



Integricon Property Restoration and Construction Group Inc. (IPCG)
219 Westcreek Drive
Vaughan, ON
L4L 9T7

RE: Surface Water and Groundwater Level Monitoring – 11476 Highway 26, Collingwood, ON

In December 2014, SPL Consultants Ltd. advanced eleven (11) boreholes and installed four (4) monitoring wells at the Site. In July 2022, DS installed an additional two (2) monitoring wells at the Site. It is understood that additional hydrogeological assessments are required to address comments from the Town and the Conservation Authority in support of future Site Plan Approvals.

A coastal wetland feature was identified on the northern portion of the Site. A wetland Water Balance Risk Assessment is currently underway to assess existing and proposed condition of the wetland catchment area including changes to drainage boundaries and proposed land cover. To further support the water balance and assess recharge/discharge conditions, in May 2024, a site reconnaissance of the site was conducted to assess the wetland feature. Two (2) surface water stations were installed at the inlet and outlet locations of the wetland. The locations of the surface water stations are presented in **Figure 1**. Each surface water station was equipped with a staff gauge (SG1 & SG2) to monitor surface water levels, and a shallow and deep piezometer (PZ1S/D & PZ2S/D) to assess the vertical gradient at the wetland. Automated data loggers were installed at each staff gauge and deep piezometer locations set to record water levels on a continuous basis. In addition, automated data loggers were installed at two (2) select monitoring well locations (BH14-1 & BH14-7). Groundwater and surface water levels were monitored between May and September 2024 monthly to obtain manual water level readings and download data loggers. The monitoring period is proposed to be completed in May 2025.

Based on continuous and manual groundwater level data to date, groundwater levels were below the ground surface during the monitoring period ranging from 0.4 to 1.4 meters below ground surface (mbgs) to corresponding elevations 177.0 to 178.9 meters above sea level (masl). The groundwater level trends indicate that water levels were highest during the spring (May-June) and gradually declined for the remainder of the monitoring period until September 2024 and increases during the final monitoring event (October 1st, 2024). Groundwater levels showed a positive response to major precipitation events, observed in May, June and July 2024. Groundwater levels are presented in **Table 1** in **Appendix A**, and groundwater level hydrographs are presented in **Appendix B**. Borehole logs are presented in **Appendix C**.



Based on the review of the monitoring data to date for the Wetland the following groundwater and surface water conditions are noted. SG1 & SG2 water levels generally remained slightly above the base of the wetland, 180.1 and 179.7 masl, respectively, in the spring (May-June) and gradually declined to dry conditions for the remainder of the monitoring period. Groundwater levels in the piezometers near SG1 were consistently below the surface water levels throughout the monitoring period. Shallow and deep piezometer water levels were consistently the same throughout the monitoring period. Therefore, the vertical gradient is inconclusive and additional data is required to determine the vertical gradient. Groundwater levels in the piezometers near SG2 were generally below surface water levels except for the May and June 2024 monitoring events, suggesting of groundwater contribution to the wetland. Shallow groundwater levels in PZ2S were generally above PZ2D water levels suggestive of a downward gradient. Additional monitoring is required to confirm the vertical gradient at the location. A summary of the water levels in each of the surface water monitoring station is provided in **Table 2** in **Appendix A**. The hydrographs are provided in **Appendix B**.

In May 2024, two (2) surface water quality samples were obtained from the wetland near each of the surface water monitoring stations (SG1 & SG2) and analyzed for general chemistry parameters and metals and inorganics to establish pre-construction baseline conditions. Results were compared to Provincial Water Quality Objectives (PWQO). Results indicate that phosphorus and iron exceeded at both locations. Groundwater quality results reported in the Preliminary Hydrogeological Investigation completed by DS dated February 13, 2023, indicate that groundwater exceeded multiple parameters against PWQO. Therefore, groundwater will be required to be treated to meet or exceed surface water quality to discharge groundwater overland during dewatering activities. The laboratory certificate of analysis is presented in **Appendix D**.

Should you have any questions regarding these findings, please contact the undersigned.

Sincerely,

DS Consultants Limited

Prepared By:

Dorothy Santos, M.Sc.
Project Manager

Reviewed By:

Martin Gedeon, M.Sc., P.Geo.
Vice President

**Enclosures:**

Figure 1- Borehole/Monitoring Well and Surface Water Station Locations

Appendix A- Groundwater and Surface Water Tables (Table 1 & Table 2)

Appendix B- Groundwater and Surface Water Level Hydrographs

Appendix C- Borehole Logs

Appendix D- Laboratory Certificate of Analysis



Figures



Legend

- Approx site boundary
- ⊕ Borehole-DS
- ⊕ Monitoring Well-DS
- ⊕ Borehole-SPL
- ⊕ Monitoring Well-SPL
- Wetland
- Surface Water Station
(Staff Gauge & Piezometers)



DS CONSULTANTS LTD.

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Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Project: HYDROGEOLOGICAL INVESTIGATION
11476 Highway 26, Collingwood, Ontario

Title: **BOREHOLE/MONITORING WELL & SURFACE WATER
STATION LOCATION PLAN**



Client:
Integricon Property Restoration And
Construction Group

Size:
8.5 x 11

Rev:
0

Approved By: P.P

Scale: As Shown

Image/Map Source: Google Satellite Image

Drawn By: L.G/S.Y

Project No.: 22-189-400

Date: October 2024

Figure No.: 1



Appendix A

Table 1: Groundwater Level Monitoring Data

Location: 11476 Highway 26, Collingwood

Date					May 7, 2024			June 25, 2024			September 4, 2024			October 1, 2024		
Well ID	Surface Elevation	S.Up	Well Depth (m)	Well Depth (m)	Water level	Water level	Water Level Elev.	Water level	Water level	Water Level Elev.	Water level	Water level	Water Level Elev.	Water level	Water level	Water Level Elev.
			T.O.P	(mbgs)	T.O.P	(mbgs)	(masl)	T.O.P	(mbgs)	(masl)	T.O.P	(mbgs)	(masl)	T.O.P	(mbgs)	(masl)
BH 14-1	179.0	0.8	2.1	1.4	1.0	0.3	178.7	1.2	0.5	178.5	1.6	0.9	177.4	1.8	1.0	178.0
BH 14-3	179.3	1.0	2.4	1.4	1.4	0.4	178.9	1.8	0.8	178.5	2.1	1.1	177.2	2.2	1.2	178.1
BH 14-7	179.2	0.8	6.2	5.4	1.0	0.3	178.9	1.3	0.6	178.6	1.6	0.9	177.6	1.8	1.0	178.2
BH14-8	179.4	0.7	2.6	1.8	1.4	0.7	178.7	1.6	0.9	178.5	2.0	1.2	177.4	2.1	1.4	178.0
BH 22-1	179.2	1.1	2.5	1.4	1.7	0.6	178.6	1.8	0.8	178.4	2.2	1.1	177.0	2.4	1.3	177.9
BH22-5	179.1	1.2	2.9	1.7	1.5	0.3	178.8	1.9	0.7	178.5	2.2	1.0	177.0	2.3	1.1	178.0
BH 1	179.2	0.8	2.3	1.5	1.2	0.4	178.8	1.5	0.7	178.5	1.8	1.0	177.4	2.0	1.2	178.0
BH 2	179.3	0.8	2.3	1.5	1.3	0.4	178.8	1.6	0.8	178.5	1.9	1.1	177.3	2.1	1.3	178.0
BH 3	179.1	0.7	2.1	1.5	1.1	0.4	178.8	1.4	0.7	178.4	1.7	1.1	177.4	1.9	1.2	177.9
BH 4	179.1	0.7	2.2	1.4	1.0	0.3	178.8	1.4	0.6	178.4	1.7	0.9	177.4	1.9	1.1	177.9
BH 5	179.1	0.8	6.0	5.3	1.2	0.4	178.7	1.5	0.7	178.4	1.8	1.1	177.3	1.9	1.2	177.9

Table 2: Groundwater Level Monitoring I

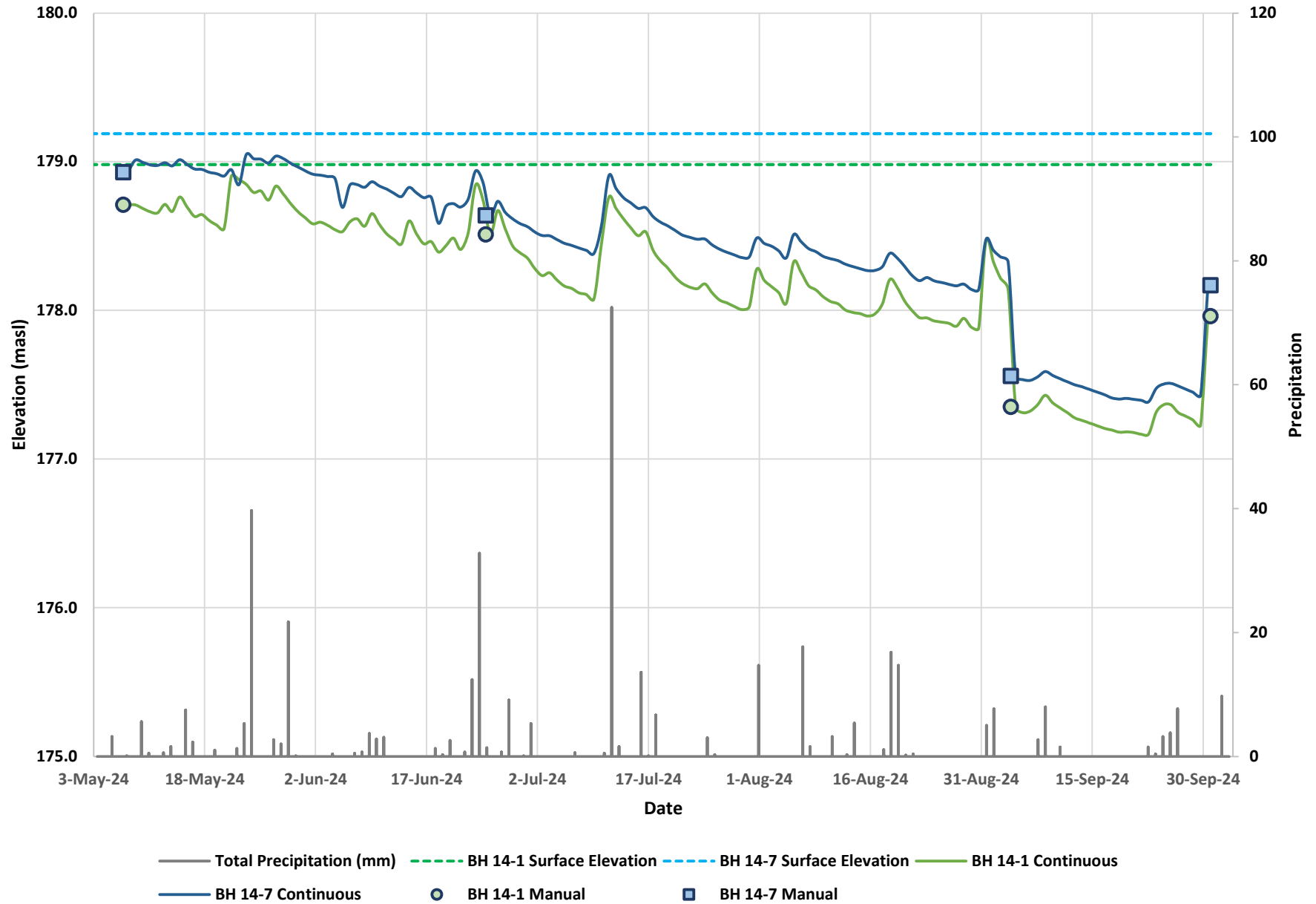
Location: 11476 Highway 26, Collingwood

SG					07-May-24		25-Jun-24		04-Sep-24		01-Oct-24	
SG/PZ ID	TOB Elevation (masl)	Depth (top of Casing) Inside	Stick-up TOC (m) (t-bar)	Surface Elev. (masl)	Depth to Water (TOP)	Depth to Water (masl)	Depth to Water (TOP)	Depth to Water (masl)	Depth to Water (TOP)	Depth to Water (masl)	Depth to Water (TOP)	Depth to Water (masl)
SG-1	180.1			178.5	1.5	178.6	1.6	178.5	Dry	178.5	Dry	178.5
SG-2	179.7			178.2	1.1	178.5	1.2	178.4	inaccessible		Dry	178.2
PZ1D		1.8	1.1	178.5	1.2	178.3	1.3	178.3	1.6	178.0	1.8	177.8
PZ1S		1.8	0.8	178.5	0.9	178.3	1.0	178.3	1.3	178.0	1.5	177.8
PZ2D		3.4	1.4	178.5		179.9	1.7	178.2	inaccessible		2.0	177.9
PZ2S		1.9	0.6	178.6	1.6	177.6	0.9	178.4	inaccessible		1.2	178.0

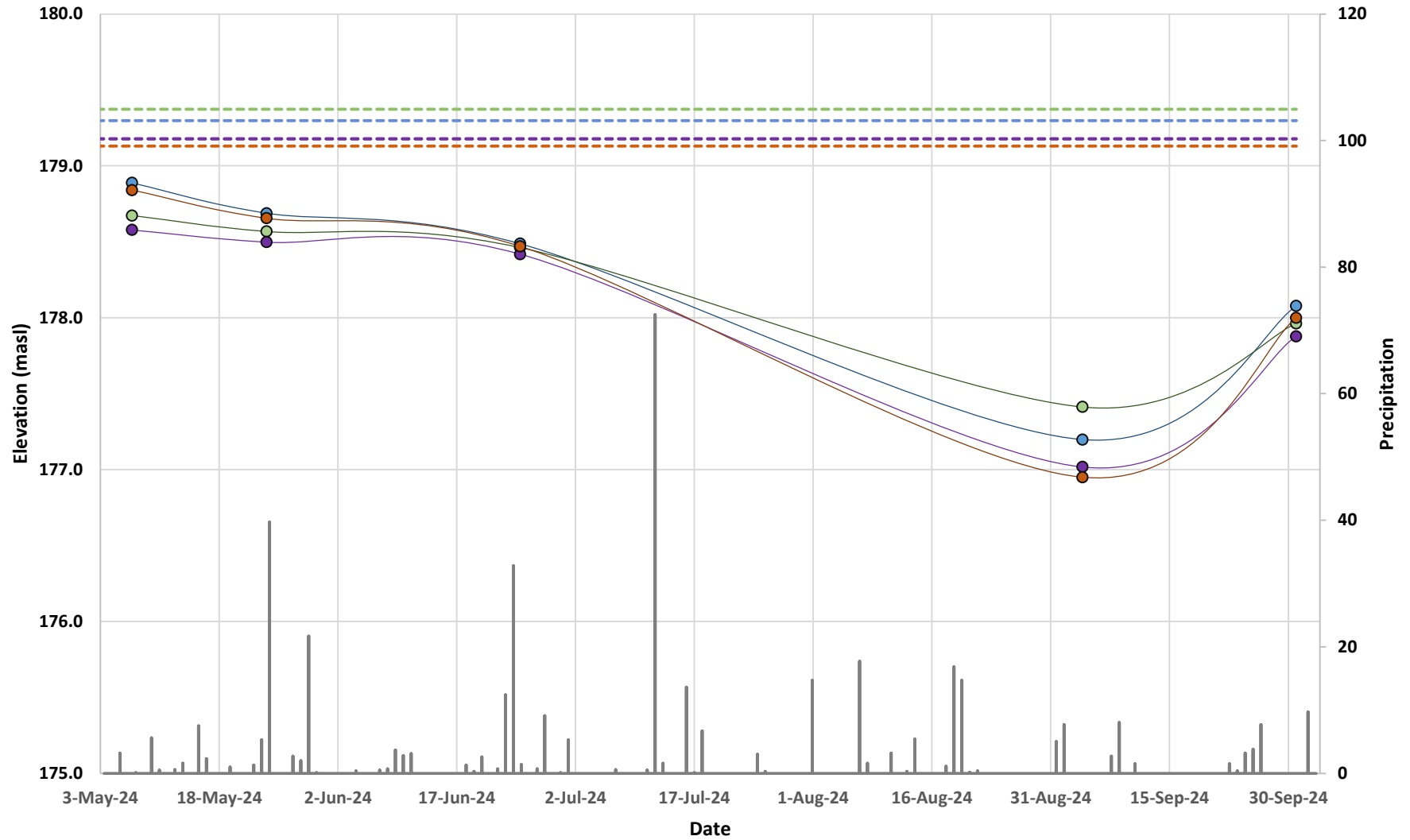


Appendix B

11476 Highway 26, Hydrograph BH14-1 & BH14-7

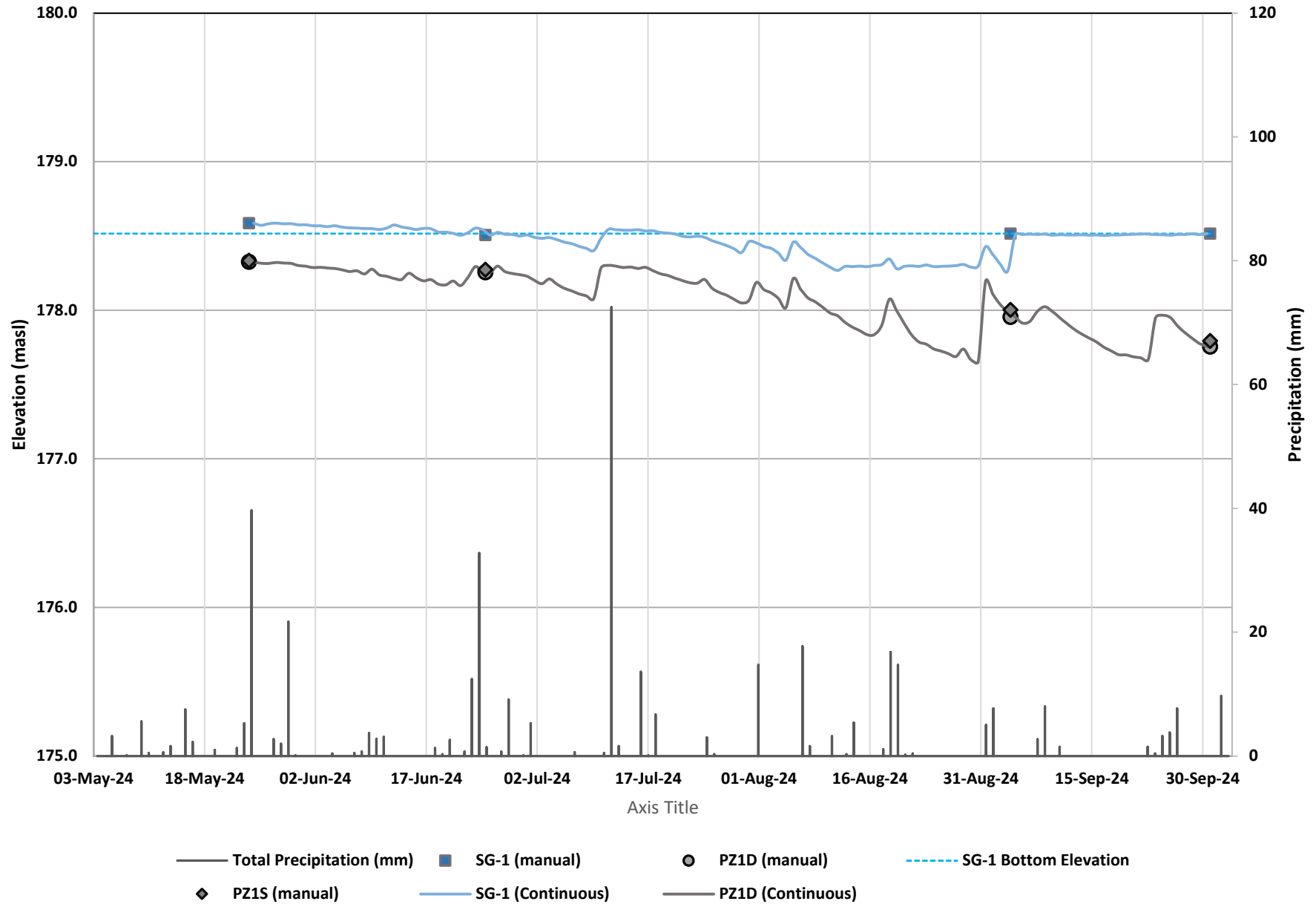


11476 Highway 26, Hydrograph BH14-3, BH14-8, BH22-1 & BH22-5

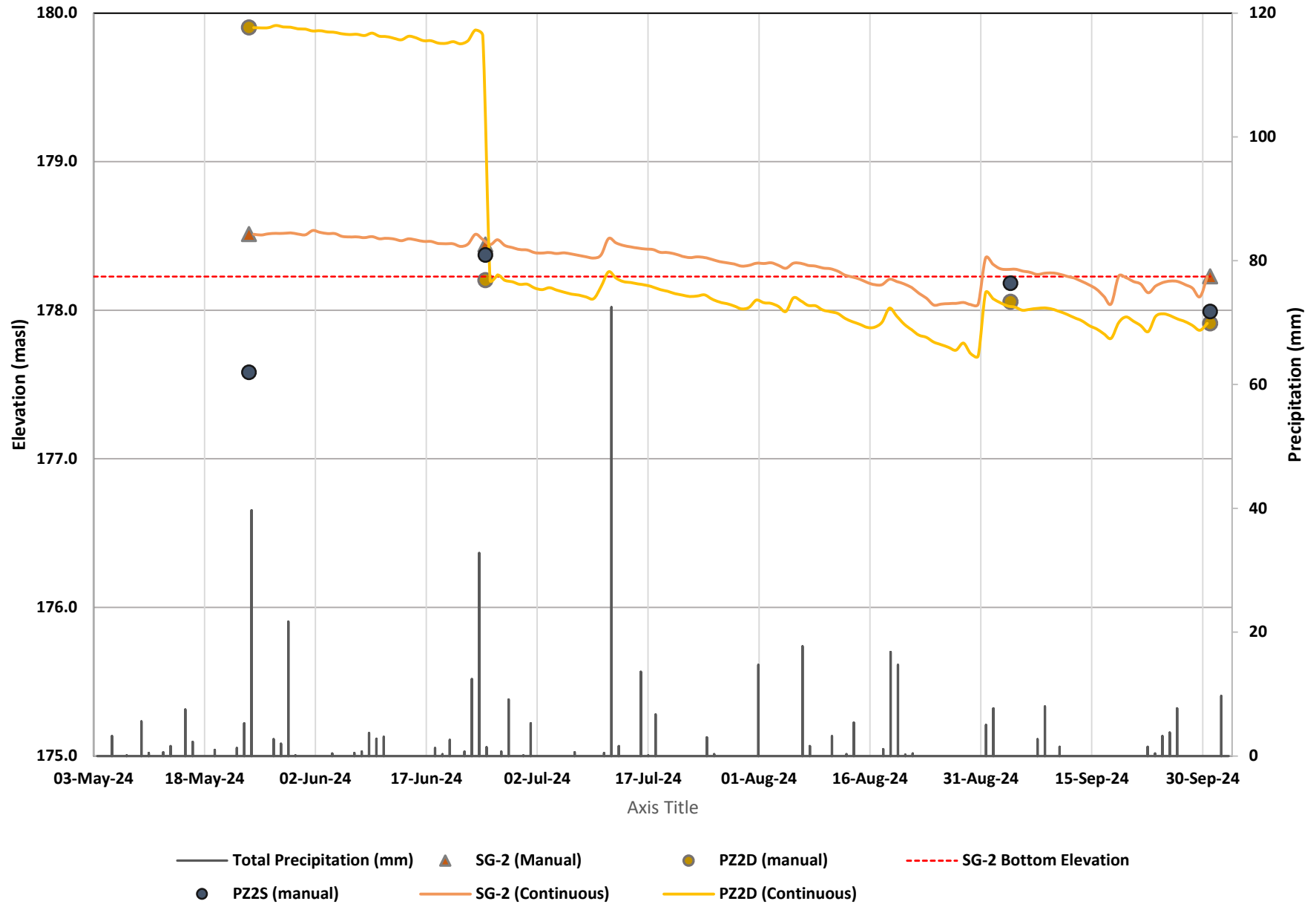


— Total Precipitation (mm) - - - BH 14-3 Surface Elevation - - - BH14-8 Surface Elevation
- - - BH 22-1 Surface Elevation - - - BH22-5 Surface Elevation ● BH 14-3 Manual
● BH14-8 Manual ● BH 22-1 Manual ● BH22-5 Manual

11476 Highway 26, Station Hydrograph SG/PZ 1



11476 Highway 26, Station Hydrograph SG/PZ 2





Appendix C

PROJECT: Geotechnical Investigation

CLIENT: Integricon Property Restoration and Construction Group Inc.

PROJECT LOCATION: 11476 Highway 26, Collingwood, ON

DATUM: Geodetic

BH LOCATION: See Drawing 1 N 4929716.695 E 559282.851

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150 mm

Date: Jun-02-2022

REF. NO.: 22-189-400

ENCL NO.: 2

[illegible]

DS SOIL LOG-2021-FINAL 22-189-400.GPJ DS.GDT 22-8-15

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

$+3, \times 3$: Numbers refer to Sensitivity

○ $\epsilon = 3\%$ Strain at Failure

PROJECT: Geotechnical Investigation
CLIENT: Integricon Property Restoration and Construction Group Inc.
PROJECT LOCATION: 11476 Highway 26, Collingwood, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4929674.096 E 559271.109

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150 mm
Date: Jun-02-2022
REF. NO.: 22-189-400
ENCL NO.: 3

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			POCKET PEN (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)				WATER CONTENT (%)					
								20 40 60 80 100				W _p W W _L					
179.0							179									GR SA SI CL	
179.0	0.1	ASPHALT:50 mm	1	SS	10												
		GRANULAR BASE: sand and gravel, 250mm															
178.7	0.3	FILL: silty sand, some gravel, brown, moist, compact															
178.2	0.8	SILTY SAND: trace gravel, brown, wet, very dense	2	SS	50/100 mm												
178.1	0.9	END OF BOREHOLE: Notes: 1) Augar refusal at depth of 0.9m on inferred bedrock. 2) Water at depth of 0.8m during drilling.															

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3 , × 3 : Numbers refer to Sensitivity

○ = 3% Strain at Failure

DS SOIL LOG-2021-FINAL 22-189-400.GPJ DS.GDT 22-8-15

PROJECT: Geotechnical Investigation
CLIENT: Integricon Property Restoration and Construction Group Inc.
PROJECT LOCATION: 11476 Highway 26, Collingwood, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4929702.12 E 559328.961

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150 mm
Date: Jun-02-2022
REF. NO.: 22-189-400
ENCL NO.: 4

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)					W _p	W	W _L			
179.0								20	40	60	80	100						GR SA SI CL
178.9	ASPHALT: 50 mm																	
0.1	GRANULAR: sand and gravel, 200 mm																	
178.7																		
0.3	FIL: silty sand with topsoil, trace gravel, brown, moist, loose		1	SS	6													
178.2																		
0.8	SAND: trace gravel, yellowish brown, wet, very dense		2	SS	50/150 mm													
178.1																		
0.9	END OF BOREHOLE: Notes: 1) Auger refusal at depth of 0.9m on inferred bedrock. 2) Water at depth of 0.8m during drilling.																	

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3 , × 3 : Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation

CLIENT: Integricon Property Restoration and Construction Group Inc.

PROJECT LOCATION: 11476 Highway 26, Collingwood, ON

DATUM: Geodetic

BH LOCATION: See Drawing 1 N 4929651.171 E 559308.876

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150 mm

Date: Jun-02-2022

REF. NO.: 22-189-400

ENCL NO.: 5

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT						POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kNm ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)						
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)								WATER CONTENT (%)			GR	SA	SI	CL
								20	40	60	80	100	PLASTIC LIMIT w _p			NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L					
178.9																						
0.0 178.8	ASPHALT: 50 mm																					
0.1	GRANULAR: sand and gravel, 250 mm																					
178.6			1	SS	30																	
0.3	SILTY SAND: trace clay, trace gravel, yellowish brown, wet, dense to very dense																					
				</																		

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ $\epsilon = 3\%$ Strain at Failure

PROJECT: Geotechnical Investigation
CLIENT: Integricon Property Restoration and Construction Group Inc.
PROJECT LOCATION: 11476 Highway 26, Collingwood, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4929709.071 E 559356.738

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150 mm
Date: Jun-02-2022
REF. NO.: 22-189-400
ENCL NO.: 6

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)								WATER CONTENT (%)		
								20 40 60 80 100								10 20 30		
179.1	ASPHALT: 50 mm														GR SA SI CL			
179.0	GRANULAR: sand and gravel, 550 mm		1	SS	10		179											
178.5	GRAVELLY SAND: some silt, trace clay, yellowish brown, wet, very dense																	
178.0																		
177.5																		
177.0			2	SS	60		178								25 54 16 5			
176.5																		
176.0																		
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114.0																		
113.5																		

W. L. 178.4 m
Aug 05, 2022

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3 , × 3 : Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION: N 0 E 1

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/12/2014
 REF. NO.: 10001104
 DRG. NO.: 2

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L			
178.8	ASPHALT: 50mm														GR SA SI CL
178.0	GRANULAR BASE/SUBBASE: 150mm, sand and gravel														
178.6	FILL: silty sand, some clay, trace gravel, light brown to brown, moist to very moist, loose		1	SS	15										
178.0															
0.8	SAND: some silt, trace clay, trace gravel, oxidized, light brown, wet, loose		2	SS	6										4 80 11 5
177.3															
1.5	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 1.46m on assumed bedrock 2. Installed 50 mm diameter monitoring well upon completion 3. Water Level Measurements in Monitoring Well: Date W.L. Depth (m) W.L. Elev. (m) Dec. 12, 2014 0.63 178.17 Jan. 19, 2015 0.46 178.34														

GROUNDWATER ELEVATIONS

1st 2nd 3rd 4th
 Measurement

GRAPH
NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure



LOG OF BOREHOLE BH14-02

1 OF 1

PROJECT: Geotechnical Investigation
CLIENT: C.C. Tatham & Associates Ltd.
PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
DATUM: Geodetic
BH LOCATION: N 0 E 2

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Dec/12/2014
REF. NO.: 10001104
DRG. NO.: 3

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	POCKET PEN. (C _u) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)							
178.9	ASPHALT: 25mm	○													
178.7	GRANULAR BASE/SUBBASE: 150mm, sand and gravel	○													
0.2	FILL: silty sand, some gravel, trace clay, brown, moist to very moist, compact	⊗	1	SS	15						○				
178.1															
0.8	SAND: some silt, some gravel, trace clay, light brown, very moist to wet, compact	⊗	2	SS	14		178				○				
177.8	25mm seam of organic material, wet	⊗													
177.6	END OF BOREHOLE ON ASSUMED BEDROCK														
1.1	Notes: 1. Auger refusal at 1.07m on assumed bedrock 2. Borehole was wet at bottom upon completion of drilling														

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION: N 0 E 3

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/11/2014
 REF. NO.: 10001104
 DRG. NO.: 4

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L			
179.1															
179.0	TOPSOIL: 100mm														
0.1	FILL: sand, trace silt, trace gravel, trace organics, light brown, moist, very loose to loose		1	SS	4		179								
178.4															
0.8	SAND: trace silt, trace clay, trace gravel, oxidized, brown, wet, loose		2	SS	9		178								
1															
177.6															
1.5	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 1.52m on assumed bedrock 2. Installed 50 mm diameter monitoring well upon completion 3. Water Level Measurements in Monitoring Well: Date W.L. Depth (m) W.L. Elev. (m) Dec. 12, 2014 0.99 178.14 Jan. 19, 2015 0.87 178.26														

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION:

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/12/2014
 REF. NO.: 10001104
 DRG. NO.: 5

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		POCKET PEN. (C _u) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)				
179.2								20 40 60 80 100	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	GR SA SI CL
179.0	ASPHALT: 25mm FILL: silty sand, trace clay, trace gravel, dark brown, trace topsoil, very moist, very loose		1	SS	3		179					
178.7	some clay, wet											
178.5	compact											
178.4	SAND: trace silt, trace clay, trace gravel, oxidized, brown, wet, compact		2	SS	13		178					
177.9												
1.4	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 1.37m on assumed bedrock 2. Borehole was wet at bottom upon completion of drilling											

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure



LOG OF BOREHOLE BH14-05

1 OF 1

PROJECT: Geotechnical Investigation

CLIENT: C.C. Tatham & Associates Ltd.

PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario

DATUM: Geodetic

BH LOCATION:

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Dec/11/2014

REF. NO.: 10001104

DRG. NO.: 6

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L			
179.1															GR SA SI CL
179.0	TOPSOIL: 100mm														
0.1	FILL: sand and gravel, trace silt, trace clay, trace topsoil, reddish brown, dense		1	SS	31		179								
178.8	some clay, dark brown, moist to very moist														
0.3															
178.4	silty sand, some gravel, some clay, wet, compact														
0.8															
178.1			2	SS	16										
1.1	SAND: trace silt, trace clay, trace gravel, oxidized, brown, wet, compact						178								
177.5															
1.7	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 1.65m on assumed bedrock 2. Borehole was wet at bottom upon completion of drilling														

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
CLIENT: C.C. Tatham & Associates Ltd.
PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Dec/11/2014

REF. NO.: 10001104
DRG. NO.: 7

[illegible]

SSPL SOIL LOG 10001104 BH LOGS.GPJ SPL.GDT 2/5/15

Continued Next Page

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

$+^3, \times^3$: Numbers refer to Sensitivity

○ **$\epsilon = 3\%$** Strain at Failure



LOG OF BOREHOLE BH14-07

2 OF 2

PROJECT: Geotechnical Investigation
CLIENT: C.C. Tatham & Associates Ltd.
PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Dec/11/2014

REF. NO.: 10001104
DRG. NO.: 7

SOIL PROFILE			SAMPLES				GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	POCKET PEN. (C _u) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	SHEAR STRENGTH (kPa)			WATER CONTENT (%)							
								20 40 60 80 100								GR SA SI CL
	RUN 4(Continued)															
172.5																
6.3	END OF BOREHOLE Notes: 1. Auger refusal at 1.37m on assumed bedrock 2. Installed 50 mm diameter monitoring well upon completion 3. Water Level Measurements in Monitoring Well: Date W.L. Depth (m) W.L. Elev. (m) Dec. 12, 2014 0.57 178.25 Jan. 19, 2015 0.48 178.34															

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION:

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/11/2014

REF. NO.: 10001104
 DRG. NO.: 7

(m) ELEV DEPTH	ROCK DESCRIPTION	GROUND WATER CONDITIONS	CORE SAMPLE		TOTAL CORE RECOVERY (%)	SOLID CORE RECOVERY (%)	HARD LAYER (%)	RQD (%)	FRACTURE INDEX (per 0.3 m)	DISCONTINUITIES	Weathering Index	HYDRAULIC CONDUCTIVITY (cm/sec)	POINT LOAD TEST UCS AXIAL (MPa)*	POINT LOAD TEST UCS DIAMETRAL (MPa)*	UNIAXIAL COMPRESSION (MPa)	DENSITY (g/cm ³) E (GPa)	
			NUMBER	SIZE													
177.5	Rock Surface																
177.4	LIMESTONE: slightly weathered to fresh, fine- to coarse-grained, fossiliferous, argillaceous, grey		1	NQ	87	0		0	>25								
177.1									>25								
1.8										15							
										6							
	2	NQ	100	93		83	3										
							0										
								4									
175.5										Soft Layer at 3.36m for 30mm							
3.3									1								
									1								
			3	NQ	100	92		77	5								
									0								
									3								
174.0																	
4.8									0								
									1								
			4	NQ	100	98		98	0								
									1								
									0								
172.5																	
6.3	END OF BOREHOLE																

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION:

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/11/2014
 REF. NO.: 10001104
 DRG. NO.: 8

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)				W _p	W	W _L			
179.2	TOPSOIL: 125mm							20 40 60 80 100									GR SA SI CL
0.0 179.0																	
0.1	FILL: fine sand, trace to some gravel, trace silt, trace clay, trace topsoil, trace organics, light brown, moist to very moist, very loose		1	SS	3		179										
178.4																	
0.8	SAND: trace silt, trace clay, trace gravel, trace mollusks, oxidized, brown, very moist to wet, compact		2	SS	13		178										
177.7																	
1.5	some gravel to gravelly, light brown		3	SS	19												19 64 11 6
2.1	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 2.10m on assumed bedrock 2. Installed 50 mm diameter monitoring well upon completion 3. Water Level Measurements in Monitoring Well: Date W.L. Depth (m) W.L. Elev. (m) Dec. 12, 2014 0.90 178.27 Jan. 19, 2015 0.85 178.35																

GROUNDWATER ELEVATIONS

1st 2nd 3rd 4th
 Measurement

GROUND NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION:

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/11/2014
 REF. NO.: 10001104
 DRG. NO.: 9

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L			
179.9	ASPHALT: 50mm														GR SA SI CL
179.0	GRANULAR BASE/SUBBASE: 150mm, sand and gravel														
179.7	FILL: silty sand, some gravel, trace to some clay, light brown, moist to very moist, compact		1	SS	21										
179.2															
0.8	SAND: trace silt, trace clay, trace gravel, trace mollusks, light brown, wet, compact		2	SS	14		179								
178.6	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal at 1.37m on assumed bedrock 2. Water level was 1.05m upon completion of drilling														

GROUNDWATER ELEVATIONS

1st 2nd 3rd 4th
 Measurement

GRAPH
NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure

PROJECT: Geotechnical Investigation
 CLIENT: C.C. Tatham & Associates Ltd.
 PROJECT LOCATION: 11476 Highway 26, Collingwood, Ontario
 DATUM: Geodetic
 BH LOCATION:

DRILLING DATA
 Method: Hollow Stem Auger
 Diameter: 150mm
 Date: Dec/11/2014
 REF. NO.: 10001104
 DRG. NO.: 10

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC NATURAL LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)				W _p	W	W _L			
179.7								20	40	60	80	100					
0.0 179.8	TOPSOIL: 100mm							20	40	60	80	100					
0.1	FILL: sand and gravel, some silt, trace clay, pieces of pvc piping, light grey, moist, loose		1	SS	7												
178.9							179										
0.8	SAND: some silt, trace clay, trace gravel, oxidized, light brown, very moist to wet, compact		2	SS	12												
1																	
2							178										
3			3	SS	14												
177.4																	
2.3	GRAVELLY SAND: some silt, trace clay, greyish brown, wet, compact		4	SS	23		177										
3																	
176.6																	
3.1	END OF BOREHOLE ON ASSUMED BEDROCK Notes: 1. Auger refusal and spoon bouncing at 3.05m on assumed bedrock 2. Water level was 2.42m upon completion of drilling																

GROUNDWATER ELEVATIONS

1st 2nd 3rd 4th
 Measurement

GRAPH
 NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ = 3% Strain at Failure



Appendix D



FINAL REPORT

CA40211-MAY24 R1

22-189-402, 11476 Highway 26, Collingwood ON

Prepared for

DS Consultants



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FINAL REPORT

CA40211-MAY24 R1

Client: DS Consultants
Project: 22-189-402, 11476 Highway 26, Collingwood ON
Project Manager: Dorothy Santos
Samplers: Chaitonya

MATRIX: WATER

Sample Number	7	8
Sample Name	SG-1	SG-2
Sample Matrix	Solution	Solution
Sample Date	24/05/2024	24/05/2024

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
General Chemistry					
Alkalinity	mg/L as CaCO3	2		226	183
Bicarbonate	mg/L as CaCO3	2		226	183
Carbonate	mg/L as CaCO3	2		< 2	< 2
OH	mg/L as CaCO3	2		< 2	< 2
Colour	TCU	3		46	38
Conductivity	uS/cm	2		466	925
Turbidity	NTU	0.10		40	8.5
Ammonia+Ammonium (N)	as N mg/L	0.1		< 0.1	< 0.1
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03		< 0.03	< 0.03
Total Organic Carbon	mg/L	1		19	12
Metals and Inorganics					
Fluoride	mg/L	0.06		0.14	0.09
Bromide	mg/L	0.3		< 0.3	< 0.3
Nitrite (as N)	as N mg/L	0.03		< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		< 0.06	< 0.06
Sulphate	mg/L	2		< 2	< 2
Hardness	mg/L as CaCO3	0.05		218	213
Aluminum (total)	mg/L	0.001		0.029	0.038
Arsenic (total)	mg/L	0.0002	0.005	0.0013	0.0012
Boron (total)	mg/L	0.002	0.2	0.021	0.012
Barium (total)	mg/L	0.00008		0.0177	0.0205



FINAL REPORT

CA40211-MAY24 R1

Client: DS Consultants
Project: 22-189-402, 11476 Highway 26, Collingwood ON
Project Manager: Dorothy Santos
Samplers: Chaitonya

MATRIX: WATER

Sample Number	7	8
Sample Name	SG-1	SG-2
Sample Matrix	Solution	Solution
Sample Date	24/05/2024	24/05/2024

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Beryllium (total)	mg/L	0.000007	1.1	< 0.000007	< 0.000007
Cobalt (total)	mg/L	0.000004	0.0009	0.000552	0.000446
Calcium (total)	mg/L	0.01		69.9	69.4
Cadmium (total)	mg/L	0.000003	0.0005	0.000005	< 0.000003
Copper (total)	mg/L	0.001	0.005	< 0.001	< 0.001
Chromium (total)	mg/L	0.00008	0.1	0.00020	0.00020
Iron (total)	mg/L	0.007	0.3	2.69	2.13
Potassium (total)	mg/L	0.009		5.66	3.26
Magnesium (total)	mg/L	0.001		10.6	9.64
Manganese (total)	mg/L	0.00001		0.149	0.346
Molybdenum (total)	mg/L	0.0004	0.04	< 0.0004	< 0.0004
Nickel (total)	mg/L	0.0001	0.025	0.0015	0.0008
Sodium (total)	mg/L	0.01		14.7	117
Phosphorus (total)	mg/L	0.003	0.01	0.094	0.095
Lead (total)	mg/L	0.00009	0.025	0.00016	0.00010
Silicon (total)	mg/L	0.02		0.93	2.04
Silver (total)	mg/L	0.00005	0.0001	< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008		0.215	0.204
Thallium (total)	mg/L	0.000005	0.0003	0.000005	< 0.000005
Tin (total)	mg/L	0.00006		0.00006	0.00008
Titanium (total)	mg/L	0.0001		0.0018	0.0022
Antimony (total)	mg/L	0.0009	0.02	< 0.0009	< 0.0009



FINAL REPORT

CA40211-MAY24 R1

Client: DS Consultants
Project: 22-189-402, 11476 Highway 26, Collingwood ON
Project Manager: Dorothy Santos
Samplers: Chaitonya

MATRIX: WATER

Sample Number	7	8
Sample Name	SG-1	SG-2
Sample Matrix	Solution	Solution
Sample Date	24/05/2024	24/05/2024

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Selenium (total)	mg/L	0.00004	0.1	0.00016	0.00010
Uranium (total)	mg/L	0.000002	0.005	0.000029	0.000028
Vanadium (total)	mg/L	0.00001	0.006	0.00014	0.00008
Zinc (total)	mg/L	0.002	0.02	< 0.002	< 0.002
Cation sum	meq/L	-9999		5.31	9.58
Anion Sum	meq/L	-9999		5.22	9.58
Anion-Cation Balance	% difference	-9999		0.79	-0.02
Ion Ratio	-	-9999		1.02	1
Total Dissolved Solids (calculated)	mg/L	-9999		262	519
Conductivity (calculated)	uS/cm	-9999		527	958
Langeliers Index 4° C	@ 4° C	-9999		0.22	0.19
Saturation pH 4°C	pHs @ 4°C	-9999		7.75	7.87

Other (ORP)

pH	No unit	0.05	8.6	7.97	8.06
Chloride	mg/L	1		25	210
Mercury (total)	mg/L	0.00001	0.0002	0.00001	< 0.00001



EXCEEDANCE SUMMARY

				PWQO_L / WATER
				/ - - Table 2 -
				General - July 1999
				PIBS 3303E
Parameter	Method	Units	Result	L1

SG-1

Iron	SM 3030/EPA 200.8	mg/L	2.69	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.094	0.01

SG-2

Iron	SM 3030/EPA 200.8	mg/L	2.13	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.095	0.01



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Alkalinity
Method: SM 2320 | Internal ref.: ME-CA-1ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0665-MAY24	mg/L as CaCO3	2	< 2	2	20	102	80	120	NA		

Ammonia by SFA
Method: SM 4500 | Internal ref.: ME-CA-1ENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0257-MAY24	as N mg/L	0.1	<0.1	0	10	94	90	110	103	75	125



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO8084-MAY24	mg/L	1	<1	ND	20	99	80	120	98	75	125
Sulphate	DIO8084-MAY24	mg/L	2	<2	ND	20	109	80	120	109	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bromide	DIO0646-MAY24	mg/L	0.3	<0.3	ND	20	101	90	110	107	75	125
Nitrite (as N)	DIO0646-MAY24	mg/L	0.03	<0.03	ND	20	97	90	110	97	75	125
Nitrate (as N)	DIO0646-MAY24	mg/L	0.06	<0.06	ND	20	97	90	110	100	75	125
Bromide	DIO0682-MAY24	mg/L	0.3	<0.3	ND	20	97	90	110	94	75	125
Nitrite (as N)	DIO0682-MAY24	mg/L	0.03	<0.03	ND	20	98	90	110	107	75	125
Nitrate (as N)	DIO0682-MAY24	mg/L	0.06	<0.06	ND	20	98	90	110	91	75	125



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Carbon by SFA
Method: SM 5310 | Internal ref.: ME-CA-IENVISFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Organic Carbon	SKA0265-MAY24	mg/L	1	<1	3	20	102	90	110	100	75	125

Carbonate/Bicarbonate
Method: SM 2320 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Carbonate	EWL0665-MAY24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0665-MAY24	mg/L as CaCO3	2	< 2	2	10	NA	90	110	NA		
OH	EWL0665-MAY24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Colour

Method: SM 2120 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Colour	EWL0711-MAY24	TCU	3	< 3	0	10	105	80	120	NA		

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0665-MAY24	uS/cm	2	< 2	0	20	99	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0667-MAY24	mg/L	0.06	<0.06	0	10	97	90	110	78	75	125



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Mercury by CVAAS
Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0057-MAY24	mg/L	0.00001	< 0.00001	9	20	107	80	120	93	70	130



FINAL REPORT

CA40211-MAY24 R1

QC SUMMARY

Metals in aqueous samples - ICP-MS
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-ENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0279-MAY24	mg/L	0.00005	<0.00005	ND	20	100	90	110	80	70	130
Aluminum (total)	EMS0279-MAY24	mg/L	0.001	<0.001	5	20	98	90	110	109	70	130
Arsenic (total)	EMS0279-MAY24	mg/L	0.0002	<0.0002	ND	20	100	90	110	102	70	130
Barium (total)	EMS0279-MAY24	mg/L	0.00008	<0.00008	1	20	96	90	110	102	70	130
Beryllium (total)	EMS0279-MAY24	mg/L	0.000007	<0.000007	ND	20	96	90	110	95	70	130
Boron (total)	EMS0279-MAY24	mg/L	0.002	<0.002	ND	20	98	90	110	95	70	130
Calcium (total)	EMS0279-MAY24	mg/L	0.01	<0.01	2	20	98	90	110	101	70	130
Cadmium (total)	EMS0279-MAY24	mg/L	0.000003	<0.000003	0	20	98	90	110	96	70	130
Cobalt (total)	EMS0279-MAY24	mg/L	0.000004	<0.000004	8	20	101	90	110	100	70	130
Chromium (total)	EMS0279-MAY24	mg/L	0.00008	<0.00008	ND	20	101	90	110	101	70	130
Copper (total)	EMS0279-MAY24	mg/L	0.001	<0.001	ND	20	101	90	110	105	70	130
Iron (total)	EMS0279-MAY24	mg/L	0.007	<0.007	0	20	100	90	110	100	70	130
Potassium (total)	EMS0279-MAY24	mg/L	0.009	<0.009	2	20	99	90	110	107	70	130
Magnesium (total)	EMS0279-MAY24	mg/L	0.001	<0.001	3	20	100	90	110	100	70	130
Manganese (total)	EMS0279-MAY24	mg/L	0.00001	<0.00001	0	20	101	90	110	103	70	130
Molybdenum (total)	EMS0279-MAY24	mg/L	0.0004	<0.0004	ND	20	101	90	110	99	70	130
Sodium (total)	EMS0279-MAY24	mg/L	0.01	<0.01	0	20	109	90	110	107	70	130
Nickel (total)	EMS0279-MAY24	mg/L	0.0001	<0.0001	1	20	106	90	110	104	70	130
Lead (total)	EMS0279-MAY24	mg/L	0.00009	<0.00009	ND	20	99	90	110	99	70	130
Phosphorus (total)	EMS0279-MAY24	mg/L	0.003	<0.003	0	20	98	90	110	NV	70	130



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CA40211-MAY24 R1

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Antimony (total)	EMS0279-MAY24	mg/L	0.0009	<0.0009	ND	20	106	90	110	97	70	130
Selenium (total)	EMS0279-MAY24	mg/L	0.00004	<0.00004	2	20	98	90	110	98	70	130
Silicon (total)	EMS0279-MAY24	mg/L	0.02	<0.02	4	20	93	90	110	NV	70	130
Tin (total)	EMS0279-MAY24	mg/L	0.00006	<0.00006	11	20	97	90	110	NV	70	130
Strontium (total)	EMS0279-MAY24	mg/L	0.00008	<0.00008	1	20	99	90	110	100	70	130
Titanium (total)	EMS0279-MAY24	mg/L	0.0001	<0.0001	2	20	96	90	110	NV	70	130
Thallium (total)	EMS0279-MAY24	mg/L	0.000005	<0.000005	ND	20	99	90	110	82	70	130
Uranium (total)	EMS0279-MAY24	mg/L	0.000002	<0.000002	1	20	104	90	110	102	70	130
Vanadium (total)	EMS0279-MAY24	mg/L	0.00001	<0.00001	4	20	101	90	110	101	70	130
Zinc (total)	EMS0279-MAY24	mg/L	0.002	<0.002	1	20	99	90	110	130	70	130

pH
Method: SM 4500 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0665-MAY24	No unit	0.05	NA	1		101			NA		



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QC SUMMARY

Reactive Phosphorus by SFA
Method: SM 4500-P F | Internal ref.: ME-CA-IENVISFA-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Reactive Phosphorous (o-phosphate as P)	SKA0262-MAY24	mg/L	0.03	<0.03	ND	10	101	90	110	67	75	125

Turbidity
Method: SM 2130 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Turbidity	EWL0754-MAY24	NTU	0.10	< 0.10	0	10	99	90	110	NA		



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QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.



LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.

RL Reporting Limit.

↑ Reporting limit raised.

↓ Reporting limit lowered.

NA The sample was not analysed for this analyte

ND Non Detect

Results relate only to the sample tested.

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.

"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

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This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 036148

Page 1 of 1

Received By: Arif Goodman
Received Date: 05/24/24 (mm/dd/yy)
Received Time: 17:30 (hr : min)Received By (signature): Arif Goodman
Custody Seal Present: Yes ☒ No ☐
Custody Seal Intact: Yes ☒ No ☐Cooling Agent Present: Yes ☒ No ☐ Type: ice
Temperature Upon Receipt (°C): 9.9LAB LIMS #: CA40211-may

REPORT INFORMATION

INVOICE INFORMATION

Company: PS Consultants Ltd.☒ (same as Report Information)Contact: Barney Santos

Company:

Address: 6221 Hwy 7, Unit 6Contact: AccountingPhone: 905-329-2735

Address:

Fax: 905-329-2735

Phone:

Email: psenters@psconsultants.ca

Email:

REGULATIONS

Other Regulations:

☐ O.Reg 153/04☐ O.Reg 406/19

Sewer By-Law:

Sanitary ☐Storm ☐

Municipality:

MISA ☐

ODWS Not Reportable *See note

Soil Volume ☐ <350m3 ☐ >350m3

RECORD OF SITE CONDITION (RSC)

YES ☐ NO ☐

SAMPLE IDENTIFICATION

DATE SAMPLED

TIME SAMPLED

OF BOTTLES

MATRIX

Field Filtered (Y/N)

Metals & Inorganics
incl CrVI, CN, Hg pH, B(HWS), EC, SAR-soil)
(Cl, Na-water)Full Metals Suite
ICP metals plus B(HWS-soil only) Hg, CrVIICP Metals only Sb, As, Ba, Be, B, Cd,
Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Ti, U, V, Zn

PAHs only

SVOCs
all incl PAHs, ABNs, GPsPCBs Total ☐ Aroclor ☐

F1-F4 + BTEX

F1-F4 only
no BTEXVOCs
all incl BTEX

BTEX only

Pesticides
Organochlorine or specify other

General water characterization pkg

Sewer Use:
Specify pkg:Water Characterization Pkg
General ☐ Extended ☐

SPLP tests

TCLP tests

SPLP tests

TCLP tests

SPLP tests

TCLP tests

SPLP tests

TCLP tests

SPLP tests

TAT's are quoted in business days (excluding statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business dayRUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

ANALYSIS REQUESTED

Other (please specify)

SPLP tests

TCLP tests

SPLP tests

TCLP tests

SPLP tests

P.O. #:

Site Location/ID: 11476 Highway 26,

TURNAROUND TIME (TAT) REQUIRED

Culloway rd, ON

PINK COPY - CLIENT

YELLOW & WHITE COPY - SGS

Date of Issue: 07 JUNE 2023

Note: Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection, handling and transportation of samples. (2) Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). (3) Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. (Printed copies are available upon request). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.Sampled By (NAME): ChaitanyaSignature: ChaitanyaDate: 5/24/24 (mm/dd/yy)Relinquished By (NAME): ChaitanyaSignature: ChaitanyaDate: 5/24/24 (mm/dd/yy)

Pink Copy - Client

Yellow & White Copy - SGS

Date of Issue: 07 JUNE 2023

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