11		98	%	80 - 120
			Total Copper (Cu)	2022/08/11		98	%	80 - 120
			Total Lead (Pb)	2022/08/11		98	%	80 - 120
			Total Mercury (Hg)	2022/08/11		109	%	80 - 120
			Total Molybdenum (Mo)	2022/08/11		99	%	80 - 120
			Total Nickel (Ni)	2022/08/11		97	%	80 - 120
			Total Selenium (Se)	2022/08/11		101	%	80 - 120
			Total Silver (Ag)	2022/08/11		98	%	80 - 120
			Total Thallium (TI)	2022/08/11		98	%	80 - 120
			Total Tin (Sn)	2022/08/11		98	%	80 - 120
			Total Uranium (U)	2022/08/11		97	%	80 - 120
			Total Vanadium (V)	2022/08/11		98	%	80 - 120
			Total Zinc (Zn)	2022/08/11		99	%	80 - 120
A676884	MKJ	Method Blank	Total Antimony (Sb)	2022/08/11	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/11	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/11	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/11	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/11	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/11	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/11	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/11	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/11	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/11	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/11	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/11	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/11	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/11	<0.20		mg/kg	
			Total Thallium (Tl)	2022/08/11	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/11	<1.0		mg/kg	
			Total Uranium (U)	2022/08/11	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/11	<1.0		mg/kg	
			Total Zinc (Zn)	2022/08/11	<10		mg/kg	
A676884	MKJ	RPD	Total Antimony (Sb)	2022/08/11	NC		%	30
			Total Arsenic (As)	2022/08/11	4.0		%	30
			Total Barium (Ba)	2022/08/11	0.54		%	35
			Total Beryllium (Be)	2022/08/11	5.7		%	30
			Total Cadmium (Cd)	2022/08/11	1.6		%	30
			Total Chromium (Cr)	2022/08/11	2.4		%	30
			Total Cobalt (Co)	2022/08/11	8.8		%	30
			Total Copper (Cu)	2022/08/11	2.5		%	30
			Total Lead (Pb)	2022/08/11	6.7		%	35
			Total Molybdenum (Mo)	2022/08/11	2.4		%	35
			Total Nickel (Ni)	2022/08/11	5.1		%	30
			Total Selenium (Se)	2022/08/11	NC		%	30
			Total Silver (Ag)	2022/08/11	NC		%	35
			Total Thallium (Tl)	2022/08/11	2.0		%	30
			Total Tin (Sn)	2022/08/11	NC		%	35
			Total Uranium (U)	2022/08/11	6.0		%	30
			Total Vanadium (V)	2022/08/11	0.28		%	30
			Total Zinc (Zn)	2022/08/11	8.3		%	30
A677124	MKJ	Matrix Spike	Total Antimony (Sb)	2022/08/11		93	%	75 - 125

 Page 21 of 37

 Bureau Veritas
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QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
		4 • • / P •	Total Arsenic (As)	2022/08/11		92	%	75 - 125
			Total Barium (Ba)	2022/08/11		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/11		94	%	75 - 125
			Total Cadmium (Cd)	2022/08/11		94	%	75 - 125
			Total Chromium (Cr)	2022/08/11		92	%	75 - 125
			Total Cobalt (Co)	2022/08/11		93	%	75 - 125
			Total Copper (Cu)	2022/08/11		92	%	75 - 125
			Total Lead (Pb)	2022/08/11		92	%	75 - 125
			Total Mercury (Hg)	2022/08/11		97	%	75 - 125
			Total Molybdenum (Mo)	2022/08/11		97	%	75 - 125
			Total Nickel (Ni)	2022/08/11		91	%	75 - 125
			Total Selenium (Se)	2022/08/11		98	%	75 - 125
			Total Silver (Ag)	2022/08/11		94	%	75 - 125
			Total Thallium (TI)	2022/08/11		93	%	75 - 125
			Total Tin (Sn)	2022/08/11		97	%	75 - 125
			Total Uranium (U)	2022/08/11		86	%	75 - 125
			Total Vanadium (V)	2022/08/11		93	%	75 - 125
			Total Zinc (Zn)	2022/08/11		NC	%	75 - 125
A677124	MKJ	QC Standard	Total Antimony (Sb)	2022/08/11		113	%	15 - 182
			Total Arsenic (As)	2022/08/11		97	%	53 - 147
			Total Barium (Ba)	2022/08/11		96	%	80 - 119
			Total Cadmium (Cd)	2022/08/11		94	%	72 - 128
			Total Chromium (Cr)	2022/08/11		93	%	59 - 141
			Total Cobalt (Co)	2022/08/11		91	%	58 - 142
			Total Copper (Cu)	2022/08/11		96	%	83 - 117
			Total Lead (Pb)	2022/08/11		103	%	79 - 121
			Total Molybdenum (Mo)	2022/08/11		116	%	67 - 133
			Total Nickel (Ni)	2022/08/11		102	%	79 - 121
			Total Silver (Ag)	2022/08/11		103	%	47 - 153
			Total Tin (Sn)	2022/08/11		94	%	67 - 133
			Total Uranium (U)	2022/08/11		84	%	77 - 123
			Total Vanadium (V)	2022/08/11		97	%	79 - 121
			Total Zinc (Zn)	2022/08/11		95	%	79 - 121
A677124	MKJ	Spiked Blank	Total Antimony (Sb)	2022/08/11		107	%	80 - 120
			Total Arsenic (As)	2022/08/11		98	%	80 - 120
			Total Barium (Ba)	2022/08/11		100	%	80 - 120
			Total Beryllium (Be)	2022/08/11		99	%	80 - 120
			Total Cadmium (Cd)	2022/08/11		100	%	80 - 120
			Total Chromium (Cr)	2022/08/11		99	%	80 - 120
			Total Cobalt (Co)	2022/08/11		99	%	80 - 120
			Total Copper (Cu)	2022/08/11		99	%	80 - 120
			Total Lead (Pb)	2022/08/11		100	%	80 - 120
			Total Mercury (Hg)	2022/08/11		112	%	80 - 120
			Total Molybdenum (Mo)	2022/08/11		102	%	80 - 120
			Total Nickel (Ni)	2022/08/11		100	%	80 - 120
			Total Selenium (Se)	2022/08/11		103	%	80 - 120
			Total Silver (Ag)	2022/08/11		100	%	80 - 120
			Total Thallium (TI)	2022/08/11		100	%	80 - 120
			Total Tin (Sn)	2022/08/11		101	%	80 - 120
			Total Uranium (U)	2022/08/11		99	%	80 - 120
			Total Vanadium (V)	2022/08/11		100	%	80 - 120
			Total Zinc (Zn)	2022/08/11		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677124	MKJ	Method Blank	Total Antimony (Sb)	2022/08/11	<0.50	Recovery	mg/kg	QC LIIIIIS
A677124 MIN	IVIRG	Method Blank	Total Arsenic (As)	2022/08/11	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/11	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/11	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/11	<0.40			
			Total Chromium (Cr)	2022/08/11	<1.0		mg/kg mg/kg	
			Total Cobalt (Co)	2022/08/11	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/11	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/11	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/11	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/11	<0.050		mg/kg	
			Total Nickel (Ni)	2022/08/11	<1.0			
				2022/08/11	<0.50		mg/kg	
			Total Selenium (Se) Total Silver (Ag)	2022/08/11	<0.30		mg/kg	
			Total Thallium (TI)	2022/08/11	<0.20		mg/kg	
				2022/08/11	<0.10		mg/kg	
			Total Tin (Sn)				mg/kg	
			Total Uranium (U)	2022/08/11	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/11 2022/08/11	<1.0		mg/kg	
AC77124	NAKI		Total Zinc (Zn)	2022/08/11	<10		mg/kg	20
A677124	MKJ	RPD	Total Antimony (Sb)		11		%	30
			Total Arsenic (As)	2022/08/11	0.52		%	30
			Total Barium (Ba)	2022/08/11	4.1		%	35
			Total Beryllium (Be)	2022/08/11	1.7		%	30
			Total Cadmium (Cd)	2022/08/11	9.4		%	30
			Total Chromium (Cr)	2022/08/11	2.7		%	30
			Total Cobalt (Co)	2022/08/11	5.8		%	30
			Total Copper (Cu)	2022/08/11	0.63		%	30
			Total Lead (Pb)	2022/08/11	1.3		%	35
			Total Mercury (Hg)	2022/08/11	10		%	35
			Total Molybdenum (Mo)	2022/08/11	1.7		%	35
			Total Nickel (Ni)	2022/08/11	4.4		%	30
			Total Selenium (Se)	2022/08/11	4.1		%	30
			Total Silver (Ag)	2022/08/11	NC		%	35
			Total Thallium (TI)	2022/08/11	0.45		%	30
			Total Tin (Sn)	2022/08/11	NC		%	35
			Total Uranium (U)	2022/08/11	0.82		%	30
			Total Vanadium (V)	2022/08/11	0.92		%	30
			Total Zinc (Zn)	2022/08/11	0.29		%	30
A677150	FM0	Matrix Spike [AZF957-03]	Hex. Chromium (Cr 6+)	2022/08/11		84	%	75 - 125
A677150	FM0	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/11		102	%	80 - 120
A677150	FM0	Method Blank	Hex. Chromium (Cr 6+)	2022/08/11	<0.080		mg/kg	
A677150	FM0	RPD [AZF957-03]	Hex. Chromium (Cr 6+)	2022/08/11	NC		%	35
A677176	MPU	Matrix Spike	Soluble (Hot water) Boron (B)	2022/08/11		108	%	75 - 125
A677176	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/11		102	%	80 - 120
A677176	MPU	Method Blank	Soluble (Hot water) Boron (B)	2022/08/11	<0.10		mg/kg	
A677176	MPU	RPD	Soluble (Hot water) Boron (B)	2022/08/11	27		%	35
A677260	PL	Matrix Spike	Soluble Calcium (Ca)	2022/08/11		100	%	75 - 125
			Soluble Magnesium (Mg)	2022/08/11		103	%	75 - 125
			Soluble Sodium (Na)	2022/08/11		95	%	75 - 125
			Soluble Potassium (K)	2022/08/11		98	%	75 - 125
A677260	PL	QC Standard	Soluble Calcium (Ca)	2022/08/11		99	%	75 - 125
			Soluble Magnesium (Mg)	2022/08/11		97	%	75 - 125

Page 23 of 37



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Soluble Sodium (Na)	2022/08/11		91	%	75 - 125
			Soluble Potassium (K)	2022/08/11		95	%	75 - 125
			Soluble Sulphate (SO4)	2022/08/11		97	%	75 - 125
A677260	PL	Spiked Blank	Soluble Calcium (Ca)	2022/08/11		103	%	80 - 120
			Soluble Magnesium (Mg)	2022/08/11		103	%	80 - 120
			Soluble Sodium (Na)	2022/08/11		95	%	80 - 120
			Soluble Potassium (K)	2022/08/11		98	%	80 - 120
A677260	PL	Method Blank	Soluble Calcium (Ca)	2022/08/11	<1.5		mg/L	
			Soluble Magnesium (Mg)	2022/08/11	<1.0		mg/L	
			Soluble Sodium (Na)	2022/08/11	<2.5		mg/L	
			Soluble Potassium (K)	2022/08/11	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/08/11	<5.0		mg/L	
A677260	PL	RPD	Soluble Calcium (Ca)	2022/08/11	3.7		%	30
			Soluble Magnesium (Mg)	2022/08/11	3.7		%	30
			Soluble Sodium (Na)	2022/08/11	3.5		%	30
			Soluble Potassium (K)	2022/08/11	4.1		%	30
			Soluble Sulphate (SO4)	2022/08/11	5.3		%	30
A677396	PL	Matrix Spike	Soluble Calcium (Ca)	2022/08/11	5.5	96	%	75 - 125
//0//0000		matikopike	Soluble Magnesium (Mg)	2022/08/11		101	%	75 - 125
			Soluble Sodium (Na)	2022/08/11		94	%	75 - 125
			Soluble Potassium (K)	2022/08/11		96	%	75 - 125
A677396	PL	QC Standard	Soluble Calcium (Ca)	2022/08/11		105	%	75 - 125
R077550		Qe Standard	Soluble Magnesium (Mg)	2022/08/11		103	%	75 - 125
			Soluble Sodium (Na)	2022/08/11		94	%	75 - 125
			Soluble Potassium (K)	2022/08/11		93	%	75 - 125
			Soluble Sulphate (SO4)	2022/08/11		101	%	75 - 125
A677396	PL	Spiked Blank	Soluble Calcium (Ca)	2022/08/11		101	%	80 - 120
//0//0000		opined blank	Soluble Magnesium (Mg)	2022/08/11		100	%	80 - 120
			Soluble Sodium (Na)	2022/08/11		94	%	80 - 120
			Soluble Potassium (K)	2022/08/11		96	%	80 - 120
A677396	PL	Method Blank	Soluble Calcium (Ca)	2022/08/11	<1.5	50	mg/L	00 120
A077550		Method Blank	Soluble Magnesium (Mg)	2022/08/11	<1.0		mg/L	
			Soluble Sodium (Na)	2022/08/11	<2.5		mg/L	
			Soluble Potassium (K)	2022/08/11	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/08/11	<5.0		mg/L	
A677396	PL	RPD	Soluble Calcium (Ca)	2022/08/11	0.014		%	30
A077550			Soluble Magnesium (Mg)	2022/08/11	1.3		%	30
			Soluble Sodium (Na)	2022/08/11	1.2		%	30
			Soluble Potassium (K)	2022/08/11	1.2		%	30
			Soluble Sulphate (SO4)	2022/08/11	0.17		%	30
A677413	TOR	Matrix Spike	Soluble Chloride (Cl)	2022/08/11	0.17	108	%	75 - 125
A677413	TOR	QC Standard	Soluble Chloride (Cl)	2022/08/11		88	%	75 - 125
A677413 A677413	TOR	Spiked Blank	Soluble Chloride (Cl)	2022/08/11		105	%	80 - 120
A677413	TOR	Method Blank	Soluble Chloride (Cl)	2022/08/11	<10	105	mg/L	00 - 120
A677413 A677413	TOR	RPD	Soluble Chloride (Cl)	2022/08/11	7.2		111g/L %	30
A677413 A677416	ZI	QC Standard	Soluble Conductivity	2022/08/11	1.2	101	%	50 75 - 125
A677416	ZI	Spiked Blank	Soluble Conductivity	2022/08/11		101	%	90 - 110
A677416	ZI	Method Blank	Soluble Conductivity	2022/08/11	<0.020	100	dS/m	70 - 110
A677416 A677416	ZI	RPD	Soluble Conductivity	2022/08/11	7.3		us/m %	20
	ZI	QC Standard	1		7.5	00		
A677437 A677437		Spiked Blank	Soluble Conductivity Soluble Conductivity	2022/08/11 2022/08/11		98 100	% %	75 - 125 90 - 110
	ZI	•	-		<0.020	100		90 - 110
A677437	ZI	Method Blank	Soluble Conductivity	2022/08/11	<0.020		dS/m	



QUALITY ASSURANCE REPORT(CONT'D)

04/00								
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677437	ZI	RPD	Soluble Conductivity	2022/08/11	3.2	Recovery	%	20
A677512	TOR	Matrix Spike	Soluble Chloride (Cl)	2022/08/11	0.12	110	%	75 - 125
A677512	TOR	QC Standard	Soluble Chloride (Cl)	2022/08/11		100	%	75 - 125
A677512	TOR	Spiked Blank	Soluble Chloride (Cl)	2022/08/11		110	%	80 - 120
A677512	TOR	Method Blank	Soluble Chloride (Cl)	2022/08/11	<10	110	mg/L	00 120
A677512	TOR	RPD	Soluble Chloride (Cl)	2022/08/11	14		%	30
A677996	JHC	QC Standard	Saturation %	2022/08/12	11	94	%	75 - 125
A677996	JHC	RPD	Saturation %	2022/08/12	1.2	51	%	12
A677998	AL7	QC Standard	Soluble (CaCl2) pH	2022/08/12	1.6	98	%	97 - 103
A677998	AL7	Spiked Blank	Soluble (CaCl2) pH	2022/08/12		100	%	97 - 103
A677998	AL7	RPD	Soluble (CaCl2) pH	2022/08/12	0.47	100	%	N/A
A678276	KGR	Matrix Spike [AZF959-03]	Total Antimony (Sb)	2022/08/12	0.17	98	%	75 - 125
//0/02/0	Non		Total Arsenic (As)	2022/08/12		95	%	75 - 125
			Total Barium (Ba)	2022/08/12		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/12		97	%	75 - 125
			Total Cadmium (Cd)	2022/08/12		97	%	75 - 125
			Total Chromium (Cr)	2022/08/12		106	%	75 - 125
			Total Cobalt (Co)	2022/08/12		98	%	75 - 125
			Total Copper (Cu)	2022/08/12		99	%	75 - 125
			Total Lead (Pb)	2022/08/12		98	%	75 - 125
			Total Mercury (Hg)	2022/08/12		98	%	75 - 125
			Total Molybdenum (Mo)	2022/08/12		98	%	75 - 125
			Total Nickel (Ni)	2022/08/12		100	%	75 - 125
			Total Selenium (Se)	2022/08/12		99	%	75 - 125
			Total Silver (Ag)	2022/08/12		92	%	75 - 125
			Total Thallium (TI)	2022/08/12		97	%	75 - 125
			Total Tin (Sn)	2022/08/12		98	%	75 - 125
			Total Uranium (U)	2022/08/12		94	%	75 - 125
			Total Vanadium (V)	2022/08/12		114	%	75 - 125
			Total Zinc (Zn)	2022/08/12		105	%	75 - 125
A678276	KGR	QC Standard	Total Antimony (Sb)	2022/08/12		105	%	15 - 182
A070270	Kon	Qe Standard	Total Arsenic (As)	2022/08/12		103	%	53 - 147
			Total Barium (Ba)	2022/08/12		100	%	80 - 119
			Total Cadmium (Cd)	2022/08/12		99	%	72 - 128
			Total Chromium (Cr)	2022/08/12		98	%	59 - 141
			Total Cobalt (Co)	2022/08/12		98	%	58 - 142
			Total Copper (Cu)	2022/08/12		104	%	83 - 117
			Total Lead (Pb)	2022/08/12		110	%	79 - 121
			Total Molybdenum (Mo)	2022/08/12		124	%	67 - 133
			Total Nickel (Ni)	2022/08/12		110	%	79 - 121
			Total Silver (Ag)	2022/08/12		104	%	47 - 153
			Total Tin (Sn)	2022/08/12		112	%	67 - 133
			Total Uranium (U)	2022/08/12		90	%	77 - 123
			Total Vanadium (V)	2022/08/12		101	%	79 - 121
			Total Zinc (Zn)	2022/08/12		101	%	79 - 121
A678276	KGR	Spiked Blank	Total Antimony (Sb)	2022/08/12		100	%	80 - 120
		- F	Total Arsenic (As)	2022/08/12		96	%	80 - 120
			Total Barium (Ba)	2022/08/12		97	%	80 - 120
			Total Beryllium (Be)	2022/08/12		96	%	80 - 120
			Total Cadmium (Cd)	2022/08/12		97	%	80 - 120
			Total Chromium (Cr)	2022/08/12		98	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2022/08/12		99	%	80 - 120
			Total Lead (Pb)	2022/08/12		98	%	80 - 120
			Total Mercury (Hg)	2022/08/12		104	%	80 - 120
			Total Molybdenum (Mo)	2022/08/12		99	%	80 - 120
			Total Nickel (Ni)	2022/08/12		98	%	80 - 120
			Total Selenium (Se)	2022/08/12		100	%	80 - 120
			Total Silver (Ag)	2022/08/12		99	%	80 - 120
			Total Thallium (Tl)	2022/08/12		98	%	80 - 120
			Total Tin (Sn)	2022/08/12		98	%	80 - 120
			Total Uranium (U)	2022/08/12		97	%	80 - 120
			Total Vanadium (V)	2022/08/12		99	%	80 - 120
			Total Zinc (Zn)	2022/08/12		97	%	80 - 120
A678276	KGR	Method Blank	Total Antimony (Sb)	2022/08/12	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/12	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/12	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/12	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/12	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/12	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/12	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/12	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/12	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/12	< 0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/12	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/12	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/12	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/12	<0.20		mg/kg	
			Total Thallium (TI)	2022/08/12	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/12	<1.0		mg/kg	
			Total Uranium (U)	2022/08/12	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/12	<1.0		mg/kg	
			Total Zinc (Zn)	2022/08/12	<10		mg/kg	
A678276	KGR	RPD [AZF959-03]	Total Antimony (Sb)	2022/08/12	NC		%	30
1070270	Non		Total Arsenic (As)	2022/08/12	1.5		%	30
			Total Barium (Ba)	2022/08/12	2.4		%	35
			Total Beryllium (Be)	2022/08/12	NC		%	30
			Total Cadmium (Cd)	2022/08/12	1.4		%	30
			Total Chromium (Cr)	2022/08/12	21		%	30
			Total Cobalt (Co)	2022/08/12	7.1		%	30
			Total Copper (Cu)	2022/08/12	15		%	30
			Total Lead (Pb)	2022/08/12	0.98		%	35
			Total Mercury (Hg)	2022/08/12	NC		%	35
			Total Molybdenum (Mo)	2022/08/12	13		%	35
			Total Nickel (Ni)	2022/08/12	18		%	30
			Total Selenium (Se)	2022/08/12	NC		%	30
			Total Silver (Ag)	2022/08/12	NC		%	35
			Total Thallium (TI)	2022/08/12	NC		%	30
			Total Tin (Sn)	2022/08/12	NC		%	35
			Total Uranium (U)	2022/08/12	1.6		%	30
			Total Vanadium (V)	2022/08/12	7.3		%	30
			Total Zinc (Zn)	2022/08/12	5.7		%	30
A678625	MPU	Matrix Spike [AZF959-03]	Soluble (Hot water) Boron (B)	2022/08/12		101	%	75 - 125
A678625	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/12		102	%	80 - 120

Page 26 of 37



04/06

GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Location: CAMP FAREWELL, NT Your P.O. #: 22525414-1100-1104 Sampler Initials: ML

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A678625	MPU	Method Blank	Soluble (Hot water) Boron (B)	2022/08/12	<0.10		mg/kg	
A678625	MPU	RPD [AZF959-03]	Soluble (Hot water) Boron (B)	2022/08/12	0.38		%	35
A678849	PL	Matrix Spike	Soluble Calcium (Ca)	2022/08/12		99	%	75 - 125
			Soluble Magnesium (Mg)	2022/08/12		109	%	75 - 125
			Soluble Sodium (Na)	2022/08/12		76	%	75 - 125
			Soluble Potassium (K)	2022/08/12		108	%	75 - 125
A678849	PL	QC Standard	Soluble Calcium (Ca)	2022/08/12		102	%	75 - 125
			Soluble Magnesium (Mg)	2022/08/12		103	%	75 - 125
			Soluble Sodium (Na)	2022/08/12		95	%	75 - 125
			Soluble Potassium (K)	2022/08/12		89	%	75 - 125
			Soluble Sulphate (SO4)	2022/08/12		103	%	75 - 125
A678849	PL	Spiked Blank	Soluble Calcium (Ca)	2022/08/12		115	%	80 - 120
			Soluble Magnesium (Mg)	2022/08/12		118	%	80 - 120
			Soluble Sodium (Na)	2022/08/12		102	%	80 - 120
			Soluble Potassium (K)	2022/08/12		114	%	80 - 120
A678849	PL	Method Blank	Soluble Calcium (Ca)	2022/08/12	<1.5		mg/L	
			Soluble Magnesium (Mg)	2022/08/12	<1.0		mg/L	
			Soluble Sodium (Na)	2022/08/12	<2.5		mg/L	
			Soluble Potassium (K)	2022/08/12	<1.3		mg/L	
			Soluble Sulphate (SO4)	2022/08/12	<5.0		mg/L	
A678849	PL	RPD	Soluble Calcium (Ca)	2022/08/12	0.48		%	30
			Soluble Magnesium (Mg)	2022/08/12	0.28		%	30
			Soluble Sodium (Na)	2022/08/12	0.39		%	30
			Soluble Potassium (K)	2022/08/12	2.5		%	30
			Soluble Sulphate (SO4)	2022/08/12	2.5		%	30
A678876	TOR	Matrix Spike	Soluble Chloride (Cl)	2022/08/12		NC	%	75 - 125
A678876	TOR	QC Standard	Soluble Chloride (Cl)	2022/08/12		83	%	75 - 125
A678876	TOR	Spiked Blank	Soluble Chloride (Cl)	2022/08/12		108	%	80 - 120
A678876	TOR	Method Blank	Soluble Chloride (Cl)	2022/08/12	<10		mg/L	
A678876	TOR	RPD	Soluble Chloride (Cl)	2022/08/12	5.8		%	30
A678998	ZI	QC Standard	Soluble Conductivity	2022/08/12		96	%	75 - 125
A678998	ZI	Spiked Blank	Soluble Conductivity	2022/08/12		101	%	90 - 110
A678998	ZI	Method Blank	Soluble Conductivity	2022/08/12	<0.020		dS/m	
A678998	ZI	RPD	Soluble Conductivity	2022/08/12	5.7		%	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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limit reported based on MDL and sample weight used for analysis.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Junzhi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

Mermicatelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

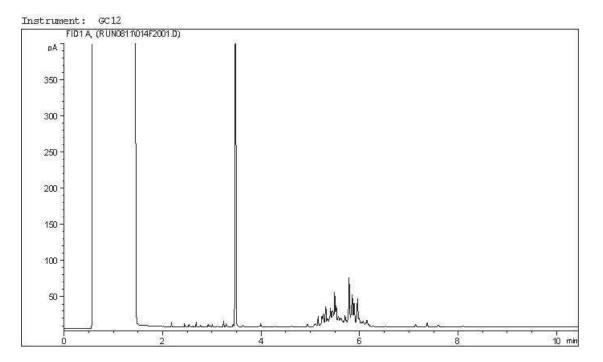


Automated Statchk

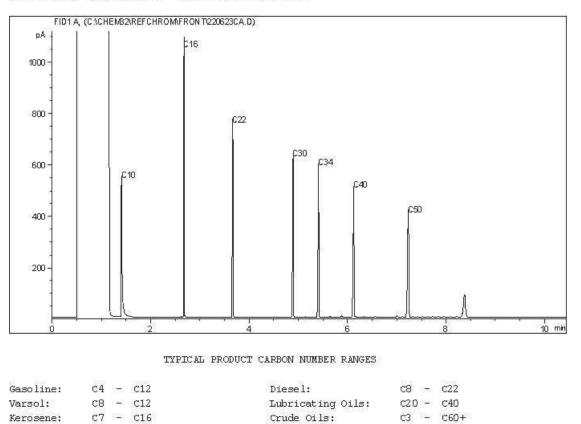
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

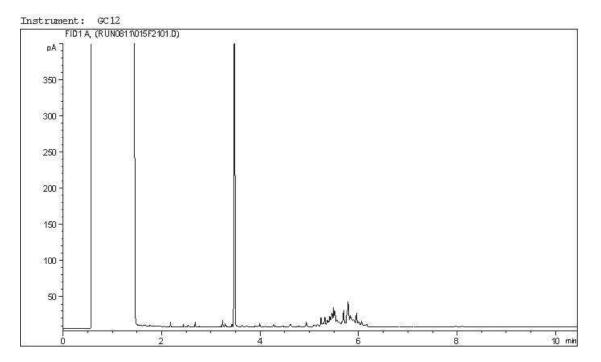
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Page 1 of 1			- 1/04 LAB USE ONLY - PLACE STICKER HERE			Rush Confirmation #:			19. 20 21 22 Regular Turnaround Time (TAT)	1 5t	Rush Turnaroun Surcharge	LIWENS		Head Minimeter Community	also eno	OLA SHELL DOPALIN	distant and and	Tilivet at P	41259544			X 3 Received in Vellowkhife	11.45 m	AUG no 2022	100-403/ c5-4	Tama: 7'19	TO BUREAU VEHTAS A MUMBULENS AND COMPRIONS SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACMOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH AN WWW. BUNA COMPILE PASS AND CONDITIONS OR BY CALLING THE LABORATORY USED ABOVE TO OBTAIN A COPY	No Temperature reading by:		Time			
ENV COC - 00013v3	Project Information	Shell	22525414-400009200000000000000000000 11000	22525414-谢如敏 - (DCvo	NA	Jamp Fare WRSPERHAMMER, NT	NT	rmanicetkaud	11 12 13 14 15' 16 17 18			- dissolv	netals netals otal issolve icron) sand; sand;	Routine wa Regulated r Metrony - tr Metrony - tr Salinity 4 Salinity 4 Texture (% Basic class l Basic class l													G OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGI HE LABORATORY LISTED ABOVE TO OBTAIN A COPY	LAB USE ONLY Seal procent	Seal Intact Cooling media present	Y Date H	~ 22 · 08 ₽0 /	-	
-	e)	Quotation #:	P.O. #/ AFE#:	Project #:	Postal T2P 4K3 Site #:	Site Location:	C Choo Resident	Sampled By:	1 2 3 4 5 6 7 8		a	ננסטות		FIELD FILTE FIELD PRES FILTRA LAB FILTRA BTEX F1-F4 PHAS PHAS PHAS FIET F1-F2 FIET F1-F2 FIET F1-F3 FIET F1-F3 FIET F1-F3 FIET F1 FIET F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F1 F	XX	XX	XX	XX	XX	X	×	×					ZARD TERMIS AND CONDITIONS SIGNIN MS-AND CONDITIONS OR BY CALLING TH		1 2 3	Received by: (Signature/ Print)	Fren Megan face		
Edmonton, AB: 9331.48 St. T6b 2R4 Toll Free (800) 386-7247 Winnipeg, MB: D-675 Berry St. R3H 1A7 Toll Free (866) 800-6208	Report Information (if differs from invoice)	Golder Associates	Aurelie Bellavance		Calgary AB Co	403-299-5600	Oswan nevellant a lax	peter. tan Qusp. co		Drinking Water - Manitoba	B other AmsRP	LIVERY TO BUREAU VERITAS	Time (24hr)	D HH MM Matrix	3 66 14 50 Soil	22 08 06 14 55 Soil	22 08 06 16 10 Soil	08 06 15 35 Soil	22 08 06 16 20 Suil	3 of (B 40 Sail	3 Ob H 10 Soil	06 14 10	_					LAB USE ONLY Yes No present	Seal intact Seal intact Solution Seal intact Seal intact Seal intact Seal intact Seal intact Seal interview Se		15 00 1 Mager	-	
vB: 9331-48 St. 1 B: D-675 Berry :		Company:	Contact Name:	Street Address:	City:	Phone:	Email: 21	ppies:	a	Drin	N oth	PLING UNTIL DE	Date Sampled	YY MM	22 08	22 06	22 06	22 0	22 08	22 08	22 08	22 08				CHAIM OF CITC	ARE AVAILAB	2.5 Seal	3 Cooli	DD M	5 03		
BVNA.com		Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Code:		Canada Account Payable		Regulatory Criteria	CCME	chewan	SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BURE		Sample identification	BH22-42-01	8422-42-02	BH 22-4%-01	MW22-43-01	22-45-01	22-46-01	10-11-22	E C	~			12 111111 FSG OTHERINGE AGREED TO IN VIDITING. WOOD SUBARTEED AN TWE CANNAGE CONTACTOR		Ves No .c 7,5 3,7		YY Date	Unholissa lord 22 08		
	Invoice Information	Company :	Contact Name:	Street Address:		Phone:	Email:	Copies:			Saskatchewan	SA		-	1 BH 2	² BH 2	BH S	4 MUL	5 BH22	· BH 22.	7 BH 22	8 DUP	5	1	= 3	12 1 INI FSS OTHER		LAB USE ONLY Seal present	Seal intact Cooling media present	Reling	Mobile	Part	The second second

Page 29 of 37

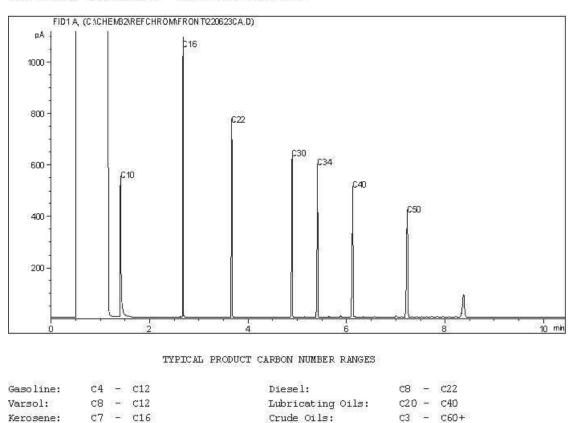


Carbon Range Distribution - Reference Chromatogram



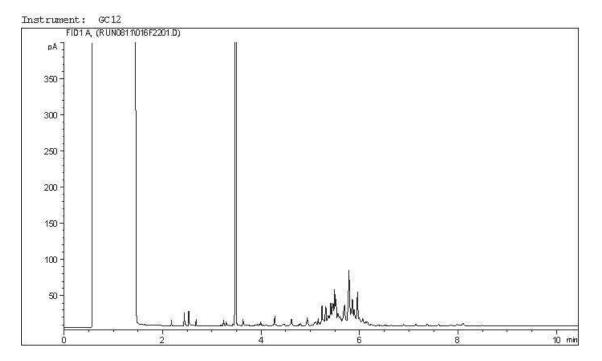


Carbon Range Distribution - Reference Chromatogram

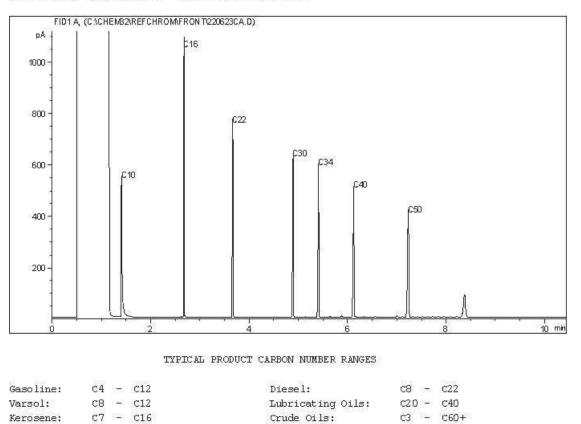


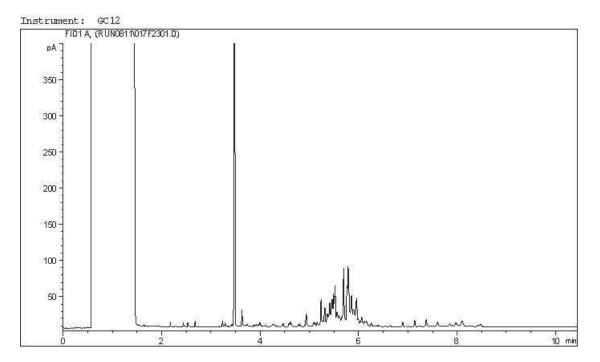
GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL, NT Client ID: BH22-44-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

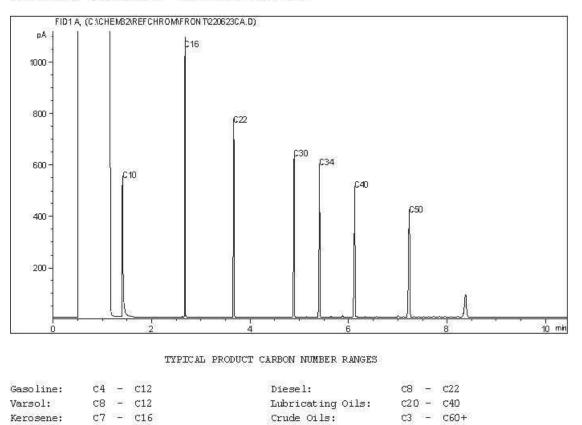


Carbon Range Distribution - Reference Chromatogram



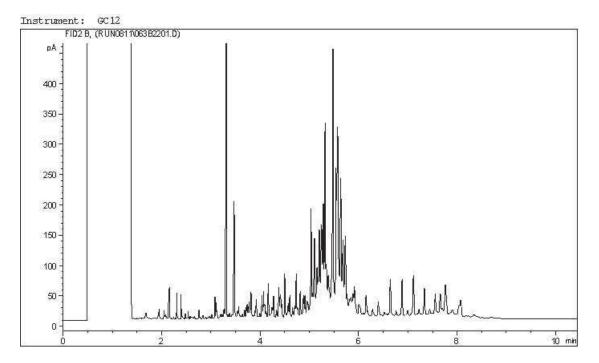


Carbon Range Distribution - Reference Chromatogram

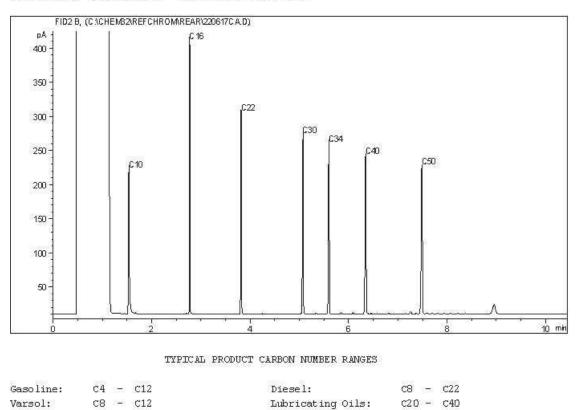


GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL, NT Client ID: BH22-45-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

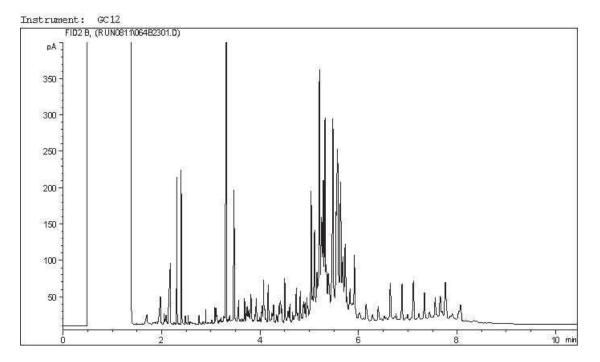
c7 - c16

Kerosene:

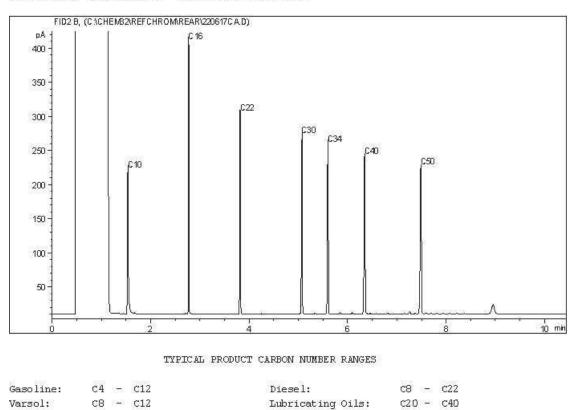
Crude Oils:

GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL, NT Client ID: BH22-46-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram

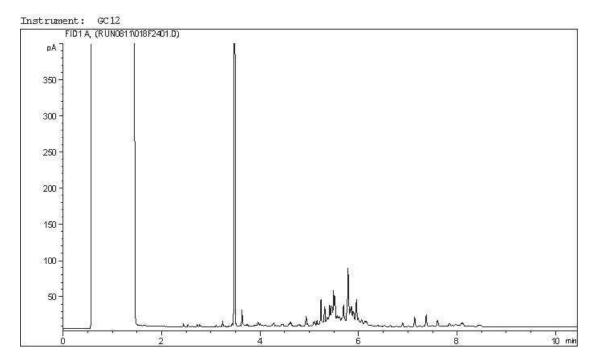


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

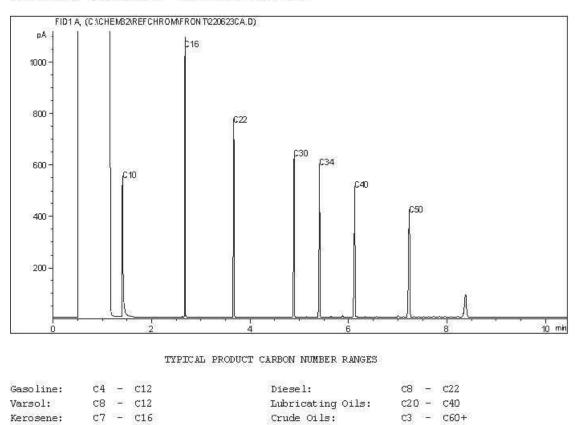
c7 - c16

Kerosene:

Crude Oils:

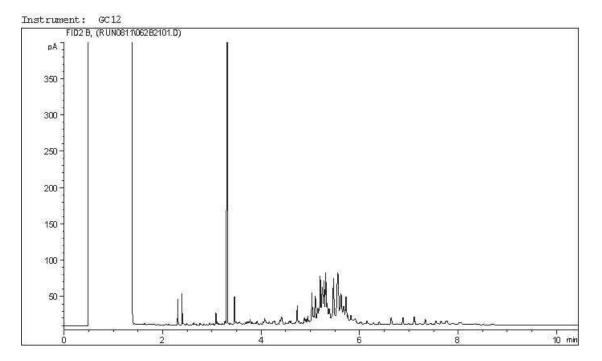


Carbon Range Distribution - Reference Chromatogram

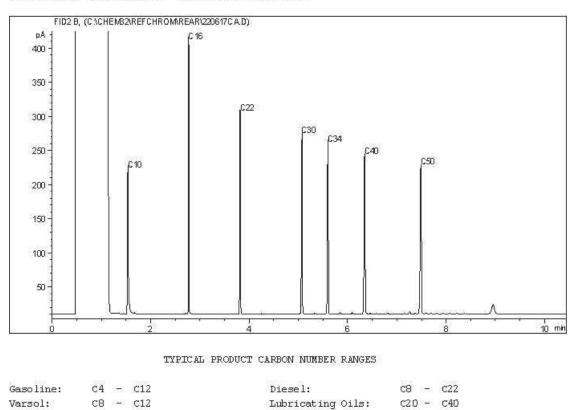


GOLDER ASSOCIATES LTD. Client Project #: 22525414-1000 Site Reference: CAMP FAREWELL, NT Client ID: DUP A

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

c7 - c16

Kerosene:

Crude Oils:



August 19, 2022

GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Chromatogram Interpretation of CAMP FAREWELL, NT; Project 22525414-1000 Bureau Veritas Job No.: C259075

Bureau Veritas was retained by Golder Associates Ltd. to provide hydrocarbon interpretations concerning the likely origin of hydrocarbons quantified within CCME fraction(s) F2, F3 and/or F4.

Analytical Method

Petroleum hydrocarbon analyses at Bureau Veritas are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Chromatogram Interpretation

A comprehensive qualitative assessment of the resultant gas chromatograms in the F2-F4 ranges was performed. The chromatograms were inspected for specific peak profiles that would indicate the possible origin of the hydrocarbons present in the sample. The presence and nature of specific aliphatic compounds (n-alkanes), the presence of characteristic unresolved complex mixtures (UCMs) or "humps" and the relative abundance (ratios) of specific compounds are reviewed as part of the evaluation.

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001



Data Interpretation

Table 1. Qualitative Data Summary – Chromatogram Interpretation

Lab ID	Sample ID	Chromatogram Interpretation
AZF958	BH22-45-01	The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic
AZF959	BH22-46-01	organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile
AZF960	BH22-41-01	of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Laboratories

Michael Sheppard, B.Sc., P.Bio., QP Consulting Scientist Environmental Services

t Cantuel

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Hydrocarbon Resemblance

Characterization by way of visual evaluation of the sample chromatogram may not be conclusive and is only indicative of substances that may be present. The resemblance information must be regarded as approximate and qualitative.

August 19, 2022



GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Biogenic Toluene Assessment of Camp Farewell, NT; Project 22525414-100 Bureau Veritas Job No.: C259077

Bureau Veritas Environmental & Specialty Services Laboratories (BV Labs) was retained by Golder Associated Ltd. to provide an interpretation concerning the likely origin of toluene quantified within CCME Fraction 1 (nC6-nC10).

Analytical Method

Petroleum hydrocarbon analyses at BV Labs are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Biogenic Toluene

The sample extract is analyzed by volatile organic compound (VOC) analysis in selected ion monitoring (SIM) mode to determine the origin of the quantified toluene. The presence of specific marker compounds, both biogenic and petrogenic, along with a series of associated parameters are reviewed as part of this evaluation. Diagnostic parameters of primary interest and the ranges typically associated with biogenic toluene samples are listed below²:

- Moisture: typically ≥70%
- Absence of an Unresolved Complex Mixture (UCM) within CCME Fractions F2 or F3.
- Presence of a "Biogenic Cluster" within CCME Fraction 3 (F3Bc); specifically F3B, nC32-nC34
- Presence of biogenic monoterpene compound(s)³
- Toluene ratio (T_{ratio}): Ratio between Toluene and sum of all BTEX compounds; typically >0.7
- Cymene ratio (Cratio): Ratio between p-Cymene and the sum of all three isomers; typically >0.8
- Additional diagnostic parameters may be included in the assessment if deemed beneficial (examples include: Carbon Preference Index (CPI), isoprenoid ratios, BIC, etc.)

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001

² Bureau Veritas Laboratories Canada: threshold values derived internally (assessment of long-term data set)

³ Target compounds: α/β -Pinene, Camphene, (+)-3-Carene, α-Terpinene, Limonene, o/m/p-Cymene, γ-Terpinene and α-Terpinolene (list may be amended from time-to-time without notice)



Data Interpretation

Table 1. Data Summary - Biogenic Toluene Evaluation

Lab ID	Semente ID		Die	agnostic	Paramete	rs ⁴		Conclusion
Lab ID	Sample ID	Moist	UCM	F3Bc	Mono	T _{ratio}	Cratio	Conclusion⁵
AZF966	BH22-03-01	Н	No	Yes	No	1.0	NC	Inconclusive (neither)

NC: Unable to Calculate

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Environmental & Specialty Services Laboratories



Michael Sheppard, B.SC., P.Bio, QP Consulting Scientist Environmental Services

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Biogenic Toluene

A detailed assessment of Selective Ion Monitoring (SIM) GC-MS, and associated project data was completed to provide further information relating to the biogenic and/or petrogenic origin of compounds or fractions quantified as part of the CCME Tier I protocol. All statements must be regarded as approximate and qualitative.

⁴ Diagnostic Parameters

Moist: Moisture; H (≥70%), M (<70 & ≥20%), L (<20%) UCM: Presence/Position of Unresolved Complex Mixture F3Bc: Presence of a biogenic cluster within F3B Mono: Biogenic monoterpenes (excluding cymenes) T_{ratio} : Toluene Ratio (T/ Σ BTEX) C_{ratio} : Cymene Ratio (p-Cymene/ Σ Cymene isomers)

⁵ Conclusions

Biogenic Toluene: Quantified toluene likely of biogenic origin Petrogenic Toluene: Quantified toluene likely of petrogenic origin Inconclusive (both): Presence of both biogenic and petrogenic diagnostic parameters (CSIA recommended) Inconclusive (neither): Insufficient evidence to support Biogenic or Petrogenic origin (CSIA recommended)



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-100 Site Location: CAMP FAREWELL, NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/10/05 Report #: R3244018 Version: 6 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C259077 Received: 2022/08/09, 11:30

Sample Matrix: Soil # Samples Received: 10

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 3)	10	N/A	2022/08/11	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	10	N/A	2022/08/11		Auto Calc
Toluene (13C/12C) CSIA (2)	1	N/A	N/A		See Attachment
CCME Hydrocarbons (F2-F4 in soil) (1, 4)	10	2022/08/10	2022/08/11	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F4G in soil) (1, 4)	1	2022/08/10	2022/08/11	AB SOP-00036	CCME PHC-CWS m
				AB SOP-00040	
Moisture (1)	10	N/A	2022/08/11	AB SOP-00002	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) This test was performed by Microbial insights c/o EBPI, 735 Griffith Court , Burlington, ON, L7L 5R9

(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(4) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's

Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003.

Page 1 of 23



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-100 Site Location: CAMP FAREWELL, NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/10/05 Report #: R3244018 Version: 6 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C259077

Received: 2022/08/09, 11:30

Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



Cynny Hagen, Key Account Soecialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

	175062			A7E064		175065			A7E066		
	09:05			09:05		09:20			09:50		
	1 of 1					1 of 1			1 of 1		
UNITS	BH22-01-01	RDL	QC Batch	DUP B	RDL	MW22-02-01	RDL	QC Batch	BH22-03-01	RDL	QC Batch
					-					-	-
mg/kg	<31 (1)	31	A676506	<33 (1)	33	110 (1)	26	A676506	280 (1)	35	A676506
mg/kg	290 (1)	150	A676506	310 (1)	170	2200 (1)	130	A676506	4800 (1)	170	A676506
mg/kg	<150 (1)	150	A676506	<170 (1)	170	750 (1)	130	A676506	2000 (1)	170	A676506
mg/kg	Yes	N/A	A676506	Yes	N/A	Yes	N/A	A676506	No	N/A	A676506
%	67	0.30	A676514	70	0.30	61	0.30	A676508	71	0.30	A676514
					-					-	
mg/kg	<0.25	0.25	A676395	<0.25	0.25	<0.17	0.17	A676395	<0.23	0.23	A676395
mg/kg	<35	35	A676395	<36	36	<24	24	A676395	<33	33	A676395
					-					-	
mg/kg	<0.028 (2)	0.028	A676666	<0.028 (2)	0.028	<0.019 (2)	0.019	A676666	<0.026 (2)	0.026	A676666
mg/kg	<0.050 (3)	0.050	A676666	<0.050 (3)	0.050	<0.050 (3)	0.050	A676666	4.0 (2)	0.26	A676666
mg/kg	<0.056 (2)	0.056	A676666	<0.057 (2)	0.057	<0.037 (2)	0.037	A676666	<0.052 (2)	0.052	A676666
mg/kg	<0.22 (2)	0.22	A676666	<0.23 (2)	0.23	<0.15 (2)	0.15	A676666	<0.21 (2)	0.21	A676666
mg/kg	<0.11 (2)	0.11	A676666	<0.11 (2)	0.11	<0.074 (2)	0.074	A676666	<0.10 (2)	0.10	A676666
mg/kg	<35 (3)	35	A676666	<36 (3)	36	<24 (3)	24	A676666	<33 (3)	33	A676666
					-					-	
%	108	N/A	A676666	123	N/A	116	N/A	A676666	124	N/A	A676666
%	87	N/A	A676666	87	N/A	93	N/A	A676666	89	N/A	A676666
%	96	N/A	A676666	101	N/A	100	N/A	A676666	117	N/A	A676666
%	103	N/A	A676666	111	N/A	110	N/A	A676666	109	N/A	A676666
%	96	N/A	A676506	97	N/A	95	N/A	A676506	98	N/A	A676506
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	I of 1 UNITS BH22-01-01 mg/kg <31 (1)	2022/08/07 09:05	2022/08/07 09:05 Image: Constraint of the image: Consthe image: Constraint of the image: Constraint of the	2022/08/07 09:05 2022/08/07 09:05 1 of 1 I 2022/08/07 09:05 1 of 1 I 1 of 1 UNITS BH22-01-01 RDL QC Batch DUP B mg/kg <31 (1)	2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:05 1 of 1 1 of 1 1 of 1 UNITS BH22-01-01 RDL QC Batch DUP B RDL mg/kg <31 (1)	2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:20 1 of 1 UNITS BH22-01-01 RDL QC Batch DUP B RDL MW22-02-01 mg/kg <31 (1)	2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:00 2022/08/07 09:00 1 of 1 UNITS BH22-01-01 RDL QC Batch DUP B RDL MW22-02-01 RDL mg/kg <31 (1)	2022/08/07 09:05 0 2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:20 0 1 of 1 0 0	2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:05 2022/08/07 09:20 2022/08/07 09:20 2022/08/07 09:50 1 of 1 1 1 of 1 1 1 of 1 1 1 of 1 1 1 of 1 UNITS BH22-01-01 RDL QC Batch DUP B RDL MW22-02-01 RDL QC Batch BH22-03-01 mg/kg <31 (1)	2022/08/07 09:052022/08/07 09:052022/08/07 09:052022/08/07 09:002022/08/07 09:002022/08/07 09:002022/08/07 09:002002022/08/07 09:002002002022/08/07 09:002002002002002002002002002002002002002002002002002002002001010111 </td

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limits raised based on sample weight used for analysis.

(3) Detection limit reported based on MDL and sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		AZF967	AZF967		AZF968		AZF969	AZF970	AZF970		
		2022/08/07	2022/08/07		2022/08/07		2022/08/07	2022/08/07	2022/08/07		
Sampling Date		10:05	10:05		10:20		10:25	10:35	10:35		
COC Number		1 of 1	1 of 1		1 of 1		1 of 1	1 of 1	1 of 1		
	UNITS	BH22-04-01	BH22-04-01 Lab-Dup	RDL	BH22-05-01	RDL	BH22-05-02	BH22-06-02	BH22-06-02 Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<20 (1)	N/A	20	<28 (1)	28	34	56 (2)	49	10	A676506
F3 (C16-C34 Hydrocarbons)	mg/kg	310 (1)	N/A	100	400 (1)	140	730	530	420	50	A676506
F4 (C34-C50 Hydrocarbons)	mg/kg	<100 (1)	N/A	100	<140 (1)	140	170	120	100	50	A676506
Reached Baseline at C50	mg/kg	Yes	N/A	N/A	Yes	N/A	Yes	Yes	Yes	N/A	A676506
Physical Properties				-							
Moisture	%	50	45	0.30	65	0.30	39	31	N/A	0.30	A676514
Volatiles				-		•					,
Xylenes (Total)	mg/kg	<0.15	N/A	0.15	<0.18	0.18	<0.045	<0.045	N/A	0.045	A676395
F1 (C6-C10) - BTEX	mg/kg	<24	N/A	24	<25	25	<10	<10	N/A	10	A676395
Field Preserved Volatiles											
Benzene	mg/kg	<0.017 (3)	N/A	0.017	<0.020 (3)	0.020	<0.0050	<0.0050	N/A	0.0050	A676666
Toluene	mg/kg	<0.050 (4)	N/A	0.050	<0.050 (4)	0.050	<0.050	<0.050	N/A	0.050	A676666
Ethylbenzene	mg/kg	<0.034 (3)	N/A	0.034	<0.039 (3)	0.039	<0.010	<0.010	N/A	0.010	A676666
m & p-Xylene	mg/kg	<0.14 (3)	N/A	0.14	<0.16 (3)	0.16	<0.040	<0.040	N/A	0.040	A676666
o-Xylene	mg/kg	<0.068 (3)	N/A	0.068	<0.079 (3)	0.079	<0.020	<0.020	N/A	0.020	A676666
F1 (C6-C10)	mg/kg	<24 (4)	N/A	24	<25 (4)	25	<10	<10	N/A	10	A676666
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	105	N/A	N/A	117	N/A	111	126	N/A	N/A	A676666
4-Bromofluorobenzene (sur.)	%	85	N/A	N/A	97	N/A	86	87	N/A	N/A	A676666
D10-o-Xylene (sur.)	%	100	N/A	N/A	123	N/A	108	103	N/A	N/A	A676666
D4-1,2-Dichloroethane (sur.)	%	103	N/A	N/A	117	N/A	104	120	N/A	N/A	A676666
O-TERPHENYL (sur.)	%	91	N/A	N/A	90	N/A	102	100	93	N/A	A676506

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Matrix spike exceeds acceptance limits due to probable matrix interference.

(3) Detection limits raised based on sample weight used for analysis.

(4) Detection limit reported based on MDL and sample weight used for analysis.



Bureau Veritas ID		AZF971		AZF972		
Sampling Date		2022/08/07		2022/08/07		
		10:50		11:10		
COC Number		1 of 1		1 of 1		
	UNITS	BH22-07-01	RDL	BH22-08-01	RDL	QC Batch
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/kg	27 (1)	22	110 (1)	29	A676506
F3 (C16-C34 Hydrocarbons)	mg/kg	410 (1)	110	1300 (1)	150	A676506
F4 (C34-C50 Hydrocarbons)	mg/kg	110 (1)	110	450 (1)	150	A676506
Reached Baseline at C50	mg/kg	Yes	N/A	Yes	N/A	A676506
Physical Properties	•		•		•	
Moisture	%	54	0.30	66	0.30	A676514
Volatiles						
Xylenes (Total)	mg/kg	<0.14	0.14	<0.18	0.18	A676395
F1 (C6-C10) - BTEX	mg/kg	<24	24	<26	26	A676395
Field Preserved Volatiles	•				•	
Benzene	mg/kg	<0.016 (2)	0.016	<0.021 (2)	0.021	A676666
Toluene	mg/kg	<0.050 (3)	0.050	<0.050 (3)	0.050	A676666
Ethylbenzene	mg/kg	<0.031 (2)	0.031	<0.041 (2)	0.041	A676666
m & p-Xylene	mg/kg	<0.13 (2)	0.13	<0.17 (2)	0.17	A676666
o-Xylene	mg/kg	<0.063 (2)	0.063	<0.083 (2)	0.083	A676666
F1 (C6-C10)	mg/kg	<24 (3)	24	<26 (3)	26	A676666
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	114	N/A	98	N/A	A676666
4-Bromofluorobenzene (sur.)	%	81	N/A	86	N/A	A676666
D10-o-Xylene (sur.)	%	98	N/A	111	N/A	A676666
D4-1,2-Dichloroethane (sur.)	%	104	N/A	102	N/A	A676666
O-TERPHENYL (sur.)	%	89	N/A	93	N/A	A676506
RDL = Reportable Detection Li	nit					
N/A = Not Applicable						
(1) Detection limits raised due moisture.	to high ı	noisture cont	ent, sar	mple contains	=> 50%	6
(2) Detection limits raised base	n on sa	nnle weight u	ised for	analysis		
		inpic weight u	500 101	anary 515.		

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

(3) Detection limit reported based on MDL and sample weight used for analysis.



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		AZF966	
Sampling Date		2022/08/07 09:50	
COC Number		1 of 1	
	UNITS	BH22-03-01	QC Batch
Parameter			
Subcontract Parameter	N/A	SEE ATTACH	A741216



PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		AZF966		
Sampling Date		2022/08/07 09:50		
COC Number		1 of 1		
	UNITS	BH22-03-01	RDL	QC Batch
Ext. Pet. Hydrocarbon	UNITS	BH22-03-01	RDL	QC Batch
Ext. Pet. Hydrocarbon F4G-SG (Heavy Hydrocarbons-Grav.)	UNITS mg/kg	BH22-03-01 9200	RDL 1700	



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt												
ΙΓ	Package 1	3.0°C										
L												
Version	#6. Report roissu	ad with undated To	luene Assessment report.									
VEISION	#0. Neport leissu	eu with upuateu it	idene Assessment report.									
		.										
Version	#5: Ioluene Stage	e 3 isotope assessm	ent has been added on sample AZF966 (BH22-03-01) as per client request. 20220831									
Version	#4: Report reissu	ed with Bio-Toluen	e report on sample AZF966 as per request from client. 20220818									
Version #3: Report reissued to include chromatogram review and report as per client request received 20220815												
Results relate only to the items tested.												



QUALITY ASSURANCE REPORT

QA/QC	La 11	00.7	Descuration		\/_}	Dee	110.170	0011
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
A676506	CAU	Matrix Spike [AZF970-01]	O-TERPHENYL (sur.)	2022/08/11		140	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		141 (1)	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/11		134	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/11		140	%	60 - 140
A676506	CAU	Spiked Blank	O-TERPHENYL (sur.)	2022/08/11		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		88	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/11		93	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/11		93	%	60 - 140
A676506	CAU	Method Blank	O-TERPHENYL (sur.)	2022/08/11		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/11	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/11	<50		mg/kg	
A676506	CAU	RPD [AZF970-01]	F2 (C10-C16 Hydrocarbons)	2022/08/11	13		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/11	23		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/11	22		%	40
A676508	WLE	Method Blank	Moisture	2022/08/11	<0.30		%	
A676508	WLE	RPD	Moisture	2022/08/11	2.5		%	20
A676514	WLE	Method Blank	Moisture	2022/08/11	<0.30		%	
A676514	WLE	RPD [AZF967-01]	Moisture	2022/08/11	11		%	20
A676666	WPK	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/08/11		112	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/11		80	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		107	%	50 - 140
			Benzene	2022/08/11		98	%	50 - 140
			Toluene	2022/08/11		89	%	50 - 140
			Ethylbenzene	2022/08/11		83	%	50 - 140
			m & p-Xylene	2022/08/11		81	%	50 - 140
			o-Xylene	2022/08/11		78	%	50 - 140
			F1 (C6-C10)	2022/08/11		101	%	60 - 140
A676666	WPK	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/11		121	%	50 - 140
		·	4-Bromofluorobenzene (sur.)	2022/08/11		100	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		117	%	50 - 140
			Benzene	2022/08/11		104	%	60 - 130
			Toluene	2022/08/11		99	%	60 - 130
			Ethylbenzene	2022/08/11		86	%	60 - 130
			m & p-Xylene	2022/08/11		93	%	60 - 130
			o-Xylene	2022/08/11		83	%	60 - 130
			F1 (C6-C10)	2022/08/11		112	%	60 - 140
A676666	W/PK	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/11		130	%	50 - 140
A070000	VVI IX	Method Blank	4-Bromofluorobenzene (sur.)	2022/08/11		93	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/11		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/11		127	%	50 - 140
			Benzene	2022/08/11	<0.0050	127	mg/kg	50 - 140
			Toluene	2022/08/11	<0.0050			
			Ethylbenzene	2022/08/11	<0.050 <0.010		mg/kg	
							mg/kg	
			m & p-Xylene	2022/08/11	<0.040		mg/kg	
			o-Xylene	2022/08/11	<0.020		mg/kg	
			F1 (C6-C10)	2022/08/11	<10		mg/kg	
A676666	WPK	RPD	Benzene	2022/08/11	NC		%	50
			Toluene	2022/08/11	NC (2)		%	50
			Ethylbenzene	2022/08/11	NC		%	50

Page 9 of 23 Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			m & p-Xylene	2022/08/11	NC		%	50
			o-Xylene	2022/08/11	NC		%	50
			F1 (C6-C10)	2022/08/11	NC (2)		%	30
A677163	JLJ	Spiked Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/08/11		95	%	60 - 140
A677163	JLJ	Method Blank	F4G-SG (Heavy Hydrocarbons-Grav.)	2022/08/11	<500		mg/kg	

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 (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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limit reported based on MDL and sample weight used for analysis.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

10al mml

Cynny Hagen, Key Account Soecialist

-1-

Gita Pokhrel, Laboratory Supervisor

Junchi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

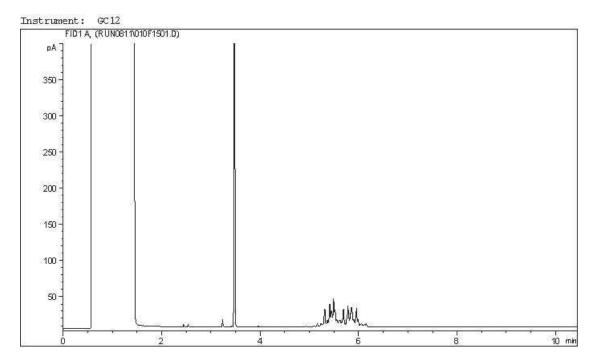
Mermicatelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

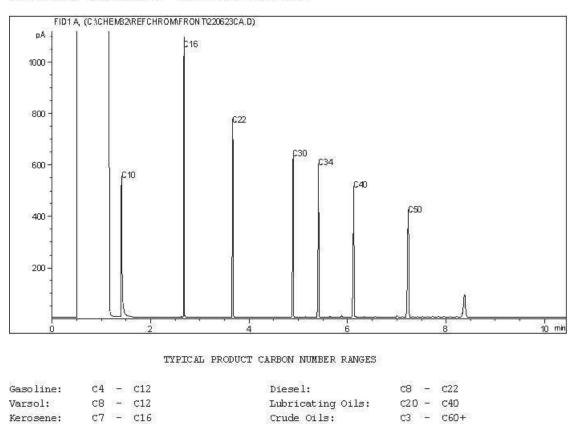
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

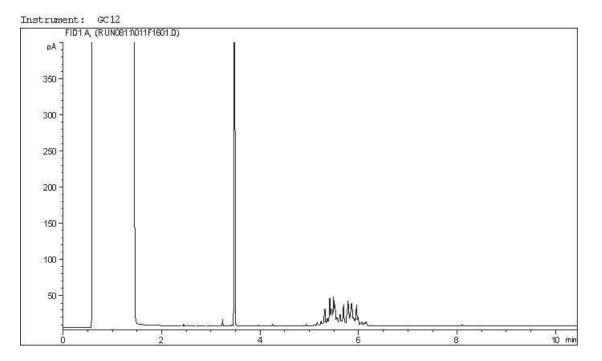
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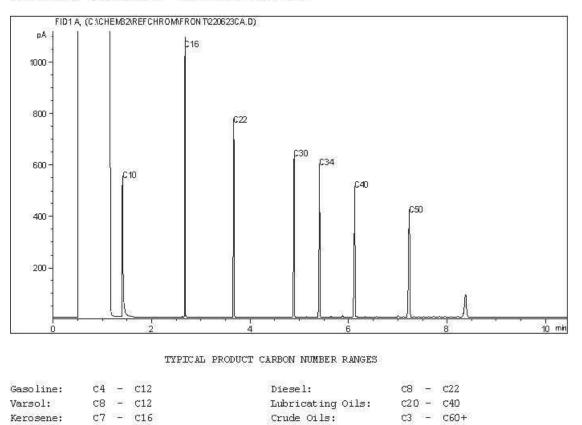


Carbon Range Distribution - Reference Chromatogram



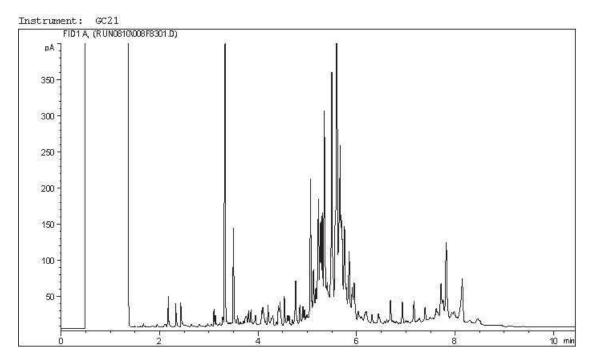


Carbon Range Distribution - Reference Chromatogram

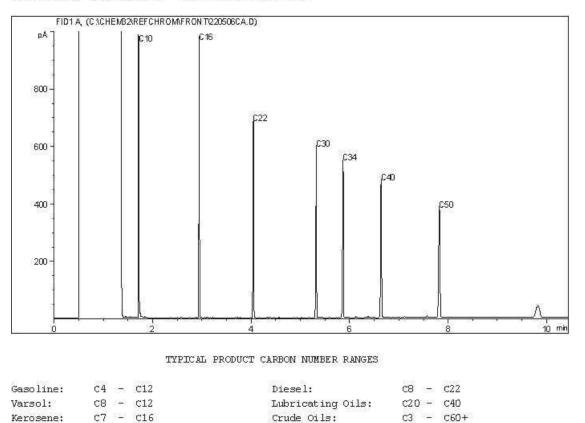


GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: MW22-02-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

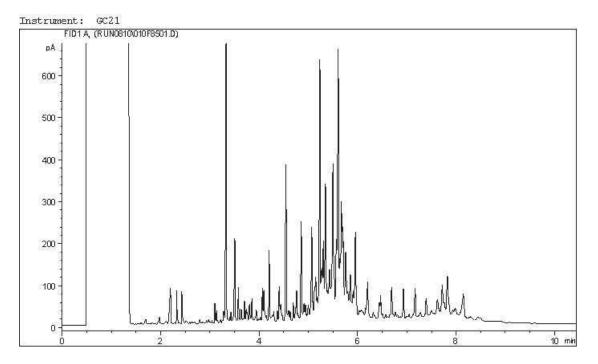


Carbon Range Distribution - Reference Chromatogram

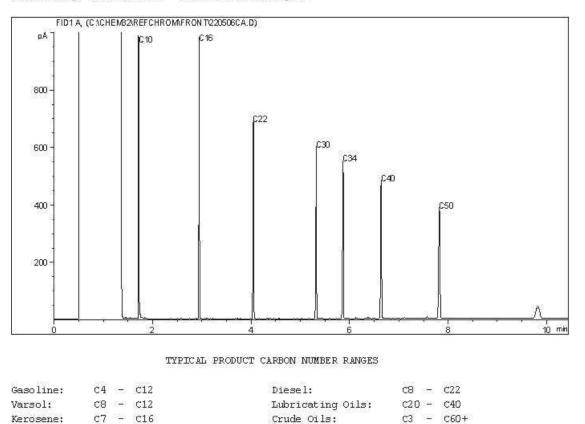


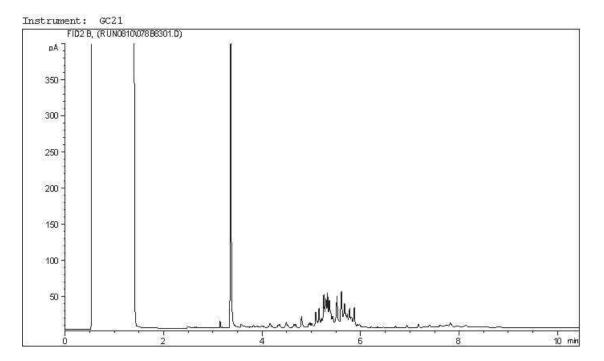
GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: BH22-03-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

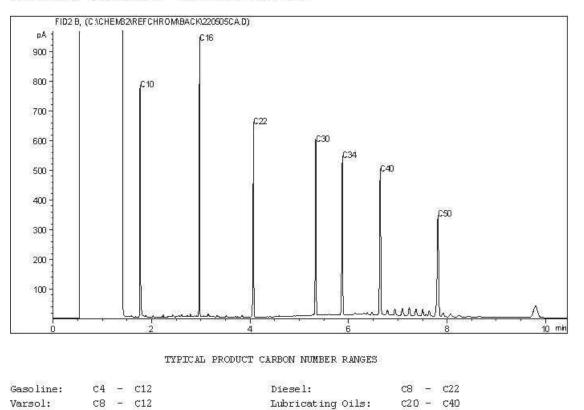


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram

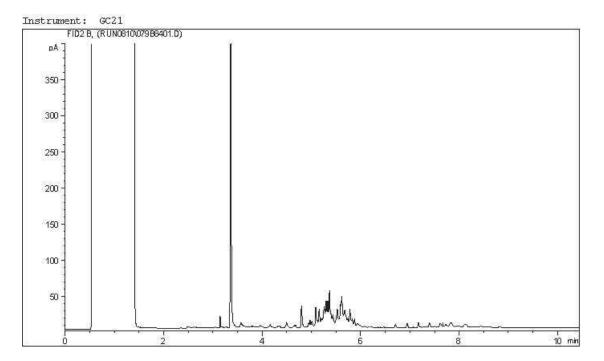


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

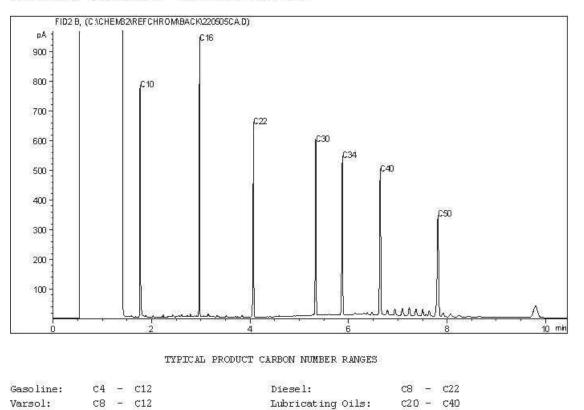
c7 - c16

Kerosene:

Crude Oils:



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

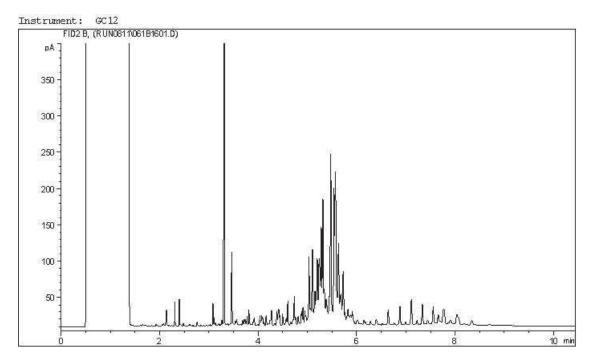
c7 - c16

Kerosene:

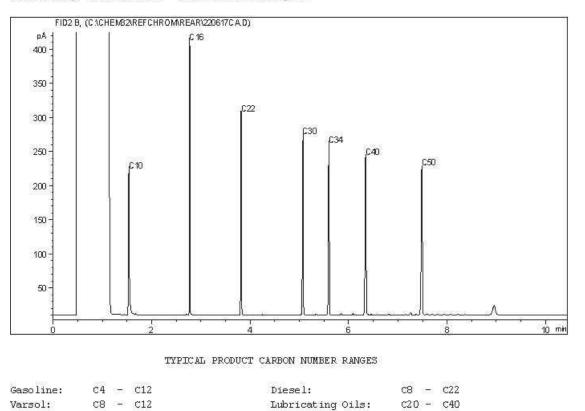
Crude Oils:

GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: BH22-05-02

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

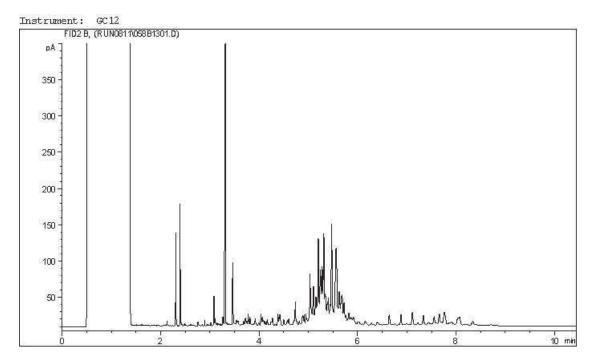
c7 - c16

Kerosene:

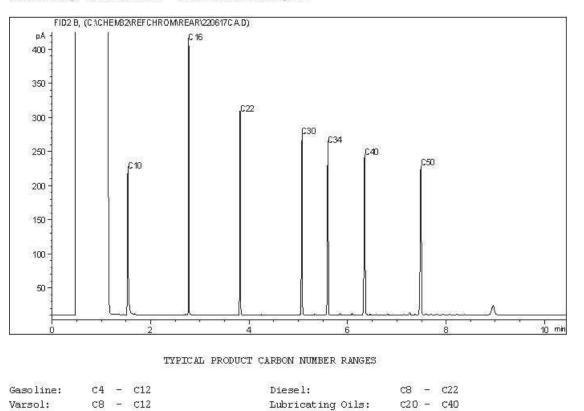
Crude Oils:

GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: BH22-06-02

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Varsol:

Kerosene:

C8 - C12

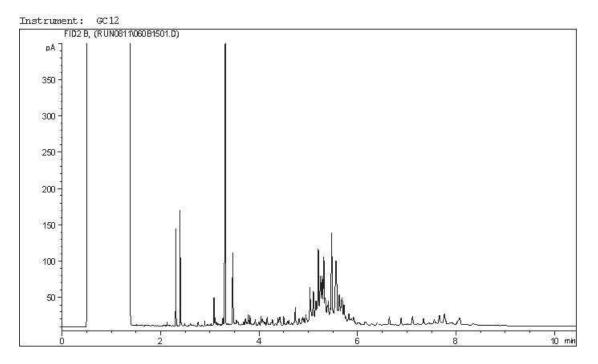
c7 - c16

Crude Oils:

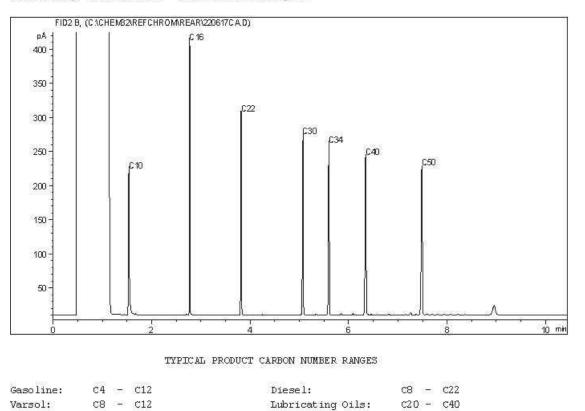
c20 - c40

GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: BH22-06-02

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram

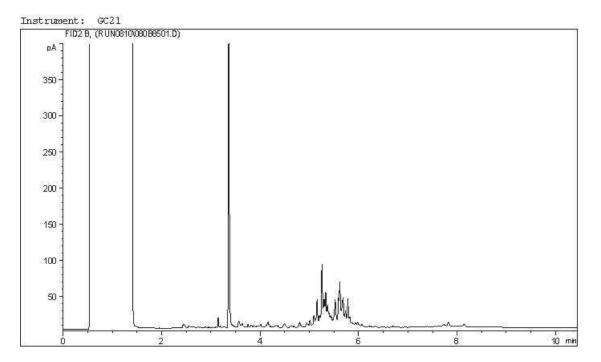


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

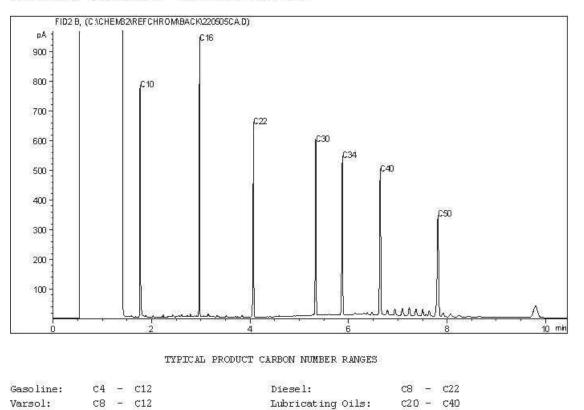
c7 - c16

Kerosene:

Crude Oils:



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

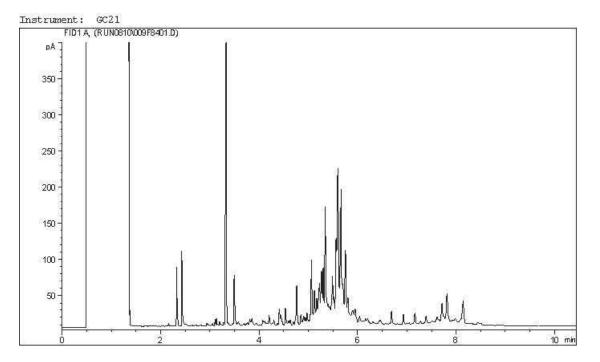
c7 - c16

Kerosene:

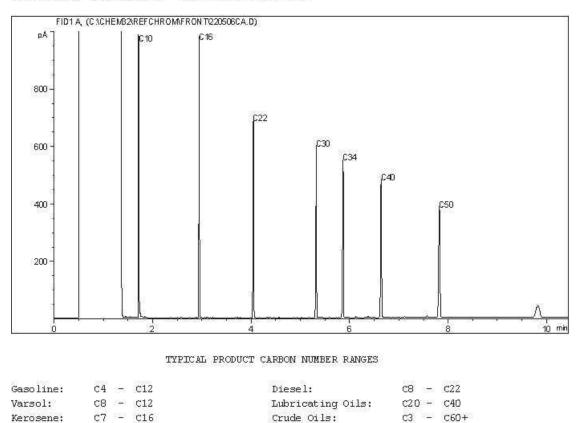
Crude Oils:

GOLDER ASSOCIATES LTD. Client Project #: 22525414-100 Site Reference: CAMP FAREWELL, NT Client ID: BH22-08-01

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram





August 15, 2022

GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Chromatogram Interpretation of CAMP FAREWELL, NT; Project 22525414-100 Bureau Veritas Job No.: C259077

Bureau Veritas was retained by Golder Associates Ltd. to provide hydrocarbon interpretations concerning the likely origin of hydrocarbons quantified within CCME fraction(s) F2, F3 and/or F4.

Analytical Method

Petroleum hydrocarbon analyses at Bureau Veritas are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Chromatogram Interpretation

A comprehensive qualitative assessment of the resultant gas chromatograms in the F2-F4 ranges was performed. The chromatograms were inspected for specific peak profiles that would indicate the possible origin of the hydrocarbons present in the sample. The presence and nature of specific aliphatic compounds (n-alkanes), the presence of characteristic unresolved complex mixtures (UCMs) or "humps" and the relative abundance (ratios) of specific compounds are reviewed as part of the evaluation.

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001



Data Interpretation

Table 1. Qualitative Data Summary – Chromatogram Interpretation

Lab ID	Sample ID	Chromatogram Interpretation
AZF965	MW22-02-01	The COME FO FA observate graphic people profile is consistent with
AZF966	BH22-03-01	The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic
AZF969	BH22-05-02	organic material may contain peak patterns spanning the C10 to
AZF970	BH22-06-02	C50 range, but they are most commonly characterized by a profile
AZF971 BH22-07-0		of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.
AZF972	BH22-08-01	

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Laboratories

Michael Sheppard, B.Sc., P.Bio., QP Consulting Scientist Environmental Services

It Cantuel

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Hydrocarbon Resemblance

Characterization by way of visual evaluation of the sample chromatogram may not be conclusive and is only indicative of substances that may be present. The resemblance information must be regarded as approximate and qualitative.



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Client:			—		Phone: Fax:	4037352273
Identifier:	006TI		Date Rec:	09/01/2022	I	Report Date: 09/30/2022
Client Proj	ect #:	22525414-1	100-1104	Client Project	Name:	22525414-100, Camp Farewll, NT
Purchase (Order #:	C259077				
Test result	s provide	ed for:	CSIA			

Reviewed By:

Jon Robis

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

	arch Dr., Knoxville, T 73-8188 Fax. (865) 57					CSIA
Client: Project:	Bureau Veritas 22525414-100, Ca	mp Farewll, N	Г	MI Project Number: Date Received:	006TI 09/01/2022	
Sample Infe	ormation					
Client Sa	ample ID:		AZF966 (BH22-03-01)			
Sample I	Date:		08/31/2022			
Analyst/F	Reviewer:		MW/SR			
Carbon		Units				
¹³ C/ ¹² C Toluene (S	%) {	5 ¹³ C, VPDB (‰)	-31.2			

Legend: NA= Not Analyzed NS=Not Sampled J= Estimated concentration below PQL but above LQL ND= Not Detected

Quality Assurance/Quality Control Data

Samples Received 9/1/2022						
Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control (‰ Std. Dev.)*	Blank	
¹³ C/ ¹² C Toluene (‰)	09/01/2022	09/28/2022	7.9 °C	0.1	Pass	
	00/01/2022	00,20,2022	7.5 0	0.1	1 835	

* $\bar{\sigma}^{13}_{C}$ positive control values are within +- 0.5‰ of true value.

October 5, 2022



GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Biogenic Toluene Assessment of Camp Farewell, NT; Project 22525414-100 Bureau Veritas Job No.: C259077

Bureau Veritas Environmental & Specialty Services Laboratories (BV Labs) was retained by Golder Associated Ltd. to provide an interpretation concerning the likely origin of toluene quantified within CCME Fraction 1 (nC6-nC10).

Analytical Method

Petroleum hydrocarbon analyses at BV Labs are conducted in accordance with the analytical specifications required by the prescriptive and performance-based elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples. Compound Specific Isotope Analyses (CSIA) are conducted by Microbial Insights Inc. utilizing Isotope Ratio Mass Spectroscopy (IRMS).

Biogenic Toluene

The biogenic toluene evaluation involved the analysis of two extracts. A methanol extract was analyzed by GC/MS in selected ion monitoring (SIM) mode for specific diagnostic volatile organic compounds (VOCs). A second sample aliquot extracted in organic-free deionized water was submitted for CSIA. The CSIA was selected to provide an additional line of evidence concerning which of two origins the sample's toluene is deemed most likely (biogenic or petrogenic).

The diagnostic parameters of primary interest and the ranges typically associated with biogenic toluene samples listed below²:

- Moisture: typically ≥70%
- Absence of an Unresolved Complex Mixture (UCM) within CCME Fractions F2 or F3.
- Presence of a "Biogenic Cluster" within CCME Fraction 3 (F3Bc); specifically F3B, nC32-nC34
- Presence of biogenic monoterpene compound(s)³
- Toluene ratio (T_{ratio}): Ratio between Toluene and sum of all BTEX compounds; typically >0.7
- Cymene ratio (Cratio): Ratio between p-Cymene and the sum of all three isomers; typically >0.8
- Additional diagnostic parameters may be included in the assessment if deemed beneficial (examples include: Carbon Preference Index (CPI), isoprenoid ratios, BIC, etc.)
- Toluene Compound Specific Isotope Analysis (CSIA): δ13C < -30‰

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001

² Bureau Veritas Laboratories Canada: threshold values derived internally (assessment of long-term data set)

³ Target compounds: α/β-Pinene, Camphene, (+)-3-Carene, α-Terpinene, Limonene, o/m/p-Cymene, γ-Terpinene and α-Terpinolene (list may be amended from time-to-time without notice)



Data Interpretation

Table 1. Data Summary - Biogenic Toluene Evaluation

Lab ID	Lark ID	Sample ID		Conclusion ⁵						
			Moist	UCM	F3B _c	Mono	T _{ratio}	Cratio	CSIA	Conclusion
	AZF966	BH22-03-01	Н	No	Yes	No	1.0	NC	-31.2‰	Biogenic Toluene

NC: Unable to Calculate

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, **Bureau Veritas Environmental & Specialty Services Laboratories**



Michael Sheppard, B.Sc., P.Bio, QP **Consulting Scientist Environmental Services**

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager - Western Canada **Environmental Services**

Disclaimer

Biogenic Toluene

A detailed assessment of Selective Ion Monitoring (SIM) GC-MS, and associated project data was completed to provide further information relating to the biogenic and/or petrogenic origin of compounds or fractions quantified as part of the CCME Tier I protocol. All statements must be regarded as approximate and qualitative.

⁴ Diagnostic Parameters

Moist: Moisture; H (≥70%), M (<70 & ≥20%), L (<20%) UCM: Presence/Position of Unresolved Complex Mixture F3Bc: Presence of a biogenic cluster within F3B CSIA: Biogenic Toluene δ13C < -30‰; Petrogenic Toluene δ13C between -29.5‰ and -27.5‰

Mono: Biogenic monoterpenes (excluding cymenes) T_{ratio} : Toluene Ratio (T/ Σ BTEX)

Cratio: Cymene Ratio (p-Cymene/SCymene isomers) Reported value sourced from Microbial Insights Inc. report 006TI; dated 2022/09/30

⁵ Conclusions

Biogenic Toluene: Quantified toluene likely of biogenic origin Petrogenic Toluene: Quantified toluene likely of petrogenic origin Inconclusive (both): Presence of both biogenic and petrogenic diagnostic parameters Inconclusive (neither): Insufficient evidence to support Biogenic or Petrogenic origin



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL,NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/06 Report #: R3226709 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C260013 Received: 2022/08/12, 09:00

Sample Matrix: Soil # Samples Received: 8

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	4	2022/08/16	2022/08/16	AB SOP-00034 / AB SOP- 00042	EPA 6010d R5 m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 3)	3	N/A	2022/08/16	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 3)	5	N/A	2022/08/17	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	8	N/A	2022/08/17		Auto Calc
Hexavalent Chromium (1, 4)	4	2022/08/16	2022/08/16	AB SOP-00063	SM 23 3500-Cr B m
Barium on ICP using Fusion Extraction (2)	1	N/A	2022/09/06		
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	7	2022/08/15	2022/08/16	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	1	2022/08/17	2022/08/17	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	1	2022/08/16	2022/08/16	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	3	2022/08/16	2022/08/17	AB SOP-00001 / AB SOP- 00043	EPA 6020b R2 m
Moisture (1)	8	N/A	2022/08/16	AB SOP-00002	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL,NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/06 Report #: R3226709 Version: 3 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C260013

Received: 2022/08/12, 09:00

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St., Calgary, AB, T2E 6P8

(2) This test was performed by AGAT - Calgary, 2910 12th Street NE , Calgary, AB, T2E 7P7

(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(4) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(5) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.





Please direct all questions regarding this Certificate of Analysis to your Project Manager. Cynny Hagen, Key Account Specialist Email: Cynny.HAGEN@bureauveritas.com Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		AZM158	AZM159	AZM159		AZM160		AZM161		
Sampling Date		2022/08/08	2022/08/08	2022/08/08		2022/08/08		2022/08/08		
		11:00	11:10	11:10		11:20		11:30		
COC Number		1 of 1	1 of 1	1 of 1		1 of 1		1 of 1		
	UNITS	BH22-19-01	BH22-19-02	BH22-19-02 Lab-Dup	RDL	BH22-19-03	RDL	BH22-19-04	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	14	<10	N/A	10	44 (1)	23	<10	10	A681385
F3 (C16-C34 Hydrocarbons)	mg/kg	160	<50	N/A	50	580 (1)	110	<50	50	A681385
F4 (C34-C50 Hydrocarbons)	mg/kg	73	<50	N/A	50	190 (1)	110	<50	50	A681385
Reached Baseline at C50	mg/kg	Yes	Yes	N/A	N/A	Yes	N/A	Yes	N/A	A681385
Physical Properties					•					
Moisture	%	10	4.9	4.1	0.30	57	0.30	17	0.30	A681498
Volatiles						•	•			
Xylenes (Total)	mg/kg	<0.045	<0.045	N/A	0.045	<0.14	0.14	<0.045	0.045	A679841
F1 (C6-C10) - BTEX	mg/kg	<10	<10	N/A	10	<15	15	<10	10	A679841
Field Preserved Volatiles			-					-		
Benzene	mg/kg	<0.0050	<0.0050	N/A	0.0050	<0.014 (2)	0.014	<0.0050	0.0050	A680671
Toluene	mg/kg	<0.050	<0.050	N/A	0.050	<0.050 (2)	0.050	<0.050	0.050	A680671
Ethylbenzene	mg/kg	<0.010	<0.010	N/A	0.010	<0.021 (2)	0.021	<0.010	0.010	A680671
m & p-Xylene	mg/kg	<0.040	<0.040	N/A	0.040	<0.13 (3)	0.13	<0.040	0.040	A680671
o-Xylene	mg/kg	<0.020	<0.020	N/A	0.020	<0.064 (3)	0.064	<0.020	0.020	A680671
F1 (C6-C10)	mg/kg	<10	<10	N/A	10	<15 (2)	15	<10	10	A680671
Surrogate Recovery (%)					-					
1,4-Difluorobenzene (sur.)	%	98	97	N/A	N/A	96	N/A	96	N/A	A680671
4-Bromofluorobenzene (sur.)	%	99	100	N/A	N/A	99	N/A	99	N/A	A680671
D10-o-Xylene (sur.)	%	98	94	N/A	N/A	102	N/A	111	N/A	A680671
D4-1,2-Dichloroethane (sur.)	%	97	97	N/A	N/A	99	N/A	99	N/A	A680671
O-TERPHENYL (sur.)	%	127	91	N/A	N/A	135	N/A	129	N/A	A681385

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(2) Detection limit reported based on MDL and sample weight used for analysis.

(3) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

								r	r
Bureau Veritas ID		AZM162	AZM163		AZM164		AZM165		
Sampling Date		2022/08/08	2022/08/08		2022/08/08		2022/08/08		
		09:40	09:40		09:50		10:00		
COC Number		1 of 1	1 of 1		1 of 1		1 of 1		
	UNITS	BH22-27-05	DUP C	RDL	BH22-27-06	RDL	BH22-27-07	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	22	25	10	<10	10	<10	10	A681385
F3 (C16-C34 Hydrocarbons)	mg/kg	88	140	50	<50	50	<50	50	A681385
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	54	50	<50	50	<50	50	A681385
Reached Baseline at C50	mg/kg	Yes	Yes	N/A	Yes	N/A	Yes	N/A	A681385
Physical Properties									
Moisture	%	18	22	0.30	18	0.30	16	0.30	A681498
Volatiles									
Xylenes (Total)	mg/kg	<0.045	<0.045	0.045	<0.11	0.11	<0.045	0.045	A679841
F1 (C6-C10) - BTEX	mg/kg	<10	<10	10	<12	12	<10	10	A679841
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	0.0050	<0.011 (1)	0.011	<0.0050	0.0050	A680671
Toluene	mg/kg	<0.050	<0.050	0.050	<0.050 (1)	0.050	<0.050	0.050	A680671
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	<0.017 (1)	0.017	<0.010	0.010	A680671
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	<0.10 (2)	0.10	<0.040	0.040	A680671
o-Xylene	mg/kg	<0.020	<0.020	0.020	<0.051 (2)	0.051	<0.020	0.020	A680671
F1 (C6-C10)	mg/kg	<10	<10	10	<12 (1)	12	<10	10	A680671
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	102	103	N/A	93	N/A	97	N/A	A680671
4-Bromofluorobenzene (sur.)	%	87	86	N/A	99	N/A	99	N/A	A680671
D10-o-Xylene (sur.)	%	119	113	N/A	155 (3)	N/A	101	N/A	A680671
D4-1,2-Dichloroethane (sur.)	%	115	119	N/A	103	N/A	99	N/A	A680671
O-TERPHENYL (sur.)	%	128	138	N/A	131	N/A	130	N/A	A681385

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limit reported based on MDL and sample weight used for analysis.

(2) Detection limits raised based on sample weight used for analysis.

(3) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		AZM158		AZM159		AZM160			AZM161		
Sampling Date		2022/08/08 11:00		2022/08/08 11:10		2022/08/08 11:20			2022/08/08 11:30		
COC Number		1 of 1		1 of 1		1 of 1			1 of 1		
	UNITS	BH22-19-01	QC Batch	BH22-19-02	RDL	BH22-19-03	RDL	QC Batch	BH22-19-04	RDL	QC Batch
Elements											
Soluble (Hot water) Boron (B)	mg/kg	0.47	A683000	0.13	0.10	0.74	0.30	A683000	<0.10	0.10	A683007
Hex. Chromium (Cr 6+)	mg/kg	<0.080	A682697	<0.080	0.080	<0.18 (1)	0.18	A682694	<0.080	0.080	A682694
Total Antimony (Sb)	mg/kg	0.61	A683223	<0.50	0.50	<0.50	0.50	A683223	<0.50	0.50	A682439
Total Arsenic (As)	mg/kg	4.0	A683223	4.4	1.0	2.7	1.0	A683223	6.3	1.0	A682439
Total Barium (Ba)	mg/kg	1300	A683223	200	1.0	290	1.0	A683223	310	1.0	A682439
Total Beryllium (Be)	mg/kg	<0.40	A683223	<0.40	0.40	<0.40	0.40	A683223	<0.40	0.40	A682439
Total Cadmium (Cd)	mg/kg	0.13	A683223	<0.050	0.050	0.33	0.050	A683223	0.069	0.050	A682439
Total Chromium (Cr)	mg/kg	5.5	A683223	5.8	1.0	7.8	1.0	A683223	12	1.0	A682439
Total Cobalt (Co)	mg/kg	1.8	A683223	1.5	0.50	4.0	0.50	A683223	3.7	0.50	A682439
Total Copper (Cu)	mg/kg	15	A683223	3.5	1.0	7.5	1.0	A683223	5.6	1.0	A682439
Total Lead (Pb)	mg/kg	38	A683223	6.7	0.50	4.6	0.50	A683223	6.9	0.50	A682439
Total Mercury (Hg)	mg/kg	<0.050	A683223	<0.050	0.050	0.051	0.050	A683223	<0.050	0.050	A682439
Total Molybdenum (Mo)	mg/kg	0.75	A683223	0.67	0.40	0.63	0.40	A683223	1.2	0.40	A682439
Total Nickel (Ni)	mg/kg	4.6	A683223	3.8	1.0	17	1.0	A683223	10	1.0	A682439
Total Selenium (Se)	mg/kg	<0.50	A683223	<0.50	0.50	0.77	0.50	A683223	<0.50	0.50	A682439
Total Silver (Ag)	mg/kg	<0.20	A683223	<0.20	0.20	<0.20	0.20	A683223	<0.20	0.20	A682439
Total Thallium (Tl)	mg/kg	<0.10	A683223	<0.10	0.10	<0.10	0.10	A683223	<0.10	0.10	A682439
Total Tin (Sn)	mg/kg	<1.0	A683223	<1.0	1.0	<1.0	1.0	A683223	<1.0	1.0	A682439
Total Uranium (U)	mg/kg	0.36	A683223	0.35	0.20	0.55	0.20	A683223	0.31	0.20	A682439
Total Vanadium (V)	mg/kg	9.2	A683223	11	1.0	20	1.0	A683223	15	1.0	A682439
Total Zinc (Zn)	mg/kg	68	A683223	11	10	<10	10	A683223	29	10	A682439
RDL = Reportable Detection Lin	nit										

RDL = Reportable Detection Limit

(1) Detection limits raised due to high moisture content, samples contain => 50% moisture.



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		AZM158	
Buleau Ventas ID			
Sampling Date		2022/08/08	
ounping bute		11:00	
COC Number		1 of 1	
	UNITS	BH22-19-01	QC Batch
Parameter			
Subcontract Parameter	N/A	ATTACHED	A705550



GENERAL COMMENTS

Each te	mperature is the	average of up to t	hree cooler temperatures taken at receipt	
]	Package 1	1.7°C		
Version	2: Report reissue	d to include Chron	natogram analysis on sample AZM160/BH22-19-03 as per client request received 2022/08/18.	
Version	3: Report reissue	d to include result	s for Barium - True Total on sample BH22-19-01/AZM158 as per client request received 2022/08/24.	
Sample	AZM158 [BH22-1	19-01] : Please see	e attachment for Barium on ICP using Fusion Extraction results.	
			CCME REGULATED METALS - SOILS (SOIL) Comments	
Sample	AZM160 [BH22-1	.9-03] Boron (Hot	Water Soluble): Detection limits raised based on sample weight used for analysis.	
Results	relate only to the	e items tested.		



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A680671	D01	Matrix Spike	1,4-Difluorobenzene (sur.)	2022/08/16		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		100	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/16		105	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		99	%	50 - 140
			Benzene	2022/08/16		102	%	50 - 140
			Toluene	2022/08/16		100	%	50 - 140
			Ethylbenzene	2022/08/16		99	%	50 - 140
			m & p-Xylene	2022/08/16		100	%	50 - 140
			o-Xylene	2022/08/16		99	%	50 - 140
			F1 (C6-C10)	2022/08/16		104	%	60 - 140
A680671	D01	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/16		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		100	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/16		93	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		99	%	50 - 140
			Benzene	2022/08/16		98	%	60 - 130
			Toluene	2022/08/16		94	%	60 - 130
			Ethylbenzene	2022/08/16		95	%	60 - 130
			m & p-Xylene	2022/08/16		93	%	60 - 130
			o-Xylene	2022/08/16		93	%	60 - 130
			F1 (C6-C10)	2022/08/16		97	%	60 - 140
A680671	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/17		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/17		106	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/17		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/17		96	%	50 - 140
			Benzene	2022/08/17	<0.0050		mg/kg	
			Toluene	2022/08/17	<0.050		mg/kg	
			Ethylbenzene	2022/08/17	<0.010		mg/kg	
			m & p-Xylene	2022/08/17	<0.040		mg/kg	
			o-Xylene	2022/08/17	<0.020		mg/kg	
			F1 (C6-C10)	2022/08/17	<10		mg/kg	
A680671	DO1	RPD	Benzene	2022/08/17	9.8		%	50
			Toluene	2022/08/17	NC		%	50
			Ethylbenzene	2022/08/17	24		%	50
			m & p-Xylene	2022/08/17	NC		%	50
			o-Xylene	2022/08/17	NC		%	50
			F1 (C6-C10)	2022/08/17	NC		%	30
A681385	VP4	Matrix Spike	O-TERPHENYL (sur.)	2022/08/16		134	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16		128	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/16		131	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/16		128	%	60 - 140
A681385	VP4	Spiked Blank	O-TERPHENYL (sur.)	2022/08/16		116	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16		113	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/16		117	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/16		114	%	60 - 140
A681385	VP4	Method Blank	O-TERPHENYL (sur.)	2022/08/16		128	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/16	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/16	<50		mg/kg	
A681385	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2022/08/16	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/16	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/16	NC		%	40
A681498	A1H	Method Blank	Moisture	2022/08/16	<0.30		%	

Page 8 of 24



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A681498	A1H	RPD [AZM159-02]	Moisture	2022/08/16	18		%	20
A682439	KH2	Matrix Spike	Total Antimony (Sb)	2022/08/16		94	%	75 - 125
		·	Total Arsenic (As)	2022/08/16		99	%	75 - 125
			Total Barium (Ba)	2022/08/16		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/16		101	%	75 - 125
			Total Cadmium (Cd)	2022/08/16		100	%	75 - 125
			Total Chromium (Cr)	2022/08/16		121	%	75 - 125
			Total Cobalt (Co)	2022/08/16		100	%	75 - 125
			Total Copper (Cu)	2022/08/16		97	%	75 - 125
			Total Lead (Pb)	2022/08/16		96	%	75 - 125
			Total Mercury (Hg)	2022/08/16		88	%	75 - 125
			Total Molybdenum (Mo)	2022/08/16		102	%	75 - 125
			Total Nickel (Ni)	2022/08/16		103	%	75 - 125
			Total Selenium (Se)	2022/08/16		100	%	75 - 125
			Total Silver (Ag)	2022/08/16		100	%	75 - 125
			Total Thallium (Tl)	2022/08/16		95	%	75 - 125
			Total Tin (Sn)	2022/08/16		102	%	75 - 125
			Total Uranium (U)	2022/08/16		91	%	75 - 125
			Total Vanadium (V)	2022/08/16		151 (1)	%	75 - 125
			Total Zinc (Zn)	2022/08/16		NC	%	75 - 125
A682439	KH2	QC Standard	Total Antimony (Sb)	2022/08/16		114	%	15 - 182
			Total Arsenic (As)	2022/08/16		108	%	53 - 147
			Total Barium (Ba)	2022/08/16		105	%	80 - 119
			Total Cadmium (Cd)	2022/08/16		105	%	72 - 128
			Total Chromium (Cr)	2022/08/16		99	%	59 - 141
			Total Cobalt (Co)	2022/08/16		100	%	58 - 142
			Total Copper (Cu)	2022/08/16		99	%	83 - 117
			Total Lead (Pb)	2022/08/16		112	%	79 - 121
			Total Molybdenum (Mo)	2022/08/16		119	%	67 - 133
			Total Nickel (Ni)	2022/08/16		112	%	79 - 121
			Total Silver (Ag)	2022/08/16		101	%	47 - 153
			Total Tin (Sn)	2022/08/16		103	%	67 - 133
			Total Uranium (U)	2022/08/16		89	%	77 - 123
			Total Vanadium (V)	2022/08/16		103	%	79 - 121
			Total Zinc (Zn)	2022/08/16		107	%	79 - 121
A682439	KH2	Spiked Blank	Total Antimony (Sb)	2022/08/16		107	%	80 - 120
			Total Arsenic (As)	2022/08/16		98	%	80 - 120
			Total Barium (Ba)	2022/08/16		101	%	80 - 120
			Total Beryllium (Be)	2022/08/16		97	%	80 - 120
			Total Cadmium (Cd)	2022/08/16		99	%	80 - 120
			Total Chromium (Cr)	2022/08/16		99	%	80 - 120
			Total Cobalt (Co)	2022/08/16		99	%	80 - 120
			Total Copper (Cu)	2022/08/16		98	%	80 - 120
			Total Lead (Pb)	2022/08/16		98	%	80 - 120
			Total Mercury (Hg)	2022/08/16		99	%	80 - 120
			Total Molybdenum (Mo)	2022/08/16		100	%	80 - 120
			Total Nickel (Ni)	2022/08/16		99	%	80 - 120
			Total Selenium (Se)	2022/08/16		103	%	80 - 120
			Total Silver (Ag)	2022/08/16		99	%	80 - 120
								80 - 120
			lotal Inallium (II)	2022/08/10		99	%	00-120
			Total Thallium (Tl) Total Tin (Sn)	2022/08/16 2022/08/16		99 99	% %	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2022/08/16		99	%	80 - 120
			Total Zinc (Zn)	2022/08/16		100	%	80 - 120
A682439	KH2	Method Blank	Total Antimony (Sb)	2022/08/16	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/16	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/16	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/16	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/16	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/16	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/16	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/16	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/16	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/16	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/16	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/16	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/16	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/16	<0.20		mg/kg	
			Total Thallium (TI)	2022/08/16	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/16	<1.0		mg/kg	
			Total Uranium (U)	2022/08/16	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/16	<1.0		mg/kg	
			Total Zinc (Zn)	2022/08/16	<10		mg/kg	
A682439	KH2	RPD	Total Antimony (Sb)	2022/08/16	1.3		%	30
A002433	RHZ		Total Arsenic (As)	2022/08/16	4.3		%	30
			Total Barium (Ba)	2022/08/16	1.5		%	35
			Total Beryllium (Be)	2022/08/16	4.5		%	30
			Total Cadmium (Cd)	2022/08/16	3.3		%	30
			Total Chromium (Cr)	2022/08/16	3.6		%	30
			Total Cobalt (Co)	2022/08/16	3.3		%	30
							%	30
			Total Copper (Cu)	2022/08/16	4.5			
			Total Lead (Pb)	2022/08/16	2.1		%	35
			Total Mercury (Hg)	2022/08/16	0.65		%	35
			Total Molybdenum (Mo)	2022/08/16	0.18		%	35
			Total Nickel (Ni)	2022/08/16	4.3		%	30
			Total Selenium (Se)	2022/08/16	NC		%	30
			Total Silver (Ag)	2022/08/16	NC		%	35
			Total Thallium (TI)	2022/08/16	3.6		%	30
			Total Tin (Sn)	2022/08/16	NC		%	35
			Total Uranium (U)	2022/08/16	2.5		%	30
			Total Vanadium (V)	2022/08/16	4.0		%	30
			Total Zinc (Zn)	2022/08/16	3.1		%	30
A682694	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/16		96	%	75 - 125
A682694	FM0	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/16		104	%	80 - 120
A682694	FM0	Method Blank	Hex. Chromium (Cr 6+)	2022/08/16	<0.080		mg/kg	
A682694	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/16	NC		%	35
A682697	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/16		97	%	75 - 125
A682697	FM0	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/16		98	%	80 - 120
A682697	FM0	Method Blank	Hex. Chromium (Cr 6+)	2022/08/16	<0.080		mg/kg	
A682697	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/16	NC		%	35
A683000	MPU	Matrix Spike	Soluble (Hot water) Boron (B)	2022/08/16		95	%	75 - 125
A683000	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/16		89	%	80 - 120
A683000	MPU	Method Blank	Soluble (Hot water) Boron (B)	2022/08/16	<0.10		mg/kg	
A683000	MPU	RPD	Soluble (Hot water) Boron (B)	2022/08/16	4.3		%	35

Page 10 of 24



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A683007	MPU	Matrix Spike	Soluble (Hot water) Boron (B)	2022/08/16		91	%	75 - 125
A683007	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/16		94	%	80 - 120
A683007	MPU	Method Blank	Soluble (Hot water) Boron (B)	2022/08/16	<0.10		mg/kg	
A683007	MPU	RPD	Soluble (Hot water) Boron (B)	2022/08/16	6.8		%	35
A683223	KH2	Matrix Spike	Total Antimony (Sb)	2022/08/17		104	%	75 - 125
		·	Total Arsenic (As)	2022/08/17		100	%	75 - 125
			Total Barium (Ba)	2022/08/17		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/17		105	%	75 - 125
			Total Cadmium (Cd)	2022/08/17		101	%	75 - 125
			Total Chromium (Cr)	2022/08/17		113	%	75 - 125
			Total Cobalt (Co)	2022/08/17		102	%	75 - 125
			Total Copper (Cu)	2022/08/17		101	%	75 - 125
			Total Lead (Pb)	2022/08/17		103	%	75 - 125
			Total Mercury (Hg)	2022/08/17		101	%	75 - 125
			Total Molybdenum (Mo)	2022/08/17		106	%	75 - 125
			Total Nickel (Ni)	2022/08/17		106	%	75 - 125
			Total Selenium (Se)	2022/08/17		100	%	75 - 125
			Total Silver (Ag)	2022/08/17		104	%	75 - 125
			Total Thallium (Tl)	2022/08/17		102	%	75 - 125
			Total Tin (Sn)	2022/08/17		105	%	75 - 125
			Total Uranium (U)	2022/08/17		101	%	75 - 125
			Total Vanadium (V)	2022/08/17		131 (1)	%	75 - 125
			Total Zinc (Zn)	2022/08/17		113	%	75 - 125
A683223	KH2	QC Standard	Total Antimony (Sb)	2022/08/17		96	%	15 - 182
			Total Arsenic (As)	2022/08/17		73	%	53 - 147
			Total Barium (Ba)	2022/08/17		89	%	80 - 119
			Total Cadmium (Cd)	2022/08/17		85	%	72 - 128
			Total Chromium (Cr)	2022/08/17		78	%	59 - 141
			Total Cobalt (Co)	2022/08/17		73	%	58 - 142
			Total Copper (Cu)	2022/08/17		101	%	83 - 117
			Total Lead (Pb)	2022/08/17		98	%	79 - 121
			Total Molybdenum (Mo)	2022/08/17		112	%	67 - 133
			Total Nickel (Ni)	2022/08/17		81	%	79 - 121
			Total Silver (Ag)	2022/08/17		80	%	47 - 153
			Total Tin (Sn)	2022/08/17		86	%	67 - 133
			Total Uranium (U)	2022/08/17		81	%	77 - 123
			Total Vanadium (V)	2022/08/17		79	%	79 - 121
			Total Zinc (Zn)	2022/08/17		101	%	79 - 121
A683223	KH2	Spiked Blank	Total Antimony (Sb)	2022/08/17		101	%	80 - 120
			Total Arsenic (As)	2022/08/17		94	%	80 - 120
			Total Barium (Ba)	2022/08/17		97	%	80 - 120
			Total Beryllium (Be)	2022/08/17		98	%	80 - 120
			Total Cadmium (Cd)	2022/08/17		96	%	80 - 120
			Total Chromium (Cr)	2022/08/17		97	%	80 - 120
			Total Cobalt (Co)	2022/08/17		97	%	80 - 120
			Total Copper (Cu)	2022/08/17		97	%	80 - 120
			Total Lead (Pb)	2022/08/17		97	%	80 - 120
			Total Mercury (Hg)	2022/08/17		102	%	80 - 120
			Total Molybdenum (Mo)	2022/08/17		99	%	80 - 120
			Total Nickel (Ni)	2022/08/17		96	%	80 - 120
			Total Selenium (Se)	2022/08/17		96	%	80 - 120
			Total Silver (Ag)	2022/08/17		98	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Thallium (TI)	2022/08/17		98	%	80 - 120
			Total Tin (Sn)	2022/08/17		97	%	80 - 120
			Total Uranium (U)	2022/08/17		98	%	80 - 120
			Total Vanadium (V)	2022/08/17		98	%	80 - 120
			Total Zinc (Zn)	2022/08/17		95	%	80 - 120
A683223	KH2	Method Blank	Total Antimony (Sb)	2022/08/17	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/17	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/17	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/17	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/17	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/17	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/17	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/17	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/17	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/17	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/17	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/17	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/17	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/17	<0.20		mg/kg	
			Total Thallium (Tl)	2022/08/17	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/17	<1.0		mg/kg	
			Total Uranium (U)	2022/08/17	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/17	<1.0		mg/kg	
	83223 KH2 RPD		Total Zinc (Zn)	2022/08/17	<10		mg/kg	
A683223	KH2	RPD	Total Antimony (Sb)	2022/08/17	NC		%	30
			Total Arsenic (As)	2022/08/17	10		%	30
			Total Barium (Ba)	2022/08/17	14		%	35
			Total Beryllium (Be)	2022/08/17	NC		%	30
			Total Cadmium (Cd)	2022/08/17	0.64		%	30
			Total Chromium (Cr)	2022/08/17	7.9		%	30
			Total Cobalt (Co)	2022/08/17	7.9		%	30
			Total Copper (Cu)	2022/08/17	5.9		%	30
			Total Lead (Pb)	2022/08/17	3.3		%	35
			Total Mercury (Hg)	2022/08/17	NC		%	35
			Total Molybdenum (Mo)	2022/08/17	2.7		%	35
			Total Nickel (Ni)	2022/08/17	4.8		%	30
			Total Selenium (Se)	2022/08/17	NC		%	30
			Total Silver (Ag)	2022/08/17	NC		%	35
			Total Thallium (TI)	2022/08/17	NC		%	30
			Total Tin (Sn)	2022/08/17	NC		%	35
			Total Uranium (U)	2022/08/17	5.0		%	30
			Total Vanadium (V)	2022/08/17	11		%	30



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2022/08/17	6.1		%	30
Duplicate	e: Paire	d analysis of a sepa	rate portion of the same sample. Used to ev	valuate the variance in the measure	ment.			

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Chantal Vincent, Customer Solutions Representative

Gita Pokhrel, Laboratory Supervisor

Junzhi Gras

Janet Gao, B.Sc., QP, Supervisor, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

Mermicatelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas 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.

COR FCD-00265 / 5 Page ____ of ____

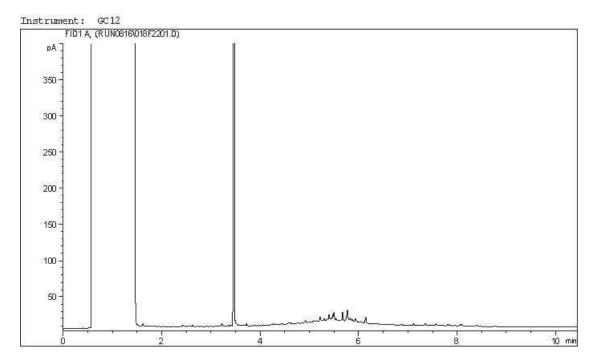
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ADDITIONAL COOLER TEMPERATURE RECORD

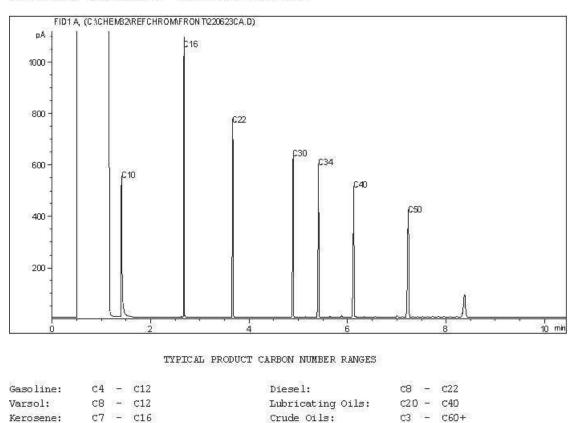
CHAIN-OF-CUSTODY RECORD

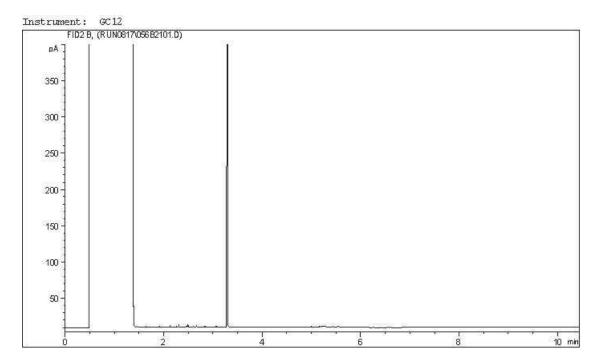
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CHAIN OF CUSTODY RECORD ENV COC - 00013v3	Project Information	Shell	22525414-\$100-\$104	22525414-3000	Camp Forrewelling	() THEST-CHARNEL, NT	NT	Lord, Hu	8 9 10 11 12 13 14 15 16 17 1			ossib - disso n) d, silt, cla	bretam b bretan b letot - cotain - disso di disso di disso di disso disso disso disso disso diso	Wercury Ynor9M 9 Yfinils2 25) 9v9i2		×	×	×					2 war marte	ner and and			NING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOW G THE LABORATORY LISTED ABOVE TO OBTAIN A COPY	LAB USE ONLY Yes	Seal present Seal intact		Delary 2032 08 13	
		Quotation #:	P.O. #/ AFE#:	Project #:	T2P 4K3 Site #:	Site Location:	Sh-COM Site Location		2 3 4 5 6 7		đ	ו גנטווו	PPD F4 F2 F2	яя слея и в гіст втех г.т. втех г.т. втех г.т. втех г.т.	X X	XXXX	X X	* *	X	×	X	×	222222	adver			RD TERMS AND CONDITIONS SIG AND CONDITIONS OR BY CALLIN		Ŷ	Received bv: (Signature/ Print)	Sarah De	
noose Location: (=diagray, A4000 13th 5t, NE, T2E 6P8 Toil Free (800) 386-7247 Edmonton, AB: 9331-48 St. T6B JA4 Toil Free (800) 386-7247 (=Winnipeg, MB: 0-675 Berry St. RJH 1A7 Toil Free (866) 800-6208	Report Information (if differs from invoice)	Golder Associates	Aurelie Bellavance		Calgary AB Code:	403-299-5600	aurelic bellavance WSD.com	1/201	1	Drinking Water - Manitoba	Xother AMSRD	L DELIVERY TO BUREAU VERITAS	Date Sampled Time (24hr)	MM Matrix HH MM HH	08 08 11 00 Soil	08 08 11 10 Soil		08 08 11 30 Soil	08 08 09 40 Soil	08 08 09 40 SOI)	08 08 09 50 Soil	08 08 10 00 Soil	Sales MARANN	2812811 541				LAB USE ONLY	-Seal present Seal intact	cooling media present Time	03 00 2	-
ation: AB: 4000 19th 5 on, AB: 9331 48 eg, MB: D-675 B		Company:	Contact Name:	Street Address	City:	Phone:	Email:	Copies:	Criteria			SAMPLING UNT	Dat	¥	22	22	22	22.	22	22	22	22	N NEW	VAZI			DN THIS CHAIN O ARE AN		2.6 1.0		08 00	
Choose Location: Calgary, AB: 4 Edunatory, AB: 4 Winnipeg, MB	mation Invoice to (requires report)	Client #254, Golder Associates	237 - 4 Ave SW Suite 3300		Calgary Prov: AB Color		Canada Account Payable		Regulatory Criteria	CCME Drinking Water - Canada	Saskatchewan	SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BURE U V		Sample Identification	BH22-19-01	8422-19-02	BH22-19-03	BH22-19- 04	BH 22 - 27 - 05	DUP C	BH 22- 27-06	BH22-27-07	MANNANAN	monnon			•UNLESS OTHERWISE AGREED TO IN WRITING. WORK SUBMITTED ON THIS CHAIN OF CUSTOPY IS SUBJECT TO ARE AVAILABLE FOR VIEWING AT	se onty Yes No	\$ \$ \$	by: (Signature/ Print)	1 Que Melissaburd 22	
	Invoice Information	Company :	Contact	Street	City:	Phone:	Email:	Copies:		LTA 🗌	Sasl				1	2	10 10	4 F	s J	9	7 Đ	8	9 6	10 M	11	12	+UNLESS O	LAB	Seal present Seal intact	Cooling media present Relinquished	1 Mala	

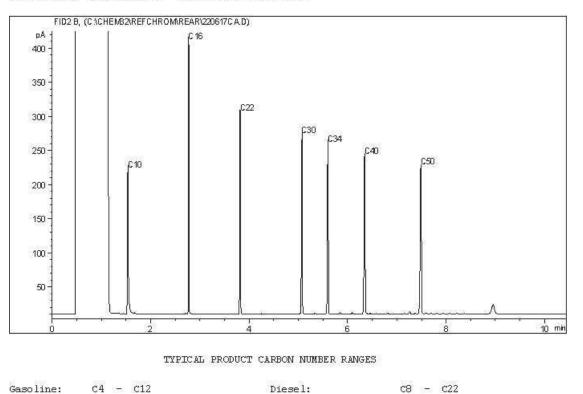


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Varsol:

Kerosene:

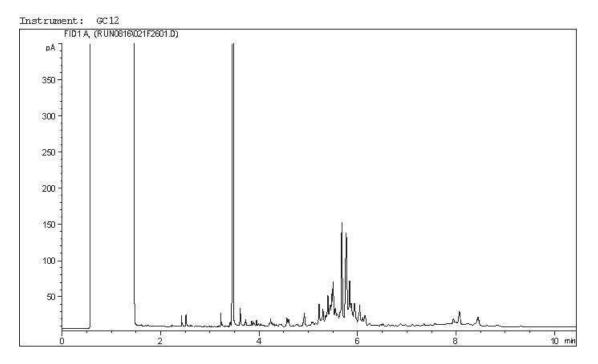
C8 - C12

c7 - c16

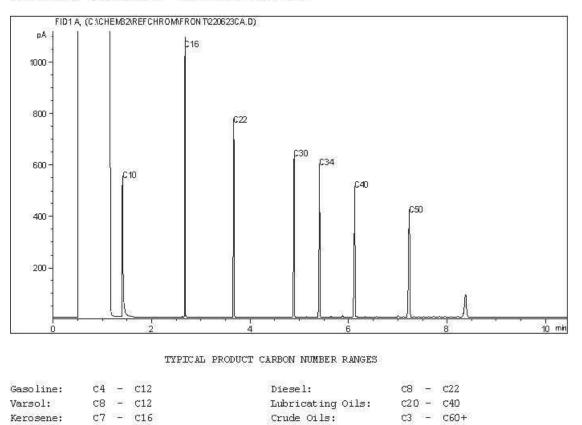
Lubricating Oils:

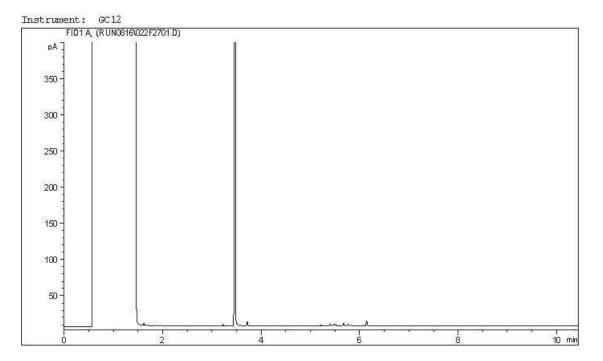
Crude Oils:

c20 - c40

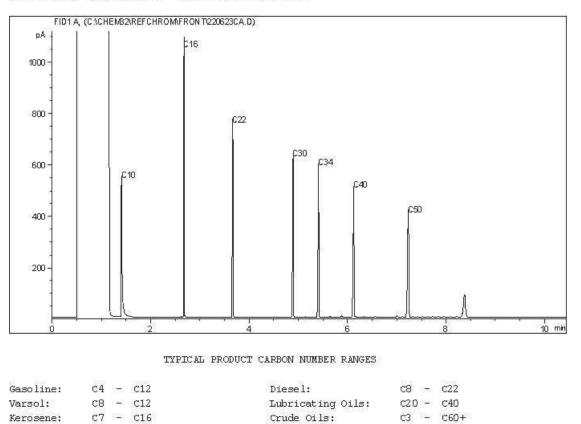


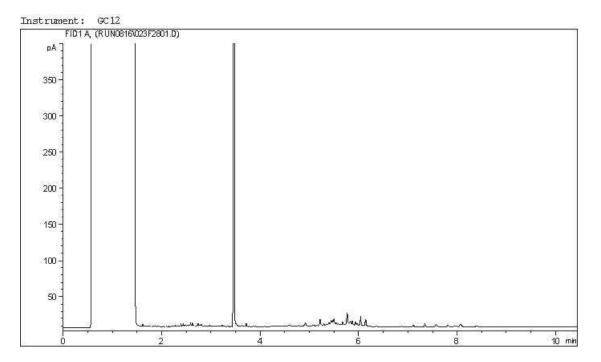
Carbon Range Distribution - Reference Chromatogram



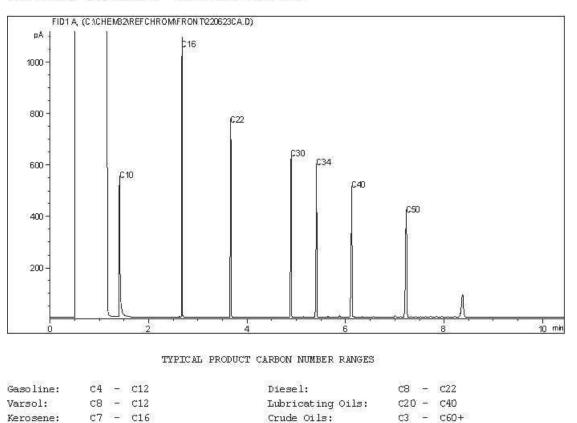


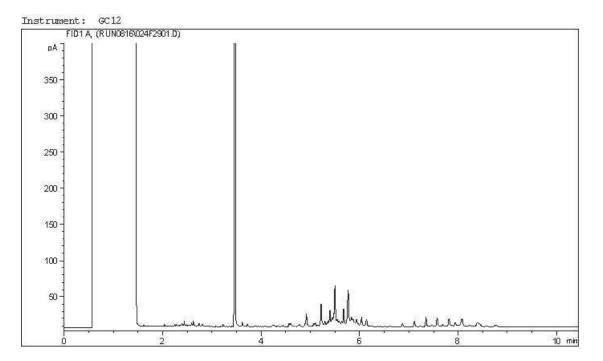
Carbon Range Distribution - Reference Chromatogram



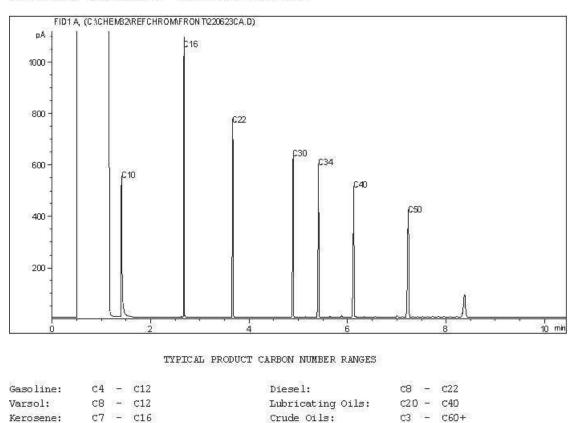


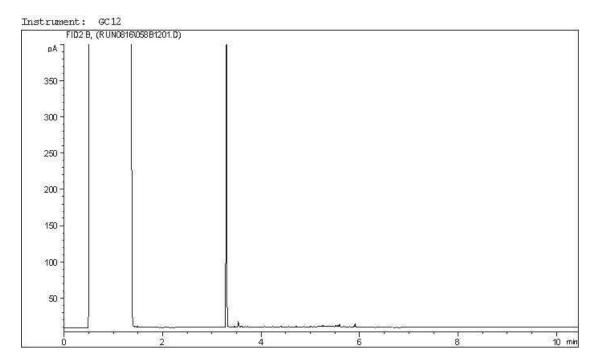
Carbon Range Distribution - Reference Chromatogram



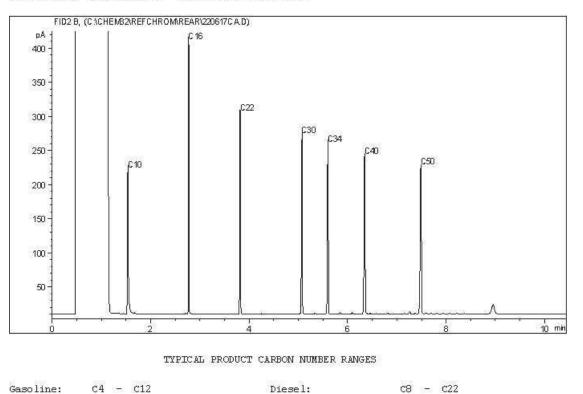


Carbon Range Distribution - Reference Chromatogram





Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Varsol:

Kerosene:

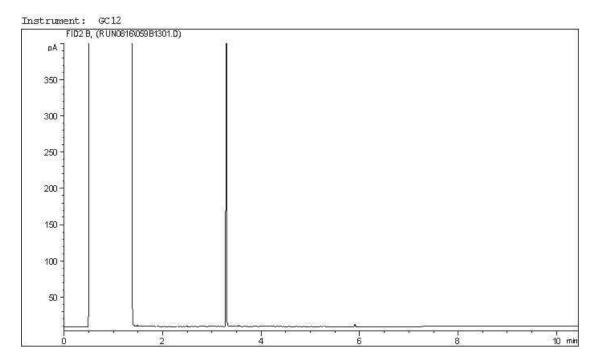
C8 - C12

c7 - c16

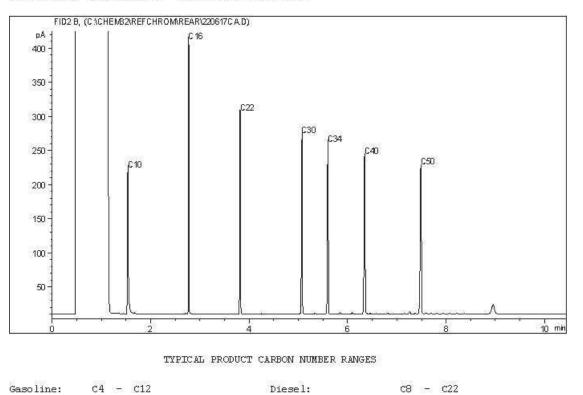
Lubricating Oils:

Crude Oils:

c20 - c40



Carbon Range Distribution - Reference Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Varsol:

Kerosene:

C8 - C12

c7 - c16

Lubricating Oils:

Crude Oils:

c20 - c40



August 19, 2022

GOLDER ASSOCIATES LTD.

2800, 700 -2nd Street SW CALGARY, AB, T2P 2W2

Attention: Aurelie Bellavance

Re: Chromatogram Interpretation of CAMP FAREWELL, NT; Project 22525414-1000 Bureau Veritas Job No.: C260013

Bureau Veritas was retained by Golder Associates Ltd. to provide hydrocarbon interpretations concerning the likely origin of hydrocarbons quantified within CCME fraction(s) F2, F3 and/or F4.

Analytical Method

Petroleum hydrocarbon analyses at Bureau Veritas are conducted in accordance with the analytical specifications required by the prescriptive and performance-based (where appropriate) elements of the CCME Tier I protocols for hydrocarbon determination¹ in soil samples.

Chromatogram Interpretation

A comprehensive qualitative assessment of the resultant gas chromatograms in the F2-F4 ranges was performed. The chromatograms were inspected for specific peak profiles that would indicate the possible origin of the hydrocarbons present in the sample. The presence and nature of specific aliphatic compounds (n-alkanes), the presence of characteristic unresolved complex mixtures (UCMs) or "humps" and the relative abundance (ratios) of specific compounds are reviewed as part of the evaluation.

¹ Canadian Council of Ministers of the Environment: "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier I Method" 2001



Data Interpretation

Table 1. Qualitative Data Summary – Chromatogram Interpretation

Lab ID	Sample ID	Chromatogram Interpretation
AZM160	BH22-19-03	The CCME F2-F4 chromatographic peak profile is consistent with biogenic organic material (e.g. peat). Chromatograms of biogenic organic material may contain peak patterns spanning the C10 to C50 range, but they are most commonly characterized by a profile of unevenly distributed sharp peaks between C28 and C34. The impacts are not consistent with a petroleum product or crude oil.

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely, Bureau Veritas Laboratories

Michael Sheppard, B.Sc., P.Bio., QP Consulting Scientist Environmental Services

Canture

Scott Cantwell, CET, B.Sc., P.Chem. Director and General Manager – Western Canada Environmental Services

Disclaimer

Hydrocarbon Resemblance

Characterization by way of visual evaluation of the sample chromatogram may not be conclusive and is only indicative of substances that may be present. The resemblance information must be regarded as approximate and qualitative.



2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

CLIENT NAME: BUREAU VERITAS CANADA (2019) INC 2021 - 41ST STREET NE Calgary, AB T2E6P2 (403) 291-3077 ATTENTION TO: Cynny Hagen PROJECT: C260013 AGAT WORK ORDER: 22C940491 SOIL ANALYSIS REVIEWED BY: Loan Nguyen, Senior Analyst DATE REPORTED: Sep 06, 2022 PAGES (INCLUDING COVER): 7 VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

*Notes		
Disclaimer:		

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta	
(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	
Environmental Services Association of Alberta (ESAA)	

Page 1 of 7

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. Measurement Uncertainty is not taken into consideration when stating conformity with a specified requirement.



Certificate of Analysis

AGAT WORK ORDER: 22C940491 PROJECT: C260013 2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatiabs.com

CLIENT NAME: BUREAU VERITAS CANADA (2019) INC

SAMPLING SITE:

ATTENTION TO: Cynny Hagen

SAMPLED BY:

Metals - Barium by Fusion ICP													
DATE RECEIVED: 2022-09-01					DATE REPORTED: 2022-09-06								
				AZM158-BH22-									
	S	AMPLE DES	CRIPTION:	19-01									
		SAM	PLE TYPE:	Soil									
		DATES	SAMPLED:	2022-08-08 11:00									
Parameter	Unit	G/S	RDL	4267008									
True Barium by Fusion ICP	mg/kg		50	7750									

Comments:RDL - Reported Detection Limit;G / S - Guideline / Standard4267008Result is based on the dry weight of the sample.

Analysis performed at AGAT Calgary (unless marked by *)

Certified By:



2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

Quality Assurance

CLIENT NAME: BUREAU VERITAS CANADA (2019) INC

PROJECT: C260013

AGAT WORK ORDER: 22C940491

ATTENTION TO: Cynny Hagen

SAMPLING SITE:

SAMPLED BY:

				Soi	l Ana	alysis	5								
RPT Date: Sep 06, 2022			[DUPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lir	ptable nits	Recovery	Lin	eptable nits
		ld					Value	Lower	Upper		Lower	Upper		Lower	Upper
Metals - Barium by Fusion ICP Barium by Fusion ICP-OES	4266587		976	977	0.0%	< 40	95%	70%	130%				NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

Certified By:



AGAT QUALITY ASSURANCE REPORT (V1)

Page 3 of 7

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



2910 12TH STREET NE CALGARY, ALBERTA CANADA T2E 7P7 TEL (403)735-2005 FAX (403)735-2771 http://www.agatlabs.com

Method Summary

CLIENT NAME: BUREAU VERITAS CANA	DA (2019) INC	AGAT WORK ORE	DER: 22C940491
PROJECT: C260013		ATTENTION TO: C	Synny Hagen
SAMPLING SITE:		SAMPLED BY:	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
True Barium by Fusion ICP	SOIL- 0620, INST- 0140	ASTM D4503.08	ICP/OES



Sent To: AGAT - Calgary 2910 12th Street NE Calgary, AB, T2E 7P7 Tel: (403) 735-2005

1-SEP 722 PH12:09 CHAIN OF CUSTODY RECORD FOR SUBCONTRACTED WORK

Page 01 of 01

coc#c260013-CAGT-01-01 22C9H0491

							-												
REPORT INFORMAT	ION									AN	IALYSIS R	EQUEST	TED						
Company:	Bureau Veritas																		
Address:	4000 19st N.E, Calgary, Alberta	, T2E 6P8	3																
Contact Name:	Cynny Hagen						Extraction								÷.				
Email:	Cynny.HAGEN@bureauveritas.	com, Cus	tomersolutions	west@bu	reauverita	as.coi	Extra								1.1				
Phone:	(403) 735-2273						Fusion												
Lab Project #:	C260013						using F												
# SAMPLE ID		MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS		Barium on ICP us										ADDITION	IAL SAM	PLE INFORMATION
1 AZM158-BH2	2-19-01	SOIL	2022/08/08	11:00	ML	1	х									(P:01)			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9														_					
10																			
REGULATORY CRITE	RIA		SPECIAL INSTRU										_						TURNAROUND TIME
			Please inform B • You are not • The hold tin **Please return	accredited	for the req aching for t	ueste he re	ed tesi quest	ed test(s).										X Rush Requireda
COOLER ID:		ï	COOLER ID:				_	_		-1	COOLER								Date Required
Custody Seal Present Custody Seal Intact Cooling Media Present	YES NO Temp: (°C)	*	Custody Seal Prese Custody Seal Intac Cooling Media Pre	t	YES NO	Tem (°C	· .	,a .	·	8,	Custody Custody	Seal Pres Seal Inta Media Pre	ct	YES NO	D Temp (°C)			4	Please inform us if rush charges will be incurred.
RELINQUISHED BY: (S			(YYYY/MM/DD)	RECE	RECEIVED BY: (SIGN & PRINT) DATE: (YYYY/MM						A/DD)	TIME: (HI	H:MM)						
IT AXAT	Kobil Webrehn	2027	109/01	091	30	1,		la	07 C	RU	F	tan	3	2022	109	01	12:0	9	
2.						2.							-						

	SAMPLE INTEGRITY RECEIPT
agat Lat	
RECEIVING BASICS - Shipping	Temperature (Bottles/Jars only) N/A only Soil Bags Received
Company/Consultant: Bureau Veritas	FROZEN (Please Circle if samples received Frozen)
Courier: Prepaid Collect	1 (Bottle/Jar) $NASail ={C} C = 2(Bottle/Jar) ++ ={C} C$
	3 (Bottle/Jar)++=°C 4 (Bottle/Jar)++_=°C
Waybill#	5 (Bottle/Jar)++=°C 6 (Bottle/Jar)++=°C
Branch: EDM GP FN FM RD VAN LYD FSJ EST SASK Other:	7 (Bottle/Jar)++=°C 8 (Bottle/Jar)++=°C
If multiple sites were submitted at once: Yes No	9 (Bottle/Jar)++=°C 10 (Bottle/Jar)++=°C
Custody Seal Intact: Yes No NA	(If more than 10 coolers are received use another sheet of paper and attach)
TAT: <24hr 24-48hr 48-72hr Reg Other	LOGISTICS USE ONLY
Cooler Quantity:	Workorder No: <u>22694049</u>
TIME SENSITIVE ISSUES - Shipping	Samples Damaged: Yes No If YES why?
	No Bubble Wrap Frozen Courier
ALREADY EXCEEDED HOLD TIME? Yes No	Other:
Inorganic Tests (Please Circle): Mibi, BOD, Nitrate/Nitrite, Turbidity,	Account Project Manager:have they been notified of the above issues: Yes No
Color, Microtox, Ortho PO4, Tedlar Bag, Residual Chlorine, Chlorophyll*, Chloroamines*	Whom spoken to: Date/Time:
	CPM Initial
Earliest Expiry:	General Comments:
Hydrocarbons: Earliest Expiry	
SAMPLE INTEGRITY - Shipping	
Hazardous Samples: YES NO Precaution Taken:	
Legal Samples: Yes No	
International Samples: Yes No	
Tape Sealed: Yes No	
Coolant Used: Icepack Bagged Ice Free Ice Free Water None	

* Subcontracted Analysis (See CPM)

No ne

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- N-CIZZ	JAZOO EXPRESS COURIER www.jazoocourier.com	CLIENT USE ONLY	Receiver Name:	Delivery From:	-	envelope, sm/med/lg box, cooler,	eitc.	Jeb/PO/Refarance #.	TA A A A	DRIVER USE ONLY		D/O Time:	# Of TDG # Of Same Day Surcharge I *		and -	D/O Driver Name:	the last	HOTSHOT DETAILS	Or Total Charge (\$):	OFFICE USE ONLY	Invoiced By:	To schedule a pickup please contact dispatch at the city nearest you:	Calgary 403-660-5504 Fort McMurray 587-645-6364 Edmonton 780-903-3628 Grande Prairie 587-297-8406	UPPORTING LOCAL AND CHOOSING JAZ
	JAZO		Robel Mebrahmu	01001002		2			Authorized Shipper Signature:	V	1 BL	6		-		Total # Items Dropped Off:	Authorized Receiver Signature:					To sched	Calgary Edmonto	THANK YOU F
	A STATE		Sender Name:	Date:		# Items:			Authorize		P/U Driver Name:	# Items P/U:	# Of Overweight	Additional Info:		Total # Item	Authorized		Total Km:	Month of		-		

×.



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL,NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/06 Report #: R3227002 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C260016 Received: 2022/08/12, 09:00

Sample Matrix: Soil # Samples Received: 9

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	5	2022/08/16	2022/08/16	AB SOP-00034 / AB SOP-	EPA 6010d R5 m
				00042	
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 3)	9	N/A	2022/08/16	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	9	N/A	2022/08/17		Auto Calc
Hexavalent Chromium (1, 4)	5	2022/08/16	2022/08/16	AB SOP-00063	SM 23 3500-Cr B m
Barium on ICP using Fusion Extraction (2)	5	N/A	2022/09/06		
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	4	2022/08/16	2022/08/16	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (1, 5)	5	2022/08/16	2022/08/17	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	4	2022/08/16	2022/08/16	AB SOP-00001 / AB SOP-	EPA 6020b R2 m
				00043	
Elements by ICPMS - Soils (1)	1	2022/08/16	2022/08/17	AB SOP-00001 / AB SOP-	EPA 6020b R2 m
				00043	
Moisture (1)	9	N/A	2022/08/17	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (1)	5	N/A	2022/08/17		Auto Calc
PAH in Soil by GC/MS (1)	5	2022/08/16	2022/08/17	AB SOP-00036 / AB SOP-	EPA 3540C/8270E m
				00003	

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas 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 Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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



Your P.O. #: 22525414-1100-1104 Your Project #: 22525414-1000 Site Location: CAMP FAREWELL,NT Your C.O.C. #: 1 of 1

Attention: Aurelie Bellavance

GOLDER ASSOCIATES LTD. 2800, 700 -2nd Street SW CALGARY, AB CANADA T2P 2W2

> Report Date: 2022/09/06 Report #: R3227002 Version: 3 - Revision

CERTIFICATE OF ANALYSIS - REVISED REPORT

BUREAU VERITAS JOB #: C260016

Received: 2022/08/12, 09:00

dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) This test was performed by AGAT - Calgary, 2910 12th Street NE , Calgary, AB, T2E 7P7

(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(4) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(5) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



AUTHORIZED REPORT RAPPORT AUTORISÉ

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Cynny Hagen, Key Account Specialist

Email: Cynny.HAGEN@bureauveritas.com

Phone# (403)735-2273

Bureau Veritas 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.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		AZM175	AZM175		AZM176	AZM176	AZM177		
Someling Data		2022/08/09	2022/08/09		2022/08/09	2022/08/09	2022/08/09		
Sampling Date		13:20	13:20		13:10	13:10	13:10		
COC Number		1 of 1	1 of 1		1 of 1	1 of 1	1 of 1		
	UNITS	BH22-29-03	BH22-29-03 Lab-Dup	RDL	DUP J	DUP J Lab-Dup	BH22-29-02	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	48	N/A	10	<10	N/A	<10	10	A682565
F3 (C16-C34 Hydrocarbons)	mg/kg	790	N/A	50	100	N/A	<50	50	A682565
F4 (C34-C50 Hydrocarbons)	mg/kg	240	N/A	50	<50	N/A	<50	50	A682565
Reached Baseline at C50	mg/kg	Yes	N/A	N/A	Yes	N/A	Yes	N/A	A682565
Physical Properties			•			•		•	
Moisture	%	43	N/A	0.30	5.2	6.1	4.4	0.30	A682261
Volatiles	•					•		•	
Xylenes (Total)	mg/kg	<0.13	N/A	0.13	<0.045	N/A	<0.045	0.045	A679841
F1 (C6-C10) - BTEX	mg/kg	<18	N/A	18	<10	N/A	<10	10	A679841
Field Preserved Volatiles			•			•		•	
Benzene	mg/kg	<0.012 (1)	<0.012	0.012	<0.0050	N/A	<0.0050	0.0050	A680674
Toluene	mg/kg	<0.050 (1)	<0.050	0.050	<0.050	N/A	<0.050	0.050	A680674
Ethylbenzene	mg/kg	<0.022 (1)	0.025	0.022	<0.010	N/A	< 0.010	0.010	A680674
m & p-Xylene	mg/kg	<0.11 (2)	<0.11	0.11	<0.040	N/A	<0.040	0.040	A680674
o-Xylene	mg/kg	<0.056 (2)	<0.056	0.056	<0.020	N/A	<0.020	0.020	A680674
F1 (C6-C10)	mg/kg	<18 (1)	<18	18	<10	N/A	<10	10	A680674
Surrogate Recovery (%)	•					•		•	
1,4-Difluorobenzene (sur.)	%	83	87	N/A	84	N/A	84	N/A	A680674
4-Bromofluorobenzene (sur.)	%	88	95	N/A	90	N/A	91	N/A	A680674
D10-o-Xylene (sur.)	%	93	118	N/A	99	N/A	98	N/A	A680674
D4-1,2-Dichloroethane (sur.)	%	82	88	N/A	88	N/A	83	N/A	A680674
O-TERPHENYL (sur.)	%	95	N/A	N/A	92	N/A	97	N/A	A682565

RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limit reported based on MDL and sample weight used for analysis.

(2) Detection limits raised based on sample weight used for analysis.



AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		AZM178		AZM179	AZM180	AZM181	AZM182		
Sampling Date		2022/08/09 13:00		2022/08/09 15:20	2022/08/09 15:00	2022/08/09 15:10	2022/08/09 15:30		
COC Number		1 of 1		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	BH22-29-01	QC Batch	BH22-25-03	BH22-25-01	BH22-25-02	BH22-25-04	RDL	QC Batch
Ext. Pet. Hydrocarbon	•								
F2 (C10-C16 Hydrocarbons)	mg/kg	11	A682565	<10	36	29	14	10	A682914
F3 (C16-C34 Hydrocarbons)	mg/kg	160	A682565	<50	180	160	<50	50	A682914
F4 (C34-C50 Hydrocarbons)	mg/kg	72	A682565	<50	55	<50	<50	50	A682914
Reached Baseline at C50	mg/kg	Yes	A682565	Yes	Yes	Yes	Yes	N/A	A682914
Physical Properties	•				-	-	-		
Moisture	%	5.4	A682261	4.9	6.5	10	4.4	0.30	A682261
Volatiles									
Xylenes (Total)	mg/kg	<0.045	A680070	<0.045	<0.045	<0.045	<0.045	0.045	A679841
F1 (C6-C10) - BTEX	mg/kg	<10	A680070	<10	<10	<10	<10	10	A679841
Field Preserved Volatiles		-							
Benzene	mg/kg	<0.0050	A680674	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A680674
Toluene	mg/kg	<0.050	A680674	<0.050	<0.050	<0.050	<0.050	0.050	A680674
Ethylbenzene	mg/kg	<0.010	A680674	<0.010	<0.010	<0.010	<0.010	0.010	A680674
m & p-Xylene	mg/kg	<0.040	A680674	<0.040	<0.040	<0.040	<0.040	0.040	A680674
o-Xylene	mg/kg	<0.020	A680674	<0.020	<0.020	<0.020	<0.020	0.020	A680674
F1 (C6-C10)	mg/kg	<10	A680674	<10	<10	<10	<10	10	A680674
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	88	A680674	86	90	89	86	N/A	A680674
4-Bromofluorobenzene (sur.)	%	94	A680674	93	94	93	93	N/A	A680674
D10-o-Xylene (sur.)	%	107	A680674	102	107	106	110	N/A	A680674
D4-1,2-Dichloroethane (sur.)	%	93	A680674	84	90	92	86	N/A	A680674
O-TERPHENYL (sur.)	%	95	A682565	91	82	93	88	N/A	A682914
RDL = Reportable Detection Lir	nit								
N/A = Not Applicable									



Bureau Veritas ID		AZM183		
Sampling Data		2022/08/09		
Sampling Date		13:40		
COC Number		1 of 1		
	UNITS	BH22-25-5	RDL	QC Batch
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	380	10	A682914
F3 (C16-C34 Hydrocarbons)	mg/kg	190	50	A682914
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	A682914
Reached Baseline at C50	mg/kg	Yes	N/A	A682914
Physical Properties				
Moisture	%	4.8	0.30	A682261
Volatiles				
Xylenes (Total)	mg/kg	<0.045	0.045	A679841
F1 (C6-C10) - BTEX	mg/kg	<10	10	A679841
Field Preserved Volatiles				
Benzene	mg/kg	<0.0050	0.0050	A680674
Toluene	mg/kg	<0.050	0.050	A680674
Ethylbenzene	mg/kg	<0.010	0.010	A680674
m & p-Xylene	mg/kg	<0.040	0.040	A680674
o-Xylene	mg/kg	<0.020	0.020	A680674
F1 (C6-C10)	mg/kg	<10	10	A680674
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	87	N/A	A680674
4-Bromofluorobenzene (sur.)	%	92	N/A	A680674
D10-o-Xylene (sur.)	%	102	N/A	A680674
D4-1,2-Dichloroethane (sur.)	%	86	N/A	A680674
O-TERPHENYL (sur.)	%	90	N/A	A682914
RDL = Reportable Detection Lii N/A = Not Applicable	nit			

AT1 BTEX AND F1-F4 IN SOIL (VIALS)



CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		AZM179		AZM180	AZM180	AZM181		AZM182		
Sampling Date		2022/08/09		2022/08/09	2022/08/09	2022/08/09		2022/08/09		
		15:20		15:00	15:00	15:10		15:30		
COC Number		1 of 1		1 of 1	1 of 1	1 of 1		1 of 1		
	UNITS	BH22-25-03	QC Batch	BH22-25-01	BH22-25-01 Lab-Dup	BH22-25-02	QC Batch	BH22-25-04	RDL	QC Batch
Elements										
Soluble (Hot water) Boron (B)	mg/kg	0.17	A683007	0.28	N/A	0.37	A682378	<0.10	0.10	A683007
Hex. Chromium (Cr 6+)	mg/kg	<0.080	A682694	<0.080	N/A	<0.080	A682694	<0.080	0.080	A682694
Total Antimony (Sb)	mg/kg	<0.50	A682439	<0.50	<0.50	<0.50	A682363	<0.50	0.50	A682611
Total Arsenic (As)	mg/kg	6.3	A682439	6.0	7.5	6.5	A682363	6.5	1.0	A682611
Total Barium (Ba)	mg/kg	790	A682439	2600	2200	2100	A682363	830	1.0	A682611
Total Beryllium (Be)	mg/kg	<0.40	A682439	<0.40	<0.40	<0.40	A682363	<0.40	0.40	A682611
Total Cadmium (Cd)	mg/kg	0.085	A682439	0.20	0.19	0.17	A682363	0.10	0.050	A682611
Total Chromium (Cr)	mg/kg	6.7	A682439	7.2	7.6	7.4	A682363	8.0	1.0	A682611
Total Cobalt (Co)	mg/kg	4.6	A682439	2.7	3.2	3.1	A682363	4.8	0.50	A682611
Total Copper (Cu)	mg/kg	4.5	A682439	9.5	9.6	9.2	A682363	4.3	1.0	A682611
Total Lead (Pb)	mg/kg	6.2	A682439	29	27	20	A682363	6.0	0.50	A682611
Total Mercury (Hg)	mg/kg	<0.050	A682439	0.084	0.071	<0.050	A682363	<0.050	0.050	A682611
Total Molybdenum (Mo)	mg/kg	0.59	A682439	0.70	0.76	0.70	A682363	0.55	0.40	A682611
Total Nickel (Ni)	mg/kg	8.1	A682439	6.5	7.9	7.1	A682363	10	1.0	A682611
Total Selenium (Se)	mg/kg	<0.50	A682439	<0.50	<0.50	<0.50	A682363	<0.50	0.50	A682611
Total Silver (Ag)	mg/kg	<0.20	A682439	<0.20	<0.20	<0.20	A682363	<0.20	0.20	A682611
Total Thallium (Tl)	mg/kg	<0.10	A682439	<0.10	<0.10	<0.10	A682363	<0.10	0.10	A682611
Total Tin (Sn)	mg/kg	<1.0	A682439	<1.0	<1.0	<1.0	A682363	<1.0	1.0	A682611
Total Uranium (U)	mg/kg	0.26	A682439	0.43	0.42	0.36	A682363	0.32	0.20	A682611
Total Vanadium (V)	mg/kg	14	A682439	12 (1)	13	14	A682363	16	1.0	A682611
Total Zinc (Zn)	mg/kg	30	A682439	44	44	41	A682363	32	10	A682611

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Matrix spike exceeds acceptance limits due to matrix interference.



Bureau Veritas ID		AZM183		
Sampling Date		2022/08/09		
		13:40		
COC Number		1 of 1		
	UNITS	BH22-25-5	RDL	QC Batch
Elements				
Soluble (Hot water) Boron (B)	mg/kg	<0.10	0.10	A682378
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	A682694
Total Antimony (Sb)	mg/kg	<0.50	0.50	A682363
Total Arsenic (As)	mg/kg	6.0	1.0	A682363
Total Barium (Ba)	mg/kg	680	1.0	A682363
Total Beryllium (Be)	mg/kg	<0.40	0.40	A682363
Total Cadmium (Cd)	mg/kg	0.089	0.050	A682363
Total Chromium (Cr)	mg/kg	5.8	1.0	A682363
Total Cobalt (Co)	mg/kg	3.9	0.50	A682363
Total Copper (Cu)	mg/kg	3.6	1.0	A682363
Total Lead (Pb)	mg/kg	5.0	0.50	A682363
Total Mercury (Hg)	mg/kg	<0.050	0.050	A682363
Total Molybdenum (Mo)	mg/kg	0.43	0.40	A682363
Total Nickel (Ni)	mg/kg	9.9	1.0	A682363
Total Selenium (Se)	mg/kg	<0.50	0.50	A682363
Total Silver (Ag)	mg/kg	<0.20	0.20	A682363
Total Thallium (Tl)	mg/kg	<0.10	0.10	A682363
Total Tin (Sn)	mg/kg	<1.0	1.0	A682363
Total Uranium (U)	mg/kg	0.26	0.20	A682363
Total Vanadium (V)	mg/kg	12	1.0	A682363
Total Zinc (Zn)	mg/kg	29	10	A682363
RDL = Reportable Detection Lin	nit			

CCME REGULATED METALS - SOILS (SOIL)



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		AZM179	AZM180	AZM181	AZM182	AZM183					
Sampling Date		2022/08/09 15:20	2022/08/09 15:00	2022/08/09 15:10	2022/08/09 15:30	2022/08/09 13:40					
COC Number		1 of 1									
	UNITS	BH22-25-03	BH22-25-01	BH22-25-02	BH22-25-04	BH22-25-5	QC Batch				
Parameter											
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	A705574				



SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

	2022/08/09	2022/08/09	2022/08/09	2022/08/09	2022/08/09		
	15:20	15:00	15:10	15:30	13:40		
	1 of 1	1 of 1	1 of 1	1 of 1	1 of 1		
UNITS	BH22-25-03	BH22-25-01	BH22-25-02	BH22-25-04	BH22-25-5	RDL	QC Batch
mg/kg	< 0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	A679833
mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0088 (1)	0.0050	A682912
%	88	80	91	91	96	N/A	A682912
%	84	77	90	87	94	N/A	A682912
%	76	71	81	78	86	N/A	A682912
%	103	92	102	99	114	N/A	A682912
	mg/kg mg/kg % %	I of 1 UNITS BH22-25-03 mg/kg <0.0071	1 of 1 1 of 1 UNITS BH22-25-03 BH22-25-01 mg/kg <0.0071	1 of 1 1 of 1 1 of 1 UNITS BH22-25-03 BH22-25-01 BH22-25-02 mg/kg <0.0071 <0.0071 <0.0071 mg/kg <0.0050 <0.0050 <0.0050 % 88 80 91 % 84 77 90 % 76 71 81	1 of 1 1 of 1 1 of 1 1 of 1 UNITS BH22-25-03 BH22-25-01 BH22-25-02 BH22-25-04 mg/kg <0.0071 <0.0071 <0.0071 <0.0071 mg/kg <0.0050 <0.0050 <0.0050 <0.0050 % 88 80 91 91 % 84 77 90 87 % 76 71 81 78	1 of 1 UNITS BH22-25-03 BH22-25-01 BH22-25-02 BH22-25-04 BH22-25-5 mg/kg <0.0071 <0.0071 <0.0071 <0.0071 <0.0071 <0.0071 mg/kg <0.0050 <0.0050 <0.0050 <0.0050 <0.0088 (1) % 88 80 91 91 96 % 84 77 90 87 94 % 76 71 81 78 86	1 of 1 UNITS BH22-25-03 BH22-25-01 BH22-25-02 BH22-25-04 BH22-25-5 RDL mg/kg <0.0071 <0.0071 <0.0071 <0.0071 <0.0071 0.0071 mg/kg <0.0050 <0.0050 <0.0050 <0.0050 <0.0050 0.0088 (1) 0.0050 % 88 80 91 91 96 N/A % 84 77 90 87 94 N/A % 76 71 81 78 86 N/A

N/A = Not Applicable

(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt
Package 1 4.0°C
Version 2: Report reissued to include Chromatogram analysis on below samples as per client request received 2022/08/18. AZM183/BH22-25-05 AZM175/BH22-29-03c
Version 3: Report reissued to include results for Barium - True Total on below samples as per client request received 2022/08/24. BH22-25-05/AZM183 BH22-25-01/AZM180 BH22-25-02/AZM181 BH22-25-03/AZM179 BH22-25-04/AZM182
Sample AZM179 [BH22-25-03] : Please see attachment for Barium on ICP using Fusion Extraction results.
Sample AZM180 [BH22-25-01] : Please see attachment for Barium on ICP using Fusion Extraction results.
Sample AZM181 [BH22-25-02] : Please see attachment for Barium on ICP using Fusion Extraction results.
Sample AZM182 [BH22-25-04] : Please see attachment for Barium on ICP using Fusion Extraction results.
Sample AZM183 [BH22-25-5] : Please see attachment for Barium on ICP using Fusion Extraction results.
Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A680674	D01	Matrix Spike [AZM175-02]	1,4-Difluorobenzene (sur.)	2022/08/16		85	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		93	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/16		113	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		86	%	50 - 140
			Benzene	2022/08/16		71	%	50 - 140
			Toluene	2022/08/16		83	%	50 - 140
			Ethylbenzene	2022/08/16		86	%	50 - 140
			m & p-Xylene	2022/08/16		88	%	50 - 140
			o-Xylene	2022/08/16		86	%	50 - 140
			F1 (C6-C10)	2022/08/16		106	%	60 - 140
A680674	D01	Spiked Blank	1,4-Difluorobenzene (sur.)	2022/08/16		87	%	50 - 140
		4-Bromofluorobenzene (sur.)	2022/08/16		90	%	50 - 140	
			D10-o-Xylene (sur.)	2022/08/16		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		86	%	50 - 140
		Benzene	2022/08/16		73	%	60 - 130	
		Toluene	2022/08/16		80	%	60 - 130	
			Ethylbenzene	2022/08/16		86	%	60 - 130
			m & p-Xylene	2022/08/16		86	%	60 - 130
			o-Xylene	2022/08/16		86	%	60 - 130
			F1 (C6-C10)	2022/08/16		97	%	60 - 140
A680674	D01	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/16		82	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		94	%	50 - 140
			D10-o-Xylene (sur.)	2022/08/16		90	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		85	%	50 - 140
			Benzene	2022/08/16	<0.0050		mg/kg	
			Toluene	2022/08/16	<0.050		mg/kg	
			Ethylbenzene	2022/08/16	<0.010		mg/kg	
			m & p-Xylene	2022/08/16	<0.040		mg/kg	
			o-Xylene	2022/08/16	<0.020		mg/kg	
			F1 (C6-C10)	2022/08/16	<10		mg/kg	
A680674	D01	RPD [AZM175-02]	Benzene	2022/08/16	NC		%	50
			Toluene	2022/08/16	NC		%	50
			Ethylbenzene	2022/08/16	14		%	50
			m & p-Xylene	2022/08/16	NC		%	50
			o-Xylene	2022/08/16	NC		%	50
			F1 (C6-C10)	2022/08/16	NC		%	30
A682261	KLG	Method Blank	Moisture	2022/08/17	< 0.30		%	
A682261	KLG	RPD [AZM176-01]	Moisture	2022/08/17	16		%	20
A682363	KH2	Matrix Spike [AZM180-01]	Total Antimony (Sb)	2022/08/16		104	%	75 - 125
			Total Arsenic (As)	2022/08/16		100	%	75 - 125
			Total Barium (Ba)	2022/08/16		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/16		96	%	75 - 125
			Total Cadmium (Cd)	2022/08/16		98	%	75 - 125
			Total Chromium (Cr)	2022/08/16		110	%	75 - 125
			Total Cobalt (Co)	2022/08/16		99	%	75 - 125
			Total Copper (Cu)	2022/08/16		100	%	75 - 125
			Total Lead (Pb)	2022/08/16		108	%	75 - 125
			Total Mercury (Hg)	2022/08/16		94	%	75 - 125
			Total Molybdenum (Mo)	2022/08/16		99	%	75 - 125
			Total Nickel (Ni)	2022/08/16		103	%	75 - 125



01/06								
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2022/08/16		103	%	75 - 125
			Total Silver (Ag)	2022/08/16		98	%	75 - 125
			Total Thallium (Tl)	2022/08/16		97	%	75 - 125
			Total Tin (Sn)	2022/08/16		99	%	75 - 125
			Total Uranium (U)	2022/08/16		95	%	75 - 125
			Total Vanadium (V)	2022/08/16		136 (1)	%	75 - 125
			Total Zinc (Zn)	2022/08/16		117	%	75 - 125
A682363	KH2	QC Standard	Total Antimony (Sb)	2022/08/16		141	%	15 - 182
			Total Arsenic (As)	2022/08/16		129	%	53 - 147
			Total Barium (Ba)	2022/08/16		104	%	80 - 119
		Total Cadmium (Cd)	2022/08/16		123	%	72 - 128	
		Total Chromium (Cr)	2022/08/16		116	%	59 - 141	
			Total Cobalt (Co)	2022/08/16		119	%	58 - 142
			Total Copper (Cu)	2022/08/16		103	%	83 - 117
			Total Lead (Pb)	2022/08/16		112	%	79 - 121
			Total Molybdenum (Mo)	2022/08/16		118	%	67 - 133
			Total Nickel (Ni)	2022/08/16		109	%	79 - 121
			Total Silver (Ag)	2022/08/16		119	%	47 - 153
			Total Tin (Sn)	2022/08/16		132	%	67 - 133
			Total Uranium (U)	2022/08/16		104	%	77 - 123
			Total Vanadium (V)	2022/08/16		108	%	79 - 121
			Total Zinc (Zn)	2022/08/16		107	%	79 - 121
A682363	KH2	Spiked Blank	Total Antimony (Sb)	2022/08/16		113	%	80 - 120
			Total Arsenic (As)	2022/08/16		105	%	80 - 120
			Total Barium (Ba)	2022/08/16		108	%	80 - 120
			Total Beryllium (Be)	2022/08/16		101	%	80 - 120
			Total Cadmium (Cd)	2022/08/16		105	%	80 - 120
			Total Chromium (Cr)	2022/08/16		106	%	80 - 120
			Total Cobalt (Co)	2022/08/16		107	%	80 - 120
			Total Copper (Cu)	2022/08/16		106	%	80 - 120
			Total Lead (Pb)	2022/08/16		105	%	80 - 120
			Total Mercury (Hg)	2022/08/16		107	%	80 - 120
			Total Molybdenum (Mo)	2022/08/16		105	%	80 - 120
			Total Nickel (Ni)	2022/08/16		105	%	80 - 120
			Total Selenium (Se)	2022/08/16		107	%	80 - 120
			Total Silver (Ag)	2022/08/16		105	%	80 - 120
			Total Thallium (TI)	2022/08/16		106	%	80 - 120
			Total Tin (Sn)	2022/08/16		106	%	80 - 120
			Total Uranium (U)	2022/08/16		104	%	80 - 120
			Total Vanadium (V)	2022/08/16		107	%	80 - 120
			Total Zinc (Zn)	2022/08/16		108	%	80 - 120
A682363	KH2	Method Blank	Total Antimony (Sb)	2022/08/16	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/16	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/16	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/16	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/16	< 0.050		mg/kg	
			Total Chromium (Cr)	2022/08/16	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/16	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/16	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/16	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/16	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/16	<0.40		mg/kg	



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Nickel (Ni)	2022/08/16	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/16	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/16	<0.20		mg/kg	
			Total Thallium (Tl)	2022/08/16	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/16	<1.0		mg/kg	
			Total Uranium (U)	2022/08/16	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/16	<1.0		mg/kg	
			Total Zinc (Zn)	2022/08/16	<10		mg/kg	
A682363	KH2	RPD [AZM180-01]	Total Antimony (Sb)	2022/08/16	NC		%	30
			Total Arsenic (As)	2022/08/16	22		%	30
			Total Barium (Ba)	2022/08/16	16		%	35
			Total Beryllium (Be)	2022/08/16	NC		%	30
			Total Cadmium (Cd)	2022/08/16	3.1		%	30
			Total Chromium (Cr)	2022/08/16	5.3		%	30
			Total Cobalt (Co)	2022/08/16	19		%	30
			Total Copper (Cu)	2022/08/16	0.82		%	30
			Total Lead (Pb)	2022/08/16	8.2		%	35
			Total Mercury (Hg)	2022/08/16	17		%	35
			Total Molybdenum (Mo)	2022/08/16	8.0		%	35
			Total Nickel (Ni)	2022/08/16	21		%	30
			Total Selenium (Se)	2022/08/16	NC		%	30
			Total Silver (Ag)	2022/08/16	NC		%	35
			Total Thallium (Tl)	2022/08/16	NC		%	30
			Total Tin (Sn)	2022/08/16	NC		%	35
			Total Uranium (U)	2022/08/16	1.3		%	30
			Total Vanadium (V)	2022/08/16	5.2		%	30
			Total Zinc (Zn)	2022/08/16	0.46		%	30
A682378	PC5	Matrix Spike	Soluble (Hot water) Boron (B)	2022/08/16		103	%	75 - 125
A682378	PC5	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/16		104	%	80 - 120
A682378	PC5	Method Blank	Soluble (Hot water) Boron (B)	2022/08/16	<0.10		mg/kg	
A682378	PC5	RPD	Soluble (Hot water) Boron (B)	2022/08/16	NC		%	35
A682439	KH2	Matrix Spike	Total Antimony (Sb)	2022/08/16		94	%	75 - 125
			Total Arsenic (As)	2022/08/16		99	%	75 - 125
			Total Barium (Ba)	2022/08/16		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/16		101	%	75 - 125
			Total Cadmium (Cd)	2022/08/16		100	%	75 - 125
			Total Chromium (Cr)	2022/08/16		121	%	75 - 125
			Total Cobalt (Co)	2022/08/16		100	%	75 - 125
			Total Copper (Cu)	2022/08/16		97	%	75 - 125
			Total Lead (Pb)	2022/08/16		96	%	75 - 125
			Total Mercury (Hg)	2022/08/16		88	%	75 - 125
			Total Molybdenum (Mo)	2022/08/16		102	%	75 - 125
			Total Nickel (Ni)	2022/08/16		103	%	75 - 125
			Total Selenium (Se)	2022/08/16		100	%	75 - 125
			Total Silver (Ag)	2022/08/16		100	%	75 - 125
			Total Thallium (Tl)	2022/08/16		95	%	75 - 125
			Total Tin (Sn)	2022/08/16		102	%	75 - 125
			Total Uranium (U)	2022/08/16		91	%	75 - 125
			Total Vanadium (V)	2022/08/16		151 (1)	%	75 - 125
			Total Zinc (Zn)	2022/08/16		NC	%	75 - 125
A682439	KH2	QC Standard	Total Antimony (Sb)	2022/08/16		114	%	15 - 182
		-	Total Arsenic (As)	2022/08/16		108	%	53 - 147



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Barium (Ba)	2022/08/16		105	%	80 - 119
			Total Cadmium (Cd)	2022/08/16		105	%	72 - 128
			Total Chromium (Cr)	2022/08/16		99	%	59 - 141
			Total Cobalt (Co)	2022/08/16		100	%	58 - 142
			Total Copper (Cu)	2022/08/16		99	%	83 - 117
			Total Lead (Pb)	2022/08/16		112	%	79 - 121
			Total Molybdenum (Mo)	2022/08/16		119	%	67 - 133
			Total Nickel (Ni)	2022/08/16		112	%	79 - 121
			Total Silver (Ag)	2022/08/16		101	%	47 - 153
			Total Tin (Sn)	2022/08/16		103	%	67 - 133
			Total Uranium (U)	2022/08/16		89	%	77 - 123
			Total Vanadium (V)	2022/08/16		103	%	79 - 121
			Total Zinc (Zn)	2022/08/16		107	%	79 - 121
A682439	KH2	Spiked Blank	Total Antimony (Sb)	2022/08/16		107	%	80 - 120
			Total Arsenic (As)	2022/08/16		98	%	80 - 120
			Total Barium (Ba)	2022/08/16		101	%	80 - 120
			Total Beryllium (Be)	2022/08/16		97	%	80 - 120
			Total Cadmium (Cd)	2022/08/16		99	%	80 - 120
			Total Chromium (Cr)	2022/08/16		99	%	80 - 120
			Total Cobalt (Co)	2022/08/16		99	%	80 - 120
			Total Copper (Cu)	2022/08/16		98	%	80 - 120
			Total Lead (Pb)	2022/08/16		98	%	80 - 120
			Total Mercury (Hg)	2022/08/16		99	%	80 - 120
			Total Molybdenum (Mo)	2022/08/16		100	%	80 - 120
			Total Nickel (Ni)	2022/08/16		99	%	80 - 120
			Total Selenium (Se)	2022/08/16		103	%	80 - 120
			Total Silver (Ag)	2022/08/16		99	%	80 - 120
			Total Thallium (Tl)	2022/08/16		99	%	80 - 120
			Total Tin (Sn)	2022/08/16		99	%	80 - 120
			Total Uranium (U)	2022/08/16		97	%	80 - 120
			Total Vanadium (V)	2022/08/16		99	%	80 - 120
			Total Zinc (Zn)	2022/08/16		100	%	80 - 120
A682439	KH2	Method Blank	Total Antimony (Sb)	2022/08/16	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/16	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/16	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/16	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/16	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/16	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/16	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/16	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/16	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/16	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/16	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/16	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/16	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/16	<0.20		mg/kg	
			Total Thallium (Tl)	2022/08/16	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/16	<1.0		mg/kg	
			Total Uranium (U)	2022/08/16	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/16	<1.0		mg/kg	
			Total Zinc (Zn)	2022/08/16	<10		mg/kg	
A682439	KH2	RPD	Total Antimony (Sb)	2022/08/16	1.3		%	30



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Arsenic (As)	2022/08/16	4.3		%	30
			Total Barium (Ba)	2022/08/16	1.5		%	35
			Total Beryllium (Be)	2022/08/16	4.5		%	30
			Total Cadmium (Cd)	2022/08/16	3.3		%	30
			Total Chromium (Cr)	2022/08/16	3.6		%	30
			Total Cobalt (Co)	2022/08/16	3.3		%	30
			Total Copper (Cu)	2022/08/16	4.5		%	30
			Total Lead (Pb)	2022/08/16	2.1		%	35
			Total Mercury (Hg)	2022/08/16	0.65		%	35
			Total Molybdenum (Mo)	2022/08/16	0.18		%	35
			Total Nickel (Ni)	2022/08/16	4.3		%	30
			Total Selenium (Se)	2022/08/16	NC		%	30
			Total Silver (Ag)	2022/08/16	NC		%	35
			Total Thallium (Tl)	2022/08/16	3.6		%	30
			Total Tin (Sn)	2022/08/16	NC		%	35
			Total Uranium (U)	2022/08/16	2.5		%	30
			Total Vanadium (V)	2022/08/16	4.0		%	30
			Total Zinc (Zn)	2022/08/16	3.1		%	30
A682565	GG3	Matrix Spike	O-TERPHENYL (sur.)	2022/08/16		91	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16		87	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/16		84	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/16		83	%	60 - 140
A682565	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/08/16		90	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16		86	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/16		83	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/16		82	%	60 - 140
A682565	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/16		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/16	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/16	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/16	<50		mg/kg	
A682565	GG3	RPD	F2 (C10-C16 Hydrocarbons)	2022/08/16	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/16	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/16	NC		%	40
A682611	MKJ	Matrix Spike	Total Antimony (Sb)	2022/08/17		101	%	75 - 125
			Total Arsenic (As)	2022/08/17		97	%	75 - 125
			Total Barium (Ba)	2022/08/17		NC	%	75 - 125
			Total Beryllium (Be)	2022/08/17		96	%	75 - 125
			Total Cadmium (Cd)	2022/08/17		98	%	75 - 125
			Total Chromium (Cr)	2022/08/17		113	%	75 - 125
			Total Cobalt (Co)	2022/08/17		99	%	75 - 125
			Total Copper (Cu)	2022/08/17		100	%	75 - 125
			Total Lead (Pb)	2022/08/17		99	%	75 - 125
			Total Mercury (Hg)	2022/08/17		96	%	75 - 125
			Total Molybdenum (Mo)	2022/08/17		101	%	75 - 125
			Total Nickel (Ni)	2022/08/17		104	%	75 - 125
			Total Selenium (Se)	2022/08/17		100	%	75 - 125
			Total Silver (Ag)	2022/08/17		99	%	75 - 125
			Total Thallium (Tl)	2022/08/17		98	%	75 - 125
			Total Tin (Sn)	2022/08/17		102	%	75 - 125
			Total Uranium (U)	2022/08/17		95	%	75 - 125
			Total Vanadium (V)	2022/08/17		140 (1)	%	75 - 125
			Total Zinc (Zn)	2022/08/17		102	%	75 - 125



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A682611	MKJ	QC Standard	Total Antimony (Sb)	2022/08/17		109	%	15 - 182
			Total Arsenic (As)	2022/08/17		103	%	53 - 147
			Total Barium (Ba)	2022/08/17		103	%	80 - 119
			Total Cadmium (Cd)	2022/08/17		94	%	72 - 128
			Total Chromium (Cr)	2022/08/17		113	%	59 - 141
			Total Cobalt (Co)	2022/08/17		101	%	58 - 142
			Total Copper (Cu)	2022/08/17		103	%	83 - 117
			Total Lead (Pb)	2022/08/17		111	%	79 - 121
			Total Molybdenum (Mo)	2022/08/17		122	%	67 - 133
			Total Nickel (Ni)	2022/08/17		110	%	79 - 121
			Total Silver (Ag)	2022/08/17		89	%	47 - 153
			Total Tin (Sn)	2022/08/17		98	%	67 - 133
			Total Uranium (U)	2022/08/17		98	%	77 - 123
			Total Vanadium (V)	2022/08/17		111	%	79 - 121
			Total Zinc (Zn)	2022/08/17		103	%	79 - 121
A682611	MKJ	Spiked Blank	Total Antimony (Sb)	2022/08/17		102	%	80 - 120
			Total Arsenic (As)	2022/08/17		95	%	80 - 120
			Total Barium (Ba)	2022/08/17		96	%	80 - 120
			Total Beryllium (Be)	2022/08/17		92	%	80 - 120
			Total Cadmium (Cd)	2022/08/17		95	%	80 - 120
			Total Chromium (Cr)	2022/08/17		97	%	80 - 120
			Total Cobalt (Co)	2022/08/17		97	%	80 - 120
			Total Copper (Cu)	2022/08/17		97	%	80 - 120
			Total Lead (Pb)	2022/08/17		97	%	80 - 120
			Total Mercury (Hg)	2022/08/17		100	%	80 - 120
			Total Molybdenum (Mo)	2022/08/17		96	%	80 - 120
			Total Nickel (Ni)	2022/08/17		96	%	80 - 120
			Total Selenium (Se)	2022/08/17		99	%	80 - 120
			Total Silver (Ag)	2022/08/17		96	%	80 - 120
			Total Thallium (Tl)	2022/08/17		97	%	80 - 120
			Total Tin (Sn)	2022/08/17		96	%	80 - 120
			Total Uranium (U)	2022/08/17		97	%	80 - 120
			Total Vanadium (V)	2022/08/17		97	%	80 - 120
			Total Zinc (Zn)	2022/08/17		97	%	80 - 120
A682611	MKJ	Method Blank	Total Antimony (Sb)	2022/08/17	<0.50		mg/kg	
			Total Arsenic (As)	2022/08/17	<1.0		mg/kg	
			Total Barium (Ba)	2022/08/17	<1.0		mg/kg	
			Total Beryllium (Be)	2022/08/17	<0.40		mg/kg	
			Total Cadmium (Cd)	2022/08/17	<0.050		mg/kg	
			Total Chromium (Cr)	2022/08/17	<1.0		mg/kg	
			Total Cobalt (Co)	2022/08/17	<0.50		mg/kg	
			Total Copper (Cu)	2022/08/17	<1.0		mg/kg	
			Total Lead (Pb)	2022/08/17	<0.50		mg/kg	
			Total Mercury (Hg)	2022/08/17	<0.050		mg/kg	
			Total Molybdenum (Mo)	2022/08/17	<0.40		mg/kg	
			Total Nickel (Ni)	2022/08/17	<1.0		mg/kg	
			Total Selenium (Se)	2022/08/17	<0.50		mg/kg	
			Total Silver (Ag)	2022/08/17	<0.20		mg/kg	
			Total Thallium (Tl)	2022/08/17	<0.10		mg/kg	
			Total Tin (Sn)	2022/08/17	<1.0		mg/kg	
			Total Uranium (U)	2022/08/17	<0.20		mg/kg	
			Total Vanadium (V)	2022/08/17	<1.0		mg/kg	



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2022/08/17	<10		mg/kg	
A682611	MKJ	RPD	Total Chromium (Cr)	2022/08/17	1.9		%	30
			Total Nickel (Ni)	2022/08/17	5.2		%	30
A682694	FM0	Matrix Spike	Hex. Chromium (Cr 6+)	2022/08/16		96	%	75 - 125
A682694	FM0	Spiked Blank	Hex. Chromium (Cr 6+)	2022/08/16		104	%	80 - 120
A682694	FM0	Method Blank	Hex. Chromium (Cr 6+)	2022/08/16	<0.080		mg/kg	
A682694	FM0	RPD	Hex. Chromium (Cr 6+)	2022/08/16	NC		%	35
A682912	SJ1	Matrix Spike	D10-ANTHRACENE (sur.)	2022/08/17		100	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/17		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/17		91	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/17		128	%	50 - 130
			Naphthalene	2022/08/17		94	%	50 - 130
A682912	SJ1	Spiked Blank	D10-ANTHRACENE (sur.)	2022/08/17		88	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/17		83	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/17		79	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/17		103	%	50 - 130
			Naphthalene	2022/08/17		76	%	50 - 130
A682912	SJ1	Method Blank	D10-ANTHRACENE (sur.)	2022/08/17		100	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/17		94	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/17		89	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/17		129	%	50 - 130
			Naphthalene	2022/08/17	<0.0050		mg/kg	
A682912	SJ1	RPD	Naphthalene	2022/08/17	23		%	50
A682914	GG3	Matrix Spike	O-TERPHENYL (sur.)	2022/08/17		86	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/17		96	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/17		88	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/17		84	%	60 - 140
A682914	GG3	Spiked Blank	O-TERPHENYL (sur.)	2022/08/17		97	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/17		89	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2022/08/17		96	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2022/08/17		91	%	60 - 140
A682914	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/17		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/17	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2022/08/17	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2022/08/17	<50		mg/kg	
A682914	GG3	RPD	F2 (C10-C16 Hydrocarbons)	2022/08/17	1.2		%	40
			F3 (C16-C34 Hydrocarbons)	2022/08/17	5.7		%	40
			F4 (C34-C50 Hydrocarbons)	2022/08/17	4.1		%	40
A683007	MPU	Matrix Spike	Soluble (Hot water) Boron (B)	2022/08/16	-	91	%	75 - 125
A683007	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2022/08/16		94	%	80 - 120
A683007	MPU	Method Blank	Soluble (Hot water) Boron (B)	2022/08/16	<0.10		mg/kg	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A683007	MPU	RPD	Soluble (Hot water) Boron (B)	2022/08/16	6.8		%	35

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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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 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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.