



REPORT

Environmental Compliance Approval Quarterly Monitoring Report (May to August)

McCarthy Quarry

Submitted to:

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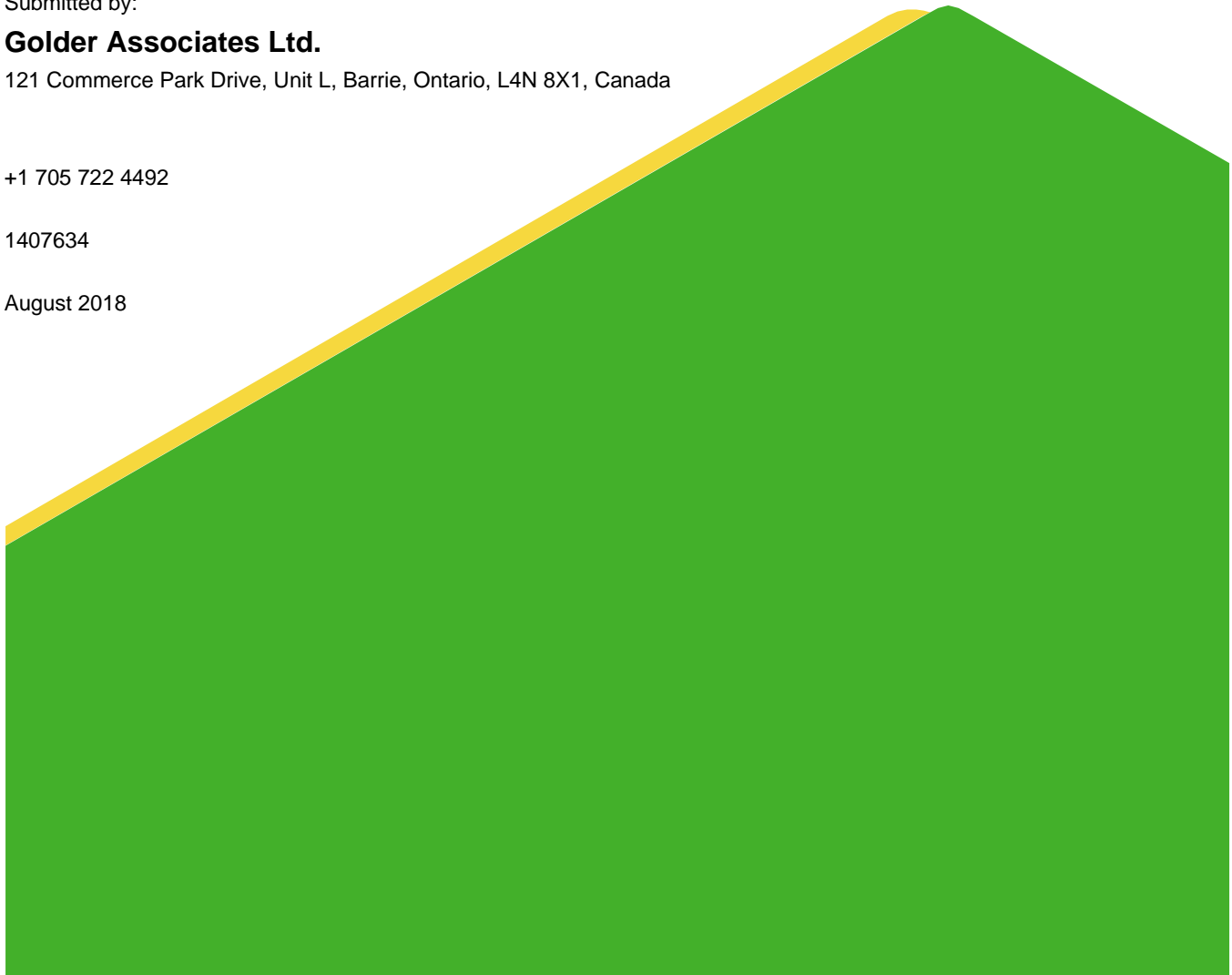
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1407634

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Appendix A – ECA No. 4731-987KM8

APPENDIX B

Appendix B – 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 Environmental Compliance Approval (ECA) No. 4731-987KM8 issued on October 15, 2013 requires this task. A copy of the ECA No. 4731-987KM8 is found in Appendix A.

The following report addresses the requirements described in Sections 7 and 8 of the ECA. Included herein are a brief background, summary and discussion of the sampling results and data collected on-site during each sampling event.

2.0 BACKGROUND

The McCarthy Quarry dewatering system consists of the collection of groundwater and surface water (hereafter referred to as “quarry discharge”) at the base of the quarry floor in a quarry sump which is pumped to a settling pond, at grade, to the south of the active quarry area (Figure 1). The sump is equipped with a 4-inch Grindex pump which is rated at 35 L/sec and is attached to a 4-inch (101 mm) diameter discharge line. Water is pumped from the quarry floor up the quarry face to a 4-inch (101 mm) diameter pipeline that directs the water to the 14,000 m³ settling pond. The water in the settling pond is equipped with a Hickenbottom control structure that discharges the water 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 to the Talbot River, which discharges into Lake Simcoe.

The dewatering activities from the McCarthy Quarry are currently carried out under the existing ECA No. 4731-987KM8 issued on October 15, 2013. Under the current ECA Coco is permitted to pump water from the quarry sump at a rate of 4,545 L/min (76 L/sec).

3.0 QUARRY DISCHARGE MONITORING PLAN

Weekly monitoring of the effluent is required by the ECA at three locations, as shown on Figure 1:

- The outfall of the settling pond (labelled as McCarthy Pond);
- The culvert along Concession Road 1 at the McCarthy property (SW1) downstream of the McCarthy Pond discharge location; and,
- 260 m north of the intersection of Concession Road 1 and the Mara Eldon Boundary Road (labelled as SW2) representing upstream conditions.

Weekly quarry discharge monitoring is required per Section 7(2) for Total Suspended Solids (TSS), Oil and Grease, Phenolics (4AAP) and pH at the McCarthy Pond. Additional water quality sampling is required under Section 7(3) at a semi-annual frequency at all three locations, recognizing that, as of April 24, 2014 this monitoring was reduced from weekly sampling frequency to a semi-annual frequency following one year of quarry operation according to Section 7(7). The parameters required for semi-annual water quality monitoring at all three locations are listed in Table 3 of the ECA. Monthly acute lethality is also required at the McCarthy Pond under Section 8.

As per Section 7(8) an inline flow meter is installed in the discharge line of the sump pump in order to measure continuous flow rates. The flow rates are recorded and provided to Golder by staff at McCarthy Quarry.

The weekly quarry discharge samples (Section 7(2)) were collected by staff at the McCarthy Quarry. The semi-annual water quality samples (Section 7(3) and Section 7(7)) were collected by Golder. Both the weekly and semi-annual water quality samples were sent to Maxxam Analytics Laboratory for analysis. Additionally, the monthly lethality samples were collected by Golder and sent to AGAT Laboratories Ltd.

The weekly water quality sample was not collected from the McCarthy Pond on the week of April 30 to May 4, May 7 to 11, June 18 to 22, June 25 to 29, July 2 to 6, July 9 to 13, July 16 to 20 and July 23 to 27, 2018. In addition, the monthly lethality sample was not collected from the McCarthy Pond during the months of June and July 2018 as there was no quarry discharge at the time of sampling.

4.0 QUARRY DISCHARGE MONITORING RESULTS

All laboratory certificates of analysis for the May to August 2018 monitoring period are included in Appendix B. Results of the quarry discharge monitoring are summarized below:

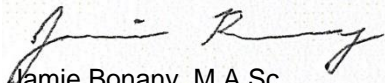
- The TSS, pH, Oil and Grease and Phenol (4AAP) concentrations were all below the daily concentration limits of the ECA (Table 1);
- The TSS, Oil and Grease and Phenol (4AAP) concentrations were all below the monthly concentration limits of the ECA (Table 2);
- The semi-annual surface water sampling results were below the PWQO, with the exception of phosphors at SW1 and iron at SW2 (Table 3);
- The quarry discharge between May and August, 2018 was found to be non-lethal to rainbow trout and *Daphnia magna* (Table 4). Zero rainbow trout and zero *Daphnia* died during lethality testing during the past quarter.; and,
- The discharge rate between May and August, 2018 was below the permitted rate of 4,545 L/min (76 L/sec) (Table 5).

5.0 SUMMARY AND RECOMMENDATIONS

All samples met the daily and monthly concentration limits of the ECA No. 4731-987KM8.

Signature Page

Golder Associates Ltd.



Jamie Bonany, M.A.Sc.
Project Scientist



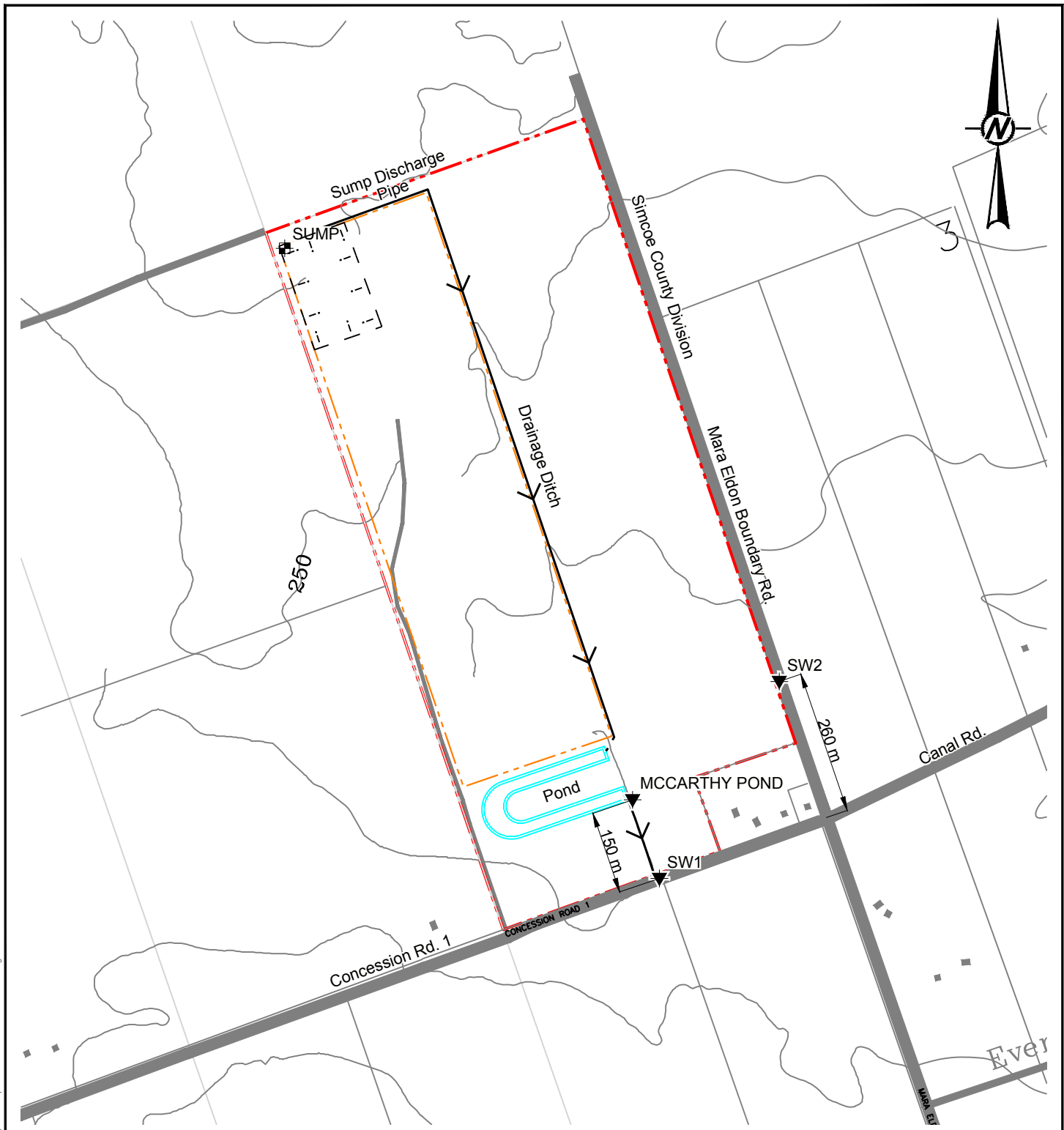
John Easton, M.Sc., P.Geol.
Associate Senior Hydrogeologist

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 | 2015-05-14 |
| | PREPARED | STB |
| | DESIGN | |
| | REVIEW | |
| | APPROVED | |



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

Path: \\golder\gbs\gbl\Barrie\CAD\Projects\2014\14-07634 (Barrie, Coco Enviro and Hydro)\18AA-1 | File Name: 140763418AA SITE.dwg

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

•
Tables

Table 1: McCarthy Pond Weekly Water Quality Results (May to August 2018)

| | Unit | Reportable Detection Limit (RDL) | PWQO ¹ | Daily Concentration Limit ² | McCarthy Quarry | | | | |
|------------------------|------|----------------------------------|-------------------|--|-----------------|-----------|-----------|-----------|-----------|
| Sample ID | | | | | Pond | | | | |
| Date | | | | | 18-May-18 | 24-May-18 | 31-May-18 | 07-Jun-18 | 14-Jun-18 |
| pH | pH | n/a | | 6.0-9.5 | 8.19 | 8.38 | 8.31 | 8.73 | 8.81 |
| Total Suspended Solids | mg/L | 1 | | 30 | 3 | 3 | 3 | 5 | 5 |
| Total Oil and Grease | mg/L | 0.5 | Note 3 | 30 | 0.9 | <0.5 | 0.6 | 2.7 | 3.1 |
| Phenols (4AAP) | mg/L | <0.0010 | | 0.04 | <0.001 | 0.0010 | 0.0011 | <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 (May to August 2018)

| Sample ID | Unit | Reportable Detection Limit (RDL) | PWQO ¹ | Monthly Concentration Limit ² | McCarthy Quarry | | |
|------------------------|------|----------------------------------|-------------------|--|-----------------|--------|------|
| | | | | | Pond | | |
| Date | | | | | May | June | July |
| Total Suspended Solids | mg/L | 1 | | 15 | 3.0 | 5.0 | - |
| Total Oil and Grease | mg/L | 0.5 | Note 3 | 15 | 0.7 | 2.9 | - |
| Phenols (4AAP) | mg/L | <0.0010 | | 0.02 | 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 (May 2018)

| Sample ID | Unit | Reportable Detection Limit (RDL) | PWQO ¹ | Interim PWQO ² | PTTW Effluent Limits | McCarthy Quarry | | |
|--|-------|----------------------------------|--------------------|---------------------------|----------------------|--|-----------|-----------|
| | | | | | | Pond | SW1 | SW2 |
| Date | | | | | | 30-May-18 | 30-May-18 | 30-May-18 |
| Field Measured Parameters | | | | | | | | |
| Conductivity | µS/cm | | | | | 853 | 910 | 636 |
| pH | pH | n/a | 6.5-8.5 | | 6.0-9.5 | 8.55 | 8.27 | 7.57 |
| Temperature | °C | n/a | | | | 26.4 | 29.8 | 21.7 |
| Calculated Parameters | | | | | | | | |
| Hardness (CaCO ₃) | mg/L | 1.0 | | | | 240 | 240 | 340 |
| Inorganics | | | | | | | | |
| Total Ammonia-N | mg/L | 0.050 | | | | 0.16 | 0.14 | 0.095 |
| Conductivity | ms/cm | 0.001 | | | | 0.848 | 0.841 | 0.683 |
| Total Dissolved Solids | mg/L | 10 | | | | 525 | 520 | 425 |
| Fluoride (F ⁻) | mg/L | 0.10 | | | | 0.50 | 0.49 | <0.10 |
| Total Kjeldahl Nitrogen (TKN) | mg/L | 0.10 | | | | 0.60 | 0.57 | 0.63 |
| Dissolved Organic Carbon | mg/L | 0.50 | | | | 7.5 | 7.9 | 20 |
| pH | pH | N/A | 6.5-8.5 | | 6.0-9.5 | 8.21 | 8.20 | 8.11 |
| Phenols-4AAP | mg/L | 0.0010 | | | 0.04 | <0.0010 | <0.0010 | <0.0010 |
| Total Phosphorus | mg/L | 0.020 | | 0.02 ^{2b} | | <0.020 | 0.021 | <0.10 |
| Total Suspended Solids | mg/L | 10 | | | 30 | <10 | <10 | <10 |
| Dissolved Sulphate (SO ₄) | mg/L | 1 | | | | 230 | 220 | 20 |
| Alkalinity (Total as CaCO ₃) | mg/L | 1.0 | | | | 110 | 120 | 330 |
| Dissolved Chloride (Cl) | mg/L | 1 | | | | 60 | 50 | 21 |
| Nitrite (N) | mg/L | 0.010 | | | | <0.010 | <0.010 | <0.010 |
| Nitrate (N) | mg/L | 0.10 | | | | <0.10 | <0.10 | <0.10 |
| Petroleum Hydrocarbons | | | | | | | | |
| Total Oil & Grease | mg/L | 0.50 | Note 3 | | 30 | <0.50 | <0.50 | <0.50 |
| Metals | | | | | | | | |
| Total Arsenic (As) | ug/L | 1 | 100 | 5 | | <1.0 | <1.0 | 1.0 |
| Total Cadmium (Cd) | ug/L | 0.1 | 0.2 | 0.1-0.5 ^{5d} | | <0.10 | <0.10 | <0.10 |
| Dissolved Calcium (Ca) | mg/L | 0.05 | | | | 53 | 54 | 120 |
| Total Calcium (Ca) | ug/L | 200 | | | | 51000 | 53000 | 120000 |
| Total Chromium (Cr) | ug/L | 5 | 1-89 ^{5e} | | | <5.0 | <5.0 | <5.0 |
| Total Copper (Cu) | ug/L | 1 | 5 | 1-5 ^{5f} | | <1.0 | <1.0 | <1.0 |
| Total Iron (Fe) | ug/L | 100 | 300 | | | <100 | 160 | 370 |
| Total Lead (Pb) | ug/L | 0.5 | 5-25 ^{5g} | 1-5 ^{5h} | | <0.50 | <0.50 | <0.50 |
| Dissolved Magnesium (Mg) | mg/L | 0.05 | | | | 26 | 25 | 7.0 |
| Total Magnesium (Mg) | ug/L | 50 | | | | 25000 | 24000 | 7100 |
| Total Manganese (Mn) | ug/L | 2 | | | | 64 | 47 | 150 |
| Total Nickel (Ni) | ug/L | 1 | 25 | | | 1.5 | 1.3 | 1.2 |
| Dissolved Potassium (K) | mg/L | 1 | | | | 10 | 9 | 4 |
| Total Potassium (K) | ug/L | 200 | | | | 9300 | 8800 | 4200 |
| Dissolved Sodium (Na) | mg/L | 0.5 | | | | 78 | 74 | 18 |
| Total Sodium (Na) | ug/L | 100 | | | | 74000 | 71000 | 17000 |
| Total Zinc (Zn) | ug/L | 5 | 30 | 20 | | <5.0 | <5.0 | <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); <i>shaded cells and italics denote Interim PWQO exceedance</i>; 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. <i>Phosphorus (Interim)</i>: - 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: (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> | | |
| <p>5a. <i>Aluminum (Interim)</i>: - 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> | | | | | | <p>5c. <i>Beryllium</i>: If Hardness <75 mg/L (CaCO₃), use 11 ug/L If Hardness >75 mg/L (CaCO₃), use 1100 ug/L</p> <p>5d. <i>Cadmium (Interim)</i>: If Hardness 0-100 mg/L (CaCO₃), then use 0.1 ug/L If Hardness >100 mg/L (CaCO₃), then use 0.5 ug/L</p> <p>5e. <i>Chromium</i>: 1 ug/L for hexavalent chromium (Cr VI) 8.9 ug/L for trivalent chromium (Cr III)</p> <p>5f. <i>Copper (Interim)</i>: If Hardness as CaCO₃ (mg/L) is 0 - 20, then use 1 ug/L If Hardness as CaCO₃ (mg/L) is >20, then use 5 ug/L</p> <p>5g. <i>Lead</i>: If Alkalinity as CaCO₃ (mg/L) is < 20, then use 5 ug/L If Alkalinity as CaCO₃ (mg/L) is 20 to 40, use 10 ug/L If Alkalinity as CaCO₃ (mg/L) is 40 to 80, use 20 ug/L If Alkalinity as CaCO₃ (mg/L) is > 80, use 25 ug/L</p> <p>5h. <i>Lead (Interim)</i>: If Hardness as CaCO₃ (mg/L) is < 30, then use 1 ug/L If Hardness as CaCO₃ (mg/L) is 30 to 80, then use 3 ug/L If Hardness as CaCO₃ (mg/L) is > 80, then use 5 ug/L</p> | | |

Table 4: Lethality Monitoring at McCarthy Pond

| | Unit | Mortality Limit | McCarthy Quarry |
|------------------|-------------------|-----------------|------------------|
| Sample ID | | | Pond |
| Date | | | 30-May-18 |
| Daphnia Magna | % Mortality Rate* | <50% | 0 |
| Rainbow Trout | % Mortality Rate* | <50% | 0 |

* Test results represent acute lethality (100% effluent) of toxicants to Daphnia Magna and Rainbow Trout

Table 5: 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-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 2-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 3-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 4-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 5-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 6-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 7-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 8-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 9-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 10-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 11-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 12-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 13-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 14-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 15-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 16-May-18 | 7AM | 12PM | 18000 | 300 | 630,000 | 35 | 2,100 |
| 17-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 18-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 19-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 20-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 21-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 22-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 23-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 24-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 25-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 26-May-18 | 7AM | 12PM | 18000 | 300 | 630,000 | 35 | 2,100 |
| 27-May-18 | NO PUMP | | 0 | 0 | - | - | - |
| 28-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 29-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 30-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 31-May-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 1-Jun-18 | 7AM | 4PM | 32400 | 540 | 1,134,000 | 35 | 2,100 |
| 2-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 3-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 4-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 5-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 6-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 7-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |

Table 5: 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 |
| 8-Jun-18 | 7AM | 4PM | 32400 | 540 | 1,134,000 | 35 | 2,100 |
| 9-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 10-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 11-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 12-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 13-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 14-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 15-Jun-18 | 7AM | 4PM | 32400 | 540 | 1,134,000 | 35 | 2,100 |
| 16-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 17-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 18-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 19-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 20-Jun-18 | 7AM | 4PM | 32400 | 540 | 1,134,000 | 35 | 2,100 |
| 21-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 22-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 23-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 24-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 25-Jun-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 26-Jun-18 | 7AM | 2PM | 25200 | 420 | 882,000 | 35 | 2,100 |
| 27-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 28-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 29-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 30-Jun-18 | NO PUMP | | 0 | 0 | - | - | - |
| 1-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 2-Jul-18 | 7AM | 12PM | 18000 | 300 | 630,000 | 35 | 2,100 |
| 3-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 4-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 5-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 6-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 7-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 8-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 9-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 10-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 11-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 12-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 13-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 14-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |

Table 5: 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 |
| 15-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 16-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 17-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 18-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 19-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 20-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 21-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 22-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 23-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 24-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 25-Jul-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 26-Jul-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 27-Jul-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 28-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 29-Jul-18 | NO PUMP | | 0 | 0 | - | - | - |
| 30-Jul-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |
| 31-Jul-18 | 7AM | 5PM | 36000 | 600 | 1,260,000 | 35 | 2,100 |

APPENDIX A

**Appendix A – ECA No. 4731-
987KM8**



- AKossi
- GA

Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 4731-987KM8

Issue Date: October 15, 2013

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

Site Location: McCarthy Quarry
Lot 1, Concession 1, Original Township of Mara
Lot 1, Concession 1
Ramara Township, 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:

a sewage works for the collection, transmission, treatment and disposal of quarry water effluent from an aggregate 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;
- 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:

"Approval" means this entire document and 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 Barrie District Office of the Ministry;

"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 its successors and assignees;

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

"Quarterly" means all or part of a period of three consecutive months beginning on the first day of January, April, July or October;

"Semi-annually" means all or part of a period of six months beginning on the first day of January or July;

"Weekly" means a period of seven days, starting on Sunday and ending on Saturday; and

"Works" means the sewage works described in the Owner's application, this *Approval* and in the supporting documentation referred to herein, to the extent approved by this *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) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Approval* , the application for approval of the *Works* and the submitted supporting documents and plans and specifications as listed in this *Approval* .

(2) Where there is a conflict between a provision of any submitted document referred to in this *Approval* and the Conditions of this *Approval* , the Conditions in this *Approval* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

2. CHANGE OF OWNER

(1) The *Owner* shall notify the *District Manager* and the *Director* , in writing, of any of the following changes within seven (7) days of the change occurring:

(a) change of *Owner* or operating authority, or both;

(b) change of address of *Owner* or operating authority or address of new owner or operating authority;

(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 *Partnerships Registration Act* ;

(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 most current "Initial Notice or Notice of Change" (Form 1, 2 or 3 of O. Reg. 189, R.R.O. 1980, as amended from time to time), filed under the *Corporations Informations Act* 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 certificate, 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 will refer to this Approval's number.

3. CHANGES IN PROCESSES OR PROCESS MATERIALS

The *Owner* shall give written notice to the *District Manager* of any plans to change the processes or process materials in the *Owner's* enterprise serviced by the *Works* where the change may significantly alter the quantity or quality of the influent to or effluent from the *Works* , and no such changes shall be made unless with the written concurrence or approval of the *District Manager* .

4. OPERATIONS MANUAL

(1) The *Owner* shall prepare an operations manual prior to the commencement of operation of the sewage *Works* , that includes, but not necessarily 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 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 potential spill, bypasses and any other abnormal situations and for notifying the *District Manager* ; and

(e) complaint procedures for receiving and responding to public complaints.

(2) The *Owner* shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the sewage works. Upon request, the *Owner* shall make the manual available for inspection and copying by Ministry personnel.

(3) A copy of the operations manual required by subsection (1) shall be provided to the *Director* no later than **three (3) months** prior to the commencement of operation of the sewage works.

5. EFFLUENT LIMITS

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

| Effluent Parameter | Daily Concentration Limit (mg/L) | Monthly Average Concentration Limit (mg/L) |
|---------------------------|---|---|
| Column 1 | Column 2 | Column 3 |
| Total Suspended Solids | 30 | 15 |
| Oil and Grease | 30 | 15 |
| Phenolics (4AAP) | 0.04 | 0.02 |

(2) pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times.

(3) The *Owner* shall ensure that the quarry water effluent shall be non-lethal to rainbow trout and *Daphnia magna* at all times.

(4) For the purposes of determining compliance with and enforcing subsection (1), exceedance of a daily concentration is deemed to have occurred when any daily single grab sample, analyzed for a parameter named in Column 1 of Table 1, is greater than the corresponding daily concentration set in Column 2 of Table 1.

(5) For the purposes of determining compliance with and enforcing subsection (1), exceedance of a monthly average concentration is deemed to have occurred when the arithmetic mean concentration of all samples taken in a calendar month, analyzed for a parameter named in Column 1 of Table 1, is greater than the corresponding monthly average concentration set in Column 3 of Table 1.

(6) Non-compliance with respect to pH is deemed to have occurred when any single measurement is outside of the indicated range.

(7) For the purposes of determining compliance with and enforcing subsection (3), the effluent is deemed to be non-lethal if the test results, required pursuant to Condition 8, show mortality for no more than 50 percent of either test organism in each sample of undiluted effluent.

6. EFFLUENT - VISUAL OBSERVATIONS

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.

7. EFFLUENT MONITORING AND RECORDING

The *Owner* shall, upon commencement of operation of the sewage works, carry out the following sampling from the final effluent control point (i.e. the outfall of the settling pond which is approximately 150 metres north of Concession 1) at the commencement of effluent discharge and for the duration of the discharge period, as follows:

(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:

| Effluent Parameter | Frequency | Sample Type |
|---------------------------|------------------|--------------------|
| Total Suspended Solids | Weekly | Grab |
| Oil and Grease | Weekly | Grab |
| Phenolics (4AAP) | Weekly | Grab |

(3) The *Owner* shall collect effluent samples at the following locations and analyze for the parameters listed in Table 3 at a frequency of once per week:

- (a) Outfall of settling pond approximately 150 metres north of Concession 1 (i.e. end of pipe discharge);
- (b) Box culvert on Eldon-Ramara Townline approximately 260 metres north of intersection of Ramara Concession 1 and Eldon-Ramara Townline (i.e. upgradient of end of pipe discharge);

- (c) 80 centimetre CSP located at Concession 1 Road on McCarthy property (i.e. downgradient of end of pipe discharge).

| Table 3 - Effluent and Surface Water Monitoring | |
|---|---|
| Frequency | Weekly |
| 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 |

- (4) There shall be at least **four days** between successive sampling.
- (5) 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;
 - (b) the publication "Standard Methods for the Examination of Water and Wastewater" (17th edition) as amended from time to time by more recently published editions; and,
 - (c) in respect of any parameters not mentioned in (a) and (b), the written approval of the *District Manager* , shall be obtained prior to sampling.
- (6) The measurement frequencies specified in subsection (2) in respect of any parameter are minimum requirements which may, **after 48 months** of monitoring in accordance with this Condition, be modified by the *District Manager* in writing from time to time.
- (7) The measurement frequencies specified in subsection (3) in respect of any parameter shall be changed to semi-annually after one year of quarry operation.
- (8) A continuous flow measuring device shall be installed and maintained to measure the flowrate of the effluent from the sewage works, with an accuracy to within plus or minus 15 per cent of the actual flowrate for the entire design range of the flow measuring device and the *Owner* shall measure, record and calculate the flowrate for each effluent stream on each day of sampling.
- (9) The *Owner* shall retain for a minimum of **three (3) years** from the date of their creation, all records

and information related to or resulting from the monitoring activities required by this *Approval* .

8. LETHALITY MONITORING

(1) The *Owner* shall perform rainbow trout acute lethality test and *Daphnia magna* acute lethality test at least once a month on the quarry water effluent according to procedures published in Environment Canada publications entitled "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout", dated July 1990 and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* ", dated July 1990 and as updated from time to time.

(2) The acute lethality tests shall be carried out on a grab sample as a single concentration test using 100 per cent quarry water effluent.

(3) A minimum of two samples shall be tested for either test animal per each discharge period.

9. RECEIVER INSPECTION

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.

10. REPORTING

(1) One week prior to the start up of the operation of the *Works* , the *Owner* shall notify the *District Manager* (in writing) of the pending start up date.

(2) The *Owner* shall report to the *District Manager* or designate, any exceedance of any parameter specified in Condition 5 orally, forthwith, and in writing within seven (7) days of the exceedance.

(3) In addition to the obligations under Part X of the *Environmental Protection Act* , the *Owner* shall, within 10 working days of the occurrence of any spill, bypass or loss of any product, by product, intermediate product, oils, solvents, 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.

(4) The *Owner* shall submit quarterly reports of the information obtained under Conditions 7 and 8 within 30 days of the end of each quarter.

(5) The *Owner* shall prepare and submit a performance report to the *District Manager* on an annual basis within sixty (60) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following thereafter. 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 5, 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; and
- (e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment.

Schedule A

Environmental Compliance Approval (ECA) supporting documents:

1. Application for Approval of Industrial Sewage Works submitted by Thomas S. McCarthy dated July 21, 2001 and revised January 25, 2002;
2. McCarthy Property - Certificate of Approval Application prepared by Dixon Hydrogeology Limited dated July 2001;
3. Revised Permit to Take Water - McCarthy Property prepared by Dixon Hydrogeology Limited dated April 11, 2002;
4. Letter and attachments dated January 25, 2002 from John Easton of Dixon Hydrogeology Limited to Mohamed Dhalla of the Ministry of the Environment;
5. Letter and attachments dated April 1, 2002 from Dave Hulme of Dave T. Hulme Enterprises Inc. to Stefanos Habtom of the Ministry of the Environment;
6. Letter dated April 10, 2002 from John Easton of Dixon Hydrogeology Limited to Stefanos Habtom of the Ministry of the Environment;
7. Environmental Review Amended Tribunal Decision: 02-214/02-217 and 03-188/03-189, dated May 25, 2006 - Trent Talbot River Property Owners Association, Marchand Lamarre and Jodi McIntosh v. Director, Ministry of the Environment; and
8. Notification of Change of Address/Ownership dated June 29, 2012, MOE Reference Number 3620-8VQPTZ acknowledging change in company address/ownership from Thomas S. McCarty, Rural Route No.1 Brechin, Ontario, L0K 1B0 to QBJR Aggregates Inc., 949 Wilson Ave., Toronto, Ontario, M3K 1G.

1. 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;
2. 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:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. 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
 2 St. Clair Avenue West, Floor 12A
 Toronto, Ontario
 M4V 1L5

* 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) 314-4506 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 15th day of October, 2013



Edgardo Tovilla
 Director
 appointed for the purposes of Part II.1 of the
Environmental Protection Act

APPENDIX B

Appendix B – Water Quality Data

Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 628645-07-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/05/24
 Report #: R5169247
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8B8396

Received: 2018/05/18, 09:33

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | | Laboratory Method | Reference |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Animal and Vegetable Oil and Grease | 1 | N/A | 2018/05/24 | CAM SOP-00326 | EPA1664B m,SM5520B m |
| Total Oil and Grease | 1 | 2018/05/24 | 2018/05/24 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 1 | N/A | 2018/05/22 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 1 | N/A | 2018/05/23 | CAM SOP-00444 | OMOE E3179 m |
| Mineral/Synthetic O & G (TPH Heavy Oil) (1) | 1 | 2018/05/24 | 2018/05/24 | CAM SOP-00326 | EPA1664B m,SM5520F m |
| Low Level Total Suspended Solids | 1 | 2018/05/22 | 2018/05/23 | CAM SOP-00428 | SM 23 2540D m |

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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.

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. #: 628645-07-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/05/24
Report #: R5169247
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8B8396
Received: 2018/05/18, 09:33

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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

RESULTS OF ANALYSES OF WATER

| | | | | |
|--|--------------|--------------|------------|-----------------|
| Maxxam ID | | GST311 | | |
| Sampling Date | | 2018/05/18 | | |
| COC Number | | 628645-07-01 | | |
| | UNITS | POND | RDL | QC Batch |
| Calculated Parameters | | | | |
| Total Animal/Vegetable Oil and Grease | mg/L | 0.90 | 0.50 | 5537711 |
| Inorganics | | | | |
| pH | pH | 8.19 | N/A | 5540023 |
| Phenols-4AAP | mg/L | <0.0010 | 0.0010 | 5544420 |
| Total Suspended Solids | mg/L | 3 | 1 | 5541439 |
| Petroleum Hydrocarbons | | | | |
| Total Oil & Grease | mg/L | 0.90 | 0.50 | 5545156 |
| Total Oil & Grease Mineral/Synthetic | mg/L | <0.50 | 0.50 | 5545159 |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable | | | | |

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 5.3°C |
|-----------|-------|

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|--------------------------------------|---------------|---------|----------|-------|-----------|
| 5540023 | GTO | Spiked Blank | pH | 2018/05/22 | | 102 | % | 98 - 103 |
| 5540023 | GTO | RPD | pH | 2018/05/22 | 0.15 | | % | N/A |
| 5541439 | MJ1 | QC Standard | Total Suspended Solids | 2018/05/23 | | 100 | % | 85 - 115 |
| 5541439 | MJ1 | Method Blank | Total Suspended Solids | 2018/05/23 | <1 | | mg/L | |
| 5541439 | MJ1 | RPD | Total Suspended Solids | 2018/05/23 | 5.7 | | % | 25 |
| 5544420 | ZSK | Matrix Spike | Phenols-4AAP | 2018/05/23 | | 96 | % | 80 - 120 |
| 5544420 | ZSK | Spiked Blank | Phenols-4AAP | 2018/05/23 | | 96 | % | 80 - 120 |
| 5544420 | ZSK | Method Blank | Phenols-4AAP | 2018/05/23 | <0.0010 | | mg/L | |
| 5544420 | ZSK | RPD | Phenols-4AAP | 2018/05/23 | NC | | % | 20 |
| 5545156 | FA | Spiked Blank | Total Oil & Grease | 2018/05/24 | | 94 | % | 85 - 115 |
| 5545156 | FA | RPD | Total Oil & Grease | 2018/05/24 | 2.9 | | % | 25 |
| 5545156 | FA | Method Blank | Total Oil & Grease | 2018/05/24 | <0.50 | | mg/L | |
| 5545159 | FA | Spiked Blank | Total Oil & Grease Mineral/Synthetic | 2018/05/24 | | 95 | % | 85 - 115 |
| 5545159 | FA | RPD | Total Oil & Grease Mineral/Synthetic | 2018/05/24 | 3.2 | | % | 25 |
| 5545159 | FA | Method Blank | Total Oil & Grease Mineral/Synthetic | 2018/05/24 | <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 $\leq 2x$ RDL).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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

Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 641481-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/05/30
 Report #: R5184893
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8C4915

Received: 2018/05/25, 11:35

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Reference |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Animal and Vegetable Oil and Grease | 1 | N/A | 2018/05/29 | CAM SOP-00326 | EPA1664B m,SM5520B m |
| Total Oil and Grease | 1 | 2018/05/29 | 2018/05/29 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 1 | N/A | 2018/05/29 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 1 | N/A | 2018/05/29 | CAM SOP-00444 | OMOE E3179 m |
| Mineral/Synthetic O & G (TPH Heavy Oil) (1) | 1 | 2018/05/29 | 2018/05/29 | CAM SOP-00326 | EPA1664B m,SM5520F m |
| Low Level Total Suspended Solids | 1 | 2018/05/28 | 2018/05/29 | 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.

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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. #: 641481-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/05/30
Report #: R5184893
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8C4915
Received: 2018/05/25, 11:35

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

=====
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RESULTS OF ANALYSES OF WATER

| | | | | | |
|--|--------------|-----------------|---------------------|------------|-----------------|
| Maxxam ID | | | GUE378 | | |
| Sampling Date | | | 2018/05/24 13:32 | | |
| COC Number | | | 641481-04-01 | | |
| | UNITS | Criteria | POND | RDL | QC Batch |
| Calculated Parameters | | | | | |
| Total Animal/Vegetable Oil and Grease | mg/L | - | <0.50 | 0.50 | 5549703 |
| Inorganics | | | | | |
| pH | pH | 6.5:8.5 | 8.38 | N/A | 5552962 |
| Phenols-4AAP | mg/L | 0.001 | 0.0010 | 0.0010 | 5553922 |
| Total Suspended Solids | mg/L | - | 3 | 1 | 5550961 |
| Petroleum Hydrocarbons | | | | | |
| Total Oil & Grease | mg/L | - | <0.50 | 0.50 | 5553105 |
| Total Oil & Grease Mineral/Synthetic | mg/L | 0.5 | <0.50 | 0.50 | 5553112 |
| 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 | | | | | |

GENERAL COMMENTS

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

| | |
|-----------|--------|
| Package 1 | 16.7°C |
|-----------|--------|

Samples received with temp >10 C and analyses conducted with client's consent.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|--------------------------------------|---------------|---------|----------|-------|-----------|
| 5550961 | MJ1 | QC Standard | Total Suspended Solids | 2018/05/29 | | 98 | % | 85 - 115 |
| 5550961 | MJ1 | Method Blank | Total Suspended Solids | 2018/05/29 | <1 | | mg/L | |
| 5550961 | MJ1 | RPD | Total Suspended Solids | 2018/05/29 | 12 | | % | 25 |
| 5552962 | GTO | Spiked Blank | pH | 2018/05/29 | | 102 | % | 98 - 103 |
| 5552962 | GTO | RPD | pH | 2018/05/29 | 0.12 | | % | N/A |
| 5553105 | MA4 | Spiked Blank | Total Oil & Grease | 2018/05/29 | | 97 | % | 85 - 115 |
| 5553105 | MA4 | RPD | Total Oil & Grease | 2018/05/29 | 2.8 | | % | 25 |
| 5553105 | MA4 | Method Blank | Total Oil & Grease | 2018/05/29 | <0.50 | | mg/L | |
| 5553112 | MA4 | Spiked Blank | Total Oil & Grease Mineral/Synthetic | 2018/05/29 | | 96 | % | 85 - 115 |
| 5553112 | MA4 | RPD | Total Oil & Grease Mineral/Synthetic | 2018/05/29 | 1.6 | | % | 25 |
| 5553112 | MA4 | Method Blank | Total Oil & Grease Mineral/Synthetic | 2018/05/29 | <0.50 | | mg/L | |
| 5553922 | ZSK | Matrix Spike | Phenols-4AAP | 2018/05/29 | | 94 | % | 80 - 120 |
| 5553922 | ZSK | Spiked Blank | Phenols-4AAP | 2018/05/29 | | 96 | % | 80 - 120 |
| 5553922 | ZSK | Method Blank | Phenols-4AAP | 2018/05/29 | <0.0010 | | mg/L | |
| 5553922 | ZSK | RPD | Phenols-4AAP | 2018/05/29 | NC | | % | 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.

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 $\leq 2x$ RDL).

VALIDATION SIGNATURE PAGE

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



Brad Newman, Scientific Service Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 661829-01-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/06/07
 Report #: R5220975
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D1367

Received: 2018/06/01, 09:26

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | | Laboratory Method | Reference |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Animal and Vegetable Oil and Grease | 1 | N/A | 2018/06/05 | CAM SOP-00326 | EPA1664B m,SM5520B m |
| Total Oil and Grease | 1 | 2018/06/04 | 2018/06/04 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 1 | N/A | 2018/06/04 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 1 | N/A | 2018/06/06 | CAM SOP-00444 | OMOE E3179 m |
| Mineral/Synthetic O & G (TPH Heavy Oil) (1) | 1 | 2018/06/05 | 2018/06/05 | CAM SOP-00326 | EPA1664B m,SM5520F m |
| Low Level Total Suspended Solids | 1 | 2018/06/04 | 2018/06/05 | 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.

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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. #: 661829-01-01

Attention: Dawn Hoyle/Jamie Bonany

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121 Commerce Park Drive
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CANADA L4N 8X1

Report Date: 2018/06/07
Report #: R5220975
Version: 1 - Final

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Received: 2018/06/01, 09:26

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Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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RESULTS OF ANALYSES OF WATER

| | | | | | |
|--|--------------|-----------------|---------------------|------------|-----------------|
| Maxxam ID | | | GVQ055 | | |
| Sampling Date | | | 2018/05/31 11:56 | | |
| COC Number | | | 661829-01-01 | | |
| | UNITS | Criteria | POND | RDL | QC Batch |
| Calculated Parameters | | | | | |
| Total Animal/Vegetable Oil and Grease | mg/L | - | 0.60 | 0.50 | 5559212 |
| Inorganics | | | | | |
| pH | pH | 6.5:8.5 | 8.31 | N/A | 5561584 |
| Phenols-4AAP | mg/L | 0.001 | 0.0011 | 0.0010 | 5566472 |
| Total Suspended Solids | mg/L | - | 3 | 1 | 5562721 |
| Petroleum Hydrocarbons | | | | | |
| Total Oil & Grease | mg/L | - | 0.60 | 0.50 | 5562512 |
| Total Oil & Grease Mineral/Synthetic | mg/L | 0.5 | <0.50 | 0.50 | 5564462 |
| 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 | | | | | |

GENERAL COMMENTS

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

| | |
|-----------|--------|
| Package 1 | 17.3°C |
|-----------|--------|

Sample received with temp >10 C and analyses conducted with client's consent.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|--------------------------------------|---------------|---------|----------|-------|-----------|
| 5561584 | TA1 | Spiked Blank | pH | 2018/06/04 | | 101 | % | 98 - 103 |
| 5561584 | TA1 | RPD | pH | 2018/06/04 | 1.2 | | % | N/A |
| 5562512 | AMJ | Spiked Blank | Total Oil & Grease | 2018/06/04 | | 99 | % | 85 - 115 |
| 5562512 | AMJ | RPD | Total Oil & Grease | 2018/06/04 | 2.0 | | % | 25 |
| 5562512 | AMJ | Method Blank | Total Oil & Grease | 2018/06/04 | <0.50 | | mg/L | |
| 5562721 | NNA | QC Standard | Total Suspended Solids | 2018/06/05 | | 97 | % | 85 - 115 |
| 5562721 | NNA | Method Blank | Total Suspended Solids | 2018/06/05 | <1 | | mg/L | |
| 5562721 | NNA | RPD | Total Suspended Solids | 2018/06/05 | 0 | | % | 25 |
| 5564462 | FA | Spiked Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/05 | | 96 | % | 85 - 115 |
| 5564462 | FA | RPD | Total Oil & Grease Mineral/Synthetic | 2018/06/05 | 4.8 | | % | 25 |
| 5564462 | FA | Method Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/05 | <0.50 | | mg/L | |
| 5566472 | ZSK | Matrix Spike | Phenols-4AAP | 2018/06/06 | | 96 | % | 80 - 120 |
| 5566472 | ZSK | Spiked Blank | Phenols-4AAP | 2018/06/06 | | 97 | % | 80 - 120 |
| 5566472 | ZSK | Method Blank | Phenols-4AAP | 2018/06/06 | <0.0010 | | mg/L | |
| 5566472 | ZSK | RPD | Phenols-4AAP | 2018/06/06 | NC | | % | 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.

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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 $\leq 2 \times$ RDL).

VALIDATION SIGNATURE PAGE

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Brad Newman, Scientific Service Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 635365-02-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/06/12
 Report #: R5233576
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D8843

Received: 2018/06/08, 08:49

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Reference |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Animal and Vegetable Oil and Grease | 1 | N/A | 2018/06/11 | CAM SOP-00326 | EPA1664B m,SM5520B m |
| Total Oil and Grease | 1 | 2018/06/11 | 2018/06/11 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 1 | N/A | 2018/06/11 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 1 | N/A | 2018/06/11 | CAM SOP-00444 | OMOE E3179 m |
| Mineral/Synthetic O & G (TPH Heavy Oil) (1) | 1 | 2018/06/11 | 2018/06/11 | CAM SOP-00326 | EPA1664B m,SM5520F m |
| Low Level Total Suspended Solids | 1 | 2018/06/09 | 2018/06/09 | 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.

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* 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. #: 635365-02-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/06/12
Report #: R5233576
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D8843
Received: 2018/06/08, 08:49

Encryption Key

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Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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RESULTS OF ANALYSES OF WATER

| | | | | | |
|--|--------------|-----------------|---------------------|------------|-----------------|
| Maxxam ID | | | GXE959 | | |
| Sampling Date | | | 2018/06/07 12:34 | | |
| COC Number | | | 635365-02-01 | | |
| | UNITS | Criteria | POND | RDL | QC Batch |
| Calculated Parameters | | | | | |
| Total Animal/Vegetable Oil and Grease | mg/L | - | 2.1 | 0.50 | 5571232 |
| Inorganics | | | | | |
| pH | pH | 6.5:8.5 | 8.73 | N/A | 5572990 |
| Phenols-4AAP | mg/L | 0.001 | <0.0010 | 0.0010 | 5574592 |
| Total Suspended Solids | mg/L | - | 5 | 1 | 5573043 |
| Petroleum Hydrocarbons | | | | | |
| Total Oil & Grease | mg/L | - | 2.7 | 0.50 | 5573524 |
| Total Oil & Grease Mineral/Synthetic | mg/L | 0.5 | 0.60 | 0.50 | 5573531 |
| 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 | | | | | |

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 2.7°C |
|-----------|-------|

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|--------------------------------------|---------------|---------|----------|-------|-----------|
| 5572990 | SAU | Spiked Blank | pH | 2018/06/11 | | 102 | % | 98 - 103 |
| 5572990 | SAU | RPD | pH | 2018/06/11 | 0.53 | | % | N/A |
| 5573043 | MKX | QC Standard | Total Suspended Solids | 2018/06/09 | | 96 | % | 85 - 115 |
| 5573043 | MKX | Method Blank | Total Suspended Solids | 2018/06/09 | <1 | | mg/L | |
| 5573043 | MKX | RPD | Total Suspended Solids | 2018/06/09 | 3.1 | | % | 25 |
| 5573524 | FA | Spiked Blank | Total Oil & Grease | 2018/06/11 | | 100 | % | 85 - 115 |
| 5573524 | FA | RPD | Total Oil & Grease | 2018/06/11 | 6.2 | | % | 25 |
| 5573524 | FA | Method Blank | Total Oil & Grease | 2018/06/11 | <0.50 | | mg/L | |
| 5573531 | FA | Spiked Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/11 | | 91 | % | 85 - 115 |
| 5573531 | FA | RPD | Total Oil & Grease Mineral/Synthetic | 2018/06/11 | 4.8 | | % | 25 |
| 5573531 | FA | Method Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/11 | <0.50 | | mg/L | |
| 5574592 | ZSK | Matrix Spike | Phenols-4AAP | 2018/06/11 | | 96 | % | 80 - 120 |
| 5574592 | ZSK | Spiked Blank | Phenols-4AAP | 2018/06/11 | | 97 | % | 80 - 120 |
| 5574592 | ZSK | Method Blank | Phenols-4AAP | 2018/06/11 | <0.0010 | | mg/L | |
| 5574592 | ZSK | RPD | Phenols-4AAP | 2018/06/11 | NC | | % | 20 |

N/A = Not Applicable

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VALIDATION SIGNATURE PAGE

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

Ewa Pranjić, M.Sc., C.Chem, Scientific Specialist

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Your Project #: 1407634
 Site#: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 628645-01-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2018/06/22
 Report #: R5261815
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8E6670

Received: 2018/06/15, 10:18

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Reference |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Animal and Vegetable Oil and Grease | 1 | N/A | 2018/06/18 | CAM SOP-00326 | EPA1664B m,SM5520B m |
| Total Oil and Grease | 1 | 2018/06/18 | 2018/06/18 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 1 | N/A | 2018/06/19 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 1 | N/A | 2018/06/20 | CAM SOP-00444 | OMOE E3179 m |
| Mineral/Synthetic O & G (TPH Heavy Oil) (1) | 1 | 2018/06/18 | 2018/06/18 | CAM SOP-00326 | EPA1664B m,SM5520F m |
| Low Level Total Suspended Solids | 1 | 2018/06/18 | 2018/06/18 | CAM SOP-00428 | SM 23 2540D m |

Remarks:

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

Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 628645-01-01

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CANADA L4N 8X1

Report Date: 2018/06/22
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CERTIFICATE OF ANALYSIS

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RESULTS OF ANALYSES OF WATER

| Maxxam ID | | | GYX220 | GYX220 | | |
|--|-------|----------------|---------------------|---------------------|--------|----------|
| Sampling Date | | | 2018/06/14 12:22 | 2018/06/14 12:22 | | |
| COC Number | | | 628645-01-01 | 628645-01-01 | | |
| | UNITS | Criteria | POND | POND Lab-Dup | RDL | QC Batch |
| Calculated Parameters | | | | | | |
| Total Animal/Vegetable Oil and Grease | mg/L | - | 2.4 | N/A | 0.50 | 5583588 |
| Inorganics | | | | | | |
| pH | pH | 6.5:8.5 | 8.81 | N/A | N/A | 5586216 |
| Phenols-4AAP | mg/L | 0.001 | <0.0010 | <0.0010 | 0.0010 | 5590108 |
| Total Suspended Solids | mg/L | - | 5 | N/A | 1 | 5585771 |
| Petroleum Hydrocarbons | | | | | | |
| Total Oil & Grease | mg/L | - | 3.1 | N/A | 0.50 | 5585568 |
| Total Oil & Grease Mineral/Synthetic | mg/L | 0.5 | 0.70 | N/A | 0.50 | 5585573 |
| 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 | | | | | | |

GENERAL COMMENTS

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

| | |
|-----------|--------|
| Package 1 | 16.3°C |
|-----------|--------|

Sample containers received with temp >10 C and analyses conducted with client's consent.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------------------|--------------------------------------|---------------|---------|----------|-------|-----------|
| 5585568 | FA | Spiked Blank | Total Oil & Grease | 2018/06/18 | | 94 | % | 85 - 115 |
| 5585568 | FA | RPD | Total Oil & Grease | 2018/06/18 | 4.4 | | % | 25 |
| 5585568 | FA | Method Blank | Total Oil & Grease | 2018/06/18 | <0.50 | | mg/L | |
| 5585573 | FA | Spiked Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/18 | | 94 | % | 85 - 115 |
| 5585573 | FA | RPD | Total Oil & Grease Mineral/Synthetic | 2018/06/18 | 3.2 | | % | 25 |
| 5585573 | FA | Method Blank | Total Oil & Grease Mineral/Synthetic | 2018/06/18 | <0.50 | | mg/L | |
| 5585771 | MKX | QC Standard | Total Suspended Solids | 2018/06/18 | | 95 | % | 85 - 115 |
| 5585771 | MKX | Method Blank | Total Suspended Solids | 2018/06/18 | <1 | | mg/L | |
| 5585771 | MKX | RPD | Total Suspended Solids | 2018/06/18 | 15 | | % | 25 |
| 5586216 | SAU | Spiked Blank | pH | 2018/06/19 | | 102 | % | 98 - 103 |
| 5586216 | SAU | RPD | pH | 2018/06/19 | 1.6 | | % | N/A |
| 5590108 | ZSK | Matrix Spike [GYX220-04] | Phenols-4AAP | 2018/06/20 | | 95 | % | 80 - 120 |
| 5590108 | ZSK | Spiked Blank | Phenols-4AAP | 2018/06/20 | | 98 | % | 80 - 120 |
| 5590108 | ZSK | Method Blank | Phenols-4AAP | 2018/06/20 | <0.0010 | | mg/L | |
| 5590108 | ZSK | RPD [GYX220-04] | Phenols-4AAP | 2018/06/20 | NC | | % | 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.

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 $\leq 2 \times$ RDL).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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

Your Project #: 1407634
 Site Location: MCCARTHY
 Your C.O.C. #: 665337-01-01

Attention: Jamie Bonany

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

Report Date: 2018/06/07
 Report #: R5220189
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D1259

Received: 2018/06/01, 09:20

Sample Matrix: Water
 # Samples Received: 3

| Analyses | Quantity | Date | Date | Laboratory Method | Reference |
|--|----------|------------|------------|------------------------------|----------------------|
| | | Extracted | Analyzed | | |
| Alkalinity | 3 | N/A | 2018/06/05 | CAM SOP-00448 | SM 23 2320 B m |
| Chloride by Automated Colourimetry | 3 | N/A | 2018/06/05 | CAM SOP-00463 | EPA 325.2 m |
| Conductivity | 3 | N/A | 2018/06/05 | CAM SOP-00414 | SM 23 2510 m |
| Dissolved Organic Carbon (DOC) (1) | 3 | N/A | 2018/06/05 | CAM SOP-00446 | SM 23 5310 B m |
| Fluoride | 3 | 2018/06/02 | 2018/06/05 | CAM SOP-00449 | SM 23 4500-F C m |
| Hardness (calculated as CaCO ₃) | 3 | N/A | 2018/06/06 | CAM SOP 00102/00408/00447 | SM 2340 B |
| Lab Filtered Metals Analysis by ICP | 2 | 2018/06/04 | 2018/06/06 | CAM SOP-00408 | EPA 6010D m |
| Lab Filtered Metals Analysis by ICP | 1 | 2018/06/05 | 2018/06/06 | CAM SOP-00408 | EPA 6010D m |
| Total Metals Analysis by ICPMS | 3 | N/A | 2018/06/06 | CAM SOP-00447 | EPA 6020B m |
| Total Ammonia-N | 3 | N/A | 2018/06/06 | CAM SOP-00441 | EPA GS I-2522-90 m |
| Nitrate (NO ₃) and Nitrite (NO ₂) in Water (2) | 3 | N/A | 2018/06/05 | CAM SOP-00440 | SM 23 4500-NO3I/NO2B |
| Total Oil and Grease | 3 | 2018/06/04 | 2018/06/04 | CAM SOP-00326 | EPA1664B m,SM5520A m |
| pH | 3 | N/A | 2018/06/05 | CAM SOP-00413 | SM 4500H+ B m |
| Phenols (4AAP) | 3 | N/A | 2018/06/05 | CAM SOP-00444 | OMOE E3179 m |
| Sulphate by Automated Colourimetry | 3 | N/A | 2018/06/04 | CAM SOP-00464 | EPA 375.4 m |
| Total Dissolved Solids | 3 | 2018/06/04 | 2018/06/06 | CAM SOP-00428 | SM 23 2540C m |
| Total Kjeldahl Nitrogen in Water | 2 | 2018/06/02 | 2018/06/06 | CAM SOP-00938 | OMOE E3516 m |
| Total Kjeldahl Nitrogen in Water | 1 | 2018/06/02 | 2018/06/07 | CAM SOP-00938 | OMOE E3516 m |
| Total Phosphorus (Colourimetric) | 3 | 2018/06/05 | 2018/06/05 | CAM SOP-00407 | SM 23 4500 P B H m |
| Total Suspended Solids | 3 | 2018/06/04 | 2018/06/05 | CAM SOP-00428 | SM 23 2540D m |

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Your Project #: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 665337-01-01

Attention: Jamie Bonany

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

Report Date: 2018/06/07
Report #: R5220189
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D1259

Received: 2018/06/01, 09:20

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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.

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) 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: EGitej@maxxam.ca

Phone# (905)817-5829

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

RESULTS OF ANALYSES OF WATER

| Maxxam ID | | | GVP562 | GVP563 | | GVP564 | | |
|---|---------------------------------|----------|----------------------|---------------------|--------|---------------------|--------|----------|
| Sampling Date | | | 2018/05/30 01:15 | 2018/05/30 01:00 | | 2018/05/30 11:30 | | |
| COC Number | | | 665337-01-01 | 665337-01-01 | | 665337-01-01 | | |
| | UNITS | Criteria | POND | SW1 | RDL | SW2 | RDL | QC Batch |
| Calculated Parameters | | | | | | | | |
| Hardness (CaCO ₃) | mg/L | - | 240 | 240 | 1.0 | 340 | 1.0 | 5559633 |
| Inorganics | | | | | | | | |
| Total Ammonia-N | mg/L | - | 0.16 | 0.14 | 0.050 | 0.095 | 0.050 | 5561665 |
| Conductivity | mS/cm | - | 0.848 | 0.841 | 0.001 | 0.683 | 0.001 | 5561484 |
| Total Dissolved Solids | mg/L | - | 525 | 520 | 10 | 425 | 10 | 5562689 |
| Fluoride (F ⁻) | mg/L | - | 0.50 | 0.49 | 0.10 | <0.10 | 0.10 | 5561483 |
| Total Kjeldahl Nitrogen (TKN) | mg/L | - | 0.60 | 0.57 | 0.10 | 0.63 | 0.10 | 5561612 |
| Dissolved Organic Carbon | mg/L | - | 7.5 | 7.9 | 0.50 | 20 | 0.50 | 5561441 |
| pH | pH | 6.5:8.5 | 8.21 | 8.20 | | 8.11 | | 5561485 |
| Phenols-4AAP | mg/L | 0.001 | <0.0010 | <0.0010 | 0.0010 | <0.0010 | 0.0010 | 5565033 |
| Total Phosphorus | mg/L | 0.01 | <0.020 (1) | 0.021 | 0.020 | <0.10 (2) | 0.10 | 5564214 |
| Total Suspended Solids | mg/L | - | <10 | <10 | 10 | <10 | 10 | 5562682 |
| Dissolved Sulphate (SO ₄) | mg/L | - | 230 | 220 | 1.0 | 20 | 1.0 | 5561803 |
| Alkalinity (Total as CaCO ₃) | mg/L | - | 110 | 120 | 1.0 | 330 | 1.0 | 5561481 |
| Dissolved Chloride (Cl) | mg/L | - | 60 | 50 | 1.0 | 21 | 1.0 | 5561801 |
| Nitrite (N) | mg/L | - | <0.010 | <0.010 | 0.010 | <0.010 | 0.010 | 5561682 |
| Nitrate (N) | mg/L | - | <0.10 | <0.10 | 0.10 | <0.10 | 0.10 | 5561682 |
| Nitrate + Nitrite (N) | mg/L | - | <0.10 | <0.10 | 0.10 | <0.10 | 0.10 | 5561682 |
| Petroleum Hydrocarbons | | | | | | | | |
| Total Oil & Grease | mg/L | - | <0.50 | <0.50 | 0.50 | <0.50 | 0.50 | 5562512 |
| 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 | | | | | | | | |
| (1) RDL exceeds criteria | | | | | | | | |
| (2) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. | | | | | | | | |

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | | GVP562 | | GVP563 | | | GVP563 | | |
|---|---------------------------------|----------|---------------------|----------|---------------------|------|----------|---------------------|------|----------|
| Sampling Date | | | 2018/05/30 01:15 | | 2018/05/30 01:00 | | | 2018/05/30 01:00 | | |
| COC Number | | | 665337-01-01 | | 665337-01-01 | | | 665337-01-01 | | |
| | UNITS | Criteria | POND | QC Batch | SW1 | RDL | QC Batch | SW1 Lab-Dup | RDL | QC Batch |
| Metals | | | | | | | | | | |
| Dissolved Calcium (Ca) | mg/L | - | 53 | 5562457 | 54 | 0.05 | 5564433 | 55 | 0.05 | 5564433 |
| Dissolved Magnesium (Mg) | mg/L | - | 26 | 5562457 | 25 | 0.05 | 5564433 | 25 | 0.05 | 5564433 |
| Dissolved Potassium (K) | mg/L | - | 10 | 5562457 | 9 | 1 | 5564433 | 9 | 1 | 5564433 |
| Dissolved Sodium (Na) | mg/L | - | 78 | 5562457 | 74 | 0.5 | 5564433 | 75 | 0.5 | 5564433 |
| Total Arsenic (As) | ug/L | 100 | <1.0 | 5564615 | <1.0 | 1.0 | 5564615 | | | |
| Total Cadmium (Cd) | ug/L | 0.2 | <0.10 | 5564615 | <0.10 | 0.10 | 5564615 | | | |
| Total Calcium (Ca) | ug/L | - | 51000 | 5564615 | 53000 | 200 | 5564615 | | | |
| Total Chromium (Cr) | ug/L | - | <5.0 | 5564615 | <5.0 | 5.0 | 5564615 | | | |
| Total Copper (Cu) | ug/L | 5 | <1.0 | 5564615 | <1.0 | 1.0 | 5564615 | | | |
| Total Iron (Fe) | ug/L | 300 | <100 | 5564615 | 160 | 100 | 5564615 | | | |
| Total Lead (Pb) | ug/L | 5 | <0.50 | 5564615 | <0.50 | 0.50 | 5564615 | | | |
| Total Magnesium (Mg) | ug/L | - | 25000 | 5564615 | 24000 | 50 | 5564615 | | | |
| Total Manganese (Mn) | ug/L | - | 64 | 5564615 | 47 | 2.0 | 5564615 | | | |
| Total Nickel (Ni) | ug/L | 25 | 1.5 | 5564615 | 1.3 | 1.0 | 5564615 | | | |
| Total Potassium (K) | ug/L | - | 9300 | 5564615 | 8800 | 200 | 5564615 | | | |
| Total Sodium (Na) | ug/L | - | 74000 | 5564615 | 71000 | 100 | 5564615 | | | |
| Total Zinc (Zn) | ug/L | 30 | <5.0 | 5564615 | <5.0 | 5.0 | 5564615 | | | |
| 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 | | | | | | | | | | |

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | | GVP564 | | |
|---|---------------------------------|----------|---------------------|------|----------|
| Sampling Date | | | 2018/05/30 11:30 | | |
| COC Number | | | 665337-01-01 | | |
| | UNITS | Criteria | SW2 | RDL | QC Batch |
| Metals | | | | | |
| Dissolved Calcium (Ca) | mg/L | - | 120 | 0.05 | 5562457 |
| Dissolved Magnesium (Mg) | mg/L | - | 7.0 | 0.05 | 5562457 |
| Dissolved Potassium (K) | mg/L | - | 4 | 1 | 5562457 |
| Dissolved Sodium (Na) | mg/L | - | 18 | 0.5 | 5562457 |
| Total Arsenic (As) | ug/L | 100 | 1.0 | 1.0 | 5564615 |
| Total Cadmium (Cd) | ug/L | 0.2 | <0.10 | 0.10 | 5564615 |
| Total Calcium (Ca) | ug/L | - | 120000 | 200 | 5564615 |
| Total Chromium (Cr) | ug/L | - | <5.0 | 5.0 | 5564615 |
| Total Copper (Cu) | ug/L | 5 | <1.0 | 1.0 | 5564615 |
| Total Iron (Fe) | ug/L | 300 | 370 | 100 | 5564615 |
| Total Lead (Pb) | ug/L | 5 | <0.50 | 0.50 | 5564615 |
| Total Magnesium (Mg) | ug/L | - | 7100 | 50 | 5564615 |
| Total Manganese (Mn) | ug/L | - | 150 | 2.0 | 5564615 |
| Total Nickel (Ni) | ug/L | 25 | 1.2 | 1.0 | 5564615 |
| Total Potassium (K) | ug/L | - | 4200 | 200 | 5564615 |
| Total Sodium (Na) | ug/L | - | 17000 | 100 | 5564615 |
| Total Zinc (Zn) | ug/L | 30 | <5.0 | 5.0 | 5564615 |
| 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 | | | | | |

TEST SUMMARY

Maxxam ID: GVP562
Sample ID: POND
Matrix: Water

Collected: 2018/05/30
Shipped:
Received: 2018/06/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|----------------------|---------|------------|---------------|---------------------|
| Alkalinity | AT | 5561481 | N/A | 2018/06/05 | Surinder Rai |
| Chloride by Automated Colourimetry | KONE | 5561801 | N/A | 2018/06/05 | Deonarine Ramnarine |
| Conductivity | AT | 5561484 | N/A | 2018/06/05 | Surinder Rai |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 5561441 | N/A | 2018/06/05 | Nimarta Singh |
| Fluoride | ISE | 5561483 | 2018/06/02 | 2018/06/05 | Surinder Rai |
| Hardness (calculated as CaCO ₃) | | 5559633 | N/A | 2018/06/06 | Automated Statchk |
| Lab Filtered Metals Analysis by ICP | ICP | 5562457 | 2018/06/04 | 2018/06/06 | Azita Fazaeli |
| Total Metals Analysis by ICPMS | ICP/MS | 5564615 | N/A | 2018/06/06 | Thao Nguyen |
| Total Ammonia-N | LACH/NH ₄ | 5561665 | N/A | 2018/06/06 | Parminder Sangha |
| Nitrate (NO ₃) and Nitrite (NO ₂) in Water | LACH | 5561682 | N/A | 2018/06/05 | Chandra Nandlal |
| Total Oil and Grease | BAL | 5562512 | 2018/06/04 | 2018/06/04 | Amjad Mir |
| pH | AT | 5561485 | N/A | 2018/06/05 | Surinder Rai |
| Phenols (4AAP) | TECH/PHEN | 5565033 | N/A | 2018/06/05 | Zahid Soikot |
| Sulphate by Automated Colourimetry | KONE | 5561803 | N/A | 2018/06/04 | Alina Dobreanu |
| Total Dissolved Solids | BAL | 5562689 | 2018/06/04 | 2018/06/06 | Mandeep Kaur |
| Total Kjeldahl Nitrogen in Water | SKAL | 5561612 | 2018/06/02 | 2018/06/06 | Rajni Tyagi |
| Total Phosphorus (Colourimetric) | LACH/P | 5564214 | 2018/06/05 | 2018/06/05 | Amanpreet Sappal |
| Total Suspended Solids | BAL | 5562682 | 2018/06/04 | 2018/06/05 | Massarat Jan |

Maxxam ID: GVP563
Sample ID: SW1
Matrix: Water

Collected: 2018/05/30
Shipped:
Received: 2018/06/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|----------------------|---------|------------|---------------|---------------------|
| Alkalinity | AT | 5561481 | N/A | 2018/06/05 | Surinder Rai |
| Chloride by Automated Colourimetry | KONE | 5561801 | N/A | 2018/06/05 | Deonarine Ramnarine |
| Conductivity | AT | 5561484 | N/A | 2018/06/05 | Surinder Rai |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 5561441 | N/A | 2018/06/05 | Nimarta Singh |
| Fluoride | ISE | 5561483 | 2018/06/02 | 2018/06/05 | Surinder Rai |
| Hardness (calculated as CaCO ₃) | | 5559633 | N/A | 2018/06/06 | Automated Statchk |
| Lab Filtered Metals Analysis by ICP | ICP | 5564433 | 2018/06/05 | 2018/06/06 | Azita Fazaeli |
| Total Metals Analysis by ICPMS | ICP/MS | 5564615 | N/A | 2018/06/06 | Thao Nguyen |
| Total Ammonia-N | LACH/NH ₄ | 5561665 | N/A | 2018/06/06 | Parminder Sangha |
| Nitrate (NO ₃) and Nitrite (NO ₂) in Water | LACH | 5561682 | N/A | 2018/06/05 | Chandra Nandlal |
| Total Oil and Grease | BAL | 5562512 | 2018/06/04 | 2018/06/04 | Amjad Mir |
| pH | AT | 5561485 | N/A | 2018/06/05 | Surinder Rai |
| Phenols (4AAP) | TECH/PHEN | 5565033 | N/A | 2018/06/05 | Zahid Soikot |
| Sulphate by Automated Colourimetry | KONE | 5561803 | N/A | 2018/06/04 | Alina Dobreanu |
| Total Dissolved Solids | BAL | 5562689 | 2018/06/04 | 2018/06/06 | Mandeep Kaur |
| Total Kjeldahl Nitrogen in Water | SKAL | 5561612 | 2018/06/02 | 2018/06/06 | Rajni Tyagi |
| Total Phosphorus (Colourimetric) | LACH/P | 5564214 | 2018/06/05 | 2018/06/05 | Amanpreet Sappal |
| Total Suspended Solids | BAL | 5562682 | 2018/06/04 | 2018/06/05 | Massarat Jan |

TEST SUMMARY

Maxxam ID: GVP563 Dup
Sample ID: SW1
Matrix: Water

Collected: 2018/05/30
Shipped:
Received: 2018/06/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|-------------------------------------|-----------------|---------|------------|---------------|---------------|
| Lab Filtered Metals Analysis by ICP | ICP | 5564433 | 2018/06/05 | 2018/06/06 | Azita Fazaeli |

Maxxam ID: GVP564
Sample ID: SW2
Matrix: Water

Collected: 2018/05/30
Shipped:
Received: 2018/06/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|----------------------|---------|------------|---------------|---------------------|
| Alkalinity | AT | 5561481 | N/A | 2018/06/05 | Surinder Rai |
| Chloride by Automated Colourimetry | KONE | 5561801 | N/A | 2018/06/05 | Deonarine Ramnarine |
| Conductivity | AT | 5561484 | N/A | 2018/06/05 | Surinder Rai |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 5561441 | N/A | 2018/06/05 | Nimarta Singh |
| Fluoride | ISE | 5561483 | 2018/06/02 | 2018/06/05 | Surinder Rai |
| Hardness (calculated as CaCO ₃) | | 5559633 | N/A | 2018/06/06 | Automated Statchk |
| Lab Filtered Metals Analysis by ICP | ICP | 5562457 | 2018/06/04 | 2018/06/06 | Azita Fazaeli |
| Total Metals Analysis by ICPMS | ICP/MS | 5564615 | N/A | 2018/06/06 | Thao Nguyen |
| Total Ammonia-N | LACH/NH ₄ | 5561665 | N/A | 2018/06/06 | Parminder Sangha |
| Nitrate (NO ₃) and Nitrite (NO ₂) in Water | LACH | 5561682 | N/A | 2018/06/05 | Chandra Nandlal |
| Total Oil and Grease | BAL | 5562512 | 2018/06/04 | 2018/06/04 | Amjad Mir |
| pH | AT | 5561485 | N/A | 2018/06/05 | Surinder Rai |
| Phenols (4AAP) | TECH/PHEN | 5565033 | N/A | 2018/06/05 | Zahid Soikot |
| Sulphate by Automated Colourimetry | KONE | 5561803 | N/A | 2018/06/04 | Alina Dobreanu |
| Total Dissolved Solids | BAL | 5562689 | 2018/06/04 | 2018/06/06 | Mandeep Kaur |
| Total Kjeldahl Nitrogen in Water | SKAL | 5561612 | 2018/06/02 | 2018/06/07 | Rajni Tyagi |
| Total Phosphorus (Colourimetric) | LACH/P | 5564214 | 2018/06/05 | 2018/06/05 | Amanpreet Sappal |
| Total Suspended Solids | BAL | 5562682 | 2018/06/04 | 2018/06/05 | Massarat Jan |

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 5.7°C |
| Package 2 | 7.7°C |
| Package 3 | 4.7°C |

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|-------------------------------|---------------|--------|----------|-------|-----------|
| 5561441 | NS3 | Matrix Spike | Dissolved Organic Carbon | 2018/06/04 | | NC | % | 80 - 120 |
| 5561441 | NS3 | Spiked Blank | Dissolved Organic Carbon | 2018/06/04 | | 99 | % | 80 - 120 |
| 5561441 | NS3 | Method Blank | Dissolved Organic Carbon | 2018/06/04 | <0.50 | | mg/L | |
| 5561441 | NS3 | RPD | Dissolved Organic Carbon | 2018/06/04 | 0.74 | | % | 20 |
| 5561481 | SAU | Spiked Blank | Alkalinity (Total as CaCO3) | 2018/06/04 | | 98 | % | 85 - 115 |
| 5561481 | SAU | Method Blank | Alkalinity (Total as CaCO3) | 2018/06/04 | <1.0 | | mg/L | |
| 5561481 | SAU | RPD | Alkalinity (Total as CaCO3) | 2018/06/04 | 0.95 | | % | 20 |
| 5561483 | SAU | Matrix Spike | Fluoride (F-) | 2018/06/04 | | 98 | % | 80 - 120 |
| 5561483 | SAU | Spiked Blank | Fluoride (F-) | 2018/06/04 | | 97 | % | 80 - 120 |
| 5561483 | SAU | Method Blank | Fluoride (F-) | 2018/06/04 | <0.10 | | mg/L | |
| 5561483 | SAU | RPD | Fluoride (F-) | 2018/06/04 | NC | | % | 20 |
| 5561484 | SAU | Spiked Blank | Conductivity | 2018/06/04 | | 100 | % | 85 - 115 |
| 5561484 | SAU | Method Blank | Conductivity | 2018/06/04 | <0.001 | | mS/cm | |
| 5561484 | SAU | RPD | Conductivity | 2018/06/04 | 0.59 | | % | 25 |
| 5561485 | SAU | Spiked Blank | pH | 2018/06/04 | | 102 | % | 98 - 103 |
| 5561485 | SAU | RPD | pH | 2018/06/04 | 0.083 | | % | N/A |
| 5561612 | RTY | Matrix Spike | Total Kjeldahl Nitrogen (TKN) | 2018/06/06 | | 98 | % | 80 - 120 |
| 5561612 | RTY | QC Standard | Total Kjeldahl Nitrogen (TKN) | 2018/06/06 | | 96 | % | 80 - 120 |
| 5561612 | RTY | Spiked Blank | Total Kjeldahl Nitrogen (TKN) | 2018/06/06 | | 99 | % | 80 - 120 |
| 5561612 | RTY | Method Blank | Total Kjeldahl Nitrogen (TKN) | 2018/06/06 | <0.10 | | mg/L | |
| 5561612 | RTY | RPD | Total Kjeldahl Nitrogen (TKN) | 2018/06/06 | 3.8 | | % | 20 |
| 5561665 | SAN | Matrix Spike | Total Ammonia-N | 2018/06/06 | | 87 | % | 75 - 125 |
| 5561665 | SAN | Spiked Blank | Total Ammonia-N | 2018/06/06 | | 102 | % | 80 - 120 |
| 5561665 | SAN | Method Blank | Total Ammonia-N | 2018/06/06 | <0.050 | | mg/L | |
| 5561665 | SAN | RPD | Total Ammonia-N | 2018/06/06 | 0.60 | | % | 20 |
| 5561682 | C_N | Matrix Spike | Nitrite (N) | 2018/06/05 | | 98 | % | 80 - 120 |
| | | | Nitrate (N) | 2018/06/05 | | 105 | % | 80 - 120 |
| 5561682 | C_N | Spiked Blank | Nitrite (N) | 2018/06/05 | | 97 | % | 80 - 120 |
| | | | Nitrate (N) | 2018/06/05 | | 104 | % | 80 - 120 |
| 5561682 | C_N | Method Blank | Nitrite (N) | 2018/06/05 | <0.010 | | mg/L | |
| | | | Nitrate (N) | 2018/06/05 | <0.10 | | mg/L | |
| 5561682 | C_N | RPD | Nitrite (N) | 2018/06/05 | NC | | % | 20 |
| | | | Nitrate (N) | 2018/06/05 | 0.90 | | % | 20 |
| 5561801 | DRM | Matrix Spike | Dissolved Chloride (Cl) | 2018/06/05 | | 108 | % | 80 - 120 |
| 5561801 | DRM | Spiked Blank | Dissolved Chloride (Cl) | 2018/06/05 | | 103 | % | 80 - 120 |
| 5561801 | DRM | Method Blank | Dissolved Chloride (Cl) | 2018/06/05 | <1.0 | | mg/L | |
| 5561801 | DRM | RPD | Dissolved Chloride (Cl) | 2018/06/05 | 1.3 | | % | 20 |
| 5561803 | ADB | Matrix Spike | Dissolved Sulphate (SO4) | 2018/06/04 | | 119 | % | 75 - 125 |
| 5561803 | ADB | Spiked Blank | Dissolved Sulphate (SO4) | 2018/06/04 | | 100 | % | 80 - 120 |
| 5561803 | ADB | Method Blank | Dissolved Sulphate (SO4) | 2018/06/04 | <1.0 | | mg/L | |
| 5561803 | ADB | RPD | Dissolved Sulphate (SO4) | 2018/06/04 | 1.7 | | % | 20 |
| 5562457 | AFZ | Matrix Spike | Dissolved Calcium (Ca) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Dissolved Potassium (K) | 2018/06/06 | | 106 | % | 80 - 120 |
| | | | Dissolved Sodium (Na) | 2018/06/06 | | NC | % | 80 - 120 |
| 5562457 | AFZ | Spiked Blank | Dissolved Calcium (Ca) | 2018/06/06 | | 101 | % | 80 - 120 |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | | 100 | % | 80 - 120 |
| | | | Dissolved Potassium (K) | 2018/06/06 | | 102 | % | 80 - 120 |
| | | | Dissolved Sodium (Na) | 2018/06/06 | | 101 | % | 80 - 120 |
| 5562457 | AFZ | Method Blank | Dissolved Calcium (Ca) | 2018/06/06 | <0.05 | | mg/L | |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | <0.05 | | mg/L | |
| | | | Dissolved Potassium (K) | 2018/06/06 | <1 | | mg/L | |

QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------------------|--------------------------|---------------|--------|----------|-------|-----------|
| 5562457 | AFZ | RPD | Dissolved Sodium (Na) | 2018/06/06 | <0.5 | | mg/L | |
| | | | Dissolved Calcium (Ca) | 2018/06/06 | 1.3 | | % | 25 |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | 1.8 | | % | 25 |
| | | | Dissolved Potassium (K) | 2018/06/06 | 1.1 | | % | 25 |
| | | | Dissolved Sodium (Na) | 2018/06/06 | 0.84 | | % | 25 |
| 5562512 | AMJ | Spiked Blank | Total Oil & Grease | 2018/06/04 | | 99 | % | 85 - 115 |
| 5562512 | AMJ | RPD | Total Oil & Grease | 2018/06/04 | 2.0 | | % | 25 |
| 5562512 | AMJ | Method Blank | Total Oil & Grease | 2018/06/04 | <0.50 | | mg/L | |
| 5562682 | MJ1 | QC Standard | Total Suspended Solids | 2018/06/05 | | 98 | % | 85 - 115 |
| 5562682 | MJ1 | Method Blank | Total Suspended Solids | 2018/06/05 | <10 | | mg/L | |
| 5562682 | MJ1 | RPD | Total Suspended Solids | 2018/06/05 | NC | | % | 25 |
| 5562689 | MKX | QC Standard | Total Dissolved Solids | 2018/06/06 | | 97 | % | 90 - 110 |
| 5562689 | MKX | Method Blank | Total Dissolved Solids | 2018/06/06 | <10 | | mg/L | |
| 5562689 | MKX | RPD | Total Dissolved Solids | 2018/06/06 | 3.2 | | % | 25 |
| 5564214 | ASP | Matrix Spike | Total Phosphorus | 2018/06/05 | | 97 | % | 80 - 120 |
| 5564214 | ASP | QC Standard | Total Phosphorus | 2018/06/05 | | 97 | % | 80 - 120 |
| 5564214 | ASP | Spiked Blank | Total Phosphorus | 2018/06/05 | | 95 | % | 80 - 120 |
| 5564214 | ASP | Method Blank | Total Phosphorus | 2018/06/05 | <0.020 | | mg/L | |
| 5564214 | ASP | RPD | Total Phosphorus | 2018/06/05 | NC | | % | 20 |
| 5564433 | AFZ | Matrix Spike [GVP563-01] | Dissolved Calcium (Ca) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Dissolved Potassium (K) | 2018/06/06 | | 102 | % | 80 - 120 |
| | | | Dissolved Sodium (Na) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Dissolved Calcium (Ca) | 2018/06/06 | | 100 | % | 80 - 120 |
| 5564433 | AFZ | Spiked Blank | Dissolved Magnesium (Mg) | 2018/06/06 | | 99 | % | 80 - 120 |
| | | | Dissolved Potassium (K) | 2018/06/06 | | 101 | % | 80 - 120 |
| | | | Dissolved Sodium (Na) | 2018/06/06 | | 100 | % | 80 - 120 |
| | | | Dissolved Calcium (Ca) | 2018/06/06 | <0.05 | mg/L | | |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | <0.05 | mg/L | | |
| 5564433 | AFZ | Method Blank | Dissolved Potassium (K) | 2018/06/06 | <1 | | mg/L | |
| | | | Dissolved Sodium (Na) | 2018/06/06 | <0.5 | | mg/L | |
| | | | Dissolved Calcium (Ca) | 2018/06/06 | 0.74 | % | 25 | |
| | | | Dissolved Magnesium (Mg) | 2018/06/06 | 0.41 | % | 25 | |
| | | | Dissolved Potassium (K) | 2018/06/06 | 0.40 | % | 25 | |
| 5564433 | AFZ | RPD [GVP563-01] | Dissolved Sodium (Na) | 2018/06/06 | 0.73 | | % | 25 |
| | | | Total Arsenic (As) | 2018/06/06 | | 99 | % | 80 - 120 |
| | | | Total Cadmium (Cd) | 2018/06/06 | | 101 | % | 80 - 120 |
| | | | Total Calcium (Ca) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Total Chromium (Cr) | 2018/06/06 | | 96 | % | 80 - 120 |
| 5564615 | TNG | Matrix Spike | Total Copper (Cu) | 2018/06/06 | | 101 | % | 80 - 120 |
| | | | Total Iron (Fe) | 2018/06/06 | | 97 | % | 80 - 120 |
| | | | Total Lead (Pb) | 2018/06/06 | | 94 | % | 80 - 120 |
| | | | Total Magnesium (Mg) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Manganese (Mn) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Nickel (Ni) | 2018/06/06 | | 97 | % | 80 - 120 |
| | | | Total Potassium (K) | 2018/06/06 | | 94 | % | 80 - 120 |
| | | | Total Sodium (Na) | 2018/06/06 | | NC | % | 80 - 120 |
| | | | Total Zinc (Zn) | 2018/06/06 | | 98 | % | 80 - 120 |
| | | | Total Arsenic (As) | 2018/06/06 | | 98 | % | 80 - 120 |
| | | | Total Cadmium (Cd) | 2018/06/06 | | 99 | % | 80 - 120 |
| | | | Total Calcium (Ca) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Chromium (Cr) | 2018/06/06 | | 95 | % | 80 - 120 |

QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|-------------|------|--------------|----------------------|---------------|---------|----------|-------|-----------|
| | | | Total Copper (Cu) | 2018/06/06 | | 97 | % | 80 - 120 |
| | | | Total Iron (Fe) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Lead (Pb) | 2018/06/06 | | 95 | % | 80 - 120 |
| | | | Total Magnesium (Mg) | 2018/06/06 | | 97 | % | 80 - 120 |
| | | | Total Manganese (Mn) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Nickel (Ni) | 2018/06/06 | | 97 | % | 80 - 120 |
| | | | Total Potassium (K) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Sodium (Na) | 2018/06/06 | | 96 | % | 80 - 120 |
| | | | Total Zinc (Zn) | 2018/06/06 | | 102 | % | 80 - 120 |
| 5564615 | TNG | Method Blank | Total Arsenic (As) | 2018/06/06 | <1.0 | | ug/L | |
| | | | Total Cadmium (Cd) | 2018/06/06 | <0.10 | | ug/L | |
| | | | Total Calcium (Ca) | 2018/06/06 | <200 | | ug/L | |
| | | | Total Chromium (Cr) | 2018/06/06 | <5.0 | | ug/L | |
| | | | Total Copper (Cu) | 2018/06/06 | <1.0 | | ug/L | |
| | | | Total Iron (Fe) | 2018/06/06 | <100 | | ug/L | |
| | | | Total Lead (Pb) | 2018/06/06 | <0.50 | | ug/L | |
| | | | Total Magnesium (Mg) | 2018/06/06 | <50 | | ug/L | |
| | | | Total Manganese (Mn) | 2018/06/06 | <2.0 | | ug/L | |
| | | | Total Nickel (Ni) | 2018/06/06 | <1.0 | | ug/L | |
| | | | Total Potassium (K) | 2018/06/06 | <200 | | ug/L | |
| | | | Total Sodium (Na) | 2018/06/06 | <100 | | ug/L | |
| | | | Total Zinc (Zn) | 2018/06/06 | <5.0 | | ug/L | |
| 5564615 | TNG | RPD | Total Cadmium (Cd) | 2018/06/06 | NC | | % | 20 |
| | | | Total Chromium (Cr) | 2018/06/06 | 0.21 | | % | 20 |
| | | | Total Copper (Cu) | 2018/06/06 | 0.72 | | % | 20 |
| | | | Total Iron (Fe) | 2018/06/06 | 0.95 | | % | 20 |
| | | | Total Lead (Pb) | 2018/06/06 | 1.3 | | % | 20 |
| | | | Total Nickel (Ni) | 2018/06/06 | 2.2 | | % | 20 |
| | | | Total Zinc (Zn) | 2018/06/06 | 2.2 | | % | 20 |
| 5565033 | ZSK | Matrix Spike | Phenols-4AAP | 2018/06/05 | | 94 | % | 80 - 120 |
| 5565033 | ZSK | Spiked Blank | Phenols-4AAP | 2018/06/05 | | 97 | % | 80 - 120 |
| 5565033 | ZSK | Method Blank | Phenols-4AAP | 2018/06/05 | <0.0010 | | mg/L | |
| 5565033 | ZSK | RPD | Phenols-4AAP | 2018/06/05 | NC | | % | 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.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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

Exceedence Summary Table – Prov. Water Quality Obj.
Result Exceedences

| Sample ID | Maxxam ID | Parameter | Criteria | Result | DL | Units |
|-----------|-----------|------------------|----------|--------|-------|-------|
| SW1 | GVP563-04 | Total Phosphorus | 0.01 | 0.021 | 0.020 | mg/L |
| SW2 | GVP564-05 | Total Iron (Fe) | 300 | 370 | 100 | ug/L |

Detection Limit Exceedences

| Sample ID | Maxxam ID | Parameter | Criteria | Result | DL | Units |
|-----------|-----------|------------------|----------|--------|-------|-------|
| POND | GVP562-04 | Total Phosphorus | 0.01 | <0.020 | 0.020 | mg/L |
| SW2 | GVP564-04 | Total Phosphorus | 0.01 | <0.10 | 0.10 | 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.



**CLIENT NAME: GOLDER ASSOCIATES LTD.
121 COMMERCE PARK DRIVE, UNIT L
BARRIE, ON L4N8X1
(705) 722-4492**

ATTENTION TO: Scott Patrick

PROJECT: 1407634

AGAT WORK ORDER: 18M344734

ECOTOX ANALYSIS REVIEWED BY: Marie-Lou Cuerrier, Lab Coordinator

DATE REPORTED: 2018-06-12

VERSION*: 1

PAGES (INCLUDING COVER): 4

Should you require any information regarding this analysis please contact your client services representative at (514) 337-1000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18M344734

PROJECT: 1407634

9770 ROUTE TRANSCANADIENNE
ST. LAURENT, QUEBEC
CANADA H4S 1V9
TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLED BY:SDP/QEH

ATTENTION TO: Scott Patrick

SAMPLING SITE:McCarthy

Daphnia Lethality (D.magna) single concentration-48h

DATE RECEIVED: 2018-05-31

DATE REPORTED: 2018-06-12

| | | SAMPLE DESCRIPTION: | | POND | |
|--------------------|-----------------|---------------------|-----|------------|--|
| | | SAMPLE TYPE: | | SW | |
| | | DATE SAMPLED: | | 2018-05-30 | |
| Parameter | Unit | G / S | RDL | 9284919 | |
| Mortality 100% v/v | % mortality-48h | | | 0 | |
| Acute Lethality | | | | NO | |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9284919 Refer to the annex for analysis details.
Conclusion legend:
Acute lethality: NO (mortality: 50% or less)
Acute lethality: YES (mortality: more than 50%)

Certified By: _____

Marie-Lou Currie 

AGAT Laboratories' procedure for signatures and signatories adheres strictly to the requirements of accreditation ISO 17025:2005 as required by CALA, SCC and MDDELCC where applicable. All electronic signatures on AGAT certificates are password protected and all signatories meet their regional and scope of accreditation requirements and are approved by CALA, SCC and MDDELCC.



Certificate of Analysis

AGAT WORK ORDER: 18M344734

PROJECT: 1407634

9770 ROUTE TRANSCANADIENNE
ST. LAURENT, QUEBEC
CANADA H4S 1V9
TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLED BY:SDP/QEH

ATTENTION TO: Scott Patrick

SAMPLING SITE:McCarthy

Rainbow Trout Lethality (O. mykiss) single concentration-96h

DATE RECEIVED: 2018-05-31

DATE REPORTED: 2018-06-12

| | | SAMPLE DESCRIPTION: | | POND | |
|--------------------|-----------------|---------------------|-----|------------|--|
| | | SAMPLE TYPE: | | SW | |
| | | DATE SAMPLED: | | 2018-05-30 | |
| Parameter | Unit | G / S | RDL | 9284919 | |
| Mortality 100% v/v | % mortality-96h | | | 0 | |
| Acute Lethality | | | | NO | |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9284919 Refer to the annex for analysis details.
Conclusion legend:
Acute lethality: NO (mortality: 50% or less)
Acute lethality: YES (mortality: more than 50%)

Certified By: _____

Marie-Lou Carrier 

AGAT Laboratories' procedure for signatures and signatories adheres strictly to the requirements of accreditation ISO 17025:2005 as required by CALA, SCC and MDDELCC where applicable. All electronic signatures on AGAT certificates are password protected and all signatories meet their regional and scope of accreditation requirements and are approved by CALA, SCC and MDDELCC.



Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18M344734

PROJECT: 1407634

ATTENTION TO: Scott Patrick

SAMPLED BY:SDP/QEH

SAMPLING SITE:McCarthy

| PARAMETER | DATE PREPARED | DATE ANALYZED | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|---------------|---------------|----------------|----------------------|----------------------|
| ECOTOX Analysis | | | | | |
| Mortality 100% v/v | | | | | |
| Acute Lethality | | | | | |
| Mortality 100% v/v | | | ECO-152-20000F | EPS1/RM/13 | |
| Acute Lethality | | | | | |



golder.com