NORTH COAL LIMITED
ATTN: Bill Arling
652 F Sparwood Drive
PO Box 576
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Date Received: 19-MAR-21
Report Date: 01-APR-21 15:42 (MT)
Version: FINAL

Client Phone: 250-423-8854

Certificate of Analysis

Lab Work Order #: L2568728

Project P.O. #: NOT SUBMITTED
Job Reference: 18CANA02
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2568728-1	L2568728-2	L2568728-3	L2568728-4	L2568728-5
Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
Sampled Date	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21
Sampled Time	12:30	11:15	10:15	09:30	09:15
Client ID	MICH-13.0	MICH-33.8	AND 1	MICH-39.1	FIELD BLANK
Grouping / **Analyte**					
WATER					
Physical Tests					
Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
Hardness (as CaCO3) (mg/L)	223	390	144	656	<0.50
Total Suspended Solids (mg/L)	<3.0	3.7	<3.0	<3.0	<3.0
Total Dissolved Solids (mg/L)	254 DLHC	493 DLHC	152 DLHC	866 DLHC	<10
Turbidity (NTU)	1.06	0.84	0.22	0.55	<0.10
Anions and Nutrients					
Alkalinity, Total (as CaCO3) (mg/L)	155	189	134	241	<2.0
Ammonia as N (mg/L)	0.0078	0.0087	0.0078	0.0051	<0.0050
Bicarbonate (HCO3) (mg/L)	187	231	163	294	<5.0
Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.25 DLHC	<0.050
Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
Chloride (Cl) (mg/L)	2.58	3.13	<0.50	4.7 DLHC	<0.50
Conductivity (EC) (uS/cm)	419	701	262	1120	<2.0
Fluoride (F) (mg/L)	0.087	0.127	0.263	0.10 DLHC	<0.020
Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
Nitrate (as N) (mg/L)	0.366	1.25	0.168	3.05 DLHC	0.0126 RRV
Nitrite (as N) (mg/L)	0.0015	0.0011	0.0011	0.0055 DLHC	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.169	0.438	0.148	0.844	<0.050
pH (pH)	8.29	8.13	8.24	8.27	6.03
Orthophosphate-Dissolved (as P) (mg/L)	0.0059	0.0049	<0.0010	0.0019	<0.0010
Phosphorus (P)-Total (mg/L)	0.0069	0.0047	<0.0020	<0.0020	<0.0020
Sulfate (SO4) (mg/L)	80.6	207	22.1	451 DLHC	<0.30
Organic / Inorganic Carbon					
Dissolved Organic Carbon (mg/L)	0.96	0.61	0.62	0.69	<0.50
Total Organic Carbon (mg/L)	1.10	0.92	0.56	0.83	<0.50
Total Metals					
Aluminum (Al)-Total (mg/L)	0.0220	0.0275	0.0073	0.0121	<0.0030
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00017	<0.00010
Arsenic (As)-Total (mg/L)	0.00019	0.00022	0.00043	0.00020	<0.00010
Barium (Ba)-Total (mg/L)	0.142	0.0799	0.0239	0.0756	<0.00010
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	0.019	<0.010	0.039	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000328	0.0000225	0.0000113	0.0000288	<0.0000050
Calcium (Ca)-Total (mg/L)	57.9	87.9	40.9	144	<0.050
Chromium (Cr)-Total (mg/L)	0.00011	0.00020	0.00026	0.00018	<0.00010
Cobalt (Co)-Total (mg/L)	<0.00010	0.00011	<0.00010	0.00116	<0.00010
Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total (mg/L)	0.025	0.026	<0.010	0.015	<0.010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2568728-6	L2568728-7			
	Description	SURFACE WATE	SURFACE WATE			
	Sampled Date	18-MAR-21	18-MAR-21			
	Sampled Time	09:00	11:00			
	Client ID	TRIP BLANK	DUPLICATE			
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0			
	Hardness (as CaCO3) (mg/L)	<0.50	382			
	Total Suspended Solids (mg/L)	<3.0	3.1			
	Total Dissolved Solids (mg/L)	<10	502 DLHC			
	Turbidity (NTU)	<0.10	0.97			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	189			
	Ammonia as N (mg/L)	<0.0050	0.0052			
	Bicarbonate (HCO3) (mg/L)	<5.0	230			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0			
	Chloride (Cl) (mg/L)	<0.50	3.20			
	Conductivity (EC) (uS/cm)	<2.0	688			
	Fluoride (F) (mg/L)	<0.020	0.109			
	Hydroxide (OH) (mg/L)	<5.0	<5.0			
	Nitrate (as N) (mg/L)	<0.0050	1.26			
	Nitrite (as N) (mg/L)	<0.0010	0.0014			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.171			
	pH (pH)	5.48	8.27			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0040			
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0042			
	Sulfate (SO4) (mg/L)	<0.30	207			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.69			
	Total Organic Carbon (mg/L)	<0.50	0.76			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0313			
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010	0.00023			
	Barium (Ba)-Total (mg/L)	<0.00010	0.0823			
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	<0.010	0.019			
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000233			
	Calcium (Ca)-Total (mg/L)	<0.050	89.3			
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00022			
	Cobalt (Co)-Total (mg/L)	<0.00010	0.00011			
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010	0.032			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2568728-1	L2568728-2	L2568728-3	L2568728-4	L2568728-5
Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
Sampled Date	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21
Sampled Time	12:30	11:15	10:15	09:30	09:15
Client ID	MICH-13.0	MICH-33.8	AND 1	MICH-39.1	FIELD BLANK
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	0.0066	0.0120	0.0022	0.0247	<0.0010
Magnesium (Mg)-Total (mg/L)	18.2	35.6	9.46	70.3	<0.0050
Manganese (Mn)-Total (mg/L)	0.00134	0.00188	0.00018	0.00931	<0.00010
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.000710	0.000802	0.000914	0.00102	<0.000050
Nickel (Ni)-Total (mg/L)	<0.00050	0.00259	<0.00050	0.0140	<0.00050
Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total (mg/L)	0.70	0.97	0.25	1.94	<0.10
Selenium (Se)-Total (mg/L)	0.00225	0.00495	0.00170	0.00941	<0.000050
Silicon (Si)-Total (mg/L)	2.25	1.99	1.52	2.34	<0.050
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	5.29	10.3	0.884	20.5	<0.050
Strontium (Sr)-Total (mg/L)	0.184	0.302	0.161	0.506	<0.00020
Sulfur (S)-Total (mg/L)	29.3	73.6	8.00	163	<0.50
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	0.000033	0.000015	<0.000010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	<0.00030	0.00040	<0.00030	<0.00030	<0.00030
Uranium (U)-Total (mg/L)	0.000814	0.00185	0.000899	0.00358	<0.000010
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	0.0034	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	0.00018	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00018	0.00021	0.00045	0.00016	<0.00010
Barium (Ba)-Dissolved (mg/L)	0.136	0.0807	0.0237	0.0739	<0.00010
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	0.019	<0.010	0.038	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000226	0.0000210	0.0000111	0.0000280	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	58.7	92.6	41.6	143	<0.050
Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00016	0.00025	0.00013	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00108	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2568728-6	L2568728-7			
	Description	SURFACE WATE	SURFACE WATE			
	Sampled Date	18-MAR-21	18-MAR-21			
	Sampled Time	09:00	11:00			
	Client ID	TRIP BLANK	DUPLICATE			
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010	0.0117			
	Magnesium (Mg)-Total (mg/L)	<0.0050	35.9			
	Manganese (Mn)-Total (mg/L)	<0.00010	0.00203			
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000771			
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00272			
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050			
	Potassium (K)-Total (mg/L)	<0.10	0.98			
	Selenium (Se)-Total (mg/L)	<0.000050	0.00521			
	Silicon (Si)-Total (mg/L)	<0.050	2.03			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050	10.5			
	Strontium (Sr)-Total (mg/L)	<0.00020	0.307			
	Sulfur (S)-Total (mg/L)	<0.50	74.8			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00042			
	Uranium (U)-Total (mg/L)	<0.000010	0.00191			
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0013 RRV	<0.0010			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00018			
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.0804			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	0.018			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000198			
	Calcium (Ca)-Dissolved (mg/L)	<0.050	89.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00019			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00029			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2568728-1	L2568728-2	L2568728-3	L2568728-4	L2568728-5
Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
Sampled Date	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21
Sampled Time	12:30	11:15	10:15	09:30	09:15
Client ID	MICH-13.0	MICH-33.8	AND 1	MICH-39.1	FIELD BLANK
Grouping / **Analyte**					
WATER					
Dissolved Metals Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0066	0.0122	0.0024	0.0249	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	18.5	38.5	9.82	72.7	<0.0050
Manganese (Mn)-Dissolved (mg/L)	0.00062	0.00106	<0.00010	0.00832	<0.00010
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.000699	0.000771	0.000898	0.000986	<0.000050
Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00267	<0.00050	0.0137	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.67	0.98	0.24	1.89	<0.10
Selenium (Se)-Dissolved (mg/L)	0.00247	0.00591	0.00205	0.0105	<0.000050
Silicon (Si)-Dissolved (mg/L)	2.18	1.98	1.49	2.24	<0.050
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	5.22	10.7	0.857	20.8	<0.050
Strontium (Sr)-Dissolved (mg/L)	0.184	0.316	0.166	0.512	<0.00020
Sulfur (S)-Dissolved (mg/L)	28.3	74.2	7.60	154	<0.50
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000035	0.000014	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000805	0.00193	0.000886	0.00350	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0017	0.0022	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Aggregate Organics Chemical Oxygen Demand (mg/L)	<10	<10	<10	<10	<10
Volatile Organic Compounds Acetone (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Acrolein (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Acrylonitrile (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bromobenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromochloromethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromodichloromethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bromoform (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bromomethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2-Butanone (MEK) (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
n-Butylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
sec-Butylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
tert-Butylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2568728-6	L2568728-7			
	Description	SURFACE WATE	SURFACE WATE			
	Sampled Date	18-MAR-21	18-MAR-21			
	Sampled Time	09:00	11:00			
	Client ID	TRIP BLANK	DUPLICATE			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0121			
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	38.7			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00103			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000743			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00258			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	<0.10	0.96			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00590			
	Silicon (Si)-Dissolved (mg/L)	<0.050	1.92			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050	10.9			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.314			
	Sulfur (S)-Dissolved (mg/L)	<0.50	72.1			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000012			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00183			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030			
Aggregate Organics	Chemical Oxygen Demand (mg/L)	<10	<10			
Volatile Organic Compounds	Acetone (mg/L)	<0.050	<0.050			
	Acrolein (mg/L)	<0.050	<0.050			
	Acrylonitrile (mg/L)	<0.020	<0.020			
	Benzene (mg/L)	<0.00050	<0.00050			
	Bromobenzene (mg/L)	<0.0010	<0.0010			
	Bromochloromethane (mg/L)	<0.0010	<0.0010			
	Bromodichloromethane (mg/L)	<0.00050	<0.00050			
	Bromoform (mg/L)	<0.00050	<0.00050			
	Bromomethane (mg/L)	<0.0010	<0.0010			
	2-Butanone (MEK) (mg/L)	<0.020	<0.020			
	n-Butylbenzene (mg/L)	<0.0010	<0.0010			
	sec-Butylbenzene (mg/L)	<0.0010	<0.0010			
	tert-Butylbenzene (mg/L)	<0.0010	<0.0010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2568728-1	L2568728-2	L2568728-3	L2568728-4	L2568728-5
Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
Sampled Date	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21
Sampled Time	12:30	11:15	10:15	09:30	09:15
Client ID	MICH-13.0	MICH-33.8	AND 1	MICH-39.1	FIELD BLANK
Grouping / **Analyte**					
WATER					
Volatile Organic Compounds / Carbon disulfide (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Carbon tetrachloride (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chlorobenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dibromochloromethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chloroethane (mg/L)	<0.0010	<0.0010	0.0011	<0.0010	<0.0010
Chloroform (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chloromethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2-Chlorotoluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
4-Chlorotoluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dibromo-3-chloropropane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ethylene dibromide (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dibromomethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cis-1,4-Dichloro-2-butene (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
trans-1,4-Dichloro-2-butene (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichlorobenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,3-Dichlorobenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,4-Dichlorobenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Dichlorodifluoromethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1-Dichloroethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,2-Dichloroethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cis-1,2-Dichloroethene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
trans-1,2-Dichloroethene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylene chloride (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dichloropropane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,3-Dichloropropane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2,2-Dichloropropane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloropropene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
cis-1,3-Dichloropropene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
trans-1,3-Dichloropropene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ethanol (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
Ethyl methacrylate (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Hexachlorobutadiene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
2-Hexanone (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Iodomethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Isopropylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2568728-6	L2568728-7			
	Description	SURFACE WATE	SURFACE WATE			
	Sampled Date	18-MAR-21	18-MAR-21			
	Sampled Time	09:00	11:00			
	Client ID	TRIP BLANK	DUPLICATE			
Grouping	**Analyte**					
WATER						
Volatile Organic Compounds	Carbon disulfide (mg/L)	<0.0010	<0.0010			
	Carbon tetrachloride (mg/L)	<0.00050	<0.00050			
	Chlorobenzene (mg/L)	<0.00050	<0.00050			
	Dibromochloromethane (mg/L)	<0.00050	<0.00050			
	Chloroethane (mg/L)	<0.0010	<0.0010			
	Chloroform (mg/L)	<0.00050	<0.00050			
	Chloromethane (mg/L)	<0.0010	<0.0010			
	2-Chlorotoluene (mg/L)	<0.0010	<0.0010			
	4-Chlorotoluene (mg/L)	<0.0010	<0.0010			
	1,2-Dibromo-3-chloropropane (mg/L)	<0.0010	<0.0010			
	Ethylene dibromide (mg/L)	<0.00050	<0.00050			
	Dibromomethane (mg/L)	<0.00050	<0.00050			
	cis-1,4-Dichloro-2-butene (mg/L)	<0.0050	<0.0050			
	trans-1,4-Dichloro-2-butene (mg/L)	<0.0050	<0.0050			
	1,2-Dichlorobenzene (mg/L)	<0.00050	<0.00050			
	1,3-Dichlorobenzene (mg/L)	<0.00050	<0.00050			
	1,4-Dichlorobenzene (mg/L)	<0.00050	<0.00050			
	Dichlorodifluoromethane (mg/L)	<0.00050	<0.00050			
	1,1-Dichloroethane (mg/L)	<0.00050	<0.00050			
	1,2-Dichloroethane (mg/L)	<0.0010	<0.0010			
	1,1-Dichloroethene (mg/L)	<0.00050	<0.00050			
	cis-1,2-Dichloroethene (mg/L)	<0.0010	<0.0010			
	trans-1,2-Dichloroethene (mg/L)	<0.00050	<0.00050			
	Methylene chloride (mg/L)	<0.0010	<0.0010			
	1,2-Dichloropropane (mg/L)	<0.00050	<0.00050			
	1,3-Dichloropropane (mg/L)	<0.0010	<0.0010			
	2,2-Dichloropropane (mg/L)	<0.0010	<0.0010			
	1,1-Dichloropropene (mg/L)	<0.0010	<0.0010			
	cis-1,3-Dichloropropene (mg/L)	<0.00050	<0.00050			
	trans-1,3-Dichloropropene (mg/L)	<0.0010	<0.0010			
	Ethanol (mg/L)	<0.20	<0.20			
	Ethyl methacrylate (mg/L)	<0.0050	<0.0050			
	Ethylbenzene (mg/L)	<0.00050	<0.00050			
	Hexachlorobutadiene (mg/L)	<0.0010	<0.0010			
	2-Hexanone (mg/L)	<0.0050	<0.0050			
	Iodomethane (mg/L)	<0.0010	<0.0010			
	Isopropylbenzene (mg/L)	<0.0010	<0.0010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2568728-1	L2568728-2	L2568728-3	L2568728-4	L2568728-5
Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
Sampled Date	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21	18-MAR-21
Sampled Time	12:30	11:15	10:15	09:30	09:15
Client ID	MICH-13.0	MICH-33.8	AND 1	MICH-39.1	FIELD BLANK
Grouping / **Analyte**					
WATER					
Volatile Organic Compounds p-Isopropyltoluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
4-Methyl-2-pentanone (MIBK) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Methyl-t-butyl ether (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
n-Propylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1,2,2-Tetrachloroethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Tetrachloroethylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,2,3-Trichlorobenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2,4-Trichlorobenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,3,5-Trichlorobenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1,1-Trichloroethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,2-Trichloroethane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Trichloroethene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Trichlorofluoromethane (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2,3-Trichloropropane (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,2,4-Trimethylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,3,5-Trimethylbenzene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Vinyl chloride (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
o-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
m+p-Xylenes (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes (mg/L)	<0.00071	<0.00071	<0.00071	<0.00071	<0.00071
Surrogate: 4-Bromofluorobenzene (%)	76.6	75.7	75.0	75.9	74.2
Surrogate: 3,4-Dichlorotoluene (%)	106.6	98.1	73.7	84.5	106.0
Surrogate: 1,4-Difluorobenzene (%)	94.9	95.1	95.1	93.8	94.1
Hydrocarbons EPH10-19 (ug/L)	<100	<100	<100	<100	<100
EPH19-32 (ug/L)	<100	<100	<100	<100	<100
Surrogate: 2-Bromobenzotrifluoride (%)	88.1	83.2	79.5	83.2	87.9

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2568728-6	L2568728-7			
	Description	SURFACE WATE	SURFACE WATE			
	Sampled Date	18-MAR-21	18-MAR-21			
	Sampled Time	09:00	11:00			
	Client ID	TRIP BLANK	DUPLICATE			
Grouping	**Analyte**					
WATER						
Volatile Organic Compounds	p-Isopropyltoluene (mg/L)	<0.0010	<0.0010			
	4-Methyl-2-pentanone (MIBK) (mg/L)	<0.0050	<0.0050			
	Methyl-t-butyl ether (mg/L)	<0.00050	<0.00050			
	n-Propylbenzene (mg/L)	<0.0010	<0.0010			
	Styrene (mg/L)	<0.00050	<0.00050			
	1,1,1,2-Tetrachloroethane (mg/L)	<0.0010	<0.0010			
	1,1,2,2-Tetrachloroethane (mg/L)	<0.00050	<0.00050			
	Tetrachloroethylene (mg/L)	<0.00050	<0.00050			
	Toluene (mg/L)	<0.00050	<0.00050			
	1,2,3-Trichlorobenzene (mg/L)	<0.0010	<0.0010			
	1,2,4-Trichlorobenzene (mg/L)	<0.0010	<0.0010			
	1,3,5-Trichlorobenzene (mg/L)	<0.0010	<0.0010			
	1,1,1-Trichloroethane (mg/L)	<0.00050	<0.00050			
	1,1,2-Trichloroethane (mg/L)	<0.00050	<0.00050			
	Trichloroethene (mg/L)	<0.00050	<0.00050			
	Trichlorofluoromethane (mg/L)	<0.0010	<0.0010			
	1,2,3-Trichloropropane (mg/L)	<0.00050	<0.00050			
	1,2,4-Trimethylbenzene (mg/L)	<0.0010	<0.0010			
	1,3,5-Trimethylbenzene (mg/L)	<0.0010	<0.0010			
	Vinyl chloride (mg/L)	<0.00050	<0.00050			
	o-Xylene (mg/L)	<0.00050	<0.00050			
	m+p-Xylenes (mg/L)	<0.00050	<0.00050			
	Xylenes (mg/L)	<0.00071	<0.00071			
	Surrogate: 4-Bromofluorobenzene (%)	76.4	75.7			
	Surrogate: 3,4-Dichlorotoluene (%)	114.3	111.4			
	Surrogate: 1,4-Difluorobenzene (%)	94.6	94.9			
Hydrocarbons	EPH10-19 (ug/L)	<100	<100			
	EPH19-32 (ug/L)	<100	<100			
	Surrogate: 2-Bromobenzotrifluoride (%)	83.1	88.4			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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

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

BE-T-L-CCMS-CL	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

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

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

BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

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

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

COD-T-COL-CL	Water	Chemical Oxygen Demand (COD)	APHA 5220 D Colorimetry

Samples are analyzed using the closed reflux colourimetric method

COLOUR-TRUE-CL	Water	Colour (True) by Spectrometer	APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EPH-L-ME-FID-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BC Lab manual

EPH is extracted from water using a hexane micro-extraction technique, with analysis by GC-FID, as per the BC Lab Manual. EPH results include PAHs and are therefore not equivalent to LEPH or HEPH.

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

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

HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

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

HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

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

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

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

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

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

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

MTBE-ADD-CL	Water	MTBE - additional to BTEX	EPA 8260C/5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. MTBE Target compound concentration is measured using mass spectrometry detection.

NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

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

NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

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

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH/EC/ALK-CL	Water	pH, Conductivity and Total Alkalinity	APHA 4500H,2510,2320

All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)
pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode.
Alkalinity measurement is based on the sample's capacity to neutralize acid
Conductivity measurement is based on the sample's capacity to convey an electric current

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

VOC-HS-MS-CL	Water	VOCs in Water	EPA 8260C/5021A

Reference Information

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. VOC Target compound concentrations are measured using mass spectrometry detection.

XYLENES-CALC-CL Water Sum of Xylene Isomer Concentrations CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

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

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

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

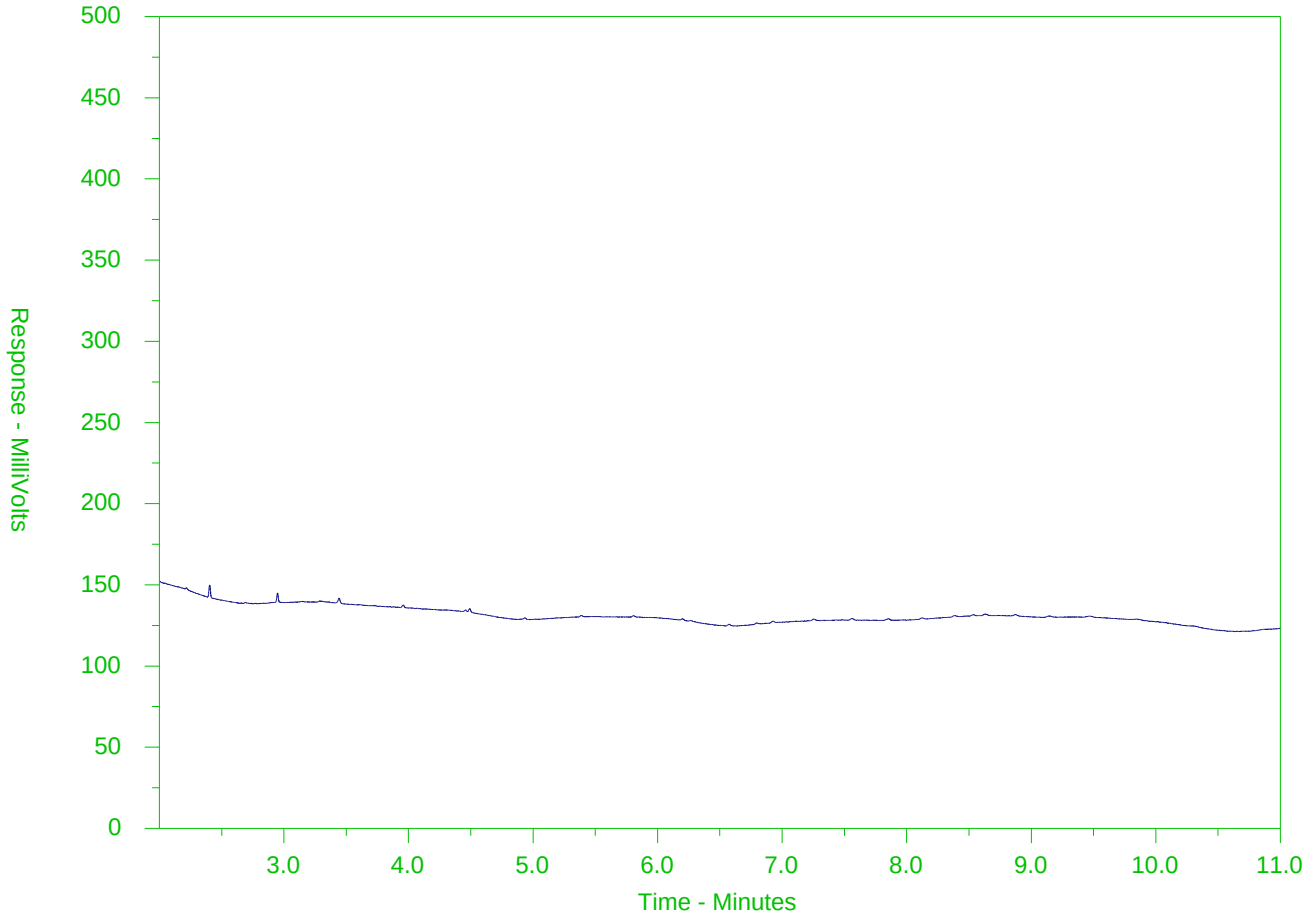
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-1
Client Sample ID: MICH-13.0



← EPH10-19 →	← EPH19-32 →	
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

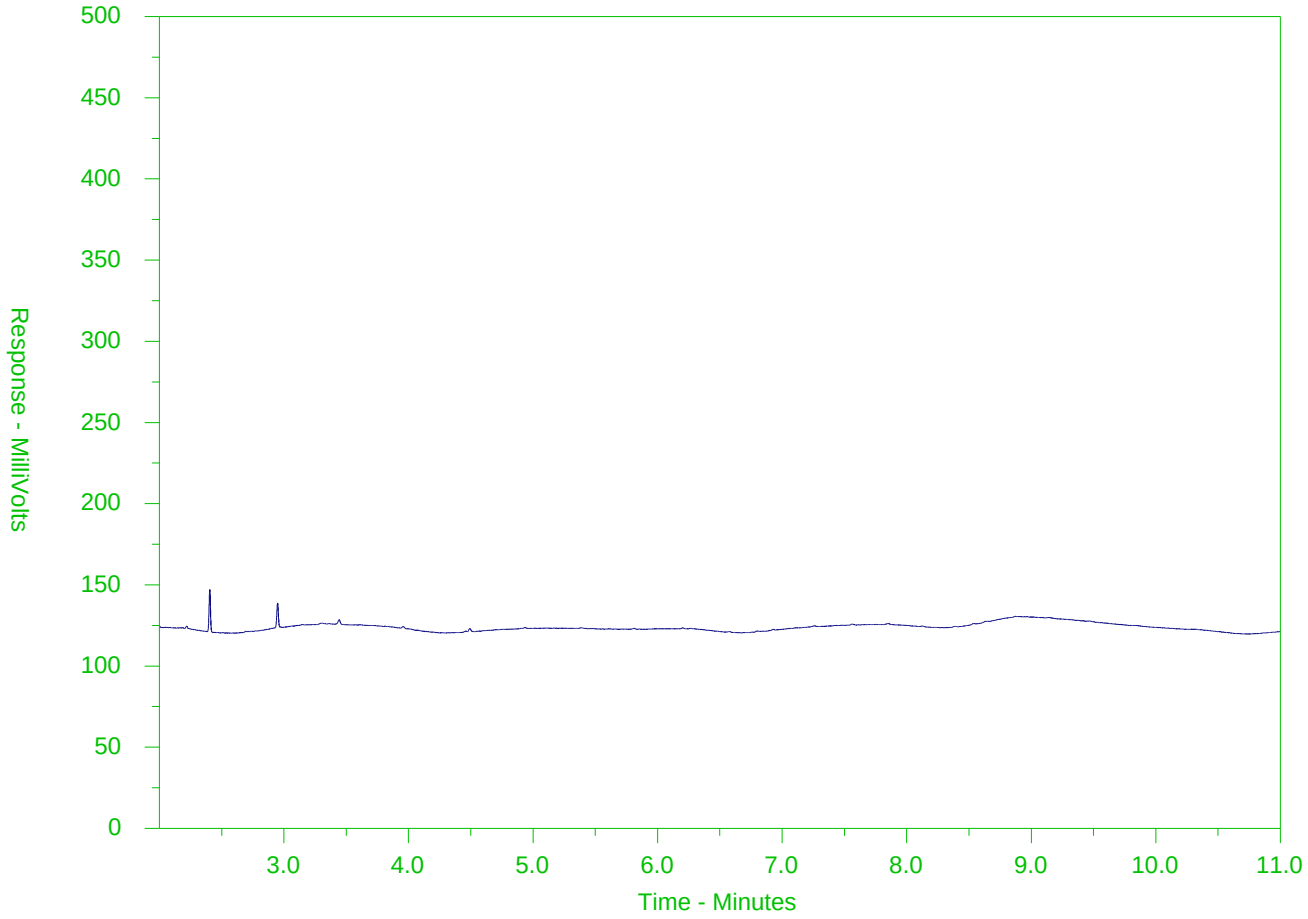
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-2
Client Sample ID: MICH-33.8



← EPH10-19 →	← EPH19-32 →	
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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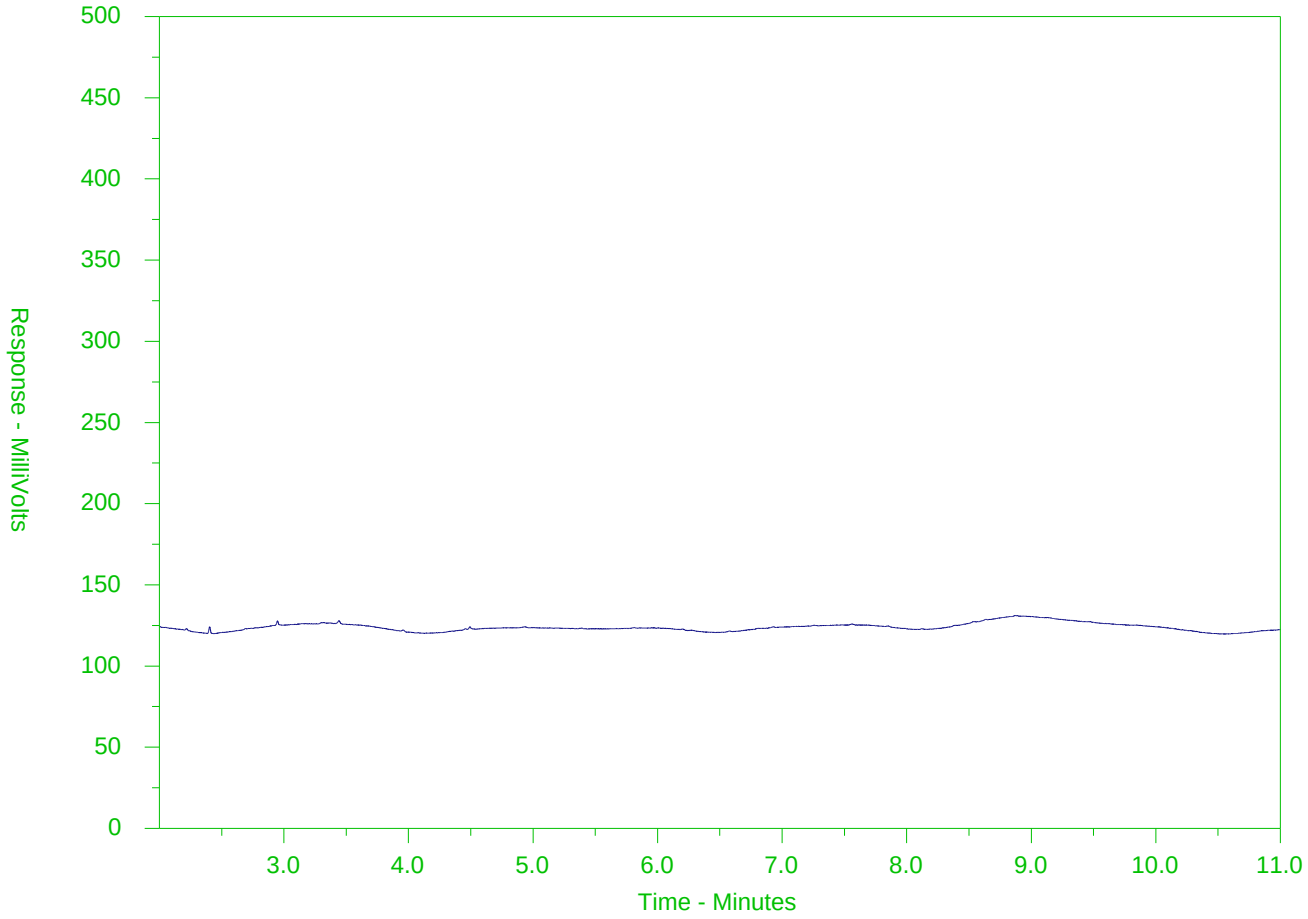
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-3
Client Sample ID: AND 1



← EPH10-19 →	← EPH19-32 →	
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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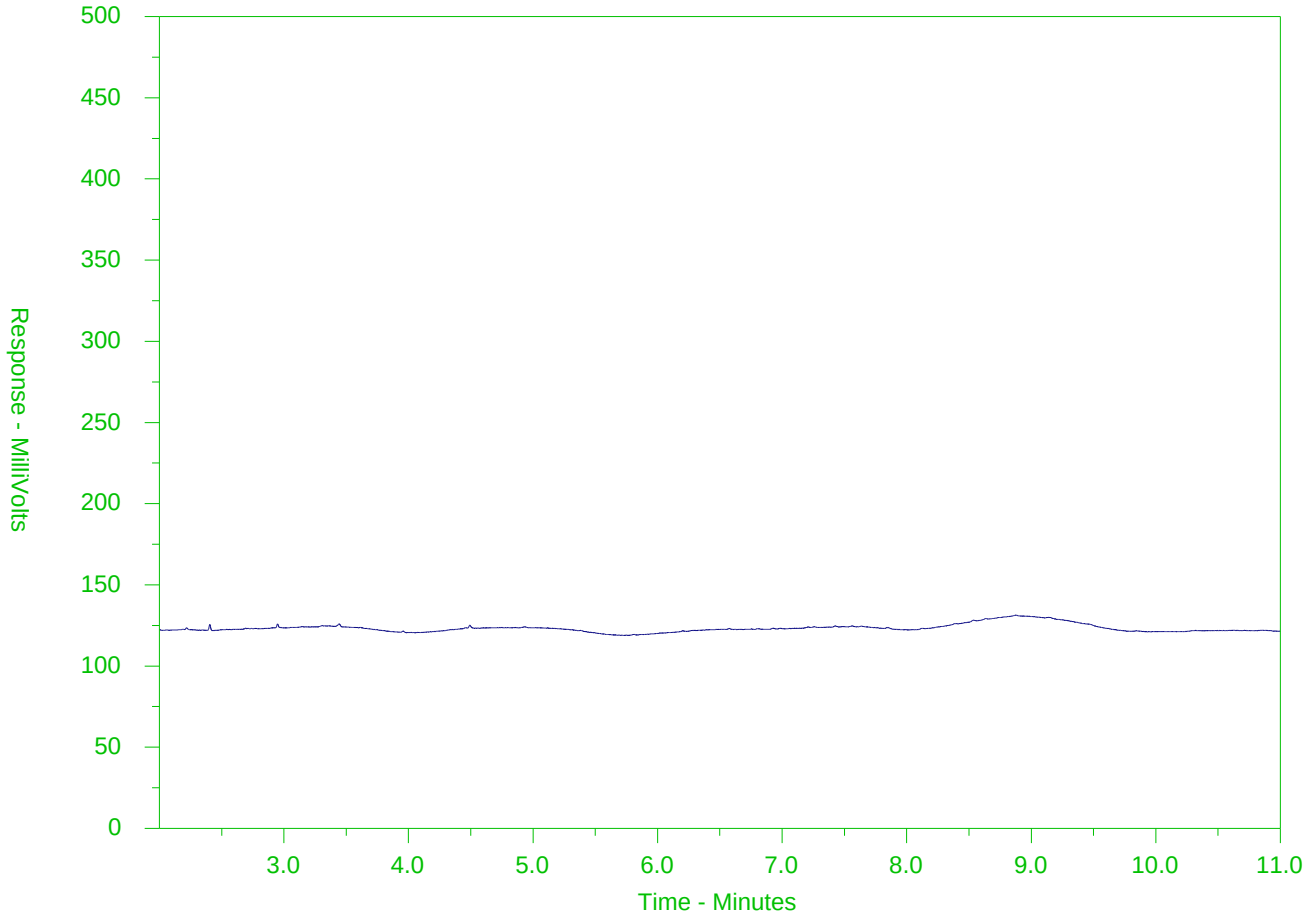
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-4
Client Sample ID: MICH-39.1



← EPH10-19 →		← EPH19-32 →
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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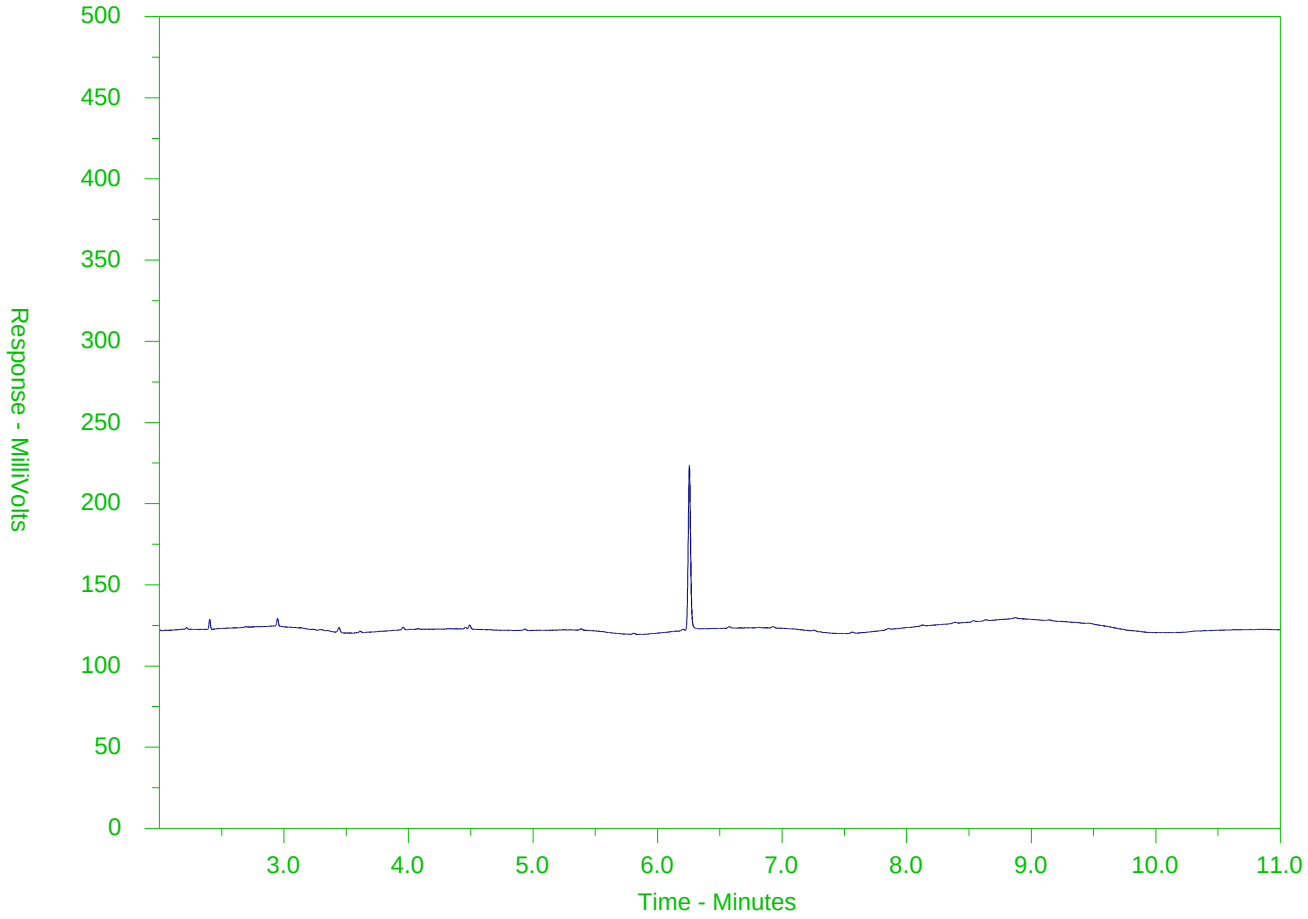
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-5
Client Sample ID: FIELD BLANK



← EPH10-19 →	← EPH19-32 →	
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

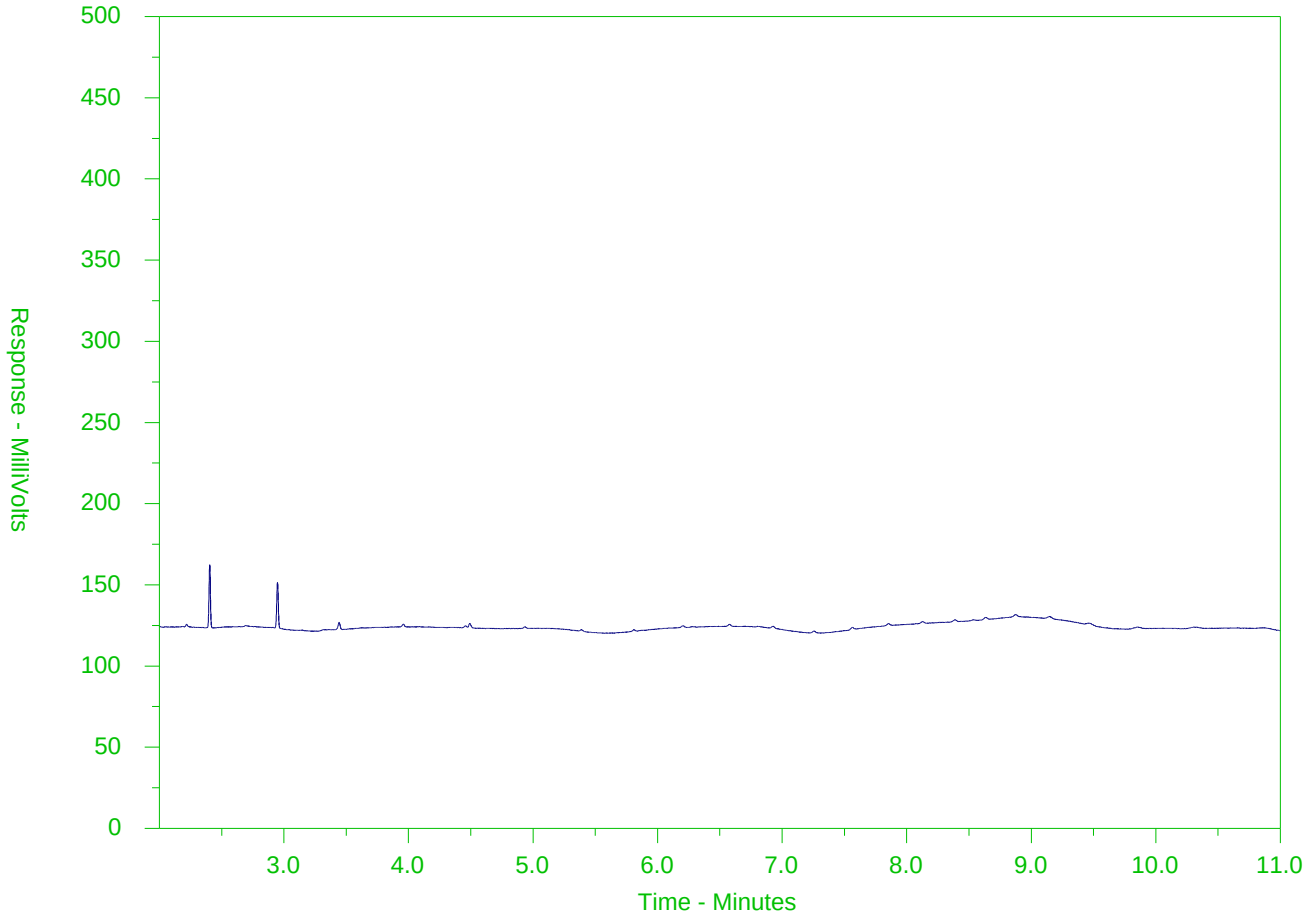
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-6
Client Sample ID: TRIP BLANK



← EPH10-19 →		← EPH19-32 →
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

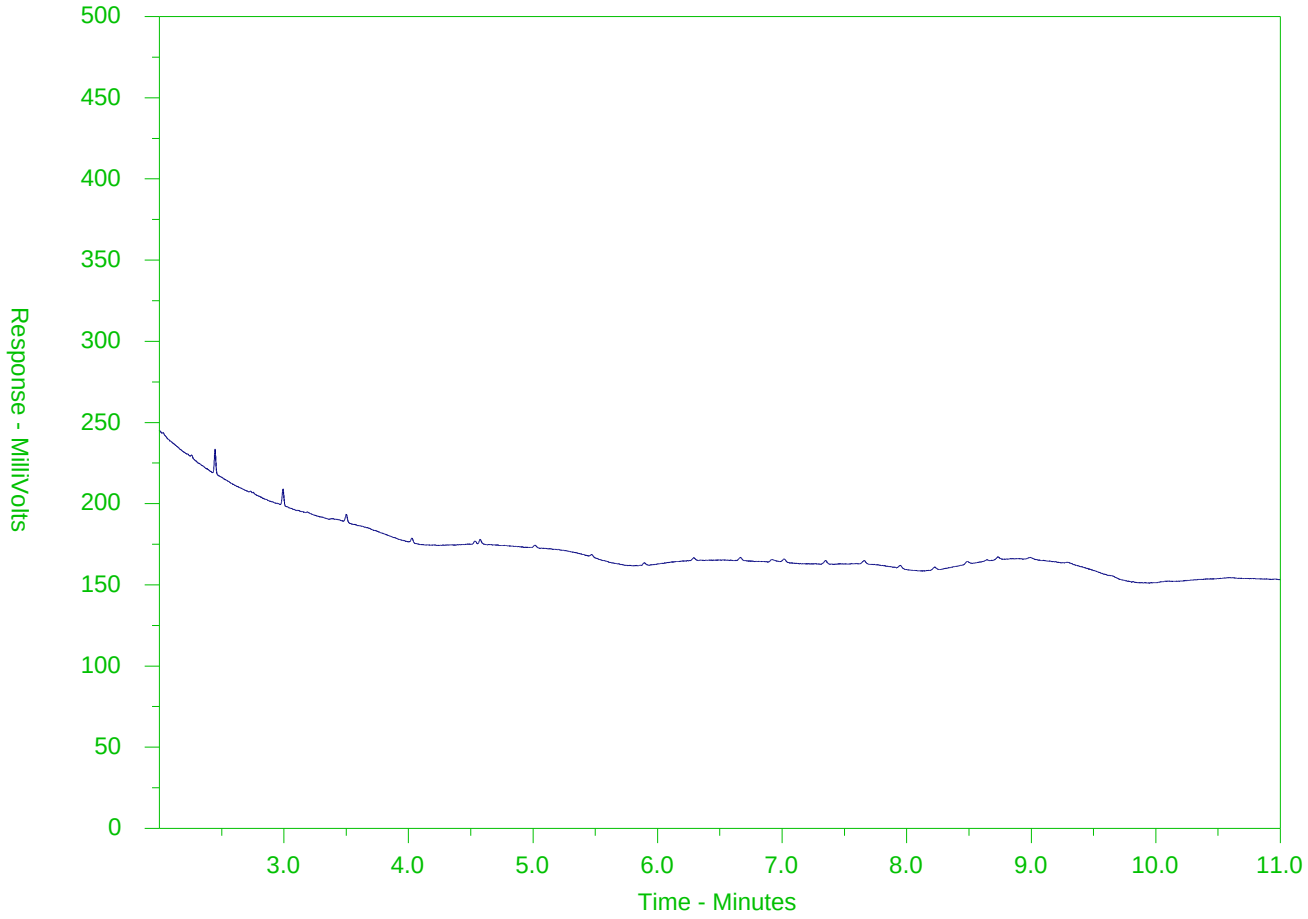
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2568728-7
Client Sample ID: DUPLICATE



← EPH10-19 →	← EPH19-32 →	
nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →		

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	North Coal Limited	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:		☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	#5000 Hwy 43	Email 1: barling@northcoal.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Sparwood, BC, V0B 2G1	Email 2: mike.robinson@lotic.co		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	Fax:	Email 3: mia.otto@lotic.co		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☑ Yes ☐ No	Job #: 18CANA02		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #: Q75701		
Lab Work Order # (lab use only)		ALS Contact: Patryk Wojciak	Sampler: Mia Otto	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	EPH x2	DOC	COD/NH3/TKN/TOC	Total Metals	Dissolved Metals	Dissolved mercury	Total Mercury	VOCx2				Number of Containers
						P	F/P	P	P	F/P	P/F	P	P				
	MICH-13.0	18/3/21	12:30	Surface Water	X	X	X	X	X	X	X	X	X				11
	MICH-33.8	18/3/21	11:15	Surface Water	X	X	X	X	X	X	X	X	X				11
	AND1	18/3/21	10:15	Surface Water	X	X	X	X	X	X	X	X	X				11
	MICH-39.1	18/3/21	09:30	Surface Water	X	X	X	X	X	X	X	X	X				11
	Field Blank	18/3/21	09:15	Surface Water	X	X	X	X	X	X	X	X	X				11
	Trip Blank	18/3/21	09:00	Surface Water	x	x	x	x	x	x	x	x	x				11
	Dupli	18/3/21	11:00	Surface Water	x	x	x	x	x	x	x	x	x				11

L2568728-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Both VOCs and DOC for duplicate not preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Mia Otto	18-Mar-21	16:00				°C		19/03	9:10	