



March 21, 2019

Reference No. 11192875-01

Mr. David Callahan  
Back Home Medical Cannabis Corporation  
5 Western Drive  
Barachois Brook, NL A0N 1B0

Dear Mr. Callahan:

**Re: 2019 Test Pitting Program  
Back Home Medical Cannabis Corporation  
5 Western Drive, Barachois Brook, NL**

GHD Limited (GHD) was retained by Back Home Medical Cannabis Corporation (BHMCC) to assess soil analytical data from a test pitting program completed by others at the commercial property located at 5 Western Drive (Site or Property) in the Community of Barachois Brook, Newfoundland and Labrador (NL). The subject Property is along the southern area of a larger property that was formerly part of Western Construction. The test pitting program was conducted to assess potential soil impacts from a diesel fuel leak from a wrecked pick-up truck in the former laydown area between September 2016 and February 2018 when it was removed from Site.

A Site Location Map and Site Plan with Sample Locations are attached as Figures 1 and 2 of Attachment A, respectively with Site photographs provided by BHMCC included as Attachment B.

## **1. Site Description**

The Site is located on the north side of Carter's Road and just east of Main Road (Route 461) in the Community of Barachois Brook, NL. The overall Property is covered by a Site building (former Repair Shop; approximately 5 percent), a cleared area (approximately 50 percent) and vacant forested land (approximately 45 percent) that covers an area of approximately 80,940 m<sup>2</sup>. It is GHD's understanding that future development of the Site includes construction of a new 13,935 square metre (m<sup>2</sup>) building which is proposed to be located near the centre of the Site.

Based on historical assessment activities, surface water and groundwater generally follow the surface topography toward the southwest and Barachois Brook located south of the Site and St. George's Bay further west. A wetland area is located approximately 20 metres north of the Site and is the nearest ecological receptor.

The existing building on Site is a steel framed structure with metal cladding and roof with slab-on-grade concrete floor, which is serviced by a drilled artesian well and septic system.

The drilled artesian well that currently supplies potable water to the Site is located approximately 275 metres southwest of the subject Property south of Carter's Road and east of Main Road (Route 461). The nearest potable well is a drilled artesian well located south of the former Bunkhouse building on the



Western Construction property, which is about 90 metres west of the subject Property boundary and about 275 metres from the location of the former wrecked pick-up truck.

## **2. Geology and Topography**

A review of the “Surficial Geology of Insular Newfoundland, Preliminary Version”, issued by the Geological Survey Division of the Mines Branch of the Department of Natural Resources, Government of Newfoundland and Labrador (Map 90-08) indicates that the Site geology consists of poorly to well sorted gravel and sand, 1.5 to 80 metres thick, having a diverse surface topography; gravel is pebble to cobble sized, and forms 50 to 95 percent of the sediment; incorporated into this unit are eskers (sinuous elongated ridges 3 to 15 metres high, and up to 10 km long); kames (moderately to steep sided mounds 3 to 30 metres high), kame terraces (terraces along valley sides, 3 to 20 metres thick, and up to 10 km long); outwash plains (plains having low relief, and a channeled surface, 3 to 50 metres thick and up to 20 km long), and deltas (fan-shaped mounds, up to 80 metres thick and 2 km diameter).

A review of the “Geology of the Island of Newfoundland”, issued by the Geological Survey Division of the Mines Branch of the Department of Natural Resources, Government of Newfoundland and Labrador (Map 90-01) indicates that the bedrock in the vicinity of the Site consists of Post Ordovician Overlap Sequences from the Carboniferous (Visean to Westphalian) era, consisting of fluvial and lacustrine, siliciclastic and minor carbonate rocks; intercalated marine, siliciclastic, carbonate and evaporitic rocks; minor coal beds and mafic volcanic flows.

The elevation at the Site is approximately 15 metres above sea level (masl) based on local topographic mapping. Surficial geology encountered at the Site during the test pitting program was not available. Information regarding bedrock and groundwater was not available; however, test pits did reach depths of up to 4.8 metres below ground surface (mbgs) at TP2 and TP3 based on information in the laboratory certificates of analysis.

## **3. Assessment Criteria**

The existing and planned Site usage is commercial with surrounding properties mixed residential and commercial, all of which are serviced by drilled artesian wells in the area. Therefore, the site is classified as a commercial property with potable groundwater. Analytical results for Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), and Total Petroleum Hydrocarbons (TPH) in soil from the test pits were compared to the 2015 Risk-Based Corrective Action (RBCA) Tier I Risk-Based Screening Level (RBSL) and Ecological Screening Level (ESL) criteria.

Analytical results for metals and PAHs in soil were compared to the 2015 Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health – Commercial.



CCME SQGs for Polychlorinated Biphenyls (PCBs) are not available. As a result, the analytical data provides an indicator of presence/absence.

#### **4. Soil Sampling Program**

The soil sampling program consisted of the excavation of 10 test pits (TP1 to TP10) by others that were located in the former laydown area of the Property. Surficial geology encountered at the Site during the test pitting program was not available. Information regarding bedrock and groundwater was not available; however, test pits did reach depths of up to 4.8 metres below ground surface (mbgs) at TP 2 and TP3 based on information in the laboratory certificates of analysis.

A total of 20 soil samples (TP1-S1, TP1-S7, TP2-S3, TP2-S8, TP3-S1, TP3-S5, TP3-SB, TP4-S5, TP5-S1, TP5-S5, TP6-S1, TP6-S5, TP7-S1, TP7-S5, TP8-S4, TP8-S6 (BASE), TP9-S5, TP10-S1, and TP10-S5) were collected from the test pits at depths ranging from surface to 4.8 mbgs. GHD are unaware if petroleum odours were encountered during the test pit excavation activities. All 20 soil samples were submitted to Maxxam Analytics Inc. (Maxxam) laboratory in St. John's, NL for BTEX/TPH.

In addition, one soil sample (TP8-S4) was submitted to Maxxam in St. John's, NL for metals, PAH, and PCB analysis.

All soil sample locations are presented on Figure 2 of Attachment A.

#### **5. Soil Analytical Results**

Soil analytical results for all 18 soil samples collected at TP1, TP2, and TP4 to TP10 reported non-detectable to very low BTEX/TPH concentrations that were below the Tier I RBSLs for a commercial property with potable groundwater and coarse-grained soil. One soil sample (TP3-S5) and its field duplicate (TP3-SB) reported BTEX concentrations below the Tier I RBSLs for the Site characteristics; however, the TPH concentrations were above the Tier I RBSL criterion for a commercial property with potable groundwater and coarse-grained soil.

One soil sample (TP8-S4) reported metals, PAH, and PCB concentrations below the respective CCME SQGs, where available.

The soil sample analytical results for petroleum hydrocarbons, metals, PAHs, and PCBs are summarized in Tables 1 to 4, respectively, of Attachment C and the Laboratory Certificates of Analyses are included in Attachment D.

#### **6. Discussion**

One soil sample (TP3-S5) and its field duplicate (TP3-SB) were collected from the location of the former wrecked pick-up, which reported TPH concentrations above the Tier I RBSL criterion for a commercial



property with potable groundwater. The nearest drilled and potable well is located about 90 metres west of the subject Property boundary and 275 metres west from the impact area at TP3.

GHD understands that BHMCC intends to implement a potable well water exclusion zone having a minimum 30 metre radius around the impact area at TP3 since the future building is planned for construction over this potable water exclusion zone. In addition, the Site is supplied with potable water from a drilled well located about 275 metres southwest of the Site.

Based on the potable water exclusion zone being applied at the impacted area where the truck wreck was located with a 30 metres radius around the impact area, the localized area of TP3 can be revised to a non-potable groundwater condition. As a result, TPH concentrations from the soil sample (TP3-S5) and its field duplicate (TP3-SB) are below the Tier I criterion for a commercial property with non-potable groundwater.

## **7. Conclusions**

Based on the analytical data provided to GHD from the 2019 test pitting program, soil samples within the potable water exclusion zone are below the BTEX/TPH Tier I RBSLs for a commercial property with non-potable groundwater. In addition, soil samples outside the potable water exclusion zone are below the BTEX/TPH Tier I RBSLs for a commercial property with potable groundwater. Therefore, GHD recommend that remediation of soil is not required.

The soil sample submitted for metals, PAH, and PCB analysis reported concentrations below the respective CCME SQGs where available.

## **8. Closure**

We trust this information is sufficient for your reference; however, please do not hesitate to contact us if you have any questions or require additional information.



Sincerely,

GHD

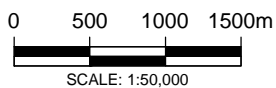
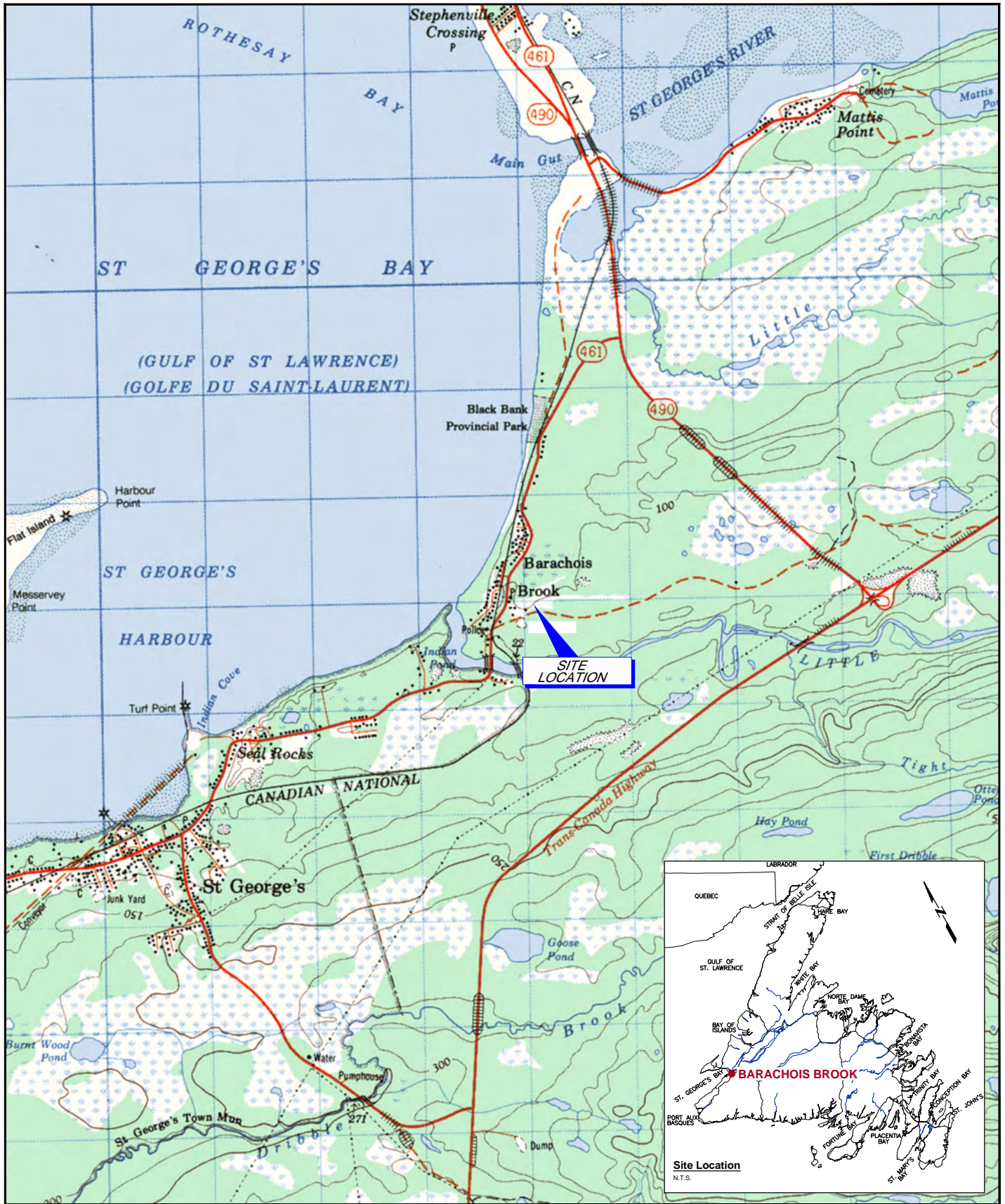
A handwritten signature in blue ink, appearing to read 'B. Luffman', is written over a faint, light blue circular watermark or background.

Brian Luffman, P.Eng.  
Associate | Senior Project Manager

BL/tc/1

- Encl. Attachment A Figure 1 - Site Location Map  
Figure 2 - Site Plan with Sample Locations
- Attachment B Site Photographs
- Attachment C Table 1 - Soil Sample Analytical Results – BTEX/TPH (mg/kg)  
Table 2 - Soil Sample Analytical Results – Metals (mg/kg)  
Table 3 - Soil Sample Analytical Results – PAHs (mg/kg)  
Table 4 - Soil Sample Analytical Results – PCBs (mg/kg)
- Attachment D Laboratory Certificates of Analysis

# Attachment A Figures



BACK HOME GROW  
CARTERS ROAD, BARACHOIS BROOK, NL  
TEST PITTING PROGRAM

SITE LOCATION MAP

11192875-01

Mar 21, 2019

FIGURE 1



SOURCE: MICROSOFT PRODUCT SCREEN SHOT(S) REPRINTED WITH PERMISSION FROM MICROSOFT CORPORATION, ACQUISITION DATE [2013], ACCESSED: 2019

		<p><b>LEGEND:</b></p> <ul style="list-style-type: none"> <li><span style="color: red; font-weight: bold;">- - -</span> PROPERTY BOUNDARY (ASSUMED)</li> <li><span style="color: orange;">◆</span> BOREHOLE LOCATION (2004)</li> <li><span style="color: black;">●</span> MONITOR WELL LOCATION (2004)</li> <li><span style="color: black;">⊠</span> SURFACE SOIL SAMPLE LOCATION</li> <li><span style="color: green;">□</span> TEST PIT LOCATION BY OTHERS (2019)</li> </ul>	GROUNDWATER FLOW DIRECTION		<p>BACK HOME GROW 5 WESTERN DRIVE, BARACHOIS BROOK, NL TEST PITTING PROGRAM</p> <p><b>SITE PLAN WITH SAMPLE LOCATIONS</b></p>	<p>11192875-01 Mar 21, 2019</p>
--	--	--	----------------------------	--	---	-------------------------------------

FIGURE 2



# Attachment B Site Photographs



Photo 1 – View, looking west, toward location of TP3 after backfilling. Photo dated March 21, 2019 and provided by BHMCC.

# Attachment C Tables

Table 1

**Soil Sample Analysis Results - BTEX/TPH (mg/kg)  
2019 Test Pitting Program  
Back Home Medical Cannabis Corporation  
5 Western Drive, Barchois Brook, NL**

Sample Location	Depth (m)	Date Sampled	Benzene	Toluene	Ethyl- benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)				Modified TPH	Comments
							F1	F2	F3			
							C <sub>6</sub> - C <sub>10</sub>	C <sub>10</sub> -C <sub>16</sub>	C <sub>16</sub> -C <sub>21</sub>	C <sub>21</sub> -C <sub>32</sub>		
TP1-S1	0.0 - 0.6	Mar 11, 2019	<	<	<	<	<	<	<	<	<	-
TP1-S7	3.6 - 4.2	Mar 11, 2019	<	<	<	<	<	<	<	<	<	-
TP2-S3	1.2 - 1.8	Mar 11, 2019	<	<	<	<	7.5	1,100	580	140	1,800	WFO
TP2-S8	4.2 - 4.8	Mar 11, 2019	<	<	<	<	<	340	190	47	580	WFO
TP3-S1	0.0 - 0.6	Mar 11, 2019	<	<	<	<	7.2	750	640	220	1,600	WFO
TP3-S5	2.4 - 3.0	Mar 11, 2019	<	<	<	<	9.2	1,800	1,300	440	3,600	WFO
TP3-SB	2.4 - 3.0	Mar 11, 2019	<	<	<	<	25	1,500	1,100	390	3,000	WFO
TP3-S8	4.2 - 4.8	Mar 11, 2019	<	<	<	<	3.6	<	<	<	<	-
TP4-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	11	37	48	WFO / LO
TP5-S1	0.0 - 0.6	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP5-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP6-S1	0.0 - 0.6	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP6-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP7-S1	0.0 - 0.6	Mar 12, 2019	<	<	<	<	<	<	<	79	79	LO
TP7-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	17	96	110	LO
TP8-S4	1.8 - 2.4	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP8-S6 (BASE)	4.2	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP9-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP10-S1	0.0 - 0.6	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
TP10-S5	2.4 - 3.0	Mar 12, 2019	<	<	<	<	<	<	<	<	<	-
Reportable Detection Limits			0.025	0.025	0.025	0.05	2.5	10	10	15	15	
Atlantic RBCA Tier I RBSLs <sup>1</sup> Commercial, <u>POTABLE</u> Coarse-Grained			0.042	0.350	0.043	0.73	na	na	na	na	870	Gasoline
											1,800	Diesel #2 Fuel Oil
											10,000	#6 Oil
Atlantic RBCA Tier I RBSLs <sup>2</sup> Commercial, <u>NON-POTABLE</u> Coarse-Grained			2.5	10,000	10,000	110	na	na	na	na	870	Gasoline
											4,000	Diesel #2 Fuel Oil
											10,000	#6 Oil
Atlantic RBCA Tier I ESLs <sup>3</sup> Commercial			180	250	300	350	320	260	1,700	na	Gasoline	
										na	Diesel #2 Fuel Oil	
										na	#6 Oil	

Notes:

Analysis completed by Maxxam Analytics Inc. in St. John's, NL

- Atlantic RBCA - Tier I RBSLs (2012; rev 2015) for **POTABLE**.
  - Atlantic RBCA - Tier I RBSLs (2012; rev 2015) for **NON-POTABLE**.
  - Atlantic RBCA - Tier I ESLs for surface soils < 1.5 mbgs (2012; rev 2015).
- TP = Test Pit  
S = Soil Sample

< = Parameter below detection limit  
LO = Lube Oil  
WFO = Weathered Fuel Oil

0.00	= Exceeds Tier I RBSLs Commercial Potable
0.00	= Exceeds Tier I RBSLs Commercial Non-Potable
0.00	= Exceeds Tier I ESLs for surface soils

**Soil Analytical Results - Metals (mg/kg)**  
**2019 Test Pitting Program**  
**Back Home Medical Cannabis Corporation**  
**5 Western Drive, Barchois Brook, NL**

Parameters	RDL	TP8-S4 1.8 - 2.4 Mar 12, 2019	CCME* Guideline
Aluminum	10	9,000	--
Antimony	2	<	--
Arsenic	2	<	12
Barium	5	29	2,000
Beryllium	2	<	--
Bismuth	2	<	--
Boron	5	<	--
Cadmium	0.3	<	22
Chromium	2	27	87
Cobalt	1	7	--
Copper	2	21	91
Iron	50	15,000	--
Lead	0.5	6.6	260
Lithium	2	2.8	--
Manganese	2	150	--
Mercury	0.1	<	24
Molybdenum	2	<	--
Nickel	2	20	89
Rubidium	2	2.8	--
Selenium	2	<	3.9
Silver	0.5	<	--
Strontium	5	22	--
Thallium	0.1	<	1
Tin	2	<	--
Uranium	0.1	0.2	--
Vanadium	2	36	130
Zinc	5	63	360

**Notes:**

\* 2015 CCME Guidelines for the Protection of Environmental and Human Health - Commercial, coarse-grained

< = Below Reportable Detection Limit

-- No guidelines / Not analyzed

**Soil Analytical Results - PAHs (mg/kg)  
2019 Test Pitting Program  
Back Home Medical Cannabis Corporation  
5 Western Drive, Barachois Brook, NL**

Parameters	CCME PEFs (for B(a)P TPE calculations - NOT Guidelines)	Human Health						Environmental Health				Detection Limits	Sample Locations		
		SQG <sub>HH</sub>	Soil Contact/ Ingestion		Indoor Air	Potable Groundwater		SQG <sub>E</sub>	Soil Contact	Aquatic Health	Interim Eco		Sample ID	TP8-S4	
		2010 CCME SQG <sub>HH</sub> Lowest of all Human Health Pathways (assumed all pathways are complete)	2010 CCME Guidelines (Commercial) - Human Health, Direct Contact, 10-5 ILCR	MOE 2011a (Commercial, Soil Contact S2 risk - (for non-carcinogenic compounds)	MOE 2009a (Commercial, Indoor Air S-1A - (for non-carcinogenic compounds)	2010 CCME Guidelines (Commercial) - Human Health, Protection of Potable Groundwater	MOE 2009b (Commercial, Soil Leaching to Groundwater S-GW1 (for non-carcinogenic compounds)	2010 CCME SQG <sub>E</sub> Lowest of all Ecological Health Pathways (assumed all pathways are complete), Interim guideline used in the absence of other guideline	2010 CCME Guidelines (Commercial) - Environmental Health, Direct Contact	2010 CCME Guidelines (Commercial) - Environmental Health, Protection of Freshwater Life	2010 CCME Guidelines (Commercial) - Environmental Health, Interim Soil Quality Criteria		Sample Depth (m)	Sample Date	
1-Methylnaphthalene		30		560			30					0.01		ND	
2-Methylnaphthalene		30		560			30					0.01		ND	
Acenaphthylene		2.3		9.6	6.6		2.3			320		320	0.01	ND	
Acenaphthene		21		96	120		21			0.28		0.28	0.01	ND	
Anthracene		15,000		42,000			15,000			32	32		0.01	ND	
Benz(a)anthracene	0.1	See B(a)P TPE/ IACR								10		10	0.01	ND	
Benzo(a)pyrene	1	See B(a)P TPE/ IACR								72	72	8800	1.4	0.01	ND
Benzo(b)fluoranthene	0.1	See B(a)P TPE/ IACR								10		10	0.01	ND	
Benzo(k)fluoranthene	0.1	See B(a)P TPE/ IACR								10		10	0.01	ND	
Benzo(g,h,i)perylene	0.01	See B(a)P TPE/ IACR								10		10	0.01	ND	
Benzo(k)fluoranthene	0.01	See B(a)P TPE/ IACR								10		10	0.01	ND	
Chrysene/ Triphenylene	0.01	See B(a)P TPE/ IACR								10		10	0.01	ND	
Dibenz(a,h)anthracene	1	See B(a)P TPE/ IACR								10		10	0.01	ND	
Fluoranthene		9.6		9.6	3700		24			180	180		0.01	ND	
Fluorene		1,100		5,600			1,100			0.25		0.25	0.01	ND	
Indenopyrene	0.1	See B(a)P TPE/ IACR					10			10		10	0.01	ND	
Naphthalene		9.6		2,800	9.6		93			0.013		0.013	22	0.01	ND
Perylene		2.3		96			2.3							0.01	ND
Phenanthrene		17		2,300 <sup>2</sup>			17			0.046		0.046	50	0.01	ND
Pyrene		96		96	28000		240			100		100	0.01	ND	
B(a)P Total Potency Equivalents (TPE)		5.3	5.3												0.0121

Note:

PEFs	Where parameter is not detected, TPE and IACR calculations use 1/2 the detection limit.
Shading	Potency Equivalence Factor - indicates the parameter's relative potency to B(a)P
<b>Bold</b>	Parameter Exceeds Environmental Health Aquatic Guidelines
1	Parameter Exceeds Human Health Protection of Non-Potable Water Guidelines
ND	In the absence of an applicable guideline, the lowest criteria for a non-carcinogenic PAH was substituted. Not detectable

**Soil Analytical Results - PCBs (mg/kg)**  
**2019 Test Pitting Program**  
**Back Home Medical Cannabis Corporation**  
**5 Western Drive, Barachois Brook, NL**

Parameters	RDL	TP8-S4 1.8 - 2.4 Mar 12, 2019	CCME* Guideline
Aroclor 1016	10	<	--
Aroclor 1221	2	<	--
Aroclor 1232	2	<	--
Aroclor 1248	5	<	--
Aroclor 1242	2	<	--
Aroclor 1254	2	<	--
Aroclor 1260	5	<	--
Calculated Total PCB	0.3	<	--

**Notes:**

\* 2015 CCME Guidelines for the Protection of Environmental and Human Health - Commercial, coarse-grained

< = Below Reportable Detection Limit

-- No guidelines / Not analyzed

# Attachment D Laboratory Certificate of Analysis



Your Project #: 2-1-856  
Your C.O.C. #: D 39902

**Attention: Jennifer Dawe**

Pinchin LeBlanc Environmental  
St. John's - Standing Offer  
27 Austin St  
2nd Floor  
St. John's, NL  
CANADA A1B 4C3

**Report Date: 2019/03/15**  
Report #: R5630649  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B966076**  
**Received: 2019/03/14, 09:49**

Sample Matrix: Soil  
# Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Benzo(b/j)fluoranthene Sum (soil)	1	N/A	2019/03/15	N/A	Auto Calc.
TEH in Soil (PIRI) (1)	1	2019/03/14	2019/03/14	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS	1	2019/03/15	2019/03/15	ATL SOP 00058	EPA 6020A R1 m
Moisture	4	N/A	2019/03/14	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1)	1	2019/03/14	2019/03/14	ATL SOP 00102	EPA 8270E R6 m
PCBs in soil by GC/ECD (1)	1	2019/03/14	2019/03/15	ATL SOP 00106	EPA 8082A 2007 m
PCB Aroclor sum (soil)	1	N/A	2019/03/15	N/A	Auto Calc.
ModTPH (T1) Calc. for Soil	1	N/A	2019/03/15	N/A	Atl. RBCA v3.1 m
VOCs in Soil - Field Preserved (2)	3	N/A	2019/03/14	ATL SOP 00133	EPA 8260D R4 m
VPH in Soil (PIRI) - Field Preserved (2)	1	N/A	2019/03/14	ATL SOP 00119	Atl. RBCA v3.1 m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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

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

Your Project #: 2-1-856  
Your C.O.C. #: D 39902

**Attention: Jennifer Dawe**

Pinchin LeBlanc Environmental  
St. John's - Standing Offer  
27 Austin St  
2nd Floor  
St. John's, NL  
CANADA A1B 4C3

**Report Date: 2019/03/15**  
Report #: R5630649  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B966076**

**Received: 2019/03/14, 09:49**

- (1) Soils are reported on a dry weight basis unless otherwise specified.
- (2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key



Maxxam  
15 Mar 2019 16:53:10

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Melissa DiPinto, Project Manager  
Email: mdipinto@maxxam.ca  
Phone# (902) 420-0203

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

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JER175			JER175		
Sampling Date		2019/03/12			2019/03/12		
COC Number		D 39902			D 39902		
	UNITS	TP8, S4, 1.8-2.4M	RDL	QC Batch	TP8, S4, 1.8-2.4M Lab-Dup	RDL	QC Batch
<b>Inorganics</b>							
Moisture	%	6.2	1.0	6018051			
<b>Petroleum Hydrocarbons</b>							
Benzene	mg/kg	ND	0.025	6018397	ND	0.025	6018397
Toluene	mg/kg	ND	0.050	6018397	ND	0.050	6018397
Ethylbenzene	mg/kg	ND	0.025	6018397	ND	0.025	6018397
Total Xylenes	mg/kg	ND	0.050	6018397	ND	0.050	6018397
C6 - C10 (less BTEX)	mg/kg	ND	2.5	6018397	ND	2.5	6018397
>C10-C16 Hydrocarbons	mg/kg	ND	10	6018463	ND	10	6018463
>C16-C21 Hydrocarbons	mg/kg	17	10	6018463	14	10	6018463
>C21-<C32 Hydrocarbons	mg/kg	96	15	6018463	95	15	6018463
Modified TPH (Tier1)	mg/kg	110	15	6018034			
Reached Baseline at C32	mg/kg	Yes	N/A	6018463			
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	6018463			
<b>Surrogate Recovery (%)</b>							
Isobutylbenzene - Extractable	%	86		6018463	86		6018463
n-Dotriacontane - Extractable	%	95		6018463	94		6018463
Isobutylbenzene - Volatile	%	98		6018397	98		6018397
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected N/A = Not Applicable (1) Unidentified compound(s) in fuel oil range. Lube oil fraction.							

**ATLANTIC VOC IN SOIL (FIELD PRES.)**

Maxxam ID		JER172	JER172	JER173	JER174		
Sampling Date		2019/03/11	2019/03/11	2019/03/11	2019/03/11		
COC Number		D 39902	D 39902	D 39902	D 39902		
	UNITS	TP2, S3, 1.2-1.8M	TP2, S3, 1.2-1.8M Lab-Dup	TP3, S5, 2.4-3.0M	TP3, S8, 2.4-3.0M	RDL	QC Batch
<b>Inorganics</b>							
Moisture	%	3.6	3.8	6.0	5.4	1.0	6018051
<b>Volatile Organics</b>							
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	25	6018100
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	25	6018100
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	25	6018100
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	25	6018100
1,1-Dichloroethylene	ug/kg	ND	ND	ND	ND	25	6018100
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	25	6018100
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	25	6018100
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	25	6018100
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	25	6018100
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	25	6018100
Benzene	ug/kg	ND	ND	ND	ND	25	6018100
Bromodichloromethane	ug/kg	ND	ND	ND	ND	25	6018100
Bromoform	ug/kg	ND	ND	ND	ND	25	6018100
Bromomethane	ug/kg	ND	ND	ND	ND	50	6018100
Carbon Tetrachloride	ug/kg	ND	ND	ND	ND	25	6018100
Chlorobenzene	ug/kg	ND	ND	ND	ND	25	6018100
Chloroethane	ug/kg	ND	ND	ND	ND	200	6018100
Chloroform	ug/kg	ND	ND	ND	ND	25	6018100
cis-1,2-Dichloroethylene	ug/kg	ND	ND	ND	ND	25	6018100
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	25	6018100
Dibromochloromethane	ug/kg	ND	ND	ND	ND	25	6018100
Ethylbenzene	ug/kg	ND	ND	ND	ND	25	6018100
Ethylene Dibromide	ug/kg	ND	ND	ND	ND	25	6018100
Methyl t-butyl ether (MTBE)	ug/kg	ND	ND	ND	ND	25	6018100
Methylene Chloride(Dichloromethane)	ug/kg	ND	ND	ND	ND	25	6018100
o-Xylene	ug/kg	ND	ND	ND	ND	25	6018100
p+m-Xylene	ug/kg	ND	ND	ND	ND	25	6018100
Styrene	ug/kg	ND	ND	ND	ND	25	6018100
Tetrachloroethylene	ug/kg	ND	ND	ND	ND	25	6018100
Toluene	ug/kg	ND	ND	ND	ND	50	6018100
Total Xylenes	ug/kg	ND	ND	ND	ND	50	6018100
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected							

**ATLANTIC VOC IN SOIL (FIELD PRES.)**

Maxxam ID		JER172	JER172	JER173	JER174		
Sampling Date		2019/03/11	2019/03/11	2019/03/11	2019/03/11		
COC Number		D 39902	D 39902	D 39902	D 39902		
	UNITS	TP2, S3, 1.2-1.8M	TP2, S3, 1.2-1.8M Lab-Dup	TP3, S5, 2.4-3.0M	TP3, S8, 2.4-3.0M	RDL	QC Batch
trans-1,2-Dichloroethylene	ug/kg	ND	ND	ND	ND	25	6018100
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	25	6018100
Trichloroethylene	ug/kg	ND	ND	ND	ND	10	6018100
Trichlorofluoromethane (FREON 11)	ug/kg	ND	ND	ND	ND	25	6018100
Vinyl Chloride	ug/kg	ND	ND	ND	ND	20	6018100
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	98	93	107	105		6018100
D10-o-Xylene	%	93 (1)	107 (1)	108	123		6018100
D4-1,2-Dichloroethane	%	94	90	90	90		6018100
D8-Toluene	%	100	104	105	104		6018100
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected (1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.							

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		JER175	JER175		
Sampling Date		2019/03/12	2019/03/12		
COC Number		D 39902	D 39902		
	UNITS	TP8, S4, 1.8-2.4M	TP8, S4, 1.8-2.4M Lab-Dup	RDL	QC Batch
<b>Metals</b>					
Acid Extractable Aluminum (Al)	mg/kg	9000	9300	10	6019995
Acid Extractable Antimony (Sb)	mg/kg	ND	ND	2.0	6019995
Acid Extractable Arsenic (As)	mg/kg	ND	ND	2.0	6019995
Acid Extractable Barium (Ba)	mg/kg	29	34	5.0	6019995
Acid Extractable Beryllium (Be)	mg/kg	ND	ND	2.0	6019995
Acid Extractable Bismuth (Bi)	mg/kg	ND	ND	2.0	6019995
Acid Extractable Boron (B)	mg/kg	ND	ND	50	6019995
Acid Extractable Cadmium (Cd)	mg/kg	ND	ND	0.30	6019995
Acid Extractable Chromium (Cr)	mg/kg	27	32	2.0	6019995
Acid Extractable Cobalt (Co)	mg/kg	6.5	7.3	1.0	6019995
Acid Extractable Copper (Cu)	mg/kg	21	22	2.0	6019995
Acid Extractable Iron (Fe)	mg/kg	15000	18000	50	6019995
Acid Extractable Lead (Pb)	mg/kg	6.6	9.2	0.50	6019995
Acid Extractable Lithium (Li)	mg/kg	2.8	3.5	2.0	6019995
Acid Extractable Manganese (Mn)	mg/kg	150	180	2.0	6019995
Acid Extractable Mercury (Hg)	mg/kg	ND	ND	0.10	6019995
Acid Extractable Molybdenum (Mo)	mg/kg	ND	ND	2.0	6019995
Acid Extractable Nickel (Ni)	mg/kg	20	20	2.0	6019995
Acid Extractable Rubidium (Rb)	mg/kg	2.8	3.2	2.0	6019995
Acid Extractable Selenium (Se)	mg/kg	ND	ND	1.0	6019995
Acid Extractable Silver (Ag)	mg/kg	ND	ND	0.50	6019995
Acid Extractable Strontium (Sr)	mg/kg	22	21	5.0	6019995
Acid Extractable Thallium (Tl)	mg/kg	ND	ND	0.10	6019995
Acid Extractable Tin (Sn)	mg/kg	ND	ND	1.0	6019995
Acid Extractable Uranium (U)	mg/kg	0.20	0.28	0.10	6019995
Acid Extractable Vanadium (V)	mg/kg	36	43	2.0	6019995
Acid Extractable Zinc (Zn)	mg/kg	63	64	5.0	6019995
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected					

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		JER175			JER175		
Sampling Date		2019/03/12			2019/03/12		
COC Number		D 39902			D 39902		
	UNITS	TP8, S4, 1.8-2.4M	RDL	QC Batch	TP8, S4, 1.8-2.4M Lab-Dup	RDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>							
1-Methylnaphthalene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
2-Methylnaphthalene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Acenaphthene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Acenaphthylene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Anthracene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(a)anthracene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(a)pyrene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(b)fluoranthene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(b/j)fluoranthene	mg/kg	ND	0.020	6017988			
Benzo(g,h,i)perylene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(j)fluoranthene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Benzo(k)fluoranthene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Chrysene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Dibenz(a,h)anthracene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Fluoranthene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Fluorene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Naphthalene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Perylene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Phenanthrene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
Pyrene	mg/kg	ND	0.010	6018191	ND	0.010	6018191
<b>Surrogate Recovery (%)</b>							
D10-Anthracene	%	93		6018191	96		6018191
D14-Terphenyl (FS)	%	93		6018191	96		6018191
D8-Acenaphthylene	%	95		6018191	95		6018191
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected							

**POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)**

Maxxam ID		JER175			JER175		
Sampling Date		2019/03/12			2019/03/12		
COC Number		D 39902			D 39902		
	UNITS	TP8, S4, 1.8-2.4M	RDL	QC Batch	TP8, S4, 1.8-2.4M Lab-Dup	RDL	QC Batch
<b>PCBs</b>							
Aroclor 1016	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1221	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1232	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1248	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1242	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1254	ug/g	ND	0.050	6018426	ND	0.050	6018426
Aroclor 1260	ug/g	ND	0.050	6018426	ND	0.050	6018426
Calculated Total PCB	ug/g	ND	0.050	6017992			
<b>Surrogate Recovery (%)</b>							
Decachlorobiphenyl	%	95		6018426	92		6018426
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected							



**GENERAL COMMENTS**

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

Package 1	7.3°C
-----------	-------

**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	6018051	SDN	RPD [JER172-01]	Moisture	2019/03/14	5.4		%	25
	6018100	ASL	Matrix Spike [JER172-02]	4-Bromofluorobenzene	2019/03/14		105	%	60 - 140
				D10-o-Xylene	2019/03/14		104 (1)	%	60 - 130
				D4-1,2-Dichloroethane	2019/03/14		90	%	60 - 140
				D8-Toluene	2019/03/14		104	%	60 - 140
				1,1,1-Trichloroethane	2019/03/14		105	%	60 - 140
				1,1,2,2-Tetrachloroethane	2019/03/14		101	%	60 - 140
				1,1,2-Trichloroethane	2019/03/14		98	%	60 - 140
				1,1-Dichloroethane	2019/03/14		100	%	60 - 140
				1,1-Dichloroethylene	2019/03/14		104	%	60 - 140
				1,2-Dichlorobenzene	2019/03/14		103	%	60 - 140
				1,2-Dichloroethane	2019/03/14		88	%	60 - 140
				1,2-Dichloropropane	2019/03/14		98	%	60 - 140
				1,3-Dichlorobenzene	2019/03/14		102	%	60 - 140
				1,4-Dichlorobenzene	2019/03/14		102	%	60 - 140
				Benzene	2019/03/14		98	%	60 - 140
				Bromodichloromethane	2019/03/14		95	%	60 - 140
				Bromoform	2019/03/14		89	%	60 - 140
				Bromomethane	2019/03/14		86	%	60 - 140
				Carbon Tetrachloride	2019/03/14		102	%	60 - 140
				Chlorobenzene	2019/03/14		98	%	60 - 140
				Chloroethane	2019/03/14		84	%	60 - 140
				Chloroform	2019/03/14		88	%	60 - 140
				cis-1,2-Dichloroethylene	2019/03/14		103	%	60 - 140
				cis-1,3-Dichloropropene	2019/03/14		98	%	60 - 140
				Dibromochloromethane	2019/03/14		107	%	60 - 140
				Ethylbenzene	2019/03/14		114	%	60 - 140
				Ethylene Dibromide	2019/03/14		101	%	60 - 140
				Methyl t-butyl ether (MTBE)	2019/03/14		102	%	60 - 140
				Methylene Chloride(Dichloromethane)	2019/03/14		97	%	60 - 140
				o-Xylene	2019/03/14		109	%	60 - 140
				p+m-Xylene	2019/03/14		113	%	60 - 140
				Styrene	2019/03/14		114	%	60 - 140
				Tetrachloroethylene	2019/03/14		108	%	60 - 140
				Toluene	2019/03/14		109	%	60 - 140
				trans-1,2-Dichloroethylene	2019/03/14		107	%	60 - 140
				trans-1,3-Dichloropropene	2019/03/14		92	%	60 - 140
				Trichloroethylene	2019/03/14		108	%	60 - 140
				Trichlorofluoromethane (FREON 11)	2019/03/14		91	%	60 - 140
				Vinyl Chloride	2019/03/14		81	%	60 - 140
	6018100	ASL	Spiked Blank	4-Bromofluorobenzene	2019/03/14		103	%	60 - 140
				D10-o-Xylene	2019/03/14		102	%	60 - 130
				D4-1,2-Dichloroethane	2019/03/14		97	%	60 - 140
				D8-Toluene	2019/03/14		99	%	60 - 140
				1,1,1-Trichloroethane	2019/03/14		112	%	60 - 130
				1,1,2,2-Tetrachloroethane	2019/03/14		103	%	60 - 130
				1,1,2-Trichloroethane	2019/03/14		105	%	60 - 130
				1,1-Dichloroethane	2019/03/14		111	%	60 - 130
				1,1-Dichloroethylene	2019/03/14		115	%	60 - 130
				1,2-Dichlorobenzene	2019/03/14		101	%	60 - 130
				1,2-Dichloroethane	2019/03/14		97	%	60 - 130
				1,2-Dichloropropane	2019/03/14		108	%	60 - 130
				1,3-Dichlorobenzene	2019/03/14		103	%	60 - 130
				1,4-Dichlorobenzene	2019/03/14		102	%	60 - 130
				Benzene	2019/03/14		106	%	60 - 130

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromodichloromethane	2019/03/14		104	%	60 - 130
			Bromoform	2019/03/14		99	%	60 - 130
			Bromomethane	2019/03/14		101	%	60 - 140
			Carbon Tetrachloride	2019/03/14		110	%	60 - 130
			Chlorobenzene	2019/03/14		103	%	60 - 130
			Chloroethane	2019/03/14		97	%	60 - 140
			Chloroform	2019/03/14		98	%	60 - 130
			cis-1,2-Dichloroethylene	2019/03/14		112	%	60 - 130
			cis-1,3-Dichloropropene	2019/03/14		105	%	60 - 130
			Dibromochloromethane	2019/03/14		106	%	60 - 130
			Ethylbenzene	2019/03/14		114	%	60 - 130
			Ethylene Dibromide	2019/03/14		107	%	60 - 130
			Methyl t-butyl ether (MTBE)	2019/03/14		108	%	60 - 130
			Methylene Chloride(Dichloromethane)	2019/03/14		110	%	60 - 130
			o-Xylene	2019/03/14		113	%	60 - 130
			p+m-Xylene	2019/03/14		112	%	60 - 130
			Styrene	2019/03/14		111	%	60 - 130
			Tetrachloroethylene	2019/03/14		115	%	60 - 130
			Toluene	2019/03/14		110	%	60 - 130
			trans-1,2-Dichloroethylene	2019/03/14		117	%	60 - 130
			trans-1,3-Dichloropropene	2019/03/14		101	%	60 - 130
			Trichloroethylene	2019/03/14		114	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2019/03/14		101	%	60 - 140
			Vinyl Chloride	2019/03/14		94	%	60 - 140
6018100	ASL	Method Blank	4-Bromofluorobenzene	2019/03/14		102	%	60 - 140
			D10-o-Xylene	2019/03/14		98	%	60 - 130
			D4-1,2-Dichloroethane	2019/03/14		93	%	60 - 140
			D8-Toluene	2019/03/14		99	%	60 - 140
			1,1,1-Trichloroethane	2019/03/14	ND, RDL=25		ug/kg	
			1,1,2,2-Tetrachloroethane	2019/03/14	ND, RDL=25		ug/kg	
			1,1,2-Trichloroethane	2019/03/14	ND, RDL=25		ug/kg	
			1,1-Dichloroethane	2019/03/14	ND, RDL=25		ug/kg	
			1,1-Dichloroethylene	2019/03/14	ND, RDL=25		ug/kg	
			1,2-Dichlorobenzene	2019/03/14	ND, RDL=25		ug/kg	
			1,2-Dichloroethane	2019/03/14	ND, RDL=25		ug/kg	
			1,2-Dichloropropane	2019/03/14	ND, RDL=25		ug/kg	
			1,3-Dichlorobenzene	2019/03/14	ND, RDL=25		ug/kg	
			1,4-Dichlorobenzene	2019/03/14	ND, RDL=25		ug/kg	
			Benzene	2019/03/14	ND, RDL=25		ug/kg	
			Bromodichloromethane	2019/03/14	ND, RDL=25		ug/kg	
			Bromoform	2019/03/14	ND, RDL=25		ug/kg	
			Bromomethane	2019/03/14	ND, RDL=50		ug/kg	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Carbon Tetrachloride	2019/03/14	ND, RDL=25		ug/kg	
			Chlorobenzene	2019/03/14	ND, RDL=25		ug/kg	
			Chloroethane	2019/03/14	ND, RDL=200		ug/kg	
			Chloroform	2019/03/14	ND, RDL=25		ug/kg	
			cis-1,2-Dichloroethylene	2019/03/14	ND, RDL=25		ug/kg	
			cis-1,3-Dichloropropene	2019/03/14	ND, RDL=25		ug/kg	
			Dibromochloromethane	2019/03/14	ND, RDL=25		ug/kg	
			Ethylbenzene	2019/03/14	ND, RDL=25		ug/kg	
			Ethylene Dibromide	2019/03/14	ND, RDL=25		ug/kg	
			Methyl t-butyl ether (MTBE)	2019/03/14	ND, RDL=25		ug/kg	
			Methylene Chloride(Dichloromethane)	2019/03/14	ND, RDL=25		ug/kg	
			o-Xylene	2019/03/14	ND, RDL=25		ug/kg	
			p+m-Xylene	2019/03/14	ND, RDL=25		ug/kg	
			Styrene	2019/03/14	ND, RDL=25		ug/kg	
			Tetrachloroethylene	2019/03/14	ND, RDL=25		ug/kg	
			Toluene	2019/03/14	ND, RDL=50		ug/kg	
			Total Xylenes	2019/03/14	ND, RDL=50		ug/kg	
			trans-1,2-Dichloroethylene	2019/03/14	ND, RDL=25		ug/kg	
			trans-1,3-Dichloropropene	2019/03/14	ND, RDL=25		ug/kg	
			Trichloroethylene	2019/03/14	ND, RDL=10		ug/kg	
			Trichlorofluoromethane (FREON 11)	2019/03/14	ND, RDL=25		ug/kg	
			Vinyl Chloride	2019/03/14	ND, RDL=20		ug/kg	
6018100	ASL	RPD [JER172-02]	1,1,1-Trichloroethane	2019/03/14	NC		%	50
			1,1,2,2-Tetrachloroethane	2019/03/14	NC		%	50
			1,1,2-Trichloroethane	2019/03/14	NC		%	50
			1,1-Dichloroethane	2019/03/14	NC		%	50
			1,1-Dichloroethylene	2019/03/14	NC		%	50
			1,2-Dichlorobenzene	2019/03/14	NC		%	50
			1,2-Dichloroethane	2019/03/14	NC		%	50
			1,2-Dichloropropane	2019/03/14	NC		%	50
			1,3-Dichlorobenzene	2019/03/14	NC		%	50
			1,4-Dichlorobenzene	2019/03/14	NC		%	50
			Benzene	2019/03/14	NC		%	50
			Bromodichloromethane	2019/03/14	NC		%	50

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromoform	2019/03/14	NC		%	50
			Bromomethane	2019/03/14	NC		%	50
			Carbon Tetrachloride	2019/03/14	NC		%	50
			Chlorobenzene	2019/03/14	NC		%	50
			Chloroethane	2019/03/14	NC		%	50
			Chloroform	2019/03/14	NC		%	50
			cis-1,2-Dichloroethylene	2019/03/14	NC		%	50
			cis-1,3-Dichloropropene	2019/03/14	NC		%	50
			Dibromochloromethane	2019/03/14	NC		%	50
			Ethylbenzene	2019/03/14	NC		%	50
			Ethylene Dibromide	2019/03/14	NC		%	50
			Methyl t-butyl ether (MTBE)	2019/03/14	NC		%	50
			Methylene Chloride(Dichloromethane)	2019/03/14	NC		%	50
			o-Xylene	2019/03/14	NC		%	50
			p+m-Xylene	2019/03/14	NC		%	50
			Styrene	2019/03/14	NC		%	50
			Tetrachloroethylene	2019/03/14	NC		%	50
			Toluene	2019/03/14	NC		%	50
			Total Xylenes	2019/03/14	NC		%	50
			trans-1,2-Dichloroethylene	2019/03/14	NC		%	50
			trans-1,3-Dichloropropene	2019/03/14	NC		%	50
			Trichloroethylene	2019/03/14	NC		%	50
			Trichlorofluoromethane (FREON 11)	2019/03/14	NC		%	50
			Vinyl Chloride	2019/03/14	NC		%	50
6018191	KKE	Matrix Spike [JER175-01]	D10-Anthracene	2019/03/14		95	%	50 - 130
			D14-Terphenyl (FS)	2019/03/14		96	%	50 - 130
			D8-Acenaphthylene	2019/03/14		92	%	50 - 130
			1-Methylnaphthalene	2019/03/14		84	%	50 - 130
			2-Methylnaphthalene	2019/03/14		89	%	50 - 130
			Acenaphthene	2019/03/14		91	%	50 - 130
			Acenaphthylene	2019/03/14		86	%	50 - 130
			Anthracene	2019/03/14		89	%	50 - 130
			Benzo(a)anthracene	2019/03/14		83	%	50 - 130
			Benzo(a)pyrene	2019/03/14		98	%	50 - 130
			Benzo(b)fluoranthene	2019/03/14		119	%	50 - 130
			Benzo(g,h,i)perylene	2019/03/14		113	%	50 - 130
			Benzo(j)fluoranthene	2019/03/14		100	%	50 - 130
			Benzo(k)fluoranthene	2019/03/14		112	%	50 - 130
			Chrysene	2019/03/14		82	%	50 - 130
			Dibenz(a,h)anthracene	2019/03/14		105	%	50 - 130
			Fluoranthene	2019/03/14		90	%	50 - 130
			Fluorene	2019/03/14		89	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/03/14		109	%	50 - 130
			Naphthalene	2019/03/14		89	%	50 - 130
			Perylene	2019/03/14		96	%	50 - 130
			Phenanthrene	2019/03/14		89	%	50 - 130
			Pyrene	2019/03/14		85	%	50 - 130
6018191	KKE	Spiked Blank	D10-Anthracene	2019/03/14		100	%	50 - 130
			D14-Terphenyl (FS)	2019/03/14		100	%	50 - 130
			D8-Acenaphthylene	2019/03/14		94	%	50 - 130
			1-Methylnaphthalene	2019/03/14		85	%	50 - 130
			2-Methylnaphthalene	2019/03/14		91	%	50 - 130
			Acenaphthene	2019/03/14		88	%	50 - 130
			Acenaphthylene	2019/03/14		89	%	50 - 130
			Anthracene	2019/03/14		95	%	50 - 130

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(a)anthracene	2019/03/14		89	%	50 - 130
			Benzo(a)pyrene	2019/03/14		90	%	50 - 130
			Benzo(b)fluoranthene	2019/03/14		110	%	50 - 130
			Benzo(g,h,i)perylene	2019/03/14		105	%	50 - 130
			Benzo(j)fluoranthene	2019/03/14		91	%	50 - 130
			Benzo(k)fluoranthene	2019/03/14		103	%	50 - 130
			Chrysene	2019/03/14		85	%	50 - 130
			Dibenz(a,h)anthracene	2019/03/14		94	%	50 - 130
			Fluoranthene	2019/03/14		94	%	50 - 130
			Fluorene	2019/03/14		90	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/03/14		99	%	50 - 130
			Naphthalene	2019/03/14		90	%	50 - 130
			Perylene	2019/03/14		91	%	50 - 130
			Phenanthrene	2019/03/14		94	%	50 - 130
			Pyrene	2019/03/14		88	%	50 - 130
6018191	KKE	Method Blank	D10-Anthracene	2019/03/14		110	%	50 - 130
			D14-Terphenyl (FS)	2019/03/14		113	%	50 - 130
			D8-Acenaphthylene	2019/03/14		102	%	50 - 130
			1-Methylnaphthalene	2019/03/14	ND, RDL=0.010		mg/kg	
			2-Methylnaphthalene	2019/03/14	ND, RDL=0.010		mg/kg	
			Acenaphthene	2019/03/14	ND, RDL=0.010		mg/kg	
			Acenaphthylene	2019/03/14	ND, RDL=0.010		mg/kg	
			Anthracene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(a)anthracene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(a)pyrene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(b)fluoranthene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(g,h,i)perylene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(j)fluoranthene	2019/03/14	ND, RDL=0.010		mg/kg	
			Benzo(k)fluoranthene	2019/03/14	ND, RDL=0.010		mg/kg	
			Chrysene	2019/03/14	ND, RDL=0.010		mg/kg	
			Dibenz(a,h)anthracene	2019/03/14	ND, RDL=0.010		mg/kg	
			Fluoranthene	2019/03/14	ND, RDL=0.010		mg/kg	
			Fluorene	2019/03/14	ND, RDL=0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/03/14	ND, RDL=0.010		mg/kg	
			Naphthalene	2019/03/14	ND, RDL=0.010		mg/kg	
			Perylene	2019/03/14	ND, RDL=0.010		mg/kg	
			Phenanthrene	2019/03/14	ND, RDL=0.010		mg/kg	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Pyrene	2019/03/14	ND, RDL=0.010		mg/kg	
6018191	KKE	RPD [JER175-01]	1-Methylnaphthalene	2019/03/14	NC		%	50
			2-Methylnaphthalene	2019/03/14	NC		%	50
			Acenaphthene	2019/03/14	NC		%	50
			Acenaphthylene	2019/03/14	NC		%	50
			Anthracene	2019/03/14	NC		%	50
			Benzo(a)anthracene	2019/03/14	NC		%	50
			Benzo(a)pyrene	2019/03/14	NC		%	50
			Benzo(b)fluoranthene	2019/03/14	NC		%	50
			Benzo(g,h,i)perylene	2019/03/14	NC		%	50
			Benzo(j)fluoranthene	2019/03/14	NC		%	50
			Benzo(k)fluoranthene	2019/03/14	NC		%	50
			Chrysene	2019/03/14	NC		%	50
			Dibenz(a,h)anthracene	2019/03/14	NC		%	50
			Fluoranthene	2019/03/14	NC		%	50
			Fluorene	2019/03/14	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/03/14	NC		%	50
			Naphthalene	2019/03/14	NC		%	50
			Perylene	2019/03/14	NC		%	50
			Phenanthrene	2019/03/14	NC		%	50
			Pyrene	2019/03/14	NC		%	50
6018397	SHL	Matrix Spike [JER175-02]	Isobutylbenzene - Volatile	2019/03/14		93	%	60 - 130
			Benzene	2019/03/14		87	%	60 - 130
			Toluene	2019/03/14		87	%	60 - 130
			Ethylbenzene	2019/03/14		92	%	60 - 130
			Total Xylenes	2019/03/14		88	%	60 - 130
6018397	SHL	Spiked Blank	Isobutylbenzene - Volatile	2019/03/14		95	%	60 - 130
			Benzene	2019/03/14		87	%	60 - 140
			Toluene	2019/03/14		89	%	60 - 140
			Ethylbenzene	2019/03/14		91	%	60 - 140
			Total Xylenes	2019/03/14		90	%	60 - 140
6018397	SHL	Method Blank	Isobutylbenzene - Volatile	2019/03/14		100	%	60 - 130
			Benzene	2019/03/14	ND, RDL=0.025		mg/kg	
			Toluene	2019/03/14	ND, RDL=0.050		mg/kg	
			Ethylbenzene	2019/03/14	ND, RDL=0.025		mg/kg	
			Total Xylenes	2019/03/14	ND, RDL=0.050		mg/kg	
			C6 - C10 (less BTEX)	2019/03/14	ND, RDL=2.5		mg/kg	
6018397	SHL	RPD [JER175-02]	Benzene	2019/03/14	NC		%	50
			Toluene	2019/03/14	NC		%	50
			Ethylbenzene	2019/03/14	NC		%	50
			Total Xylenes	2019/03/14	NC		%	50
			C6 - C10 (less BTEX)	2019/03/14	NC		%	50
6018426	RGE	Matrix Spike [JER175-01]	Decachlorobiphenyl	2019/03/15		92	%	70 - 130
			Aroclor 1254	2019/03/15		105	%	70 - 130
6018426	RGE	Spiked Blank	Decachlorobiphenyl	2019/03/15		95	%	70 - 130
			Aroclor 1254	2019/03/15		89	%	70 - 130
6018426	RGE	Method Blank	Decachlorobiphenyl	2019/03/15		95	%	70 - 130
			Aroclor 1016	2019/03/15	ND, RDL=0.050		ug/g	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Aroclor 1221	2019/03/15	ND, RDL=0.050		ug/g	
			Aroclor 1232	2019/03/15	ND, RDL=0.050		ug/g	
			Aroclor 1248	2019/03/15	ND, RDL=0.050		ug/g	
			Aroclor 1242	2019/03/15	ND, RDL=0.050		ug/g	
			Aroclor 1254	2019/03/15	ND, RDL=0.050		ug/g	
			Aroclor 1260	2019/03/15	ND, RDL=0.050		ug/g	
6018426	RGE	RPD [JER175-01]	Aroclor 1016	2019/03/15	NC		%	50
			Aroclor 1221	2019/03/15	NC		%	50
			Aroclor 1232	2019/03/15	NC		%	50
			Aroclor 1248	2019/03/15	NC		%	50
			Aroclor 1242	2019/03/15	NC		%	50
			Aroclor 1254	2019/03/15	NC		%	50
			Aroclor 1260	2019/03/15	NC		%	50
6018463	BCD	Matrix Spike [JER175-01]	Isobutylbenzene - Extractable	2019/03/14		88	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/14		90	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/14		81	%	30 - 130
			>C16-C21 Hydrocarbons	2019/03/14		80	%	30 - 130
			>C21-<C32 Hydrocarbons	2019/03/14		96	%	30 - 130
6018463	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/03/14		89	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/14		92	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/14		81	%	60 - 130
			>C16-C21 Hydrocarbons	2019/03/14		81	%	60 - 130
			>C21-<C32 Hydrocarbons	2019/03/14		113	%	60 - 130
6018463	BCD	Method Blank	Isobutylbenzene - Extractable	2019/03/14		95	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/14		97	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/14	ND, RDL=10		mg/kg	
			>C16-C21 Hydrocarbons	2019/03/14	ND, RDL=10		mg/kg	
			>C21-<C32 Hydrocarbons	2019/03/14	ND, RDL=15		mg/kg	
6018463	BCD	RPD [JER175-01]	>C10-C16 Hydrocarbons	2019/03/14	NC		%	50
			>C16-C21 Hydrocarbons	2019/03/14	24		%	50
			>C21-<C32 Hydrocarbons	2019/03/14	0.74		%	50
6019995	MLB	Matrix Spike [JER175-01]	Acid Extractable Antimony (Sb)	2019/03/15		99	%	75 - 125
			Acid Extractable Arsenic (As)	2019/03/15		105	%	75 - 125
			Acid Extractable Barium (Ba)	2019/03/15		104	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/03/15		105	%	75 - 125
			Acid Extractable Bismuth (Bi)	2019/03/15		103	%	75 - 125
			Acid Extractable Boron (B)	2019/03/15		107	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/03/15		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/03/15		141 (2)	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/03/15		106	%	75 - 125
			Acid Extractable Copper (Cu)	2019/03/15		107	%	75 - 125
			Acid Extractable Lead (Pb)	2019/03/15		125	%	75 - 125
			Acid Extractable Lithium (Li)	2019/03/15		106	%	75 - 125
			Acid Extractable Manganese (Mn)	2019/03/15		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/03/15		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/03/15		117	%	75 - 125



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6019995	MLB	Spiked Blank	Acid Extractable Nickel (Ni)	2019/03/15		110	%	75 - 125
			Acid Extractable Rubidium (Rb)	2019/03/15		103	%	75 - 125
			Acid Extractable Selenium (Se)	2019/03/15		107	%	75 - 125
			Acid Extractable Silver (Ag)	2019/03/15		101	%	75 - 125
			Acid Extractable Strontium (Sr)	2019/03/15		106	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/03/15		104	%	75 - 125
			Acid Extractable Tin (Sn)	2019/03/15		100	%	75 - 125
			Acid Extractable Uranium (U)	2019/03/15		108	%	75 - 125
			Acid Extractable Vanadium (V)	2019/03/15		107	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/03/15		NC	%	75 - 125
			Acid Extractable Antimony (Sb)	2019/03/15		100	%	75 - 125
			Acid Extractable Arsenic (As)	2019/03/15		102	%	75 - 125
			Acid Extractable Barium (Ba)	2019/03/15		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/03/15		100	%	75 - 125
			Acid Extractable Bismuth (Bi)	2019/03/15		101	%	75 - 125
			Acid Extractable Boron (B)	2019/03/15		109	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/03/15		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/03/15		106	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/03/15		101	%	75 - 125
			Acid Extractable Copper (Cu)	2019/03/15		101	%	75 - 125
			Acid Extractable Lead (Pb)	2019/03/15		96	%	75 - 125
			Acid Extractable Lithium (Li)	2019/03/15		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2019/03/15		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/03/15		106	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/03/15		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/03/15		102	%	75 - 125
			Acid Extractable Rubidium (Rb)	2019/03/15		99	%	75 - 125
			Acid Extractable Selenium (Se)	2019/03/15		103	%	75 - 125
			Acid Extractable Silver (Ag)	2019/03/15		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2019/03/15		101	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/03/15		102	%	75 - 125
			Acid Extractable Tin (Sn)	2019/03/15		97	%	75 - 125
Acid Extractable Uranium (U)	2019/03/15		95	%	75 - 125			
Acid Extractable Vanadium (V)	2019/03/15		102	%	75 - 125			
Acid Extractable Zinc (Zn)	2019/03/15		104	%	75 - 125			
6019995	MLB	Method Blank	Acid Extractable Aluminum (Al)	2019/03/15	ND, RDL=10		mg/kg	
			Acid Extractable Antimony (Sb)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Arsenic (As)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Barium (Ba)	2019/03/15	ND, RDL=5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Boron (B)	2019/03/15	ND, RDL=50		mg/kg	
			Acid Extractable Cadmium (Cd)	2019/03/15	ND, RDL=0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2019/03/15	ND, RDL=1.0		mg/kg	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Iron (Fe)	2019/03/15	ND, RDL=50		mg/kg	
			Acid Extractable Lead (Pb)	2019/03/15	ND, RDL=0.50		mg/kg	
			Acid Extractable Lithium (Li)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2019/03/15	ND, RDL=0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Selenium (Se)	2019/03/15	ND, RDL=1.0		mg/kg	
			Acid Extractable Silver (Ag)	2019/03/15	ND, RDL=0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2019/03/15	ND, RDL=5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2019/03/15	ND, RDL=0.10		mg/kg	
			Acid Extractable Tin (Sn)	2019/03/15	ND, RDL=1.0		mg/kg	
			Acid Extractable Uranium (U)	2019/03/15	ND, RDL=0.10		mg/kg	
			Acid Extractable Vanadium (V)	2019/03/15	ND, RDL=2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2019/03/15	ND, RDL=5.0		mg/kg	
6019995	MLB	RPD [JER175-01]	Acid Extractable Aluminum (Al)	2019/03/15	3.7		%	35
			Acid Extractable Antimony (Sb)	2019/03/15	NC		%	35
			Acid Extractable Arsenic (As)	2019/03/15	NC		%	35
			Acid Extractable Barium (Ba)	2019/03/15	16		%	35
			Acid Extractable Beryllium (Be)	2019/03/15	NC		%	35
			Acid Extractable Bismuth (Bi)	2019/03/15	NC		%	35
			Acid Extractable Boron (B)	2019/03/15	NC		%	35
			Acid Extractable Cadmium (Cd)	2019/03/15	NC		%	35
			Acid Extractable Chromium (Cr)	2019/03/15	16		%	35
			Acid Extractable Cobalt (Co)	2019/03/15	11		%	35
			Acid Extractable Copper (Cu)	2019/03/15	1.1		%	35
			Acid Extractable Iron (Fe)	2019/03/15	15		%	35
			Acid Extractable Lead (Pb)	2019/03/15	34		%	35
			Acid Extractable Lithium (Li)	2019/03/15	21		%	35
			Acid Extractable Manganese (Mn)	2019/03/15	13		%	35
			Acid Extractable Mercury (Hg)	2019/03/15	NC		%	35
			Acid Extractable Molybdenum (Mo)	2019/03/15	NC		%	35
			Acid Extractable Nickel (Ni)	2019/03/15	2.8		%	35
			Acid Extractable Rubidium (Rb)	2019/03/15	15		%	35
			Acid Extractable Selenium (Se)	2019/03/15	NC		%	35
			Acid Extractable Silver (Ag)	2019/03/15	NC		%	35
			Acid Extractable Strontium (Sr)	2019/03/15	5.8		%	35

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Thallium (Tl)	2019/03/15	NC		%	35
			Acid Extractable Tin (Sn)	2019/03/15	NC		%	35
			Acid Extractable Uranium (U)	2019/03/15	35		%	35
			Acid Extractable Vanadium (V)	2019/03/15	19		%	35
			Acid Extractable Zinc (Zn)	2019/03/15	0.92		%	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.

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) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(2) Matrix Spike exceeds acceptance limits, probable matrix interference.

**VALIDATION SIGNATURE PAGE**

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



---

Eric Dearman, Scientific Specialist



---

Rosemarie MacDonald, Scientific Specialist (Organics)

---

---

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

**CHAIN OF CUSTODY RECORD**

COC #: **D 39902** Page **1** of **2**

Invoice Information			Report Information (if differs from invoice)			Project Information (where applicable)			Turnaround Time (TAT) Required								
Company Name: <u>PINCHIN</u>			Company Name: <u>(same)</u>			Quotation #: _____			Regular TAT (5 business days) Most								
Contact Name: <u>Jennifer Dawe</u>			Contact Name: _____			I.D. #: _____			PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS								
Address: <u>27 AUSTIN ST.</u>			Address: _____			Project #: <u>2-1-856</u>			If RUSH please specify date (Surcharges will be applied)								
Postal Code: <u>A1B 4C3</u>			Postal Code: _____			Site Location: _____			DATE REQUIRED:								
Phone: <u>709 754 4190 ext.</u>			Phone: _____ Fax: _____			Site #: _____			<u>Fri MAR 15, 2019</u>								
Email: <u>jdawe@pinchin.com</u>			Email: _____			Sampled By: _____											
@ btaiter@maxxam.ca Laboratory Use Only						Analysis Requested											
CUSTODY SEAL		COOLER TEMPERATURES		COOLER TEMPERATURES		# OF CONTAINERS SUBMITTED FIELD FILTERED & PRESERVED LAB FILTRATION REQUIRED RCAP-MS (Total Metals) Well / Surface water RCAP-MS (Dissolved Metals) Ground waters Total Digest (Default Method) for soil, water & surface water Dissolved for ground water Mercury (ORCLE) TOTAL / DISSOLVED Metals & Mercury Detail Acid Extractable (available) Digest Metals Total Digest for Ocean Sediments (MDS) (MFCOD) Mercury low level by Cold Vapor A4 Hot Water Soluble Boron (required for COPE Agricultural / Landfill) RBGA Hydrocarbons (BTEX, GS-C2) Hydrocarbons Soil (Petroleum), MS Fuel Oil Spill (only Low Level) BTEX, GS-C2 COPE Hydrocarbons (CVS-PHC 11/BTEX, 75-14) MS Petrol Water BTEX, TPH, Low Level T.E.H PAHs (Default for water/soil) PAHs (EPA) (OCME Sediments) PCBs VOCs Total Coliform/E.coli (Presence/Absence) Total Coliform/E.coli (Count)											
Present	Intact	<u>7, 8, 7</u>		<u>7.3° Avg</u>								Regulatory Requirements (Specify)					
COOLING MEDIA PRESENT <input checked="" type="checkbox"/> Y <input type="checkbox"/> N				COMMENTS													
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																	
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX													
1	TP1, S1, 0-0.6m	2019/03/11		SOIL	3												
2	TP1, S7, 3.6-4.2m	2019/03/11		SOIL	3												
3	TP2, S3, 1.2-1.8 m	2019/03/11		SOIL	3												
4	TP2, S8, 4.2-4.8 m	2019/03/11		SOIL	3												
5	TP3, S1, 0-0.6m	2019/03/11		SOIL	3												
6	TP3, S5, 2.4-3.0m	2019/03/11		SOIL	3												
7	TP3, S8, 2.4-3.0m	2019/03/11		SOIL	3												
8	TP3, S8, 4.2-4.8 m	2019/03/11		SOIL	3												
9	TP4, S5, 2.4-3.0m	2019/03/12		SOIL	3												
10	TP5, S1, 0-0.6m	2019/03/12		SOIL	3												
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #										
<u>Dave Dawe</u>				<u>Robert K. White</u>	<u>MAR 13 2019</u>	<u>145</u>	<u>B964993</u> <u>B966076 PMC</u>										

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at [www.maxxam.ca/terms](http://www.maxxam.ca/terms).

White: Maxxam

Pink: Client

**TPH Must  
Done in NL**



200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-0612 Toll Free: 1-800-585-7227  
 49-55 Elizabeth Avenue, St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8912 Toll Free: 1-888-462-7227  
 465 George Street, Unit G, Sydney, NS B1P 1K5 Tel: 902-567-1956 Fax: 902-539-8904 Toll Free: 1-800-535-7776  
 www.maxxam.ca E-mail: Customerservice@maxxam.ca

CHAIN OF CUSTODY RECORD

COC #: **D39900** Page **2** of **2**

Invoice Information			Report Information (if differs from invoice)			Project Information (where applicable)			Turnaround Time (TAT) Required			
Company Name: <b>PINCHIN</b>			Company Name: <b>Same</b>			Quotation #: _____			Regular TAT (5 business days) Most			
Contact Name: <b>JENNIFER DAVE</b>			Contact Name: _____			P.O. #: _____			PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: <b>27 AUSTIN ST.</b>			Address: _____			Project #: <b>2-1-856</b>			IF RUSH please specify date (Surcharges will be applied)			
Postal Code: <b>A1B 4C3</b>			Postal Code: _____			Site Location: _____			DATE REQUIRED:			
Phone: <b>709 754 4800</b> Fax: _____			Phone: _____ Fax: _____			Site #: _____			<b>FRI MAR 15, 2019</b>			
Email: <b>jdave@pinchin.com</b>			Email: _____			Sampled By: _____						
Laboratory Use Only <b>btuite@pinchins.com</b>						Analysis Requested						
CUSTODY SEAL		COOLER TEMPERATURES		COOLER TEMPERATURES		Analysis Requested						Regulatory Requirements (Specify)
Present	Intact	<b>7, 8, 7</b>		<b>7.3° Avg</b>								
COOLING MEDIA PRESENT <input checked="" type="checkbox"/> Y <input type="checkbox"/> N						# OF CONTAINERS SUBMITTED FIELD FILTERED / PRESERVED LAB FILTRATION REQUIRED RCAP-MS (Total Metals) / Soil / Surface water RCAP-MS (Dissolved Metals) / Ground waters Total Digest (Direct Method) for well water & surface water Dissolved for ground water Mercury (CHLOR TOTAL / DISSOLVED) Metals & Mercury (Total Acid Extractable (Available) Digest) Metals Total Digest for Ocean Sediments (H2O2/HF/HClO4) Mercury Low level by Cold Vaporization Nitrate Soluble Boron (required for CBML Agricultural Landfill) BBGA Hydrocarbons (BTEX, C6-C12) Hydrocarbons Soil (Total/PAHs) / 105 Foot Oil Spill Policy Low Level (BTEX, C6-C12) SCME Hydrocarbons (CWS-PHC F/UTEM, P2-P4) MB Potable Water (BTEX, UPH, Low level T.E.H) PAHs (Total for water/soil) PAHs (EWAL) (CCME Sediment) PCBs VOCs Total Coliform/E.coli (Presence/Absence) Total Coliform/E.coli (Count) HMOID-DO NOT ANALYZE						COMMENTS
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM												
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX								
1	TP5, SS, 2.4-3.0m	2019/03/10		SOIL	W							
2	TP6, S1, 0-0.6m	2019/03/10		SOIL	W							
3	TP6, SS, 2.4-3.0m	2019/03/10		SOIL	W							
4	TP7, S1, 0-0.6m	2019/03/12		SOIL	W							
5	TP7, SS, 2.4-3.0m	2019/03/12		SOIL	W							
6	TP8, SA, 1.8-2.4m	2019/03/12		SOIL	W							
7	TP8, S6 (BASE) 4.2m	2019/03/12		SOIL	W							
8	TP9, SS, 2.4-3m	2019/03/12		SOIL	W							
9	TP10, S1, 0-0.6m	2019/03/12		SOIL	W							
10	TP10, SS, 2.4-3m	2019/03/12		SOIL	W							
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #				
<i>[Signature]</i>				<i>[Signature]</i>		<b>MAR 13 2019</b>	<b>145</b>	<b>B964993</b> <b>B966076</b> <i>PMC</i>				

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at [www.maxxam.ca/terms](http://www.maxxam.ca/terms).

White: Maxxam

Pink: Client

**TPH Must Done in NL**

*- Except TP8, S4  
Bedford must do TPH Limited sample etc.*

Your Project #: 2-1-856  
Your C.O.C. #: D39902

**Attention: Jennifer Dawe**

Pinchin LeBlanc Environmental  
St. John's - Standing Offer  
27 Austin St  
2nd Floor  
St. John's, NL  
CANADA A1B 4C3

**Report Date: 2019/03/18**  
Report #: R5633129  
Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B964993**

**Received: 2019/03/13, 13:45**

Sample Matrix: Soil  
# Samples Received: 19

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
TEH in Soil (PIRI) (1, 2)	19	2019/03/14	2019/03/15	ATL SOP 00197	Atl. RBCA v3.1 m
Moisture	19	N/A	2019/03/14	ATL SOP-00196	OMOE Handbook 1983 m
ModTPH (T1) Calc. for Soil	19	N/A	2019/03/15	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (3)	11	N/A	2019/03/14	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (3)	8	N/A	2019/03/15	ATL SOP 00199	Atl. RBCA v3.1 m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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) Reported on a dry weight basis.

(2) Soils are reported on a dry weight basis unless otherwise specified.

(3) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Your Project #: 2-1-856  
Your C.O.C. #: D39902

**Attention: Jennifer Dawe**

Pinchin LeBlanc Environmental  
St. John's - Standing Offer  
27 Austin St  
2nd Floor  
St. John's, NL  
CANADA A1B 4C3

**Report Date: 2019/03/18**  
Report #: R5633129  
Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B964993**  
**Received: 2019/03/13, 13:45**

Encryption Key



Maxxam  
18 Mar 2019 12:13:53

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Paula Chaplin, Project Manager Assistant  
Email: PChaplin@maxxam.ca  
Phone# (709)754-8615

=====

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



**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL277	JEL278			JEL279		
Sampling Date		2019/03/11	2019/03/11			2019/03/11		
COC Number		D39902	D39902			D39902		
	UNITS	TP1,S1,0-0.6M	TP1,S7,3.6-4.2M	RDL	QC Batch	TP2,S3,1.2-1.8M	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	4.8	3.9	1.0	6016353	4.6	1.0	6016353
<b>Petroleum Hydrocarbons</b>								
Benzene	mg/kg	ND	ND	0.025	6015855	ND	0.025	6015855
Toluene	mg/kg	ND	ND	0.050	6015855	ND	0.050	6015855
Ethylbenzene	mg/kg	ND	ND	0.025	6015855	ND	0.025	6015855
Total Xylenes	mg/kg	ND	ND	0.050	6015855	ND	0.050	6015855
C6 - C10 (less BTEX)	mg/kg	ND	ND	2.5	6015855	7.5	2.5	6015855
>C10-C16 Hydrocarbons	mg/kg	ND	ND	10	6016466	1100	10	6016466
>C16-C21 Hydrocarbons	mg/kg	ND	ND	10	6016466	580	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	6016466	140	15	6016466
Modified TPH (Tier1)	mg/kg	ND	ND	15	6015813	1800	15	6015813
Reached Baseline at C32	mg/kg	NA	NA	N/A	6016466	Yes	N/A	6016466
Hydrocarbon Resemblance	mg/kg					COMMENT (1)	N/A	6016466
<b>Surrogate Recovery (%)</b>								
Isobutylbenzene - Extractable	%	99	100		6016466	105		6016466
n-Dotriacontane - Extractable	%	103	105		6016466	110		6016466
Isobutylbenzene - Volatile	%	91	86		6015855	74		6015855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable (1) Weathered fuel oil fraction.								

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL279			JEL280	JEL281	JEL282		
Sampling Date		2019/03/11			2019/03/11	2019/03/11	2019/03/11		
COC Number		D39902			D39902	D39902	D39902		
	UNITS	TP2,S3,1.2-1.8M Lab-Dup	RDL	QC Batch	TP2,S8,4.2-4.8M	TP3,S1,0-0.6M	TP3,S5,2.4-3.0M	RDL	QC Batch
<b>Inorganics</b>									
Moisture	%	5.0	1.0	6016353	4.0	4.6	6.2	1.0	6016353
<b>Petroleum Hydrocarbons</b>									
Benzene	mg/kg	ND	0.025	6015855	ND	ND	ND	0.025	6015855
Toluene	mg/kg	ND	0.050	6015855	ND	ND	ND	0.050	6015855
Ethylbenzene	mg/kg	ND	0.025	6015855	ND	ND	ND	0.025	6015855
Total Xylenes	mg/kg	ND	0.050	6015855	ND	ND	ND	0.050	6015855
C6 - C10 (less BTEX)	mg/kg	8.6	2.5	6015855	ND	7.2	9.2	2.5	6015855
>C10-C16 Hydrocarbons	mg/kg	1000	10	6016466	340	750	1800	10	6016466
>C16-C21 Hydrocarbons	mg/kg	530	10	6016466	190	640	1300	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	130	15	6016466	47	220	440	15	6016466
Modified TPH (Tier1)	mg/kg				580	1600	3600	15	6015813
Reached Baseline at C32	mg/kg	Yes	N/A	6016466	Yes	Yes	Yes	N/A	6016466
Hydrocarbon Resemblance	mg/kg				COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	6016466
<b>Surrogate Recovery (%)</b>									
Isobutylbenzene - Extractable	%	100		6016466	98	106	110		6016466
n-Dotriacontane - Extractable	%	106		6016466	103	107	112		6016466
Isobutylbenzene - Volatile	%	74		6015855	87	81	71		6015855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected N/A = Not Applicable (1) Weathered fuel oil fraction.									

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL283			JEL284			JEL285		
Sampling Date		2019/03/11			2019/03/11			2019/03/12		
COC Number		D39902			D39902			D39902		
	UNITS	TP3,SB,2.4-3.0M	RDL	QC Batch	TP3,S8,4.2-4.8M	RDL	QC Batch	TP4,S5,2.4-3.0M	RDL	QC Batch
<b>Inorganics</b>										
Moisture	%	5.0	1.0	6016353	2.4	1.0	6016353	6.7	1.0	6016353
<b>Petroleum Hydrocarbons</b>										
Benzene	mg/kg	ND	0.025	6015855	ND	0.025	6015855	ND	0.025	6015855
Toluene	mg/kg	ND	0.050	6015855	ND	0.050	6015855	ND	0.050	6015855
Ethylbenzene	mg/kg	ND	0.025	6015855	ND	0.025	6015855	ND	0.025	6015855
Total Xylenes	mg/kg	ND	0.050	6015855	ND	0.050	6015855	ND	0.050	6015855
C6 - C10 (less BTEX)	mg/kg	25	2.5	6015855	3.6	2.5	6015855	ND	2.5	6015855
>C10-C16 Hydrocarbons	mg/kg	1500	10	6016466	ND	10	6016466	ND	10	6016466
>C16-C21 Hydrocarbons	mg/kg	1100	10	6016466	ND	10	6016466	11	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	390	15	6016466	ND	15	6016466	37	15	6016466
Modified TPH (Tier1)	mg/kg	3000	15	6015813	ND	15	6015813	48	15	6015813
Reached Baseline at C32	mg/kg	Yes	N/A	6016466	NA	N/A	6016466	Yes	N/A	6016466
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	6016466				COMMENT (2)	N/A	6016466
<b>Surrogate Recovery (%)</b>										
Isobutylbenzene - Extractable	%	110		6016466	98		6016466	96		6016466
n-Dotriacontane - Extractable	%	112		6016466	103		6016466	105		6016466
Isobutylbenzene - Volatile	%	73		6015855	119		6015855	114		6015855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable (1) Weathered fuel oil fraction. (2) Weathered fuel oil fraction. Lube oil fraction.										

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL286	JEL287		JEL288	JEL289		
Sampling Date		2019/03/12	2019/03/12		2019/03/12	2019/03/12		
COC Number		D39902	D39902		D39902	D39902		
	UNITS	TP5,S1,0-0.6M	TP5,S5,2.4-3.0M	QC Batch	TP6,S1,0-0.6M	TP6,S5,2.4-3.0M	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	3.6	3.4	6016353	5.6	6.8	1.0	6016353
<b>Petroleum Hydrocarbons</b>								
Benzene	mg/kg	ND	ND	6015855	ND	ND	0.025	6018811
Toluene	mg/kg	ND	ND	6015855	ND	ND	0.050	6018811
Ethylbenzene	mg/kg	ND	ND	6015855	ND	ND	0.025	6018811
Total Xylenes	mg/kg	ND	ND	6015855	ND	ND	0.050	6018811
C6 - C10 (less BTEX)	mg/kg	ND	ND	6015855	ND	ND	2.5	6018811
>C10-C16 Hydrocarbons	mg/kg	ND	ND	6016466	ND	ND	10	6016466
>C16-C21 Hydrocarbons	mg/kg	ND	ND	6016466	ND	ND	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	6016466	ND	ND	15	6016466
Modified TPH (Tier1)	mg/kg	ND	ND	6015813	ND	ND	15	6015813
Reached Baseline at C32	mg/kg	NA	NA	6016466	NA	NA	N/A	6016466
<b>Surrogate Recovery (%)</b>								
Isobutylbenzene - Extractable	%	95	100	6016466	99	95		6016466
n-Dotriacontane - Extractable	%	101	103	6016466	103	99		6016466
Isobutylbenzene - Volatile	%	106	102	6015855	99	76		6018811
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable								

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL290			JEL291	JEL293	JEL294		
Sampling Date		2019/03/12			2019/03/12	2019/03/12	2019/03/12		
COC Number		D39902			D39902	D39902	D39902		
	UNITS	TP7,S1,0-0.6M	RDL	QC Batch	TP7,S5,2.4-3.0M	TP8,S6(BASE) 4.2M	TP9,S5,2.4-3M	RDL	QC Batch
<b>Inorganics</b>									
Moisture	%	17	1.0	6016353	3.2	4.0	4.2	1.0	6016353
<b>Petroleum Hydrocarbons</b>									
Benzene	mg/kg	ND	0.025	6018811	ND	ND	ND	0.025	6018811
Toluene	mg/kg	ND	0.050	6018811	ND	ND	ND	0.050	6018811
Ethylbenzene	mg/kg	ND	0.025	6018811	ND	ND	ND	0.025	6018811
Total Xylenes	mg/kg	ND	0.050	6018811	ND	ND	ND	0.050	6018811
C6 - C10 (less BTEX)	mg/kg	ND	2.5	6018811	ND	ND	ND	2.5	6018811
>C10-C16 Hydrocarbons	mg/kg	ND	10	6016466	ND	ND	ND	10	6016466
>C16-C21 Hydrocarbons	mg/kg	ND	10	6016466	ND	ND	ND	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	79	15	6016466	ND	ND	ND	15	6016466
Modified TPH (Tier1)	mg/kg	79	15	6015813	ND	ND	ND	15	6015813
Reached Baseline at C32	mg/kg	Yes	N/A	6016466	NA	NA	NA	N/A	6016466
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	6016466					
<b>Surrogate Recovery (%)</b>									
Isobutylbenzene - Extractable	%	99		6016466	98	99	96		6016466
n-Dotriacontane - Extractable	%	103		6016466	102	101	100		6016466
Isobutylbenzene - Volatile	%	93		6018811	87	100	100		6018811
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable (1) Lube oil fraction.									

**RBCA HYDROCARBONS IN SOIL (FIELD PRES.)**

Maxxam ID		JEL295	JEL296		
Sampling Date		2019/03/12	2019/03/12		
COC Number		D39902	D39902		
	UNITS	TP10,S1,0-0.6M	TP10,S5,2.4-3M	RDL	QC Batch
<b>Inorganics</b>					
Moisture	%	3.2	4.4	1.0	6016353
<b>Petroleum Hydrocarbons</b>					
Benzene	mg/kg	ND	ND	0.025	6018811
Toluene	mg/kg	ND	ND	0.050	6018811
Ethylbenzene	mg/kg	ND	ND	0.025	6018811
Total Xylenes	mg/kg	ND	ND	0.050	6018811
C6 - C10 (less BTEX)	mg/kg	ND	ND	2.5	6018811
>C10-C16 Hydrocarbons	mg/kg	ND	ND	10	6016466
>C16-C21 Hydrocarbons	mg/kg	ND	ND	10	6016466
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	6016466
Modified TPH (Tier1)	mg/kg	ND	ND	15	6015813
Reached Baseline at C32	mg/kg	NA	NA	N/A	6016466
<b>Surrogate Recovery (%)</b>					
Isobutylbenzene - Extractable	%	99	95		6016466
n-Dotriacontane - Extractable	%	102	99		6016466
Isobutylbenzene - Volatile	%	79	90		6018811
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable					

**GENERAL COMMENTS**

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

Package 1	7.3°C
-----------	-------

**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6015855	JRD	Matrix Spike [JEL279-01]	Isobutylbenzene - Volatile	2019/03/14		60	%	60 - 130
			Benzene	2019/03/14		83	%	60 - 130
			Toluene	2019/03/14		81	%	60 - 130
			Ethylbenzene	2019/03/14		78	%	60 - 130
			Total Xylenes	2019/03/14		77	%	60 - 130
6015855	JRD	Spiked Blank	Isobutylbenzene - Volatile	2019/03/14		106	%	60 - 130
			Benzene	2019/03/14		73	%	60 - 140
			Toluene	2019/03/14		70	%	60 - 140
			Ethylbenzene	2019/03/14		71	%	60 - 140
			Total Xylenes	2019/03/14		70	%	60 - 140
6015855	JRD	Method Blank	Isobutylbenzene - Volatile	2019/03/14		107	%	60 - 130
			Benzene	2019/03/14	ND, RDL=0.025		mg/kg	
			Toluene	2019/03/14	ND, RDL=0.050		mg/kg	
			Ethylbenzene	2019/03/14	ND, RDL=0.025		mg/kg	
			Total Xylenes	2019/03/14	ND, RDL=0.050		mg/kg	
			C6 - C10 (less BTEX)	2019/03/14	ND, RDL=2.5		mg/kg	
6015855	JRD	RPD [JEL279-01]	Benzene	2019/03/14	NC		%	50
			Toluene	2019/03/14	NC		%	50
			Ethylbenzene	2019/03/14	NC		%	50
			Total Xylenes	2019/03/14	NC		%	50
			C6 - C10 (less BTEX)	2019/03/14	14		%	50
6016353	TMR	RPD [JEL279-01]	Moisture	2019/03/14	8.3		%	25
6016466	SPI	Matrix Spike [JEL279-01]	Isobutylbenzene - Extractable	2019/03/15		105	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/15		112	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/15		NC	%	30 - 130
			>C16-C21 Hydrocarbons	2019/03/15		NC	%	30 - 130
			>C21-<C32 Hydrocarbons	2019/03/15		83	%	30 - 130
6016466	SPI	Spiked Blank	Isobutylbenzene - Extractable	2019/03/15		98	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/15		107	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/15		94	%	60 - 130
			>C16-C21 Hydrocarbons	2019/03/15		103	%	60 - 130
			>C21-<C32 Hydrocarbons	2019/03/15		81	%	60 - 130
6016466	SPI	Method Blank	Isobutylbenzene - Extractable	2019/03/15		96	%	60 - 130
			n-Dotriacontane - Extractable	2019/03/15		97	%	60 - 130
			>C10-C16 Hydrocarbons	2019/03/15	ND, RDL=10		mg/kg	
			>C16-C21 Hydrocarbons	2019/03/15	ND, RDL=10		mg/kg	
6016466	SPI	RPD [JEL279-01]	>C21-<C32 Hydrocarbons	2019/03/15	ND, RDL=15		mg/kg	
			>C10-C16 Hydrocarbons	2019/03/15	6.8		%	50
			>C16-C21 Hydrocarbons	2019/03/15	8.0		%	50
6018811	JRD	Matrix Spike	>C21-<C32 Hydrocarbons	2019/03/15	6.7		%	50
			Isobutylbenzene - Volatile	2019/03/15		112	%	60 - 130
			Benzene	2019/03/15		111	%	60 - 130
			Toluene	2019/03/15		103	%	60 - 130
6018811	JRD	Spiked Blank	Ethylbenzene	2019/03/15		105	%	60 - 130
			Total Xylenes	2019/03/15		108	%	60 - 130
			Isobutylbenzene - Volatile	2019/03/15		88	%	60 - 130



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6018811	JRD	Method Blank	Benzene	2019/03/15		94	%	60 - 140
			Toluene	2019/03/15		92	%	60 - 140
			Ethylbenzene	2019/03/15		92	%	60 - 140
			Total Xylenes	2019/03/15		92	%	60 - 140
			Isobutylbenzene - Volatile	2019/03/15		92	%	60 - 130
			Benzene	2019/03/15	ND, RDL=0.025		mg/kg	
			Toluene	2019/03/15	ND, RDL=0.050		mg/kg	
			Ethylbenzene	2019/03/15	ND, RDL=0.025		mg/kg	
			Total Xylenes	2019/03/15	ND, RDL=0.050		mg/kg	
			C6 - C10 (less BTEX)	2019/03/15	ND, RDL=2.5		mg/kg	
6018811	JRD	RPD	Benzene	2019/03/15	NC		%	50
			Toluene	2019/03/15	NC		%	50
			Ethylbenzene	2019/03/15	NC		%	50
			Total Xylenes	2019/03/15	NC		%	50
			C6 - C10 (less BTEX)	2019/03/15	NC		%	50

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).

### VALIDATION SIGNATURE PAGE

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



---

Paula Chaplin, Project Manager Assistant

---

---

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



200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227  
 49-55 Elizabeth Avenue, St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227  
 465 George Street, Unit G, Sydney, NS B1P 1K5 Tel: 902-587-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

ATL FCD 00149 / 22

www.maxxam.ca E-mail: Customerservicebedford@maxxam.ca

CHAIN OF CUSTODY RECORD

COC #: **D 39902** Page **1** of **2**

Invoice Information			Report Information (if differs from invoice)			Project Information (where applicable)			Turnaround Time (TAT) Required																									
Company Name: <b>PINCHIN</b>			Company Name: <b>(same)</b>			Quotation #:			<input type="checkbox"/> Regular TAT (5 business days) Most analyses PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS IF RUSH please specify date (Surcharges will be applied) DATE REQUIRED: <b>Fri MAR 15, 2019</b>																									
Contact Name: <b>Jennifer Dawe</b>			Contact Name:			P.O. #:																												
Address: <b>27 AUSTIN ST.</b>			Address:			Project #: <b>2-1-856</b>																												
Postal Code: <b>A1B 4C3</b>			Postal Code:			Site Location:																												
Phone: <b>709 754 4190</b>			Phone:			Site #:																												
Email: <b>jdawe@pinchin.com</b>			Email:			Sampled By:																												
<b>btaiter@maxxam.com</b> <small>Laboratory Use Only</small>			Analysis Requested																															
CUSTODY SEAL		COOLER TEMPERATURES		COOLER TEMPERATURES		Metals (Water)			Metals (Soil)			Regulatory Requirements (Specify)																						
Present	Intact																																	
		<b>7, 8, 7</b>		<b>7.3° Avg</b>																														
COOLING MEDIA PRESENT <b>(Y) N</b>																																		
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																																		
SAMPLE IDENTIFICATION			DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	RCAP-MS (Total Metals) Well / Surface water	RCAP-MS (Dissolved Metals) Ground waters for well water & surface water	Dissolved for ground water	Mercury (CIRCLE) TOTAL / DISSOLVED	Metals & Mercury	Metals Total Digest - for Ocean Sediments (HNO3/HF/HClO4)	Mercury Low level by Cold Vapour AA	Hot Water Soluble Boron (required for CCME Agricultural/Landfill)	RBGA Hydrocarbons (RTEX, CG-C37)	Hydrocarbons Soil (Pneable), MS Fuel Oil Spill Policy Low Level BTEX, CG-C32	CCME Hydrocarbons (VWS-PHC F3/RTEX, F2-F4)	MS Potable Water BTEX, VPH, Low Level T.E.H	PAMS (Default for water/soil)	PAMS (FWAL /CCME Sediment)	PCBs	VOCs	Total Coliform/E.coli (Presence/Absence)	Total Coliform/E.coli (Count)	HOLD- DO NOT AWAYTE	COMMENTS						
1	TP1, SL, 0-0.6m	2019/03/11		SOIL	3																													
2	TP1, SF, 3.6-4.2m	2019/03/11		SOIL	3																													
3	TP2, SB, 1.2-1.8 m	2019/03/11		SOIL	3																													
4	TP2, SS, 4.2-4.8 m	2019/03/11		SOIL	3																													
5	TP3, SL, 0-0.6m	2019/03/11		SOIL	3																													
6	TP3, SS, 2.4-3.0m	2019/03/11		SOIL	3																													
7	TP3, SB, 2.4-3.0m	2019/03/11		SOIL	3																													
8	TP3, SS, 4.2-4.8 m	2019/03/11		SOIL	3																													
9	TP4, SS, 2.4-3.0m	2019/03/12		SOIL	3																													
10	TP5, SL, 0-0.6m	2019/03/12		SOIL	3																													
RELINQUISHED BY: (Signature/Print)			DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #																										
<b>Dal Dalij</b>					<b>Michael K. Smith</b>	<b>MAR 13 2019</b>	<b>145</b>	<b>B964993</b> <b>PMC</b>																										

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms.

White: Maxxam

Pink: Client



200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227  
 49-55 Elizabeth Avenue, St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227  
 465 George Street, Unit G, Sydney, NS B1P 1K5 Tel: 902-567-1255 Fax: 902-539-8504 Toll Free: 1-888-535-7770

ATL FCD 00149 / 22

www.maxxam.ca E-mail: Customerservicebedford@maxxam.ca

CHAIN OF CUSTODY RECORD

COC #: **D39900** Page **2** of **2**

<b>Invoice Information</b> Company Name: <u>PINCHIN</u> Contact Name: <u>JENNIFER DAVE</u> Address: <u>27 AUSTIN ST.</u> Postal Code: <u>A1B 4C3</u> Phone: <u>709 754 4800</u> Fax: Email: <u>jdave@pinchin.com</u>		<b>Report Information (if differs from invoice)</b> Company Name: <u>Same</u> Contact Name: Address: Postal Code: Phone: Fax: Email:		<b>Project Information (where applicable)</b> Quotation #: P.O. #: Project #: <u>2-1-856</u> Site Location: Site #: Sampled By:		<b>Turnaround Time (TAT) Required</b> <input type="checkbox"/> Regular TAT (5 business days) Most analyses PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS. IF RUSH please specify date (Surcharges will be applied) <b>DATE REQUIRED:</b> <u>FRI MAR 15, 2019</u>	
--	--	--	--	---	--	---	--

Laboratory Use Only b.tuite@pinchin.com			<b>Analysis Requested</b>														
<b>CUSTODY SEAL</b> Present <input type="checkbox"/> Intact <input type="checkbox"/>		<b>COOLER TEMPERATURES</b> <u>7, 8, 7</u>			<b>COOLER TEMPERATURES</b> <u>7.3° Avg</u>			<b>Analysis Requested</b> # OF CONTAINERS SUBMITTED: _____ FIELD FILTERED & PRESERVED: _____ LAB FILTRATION REQUIRED: _____ RCAP-MS (Total Metals) Well / Surface water: _____ RCAP-MS (Dissolved Metals) Ground waters: _____ Total Digest (Default Method) for well water & surface water: _____ Dissolved for ground water: _____ Mercury (CIRCLE) TOTAL / DISSOLVED: _____ Metals & Mercury: _____ Beddell Acid Extractable (Amalab) Digest: _____ Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4): _____ Mercury Low level by Cold Vapour AA: _____ Hot Water Soluble Boron (required for CCME Agriculture/Landfill): _____ RECA Hydrocarbons (BTEX, G6-C17): _____ Hydrocarbons soil (Potato/G), MS Fuel Oil Spill Policy Low Level BTEX, G6-C12: _____ CCME Hydrocarbons (CWS-PHC F1/BTEX, P2,P4): _____ NB Potable Water BTEX, VPH, Low level T, E, H: _____ PAMS (Default for water/soil): _____ PAMS (PRIAL /CCME Settlement): _____ PCBs: _____ VOCs: _____ Total Coliform/E.coli (Presence/Absence): _____ Total Coliform/E.coli (Count): _____ HOLD-DO NOT ANALYZE: _____									
<b>COOLING MEDIA PRESENT</b> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		<b>Regulatory Requirements (Specify)</b>															
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																	

SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	RCAP-MS (Total Metals) Well / Surface water	RCAP-MS (Dissolved Metals) Ground waters	Total Digest (Default Method) for well water & surface water	Dissolved for ground water	Mercury (CIRCLE) TOTAL / DISSOLVED	Metals & Mercury	Beddell Acid Extractable (Amalab) Digest	Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Mercury Low level by Cold Vapour AA	Hot Water Soluble Boron (required for CCME Agriculture/Landfill)	RECA Hydrocarbons (BTEX, G6-C17)	Hydrocarbons soil (Potato/G), MS Fuel Oil Spill Policy Low Level BTEX, G6-C12	CCME Hydrocarbons (CWS-PHC F1/BTEX, P2,P4)	NB Potable Water BTEX, VPH, Low level T, E, H	PAMS (Default for water/soil)	PAMS (PRIAL /CCME Settlement)	PCBs	VOCs	Total Coliform/E.coli (Presence/Absence)	Total Coliform/E.coli (Count)	HOLD-DO NOT ANALYZE	COMMENTS		
1 TP5, SS, 2.4-3.0m	2019/03/10		SOIL	3																										
2 TP6, S1, 0-0.6m	2019/03/10		SOIL	3																										
3 TP6, SS, 2.4-3.0m	2019/03/12		SOIL	3																										
4 TP7, S1, 0-0.6m	2019/03/12		SOIL	3																										
5 TP7, SS, 2.4-3.0m	2019/03/12		SOIL	3																										
6 TP8, SA, 1.8-2.4m	2019/03/12		SOIL	3								X									X	X								
7 TP8, S6 (BASE) 4.2m	2019/03/12		SOIL	3																										
8 TP9, SS, 2.4-3 in	2019/03/12		SOIL	3																										
9 TP10, S1, 0-0.6m	2019/03/12		SOIL	3																										
10 TP10, SS, 2.4-3 m	2019/03/12		SOIL	3																										

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
<i>[Signature]</i>			<i>[Signature]</i>	MAR 13 2019	145	B964993 <i>[Signature]</i>

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms.

White: Maxxam

Pink: Client