



GOLDER

REPORT

MCCARTHY QUARRY

2020 Permit To Take Water Compliance Report

Submitted to:

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Submitted by:

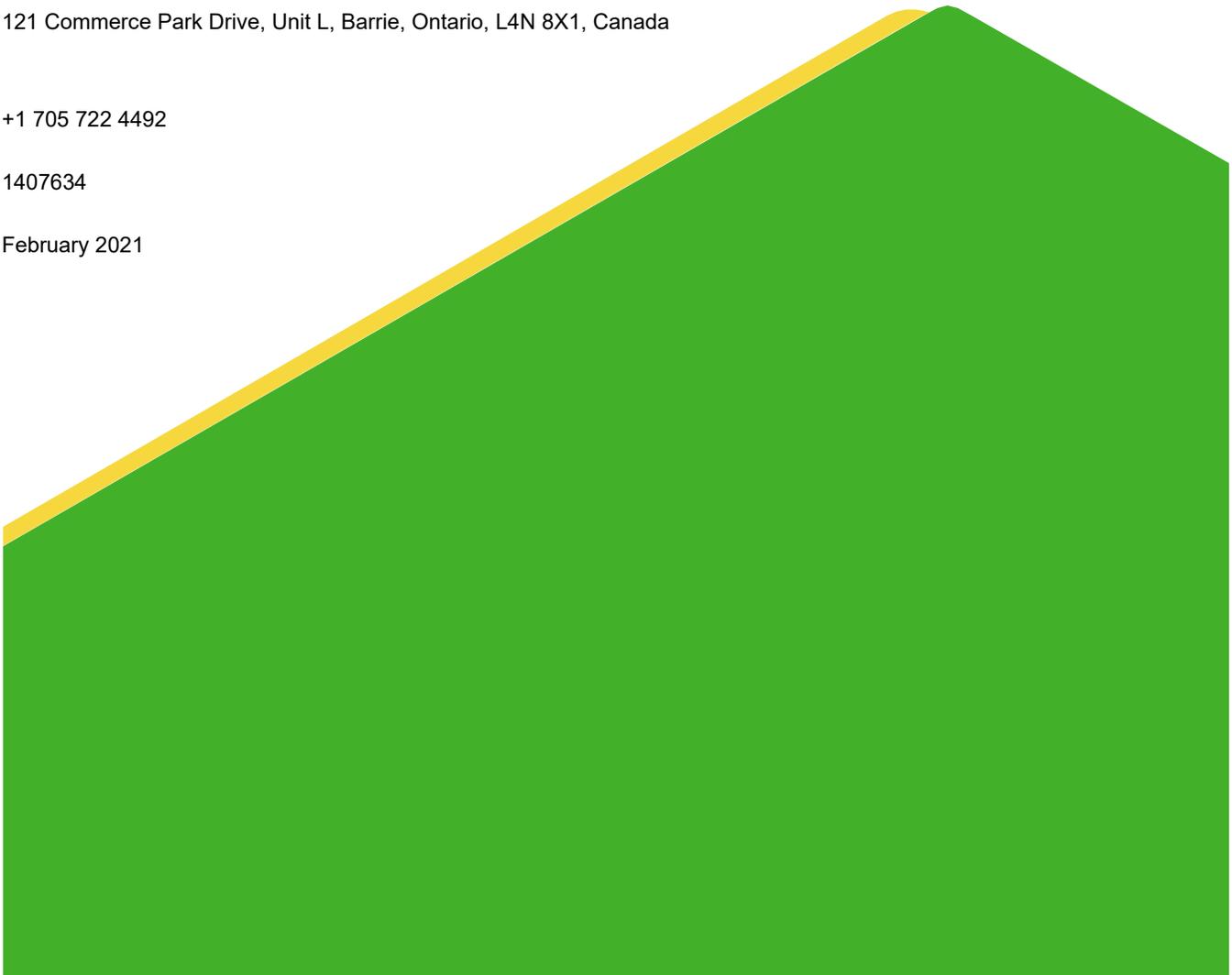
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Distribution List

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PTTW No. 1603- BKTPQH

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by QBJR/Coco Aggregates Inc. (Coco) to prepare the annual Permit To Take Water (PTTW) report for the McCarthy Quarry (the Site) located in the Township of Ramara, County of Simcoe (Figure 1). The monitoring activities documented in this report were conducted as a requirement of Permit To Take Water (PTTW) No. 1603-BKTPQH (the 'Permit'; Appendix A). The Permit is in place from January 31, 2020 to January 31, 2025. Disposal of water from the Site is governed by Environmental Compliance Approval (ECA) No. ECA No. 7737-BH6QEA, issued on October 22, 2019.

2.0 PHYSICAL SETTING

2.1 Site Development and Land Use

The Site is located approximately six kilometres south-east of the Community of Brechin at Lot 1, Concession 1, Township of Ramara former Mara, Simcoe County (Figure 1). The Site began operations with the advancement of the sinking cut on March 15, 2013. Currently, the quarry floor is approximately 15 metres below (historic) ground level (mbgl) or 240 metres above sea level (masl). The current quarry footprint is approximately 400 m by 260 m (10.4 ha) (Figure 2). The ultimate quarry extent is expected to be approximately 30 ha.

Land use surrounding the Site is primarily rural, consisting of woodlots, pasture and scattered single-family homes. To the south and east along the Talbot River and Canal Lake are seasonal and year-round residences.

2.2 Geology

The elevation of the land the vicinity of the Site ranges from 250 masl to 255 masl, with the higher elevations on the western portion of the property. The overburden thickness on the Site ranges from 0.3 m in the north (OW9) to approximately 8 m in the south (OW4) (Figure 3 and Figure 4).

The quarry is located in a broad, arching, low relief upland area within a clay and limestone plain typical of the physiography to the east of Lake Simcoe (Chapman & Putman, 1984). Underlying the overburden material are Middle Ordovician aged limestone deposits including, from bedrock surface down: Verulam, Bobcaygeon and Gull River Formations.

The Verulam Formation consists of thinly bedded limestone and shale or shaley limestone and is relatively thin at the Site (0 to 4 m in thickness).

The Bobcaygeon Formation consists of thin to medium bedded limestones and ranges in thickness from approximately 31 m (OW6) to 40 m (OW9) (Figures 3 and 4). Quarrying at the Site is primarily within the Bobcaygeon Formation.

The Gull River Formation consists of fine-grained limestone with minor interbeds of shale or shaley limestone with an approximate thickness of 16 m. The Gull River Formation remains intact at the Site.

2.3 Aquifers and Local Water Use

Overburden aquifer deposits within the vicinity of the Site, where sufficiently thick, likely provide sufficient water for domestic purposes as evidenced by the presence of dug and bored wells in the area. A review of measured overburden water levels suggest the flow system approximately mimics topographic trends and thus flow in a generally south to southeast direction towards the Talbot River.

Wells constructed in the bedrock are generally completed within the Bobcaygeon or Gull River Formations. As indicated above, quarrying at the Site is primarily within the Bobcaygeon Formation. The regional groundwater flow direction in the Bobcaygeon Formation is generally to the southwest towards Lake Simcoe (Figure 5).

The Ministry of Environment, Conservation and Parks (MECP) water well database was reviewed to identify accessible private water wells located in the vicinity of the Site. Nine wells, three dug and six drilled, were located within 1,000 m of Site. Seven wells are on Concession Road 1 and two wells are on the Mara-Eldon Boundary Road (Figure 1).

2.4 Quarry Dewatering

The Permit authorizes a maximum daily water taking volume of 6,544,800 L/day with a maximum of 250 days of taking. The maximum annual water taking is capped at 196,500,000 L/year.

Groundwater and precipitation entering the quarry is collected in a sump in the quarry floor. The sump is equipped with a 4-inch Grindex pump with a maximum discharge rate of 35 L/sec which is attached to a 4-inch (101 mm) diameter discharge line. The water is pumped from the quarry floor up the quarry face via the discharge line to a 4-inch (101 mm) diameter pipeline that directs the water to a ditch that runs southward through the McCarthy property to the 14,000 m³ settling pond. The water in the settling pond discharges via a Hickenbottom control structure to the roadside ditches along Concession Road 1. The water in the roadside ditch travels eastward along the north side of Concession Road 1 to a municipal drain and eventually discharges to the Talbot River, which in turn discharges to Lake Simcoe.

3.0 MONITORING PROGRAM AND RESULTS

The monitoring program for the Site, which is outlined in Section 4 of the Permit (Appendix A), directs Coco to record daily water takings, monitor groundwater levels in 22 monitoring wells and seven residential wells and analyze groundwater quality in select monitoring and residential wells. Coco is also required to maintain a publicly accessible internet site containing the required monitoring data and reporting and to establish a Public Liaison Committee (PLC) that is to meet once every four months.

3.1 Quarry Operations Update

The current quarry footprint is approximately 400 m by 260 m (10.4 hectares) with the ultimate limit of extraction (30 ha) shown in Figure 2. Coco staff reported there was no aggregate extraction completed in 2020.

3.2 Monitoring Condition 4.1: Water Level Monitoring of Sump

Condition 4.1 of the Permit stipulates that the water level in the quarry cannot be lowered below an elevation of 232.0 masl. The quarry floor is currently approximately 15 metres below ground level (mbgl) or 240 masl; Coco staff estimated the bottom of the sump is approximately 4 m below the quarry floor. As such, the water level in the quarry remains above 232.0 masl.

3.3 Monitoring Condition 4.2, 4.3 and 4.4: Groundwater Elevations

Water level monitoring has been ongoing at the Site since the early stages of quarry development in 2002. Both on-Site observation wells and off-Site residential wells have been incorporated into the monitoring program in order to meet the requirements of Conditions 4.2, 4.3 and 4.4 of the Permit. Groundwater elevation readings at the Site are collected through a combination of monthly manual water level measurements at all the wells, and

pressure transducers installed in select wells for automated daily monitoring. The wells included in the 2020 monitoring program are listed in Table 1 and shown on Figure 1 and Figure 2.

Table 1: Groundwater Monitoring Locations and Measurement Frequency

	Daily Monitoring **	Monthly Monitoring
Monitoring Wells	OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW9-1, OW9-2, Bored, CKL-1 and CKL-2	AM1b, AMx-R, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, Bored, CKL-1 and CKL-2
Residential Wells	DW3	DW3, DW1, DW2, DW4, DW6*, DW7* and DW8*

*Monitored at least once every two months

**Daily monitoring completed with a pressure transducer

Table 3 presents the manual groundwater level readings collected at each of the monitoring locations. Groundwater hydrographs are presented in Figures 6 through 10 and include data from 2014 through 2020. Appendix B provides groundwater hydrographs at each of the wells over the period from 2006 through 2020. Due to the Covid-19 pandemic, private residential wells were not monitored between April and July of 2020. Starting in August of 2020, Golder attempted to contact each homeowner to confirm they still wanted to be included in the monitoring program during the Covid-19 pandemic. As of the end of 2020, Golder has been unable to reach the homeowner of DW3 and DW7. The homeowner of DW3 had previously requested they be contacted via telephone before each monitoring round. Multiple unreturned voice mails were left for the resident and the resident was not home at the time of each monitoring round.

In 2020 most of the monitoring wells displayed a pattern of rising groundwater levels in January through the spring period with subsequent decline in the summer. This pattern is consistent with historical behaviour at the Site. In addition, the measured maxima and minima of 2020 groundwater elevations were generally within historical ranges for most wells. Exceptions to historical trends include:

- Well DW4 (Overburden): The groundwater levels at DW4 have decreased slightly since 2018 in comparison to historical norms. It is noted the decline in water levels is most significant in the summer months. Water levels increased at DW4 towards the end of 2020 and the water level in December 2020 was similar to historical water levels recorded in the winter months;
- Well AMx-R (Verulam Formation): Well AMx was monitored until April 2015 when it was removed due to the advance of the south quarry face. Well AMx-R was installed as a replacement for AMx along the western property boundary between the quarry face and OW4 in late 2017; water level monitoring started in April 2018. Groundwater levels at AMx-R rose by approximately 6 m between April 2018 and July 2019; thereafter groundwater levels appeared to stabilize (Figure 6);

- Wells OW9-1 and OW9-2 (Bobcaygeon Formation): The groundwater level at OW9-1 has declined approximately 12 m since 2014 and this location is now generally dry. The water level at OW9-2 has declined approximately 15 m since 2014 (Figure 7). The groundwater level at this location has almost declined below the bottom of the well;
- Well OW6-3 (Gull River Formation): Groundwater levels have risen by approximately 10 m since the start of 2014 (Figure 9); and
- Well OW8-3 (Gull River Formation): Groundwater levels have declined by approximately 4 m at OW8-3 since the start of 2017 (Figure 9). Following this decline, water levels fluctuated in 2019 and 2020, but appear to have stabilized since July of 2020, albeit below the historic levels reported before 2017.

A review of the results described above provides for the following inferences:

- Wells where the 2020 groundwater levels were consistent with historical trends are inferred to be beyond the influence of dewatering activities at the quarry. It is particularly noted that no private wells displayed evidence of quarry impact. Based on the water level monitoring results, drawdown is currently limited to a distance of not more than 150 m from the quarry face (see below comments on OW9);
- Well DW4: Given that this well is located approximately 850 m from the current quarry face, the transitory lower water levels noted during the summer months since 2018 are not considered to be related to quarrying operations;
- Well AMx-R: The gradual rise and stabilization of the groundwater levels at this well is attributed to the water level reaching “static” conditions following installation. The relatively long time period for stabilization is assumed to be due to the low conductivity of the surrounding bedrock;
- Well OW9-1 and OW9-2: the decline in water levels at both OW9-1 and OW9-2 is attributed to the on-going dewatering operations at the Site. OW9 was installed after extraction had begun at the quarry; therefore, there are no pre-extraction water level data; however water levels were stable until the quarry face reached approximately 150 m from OW9. The OW9 wells are currently approximately 10 m from the working face of the quarry and the water levels in the lower screen have declined approximately 15 m since 2014 in response to the lowering of the groundwater table in the quarry footprint; and
- Wells OW6-3 and OW8-3: each of these wells are completed in the Gull River Formation, which is located more than 30 m below the current quarry bottom. Based on the vertical separation and the presence of (thin) shale and shaley limestone layers within the formation it is assumed that the Gull River Formation is hydraulically isolated from the quarry dewatering operations and the measured water level fluctuations are unrelated to quarry development.

3.4 Monitoring Condition 4.5 and 4.6: Groundwater Quality

Groundwater quality sampling is typically conducted on a semi-annual basis at both on-Site monitoring wells and off-Site residential wells. Sampling events for on-Site monitoring wells were completed in May and October of 2020. However, sampling at residential wells was limited to DW1 and DW2 in October, with the May event avoided as a result of concerns regarding the Covid-19 pandemic. No sample was collected at OW5-2 in 2020 as a result of a suspected pipe offset. Coco staff had planned to repair this OW5-2 before the end of 2020, however access to well was limited due to implement weather and repair of OW5-2 is planned for the spring of 2021. A summary of the sampled parameters and the wells included in the sampling program are provided in Table 2.

Table 2: Groundwater Quality Sampling Program

	Monitoring Locations	Water Quality Parameters
Monitoring Wells	AM1b, AMx, TW1-1, Bored, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-2, OW7-1, OW7-2, OW8-1, OW8-2, OW9-1, and OW9-2	pH, alkalinity, bicarbonate, fluoride, chloride, magnesium, calcium, sodium, potassium, ammonia, sulphate, nitrate, nitrite, phosphate, phosphorous, conductivity, DOC, colour, TDS, hardness
Residential Wells	DW1, DW2 and DW3	pH, alkalinity (CaCO ₃), bicarbonate, conductivity, fluoride, chloride, nitrate, nitrite, chromium, tannins, sulphate, magnesium, calcium, sodium, potassium, ammonia (N), phosphate, phosphorous, anion sum, cation sum, DOC, colour, turbidity, aluminium, arsenic, barium, boron, cadmium, ion ratio, % difference, copper, iron, lead, manganese, selenium, zinc, hardness (CaCO ₃), TDS (iron sum calc.), Langelier Index

The laboratory analytical results for the 2020 sampling events are provided in Appendix C, and the results are summarized in Table 4 (Residential Wells) and Table 5 (Monitoring Wells). Table 4 and 5 provide a comparison of the laboratory results to Ontario Drinking Water Standards (ODWS).

The water quality at residential wells DW1 and DW2 met the ODWS for the 2020 sampling events for the parameters tested with the exception of total dissolved solids (TDS), hardness (as CaCO₃), and manganese at DW1. None of these exceedances are attributed to the effects of the dewatering activities but are instead considered a reflection of background water quality (see below).

The water quality at the on-site monitoring wells for the 2020 sampling events, notably elevated hardness and TDS, was consistent with the pre-quarry conditions (Whitewater Hydrogeology Ltd., 2013).

3.5 Monitoring Condition 4.8 Water Taking Measurements and Reporting

The rate and volume of groundwater extraction and discharge from the quarry are provided to Golder by McCarthy Quarry staff. The pumping records for January 2020 to December 2020 are presented in Table 6. The daily discharge rate (L/min) between January 1, 2020 and December 31, 2020, which was calculated by dividing the total volume pumped per day by the total minutes of pumping, was approximately 1,200 L/min, with the daily pumping volume ranging from 0 to 1,386,000 L/day (Table 6). These water taking rates were below the permitted rate of 4,545 L/min (6,544,800 L/day). The total volume of water removed (79,848,000 L) was less than the maximum taking of 196,500,000 L/year. Pumping was conducted on a total of 123 days in 2020, which was less than the maximum of 250 days per year. The predicted dewatering activities over the next twelve months are expected to remain consistent with those in 2020.

The proportion of surface water and groundwater contributions to quarry inflow may be inferred by performing a simple water budget. First, the total surface water contribution to the quarry is estimated by calculating the direct surplus contribution over the 10 ha quarry area plus the additional contributing runoff from the surrounding 5 ha catchment area (i.e. the stripped area). A surplus value of 501 mm/yr for the quarry footprint and runoff value of 250 mm/yr for the stripped area was applied based on meteorological data from the Meteorological Service of Canada Thornthwaite water budgets (Orillia Brain MET station in Orillia, Ontario between 1993 to 2016).

The volume of water entering the quarry from direct surplus was calculated as 50,100,000 L and the volume of water entering the quarry from surrounding runoff was calculated as 12,500,000 L; thus the total contribution of surface water to the overall water taking was approximately 62,600,000 L. As the total volume of water pumped from the quarry from January 1 to December 31, 2020 was 79,848,000 L, the remaining 17,248,000 was inferred to be sourced from groundwater contributions.

3.6 Condition 4.11 Publicly Accessible Internet Site

The water quality and quantity monitoring data that is required by the PTTW is available at: www.cocoaggregates.com

To access the reports for the McCarthy Quarry click “Documents” on the homepage.

3.7 Condition 4.12 Public Liaison Committee

A Public Liaison Committee have been maintained in previous years, however no meeting was held in 2020 due to the Covid-19 pandemic. Coco did not receive any complaints from residents in 2020 related to quarry operations.

4.0 LIMITATIONS AND USE OF REPORT

The services performed as described in this report were conducted in a manner consistent with the level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report is based on data and information collected during the hydrogeological and hydrological assessment of the Site conducted by Golder. The assessment is based solely on the Site conditions encountered at the time of the assessment, supplemented by other information and data obtained by Golder as described in this report. No assurance is made regarding changes in conditions at the Site subsequent to the time of the assessment. Furthermore, and as with all subsurface investigations, this study necessarily utilizes information at a relatively small number of discrete locations (for example, monitoring wells) to infer geologic and groundwater conditions across the Site and for areas where no such information exists.

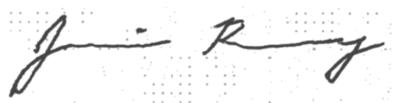
In evaluating the Site, Golder has, in part, relied in good faith on information provided by Coco and their agents. Golder has assumed that the information is factual and accurate. No responsibility is accepted by Golder for any deficiencies, misstatements or inaccuracies contained in this report as a result of errors, omissions, misinterpretations or misrepresentations related to the information provided by Coco and their agents.

5.0 CLOSURE

In closure, we recommend that the groundwater monitoring continue as outlined in PTTW No. 1603-BKTPQH. We trust that this report meets your needs at the present time. If you have any questions or require clarification, please do not hesitate to contact the undersigned.

Signature Page

Golder Associates Ltd.



Jamie Bonany, M.A.Sc.
Project Scientist



Devin Hannan, P.Eng.
Associate, Environmental Engineer

JEB/DH/cdr

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REFERENCES

Chapman, L.J., Putnam D.F., 1984. Physiography of Southern Ontario; Ontario Geological Survey, Map P.2715 (coloured.) Scale 1:600,000.

Whitewater Hydrogeology Ltd., 2013. 2012 Compliance Report #2, Stan McCarthy Quarry. Whitewater Hydrogeology Ltd., Collingwood, Ontario, January 2013.

FIGURES

Figure 1 – Location Map

Figure 2 – Site Location Map

Figure 3 – Site Section C-C'

Figure 4 – Site Section D-D'

Figure 5 – Groundwater Flow – Bobcaygeon Formation

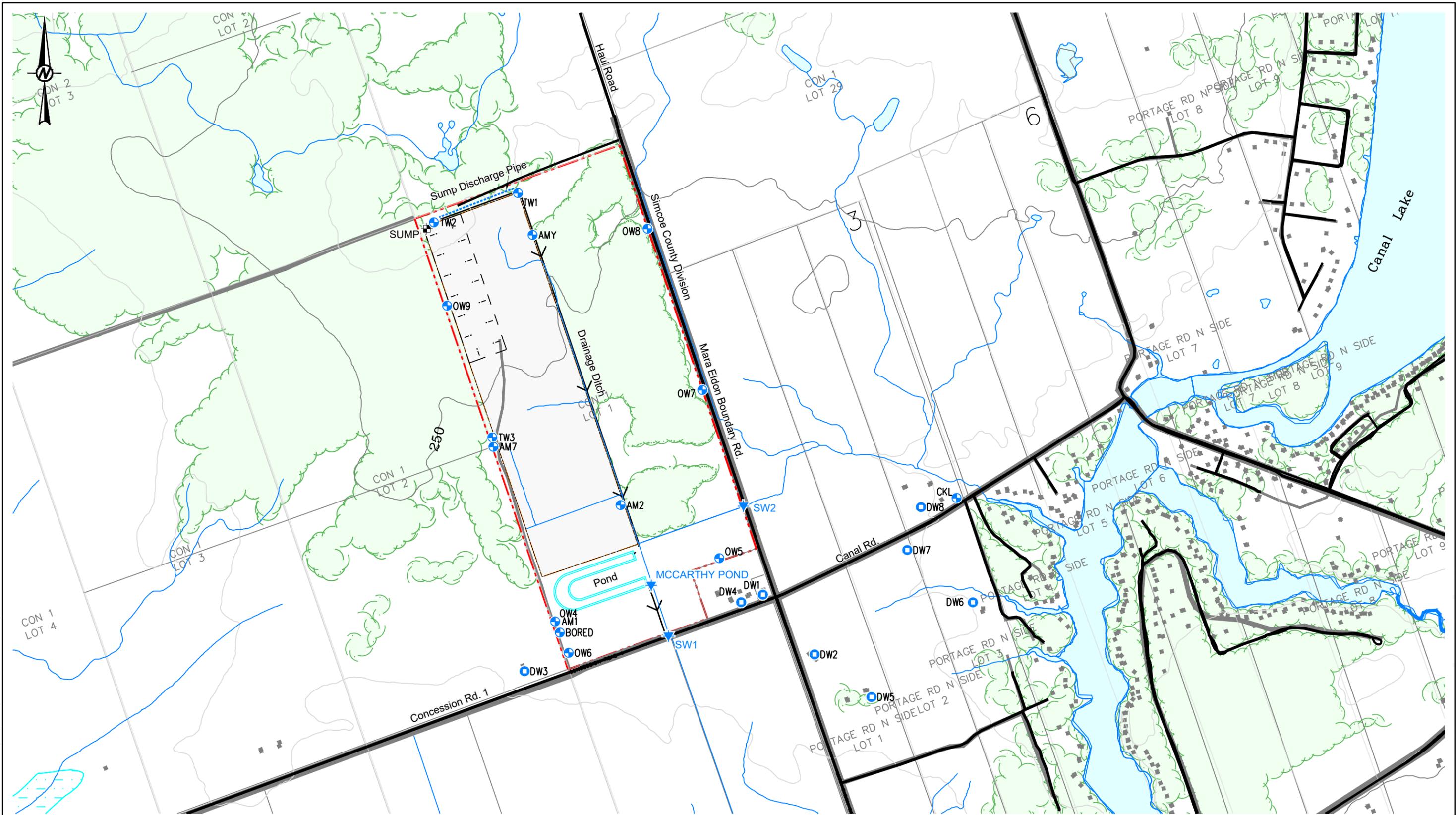
Figure 6 – Overburden Monitoring Wells Groundwater Elevations

Figure 7 – Verulam Monitoring Wells Groundwater Elevations

Figure 8 – Bobcaygeon Monitoring Wells Groundwater Elevations

Figure 9 – Gull River Monitoring Wells Groundwater Elevations

Figure 10 – Precambrian Bedrock Monitoring Wells Groundwater Elevations



- LEGEND**
- Approximate Property Boundary
 - Approximate Licenced Boundary
 - Approximate Extent of Quarry
 - Private Well Monitoring Location
 - ⊕ Observation Well Monitoring Location
 - ★ Surface Water Sampling Location

REFERENCES AND NOTES

1. Projection UTM NAD83 Zone 17
2. Mapping based on ESRI Geography Network OBM Features and 2012 Road Network
3. All Mapped features are Approximate and Not to Scale



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PROJECT
McCARTHY QUARRY
2020 ANNUAL MONITORING REPORT

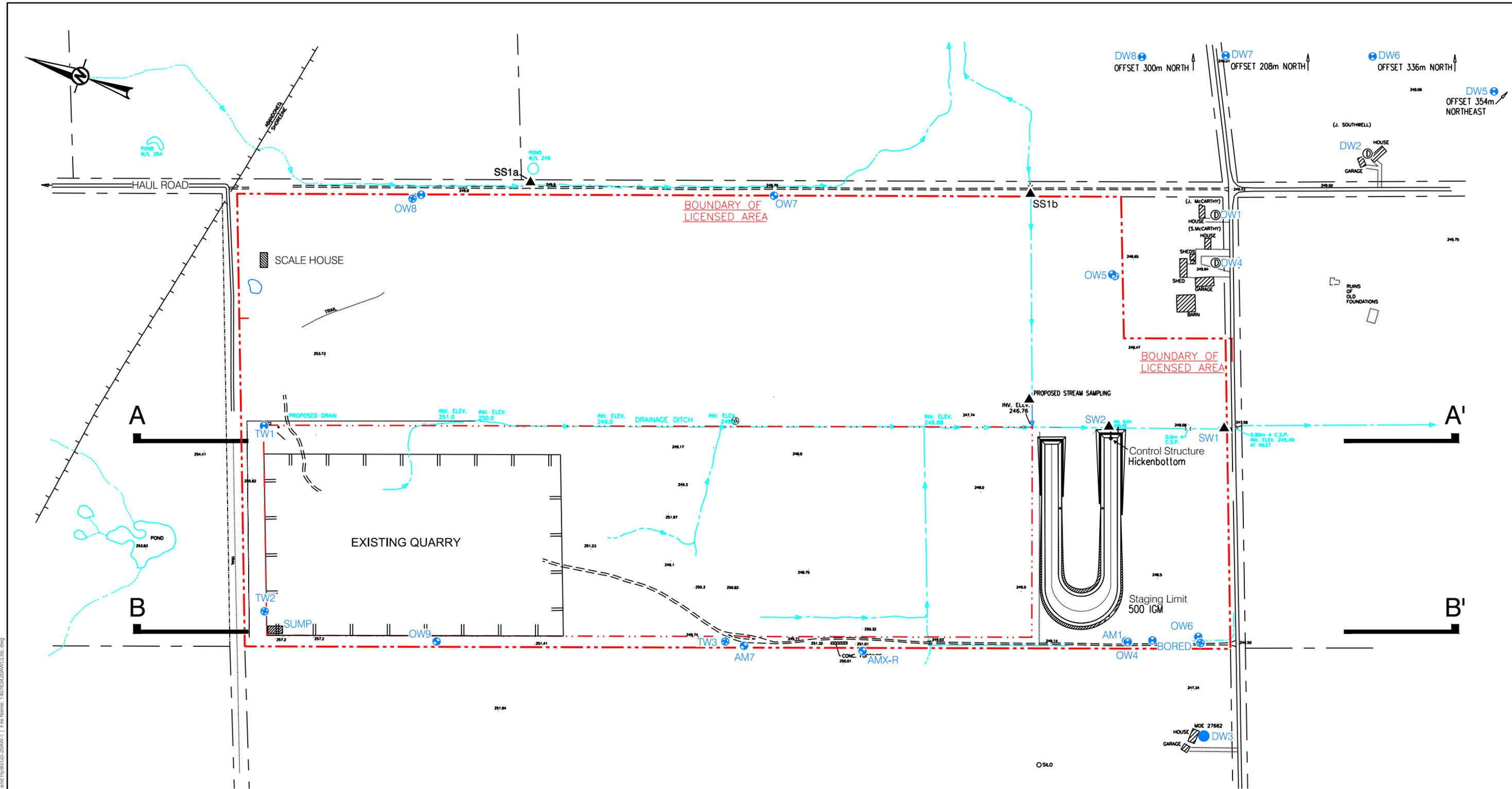
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LOCATION MAP

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LEGEND	
	Quarry Boundary
	Limit of Extraction
	Swales and Drainage Plan
	Surface Water Sampling Location
	Private Dug Well
	Private Drilled Well
	Standpipe
	Observation Well

- NOTES**
1. Test Well AM7 inaccessible
 2. DW1 Formally Degroot
 3. DW2 Formally Southwell
 4. DW3 Formally Lamarre
 5. DW4 Formally McCarthy
 6. AMX decommissioned replaced with AMX-R



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McCarthy Quarry
2020 ANNUAL MONITORING REPORT

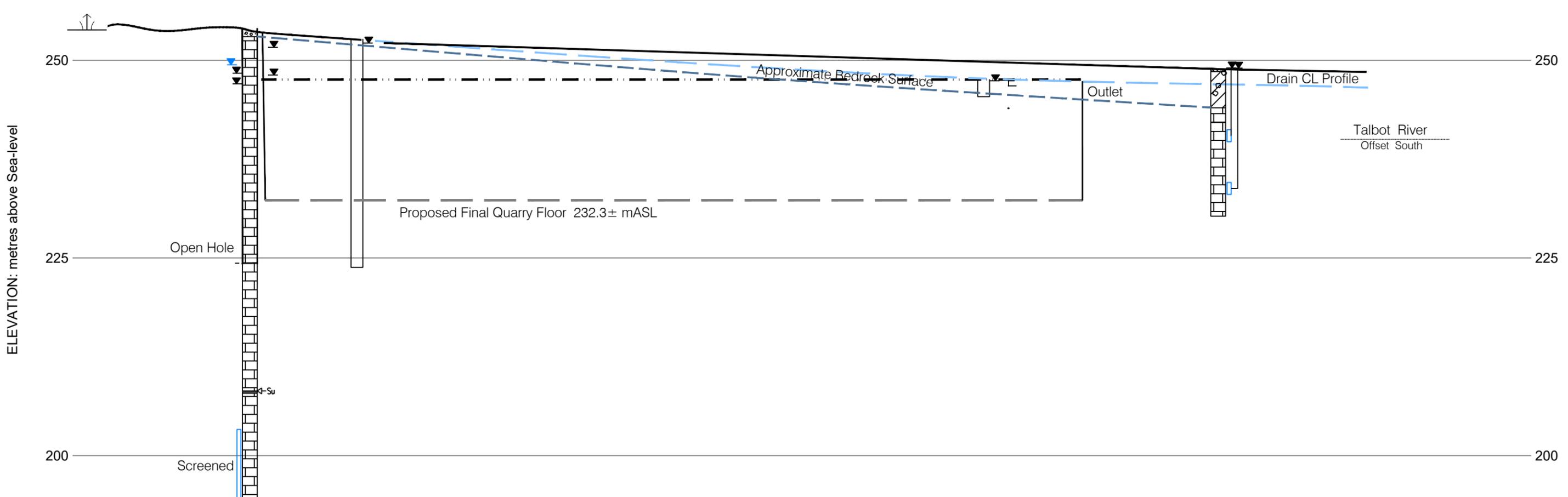
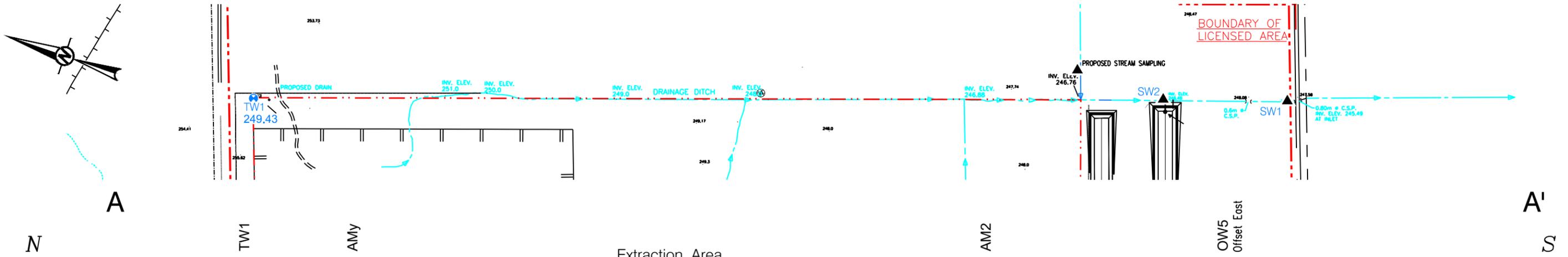
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On all sections, boundaries between soil strata have been determined only at well and test well locations. Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

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PROJECT
McCARTHY QUARRY
2020 ANNUAL MONITORING REPORT

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	DESIGN	STB
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	APPROVED	DEH

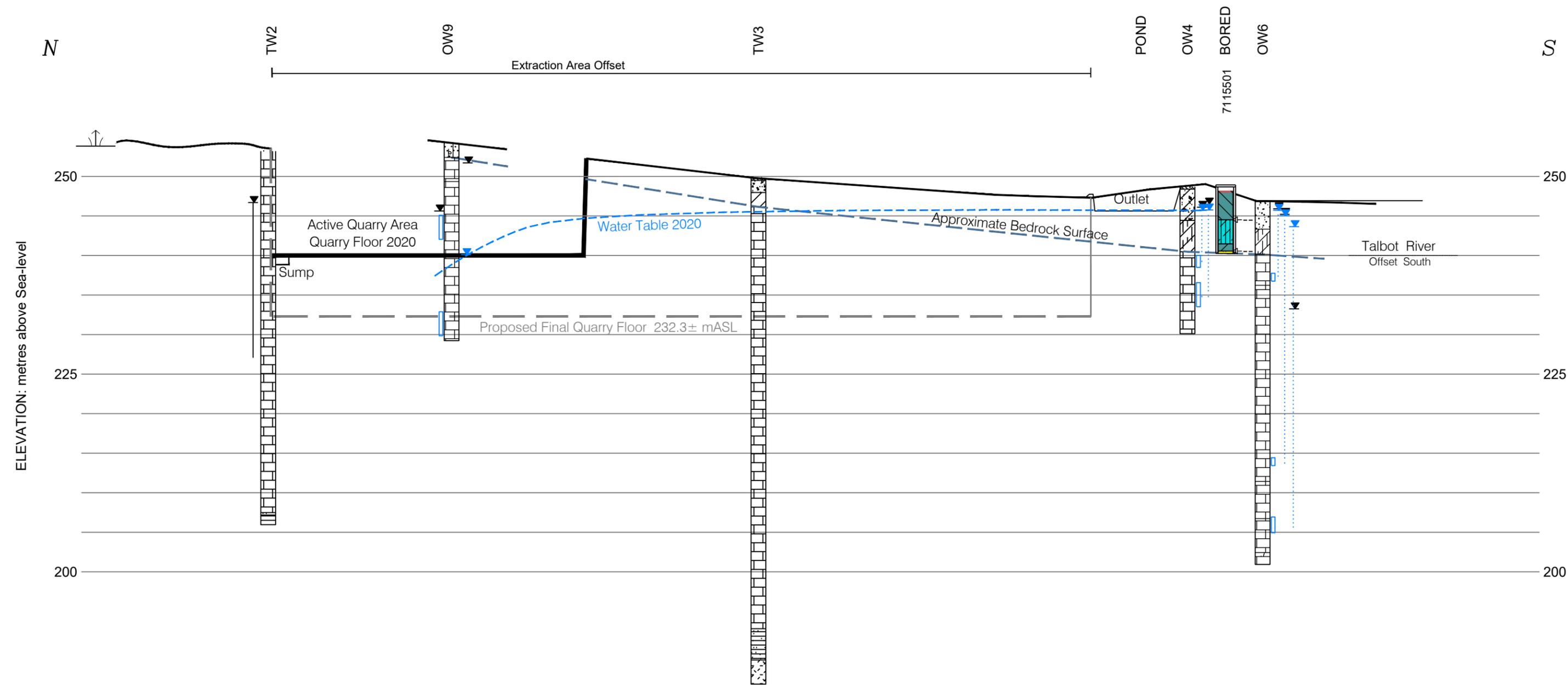
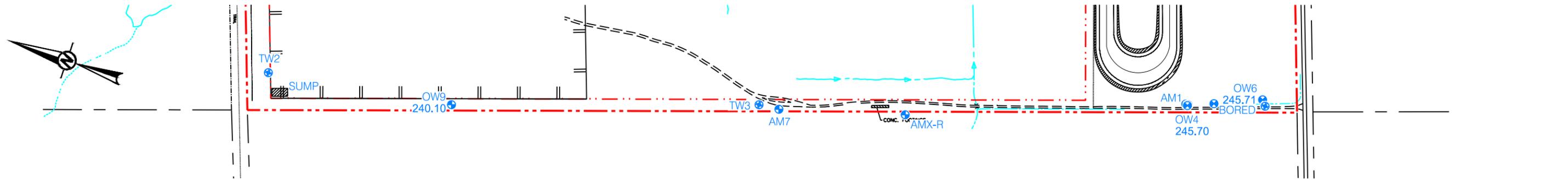
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SITE SECTION A-A'

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On all sections, boundaries between soil strata have been determined only at well and test well locations. Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

Depth of Quarry measured in offset Blast Hole drilling 2014 and reflecting maximum depth

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McCARTHY QUARRY
2020 ANNUAL MONITORING REPORT

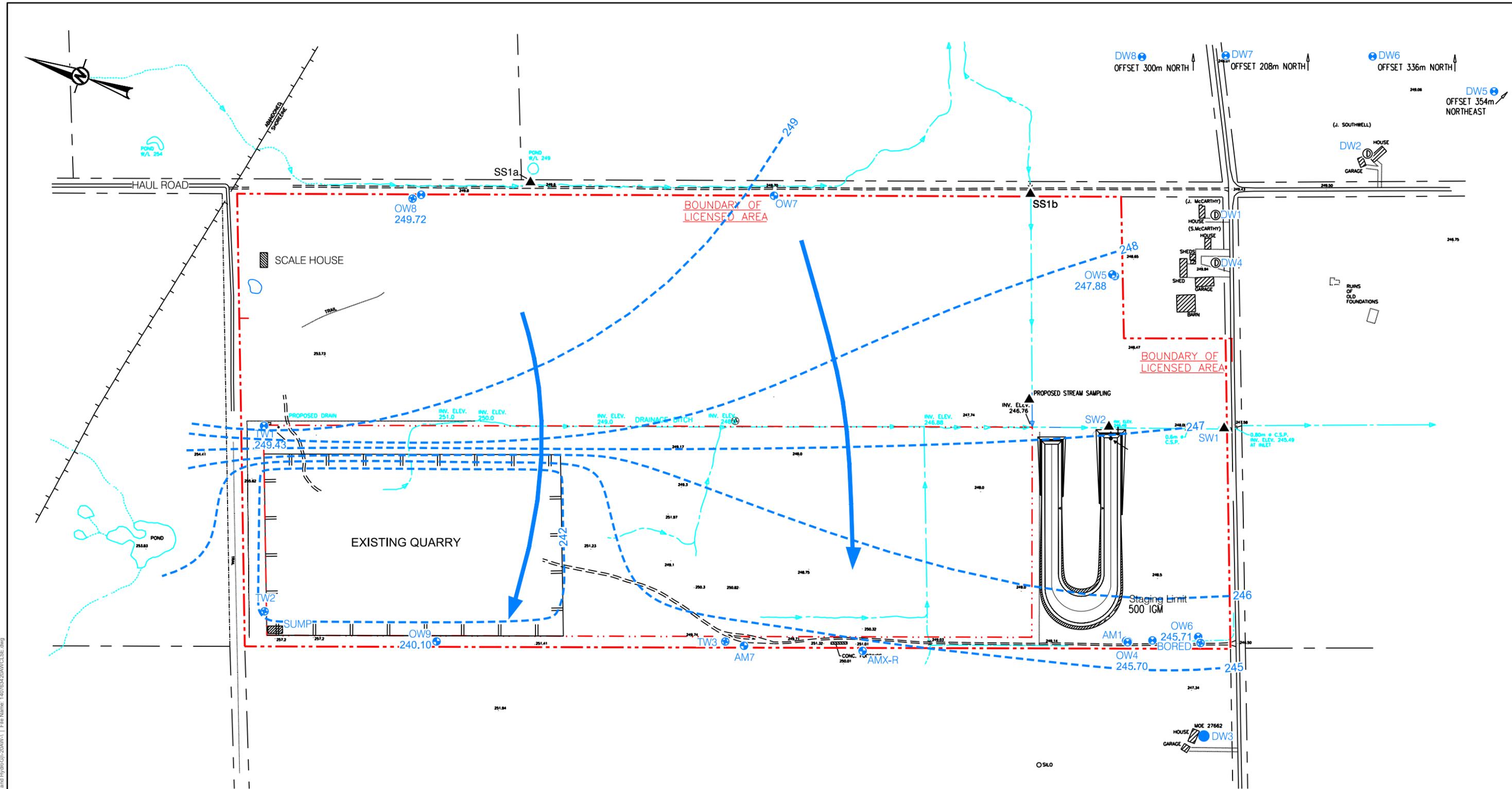
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TITLE
SITE SECTION B - B'

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- - - - - Quarry Boundary
- · - · - Limit of Extraction
- - - - - Swales and Drainage Plan
- 245.67 Static Water Level (September 2020)
- - - - - Equipotential Line (masl)
- ← Inferred Groundwater Flow (Upper Bobcaygeon)
- ▲ Surface Water Sampling Location
- ⊙ Private Dug Well
- Private Drilled Well
- ⊕ Standpipe
- ⊕ Test Well

- NOTES:**
1. Test Well AM7 inaccessible
 2. DW1 Formally Degroot
 3. DW2 Formally Southwell
 4. DW3 Formally Lamarre
 5. DW4 Formally McCarthy
 6. AMX decommissioned replaced with AMX-R
 7. Static levels taken September, 2020

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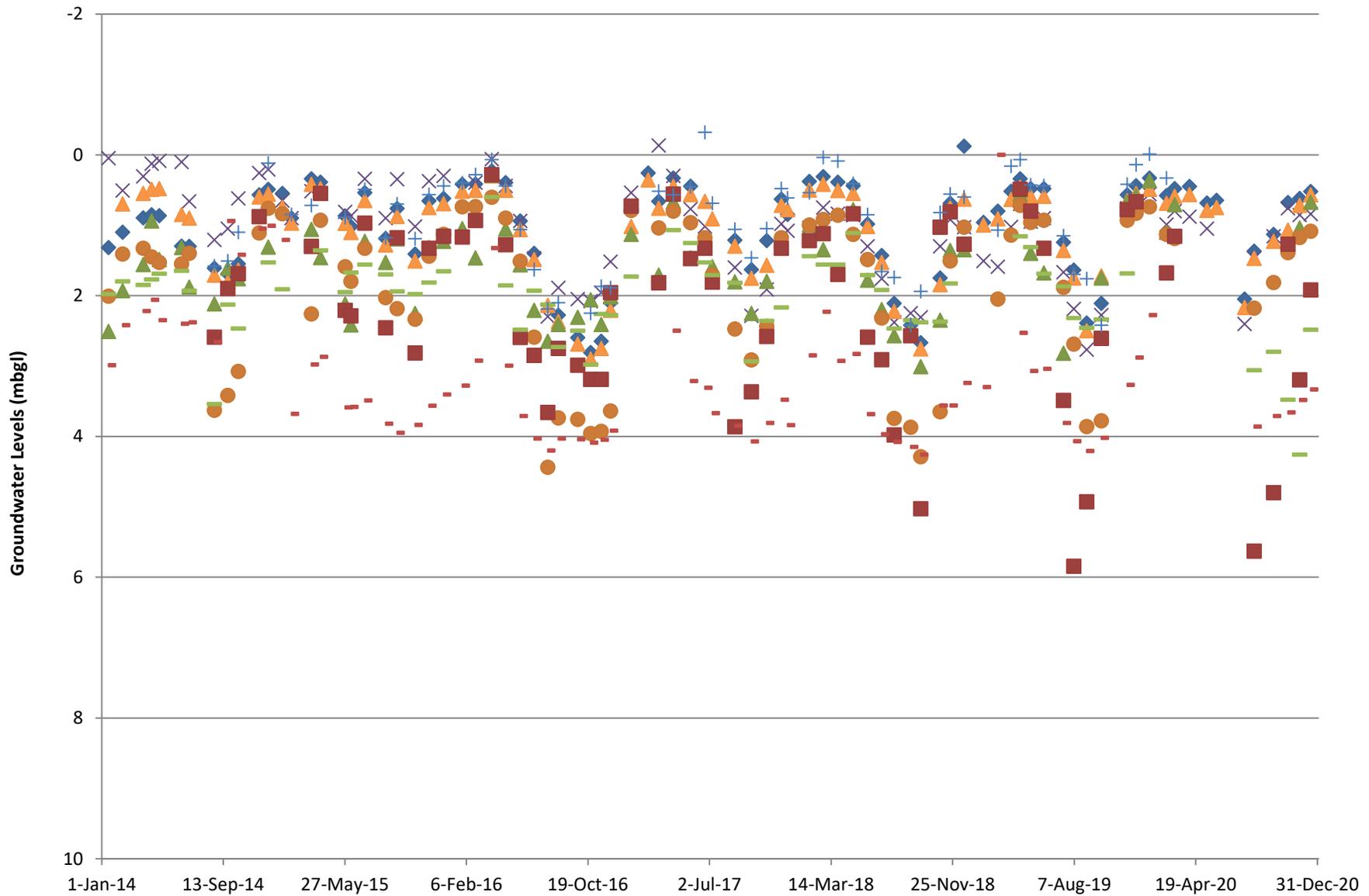
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2020 ANNUAL MONITORING REPORT

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GROUNDWATER FLOW - BOBCAYGEON FORMATION

PROJECT No. 1407634 Phase A Rev. A Figure 5

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25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



- ◆ Bored
- × OW5-1
- ▲ AM1b
- ▲ DW1
- DW2
- DW4
- DW6
- + DW7
- DW8



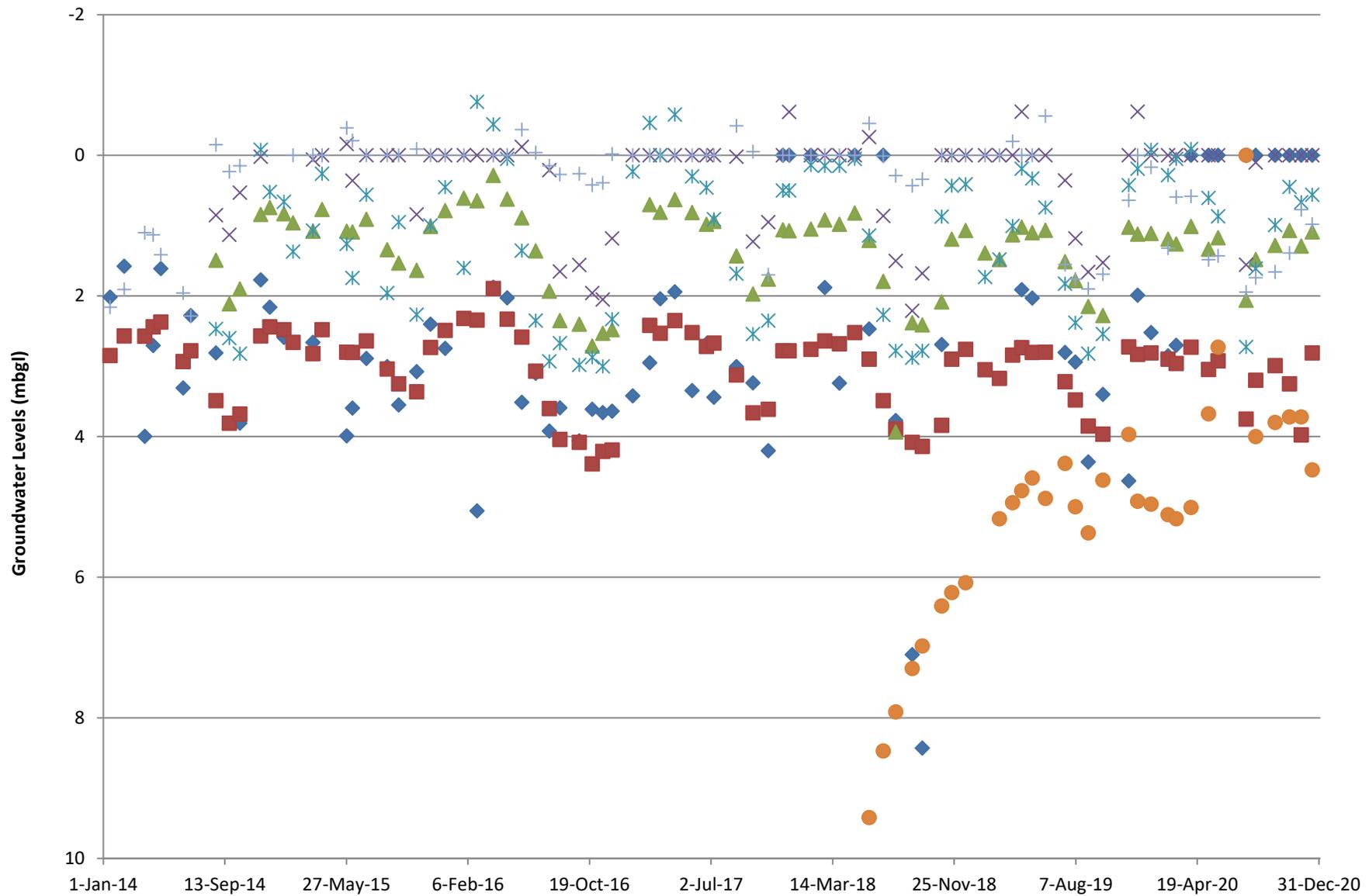
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 11-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Overburden Monitoring Wells
Groundwater Levels**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
6



- ◆ DW3
- OW4-1
- ▲ OW6-1
- × OW7-1
- * OW8-1
- Amx-R
- + CKL-1



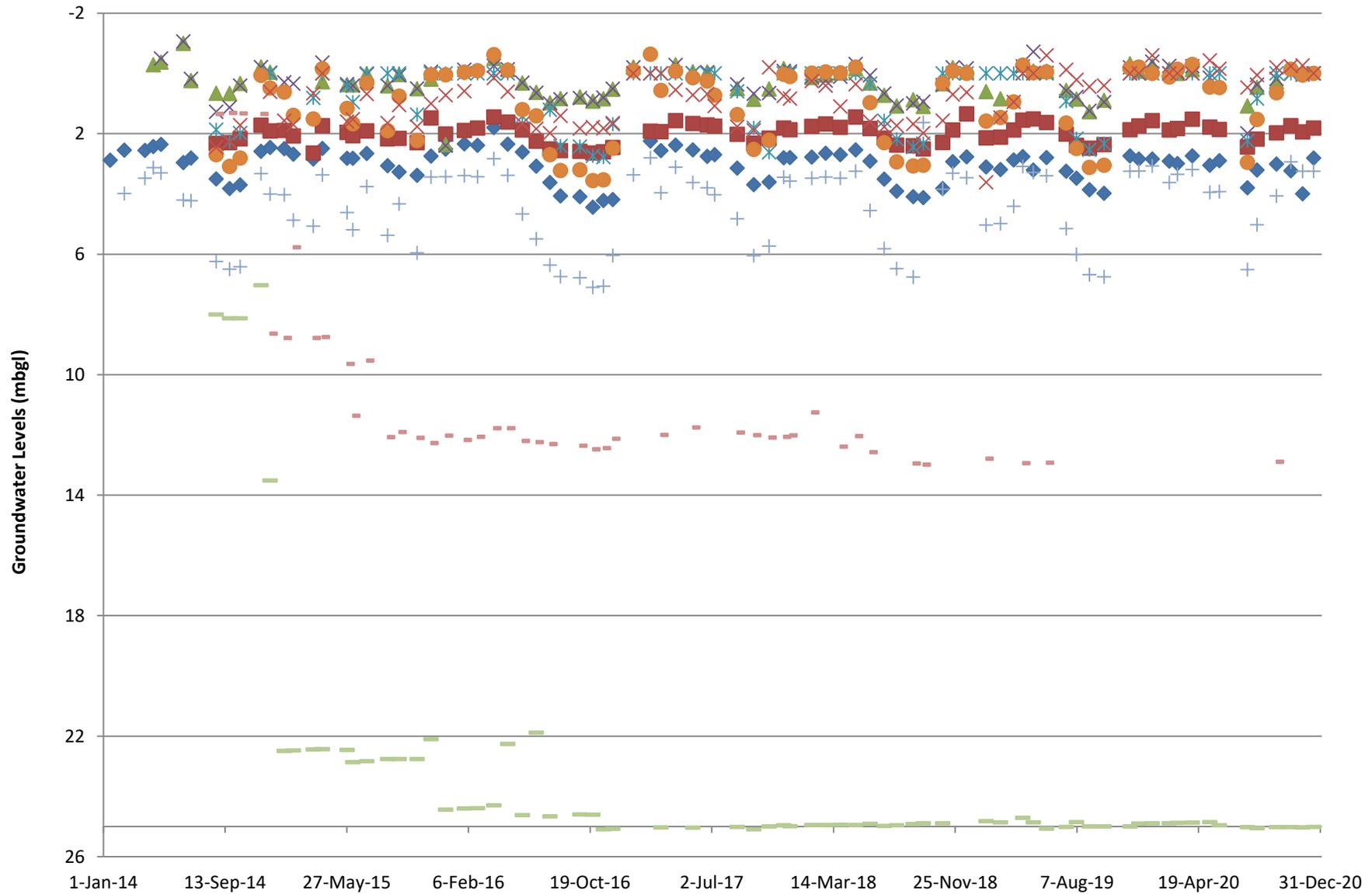
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 11-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Verulam Monitoring Wells
Groundwater Levels**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
7



- ◆ OW4-2 ■ OW6-2 ▲ OW5-2
- × OW5-3 × OW7-2 ● OW8-2
- + TW1-1 - OW9-1 - OW9-2
- × CLK-2



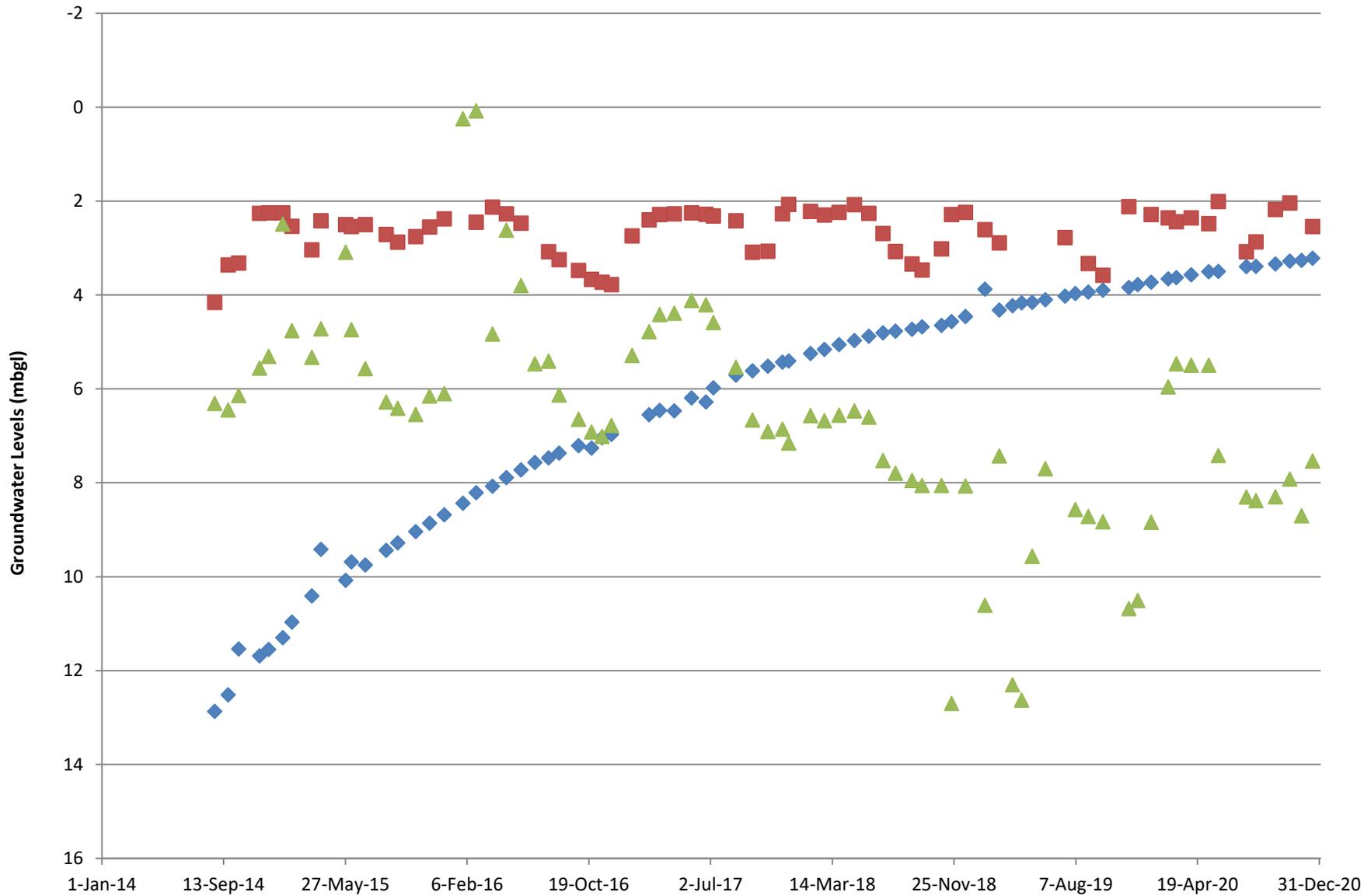
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 11-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Bobcaygeon Monitoring Wells
Groundwater Level**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
8



- ◆ OW6-3
- OW7-3
- ▲ OW8-3



GOLDER

SCALE: NTS
 DATE: 11-Feb-21
 CAD: JEB

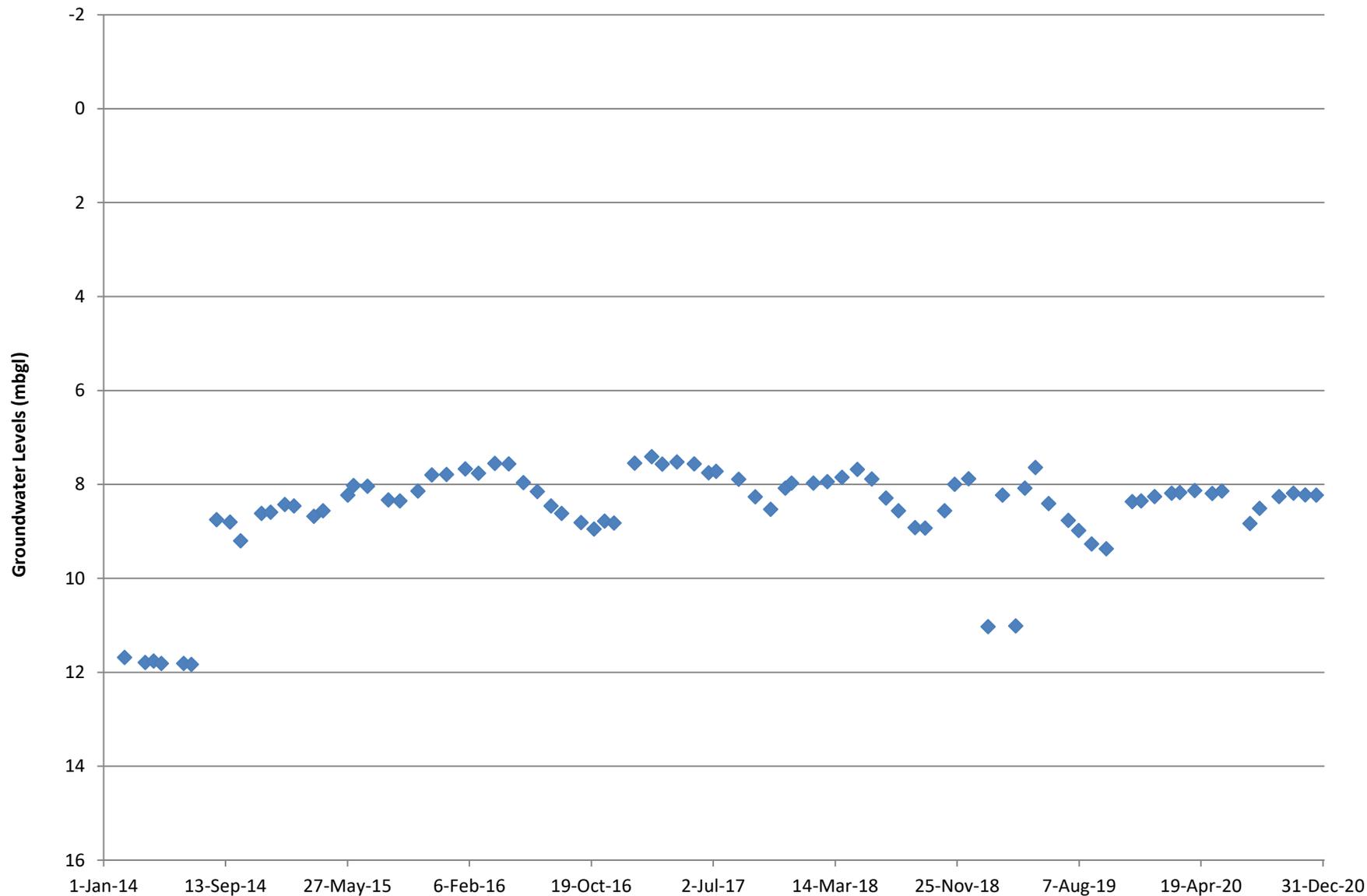
FILE No.
 PROJECT No. 1407634

TEST:
 REVIEW: DH

**McCarthy Quarry
 Gull River Monitoring Wells
 Groundwater Level**

QBJR/Coco Aggregates Inc.
 2020 Annual Monitoring Report

FIGURE No
9



◆ TW1-2



GOLDER

SCALE: NTS
 DATE: 11-Feb-21
 CAD: JEB

**McCarthy Quarry
 Precambrian Monitoring Wells
 Groundwater Level**

FILE No.
 PROJECT No. 1407634

TEST:
 REVIEW: DH

QBJR/Coco Aggregates Inc.
 2020 Annual Monitoring Report

FIGURE No
10

TABLES

- Table 1 - Groundwater Monitoring Locations (embedded)
- Table 2 - Groundwater Quality Requirements (embedded)
- Table 3 – 2020 Water Levels
- Table 4 – Private Water Supply Water Quality
- Table 5 – Onsite Observation Wells Water Quality
- Table 6 – 2020 Measured Water Volume and Rate of Discharge from Quarry Sump

Well	Unit	Elevation (masl)	Stick up (m)	13-Jan-20	18-Feb-20	06-Mar-20	06-Apr-20	13-May-20	02-Jun-20	31-Jul-20	20-Aug-20	30-Sep-20	30-Oct-20	24-Nov-20	17-Dec-20
				Water Levels (mbgl)											
DW3	Verulam	246.52	0.46	2.52	2.85	2.70	NA								
OW4-1	Verulam	249.57	0.88	2.81	2.90	2.96	2.73	3.05	2.92	3.75	3.20	2.99	3.25	3.98	2.81
OW4-2	Bobcaygeon	249.62	0.86	2.84	2.92	2.99	2.74	3.04	2.90	3.79	3.21	3.01	3.23	3.99	2.81
Bored	Overburden	248.86	0.66	0.33	0.58	0.48	0.45	0.69	0.65	2.05	1.37	1.13	0.68	0.62	0.52
OW6-1	Verulam	247.60	0.61	1.11	1.19	1.26	1.01	1.34	1.17	2.06	1.48	1.28	1.07	1.29	1.09
OW6-2	Bobcaygeon	247.52	0.53	1.57	1.88	1.83	1.52	1.78	1.86	2.44	2.18	1.97	1.73	1.94	1.81
OW6-3	Gull River	247.46	0.47	3.73	3.66	3.63	3.57	3.50	3.50	3.40	3.39	3.34	3.28	3.27	3.22
DW4	Overburden	250.19	0.24	frozen	1.68	1.16	NA	NA	NA	NA	5.63	4.80	1.27	3.20	1.92
DW1	Overburden	249.83	0.3	0.37	1.10	0.71	NA	1.04	0.68						
OW5-1	Overburden	249.84	0.8	0.56	0.99	0.80	0.88	1.05	NA	2.41	1.47	1.16	0.76	0.85	0.84
OW5-2	Bobcaygeon	249.76	1.0	-0.26	-0.14	frozen	-0.13	broken	NA	1.08	0.46	0.28	broken	broken	broken
OW5-3	Bobcaygeon	249.70	1.0	-0.39	-0.25	-0.05	-0.24	0.14	NA	1.99	0.37	0.18	0.01	0.04	0.00
DW2	Overburden	247.50	0.8	0.74	1.13	1.19	NA	NA	NA	NA	2.18	1.82	1.39	1.18	1.09
DW7	Overburden		0.32	-0.01	0.33	frozen	NA								
DW8	Overburden			2.28	frozen	frozen	NA	NA	NA	NA	3.86	3.71	3.66	3.49	3.33
DW6	Overburden		0.5	frozen	frozen	frozen	NA	NA	NA	NA	3.06	2.80	3.48	4.26	2.49
OW7-1	Verulam	249.80	0.62	flowing	flowing	flowing	NA	NA	NA	1.56	0.10	flowing	flowing	flowing	flowing
OW7-2	Bobcaygeon	249.78		flowing	flowing	flowing	NA	NA	NA	2.24	0.83	flowing	flowing	flowing	flowing
OW7-3	Gull River	249.74	0.61	2.29	2.36	2.44	2.36	2.48	2.01	3.08	2.87	2.18	2.04	NM	2.54
OW8-1	Verulam	251.47	0.76	-0.08	0.28	0.05	-0.09	0.61	0.87	2.73	1.61	0.99	0.45	0.67	0.56
OW8-2	Bobcaygeon	251.44	0.83	frozen	0.12	-0.14	-0.30	0.45	0.47	2.96	1.53	0.64	-0.14	0.05	frozen
OW8-3	Gull River	251.40	0.8	8.84	5.96	5.47	5.50	5.50	7.42	8.31	8.38	8.30	7.92	8.70	7.54
TW1-1	Bobcaygeon	254.10	0.6	3.07	3.62	3.35	3.19	3.95	3.92	6.52	5.02	4.07	2.94	3.25	3.25
TW1-2	Precambrian	254.10	0.52	8.26	8.19	8.17	8.13	8.20	8.14	8.83	8.51	8.26	8.19	8.23	8.23
OW9-1	Bobcaygeon	253.40	0.41	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
OW9-2	Bobcaygeon	253.31	0.35	24.89	24.89	24.88	24.87	24.86	24.96	25.02	25.05	25.02	25.02	25.03	25.01
CKL-1	Verulam		0.6	0.17	1.32	0.59	0.58	1.49	1.43	1.95	1.74	1.66	1.39	0.77	0.98
CKL-2	Bobcaygeon		0.65	-0.60	frozen	frozen	flowing	-0.43	-0.16	0.47	0.05	-0.20	-0.24	-0.26	frozen
AM1b	Overburden	249.45	0.2	0.49	0.69	0.59	0.57	0.79	0.75	2.17	1.47	1.23	1.07	0.72	0.57
AMX-R	Verulam			4.96	5.11	5.17	5.01	3.68	2.73	NA	4.00	3.80	3.72	3.72	4.47

Notes:

1. Highlighted cells represent groundwater measurements in terms of meters above sea level (masl)
2. Not Accessible (NA)
3. Not Measured (NM)

	Sample	DW1										DW2								
		Date	30-May-16	25-Oct-16	23-May-17	30-Oct-17	30-May-18	31-Oct-18	09-May-19	04-Oct-19	30-Oct-20	30-May-16	25-Oct-16	23-May-17	30-Oct-17	30-May-18	31-Oct-18	09-May-19	04-Oct-19	30-Oct-20
		ODWS																		
Anion Sum	Sum	12.6	12.3	12.3	9.78	12.7	12.1	10.7	12.6	12.8	8.62	11.2	7.76	9.18	8.33	11.6	7.59	11.2	8.5	
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	330	340	310	350	320	320	340	320	340	340	330	340	340	350	330	320	310	330	
Calculated TDS	500 (AO)	700	640	660	530	690	650	570	690	700	470	570	400	470	430	610	390	590	460	
Cation Sum	Sum	13.8	11.5	12.4	10.5	13.2	12.2	10.8	13.2	13.7	9.22	10.3	7.36	8.51	7.65	11.3	7.11	11.4	8.93	
Hardness (CaCO3)	mg/L	80-100 (OG)	600	500	540	460	560	510	470	550	580	400	450	340	380	340	480	330	490	400
Ion Balance (% Difference)	%		4.69	3.23	0.37	3.6	1.80	0.410	0.440	2.31	3.33	3.37	4.12	2.61	3.8	4.21	1.32	3.24	1.02	2.43
Langelier Index (@ 20C)	NA		0.917	1.10	0.778	1.08	1.06	0.725	0.874	0.847	0.977	1.01	0.923	0.905	1.04	1.04	0.665	0.920	0.821	0.989
Langelier Index (@ 4C)	NA		0.670	0.848	0.531	0.835	0.815	0.478	0.627	0.600	0.73	0.757	0.675	0.657	0.792	0.791	0.418	0.671	0.574	0.741
Saturation pH (@ 20C)	NA		6.71	6.77	6.8	6.75	6.76	6.84	6.81	6.79	6.76	6.81	7.01	6.84	6.9	6.85	6.99	6.87	6.98	6.83
Saturation pH (@ 4C)	NA		6.96	7.02	7.05	6.99	7.01	7.09	7.05	7.04	7.06	7.06	7.26	7.09	7.15	7.09	7.23	7.12	7.22	7.08
Total Ammonia-N	mg/L		<0.050	<0.050	<0.050	<0.050	0.086	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.084	<0.050	<0.050	<0.050	<0.050	
Colour	TCU	5 (AO)	<2	<2	<2	4	<2	3	2	<2	<2	<2	<2	<2	3	4	<2	3		
Conductivity	uS/cm		1300	1200	1300	910	1400	1200	1000	1300	810	1100	730	840	780	1100	720	1100	820	
Fluoride (F-)	mg/L	1.5	0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	0.12	0.10	0.17	0.11	0.1	<0.10	0.18	<0.10	0.13	<0.10
Dissolved Organic Carbon	mg/L	5 (AO)	1.1	1.5	1.4	2.0	1.1	0.93	2.0	1.0	1.2	3.6	1.9	3.2	2	3.0	2.0	3.2	1.6	2.8
Orthophosphate (P)	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.62	7.86	7.58	7.83	7.83	7.57	7.68	7.64	7.74	7.81	7.94	7.75	7.94	7.88	7.65	7.79	7.80	7.82
Dissolved Sulphate (SO4)	mg/L	500 (AO)	35	32	30	21	32	32	20	33	29	32	47	18	29	25	54	19	40	31
Tannins & Lignins	mg/L		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5	0.2	1.7	0.2	0.1	0.1	<0.1	<0.1	<0.1	0.2	0.6	<0.1	0.3	0.3	0.6	<0.1	<0.1	2.3	0.5
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	330	350	310	360	320	320	340	320	320	340	330	340	340	350	330	320	310	340
Dissolved Chloride (Cl)	mg/L	250 (OG)	190	170	200	77	200	180	120	200	200	38	130	22	63	27	140	26	140	41
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	0.29	0.16	0.13	0.43	0.40	0.24	0.83	<0.10	<0.10	<0.10	1.39	<0.10	0.14	<0.10	2.05	0.13	1.77	<0.10
Nitrate + Nitrite	mg/L	10	0.29	0.16	0.13	0.43	0.40	0.24	0.83	0.12	<0.10	<0.10	1.39	<0.10	0.14	<0.10	2.05	0.13	1.77	<0.10
Dissolved Aluminum (Al)	mg/L	0.1 (OG)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0056	<0.005	<0.005
Dissolved Antimony (Sb)	ug/L	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000	170	110	170	90	190	170	150	190	180	85	170	51	69	71	220	50	230	69
Dissolved Beryllium (Be)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40
Dissolved Boron (B)	ug/L	5000	25	30	36	40	25	40	27	37	39	30	33	44	17	37	33	55	26	19
Dissolved Cadmium (Cd)	ug/L	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Dissolved Calcium (Ca)	mg/L		190	150	160	150	170	140	140	160	170	130	89	120	110	120	98	110	100	130
Dissolved Chromium (Cr)	ug/L	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)	110	1.6	130	<1.0	100	62	69	42	44	1.3	1.9	1.5	<1.0	3.7	5.0	3.5	1.5	<0.90
Dissolved Iron (Fe)	mg/L	0.3 (AO)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Lead (Pb)	ug/L	10	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L		30	29	32	21	32	37	28	37	36	19	55	10	26	12	58	10	56	20
Dissolved Manganese (Mn)	ug/L	50 (AO)	3.1	34	4.1	32	<2.0	<2.0	31	240	32	6.6	15	<2.0	9.5	5.1	<2.0	7.7	4.8	
Dissolved Molybdenum (Mo)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	0.64	<0.50	1.4	<0.50	<0.50	<0.50	1.0	<0.50	1.0	<0.50	0.71
Dissolved Nickel (Ni)	ug/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		1.6	2.0	1.8	1.6	2.0	2.3	1.6	2	2.2	8.6	3.3	4.3	3.2	11.0	3.4	5.2	3.2	4.4
Dissolved Selenium (Se)	ug/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L		7.2	8.0	7.0	8.4	7.0	8.9	7.2	9	8.8	5.0	9.1	3.9	7.6	4.6	9.0	3.4	9.4	6.1
Dissolved Silver (Ag)	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Dissolved Sodium (Na)	mg/L	200 (OG)	41	33	38	29	45	46	33	48	47	22	30	12	21	14	36	11	35	19
Dissolved Strontium (Sr)	mg/L		0.580	0.520	0.630	0.390	0.620	0.570	0.510	0.620	0.68	0.350	0.630	0.280	0.340	0.300	0.590	0.270	0.580	0.350
Dissolved Thallium (Tl)	mg/L		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Dissolved Titanium (Ti)	ug/L		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02	0.0015	0.00088	0.0014	0.00076	0.0015	0.0015	0.0013	0.0016	0.0015	0.00072	0.0029	0.00031	0.00071	0.00030	0.00260	0.00028	0.00260	0.00043
Dissolved Vanadium (V)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	0.56	<0.50	0.65	<0.50	0.64	<0.50
Dissolved Zinc (Zn)	ug/L	5000 (AO)	36	<5.0	14	<5.0	17	16	5.6	7.7	18	19	<5.0	5.1	<5.0	10	7.0	<5.0	<5.0	<5.0

	Sample	MOE 5727662 (DW3)								
		Date	30-May-16	25-Oct-16	23-May-17	30-Oct-17	30-May-18	31-Oct-18	09-May-19	08-Oct-19
		ODWS								
Anion Sum	Sum		8.90	9.10	8.79	8.57	8.77	10.7	8.73	9.01
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		240	230	240	230	230	230	220	220
Calculated TDS	mg/L	500 (AO)	490	490	480	460	470	580	480	490
Cation Sum	Sum		9.05	8.86	8.74	8.6	8.68	10.7	8.97	8.86
Hardness (CaCO3)	mg/L	80-100 (OG)	200	180	180	180	190	190	200	190
Ion Balance (% Difference)	%		0.820	1.34	0.29	0.16	0.520	0.310	1.33	0.820
Langelier Index (@ 20C)	NA		0.439	0.548	0.368	0.48	0.393	0.404	0.358	0.512
Langelier Index (@ 4C)	NA		0.191	0.300	0.12	0.232	0.145	0.157	0.110	0.264
Saturation pH (@ 20C)	NA		7.53	7.59	7.57	7.61	7.56	7.58	7.57	7.59
Saturation pH (@ 4C)	NA		7.78	7.83	7.82	7.85	7.81	7.83	7.82	7.84
Total Ammonia-N	mg/L		<0.050	0.46	<0.050	0.41	0.51	<0.050	<0.050	0.33
Colour	TCU	5 (AO)	<2	<2	<2	<2	<2	5	<2	<2
Conductivity	uS/cm		900	960	900	860	880	1100	930	970
Fluoride (F-)	mg/L	1.5	0.75	0.79	0.75	0.77	0.70	0.73	0.71	0.69
Dissolved Organic Carbon	mg/L	5 (AO)	0.23	1.1	0.38	<0.50	<0.50	0.67	0.50	0.69
Orthophosphate (P)	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.97	8.13	7.94	8.08	7.95	7.99	7.93	8.10
Dissolved Sulphate (SO4)	mg/L	500 (AO)	6.9	1.5	6	2.4	5.0	<1.0	7.3	1.2
Tannins & Lignins	mg/L		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5	0.1	0.3	0.4	2.4	1.3	<0.1	<0.1	0.2
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	240	230	240	230	240	240	230	220
Dissolved Chloride (Cl)	mg/L	250 (OG)	140	160	140	140	140	210	140	160
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Aluminum (Al)	mg/L	0.1 (OG)	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<5.0
Dissolved Antimony (Sb)	ug/L	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000	190	210	190	190	200	200	200	220
Dissolved Beryllium (Be)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Boron (B)	ug/L	5000	730	760	820	790	780	610	840	730
Dissolved Cadmium (Cd)	ug/L	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		36	33	33	31	34	34	34	34
Dissolved Chromium (Cr)	ug/L	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)	9.5	<1.0	<1.0	<1.0	2.6	43	13	23
Dissolved Iron (Fe)	mg/L	0.3 (AO)	<0.1	0.1	<0.1	<0.1	0.190	<0.1	<0.1	<0.1
Dissolved Lead (Pb)	ug/L	10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1
Dissolved Magnesium (Mg)	mg/L		26	24	25	25	26	26	27	25
Dissolved Manganese (Mn)	ug/L	50 (AO)	<2.0	4.3	3.9	4.9	5.5	<2.0	<2.0	3.3
Dissolved Molybdenum (Mo)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Nickel (Ni)	ug/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		6.9	7.6	7.1	7.2	7.2	7.2	7.1	7.1
Dissolved Selenium (Se)	ug/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L		5.60	5.00	5.50	5.30	5.6	5.0	5.6	4.8
Dissolved Silver (Ag)	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	mg/L	200 (OG)	110	120	110	110	110	150	110	110
Dissolved Strontium (Sr)	mg/L		2.5	2.5	2.2	2.3	2.3	2.6	2.5	3
Dissolved Thallium (Tl)	mg/L		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Dissolved Titanium (Ti)	ug/L		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Vanadium (V)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Zinc (Zn)	ug/L	5000 (AO)	210	<5.0	6.9	180	8.9	630	130	170

Parameter	Units	Sample	OW4-I										OW4-II										
		Date	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	
		ODWS																					
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		280	260	260	250	240	240	210	230	220	220	280	240	230	230	250	230	230	230	240	240	
Total Ammonia-N	mg/L		0.74	0.84	0.77	1.3	1.2	1.3	1.0	1.4	0.98	1.3	0.80	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1	1.1	
Colour	TCU	5 (AO)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Conductivity	uS/cm		950	910	1200	1600	1400	1300	1300	1400	1300	1390	1100	1800	1800	1900	1600	1800	1600	1800	1500	1740	
Total Dissolved Solids	mg/L	500 (AO)	530	490	630	780	690	700	630	680	670	720	570	930	910	910	810	920	840	920	740	880	
Fluoride (F ⁻)	mg/L	1.5	1.4	1.4	1.2	0.99	1.0	1.1	1.0	0.99	1	0.99	1.3	0.95	0.95	0.91	0.98	0.90	0.96	0.88	1	0.91	
Dissolved Organic Carbon	mg/L	5 (AO)	1.8	3.2	2.2	1.9	1.7	2.7	2.4	1.8	1.7	1.6	1.2	1.1	1.1	1.1	1.1	1.2	1.0	1.1	0.99	1.1	
Hardness	mg/L	80-100 (OG)	94	82	130	170	140	170	140	140	150	160	130	250	250	230	210	240	230	260	180	230	
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
pH	units	6.5-8.5 (OG)	8.28	8.45	8.16	8.06	8.19	8.42	8.40	8.39	8.11	8.11	8.09	8.05	7.94	7.96	8.05	8.29	8.03	8.21	8	7.94	
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	4.1	11	6.7	2.9	7.5	2.8	2.9	6.9	2.6	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	290	270	260	260	240	250	220	240	220	220	280	240	230	240	250	240	240	230	250	240	
Dissolved Chloride (Cl)	mg/L	250 (AO)	130	120	210	330	270	260	250	260	260	300	160	430	400	430	340	430	350	400	290	390	
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Dissolved Calcium (Ca)	mg/L		18	16	24	32	28	33	27	27	30	30	24	45	47	42	39	47	43	49	35	45	
Dissolved Magnesium (Mg)	mg/L		12	10	17	22	18	21	18	18	19	21	16	32	33	31	27	31	30	34	24	30	
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	
Dissolved Potassium (K)	mg/L		6.2	5.2	6.7	7.5	7.0	7.8	6.4	6.8	7.7	7.2	7.3	9.9	11	9.8	9.3	9.8	9.7	11	8.7	9.8	
Dissolved Sodium (Na)	mg/L	200 (AO)	170	150	190	210	200	220	180	200	210	210	180	260	260	250	230	260	250	270	220	250	

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded)
 are shown in bold.

Parameter	Units	Sample	OW5-I										OW5-II							
		Date	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19
		ODWS																		
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		230	240	230	250	260	260	270	260	280	320	110	110	110	110	110	110	110	120
Total Ammonia-N	mg/L		0.65	0.78	0.81	0.78	0.75	0.72	0.54	0.62	0.39	0.52	9.2	9.5	9.4	9.6	12	9.9	8.6	9.1
Colour	TCU	5 (AO)	<2	4	<2	<2	<2	2	<2	<2	<2	<2	51	100	51	9	6	34	<2	12
Conductivity	uS/cm		620	620	600	690	710	690	740	620	740	737	29000	27000	28000	28000	28000	25000	27000	26000
Total Dissolved Solids	mg/L	500 (AO)	350	340	340	360	390	390	460	360	410	430	16000	16000	16000	16000	18000	16000	16000	15000
Fluoride (F ⁻)	mg/L	1.5	0.85	0.89	0.82	0.8	0.65	0.73	0.56	0.70	0.56	0.63	0.45	0.45	0.44	0.47	0.42	0.44	0.40	0.41
Dissolved Organic Carbon	mg/L	5 (AO)	1.2	1.3	1.4	1.3	1.3	1.3	1.2	1.5	1	1.4	0.53	0.48	0.7	0.49	0.51	0.62	0.57	<0.50
Hardness	mg/L	80-100 (OG)	170	160	170	160	210	200	330	190	260	230	6300	6300	6300	5200	7900	6300	6000	5800
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	8.02	8.11	8.01	8.02	8.01	8.28	7.97	8.20	7.93	7.87	7.28	7.34	7.27	7.34	7.31	7.69	7.35	7.58
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	32	27	28	31	35	35	44	36	45	41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.3	5.3
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	240	240	230	250	260	270	270	260	280	320	110	110	110	110	110	110	110	120
Dissolved Chloride (Cl)	mg/L	250 (AO)	39	35	37	44	46	43	52	26	39	34	10000	9800	10000	11000	10000	9700	10000	9400
Nitrite (N)	mg/L	1	0.107	0.066	0.033	0.055	<0.010	0.086	<0.010	0.046	0.046	0.057	0.013	<0.010	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	0.41	0.26	<0.10	0.39	0.43	0.26	0.59	0.26	0.46	0.29	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	10	0.52	0.32	<0.10	0.45	0.43	0.34	0.59	0.31	0.5	0.35	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		31	29	29	29	39	37	84	33	50	44	1300	1300	1200	1000	1600	1300	1200	1200
Dissolved Magnesium (Mg)	mg/L		22	21	22	22	27	25	29	25	32	29	750	760	780	640	920	750	720	690
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.17	0.12	<0.1	<0.1	<1	<1	<0.5	<1	<0.5	<0.5	<0.5	0.56
Dissolved Potassium (K)	mg/L		7.2	7.5	6.9	7.4	6.9	7.5	6.6	6.8	6.5	7.7	69	77	74	62	77	70	66	67
Dissolved Sodium (Na)	mg/L	200 (AO)	63	64	64	64	66	70	66	59	59	65	3800	3900	3900	3300	4400	4000	3400	3800

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded) are shown in bold.

Parameter	Units	Sample	OW5-III										OW6-II										
		Date	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	30-May-16	25-Oct-16	23-May-17	30-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	
		ODWS																					
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		110	120	110	130	130	100	110	110	88	120	160	160	150	150	150	150	140	150	140	160	
Total Ammonia-N	mg/L		8.9	10	9.6	10	9.6	9.4	9.7	9.5	8.2	10	1.0	1.3	0.059	0.96	0.12	1.2	<0.050	1.4	<0.050	1.8	
Colour	TCU	5 (AO)	35	59	2	5	3	12	<2	4	32	16	<2	<2	<2	<2	3	<2	<2	<2	<2		
Conductivity	uS/cm		27000	32000	29000	33000	31000	21000	29000	28000	21000	31600	6200	6300	6400	6300	6500	6100	6500	6400	6400	6670	
Total Dissolved Solids	mg/L	500 (AO)	16000	18000	17000	20000	18000	13000	17000	16000	13000	18000	3800	4000	4000	3700	4100	4000	4000	4000	4000	4100	
Fluoride (F ⁻)	mg/L	1.5	0.44	0.43	0.44	0.43	0.39	0.34	0.40	0.39	0.35	0.41	0.49	0.51	0.52	0.57	0.60	0.62	0.63	0.69	0.76		
Dissolved Organic Carbon	mg/L	5 (AO)	1.1	1.3	0.78	1.1	0.85	2.8	0.99	0.79	1.3	1.2	1.0	0.63	0.77	0.82	0.58	0.66	0.58	0.57	0.56	0.83	
Hardness	mg/L	80-100 (OG)	6600	6900	6500	6400	6300	5300	6700	6200	5900	7500	1600	1600	1600	1400	1600	1600	1600	1700	1700	1700	
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
pH	units	6.5-8.5 (OG)	7.28	7.45	7.33	7.36	7.35	7.17	7.39	7.53	7.22	7.21	7.69	7.77	7.6	7.67	7.67	8.00	7.69	7.86	7.66	7.69	
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	33	77	14	83	79	2.8	34	11	<1.0	79	1000	1100	990	1100	990	960	930	960	1000		
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	110	120	110	130	130	100	110	110	88	120	160	160	150	150	150	160	140	150	140	170	
Dissolved Chloride (Cl)	mg/L	250 (AO)	9900	11000	10000	13000	12000	7500	10000	10000	7300	11000	1400	1500	1500	1400	1600	1600	1500	1600	1600	1600	
Nitrite (N)	mg/L	1	0.013	<0.010	<0.050	<0.010	<0.010	0.180	<0.010	<0.010	<0.010	0.021	0.127	0.020	0.019	0.114	0.164	0.077	<0.010	0.072	<0.010	0.024	
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.50	<0.10	<0.10	0.64	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.24	0.18	0.80	0.20	0.95	<0.10	1.34	<0.10	
Nitrate + Nitrite	mg/L	10	0.10	<0.10	<0.50	<0.10	<0.10	0.82	<0.10	<0.10	<0.10	<0.10	0.21	<0.10	1.26	0.29	0.97	0.27	0.95	<0.10	1.34	<0.10	
Dissolved Calcium (Ca)	mg/L		1400	1400	1300	1300	1300	1100	1400	1300	1200	1600	330	320	310	280	320	330	340	330	340	360	
Dissolved Magnesium (Mg)	mg/L		770	800	790	780	760	630	770	730	700	880	180	190	200	180	200	190	190	200	200	210	
Dissolved Phosphorus (P)	mg/L		<1	<1	<0.5	<1	<0.5	<0.5	<1	0.62	<1	0.57	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.1	0.10	<0.1	0.11	
Dissolved Potassium (K)	mg/L		67	71	76	67	69	59	68	68	59	71	15	16	18	15	17	17	18	19	18	20	
Dissolved Sodium (Na)	mg/L	200 (AO)	4200	4300	4200	4200	3800	3300	4000	3800	3800	4600	760	770	790	720	760	800	810	800	780	840	

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded)
 are shown in bold.

Parameter	Units	Sample	OW7-I										OW7-II										
		Date	30-May-16	25-Oct-16	23-May-17	30-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	
		ODWS																					
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		270	220	310	230	280	260	290	210	300	290	270	290	320	250	280	230	290	270	300	290	
Total Ammonia-N	mg/L		3.0	2.5	2.8	4.7	3.0	3.1	2.0	1.8	2.4	2.4	2.6	1.6	1.6	3.6	2.2	2.8	2.4	1.6	2.1	2.3	
Colour	TCU	5 (AO)	76	21	23	90	190	17	<2	17	33	27	20	<2	3	<2	<2	<2	<2	<2	<2	<2	
Conductivity	uS/cm		5800	690	5300	11000	6400	6500	6400	720	6400	6810	9800	860	5600	15000	6800	7300	6200	2200	6500	7300	
Total Dissolved Solids	mg/L	500 (AO)	3100	360	2800	5600	3400	3800	3500	430	3400	4000	5400	470	3000	8300	3800	4300	3400	1100	3400	3900	
Fluoride (F ⁻)	mg/L	1.5	2.7	0.46	2.8	1.2	2.2	1.1	2.1	0.46	2.1	1.9	2.1	0.49	2.8	1.4	2.1	1.1	2.1	0.75	2.2	1.9	
Dissolved Organic Carbon	mg/L	5 (AO)	0.92	1.8	0.98	0.92	1.0	1.3	0.84	1.9	0.56	0.86	2.0	3.2	1	1	1.0	1.4	0.77	2.4	0.56	0.81	
Hardness	mg/L	80-100 (OG)	860	250	710	1900	830	1300	910	320	860	1000	1800	330	800	3000	1100	1400	830	500	910	1000	
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	
pH	units	6.5-8.5 (OG)	7.93	7.90	7.86	7.72	7.85	7.98	7.83	8.05	7.78	7.74	7.73	8.14	7.87	7.66	7.74	7.77	7.89	8.07	7.78	7.76	
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	9.1	49	37	32	14	32	25	73	20	28	23	50	24	7	28	28	20	43	21	26	
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	280	220	310	230	280	260	290	210	300	290	270	300	320	250	280	230	300	270	300	290	
Dissolved Chloride (Cl)	mg/L	250 (AO)	1700	46	1500	3600	2000	2200	1900	47	1900	2300	3200	71	1600	5300	2200	2600	1900	490	2000	2200	
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Dissolved Calcium (Ca)	mg/L		170	52	140	390	160	270	190	63	180	200	380	66	160	600	220	290	180	100	180	210	
Dissolved Magnesium (Mg)	mg/L		110	30	86	230	100	150	100	39	100	120	210	39	97	360	130	160	95	60	110	120	
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	0.11	<0.1	0.10	<0.1	<0.1	
Dissolved Potassium (K)	mg/L		15	12	13	26	14	22	16	13	15	18	21	13	14	29	16	22	15	12	17	18	
Dissolved Sodium (Na)	mg/L	200 (AO)	890	28	790	1200	890	950	1000	50	980	1100	1400	44	850	1900	1000	1100	960	250	950	1100	

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded)
 are shown in bold.

Parameter	Units	Sample	OW8-I										OW8-II										
		Date	30-May-16	25-Oct-16	23-May-17	30-Oct-17	29-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	30-May-16	25-Oct-16	23-May-17	26-Oct-17	29-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	
		ODWS																					
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		330	370	310	300	290	300	250	300	310	300	290	340	320	300	300	290	300	310	280	300	
Total Ammonia-N	mg/L		0.72	1.3	0.63	1.4	0.84	0.43	1.1	0.84	0.55	0.37	1.1	1.7	0.48	1.1	0.51	0.95	0.39	0.87	0.32	0.37	
Colour	TCU	5 (AO)	<2	<2	<2	<2	7	<2	<2	<2	<2	<2	40	<2	<2	<2	4	<2	<2	<2	<2	<2	
Conductivity	uS/cm		2000	3200	980	2400	1300	770	2000	1600	1000	847	4700	5100	800	3000	810	2500	760	2100	700	822	
Total Dissolved Solids	mg/L	500 (AO)	1100	1700	600	1200	780	450	1200	880	560	470	2500	2700	470	1500	450	1400	440	1100	410	460	
Fluoride (F ⁻)	mg/L	1.5	2.2	1.3	1.6	0.89	0.91	0.69	1.1	0.86	1.3	0.95	0.47	1.2	0.71	0.79	0.47	0.90	0.60	0.94	0.51	0.51	
Dissolved Organic Carbon	mg/L	5 (AO)	1.4	1.3	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.7	1.2	1.9	1.4	1.7	1.4	1.7	1.4	1.6	1.8	
Hardness	mg/L	80-100 (OG)	550	450	240	520	500	290	450	390	300	290	1300	780	260	660	320	480	300	430	300	320	
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
pH	units	6.5-8.5 (OG)	7.92	7.85	7.96	7.86	7.85	7.81	8.04	7.98	7.88	7.8	7.65	7.85	7.73	7.67	7.76	7.96	7.85	7.99	7.89	7.71	
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	30	20	53	45	46	54	58	38	38	45	54	8.4	52	37	60	22	51	22	50	52	
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	330	370	310	300	290	300	250	300	310	300	290	340	330	300	310	300	300	310	290	300	
Dissolved Chloride (Cl)	mg/L	250 (AO)	420	820	110	540	240	36	470	310	110	65	1300	1500	36	770	44	630	33	460	26	44	
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Dissolved Calcium (Ca)	mg/L		140	110	62	140	140	86	120	100	85	86	340	180	70	170	96	130	89	110	89	95	
Dissolved Magnesium (Mg)	mg/L		45	43	22	44	39	18	39	34	22	19	120	79	20	58	18	41	18	38	19	20	
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	
Dissolved Potassium (K)	mg/L		6.9	11	5.5	8.4	5.7	4.3	8.5	7.0	4.6	4.1	9.5	14	4.9	9.0	3.9	8.5	4.0	7.2	3.8	4.1	
Dissolved Sodium (Na)	mg/L	200 (AO)	270	480	150	250	130	57	330	200	96	68	430	710	84	300	36	340	51	250	41	53	

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded)
 are shown in bold.

Parameter	Units	Sample	OW9-I					OW9-II			
		Date	30-May-16	25-Oct-16	23-May-17	26-Oct-17	29-May-18	30-May-16	25-Oct-16	08-May-19	14-May-20
		ODWS									
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		230	150	170	130	200	250	230	170	160
Total Ammonia-N	mg/L		12	18	18	21	18	0.23	0.22	0.11	0.27
Colour	TCU	5 (AO)	21	87	110	49	14	7	4	3	3
Conductivity	uS/cm		50000	80000	81000	88000	73000	15000	16000	39000	50000
Total Dissolved Solids	mg/L	500 (AO)	31000	55000	58000	57000	46000	8300	9000	23000	32000
Fluoride (F ⁻)	mg/L	1.5	<0.10	<0.1	<0.10	<0.10	<0.10	0.11	0.11	<0.10	<0.10
Dissolved Organic Carbon	mg/L	5 (AO)	10	9.1	12	9.1	8.7	8.8	8.7	7.8	8.1
Hardness	mg/L	80-100 (OG)	16000	26000	27000	25000	22000	3300	3900	12000	17000
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.02	6.90	6.73	6.95	6.93	7.37	7.40	7.09	7.13
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	150	210	180	160	120	380	320	880	1000
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	230	150	170	130	200	250	240	170	160
Dissolved Chloride (Cl)	mg/L	250 (AO)	19000	35000	37000	39000	30000	4700	5000	13000	20000
Nitrite (N)	mg/L	1	<0.050	<0.050	<0.10	<0.010	<0.050	0.065	0.026	0.013	0.033
Nitrate (N)	mg/L	10	<0.50	<0.50	<1.0	<0.10	<0.50	3.38	2.84	0.51	0.99
Nitrate + Nitrite	mg/L	10	<0.50	<0.50	<1.0	<0.10	<0.50	3.44	2.86	0.52	1.02
Dissolved Calcium (Ca)	mg/L		3500	5500	5700	5000	4600	800	930	2900	3800
Dissolved Magnesium (Mg)	mg/L		1800	3100	3200	3100	2500	310	370	1200	1700
Dissolved Phosphorus (P)	mg/L		<1	<1	<2	<1	<1	<0.5	<0.5	<0.1	<1
Dissolved Potassium (K)	mg/L		100	150	140	140	120	34	42	69	92
Dissolved Sodium (Na)	mg/L	200 (AO)	6500	11000	11000	10000	9000	1900	2200	4200	5800

Notes:

AO: aesthetic objective

OG: operational guideline

Exceedances of the OWDS (operational guidelines excluded)

are shown in bold.

Parameter	Units	Sample	TW1-1										AMX-R				
		Date	30-May-16	25-Oct-16	23-May-17	26-Oct-17	30-May-18	31-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	31-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20
		ODWS															
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L		260	280	290	290	290	280	280	280	260	100	66	39	1.6	22	
Total Ammonia-N	mg/L		1.0	1.0	0.47	1.2	0.80	0.62	0.68	1.2	0.95	6.4	6.0	5.8	5.7	5.4	
Colour	TCU	5 (AO)	<2	2	<2	<2	<2	2	<2	<2	<2	<2	<2	18	<2	260	
Conductivity	uS/cm		2800	3500	1300	2300	1900	1800	1900	3100	2800	2460	22000	20000	21000	18000	18500
Total Dissolved Solids	mg/L	500 (AO)	1400	1800	670	1300	950	930	1000	1700	1400	1300	14000	11000	12000	10000	9800
Fluoride (F ⁻)	mg/L	1.5	0.54	0.50	0.5	0.5	0.49	0.49	0.51	0.50	0.5	0.47	0.61	0.58	0.57	0.56	0.6
Dissolved Organic Carbon	mg/L	5 (AO)	1.6	1.7	1.8	1.7	1.6	1.8	1.6	1.6	1.7	3.6	2.7	2.6	2	2.2	
Hardness	mg/L	80-100 (OG)	650	810	410	760	450	490	490	830	610	540	5700	4800	4700	3800	3600
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.85	7.84	7.71	7.78	7.83	8.10	7.78	7.99	7.84	7.91	7.66	7.13	7.12	6.06	6.39
Dissolved Sulphate (SO ₄)	mg/L	500 (AO)	17	11	22	20	27	24	28	33	30	29	53	29	37	<1.0	4.8
Alkalinity (Total as CaCO ₃)	mg/L	30-500 (OG)	260	280	290	290	290	280	280	280	290	260	100	67	39	1.6	22
Dissolved Chloride (Cl)	mg/L	250 (AO)	690	980	220	510	420	390	420	830	660	610	9200	7200	7800	6300	6400
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.030	<0.010	0.023	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	0.14	<0.10	0.25	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	0.17	<0.10	0.27	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		140	180	96	160	100	120	110	180	130	100	1100	920	910	680	690
Dissolved Magnesium (Mg)	mg/L		75	89	41	86	48	50	52	91	68	68	720	610	600	510	460
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.5	<0.5	0.64	<0.5	0.54
Dissolved Potassium (K)	mg/L		12	10	6.1	10	7.7	7.1	8.6	13	10	11	56	49	50	48	42
Dissolved Sodium (Na)	mg/L	200 (AO)	300	320	100	320	160	160	210	400	290	290	3200	2600	2600	2400	2200

Notes:
 AO: aesthetic objective
 OG: operational guideline
 Exceedances of the OWDS (operational guidelines excluded) are shown in bold.

Table 6: 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					6,544,800	76	4,545
1-Jan-20	NO PUMP		0	0	-	-	-
2-Jan-20	NO PUMP		0	0	-	-	-
3-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
4-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
5-Jan-20	NO PUMP		0	0	-	-	-
6-Jan-20	NO PUMP		0	0	-	-	-
7-Jan-20	NO PUMP		0	0	-	-	-
8-Jan-20	NO PUMP		0	0	-	-	-
9-Jan-20	NO PUMP		0	0	-	-	-
10-Jan-20	NO PUMP		0	0	-	-	-
11-Jan-20	NO PUMP		0	0	-	-	-
12-Jan-20	NO PUMP		0	0	-	-	-
13-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
14-Jan-20	7AM	5PM	36000	600	720,000	20	1,200
15-Jan-20	NO PUMP		0	0	-	-	-
16-Jan-20	NO PUMP		0	0	-	-	-
17-Jan-20	NO PUMP		0	0	-	-	-
18-Jan-20	NO PUMP		0	0	-	-	-
19-Jan-20	NO PUMP		0	0	-	-	-
20-Jan-20	NO PUMP		0	0	-	-	-
21-Jan-20	NO PUMP		0	0	-	-	-
22-Jan-20	NO PUMP		0	0	-	-	-
23-Jan-20	NO PUMP		0	0	-	-	-
24-Jan-20	NO PUMP		0	0	-	-	-
25-Jan-20	NO PUMP		0	0	-	-	-
26-Jan-20	NO PUMP		0	0	-	-	-
27-Jan-20	NO PUMP		0	0	-	-	-
28-Jan-20	NO PUMP		0	0	-	-	-
29-Jan-20	NO PUMP		0	0	-	-	-
30-Jan-20	NO PUMP		0	0	-	-	-
31-Jan-20	NO PUMP		0	0	-	-	-
1-Feb-20	NO PUMP		0	0	-	-	-
2-Feb-20	NO PUMP		0	0	-	-	-
3-Feb-20	7AM	4PM	32400	540	648,000	20	1,200
4-Feb-20	7AM	4PM	32400	540	648,000	20	1,200
5-Feb-20	NO PUMP		0	0	-	-	-
6-Feb-20	NO PUMP		0	0	-	-	-
7-Feb-20	NO PUMP		0	0	-	-	-
8-Feb-20	NO PUMP		0	0	-	-	-
9-Feb-20	NO PUMP		0	0	-	-	-
10-Feb-20	NO PUMP		0	0	-	-	-
11-Feb-20	NO PUMP		0	0	-	-	-
12-Feb-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
13-Feb-20	NO PUMP		0	0	-	-	-
14-Feb-20	NO PUMP		0	0	-	-	-
15-Feb-20	NO PUMP		0	0	-	-	-
16-Feb-20	NO PUMP		0	0	-	-	-
17-Feb-20	NO PUMP		0	0	-	-	-
18-Feb-20	NO PUMP		0	0	-	-	-
19-Feb-20	NO PUMP		0	0	-	-	-
20-Feb-20	NO PUMP		0	0	-	-	-
21-Feb-20	NO PUMP		0	0	-	-	-
22-Feb-20	NO PUMP		0	0	-	-	-
23-Feb-20	NO PUMP		0	0	-	-	-
24-Feb-20	NO PUMP		0	0	-	-	-
25-Feb-20	NO PUMP		0	0	-	-	-
26-Feb-20	NO PUMP		0	0	-	-	-
27-Feb-20	NO PUMP		0	0	-	-	-
28-Feb-20	NO PUMP		0	0	-	-	-
29-Feb-20	NO PUMP		0	0	-	-	-
1-Mar-20	NO PUMP		0	0	-	-	-
2-Mar-20	NO PUMP		0	0	-	-	-
3-Mar-20	NO PUMP		0	0	-	-	-
4-Mar-20	NO PUMP		0	0	-	-	-
5-Mar-20	NO PUMP		0	0	-	-	-
6-Mar-20	NO PUMP		0	0	-	-	-
7-Mar-20	NO PUMP		0	0	-	-	-
8-Mar-20	NO PUMP		0	0	-	-	-
9-Mar-20	NO PUMP		0	0	-	-	-
10-Mar-20	NO PUMP		0	0	-	-	-
11-Mar-20	NO PUMP		0	0	-	-	-
12-Mar-20	NO PUMP		0	0	-	-	-
13-Mar-20	NO PUMP		0	0	-	-	-
14-Mar-20	NO PUMP		0	0	-	-	-
15-Mar-20	NO PUMP		0	0	-	-	-
16-Mar-20	NO PUMP		0	0	-	-	-
17-Mar-20	NO PUMP		0	0	-	-	-
18-Mar-20	NO PUMP		0	0	-	-	-
19-Mar-20	NO PUMP		0	0	-	-	-
20-Mar-20	NO PUMP		0	0	-	-	-
21-Mar-20	NO PUMP		0	0	-	-	-
22-Mar-20	NO PUMP		0	0	-	-	-
23-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
24-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
25-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
26-Mar-20	7AM	4PM	32400	540	648,000	20	1,200

Table 6: 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					6,544,800	76	4,545
27-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
28-Mar-20	NO PUMP		0	0	-	-	-
29-Mar-20	NO PUMP		0	0	-	-	-
30-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
31-Mar-20	7AM	4PM	32400	540	648,000	20	1,200
1-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
2-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
3-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
4-Apr-20	NO PUMP		0	0	-	-	-
5-Apr-20	NO PUMP		0	0	-	-	-
6-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
7-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
8-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
9-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
10-Apr-20	NO PUMP		0	0	-	-	-
11-Apr-20	NO PUMP		0	0	-	-	-
12-Apr-20	NO PUMP		0	0	-	-	-
13-Apr-20	NO PUMP		0	0	-	-	-
14-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
15-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
16-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
17-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
18-Apr-20	NO PUMP		0	0	-	-	-
19-Apr-20	NO PUMP		0	0	-	-	-
20-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
21-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
22-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
23-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
24-Apr-20	7AM	4PM	32400	540	648,000	20	1,200
25-Apr-20	NO PUMP		0	0	-	-	-
26-Apr-20	NO PUMP		0	0	-	-	-
27-Apr-20	NO PUMP		0	0	-	-	-
28-Apr-20	NO PUMP		0	0	-	-	-
29-Apr-20	NO PUMP		0	0	-	-	-
30-Apr-20	NO PUMP		0	0	-	-	-
1-May-20	NO PUMP		0	0	-	-	-
2-May-20	NO PUMP		0	0	-	-	-
3-May-20	NO PUMP		0	0	-	-	-
4-May-20	NO PUMP		0	0	-	-	-
5-May-20	NO PUMP		0	0	-	-	-
6-May-20	NO PUMP		0	0	-	-	-
7-May-20	NO PUMP		0	0	-	-	-
8-May-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
9-May-20	NO PUMP		0	0	-	-	-
10-May-20	NO PUMP		0	0	-	-	-
11-May-20	NO PUMP		0	0	-	-	-
12-May-20	NO PUMP		0	0	-	-	-
13-May-20	NO PUMP		0	0	-	-	-
14-May-20	NO PUMP		0	0	-	-	-
15-May-20	NO PUMP		0	0	-	-	-
16-May-20	NO PUMP		0	0	-	-	-
17-May-20	NO PUMP		0	0	-	-	-
18-May-20	NO PUMP		0	0	-	-	-
19-May-20	NO PUMP		0	0	-	-	-
20-May-20	NO PUMP		0	0	-	-	-
21-May-20	NO PUMP		0	0	-	-	-
22-May-20	NO PUMP		0	0	-	-	-
23-May-20	NO PUMP		0	0	-	-	-
24-May-20	NO PUMP		0	0	-	-	-
25-May-20	NO PUMP		0	0	-	-	-
26-May-20	NO PUMP		0	0	-	-	-
27-May-20	NO PUMP		0	0	-	-	-
28-May-20	NO PUMP		0	0	-	-	-
29-May-20	NO PUMP		0	0	-	-	-
30-May-20	NO PUMP		0	0	-	-	-
31-May-20	NO PUMP		0	0	-	-	-
1-Jun-20	NO PUMP		0	0	-	-	-
2-Jun-20	NO PUMP		0	0	-	-	-
3-Jun-20	NO PUMP		0	0	-	-	-
4-Jun-20	NO PUMP		0	0	-	-	-
5-Jun-20	NO PUMP		0	0	-	-	-
6-Jun-20	NO PUMP		0	0	-	-	-
7-Jun-20	NO PUMP		0	0	-	-	-
8-Jun-20	NO PUMP		0	0	-	-	-
9-Jun-20	NO PUMP		0	0	-	-	-
10-Jun-20	NO PUMP		0	0	-	-	-
11-Jun-20	NO PUMP		0	0	-	-	-
12-Jun-20	NO PUMP		0	0	-	-	-
13-Jun-20	NO PUMP		0	0	-	-	-
14-Jun-20	NO PUMP		0	0	-	-	-
15-Jun-20	NO PUMP		0	0	-	-	-
16-Jun-20	NO PUMP		0	0	-	-	-
17-Jun-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
18-Jun-20	NO PUMP		0	0	-	-	-
19-Jun-20	NO PUMP		0	0	-	-	-
20-Jun-20	NO PUMP		0	0	-	-	-
21-Jun-20	NO PUMP		0	0	-	-	-
22-Jun-20	NO PUMP		0	0	-	-	-
23-Jun-20	NO PUMP		0	0	-	-	-
24-Jun-20	NO PUMP		0	0	-	-	-
25-Jun-20	NO PUMP		0	0	-	-	-
26-Jun-20	NO PUMP		0	0	-	-	-
27-Jun-20	NO PUMP		0	0	-	-	-
28-Jun-20	NO PUMP		0	0	-	-	-
29-Jun-20	NO PUMP		0	0	-	-	-
30-Jun-20	NO PUMP		0	0	-	-	-
1-Jul-20	NO PUMP		0	0	-	-	-
2-Jul-20	NO PUMP		0	0	-	-	-
3-Jul-20	NO PUMP		0	0	-	-	-
4-Jul-20	NO PUMP		0	0	-	-	-
5-Jul-20	NO PUMP		0	0	-	-	-
6-Jul-20	NO PUMP		0	0	-	-	-
7-Jul-20	NO PUMP		0	0	-	-	-
8-Jul-20	NO PUMP		0	0	-	-	-
9-Jul-20	NO PUMP		0	0	-	-	-
10-Jul-20	NO PUMP		0	0	-	-	-
11-Jul-20	NO PUMP		0	0	-	-	-
12-Jul-20	NO PUMP		0	0	-	-	-
13-Jul-20	NO PUMP		0	0	-	-	-
14-Jul-20	NO PUMP		0	0	-	-	-
15-Jul-20	NO PUMP		0	0	-	-	-
16-Jul-20	NO PUMP		0	0	-	-	-
17-Jul-20	NO PUMP		0	0	-	-	-
18-Jul-20	NO PUMP		0	0	-	-	-
19-Jul-20	NO PUMP		0	0	-	-	-
20-Jul-20	NO PUMP		0	0	-	-	-
21-Jul-20	NO PUMP		0	0	-	-	-
22-Jul-20	NO PUMP		0	0	-	-	-
23-Jul-20	NO PUMP		0	0	-	-	-
24-Jul-20	NO PUMP		0	0	-	-	-
25-Jul-20	NO PUMP		0	0	-	-	-
26-Jul-20	NO PUMP		0	0	-	-	-
27-Jul-20	NO PUMP		0	0	-	-	-
28-Jul-20	NO PUMP		0	0	-	-	-
29-Jul-20	NO PUMP		0	0	-	-	-
30-Jul-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
31-Jul-20	NO PUMP		0	0	-	-	-
1-Aug-20	NO PUMP		0	0	-	-	-
2-Aug-20	NO PUMP		0	0	-	-	-
3-Aug-20	NO PUMP		0	0	-	-	-
4-Aug-20	NO PUMP		0	0	-	-	-
5-Aug-20	NO PUMP		0	0	-	-	-
6-Aug-20	NO PUMP		0	0	-	-	-
7-Aug-20	9AM	4PM	25200	420	504,000	20	1,200
8-Aug-20	NO PUMP		0	0	-	-	-
9-Aug-20	NO PUMP		0	0	-	-	-
10-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
11-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
12-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
13-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
14-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
15-Aug-20	NO PUMP		0	0	-	-	-
16-Aug-20	NO PUMP		0	0	-	-	-
17-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
18-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
19-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
20-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
21-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
22-Aug-20	NO PUMP		0	0	-	-	-
23-Aug-20	NO PUMP		0	0	-	-	-
24-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
25-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
26-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
27-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
28-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
29-Aug-20	NO PUMP		0	0	-	-	-
30-Aug-20	NO PUMP		0	0	-	-	-
31-Aug-20	7AM	4PM	32400	540	648,000	20	1,200
1-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
2-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
3-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
4-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
5-Sep-20	NO PUMP		0	0	-	-	-
6-Sep-20	NO PUMP		0	0	-	-	-
7-Sep-20	NO PUMP		0	0	-	-	-
8-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
9-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
10-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
11-Sep-20	7AM	4PM	32400	540	648,000	20	1,200

Table 6: 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					6,544,800	76	4,545
12-Sep-20	NO PUMP		0	0	-	-	-
13-Sep-20	NO PUMP		0	0	-	-	-
14-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
15-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
16-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
17-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
18-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
19-Sep-20	NO PUMP		0	0	-	-	-
20-Sep-20	NO PUMP		0	0	-	-	-
21-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
22-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
23-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
24-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
25-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
26-Sep-20	NO PUMP		0	0	-	-	-
27-Sep-20	NO PUMP		0	0	-	-	-
28-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
29-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
30-Sep-20	7AM	4PM	32400	540	648,000	20	1,200
1-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
2-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
3-Oct-20	NO PUMP		0	0	-	-	-
4-Oct-20	NO PUMP		0	0	-	-	-
5-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
6-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
7-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
8-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
9-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
10-Oct-20	NO PUMP		0	0	-	-	-
11-Oct-20	NO PUMP		0	0	-	-	-
12-Oct-20	NO PUMP		0	0	-	-	-
13-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
14-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
15-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
16-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
17-Oct-20	NO PUMP		0	0	-	-	-
18-Oct-20	NO PUMP		0	0	-	-	-
19-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
20-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
21-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
22-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
23-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
24-Oct-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
25-Oct-20	NO PUMP		0	0	-	-	-
26-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
27-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
28-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
29-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
30-Oct-20	7AM	4PM	32400	540	648,000	20	1,200
31-Oct-20	NO PUMP		0	0	-	-	-
1-Nov-20	NO PUMP		0	0	-	-	-
2-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
3-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
4-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
5-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
6-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
7-Nov-20	NO PUMP		0	0	-	-	-
8-Nov-20	NO PUMP		0	0	-	-	-
9-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
10-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
11-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
12-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
13-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
14-Nov-20	NO PUMP		0	0	-	-	-
15-Nov-20	NO PUMP		0	0	-	-	-
16-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
17-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
18-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
19-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
20-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
21-Nov-20	NO PUMP		0	0	-	-	-
22-Nov-20	NO PUMP		0	0	-	-	-
23-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
24-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
25-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
26-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
27-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
28-Nov-20	NO PUMP		0	0	-	-	-
29-Nov-20	NO PUMP		0	0	-	-	-
30-Nov-20	7AM	4PM	32400	540	648,000	20	1,200
1-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
2-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
3-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
4-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
5-Dec-20	NO PUMP		0	0	-	-	-
6-Dec-20	NO PUMP		0	0	-	-	-

Table 6: 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					6,544,800	76	4,545
7-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
8-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
9-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
10-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
11-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
12-Dec-20	NO PUMP		0	0	-	-	-
13-Dec-20	NO PUMP		0	0	-	-	-
14-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
15-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
16-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
17-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
18-Dec-20	7AM	4PM	32400	540	648,000	20	1,200
19-Dec-20	NO PUMP		0	0	-	-	-
20-Dec-20	NO PUMP		0	0	-	-	-
21-Dec-20	NO PUMP		0	0	-	-	-
22-Dec-20	NO PUMP		0	0	-	-	-
23-Dec-20	NO PUMP		0	0	-	-	-
24-Dec-20	NO PUMP		0	0	-	-	-
25-Dec-20	NO PUMP		0	0	-	-	-
26-Dec-20	NO PUMP		0	0	-	-	-
27-Dec-20	NO PUMP		0	0	-	-	-
28-Dec-20	NO PUMP		0	0	-	-	-
29-Dec-20	NO PUMP		0	0	-	-	-
30-Dec-20	NO PUMP		0	0	-	-	-
31-Dec-20	NO PUMP		0	0	-	-	-

APPENDIX A

PTTW No. 1603-BKTPQH

PERMIT TO TAKE WATER
Ground Water
NUMBER 1603-BKTPQH

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

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

For the water taking from: Quarry Sump, McCarthy Quarry

Located at: Lot 1, Concession 1, Geographic Township of Mara
Ramara, County of Simcoe

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.
- (d) "District Office" means the Barrie District Office.
- (e) "Permit" means this Permit to Take Water No. 1603-BKTPQH including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.
- (f) "Permit Holder" means QBJR Aggregates Inc..
- (g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

- 1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated October 23, 2019 and signed by Jenny Coco, CEO, and all Schedules included in this Permit.
- 1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.
- 1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.
- 1.4 This Permit is not transferable to another person.
- 1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.
- 1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.
- 1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

- 2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.
- 2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:
 - (a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **January 31, 2025**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Quarry Sump	Pond Connected	Pits and Quarries	Dewatering	4,545	24	6,544,800	250	17 650950 4933500
						Total Taking:	6,544,800		

3.3 There is an additional water taking limitation per year for Source 1 described as Quarry Sump within Table A. The maximum taking per year from the Quarry Sump is 196,500,000 litres.

4. Monitoring

4.1 The Permit Holder shall not lower the water in the quarry below an elevation of 232.0 metres above sea level.

4.2 The Permit Holder shall conduct daily water level monitoring with the use of pressure transducers and data loggers at:

- a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.
- b) The monitoring wells named OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW8-3, OW9-2, and Bored Well (shown on Figure 2, in Item 2 of Schedule A of this Permit).
- c) The City of Kwartha Lakes monitoring well CKL-1, if granted permission by the property owner .

These pressure transducers and data loggers shall be inspected and downloaded at least every 6 months.

4.3 The Permit Holder shall conduct monthly water level monitoring with the use of a manual water level meter at:

- a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.
- b) The residential wells named DW1, DW2, and DW4, if granted permission by the property owner (shown on Figure 2, in Item 2 of Schedule A of this Permit).
- c) The monitoring wells named AM1b, AMX-R, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, and Bored Well (shown on Figure 2 in Item 2 of Schedule A of this Permit).
- d) The City of Kwartha Lakes monitoring wells CKL-1 and CKL-2, if granted permission by the property owner .

The Permit Holder may suspend monthly water level monitoring under Condition 4.3 for the months of January and/or February if no water is taken from the quarry on those months.

4.4 The Permit Holder shall, if granted permission by the property owner, measure and record static water levels in the residential wells named DW6, DW7, and DW8, as shown on Figure 2 in Item 2 of Schedule A of this Permit, at least once in every two (2) month period during which water is taken from the quarry. The Permit Holder may suspend monthly water level monitoring under Condition 4.4 for the months of January and/or February if no water is taken from the quarry on those months.

4.5 The Permit Holder shall, if granted permission by the property owner, on a semi-annual basis collect raw water samples from the residential wells named DW1, DW2, and the well identified in condition 4.2(a). Each sample shall be tested, at a minimum, for the parameters listed in Table 1 below:

Table 1: Water Quality Parameters for Residential Wells

pH	Sulphate	DOC	Copper
Alkalinity (CaCO ₃)	Magnesium	Colour	Iron
Bicarbonate	Calcium	Turbidity	Lead
Conductivity	Sodium	Aluminium	Manganese
Fluoride	Potassium	Arsenic	Selenium
Chloride	Ammonia (N)	Barium	Zinc
Nitrate	Phosphate	Boron	Hardness (CaCO ₃)
Nitrite	Phosphorus	Cadmium	TDS (iron sum calc.)
Chromium	Anion Sum	Ion Ratio	Langelier Index
Tannins	Cation Sum	% Difference	

The Permit Holder shall immediately report to the respective well owner, the Director, and District Office any sampling result that exceeds the Ontario Drinking Water Quality Standards as prescribed by O.Reg. 169/03, as amended.

- 4.6 The Permit Holder shall on a semi-annual basis conduct the groundwater quality monitoring from the on-site groundwater monitors listed in Table 2. Each sample shall be tested, at a minimum, for the parameters listed in Table 3.

Table 2: On-Site Groundwater Monitors for Water Quality Sampling

AM1b	OW4-I	OW5-III	OW8-I
AMX-R	OW4-II	OW6-II	OW8-II
TW1-1	OW5-I	OW7-I	OW9-I
Bored Well	OW5-II	OW7-II	OW9-II

Table 3: Water Quality Parameters for On-Site Groundwater Monitors

pH	Magnesium	Sulphate	Conductivity
Alkalinity	Calcium	Nitrate	DOC
Bicarbonate	Sodium	Nitrite	Colour
Fluoride	Potassium	Phosphate	TDS
Chloride	Ammonia	Phosphorus	Hardness

- 4.7 The Permit Holder shall notify the Director, in writing, within 30 days if the groundwater level or groundwater quality monitoring of any well listed under conditions 4.2, 4.3, 4.4, 4.5, and 4.6 is not possible, including being denied access to a private well. In the event of damage or loss of any monitoring well, monitoring devices or related equipment, the Permit Holder shall be allowed 30 calendar days from the date of discovery of the occurrence to repair or replace equipment. If a well is too damaged to be repaired or monitored, or if the well is deemed unsafe to be monitored, then the Director will decide if a replacement well is required and will modify the appropriate monitoring conditions in a written letter to the Permit Holder.
- 4.8 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured or calculated amounts for water pumped per day for each day that water is taken under the authorization of this Permit.
- 4.9 The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.
- 4.10 The Permit Holder shall provide to the Director an annual monitoring report no later than March 1 each year during the life of this Permit. The annual monitoring report shall be prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:
- a) The review and assessment of all monitoring data required by this Permit.
 - b) An up-date of the quarry operations and predicted quarrying and dewatering for the next twelve (12) months.

- c) An assessment of the groundwater trends using the on-site on off-site monitoring data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.
- d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.
- e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.
- f) Any groundwater interference complaints.
- g) Description of all communication with the public.
- h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report.

- 4.11 The Permit Holder shall make available on a publicly-accessible site on the internet the water quality and quantity data that it is required to monitor and record under this Permit and O.Reg. 387/04, as amended, and a copy of every report that is required to be prepared under this Permit. For greater clarity, the Permit Holder shall not publish any personal information as defined by the *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31, as amended.
- 4.12 The Permit Holder shall maintain a Public Liaison Committee ("PLC") comprised of not more than seven (7) members that will meet at least once every four (4) months, unless the majority of the PLC decide that more or less frequent meetings are required. The PLC shall be comprised of: two (2) members appointed by the Permit Holder - one of whom shall act as Chairperson; one (1) member from each of the Township and the County, if they wish to have representatives; and three (3) members appointed by the public, if they wish to have representatives, who must be permanent residents within a 3 kilometre radius of the quarry property. The PLC shall serve in an advisory / community liaison role and shall have no powers to direct the Permit Holder or the Ministry.
- 4.13 Any request for an amendment or renewal of this Permit must be accompanied by a report prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:
 - a) The review and assessment of all monitoring data required by this Permit.
 - b) An up-date of the quarry operations and predicted quarrying and dewatering for the duration of the requested permit.
 - c) An assessment of the groundwater trends using the on-site on off-site monitoring data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.
 - d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.

- e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.
- f) Any groundwater interference complaints.
- g) Description of all communication with the public.
- h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report. Any application for renewal of this Permit must be submitted to the Ministry at least ninety (90) days prior to the expiry of this Permit.

- 4.14 The Permit Holder shall, as directed by the Ministry, participate in a cumulative impact assessment for the Carden Plain Area with other quarry operators who have been issued a permit to take water in this area.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

- 5.2.1 Where the water supply provided by the well known by MOE Water Well Record Number 5727662 is restored in accordance with Condition 5.2, the Permit Holder shall restore the supply in a manner satisfactory to the Director, taking into account the residential needs, requirements and preferences of the persons serviced by the well.

- 5.3 Upon the receipt of a groundwater interference complaint, the Permit Holder shall:

- a) Implement the McCarthy Quarry Complaint Resolution Process as described in Item 3 of Schedule A of this Permit.
- b) In addition, appropriate notification and actions must be taken as described in conditions 5.1 and 5.2 of this Permit. The provisions of conditions 5.1 and 5.2 shall take precedence over the provisions of condition 5.3(a) if there is a conflict.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act*, Section 100 (4).

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

- 1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
- 2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
- 3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:

1. The portions of the Permit or each term or condition in the Permit 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.

In addition to these legal requirements, the Notice should also include:

- a. The name of the appellant;
- b. The address of the appellant;
- c. The Permit to Take Water number;
- d. The date of the Permit to Take Water;
- e. The name of the Director;
- f. The municipality within which the works are located;

This notice must be served upon:

*The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email:
ERTTribunalsecretary@ontario.ca*

AND

*The Minister of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7J 2J3*

AND

*The Director, Section 34.1,
Ministry of the Environment,
Conservation and Parks
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416) 325-6347*

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at
(416) 212-6349
Toll Free 1(866) 448-2248

by Fax at
(416) 326-5370
Toll Free 1(844) 213-3474

by e-mail at
www.ert.gov.on.ca

*This instrument is subject to Section 38 of the **Environmental Bill of Rights** that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 7818-9QJNL4, issued on 2014/12/30.

Dated at Toronto this 31st day of January, 2020.



Ellen Klupfel
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

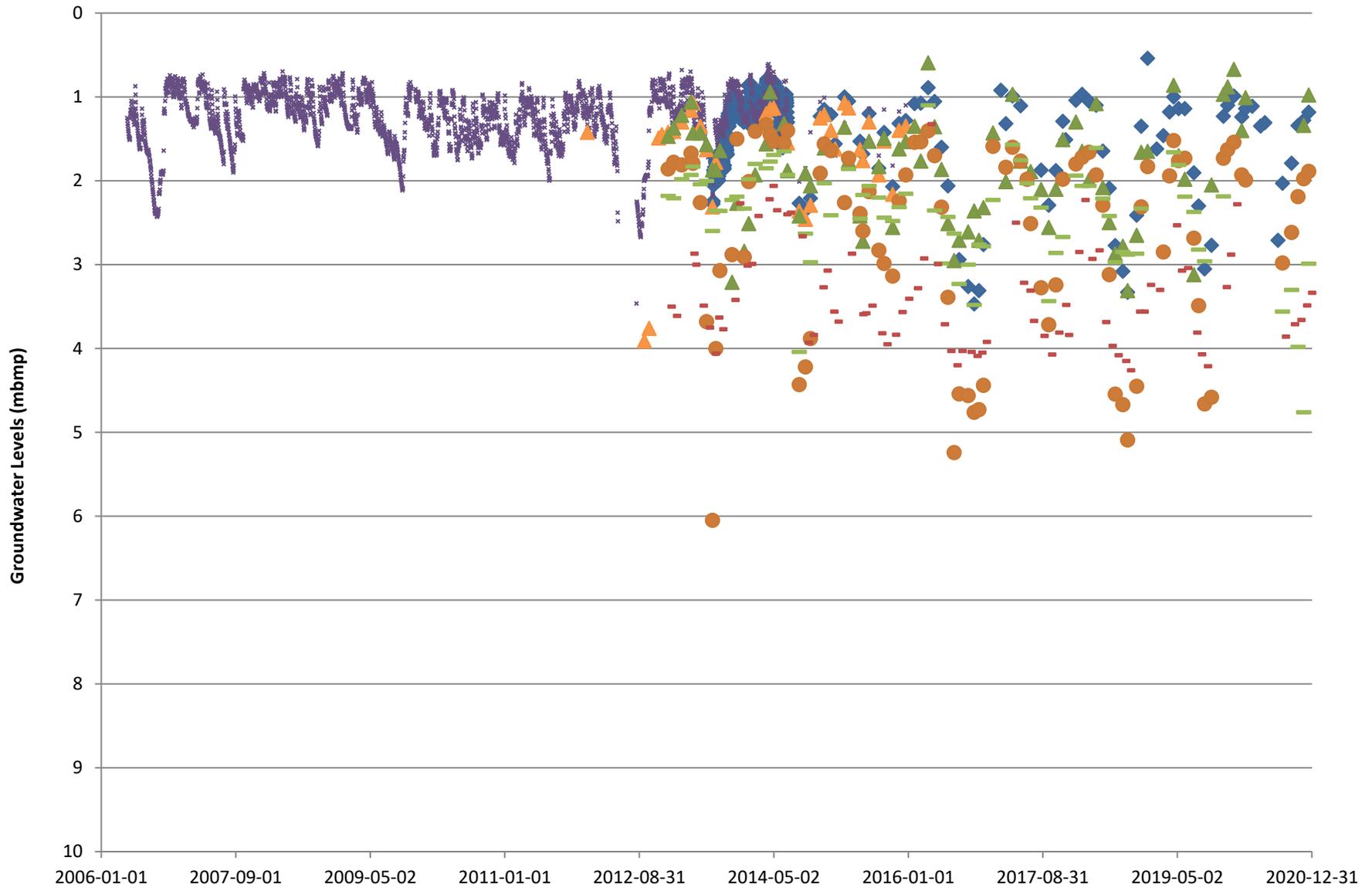
Schedule A

This Schedule "A" forms part of Permit To Take Water 1603-BKTPQH, dated January 31, 2020.

1. Permit to Take Water Application, dated October 23, 2019 and signed by Jenny Coco.
2. Golder Associates Ltd. (November 1, 2019). Hydrogeological Assessment, Permit to Take Water Renewal, McCarthy Quarry.

APPENDIX B

Hydrographs



- ◆ Bored
- × OW5-1
- ▲ AM1b
- ▲ DW1
- DW2
- DW6
- DW8



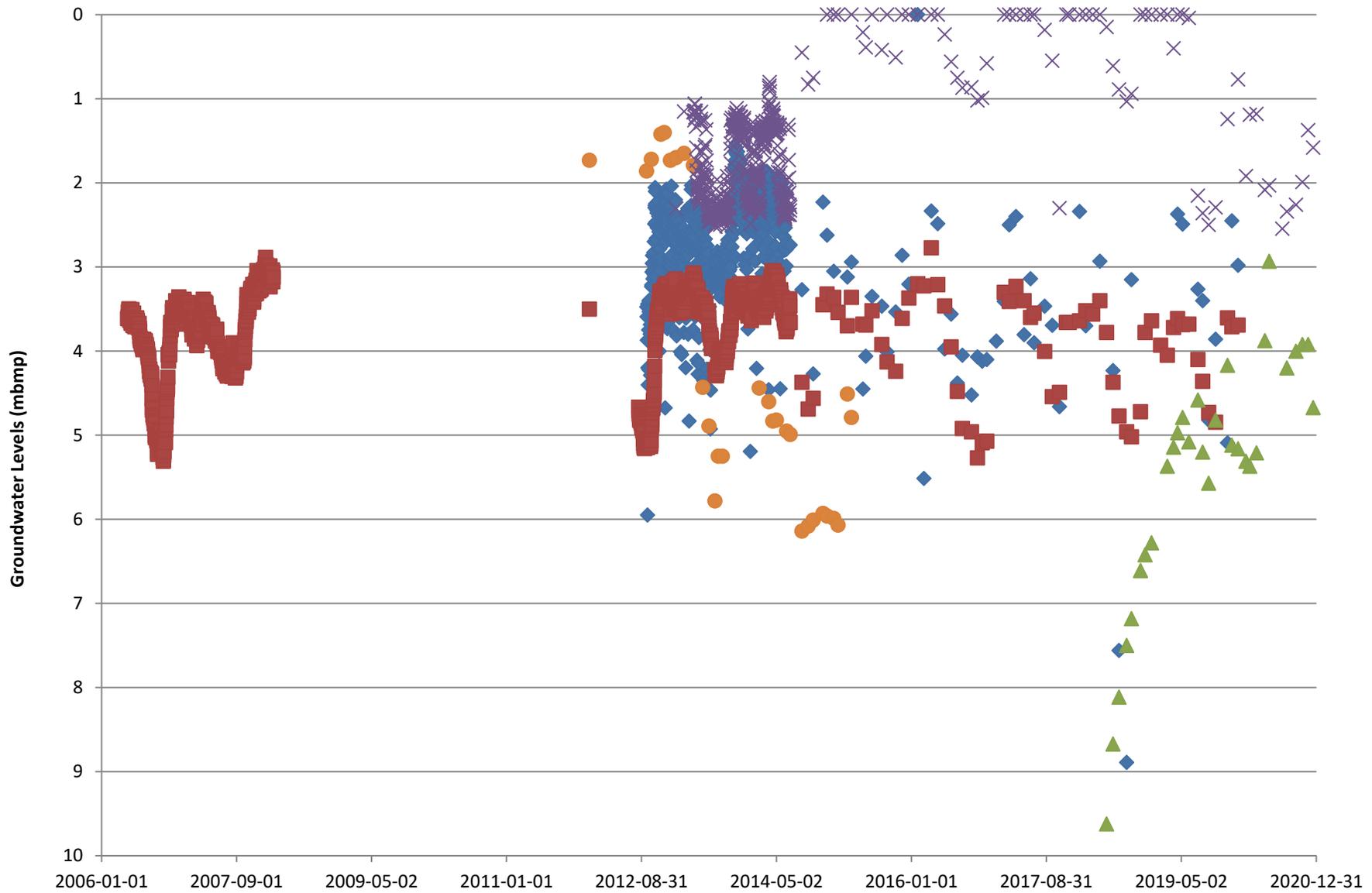
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 16-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Overburden Monitoring Wells
GroundwaterLevel**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
B-1



- ◆ DW3
- AMx
- × CLK-1
- OW4-1
- ▲ Amx-R



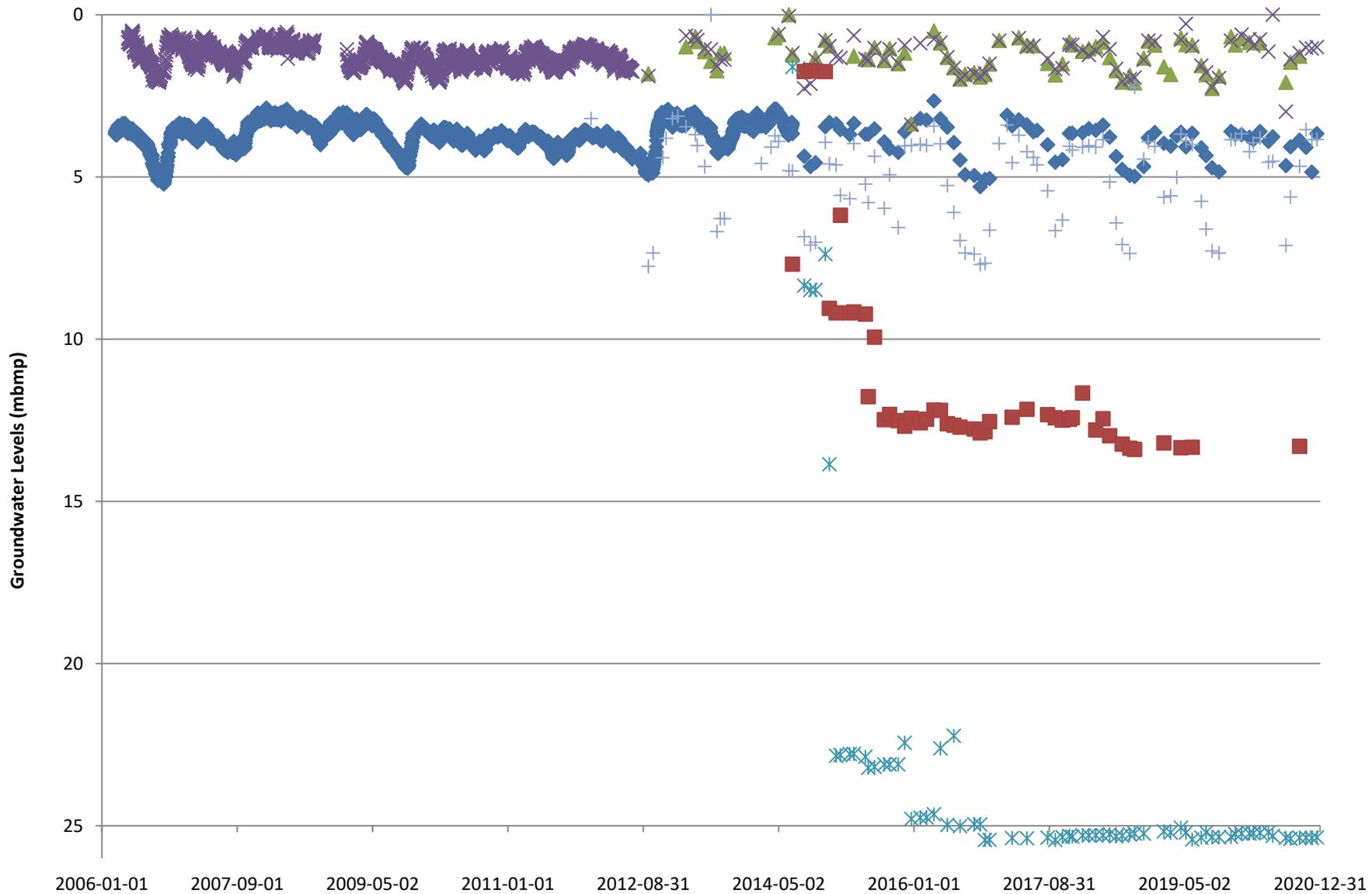
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 16-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Verulam Monitoring Wells
Groundwater Level**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
B-2



- ◆ OW4-2 ▲ OW5-2 ✕ OW5-3
- + TW1-1 ■ OW9-I * OW9-II



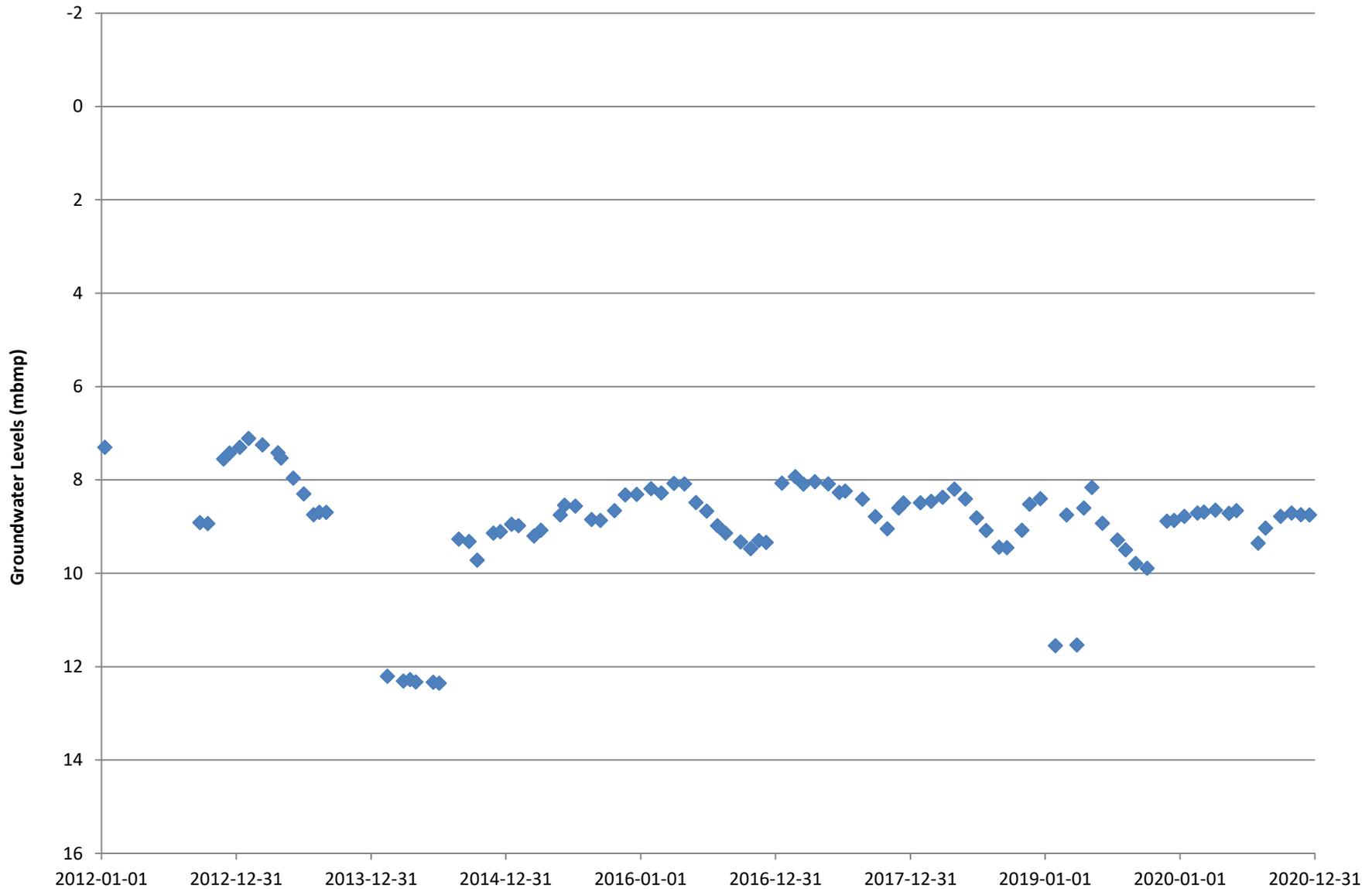
FILE No.
PROJECT No. 1407634

SCALE: NTS
DATE: 16-Feb-21
CAD: JEB
TEST:
REVIEW: DH

**McCarthy Quarry
Bobcaygeon Monitoring Wells
Groundwater Level**

QBJR/Coco Aggregates Inc.
2020 Annual Monitoring Report

FIGURE No
B-3



◆ TW1-2



SCALE: NTS
 DATE: 16-Feb-21
 CAD: JEB

**McCarthy Quarry
 Precambrian Monitoring Wells
 Groundwater Level**

FILE No.
 PROJECT No. 1407634

TEST:
 REVIEW: DH

QBJR/Coco Aggregates Inc.
 2020 Annual Monitoring Report

FIGURE No
B-4

APPENDIX C

Laboratory Certificates of Analysis



Your Project #: 1407634
Your C.O.C. #: 772247-02-01

Attention: Jamie Bonany

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

Report Date: 2020/05/25
Report #: R6185236
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9785

Received: 2020/05/15, 09:52

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	6	N/A	2020/05/21	CAM SOP-00448	SM 23 2320 B m
Alkalinity	1	N/A	2020/05/22	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	7	N/A	2020/05/22	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	7	N/A	2020/05/20	CAM SOP-00463	SM 23 4500-Cl E m
Colour	7	N/A	2020/05/21	CAM SOP-00412	SM 23 2120C m
Conductivity	7	N/A	2020/05/21	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2020/05/22	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2020/05/23	CAM SOP-00446	SM 23 5310 B m
Fluoride	7	2020/05/20	2020/05/21	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2020/05/20	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	5	N/A	2020/05/22	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	2	N/A	2020/05/20	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	4	N/A	2020/05/21	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2020/05/22	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	7	N/A	2020/05/22	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	7	N/A	2020/05/21	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	7	2020/05/20	2020/05/21	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	7	N/A	2020/05/22	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	7	N/A	2020/05/20	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	7	N/A	2020/05/22		Auto Calc

Remarks:

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

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



Your Project #: 1407634
Your C.O.C. #: 772247-02-01

Attention: Jamie Bonany

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

Report Date: 2020/05/25
Report #: R6185236
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9785

Received: 2020/05/15, 09:52

accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

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

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

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

=====

This report has been generated and distributed using a secure automated process.

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



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM051			MQM051		
Sampling Date				2020/05/14 12:45			2020/05/14 12:45		
COC Number				772247-02-01			772247-02-01		
	UNITS	MAC	A/O	OW7-2	RDL	QC Batch	OW7-2 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	300	1.0	6729218			
Calculated TDS	mg/L	-	500	3400	1.0	6729253			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.7	1.0	6729218			
Hardness (CaCO3)	mg/L	-	80:100	910	1.0	6728715			
Inorganics									
Total Ammonia-N	mg/L	-	-	2.1	0.050	6737534			
Colour	TCU	-	5	<2	2	6733903	<2	2	6733903
Conductivity	umho/cm	-	-	6500	1.0	6731926			
Fluoride (F-)	mg/L	1.5	-	2.2	0.10	6731916			
Dissolved Organic Carbon	mg/L	-	5	0.56	0.40	6734717			
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	6730635			
pH	pH	-	6.5:8.5	7.78		6731928			
Dissolved Sulphate (SO4)	mg/L	-	500	21	1.0	6730634			
Alkalinity (Total as CaCO3)	mg/L	-	30:500	300	1.0	6731924			
Dissolved Chloride (Cl-)	mg/L	-	250	2000	20	6730631			
Nitrite (N)	mg/L	1	-	<0.010	0.010	6730602			
Nitrate (N)	mg/L	10	-	<0.10	0.10	6730602			
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	6730602			
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM052		MQM053			MQM054		
Sampling Date				2020/05/14 01:15		2020/05/14 01:30			2020/05/14 03:15		
COC Number				772247-02-01		772247-02-01			772247-02-01		
	UNITS	MAC	A/O	OW8-1	QC Batch	OW8-2	RDL	QC Batch	OW9-2	RDL	QC Batch

Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	310	6729218	280	1.0	6729218	160	1.0	6729218
Calculated TDS	mg/L	-	500	560	6729253	410	1.0	6729253	32000	1.0	6729253
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	2.2	6729218	2.1	1.0	6729218	<1.0	1.0	6729218
Hardness (CaCO ₃)	mg/L	-	80:100	300	6728715	300	1.0	6728715	17000	1.0	6728715

Inorganics											
Total Ammonia-N	mg/L	-	-	0.55	6737534	0.32	0.050	6737534	0.27	0.050	6737534
Colour	TCU	-	5	<2	6733903	<2	2	6733903	3	2	6733903
Conductivity	umho/cm	-	-	1000	6731926	700	1.0	6731926	50000	1.0	6731926
Fluoride (F ⁻)	mg/L	1.5	-	1.3	6731916	0.51	0.10	6731916	<0.10	0.10	6731916
Dissolved Organic Carbon	mg/L	-	5	1.5	6734722	1.6	0.40	6734717	8.1	0.40	6734722
Orthophosphate (P)	mg/L	-	-	<0.010	6730635	<0.010	0.010	6730635	<0.010	0.010	6730635
pH	pH	-	6.5:8.5	7.88	6731928	7.89		6731928	7.13		6731928
Dissolved Sulphate (SO ₄)	mg/L	-	500	38	6730634	50	1.0	6730634	1000	5.0	6730634
Alkalinity (Total as CaCO ₃)	mg/L	-	30:500	310	6731924	290	1.0	6731924	160	1.0	6731924
Dissolved Chloride (Cl ⁻)	mg/L	-	250	110	6730631	26	1.0	6730631	20000	200	6730631
Nitrite (N)	mg/L	1	-	<0.010	6730602	<0.010	0.010	6730602	0.033	0.010	6730602
Nitrate (N)	mg/L	10	-	<0.10	6730602	<0.10	0.10	6730602	0.99	0.10	6730602
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	6730602	<0.10	0.10	6730602	1.02	0.10	6730602

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
 (Made under the Ontario Safe Drinking Water Act, 2002)



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM054			MQM055		
Sampling Date				2020/05/14 03:15			2020/05/14 08:45		
COC Number				772247-02-01			772247-02-01		
	UNITS	MAC	A/O	OW9-2 Lab-Dup	RDL	QC Batch	AMX-R	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				1.6	1.0	6729218
Calculated TDS	mg/L	-	500				10000	1.0	6729253
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				<1.0	1.0	6729218
Hardness (CaCO3)	mg/L	-	80:100				3800	1.0	6728715
Inorganics									
Total Ammonia-N	mg/L	-	-				5.7	0.050	6737534
Colour	TCU	-	5				<2	2	6733903
Conductivity	umho/cm	-	-				18000	1.0	6731926
Fluoride (F-)	mg/L	1.5	-				0.56	0.10	6731916
Dissolved Organic Carbon	mg/L	-	5	8.1	0.40	6734722	2.0	0.40	6734722
Orthophosphate (P)	mg/L	-	-				<0.010	0.010	6730635
pH	pH	-	6.5:8.5				6.06		6731928
Dissolved Sulphate (SO4)	mg/L	-	500				<1.0	1.0	6730634
Alkalinity (Total as CaCO3)	mg/L	-	30:500				1.6	1.0	6731924
Dissolved Chloride (Cl-)	mg/L	-	250				6300	70	6730631
Nitrite (N)	mg/L	1	-				<0.010	0.010	6730602
Nitrate (N)	mg/L	10	-				<0.10	0.10	6730602
Nitrate + Nitrite (N)	mg/L	10	-				<0.10	0.10	6730602
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM055			MQM056		MQM057		
Sampling Date				2020/05/14 08:45			2020/05/14 07:45		2020/05/14 11:00		
COC Number				772247-02-01			772247-02-01		772247-02-01		
	UNITS	MAC	A/O	AMX-R Lab-Dup	RDL	QC Batch	OW4-1-D	RDL	OW5-1-D	RDL	QC Batch

Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				200	1.0	280	1.0	6729218
Calculated TDS	mg/L	-	500				660	1.0	420	1.0	6729253
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				3.1	1.0	2.4	1.0	6729218
Hardness (CaCO3)	mg/L	-	80:100				170	1.0	270	1.0	6728715

Inorganics											
Total Ammonia-N	mg/L	-	-				1.1	0.050	0.49	0.050	6737534
Colour	TCU	-	5				<2	2	<2	2	6733903
Conductivity	umho/cm	-	-	18000	1.0	6731926	1200	1.0	730	1.0	6731926
Fluoride (F-)	mg/L	1.5	-	0.56	0.10	6731916	1.1	0.10	0.58	0.10	6731916
Dissolved Organic Carbon	mg/L	-	5				2.0	0.40	1.2	0.40	6734722
Orthophosphate (P)	mg/L	-	-				<0.010	0.010	<0.010	0.010	6730635
pH	pH	-	6.5:8.5	6.17		6731928	8.23		7.97		6731928
Dissolved Sulphate (SO4)	mg/L	-	500				2.5	1.0	45	1.0	6730634
Alkalinity (Total as CaCO3)	mg/L	-	30:500	2.4	1.0	6731924	200	1.0	280	1.0	6731924
Dissolved Chloride (Cl-)	mg/L	-	250				230	3.0	39	1.0	6730631
Nitrite (N)	mg/L	1	-				<0.010	0.010	0.061	0.010	6730602
Nitrate (N)	mg/L	10	-				<0.10	0.10	0.44	0.10	6730602
Nitrate + Nitrite (N)	mg/L	10	-				<0.10	0.10	0.50	0.10	6730602

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
 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
 (Made under the Ontario Safe Drinking Water Act, 2002)



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID			MQM051		MQM052	MQM053			MQM054		
Sampling Date			2020/05/14 12:45		2020/05/14 01:15	2020/05/14 01:30			2020/05/14 03:15		
COC Number			772247-02-01		772247-02-01	772247-02-01			772247-02-01		
	UNITS	A/O	OW7-2	RDL	OW8-1	OW8-2	RDL	QC Batch	OW9-2	RDL	QC Batch
Metals											
Dissolved Calcium (Ca)	ug/L	-	180000	1000	85000	89000	200	6731725	3800000	4000	6730799
Dissolved Magnesium (Mg)	ug/L	-	110000	50	22000	19000	50	6731725	1700000	500	6730799
Dissolved Phosphorus (P)	ug/L	-	<100	100	<100	<100	100	6731725	<1000	1000	6730799
Dissolved Potassium (K)	ug/L	-	17000	200	4600	3800	200	6731725	92000	2000	6730799
Dissolved Sodium (Na)	ug/L	200000	950000	500	96000	42000	100	6731725	5800000	1000	6730799
No Fill	No Exceedance										
Grey	Exceeds 1 criteria policy/level										
Black	Exceeds both criteria/levels										
RDL = Reportable Detection Limit QC Batch = Quality Control Batch A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)											

BV Labs ID			MQM055			MQM056			MQM057		
Sampling Date			2020/05/14 08:45			2020/05/14 07:45			2020/05/14 11:00		
COC Number			772247-02-01			772247-02-01			772247-02-01		
	UNITS	A/O	AMX-R	RDL	QC Batch	OW4-1-D	QC Batch	OW5-1-D	RDL	QC Batch	
Metals											
Dissolved Calcium (Ca)	ug/L	-	680000	2000	6731725	33000	6730799	51000	200	6731725	
Dissolved Magnesium (Mg)	ug/L	-	510000	250	6731725	22000	6730799	33000	50	6731725	
Dissolved Phosphorus (P)	ug/L	-	<500	500	6731725	<100	6730799	<100	100	6731725	
Dissolved Potassium (K)	ug/L	-	48000	1000	6731725	8900	6730799	6300	200	6731725	
Dissolved Sodium (Na)	ug/L	200000	2400000	500	6731725	230000	6730799	60000	100	6731725	
No Fill	No Exceedance										
Grey	Exceeds 1 criteria policy/level										
Black	Exceeds both criteria/levels										
RDL = Reportable Detection Limit QC Batch = Quality Control Batch A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)											



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM051
Sample ID: OW7-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6731725	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk

BV Labs ID: MQM051 Dup
Sample ID: OW7-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru

BV Labs ID: MQM052
Sample ID: OW8-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6731725	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM053
Sample ID: OW8-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6731725	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk

BV Labs ID: MQM054
Sample ID: OW9-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/20	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730799	N/A	2020/05/20	John Bowman
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk

BV Labs ID: MQM054 Dup
Sample ID: OW9-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/22	Nimarta Singh



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM055
Sample ID: AMX-R
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/22	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6731725	N/A	2020/05/22	Nan Raykha
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk

BV Labs ID: MQM055 Dup
Sample ID: AMX-R
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/22	Surinder Rai
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai

BV Labs ID: MQM056
Sample ID: OW4-1-D
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/20	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730799	N/A	2020/05/20	John Bowman
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM056
Sample ID: OW4-1-D
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk

BV Labs ID: MQM057
Sample ID: OW5-1-D
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6731924	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6729218	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6730631	N/A	2020/05/20	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6731926	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6731916	2020/05/20	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728715	N/A	2020/05/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6731725	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737534	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6730602	N/A	2020/05/21	Chandra Nandlal
pH	AT	6731928	2020/05/20	2020/05/21	Surinder Rai
Orthophosphate	KONE	6730635	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6730634	N/A	2020/05/20	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6729253	N/A	2020/05/22	Automated Statchk



GENERAL COMMENTS

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

Package 1	4.7°C
Package 2	3.3°C
Package 3	4.3°C

Sample MQM054 [OW9-2] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample MQM055 [AMX-R] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6730602	C_N	Matrix Spike	Nitrite (N)	2020/05/21		113	%	80 - 120
			Nitrate (N)	2020/05/21		109	%	80 - 120
6730602	C_N	Spiked Blank	Nitrite (N)	2020/05/21		107	%	80 - 120
			Nitrate (N)	2020/05/21		102	%	80 - 120
6730602	C_N	Method Blank	Nitrite (N)	2020/05/21	<0.010		mg/L	
			Nitrate (N)	2020/05/21	<0.10		mg/L	
6730602	C_N	RPD	Nitrite (N)	2020/05/21	NC		%	20
			Nitrate (N)	2020/05/21	NC		%	20
6730631	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2020/05/20		NC	%	80 - 120
6730631	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/05/20		101	%	80 - 120
6730631	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/05/20	<1.0		mg/L	
6730631	DRM	RPD	Dissolved Chloride (Cl-)	2020/05/20	3.7		%	20
6730634	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2020/05/20		NC	%	75 - 125
6730634	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/05/20		103	%	80 - 120
6730634	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/05/20	<1.0		mg/L	
6730634	DRM	RPD	Dissolved Sulphate (SO4)	2020/05/20	0.71		%	20
6730635	DRM	Matrix Spike	Orthophosphate (P)	2020/05/22		112	%	75 - 125
6730635	DRM	Spiked Blank	Orthophosphate (P)	2020/05/22		100	%	80 - 120
6730635	DRM	Method Blank	Orthophosphate (P)	2020/05/22	<0.010		mg/L	
6730635	DRM	RPD	Orthophosphate (P)	2020/05/22	NC		%	25
6730799	JBW	Matrix Spike	Dissolved Calcium (Ca)	2020/05/20		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/20		NC	%	80 - 120
			Dissolved Phosphorus (P)	2020/05/20		118	%	80 - 120
			Dissolved Potassium (K)	2020/05/20		114	%	80 - 120
			Dissolved Sodium (Na)	2020/05/20		NC	%	80 - 120
6730799	JBW	Spiked Blank	Dissolved Calcium (Ca)	2020/05/20		107	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/20		105	%	80 - 120
			Dissolved Phosphorus (P)	2020/05/20		123 (1)	%	80 - 120
			Dissolved Potassium (K)	2020/05/20		106	%	80 - 120
			Dissolved Sodium (Na)	2020/05/20		103	%	80 - 120
6730799	JBW	Method Blank	Dissolved Calcium (Ca)	2020/05/20	<200		ug/L	
			Dissolved Magnesium (Mg)	2020/05/20	<50		ug/L	
			Dissolved Phosphorus (P)	2020/05/20	<100		ug/L	
			Dissolved Potassium (K)	2020/05/20	<200		ug/L	
			Dissolved Sodium (Na)	2020/05/20	<100		ug/L	
6730799	JBW	RPD	Dissolved Calcium (Ca)	2020/05/20	1.0		%	20
			Dissolved Magnesium (Mg)	2020/05/20	0.94		%	20
			Dissolved Potassium (K)	2020/05/20	2.2		%	20
			Dissolved Sodium (Na)	2020/05/20	1.4		%	20
6731725	N_R	Matrix Spike	Dissolved Calcium (Ca)	2020/05/21		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/21		NC	%	80 - 120
			Dissolved Phosphorus (P)	2020/05/21		119	%	80 - 120
			Dissolved Potassium (K)	2020/05/21		110	%	80 - 120
			Dissolved Sodium (Na)	2020/05/21		NC	%	80 - 120
6731725	N_R	Spiked Blank	Dissolved Calcium (Ca)	2020/05/21		100	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/21		99	%	80 - 120
			Dissolved Phosphorus (P)	2020/05/21		105	%	80 - 120
			Dissolved Potassium (K)	2020/05/21		100	%	80 - 120
			Dissolved Sodium (Na)	2020/05/21		96	%	80 - 120
6731725	N_R	Method Blank	Dissolved Calcium (Ca)	2020/05/21	<200		ug/L	
			Dissolved Magnesium (Mg)	2020/05/21	<50		ug/L	
			Dissolved Phosphorus (P)	2020/05/21	<100		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6731916	SAU	Matrix Spike [MQM055-01]	Dissolved Potassium (K)	2020/05/21	<200		ug/L	
			Dissolved Sodium (Na)	2020/05/21	<100		ug/L	
			Fluoride (F-)	2020/05/21		70 (1)	%	80 - 120
6731916	SAU	Spiked Blank	Fluoride (F-)	2020/05/21		102	%	80 - 120
6731916	SAU	Method Blank	Fluoride (F-)	2020/05/21	<0.10		mg/L	
6731916	SAU	RPD [MQM055-01]	Fluoride (F-)	2020/05/21	0.95		%	20
6731924	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2020/05/21		94	%	85 - 115
6731924	SAU	Method Blank	Alkalinity (Total as CaCO3)	2020/05/21	<1.0		mg/L	
6731924	SAU	RPD [MQM055-01]	Alkalinity (Total as CaCO3)	2020/05/22	NC		%	20
6731926	SAU	Spiked Blank	Conductivity	2020/05/21		101	%	85 - 115
6731926	SAU	Method Blank	Conductivity	2020/05/21	<1.0		umho/cm	
6731926	SAU	RPD [MQM055-01]	Conductivity	2020/05/21	0.29		%	25
6731928	SAU	Spiked Blank	pH	2020/05/21		101	%	98 - 103
6731928	SAU	RPD [MQM055-01]	pH	2020/05/21	1.8		%	N/A
6733903	VRO	Spiked Blank	Colour	2020/05/21		98	%	80 - 120
6733903	VRO	Method Blank	Colour	2020/05/21	<2		TCU	
6733903	VRO	RPD [MQM051-01]	Colour	2020/05/21	NC		%	25
6734717	NS3	Matrix Spike	Dissolved Organic Carbon	2020/05/22		92	%	80 - 120
6734717	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/22		98	%	80 - 120
6734717	NS3	Method Blank	Dissolved Organic Carbon	2020/05/22	<0.40		mg/L	
6734717	NS3	RPD	Dissolved Organic Carbon	2020/05/22	13		%	20
6734722	NS3	Matrix Spike [MQM054-02]	Dissolved Organic Carbon	2020/05/22		91	%	80 - 120
6734722	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/22		98	%	80 - 120
6734722	NS3	Method Blank	Dissolved Organic Carbon	2020/05/22	<0.40		mg/L	
6734722	NS3	RPD [MQM054-02]	Dissolved Organic Carbon	2020/05/22	0.44		%	20
6737534	ASP	Matrix Spike	Total Ammonia-N	2020/05/22		97	%	75 - 125
6737534	ASP	Spiked Blank	Total Ammonia-N	2020/05/22		102	%	80 - 120
6737534	ASP	Method Blank	Total Ammonia-N	2020/05/22	<0.050		mg/L	
6737534	ASP	RPD	Total Ammonia-N	2020/05/22	0.21		%	20

N/A = Not Applicable

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

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

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

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

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

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

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



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

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

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

Anastassia Hamanov, Scientific Specialist

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



BUREAU
VERITAS

BV Labs Job #: COB9785
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

Exceedance Summary Table – ODWS (2002)

Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
OW7-2	MQM051-01	Fluoride (F-)	1.5	2.2	0.10	mg/L
The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.						



Your Project #: 1407634
 Your C.O.C. #: 772247-01-01

Attention: Jamie Bonany

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

Report Date: 2020/05/26
 Report #: R6187075
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9831

Received: 2020/05/15, 09:52

Sample Matrix: Water
 # Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	9	N/A	2020/05/21	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	9	N/A	2020/05/22	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	9	N/A	2020/05/21	CAM SOP-00463	SM 23 4500-Cl E m
Colour	9	N/A	2020/05/21	CAM SOP-00412	SM 23 2120C m
Conductivity	9	N/A	2020/05/21	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2020/05/22	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	6	N/A	2020/05/23	CAM SOP-00446	SM 23 5310 B m
Fluoride	9	2020/05/21	2020/05/21	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	9	N/A	2020/05/25	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	7	N/A	2020/05/23	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	2	N/A	2020/05/25	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	9	N/A	2020/05/22	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	9	N/A	2020/05/22	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	9	2020/05/21	2020/05/21	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	9	N/A	2020/05/22	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	9	N/A	2020/05/21	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	9	N/A	2020/05/25		Auto Calc

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and



Your Project #: 1407634
Your C.O.C. #: 772247-01-01

Attention: Jamie Bonany

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

Report Date: 2020/05/26
Report #: R6187075
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9831

Received: 2020/05/15, 09:52

use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

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

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

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

=====

This report has been generated and distributed using a secure automated process.

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



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM258			MQM259		
Sampling Date				2020/05/14 02:30			2020/05/14 08:45		
COC Number				772247-01-01			772247-01-01		
	UNITS	MAC	A/O	TW1-1	RDL	QC Batch	BORED	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	280	1.0	6727721	280	1.0	6727721
Calculated TDS	mg/L	-	500	1400	1.0	6728309	330	1.0	6728309
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.8	1.0	6727721	2.5	1.0	6727721
Hardness (CaCO3)	mg/L	-	80:100	610	1.0	6728274	270	1.0	6728274
Inorganics									
Total Ammonia-N	mg/L	-	-	0.95	0.050	6737479	<0.050	0.050	6737442
Colour	TCU	-	5	<2	2	6733903	<2	2	6733903
Conductivity	umho/cm	-	-	2800	1.0	6733819	570	1.0	6733819
Fluoride (F-)	mg/L	1.5	-	0.50	0.10	6733810	0.13	0.10	6733810
Dissolved Organic Carbon	mg/L	-	5	1.6	0.40	6734722	0.92	0.40	6734722
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	6732574	<0.010	0.010	6732574
pH	pH	-	6.5:8.5	7.84		6733838	7.98		6733838
Dissolved Sulphate (SO4)	mg/L	-	500	30	1.0	6732566	28	1.0	6732566
Alkalinity (Total as CaCO3)	mg/L	-	30:500	290	1.0	6733815	290	1.0	6733815
Dissolved Chloride (Cl-)	mg/L	-	250	660	8.0	6732560	1.4	1.0	6732560
Nitrite (N)	mg/L	1	-	<0.010	0.010	6733857	<0.010	0.010	6736904
Nitrate (N)	mg/L	10	-	<0.10	0.10	6733857	0.25	0.10	6736904
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	6733857	0.25	0.10	6736904
No Fill	No Exceedance								
Grey	Exceeds 1 criteria policy/level								
Black	Exceeds both criteria/levels								
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM259			MQM260		MQM261		
Sampling Date				2020/05/14 08:45			2020/05/14 07:45		2020/05/14 08:00		
COC Number				772247-01-01			772247-01-01		772247-01-01		
	UNITS	MAC	A/O	BORED Lab-Dup	RDL	QC Batch	OW4-1	QC Batch	OW4-2	RDL	QC Batch

Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				220	6727721	240	1.0	6727721
Calculated TDS	mg/L	-	500				670	6728309	740	1.0	6728309
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				2.6	6727721	2.3	1.0	6727721
Hardness (CaCO3)	mg/L	-	80:100				150	6728274	180	1.0	6728274

Inorganics											
Total Ammonia-N	mg/L	-	-				0.98	6737442	1.0	0.050	6737442
Colour	TCU	-	5				<2	6733903	<2	2	6733903
Conductivity	umho/cm	-	-				1300	6733819	1500	1.0	6733819
Fluoride (F-)	mg/L	1.5	-				1.0	6733810	1.0	0.10	6733810
Dissolved Organic Carbon	mg/L	-	5				1.7	6734717	0.99	0.40	6734722
Orthophosphate (P)	mg/L	-	-				<0.010	6732590	<0.010	0.010	6732590
pH	pH	-	6.5:8.5				8.11	6733838	8.00		6733838
Dissolved Sulphate (SO4)	mg/L	-	500				2.6	6732587	<1.0	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	30:500				220	6733815	250	1.0	6733815
Dissolved Chloride (Cl-)	mg/L	-	250				260	6732582	290	3.0	6732582
Nitrite (N)	mg/L	1	-	<0.010	0.010	6736904	<0.010	6733857	<0.010	0.010	6733857
Nitrate (N)	mg/L	10	-	0.25	0.10	6736904	<0.10	6733857	<0.10	0.10	6733857
Nitrate + Nitrite (N)	mg/L	10	-	0.25	0.10	6736904	<0.10	6733857	<0.10	0.10	6733857

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels
<p>RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)</p>	



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM262			MQM263		MQM264		
Sampling Date				2020/05/14 11:00			2020/05/14 11:45		2020/05/14 09:30		
COC Number				772247-01-01			772247-01-01		772247-01-01		
	UNITS	MAC	A/O	OW5-1	RDL	QC Batch	OW5-3	RDL	OW6-2	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	280	1.0	6727721	88	1.0	140	1.0	6727721
Calculated TDS	mg/L	-	500	410	1.0	6728309	13000	1.0	4000	1.0	6728309
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	2.2	1.0	6727721	<1.0	1.0	<1.0	1.0	6727721
Hardness (CaCO3)	mg/L	-	80:100	260	1.0	6728274	5900	1.0	1700	1.0	6728274
Inorganics											
Total Ammonia-N	mg/L	-	-	0.39	0.050	6737479	8.2	0.050	<0.050	0.050	6737442
Colour	TCU	-	5	<2	2	6733903	32	2	<2	2	6733903
Conductivity	umho/cm	-	-	740	1.0	6733819	21000	1.0	6400	1.0	6733819
Fluoride (F-)	mg/L	1.5	-	0.56	0.10	6733810	0.35	0.10	0.69	0.10	6733810
Dissolved Organic Carbon	mg/L	-	5	1.0	0.40	6734717	1.3	0.40	0.56	0.40	6734722
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	6732574	<0.010	0.010	<0.010	0.010	6732574
pH	pH	-	6.5:8.5	7.93		6733838	7.22		7.66		6733838
Dissolved Sulphate (SO4)	mg/L	-	500	45	1.0	6732566	<1.0	1.0	960	5.0	6732566
Alkalinity (Total as CaCO3)	mg/L	-	30:500	280	1.0	6733815	88	1.0	140	1.0	6733815
Dissolved Chloride (Cl-)	mg/L	-	250	39	1.0	6732560	7300	80	1600	15	6732560
Nitrite (N)	mg/L	1	-	0.046	0.010	6733857	<0.010	0.010	<0.010	0.010	6733857
Nitrate (N)	mg/L	10	-	0.46	0.10	6733857	<0.10	0.10	1.34	0.10	6733857
Nitrate + Nitrite (N)	mg/L	10	-	0.50	0.10	6733857	<0.10	0.10	1.34	0.10	6733857
No Fill	No Exceedance										
Grey	Exceeds 1 criteria policy/level										
Black	Exceeds both criteria/levels										
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively											
(Made under the Ontario Safe Drinking Water Act, 2002)											



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID				MQM265			MQM703		
Sampling Date				2020/05/14 12:30			2020/05/14 08:30		
COC Number				772247-01-01			772247-01-01		
	UNITS	MAC	A/O	OW7-1	RDL	QC Batch	AM1B	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	300	1.0	6727721	230	1.0	6727721
Calculated TDS	mg/L	-	500	3400	1.0	6728309	290	1.0	6728309
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	1.7	1.0	6727721	2.0	1.0	6727721
Hardness (CaCO ₃)	mg/L	-	80:100	860	1.0	6728274	240	1.0	6728274
Inorganics									
Total Ammonia-N	mg/L	-	-	2.4	0.050	6737442	0.11	0.050	6737442
Colour	TCU	-	5	33	2	6733903	<2	2	6733903
Conductivity	umho/cm	-	-	6400	1.0	6733819	500	1.0	6733819
Fluoride (F ⁻)	mg/L	1.5	-	2.1	0.10	6733810	0.23	0.10	6733810
Dissolved Organic Carbon	mg/L	-	5	0.56	0.40	6734717	0.70	0.40	6734722
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	6732590	<0.010	0.010	6732590
pH	pH	-	6.5:8.5	7.78		6733838	7.97		6733838
Dissolved Sulphate (SO ₄)	mg/L	-	500	20	1.0	6732587	39	1.0	6732587
Alkalinity (Total as CaCO ₃)	mg/L	-	30:500	300	1.0	6733815	230	1.0	6733815
Dissolved Chloride (Cl ⁻)	mg/L	-	250	1900	20	6732582	1.5	1.0	6732582
Nitrite (N)	mg/L	1	-	<0.010	0.010	6733857	<0.010	0.010	6733857
Nitrate (N)	mg/L	10	-	<0.10	0.10	6733857	<0.10	0.10	6733857
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	6733857	<0.10	0.10	6733857
No Fill	No Exceedance								
Grey	Exceeds 1 criteria policy/level								
Black	Exceeds both criteria/levels								
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID			MQM258		MQM259	MQM260	MQM261	MQM262		
Sampling Date			2020/05/14 02:30		2020/05/14 08:45	2020/05/14 07:45	2020/05/14 08:00	2020/05/14 11:00		
COC Number			772247-01-01		772247-01-01	772247-01-01	772247-01-01	772247-01-01		
	UNITS	A/O	TW1-1	RDL	BORED	OW4-1	OW4-2	OW5-1	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	-	130000	400	63000	30000	35000	50000	200	6730227
Dissolved Magnesium (Mg)	ug/L	-	68000	50	28000	19000	24000	32000	50	6730227
Dissolved Phosphorus (P)	ug/L	-	<100	100	<100	<100	<100	<100	100	6730227
Dissolved Potassium (K)	ug/L	-	10000	200	5000	7700	8700	6500	200	6730227
Dissolved Sodium (Na)	ug/L	200000	290000	100	12000	210000	220000	59000	100	6730227
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively										
(Made under the Ontario Safe Drinking Water Act, 2002)										

BV Labs ID			MQM263		MQM264	MQM265		MQM703		
Sampling Date			2020/05/14 11:45		2020/05/14 09:30	2020/05/14 12:30		2020/05/14 08:30		
COC Number			772247-01-01		772247-01-01	772247-01-01		772247-01-01		
	UNITS	A/O	OW5-3	RDL	OW6-2	OW7-1	RDL	AM1B	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	-	1200000	4000	340000	180000	1000	47000	200	6730227
Dissolved Magnesium (Mg)	ug/L	-	700000	500	200000	100000	50	31000	50	6730227
Dissolved Phosphorus (P)	ug/L	-	<1000	1000	<100	<100	100	<100	100	6730227
Dissolved Potassium (K)	ug/L	-	59000	2000	18000	15000	200	2200	200	6730227
Dissolved Sodium (Na)	ug/L	200000	3800000	1000	780000	980000	500	6000	100	6730227
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively										
(Made under the Ontario Safe Drinking Water Act, 2002)										



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM258
Sample ID: TW1-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM259
Sample ID: BORED
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6736904	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM259 Dup
Sample ID: BORED
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6736904	N/A	2020/05/22	Chandra Nandlal



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM260
Sample ID: OW4-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM261
Sample ID: OW4-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM262
Sample ID: OW5-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM262
Sample ID: OW5-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM263
Sample ID: OW5-3
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM264
Sample ID: OW6-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM264
Sample ID: OW6-2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/25	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM265
Sample ID: OW7-1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/25	Azita Fazaeli
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk

BV Labs ID: MQM703
Sample ID: AM1B
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733815	N/A	2020/05/21	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	6727721	N/A	2020/05/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Colour	SPEC	6733903	N/A	2020/05/21	Viorica Rotaru
Conductivity	AT	6733819	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734722	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733810	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6728274	N/A	2020/05/25	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	6730227	N/A	2020/05/23	Azita Fazaeli



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM703
Sample ID: AM1B
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6737442	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733857	N/A	2020/05/22	Chandra Nandlal
pH	AT	6733838	2020/05/21	2020/05/21	Surinder Rai
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	6728309	N/A	2020/05/25	Automated Statchk



GENERAL COMMENTS

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

Package 1	4.7°C
Package 2	3.3°C
Package 3	4.3°C

Sample MQM263 [OW5-3] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6730227	AFZ	Matrix Spike	Dissolved Calcium (Ca)	2020/05/23		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/23		NC	%	80 - 120
			Dissolved Phosphorus (P)	2020/05/23	116	%	80 - 120	
			Dissolved Potassium (K)	2020/05/23	107	%	80 - 120	
			Dissolved Sodium (Na)	2020/05/23	103	%	80 - 120	
6730227	AFZ	Spiked Blank	Dissolved Calcium (Ca)	2020/05/23		96	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/23	95	%	80 - 120	
			Dissolved Phosphorus (P)	2020/05/23	109	%	80 - 120	
			Dissolved Potassium (K)	2020/05/23	95	%	80 - 120	
6730227	AFZ	Method Blank	Dissolved Sodium (Na)	2020/05/23	94	%	80 - 120	
			Dissolved Calcium (Ca)	2020/05/23	<200	ug/L		
			Dissolved Magnesium (Mg)	2020/05/23	<50	ug/L		
			Dissolved Phosphorus (P)	2020/05/23	<100	ug/L		
			Dissolved Potassium (K)	2020/05/23	<200	ug/L		
6730227	AFZ	RPD	Dissolved Sodium (Na)	2020/05/23	<100	ug/L		
6732560	DRM	Matrix Spike	Dissolved Sodium (Na)	2020/05/23	1.0	%		20
6732560	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2020/05/21		120	%	80 - 120
6732560	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/05/21		101	%	80 - 120
6732560	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/05/21	<1.0		mg/L	
6732560	DRM	RPD	Dissolved Chloride (Cl-)	2020/05/21	2.0		%	20
6732566	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2020/05/21		133 (1)	%	75 - 125
6732566	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/05/21		101	%	80 - 120
6732566	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/05/21	<1.0		mg/L	
6732566	DRM	RPD	Dissolved Sulphate (SO4)	2020/05/21	NC		%	20
6732574	DRM	Matrix Spike	Orthophosphate (P)	2020/05/22		108	%	75 - 125
6732574	DRM	Spiked Blank	Orthophosphate (P)	2020/05/22		99	%	80 - 120
6732574	DRM	Method Blank	Orthophosphate (P)	2020/05/22	<0.010		mg/L	
6732574	DRM	RPD	Orthophosphate (P)	2020/05/22	NC		%	25
6732582	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2020/05/21		NC	%	80 - 120
6732582	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/05/21		101	%	80 - 120
6732582	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/05/21	<1.0		mg/L	
6732582	DRM	RPD	Dissolved Chloride (Cl-)	2020/05/21	0.047		%	20
6732587	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2020/05/21		NC	%	75 - 125
6732587	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/05/21		102	%	80 - 120
6732587	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/05/21	<1.0		mg/L	
6732587	DRM	RPD	Dissolved Sulphate (SO4)	2020/05/21	0.83		%	20
6732590	DRM	Matrix Spike	Orthophosphate (P)	2020/05/22		111	%	75 - 125
6732590	DRM	Spiked Blank	Orthophosphate (P)	2020/05/22		101	%	80 - 120
6732590	DRM	Method Blank	Orthophosphate (P)	2020/05/22	<0.010		mg/L	
6732590	DRM	RPD	Orthophosphate (P)	2020/05/22	NC		%	25
6733810	SAU	Matrix Spike	Fluoride (F-)	2020/05/21		103	%	80 - 120
6733810	SAU	Spiked Blank	Fluoride (F-)	2020/05/21		98	%	80 - 120
6733810	SAU	Method Blank	Fluoride (F-)	2020/05/21	<0.10		mg/L	
6733810	SAU	RPD	Fluoride (F-)	2020/05/21	7.6		%	20
6733815	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2020/05/21		95	%	85 - 115
6733815	SAU	Method Blank	Alkalinity (Total as CaCO3)	2020/05/21	<1.0		mg/L	
6733815	SAU	RPD	Alkalinity (Total as CaCO3)	2020/05/21	1.2		%	20
6733819	SAU	Spiked Blank	Conductivity	2020/05/21		101	%	85 - 115
6733819	SAU	Method Blank	Conductivity	2020/05/21	<1.0		umho/cm	
6733819	SAU	RPD	Conductivity	2020/05/21	0.35		%	25
6733838	SAU	Spiked Blank	pH	2020/05/21		102	%	98 - 103
6733838	SAU	RPD	pH	2020/05/21	0.027		%	N/A



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6733857	C_N	Matrix Spike	Nitrite (N)	2020/05/22		107	%	80 - 120
			Nitrate (N)	2020/05/22		101	%	80 - 120
6733857	C_N	Spiked Blank	Nitrite (N)	2020/05/22		108	%	80 - 120
			Nitrate (N)	2020/05/22		102	%	80 - 120
6733857	C_N	Method Blank	Nitrite (N)	2020/05/22	<0.010		mg/L	
			Nitrate (N)	2020/05/22	<0.10		mg/L	
6733857	C_N	RPD	Nitrite (N)	2020/05/22	NC		%	20
			Nitrate (N)	2020/05/22	0.28		%	20
6733903	VRO	Spiked Blank	Colour	2020/05/21		98	%	80 - 120
6733903	VRO	Method Blank	Colour	2020/05/21	<2		TCU	
6733903	VRO	RPD	Colour	2020/05/21	NC		%	25
6734717	NS3	Matrix Spike	Dissolved Organic Carbon	2020/05/22		92	%	80 - 120
6734717	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/22		98	%	80 - 120
6734717	NS3	Method Blank	Dissolved Organic Carbon	2020/05/22	<0.40		mg/L	
6734717	NS3	RPD	Dissolved Organic Carbon	2020/05/22	13		%	20
6734722	NS3	Matrix Spike	Dissolved Organic Carbon	2020/05/22		91	%	80 - 120
6734722	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/22		98	%	80 - 120
6734722	NS3	Method Blank	Dissolved Organic Carbon	2020/05/22	<0.40		mg/L	
6734722	NS3	RPD	Dissolved Organic Carbon	2020/05/22	0.44		%	20
6736904	C_N	Matrix Spike [MQM259-01]	Nitrite (N)	2020/05/22		107	%	80 - 120
			Nitrate (N)	2020/05/22		101	%	80 - 120
6736904	C_N	Spiked Blank	Nitrite (N)	2020/05/22		108	%	80 - 120
			Nitrate (N)	2020/05/22		101	%	80 - 120
6736904	C_N	Method Blank	Nitrite (N)	2020/05/22	<0.010		mg/L	
			Nitrate (N)	2020/05/22	<0.10		mg/L	
6736904	C_N	RPD [MQM259-01]	Nitrite (N)	2020/05/22	NC		%	20
			Nitrate (N)	2020/05/22	0.44		%	20
6737442	ASP	Matrix Spike	Total Ammonia-N	2020/05/22		96	%	75 - 125
6737442	ASP	Spiked Blank	Total Ammonia-N	2020/05/22		100	%	80 - 120
6737442	ASP	Method Blank	Total Ammonia-N	2020/05/22	<0.050		mg/L	
6737442	ASP	RPD	Total Ammonia-N	2020/05/22	2.5		%	20
6737479	ASP	Matrix Spike	Total Ammonia-N	2020/05/22		98	%	75 - 125
6737479	ASP	Spiked Blank	Total Ammonia-N	2020/05/22		100	%	80 - 120
6737479	ASP	Method Blank	Total Ammonia-N	2020/05/22	<0.050		mg/L	
6737479	ASP	RPD	Total Ammonia-N	2020/05/22	0.57		%	20

N/A = Not Applicable

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

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

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

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

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

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

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



BUREAU
VERITAS

BV Labs Job #: COB9831
Report Date: 2020/05/26

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

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

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

Anastassia Hamanov, Scientific Specialist

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



BUREAU
VERITAS

BV Labs Job #: COB9831

Report Date: 2020/05/26

Golder Associates Ltd

Client Project #: 1407634

Sampler Initials: DH

Exceedance Summary Table – ODWS (2002)

Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
OW7-1	MQM265-01	Fluoride (F-)	1.5	2.1	0.10	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.



Your Project #: 1407634
 Site Location: McCarthy
 Your C.O.C. #: 796489-01-01

Attention: Dawn Hoyle

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

Report Date: 2020/11/10
 Report #: R6405395
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0T0996

Received: 2020/11/03, 09:32

Sample Matrix: Water
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	2	N/A	2020/11/06	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	2	N/A	2020/11/06	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	2	N/A	2020/11/05	CAM SOP-00463	SM 23 4500-Cl E m
Colour	2	N/A	2020/11/04	CAM SOP-00412	SM 23 2120C m
Conductivity	2	N/A	2020/11/06	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	2	N/A	2020/11/05	CAM SOP-00446	SM 23 5310 B m
Fluoride	2	2020/11/05	2020/11/06	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2020/11/10	CAM SOP 00102/00408/00447	SM 2340 B
Metals Analysis by ICPMS (as received) (2)	2	N/A	2020/11/09	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	2	N/A	2020/11/10		
Anion and Cation Sum	2	N/A	2020/11/10		
Total Ammonia-N	2	N/A	2020/11/06	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	2	N/A	2020/11/05	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	2	2020/11/05	2020/11/06	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	2	N/A	2020/11/05	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	2	N/A	2020/11/10		Auto Calc
Sat. pH and Langelier Index (@ 4C)	2	N/A	2020/11/10		Auto Calc
Sulphate by Automated Colourimetry	2	N/A	2020/11/05	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	2	N/A	2020/11/04	CAM SOP-00410	SM 23 5550 B m
Total Dissolved Solids (TDS calc)	2	N/A	2020/11/10		Auto Calc
Turbidity	2	N/A	2020/11/04	CAM SOP-00417	SM 23 2130 B m

Remarks:

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

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



Your Project #: 1407634
Site Location: McCarthy
Your C.O.C. #: 796489-01-01

Attention: Dawn Hoyle

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

Report Date: 2020/11/10
Report #: R6405395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0T0996

Received: 2020/11/03, 09:32

accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

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

(2) Metals analysis was performed on the sample 'as received'.

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

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

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



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

RCAP - COMPREHENSIVE (WATER)

BV Labs ID				OBH430			OBH430		
Sampling Date				2020/10/30 02:00			2020/10/30 02:00		
COC Number				796489-01-01			796489-01-01		
	UNITS	MAC	A/O	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	-	-	12.8	N/A	7036704			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	320	1.0	7036706			
Calculated TDS	mg/L	-	500	700	1.0	7036700			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.7	1.0	7036706			
Cation Sum	me/L	-	-	13.7	N/A	7036704			
Hardness (CaCO3)	mg/L	-	80:100	580	1.0	7036418			
Ion Balance (% Difference)	%	-	-	3.33	N/A	7036703			
Langelier Index (@ 20C)	N/A	-	-	0.977		7036701			
Langelier Index (@ 4C)	N/A	-	-	0.730		7036702			
Saturation pH (@ 20C)	N/A	-	-	6.76		7036701			
Saturation pH (@ 4C)	N/A	-	-	7.01		7036702			
Inorganics									
Total Ammonia-N	mg/L	-	-	<0.050	0.050	7039968			
Conductivity	umho/cm	-	-	1300	1.0	7040431	1300	1.0	7040431
Dissolved Organic Carbon	mg/L	-	5	1.2	0.40	7036036			
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7038081	<0.010	0.010	7038081
pH	pH	-	6.5:8.5	7.74		7040436	7.63		7040436
Dissolved Sulphate (SO4)	mg/L	-	500	29	1.0	7038080	29	1.0	7038080
Alkalinity (Total as CaCO3)	mg/L	-	30:500	320	1.0	7040433	330	1.0	7040433
Dissolved Chloride (Cl-)	mg/L	-	250	200	3.0	7038074	200	3.0	7038074
Nitrite (N)	mg/L	1	-	<0.010	0.010	7038435			
Nitrate (N)	mg/L	10	-	<0.10	0.10	7038435			
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7038435			
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									
N/A = Not Applicable									



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

RCAP - COMPREHENSIVE (WATER)

BV Labs ID				OBH431			OBH431		
Sampling Date				2020/10/30 01:30			2020/10/30 01:30		
COC Number				796489-01-01			796489-01-01		
	UNITS	MAC	A/O	DW2	RDL	QC Batch	DW2 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	-	-	8.50	N/A	7036704			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	330	1.0	7036706			
Calculated TDS	mg/L	-	500	460	1.0	7036700			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	2.1	1.0	7036706			
Cation Sum	me/L	-	-	8.93	N/A	7036704			
Hardness (CaCO3)	mg/L	-	80:100	400	1.0	7036418			
Ion Balance (% Difference)	%	-	-	2.43	N/A	7036703			
Langelier Index (@ 20C)	N/A	-	-	0.989		7036701			
Langelier Index (@ 4C)	N/A	-	-	0.741		7036702			
Saturation pH (@ 20C)	N/A	-	-	6.83		7036701			
Saturation pH (@ 4C)	N/A	-	-	7.08		7036702			
Inorganics									
Total Ammonia-N	mg/L	-	-	<0.050	0.050	7039968			
Conductivity	umho/cm	-	-	820	1.0	7040431			
Dissolved Organic Carbon	mg/L	-	5	2.8	0.40	7036036			
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7038081			
pH	pH	-	6.5:8.5	7.82		7040436			
Dissolved Sulphate (SO4)	mg/L	-	500	31	1.0	7038080			
Alkalinity (Total as CaCO3)	mg/L	-	30:500	340	1.0	7040433			
Dissolved Chloride (Cl-)	mg/L	-	250	41	1.0	7038074			
Nitrite (N)	mg/L	1	-	<0.010	0.010	7038435	<0.010	0.010	7038435
Nitrate (N)	mg/L	10	-	<0.10	0.10	7038435	<0.10	0.10	7038435
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7038435	<0.10	0.10	7038435
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									
N/A = Not Applicable									



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VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH430			OBH430			OBH431		
Sampling Date				2020/10/30 02:00			2020/10/30 02:00			2020/10/30 01:30		
COC Number				796489-01-01			796489-01-01			796489-01-01		
	UNITS	MAC	A/O	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Inorganics												
Colour	TCU	-	5	<2	2	7036042				3	2	7036042
Fluoride (F-)	mg/L	1.5	-	0.12	0.10	7040423	<0.10	0.10	7040423	<0.10	0.10	7040423
Tannins & Lignins	mg/L	-	-	<0.2	0.2	7036910	<0.2	0.2	7036910	<0.2	0.2	7036910
Turbidity	NTU	-	5	0.2	0.1	7035754				0.5	0.1	7035754
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 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)												



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH430	OBH431		
Sampling Date				2020/10/30 02:00	2020/10/30 01:30		
COC Number				796489-01-01	796489-01-01		
	UNITS	MAC	A/O	DW1	DW2	RDL	QC Batch
Metals							
Aluminum (Al)	ug/L	-	100	<4.9	<4.9	4.9	7042373
Antimony (Sb)	ug/L	6	-	<0.50	<0.50	0.50	7042373
Arsenic (As)	ug/L	10	-	<1.0	<1.0	1.0	7042373
Barium (Ba)	ug/L	1000	-	180	69	2.0	7042373
Beryllium (Be)	ug/L	-	-	<0.40	<0.40	0.40	7042373
Bismuth (Bi)	ug/L	-	-	<1.0	<1.0	1.0	7042373
Boron (B)	ug/L	5000	-	39	19	10	7042373
Cadmium (Cd)	ug/L	5	-	<0.090	<0.090	0.090	7042373
Calcium (Ca)	ug/L	-	-	170000	130000	200	7042373
Chromium (Cr)	ug/L	50	-	<5.0	<5.0	5.0	7042373
Cobalt (Co)	ug/L	-	-	<0.50	<0.50	0.50	7042373
Copper (Cu)	ug/L	-	1000	44	<0.90	0.90	7042373
Iron (Fe)	ug/L	-	300	<100	<100	100	7042373
Lead (Pb)	ug/L	10	-	<0.50	<0.50	0.50	7042373
Lithium (Li)	ug/L	-	-	12	<5.0	5.0	7042373
Magnesium (Mg)	ug/L	-	-	36000	20000	50	7042373
Manganese (Mn)	ug/L	-	50	240	4.8	2.0	7042373
Molybdenum (Mo)	ug/L	-	-	0.64	0.71	0.50	7042373
Nickel (Ni)	ug/L	-	-	<1.0	<1.0	1.0	7042373
Phosphorus (P)	ug/L	-	-	<100	<100	100	7042373
Potassium (K)	ug/L	-	-	2200	4400	200	7042373
Selenium (Se)	ug/L	50	-	<2.0	<2.0	2.0	7042373
Silicon (Si)	ug/L	-	-	8800	6100	50	7042373
Silver (Ag)	ug/L	-	-	<0.090	<0.090	0.090	7042373
Sodium (Na)	ug/L	-	200000	47000	19000	100	7042373
Strontium (Sr)	ug/L	-	-	680	350	1.0	7042373
Tellurium (Te)	ug/L	-	-	<1.0	<1.0	1.0	7042373
Thallium (Tl)	ug/L	-	-	<0.050	<0.050	0.050	7042373
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively							
(Made under the Ontario Safe Drinking Water Act, 2002)							



BUREAU
VERITAS

BV Labs Job #: COT0996
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Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH430	OBH431		
Sampling Date				2020/10/30 02:00	2020/10/30 01:30		
COC Number				796489-01-01	796489-01-01		
	UNITS	MAC	A/O	DW1	DW2	RDL	QC Batch
Tin (Sn)	ug/L	-	-	<1.0	<1.0	1.0	7042373
Titanium (Ti)	ug/L	-	-	<5.0	<5.0	5.0	7042373
Tungsten (W)	ug/L	-	-	<1.0	<1.0	1.0	7042373
Uranium (U)	ug/L	20	-	1.5	0.43	0.10	7042373
Vanadium (V)	ug/L	-	-	<0.50	<0.50	0.50	7042373
Zinc (Zn)	ug/L	-	5000	18	<5.0	5.0	7042373
Zirconium (Zr)	ug/L	-	-	<1.0	<1.0	1.0	7042373
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4- Chemical/Physical Objectives [A/O] - Not Health Related, respectively							
(Made under the Ontario Safe Drinking Water Act, 2002)							



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VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

TEST SUMMARY

BV Labs ID: OBH430
Sample ID: DW1
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040433	N/A	2020/11/06	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7036706	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7038074	N/A	2020/11/05	Deonarine Ramnarine
Colour	SPEC	7036042	N/A	2020/11/04	Viorica Rotaru
Conductivity	AT	7040431	N/A	2020/11/06	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7036036	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040423	2020/11/05	2020/11/06	Surinder Rai
Hardness (calculated as CaCO3)		7036418	N/A	2020/11/10	Automated Statchk
Metals Analysis by ICPMS (as received)	ICP/MS	7042373	N/A	2020/11/09	Arefa Dabhad
Ion Balance (% Difference)	CALC	7036703	N/A	2020/11/10	Automated Statchk
Anion and Cation Sum	CALC	7036704	N/A	2020/11/10	Automated Statchk
Total Ammonia-N	LACH/NH4	7039968	N/A	2020/11/06	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7038435	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040436	2020/11/05	2020/11/06	Surinder Rai
Orthophosphate	KONE	7038081	N/A	2020/11/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	7036701	N/A	2020/11/10	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7036702	N/A	2020/11/10	Automated Statchk
Sulphate by Automated Colourimetry	KONE	7038080	N/A	2020/11/05	Deonarine Ramnarine
Tannins & Lignins	SPEC	7036910	N/A	2020/11/04	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	7036700	N/A	2020/11/10	Automated Statchk
Turbidity	AT	7035754	N/A	2020/11/04	Viorica Rotaru

BV Labs ID: OBH430 Dup
Sample ID: DW1
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040433	N/A	2020/11/06	Surinder Rai
Chloride by Automated Colourimetry	KONE	7038074	N/A	2020/11/05	Deonarine Ramnarine
Conductivity	AT	7040431	N/A	2020/11/06	Surinder Rai
Fluoride	ISE	7040423	2020/11/05	2020/11/06	Surinder Rai
pH	AT	7040436	2020/11/05	2020/11/06	Surinder Rai
Orthophosphate	KONE	7038081	N/A	2020/11/05	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7038080	N/A	2020/11/05	Deonarine Ramnarine
Tannins & Lignins	SPEC	7036910	N/A	2020/11/04	Viorica Rotaru

BV Labs ID: OBH431
Sample ID: DW2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040433	N/A	2020/11/06	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7036706	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7038074	N/A	2020/11/05	Deonarine Ramnarine



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VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

TEST SUMMARY

BV Labs ID: OBH431
Sample ID: DW2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	7036042	N/A	2020/11/04	Viorica Rotaru
Conductivity	AT	7040431	N/A	2020/11/06	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7036036	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040423	2020/11/05	2020/11/06	Surinder Rai
Hardness (calculated as CaCO3)		7036418	N/A	2020/11/10	Automated Statchk
Metals Analysis by ICPMS (as received)	ICP/MS	7042373	N/A	2020/11/09	Arefa Dabhad
Ion Balance (% Difference)	CALC	7036703	N/A	2020/11/10	Automated Statchk
Anion and Cation Sum	CALC	7036704	N/A	2020/11/10	Automated Statchk
Total Ammonia-N	LACH/NH4	7039968	N/A	2020/11/06	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7038435	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040436	2020/11/05	2020/11/06	Surinder Rai
Orthophosphate	KONE	7038081	N/A	2020/11/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	7036701	N/A	2020/11/10	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7036702	N/A	2020/11/10	Automated Statchk
Sulphate by Automated Colourimetry	KONE	7038080	N/A	2020/11/05	Deonarine Ramnarine
Tannins & Lignins	SPEC	7036910	N/A	2020/11/04	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	7036700	N/A	2020/11/10	Automated Statchk
Turbidity	AT	7035754	N/A	2020/11/04	Viorica Rotaru

BV Labs ID: OBH431 Dup
Sample ID: DW2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7038435	N/A	2020/11/05	Chandra Nandlal



BUREAU
VERITAS

BV Labs Job #: COT0996
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Golder Associates Ltd
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GENERAL COMMENTS

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

Package 1	4.0°C
Package 2	4.7°C
Package 3	5.7°C

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7035754	VRO	Spiked Blank	Turbidity	2020/11/04		110	%	85 - 115
7035754	VRO	Method Blank	Turbidity	2020/11/04	<0.1		NTU	
7035754	VRO	RPD	Turbidity	2020/11/04	0.52		%	20
7036036	NS3	Matrix Spike	Dissolved Organic Carbon	2020/11/05		95	%	80 - 120
7036036	NS3	Spiked Blank	Dissolved Organic Carbon	2020/11/05		100	%	80 - 120
7036036	NS3	Method Blank	Dissolved Organic Carbon	2020/11/05	<0.40		mg/L	
7036036	NS3	RPD	Dissolved Organic Carbon	2020/11/05	0.26		%	20
7036042	VRO	Spiked Blank	Colour	2020/11/04		99	%	80 - 120
7036042	VRO	Method Blank	Colour	2020/11/04	<2		TCU	
7036042	VRO	RPD	Colour	2020/11/04	NC		%	25
7036910	VRO	Matrix Spike [OBH430-03]	Tannins & Lignins	2020/11/04		99	%	80 - 120
7036910	VRO	Spiked Blank	Tannins & Lignins	2020/11/04		99	%	80 - 120
7036910	VRO	Method Blank	Tannins & Lignins	2020/11/04	<0.2		mg/L	
7036910	VRO	RPD [OBH430-03]	Tannins & Lignins	2020/11/04	NC		%	20
7038074	DRM	Matrix Spike [OBH430-01]	Dissolved Chloride (Cl-)	2020/11/05		NC	%	80 - 120
7038074	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/11/05		102	%	80 - 120
7038074	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/11/05	<1.0		mg/L	
7038074	DRM	RPD [OBH430-01]	Dissolved Chloride (Cl-)	2020/11/05	0.24		%	20
7038080	DRM	Matrix Spike [OBH430-01]	Dissolved Sulphate (SO4)	2020/11/05		NC	%	75 - 125
7038080	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/11/05		104	%	80 - 120
7038080	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/11/05	<1.0		mg/L	
7038080	DRM	RPD [OBH430-01]	Dissolved Sulphate (SO4)	2020/11/05	1.4		%	20
7038081	ADB	Matrix Spike [OBH430-01]	Orthophosphate (P)	2020/11/05		105	%	75 - 125
7038081	ADB	Spiked Blank	Orthophosphate (P)	2020/11/05		101	%	80 - 120
7038081	ADB	Method Blank	Orthophosphate (P)	2020/11/05	<0.010		mg/L	
7038081	ADB	RPD [OBH430-01]	Orthophosphate (P)	2020/11/05	NC		%	25
7038435	C_N	Matrix Spike [OBH431-01]	Nitrite (N)	2020/11/05		102	%	80 - 120
7038435	C_N	Spiked Blank	Nitrate (N)	2020/11/05		90	%	80 - 120
7038435	C_N	Spiked Blank	Nitrite (N)	2020/11/05		109	%	80 - 120
7038435	C_N	Spiked Blank	Nitrate (N)	2020/11/05		95	%	80 - 120
7038435	C_N	Method Blank	Nitrite (N)	2020/11/05	<0.010		mg/L	
7038435	C_N	Method Blank	Nitrate (N)	2020/11/05	<0.10		mg/L	
7038435	C_N	RPD [OBH431-01]	Nitrite (N)	2020/11/05	NC		%	20
7038435	C_N	RPD [OBH431-01]	Nitrate (N)	2020/11/05	NC		%	20
7039968	ASP	Matrix Spike	Total Ammonia-N	2020/11/06		96	%	75 - 125
7039968	ASP	Spiked Blank	Total Ammonia-N	2020/11/06		99	%	80 - 120
7039968	ASP	Method Blank	Total Ammonia-N	2020/11/06	<0.050		mg/L	
7039968	ASP	RPD	Total Ammonia-N	2020/11/06	5.8		%	20
7040423	SAU	Matrix Spike [OBH430-01]	Fluoride (F-)	2020/11/06		96	%	80 - 120
7040423	SAU	Spiked Blank	Fluoride (F-)	2020/11/06		99	%	80 - 120
7040423	SAU	Method Blank	Fluoride (F-)	2020/11/06	<0.10		mg/L	
7040423	SAU	RPD [OBH430-01]	Fluoride (F-)	2020/11/06	18		%	20
7040431	SAU	Spiked Blank	Conductivity	2020/11/06		101	%	85 - 115
7040431	SAU	Method Blank	Conductivity	2020/11/06	<1.0		umho/cm	
7040431	SAU	RPD [OBH430-01]	Conductivity	2020/11/06	0.45		%	25



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BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	7040433	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2020/11/06		94	%	85 - 115
	7040433	SAU	Method Blank	Alkalinity (Total as CaCO3)	2020/11/06	<1.0		mg/L	
	7040433	SAU	RPD [OBH430-01]	Alkalinity (Total as CaCO3)	2020/11/06	1.8		%	20
	7040436	SAU	Spiked Blank	pH	2020/11/06		101	%	98 - 103
	7040436	SAU	RPD [OBH430-01]	pH	2020/11/06	1.3		%	N/A
	7042373	ADA	Matrix Spike	Aluminum (Al)	2020/11/09		98	%	80 - 120
				Antimony (Sb)	2020/11/09		103	%	80 - 120
				Arsenic (As)	2020/11/09		101	%	80 - 120
				Barium (Ba)	2020/11/09		101	%	80 - 120
				Beryllium (Be)	2020/11/09		99	%	80 - 120
				Bismuth (Bi)	2020/11/09		99	%	80 - 120
				Boron (B)	2020/11/09		95	%	80 - 120
				Cadmium (Cd)	2020/11/09		101	%	80 - 120
				Calcium (Ca)	2020/11/09		NC	%	80 - 120
				Chromium (Cr)	2020/11/09		96	%	80 - 120
				Cobalt (Co)	2020/11/09		102	%	80 - 120
				Copper (Cu)	2020/11/09		102	%	80 - 120
				Iron (Fe)	2020/11/09		97	%	80 - 120
				Lead (Pb)	2020/11/09		97	%	80 - 120
				Lithium (Li)	2020/11/09		102	%	80 - 120
				Magnesium (Mg)	2020/11/09		100	%	80 - 120
				Manganese (Mn)	2020/11/09		98	%	80 - 120
				Molybdenum (Mo)	2020/11/09		101	%	80 - 120
				Nickel (Ni)	2020/11/09		96	%	80 - 120
				Phosphorus (P)	2020/11/09		101	%	80 - 120
				Potassium (K)	2020/11/09		103	%	80 - 120
				Selenium (Se)	2020/11/09		100	%	80 - 120
				Silicon (Si)	2020/11/09		102	%	80 - 120
				Silver (Ag)	2020/11/09		99	%	80 - 120
				Sodium (Na)	2020/11/09		97	%	80 - 120
				Strontium (Sr)	2020/11/09		99	%	80 - 120
				Tellurium (Te)	2020/11/09		104	%	80 - 120
				Thallium (Tl)	2020/11/09		98	%	80 - 120
				Tin (Sn)	2020/11/09		103	%	80 - 120
				Titanium (Ti)	2020/11/09		99	%	80 - 120
				Tungsten (W)	2020/11/09		100	%	80 - 120
				Uranium (U)	2020/11/09		100	%	80 - 120
				Vanadium (V)	2020/11/09		97	%	80 - 120
				Zinc (Zn)	2020/11/09		98	%	80 - 120
				Zirconium (Zr)	2020/11/09		105	%	80 - 120
	7042373	ADA	Spiked Blank	Aluminum (Al)	2020/11/09		104	%	80 - 120
				Antimony (Sb)	2020/11/09		103	%	80 - 120
				Arsenic (As)	2020/11/09		102	%	80 - 120
				Barium (Ba)	2020/11/09		103	%	80 - 120
				Beryllium (Be)	2020/11/09		102	%	80 - 120
				Bismuth (Bi)	2020/11/09		102	%	80 - 120
				Boron (B)	2020/11/09		97	%	80 - 120
				Cadmium (Cd)	2020/11/09		103	%	80 - 120
				Calcium (Ca)	2020/11/09		103	%	80 - 120
				Chromium (Cr)	2020/11/09		96	%	80 - 120
				Cobalt (Co)	2020/11/09		100	%	80 - 120



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BV Labs Job #: COT0996
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Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC		QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Batch	Init							
			Copper (Cu)	2020/11/09		104	%	80 - 120
			Iron (Fe)	2020/11/09		100	%	80 - 120
			Lead (Pb)	2020/11/09		99	%	80 - 120
			Lithium (Li)	2020/11/09		102	%	80 - 120
			Magnesium (Mg)	2020/11/09		100	%	80 - 120
			Manganese (Mn)	2020/11/09		100	%	80 - 120
			Molybdenum (Mo)	2020/11/09		102	%	80 - 120
			Nickel (Ni)	2020/11/09		97	%	80 - 120
			Phosphorus (P)	2020/11/09		112	%	80 - 120
			Potassium (K)	2020/11/09		104	%	80 - 120
			Selenium (Se)	2020/11/09		102	%	80 - 120
			Silicon (Si)	2020/11/09		101	%	80 - 120
			Silver (Ag)	2020/11/09		100	%	80 - 120
			Sodium (Na)	2020/11/09		100	%	80 - 120
			Strontium (Sr)	2020/11/09		99	%	80 - 120
			Tellurium (Te)	2020/11/09		107	%	80 - 120
			Thallium (Tl)	2020/11/09		100	%	80 - 120
			Tin (Sn)	2020/11/09		103	%	80 - 120
			Titanium (Ti)	2020/11/09		100	%	80 - 120
			Tungsten (W)	2020/11/09		101	%	80 - 120
			Uranium (U)	2020/11/09		99	%	80 - 120
			Vanadium (V)	2020/11/09		97	%	80 - 120
			Zinc (Zn)	2020/11/09		99	%	80 - 120
			Zirconium (Zr)	2020/11/09		104	%	80 - 120
7042373	ADA	Method Blank	Aluminum (Al)	2020/11/09	<4.9		ug/L	
			Antimony (Sb)	2020/11/09	<0.50		ug/L	
			Arsenic (As)	2020/11/09	<1.0		ug/L	
			Barium (Ba)	2020/11/09	<2.0		ug/L	
			Beryllium (Be)	2020/11/09	<0.40		ug/L	
			Bismuth (Bi)	2020/11/09	<1.0		ug/L	
			Boron (B)	2020/11/09	<10		ug/L	
			Cadmium (Cd)	2020/11/09	<0.090		ug/L	
			Calcium (Ca)	2020/11/09	<200		ug/L	
			Chromium (Cr)	2020/11/09	<5.0		ug/L	
			Cobalt (Co)	2020/11/09	<0.50		ug/L	
			Copper (Cu)	2020/11/09	<0.90		ug/L	
			Iron (Fe)	2020/11/09	<100		ug/L	
			Lead (Pb)	2020/11/09	<0.50		ug/L	
			Lithium (Li)	2020/11/09	<5.0		ug/L	
			Magnesium (Mg)	2020/11/09	<50		ug/L	
			Manganese (Mn)	2020/11/09	<2.0		ug/L	
			Molybdenum (Mo)	2020/11/09	<0.50		ug/L	
			Nickel (Ni)	2020/11/09	<1.0		ug/L	
			Phosphorus (P)	2020/11/09	<100		ug/L	
			Potassium (K)	2020/11/09	<200		ug/L	
			Selenium (Se)	2020/11/09	<2.0		ug/L	
			Silicon (Si)	2020/11/09	<50		ug/L	
			Silver (Ag)	2020/11/09	<0.090		ug/L	
			Sodium (Na)	2020/11/09	<100		ug/L	
			Strontium (Sr)	2020/11/09	<1.0		ug/L	
			Tellurium (Te)	2020/11/09	<1.0		ug/L	



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VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7042373	ADA	RPD	Thallium (Tl)	2020/11/09	<0.050		ug/L	
			Tin (Sn)	2020/11/09	<1.0		ug/L	
			Titanium (Ti)	2020/11/09	<5.0		ug/L	
			Tungsten (W)	2020/11/09	<1.0		ug/L	
			Uranium (U)	2020/11/09	<0.10		ug/L	
			Vanadium (V)	2020/11/09	<0.50		ug/L	
			Zinc (Zn)	2020/11/09	<5.0		ug/L	
			Zirconium (Zr)	2020/11/09	<1.0		ug/L	
			Calcium (Ca)	2020/11/09	2.3		%	20
			Iron (Fe)	2020/11/09	NC		%	20
			Magnesium (Mg)	2020/11/09	0.77		%	20
			Manganese (Mn)	2020/11/09	NC		%	20
			Potassium (K)	2020/11/09	2.8		%	20
			Sodium (Na)	2020/11/09	1.6		%	20

N/A = Not Applicable

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

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

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

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

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

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



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

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



BUREAU
VERITAS

BV Labs Job #: COT0996
Report Date: 2020/11/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SDP

Exceedance Summary Table – ODWS (2002)
Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						
The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.						



Your Project #: 1407634
 Site Location: McCarthy
 Your C.O.C. #: 796494-01-01, 796494-02-01

Attention: Dawn Hoyle

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

Report Date: 2020/11/09
 Report #: R6404244
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: COT1031

Received: 2020/11/03, 09:32

Sample Matrix: Water
 # Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	14	N/A	2020/11/05	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	14	N/A	2020/11/06	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	14	N/A	2020/11/06	CAM SOP-00463	SM 23 4500-Cl E m
Colour	14	N/A	2020/11/09	CAM SOP-00412	SM 23 2120C m
Conductivity	14	N/A	2020/11/05	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	8	N/A	2020/11/05	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	6	N/A	2020/11/06	CAM SOP-00446	SM 23 5310 B m
Fluoride	14	2020/11/05	2020/11/05	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	8	N/A	2020/11/06	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	6	N/A	2020/11/09	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	3	N/A	2020/11/05	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	10	N/A	2020/11/06	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2020/11/09	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	14	N/A	2020/11/09	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	14	N/A	2020/11/05	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	14	2020/11/05	2020/11/05	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	14	N/A	2020/11/06	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	14	N/A	2020/11/06	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	8	N/A	2020/11/06		Auto Calc
Total Dissolved Solids (TDS calc)	6	N/A	2020/11/09		Auto Calc

Remarks:

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

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



Your Project #: 1407634
Site Location: McCarthy
Your C.O.C. #: 796494-01-01, 796494-02-01

Attention: Dawn Hoyle

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

Report Date: 2020/11/09
Report #: R6404244
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: COT1031

Received: 2020/11/03, 09:32

accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

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

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

Encryption Key

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

Ema Gitej, Senior Project Manager

Email: Ema.Gitej@bvlabs.com

Phone# (905)817-5829

=====

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VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH586			OBH586		
Sampling Date				2020/10/30 04:45			2020/10/30 04:45		
COC Number				796494-01-01			796494-01-01		
	UNITS	MAC	A/O	AM1b	RDL	QC Batch	AM1b Lab-Dup	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	240	1.0	7039039			
Calculated TDS	mg/L	-	500	300	1.0	7037786			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.6	1.0	7039039			
Hardness (CaCO3)	mg/L	-	80:100	250	1.0	7037785			
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-	<1.0	1.0	7039039			
Inorganics									
Total Ammonia-N	mg/L	-	-	0.088	0.050	7040601			
Colour	TCU	-	5	<2	2	7040649	<2	2	7040649
Conductivity	mS/cm	-	-	0.499	0.001	7040474			
Fluoride (F-)	mg/L	1.5	-	0.22	0.10	7040448			
Dissolved Organic Carbon	mg/L	-	5	1.2	0.40	7040515			
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7040685			
pH	pH	-	6.5:8.5	7.85		7040492			
Dissolved Sulphate (SO4)	mg/L	-	500	40	1.0	7040683			
Alkalinity (Total as CaCO3)	mg/L	-	30:500	240	1.0	7040489			
Dissolved Chloride (Cl-)	mg/L	-	250	2.5	1.0	7040677			
Nitrite (N)	mg/L	1	-	<0.010	0.010	7040421			
Nitrate (N)	mg/L	10	-	<0.10	0.10	7040421			
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7040421			
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



BUREAU
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BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH587			OBH588		OBH589		
Sampling Date				2020/10/29 04:45			2020/10/29 12:15		2020/10/30 05:00		
COC Number				796494-01-01			796494-01-01		796494-01-01		
	UNITS	MAC	A/O	AMx-R	RDL	QC Batch	TW1-1	RDL	Bored	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	22	1.0	7039039	260	1.0	270	1.0	7039039
Calculated TDS	mg/L	-	500	9800	1.0	7037786	1300	1.0	330	1.0	7037786
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	<1.0	1.0	7039039	2.0	1.0	2.6	1.0	7039039
Hardness (CaCO3)	mg/L	-	80:100	3600	1.0	7037785	540	1.0	270	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-	<1.0	1.0	7039039	<1.0	1.0	<1.0	1.0	7039039
Inorganics											
Total Ammonia-N	mg/L	-	-	5.4	0.050	7040601	0.73	0.050	<0.050	0.050	7040601
Colour	TCU	-	5	260	10	7040649	<2	2	<2	2	7040649
Conductivity	mS/cm	-	-	18.5	0.001	7040474	2.46	0.001	0.562	0.001	7040474
Fluoride (F-)	mg/L	1.5	-	0.60	0.10	7040448	0.47	0.10	0.13	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5	2.2	0.40	7041052	1.7	0.40	1.0	0.40	7040515
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7040685	<0.010	0.010	<0.010	0.010	7040685
pH	pH	-	6.5:8.5	6.39		7040492	7.91		8.00		7040492
Dissolved Sulphate (SO4)	mg/L	-	500	4.8	1.0	7040683	29	1.0	28	1.0	7040683
Alkalinity (Total as CaCO3)	mg/L	-	30:500	22	1.0	7040489	260	1.0	280	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250	6400	80	7040677	610	8.0	1.9	1.0	7040677
Nitrite (N)	mg/L	1	-	<0.010	0.010	7040421	0.023	0.010	<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-	<0.10	0.10	7040421	0.25	0.10	0.26	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7040421	0.27	0.10	0.26	0.10	7040421
No Fill	No Exceedance										
Grey	Exceeds 1 criteria policy/level										
Black	Exceeds both criteria/levels										
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively											
(Made under the Ontario Safe Drinking Water Act, 2002)											



RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH589			OBH590		
Sampling Date				2020/10/30 05:00			2020/10/30 04:15		
COC Number				796494-01-01			796494-01-01		
	UNITS	MAC	A/O	Bored Lab-Dup	RDL	QC Batch	OW4-1	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				220	1.0	7039039
Calculated TDS	mg/L	-	500				720	1.0	7037786
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				2.7	1.0	7039039
Hardness (CaCO3)	mg/L	-	80:100				160	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-				<1.0	1.0	7039039
Inorganics									
Total Ammonia-N	mg/L	-	-	<0.050	0.050	7040601	1.3	0.050	7040601
Colour	TCU	-	5				<2	2	7040649
Conductivity	mS/cm	-	-				1.39	0.001	7040474
Fluoride (F-)	mg/L	1.5	-				0.99	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5				1.6	0.40	7042741
Orthophosphate (P)	mg/L	-	-				<0.010	0.010	7040685
pH	pH	-	6.5:8.5				8.11		7040492
Dissolved Sulphate (SO4)	mg/L	-	500				2.9	1.0	7040683
Alkalinity (Total as CaCO3)	mg/L	-	30:500				220	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250				300	4.0	7040677
Nitrite (N)	mg/L	1	-				<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-				<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-				<0.10	0.10	7040421
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



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BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH591		OBH592			OBH593		
Sampling Date				2020/10/30 03:45		2020/10/29 02:45			2020/10/29 03:00		
COC Number				796494-01-01		796494-01-01			796494-01-01		
	UNITS	MAC	A/O	OW4-2	RDL	OW5-1	RDL	QC Batch	OW5-3	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	240	1.0	320	1.0	7039039	120	1.0	7039039
Calculated TDS	mg/L	-	500	880	1.0	430	1.0	7037786	18000	1.0	7037786
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	1.9	1.0	2.2	1.0	7039039	<1.0	1.0	7039039
Hardness (CaCO ₃)	mg/L	-	80:100	230	1.0	230	1.0	7037785	7500	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	<1.0	1.0	<1.0	1.0	7039039	<1.0	1.0	7039039
Inorganics											
Total Ammonia-N	mg/L	-	-	1.1	0.050	0.52	0.050	7040601	10	0.050	7040601
Colour	TCU	-	5	<2	2	<2	2	7040649	16	2	7040649
Conductivity	mS/cm	-	-	1.74	0.001	0.737	0.001	7040474	31.6	0.001	7040474
Fluoride (F ⁻)	mg/L	1.5	-	0.91	0.10	0.63	0.10	7040448	0.41	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5	1.1	0.40	1.4	0.40	7040515	1.2	0.40	7042741
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	<0.010	0.010	7040685	<0.010	0.010	7040685
pH	pH	-	6.5:8.5	7.94		7.87		7040492	7.21		7040492
Dissolved Sulphate (SO ₄)	mg/L	-	500	<1.0	1.0	41	1.0	7040683	79	1.0	7040683
Alkalinity (Total as CaCO ₃)	mg/L	-	30:500	240	1.0	320	1.0	7040489	120	1.0	7040489
Dissolved Chloride (Cl ⁻)	mg/L	-	250	390	5.0	34	1.0	7040677	11000	120	7040677
Nitrite (N)	mg/L	1	-	<0.010	0.010	0.057	0.010	7040421	0.021	0.010	7040421
Nitrate (N)	mg/L	10	-	<0.10	0.10	0.29	0.10	7040421	<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	0.35	0.10	7040421	<0.10	0.10	7040421
No Fill	No Exceedance										
Grey	Exceeds 1 criteria policy/level										
Black	Exceeds both criteria/levels										
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively											
(Made under the Ontario Safe Drinking Water Act, 2002)											



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH594			OBH595		OBH596		
Sampling Date				2020/10/29 04:15			2020/10/29 12:50		2020/10/29 12:40		
COC Number				796494-01-01			796494-02-01		796494-02-01		
	UNITS	MAC	A/O	OW6-2	RDL	QC Batch	OW7-1	QC Batch	OW7-2	RDL	QC Batch

Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	160	1.0	7039039	290	7039039	290	1.0	7039039
Calculated TDS	mg/L	-	500	4100	1.0	7037786	4000	7037786	3900	1.0	7037786
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	<1.0	1.0	7039039	1.5	7039039	1.6	1.0	7039039
Hardness (CaCO ₃)	mg/L	-	80:100	1700	1.0	7037785	1000	7037785	1000	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	<1.0	1.0	7039039	<1.0	7039039	<1.0	1.0	7039039

Inorganics											
Total Ammonia-N	mg/L	-	-	1.8	0.050	7040601	2.4	7040601	2.3	0.050	7040601
Colour	TCU	-	5	<2	2	7040649	27	7040649	<2	2	7040649
Conductivity	mS/cm	-	-	6.67	0.001	7040474	6.81	7040474	7.30	0.001	7040474
Fluoride (F-)	mg/L	1.5	-	0.76	0.10	7040448	1.9	7040448	1.9	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5	0.83	0.40	7042741	0.86	7041052	0.81	0.40	7042741
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7040685	<0.010	7040685	<0.010	0.010	7040685
pH	pH	-	6.5:8.5	7.69		7040492	7.74	7040492	7.76		7040492
Dissolved Sulphate (SO ₄)	mg/L	-	500	1000	5.0	7040683	28	7040683	26	1.0	7040683
Alkalinity (Total as CaCO ₃)	mg/L	-	30:500	170	1.0	7040489	290	7040489	290	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250	1600	20	7040677	2300	7040677	2200	30	7040677
Nitrite (N)	mg/L	1	-	0.024	0.010	7040421	<0.010	7040421	<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-	<0.10	0.10	7040421	<0.10	7040421	<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7040421	<0.10	7040421	<0.10	0.10	7040421

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
 (Made under the Ontario Safe Drinking Water Act, 2002)



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH596			OBH597		
Sampling Date				2020/10/29 12:40			2020/10/29 01:30		
COC Number				796494-02-01			796494-02-01		
	UNITS	MAC	A/O	OW7-2 Lab-Dup	RDL	QC Batch	OW8-1	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				300	1.0	7039039
Calculated TDS	mg/L	-	500				470	1.0	7037786
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				1.8	1.0	7039039
Hardness (CaCO3)	mg/L	-	80:100				290	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-				<1.0	1.0	7039039
Inorganics									
Total Ammonia-N	mg/L	-	-				0.37	0.050	7040601
Colour	TCU	-	5				<2	2	7040649
Conductivity	mS/cm	-	-	7.08	0.001	7040474	0.847	0.001	7040474
Fluoride (F-)	mg/L	1.5	-	2.0	0.10	7040448	0.95	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5				1.6	0.40	7040515
Orthophosphate (P)	mg/L	-	-				<0.010	0.010	7040685
pH	pH	-	6.5:8.5	7.73		7040492	7.80		7040492
Dissolved Sulphate (SO4)	mg/L	-	500				45	1.0	7040683
Alkalinity (Total as CaCO3)	mg/L	-	30:500	290	1.0	7040489	300	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250				65	1.0	7040677
Nitrite (N)	mg/L	1	-				<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-				<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-				<0.10	0.10	7040421
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



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BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH597			OBH598		
Sampling Date				2020/10/29 01:30			2020/10/29 01:50		
COC Number				796494-02-01			796494-02-01		
	UNITS	MAC	A/O	OW8-1 Lab-Dup	RDL	QC Batch	OW8-2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				300	1.0	7039039
Calculated TDS	mg/L	-	500				460	1.0	7037786
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				1.4	1.0	7039039
Hardness (CaCO3)	mg/L	-	80:100				320	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-				<1.0	1.0	7039039
Inorganics									
Total Ammonia-N	mg/L	-	-				0.37	0.050	7040601
Colour	TCU	-	5				<2	2	7040649
Conductivity	mS/cm	-	-				0.822	0.001	7040474
Fluoride (F-)	mg/L	1.5	-				0.51	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5				1.8	0.40	7040515
Orthophosphate (P)	mg/L	-	-				<0.010	0.010	7040685
pH	pH	-	6.5:8.5				7.71		7040492
Dissolved Sulphate (SO4)	mg/L	-	500				52	1.0	7040683
Alkalinity (Total as CaCO3)	mg/L	-	30:500				300	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250				44	1.0	7040677
Nitrite (N)	mg/L	1	-	<0.010	0.010	7040421	<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-	<0.10	0.10	7040421	<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-	<0.10	0.10	7040421	<0.10	0.10	7040421
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



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VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

RESULTS OF ANALYSES OF WATER

BV Labs ID				OBH598			OBH599		
Sampling Date				2020/10/29 01:50			2020/10/30 03:45		
COC Number				796494-02-01			796494-02-01		
	UNITS	MAC	A/O	OW8-2 Lab-Dup	RDL	QC Batch	DUP2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-				240	1.0	7039039
Calculated TDS	mg/L	-	500				880	1.0	7037786
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-				1.6	1.0	7039039
Hardness (CaCO3)	mg/L	-	80:100				230	1.0	7037785
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	-	-				<1.0	1.0	7039039
Inorganics									
Total Ammonia-N	mg/L	-	-				1.1	0.050	7040601
Colour	TCU	-	5				<2	2	7040649
Conductivity	mS/cm	-	-				1.74	0.001	7040474
Fluoride (F-)	mg/L	1.5	-				0.90	0.10	7040448
Dissolved Organic Carbon	mg/L	-	5				1.1	0.40	7040515
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	7040685	<0.010	0.010	7040685
pH	pH	-	6.5:8.5				7.86		7040492
Dissolved Sulphate (SO4)	mg/L	-	500	52	1.0	7040683	<1.0	1.0	7040683
Alkalinity (Total as CaCO3)	mg/L	-	30:500				240	1.0	7040489
Dissolved Chloride (Cl-)	mg/L	-	250	44	1.0	7040677	390	5.0	7040677
Nitrite (N)	mg/L	1	-				<0.010	0.010	7040421
Nitrate (N)	mg/L	10	-				<0.10	0.10	7040421
Nitrate + Nitrite (N)	mg/L	10	-				<0.10	0.10	7040421
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									
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively									
(Made under the Ontario Safe Drinking Water Act, 2002)									



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VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID	OBH586						OBH587			OBH588		
Sampling Date				2020/10/30 04:45			2020/10/29 04:45			2020/10/29 12:15		
COC Number				796494-01-01			796494-01-01			796494-01-01		
	UNITS	MAC	A/O	AM1b	RDL	QC Batch	AMx-R	RDL	QC Batch	TW1-1	RDL	QC Batch

Metals												
Dissolved Aluminum (Al)	ug/L	-	100	5.9	4.9	7039985	<25	25	7039964	<4.9	4.9	7039985
Dissolved Antimony (Sb)	ug/L	6	-	<0.50	0.50	7039985	<2.5	2.5	7039964	<0.50	0.50	7039985
Dissolved Arsenic (As)	ug/L	10	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Barium (Ba)	ug/L	1000	-	100	2.0	7039985	210	10	7039964	29	2.0	7039985
Dissolved Beryllium (Be)	ug/L	-	-	<0.40	0.40	7039985	<2.0	2.0	7039964	<0.40	0.40	7039985
Dissolved Bismuth (Bi)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Boron (B)	ug/L	5000	-	57	10	7039985	1300	50	7039964	530	10	7039985
Dissolved Cadmium (Cd)	ug/L	5	-	<0.090	0.090	7039985	<0.45	0.45	7039964	<0.090	0.090	7039985
Dissolved Calcium (Ca)	ug/L	-	-	47000	200	7039985	690000	2000	7039964	100000	400	7039985
Dissolved Chromium (Cr)	ug/L	50	-	<5.0	5.0	7039985	<25	25	7039964	<5.0	5.0	7039985
Dissolved Cobalt (Co)	ug/L	-	-	<0.50	0.50	7039985	<2.5	2.5	7039964	<0.50	0.50	7039985
Dissolved Copper (Cu)	ug/L	-	1000	<0.90	0.90	7039985	<4.5	4.5	7039964	2.0	0.90	7039985
Dissolved Iron (Fe)	ug/L	-	300	310	100	7039985	31000	500	7039964	1300	100	7039985
Dissolved Lead (Pb)	ug/L	10	-	<0.50	0.50	7039985	<2.5	2.5	7039964	<0.50	0.50	7039985
Dissolved Lithium (Li)	ug/L	-	-	14	5.0	7039985	1100	25	7039964	150	5.0	7039985
Dissolved Magnesium (Mg)	ug/L	-	-	32000	50	7039985	460000	250	7039964	68000	50	7039985
Dissolved Manganese (Mn)	ug/L	-	50	9.1	2.0	7039985	1600	10	7039964	72	2.0	7039985
Dissolved Molybdenum (Mo)	ug/L	-	-	1.5	0.50	7039985	<2.5	2.5	7039964	<0.50	0.50	7039985
Dissolved Nickel (Ni)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Phosphorus (P)	ug/L	-	-	<100	100	7039985	540	500	7039964	<100	100	7039985
Dissolved Potassium (K)	ug/L	-	-	2300	200	7039985	42000	1000	7039964	11000	200	7039985
Dissolved Selenium (Se)	ug/L	50	-	<2.0	2.0	7039985	<10	10	7039964	<2.0	2.0	7039985
Dissolved Silicon (Si)	ug/L	-	-	12000	50	7039985	260	250	7039964	2900	50	7039985
Dissolved Silver (Ag)	ug/L	-	-	<0.090	0.090	7039985	<0.45	0.45	7039964	<0.090	0.090	7039985
Dissolved Sodium (Na)	ug/L	-	200000	7000	100	7039985	2200000	500	7039964	290000	100	7039985
Dissolved Strontium (Sr)	ug/L	-	-	520	1.0	7039985	44000	5.0	7039964	5600	1.0	7039985
Dissolved Tellurium (Te)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Thallium (Tl)	ug/L	-	-	<0.050	0.050	7039985	<0.25	0.25	7039964	<0.050	0.050	7039985

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
 (Made under the Ontario Safe Drinking Water Act, 2002)



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH586			OBH587			OBH588		
Sampling Date				2020/10/30 04:45			2020/10/29 04:45			2020/10/29 12:15		
COC Number				796494-01-01			796494-01-01			796494-01-01		
	UNITS	MAC	A/O	AM1b	RDL	QC Batch	AMx-R	RDL	QC Batch	TW1-1	RDL	QC Batch
Dissolved Tin (Sn)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Titanium (Ti)	ug/L	-	-	<5.0	5.0	7039985	<25	25	7039964	<5.0	5.0	7039985
Dissolved Tungsten (W)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
Dissolved Uranium (U)	ug/L	20	-	<0.10	0.10	7039985	<0.50	0.50	7039964	<0.10	0.10	7039985
Dissolved Vanadium (V)	ug/L	-	-	<0.50	0.50	7039985	<2.5	2.5	7039964	<0.50	0.50	7039985
Dissolved Zinc (Zn)	ug/L	-	5000	<5.0	5.0	7039985	<25	25	7039964	<5.0	5.0	7039985
Dissolved Zirconium (Zr)	ug/L	-	-	<1.0	1.0	7039985	<5.0	5.0	7039964	<1.0	1.0	7039985
No Fill	No Exceedance											
Grey	Exceeds 1 criteria policy/level											
Black	Exceeds both criteria/levels											
RDL = Reportable Detection Limit												
QC Batch = Quality Control Batch												
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively												
(Made under the Ontario Safe Drinking Water Act, 2002)												



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VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH589		OBH590		OBH591		
Sampling Date				2020/10/30 05:00		2020/10/30 04:15		2020/10/30 03:45		
COC Number				796494-01-01		796494-01-01		796494-01-01		
	UNITS	MAC	A/O	Bored	QC Batch	OW4-1	QC Batch	OW4-2	RDL	QC Batch
Metals										
Dissolved Aluminum (Al)	ug/L	-	100	5.1	7039964	41	7039985	<4.9	4.9	7039964
Dissolved Antimony (Sb)	ug/L	6	-	<0.50	7039964	<0.50	7039985	<0.50	0.50	7039964
Dissolved Arsenic (As)	ug/L	10	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Barium (Ba)	ug/L	1000	-	71	7039964	56	7039985	68	2.0	7039964
Dissolved Beryllium (Be)	ug/L	-	-	<0.40	7039964	<0.40	7039985	<0.40	0.40	7039964
Dissolved Bismuth (Bi)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Boron (B)	ug/L	5000	-	19	7039964	710	7039985	880	10	7039964
Dissolved Cadmium (Cd)	ug/L	5	-	<0.090	7039964	<0.090	7039985	<0.090	0.090	7039964
Dissolved Calcium (Ca)	ug/L	-	-	62000	7039964	30000	7039985	45000	200	7039964
Dissolved Chromium (Cr)	ug/L	50	-	<5.0	7039964	<5.0	7039985	<5.0	5.0	7039964
Dissolved Cobalt (Co)	ug/L	-	-	<0.50	7039964	<0.50	7039985	<0.50	0.50	7039964
Dissolved Copper (Cu)	ug/L	-	1000	4.0	7039964	<0.90	7039985	<0.90	0.90	7039964
Dissolved Iron (Fe)	ug/L	-	300	<100	7039964	590	7039985	<100	100	7039964
Dissolved Lead (Pb)	ug/L	10	-	<0.50	7039964	<0.50	7039985	<0.50	0.50	7039964
Dissolved Lithium (Li)	ug/L	-	-	14	7039964	110	7039985	160	5.0	7039964
Dissolved Magnesium (Mg)	ug/L	-	-	28000	7039964	21000	7039985	30000	50	7039964
Dissolved Manganese (Mn)	ug/L	-	50	<2.0	7039964	44	7039985	2.1	2.0	7039964
Dissolved Molybdenum (Mo)	ug/L	-	-	2.5	7039964	0.59	7039985	<0.50	0.50	7039964
Dissolved Nickel (Ni)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Phosphorus (P)	ug/L	-	-	<100	7039964	<100	7039985	<100	100	7039964
Dissolved Potassium (K)	ug/L	-	-	6200	7039964	7200	7039985	9800	200	7039964
Dissolved Selenium (Se)	ug/L	50	-	<2.0	7039964	<2.0	7039985	<2.0	2.0	7039964
Dissolved Silicon (Si)	ug/L	-	-	8500	7039964	4500	7039985	4500	50	7039964
Dissolved Silver (Ag)	ug/L	-	-	<0.090	7039964	<0.090	7039985	<0.090	0.090	7039964
Dissolved Sodium (Na)	ug/L	-	200000	16000	7039964	210000	7039985	250000	100	7039964
Dissolved Strontium (Sr)	ug/L	-	-	270	7039964	1500	7039985	3500	1.0	7039964
Dissolved Tellurium (Te)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Thallium (Tl)	ug/L	-	-	<0.050	7039964	<0.050	7039985	<0.050	0.050	7039964

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels
RDL = Reportable Detection Limit	
QC Batch = Quality Control Batch	
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively	
(Made under the Ontario Safe Drinking Water Act, 2002)	



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BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH589		OBH590		OBH591		
Sampling Date				2020/10/30 05:00		2020/10/30 04:15		2020/10/30 03:45		
COC Number				796494-01-01		796494-01-01		796494-01-01		
	UNITS	MAC	A/O	Bored	QC Batch	OW4-1	QC Batch	OW4-2	RDL	QC Batch
Dissolved Tin (Sn)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Titanium (Ti)	ug/L	-	-	<5.0	7039964	<5.0	7039985	<5.0	5.0	7039964
Dissolved Tungsten (W)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
Dissolved Uranium (U)	ug/L	20	-	1.7	7039964	0.14	7039985	<0.10	0.10	7039964
Dissolved Vanadium (V)	ug/L	-	-	<0.50	7039964	<0.50	7039985	<0.50	0.50	7039964
Dissolved Zinc (Zn)	ug/L	-	5000	<5.0	7039964	<5.0	7039985	<5.0	5.0	7039964
Dissolved Zirconium (Zr)	ug/L	-	-	<1.0	7039964	<1.0	7039985	<1.0	1.0	7039964
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively										
(Made under the Ontario Safe Drinking Water Act, 2002)										



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH592		OBH593		OBH594		
Sampling Date				2020/10/29 02:45		2020/10/29 03:00		2020/10/29 04:15		
COC Number				796494-01-01		796494-01-01		796494-01-01		
	UNITS	MAC	A/O	OW5-1	RDL	OW5-3	RDL	OW6-2	RDL	QC Batch
Metals										
Dissolved Aluminum (Al)	ug/L	-	100	6.3	4.9	<25	25	50	4.9	7039964
Dissolved Antimony (Sb)	ug/L	6	-	<0.50	0.50	<2.5	2.5	<0.50	0.50	7039964
Dissolved Arsenic (As)	ug/L	10	-	<1.0	1.0	<5.0	5.0	1.1	1.0	7039964
Dissolved Barium (Ba)	ug/L	1000	-	89	2.0	630	10	100	2.0	7039964
Dissolved Beryllium (Be)	ug/L	-	-	<0.40	0.40	<2.0	2.0	<0.40	0.40	7039964
Dissolved Bismuth (Bi)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
Dissolved Boron (B)	ug/L	5000	-	680	10	2500	50	3900	10	7039964
Dissolved Cadmium (Cd)	ug/L	5	-	<0.090	0.090	<0.45	0.45	<0.090	0.090	7039964
Dissolved Calcium (Ca)	ug/L	-	-	44000	200	1600000	5000	360000	1000	7039964
Dissolved Chromium (Cr)	ug/L	50	-	<5.0	5.0	<25	25	<5.0	5.0	7039964
Dissolved Cobalt (Co)	ug/L	-	-	<0.50	0.50	<2.5	2.5	<0.50	0.50	7039964
Dissolved Copper (Cu)	ug/L	-	1000	2.8	0.90	<4.5	4.5	<0.90	0.90	7039964
Dissolved Iron (Fe)	ug/L	-	300	<100	100	13000	500	1200	100	7039964
Dissolved Lead (Pb)	ug/L	10	-	<0.50	0.50	<2.5	2.5	<0.50	0.50	7039964
Dissolved Lithium (Li)	ug/L	-	-	80	5.0	2100	25	370	5.0	7039964
Dissolved Magnesium (Mg)	ug/L	-	-	29000	50	880000	250	210000	50	7039964
Dissolved Manganese (Mn)	ug/L	-	50	6.0	2.0	310	10	2000	2.0	7039964
Dissolved Molybdenum (Mo)	ug/L	-	-	<0.50	0.50	5.0	2.5	<0.50	0.50	7039964
Dissolved Nickel (Ni)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
Dissolved Phosphorus (P)	ug/L	-	-	<100	100	570	500	110	100	7039964
Dissolved Potassium (K)	ug/L	-	-	7700	200	71000	1000	20000	200	7039964
Dissolved Selenium (Se)	ug/L	50	-	<2.0	2.0	<10	10	<2.0	2.0	7039964
Dissolved Silicon (Si)	ug/L	-	-	6700	50	5400	250	4500	50	7039964
Dissolved Silver (Ag)	ug/L	-	-	<0.090	0.090	<0.45	0.45	<0.090	0.090	7039964
Dissolved Sodium (Na)	ug/L	-	200000	65000	100	4600000	1000	840000	500	7039964
Dissolved Strontium (Sr)	ug/L	-	-	1800	1.0	88000	5.0	17000	1.0	7039964
Dissolved Tellurium (Te)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
Dissolved Thallium (Tl)	ug/L	-	-	<0.050	0.050	<0.25	0.25	<0.050	0.050	7039964
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively										
(Made under the Ontario Safe Drinking Water Act, 2002)										



ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH592		OBH593		OBH594		
Sampling Date				2020/10/29 02:45		2020/10/29 03:00		2020/10/29 04:15		
COC Number				796494-01-01		796494-01-01		796494-01-01		
	UNITS	MAC	A/O	OW5-1	RDL	OW5-3	RDL	OW6-2	RDL	QC Batch
Dissolved Tin (Sn)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
Dissolved Titanium (Ti)	ug/L	-	-	<5.0	5.0	<25	25	<5.0	5.0	7039964
Dissolved Tungsten (W)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
Dissolved Uranium (U)	ug/L	20	-	0.27	0.10	1.9	0.50	0.49	0.10	7039964
Dissolved Vanadium (V)	ug/L	-	-	<0.50	0.50	<2.5	2.5	<0.50	0.50	7039964
Dissolved Zinc (Zn)	ug/L	-	5000	<5.0	5.0	<25	25	<5.0	5.0	7039964
Dissolved Zirconium (Zr)	ug/L	-	-	<1.0	1.0	<5.0	5.0	<1.0	1.0	7039964
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives										
[A/O] - Not Health Related, respectively										
(Made under the Ontario Safe Drinking Water Act, 2002)										



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH595	OBH596			OBH597	OBH598		
Sampling Date				2020/10/29 12:50	2020/10/29 12:40			2020/10/29 01:30	2020/10/29 01:50		
COC Number				796494-02-01	796494-02-01			796494-02-01	796494-02-01		
	UNITS	MAC	A/O	OW7-1	OW7-2	RDL	QC Batch	OW8-1	OW8-2	RDL	QC Batch
Metals											
Dissolved Aluminum (Al)	ug/L	-	100	<4.9	<4.9	4.9	7039985	6.2	<4.9	4.9	7039964
Dissolved Antimony (Sb)	ug/L	6	-	<0.50	<0.50	0.50	7039985	<0.50	<0.50	0.50	7039964
Dissolved Arsenic (As)	ug/L	10	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964
Dissolved Barium (Ba)	ug/L	1000	-	67	64	2.0	7039985	150	180	2.0	7039964
Dissolved Beryllium (Be)	ug/L	-	-	<0.40	<0.40	0.40	7039985	<0.40	<0.40	0.40	7039964
Dissolved Bismuth (Bi)	ug/L	-	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964
Dissolved Boron (B)	ug/L	5000	-	2100	2100	10	7039985	440	340	10	7039964
Dissolved Cadmium (Cd)	ug/L	5	-	<0.090	<0.090	0.090	7039985	<0.090	<0.090	0.090	7039964
Dissolved Calcium (Ca)	ug/L	-	-	200000	210000	1000	7039985	86000	95000	200	7039964
Dissolved Chromium (Cr)	ug/L	50	-	<5.0	<5.0	5.0	7039985	<5.0	<5.0	5.0	7039964
Dissolved Cobalt (Co)	ug/L	-	-	<0.50	<0.50	0.50	7039985	<0.50	<0.50	0.50	7039964
Dissolved Copper (Cu)	ug/L	-	1000	<0.90	<0.90	0.90	7039985	<0.90	<0.90	0.90	7039964
Dissolved Iron (Fe)	ug/L	-	300	1000	<100	100	7039985	280	<100	100	7039964
Dissolved Lead (Pb)	ug/L	10	-	<0.50	<0.50	0.50	7039985	<0.50	<0.50	0.50	7039964
Dissolved Lithium (Li)	ug/L	-	-	410	420	5.0	7039985	49	40	5.0	7039964
Dissolved Magnesium (Mg)	ug/L	-	-	120000	120000	50	7039985	19000	20000	50	7039964
Dissolved Manganese (Mn)	ug/L	-	50	48	3.1	2.0	7039985	23	8.7	2.0	7039964
Dissolved Molybdenum (Mo)	ug/L	-	-	1.9	<0.50	0.50	7039985	<0.50	<0.50	0.50	7039964
Dissolved Nickel (Ni)	ug/L	-	-	<1.0	<1.0	1.0	7039985	1.4	<1.0	1.0	7039964
Dissolved Phosphorus (P)	ug/L	-	-	<100	<100	100	7039985	<100	<100	100	7039964
Dissolved Potassium (K)	ug/L	-	-	18000	18000	200	7039985	4100	4100	200	7039964
Dissolved Selenium (Se)	ug/L	50	-	<2.0	2.6	2.0	7039985	<2.0	<2.0	2.0	7039964
Dissolved Silicon (Si)	ug/L	-	-	3200	3100	50	7039985	3000	3400	50	7039964
Dissolved Silver (Ag)	ug/L	-	-	<0.090	<0.090	0.090	7039985	<0.090	<0.090	0.090	7039964
Dissolved Sodium (Na)	ug/L	-	200000	1100000	1100000	500	7039985	68000	53000	100	7039964
Dissolved Strontium (Sr)	ug/L	-	-	12000	12000	1.0	7039985	1700	1700	1.0	7039964
Dissolved Tellurium (Te)	ug/L	-	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964
Dissolved Thallium (Tl)	ug/L	-	-	<0.050	<0.050	0.050	7039985	<0.050	<0.050	0.050	7039964

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
 (Made under the Ontario Safe Drinking Water Act, 2002)



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH595	OBH596			OBH597	OBH598		
Sampling Date				2020/10/29 12:50	2020/10/29 12:40			2020/10/29 01:30	2020/10/29 01:50		
COC Number				796494-02-01	796494-02-01			796494-02-01	796494-02-01		
	UNITS	MAC	A/O	OW7-1	OW7-2	RDL	QC Batch	OW8-1	OW8-2	RDL	QC Batch
Dissolved Tin (Sn)	ug/L	-	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964
Dissolved Titanium (Ti)	ug/L	-	-	<5.0	<5.0	5.0	7039985	<5.0	<5.0	5.0	7039964
Dissolved Tungsten (W)	ug/L	-	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964
Dissolved Uranium (U)	ug/L	20	-	<0.10	<0.10	0.10	7039985	<0.10	<0.10	0.10	7039964
Dissolved Vanadium (V)	ug/L	-	-	0.87	<0.50	0.50	7039985	<0.50	<0.50	0.50	7039964
Dissolved Zinc (Zn)	ug/L	-	5000	<5.0	<5.0	5.0	7039985	<5.0	<5.0	5.0	7039964
Dissolved Zirconium (Zr)	ug/L	-	-	<1.0	<1.0	1.0	7039985	<1.0	<1.0	1.0	7039964

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels
RDL = Reportable Detection Limit	
QC Batch = Quality Control Batch	
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively	
(Made under the Ontario Safe Drinking Water Act, 2002)	



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH599		
Sampling Date				2020/10/30 03:45		
COC Number				796494-02-01		
	UNITS	MAC	A/O	DUP2	RDL	QC Batch
Metals						
Dissolved Aluminum (Al)	ug/L	-	100	<4.9	4.9	7039985
Dissolved Antimony (Sb)	ug/L	6	-	<0.50	0.50	7039985
Dissolved Arsenic (As)	ug/L	10	-	<1.0	1.0	7039985
Dissolved Barium (Ba)	ug/L	1000	-	64	2.0	7039985
Dissolved Beryllium (Be)	ug/L	-	-	<0.40	0.40	7039985
Dissolved Bismuth (Bi)	ug/L	-	-	<1.0	1.0	7039985
Dissolved Boron (B)	ug/L	5000	-	920	10	7039985
Dissolved Cadmium (Cd)	ug/L	5	-	<0.090	0.090	7039985
Dissolved Calcium (Ca)	ug/L	-	-	42000	200	7039985
Dissolved Chromium (Cr)	ug/L	50	-	<5.0	5.0	7039985
Dissolved Cobalt (Co)	ug/L	-	-	<0.50	0.50	7039985
Dissolved Copper (Cu)	ug/L	-	1000	<0.90	0.90	7039985
Dissolved Iron (Fe)	ug/L	-	300	<100	100	7039985
Dissolved Lead (Pb)	ug/L	10	-	<0.50	0.50	7039985
Dissolved Lithium (Li)	ug/L	-	-	160	5.0	7039985
Dissolved Magnesium (Mg)	ug/L	-	-	29000	50	7039985
Dissolved Manganese (Mn)	ug/L	-	50	2.0	2.0	7039985
Dissolved Molybdenum (Mo)	ug/L	-	-	<0.50	0.50	7039985
Dissolved Nickel (Ni)	ug/L	-	-	<1.0	1.0	7039985
Dissolved Phosphorus (P)	ug/L	-	-	<100	100	7039985
Dissolved Potassium (K)	ug/L	-	-	9700	200	7039985
Dissolved Selenium (Se)	ug/L	50	-	<2.0	2.0	7039985
Dissolved Silicon (Si)	ug/L	-	-	4400	50	7039985
Dissolved Silver (Ag)	ug/L	-	-	<0.090	0.090	7039985
Dissolved Sodium (Na)	ug/L	-	200000	250000	100	7039985
Dissolved Strontium (Sr)	ug/L	-	-	3400	1.0	7039985
Dissolved Tellurium (Te)	ug/L	-	-	<1.0	1.0	7039985
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)						



ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				OBH599		
Sampling Date				2020/10/30 03:45		
COC Number				796494-02-01		
	UNITS	MAC	A/O	DUP2	RDL	QC Batch
Dissolved Thallium (Tl)	ug/L	-	-	<0.050	0.050	7039985
Dissolved Tin (Sn)	ug/L	-	-	<1.0	1.0	7039985
Dissolved Titanium (Ti)	ug/L	-	-	<5.0	5.0	7039985
Dissolved Tungsten (W)	ug/L	-	-	<1.0	1.0	7039985
Dissolved Uranium (U)	ug/L	20	-	<0.10	0.10	7039985
Dissolved Vanadium (V)	ug/L	-	-	<0.50	0.50	7039985
Dissolved Zinc (Zn)	ug/L	-	5000	<5.0	5.0	7039985
Dissolved Zirconium (Zr)	ug/L	-	-	<1.0	1.0	7039985
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively (Made under the Ontario Safe Drinking Water Act, 2002)						



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH586
Sample ID: AM1b
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk

BV Labs ID: OBH586 Dup
Sample ID: AM1b
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru

BV Labs ID: OBH587
Sample ID: AMx-R
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7041052	N/A	2020/11/06	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH588
Sample ID: TW1-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk

BV Labs ID: OBH589
Sample ID: Bored
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH589 Dup
Sample ID: Bored
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH590
Sample ID: OW4-1
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7042741	N/A	2020/11/06	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/09	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk

BV Labs ID: OBH591
Sample ID: OW4-2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/05	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH592
Sample ID: OW5-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH592
Sample ID: OW5-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/05	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH593
Sample ID: OW5-3
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7042741	N/A	2020/11/06	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH594
Sample ID: OW6-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH594
Sample ID: OW6-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7042741	N/A	2020/11/06	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH595
Sample ID: OW7-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7041052	N/A	2020/11/06	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk

BV Labs ID: OBH596
Sample ID: OW7-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7042741	N/A	2020/11/06	Nimarta Singh



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH596
Sample ID: OW7-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk

BV Labs ID: OBH596 Dup
Sample ID: OW7-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai

BV Labs ID: OBH597
Sample ID: OW8-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH597 Dup
Sample ID: OW8-1
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal

BV Labs ID: OBH598
Sample ID: OW8-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/06	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039964	N/A	2020/11/05	Arefa Dabhad
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/06	Automated Statchk

BV Labs ID: OBH598 Dup
Sample ID: OW8-2
Matrix: Water

Collected: 2020/10/29
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine

BV Labs ID: OBH599
Sample ID: DUP2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7040489	N/A	2020/11/05	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7039039	N/A	2020/11/06	Automated Statchk
Chloride by Automated Colourimetry	KONE	7040677	N/A	2020/11/06	Deonarine Ramnarine
Colour	SPEC	7040649	N/A	2020/11/09	Viorica Rotaru
Conductivity	AT	7040474	N/A	2020/11/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7040515	N/A	2020/11/05	Nimarta Singh
Fluoride	ISE	7040448	2020/11/05	2020/11/05	Surinder Rai



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

TEST SUMMARY

BV Labs ID: OBH599
Sample ID: DUP2
Matrix: Water

Collected: 2020/10/30
Shipped:
Received: 2020/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		7037785	N/A	2020/11/09	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7039985	N/A	2020/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7040601	N/A	2020/11/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7040421	N/A	2020/11/05	Chandra Nandlal
pH	AT	7040492	2020/11/05	2020/11/05	Surinder Rai
Orthophosphate	KONE	7040685	N/A	2020/11/06	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7040683	N/A	2020/11/06	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	7037786	N/A	2020/11/09	Automated Statchk



GENERAL COMMENTS

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

Package 1	4.0°C
Package 2	4.7°C
Package 3	5.7°C

Sample OBH587 [AMx-R] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample OBH593 [OW5-3] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: COT1031
Report Date: 2020/11/09

Golder Associates Ltd
Client Project #: 1407634
Site Location: McCarthy
Sampler Initials: SP

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7039964	ADA	Matrix Spike	Dissolved Aluminum (Al)	2020/11/05		103	%	80 - 120
			Dissolved Antimony (Sb)	2020/11/05		105	%	80 - 120
			Dissolved Arsenic (As)	2020/11/05		102	%	80 - 120
			Dissolved Barium (Ba)	2020/11/05		101	%	80 - 120
			Dissolved Beryllium (Be)	2020/11/05		102	%	80 - 120
			Dissolved Bismuth (Bi)	2020/11/05		91	%	80 - 120
			Dissolved Boron (B)	2020/11/05		94	%	80 - 120
			Dissolved Cadmium (Cd)	2020/11/05		102	%	80 - 120
			Dissolved Calcium (Ca)	2020/11/05		NC	%	80 - 120
			Dissolved Chromium (Cr)	2020/11/05		99	%	80 - 120
			Dissolved Cobalt (Co)	2020/11/05		99	%	80 - 120
			Dissolved Copper (Cu)	2020/11/05		103	%	80 - 120
			Dissolved Iron (Fe)	2020/11/05		99	%	80 - 120
			Dissolved Lead (Pb)	2020/11/05		96	%	80 - 120
			Dissolved Lithium (Li)	2020/11/05		103	%	80 - 120
			Dissolved Magnesium (Mg)	2020/11/05		NC	%	80 - 120
			Dissolved Manganese (Mn)	2020/11/05		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2020/11/05		105	%	80 - 120
			Dissolved Nickel (Ni)	2020/11/05		96	%	80 - 120
			Dissolved Phosphorus (P)	2020/11/05		99	%	80 - 120
			Dissolved Potassium (K)	2020/11/05		108	%	80 - 120
			Dissolved Selenium (Se)	2020/11/05		101	%	80 - 120
			Dissolved Silicon (Si)	2020/11/05		99	%	80 - 120
			Dissolved Silver (Ag)	2020/11/05		72 (1)	%	80 - 120
			Dissolved Sodium (Na)	2020/11/05		NC	%	80 - 120
			Dissolved Strontium (Sr)	2020/11/05		NC	%	80 - 120
			Dissolved Tellurium (Te)	2020/11/05		102	%	80 - 120
			Dissolved Thallium (Tl)	2020/11/05		94	%	80 - 120
			Dissolved Tin (Sn)	2020/11/05		105	%	80 - 120
			Dissolved Titanium (Ti)	2020/11/05		97	%	80 - 120
			Dissolved Tungsten (W)	2020/11/05		101	%	80 - 120
			Dissolved Uranium (U)	2020/11/05		98	%	80 - 120
			Dissolved Vanadium (V)	2020/11/05		100	%	80 - 120
Dissolved Zinc (Zn)	2020/11/05		98	%	80 - 120			
Dissolved Zirconium (Zr)	2020/11/05		110	%	80 - 120			
7039964	ADA	Spiked Blank	Dissolved Aluminum (Al)	2020/11/05		100	%	80 - 120
			Dissolved Antimony (Sb)	2020/11/05		105	%	80 - 120
			Dissolved Arsenic (As)	2020/11/05		101	%	80 - 120
			Dissolved Barium (Ba)	2020/11/05		104	%	80 - 120
			Dissolved Beryllium (Be)	2020/11/05		100	%	80 - 120
			Dissolved Bismuth (Bi)	2020/11/05		98	%	80 - 120
			Dissolved Boron (B)	2020/11/05		93	%	80 - 120
			Dissolved Cadmium (Cd)	2020/11/05		102	%	80 - 120
			Dissolved Calcium (Ca)	2020/11/05		98	%	80 - 120
			Dissolved Chromium (Cr)	2020/11/05		96	%	80 - 120
			Dissolved Cobalt (Co)	2020/11/05		98	%	80 - 120
			Dissolved Copper (Cu)	2020/11/05		100	%	80 - 120
			Dissolved Iron (Fe)	2020/11/05		95	%	80 - 120
			Dissolved Lead (Pb)	2020/11/05		98	%	80 - 120
			Dissolved Lithium (Li)	2020/11/05		107	%	80 - 120
Dissolved Magnesium (Mg)	2020/11/05		99	%	80 - 120			



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Manganese (Mn)	2020/11/05		97	%	80 - 120
			Dissolved Molybdenum (Mo)	2020/11/05		99	%	80 - 120
			Dissolved Nickel (Ni)	2020/11/05		96	%	80 - 120
			Dissolved Phosphorus (P)	2020/11/05		114	%	80 - 120
			Dissolved Potassium (K)	2020/11/05		100	%	80 - 120
			Dissolved Selenium (Se)	2020/11/05		102	%	80 - 120
			Dissolved Silicon (Si)	2020/11/05		97	%	80 - 120
			Dissolved Silver (Ag)	2020/11/05		98	%	80 - 120
			Dissolved Sodium (Na)	2020/11/05		95	%	80 - 120
			Dissolved Strontium (Sr)	2020/11/05		99	%	80 - 120
			Dissolved Tellurium (Te)	2020/11/05		103	%	80 - 120
			Dissolved Thallium (Tl)	2020/11/05		93	%	80 - 120
			Dissolved Tin (Sn)	2020/11/05		104	%	80 - 120
			Dissolved Titanium (Ti)	2020/11/05		96	%	80 - 120
			Dissolved Tungsten (W)	2020/11/05		96	%	80 - 120
			Dissolved Uranium (U)	2020/11/05		98	%	80 - 120
			Dissolved Vanadium (V)	2020/11/05		96	%	80 - 120
			Dissolved Zinc (Zn)	2020/11/05		97	%	80 - 120
			Dissolved Zirconium (Zr)	2020/11/05		105	%	80 - 120
7039964	ADA	Method Blank	Dissolved Aluminum (Al)	2020/11/05	<4.9		ug/L	
			Dissolved Antimony (Sb)	2020/11/05	<0.50		ug/L	
			Dissolved Arsenic (As)	2020/11/05	<1.0		ug/L	
			Dissolved Barium (Ba)	2020/11/05	<2.0		ug/L	
			Dissolved Beryllium (Be)	2020/11/05	<0.40		ug/L	
			Dissolved Bismuth (Bi)	2020/11/05	<1.0		ug/L	
			Dissolved Boron (B)	2020/11/05	<10		ug/L	
			Dissolved Cadmium (Cd)	2020/11/05	<0.090		ug/L	
			Dissolved Calcium (Ca)	2020/11/05	<200		ug/L	
			Dissolved Chromium (Cr)	2020/11/05	<5.0		ug/L	
			Dissolved Cobalt (Co)	2020/11/05	<0.50		ug/L	
			Dissolved Copper (Cu)	2020/11/05	<0.90		ug/L	
			Dissolved Iron (Fe)	2020/11/05	<100		ug/L	
			Dissolved Lead (Pb)	2020/11/05	<0.50		ug/L	
			Dissolved Lithium (Li)	2020/11/05	<5.0		ug/L	
			Dissolved Magnesium (Mg)	2020/11/05	<50		ug/L	
			Dissolved Manganese (Mn)	2020/11/05	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2020/11/05	<0.50		ug/L	
			Dissolved Nickel (Ni)	2020/11/05	<1.0		ug/L	
			Dissolved Phosphorus (P)	2020/11/05	<100		ug/L	
			Dissolved Potassium (K)	2020/11/05	<200		ug/L	
			Dissolved Selenium (Se)	2020/11/05	<2.0		ug/L	
			Dissolved Silicon (Si)	2020/11/05	<50		ug/L	
			Dissolved Silver (Ag)	2020/11/05	<0.090		ug/L	
			Dissolved Sodium (Na)	2020/11/05	<100		ug/L	
			Dissolved Strontium (Sr)	2020/11/05	<1.0		ug/L	
			Dissolved Tellurium (Te)	2020/11/05	<1.0		ug/L	
			Dissolved Thallium (Tl)	2020/11/05	<0.050		ug/L	
			Dissolved Tin (Sn)	2020/11/05	<1.0		ug/L	
			Dissolved Titanium (Ti)	2020/11/05	<5.0		ug/L	
			Dissolved Tungsten (W)	2020/11/05	<1.0		ug/L	
			Dissolved Uranium (U)	2020/11/05	<0.10		ug/L	



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QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				Dissolved Vanadium (V)	2020/11/05	<0.50		ug/L	
				Dissolved Zinc (Zn)	2020/11/05	<5.0		ug/L	
				Dissolved Zirconium (Zr)	2020/11/05	<1.0		ug/L	
7039964	ADA	RPD		Dissolved Arsenic (As)	2020/11/05	NC		%	20
7039985	PBA	Matrix Spike		Dissolved Aluminum (Al)	2020/11/06		98	%	80 - 120
				Dissolved Antimony (Sb)	2020/11/06		107	%	80 - 120
				Dissolved Arsenic (As)	2020/11/06		100	%	80 - 120
				Dissolved Barium (Ba)	2020/11/06		100	%	80 - 120
				Dissolved Beryllium (Be)	2020/11/06		99	%	80 - 120
				Dissolved Bismuth (Bi)	2020/11/06		94	%	80 - 120
				Dissolved Boron (B)	2020/11/06		98	%	80 - 120
				Dissolved Cadmium (Cd)	2020/11/06		103	%	80 - 120
				Dissolved Calcium (Ca)	2020/11/06		94	%	80 - 120
				Dissolved Chromium (Cr)	2020/11/06		97	%	80 - 120
				Dissolved Cobalt (Co)	2020/11/06		99	%	80 - 120
				Dissolved Copper (Cu)	2020/11/06		101	%	80 - 120
				Dissolved Iron (Fe)	2020/11/06		98	%	80 - 120
				Dissolved Lead (Pb)	2020/11/06		97	%	80 - 120
				Dissolved Lithium (Li)	2020/11/06		102	%	80 - 120
				Dissolved Magnesium (Mg)	2020/11/06		101	%	80 - 120
				Dissolved Manganese (Mn)	2020/11/06		97	%	80 - 120
				Dissolved Molybdenum (Mo)	2020/11/06		107	%	80 - 120
				Dissolved Nickel (Ni)	2020/11/06		95	%	80 - 120
				Dissolved Phosphorus (P)	2020/11/06		115	%	80 - 120
				Dissolved Potassium (K)	2020/11/06		102	%	80 - 120
				Dissolved Selenium (Se)	2020/11/06		100	%	80 - 120
				Dissolved Silicon (Si)	2020/11/06		102	%	80 - 120
				Dissolved Silver (Ag)	2020/11/06		91	%	80 - 120
				Dissolved Sodium (Na)	2020/11/06		95	%	80 - 120
				Dissolved Strontium (Sr)	2020/11/06		95	%	80 - 120
				Dissolved Tellurium (Te)	2020/11/06		101	%	80 - 120
				Dissolved Thallium (Tl)	2020/11/06		102	%	80 - 120
				Dissolved Tin (Sn)	2020/11/06		106	%	80 - 120
				Dissolved Titanium (Ti)	2020/11/06		98	%	80 - 120
				Dissolved Tungsten (W)	2020/11/06		100	%	80 - 120
				Dissolved Uranium (U)	2020/11/06		94	%	80 - 120
				Dissolved Vanadium (V)	2020/11/06		98	%	80 - 120
				Dissolved Zinc (Zn)	2020/11/06		98	%	80 - 120
				Dissolved Zirconium (Zr)	2020/11/06		106	%	80 - 120
7039985	PBA	Spiked Blank		Dissolved Aluminum (Al)	2020/11/06		99	%	80 - 120
				Dissolved Antimony (Sb)	2020/11/06		104	%	80 - 120
				Dissolved Arsenic (As)	2020/11/06		101	%	80 - 120
				Dissolved Barium (Ba)	2020/11/06		100	%	80 - 120
				Dissolved Beryllium (Be)	2020/11/06		99	%	80 - 120
				Dissolved Bismuth (Bi)	2020/11/06		101	%	80 - 120
				Dissolved Boron (B)	2020/11/06		93	%	80 - 120
				Dissolved Cadmium (Cd)	2020/11/06		102	%	80 - 120
				Dissolved Calcium (Ca)	2020/11/06		100	%	80 - 120
				Dissolved Chromium (Cr)	2020/11/06		100	%	80 - 120
				Dissolved Cobalt (Co)	2020/11/06		101	%	80 - 120
				Dissolved Copper (Cu)	2020/11/06		101	%	80 - 120



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QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				Dissolved Iron (Fe)	2020/11/06		99	%	80 - 120
				Dissolved Lead (Pb)	2020/11/06		100	%	80 - 120
				Dissolved Lithium (Li)	2020/11/06		98	%	80 - 120
				Dissolved Magnesium (Mg)	2020/11/06		101	%	80 - 120
				Dissolved Manganese (Mn)	2020/11/06		97	%	80 - 120
				Dissolved Molybdenum (Mo)	2020/11/06		104	%	80 - 120
				Dissolved Nickel (Ni)	2020/11/06		98	%	80 - 120
				Dissolved Phosphorus (P)	2020/11/06		117	%	80 - 120
				Dissolved Potassium (K)	2020/11/06		101	%	80 - 120
				Dissolved Selenium (Se)	2020/11/06		103	%	80 - 120
				Dissolved Silicon (Si)	2020/11/06		102	%	80 - 120
				Dissolved Silver (Ag)	2020/11/06		101	%	80 - 120
				Dissolved Sodium (Na)	2020/11/06		100	%	80 - 120
				Dissolved Strontium (Sr)	2020/11/06		97	%	80 - 120
				Dissolved Tellurium (Te)	2020/11/06		101	%	80 - 120
				Dissolved Thallium (Tl)	2020/11/06		102	%	80 - 120
				Dissolved Tin (Sn)	2020/11/06		104	%	80 - 120
				Dissolved Titanium (Ti)	2020/11/06		101	%	80 - 120
				Dissolved Tungsten (W)	2020/11/06		100	%	80 - 120
				Dissolved Uranium (U)	2020/11/06		96	%	80 - 120
				Dissolved Vanadium (V)	2020/11/06		98	%	80 - 120
				Dissolved Zinc (Zn)	2020/11/06		99	%	80 - 120
				Dissolved Zirconium (Zr)	2020/11/06		103	%	80 - 120
7039985	PBA		Method Blank	Dissolved Aluminum (Al)	2020/11/06	<4.9		ug/L	
				Dissolved Antimony (Sb)	2020/11/06	<0.50		ug/L	
				Dissolved Arsenic (As)	2020/11/06	<1.0		ug/L	
				Dissolved Barium (Ba)	2020/11/06	<2.0		ug/L	
				Dissolved Beryllium (Be)	2020/11/06	<0.40		ug/L	
				Dissolved Bismuth (Bi)	2020/11/06	<1.0		ug/L	
				Dissolved Boron (B)	2020/11/06	<10		ug/L	
				Dissolved Cadmium (Cd)	2020/11/06	<0.090		ug/L	
				Dissolved Calcium (Ca)	2020/11/06	<200		ug/L	
				Dissolved Chromium (Cr)	2020/11/06	<5.0		ug/L	
				Dissolved Cobalt (Co)	2020/11/06	<0.50		ug/L	
				Dissolved Copper (Cu)	2020/11/06	<0.90		ug/L	
				Dissolved Iron (Fe)	2020/11/06	<100		ug/L	
				Dissolved Lead (Pb)	2020/11/06	<0.50		ug/L	
				Dissolved Lithium (Li)	2020/11/06	<5.0		ug/L	
				Dissolved Magnesium (Mg)	2020/11/06	<50		ug/L	
				Dissolved Manganese (Mn)	2020/11/06	<2.0		ug/L	
				Dissolved Molybdenum (Mo)	2020/11/06	<0.50		ug/L	
				Dissolved Nickel (Ni)	2020/11/06	<1.0		ug/L	
				Dissolved Phosphorus (P)	2020/11/06	<100		ug/L	
				Dissolved Potassium (K)	2020/11/06	<200		ug/L	
				Dissolved Selenium (Se)	2020/11/06	<2.0		ug/L	
				Dissolved Silicon (Si)	2020/11/06	<50		ug/L	
				Dissolved Silver (Ag)	2020/11/06	<0.090		ug/L	
				Dissolved Sodium (Na)	2020/11/06	<100		ug/L	
				Dissolved Strontium (Sr)	2020/11/06	<1.0		ug/L	
				Dissolved Tellurium (Te)	2020/11/06	<1.0		ug/L	
				Dissolved Thallium (Tl)	2020/11/06	<0.050		ug/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Tin (Sn)	2020/11/06	<1.0		ug/L	
			Dissolved Titanium (Ti)	2020/11/06	<5.0		ug/L	
			Dissolved Tungsten (W)	2020/11/06	<1.0		ug/L	
			Dissolved Uranium (U)	2020/11/06	<0.10		ug/L	
			Dissolved Vanadium (V)	2020/11/06	<0.50		ug/L	
			Dissolved Zinc (Zn)	2020/11/06	<5.0		ug/L	
			Dissolved Zirconium (Zr)	2020/11/06	<1.0		ug/L	
7039985	PBA	RPD	Dissolved Lead (Pb)	2020/11/06	NC		%	20
			Dissolved Manganese (Mn)	2020/11/06	1.7		%	20
7040421	C_N	Matrix Spike [OBH597-01]	Nitrite (N)	2020/11/05		104	%	80 - 120
			Nitrate (N)	2020/11/05		86	%	80 - 120
7040421	C_N	Spiked Blank	Nitrite (N)	2020/11/05		107	%	80 - 120
			Nitrate (N)	2020/11/05		88	%	80 - 120
7040421	C_N	Method Blank	Nitrite (N)	2020/11/05	<0.010		mg/L	
			Nitrate (N)	2020/11/05	<0.10		mg/L	
7040421	C_N	RPD [OBH597-01]	Nitrite (N)	2020/11/05	NC		%	20
			Nitrate (N)	2020/11/05	NC		%	20
7040448	SAU	Matrix Spike [OBH596-01]	Fluoride (F-)	2020/11/05		91	%	80 - 120
7040448	SAU	Spiked Blank	Fluoride (F-)	2020/11/05		105	%	80 - 120
7040448	SAU	Method Blank	Fluoride (F-)	2020/11/05	<0.10		mg/L	
7040448	SAU	RPD [OBH596-01]	Fluoride (F-)	2020/11/05	1.9		%	20
7040474	SAU	Spiked Blank	Conductivity	2020/11/05		100	%	85 - 115
7040474	SAU	Method Blank	Conductivity	2020/11/05	<0.001		mS/cm	
7040474	SAU	RPD [OBH596-01]	Conductivity	2020/11/05	3.1		%	25
7040489	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2020/11/05		98	%	85 - 115
7040489	SAU	Method Blank	Alkalinity (Total as CaCO3)	2020/11/05	<1.0		mg/L	
7040489	SAU	RPD [OBH596-01]	Alkalinity (Total as CaCO3)	2020/11/05	0.53		%	20
7040492	SAU	Spiked Blank	pH	2020/11/05		101	%	98 - 103
7040492	SAU	RPD [OBH596-01]	pH	2020/11/05	0.37		%	N/A
7040515	NS3	Matrix Spike	Dissolved Organic Carbon	2020/11/05		96	%	80 - 120
7040515	NS3	Spiked Blank	Dissolved Organic Carbon	2020/11/05		100	%	80 - 120
7040515	NS3	Method Blank	Dissolved Organic Carbon	2020/11/05	<0.40		mg/L	
7040515	NS3	RPD	Dissolved Organic Carbon	2020/11/05	3.0		%	20
7040601	ASP	Matrix Spike [OBH589-04]	Total Ammonia-N	2020/11/09		97	%	75 - 125
7040601	ASP	Spiked Blank	Total Ammonia-N	2020/11/09		99	%	80 - 120
7040601	ASP	Method Blank	Total Ammonia-N	2020/11/09	<0.050		mg/L	
7040601	ASP	RPD [OBH589-04]	Total Ammonia-N	2020/11/09	NC		%	20
7040649	VRO	Spiked Blank	Colour	2020/11/09		101	%	80 - 120
7040649	VRO	Method Blank	Colour	2020/11/09	<2		TCU	
7040649	VRO	RPD [OBH586-01]	Colour	2020/11/09	NC		%	25
7040677	DRM	Matrix Spike [OBH598-01]	Dissolved Chloride (Cl-)	2020/11/06		NC	%	80 - 120
7040677	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/11/06		102	%	80 - 120
7040677	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/11/06	<1.0		mg/L	
7040677	DRM	RPD [OBH598-01]	Dissolved Chloride (Cl-)	2020/11/06	0.078		%	20
7040683	DRM	Matrix Spike [OBH598-01]	Dissolved Sulphate (SO4)	2020/11/06		NC	%	75 - 125
7040683	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/11/06		98	%	80 - 120



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7040683	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/11/06	<1.0		mg/L	
7040683	DRM	RPD [OBH598-01]	Dissolved Sulphate (SO4)	2020/11/06	0.52		%	20
7040685	ADB	Matrix Spike [OBH598-01]	Orthophosphate (P)	2020/11/06		105	%	75 - 125
7040685	ADB	Spiked Blank	Orthophosphate (P)	2020/11/06		99	%	80 - 120
7040685	ADB	Method Blank	Orthophosphate (P)	2020/11/06	<0.010		mg/L	
7040685	ADB	RPD [OBH598-01]	Orthophosphate (P)	2020/11/06	NC		%	25
7041052	NS3	Matrix Spike	Dissolved Organic Carbon	2020/11/06		94	%	80 - 120
7041052	NS3	Spiked Blank	Dissolved Organic Carbon	2020/11/06		100	%	80 - 120
7041052	NS3	Method Blank	Dissolved Organic Carbon	2020/11/06	<0.40		mg/L	
7041052	NS3	RPD	Dissolved Organic Carbon	2020/11/06	2.5		%	20
7042741	NS3	Matrix Spike	Dissolved Organic Carbon	2020/11/06		93	%	80 - 120
7042741	NS3	Spiked Blank	Dissolved Organic Carbon	2020/11/06		100	%	80 - 120
7042741	NS3	Method Blank	Dissolved Organic Carbon	2020/11/06	<0.40		mg/L	
7042741	NS3	RPD	Dissolved Organic Carbon	2020/11/06	2.7		%	20

N/A = Not Applicable

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

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

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

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

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

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

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



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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).

Anastassia Hamanov, Scientific Specialist

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



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Exceedance Summary Table – ODWS (2002)
Result Exceedances

Sample ID	BV Labs ID	Parameter	Criteria	Result	DL	UNITS
OW7-1	OBH595-01	Fluoride (F-)	1.5	1.9	0.10	mg/L
OW7-2	OBH596-01	Fluoride (F-)	1.5	1.9	0.10	mg/L
OW7-2	OBH596-01-Lab Dup	Fluoride (F-)	1.5	2.0	0.10	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.



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