



GOLDER

REPORT

Environmental Compliance Approval Quarterly Monitoring Report (November to February)

McCarthy Quarry

Submitted to:

Cindy Hood

Ontario Ministry of Environment, Conservation and Parks
Barrie District Office
1203-54 Cedar Pointe Drive
Barrie ON L4N 5R7

Submitted by:

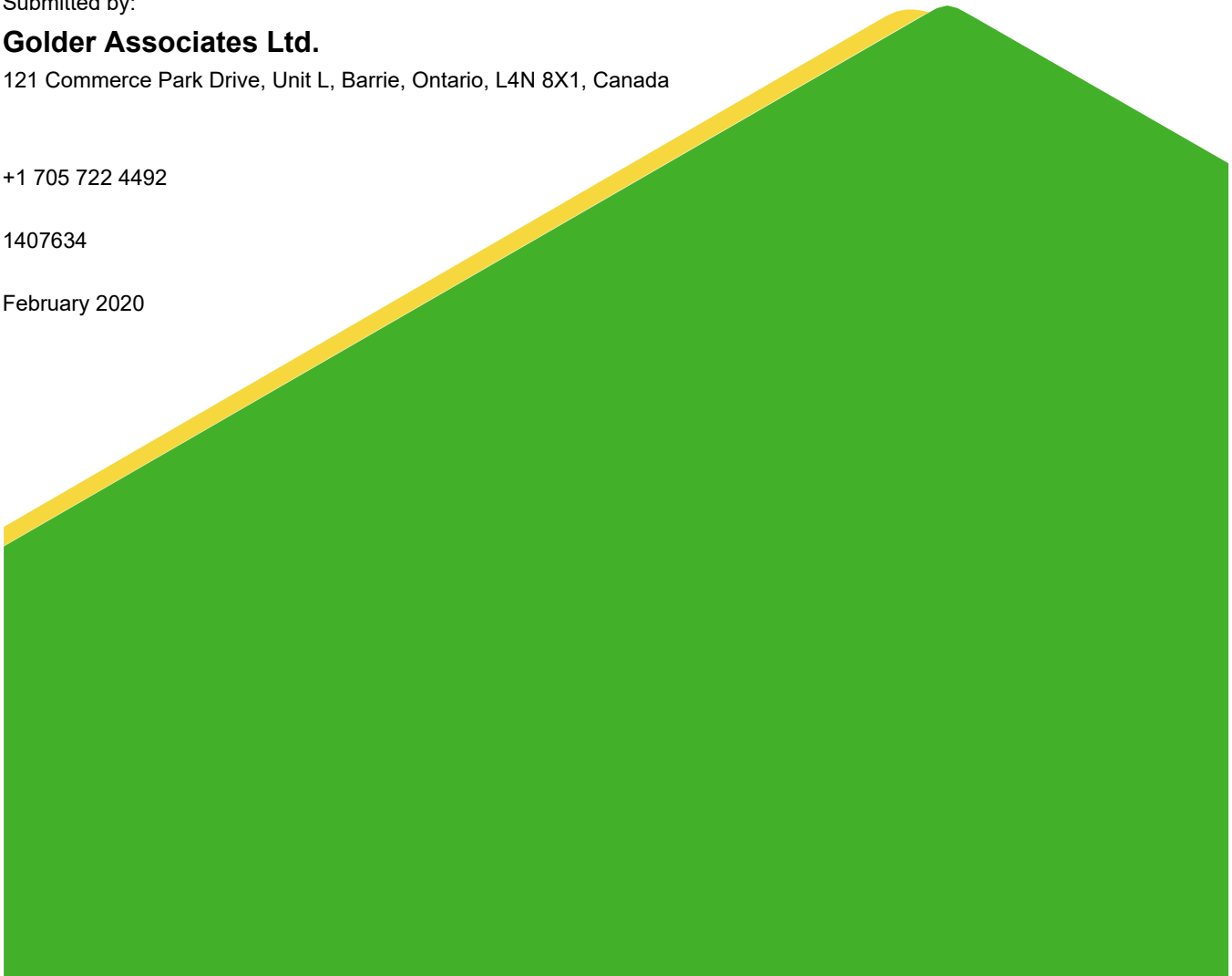
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1407634

February 2020



Distribution List

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ECA No. 7737-BH6QEA

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Water Quality Data

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by QBJR/Coco Aggregates Inc. (Coco) to prepare a quarterly compliance report for the McCarthy Quarry located in the Township of Ramara, County of Simcoe (Figure 1). The preparation of a quarterly monitoring report is a requirement of the Environmental Compliance Approval (ECA) No. 7737-BH6QEA (the 'ECA') issued on October 22, 2019. A copy of the ECA is provided in Appendix A. The following report is intended to fulfill the requirements of Section 8 (4) of the ECA, and documents the results of the monitoring program activities described in Section 6 of the ECA for the period between November 2019 and February 2020.

2.0 BACKGROUND

The dewatering activities at the McCarthy Quarry in 2019 were regulated under Permit to Take Water (PTTW) No. 7818-9QJNL4, issued on December 30, 2014 and expiring December 31, 2019. Under PTTW No.7818-9QJNL4 Coco was permitted to pump water from the quarry sump at a maximum rate of 4,545 L/min (76 L/sec). A new PTTW, No. 1603-BKTPQH, was issued on January 31, 2020 and will expire on January 31, 2025.

The McCarthy Quarry dewatering system consists of a sump located in the northwest corner of the quarry floor which collects groundwater and surface water (hereafter referred to as "quarry discharge") accumulating at the base of the quarry. The sump is pumped to an at-grade settling pond located south of the active quarry area (Figure 1). The sump is equipped with a 4-inch Grindex pump which is rated for a maximum discharge rate of up to 35 L/sec (2,100 L/min) and is attached to a 4-inch (101 mm nominal) diameter discharge line. Water is pumped from the quarry floor up the quarry face via the discharge line to a 4-inch (101 mm nominal) diameter pipeline that directs the water to a 14,000 m³ settling pond. The settling pond is equipped with a Hickenbottom control structure via which the water discharges to the roadside ditch along Concession Road 1. The water flows eastward along the north side of Concession Road 1 to a municipal drain and eventually discharges to the Talbot River, which in turn discharges into Lake Simcoe.

3.0 QUARRY DISCHARGE MONITORING PLAN

The technical requirements of the quarry discharge monitoring plan are listed in Section 4 (Effluent [quality] Limits), Section 5 (Effluent – Visual Observations), and Section 6 (Monitoring and Recording) of the ECA. The monitoring requirements consist of:

- Weekly monitoring of the effluent quality (Total Suspended Solids [TSS], oil and grease, phenolics [4AAP] and pH) at the outfall of the settling pond (labelled as McCarthy Pond on Figure 1); and
- Semi-annual monitoring of effluent quality at three locations; the McCarthy Pond outfall, the culvert along Concession Road 1 at the McCarthy property (SW1 on Figure 1), 260 m north of the intersection of Concession Road 1 and the Mara Eldon Boundary Road (SW2 on Figure 1). The parameters required for semi-annual water quality monitoring (as listed in Table 3 of the ECA) include TSS, copper, lead, nickel, zinc, arsenic, oil and grease, phenolics (4AAP), hardness (as CaCO₃), alkalinity(as CaCO₃), conductivity, pH, fluoride, chloride, nitrate (as N), nitrite (as N), sulphate, calcium, magnesium, sodium, potassium, ammonia (as N), dissolved organic carbon, iron, total Kjeldahl nitrogen, phosphorus (total), cadmium, chromium, manganese, anions (sum), cations (sum) and total dissolved solids.

The weekly quarry discharge quality sampling was conducted by Coco staff. The semi-annual water quality sampling was conducted by Golder. Both the weekly and semi-annual water quality samples were sent to Maxxam Analytics Laboratory of Mississauga, Ontario for analysis.

Weekly water quality samples were not collected from the McCarthy Pond location on the weeks of December 16 to 20, December 23 to 27, December 30, 2019 to January 3, 2020, January 13 to 17, January 20 to 24 and January 27 to 31 as quarry staff reported no discharge was present at the sampling location at the time of sampling. A semi-annual sampling event was completed at SW1 in November 2019, but could not be completed at the McCarthy Pond location at the same time due to an absence of discharge. Additional attempts were made to collect a semi-annual sample from the McCarthy pond in October 2019 and December 2019, however no discharge was occurring from the Pond at the time of each attempt.

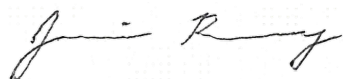
4.0 MONITORING RESULTS AND RECOMMENDATIONS

All laboratory certificates of analysis for the November 2019 to February 2020 monitoring period for both weekly and semi-annual monitoring are provided in Appendix B. Results of the quarry discharge sample analyses are summarized below:

- The TSS, pH, Oil and Grease, and Phenol (4AAP) concentrations were reported to be below their respective concentration limits stipulated in the ECA (Table 1) for all weekly samples;
- The monthly average of the TSS, Oil and Grease, and Phenol (4AAP) concentrations were all calculated to be below the monthly concentration limits stipulated in the ECA (Table 2);
- The concentrations of the various parameters analyzed in the semi-annual surface water sample collected at SW1 were below the PWQO guidelines (Table 3); and,
- The daily discharge rate between November 2019 and February 2020 was below the permitted rate of 4,545 L/min (76 L/sec) (Table 4).

Signature Page

Golder Associates Ltd.



Jamie Bonany, M.A.Sc.
Project Scientist



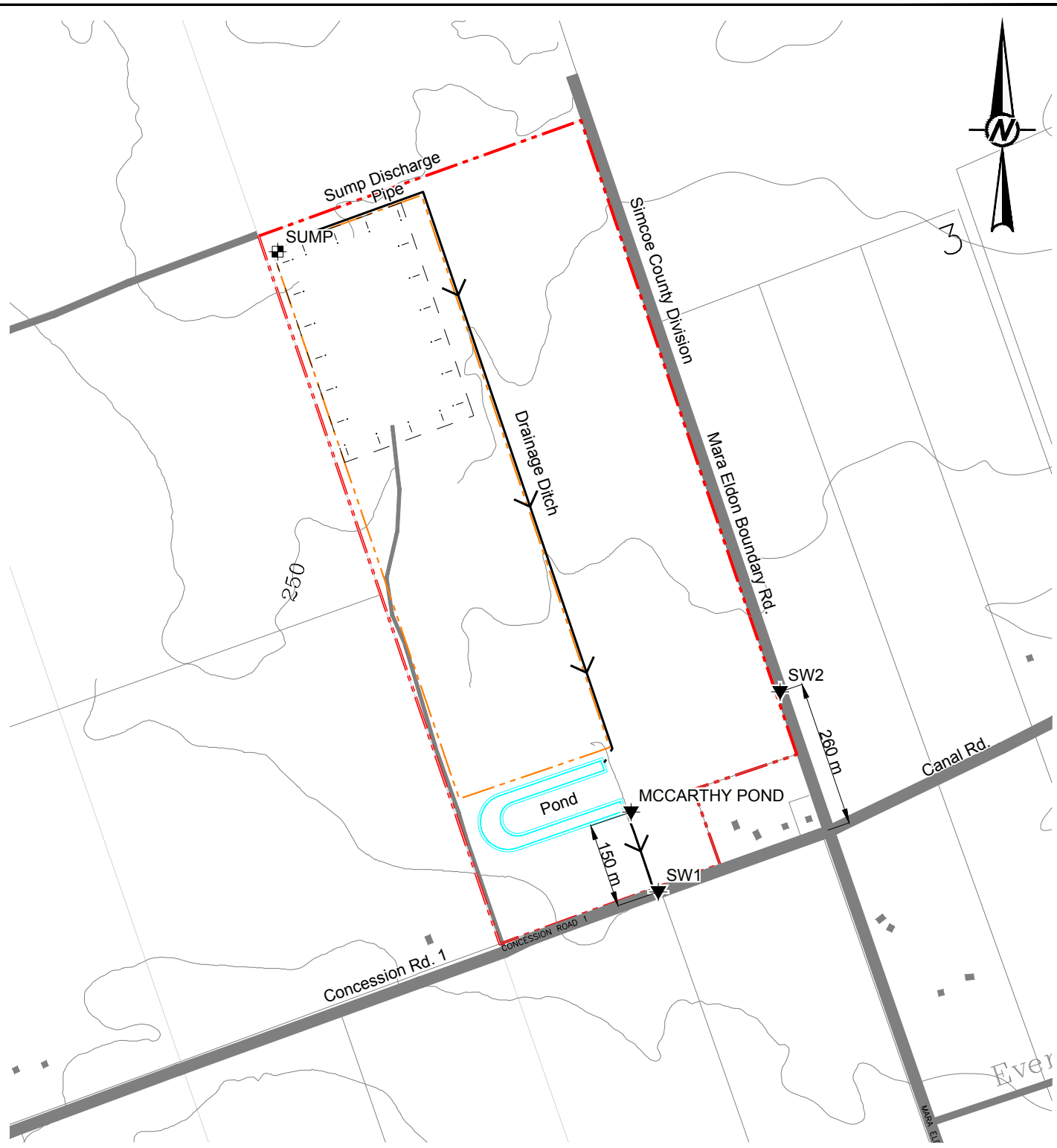
John Easton, M.Sc., P.Geol.
Associate Senior Hydrogeologist

JB/JE/cdr

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Figures

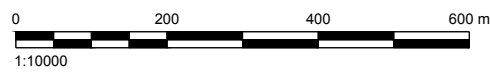


LEGEND

- - - Approximate Property Boundary
- - - Approximate Licenced Boundary
- 5 m Contour Line
- ▼ Surface Water Sampling Location
- Approximate Extent of Quarry

REFERENCES AND NOTES

1. Projection UTM NAD83 Zone 17
2. Mapping based on ESRI Geography Network OBM Features and Bing Orthophotos



CLIENT
COCO / QBJR AGGREGATES INC.

PROJECT
STAN MCCARTHY QUARRY

TITLE
LOCATION MAP

CONSULTANT	YYYY-MM-DD	2019-11-08
	PREPARED	STB
	DESIGN	
	REVIEW	
	APPROVED	



PROJECT No. 14-07634 SCALE AS SHOWN Rev. A Figure 1

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIA 26 mm

Tables

Table 1: McCarthy Pond Weekly Water Quality Results (November 2019 to February 2020)

Sample ID	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Daily Concentration Limit ²	McCarthy Quarry						
					Pond						
Date					07-Nov-19	14-Nov-19	21-Nov-19	28-Nov-19	05-Dec-19	12-Dec-19	09-Jan-19
pH	pH	n/a		6.0-9.5	7.72	7.94	7.68	7.82	7.72	7.61	7.53
Total Suspended Solids	mg/L	1		30	2	2	2	2	1	1	2
Total Oil and Grease	mg/L	0.5	Note 3	30	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.04	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Notes

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.
2. Daily Concentration Limit; bolded values denote exceedances in the Permit to Take Waters daily concentration limits.
3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.
4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 2: McCarthy Pond Monthly Water Quality Results (November 2019 to February 2020)

Sample ID	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Monthly Concentration Limit ²	McCarthy Quarry		
					Pond		
Date					November	December	January
Total Suspended Solids	mg/L	1		15	2.0	1.0	2.0
Total Oil and Grease	mg/L	0.5	Note 3	15	0.7	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.02	<0.001	<0.001	<0.001

Notes

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.
2. Monthly Concentration Limit; bolded values denote exceedances in the Permit to Take Waters monthly concentration limits.
3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.
4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 3: McCarthy Semi-Annual Water Quality Monitoring Results (November 2019)

	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Interim PWQO ²	PTTW Effluent Limits	McCarthy Quarry
Sample ID						SW1
Date						27-Nov-19
Field Measured Parameters						
Conductivity	µS/cm					1225
pH		n/a	6.5-8.5		6.0-9.5	6.70
Temperature	°C	n/a				10.9
Calculated Parameters						
Hardness (CaCO ₃)	mg/L	1.0				510
Inorganics						
Total Ammonia-N	mg/L	0.050				<0.050
Conductivity	ms/cm	0.001				1.24
Total Dissolved Solids	mg/L	10				815
Fluoride (F ⁻)	mg/L	0.10				0.1
Total Kjeldahl Nitrogen (TKN)	mg/L	0.10				0.32
Dissolved Organic Carbon	mg/L	0.50				8
pH		N/A	6.5-8.5		6.0-9.5	7.89
Phenols-4AAP	mg/L	0.0010			0.04	<0.0010
Total Phosphorus	mg/L	0.020		0.02 ^{5b}		<0.02
Total Suspended Solids	mg/L	10			30	<10
Dissolved Sulphate (SO ₄)	mg/L	1				240
Alkalinity (Total as CaCO ₃)	mg/L	1.0				200
Dissolved Chloride (Cl)	mg/L	1				140
Nitrite (N)	mg/L	0.010				<0.010
Nitrate (N)	mg/L	0.10				<0.10
Petroleum Hydrocarbons						
Total Oil & Grease	mg/L	0.50	Note 3		30	<0.50
Metals						
Total Arsenic (As)	ug/L	1	100	5		<1.0
Total Cadmium (Cd)	ug/L	0.1	0.2	0.1-0.5 ^{5d}		<0.10
Dissolved Calcium (Ca)	mg/L	0.05				180
Total Calcium (Ca)	ug/L	200				180000
Total Chromium (Cr)	ug/L	5	1-89 ^{5e}			<5.0
Total Copper (Cu)	ug/L	1	5	1-5 ^{5f}		1.1
Total Iron (Fe)	ug/L	100	300			260
Total Lead (Pb)	ug/L	0.5	5-25 ^{5g}	1-5 ^{5h}		<0.50
Dissolved Magnesium (Mg)	mg/L	0.05				13
Total Magnesium (Mg)	ug/L	50				13000
Total Manganese (Mn)	ug/L	2				50
Total Nickel (Ni)	ug/L	1	25			<1.0
Dissolved Potassium (K)	mg/L	1				2.6
Total Potassium (K)	ug/L	200				2600
Dissolved Sodium (Na)	mg/L	0.5				71
Total Sodium (Na)	ug/L	100				71000
Total Zinc (Zn)	ug/L	5	30	20		<5.0
<p>1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.</p> <p>2. Interim Provincial Water Quality Objectives (Interim PWQO); shaded cells and italics denote Interim PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.</p> <p>3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.</p> <p>4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).</p>					<p>5b. Phosphorus (Interim):</p> <ul style="list-style-type: none"> - Current scientific evidence is insufficient to develop a firm Objective at this time. - Accordingly, the following phosphorus concentrations should be considered as general guidelines which should be supplemented by site-specific studies: <ul style="list-style-type: none"> (a) To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20 ug/L; (b) A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10 ug/L or less. This should apply to all lakes naturally below this value; (c) Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L 	
<p>5a. Aluminum (Interim):</p> <ul style="list-style-type: none"> - At pH 4.5 to 5.5 the Interim PWQO is 15 ug/L based on inorganic monomeric aluminum measured in clay-free samples. - At pH >5.5 to 6.5, no condition should be permitted which would increase the acid soluble inorganic aluminum concentration in clay-free samples to more than 10% above natural background concentrations for waters representative of that geological area of the Province that are unaffected by man-made inputs. - At pH >6.5 to 9.0, the Interim PWQO is 75 ug/L based on total aluminum measured in clay-free samples. - If natural background aluminum concentrations in water bodies unaffected by manmade inputs are greater than the numerical Interim PWQO (above), no condition is permitted that would increase the aluminum concentration in clay-free samples by more than 10% of the natural background level. 					<p>5c. Beryllium:</p>	
					<p>5d. Cadmium: (Interim)</p>	
					<p>5e. Chromium:</p>	
					<p>5f. Copper: (Interim)</p>	
					<p>5g. Lead:</p>	
					<p>5h. Lead: (Interim)</p>	

Table 4: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					6,550,000	76	4,545
1-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
2-Nov-19	NO PUMP		0	0	-	-	-
3-Nov-19	NO PUMP		0	0	-	-	-
4-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
5-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
6-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
7-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
8-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
9-Nov-19	NO PUMP		0	0	-	-	-
10-Nov-19	NO PUMP		0	0	-	-	-
11-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
12-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
13-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
14-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
15-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
16-Nov-19	NO PUMP		0	0	-	-	-
17-Nov-19	NO PUMP		0	0	-	-	-
18-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
19-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
20-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
21-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
22-Nov-19	7AM	4PM	32400	540	648,000	20	1,200
23-Nov-19	NO PUMP		0	0	-	-	-
24-Nov-19	NO PUMP		0	0	-	-	-
25-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
26-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
27-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
28-Nov-19	7AM	5PM	36000	600	720,000	20	1,200
29-Nov-19	7AM	3PM	28800	480	576,000	20	1,200
30-Nov-19	NO PUMP		0	0	-	-	-
1-Dec-19	NO PUMP		0	0	-	-	-
2-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
3-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
4-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
5-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
6-Dec-19	7AM	4PM	32400	540	648,000	20	1,200
7-Dec-19	NO PUMP		0	0	-	-	-
8-Dec-19	NO PUMP		0	0	-	-	-
9-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
10-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
11-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
12-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
13-Dec-19	7AM	5PM	36000	600	720,000	20	1,200

Table 4: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					6,550,000	76	4,545
14-Dec-19	NO PUMP		0	0	-	-	-
15-Dec-19	NO PUMP		0	0	-	-	-
16-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
17-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
18-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
19-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
20-Dec-19	7AM	5PM	36000	600	720,000	20	1,200
21-Dec-19	NO PUMP		0	0	-	-	-
22-Dec-19	NO PUMP		0	0	-	-	-
23-Dec-19	NO PUMP		0	0	-	-	-
24-Dec-19	NO PUMP		0	0	-	-	-
25-Dec-19	NO PUMP		0	0	-	-	-
26-Dec-19	NO PUMP		0	0	-	-	-
27-Dec-19	NO PUMP		0	0	-	-	-
28-Dec-19	NO PUMP		0	0	-	-	-
29-Dec-19	NO PUMP		0	0	-	-	-
30-Dec-19	NO PUMP		0	0	-	-	-
31-Dec-19	NO PUMP		0	0	-	-	-
1-Jan-20	NO PUMP		0	0	-	-	-
2-Jan-20	NO PUMP		0	0	-	-	-
3-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
4-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
5-Jan-20	NO PUMP		0	0	-	-	-
6-Jan-20	NO PUMP		0	0	-	-	-
7-Jan-20	NO PUMP		0	0	-	-	-
8-Jan-20	NO PUMP		0	0	-	-	-
9-Jan-20	NO PUMP		0	0	-	-	-
10-Jan-20	NO PUMP		0	0	-	-	-
11-Jan-20	NO PUMP		0	0	-	-	-
12-Jan-20	NO PUMP		0	0	-	-	-
13-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
14-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
15-Jan-20	NO PUMP		0	0	-	-	-
16-Jan-20	NO PUMP		0	0	-	-	-
17-Jan-20	NO PUMP		0	0	-	-	-
18-Jan-20	NO PUMP		0	0	-	-	-
19-Jan-20	NO PUMP		0	0	-	-	-
20-Jan-20	NO PUMP		0	0	-	-	-
21-Jan-20	NO PUMP		0	0	-	-	-
22-Jan-20	NO PUMP		0	0	-	-	-
23-Jan-20	NO PUMP		0	0	-	-	-
24-Jan-20	NO PUMP		0	0	-	-	-
25-Jan-20	NO PUMP		0	0	-	-	-

Table 4: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					6,550,000	76	4,545
26-Jan-20	NO PUMP		0	0	-	-	-
27-Jan-20	NO PUMP		0	0	-	-	-
28-Jan-20	NO PUMP		0	0	-	-	-
29-Jan-20	NO PUMP		0	0	-	-	-
30-Jan-20	NO PUMP		0	0	-	-	-
31-Jan-20	NO PUMP		0	0	-	-	-

APPENDIX A

ECA No. 7737-BH6QEA

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7737-BH6QEA
Issue Date: October 22, 2019

QBJR Aggregates Inc.
949 Wilson Avenue
Toronto, Ontario
M3K 1G2

Site Location: McCarthy Quarry
Lot 1, Concession 1,
Original Township of Mara
Township of Ramara
County of Simcoe
L0K 1B0

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

sewage works for the collection, transmission, treatment and disposal of stormwater and groundwater collecting within the confines of the Quarry, consisting of the following:

- one (1) sump, measuring 20 metres long, 10 metres wide and 3 metres deep, located at the base of the quarry floor, equipped with two (2) submersible pumps each rated at 38 litres per second with a suction intake approximately one (1) metre above the bottom of the sump, discharging to a settling pond via a 203 millimetre diameter pipeline; and
- one (1) horse-shoe shaped settling pond with an approximate volume of 14,000 cubic metres (at elevation 248.2 metres), with a Hickenbottom control structure equipped with a 150 millimetre diameter orifice plate, discharging to the roadside ditch along Concession Road 1 with ultimate discharge to the Talbot River via a private ditch.

all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works.

all in accordance with supporting documents listed in **Schedule A**.

For the purpose of this environmental compliance approval, the following definitions apply:

"Application" means the application for an environmental compliance approval submitted to the Ministry for approval by or on behalf of the Owner and dated August 8, 2019.

"Approval" means this environmental compliance approval, any schedules attached to it, and the Application;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

"EPA" means the *Environmental Protection Act, R.S.O. 1990, c.E.19* , as amended;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Owner" means QBJR Aggregates Inc., and includes its successors and assignees;

"OWRA" means the *Ontario Water Resources Act, R.S.O. 1990, c. O.40* , as amended; and

"Works" means the sewage works described in the Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

- (1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- (2) Except as otherwise provided by these terms and conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with this Approval.
- (3) Where there is a conflict between a provision of this environmental compliance approval and any document submitted by the Owner, the conditions in this environmental compliance approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Owner, the Application shall take precedence

unless it is clear that the purpose of the document was to amend the Application

- (4) Where there is a conflict between the documents listed in the Schedule A, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
- (5) The terms and conditions of this Approval are severable. If any term and condition of this environmental compliance approval, or the application of any requirement of this environmental compliance approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.
- (6) The issuance of, and compliance with the conditions of, this Approval does not:
 - a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or
 - b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. CHANGE OF OWNER

- (1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:
 - (a) change of address of Owner or operating authority;
 - (b) change of Owner or operating authority or both, including address of new Owner or operating authority, or both;
 - (c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* ; and
 - (d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the “Initial Return” or “Notice of Change” filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , shall be included in the notification to the District Manager.
- (2) In the event of any change in ownership of the Works, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be

forwarded to the District Manager.

- (3) The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this environmental compliance approval.

3. OPERATION AND MAINTENANCE

- (1) The Owner shall prepare an operations manual of the Works that includes, but is not limited to, the following information:
 - (a) operating procedures for routine operation of the Works;
 - (b) inspection programs, including frequency of inspection, for the Works and the methods or tests to be employed to detect when maintenance is necessary;
 - (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;
 - (d) contingency plans and procedures for dealing with a potential spill, bypasses or any other abnormal situations, including notifying the District Manager of the situation; and
 - (e) procedures for receiving and responding to public complaints.
- (2) The Owner shall ensure that the Works and related equipment and appurtenances which are installed or used to achieve compliance with this Approval are properly operated and maintained.
- (3) The Owner shall inspect the sump, discharge pump and settling pond on a monthly basis and keep a log or record of the inspections at the Quarry.
- (4) The Owner shall carry out on an as-needed basis, specific maintenance requirements like removing build-up, associated with the sump, pump and settling pond.
- (5) The Owner shall, upon identification of a loss of oil and fuel, take immediate action to prevent the further occurrence of such loss and prevent the spill from entering into the sump and/or the settling pond.
- (6) In furtherance of, but without limiting the generality of, the obligation imposed by subsection (2), the Owner shall ensure that equipment and material for the containment, clean-up and disposal of oil and fuel and materials contaminated with oil or fuel are kept on hand and in good repair for immediate use in the event of:
 - (a) loss of oil or fuel during refuelling or equipment maintenance;

- (b) a spill within the meaning of Part X of the Environmental Protection Act; and/or
- (c) the identification of an abnormal amount of oil or fuel in the sump and/or settling pond.

4. EFFLUENT LIMITS

- (1) The Owner shall construct, operate and maintain the Works such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

Table 1 - Effluent Limits		
Effluent Parameter	Daily Concentration (milligrams per litre unless otherwise indicated)	Monthly Average Concentration (milligrams per litre unless otherwise indicated)
Column 1	Column 2	Column 3
Oil and Grease	30	15
Phenolics (4AAP)	0.04	0.02
Total Suspended Solids	30	15
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

- (2) For the purposes of determining compliance with and enforcing subsection (1):
 - (a) non-compliance with respect to a Daily Concentration is deemed to have occurred when any single grab sample analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding daily concentration set out in Column 2 of subsection (1);
 - (b) non-compliance with respect to an Monthly Average Concentration is deemed to have occurred when the arithmetic mean concentration of all samples taken in a month, analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding monthly average concentration set out in Column 3 of subsection (1); and
 - (c) non-compliance with respect to pH is deemed to have occurred when any single measurement is outside of the indicated range.

5. EFFLUENT - VISUAL OBSERVATIONS

- (1) Notwithstanding any other condition in this Approval, the Owner shall ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.
- (2) Notwithstanding any other condition in this Approval, the Owner shall ensure that the

effluent from the Works shall not cause flooding or erosion to the downstream receiver and in particular Road flooding.

6. MONITORING AND RECORDING

The Owner shall, upon the Issuance of this Approval, carry out the following monitoring program:

- (1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.
- (2) Samples shall be collected and analyzed at the following sampling point, at the sampling frequencies and using the sample type specified for each parameter listed:

Table 2 - Effluent Monitoring	
Sample Point	Outfall of settling pond approximately 150 metres north of Concession 1 (i.e. end of pipe discharge).
Frequency	Weekly
Sample Type	Grab
Parameters	Oil and Grease, Phenolics (4AAP), and Total Suspended Solid (TSS).

Table 3 - Effluent and Surface Water Monitoring	
Sample Point	<ol style="list-style-type: none"> 1. Outfall of settling pond approximately 150 metres north of Concession 1 (i.e. end of pipe discharge). 2. Box culvert on Eldon-Ramara Townline approximately 260 metres north of the intersection of Ramara Concession 1 and Eldon-Ramara Townline (i.e. upgradient of end of pipe discharge). 3. 80 centimetre CSP located at Concession 1 Road on McCarthy property (i.e. downgradient of end of pipe discharge).
Frequency	Semi-Annually during discharge event.
Sample Type	Grab
Parameters	Total Suspended Solids, Copper, Lead, Nickel, Zinc, Arsenic, Oil and Grease, Phenolics (4AAP), Hardness (as CaCO ₃), Alkalinity(as CaCO ₃), Conductivity, pH, Fluoride, Chloride, Nitrate (N), Nitrite (N), Sulphate, Calcium, Magnesium, Sodium, Potassium, Ammonia (N), Dissolved Organic Carbon, Iron, Total Kjeldahl Nitrogen, Phosphorus (Total), Cadmium, Chromium, Manganese, Anion (Sum), Cation (Sum) and Total Dissolved Solids.

- (3) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:
 - (a) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and
 - (b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.
- (4) The Owner shall measure, record and calculate the discharge rate and volume from the Works on a daily basis during discharging period.
- (5) The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

7. RECEIVER INSPECTION

- (1) The Owner shall, at least once per year, undertake a visual inspection of the downstream ditches for evidence of erosion and/or flooding and shall report the observations in the annual report.

8. REPORTING

- (1) The Owner shall report to the District Manager or designate, any exceedance of any parameter specified in condition 4 orally, forthwith, and in writing within **seven (7) days** of the exceedance.
- (2) In addition to the obligations under Part X of the EPA, the Owner shall, within **ten (10) working days** of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.
- (3) The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.
- (4) The Owner shall submit quarterly reports of the information obtained under condition 6 within **30 days** of the end of each quarter.
- (5) The Owner shall prepare, and submit to the District Manager, a **performance report**, on

an annual basis, on or before March 31st. The reports shall contain, but shall not be limited to, the following information:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in condition 4, including an overview of the success and adequacy of the sewage Works;
- (b) a description of any operating problems encountered and corrective actions taken;
- (c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the sewage works;
- (d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- (e) any other information the District Manager requires from time to time.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.(6) is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.
2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the works in compliance with it.
3. Condition 3 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works. The condition is also included to ensure that the Works will be operated and maintained in a manner enabling compliance with the terms and conditions of this Approval, such that the environment is protected and deterioration, loss, injury or damage to

any person or property is minimised and/or prevented.

4. Conditions 4 and 5 are imposed to ensure that the effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver.
5. Condition 6 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Approval and that the Works does not cause any impairment to the receiver.
6. Condition 7 is included in order to determine if the ongoing discharge of quarry water is having a negative impact on the downstream ditches so that abatement measures can be taken to prevent such occurrences.
7. Condition 8 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

SCHEDULE 'A'

1. Environmental Compliance Approval Application for Industrial Sewage Works submitted by John Easton, P.Geo., Golder Associates Ltd., and signed by Mr. Anthony Rossi, Director Land Development & Government Relations, QBJR Aggregates Inc., dated August 8, 2019; and all supporting documentation and information.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).
4731-987KM8 issued on October 15, 2013.**

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

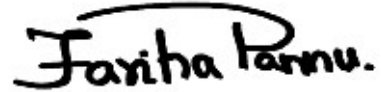
AND

The Director appointed for the purposes of Part
II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of October, 2019



Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

AA/

c: District Manager, MECP Barrie District Office
John Easton, P.Geo., Golder Associates Ltd.

APPENDIX B

Water Quality Data



Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 728212-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/11/14
 Report #: R5964463
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9V5188
Received: 2019/11/08, 08:51

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/11/13	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/11/13	2019/11/13	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/11/11	2019/11/12	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/11/12	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/11/13	2019/11/13	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/11/11	2019/11/12	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

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

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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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 728212-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/11/14
Report #: R5964463
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9V5188
Received: 2019/11/08, 08:51

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829

=====

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BUREAU
VERITAS

BV Labs Job #: B9V5188
Report Date: 2019/11/14

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

BV Labs ID			LGI578	LGI578		
Sampling Date			2019/11/07 15:02	2019/11/07 15:02		
COC Number			728212-02-01	728212-02-01		
	UNITS	Criteria	POND	POND Lab-Dup	RDL	QC Batch
Calculated Parameters						
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	N/A	0.50	6434707
Inorganics						
pH	pH	6.5:8.5	7.72	N/A	N/A	6436598
Phenols-4AAP	mg/L	0.001	<0.0010	N/A	0.0010	6436904
Total Suspended Solids	mg/L	-	2	2	1	6436803
Petroleum Hydrocarbons						
Total Oil & Grease	mg/L	-	<0.50	N/A	0.50	6439814
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	N/A	0.50	6439815
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable						



BUREAU
VERITAS

BV Labs Job #: B9V5188

Report Date: 2019/11/14

Golder Associates Ltd

Client Project #: 1407634

Site Location: MCCARTHY

Sampler Initials: KC

GENERAL COMMENTS

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

Package 1	11.7°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9V5188
Report Date: 2019/11/14

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: KC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6436598	SAU	Spiked Blank	pH	2019/11/12		102	%	98 - 103
6436598	SAU	RPD	pH	2019/11/12	1.1		%	N/A
6436803	SDE	QC Standard	Total Suspended Solids	2019/11/12		96	%	85 - 115
6436803	SDE	Method Blank	Total Suspended Solids	2019/11/12	<1		mg/L	
6436803	SDE	RPD [LGI578-02]	Total Suspended Solids	2019/11/12	11		%	25
6436904	BMO	Matrix Spike	Phenols-4AAP	2019/11/12		97	%	80 - 120
6436904	BMO	Spiked Blank	Phenols-4AAP	2019/11/12		96	%	80 - 120
6436904	BMO	Method Blank	Phenols-4AAP	2019/11/12	<0.0010		mg/L	
6436904	BMO	RPD	Phenols-4AAP	2019/11/12	NC		%	20
6439814	GSG	Spiked Blank	Total Oil & Grease	2019/11/13		97	%	85 - 115
6439814	GSG	RPD	Total Oil & Grease	2019/11/13	2.6		%	25
6439814	GSG	Method Blank	Total Oil & Grease	2019/11/13	<0.50		mg/L	
6439815	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/11/13		96	%	85 - 115
6439815	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2019/11/13	2.6		%	25
6439815	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/11/13	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9V5188

Report Date: 2019/11/14

Golder Associates Ltd

Client Project #: 1407634

Site Location: MCCARTHY

Sampler Initials: KC

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Brad Newman", written over a horizontal line.

Brad Newman, Scientific Service Specialist

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



Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 734802-05-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/11/25
 Report #: R5979919
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W3864
Received: 2019/11/18, 08:20

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/11/25	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/11/25	2019/11/25	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/11/22	2019/11/22	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/11/22	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/11/25	2019/11/25	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/11/22	2019/11/25	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 734802-05-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/11/25
Report #: R5979919
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W3864
Received: 2019/11/18, 08:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829

=====

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RESULTS OF ANALYSES OF WATER

BV Labs ID			LIG055		
Sampling Date			2019/11/14		
COC Number			734802-05-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	1.4	0.50	6455290
Inorganics					
pH	pH	6.5:8.5	7.94	N/A	6456740
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6457701
Total Suspended Solids	mg/L	-	2	1	6458121
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	1.4	0.50	6460702
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	6460711
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9W3864
Report Date: 2019/11/25

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

GENERAL COMMENTS

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

Package 1	14.7°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9W3864
Report Date: 2019/11/25

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6456740	NYS	Spiked Blank	pH	2019/11/22		102	%	98 - 103
6456740	NYS	RPD	pH	2019/11/22	0.70		%	N/A
6457701	BMO	Matrix Spike	Phenols-4AAP	2019/11/22		101	%	80 - 120
6457701	BMO	Spiked Blank	Phenols-4AAP	2019/11/22		100	%	80 - 120
6457701	BMO	Method Blank	Phenols-4AAP	2019/11/22	<0.0010		mg/L	
6457701	BMO	RPD	Phenols-4AAP	2019/11/22	3.1		%	20
6458121	MKX	QC Standard	Total Suspended Solids	2019/11/25		98	%	85 - 115
6458121	MKX	Method Blank	Total Suspended Solids	2019/11/25	<1		mg/L	
6458121	MKX	RPD	Total Suspended Solids	2019/11/25	15		%	25
6460702	FA	Matrix Spike	Total Oil & Grease	2019/11/25		89	%	75 - 125
6460702	FA	Spiked Blank	Total Oil & Grease	2019/11/25		98	%	85 - 115
6460702	FA	RPD	Total Oil & Grease	2019/11/25	2.3		%	25
			Total Oil & Grease	2019/11/25	0.79		%	25
6460702	FA	Method Blank	Total Oil & Grease	2019/11/25	<0.50		mg/L	
6460711	FA	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/11/25		94	%	85 - 115
6460711	FA	RPD	Total Oil & Grease Mineral/Synthetic	2019/11/25	2.7		%	25
6460711	FA	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/11/25	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



BUREAU
VERITAS

BV Labs Job #: B9W3864
Report Date: 2019/11/25

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

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



Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 734802-06-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/11/28
 Report #: R5983500
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W9963
Received: 2019/11/22, 09:18

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/11/27	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/11/27	2019/11/27	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/11/23	2019/11/25	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/11/26	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/11/27	2019/11/27	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/11/25	2019/11/26	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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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 BV Labs, 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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 734802-06-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/11/28
Report #: R5983500
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W9963
Received: 2019/11/22, 09:18

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829

=====

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BUREAU
VERITAS

BV Labs Job #: B9W9963
Report Date: 2019/11/28

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

RESULTS OF ANALYSES OF WATER

BV Labs ID		LJP005	LJP005		
Sampling Date		2019/11/21 12:26	2019/11/21 12:26		
COC Number		734802-06-01	734802-06-01		
	UNITS	POND	POND Lab-Dup	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	N/A	0.50	6457444
Inorganics					
pH	pH	7.68	N/A	N/A	6460029
Phenols-4AAP	mg/L	<0.0010	<0.0010	0.0010	6461892
Total Suspended Solids	mg/L	2	N/A	1	6461291
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	<0.50	N/A	0.50	6466931
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	N/A	0.50	6466933
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9W9963
Report Date: 2019/11/28

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

GENERAL COMMENTS

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

Package 1	11.3°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9W9963
Report Date: 2019/11/28

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6460029	SAU	Spiked Blank	pH	2019/11/25		102	%	98 - 103
6460029	SAU	RPD	pH	2019/11/25	0.15		%	N/A
6461291	MKX	QC Standard	Total Suspended Solids	2019/11/26		95	%	85 - 115
6461291	MKX	Method Blank	Total Suspended Solids	2019/11/26	<1		mg/L	
6461291	MKX	RPD	Total Suspended Solids	2019/11/26	13		%	25
6461892	LHA	Matrix Spike [LJP005-04]	Phenols-4AAP	2019/11/26		96	%	80 - 120
6461892	LHA	Spiked Blank	Phenols-4AAP	2019/11/26		95	%	80 - 120
6461892	LHA	Method Blank	Phenols-4AAP	2019/11/26	<0.0010		mg/L	
6461892	LHA	RPD [LJP005-04]	Phenols-4AAP	2019/11/26	NC		%	20
6466931	KK4	Spiked Blank	Total Oil & Grease	2019/11/27		99	%	85 - 115
6466931	KK4	RPD	Total Oil & Grease	2019/11/27	3.1		%	25
6466931	KK4	Method Blank	Total Oil & Grease	2019/11/27	<0.50		mg/L	
6466933	KK4	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/11/27		95	%	85 - 115
6466933	KK4	RPD	Total Oil & Grease Mineral/Synthetic	2019/11/27	3.8		%	25
6466933	KK4	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/11/27	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9W9963
Report Date: 2019/11/28

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read 'Brad Newman', written over a horizontal line.

Brad Newman, Scientific Service Specialist

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



Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 734802-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/12/06
 Report #: R5994337
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9X7220

Received: 2019/11/29, 09:03

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/12/06	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/12/05	2019/12/05	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/11/30	2019/12/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/12/02	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/12/05	2019/12/05	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/12/03	2019/12/04	CAM SOP-00428	SM 23 2540D m

Remarks:

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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 BV Labs, results relate to the supplied samples tested.

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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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 734802-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/12/06
Report #: R5994337
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9X7220
Received: 2019/11/29, 09:03

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

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RESULTS OF ANALYSES OF WATER

BV Labs ID			LLE888		
Sampling Date			2019/11/28 12:57		
COC Number			734802-02-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	6470375
Inorganics					
pH	pH	6.5:8.5	7.82	N/A	6472399
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6473092
Total Suspended Solids	mg/L	-	2	1	6475687
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	<0.50	0.50	6480137
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	6480139
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9X7220
Report Date: 2019/12/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: MC

GENERAL COMMENTS

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

Package 1	11.0°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9X7220
Report Date: 2019/12/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: MC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6472399	SAU	Spiked Blank	pH	2019/12/02		102	%	98 - 103
6472399	SAU	RPD	pH	2019/12/02	0.38		%	N/A
6473092	BMO	Matrix Spike	Phenols-4AAP	2019/12/02		97	%	80 - 120
6473092	BMO	Spiked Blank	Phenols-4AAP	2019/12/02		94	%	80 - 120
6473092	BMO	Method Blank	Phenols-4AAP	2019/12/02	<0.0010		mg/L	
6473092	BMO	RPD	Phenols-4AAP	2019/12/02	NC		%	20
6475687	MJ1	QC Standard	Total Suspended Solids	2019/12/04		98	%	85 - 115
6475687	MJ1	Method Blank	Total Suspended Solids	2019/12/04	<1		mg/L	
6475687	MJ1	RPD	Total Suspended Solids	2019/12/04	NC		%	25
6480137	SPK	Spiked Blank	Total Oil & Grease	2019/12/05		94	%	85 - 115
6480137	SPK	RPD	Total Oil & Grease	2019/12/05	4.7		%	25
6480137	SPK	Method Blank	Total Oil & Grease	2019/12/05	<0.50		mg/L	
6480139	SPK	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/12/05		92	%	85 - 115
6480139	SPK	RPD	Total Oil & Grease Mineral/Synthetic	2019/12/05	3.2		%	25
6480139	SPK	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/12/05	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9X7220

Report Date: 2019/12/06

Golder Associates Ltd

Client Project #: 1407634

Site Location: MCCARTHY

Sampler Initials: MC

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 724340-06-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/12/11
 Report #: R6000149
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Y4503

Received: 2019/12/05, 08:56

Sample Matrix: Surface Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/12/10	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/12/10	2019/12/10	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/12/07	2019/12/09	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/12/09	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/12/10	2019/12/10	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/12/07	2019/12/09	CAM SOP-00428	SM 23 2540D m

Remarks:

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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 BV Labs, results relate to the supplied samples tested.

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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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 724340-06-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/12/11
Report #: R6000149
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Y4503
Received: 2019/12/05, 08:56

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

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RESULTS OF ANALYSES OF SURFACE WATER

BV Labs ID			LMU993		
Sampling Date			2019/12/05 15:19		
COC Number			724340-06-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	6483067
Inorganics					
pH	pH	6.5:8.5	7.72	N/A	6484190
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6485741
Total Suspended Solids	mg/L	-	1	1	6485024
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	<0.50	0.50	6488373
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	6488376
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9Y4503
Report Date: 2019/12/11

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

GENERAL COMMENTS

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

Package 1	10.0°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9Y4503
Report Date: 2019/12/11

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6484190	SAU	Spiked Blank	pH	2019/12/09		102	%	98 - 103
6484190	SAU	RPD	pH	2019/12/09	0.16		%	N/A
6485024	XH1	QC Standard	Total Suspended Solids	2019/12/09		95	%	85 - 115
6485024	XH1	Method Blank	Total Suspended Solids	2019/12/09	<1		mg/L	
6485024	XH1	RPD	Total Suspended Solids	2019/12/09	NC		%	25
6485741	BMO	Matrix Spike	Phenols-4AAP	2019/12/09		98	%	80 - 120
6485741	BMO	Spiked Blank	Phenols-4AAP	2019/12/09		97	%	80 - 120
6485741	BMO	Method Blank	Phenols-4AAP	2019/12/09	<0.0010		mg/L	
6485741	BMO	RPD	Phenols-4AAP	2019/12/09	NC		%	20
6488373	GSG	Spiked Blank	Total Oil & Grease	2019/12/10		99	%	85 - 115
6488373	GSG	RPD	Total Oil & Grease	2019/12/10	2.1		%	25
6488373	GSG	Method Blank	Total Oil & Grease	2019/12/10	<0.50		mg/L	
6488376	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/12/10		97	%	85 - 115
6488376	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2019/12/10	3.7		%	25
6488376	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/12/10	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9Y4503
Report Date: 2019/12/11

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Anastassia Hamanov", written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 740182-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/12/19
 Report #: R6011926
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Z1986

Received: 2019/12/13, 09:14

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2019/12/18	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2019/12/18	2019/12/18	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/12/14	2019/12/16	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/12/16	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2019/12/18	2019/12/18	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2019/12/14	2019/12/16	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

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

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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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 740182-02-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/12/19
Report #: R6011926
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Z1986
Received: 2019/12/13, 09:14

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

=====

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BUREAU
VERITAS

BV Labs Job #: B9Z1986
Report Date: 2019/12/19

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

RESULTS OF ANALYSES OF WATER

BV Labs ID			LOL352		
Sampling Date			2019/12/12 10:17		
COC Number			740182-02-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	6496257
Inorganics					
pH	pH	6.5:8.5	7.61	N/A	6498027
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6498658
Total Suspended Solids	mg/L	-	1	1	6498033
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	<0.50	0.50	6503931
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	6503933
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9Z1986
Report Date: 2019/12/19

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

GENERAL COMMENTS

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

Package 1	11.7°C
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Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9Z1986
Report Date: 2019/12/19

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6498027	SAU	Spiked Blank	pH	2019/12/16		102	%	98 - 103
6498027	SAU	RPD	pH	2019/12/16	0.19		%	N/A
6498033	MKX	QC Standard	Total Suspended Solids	2019/12/16		99	%	85 - 115
6498033	MKX	Method Blank	Total Suspended Solids	2019/12/16	<1		mg/L	
6498033	MKX	RPD	Total Suspended Solids	2019/12/16	9.2		%	25
6498658	BMO	Matrix Spike	Phenols-4AAP	2019/12/16		100	%	80 - 120
6498658	BMO	Spiked Blank	Phenols-4AAP	2019/12/16		103	%	80 - 120
6498658	BMO	Method Blank	Phenols-4AAP	2019/12/16	<0.0010		mg/L	
6498658	BMO	RPD	Phenols-4AAP	2019/12/16	NC		%	20
6503931	GSG	Spiked Blank	Total Oil & Grease	2019/12/18		98	%	85 - 115
6503931	GSG	RPD	Total Oil & Grease	2019/12/18	1.3		%	25
6503931	GSG	Method Blank	Total Oil & Grease	2019/12/18	<0.50		mg/L	
6503933	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2019/12/18		97	%	85 - 115
6503933	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2019/12/18	3.2		%	25
6503933	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2019/12/18	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9Z1986
Report Date: 2019/12/19

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Brad Newman", written over a horizontal line.

Brad Newman, Scientific Service Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 734802-01-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2020/01/16
 Report #: R6038875
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C007448

Received: 2020/01/10, 09:10

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2020/01/14	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/01/14	2020/01/14	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2020/01/14	2020/01/14	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/01/15	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/01/14	2020/01/14	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/01/14	2020/01/15	CAM SOP-00428	SM 23 2540D m

Remarks:

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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 BV Labs, 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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 734802-01-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2020/01/16
Report #: R6038875
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C007448
Received: 2020/01/10, 09:10

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

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RESULTS OF ANALYSES OF WATER

BV Labs ID			LSZ226		
Sampling Date			2020/01/09 15:33		
COC Number			734802-01-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	6536712
Inorganics					
pH	pH	6.5:8.5	7.53	N/A	6537089
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6538704
Total Suspended Solids	mg/L	-	2	1	6538343
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	<0.50	0.50	6537149
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	6537150
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Criteria: Ontario Provincial Water Quality Objectives Ref. to MOEE Water Management document dated Feb.1999 N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: C007448

Report Date: 2020/01/16

Golder Associates Ltd

Client Project #: 1407634

Site Location: MCCARTHY

Sampler Initials: SB

GENERAL COMMENTS

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

Package 1	11.0°C
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Sample LSZ226 [POND] : Analysis completed as per client request.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: C007448
Report Date: 2020/01/16

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6537089	KAD	Spiked Blank	pH	2020/01/14		101	%	98 - 103
6537089	KAD	RPD	pH	2020/01/14	0.12		%	N/A
6537149	GSG	Spiked Blank	Total Oil & Grease	2020/01/14		98	%	85 - 115
6537149	GSG	RPD	Total Oil & Grease	2020/01/14	1.8		%	25
6537149	GSG	Method Blank	Total Oil & Grease	2020/01/14	<0.50		mg/L	
6537150	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/01/14		95	%	85 - 115
6537150	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/01/14	3.8		%	25
6537150	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/01/14	<0.50		mg/L	
6538343	SDE	QC Standard	Total Suspended Solids	2020/01/15		98	%	85 - 115
6538343	SDE	Method Blank	Total Suspended Solids	2020/01/15	<1		mg/L	
6538343	SDE	RPD	Total Suspended Solids	2020/01/15	13		%	25
6538704	BMO	Matrix Spike	Phenols-4AAP	2020/01/15		97	%	80 - 120
6538704	BMO	Spiked Blank	Phenols-4AAP	2020/01/15		99	%	80 - 120
6538704	BMO	Method Blank	Phenols-4AAP	2020/01/15	<0.0010		mg/L	
6538704	BMO	RPD	Phenols-4AAP	2020/01/15	0		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



BUREAU
VERITAS

BV Labs Job #: C007448

Report Date: 2020/01/16

Golder Associates Ltd

Client Project #: 1407634

Site Location: MCCARTHY

Sampler Initials: SB

VALIDATION SIGNATURE PAGE

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A handwritten signature in black ink, appearing to read "Brad Newman", written over a horizontal line.

Brad Newman, Scientific Service Specialist

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Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 747806-01-01

Attention: Jamie Bonany

Golder Associates Ltd
 121 Commerce Park Drive
 Unit L
 Barrie, ON
 CANADA L4N 8X1

Report Date: 2019/12/05
 Report #: R5992491
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9X5890

Received: 2019/11/28, 09:16

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2019/11/29	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	1	N/A	2019/12/02	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	1	N/A	2019/11/29	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2019/11/29	CAM SOP-00446	SM 23 5310 B m
Fluoride	1	2019/11/28	2019/11/29	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	1	N/A	2019/12/04	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	1	2019/11/30	2019/12/03	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	1	N/A	2019/12/02	CAM SOP-00447	EPA 6020B m
Anion and Cation Sum	1	N/A	2019/12/04		
Total Ammonia-N	1	N/A	2019/12/03	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	1	N/A	2019/11/29	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Total Oil and Grease	1	2019/12/04	2019/12/04	CAM SOP-00326	EPA1664B m,SM5520A m
pH	1	2019/11/28	2019/11/29	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2019/12/02	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	1	N/A	2019/12/02	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	1	2019/11/30	2019/12/03	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	1	2019/11/29	2019/12/03	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2019/12/02	2019/12/02	CAM SOP-00407	SM 23 4500 P B H m
Total Suspended Solids	1	2019/11/29	2019/12/02	CAM SOP-00428	SM 23 2540D m

Remarks:

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Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 747806-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2019/12/05
Report #: R5992491
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9X5890

Received: 2019/11/28, 09:16

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

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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) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlab.com

Phone# (905)817-5829

=====

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BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

RESULTS OF ANALYSES OF WATER

BV Labs ID			LKX802			LKX802		
Sampling Date			2019/11/27 10:15			2019/11/27 10:15		
COC Number			747806-01-01			747806-01-01		
	UNITS	Criteria	SW1	RDL	QC Batch	SW1 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	12.8	N/A	6469415			
Cation Sum	me/L	-	13.3	N/A	6469415			
Hardness (CaCO3)	mg/L	-	510	1.0	6468353			
Inorganics								
Total Ammonia-N	mg/L	-	<0.050	0.050	6471248			
Conductivity	mS/cm	-	1.24	0.001	6469402	1.24	0.001	6469402
Total Dissolved Solids	mg/L	-	815	10	6472495			
Fluoride (F-)	mg/L	-	0.10	0.10	6469652	<0.10	0.10	6469652
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.32	0.10	6471379			
Dissolved Organic Carbon	mg/L	-	7.5	0.50	6470425			
pH	pH	6.5:8.5	7.89		6469653	7.89		6469653
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	6473087	<0.0010	0.0010	6473087
Total Phosphorus	mg/L	0.01	<0.020 (1)	0.020	6473524			
Total Suspended Solids	mg/L	-	<10	10	6471536			
Dissolved Sulphate (SO4)	mg/L	-	240	1.0	6472383			
Alkalinity (Total as CaCO3)	mg/L	-	200	1.0	6469649	200	1.0	6469649
Dissolved Chloride (Cl-)	mg/L	-	140	1.0	6472381			
Nitrite (N)	mg/L	-	<0.010	0.010	6469216			
Nitrate (N)	mg/L	-	<0.10	0.10	6469216			
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	6469216			
Petroleum Hydrocarbons								
Total Oil & Grease	mg/L	-	<0.50	0.50	6477732			
No Fill	No Exceedance							
Grey	Exceeds 1 criteria policy/level							
Black	Exceeds both criteria/levels							
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								
Criteria: Ontario Provincial Water Quality Objectives								
Ref. to MOEE Water Management document dated Feb.1999								
N/A = Not Applicable								
(1) RDL exceeds criteria								



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID			LKX802		
Sampling Date			2019/11/27 10:15		
COC Number			747806-01-01		
	UNITS	Criteria	SW1	RDL	QC Batch
Metals					
Total Aluminum (Al)	ug/L	-	96	5.0	6473169
Total Antimony (Sb)	ug/L	20	<0.50	0.50	6473169
Total Arsenic (As)	ug/L	100	<1.0	1.0	6473169
Total Barium (Ba)	ug/L	-	49	2.0	6473169
Total Beryllium (Be)	ug/L	11	<0.50	0.50	6473169
Total Bismuth (Bi)	ug/L	-	<1.0	1.0	6473169
Total Boron (B)	ug/L	200	68	10	6473169
Total Cadmium (Cd)	ug/L	0.2	<0.10	0.10	6473169
Dissolved Calcium (Ca)	ug/L	-	180000	200	6472379
Total Calcium (Ca)	ug/L	-	180000	200	6473169
Total Chromium (Cr)	ug/L	-	<5.0	5.0	6473169
Total Cobalt (Co)	ug/L	0.9	<0.50	0.50	6473169
Total Copper (Cu)	ug/L	5	1.1	1.0	6473169
Total Iron (Fe)	ug/L	300	260	100	6475269
Total Lead (Pb)	ug/L	5	<0.50	0.50	6473169
Total Lithium (Li)	ug/L	-	9.4	5.0	6473169
Dissolved Magnesium (Mg)	ug/L	-	13000	50	6472379
Total Magnesium (Mg)	ug/L	-	13000	50	6473169
Total Manganese (Mn)	ug/L	-	50	2.0	6473169
Total Molybdenum (Mo)	ug/L	40	<0.50	0.50	6473169
Total Nickel (Ni)	ug/L	25	<1.0	1.0	6473169
Dissolved Potassium (K)	ug/L	-	2600	200	6472379
Total Potassium (K)	ug/L	-	2400	200	6473169
Total Selenium (Se)	ug/L	100	<2.0	2.0	6473169
Total Silicon (Si)	ug/L	-	2400	50	6473169
Total Silver (Ag)	ug/L	0.1	<0.10	0.10	6473169
Dissolved Sodium (Na)	ug/L	-	71000	100	6472379
Total Sodium (Na)	ug/L	-	71000	100	6473169
Total Strontium (Sr)	ug/L	-	560	1.0	6473169
No Fill	No Exceedance				
Grey	Exceeds 1 criteria policy/level				
Black	Exceeds both criteria/levels				
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
Criteria: Ontario Provincial Water Quality Objectives					
Ref. to MOEE Water Management document dated Feb.1999					



ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID			LKX802		
Sampling Date			2019/11/27 10:15		
COC Number			747806-01-01		
	UNITS	Criteria	SW1	RDL	QC Batch
Total Tellurium (Te)	ug/L	-	<1.0	1.0	6473169
Total Thallium (Tl)	ug/L	0.3	<0.050	0.050	6473169
Total Tin (Sn)	ug/L	-	<1.0	1.0	6473169
Total Titanium (Ti)	ug/L	-	7.0	5.0	6473169
Total Tungsten (W)	ug/L	30	<1.0	1.0	6473169
Total Uranium (U)	ug/L	5	2.0	0.10	6473169
Total Vanadium (V)	ug/L	6	1.4	0.50	6473169
Total Zinc (Zn)	ug/L	30	<5.0	5.0	6473169
Total Zirconium (Zr)	ug/L	4	<1.0	1.0	6473169
No Fill	No Exceedance				
Grey	Exceeds 1 criteria policy/level				
Black	Exceeds both criteria/levels				
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
Criteria: Ontario Provincial Water Quality Objectives					
Ref. to MOEE Water Management document dated Feb.1999					



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

TEST SUMMARY

BV Labs ID: LKX802
Sample ID: SW1
Matrix: Water

Collected: 2019/11/27
Shipped:
Received: 2019/11/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6469649	N/A	2019/11/29	Surinder Rai
Chloride by Automated Colourimetry	KONE	6472381	N/A	2019/12/02	Deonarine Ramnarine
Conductivity	AT	6469402	N/A	2019/11/29	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6470425	N/A	2019/11/29	Mandeep Kaur
Fluoride	ISE	6469652	2019/11/28	2019/11/29	Surinder Rai
Hardness (calculated as CaCO3)		6468353	N/A	2019/12/04	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	6472379	2019/11/30	2019/12/03	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	6473169	N/A	2019/12/02	Matthew Ritenburg
Anion and Cation Sum	CALC	6469415	N/A	2019/12/04	Automated Statchk
Total Ammonia-N	LACH/NH4	6471248	N/A	2019/12/03	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6469216	N/A	2019/11/29	Chandra Nandlal
Total Oil and Grease	BAL	6477732	2019/12/04	2019/12/04	Sukhardey Pal Singh Khangura
pH	AT	6469653	2019/11/28	2019/11/29	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6473087	N/A	2019/12/02	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6472383	N/A	2019/12/02	Deonarine Ramnarine
Total Dissolved Solids	BAL	6472495	2019/11/30	2019/12/03	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6471379	2019/11/29	2019/12/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6473524	2019/12/02	2019/12/02	Shivani Shivani
Total Suspended Solids	BAL	6471536	2019/11/29	2019/12/02	Xinyue (Sarah) Hou

BV Labs ID: LKX802 Dup
Sample ID: SW1
Matrix: Water

Collected: 2019/11/27
Shipped:
Received: 2019/11/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6469649	N/A	2019/11/29	Surinder Rai
Conductivity	AT	6469402	N/A	2019/11/29	Surinder Rai
Fluoride	ISE	6469652	2019/11/28	2019/11/29	Surinder Rai
pH	AT	6469653	2019/11/28	2019/11/29	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6473087	N/A	2019/12/02	Bramdeo Motiram



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

GENERAL COMMENTS

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

Package 1	6.7°C
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Sample LKX802, Total Metals Analysis by ICPMS: Test repeated.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6469216	C_N	Matrix Spike	Nitrite (N)	2019/11/29		116	%	80 - 120
			Nitrate (N)	2019/11/29		107	%	80 - 120
6469216	C_N	Spiked Blank	Nitrite (N)	2019/11/29		111	%	80 - 120
			Nitrate (N)	2019/11/29		97	%	80 - 120
6469216	C_N	Method Blank	Nitrite (N)	2019/11/29	<0.010		mg/L	
			Nitrate (N)	2019/11/29	<0.10		mg/L	
6469216	C_N	RPD	Nitrite (N)	2019/11/29	NC		%	20
			Nitrate (N)	2019/11/29	0.26		%	20
6469402	SAU	Spiked Blank	Conductivity	2019/11/29		101	%	85 - 115
6469402	SAU	Method Blank	Conductivity	2019/11/29	<0.001		mS/cm	
6469402	SAU	RPD [LKX802-02]	Conductivity	2019/11/29	0.25		%	25
6469649	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2019/11/29		98	%	85 - 115
6469649	SAU	Method Blank	Alkalinity (Total as CaCO3)	2019/11/29	<1.0		mg/L	
6469649	SAU	RPD [LKX802-02]	Alkalinity (Total as CaCO3)	2019/11/29	0.97		%	20
6469652	SAU	Matrix Spike [LKX802-02]	Fluoride (F-)	2019/11/29		104	%	80 - 120
6469652	SAU	Spiked Blank	Fluoride (F-)	2019/11/29		99	%	80 - 120
6469652	SAU	Method Blank	Fluoride (F-)	2019/11/29	<0.10		mg/L	
6469652	SAU	RPD [LKX802-02]	Fluoride (F-)	2019/11/29	3.5		%	20
6469653	SAU	Spiked Blank	pH	2019/11/29		102	%	98 - 103
6469653	SAU	RPD [LKX802-02]	pH	2019/11/29	0.049		%	N/A
6470425	KRM	Matrix Spike	Dissolved Organic Carbon	2019/11/29		100	%	80 - 120
6470425	KRM	Spiked Blank	Dissolved Organic Carbon	2019/11/29		102	%	80 - 120
6470425	KRM	Method Blank	Dissolved Organic Carbon	2019/11/29	<0.50		mg/L	
6470425	KRM	RPD	Dissolved Organic Carbon	2019/11/29	0.51		%	20
6471248	MT4	Matrix Spike	Total Ammonia-N	2019/12/03		102	%	75 - 125
6471248	MT4	Spiked Blank	Total Ammonia-N	2019/12/03		100	%	80 - 120
6471248	MT4	Method Blank	Total Ammonia-N	2019/12/03	<0.050		mg/L	
6471248	MT4	RPD	Total Ammonia-N	2019/12/03	NC		%	20
6471379	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/12/03		102	%	80 - 120
6471379	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/12/03		105	%	80 - 120
6471379	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/12/03		100	%	80 - 120
6471379	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/12/03	<0.10		mg/L	
6471379	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2019/12/03	NC		%	20
6471536	XH1	QC Standard	Total Suspended Solids	2019/12/02		97	%	85 - 115
6471536	XH1	Method Blank	Total Suspended Solids	2019/12/02	<10		mg/L	
6471536	XH1	RPD	Total Suspended Solids	2019/12/02	0.60		%	25
6472379	ADA	Matrix Spike	Dissolved Calcium (Ca)	2019/12/03		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2019/12/03		NC	%	80 - 120
			Dissolved Potassium (K)	2019/12/03		97	%	80 - 120
			Dissolved Sodium (Na)	2019/12/03		NC	%	80 - 120
			Dissolved Sodium (Na)	2019/12/03		92	%	80 - 120
6472379	ADA	Spiked Blank	Dissolved Calcium (Ca)	2019/12/03		100	%	80 - 120
			Dissolved Magnesium (Mg)	2019/12/03		96	%	80 - 120
			Dissolved Potassium (K)	2019/12/03		98	%	80 - 120
			Dissolved Sodium (Na)	2019/12/03		92	%	80 - 120
			Dissolved Sodium (Na)	2019/12/03		92	%	80 - 120
6472379	ADA	Method Blank	Dissolved Calcium (Ca)	2019/12/03	<200		ug/L	
			Dissolved Magnesium (Mg)	2019/12/03	<50		ug/L	
			Dissolved Potassium (K)	2019/12/03	<200		ug/L	
			Dissolved Sodium (Na)	2019/12/03	<100		ug/L	
			Dissolved Sodium (Na)	2019/12/03	<100		ug/L	
6472379	ADA	RPD	Dissolved Calcium (Ca)	2019/12/03	2.1		%	20
			Dissolved Magnesium (Mg)	2019/12/03	2.1		%	20
			Dissolved Potassium (K)	2019/12/03	1.4		%	20



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Sodium (Na)	2019/12/03	0.66		%	20
6472381	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2019/12/02		NC	%	80 - 120
6472381	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2019/12/02		105	%	80 - 120
6472381	DRM	Method Blank	Dissolved Chloride (Cl-)	2019/12/02	<1.0		mg/L	
6472381	DRM	RPD	Dissolved Chloride (Cl-)	2019/12/02	0.49		%	20
6472383	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/12/02		106	%	75 - 125
6472383	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/12/02		99	%	80 - 120
6472383	DRM	Method Blank	Dissolved Sulphate (SO4)	2019/12/02	<1.0		mg/L	
6472383	DRM	RPD	Dissolved Sulphate (SO4)	2019/12/02	0.66		%	20
6472495	XH1	QC Standard	Total Dissolved Solids	2019/12/03		100	%	90 - 110
6472495	XH1	Method Blank	Total Dissolved Solids	2019/12/03	<10		mg/L	
6472495	XH1	RPD	Total Dissolved Solids	2019/12/03	1.2		%	25
6473087	BMO	Matrix Spike [LKX802-07]	Phenols-4AAP	2019/12/02		97	%	80 - 120
6473087	BMO	Spiked Blank	Phenols-4AAP	2019/12/02		96	%	80 - 120
6473087	BMO	Method Blank	Phenols-4AAP	2019/12/02	<0.0010		mg/L	
6473087	BMO	RPD [LKX802-07]	Phenols-4AAP	2019/12/02	NC		%	20
6473169	MRG	Matrix Spike	Total Aluminum (Al)	2019/12/02		120	%	80 - 120
			Total Antimony (Sb)	2019/12/02		102	%	80 - 120
			Total Arsenic (As)	2019/12/02		103	%	80 - 120
			Total Barium (Ba)	2019/12/02		97	%	80 - 120
			Total Beryllium (Be)	2019/12/02		102	%	80 - 120
			Total Bismuth (Bi)	2019/12/02		82	%	80 - 120
			Total Boron (B)	2019/12/02		94	%	80 - 120
			Total Cadmium (Cd)	2019/12/02		98	%	80 - 120
			Total Calcium (Ca)	2019/12/02		NC	%	80 - 120
			Total Chromium (Cr)	2019/12/02		97	%	80 - 120
			Total Cobalt (Co)	2019/12/02		97	%	80 - 120
			Total Copper (Cu)	2019/12/02		99	%	80 - 120
			Total Lead (Pb)	2019/12/02		91	%	80 - 120
			Total Lithium (Li)	2019/12/02		100	%	80 - 120
			Total Magnesium (Mg)	2019/12/02		96	%	80 - 120
			Total Manganese (Mn)	2019/12/02		NC	%	80 - 120
			Total Molybdenum (Mo)	2019/12/02		101	%	80 - 120
			Total Nickel (Ni)	2019/12/02		95	%	80 - 120
			Total Potassium (K)	2019/12/02		98	%	80 - 120
			Total Selenium (Se)	2019/12/02		102	%	80 - 120
			Total Silicon (Si)	2019/12/02		99	%	80 - 120
			Total Silver (Ag)	2019/12/02		95	%	80 - 120
			Total Sodium (Na)	2019/12/02		NC	%	80 - 120
			Total Strontium (Sr)	2019/12/02		96	%	80 - 120
			Total Tellurium (Te)	2019/12/02		101	%	80 - 120
			Total Thallium (Tl)	2019/12/02		90	%	80 - 120
			Total Tin (Sn)	2019/12/02		99	%	80 - 120
			Total Titanium (Ti)	2019/12/02		99	%	80 - 120
			Total Tungsten (W)	2019/12/02		97	%	80 - 120
			Total Uranium (U)	2019/12/02		86	%	80 - 120
			Total Vanadium (V)	2019/12/02		101	%	80 - 120
			Total Zinc (Zn)	2019/12/02		100	%	80 - 120
			Total Zirconium (Zr)	2019/12/02		101	%	80 - 120
6473169	MRG	Spiked Blank	Total Aluminum (Al)	2019/12/02		99	%	80 - 120
			Total Antimony (Sb)	2019/12/02		101	%	80 - 120



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Arsenic (As)	2019/12/02		102	%	80 - 120
			Total Barium (Ba)	2019/12/02		98	%	80 - 120
			Total Beryllium (Be)	2019/12/02		102	%	80 - 120
			Total Bismuth (Bi)	2019/12/02		85	%	80 - 120
			Total Boron (B)	2019/12/02		97	%	80 - 120
			Total Cadmium (Cd)	2019/12/02		100	%	80 - 120
			Total Calcium (Ca)	2019/12/02		101	%	80 - 120
			Total Chromium (Cr)	2019/12/02		98	%	80 - 120
			Total Cobalt (Co)	2019/12/02		98	%	80 - 120
			Total Copper (Cu)	2019/12/02		100	%	80 - 120
			Total Lead (Pb)	2019/12/02		95	%	80 - 120
			Total Lithium (Li)	2019/12/02		102	%	80 - 120
			Total Magnesium (Mg)	2019/12/02		97	%	80 - 120
			Total Manganese (Mn)	2019/12/02		98	%	80 - 120
			Total Molybdenum (Mo)	2019/12/02		100	%	80 - 120
			Total Nickel (Ni)	2019/12/02		98	%	80 - 120
			Total Potassium (K)	2019/12/02		98	%	80 - 120
			Total Selenium (Se)	2019/12/02		104	%	80 - 120
			Total Silicon (Si)	2019/12/02		99	%	80 - 120
			Total Silver (Ag)	2019/12/02		97	%	80 - 120
			Total Sodium (Na)	2019/12/02		96	%	80 - 120
			Total Strontium (Sr)	2019/12/02		96	%	80 - 120
			Total Tellurium (Te)	2019/12/02		103	%	80 - 120
			Total Thallium (Tl)	2019/12/02		93	%	80 - 120
			Total Tin (Sn)	2019/12/02		97	%	80 - 120
			Total Titanium (Ti)	2019/12/02		98	%	80 - 120
			Total Tungsten (W)	2019/12/02		98	%	80 - 120
			Total Uranium (U)	2019/12/02		86	%	80 - 120
			Total Vanadium (V)	2019/12/02		99	%	80 - 120
			Total Zinc (Zn)	2019/12/02		103	%	80 - 120
			Total Zirconium (Zr)	2019/12/02		101	%	80 - 120
6473169	MRG	Method Blank	Total Aluminum (Al)	2019/12/02	<5.0		ug/L	
			Total Antimony (Sb)	2019/12/02	<0.50		ug/L	
			Total Arsenic (As)	2019/12/02	<1.0		ug/L	
			Total Barium (Ba)	2019/12/02	<2.0		ug/L	
			Total Beryllium (Be)	2019/12/02	<0.50		ug/L	
			Total Bismuth (Bi)	2019/12/02	<1.0		ug/L	
			Total Boron (B)	2019/12/02	<10		ug/L	
			Total Cadmium (Cd)	2019/12/02	<0.10		ug/L	
			Total Calcium (Ca)	2019/12/02	<200		ug/L	
			Total Chromium (Cr)	2019/12/02	<5.0		ug/L	
			Total Cobalt (Co)	2019/12/02	<0.50		ug/L	
			Total Copper (Cu)	2019/12/02	<1.0		ug/L	
			Total Lead (Pb)	2019/12/02	<0.50		ug/L	
			Total Lithium (Li)	2019/12/02	<5.0		ug/L	
			Total Magnesium (Mg)	2019/12/02	<50		ug/L	
			Total Manganese (Mn)	2019/12/02	2.6,		ug/L	
					RDL=2.0			
			Total Molybdenum (Mo)	2019/12/02	<0.50		ug/L	
			Total Nickel (Ni)	2019/12/02	<1.0		ug/L	
			Total Potassium (K)	2019/12/02	<200		ug/L	



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2019/12/02	<2.0		ug/L	
			Total Silicon (Si)	2019/12/02	<50		ug/L	
			Total Silver (Ag)	2019/12/02	<0.10		ug/L	
			Total Sodium (Na)	2019/12/02	<100		ug/L	
			Total Strontium (Sr)	2019/12/02	<1.0		ug/L	
			Total Tellurium (Te)	2019/12/02	<1.0		ug/L	
			Total Thallium (Tl)	2019/12/02	<0.050		ug/L	
			Total Tin (Sn)	2019/12/02	<1.0		ug/L	
			Total Titanium (Ti)	2019/12/02	<5.0		ug/L	
			Total Tungsten (W)	2019/12/02	<1.0		ug/L	
			Total Uranium (U)	2019/12/02	<0.10		ug/L	
			Total Vanadium (V)	2019/12/02	<0.50		ug/L	
			Total Zinc (Zn)	2019/12/02	<5.0		ug/L	
			Total Zirconium (Zr)	2019/12/02	<1.0		ug/L	
6473169	MRG	RPD	Total Boron (B)	2019/12/02	1.3		%	20
			Total Calcium (Ca)	2019/12/02	2.1		%	20
			Total Magnesium (Mg)	2019/12/02	3.4		%	20
			Total Potassium (K)	2019/12/02	2.5		%	20
			Total Sodium (Na)	2019/12/02	3.2		%	20
			Total Zinc (Zn)	2019/12/02	2.2		%	20
6473524	SSV	Matrix Spike	Total Phosphorus	2019/12/02		91	%	80 - 120
6473524	SSV	QC Standard	Total Phosphorus	2019/12/02		93	%	80 - 120
6473524	SSV	Spiked Blank	Total Phosphorus	2019/12/02		92	%	80 - 120
6473524	SSV	Method Blank	Total Phosphorus	2019/12/02	<0.020		mg/L	
6473524	SSV	RPD	Total Phosphorus	2019/12/02	0.23		%	20
6475269	PBA	Matrix Spike	Total Iron (Fe)	2019/12/03		102	%	80 - 120
6475269	PBA	Spiked Blank	Total Iron (Fe)	2019/12/03		98	%	80 - 120
6475269	PBA	Method Blank	Total Iron (Fe)	2019/12/03	<100		ug/L	
6475269	PBA	RPD	Total Iron (Fe)	2019/12/03	3.2		%	20
6477732	SPK	Spiked Blank	Total Oil & Grease	2019/12/04		97	%	85 - 115
6477732	SPK	RPD	Total Oil & Grease	2019/12/04	1.8		%	25
6477732	SPK	Method Blank	Total Oil & Grease	2019/12/04	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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).



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Brad Newman", written over a horizontal line.

Brad Newman, Scientific Service Specialist

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



BUREAU
VERITAS

BV Labs Job #: B9X5890
Report Date: 2019/12/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: CO

**Exceedence Summary Table – Prov. Water Quality Obj.
Detection Limit Exceedences**

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	Units
SW1	LKX802-05	Total Phosphorus	0.01	<0.020	0.020	mg/L
The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.						



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