WILLS

PARTNERS IN ENGINEERING, PLANNING & ENVIRONMENTAL SERVICES

December 19, 2024

Hillstreet Developments Ltd.
2015 Altona Road
Pickering, ON
K1V 2B9

Attention: Larry MacDonell

Re: Osaca Hillstreet Subdivision, Northumberland County, Ontario
Hydrogeological Study Report – Addendum #1
D.M. Wills Associates Project No. 22-11056

1.0 Introduction

D.M. Wills Associates Limited (Wills) was retained by Hillstreet Developments Ltd. c/o Larry MacDonell (Client) to complete a Hydrogeological Study (Study) for the property located at Pt Lot 27 Concession 5, in the village of Osaca, Ontario (Subject Property). The findings of Wills' Study were summarized in Wills' Hydrogeological Study Report (Wills' Report) submitted to the Client on April 2, 2024. Wills' Report was peer reviewed by BluMetric Environmental Inc. (BluMetric) on behalf of the Municipality of Port Hope. BluMetric's comments are summarized in the following document:

- Additional Peer Review of Hydrogeology Study – Second Submission, Proposed Residential Development, 5868 County Road 65, Osaca, Project Number 230352, prepared by Ian Macdonald, M.Sc., P.Geo. for the Municipality of Port Hope c/o Ms. Merepeza, May 17, 2024.

To address Blumetric's comments of May 17, 2024, Wills completed additional hydrogeological field work and groundwater modelling for the Subject Property. The investigative findings were summarized in the following documents:

- Revised Final Hydrogeological Study Report_v2, Osaca Hillstreet Subdivision, County Road 65, Osaca, Ontario, D.M. Wills Project Number 22-11056, prepared for Hillstreet Developments Ltd. c/o Larry Macdonell, July 17, 2024, (Wills' Revised Report).
- Osaca Hillstreet Subdivision, Northumberland County, Ontario, Hydrogeological Study Report, Answer to BluMetric Environmental following 2nd submission, D.M. Wills Associates Project No. 22-11056, for Hillstreet Developments Ltd. c/o Larry Macdonell, July 17, 2024 (Wills' Response Memo).

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A Comment Response Matrix summarizing BluMetric's comments and Wills' answers up to September 24, 2024, is included in **Appendix A**. Following submission of Wills' Response Memo, the following actions were determined to be required to address the outstanding peer review comments:

- Collect additional groundwater samples from the existing wells on the subject property for analysis of nitrate.
    - Further analysis is required to establish the Subject Property's background nitrate concentration.
- Collect supplemental shallow groundwater level measurements in the existing on-site wells during summer and spring to evaluate seasonal fluctuations.
- Install three new water supply wells on the Subject Property and conduct 6-hour duration pumping tests on each to confirm yield, groundwater quality (specifically with respect to nitrate), and potential interference with neighboring pumping activities.
    - The water supply wells are required to be deeper than the three wells installed and tested in 2023.
- Based on the investigations described above, develop a groundwater monitoring program (Monitoring Program), the implementation of which would be included as a condition of Site Plan approval. The groundwater monitoring program is required to evaluate:
    - Shallow groundwater levels.
    - Nitrate concentrations at the Subject Property's downgradient limit.
    - Nitrate and other relevant parameters in the aquifer(s) that is anticipated to supply drinking water to the proposed development.

This Addendum #1 to Wills' Revised Report describes the additional investigations completed since July 17, 2024, based on the peer review comments.

Wills' investigations have been completed on the basis of:

- the Ministry of Environment Conservation and Parks (MECP) Guidelines D-5-5 Private Wells: Water Supply Assessment (Guideline D-5-5).
- the Preliminary Draft Plan prepared by D.G. Biddle & Associates Limited (Biddle), dated August 15, 2024, included in **Appendix B**. This latest Preliminary Draft Plan includes a reduced number of residential lots (38)

compared to the previous version of February 2, 2024, which was used as the basis for Wills' Revised Report.

2.0 Scope of Work

Wills' approved Scope of Work to address BluMetric's peer review comments included the following:

- Static groundwater level measurements were recorded on September 10, and September 27, 2024, in three monitor wells installed by Cambium Inc. (Cambium) in 2022. These wells are identified as BH-101-22, BH-107-22 and BH110-22. Groundwater was encountered at depths ranging from 2.33 to 2.66 meters below ground (mbg).
- Six groundwater samples were collected on September 27, 2024, and submitted to SGS Canada Inc. (SGS) for nitrate analysis to inform background nitrate concentration. Groundwater samples were collected from:
    - BH101-22, BH107-22 and BH110-22, which are constructed to a depth of approximately 6 mbg.
    - Ontario Regulation (O. Reg.) 903 Water Supply Wells A377795, A377796 and A377799 installed in 2023 at depths ranging from approximately 10 to 12 mbg.
- Herb Lang Well Drilling Ltd. (HLWD) conducted a 6-hour duration pumping test on three newly installed O. Reg. 903 Water Supply Wells on the Subject Property on September 9, 10 and 11, 2024, respectively.
    - These wells are identified as A395881, A395882, and A395883 based on their Well Tag Numbers.
    - The pumping tests were conducted to determine production yield, maximum pumping rate, well recovery, groundwater quality, the potential for interference with existing neighbouring groundwater taking activities, and on-site interference post-development.
- Two groundwater samples were collected from each of the three newly installed (2024) O. Reg. 903 Water Supply Wells during the pumping tests (at the 1-hour and 6-hour pumping test intervals) and submitted to SGS for analysis of select physical, chemical, and biological parameters for comparison to the Ontario Drinking Water Quality Standards (ODWQS).
- During the pumping tests, real-time data logging technology (Solinst Level Loggers) was employed to record the drawdown and

groundwater level fluctuations, as well as the response to pumping in all the other on-site O. Reg. 903 Water Supply Wells.

    - In addition, groundwater level fluctuations were monitored using a Solinst water level tape in monitor wells BH107-22 and BH110-22.

- Groundwater modelling was used to evaluate the pumping test data was respect to groundwater availability and the potential for interference with on-site and neighbouring water users post-development.
- Evaluation of Wills' field investigative findings and preparation of this Addendum #1.

3.0 Shallow Groundwater Static Level

Table 1 summarizes the static shallow groundwater levels in monitor wells BH101-22, BH107-22 and BH110-22. Groundwater elevations for select monitor wells were inferred using the relative elevations provided in Cambium's November 2022 report titled *Geotechnical Investigation – Proposed Residential Development, 5868 County Road 65, Port Hope, ON* (Geotechnical Report) and are referenced to a local (assumed) benchmark.

Table 1 – Shallow Groundwater Static Level

Well ID	Installation year	Well depth (mbg)	Ground Elevation (masl)	October 5, 2022		December 5, 2023		September 9, 2024		September 27, 2024	
				GW level (mbg)	GW Elevation (masl)	GW level (mbg)	GW Elevation (masl)	GW level (mbg)	GW Elevation (masl)	GW level (mbg)	GW Elevation (masl)
BH101-22	2022	6.20	199.90	2.66	197.24	2.83	197.07	--	--	2.66	197.24
BH107-22	2022	5.94	200.40	2.54	197.86	2.85	197.55	2.33	198.07	2.48	197.92
BH110-22	2022	5.97	198.70	2.58	196.12	2.99	195.71	2.43	196.27	2.57	196.13

*mbg – metres below ground masl – metres above sea level, measured against an assumed datum (local benchmark)

Additional measurements during spring and at the end of summer are included in Wills' proposed Monitoring Program described in **Section 6**.

4.0 Nitrate Concentrations in Groundwater

Table 2 summarizes nitrate concentrations in groundwater samples collected on the Subject Property by Wills between October 2022 and September 2024. Certificates of Analysis provided by SGS for all the sampling events listed below are included in **Appendix C**.

Table 2 – Nitrate concentrations in groundwater on the subject Property

Well ID	Installation date (yyyy-mm-dd)	Well Depth (mbg)	Nitrate Concentrations (mg/L)			
			Oct. 2022	Oct. 2023	Dec. 2023	Sept. 2024
Surficial Aquifer (approximate depth 3-6 mbg)						
MW22-08	2022-09-23	3.00	4.35	--	--	--
BH101-22	2022-09-23	5.73	--	--	8.84	8.67
BH107-22	2022-09-23	5.79	0.68	--	0.188	0.17
BH110-22	2022-09-23	5.67	0.39	--	2.72	4.81
Intermediate Aquifer (approximate depth 10-12 mbg)						
A377795	2023-10-17	11.19	--	5.69*	--	1.18
A377796	2023-10-12	11.64	--	0.11*	--	0.09
A377799	2023-10-06	9.71	--	1.73*	--	1.82
Deep Overburden Aquifer (approximate depth 22-24 mbg)						
A395881	2024-08-08	23.77	--	--	--	<0.06*
Bedrock Aquifer (approximate depth to bedrock 43 mbg)						
A395882	2024-08-06	48.49	--	--	--	<0.06*
A395883	2024-07-31	48.50	--	--	--	<0.06*

*Average of concentrations measured in the 1-hr and 6-hr/7-hr samples collected during pumping tests.

Analytical results obtained during the pumping tests completed in 2023 showed the presence of nitrate in the intermediate aquifer (10 – 12 mbg). Assuming deeper aquifers would be less exposed to potential nitrate contamination from surface, Wills recommended installing deeper wells on the Subject Property to evaluate groundwater quality and availability at greater depths.

Based on the results obtained in September 2024, the deeper aquifers in which wells A395881, A395882 and A395883 were installed appear unaffected

by nitrate. The subsurface soil stratigraphy encountered during the installation of these wells is described in the MECP well records prepared by HLWD and included in **Appendix D**. All three well records mention the presence of an approximately 10 m thick layer of relatively compacted clayey material from approximately 12 to 22 mbg. The presence of this layer could mitigate the vertical migration of nitrate and explain the low nitrate concentrations in wells A395881, A395882 and A395883.

Additional sampling events of the surficial aquifer and intermediate aquifer are included in Wills' proposed Monitoring Program described in **Section 6**.

5.0 Pumping tests

HLWD installed three new O. Reg. 903 water supply wells (A395881, A395882 and A395883) on the Subject Property on August 8, August 6 and July 31, 2024, respectively. The location of these wells is shown on **Figure 1** and the corresponding MECP Well Records are included in **Appendix D**.

Wells A395882 and A395883 were installed in bedrock at a depth of approximately 49 mbg, and A395881 was installed in a gravel layer at a depth of approximately 24 mbg.

A 6-hour duration pumping test was conducted in each of the three wells on September 9 (A395882), September 10 (A395883) and September 11 (A395881), 2024. The pumping tests were conducted to confirm the performance of the wells over sustained pumping activity, evaluate the cumulative effect of future on-site pumping activities on groundwater availability, the potential for interference with onsite and neighboring groundwater taking activities, and to enable the collection of groundwater samples for quality analysis.

During each pumping test, drawdown and groundwater level fluctuations were monitored using:

- Solinst Level Loggers and confirmatory manual measurements in the newly installed water supply wells (A395881, A395882 and A395883) and the water supply wells installed in 2023 (A377795, A377796 and A377799).
- Manual measurements using a Solinst water level tape in monitor wells BH107-22 and BH110-22, installed by Cambium in 2022 at a depth of approximately 6 mbg.

5.1 A395882 Well Test

Following installation of the level loggers, pumping started at an initial rate of 18.9 liters per minute (L/min) (5 US gallons per minute [GPM]). Considering the rapid dewatering of the well observed while pumping at this rate, the pumping rate was decreased to 15.1 L/min (4 GPM US) after 12 minutes of pumping, then to 11.4 L/min (i.e. 3 GPM) after 23 minutes of pumping, and was maintained at that rate until completion of the test. Pumping was stopped after 420 minutes. Well details, including static water levels measured prior to the initiation of the pumping test, are summarized in **Table 3**.

Table 3 – A395882 Well Pumping Test Details

			Date:	**Sept. 9, 2024**
Well ID	**Well Depth (mbtop)**	**Well Depth (mbg)**	**Stick up (mag)**	**Static Water Level (mbg)**
Pumping Well				
A395882	49.10	48.49	0.61	9.54
Observation Wells				
A395883	49.10	48.50	0.60	9.80
A395881	24.40	23.77	0.63	10.43
A377795	11.70	11.19	0.51	2.94
A377796	12.24	11.64	0.60	2.72
A377799	10.32	9.71	0.61	2.81
BH107-22	6.76	5.79	0.97	2.33
BH110-22	6.58	5.67	0.91	2.43

mbtop – metres below top of pipe, **mbg** – metres below ground, **mag** – metres above ground

Hydrographs for the Pumping Well and Observation Wells are included in **Appendix E.** Pumping test details are summarized in **Table 4** below.

Table 4 – Pumping Test Summary Well A395882

	Pumping Rate (L/min)	Duration (minutes)	Max Drawdown (m)	Stabilization Depth (mbg)	Cumulated Volume (L)
Step Test	18.9	12	6.16	No stabilization	226.8
	15.1	11	8.80	No stabilization	392.9
Constant Rate	11.4	397	12.90	22.44*	4,918.7
Recovery Time			**% Recovery**		
50 minutes			90%		

*During the last 30 minutes of the test, groundwater level was still dropping at a relatively slow rate of 0.10 meters per hour (m/h).

The following observations are provided with respect to the A395882 pumping test results:

- The drawdown observed at the initial rate of 18.9 L/min suggests complete dewatering of the well could occur within 76 minutes of starting the pump. Similarly, the drawdown observed at the subsequent rate of 15.1 L/min suggests that complete dewatering of the well would occur before the end of the minimum test duration required by Guideline D-5-5. Therefore, the pumping rate for this test was decreased to 11.4 L/min (3 GPM) and the duration of the test was adjusted to 420 minutes to meet Guideline D-5-5 requirements. The rate of 11.4 L/min, applied during the majority of the test, is consistent with the recommended pumping rate provided by HLWD on the A395882 MECP record.
- 90% recovery was observed in the pumping well within 50 minutes of stopping the pump.
- Water levels monitored at all the observation wells showed no response to the pumping activity, except for well A395883.
- A maximum drawdown of 1.04 m was measured in observation well A395883 after 426 minutes of starting the pump in well A395882 (i.e. 6 minutes after pumping was stopped). Similar to what was observed in the pumping well, the groundwater level in observation well A395883 was still decreasing at a slow rate of approximately 0.04 m/h during the last 30 minutes of pumping.

Based on the results obtained during the pumping test in A395882:

- Interactions due to pumping between water supply wells installed in bedrock are anticipated.
- Significant interactions due to pumping between wells installed in bedrock and wells installed in the shallower on-site aquifers (i.e. 10-12 mbg and 22-24 mbg) are not anticipated.
- If proposed residential properties on the Subject Property are supplied by a bedrock well, secondary storage (i.e. cistern) will be required to compensate for the relatively low yields and meet peak water demand.

Potential interactions between pumping activities both on the Subject Property and neighboring properties are discussed further in **Section 5.4**.

5.2 A395883 Well Test

Following installation of the level loggers, pumping started at an initial rate of 18.9 L/min (5 GPM). Considering the rapid dewatering of the well observed while pumping at this rate, the pumping rate was decreased to 15.1 L/min (4 GPM) after 16 minutes of pumping, then to 11.4 L/min (3 GPM) after 29 minutes of pumping, and was maintained at that rate until completion of the test. Pumping was stopped after 413 minutes. Well details, including static water levels measured prior to the initiation of the pumping test, are summarized in **Table 5**.

Table 5 – A395883 Well Pumping Test Details

			Date:	**Sept. 10, 2024**
Well ID	**Well Depth (mbtop)**	**Well Depth (mbg)**	**Stick up (mag)**	**Static Water Level (mbg)**
Pumping Well				
A395883	49.10	48.50	0.60	9.81
Observation Wells				
A395882	49.10	48.49	0.61	9.89
A395881	24.40	23.77	0.63	10.44
A377795	11.70	11.19	0.51	2.95
A377796	12.24	11.64	0.60	2.73
A377799	10.32	9.71	0.61	2.82
BH107-22	6.76	5.79	0.97	2.33
BH110-22	6.58	5.67	0.91	2.44

mbtop – metres below top of pipe, **mbg** – metres below ground, **mag** – metres above ground

Hydrographs for the Pumping Well and Observation Wells are included in **Appendix E.** Pumping test details are summarized in **Table 6** below.

Table 6 – Pumping Test Summary Well A395883

	Pumping Rate (L/min)	Duration (minutes)	Max Drawdown (m)	Stabilization Depth (mbg)	Cumulated Volume (L)
Step Test	18.9	16	7.76	No stabilization	302.4
	15.1	13	8.63	No stabilization	498.7
Constant Rate	11.4	384	10.59	20.40*	4,876.3
Recovery Time			**% Recovery**		
145 minutes			90%		

* During the last 30 minutes of the test, groundwater level was still dropping at a relatively slow rate of 0.14 meters per hour (m/h).

The following observations are provided with respect to the A395882 pumping test results:

- The drawdown observed at the initial rate of 18.9 L/min suggests complete dewatering of the well would occur within 80 minutes of starting the pump. Similarly, the drawdown observed at the subsequent pumping rate of 15.1 L/min suggests complete dewatering of the well could occur before the end of the minimum test duration required by Guideline D-5-5. Therefore, the pumping rate for this test was decreased to 11.4 L/min (3 GPM) and the duration of the test was adjusted to 413 minutes to meet Guideline D-5-5 requirements. The rate of 11.4 L/min applied during the majority of the test is consistent with the recommended pumping rate provided by HLWD on the A395883 MECP record.
- 90% recovery was observed in the pumping well within 145 minutes of stopping the pump.
- Water levels monitored at all the observation wells showed no response to the pumping activity, except for A395882.
- A maximum drawdown of 0.94 m was measured in observation well A395882 after 416 minutes of starting the pump in A395883 (i.e. 3 minutes after pumping was stopped). Similarly to what was observed in the pumping well, the groundwater level in A395882 was still

decreasing at a slow rate of approximately 0.04 m/h during the last 30 minutes of pumping.

Based on the results obtained during the pumping test in A395883:

- Interactions due to pumping between water supply wells installed in bedrock are anticipated.
- Significant interactions due to pumping between wells installed in bedrock and wells installed in the shallower aquifers identified on the Subject Property (i.e. 10-12 mbg and 22-24 mbg) are not anticipated.
- If proposed residential properties on the Subject Property are supplied by a bedrock well, secondary storage (i.e. cistern) will be required to compensate for the relatively low yields and meet peak water demand.

Potential interactions between pumping activities both on the Subject Property and neighboring properties are evaluated further in **Section 5.4**.

5.3 A395881 Well Test

Following installation of the level loggers, pumping started at a rate of 94.6 L/min (25 GPM). This rate was maintained during the entirety of the 6-hour duration pumping test. Well details, including static water levels measured prior to the initiation of the pumping test, are summarized in **Table 7**.

Table 7 – A395881 Well Pumping Test Details

				Date: Sept. 11, 2024
Well ID	**Well Depth (mbtop)**	**Well Depth (mbg)**	**Stick up (mag)**	**Static Water Level (mbg)**
Pumping Well				
A395881	24.40	23.77	0.63	10.44
Observation Wells				
A395882	49.10	48.49	0.61	9.86
A395883	49.10	48.50	0.60	10.90
A377795	11.70	11.19	0.51	2.95
A377796	12.24	11.64	0.60	2.74
A377799	10.32	9.71	0.61	2.83
BH107-22	6.76	5.79	0.97	2.34
BH110-22	6.58	5.67	0.91	2.45

mbtop – metres below top of pipe, **mbg** – metres below ground, **mag** – metres above ground

Hydrographs for the Pumping Well and Observation Wells are included in **Appendix E.** Pumping test details are summarized in **Table 8** below.

Table 8 – Pumping Test Summary Well A395883

	Pumping Rate (L/min)	**Duration (minutes)**	**Max Drawdown (m)**	**Stabilization Depth (mbg)**	**Cumulated Volume (L)**
Constant Rate	94.6	360	0.48*	10.92	34,056.00
Recovery Time			**% Recovery**		
27.5 minutes			90%		

*Maximum drawdown was measured after 356 minutes of pumping. At the 6-hour mark, the measured drawdown was 0.465 m.

The following observations are provided with regards to the A395881 pumping test results:

- The pumping rate applied for the test represents more than 5 times the peak demand rate considered in MECP Guideline D-5-5 for a residential lot (18.75 L/min).
- Considering a pump installation depth of 20.7 mbg as recommended on the MECP record for A395881 (i.e. approximately 1.83 m above the top of the well's screen), the maximum drawdown observed in well A395881 during the test represents less than 5 % of the available drawdown.
- 90% recovery was observed in the pumping well within 28 minutes of stopping the pump.
- Water levels monitored at all the observation wells showed no response to the pumping activity in well A395881.

Based on the results obtained during the pumping test in well A395881:

- A395881 is more than capable of supplying sufficient groundwater supply to a single dwelling.
- Significant interactions between wells installed in the same stratigraphic unit as A395881 to supply individual dwellings are not anticipated.
- Significant interactions between wells installed in the same stratigraphic unit as A395881 and wells installed in the same stratigraphic units as the observation wells included in the test are not anticipated.

Potential interactions between pumping activities both on the Subject Property and neighboring properties are discussed further in **Section 5.4**.

5.4 Hydrogeological Modelling

The proposed development includes 38 residential lots, as shown on the Preliminary Draft Plan dated August 15, 2024, included in **Appendix B**.

Based on Guideline D-5-5, the drinking water requirement for a residential lot is 2.25 m^3/day. Results obtained during the pumping tests completed by Wills in October/November 2023 on wells A377795, A377796 and A377799, and in September 2024 on wells A395881, A395882 and A395883 suggest that each tested well can support the anticipated demand on individual residential lot, with supplementary storage systems proposed for wells constructed in bedrock.

Wills developed an eight-layer three-dimensional computer groundwater model (Model) to evaluate the capacity of the various on-site aquifers to

meet the water taking requirements of the proposed 38 residential lots, including the potential for interference between pumping activities both on-site and on neighboring properties.

Due to uncertainty of the lateral extent and water bearing capacity of the coarse gravel formation intercepted at A395881, the Model was used to evaluate several scenarios with respect to the anticipated installation depths of the future water supply wells on the Subject Property:

- Scenario 1: All 38 wells installed in bedrock, pumping for 6 hours in each well simultaneously, at a rate of:
    - Scenario 1.1: 18.75 L/min
    - Scenario 1.2: 11.36 L/min
- Scenario 2: 5 wells installed in a gravel layer similar to the one intercepted by A395881 (wells associated with lots 11 through 15 in the southeast corner of the Subject Property), and the remaining 33 wells installed in bedrock.
    - Scenario 2.1: pumping at 18.75 L/min for 6 hours in each of the 38 wells simultaneously
    - Scenario 2.2: pumping at 18.75 L/min in each of the 5 wells installed in the gravel layer, and at 11.36 L/min in each of the 33 wells installed in bedrock, for 6 hours, simultaneously
- Scenario 3: All 38 wells installed in the intermediate aquifer intercepted by A377795, A377796 and A377799, pumping for 6 hours at a rate of 18.75 L/min in each of the 38 wells simultaneously.

The pumping rates used in the scenarios described above are based on Wills' pumping tests results and the Guideline D-5-5 requirements for a minimum pumping rate of 18.75 L/min over a minimum duration of 6 hours, for an individual residential lot.

The approximate location of the 38 virtual wells used in the Model is shown on **Figure 2**. The following sections describe the Model used to evaluate Scenarios one through three and the results obtained for each scenario.

Elevations provided in the following sections are approximate as no survey of ground elevations was undertaken at the Subject Property. Elevations were inferred from a topographic map of the Subject Property. Ground surface at each of the three wells installed in 2024 (A395881, A395882 and A395883) was estimated to be 164.0 masl.

5.4.1 Aquifer Parameters

Wells A395882 and A395883 were installed in bedrock, as little available water was found in the alternating sediments of varying texture and hydraulic conductivity encountered above bedrock at these two locations. In wells A395882 and A395883, bedrock was encountered at a depth of 43.59 mbg (i.e. at an approximate elevation of 120.72 masl). A thin layer (approximately 0.3 metres [m]) of fractured bedrock and gravel was encountered on top of the bedrock and appeared to be water bearing. Pumping tests were carried out in both wells to determine aquifer parameters.

Well A395881 encountered a permeable water-bearing gravel layer at a depth of 22.3 mbg (i.e. elevation 141.75 masl). The gravel formation was drilled to 23.8 m mbg and a screen installed from 22.6 to 23.8 m mbg. The well was developed after drilling at a rate of 78.6 m^3/day (i.e. 54.6 L/min). Based on the MECP record for A395881, this gravel layer is at least 1.5 m thick. Observations by the driller during installation of the well suggest that the gravel formation may have extended at least 0.3 m below the installation depth and contained considerable water.

A lateral extension of the permeable gravel formation encountered at a depth of 22.3 mbg in well A395881 appeared to be present in well A395882 at a depth of 25.91 mbg, with a thickness of approximately 0.91 m. In well A395882 however, this formation contains more sand and did not yield any obvious groundwater. A cross section (A-A') showing the inferred extent of the gravel formation between wells A395881 and A395882 is included as **Figure 3**.

Similarly, the sand and gravel formation encountered in well A395883 at a depth of 21.95 mbg with a thickness of 5.48 m appears to be a lateral extension of the permeable gravel encountered in well A395881. However, similar to what was observed at well A395882, this formation at well A395883 did not yield any obvious groundwater. Well A395883 is approximately 85 m from well A395881.

Figure 1 shows the location of all O. Reg. 903 Water Supply Wells installed on the Subject Property as part of Wills' Study, as well as wells TW1, TW2 and TW3 installed in 2018 on a neighboring property to the south.

Information regarding wells TW1 through TW3 used in Wills' assessment is based on the report titled "*Groundwater Supply Assessment Report – Hope Concession 5, Part Lot 27 County Road No. 65*", prepared by Ted Rannie M.Sc., P. Geo in September 2018 (2018 Report). This report was prepared to support the development of a 20-lot subdivision on lands directly south of the Subject Property. On the MECP well records included in the 2018 Report, wells TW1, TW2 and TW3 are identified respectively with Well Tag Numbers A248943, A248945 and A248942.

Based on the review of the 2018 Report, it appears that the gravel layer encountered in well A395881 was also encountered in TW2 and TW1 with respective thicknesses of approximately 1 m (TW2) to 10 m (TW1). Similarly to the case between wells A395881 and A395883, no obvious groundwater was found in the gravel formation in TW1, according to the drilling contractor, while TW2 yielded relatively high volumes of water from the same formation. Well TW3 did not encounter this gravel layer during drilling. A cross section (B-B') showing the inferred extent of the gravel formation between wells A395883 and TW1 is included as **Figure 4**.

A plausible explanation for the existence of this permeable gravel formation is that it is a meltwater channel (tunnel channel) deposited during the waning of the last ice age. The gravel in well A395881 and TW2 may have been deposited in a high energy environment at the center of the channel and the fast-flowing water washed away all the fine materials, leaving coarse gravel. The gravel deposits in wells A395882, A395883 and TW1 represent the lower energy depositional sides of the channel with lower permeability.

The static groundwater levels measured in wells A395881, A395882 and A395883 range from approximately 9.5 to 10.5 mbg, and are significantly higher than where water was encountered during drilling. This indicates a confined or semi-confined aquifer. A semi-confined aquifer indicates that leakage from the overlying low permeability aquitard contributes to well yield. Data obtained during the pumping tests completed by Wills in September 2024 (drawdown data versus pumping rates) was analyzed to determine transmissivity "T" and storativity, "S" of the aquifers intersected by wells A395881, A395882 and A395883. Aquifer parameters were derived from curve matching using the Hantush method for leaky confined aquifers, which provided the best curve match. Therefore, results obtained during Will's Study suggest that the aquifers intersected by wells A395881, A395882 and A395883 on the Subject Property are semi-confined with leakage from above and below.

Table 9 shows the aquifer parameters derived from the method described above.

Table 9 – Derived Aquifer Parameters – Subject Property

Well ID	Pumping Rate (m^3/d)	Transmissivity (T) (m^2/d)	Storativity (S)	Maximum drawdown (m)	Test length (min)	Aquifer Thickness (m)	Hydraulic Conductivity (K) (m/d)
Sept 9, 2024 Test – Pumping Well (PW) = A395882							
A395882	16.35	1.49	9.54E-5	12.9	420	5.18	0.29
A395883	--	3.38	2.93E-05	1.04	420	1.22	2.77
A395881	--	no response	--	--	--	--	--
Sept 10, 2024 Test – PW = A395883							
A395883	16.35	0.95	0.045	10.59	413	1.22	7.5
A395882	--	3.11	4.1E-5	0.94	413	5.18	6.8
A395881	--	no response	--	--	--	--	--
September 11, 2024 Test – PW = A3395881							
A395881	136.3	196.6	0.035	0.465	360	1.52	129.3
A395883	--	no response	--	--	--	--	--
A395882	--	no response	--	--	--	--	--

The results show a transmissivity and hydraulic conductivity of 196.6 m^2/d and 129.3 m/d respectively for the coarse gravel layer encountered in well A395881. The fractured bedrock and bedrock encountered in A395883 and A395882 indicate a much lower transmissivity and hydraulic conductivity of 0.95 to 3.38 m^2/d and 0.29 to 7.5 m/day respectively. A high transmissivity and hydraulic conductivity imply a high water yield from wells. In contrast low transmissivity and hydraulic conductivity imply low water yields from wells.

5.4.2 Comparison with the Results Obtained on the Neighbouring Property

Data from the 2018 Report pertaining to the pumping tests completed in wells TW1 and TW3 on the neighboring property to the south was also analysed to derive aquifer parameters. The results of the analysis are summarized in **Table 10**. Data for the pumping well TW2 was not available.

Table 10 – Derived Aquifer Parameters – Property to the South

Well ID	Pumping Rate (m^3/d)	Transmissivity (T) (m^2/d)	Storativity (S)	Maximum drawdown (m)	Test length (min)	Aquifer Thickness (m)	Hydraulic Conductivity (K) (m/d)
PW = TW1*							
TW1	28.22	0.50	0.20	26.17	420	2.7	0.185
PW = TW2*							
TW2	163.58	no data	--	3.35	480	1.2	--
TW1	--	49.9	1.08E-6	0.20	480	2.7	18.5
TW3	--	1.53	8.4E-12	22.61	480	3.1	4.74
PW = TW3*							
TW3	109.0	0.42	7.31E-5	22.55	482	3.1	0.135
TW3**	--	5.36	--	--	--	3.1	1.73

*TW1 pumping in sand and gravel overlying bedrock; TW2 pumping from intermediate depth coarse gravel; TW3 pumping from limestone bedrock.

**Hvorslev Test 2018

On the Subject Property, pumping at 136.3 m^3/day in well A395881 produced a drawdown of 0.465 m after 6 hours in the coarse gravel layer. No response was detected during the test in any other O. Reg. 903 well installed on the Subject Property, including wells A395882 and A395883 installed in bedrock. Pumping in one of the bedrock wells influenced the other non-pumping observation well installed in bedrock, implying a fairly extensive hydraulic connection in the bedrock. However, pumping in the wells installed in bedrock had no effect on any of the other wells installed in the overburden.

It is likely that the hydraulic conductivity of the coarse gravel layer in the area of TW2 is similar to the hydraulic conductivity of the gravel layer encountered in well A395881. The pumping test in TW2 also produced a drawdown effect of 0.20 m in TW1, in the gravel layer just overlying bedrock 132.4 m away from TW2, and a drawdown of 22.6 m in TW3 in the bedrock 168.1 m away from TW2. This indicates some hydraulic connection between the bedrock, the gravel layer overlying bedrock and the shallower coarse gravel layer. The coarse gravel layer is separated from the bedrock and overlying gravel by 6.5 m of sandy silt in TW1. The coarse gravel layer does not occur in TW3.

5.4.3 Model Construction and Calibration

A detailed computer three-dimensional groundwater model was constructed based on the results of subsurface investigations and aquifer testing. Eight layers were input spanning the depth from surface (Layer 1) to the bottom of the deepest wells in the bedrock (Layer 8). A 1:10,000 topographic map was used as the basis of the model so that hydraulic boundaries (e.g. rivers and wetlands) at their respective elevations could be incorporated into the model as boundary conditions.

Aquifer parameters derived from the pumping tests completed in 2023 in wells A377795, A377796 and A377799 were input into the model in Layer 3 (sand). Aquifer parameters derived from the pumping tests completed in 2024 and described in this Addendum #1 were input into the model in Layer 5 (coarse gravel formation) and Layer 8 (bedrock).

Hydraulic conductivity was derived from transmissivity divided by the thickness of the aquifer. Storativities used in the model were those derived from the pumping tests in Layers 3, 5 and 8. Specific yield was set at 0.25 which is characteristic of the surficial material encountered. Hydraulic parameters for the low permeability layers (silt and clay) were estimated based on professional experience. Recharge was estimated at 213 mm/yr based on the water balance analysis (existing conditions) included in Wills' Revised Report.

Initially, a steady-state model was set up and calibrated to the static water level measured in wells A395881, A395882, A395883, TW1, TW2 and TW3. This model was then converted to a transient (time-based) model with two stress periods (pumping periods). The first stress period was run to produce quasi steady-state conditions to obtain simulated static water level elevations. The second stress period was for the length of the pumping tests, usually 6-hours (0.25 days). Each pumping test was simulated in the model and parameters adjusted until a reasonable match between simulated and observed drawdown was obtained. The Peaceman correction translates the simulated drawdown in the model cell to the simulated drawdown in the pumping well, which has a significantly smaller diameter than the model cell. The model predictions of Peaceman corrected simulated drawdowns are considered excellent compared to the observed drawdowns. The results of the calibration analysis described above are summarized in **Table 11**.

Table 11 – Simulated and Observed Drawdowns

Well ID*	Simulated Static Water Level (masl)	Simulated Pumping Level (masl)	Simulated Drawdown (m)	Peaceman Corrected Drawdown (m)	Observed Drawdown (m)
PW A395881	154.61	154.40	0.21	0.41	0.47
OBS A395882	154.64	154.22	0.42		0.94
PW A395883	154.49	150.48	4.0	10.59	9.27

*PW: Pumping Well; OBS: Observation Well

Well A395882 was an observation well (OBS A395882) during the pumping test on well A395883 (PW A395883). The match between simulated corrected drawdowns and observed drawdowns are considered very good.

This calibrated and verified (with pumping test data) model simulated drawdowns in the 38 proposed domestic wells based on the pumping scenarios described in **Section 5.4**. Results obtained are described in the following sections.

5.4.4 Scenario 1 - Evaluation

In Scenario 1, all 38 wells are installed in bedrock (Layer 8). The model was used to simulate drawdowns after pumping for 6 hours in each well simultaneously at a rate of:

- Scenario 1.1: 18.75 L/min
- Scenario 1.2: 11.36 L/min

The proposed 38 wells pumping in relatively close proximity will interfere with each other to some degree. The drawdown in each well (assuming the same pumping rate) will vary depending on the hydraulic conductivity of the bedrock and the proximity of each well to those around it. Thus, to determine the effect of all wells in the bedrock, two wells at the approximate centre of the well field were chosen to compare results of the simulations. These selected wells are designated in **Table 12** and subsequent tables by the model row (R) and column (C) in which the wells are located.

Simulated drawdowns and elevations obtained for Scenario 1.1 and Scenario 1.2 are summarized in **Table 12** and **Table 13** respectively.

Table 12 – Scenario 1.1 – Simulation Results

Well	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R60 C66	154.02	129.33	24.69	40.05	113.97	120.41
R63 C57	154.73	128.22	26.51	41.10	112.92	120.41

The results obtained for Scenario 1.1 suggest that pumping in all 38 wells installed in bedrock for 6 hours at a rate of 18.75 L/min would dewater the wells. Scenario 1.1 is therefore considered not feasible.

Table 13 – Scenario 1.2 – Simulation Results

Well	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R60 C66	153.99	139.83	14.16	23.47	130.52	120.41
R63 C57	154.70	138.16	16.54	25.60	129.10	120.41

The results obtained for Scenario 1.2 suggest that the bedrock is capable of sustaining a pumping rate of 11.36 L/min (16.36 m^3/d) for 6 hours each day without dewatering the wells and with minimum drawdown effects on adjacent properties as shown of **Figure 5**. Please note that the Peaceman corrected drawdown refers only to the drawdown in each well. Between wells the simulated drawdowns shown in **Table 13** and those shown in **Figure 5** will occur.

5.4.5 Scenario 2 – Evaluation

A simulation of all domestic wells pumping from the coarse gravel layer (model Layer 5) each at 18.75 L/min for 6 hours showed cumulative drawdowns of less than 1.0 m. Depending on the extent of this gravel layer and its water bearing capacity, the water needs of the Proposed Development could easily be met. However, as mentioned previously, the water bearing capacity of this layer varies from substantial water availability to no apparent water availability. The only way to confirm the existence and water bearing capacity of this gravel layer is to drill water wells to intercept it. It is likely that some of the wells drilled on the Subject Property will encounter this water bearing gravel layer. However, it is impossible to know how many of

the 38 wells will intercept this layer. Therefore, a relatively conservative Scenario 2 was tested.

In Scenario 2, the 5 wells associated with lots 11 through 15 in the southeast corner of the Subject Property are installed in Layer 5 (coarse gravel formation) while the remaining 33 wells are installed in Layer 8 (bedrock). The model was used to simulate drawdowns after pumping for 6 hours at a rate of:

- Scenario 2.1: 18.75 L/min in each of the 38 wells simultaneously.
- Scenario 2.2: 18.75 L/min in the 5 wells installed in Layer 5, and 11.36 L/min in the 33 wells installed in Layer 8, simultaneously.

Simulated drawdowns and elevations obtained for Scenario 2.1 are summarized in **Table 14** and **Table 15**. As drawdowns are slightly different in all the wells due to their spacing, the drawdowns for representative wells are given in each layer.

Table 14 – Scenario 2.1 – Simulation Results – Layer 8

Groundwater Model Well ID	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R60 C66	153.99	130.68	23.31	32.62	121.37	120.41
R63 C57	154.71	128.87	25.84	34.90	119.81	120.41

Table 15 – Scenario 2.1 – Simulation Results – Layer 5

Groundwater Model Well ID	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R68 C67	154.66	154.61	0.05	0.09	154.57	120.41
R74 C72	154.52	154.48	0.04	0.08	154.44	120.41

Pumping in 5 wells installed in Layer 5 has almost negligible effect on groundwater levels. However, the simulation of pumping 33 domestic wells at 18.75 L/min for 6 hours from the bedrock resulted in the water level in the bedrock wells declining to the level of the bedrock surface. It would be prudent to assume a factor of safety and aim at maintaining a pumping

water level of at least 5 metres above the bedrock surface. Therefore, based on the results of the simulation, scenario 2.1 is not sustainable.

Simulated drawdowns and elevations obtained for Scenario 2.2 are summarized in **Table 16** and **Table 17**.

Table 16 – Scenario 2.2 – Simulation Results – Layer 8

Groundwater Model Well ID	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R60 C66	153.99	138.71	15.28	24.59	129.40	120.41
R63 C57	154.70	138.68	16.02	25.08	129.62	120.41

Table 17 – Scenario 2.2 – Simulation Results – Layer 5

Groundwater Model Well ID	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R68 C67	154.66	154.60	0.05	0.08	154.58	120.41
R74 C72	154.52	154.48	0.04	0.06	154.46	120.41

The results of the simulation suggest that Scenario 2.2 is sustainable.

5.4.6 Scenario 3 – Evaluation

In Scenario 3, all 38 wells installed in the model Layer 3 which corresponds to the intermediate aquifer intercepted by wells A377795, A377796 and A377799. Drawdowns and elevations were simulated after pumping at a rate of 18.75 L/min in each of the 38 wells simultaneously, for 6 hours.

Simulated drawdowns and elevations obtained for Scenario 3 are summarized in **Table 18.**

Table 8 – Scenario 3 – Simulation Results – Layer 3

Groundwater Model Well ID	Simulated			Peaceman Corrected		Estimated Bedrock Elevation (masl)
	Static Water Level (masl)	Pumping Level (masl)	Drawdown (m)	Drawdown (m)	Water Level Elevation (masl)	
R60 C66	159.66	159.55	0.11	0.36	159.30	120.41
R63 C57	161.79	161.69	0.10	0.36	161.43	120.41

In Scenario 3, drawdown in the wells is less than 0.5 m and negligible between wells. The results of the simulation suggest that Scenario 3 is feasible.

5.5 Groundwater Quality

Two groundwater samples were collected from the pumping well during each pumping test in September 2024. One sample was collected 1-hour into the pumping test and the second sample was collected at the 6-hour or 7-hour mark, prior to shutting off the pump. Samples were collected in dedicated sample bottles, kept in a cooler with ice and transported to SGS immediately following completion of the field activities. Analytical results were compared to the ODWQS. The Certificates of Analysis provided by SGS are included in **Appendix C**.

The quality of the groundwater samples collected during the pumping tests complies with most ODWQS, except for the following:

A395881 Well

- Turbidity in both the 1-hour and 6-hour samples
- Total Coliform in both the 1-hour and 6-hour samples (1 cfu/100 ml)

Exceedances of the ODWQS Aesthetic Objectives or Operational Guidelines were measured for the following non-health related parameters:

- Colour in the 6-hour sample
- Hardness and Iron in both the 1-hour and 6-hour samples

A395882 Well

- Turbidity, Sodium and Total Coliform in both the 1-hour and 7-hour samples
- *E. coli* in the 1-hour sample

Exceedances of the ODWQS Aesthetic Objectives or Operational Guidelines were measured for the following non-health related parameters:

- Colour, Hardness, Iron and Chloride in both the 1-hour and 7-hour samples
- Manganese in the 1-hour sample

A395883 Well

- Turbidity, Sodium and Total Coliform in both the 1-hour and 7-hour samples
- *E. coli* in the 1-hour sample

Exceedances of Aesthetic Objectives or Operational Guidelines were measured for the following non-health related parameters:

- Colour, Hardness, Iron, Manganese and Chloride in both the 1-hour and 7-hour samples
- Aluminum in the 1-hour sample

Sources for Total Coliform and *E. coli* can be multiple and not one specific source can be identified with certainty based on available information. However, the wells are installed on recently farmed land. Animal manure may have been used during the agricultural operations, which may have caused the contamination of the samples at surface during sampling or during well construction.

Water treatment systems for the Proposed Development should consider the exceedances noted in this section. Commercial filtration and disinfection methods may be used to effectively remove metals and inactivate any harmful protozoa, bacteria and viruses, and commercial water softening may be used to treat elevated levels of hardness.

It is noted that nitrate was not detected in any of the samples collected from wells A395881, A395882 and A395883.

6.0 Conclusions and Recommendations

Based on the results of Wills' additional investigations described in this Addendum #1, the following conclusions are provided:

- Shallow groundwater level measurements recorded during the late summer 2024 showed little difference compared to the previous measurements in October 2022 and December 2023. Additional

measurements in the spring would allow for a better evaluation of groundwater level fluctuations.

- Nitrate concentrations measured in September 2024 in the monitor wells installed by Cambium in 2022 and the three water supply wells installed in 2023 showed little difference with the concentrations measured in October and December 2023, except for the following:
    - The concentration measured in well BH110-22, installed at approximately 6 mbg in the southeast portion of the Subject Property, which increased from 2.72 mg/L in December 2023 to 4.81 mg/L in September 2024.
    - The concentration measured in well A377795, installed at 11.19 mbg in the central portion of the Subject Property, which decreased from 5.69 mg/L (average of 5.16 and 6.21 mg/L) in October 2023 to 1.18 mg/L in September 2024.
- Nitrate was not detected in any of the three O. Reg. 903 Water Supply Wells installed in 2024 on the Subject Property. These results suggest that nitrate does not migrate vertically to the deeper aquifers identified on the Subject Property (i.e. approximately 22-24 mbg and 47-49 mbg).
- The results of the pumping tests and hydrogeological modelling completed by Wills and described in this Addendum #1 suggest the following:
    - Installing any number of the proposed 38 domestic wells either in the same aquifer as the O. Reg. 903 wells installed in 2023 at a depth of approximately 10-12 mbg, or in the same coarse gravel formation intercepted by well A395881 installed in 2024 at a depth of approximately 22-24 mbg, would meet the need of the proposed development without secondary storage systems. In this configuration, Wills does not anticipate significant interactions between pumping activities on the Subject Property nor with neighboring pumping activities. It is noted that the coarse gravel formation intercepted by well A395881 is not present and/or suitable for water supply (quantity wise) everywhere on the Subject Property.
    - Safe yields for the two O. Reg. 903 Water Supply Wells installed in bedrock on the Subject Property were estimated to be 11.36 L/min (3 GPM) or lower. This implies that residential lots equipped with a well installed in bedrock would require secondary storage

to meet water demand at peak hour. Bedrock wells can be significantly variable in yield depending on whether the well has intercepted a network of water bearing fractures or not.

- Although the results of groundwater modelling suggest that the configuration where all proposed 38 wells are installed in bedrock and pumped at a reduced rate of 11.36 L/min (Scenario 1.2) is feasible, the level of interactions between pumping activities on the Subject Property is significant. Where possible, shallower water bearing formations with acceptable water quality should be the preferred option to install future drinking water wells on the Subject Property.

- The lateral extent of the water-bearing coarse gravel formation intercepted by well A395881 is unknown. Results obtained during Wills' investigations, including the review of available information about wells TW1, TW2 and TW3 installed on the property to the south, suggest that:
  - This formation is present and its water bearing capacity is suitable for drinking water supply on the portion of the Subject Property located south of well A395881.
  - This formation is either not present or its water bearing capacity is not suitable for drinking water supply anywhere else on the Subject Property.
- Assumptions above with respect to the lateral extension of the water-bearing coarse gravel formation can only be verified through exploratory drilling.
- Water treatment systems for the Proposed Development should consider the exceedances noted in **Section 5.5**.

Based on the above and satisfy the outstanding peer review comments, Wills recommends that a Monitoring Program be implemented on the Subject Property, to include:

- Prior to proposed development construction:
  - Install seven monitor wells on the Subject Property, to a depth of 6 mbg, including five wells along the downgradient limit of the Subject Property and two wells along the upgradient limit to the north and west. Proposed locations for these seven monitor wells are shown on **Figure 6**.
  - Record static groundwater levels in all seven monitor wells on a bi-annual basis, during the spring and summer.

  - Collect groundwater samples in the seven newly installed monitor wells and the three existing MECP Water Supply Wells (A377795, A377796 and A377799) twice a year during spring and summer, for analysis of the following parameters on all samples: Nitrite, Nitrate, Organic Nitrogen, Total Coliform and E. Coli.
  - Preparation of technical memo summarizing the pre-development results on an annual basis.
- During construction of the proposed development and after, as required:
  - Collect groundwater samples in the seven newly installed monitor wells and the three existing MECP Water Supply Wells (A377795, A377796 and A377799) twice a year during spring and summer, for a period of three years. This timeframe may be extended pending the duration of construction and results obtained. This includes the recording of groundwater static levels in all wells.
  - Following each sampling event, submit all ten groundwater samples to an accredited laboratory of for analysis of the following parameters: Nitrite, Nitrate, Organic Nitrogen, Total Coliform and *E. coli*.
  - Prepare technical memos summarizing the results obtained during the groundwater monitoring activities, on an annual basis. These memos should include an analysis of the evolution of groundwater quality and appropriate recommendations with respect to the renewal of the 3-year monitoring period and any mitigation measures required.

Should the construction of the proposed development commence in the spring of 2025, Wills recommends that:

- The new monitor wells be installed during the winter 2024/2025.
- Pre-development groundwater levels be recorded, and groundwater samples collected and analysed during the winter 2024/2025 and early spring 2025.

We trust that this information is suitable for your purposes at this time. Please contact our office if you have any questions or require clarification.

Respectfully submitted,

Ralf Bolvin, P.Eng., QP_{ESA}
Project Engineer

David Ruttan, P.Eng.
Senior Hydrogeologist/ Senior Computer Modeller

Ian Ames, P.Geo.
Group Leader, Environmental Management and Monitoring
RB/DR/IA/jh

FIGURES

Legend

- Subject Property Limits
- Water Supply Wells Installed in 2023
- Water Supply Wells Installed in 2024
- Water Supply Wells Installed in 2018 on the Property to the South
- Wells installed by Cambium in 2022 (6 m deep)
- Cross Section

Source(s):
- Google Earth
- Groundwater Supply Assessment Report – Hope Concession 5, Part Lot 27 County Road No. 65, prepared by Ted Rannie M.Sc., P. Geo in September 2018
- Geotechnical Investigation – Proposed Residential Development, 5868 County Road 65, Port Hope, ON - Cambium Inc, November 2022

GRAPHIC SCALE
0 30 60 120 180 m

Existing Wells Locations

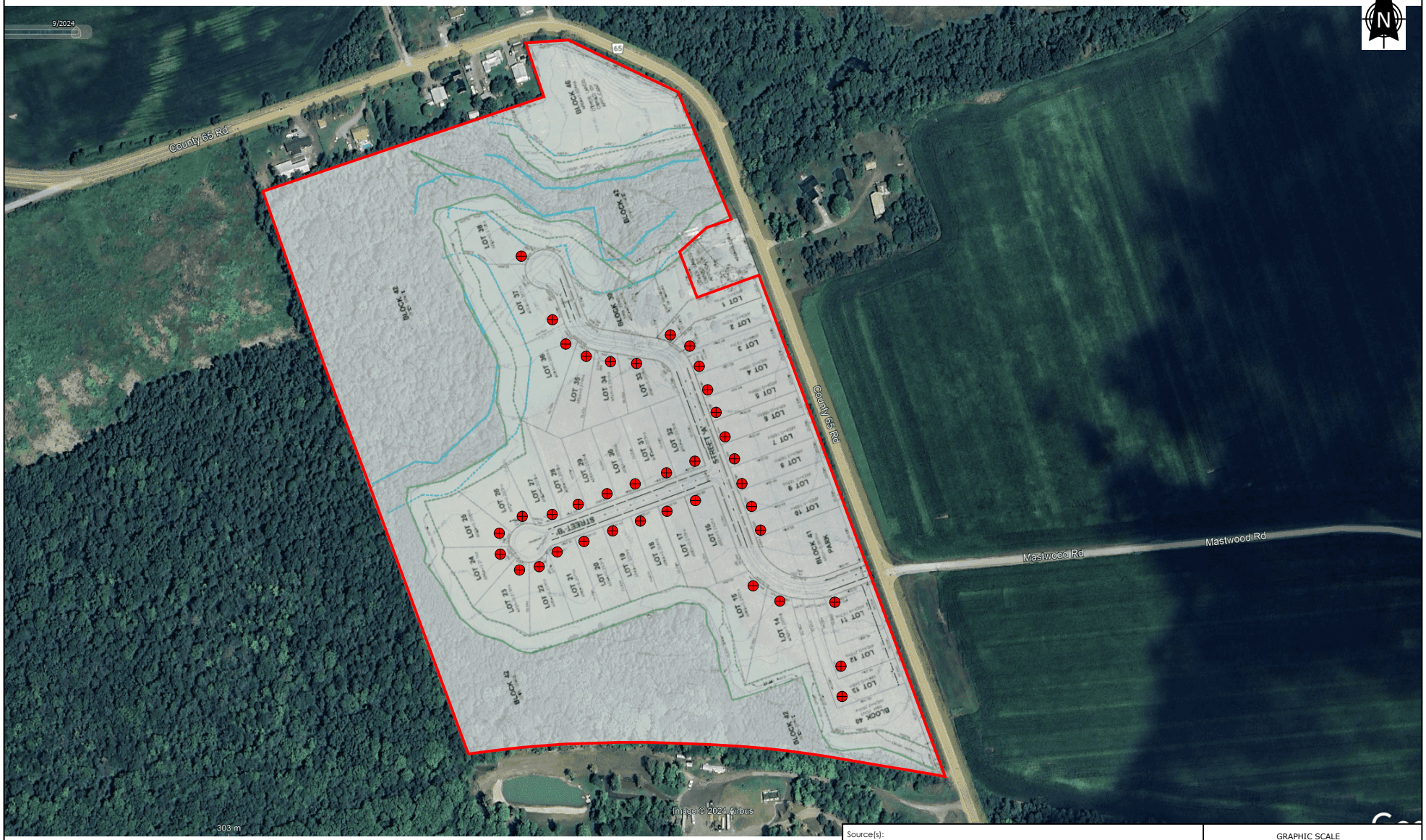
Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: 1:6 000 on 8.5"x11" (US Letter)
Checked: I. AMES	Date: November 14, 2024
Project No.: 11056	Drawing file No.: Figure 1



Source(s):
- Google Earth
- Preliminary Draft Plan, D.G. Biddle & Associates Limited, August 15, 2024

GRAPHIC SCALE
0 25 50 100 150 m

Legend

- Subject Property Limits
- Domestic Water Supply Wells (38 Wells)

Hydrogeological Modelling
Domestic Wells Locations

Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: 1:5 000 on 8.5"x11" (US Letter)
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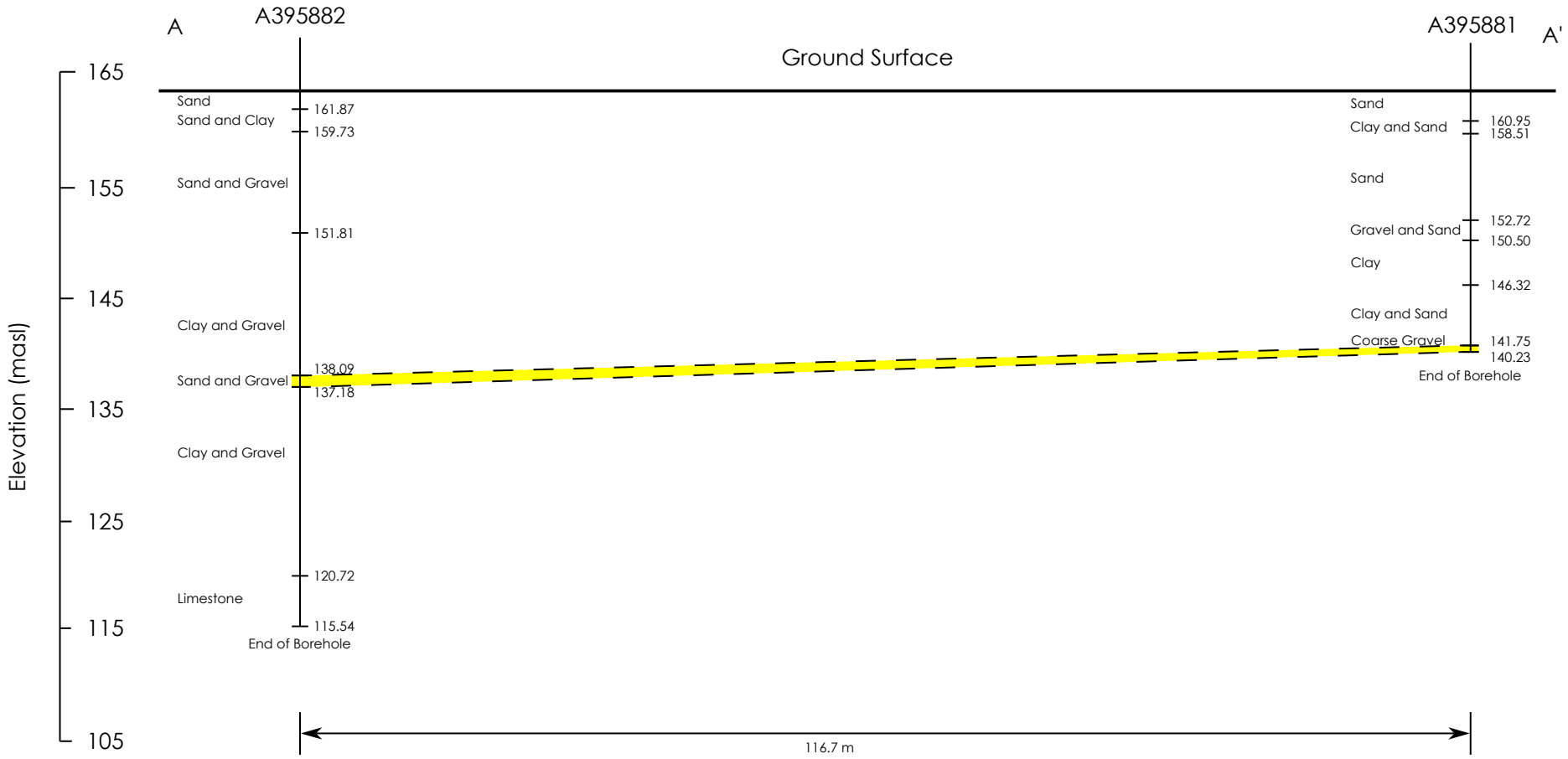
Project No.: 11056	Drawing file No.: Figure 2



Legend

Gravel Formation

Cross Section A-A'

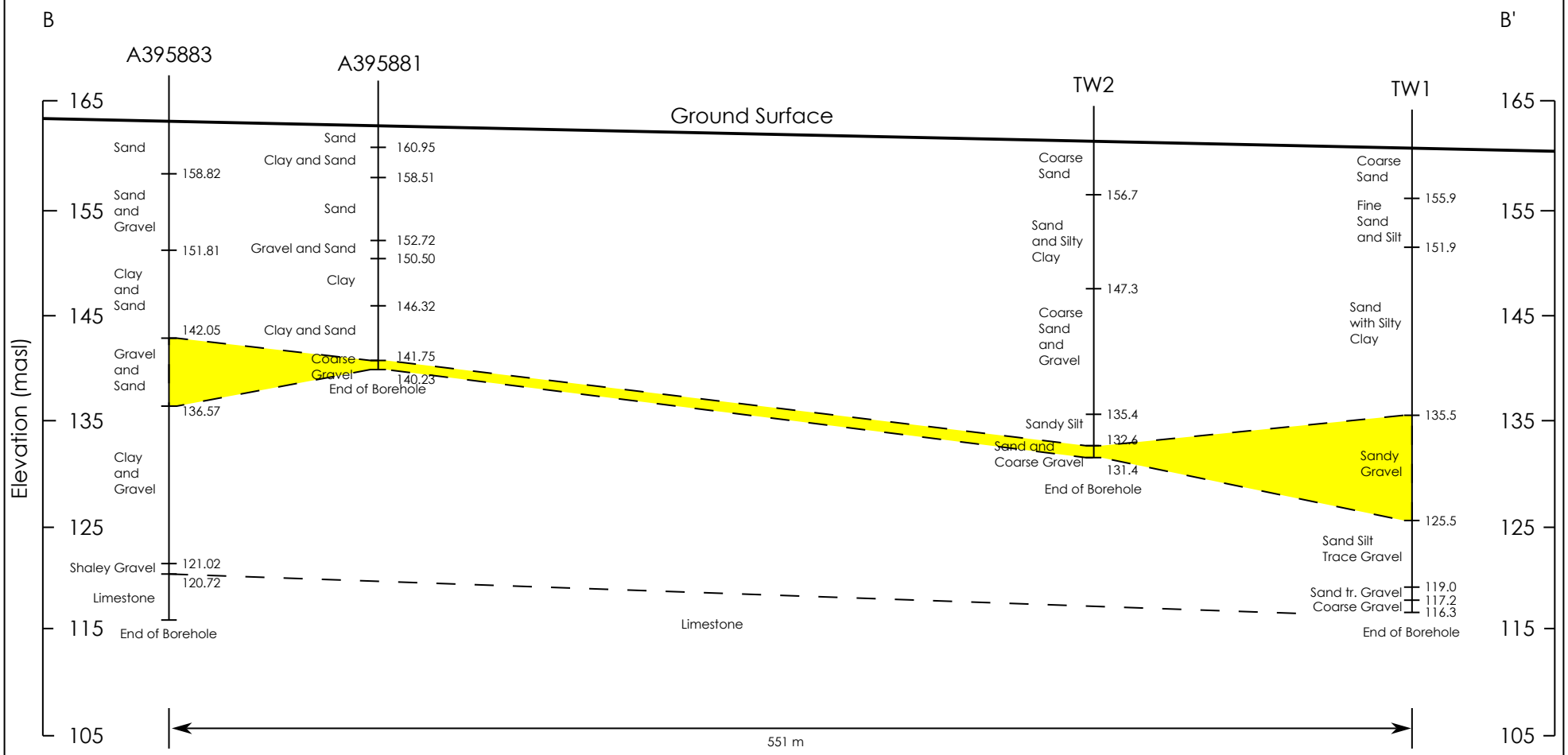
Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: See graphic scale
Checked: I. AMES	Date: November 14, 2024
Project No.: 11056	Drawing file No.: Figure 3



Legend

Gravel Formation

Cross Section B-B'

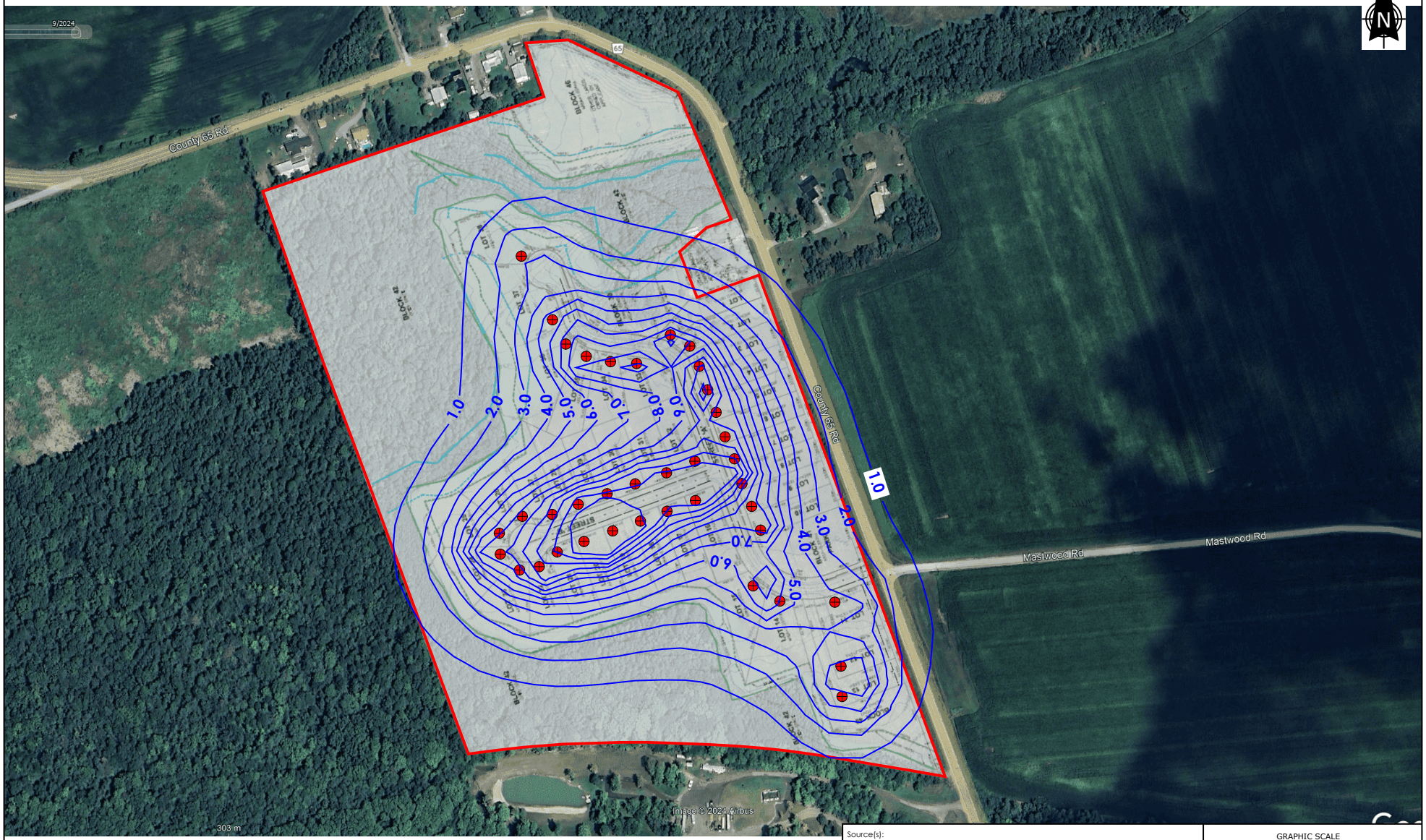
Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: See graphic scale
Checked: I. AMES	Date: November 14, 2024
Project No.: 11056	Drawing file No.: Figure 4



Source(s):
- Google Earth
- Preliminary Draft Plan, D.G. Biddle & Associates Limited, August 15, 2024

GRAPHIC SCALE
0 25 50 100 150 m

Legend
- Subject Property Limits
- Domestic Water Supply Wells (38 Wells)
- –1.0– Simulated Drawdown (meters)

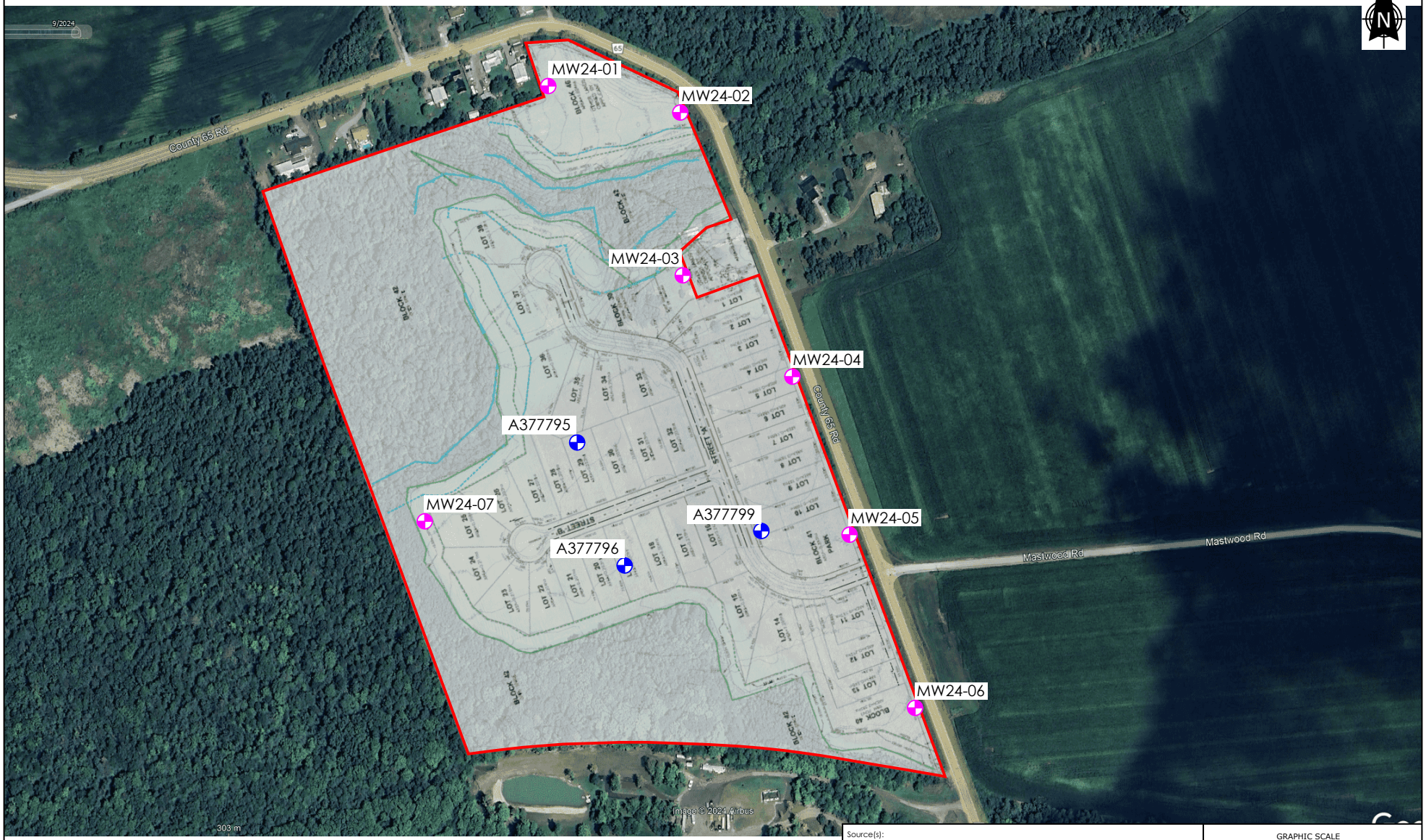
Hydrogeological Modelling
Simulated Drawdown - Scenario 1.2

Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: 1:5 000 on 8.5"x11" (US Letter)
Checked: I. AMES	Date: November 14, 2024
Project No.: 11056	Drawing file No.: Figure 5



Source(s):
- Google Earth
- Preliminary Draft Plan, D.G. Biddle & Associates Limited, August 15, 2024

GRAPHIC SCALE
0 25 50 100 150 m

Legend

- Subject Property Limits
- Water Supply Wells Installed in 2023
- Proposed New Wells (6 m deep)

Groundwater Monitoring Program
Proposed Monitor wells

Part of lot 27, Concession 5
Municipality of Port Hope
County of Northumberland

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Drawn by: R. BOLVIN	Scale: 1:5 000 on 8.5"x11" (US Letter)
Checked: I. AMES	Date: November 14, 2024
Project No.: 11056	Drawing file No.: Figure 6

Appendix A

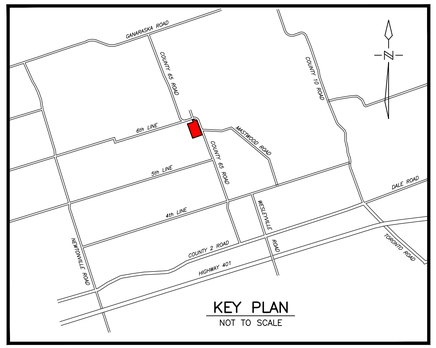
Comment Response Matrix as of September 24, 2024

Hydrogeological Study Report
Comment Response Matrix as of September 24, 2024

Comment #	Section	GRCA Comments – May 31, 2023 (Combined Agency Comments)	Wills' Response	BluMetric Reply - May 17, 2024	Wills' Response - August 29, 2024
3		The hazard limits associated with the valley slope have not been established. GRCA requires that the top of bank is identified on site and that all development (including infrastructure, filling and grading) is appropriately setback from the top of bank or long term stable slope line (whichever is greater). In this instance, a minimum 6m setback is requested. Please revise the plan accordingly. It is recommended that a site visit be undertaken with GRCA staff to identify the top of bank.	See Draft Erosion Hazard Assessment Letter Report	No Comment.	
Comment #	**Section**	**Blu Metric Environmental Comments – June 25, 2023**	**Wills' Response**	**BluMetric Reply - May 17, 2024**	**Wills' Response - Agust 29, 2024**
1	Septic System Evaluation	The Wills' evaluation indicates that the proposed 59 lots would result in unacceptable nitrate concentrations at the down gradient property boundary. BluMetric agrees that reducing the number of lots would allow the off-site nitrate discharge concentrations to be met. Wills' also suggests that advanced septic treatment system on each lot would allow for the proposed 59 lots and acceptable nitrate concentrations at the property boundary. Although this may be technically correct, the Municipality of Port Hope does not accept the use of these type of systems for individual lots. BluMetric agrees with the Municipality since continued effective use of the system is left to the responsibility of the individual lot owner. This is not always done by the owners and is also difficult for the Municipality to enforce.	The number of lots has been reduced to 40 residential lots as shown on the Preliminary Draft Plan prepared by D.G. Biddle & Associates Limited on February 21, 2024, included in Appendix A-2 of Wills' Hydrogeological Study Report. With 40 lots, the objective of 10.0 mg/L is met at the property boundary. There is no need for advanced treatment, as discussed in Section 6 of Wills Hydrogeological Study Report.	Noted.	
2	Septic System Evaluation	The Wills' evaluation suggests utilizing the middle of the percolation time range. This may be appropriate for medium to well drained soils, but the middle portion of the site has a lower percolation rate (estimated by Wills at >50 min/cm). Installing septic systems in this type of soil should include the use of raised tile beds and a re-evaluation of minimum set back distances.	The recommendation has been added in Section 4.1 and in the Conclusions.	The use of raised beds and the re-evaluation of minimum set-backs distances should be completed by the consultant on a lot-by-lot basis or at least made a condition of approval.	Noted and agreed with making this a condition of approval.
3	Septic System Evaluation	The Wills' nitrate calculations assume a background nitrate value of 0.53 mg/L based on the average collected from BH107-22 and BH110-22. Both wells are completed at depths of 2.6 to 6.1 m below ground surface. BH107-22 was completed in both shallow sand and clayey silt and BH110-22 in sand. The overall depths of the wells may not be representative of shallow nitrate concentrations and the discharge depths for the septic systems. Wills disregarded the nitrate concentration of 4.36 mg/L from the shallow monitor MW22-08 since it was likely the result of agricultural activities over many years. BluMetric agrees with the statement and the concentration observed is in keeping with the average background nitrate concentration of 3.3 mg/L determined by Wills for the proposed development south of the site at Wienfield Subdivision. For that assessment, Wills used this concentration in their nitrate calculations, but it is not known why it was not used for the present proposed development. Elevated nitrate concentrations in the shallow groundwater cannot be dismissed because of the previous land use and no prediction has been provided of nitrate reduction in former agricultural fields without any further nitrate loading. The higher values observed on the two sites is very common throughout southern Ontario in agricultural settings. Further assessment of background nitrate concentrations and calculations will be required.	Additionnal water samples were collected from wells BH101-22, BH107-22 and BH110-22 in December 2023. The new assessment is based on the average of all six nitrate concentrations measured in wells MW22-08, BH101-22, BH107-22 and BH110-22 in October 2022 and December 2023 (i.e. 2.86 mg/l), including the one previously dismissed. Section 6 has been updated to include Wills expectation with respect to nitrate levels after development.	There is a discrepancy in the nitrate calculations in the report. Based on the values in Table 15, the total nitrate loading would be 2,053,115 mg/day, resulting in a nitrate concentration at the property boundary of 10.35 mg/L. The Water Balance Assessment in Appendix J shows a total nitrate loading of 1,983,534 mg/day resulting in a nitrate concentration of 10.0 mg/L at the property boundary. The discrepancy needs to be corrected. Even if the calculations in Appendix J are correct, the nitrate concentration at the property boundary is at the maximum concentration allowed. Therefore, a monitoring program of groundwater quality for at least nitrate (but other health related parameters should also be included) should be conducted for a minimum of 3 years post-development. At that time, a re-evaluation of the need for continued monitoring could be completed.	Table 15 has been corrected to be consistent with The Water Balance Assessment included in Appendix J. Agreed regarding the minimum 3-year post development monitoring program. A monitoring program will be developed by Wills and submitted to the Municiaplity for approval in Fall 2024. Wills understands the the peer reviewer agrees to making the monitoring requirements a condition of approval.
4	Septic System Evaluation	BluMetric agrees with Wills' conclusion that shallow groundwater depth could affect the design of septic systems on individual lots. Groundwater depths were only measured during the fall of 2021 and 2022. Additional groundwater monitoring is required to determine any seasonality in groundwater elevations.	Another round of groundwater level measurements in the three on-site monitor wells installed by Cambium Inc is scheduled for the spring 2024, as stated in Section 3.3.1.	Thre rounds of water levels, two in the fall and one in the spring (2024) is not sufficient to determine seasonal trends. An ongoing water level monitoring program (spring and summer) should be conducted pre-development and for a minimum of 3 years post-development. At that time, a re-evaluation of the need for continued monitoring could be completed.	Noted and agreed. Wills understands that the peer reviewer agrees with making the water level monitoring a condition of approval.
5	Septic System Evaluation	BluMetric agrees with the Wills' Environmental Impact Study that concludes that site grading and drainage features should be designed to ensure full function of the wetland feature at the north end of the property. Enhanced infiltration using soak away pits on lots adjacent to the wetlands may be adequate to achieve this, although this may not be sufficient given the surface water and shallow groundwater flow to the southwest and away from the wetlands. There should be an evaluation on whether the septic systems in the northwest corner of the property (Lots 56-59) will have any detrimental impacts to the functionality of the wetlands. Nitrate loadings entering the wetlands would be expected to be above 10 mg/L given short flow path between the leaching beds and the wetlands.	Lots 56-59 have been removed from the development. All developed areas have been moved outside of the 30 m setback from wetlands.	Agree.	
6	Water Supply Potential	Wills' opines that the conditions at Wienfield Subdivision extend onto the 5868 property and they therefore conclude it is likely that adequate water supply can be met for individual lots. Further work is required to come to this conclusion. Wills' does, however, acknowledge that a full investigation on the 5868 property, including the drilling of water supply wells and aquifer testing, is required to ensure the required volumes and water quality for individual wells, and indicates that this is scheduled to be completed in 2023. We agree with this recommendation and the completion of this work is paramount before any draft plan approval for the development is provided. The 2023 investigation proposed by Wills should include drilling at least three water supply wells, preferably completed with the deeper overburden units. The wells must be screened as opposed to the open-bottomed wells as installed at the Wienfield Subdivision. Each well should be pumped for a minimum of 6 hours while measuring water levels in the other test wells, all available monitoring wells and private wells, if available. Normal geochemical testing during the test will be required.	The Hydrogeological Study Report has been updated to include the results of: - Three pumping tests completed on three O. Reg. 903 water wells installed on the Property in 2023. - Hydrogeological modelling based on the results of the pumping tests.	The testing completed indicates that the overburden has the capabilities of producing sufficient water for each of the 40 lots. Total coliform was detected in one well in the 6-hr sample along with organic nitrogen in both the 1-hr and 6-hr. The nitrate concentrations were 5.16 mg/L and 6.21 mg/L. Another well had both the 1-hr and 6-hr samples with total coliform and nitrate concetrations of 1.84 mg/L and 1.62 mg/L. These results are not adressed in the report other than indicating water treatment systems should be considered. This is not sufficient. How did the coliform, organic nitrogen and relative high value of nitrate (in one well) get into the wells? Is it indicative of near surface recharge and what is the source of the contaminants? This also affect the answer to Point 8 below. An ongoing monitoring program groundwater quality for a minimum of 3 years post development is recommended. At that time, a re-evaluation of the need for continued monitoring could be completed. The monitoring program should be a condition of approval.	The report states "[…] that nitrate concentrations for all tested samples collected from wells A377795, A377796 and A377799 met the ODWQS". See answer to comment 8 for further analysis of this point. The presence of Total Coliform in the samples is acknowledged in the report. Sources for coliform can be multiple, and not one specific source can be identified with certainty based on available information. However, the wells are installed on currently farmed land which was covered in crops when the pumping tests were completed. Animal manure may have been used in this field which may have caused the contamination of the samples during sampling or during well construction. Similarly, fertilizer high in nitrogen may have been used, which could explain the presence of Organic Nitrogen. This assessment has been included in section 3.5.6 of the report. Wills agrees with the recommendation to monitor groundwater quality and implement a minimum 3-year post development monitoring program. In addition, Wills has begun investigating the deeper aquifer on the Subject Property (3 deeper drilled wells intercepting either a deeper gravel layer or at the bedrock-overburden interface) to determine whether sufficient groundwater quantity and quality (e.g reduced nitrates) is available to support the proposed development. The results of this investigation are anticipated to be completed in late Fall 2024, and may mitigate the need for the 3-year post development monitoring program. Wills understands that the peer reviewer agrees with making the post development monitoring (if required) a condition of approval.
7	Water Supply Potential	Potential well interference between wells on the site as wells as adjacent private wells must be evaluated. Given the potentially 20 lots to the south, 19 lots to the west and up to 59 lots on the site, the potential cumulative interference effects must be assessed quantitatively using field data derived from pumping tests. The use of up to 88 wells in a relatively small area must be fully evaluated to ensure that all wells will always be able meet the peak water demands. There is not much data on vertical gradients or any potential connection between the deeper overburden aquifer and the shallow aquifer.	The impact on neighbouring pumping activities is adressed in the updated report, on the basis of the hydrogeological modelling completed.	The report indicates there would be minimal effects from the pumping of the wells at the proposed development on the Village of Osaca wells and a slightly greater effect on the subdivision to the south. For clarity purposes, would these effects be consistent with those shown in Figures 5 and 6? The figures indicate <0.1 m for the wells in Osaca and 0.1 m to 0.7 m for the subdivision.	Simulated cumulative drawdowns are consistent with drawdowns shown in Figure 5 and Figure 6, as indicated in section 5.3.5 of the report. See Conclusion for clarification on anticipated impact on the Village of Osaca and the subdivision to the south.
8	Water Supply Potential	The calculations should also determine if the predicted cumulative impacts could draw the shallow groundwater that will be impacted with nitrates deeper in the overburden and affect long term deeper aquifer groundwater quality	The Hydrogeological Study Report has been updated to include the results of: - Three pumping tests completed on three O. Reg. 903 water wells installed on the Property in 2023. - Hydrogeological modelling based on the results of the pumping tests.	The Hydrogeological Study Report does not specifically state that the pumping of the 40 wells would not draw nitrates and other contaminants from the on-site septic systems onto the wells. The data presented appears to support this conclusion, but should be explicitly stated by the consultant. However, if this is the case, then how is point 6 above explained.	Based on the availbale data, it cannot be excluded that pumping in the 40 wells may draw contaminants from the septic systems to the water supply wells. Additional information on this topic is provided in Wills' accompanying letter. Wills' assessment relies in part on the 2018 Report mentioned in section 5.2 of Wills' Hydrogeological Study Report. Wills' suggests: - Monitor groudwater quality to confirm the reduction in nitrate concentration following the cessation of agricultural activities on the property. - Pump test and sample the three new deep wells on the Subject Property and update the groundwater model to confirm if the deeper aquifer is suitable to support the proposed development.
Comment #	**Section**	**Municipality of Port Hope Comments – May 25, 2022**	**Wills' Response**	**BluMetric Reply - May 17, 2024**	**Wills' Response - August 29, 2024**
1		- Detailed hydrogeological and soil analysis report will be required. -The subject lands contains various natural heritage features such as significant woodlands, short and long term natural cover, unevaluated wetlands and physical constraints i.e. valleylands. The applicant would need to submit an Environment Impact Study, as per Section C20.3 of the OP and may need to submit slope stability study. Consultation should be done with GRCA.	See Will's Environmental Impact Study, Hydrogeological Study Report and Draft Erosion Hazard Assessment Letter Report.	No comment.	
Comment #	**Section**	**Municipality of Port Hope Comments – May 10, 2023**	**Wills' Response**	**BluMetric Reply - May 17, 2024**	**Wills' Response - August 29, 2024**
1		Submitted by the applicant was the Hydrogeological Study, by D.M. Wills Associates Limited, dated December 2022. In this report on page 12 the following was noted. "The Groundwater Impact Assessment concludes that a groundwater nitrate concentration of 10.7 mg/L will be achieved at the property boundary, which exceeds the ODWS and does not satisfy the requirements of D-5-4. The following mitigation options are provided: o If the number of lots is maintained at 59, Each proposed sewage disposal system would require advanced treatment to ensure that effluent leaving the system does not contain more than 37 mg/L nitrogen. o Alternatively, If the number of lots is reduced to 53, conventional sewage disposal systems (nitrate loading of 40 mg/L) without advanced treatment would result in acceptable nitrate concentrations at the property boundaries."	The number of lots has been reduced to 40 residential lots as shown on the Preliminary Draft Plan prepared by D.G. Biddle & Associates Limited on February 21, 2024, included in Appendix A-2 of Wills' Hydrogeological Study Report. With 40 lots, the objective of 10.0 mg/L is met at the property boundary, without any advanced treatment, as discussed in Section 6 of Wills Hydrogeological Study Report.	See comment 6 above.	See answer to comments 6 and 8 above.

Appendix B

Preliminary Draft Plan – D.G. Biddle & Associates Limited – August 15, 2024



AGRICULTURAL

60.20m N21°54'00"W | 199.90m N21°54'00"W | 104.67m N22°53'30"W | 21.95m N21°34'10"W | 80.45m N21°30'10"W | 88.11m N21°57'20"W

RURAL RESIDENTIAL

COUNTY 65 ROAD

BLOCK 42
OPEN SPACE

BLOCK 42
OPEN SPACE

BLOCK 42
OPEN SPACE

BLOCK 42
OPEN SPACE

BLOCK 40
SWM POND
AREA=0.392ha

BLOCK 41
AREA=0.393ha
PARK

BLOCK 39
SWM POND
AREA=0.442ha

BLOCK 46
AREA=1.024ha
OTHER LANDS OWNED BY APPLICANT

OTHER LANDS OWNED BY APPLICANT
AREA=0.334ha

BLOCK 43
(5.0m ROAD WIDENING)

BLOCK 44
(5.0m ROAD WIDENING)

BLOCK 45
(5.0m ROAD WIDENING)

STREET 'A'

STREET 'B'

LOT 1 AREA=0.191ha
LOT 2 AREA=0.192ha
LOT 3 AREA=0.190ha
LOT 4 AREA=0.188ha
LOT 5 AREA=0.188ha
LOT 6 AREA=0.188ha
LOT 7 AREA=0.188ha
LOT 8 AREA=0.188ha
LOT 9 AREA=0.188ha
LOT 10 AREA=0.188ha
LOT 11 AREA=0.197ha
LOT 12 AREA=0.215ha
LOT 13 AREA=0.246m
LOT 14 AREA=0.295ha
LOT 15 AREA=0.248ha
LOT 16 AREA=0.242ha
LOT 17 AREA=0.218ha
LOT 18 AREA=0.204ha
LOT 19 AREA=0.200ha
LOT 20 AREA=0.203ha
LOT 21 AREA=0.201ha
LOT 22 AREA=0.204ha
LOT 23 AREA=0.216ha
LOT 24 AREA=0.211ha
LOT 25 AREA=0.258ha
LOT 26 AREA=0.203ha
LOT 27 AREA=0.201ha
LOT 28 AREA=0.204ha
LOT 29 AREA=0.203ha
LOT 30 AREA=0.203ha
LOT 31 AREA=0.203ha
LOT 32 AREA=0.203ha
LOT 33 AREA=0.202ha
LOT 34 AREA=0.201ha
LOT 35 AREA=0.214ha
LOT 36 AREA=0.292ha
LOT 37 AREA=0.261ha
LOT 38 AREA=0.212ha

15.00m OFFSET | 10.00m OFFSET | 5.00m OFFSET

EXIST BUILDINGS TO BE REMOVED

COUNTY ROAD 65

MASTWOOD ROAD

AGRICULTURAL

LEGEND

- WETLANDS (20231024) BOUNDARY
- 30.0m SETBACK FROM WETLANDS (20231024)
- TREELINE (20231024) BOUNDARY
- 10.0m/15.0m SETBACK FROM WOODLANDS (20231024)

LAND USE SCHEDULE

PROPOSED USE	LOT/BLK #	# OF LOTS/BLKS	# OF UNITS	AREA (ha)
LOW DENSITY RESIDENTIAL				
SINGLE DETACHED	LOTS 1 – 38	38	38	8.050
NON RESIDENTIAL				
SWM PONDS	BLOCK 39,40	2		0.834
PARK	BLOCK 41	1		0.393
OPEN SPACE	BLOCK 42	1		12.235
ROAD WIDENING	BLOCK 43,44,45	3		0.306
OTHER LANDS OWNED BY APPLICANT	BLOCK 46	1		1.024
ROADS	20.0m ROW			1.447
TOTALS		46	38	24.289

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

a) AS SHOWN ON THE DRAFT PLAN
b) AS SHOWN ON THE DRAFT PLAN
c) AS SHOWN ON THE DRAFT PLAN
d) SEE LAND USE SCHEDULE
e) AS SHOWN ON THE DRAFT PLAN
f) AS SHOWN ON THE DRAFT PLAN
f.1) NOT APPLICABLE
g) AS SHOWN ON THE DRAFT PLAN
h) WELL AND SEPTIC
i) SAND AND SANDY SILT
j) AS SHOWN ON THE DRAFT PLAN
k) PRIVATE WELL
l) AS SHOWN ON THE DRAFT PLAN

No.	REVISION	DATE	BY	APPROVED

REVISIONS

OWNER'S AUTHORIZATION

I/WE
LAND OWNER
BEING THE REGISTERED OWNER OF THE SUBJECT LANDS HEREBY AUTHORIZE
D.G.BIDDLE AND ASSOC. LTD.
TO PREPARE AND SUBMIT A DRAFT PLAN OF SUBDIVISION FOR APPROVAL

SIGNED _____ TITLE

DATE _____

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARY OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN

ONTARIO LAND SURVEYOR
ONTARIO LAND SURVEYORS

SIGNED _____ O.L.S

DATE _____

PRELIMINARY

DRAFT PLAN

PART OF LOT 27, CONCESSION 5
FORMERLY IN THE TOWNSHIP OF HOPE
NOW IN THE
MUNICIPALITY OF PORT HOPE
COUNTY OF NORTHUMBERLAND

D.G. Biddle & Associates Limited
consulting engineers and planners
96 KING STREET EAST · OSHAWA,ON L1H 1B6
PHONE (905)576-8500 · FAX (905)576-9730
info@dgbiddle.com

MICHAEL J. FRY — REGISTERED PROFESSIONAL PLANNER — R.P.P.

SCALE:	1:1000
DRAWN BY:	B.B.
DESIGN BY:	M.F.
CHECKED BY:	M.F.
PLOT DATE:	15/08/2024

122049

DP-1

X:\SHAFTJOB FILES\122000\122049 5868 COUNTY RD 65\122049 DRAWINGS\122049 DRAWINGS CIVIL\122049 ENGINEERING DRAWINGS\122049-20240815-DRAFT PLAN.DWG

Appendix C

Certificates of Analysis – Groundwater

FINAL REPORT

CA12213-OCT22 R---

11056 - OSAC.A

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

CA12213-OCT22 R---

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	D.M. Wills -Peterborough	Project Specialist	Brad Moore Hon. B.Sc
		Laboratory	SGS Canada Inc.
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Lynsey Tuters	Telephone	705-652-2143
Telephone	289-385-6230	Facsimile	705-652-6365
Facsimile	705-741-3568	Email	brad.moore@sgs.com
Email	ltuters@dmwills.com	SGS Reference	CA12213-OCT22
Project	11056 - OSAC.A	Received	10/05/2022
Order Number		Approved	10/18/2022
Samples	Ground Water (3)	Report Number	CA12213-OCT22 R---
		Date Reported	10/18/2022

COMMENTS

Temperature of Sample upon Receipt: 20 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes
Chain of Custody Number: 031488

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

FINAL REPORT

CA12213-OCT22 R---

Client: D.M. Wills -Peterborough
Project: 11056 - OSAC.A
Project Manager: Lynsey Tuters
Samplers: L. Tuters

MATRIX: WATER

L1 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number				5	6	7
Sample Name				11056 - MW22 - 08	11056 - MW05 - Geotech3	11056 - MW11 - Geotech 2
Sample Matrix				Ground Water	Ground Water	Ground Water
Sample Date				05/10/2022	05/10/2022	05/10/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**
Metals and Inorganics						
Nitrite (as N)	as N mg/L	0.03	1	< 0.03	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06	10	4.35	0.39	0.68
Nitrate + Nitrite (as N)	as N mg/L	0.06		4.35	0.39	0.68

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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
Nitrate + Nitrite (as N)	DIO0214-OCT22	mg/L	0.06	<0.06	NA		NA			NA		
Nitrite (as N)	DIO0214-OCT22	mg/L	0.03	<0.03	ND	20	93	90	110	95	75	125
Nitrate (as N)	DIO0214-OCT22	mg/L	0.06	<0.06	0	20	99	90	110	NV	75	125
Nitrate + Nitrite (as N)	DIO0229-OCT22	mg/L	0.06	<0.06	NA		NA			NA		
Nitrite (as N)	DIO0229-OCT22	mg/L	0.03	<0.03	0	20	94	90	110	84	75	125
Nitrate (as N)	DIO0229-OCT22	mg/L	0.06	<0.06	0	20	100	90	110	96	75	125

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 031488 Page ____ of ____

Laboratory Information Section - Lab use only

Received By: Sindoori Satheesh
Received Date: OCT 05 2022 (mm/dd/yy)
Received Time: 14 : 40 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C) 20 x 3
LAB LIMS #: CA12213-OCT22

REPORT INFORMATION	INVOICE INFORMATION
Company: D.M. Wills	☑ (same as Report Information)
Contact: L. Tulers	Company:
Address: 150 Jameson Dr. Peterborough	Contact:
Phone: 289-385-6230	Address:
Fax:	Phone:
Email: ltulers@dmwills.com	Email: accounts@dmwills.com

Quotation #: P.O. #: 11056
Project #: 11056-OSACA Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)

TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture:
☐ Table 2 ☐ Ind/Com ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☑ ODWS Not Reportable *See note

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX
1	11056-MW22-08	oct 5/22	AM	1	GW
2	11056-MW05-Geotech3	oct 5/22	AM	1	GW
3	11056-MW11-Geotech2	oct 5/22	AM	1	GW
4					
5					
6					
7					
8					
9					
10					
11					
12					

M & I: 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, CrVI; ICP Metals only Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Tl, U, V, Zn
SVOC: PAHs only; SVOCs all incl PAHs, ABNs, CPs
PCB: PCBs Total ☐ Aroclor ☐
PHC: F1-F4 + BTEX; F1-F4 only no BTEX
VOC: VOCs all incl BTEX; BTEX only
Pest: Pesticides Organochlorine or specify other
Other (please specify): Nitrates ✓ ✓ ✓; Sewer Use: Specify pkg:; Water Characterization Pkg General ☐ Extended ☐
SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN
TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.

COMMENTS:

Observations/Comments/Special Instructions

Sampled By (NAME): L. Tulers Signature: L Tulers Date: Oct 05 2022 (mm/dd/yy)
Relinquished by (NAME): L. Tulers Signature: L Tulers Date: Oct 05 2022 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.6
Date of Issue: 02 May 2022

FINAL REPORT

CA19813-OCT23 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

CA19813-OCT23 R1

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	D.M. Wills -Peterborough	Project Specialist	Jill Campbell, B.Sc.,GISAS
		Laboratory	SGS Canada Inc.
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Ralf Bolvin	Telephone	2165
Telephone	705-868-1691	Facsimile	705-652-6365
Facsimile	705-741-3568	Email	jill.campbell@sgs.com
Email	rbolvin@dmwills.com	SGS Reference	CA19813-OCT23
Project	11056	Received	10/31/2023
Order Number		Approved	11/07/2023
Samples	Ground Water (2)	Report Number	CA19813-OCT23 R1
		Date Reported	11/07/2023

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 5 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 037594

Phenol Spk low due to sample matrix

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056 Well A377795_1 hr	11056 Well A377795_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	31/10/2023	31/10/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry						
UV Transmittance	%T				94.3	93.4
Alkalinity	mg/L as CaCO3	2	500		221	213
Bicarbonate	mg/L as CaCO3	2			221	213
Carbonate	mg/L as CaCO3	2			< 2	< 2
OH	mg/L as CaCO3	2			< 2	< 2
Colour	TCU	3	5		< 3	3
Conductivity	uS/cm	2			480	479
Total Suspended Solids	mg/L	2			< 2	< 2
Turbidity	NTU	0.10	5	1	1.9	3.1
Organic Nitrogen	mg/L	0.05	0.15		0.76	0.50
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			0.77	0.51
Ammonia+Ammonium (N)	as N mg/L	0.04			< 0.04	< 0.04
Dissolved Organic Carbon	mg/L	1	5		1	1
Total Organic Carbon	mg/L	1			1	1

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056 Well A377795_1 hr	11056 Well A377795_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	31/10/2023	31/10/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	< 0.06	< 0.06
Bromide	mg/L	0.3			< 0.3	< 0.3
Nitrite (as N)	as N mg/L	0.03		1	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		10	5.16	6.21
Sulphate	mg/L	2	500		11	13
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		244	239
Aluminum (total)	mg/L	0.001	0.1		0.007	0.003
Arsenic (total)	mg/L	0.0002		0.01	< 0.0002	< 0.0002
Boron (total)	mg/L	0.002		5	0.010	0.012
Barium (total)	mg/L	0.00008		1	0.00821	0.00903
Beryllium (total)	mg/L	0.000007			< 0.000007	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000135	0.000073
Calcium (total)	mg/L	0.01			90.8	88.8
Cadmium (total)	mg/L	0.000003		0.005	< 0.000003	< 0.000003
Copper (total)	mg/L	0.0002	1		0.0021	0.0019
Chromium (total)	mg/L	0.00008		0.05	0.00029	0.00027
Iron (total)	mg/L	0.007	0.3		0.124	0.032
Potassium (total)	mg/L	0.009			0.442	0.469
Magnesium (total)	mg/L	0.001			4.06	4.16

Client: D.M. Wills -Peterborough
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MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8
					Sample Name	11056 Well A377795_1 hr	11056 Well A377795_6 hr
					Sample Matrix	Ground Water	Ground Water
					Sample Date	31/10/2023	31/10/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Manganese (total)	mg/L	0.00001	0.05		0.00666	0.00284
Molybdenum (total)	mg/L	0.00004			0.00036	0.00059
Nickel (total)	mg/L	0.0001			0.0006	0.0004
Sodium (total)	mg/L	0.01	200	20	2.63	2.56
Phosphorus (total)	mg/L	0.003			< 0.003	< 0.003
Lead (total)	mg/L	0.00009		0.01	< 0.00009	< 0.00009
Silicon (total)	mg/L	0.02			3.69	3.66
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			0.155	0.155
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			0.00011	0.00021
Titanium (total)	mg/L	0.00007			0.00026	0.00010
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	0.00004	0.00012
Uranium (total)	mg/L	0.000002		0.02	0.000264	0.000281
Vanadium (total)	mg/L	0.00001			0.00023	0.00020
Zinc (total)	mg/L	0.002	5		0.003	0.002
Cation sum	meq/L	-9999			5.00	4.90
Anion Sum	meq/L	-9999			5.00	4.88
Anion-Cation Balance	% difference	-9999			0.06	0.24
Ion Ratio	none	-9999			1.00	1.00

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056 Well A377795_1 hr	11056 Well A377795_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	31/10/2023	31/10/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Total Dissolved Solids (calculated)	mg/L	-9999			257	252
Conductivity (calculated)	uS/cm	-9999			500	489
Langeliers Index 4° C	@ 4° C	-9999			0.14	0.09
Saturation pH 4°C	pHs @ 4°C	-9999			7.65	7.67
Microbiology						
Total Coliform	cfu/100mL	0		0	0	1
E. Coli	cfu/100mL	0		0	0	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			740	117
Other (ORP)						
pH	No unit	0.05	8.5		7.79	7.76
Chloride	mg/L	1	250		9	9
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			< 0.002	< 0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
11056 Well A377795_1 hr					
Organic Nitrogen		mg/L	0.76	0.15	
Turbidity	SM 2130	NTU	1.9		1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	244	100	
11056 Well A377795_6 hr					
Organic Nitrogen		mg/L	0.50	0.15	
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	1		0
Turbidity	SM 2130	NTU	3.1		1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	239	100	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0113-NOV23	mg/L as CaCO3	2	< 2	1	20	96	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0040-NOV23	mg/L	0.04	<0.04	ND	10	100	90	110	93	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-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	DIO5006-NOV23	mg/L	1	<1	11	20	104	80	120	106	75	125
Sulphate	DIO5006-NOV23	mg/L	2	<2	ND	20	102	80	120	105	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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	DIO0147-NOV23	mg/L	0.3	<0.3	ND	20	103	90	110	99	75	125
Nitrite (as N)	DIO0147-NOV23	mg/L	0.03	<0.03	19	20	100	90	110	103	75	125
Nitrate (as N)	DIO0147-NOV23	mg/L	0.06	<0.06	0	20	99	90	110	84	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0038-NOV23	mg/L	1	<1	1	20	97	90	110	95	75	125
Total Organic Carbon	SKA0038-NOV23	mg/L	1	<1	1	20	97	90	110	95	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0113-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0113-NOV23	mg/L as CaCO3	2	< 2	1	10	NA	90	110	NA		
OH	EWL0113-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 I 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	EWL0037-NOV23	TCU	3	< 3	0	10	105	80	120	NA		

Conductivity

Method: SM 2510 I 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	EWL0113-NOV23	uS/cm	2	< 2	0	20	100	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 I 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	EWL0035-NOV23	mg/L	0.06	<0.06	ND	10	97	90	110	98	75	125
Fluoride	EWL0090-NOV23	mg/L	0.06	<0.06	0	10	96	90	110	96	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0005-NOV23	mg/L	0.00001	< 0.00001	13	20	101	80	120	100	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0028-NOV23	mg/L	0.00005	<0.00005	ND	20	102	90	110	73	70	130
Aluminum (total)	EMS0028-NOV23	mg/L	0.001	<0.001	9	20	100	90	110	90	70	130
Arsenic (total)	EMS0028-NOV23	mg/L	0.0002	<0.0002	6	20	97	90	110	100	70	130
Barium (total)	EMS0028-NOV23	mg/L	0.00008	<0.00008	2	20	97	90	110	96	70	130
Beryllium (total)	EMS0028-NOV23	mg/L	0.000007	<0.000007	ND	20	98	90	110	97	70	130
Boron (total)	EMS0028-NOV23	mg/L	0.002	<0.002	5	20	107	90	110	95	70	130
Bismuth (total)	EMS0028-NOV23	mg/L	0.00001	<0.00001	ND	20	91	90	110	97	70	130
Calcium (total)	EMS0028-NOV23	mg/L	0.01	<0.01	2	20	102	90	110	100	70	130
Cadmium (total)	EMS0028-NOV23	mg/L	0.000003	<0.000003	2	20	100	90	110	106	70	130
Cobalt (total)	EMS0028-NOV23	mg/L	0.000004	<0.000004	7	20	101	90	110	99	70	130
Chromium (total)	EMS0028-NOV23	mg/L	0.00008	<0.00008	15	20	101	90	110	85	70	130
Copper (total)	EMS0028-NOV23	mg/L	0.0002	<0.0002	3	20	98	90	110	81	70	130
Iron (total)	EMS0028-NOV23	mg/L	0.007	<0.007	4	20	97	90	110	100	70	130
Potassium (total)	EMS0028-NOV23	mg/L	0.009	<0.009	4	20	101	90	110	99	70	130
Magnesium (total)	EMS0028-NOV23	mg/L	0.001	<0.001	5	20	99	90	110	98	70	130
Manganese (total)	EMS0028-NOV23	mg/L	0.00001	<0.00001	3	20	98	90	110	97	70	130
Molybdenum (total)	EMS0028-NOV23	mg/L	0.00004	<0.00004	1	20	106	90	110	107	70	130
Sodium (total)	EMS0028-NOV23	mg/L	0.01	<0.01	4	20	97	90	110	95	70	130
Nickel (total)	EMS0028-NOV23	mg/L	0.0001	<0.0001	1	20	100	90	110	98	70	130
Lead (total)	EMS0028-NOV23	mg/L	0.00009	<0.00009	ND	20	99	90	110	76	70	130

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
Phosphorus (total)	EMS0028-NOV23	mg/L	0.003	<0.003	3	20	100	90	110	NV	70	130
Antimony (total)	EMS0028-NOV23	mg/L	0.0009	<0.0009	ND	20	109	90	110	106	70	130
Selenium (total)	EMS0028-NOV23	mg/L	0.00004	<0.00004	ND	20	98	90	110	99	70	130
Silicon (total)	EMS0028-NOV23	mg/L	0.02	<0.02	4	20	105	90	110	NV	70	130
Tin (total)	EMS0028-NOV23	mg/L	0.00006	<0.00006	3	20	106	90	110	NV	70	130
Strontium (total)	EMS0028-NOV23	mg/L	0.00008	<0.00008	4	20	101	90	110	100	70	130
Titanium (total)	EMS0028-NOV23	mg/L	0.00007	<0.00005	9	20	108	90	110	NV	70	130
Thallium (total)	EMS0028-NOV23	mg/L	0.000005	<0.000005	7	20	96	90	110	99	70	130
Uranium (total)	EMS0028-NOV23	mg/L	0.000002	<0.000002	1	20	99	90	110	102	70	130
Vanadium (total)	EMS0028-NOV23	mg/L	0.00001	<0.00001	8	20	97	90	110	96	70	130
Zinc (total)	EMS0028-NOV23	mg/L	0.002	<0.002	3	20	103	90	110	123	70	130

QC SUMMARY

Microbiology

Method: OMOE MICROMFDC-E3407A | Internal ref.: ME-CA-[ENV]MIC-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
E. Coli	BAC9011-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9011-NOV23	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9011-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0113-NOV23	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-IENVISFA-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
4AAP-Phenolics	SKA0023-NOV23	mg/L	0.002	<0.002	ND	10	100	80	120	60	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-IENVISFA-LAK-AN-008

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
Sulphide	SKA0030-NOV23	mg/L	0.02	<0.02	ND	20	94	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-IENVIEWL-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 Suspended Solids	EWL0120-NOV23	mg/L	2	< 2	5	10	95	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA0045-NOV23	mg/L	0.05	<0.05	5	10	101	90	110	89	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0027-NOV23	NTU	0.10	< 0.10	0	10	100	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 037594

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page _____ of _____

Laboratory Information Section - Lab use only

Received By: _____ Received By (signature): _____

Received Date: 10 / 31 / 23 (mm/dd/yy) Custody Seal Present: Yes ☑ No ☐ Cooling Agent Present: Yes ☑ No ☐ Type: _____

Received Time: 17 : 00 (hr : min) Custody Seal Intact: Yes ☑ No ☐ Temperature Upon Receipt (°C) 5.3 LAB LIMS #: CA19813-OCT23

REPORT INFORMATION

Company: DM WILLS
Contact: RALF BOLVIN
Address: 150 JAMESON DRIVE PETERBOROUGH, ON
Phone: 705-868-1691
Fax: _____
Email: rbolvin@dmwills.com

INVOICE INFORMATION

☑ (same as Report Information)
Company: _____
Contact: _____
Address: _____
Phone: _____
Email: accounts@dmwills.com

Quotation #: _____ P.O. #: 11056
Project #: 11056 Site Location/ID: _____

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19

☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table _____ Appx. _____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations: ☐ Reg 347/558 (3 Day min TAT) ☐ PWQO ☐ MMER ☐ CCME ☐ Other: _____ ☐ MISA ☑ ODWS Not Reportable *See note

Sewer By-Law: ☐ Sanitary ☐ Storm Municipality: _____

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg pH,(B(HWS),EC,SAR-soil) (Cl, Na-water))	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI)	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Ti,U,V,Zn)	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs)	PCB: PCBs (Aroclor / Total)	PHC: F1-F4 + BTEX	PHC: F1-F4 only (no BTEX)	VOC: VOCs (all incl BTEX)	VOC: BTEX only	Pest: Pesticides (Organochlorine or specify other)	Other: Sewer Use: (Specify pkg:)	Other: Water Characterization Pkg (General / Extended)	SPLP: Specify tests (☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN)	TCLP: Specify tests (☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.)	COMMENTS:
1	11056Well A377795-1hr	Oct 31/23	11:00am	13	GW	N													X			
2	11056Well A377795-6hr	Oct 31/23	4:00PM	13	GW	N													X			
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 10 / 31 / 23 (mm/dd/yy)

Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 10 / 31 / 23 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

FINAL REPORT

CA14079-NOV23 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (2)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA14079-NOV23
Received	11/02/2023
Approved	11/09/2023
Report Number	CA14079-NOV23 R1
Date Reported	11/09/2023

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 6 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 011390

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number					7	8
Sample Name					11056WellA3777 96_1hr	11056WellA3777 96_6hr
Sample Matrix					Ground Water	Ground Water
Sample Date					02/11/2023	02/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry						
UV Transmittance	%T				92.4	91.8
Alkalinity	mg/L as CaCO3	2	500		225	224
Bicarbonate	mg/L as CaCO3	2			225	224
Carbonate	mg/L as CaCO3	2			< 2	< 2
OH	mg/L as CaCO3	2			< 2	< 2
Colour	TCU	3	5		5	4
Conductivity	uS/cm	2			454	461
Total Suspended Solids	mg/L	2			3	3
Turbidity	NTU	0.10	5	1	6.9	2.4
Organic Nitrogen	mg/L	0.05	0.15		< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			< 0.05	< 0.05
Ammonia+Ammonium (N)	as N mg/L	0.04			0.05	< 0.04
Dissolved Organic Carbon	mg/L	1	5		1	1
Total Organic Carbon	mg/L	1			1	1

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056WellA3777 96_1hr	11056WellA3777 96_6hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	02/11/2023	02/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	< 0.06	< 0.06
Bromide	mg/L	0.3			< 0.3	< 0.3
Nitrite (as N)	as N mg/L	0.03		1	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		10	0.09	0.12
Sulphate	mg/L	2	500		23	21
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		260	256
Aluminum (total)	mg/L	0.001	0.1		0.012	0.003
Arsenic (total)	mg/L	0.0002		0.01	0.0002	< 0.0002
Boron (total)	mg/L	0.002		5	0.010	0.008
Barium (total)	mg/L	0.00008		1	0.0285	0.0313
Beryllium (total)	mg/L	0.000007			0.000007	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000113	0.000043
Calcium (total)	mg/L	0.01			96.2	94.7
Cadmium (total)	mg/L	0.000003		0.005	0.000003	< 0.000003
Copper (total)	mg/L	0.0002	1		0.0006	0.0007
Chromium (total)	mg/L	0.00008		0.05	0.00021	0.00015
Iron (total)	mg/L	0.007	0.3		0.804	0.371
Potassium (total)	mg/L	0.009			0.377	0.365
Magnesium (total)	mg/L	0.001			4.83	4.72

Client: D.M. Wills -Peterborough
Project: 11056
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MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

	Sample Number				7	8
	Sample Name				11056WellA3777 96_1hr	11056WellA3777 96_6hr
	Sample Matrix				Ground Water	Ground Water
	Sample Date				02/11/2023	02/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Manganese (total)	mg/L	0.00001	0.05		0.0199	0.0134
Molybdenum (total)	mg/L	0.00004			0.00024	0.00019
Nickel (total)	mg/L	0.0001			0.0006	0.0004
Sodium (total)	mg/L	0.01	200	20	2.37	2.24
Phosphorus (total)	mg/L	0.003			0.003	< 0.003
Lead (total)	mg/L	0.00009		0.01	< 0.00009	< 0.00009
Silicon (total)	mg/L	0.02			4.76	4.72
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			0.168	0.165
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			0.00007	< 0.00006
Titanium (total)	mg/L	0.00007			0.00049	0.00011
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	0.00013	0.00012
Uranium (total)	mg/L	0.000002		0.02	0.000176	0.000202
Vanadium (total)	mg/L	0.00001			0.00015	0.00016
Zinc (total)	mg/L	0.002	5		< 0.002	< 0.002
Cation sum	meq/L	-9999			5.36	5.25
Anion Sum	meq/L	-9999			5.16	5.09
Anion-Cation Balance	% difference	-9999			1.99	1.55
Ion Ratio	none	-9999			1.04	1.03

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056WellA3777 96_1hr	11056WellA3777 96_6hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	02/11/2023	02/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Total Dissolved Solids (calculated)	mg/L	-9999			268	264
Conductivity (calculated)	uS/cm	-9999			526	517
Langeliers Index 4° C	@ 4° C	-9999			0.38	0.32
Saturation pH 4°C	pHs @ 4°C	-9999			7.61	7.62
Microbiology						
Total Coliform	cfu/100mL	0		0	0	0
E. Coli	cfu/100mL	0		0	0	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			130	36
Other (ORP)						
pH	No unit	0.05	8.5		7.99	7.94
Chloride	mg/L	1	250		6	6
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			< 0.002	< 0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
11056WellA377796_1hr					
Turbidity	SM 2130	NTU	6.9	5	1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	260	100	
Iron	SM 3030/EPA 200.8	mg/L	0.804	0.3	
11056WellA377796_6hr					
Turbidity	SM 2130	NTU	2.4		1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	256	100	
Iron	SM 3030/EPA 200.8	mg/L	0.371	0.3	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0114-NOV23	mg/L as CaCO3	2	< 2	1	20	102	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0056-NOV23	mg/L	0.04	<0.04	ND	10	97	90	110	92	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-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	DIO5010-NOV23	mg/L	1	<1	ND	20	104	80	120	107	75	125
Sulphate	DIO5010-NOV23	mg/L	2	<2	13	20	102	80	120	105	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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	DIO0191-NOV23	mg/L	0.3	<0.3	ND	20	103	90	110	93	75	125
Nitrite (as N)	DIO0191-NOV23	mg/L	0.03	<0.03	ND	20	99	90	110	103	75	125
Nitrate (as N)	DIO0191-NOV23	mg/L	0.06	<0.06	ND	20	101	90	110	105	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0054-NOV23	mg/L	1	<1	2	20	95	90	110	98	75	125
Total Organic Carbon	SKA0054-NOV23	mg/L	1	<1	2	20	95	90	110	98	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0114-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0114-NOV23	mg/L as CaCO3	2	< 2	1	10	NA	90	110	NA		
OH	EWL0114-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 I 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	EWL0166-NOV23	TCU	3	< 3	0	10	105	80	120	NA		

Conductivity

Method: SM 2510 I 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	EWL0114-NOV23	uS/cm	2	< 2	0	20	99	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 I 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	EWL0169-NOV23	mg/L	0.06	<0.06	ND	10	100	90	110	94	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0007-NOV23	mg/L	0.00001	< 0.00001	ND	20	93	80	120	91	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0035-NOV23	mg/L	0.00005	<0.00005	ND	20	98	90	110	87	70	130
Aluminum (total)	EMS0035-NOV23	mg/L	0.001	<0.001	7	20	100	90	110	112	70	130
Arsenic (total)	EMS0035-NOV23	mg/L	0.0002	<0.0002	ND	20	98	90	110	97	70	130
Barium (total)	EMS0035-NOV23	mg/L	0.00008	<0.00008	0	20	93	90	110	75	70	130
Beryllium (total)	EMS0035-NOV23	mg/L	0.000007	<0.000007	12	20	98	90	110	88	70	130
Boron (total)	EMS0035-NOV23	mg/L	0.002	<0.002	10	20	107	90	110	96	70	130
Bismuth (total)	EMS0035-NOV23	mg/L	0.00001	<0.00001	ND	20	97	90	110	83	70	130
Calcium (total)	EMS0035-NOV23	mg/L	0.01	<0.01	3	20	105	90	110	127	70	130
Cadmium (total)	EMS0035-NOV23	mg/L	0.000003	<0.000003	0	20	99	90	110	99	70	130
Cobalt (total)	EMS0035-NOV23	mg/L	0.000004	<0.000004	0	20	99	90	110	94	70	130
Chromium (total)	EMS0035-NOV23	mg/L	0.00008	<0.00008	0	20	101	90	110	105	70	130
Copper (total)	EMS0035-NOV23	mg/L	0.0002	<0.0002	2	20	98	90	110	97	70	130
Iron (total)	EMS0035-NOV23	mg/L	0.007	<0.007	0	20	102	90	110	100	70	130
Potassium (total)	EMS0035-NOV23	mg/L	0.009	<0.009	2	20	103	90	110	111	70	130
Magnesium (total)	EMS0035-NOV23	mg/L	0.001	<0.001	1	20	107	90	110	89	70	130
Manganese (total)	EMS0035-NOV23	mg/L	0.00001	<0.00001	1	20	96	90	110	78	70	130
Molybdenum (total)	EMS0035-NOV23	mg/L	0.00004	<0.00004	5	20	96	90	110	96	70	130
Sodium (total)	EMS0035-NOV23	mg/L	0.01	<0.01	1	20	105	90	110	95	70	130
Nickel (total)	EMS0035-NOV23	mg/L	0.0001	<0.0001	7	20	94	90	110	86	70	130
Lead (total)	EMS0035-NOV23	mg/L	0.00009	<0.00009	ND	20	98	90	110	88	70	130

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
Phosphorus (total)	EMS0035-NOV23	mg/L	0.003	<0.003	ND	20	103	90	110	NV	70	130
Antimony (total)	EMS0035-NOV23	mg/L	0.0009	<0.0009	ND	20	97	90	110	97	70	130
Selenium (total)	EMS0035-NOV23	mg/L	0.00004	<0.00004	ND	20	100	90	110	92	70	130
Silicon (total)	EMS0035-NOV23	mg/L	0.02	<0.02	1	20	102	90	110	NV	70	130
Tin (total)	EMS0035-NOV23	mg/L	0.00006	<0.00006	ND	20	101	90	110	NV	70	130
Strontium (total)	EMS0035-NOV23	mg/L	0.00008	<0.00008	1	20	99	90	110	82	70	130
Titanium (total)	EMS0035-NOV23	mg/L	0.00007	<0.00005	ND	20	98	90	110	NV	70	130
Thallium (total)	EMS0035-NOV23	mg/L	0.000005	<0.000005	0	20	98	90	110	88	70	130
Uranium (total)	EMS0035-NOV23	mg/L	0.000002	2e-006	5	20	98	90	110	89	70	130
Vanadium (total)	EMS0035-NOV23	mg/L	0.00001	<0.00001	16	20	97	90	110	98	70	130
Zinc (total)	EMS0035-NOV23	mg/L	0.002	<0.002	5	20	101	90	110	97	70	130

QC SUMMARY

Microbiology

Method: SM 9215A | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-005

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
Heterotrophic Plate Count (HPC)	BAC9064-NOV23	cfu/1mL	-	ACCEPTED	ACCEPTED							
E. Coli	BAC9064-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9064-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0114-NOV23	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-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
4AAP-Phenolics	SKA0052-NOV23	mg/L	0.002	<0.002	ND	10	109	80	120	96	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-008

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
Sulphide	SKA0090-NOV23	mg/L	0.02	<0.02	ND	20	105	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-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 Suspended Solids	EWL0223-NOV23	mg/L	2	< 2	1	10	95	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA0041-NOV23	mg/L	0.05	<0.05	ND	10	108	90	110	107	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0102-NOV23	NTU	0.10	< 0.10	0	10	99	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 011390 Page ____ of ____

Laboratory Information Section - Lab use only

Received By: ne
Received Date: 11/02/23 (mm/dd/yy)
Received Time: 17:10 (hr : min)
Received By (signature): ne
Custody Seal Present: Yes ☐ No ☒
Custody Seal Intact: Yes ☐ No ☒
Cooling Agent Present: Yes ☒ No ☐ Type: ICE
Temperature Upon Receipt (°C): 6.6.6
LAB LIMS #: CA14079-NOV23

REPORT INFORMATION
Company: DM WILLS
Contact: RALF BOLVIN
Address: 150 JAMESON DRIVE PETERBOROUGH, ON
Phone: 705-868-1691
Fax:
Email: rbolvin@dmwills.com

INVOICE INFORMATION
☑ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email: accounts@dmwills.com

Quotation #:
P.O. #: 11056
Project #: 11056
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED
☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day
RUSH 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

REGULATIONS
Regulation 153/04: ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ____ ☐ Res/Park ☐ Ind/Com ☐ Agri/Other Soil Texture: ☐ Coarse ☐ Medium ☐ Fine
Other Regulations: ☐ Reg 347/558 (3 Day min TAT) ☐ PWQO ☐ MMER ☐ CCME ☑ Other: ODWS ☐ MISA
Sewer By-Law: ☐ Sanitary ☐ Storm Municipality:
RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR-soil) (Cl, Na-water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni, Se,Ag,Tl,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	Other (please specify)	TCLP: Specify TCLP tests ☐M&I ☐VOC ☐PCB ☐B(a)P ☐ABN ☐Ignit.	COMMENTS:
																				Sewer Use: Specify pkg:	Water Characterization Pkg ☐ General Extended					
1	11056WellA377796_1hr	Nov 2/23	10:20AM	13	GW	N															X				
2	11056WellA377796_6hr	Nov 2/23	3:20AM	13	GW	N															X				
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 11/02/23 (mm/dd/yy)
Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 11/02/23 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.2
Date of Issue: 09 Sept, 2019

FINAL REPORT

CA14296-NOV23 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	D.M. Wills -Peterborough	Project Specialist	Maarit Wolfe, Hon.B.Sc
		Laboratory	SGS Canada Inc.
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Ralf Bolvin	Telephone	705-652-2000
Telephone	705-868-1691	Facsimile	705-652-6365
Facsimile	705-741-3568	Email	Maarit.Wolfe@sgs.com
Email	rbolvin@dmwills.com	SGS Reference	CA14296-NOV23
Project	11056	Received	11/08/2023
Order Number		Approved	11/15/2023
Samples	Ground Water (2)	Report Number	CA14296-NOV23 R1
		Date Reported	11/15/2023

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 5 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 036655

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough

Project: 11056

Project Manager: Ralf Bolvin

Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8
					Sample Name	11056-WellA377 799_1hr	11056-WellA377 799_6hr
					Sample Matrix	Ground Water	Ground Water
					Sample Date	08/11/2023	08/11/2023
Parameter		**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry							
UV Transmittance		%T				96.7	97.1
Alkalinity		mg/L as CaCO3	2	500		198	198
Bicarbonate		mg/L as CaCO3	2			198	198
Carbonate		mg/L as CaCO3	2			< 2	< 2
OH		mg/L as CaCO3	2			< 2	< 2
Colour		TCU	3	5		4	3
Conductivity		uS/cm	2			397	409
Total Suspended Solids		mg/L	2			2	< 2
Turbidity		NTU	0.10	5	1	0.80	0.55
Organic Nitrogen		mg/L	0.05	0.15		< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)		as N mg/L	0.05			< 0.05	< 0.05
Ammonia+Ammonium (N)		as N mg/L	0.04			< 0.04	< 0.04
Dissolved Organic Carbon		mg/L	1	5		1	1
Total Organic Carbon		mg/L	1			< 1	1

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056-WellA377 799_1hr	11056-WellA377 799_6hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	08/11/2023	08/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	< 0.06	< 0.06
Bromide	mg/L	0.3			< 0.3	< 0.3
Nitrite (as N)	as N mg/L	0.03		1	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		10	1.84	1.62
Sulphate	mg/L	2	500		7	8
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		220	225
Aluminum (total)	mg/L	0.001	0.1		0.007	0.003
Arsenic (total)	mg/L	0.0002		0.01	< 0.0002	< 0.0002
Boron (total)	mg/L	0.002		5	0.015	0.015
Barium (total)	mg/L	0.00008		1	0.00993	0.00982
Beryllium (total)	mg/L	0.000007			< 0.000007	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000105	0.000031
Calcium (total)	mg/L	0.01			82.1	83.9
Cadmium (total)	mg/L	0.000003		0.005	< 0.000003	< 0.000003
Copper (total)	mg/L	0.0002	1		0.0009	0.0006
Chromium (total)	mg/L	0.00008		0.05	0.00073	0.00049
Iron (total)	mg/L	0.007	0.3		0.074	0.026
Potassium (total)	mg/L	0.009			0.373	0.361
Magnesium (total)	mg/L	0.001			3.61	3.82

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number					7	8
Sample Name					11056-WellA377 799_1hr	11056-WellA377 799_6hr
Sample Matrix					Ground Water	Ground Water
Sample Date					08/11/2023	08/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Manganese (total)	mg/L	0.00001	0.05		0.00835	0.00197
Molybdenum (total)	mg/L	0.00004			0.00018	0.00009
Nickel (total)	mg/L	0.0001			0.0005	0.0002
Sodium (total)	mg/L	0.01	200	20	1.54	1.61
Phosphorus (total)	mg/L	0.003			< 0.003	< 0.003
Lead (total)	mg/L	0.00009		0.01	0.00011	< 0.00009
Silicon (total)	mg/L	0.02			4.28	4.34
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			0.137	0.140
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			< 0.00006	< 0.00006
Titanium (total)	mg/L	0.00007			0.00018	< 0.00007
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	0.00015	0.00012
Uranium (total)	mg/L	0.000002		0.02	0.000186	0.000177
Vanadium (total)	mg/L	0.00001			0.00027	0.00027
Zinc (total)	mg/L	0.002	5		< 0.002	< 0.002

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	11056-WellA377 799_1hr	11056-WellA377 799_6hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	08/11/2023	08/11/2023
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Microbiology						
Total Coliform	cfu/100mL	0		0	6	2
E. Coli	cfu/100mL	0		0	0	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			640	115
Other (ORP)						
pH	No unit	0.05	8.5		8.15	8.09
Chloride	mg/L	1	250		2	3
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			< 0.002	< 0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
11056-WellA377799_1hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	6		0
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	220	100	
11056-WellA377799_6hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	2		0
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	225	100	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0252-NOV23	mg/L as CaCO3	2	< 2	2	20	94	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0112-NOV23	mg/L	0.04	<0.04	1	10	96	90	110	97	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-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	DIO5030-NOV23	mg/L	1	<1	ND	20	102	80	120	109	75	125
Sulphate	DIO5030-NOV23	mg/L	2	<2	ND	20	104	80	120	108	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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	DIO0361-NOV23	mg/L	0.3	<0.3	ND	20	97	90	110	91	75	125
Nitrite (as N)	DIO0361-NOV23	mg/L	0.03	<0.03	ND	20	99	90	110	101	75	125
Nitrate (as N)	DIO0361-NOV23	mg/L	0.06	<0.06	ND	20	102	90	110	99	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0113-NOV23	mg/L	1	<1	2	20	103	90	110	96	75	125
Total Organic Carbon	SKA0113-NOV23	mg/L	1	<1	2	20	103	90	110	96	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0252-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0252-NOV23	mg/L as CaCO3	2	< 2	2	10	NA	90	110	NA		
OH	EWL0252-NOV23	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 I 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	EWL0304-NOV23	TCU	3	< 3	0	10	105	80	120	NA		

Conductivity

Method: SM 2510 I 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	EWL0252-NOV23	uS/cm	2	4	0	20	100	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 I 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	EWL0261-NOV23	mg/L	0.06	<0.06	0	10	103	90	110	NV	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0019-NOV23	mg/L	0.00001	< 0.00001	3	20	98	80	120	98	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0100-NOV23	mg/L	0.00005	<0.00005	ND	20	106	90	110	78	70	130
Aluminum (total)	EMS0100-NOV23	mg/L	0.001	<0.001	19	20	100	90	110	83	70	130
Arsenic (total)	EMS0100-NOV23	mg/L	0.0002	<0.0002	4	20	107	90	110	103	70	130
Barium (total)	EMS0100-NOV23	mg/L	0.00008	<0.00008	2	20	102	90	110	96	70	130
Beryllium (total)	EMS0100-NOV23	mg/L	0.000007	<0.000007	ND	20	92	90	110	94	70	130
Boron (total)	EMS0100-NOV23	mg/L	0.002	<0.002	1	20	97	90	110	94	70	130
Bismuth (total)	EMS0100-NOV23	mg/L	0.00001	<0.00001	ND	20	106	90	110	86	70	130
Calcium (total)	EMS0100-NOV23	mg/L	0.01	<0.01	4	20	100	90	110	80	70	130
Cadmium (total)	EMS0100-NOV23	mg/L	0.000003	<0.000003	ND	20	108	90	110	94	70	130
Cobalt (total)	EMS0100-NOV23	mg/L	0.000004	<0.000004	10	20	100	90	110	94	70	130
Chromium (total)	EMS0100-NOV23	mg/L	0.00008	<0.00008	ND	20	104	90	110	90	70	130
Copper (total)	EMS0100-NOV23	mg/L	0.0002	<0.0002	1	20	102	90	110	94	70	130
Iron (total)	EMS0100-NOV23	mg/L	0.007	<0.007	1	20	106	90	110	75	70	130
Potassium (total)	EMS0100-NOV23	mg/L	0.009	<0.009	1	20	99	90	110	88	70	130
Magnesium (total)	EMS0100-NOV23	mg/L	0.001	<0.001	1	20	101	90	110	89	70	130
Manganese (total)	EMS0100-NOV23	mg/L	0.00001	<0.00001	2	20	99	90	110	97	70	130
Molybdenum (total)	EMS0100-NOV23	mg/L	0.00004	<0.00004	2	20	100	90	110	90	70	130
Sodium (total)	EMS0100-NOV23	mg/L	0.01	<0.01	1	20	101	90	110	91	70	130
Nickel (total)	EMS0100-NOV23	mg/L	0.0001	<0.0001	12	20	105	90	110	95	70	130
Lead (total)	EMS0100-NOV23	mg/L	0.00009	<0.00009	ND	20	105	90	110	93	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-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
Phosphorus (total)	EMS0100-NOV23	mg/L	0.003	<0.003	2	20	101	90	110	NV	70	130
Antimony (total)	EMS0100-NOV23	mg/L	0.0009	<0.0009	ND	20	103	90	110	94	70	130
Selenium (total)	EMS0100-NOV23	mg/L	0.00004	<0.00004	ND	20	102	90	110	111	70	130
Silicon (total)	EMS0100-NOV23	mg/L	0.02	<0.02	0	20	99	90	110	NV	70	130
Tin (total)	EMS0100-NOV23	mg/L	0.00006	<0.00006	ND	20	97	90	110	NV	70	130
Strontium (total)	EMS0100-NOV23	mg/L	0.00008	<0.00008	2	20	98	90	110	92	70	130
Titanium (total)	EMS0100-NOV23	mg/L	0.00007	<0.00005	3	20	96	90	110	NV	70	130
Thallium (total)	EMS0100-NOV23	mg/L	0.000005	<0.000005	ND	20	105	90	110	93	70	130
Uranium (total)	EMS0100-NOV23	mg/L	0.000002	2e-006	1	20	92	90	110	101	70	130
Vanadium (total)	EMS0100-NOV23	mg/L	0.00001	<0.00001	6	20	102	90	110	105	70	130
Zinc (total)	EMS0100-NOV23	mg/L	0.002	<0.002	ND	20	104	90	110	110	70	130

QC SUMMARY

Microbiology

Method: SM 9215A | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-005

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
Heterotrophic Plate Count (HPC)	BAC9164-NOV23	cfu/1mL	-	ACCEPTED	ACCEPTED							
E. Coli	BAC9164-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9164-NOV23	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0252-NOV23	No unit	0.05	NA	1		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-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
4AAP-Phenolics	SKA0107-NOV23	mg/L	0.002	<0.002	ND	10	99	80	120	NV	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-008

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
Sulphide	SKA0114-NOV23	mg/L	0.02	<0.02	ND	20	116	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-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 Suspended Solids	EWL0346-NOV23	mg/L	2	< 2	0	10	97	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA5051-NOV23	mg/L	0.05	<0.05	3	10	100	90	110	90	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0243-NOV23	NTU	0.10	< 0.10	0	10	100	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 036655

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page ____ of ____

Laboratory Information Section - Lab use only

Received By: ____ Received By (signature): ____
Received Date: 11 / 08 / 23 (mm/dd/yy) Custody Seal Present: Yes ☐ No ☒ Cooling Agent Present: Yes ☒ No ☐ Type: ICE
Received Time: 17 : 05 (hr : min) Custody Seal Intact: Yes ☐ No ☒ Temperature Upon Receipt (°C): 5.5.5 LAB LIMS #: CA14296-NOV23

REPORT INFORMATION

Company: DM WILLS
Contact: RALF BOLVIN
Address: 150 JAMESON DRIVE PETERBOROUGH, ON
Phone: 705-868-1691
Fax: ____
Email: rbolvin@dmwills.com

INVOICE INFORMATION

☑ (same as Report Information)
Company: ____
Contact: ____
Address: ____
Phone: ____
Email: accounts@dmwills.com

Quotation #: ____ P.O. #: 11056
Project #: 11056 Site Location/ID: ____

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other: ____
☐ MISA ____
☑ ODWS Not Reportable *See note

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality: ____

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water))	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Tl,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other	Other	Other	Other	Other	Sewer Use: Specify pkg:	Water Characterization Pkg ☐ General ☐ Extended	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ IgnitL	COMMENTS:
1	11056 Well A377799-1hr	10:20 AM	11/08/23	13	GW	N																X			
2	11056 Well A377799-6hr	3:20 PM	11/08/23	13	GW	N																X			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 11 / 08 / 23 (mm/dd/yy) Pink Copy - Client

Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 11 / 08 / 23 (mm/dd/yy) Yellow & White Copy - SGS

FINAL REPORT

CA14187-DEC23 R

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

CA14187-DEC23 R

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (3)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA14187-DEC23
Received	12/06/2023
Approved	12/11/2023
Report Number	CA14187-DEC23 R
Date Reported	12/11/2023

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Temperature of Sample upon Receipt: 4 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes
Chain of Custody Number: 036540

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

FINAL REPORT

CA14187-DEC23 R

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number				8	9	10
Sample Name				BH101-22	BH107-22	BH110-22
Sample Matrix				Ground Water	Ground Water	Ground Water
Sample Date				05/12/2023	05/12/2023	05/12/2023
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**
Metals and Inorganics						
Nitrite (as N)	as N mg/L	0.003	1	0.003#<MDL	0.003#<MDL	0.003#<MDL
Nitrate (as N)	as N mg/L	0.006	10	8.84	0.188	2.72
Nitrate + Nitrite (as N)	as N mg/L	0.006		8.84	0.188	2.72

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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
Nitrate + Nitrite (as N)	DIO0149-DEC23	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0149-DEC23	mg/L	0.003	<0.003	ND	20	100	90	110	80	75	125
Nitrate (as N)	DIO0149-DEC23	mg/L	0.006	<0.006	1	20	99	90	110	103	75	125

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

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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.

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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.
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This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 036540

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page ____ of ____

Laboratory Information Section - Lab use only

Received By: Katelyn Medland
Received Date: 12/06/23 (mm/dd/yy)
Received Time: 15:15 (hr : min)
Received By (signature): Kay
Custody Seal Present: Yes ☐ No ☑
Custody Seal Intact: Yes ☐ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ice
Temperature Upon Receipt (°C) 3.4.5
LAB LIMS # CA14187-DEC23

REPORT INFORMATION	INVOICE INFORMATION
Company: DM WILLS	☑ (same as Report Information)
Contact: RALF BOLVIN	Company:
Address: 150 JAMESON DRIVE PETERBOROUGH, ON	Contact:
Phone: 705-868-1691	Address:
Fax:	Phone:
Email: rbolvin@dmwills.com	Email: accounts@dmwills.com

Quotation #: ____ P.O. #: 11056
Project #: 11056 Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days) — TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations: ☐ Reg 347/558 (3 Day min TAT) ☐ PWQO ☐ MMER ☐ CCME ☐ Other: ____ ☐ MISA ☑ ODWS Not Reportable *See note

Sewer By-Law: ☐ Sanitary ☐ Storm Municipality: ____

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Ti,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other (please specify): NITRATES	Other	Other	Other	Other: Sewer Use: Specify pkg:	Other: Water Characterization Pkg General ☐ Extended ☐	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	BH101-22	DEC 5/23	AM	2	GW	N												X							
2	BH107-22	↓	↓	↓	↓	N												X							
3	BH 110-22	↓	↓	↓	↓	N												X							
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 12/05/23 (mm/dd/yy)
Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 12/06/23 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7
Date of Issue: 07 JUNE 2023

FINAL REPORT

CA15268-SEP24 R---

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

CA15268-SEP24 R---

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (7)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA15268-SEP24
Received	09/27/2024
Approved	10/01/2024
Report Number	CA15268-SEP24 R---
Date Reported	10/01/2024

COMMENTS

Temperature of Sample upon Receipt: 8 degrees C

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

FINAL REPORT

CA15268-SEP24 R---

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

	Sample Number	5	6	7	8	9	10	11		
	Sample Name	BH110-22	BH107-22	A377799	A377796	DUP-01	BH101-22	A377795		
	Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water		
	Sample Date	27/09/2024	27/09/2024	27/09/2024	27/09/2024	27/09/2024	27/09/2024	27/09/2024		
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics										
Nitrite (as N)	as N mg/L	0.03	1	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06	10	4.81	0.17	1.82	0.09	0.09	8.67	1.18
Nitrate + Nitrite (as N)	as N mg/L	0.06		4.81	0.17	1.82	0.09	0.09	8.67	1.18

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENVIIC-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
Nitrate + Nitrite (as N)	DIO0631-SEP24	mg/L	0.06	<0.06	NA		NA			NA		
Nitrite (as N)	DIO0631-SEP24	mg/L	0.03	<0.03	ND	20	101	90	110	104	75	125
Nitrate (as N)	DIO0631-SEP24	mg/L	0.06	<0.06	1	20	100	90	110	103	75	125

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 011396 Page _____ of _____

Laboratory Information Section - Lab use only

Received By: SEP 27 2024 Received By (signature): _____
Received Date: __/__/__ (mm/dd/yy) Custody Seal Present: Yes ☐ No ☐ Cooling Agent Present: Yes ☐ No ☐ Type: _____
Received Time: 15:50 (hr : min) Custody Seal Intact: Yes ☐ No ☐ Temperature Upon Receipt (°C) 7.1, 8.1, 10 LAB LIMS #: sep15268 MK

REPORT INFORMATION
Company: DM WILLS
Contact: RALF BOLWIN
Address: 150 JAMESON DR PETERBOROUGH, ON
Phone: 705-868-1691
Fax: _____
Email: rbolwin@dmwills.com

INVOICE INFORMATION
☑ (same as Report Information)
Company: _____
Contact: _____
Address: _____
Phone: _____
Email: accounts@dmwills.com

Quotation #: _____ P.O. #: 11056
Project #: 11056 Site Location/ID: _____

TURNAROUND TIME (TAT) REQUIRED
☑ Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day
RUSH 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

REGULATIONS
Regulation 153/04: ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table _____ ☐ Res/Park ☐ Ind/Com ☐ Agri/Other Soil Texture: ☐ Coarse ☐ Medium ☐ Fine
Other Regulations: ☐ Reg 347/558 (3 Day min TAT) ☐ PWQO ☐ MMER ☐ CCME ☑ Other: ODWS ☐ MISA
Sewer By-Law: ☐ Sanitary ☐ Storm Municipality: _____
RECORD OF SITE CONDITION (RSC) ☐ YES ☑ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics incl CrVI, CN,Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water)	M&I: Full Metals Suite ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni, Se,Ag,Tl,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other: NITRATES	Other	Other	Other	Other	Other: Sewer Use: Specify pkg:	Other: Water Characterization Pkg General ☐ Extended ☐	TCLP: Specify TCLP tests ☐M&I ☐VOC ☐PCB ☐B(a)P ☐ABN ☐Ignit.	COMMENTS:
1	BH110-22	Sept 27/24	AM	2	GW													X								
2	BH107-22	↓	↓	↓	↓													X								
3	A377799																	X								
4	A377796																	X								
5	DUP-01		↓															X								
6	BH101-22		PM															X								
7	A377795	↓	PM	↓	↓													X								
8																										
9																										
10																										
11																										
12																										

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 09/27/24 (mm/dd/yy)
Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 09/27/24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.2
Date of Issue: 09 Sept, 2019

FINAL REPORT

CA14459-SEP24 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (2)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14459-SEP24
Received	09/11/2024
Approved	09/18/2024
Report Number	CA14459-SEP24 R1
Date Reported	09/18/2024

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 10 degrees C
Cooling Agent Present: yes
Custody Seal Present: no

Chain of Custody Number:039486

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395881_1 hr	A395881_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	11/09/2024	11/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry						
UV Transmittance	%T				91.2	91.2
Alkalinity	mg/L as CaCO3	2	500		169	170
Bicarbonate	mg/L as CaCO3	2			169	170
Carbonate	mg/L as CaCO3	2			< 2	< 2
OH	mg/L as CaCO3	2			< 2	< 2
Colour	TCU	3	5		5	6
Conductivity	uS/cm	2			360	359
Total Suspended Solids	mg/L	2			4	2
Turbidity	NTU	0.10	5	1	2.0	1.4
Organic Nitrogen	mg/L	0.05	0.15		< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			0.17	0.19
Ammonia+Ammonium (N)	as N mg/L	0.04			0.18	0.18
Dissolved Organic Carbon	mg/L	1	5		1	1
Total Organic Carbon	mg/L	1			1	1

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395881_1 hr	A395881_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	11/09/2024	11/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	0.11	0.12
Bromide	mg/L	0.3			< 0.3	< 0.3
Nitrite (as N)	as N mg/L	0.03		1	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		10	< 0.06	< 0.06
Sulphate	mg/L	2	500		22	22
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		187	191
Aluminum (total)	mg/L	0.001	0.1		0.001	< 0.001
Arsenic (total)	mg/L	0.0002		0.01	0.0003	0.0002
Boron (total)	mg/L	0.002		5	0.011	0.009
Barium (total)	mg/L	0.00008		1	0.150	0.151
Beryllium (total)	mg/L	0.000007			< 0.000007	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000012	0.000008
Calcium (total)	mg/L	0.01			49.9	51.2
Cadmium (total)	mg/L	0.000003		0.005	< 0.000003	< 0.000003
Copper (total)	mg/L	0.001	1		< 0.001	< 0.001
Chromium (total)	mg/L	0.00008		0.05	0.00010	< 0.00008
Iron (total)	mg/L	0.007	0.3		0.438	0.398
Potassium (total)	mg/L	0.009			0.818	0.824
Magnesium (total)	mg/L	0.001			15.2	15.2
Manganese (total)	mg/L	0.00001	0.05		0.00981	0.00946

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395881_1 hr	A395881_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	11/09/2024	11/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Molybdenum (total)	mg/L	0.0004			< 0.0004	< 0.0004
Nickel (total)	mg/L	0.0001			< 0.0001	< 0.0001
Sodium (total)	mg/L	0.01	200	20	3.82	3.59
Phosphorus (total)	mg/L	0.003			0.008	0.011
Lead (total)	mg/L	0.00009		0.01	0.00013	< 0.00009
Silicon (total)	mg/L	0.02			11.5	10.9
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			0.353	0.354
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			< 0.00006	< 0.00006
Titanium (total)	mg/L	0.0001			< 0.0001	< 0.0001
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	< 0.00004	< 0.00004
Uranium (total)	mg/L	0.000002		0.02	0.000012	0.000014
Vanadium (total)	mg/L	0.00001			0.00003	0.00003
Zinc (total)	mg/L	0.002	5		< 0.002	< 0.002
Cation sum	meq/L	-9999			3.97	4.03
Anion Sum	meq/L	-9999			3.86	3.89
Anion-Cation Balance	% difference	-9999			1.46	1.72
Ion Ratio	none	-9999			1.03	1.03
Total Dissolved Solids (calculated)	mg/L	-9999			194	196
Conductivity (calculated)	uS/cm	-9999			391	396

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395881_1 hr	A395881_6 hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	11/09/2024	11/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Langeliers Index 4° C	@ 4° C	-9999			-0.11	-0.25
Saturation pH 4°C	pHs @ 4°C	-9999			8.01	8.00
Microbiology						
Total Coliform	cfu/100mL	0		0	1	1
E. Coli	cfu/100mL	0		0	0	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			2	6
Other (ORP)						
pH	No unit	0.05	8.5		7.90	7.75
Chloride	mg/L	1	250		< 1	< 1
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			0.002	< 0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
A395881_1 hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	1		0
Turbidity	SM 2130	NTU	2.0		1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	187	100	
Iron	SM 3030/EPA 200.8	mg/L	0.438	0.3	
A395881_6 hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	1		0
Colour	SM 2120	TCU	6	5	
Turbidity	SM 2130	NTU	1.4		1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	191	100	
Iron	SM 3030/EPA 200.8	mg/L	0.398	0.3	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0237-SEP24	mg/L as CaCO3	2	< 2	0	20	104	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0117-SEP24	mg/L	0.04	<0.04	2	10	98	90	110	101	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-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	DIO8015-SEP24	mg/L	1	<1	ND	20	98	80	120	99	75	125
Sulphate	DIO8015-SEP24	mg/L	2	<2	ND	20	106	80	120	102	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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	DIO0243-SEP24	mg/L	0.3	<0.3	ND	20	93	90	110	76	75	125
Nitrite (as N)	DIO0243-SEP24	mg/L	0.03	<0.03	6	20	96	90	110	93	75	125
Nitrate (as N)	DIO0243-SEP24	mg/L	0.06	<0.06	0	20	97	90	110	NV	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0116-SEP24	mg/L	1	<1	7	20	98	90	110	99	75	125
Total Organic Carbon	SKA0116-SEP24	mg/L	1	<1	7	20	98	90	110	99	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0237-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0237-SEP24	mg/L as CaCO3	2	< 2	0	10	NA	90	110	NA		
OH	EWL0237-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 I 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	EWL0321-SEP24	TCU	3	< 3	2	10	105	80	120	NA		

Conductivity

Method: SM 2510 I 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	EWL0237-SEP24	uS/cm	2	2	0	20	100	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 I 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	EWL0297-SEP24	mg/L	0.06	<0.06	0	10	101	90	110	99	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0020-SEP24	mg/L	0.00001	< 0.00001	ND	20	115	80	120	125	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0139-SEP24	mg/L	0.00005	<0.00005	ND	20	97	90	110	75	70	130
Aluminum (total)	EMS0139-SEP24	mg/L	0.001	<0.001	ND	20	91	90	110	114	70	130
Arsenic (total)	EMS0139-SEP24	mg/L	0.0002	<0.0002	ND	20	101	90	110	100	70	130
Barium (total)	EMS0139-SEP24	mg/L	0.00008	<0.00008	ND	20	101	90	110	104	70	130
Beryllium (total)	EMS0139-SEP24	mg/L	0.000007	<0.000007	ND	20	102	90	110	100	70	130
Boron (total)	EMS0139-SEP24	mg/L	0.002	<0.002	8	20	99	90	110	101	70	130
Bismuth (total)	EMS0139-SEP24	mg/L	0.00001	<0.00001	ND	20	97	90	110	70	70	130
Calcium (total)	EMS0139-SEP24	mg/L	0.01	<0.01	14	20	100	90	110	101	70	130
Cadmium (total)	EMS0139-SEP24	mg/L	0.000003	<0.000003	ND	20	98	90	110	101	70	130
Cobalt (total)	EMS0139-SEP24	mg/L	0.000004	<0.000004	ND	20	102	90	110	99	70	130
Chromium (total)	EMS0139-SEP24	mg/L	0.00008	<0.00008	ND	20	98	90	110	97	70	130
Copper (total)	EMS0139-SEP24	mg/L	0.001	<0.001	ND	20	101	90	110	99	70	130
Iron (total)	EMS0139-SEP24	mg/L	0.007	<0.007	ND	20	103	90	110	100	70	130
Potassium (total)	EMS0139-SEP24	mg/L	0.009	<0.009	6	20	100	90	110	97	70	130
Magnesium (total)	EMS0139-SEP24	mg/L	0.001	<0.001	10	20	99	90	110	96	70	130
Manganese (total)	EMS0139-SEP24	mg/L	0.00001	<0.00001	ND	20	102	90	110	103	70	130
Molybdenum (total)	EMS0139-SEP24	mg/L	0.0004	<0.0004	ND	20	101	90	110	94	70	130
Sodium (total)	EMS0139-SEP24	mg/L	0.01	<0.01	6	20	100	90	110	100	70	130
Nickel (total)	EMS0139-SEP24	mg/L	0.0001	<0.0001	ND	20	100	90	110	102	70	130
Lead (total)	EMS0139-SEP24	mg/L	0.00009	<0.00009	ND	20	100	90	110	99	70	130

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
Phosphorus (total)	EMS0139-SEP24	mg/L	0.003	<0.003	ND	20	98	90	110	NV	70	130
Antimony (total)	EMS0139-SEP24	mg/L	0.0009	<0.0009	ND	20	107	90	110	125	70	130
Selenium (total)	EMS0139-SEP24	mg/L	0.00004	<0.00004	ND	20	99	90	110	91	70	130
Silicon (total)	EMS0139-SEP24	mg/L	0.02	<0.02	ND	20	103	90	110	NV	70	130
Tin (total)	EMS0139-SEP24	mg/L	0.00006	<0.00006	ND	20	101	90	110	NV	70	130
Strontium (total)	EMS0139-SEP24	mg/L	0.00008	<0.00008	7	20	101	90	110	101	70	130
Titanium (total)	EMS0139-SEP24	mg/L	0.0001	<0.0001	ND	20	99	90	110	NV	70	130
Thallium (total)	EMS0139-SEP24	mg/L	0.000005	<0.000005	ND	20	97	90	110	84	70	130
Uranium (total)	EMS0139-SEP24	mg/L	0.000002	<0.000002	ND	20	99	90	110	101	70	130
Vanadium (total)	EMS0139-SEP24	mg/L	0.00001	<0.00001	ND	20	102	90	110	104	70	130
Zinc (total)	EMS0139-SEP24	mg/L	0.002	<0.002	ND	20	94	90	110	94	70	130

QC SUMMARY

Microbiology

Method: SM 9215A | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-005

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
Heterotrophic Plate Count (HPC)	BAC9202-SEP24	cfu/1mL	-	ACCEPTED	ACCEPTED							
E. Coli	BAC9202-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9202-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0237-SEP24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-IENVISFA-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
4AAP-Phenolics	SKA0112-SEP24	mg/L	0.002	<0.002	ND	10	104	80	120	89	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-IENVISFA-LAK-AN-008

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
Sulphide	SKA0108-SEP24	mg/L	0.02	<0.02	ND	20	96	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-IENVIEWL-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 Suspended Solids	EWL0246-SEP24	mg/L	2	< 2	0	10	92	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA0138-SEP24	mg/L	0.05	<0.05	ND	10	98	90	110	79	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0256-SEP24	NTU	0.10	< 0.10	0	10	100	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 039486

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page _____ of _____

Laboratory Information Section - Lab use only

Received By: Siri Romard
Received By (signature): Siri Romard
Received Date: 09/11/24 (mm/dd/yy)
Received Time: 18:00 (hr : min)
Custody Seal Present: Yes ☐ No ☒
Custody Seal Intact: Yes ☐ No ☒
Cooling Agent Present: Yes ☑ No ☐ Type: ICE
Temperature Upon Receipt (°C) 11.8.10
LAB LIMS #: Sep 14459 AK

REPORT INFORMATION

Company: DM WILLS
Contact: RALF BOLVIN
Address: 150 JAMESON DR. PETERBOROUGH, ON
Phone: 705-868-1691
Fax:
Email: rbolvin@dmwills.com + Costic@dmwills.com

INVOICE INFORMATION

☑ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email: accounts@dmwills.com

Quotation #:
P.O. #: 11056
Project #: 11056
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table _____ Appx. _____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☑ ODWS Not Reportable *See note

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water))	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Ti,U,V,Zn)	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs)	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides (Organochlorine or specify other	Other (please specify)	Other	Other	Other	Other: Sewer Use: Specify pkg:	Other: Water Characterization Pkg ☑ Extended ☐ General	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	A395881_1hr	Sept 11/24	9:26am	14	GW	N																X			
2	A395881_6hr	Sept 11/24	3:26pm	14	GW	N																X			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC
Signature: Chris Ostic
Date: 09/11/24 (mm/dd/yy)

Relinquished by (NAME): CHRIS OSTIC
Signature: Chris Ostic
Date: 09/11/24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7
Date of Issue: 07 JUNE 2023

FINAL REPORT

CA14338-SEP24 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (2)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14338-SEP24
Received	09/10/2024
Approved	09/17/2024
Report Number	CA14338-SEP24 R1
Date Reported	09/17/2024

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 5 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 039485

raised RL for tag#8 NO2 due to SM

NH3 > TKN due to sample matrix

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number					7	8
Sample Name					A395882-1hr	A395882-7hr
Sample Matrix					Ground Water	Ground Water
Sample Date					09/09/2024	09/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry						
UV Transmittance	%T				60.7	65.2
Alkalinity	mg/L as CaCO3	2	500		324	292
Bicarbonate	mg/L as CaCO3	2			324	292
Carbonate	mg/L as CaCO3	2			< 2	< 2
OH	mg/L as CaCO3	2			< 2	< 2
Colour	TCU	3	5		8	8
Conductivity	uS/cm	2			1960	2280
Total Suspended Solids	mg/L	2			26	21
Turbidity	NTU	0.10	5	1	39	16
Organic Nitrogen	mg/L	0.05	0.15		< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			1.43	2.16
Ammonia+Ammonium (N)	as N mg/L	0.04			2.41	2.62
Dissolved Organic Carbon	mg/L	1	5		4	4
Total Organic Carbon	mg/L	1			4	4

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395882-1hr	A395882-7hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	09/09/2024	09/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	0.37	0.35
Bromide	mg/L	0.3			6.1	7.7
Nitrite (as N)	as N mg/L	0.03		1	< 0.03	< 0.3↑
Nitrate (as N)	as N mg/L	0.06		10	< 0.06	< 0.06
Sulphate	mg/L	2	500		< 2	< 2
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		422	513
Aluminum (total)	mg/L	0.001	0.1		0.085	0.045
Arsenic (total)	mg/L	0.0002		0.01	0.0003	0.0003
Boron (total)	mg/L	0.002		5	0.250	0.259
Barium (total)	mg/L	0.00008		1	0.573	0.752
Beryllium (total)	mg/L	0.000007			< 0.000007	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000213	0.000130
Calcium (total)	mg/L	0.01			94.7	116
Cadmium (total)	mg/L	0.000003		0.005	0.000003	0.000004
Copper (total)	mg/L	0.001	1		0.003	0.001
Chromium (total)	mg/L	0.00008		0.05	0.00053	0.00047
Iron (total)	mg/L	0.007	0.3		4.31	1.77
Potassium (total)	mg/L	0.009			5.57	6.34
Magnesium (total)	mg/L	0.001			45.1	54.6
Manganese (total)	mg/L	0.00001	0.05		0.0730	0.0447

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8
					Sample Name	A395882-1hr	A395882-7hr
					Sample Matrix	Ground Water	Ground Water
					Sample Date	09/09/2024	09/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Molybdenum (total)	mg/L	0.0004			0.0049	0.0052
Nickel (total)	mg/L	0.0001			0.0006	0.0004
Sodium (total)	mg/L	0.01	200	20	224	261
Phosphorus (total)	mg/L	0.003			0.054	0.054
Lead (total)	mg/L	0.00009		0.01	0.00050	0.00011
Silicon (total)	mg/L	0.02			5.81	5.96
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			4.68	6.02
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			0.00015	< 0.00006
Titanium (total)	mg/L	0.0001			0.0054	0.0035
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	0.00007	0.00005
Uranium (total)	mg/L	0.000002		0.02	0.000012	0.000007
Vanadium (total)	mg/L	0.00001			0.00027	0.00022
Zinc (total)	mg/L	0.002	5		0.003	< 0.002
Cation sum	meq/L	-9999			18.80	22.17
Anion Sum	meq/L	-9999			19.87	22.26
Anion-Cation Balance	% difference	-9999			-2.76	-0.20
Ion Ratio	none	-9999			0.95	1.00
Total Dissolved Solids (calculated)	mg/L	-9999			1036	1192
Conductivity (calculated)	uS/cm	-9999			1933	2221

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395882-1hr	A395882-7hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	09/09/2024	09/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Langeliers Index 4° C	@ 4° C	-9999			0.48	0.44
Saturation pH 4°C	pHs @ 4°C	-9999			7.52	7.49
Microbiology						
Total Coliform	cfu/100mL	0		0	1	3
E. Coli	cfu/100mL	0		0	1	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			6900	5200
Other (ORP)						
pH	No unit	0.05	8.5		8.00	7.93
Chloride	mg/L	1	250		470	580
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			0.002	0.003

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
A395882-1hr					
E.Coli	OMOE MICROMFDC-E3407A	cfu/100mL	1		0
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	1		0
Colour	SM 2120	TCU	8	5	
Turbidity	SM 2130	NTU	39	5	1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	422	100	
Iron	SM 3030/EPA 200.8	mg/L	4.31	0.3	
Manganese	SM 3030/EPA 200.8	mg/L	0.0730	0.05	
Sodium	SM 3030/EPA 200.8	mg/L	224	200	20
Chloride	US EPA 325.2	mg/L	470	250	
A395882-7hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	3		0
Colour	SM 2120	TCU	8	5	
Turbidity	SM 2130	NTU	16	5	1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	513	100	
Iron	SM 3030/EPA 200.8	mg/L	1.77	0.3	
Sodium	SM 3030/EPA 200.8	mg/L	261	200	20
Chloride	US EPA 325.2	mg/L	580	250	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0177-SEP24	mg/L as CaCO3	2	< 2	0	20	98	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0090-SEP24	mg/L	0.04	<0.04	1	10	100	90	110	95	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-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	DIO8007-SEP24	mg/L	1	<1	ND	20	96	80	120	100	75	125
Sulphate	DIO8007-SEP24	mg/L	2	<2	3	20	102	80	120	97	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-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	DIO0183-SEP24	mg/L	0.3	<0.3	1	20	98	90	110	NV	75	125
Nitrate (as N)	DIO0183-SEP24	mg/L	0.06	<0.06	ND	20	97	90	110	100	75	125
Bromide	DIO0187-SEP24	mg/L	0.3	<0.3	0	20	100	90	110	NV	75	125
Nitrite (as N)	DIO0187-SEP24	mg/L	0.03	<0.03	ND	20	97	90	110	78	75	125
Nitrate (as N)	DIO0187-SEP24	mg/L	0.06	<0.06	ND	20	98	90	110	99	75	125
Nitrite (as N)	DIO0197-SEP24	mg/L	0.03	<0.03	ND	20	97	90	110	99	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0088-SEP24	mg/L	1	<1	0	20	91	90	110	98	75	125
Total Organic Carbon	SKA0088-SEP24	mg/L	1	<1	0	20	91	90	110	98	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0177-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0177-SEP24	mg/L as CaCO3	2	< 2	0	10	NA	90	110	NA		
OH	EWL0177-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0321-SEP24	TCU	3	< 3	2	10	105	80	120	NA		

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0177-SEP24	uS/cm	2	< 2	0	20	99	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0190-SEP24	mg/L	0.06	<0.06	0	10	100	90	110	96	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0015-SEP24	mg/L	0.00001	< 0.00001	ND	20	86	80	120	129	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0090-SEP24	mg/L	0.00005	<0.00005	ND	20	101	90	110	89	70	130
Aluminum (total)	EMS0090-SEP24	mg/L	0.001	<0.001	16	20	108	90	110	102	70	130
Arsenic (total)	EMS0090-SEP24	mg/L	0.0002	<0.0002	ND	20	103	90	110	101	70	130
Barium (total)	EMS0090-SEP24	mg/L	0.00008	<0.00008	2	20	103	90	110	97	70	130
Beryllium (total)	EMS0090-SEP24	mg/L	0.000007	<0.000007	ND	20	103	90	110	97	70	130
Boron (total)	EMS0090-SEP24	mg/L	0.002	<0.002	0	20	100	90	110	90	70	130
Bismuth (total)	EMS0090-SEP24	mg/L	0.00001	<0.00001	ND	20	99	90	110	80	70	130
Calcium (total)	EMS0090-SEP24	mg/L	0.01	<0.01	5	20	101	90	110	97	70	130
Cadmium (total)	EMS0090-SEP24	mg/L	0.000003	<0.000003	ND	20	100	90	110	104	70	130
Cobalt (total)	EMS0090-SEP24	mg/L	0.000004	<0.000004	3	20	102	90	110	92	70	130
Chromium (total)	EMS0090-SEP24	mg/L	0.00008	<0.00008	3	20	103	90	110	95	70	130
Copper (total)	EMS0090-SEP24	mg/L	0.001	<0.001	ND	20	103	90	110	91	70	130
Iron (total)	EMS0090-SEP24	mg/L	0.007	<0.007	3	20	107	90	110	75	70	130
Potassium (total)	EMS0090-SEP24	mg/L	0.009	<0.009	4	20	104	90	110	98	70	130
Magnesium (total)	EMS0090-SEP24	mg/L	0.001	<0.001	5	20	105	90	110	97	70	130
Manganese (total)	EMS0090-SEP24	mg/L	0.00001	<0.00001	2	20	106	90	110	96	70	130
Molybdenum (total)	EMS0090-SEP24	mg/L	0.0004	<0.0004	3	20	103	90	110	96	70	130
Sodium (total)	EMS0090-SEP24	mg/L	0.01	<0.01	5	20	105	90	110	99	70	130
Nickel (total)	EMS0090-SEP24	mg/L	0.0001	<0.0001	ND	20	104	90	110	99	70	130
Lead (total)	EMS0090-SEP24	mg/L	0.00009	<0.00009	ND	20	102	90	110	95	70	130

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
Phosphorus (total)	EMS0090-SEP24	mg/L	0.003	<0.003	ND	20	102	90	110	NV	70	130
Antimony (total)	EMS0090-SEP24	mg/L	0.0009	<0.0009	ND	20	110	90	110	128	70	130
Selenium (total)	EMS0090-SEP24	mg/L	0.00004	<0.00004	ND	20	103	90	110	108	70	130
Silicon (total)	EMS0090-SEP24	mg/L	0.02	<0.02	2	20	100	90	110	NV	70	130
Tin (total)	EMS0090-SEP24	mg/L	0.00006	<0.00006	ND	20	103	90	110	NV	70	130
Strontium (total)	EMS0090-SEP24	mg/L	0.00008	<0.00008	3	20	105	90	110	95	70	130
Titanium (total)	EMS0090-SEP24	mg/L	0.0001	<0.0001	4	20	108	90	110	NV	70	130
Thallium (total)	EMS0090-SEP24	mg/L	0.000005	<0.000005	ND	20	99	90	110	94	70	130
Uranium (total)	EMS0090-SEP24	mg/L	0.000002	<0.000002	ND	20	101	90	110	98	70	130
Vanadium (total)	EMS0090-SEP24	mg/L	0.00001	<0.00001	6	20	103	90	110	104	70	130
Zinc (total)	EMS0090-SEP24	mg/L	0.002	<0.002	ND	20	101	90	110	105	70	130

QC SUMMARY

Microbiology

Method: OMOE MICROMFDC-E3407A | Internal ref.: ME-CA-[ENV]MIC-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
E. Coli	BAC9135-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9135-SEP24	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9135-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0177-SEP24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-IENVISFA-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
4AAP-Phenolics	SKA0097-SEP24	mg/L	0.002	<0.002	4	10	100	80	120	79	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-IENVISFA-LAK-AN-008

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
Sulphide	SKA0093-SEP24	mg/L	0.02	<0.02	ND	20	99	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-IENVIEWL-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 Suspended Solids	EWL0180-SEP24	mg/L	2	< 2	0	10	96	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA0103-SEP24	mg/L	0.05	<0.05	1	10	99	90	110	94	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0188-SEP24	NTU	0.10	< 0.10	0	10	100	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 039485

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page ____ of ____

Laboratory Information Section - Lab use only

Received By: Katelyn Medland | Received By (signature): KM
Received Date: 09 09 24 (mm/dd/yy) | Custody Seal Present: Yes ☑ No ☐ | Cooling Agent Present: Yes ☑ No ☐ Type: ice
Received Time: 08 25 (hr : min) | Custody Seal Intact: Yes ☑ No ☐ | Temperature Upon Receipt (°C): 3.5.6
LAB LIMS #: CA 14338-Sep24

REPORT INFORMATION

Company: DM WILLS
Contact: RALF BOLVIN
Address: 150 JAMESON DRIVE PETERBOROUGHT, ON
Phone: 705-868-1691
Fax:
Email: rbolvin@dmwills.com Costic@dmwills.com

INVOICE INFORMATION

☑ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email: accounts@dmwills.com

Quotation #:
P.O. #: 11056
Project #: 11056
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☑ ODWS Not Reportable *See note

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water))	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI)	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Ti,U,V,Zn)	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs)	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only (no BTEX)	VOC: VOCs (all incl BTEX)	VOC: BTEX only	Pest: Pesticides (Organochlorine or specify other)	Other (please specify)	Other	Other	Other	Other: Sewer Use: (Specify pkg:)	Other: Water Characterization Pkg (General ☐ Extended ☑)	SPLP (Specify tests)	TCLP (Specify tests)	COMMENTS:
1	A395882-1hr	Sept9/24	11:13AM	13	GW	N																X	☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	
2	A395882-7hr	Sept9/24	5:13PM	13	GW	N																X			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC | Signature: Chris Ostic | Date: 09,09,24 (mm/dd/yy)
Relinquished by (NAME): RALF BOLVIN | Signature: | Date: 09,10,24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7

FINAL REPORT

CA15109-SEP24 R1

11056

Prepared for

D.M. Wills -Peterborough

FINAL REPORT

First Page

CLIENT DETAILS

Client	D.M. Wills -Peterborough
Address	150 Jameson Drive Peterborough, ON K9J 0B9. Canada
Contact	Ralf Bolvin
Telephone	705-868-1691
Facsimile	705-741-3568
Email	rbolvin@dmwills.com
Project	11056
Order Number	
Samples	Ground Water (2)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA15109-SEP24
Received	09/11/2024
Approved	09/17/2024
Report Number	CA15109-SEP24 R1
Date Reported	09/17/2024

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 6 degrees C
Cooling Agent Present: yes
Custody Seal Present: yes

Chain of Custody Number: 039487

NO2 RL raised due to sample matrix

NH3 > TKN due to sample matrix

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395883_1hr	A395883_7hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	10/09/2024	10/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
General Chemistry						
UV Transmittance	%T				44.8	58.3
Alkalinity	mg/L as CaCO3	2	500		273	295
Bicarbonate	mg/L as CaCO3	2			273	295
Carbonate	mg/L as CaCO3	2			< 2	< 2
OH	mg/L as CaCO3	2			< 2	< 2
Colour	TCU	3	5		8	8
Conductivity	uS/cm	2			2190	2430
Total Suspended Solids	mg/L	2			45	13
Turbidity	NTU	0.10	5	1	65	37
Organic Nitrogen	mg/L	0.05	0.15		< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			1.62	1.47
Ammonia+Ammonium (N)	as N mg/L	0.04			3.72	3.76
Dissolved Organic Carbon	mg/L	1	5		5	5
Total Organic Carbon	mg/L	1			5	5

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number					7	8
Sample Name					A395883_1hr	A395883_7hr
Sample Matrix					Ground Water	Ground Water
Sample Date					10/09/2024	10/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics						
Fluoride	mg/L	0.06		1.5	0.23	0.23
Bromide	mg/L	0.3			7.3	8.1
Nitrite (as N)	as N mg/L	0.03		1	< 0.3↑	< 0.3↑
Nitrate (as N)	as N mg/L	0.06		10	< 0.06	< 0.06
Sulphate	mg/L	2	500		< 2	< 2
Sulphide	mg/L	0.02			< 0.02	< 0.02
Hardness	mg/L as CaCO3	0.05	100		595	642
Aluminum (total)	mg/L	0.001	0.1		0.167	0.059
Arsenic (total)	mg/L	0.0002		0.01	0.0024	0.0016
Boron (total)	mg/L	0.002		5	0.156	0.181
Barium (total)	mg/L	0.00008		1	0.468	0.525
Beryllium (total)	mg/L	0.000007			0.000018	< 0.000007
Bismuth (total)	mg/L	0.00001			< 0.00001	< 0.00001
Cobalt (total)	mg/L	0.000004			0.000295	0.000107
Calcium (total)	mg/L	0.01			144	156
Cadmium (total)	mg/L	0.000003		0.005	0.000016	0.000007
Copper (total)	mg/L	0.001	1		0.002	< 0.001
Chromium (total)	mg/L	0.00008		0.05	0.00059	0.00031
Iron (total)	mg/L	0.007	0.3		8.42	3.88
Potassium (total)	mg/L	0.009			3.83	4.22
Magnesium (total)	mg/L	0.001			57.0	61.6
Manganese (total)	mg/L	0.00001	0.05		0.185	0.132

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8
					Sample Name	A395883_1hr	A395883_7hr
					Sample Matrix	Ground Water	Ground Water
					Sample Date	10/09/2024	10/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Molybdenum (total)	mg/L	0.0004			0.0039	0.0048
Nickel (total)	mg/L	0.0001			0.0008	0.0002
Sodium (total)	mg/L	0.01	200	20	218	242
Phosphorus (total)	mg/L	0.003			0.155	0.131
Lead (total)	mg/L	0.00009		0.01	0.00433	< 0.00009
Silicon (total)	mg/L	0.02			6.89	6.82
Silver (total)	mg/L	0.00005			< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008			4.12	4.68
Thallium (total)	mg/L	0.000005			< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006			< 0.00006	< 0.00006
Titanium (total)	mg/L	0.0001			0.0075	0.0074
Antimony (total)	mg/L	0.0009		0.006	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004		0.05	0.00005	< 0.00004
Uranium (total)	mg/L	0.000002		0.02	0.000037	0.000005
Vanadium (total)	mg/L	0.00001			0.00046	0.00020
Zinc (total)	mg/L	0.002	5		0.003	< 0.002
Cation sum	meq/L	-9999			22.28	24.03
Anion Sum	meq/L	-9999			21.65	23.74
Anion-Cation Balance	% difference	-9999			1.44	0.59
Ion Ratio	none	-9999			1.03	1.01
Total Dissolved Solids (calculated)	mg/L	-9999			1158	1270
Conductivity (calculated)	uS/cm	-9999			2196	2389

Client: D.M. Wills -Peterborough
Project: 11056
Project Manager: Ralf Bolvin
Samplers: Chris Ostic

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8
				Sample Name	A395883_1hr	A395883_7hr
				Sample Matrix	Ground Water	Ground Water
				Sample Date	10/09/2024	10/09/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**
Metals and Inorganics (continued)						
Langeliers Index 4° C	@ 4° C	-9999			0.37	0.37
Saturation pH 4°C	pHs @ 4°C	-9999			7.42	7.36
Microbiology						
Total Coliform	cfu/100mL	0		0	620	17
E. Coli	cfu/100mL	0		0	40	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			4000	125
Other (ORP)						
pH	No unit	0.05	8.5		7.79	7.73
Chloride	mg/L	1	250		570	630
Mercury (total)	mg/L	0.00001			< 0.00001	< 0.00001
Phenols						
4AAP-Phenolics	mg/L	0.002			0.027	0.016

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
A395883_1hr					
E.Coli	OMOE MICROMFDC-E3407A	cfu/100mL	40		0
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	620		0
Colour	SM 2120	TCU	8	5	
Turbidity	SM 2130	NTU	65	5	1
Aluminum	SM 3030/EPA 200.8	mg/L	0.167	0.1	
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	595	100	
Iron	SM 3030/EPA 200.8	mg/L	8.42	0.3	
Manganese	SM 3030/EPA 200.8	mg/L	0.185	0.05	
Sodium	SM 3030/EPA 200.8	mg/L	218	200	20
Chloride	US EPA 325.2	mg/L	570	250	
A395883_7hr					
Total Coliform	OMOE MICROMFDC-E3407A	cfu/100mL	17		0
Colour	SM 2120	TCU	8	5	
Turbidity	SM 2130	NTU	37	5	1
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	642	100	
Iron	SM 3030/EPA 200.8	mg/L	3.88	0.3	
Manganese	SM 3030/EPA 200.8	mg/L	0.132	0.05	
Sodium	SM 3030/EPA 200.8	mg/L	242	200	20
Chloride	US EPA 325.2	mg/L	630	250	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-[ENV]EWL-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	EWL0197-SEP24	mg/L as CaCO3	2	< 2	1	20	106	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-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)	SKA0106-SEP24	mg/L	0.04	<0.04	3	10	100	90	110	101	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENVIEWL-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	DIO8008-SEP24	mg/L	1	<1	0	20	98	80	120	82	75	125
Sulphate	DIO8011-SEP24	mg/L	2	<2	ND	20	104	80	120	101	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENVIIC-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	DIO0204-SEP24	mg/L	0.3	<0.3	ND	20	98	90	110	84	75	125
Nitrate (as N)	DIO0204-SEP24	mg/L	0.06	<0.06	ND	20	97	90	110	97	75	125
Bromide	DIO0206-SEP24	mg/L	0.3	<0.3	1	20	98	90	110	NV	75	125
Nitrate (as N)	DIO0206-SEP24	mg/L	0.06	<0.06	ND	20	97	90	110	101	75	125
Nitrite (as N)	DIO0239-SEP24	mg/L	0.03	<0.03	ND	20	97	90	110	102	75	125

QC SUMMARY

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-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
Dissolved Organic Carbon	SKA0104-SEP24	mg/L	1	<1	1	20	91	90	110	108	75	125
Total Organic Carbon	SKA0104-SEP24	mg/L	1	<1	1	20	91	90	110	108	75	125

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0197-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0197-SEP24	mg/L as CaCO3	2	< 2	1	10	NA	90	110	NA		
OH	EWL0197-SEP24	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

QC SUMMARY

Colour

Method: SM 2120 I 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	EWL0321-SEP24	TCU	3	< 3	2	10	105	80	120	NA		

Conductivity

Method: SM 2510 I 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	EWL0197-SEP24	uS/cm	2	< 2	0	20	99	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 I 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	EWL0215-SEP24	mg/L	0.06	<0.06	2	10	97	90	110	115	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-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)	EHG0017-SEP24	mg/L	0.00001	< 0.00001	ND	20	100	80	120	129	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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
Silver (total)	EMS0096-SEP24	mg/L	0.00005	<0.00005	ND	20	95	90	110	71	70	130
Aluminum (total)	EMS0096-SEP24	mg/L	0.001	<0.001	1	20	103	90	110	100	70	130
Arsenic (total)	EMS0096-SEP24	mg/L	0.0002	<0.0002	4	20	98	90	110	92	70	130
Barium (total)	EMS0096-SEP24	mg/L	0.00008	<0.00008	1	20	98	90	110	90	70	130
Beryllium (total)	EMS0096-SEP24	mg/L	0.000007	<0.000007	ND	20	103	90	110	97	70	130
Boron (total)	EMS0096-SEP24	mg/L	0.002	<0.002	4	20	103	90	110	97	70	130
Bismuth (total)	EMS0096-SEP24	mg/L	0.00001	<0.00001	ND	20	96	90	110	76	70	130
Calcium (total)	EMS0096-SEP24	mg/L	0.01	<0.01	1	20	105	90	110	102	70	130
Cadmium (total)	EMS0096-SEP24	mg/L	0.000003	<0.000003	0	20	101	90	110	102	70	130
Cobalt (total)	EMS0096-SEP24	mg/L	0.000004	<0.000004	ND	20	98	90	110	90	70	130
Chromium (total)	EMS0096-SEP24	mg/L	0.00008	<0.00008	ND	20	102	90	110	97	70	130
Copper (total)	EMS0096-SEP24	mg/L	0.001	<0.001	1	20	101	90	110	97	70	130
Iron (total)	EMS0096-SEP24	mg/L	0.007	<0.007	ND	20	108	90	110	100	70	130
Potassium (total)	EMS0096-SEP24	mg/L	0.009	<0.009	0	20	102	90	110	93	70	130
Magnesium (total)	EMS0096-SEP24	mg/L	0.001	<0.001	0	20	106	90	110	100	70	130
Manganese (total)	EMS0096-SEP24	mg/L	0.00001	<0.00001	1	20	100	90	110	92	70	130
Sodium (total)	EMS0096-SEP24	mg/L	0.01	<0.01	0	20	107	90	110	99	70	130
Nickel (total)	EMS0096-SEP24	mg/L	0.0001	<0.0001	3	20	100	90	110	84	70	130
Lead (total)	EMS0096-SEP24	mg/L	0.00009	<0.00009	ND	20	104	90	110	92	70	130
Phosphorus (total)	EMS0096-SEP24	mg/L	0.003	<0.003	ND	20	106	90	110	NV	70	130

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)	EMS0096-SEP24	mg/L	0.0009	<0.0009	ND	20	103	90	110	97	70	130
Selenium (total)	EMS0096-SEP24	mg/L	0.00004	<0.00004	5	20	101	90	110	87	70	130
Silicon (total)	EMS0096-SEP24	mg/L	0.02	<0.02	0	20	106	90	110	NV	70	130
Tin (total)	EMS0096-SEP24	mg/L	0.00006	<0.00006	ND	20	108	90	110	NV	70	130
Strontium (total)	EMS0096-SEP24	mg/L	0.00008	<0.00008	2	20	100	90	110	94	70	130
Titanium (total)	EMS0096-SEP24	mg/L	0.0001	<0.0001	ND	20	106	90	110	NV	70	130
Thallium (total)	EMS0096-SEP24	mg/L	0.000005	<0.000005	ND	20	96	90	110	90	70	130
Uranium (total)	EMS0096-SEP24	mg/L	0.000002	<0.000002	3	20	97	90	110	89	70	130
Vanadium (total)	EMS0096-SEP24	mg/L	0.00001	<0.00001	6	20	101	90	110	91	70	130
Zinc (total)	EMS0096-SEP24	mg/L	0.002	<0.002	5	20	100	90	110	90	70	130
Molybdenum (total)	EMS0134-SEP24	mg/L	0.0004	<0.0004	1	20	105	90	110	76	70	130

QC SUMMARY

Microbiology

Method: OMOE MICROMFDC-E3407A | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
E. Coli	BAC9170-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9170-SEP24	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9170-SEP24	cfu/100mL	-	ACCEPTED	ACCEPTED							

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
pH	EWL0197-SEP24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-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
4AAP-Phenolics	SKA0112-SEP24	mg/L	0.002	<0.002	ND	10	104	80	120	89	75	125
4AAP-Phenolics	SKA0124-SEP24	mg/L	0.002	<0.002	ND	10	106	80	120	100	75	125

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-008

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
Sulphide	SKA0108-SEP24	mg/L	0.02	<0.02	ND	20	96	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-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 Suspended Solids	EWL0210-SEP24	mg/L	2	< 2	2	10	93	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-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
Total Kjeldahl Nitrogen (N)	SKA0103-SEP24	mg/L	0.05	<0.05	1	10	99	90	110	94	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-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	EWL0217-SEP24	NTU	0.10	< 0.10	ND	10	100	90	110	NA		

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.

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 039487

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page ____ of ____

Laboratory Information Section - Lab use only

Received By: Siri Romard
Received Date: 09/10/24 (mm/dd/yy)
Received Time: 18:25 (hr : min)
Received By (signature): Siri Romard
Custody Seal Present: Yes ☐ No ☒
Custody Seal Intact: Yes ☐ No ☒
Cooling Agent Present: Yes ☒ No ☐ Type: ICE
Temperature Upon Receipt (°C) 8.6.5
LAB LIMS #: Sep 15109

REPORT INFORMATION	INVOICE INFORMATION
Company: DM WILLS	☑ (same as Report Information)
Contact: RALF BOLVIN	Company:
Address: 150 JAMESON DRIVE, PETERBOROUGH, ON	Contact:
Phone: 705-868-1691	Address:
Fax:	Phone:
Email: rbolvin@dmwills.com	Email: accounts@dmwills.com
+ costic@dmwills.com	

Quotation #:
P.O. #: 11056
Project #: 11056
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business day

RUSH 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

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☑ ODWS Not Reportable *See note

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na-water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Tl,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only (no BTEX	VOC: VOCs (all incl BTEX	VOC: BTEX only	Pest: Pesticides (Organochlorine or specify other	Other (please specify)	Other	Other	Other	Other: Sewer Use: (Specify pkg:)	Other: Water Characterization Pkg ☑ Extended ☐ General	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	A395883_1hr	Sept 10/24	10:22AM	14	GW	N																X			
2	A395883_7hr	Sept 10/24	4:22PM	14	GW	N																X			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 09/10/24 (mm/dd/yy)
Relinquished by (NAME): CHRIS OSTIC Signature: Chris Ostic Date: 09/10/24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7
Date of Issue: 07 JUNE 2023

Appendix D

MECP Well ID A395881, A395882 and A395883 Well Records

General Instructions and Explanations for completing a Well Record

A completed electronic Well Record Form must be delivered to the well purchaser and the owner of the land on which the well is situated within 14 days after the date on which the well's structural stage is complete. The electronic Well Record must also be forwarded within 30 days after the date on which the well's structural stage is complete to the ministry through email to the following email address: WellRecordSubmission@ontario.ca

False and Misleading Information

Subsection 98(2) of the *Ontario Water Resources Act*, R.S.O. 1990 c. O. 40, states that:

"No person shall orally, in writing or electronically, give or submit false or misleading information in any statement, document or data, to any provincial officer, the Minister, the Ministry or the Agency, any employee in or agent of the Ministry or the Agency, or any person involved in carrying out a program of the Ministry or the Agency in respect of any matter related to this Act or the regulations."

Further, subsection 98(3) of the Act states that:

"No person shall include false or misleading information in any document or data required to be created, stored or submitted under this Act."

Measurements

All measurements must be recorded in the specified unit, metric or imperial by checking off the applicable box on the top of the form. You must use the checked unit consistently throughout the well record. Measurements must be reported to 1/10th of a metre if the unit is a metre. All measurements of depth must be referenced to ground surface.

Well Owner's Information

A "well owner" means the owner of land upon which a well is situated and includes a tenant or lessee of the land and a well purchaser. If the "well owner" is an individual, record the owner's last name and first name or if the "well owner" is a business, government or other organization, record the name in the "organization" area.

Well Location

Street Number/Name and City/town/Village must be provided, if available.

Geographic Township, Concession and Lot must be reported if the well is located in an area where such information exists.

UTM Coordinates must be recorded each time a Well Record is completed. Click the button [Test UTM in Map] to use the UTM Coordinates to plot the location to Google map. This allows verification of the UTM Coordinates. This will also automatically populate the County/District.

Municipal Plan and Sublet Number may be provided, if available.

Overburden and Bedrock Materials

For each formation encountered during construction, choose words from the lists that best describe the formation on the basis of general colour, most common material, other materials, and general description of the formation.

General Colours are White, Yellow, Grey, Brown, Blue, Red, Green and Black.

Examples of Materials are: Fill, Silt, Top Soil, Coarse Sand, Slate, Muck, Gravel, Limestone, Dolomite, Quartzite, Peat, Stones, Fine Sand, Shale, Granite, Clay, Boulders, Medium Sand, Sandstone, and Greenstone.

Some definitions are as follows:

- Clay: Composed of very fine particles. Forms dense hard lumps or clods when dry and a very elastic putty-like mass when wet. It can be rolled between fingers to form a long, flexible ribbon.
- Silt: Grain size, midway between sand and clay. It may form clods which, when broken, feel soft and floury. When moist, it will form a cast that can be handled freely without breaking. Rolled between thumb and finger, it will not "ribbon" but will give a broken appearance.

- Sand: Grains are loose and granular and may be seen and felt readily. Squeezed in the hand when dry, it falls apart when the pressure is released. Squeezed when moist, it will form a cast that will crumble when touched. Should be listed as fine sand, medium sand or coarse sand.
- Gravel: Rock fragments greater than 0.3 cm in diameter.

Examples of General Descriptions are Loose, Cemented, Previously Dug or Bored, Porous, Layered, Previously Drilled, Dense, Soft, Wood Fragments, Packed, Hard.

Abandonment

To report abandonment of a well, check off the applicable box in Type on the top of the form. Details of abandonment must be recorded in the Abandonment and Sealing Section. Additional comments may be entered in the comments box under the Information section.

Annular Space

Record all material placed in the annular space around the single casing or around the permanent outer casing. If the well is a telescoped well [i.e., a well with an outer casing and inner casing(s)] or if the well is a multi-level nested test hole, report the depth from, depth to, material and volume placed for the annular space between two different sized casings or between the inner casing(s) and the side of the well in the “Comments” area of this electronic well record form.

Method of Construction

If the equipment used to construct the well is not on the list, check “Other (specify)” and record the type of equipment, check each equipment that applies.

Well Use

If the well’s use is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple uses, check each use that applies.

Status of Well

If the well’s status is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple statuses, check each use that applies.

Construction Record – Casing and Open Hole

Use negative values to report the top of casing above ground surface. For example, if the top of the casing is 0.4 metres above the ground surface and the bottom of the casing 6.0 metres below the ground surface, record the casing “Depth From” as -0.4.

If the top of casing is located below the ground surface (e.g., if a test hole is constructed and the top of casing is located below the ground surface in a flush mounted well vault), report the top of the casing from below ground surface. For example, if the top of the casing is 0.1 metres below the ground surface and the bottom of the casing is 6 metres below the ground surface, record the casing “Depth From” as 0.1.

Note: If a drive shoe is used, the shoe is considered casing and it must be reported if the shoe has a different inside diameter thickness.

If a portion of the well was created an open hole, record the location of the open hole on a separate row, including the diameter and the depth (top and bottom of open hole) from the ground surface.

Construction Record – Well Screen

A “well screen” means perforated pipe or tubing, unsealed concrete tiles or other material installed in a well to filter out particulate matter and form the water intake zone. Therefore, the length of a well screen includes any slotted or perforated area and unsealed area of pipe or tiles.

Water Details

- if groundwater was located, record the depth from the ground surface to the location of the groundwater resource, and
- record if the groundwater quality is “Untested,” “Fresh” (i.e., not salty), or “Other (specify).” If “Other (specify)” is recorded, use the “Other (specify)” dropdown list toselect the type of groundwater (e.g., salty, blackish water, yellowish water, mineralized, etc.).

Check off “Gas” if natural gas was encountered during well construction.

Note: Natural gas encounters need to be immediately reported to the ministry at 1-800-268-6060, well purchaser and the owner of the land.

Results of Well Yield Testing

Check off “Pumping Discontinued” if pumping was discontinued before 1 hour of continuous pumping. Explain the reason why pumping was discontinued or in some cases not performed (e.g., the well went dry, impossible to install pump in small diameter well, static water level from test hole or dewatering well was obtained and is reported instead of completing a yield test etc.).

Note: Equipment breakdown is not an acceptable reason for checking off “Pumping Discontinued” on the well record form. If groundwater in the well is flowing out of the well, provide the rate of flow, and check off “Flowing Well” (i.e., static water level above the ground surface).

In the “Results of Well Yield Testing” section of the well record form, record:

- the depth to the intake of the pump,
- the rate of pumping and duration of pumping period during the yield test,
- the final water level when pumping stops,
- water level measurements made during pumping (drawdown) and recovery. All water level measurements must be referenced from below the ground surface for each time interval specified in the drawdown and recovery boxes.

If the water level measurements remain the same over a period of time, continue to measure and report the same water level measurement for the remaining pumping or recovery time intervals.

If pumping continuously for at least 1 hour, but the design of the well does not allow for water level measurements (e.g., driven point well), the person constructing the well is not required to report drawdown or recovery water level measurements.

Map of Well Location

In the “Map of Well Location” section of the well record form, click the map area to attach a map of the well location. The map must show sufficient information to locate the well, including:

- a mark on the map showing the well,
- a scale on the map, and
- where available, the name of the structure, street or surface water body nearest to the well.

Note: More than one map can be added to the well record form by clicking on “Add Map (+)” to add an additional map.

Information

Record any additional information (e.g., observations, tests, additional licensed well technicians who worked on the well, additional annular space details for a telescoped well or a multi-level nested test hole, reasons for not providing a well owner information package) in the comments area.

Declaration

Check the declaration statement to confirm that the person constructing the well agrees with the following statement: “I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate”.

Validate

Click the validate button. If there is no missing information, you will be asked to enter the well tag again to make sure the well tag is entered correctly (only enter the numeric portion of the tag number). The audit number will then be changed from “**incomplete**” to an assigned audit number. The signature field will then be available. Click on “signature” to enter the well technician’s electronic signature. For instructions on how to create an electronic signature, please visit the Adobe Digital IDs website using the following link: https://helpx.adobe.com/acrobat/using/digital-ids.html

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 395881

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Hillstreet Develpments Ltd.	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	524	Rosebank Rd.	Pickering

Country	Province	Postal Code	Telephone Number
Canada	Ontario		

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	5868	Country Rd. 65	Hope

Lot	Concession	County/District/Municipality
27	5	NORTHUMBERLAND

City/Town	Province	Postal Code
Osaca	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	705633	4875621	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 78 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Topsoil	Sand	Soft		2
Brown	Sand		Soft	2	10
Brown	Clay	Sand	Soft	10	18
Brown	Medium Sand		Loose	18	37
Grey	Gravel	Sand	Dense	37	44
Grey	Clay		Packed	44	58
Grey	Clay	Sand	Packed	58	73
Grey	Coarse Gravel	Sand	Loose	73	78

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	20	Bentonite Chips - 100 lbs	1.4
		Bentonite Slurry - 50 gal	6.68

5. Method of Construction *

- [ ] Cable Tool
- [ ] Rotary (Conventional)
- [ ] Rotary (Reverse)
- [ ] Boring
- [ ] Air percussion
- [ ] Diamond
- [ ] Jetting
- [ ] Driving
- [ ] Digging
- [ ] Rotary (Air)
- [ ] Augering
- [ ] Direct Push
- [x] Other (specify) DR-12W

6. Well Use *

- [ ] Public
- [ ] Industrial
- [ ] Cooling & Air Conditioning
- [x] Domestic
- [ ] Commercial
- [ ] Not Used
- [ ] Livestock
- [ ] Municipal
- [ ] Monitoring
- [ ] Irrigation
- [ ] Test Hole
- [ ] Dewatering
- [ ] Other (specify)

7. Status of Well *

- [x] Water Supply
- [ ] Replacement Well
- [ ] Test Hole
- [ ] Recharge Well
- [ ] Dewatering Well
- [ ] Observation and/or Monitoring Hole
- [ ] Alteration (Construction)
- [ ] Abandoned, Insufficient Supply
- [ ] Abandoned, Poor Water Quality
- [ ] Abandoned, other (specify)
- [ ] Other (specify)

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
6.25	Steel	0.188	-2	74
5.25	Steel	0.188	71	74

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
5.5	Stainless Steel	35	74	78

10. Water Details

Water found at Depth 78 (ft) ☐ Gas Kind of water ☐ Fresh ☑ Untested ☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	20	11.5
20	78	7.5

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	33.8	34.3	34.4	34.4	34.4	34.4	34.4	34.5	34.6	34.6	34.6	34.6	34.6	34.6

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8

After test of well yield, water was

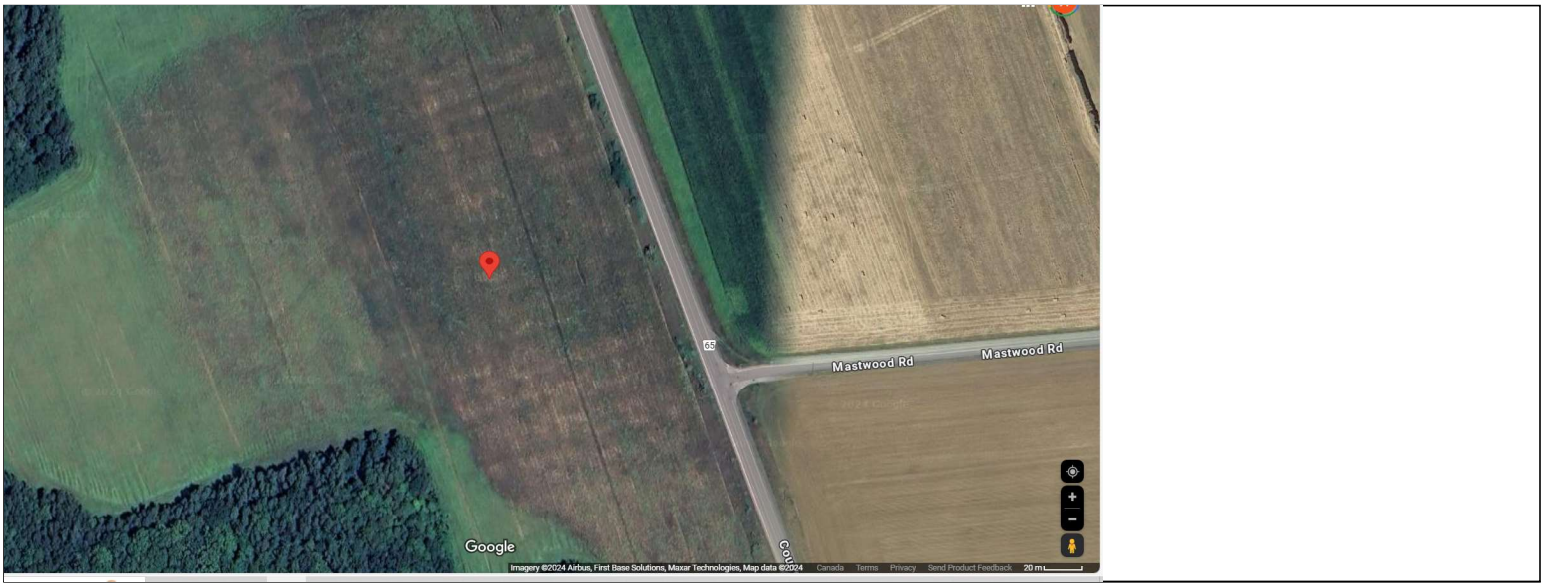
☑ Clear and sand free ☐ Other (specify)

Pump intake set at	Pumping rate	Duration of pumping	Final water level end of pumping	Disinfected? *
76 (ft)	12 (GPM)	1 hrs + 00 min	34.6 (ft)	☑ Yes ☐ No

Recommended pump depth	Recommended pump rate	Well production
68 (ft)	20 (GPM)	30 (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger



14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☑ Yes ☐ No	2024/07/26	2024/08/08

Comments
Sand was loose with pressure
K-packer and leader pipe above screen

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
Herb Lang Well Drilling Ltd.	7560

Business Address

Unit Number	Street Number	Street Name *
	4852	Highway 7

City/Town/Village *	Province	Postal Code *
Omemee	ON	K0L 2W0

Business Telephone Number	Business Email Address
705-799-7088	hlwelldrilling@gmail.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Guthrie	Ken	4198

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Guthrie	Ken	hlwelldrilling@gmail.com

Signature	Date Submitted (yyyy/mm/dd)
Ken Guthrie Digitally signed by Ken Guthrie Date: 2024.08.13 13:50:19 -04'00'	2024/08/13

17. Ministry Use Only

Audit Number

A5H9 IELR

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Street Number/Name and City/town/Village must be provided, if available.

Geographic Township, Concession and Lot must be reported if the well is located in an area where such information exists.

UTM Coordinates must be recorded each time a Well Record is completed. Click the button [Test UTM in Map] to use the UTM Coordinates to plot the location to Google map. This allows verification of the UTM Coordinates. This will also automatically populate the County/District.

Municipal Plan and Sublet Number may be provided, if available.

Overburden and Bedrock Materials

For each formation encountered during construction, choose words from the lists that best describe the formation on the basis of general colour, most common material, other materials, and general description of the formation.

General Colours are White, Yellow, Grey, Brown, Blue, Red, Green and Black.

Examples of Materials are: Fill, Silt, Top Soil, Coarse Sand, Slate, Muck, Gravel, Limestone, Dolomite, Quartzite, Peat, Stones, Fine Sand, Shale, Granite, Clay, Boulders, Medium Sand, Sandstone, and Greenstone.

Some definitions are as follows:

- Clay: Composed of very fine particles. Forms dense hard lumps or clods when dry and a very elastic putty-like mass when wet. It can be rolled between fingers to form a long, flexible ribbon.
- Silt: Grain size, midway between sand and clay. It may form clods which, when broken, feel soft and floury. When moist, it will form a cast that can be handled freely without breaking. Rolled between thumb and finger, it will not "ribbon" but will give a broken appearance.

- Sand: Grains are loose and granular and may be seen and felt readily. Squeezed in the hand when dry, it falls apart when the pressure is released. Squeezed when moist, it will form a cast that will crumble when touched. Should be listed as fine sand, medium sand or coarse sand.
- Gravel: Rock fragments greater than 0.3 cm in diameter.

Examples of General Descriptions are Loose, Cemented, Previously Dug or Bored, Porous, Layered, Previously Drilled, Dense, Soft, Wood Fragments, Packed, Hard.

Abandonment

To report abandonment of a well, check off the applicable box in Type on the top of the form. Details of abandonment must be recorded in the Abandonment and Sealing Section. Additional comments may be entered in the comments box under the Information section.

Annular Space

Record all material placed in the annular space around the single casing or around the permanent outer casing. If the well is a telescoped well [i.e., a well with an outer casing and inner casing(s)] or if the well is a multi-level nested test hole, report the depth from, depth to, material and volume placed for the annular space between two different sized casings or between the inner casing(s) and the side of the well in the “Comments” area of this electronic well record form.

Method of Construction

If the equipment used to construct the well is not on the list, check “Other (specify)” and record the type of equipment, check each equipment that applies.

Well Use

If the well’s use is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple uses, check each use that applies.

Status of Well

If the well’s status is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple statuses, check each use that applies.

Construction Record – Casing and Open Hole

Use negative values to report the top of casing above ground surface. For example, if the top of the casing is 0.4 metres above the ground surface and the bottom of the casing 6.0 metres below the ground surface, record the casing “Depth From” as -0.4.

If the top of casing is located below the ground surface (e.g., if a test hole is constructed and the top of casing is located below the ground surface in a flush mounted well vault), report the top of the casing from below ground surface. For example, if the top of the casing is 0.1 metres below the ground surface and the bottom of the casing is 6 metres below the ground surface, record the casing “Depth From” as 0.1.

Note: If a drive shoe is used, the shoe is considered casing and it must be reported if the shoe has a different inside diameter thickness.

If a portion of the well was created an open hole, record the location of the open hole on a separate row, including the diameter and the depth (top and bottom of open hole) from the ground surface.

Construction Record – Well Screen

A “well screen” means perforated pipe or tubing, unsealed concrete tiles or other material installed in a well to filter out particulate matter and form the water intake zone. Therefore, the length of a well screen includes any slotted or perforated area and unsealed area of pipe or tiles.

Water Details

- if groundwater was located, record the depth from the ground surface to the location of the groundwater resource, and
- record if the groundwater quality is “Untested,” “Fresh” (i.e., not salty), or “Other (specify).” If “Other (specify)” is recorded, use the “Other (specify)” dropdown list toselect the type of groundwater (e.g., salty, blackish water, yellowish water, mineralized, etc.).

Check off “Gas” if natural gas was encountered during well construction.

Note: Natural gas encounters need to be immediately reported to the ministry at 1-800-268-6060, well purchaser and the owner of the land.

Results of Well Yield Testing

Check off “Pumping Discontinued” if pumping was discontinued before 1 hour of continuous pumping. Explain the reason why pumping was discontinued or in some cases not performed (e.g., the well went dry, impossible to install pump in small diameter well, static water level from test hole or dewatering well was obtained and is reported instead of completing a yield test etc.).

Note: Equipment breakdown is not an acceptable reason for checking off “Pumping Discontinued” on the well record form. If groundwater in the well is flowing out of the well, provide the rate of flow, and check off “Flowing Well” (i.e., static water level above the ground surface).

In the “Results of Well Yield Testing” section of the well record form, record:

- the depth to the intake of the pump,
- the rate of pumping and duration of pumping period during the yield test,
- the final water level when pumping stops,
- water level measurements made during pumping (drawdown) and recovery. All water level measurements must be referenced from below the ground surface for each time interval specified in the drawdown and recovery boxes.

If the water level measurements remain the same over a period of time, continue to measure and report the same water level measurement for the remaining pumping or recovery time intervals.

If pumping continuously for at least 1 hour, but the design of the well does not allow for water level measurements (e.g., driven point well), the person constructing the well is not required to report drawdown or recovery water level measurements.

Map of Well Location

In the “Map of Well Location” section of the well record form, click the map area to attach a map of the well location. The map must show sufficient information to locate the well, including:

- a mark on the map showing the well,
- a scale on the map, and
- where available, the name of the structure, street or surface water body nearest to the well.

Note: More than one map can be added to the well record form by clicking on “Add Map (+)” to add an additional map.

Information

Record any additional information (e.g., observations, tests, additional licensed well technicians who worked on the well, additional annular space details for a telescoped well or a multi-level nested test hole, reasons for not providing a well owner information package) in the comments area.

Declaration

Check the declaration statement to confirm that the person constructing the well agrees with the following statement: “I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate”.

Validate

Click the validate button. If there is no missing information, you will be asked to enter the well tag again to make sure the well tag is entered correctly (only enter the numeric portion of the tag number). The audit number will then be changed from “**incomplete**” to an assigned audit number. The signature field will then be available. Click on “signature” to enter the well technician’s electronic signature. For instructions on how to create an electronic signature, please visit the Adobe Digital IDs website using the following link: https://helpx.adobe.com/acrobat/using/digital-ids.html

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 395882

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Hillstreet Development Ltd.	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	524	Rosebank Rd.	Pickering

Country	Province	Postal Code	Telephone Number
Canada	Ontario		

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	5868	County Rd. 65	Hope

Lot	Concession	County/District/Municipality
247	5	NORTHUMBERLAND

City/Town	Province	Postal Code
Osaca	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	705522	4875585	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 159 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Topsoil	Sand	Soft		2
Brown	Medium Sand		Soft	2	7
Brown	Sand	Clay	Soft	7	14
Brown	Medium Sand	Gravel	Loose	14	40
Grey	Clay	Gravel	Packed	40	85
Grey	Fine Gravel	Sand	Loose	85	88
Grey	Clay	Gravel	Cemented	88	142
Grey	Shale	Gravel	Layered	142	143
Grey	Limestone		Hard	143	159

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	20	Bentonite Chips - 150 lbs	2.1
		Bentonite Slurry - 50 gals	6.68

5. Method of Construction *

- [ ] Cable Tool
- [ ] Rotary (Conventional)
- [ ] Rotary (Reverse)
- [ ] Boring
- [ ] Air percussion
- [ ] Diamond
- [ ] Jetting
- [ ] Driving
- [ ] Digging
- [ ] Rotary (Air)
- [ ] Augering
- [ ] Direct Push
- [x] Other (specify) DR-12W

6. Well Use *

- [ ] Public
- [ ] Industrial
- [ ] Cooling & Air Conditioning
- [x] Domestic
- [ ] Commercial
- [ ] Not Used
- [ ] Livestock
- [ ] Municipal
- [ ] Monitoring
- [ ] Irrigation
- [ ] Test Hole
- [ ] Dewatering
- [ ] Other (specify)

7. Status of Well *

- [x] Water Supply
- [ ] Replacement Well
- [ ] Test Hole
- [ ] Recharge Well
- [ ] Dewatering Well
- [ ] Observation and/or Monitoring Hole
- [ ] Alteration (Construction)
- [ ] Abandoned, Insufficient Supply
- [ ] Abandoned, Poor Water Quality
- [ ] Abandoned, other (specify)
- [ ] Other (specify)

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
6.25	Steel	0.188	-2	143
6	Open Hole		143	159

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)

10. Water Details

Water found at Depth 143 (ft)	☐ Gas	Kind of water	☐ Fresh	☑ Untested	☐ Other
Water found at Depth 156	☐ Gas	Kind of water	☐ Fresh	☑ Untested	☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	20	11.5
20	143	7.5
143	159	6

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	37.5	43.1	45.8	48.2	50.3	52.3	61.3	69.2	75.7	80.4	85.5	93.1	99	103.6

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	102.6	97.9	95.5	93.5	91.4	81.8	75.6	65.2	60.4	55.6	48.3	43.2	40.1

After test of well yield, water was

☑ Clear and sand free ☐ Other (specify)

Pump intake set at	Pumping rate	Duration of pumping	Final water level end of pumping	Disinfected? *
158 (ft)	4 (GPM)	10 hrs + min	108.4 (ft)	☑ Yes ☐ No

Recommended pump depth	Recommended pump rate	Well production
150 (ft)	3 (GPM)	3 (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☑ Yes ☐ No	2023/10/23	2024/08/06

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
Herb Lang Well Drilling Ltd.	7560

Business Address

Unit Number	Street Number	Street Name *
	4852	Highway 7

City/Town/Village *	Province	Postal Code *
Omemee	ON	K0L 2W0

Business Telephone Number	Business Email Address
705-799-7088	hlwelldrilling@gmail.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Guthire	Ken	4198

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Guthrie	Ken	hlwelldrilling@gmail.com

Signature	Date Submitted (yyyy/mm/dd)
Ken Guthrie Digitally signed by Ken Guthrie Date: 2024.08.13 14:03:28 -04'00'	2024/08/13

17. Ministry Use Only

Audit Number

22CI ZWJK

General Instructions and Explanations for completing a Well Record

A completed electronic Well Record Form must be delivered to the well purchaser and the owner of the land on which the well is situated within 14 days after the date on which the well's structural stage is complete. The electronic Well Record must also be forwarded within 30 days after the date on which the well's structural stage is complete to the ministry through email to the following email address: WellRecordSubmission@ontario.ca

False and Misleading Information

Subsection 98(2) of the *Ontario Water Resources Act*, R.S.O. 1990 c. O. 40, states that:

"No person shall orally, in writing or electronically, give or submit false or misleading information in any statement, document or data, to any provincial officer, the Minister, the Ministry or the Agency, any employee in or agent of the Ministry or the Agency, or any person involved in carrying out a program of the Ministry or the Agency in respect of any matter related to this Act or the regulations."

Further, subsection 98(3) of the Act states that:

"No person shall include false or misleading information in any document or data required to be created, stored or submitted under this Act."

Measurements

All measurements must be recorded in the specified unit, metric or imperial by checking off the applicable box on the top of the form. You must use the checked unit consistently throughout the well record. Measurements must be reported to 1/10th of a metre if the unit is a metre. All measurements of depth must be referenced to ground surface.

Well Owner's Information

A "well owner" means the owner of land upon which a well is situated and includes a tenant or lessee of the land and a well purchaser. If the "well owner" is an individual, record the owner's last name and first name or if the "well owner" is a business, government or other organization, record the name in the "organization" area.

Well Location

Street Number/Name and City/town/Village must be provided, if available.

Geographic Township, Concession and Lot must be reported if the well is located in an area where such information exists.

UTM Coordinates must be recorded each time a Well Record is completed. Click the button [Test UTM in Map] to use the UTM Coordinates to plot the location to Google map. This allows verification of the UTM Coordinates. This will also automatically populate the County/District.

Municipal Plan and Sublet Number may be provided, if available.

Overburden and Bedrock Materials

For each formation encountered during construction, choose words from the lists that best describe the formation on the basis of general colour, most common material, other materials, and general description of the formation.

General Colours are White, Yellow, Grey, Brown, Blue, Red, Green and Black.

Examples of Materials are: Fill, Silt, Top Soil, Coarse Sand, Slate, Muck, Gravel, Limestone, Dolomite, Quartzite, Peat, Stones, Fine Sand, Shale, Granite, Clay, Boulders, Medium Sand, Sandstone, and Greenstone.

Some definitions are as follows:

- Clay: Composed of very fine particles. Forms dense hard lumps or clods when dry and a very elastic putty-like mass when wet. It can be rolled between fingers to form a long, flexible ribbon.
- Silt: Grain size, midway between sand and clay. It may form clods which, when broken, feel soft and floury. When moist, it will form a cast that can be handled freely without breaking. Rolled between thumb and finger, it will not "ribbon" but will give a broken appearance.

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- Gravel: Rock fragments greater than 0.3 cm in diameter.

Examples of General Descriptions are Loose, Cemented, Previously Dug or Bored, Porous, Layered, Previously Drilled, Dense, Soft, Wood Fragments, Packed, Hard.

Abandonment

To report abandonment of a well, check off the applicable box in Type on the top of the form. Details of abandonment must be recorded in the Abandonment and Sealing Section. Additional comments may be entered in the comments box under the Information section.

Annular Space

Record all material placed in the annular space around the single casing or around the permanent outer casing. If the well is a telescoped well [i.e., a well with an outer casing and inner casing(s)] or if the well is a multi-level nested test hole, report the depth from, depth to, material and volume placed for the annular space between two different sized casings or between the inner casing(s) and the side of the well in the “Comments” area of this electronic well record form.

Method of Construction

If the equipment used to construct the well is not on the list, check “Other (specify)” and record the type of equipment, check each equipment that applies.

Well Use

If the well’s use is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple uses, check each use that applies.

Status of Well

If the well’s status is not provided on the list, check “Other (specify)” and record the use of the well. If the well has multiple statuses, check each use that applies.

Construction Record – Casing and Open Hole

Use negative values to report the top of casing above ground surface. For example, if the top of the casing is 0.4 metres above the ground surface and the bottom of the casing 6.0 metres below the ground surface, record the casing “Depth From” as -0.4.

If the top of casing is located below the ground surface (e.g., if a test hole is constructed and the top of casing is located below the ground surface in a flush mounted well vault), report the top of the casing from below ground surface. For example, if the top of the casing is 0.1 metres below the ground surface and the bottom of the casing is 6 metres below the ground surface, record the casing “Depth From” as 0.1.

Note: If a drive shoe is used, the shoe is considered casing and it must be reported if the shoe has a different inside diameter thickness.

If a portion of the well was created an open hole, record the location of the open hole on a separate row, including the diameter and the depth (top and bottom of open hole) from the ground surface.

Construction Record – Well Screen

A “well screen” means perforated pipe or tubing, unsealed concrete tiles or other material installed in a well to filter out particulate matter and form the water intake zone. Therefore, the length of a well screen includes any slotted or perforated area and unsealed area of pipe or tiles.

Water Details

- if groundwater was located, record the depth from the ground surface to the location of the groundwater resource, and
- record if the groundwater quality is “Untested,” “Fresh” (i.e., not salty), or “Other (specify).” If “Other (specify)” is recorded, use the “Other (specify)” dropdown list toselect the type of groundwater (e.g., salty, blackish water, yellowish water, mineralized, etc.).

Check off “Gas” if natural gas was encountered during well construction.

Note: Natural gas encounters need to be immediately reported to the ministry at 1-800-268-6060, well purchaser and the owner of the land.

Results of Well Yield Testing

Check off “Pumping Discontinued” if pumping was discontinued before 1 hour of continuous pumping. Explain the reason why pumping was discontinued or in some cases not performed (e.g., the well went dry, impossible to install pump in small diameter well, static water level from test hole or dewatering well was obtained and is reported instead of completing a yield test etc.).

Note: Equipment breakdown is not an acceptable reason for checking off “Pumping Discontinued” on the well record form. If groundwater in the well is flowing out of the well, provide the rate of flow, and check off “Flowing Well” (i.e., static water level above the ground surface).

In the “Results of Well Yield Testing” section of the well record form, record:

- the depth to the intake of the pump,
- the rate of pumping and duration of pumping period during the yield test,
- the final water level when pumping stops,
- water level measurements made during pumping (drawdown) and recovery. All water level measurements must be referenced from below the ground surface for each time interval specified in the drawdown and recovery boxes.

If the water level measurements remain the same over a period of time, continue to measure and report the same water level measurement for the remaining pumping or recovery time intervals.

If pumping continuously for at least 1 hour, but the design of the well does not allow for water level measurements (e.g., driven point well), the person constructing the well is not required to report drawdown or recovery water level measurements.

Map of Well Location

In the “Map of Well Location” section of the well record form, click the map area to attach a map of the well location. The map must show sufficient information to locate the well, including:

- a mark on the map showing the well,
- a scale on the map, and
- where available, the name of the structure, street or surface water body nearest to the well.

Note: More than one map can be added to the well record form by clicking on “Add Map (+)” to add an additional map.

Information

Record any additional information (e.g., observations, tests, additional licensed well technicians who worked on the well, additional annular space details for a telescoped well or a multi-level nested test hole, reasons for not providing a well owner information package) in the comments area.

Declaration

Check the declaration statement to confirm that the person constructing the well agrees with the following statement: “I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate”.

Validate

Click the validate button. If there is no missing information, you will be asked to enter the well tag again to make sure the well tag is entered correctly (only enter the numeric portion of the tag number). The audit number will then be changed from “**incomplete**” to an assigned audit number. The signature field will then be available. Click on “signature” to enter the well technician’s electronic signature. For instructions on how to create an electronic signature, please visit the Adobe Digital IDs website using the following link: https://helpx.adobe.com/acrobat/using/digital-ids.html

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 395883

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Hillstreet Development Ltd.	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	524	Rosebank Rd	Pickering

Country	Province	Postal Code	Telephone Number
Canada	Ontario		

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	5868	County Rd. 65	Hope

Lot	Concession	County/District/Municipality
27	5	NORTHUMBERLAND

City/Town	Province	Postal Code
Osaca	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	705553	4875651	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 159 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Topsoil	Sand	Soft		2
Brown	Medium Sand		Soft	2	7
Brown	Sand		Packed	7	17
Brown	Sand	Gravel	Loose	17	40
Grey	Clay	Sand	Packed	40	72
Grey	Gravel	Sand	Packed	72	90
Grey	Clay	Gravel	Dense	90	141
Grey	Shale	Gravel	Layered	141	142
Grey	Limestone		Hard	142	159

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	20	Bentonite Chips - 100 lbs	1.4
		Bentonite Slurry - 60 gals	8

5. Method of Construction *

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☑ Other (specify) DR-12W

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☑ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well *

☑ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify)
☐ Other (specify)

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
6.25	Steel	0.188	-2	141
5.25	Steel	0.188	135	138
5.25	Steel	0.188	142	148

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
5.25	Stainless Steel	18	138	142

10. Water Details

Water found at Depth 142 (ft) ☐ Gas Kind of water ☐ Fresh ☑ Untested ☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	20	11.56
20	142	7.5
142	159	6

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	35.1	38.5	42.2	43.5	44.7	45	49	52.4	55.7	58.1	59.9	64.2	65.9	67.8

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)	69.8	68.9	66.8	65.4	63.8	57.7	53.9	51.1	48.4	45.7	43.7	42.2	40.9

After test of well yield, water was

☑ Clear and sand free ☐ Other (specify)

Pump intake set at	Pumping rate	Duration of pumping	Final water level end of pumping	Disinfected? *
145 (ft)	4 (GPM)	1 hrs + 30 min	72.3 (ft)	☑ Yes ☐ No

Recommended pump depth	Recommended pump rate	Well production
132 (ft)	4 (GPM)	3 (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☑ Yes ☐ No	2023/10/03	2024/07/31

Comments
K-packer and leader pipe above screen, tail pipe below screen
Salt was encountered at 159ft in the rock. We filled the hole in, back to 148ft.
Then set screen with a drop pipe from there on back. Salt appears to be gone.

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
Herb Lang Well Drilling Ltd.	7560

Business Address

Unit Number	Street Number	Street Name *
	4852	Highway 7

City/Town/Village *	Province	Postal Code *
Omemee	ON	K0L 2W0

Business Telephone Number	Business Email Address
705-799-7088	hlwelldrilling@gmail.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Guthrie	Ken	4198

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Guthrie	Ken	hlwelldrilling@gmail.com

Signature	Date Submitted (yyyy/mm/dd)
Ken Guthrie Digitally signed by Ken Guthrie Date: 2024.08.15 12:15:23 -04'00'	2024/08/15

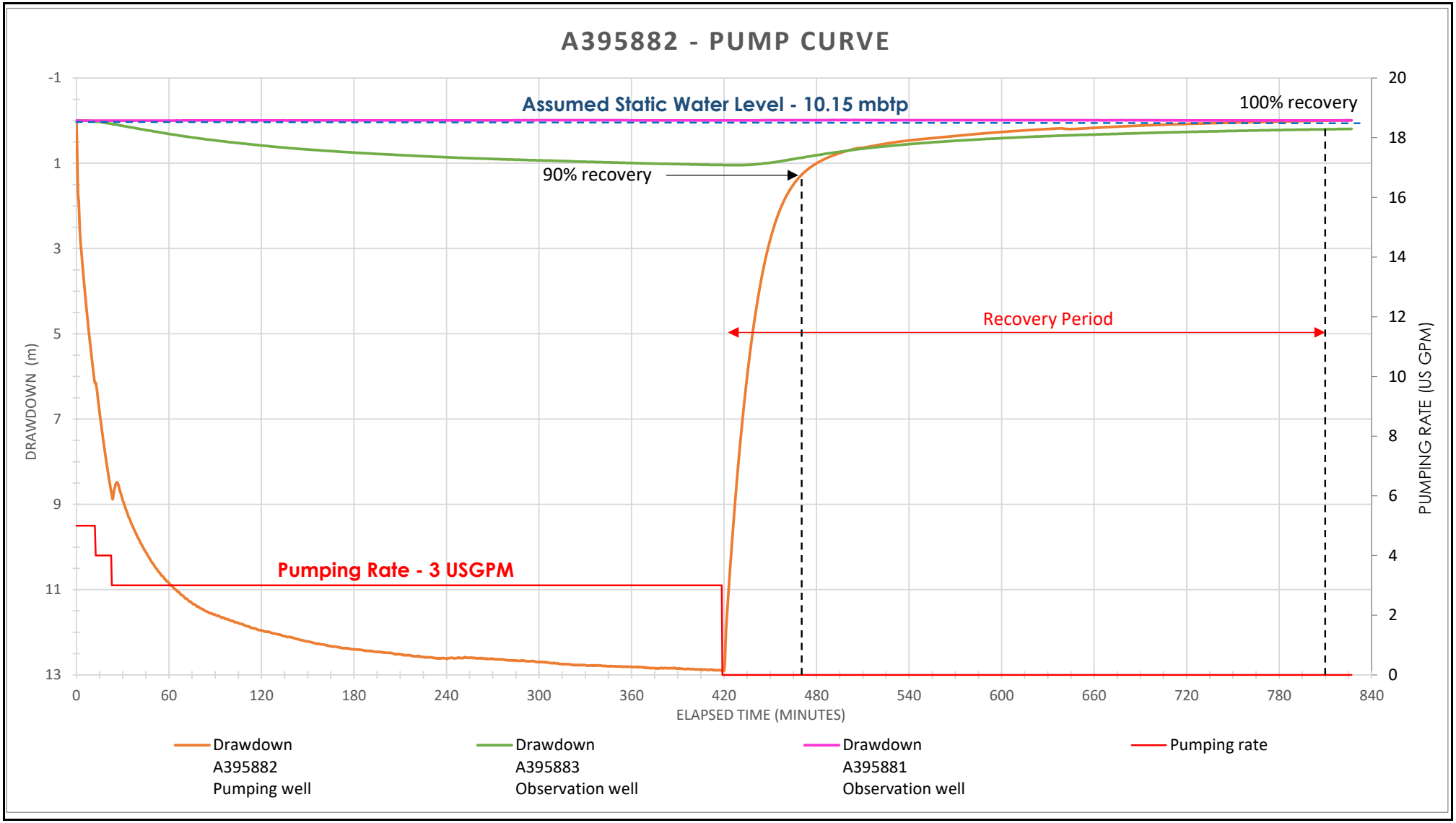
17. Ministry Use Only

Audit Number

2AOU S3DP

Appendix E

2024 Pumping Test Hydrographs
Wells A395881, A395882 and A395883



Hydrograph

A395882

Pumping Date: September 9, 2024
Pumping Initiation Time: 10:12 AM

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
Canada K9J 0B9

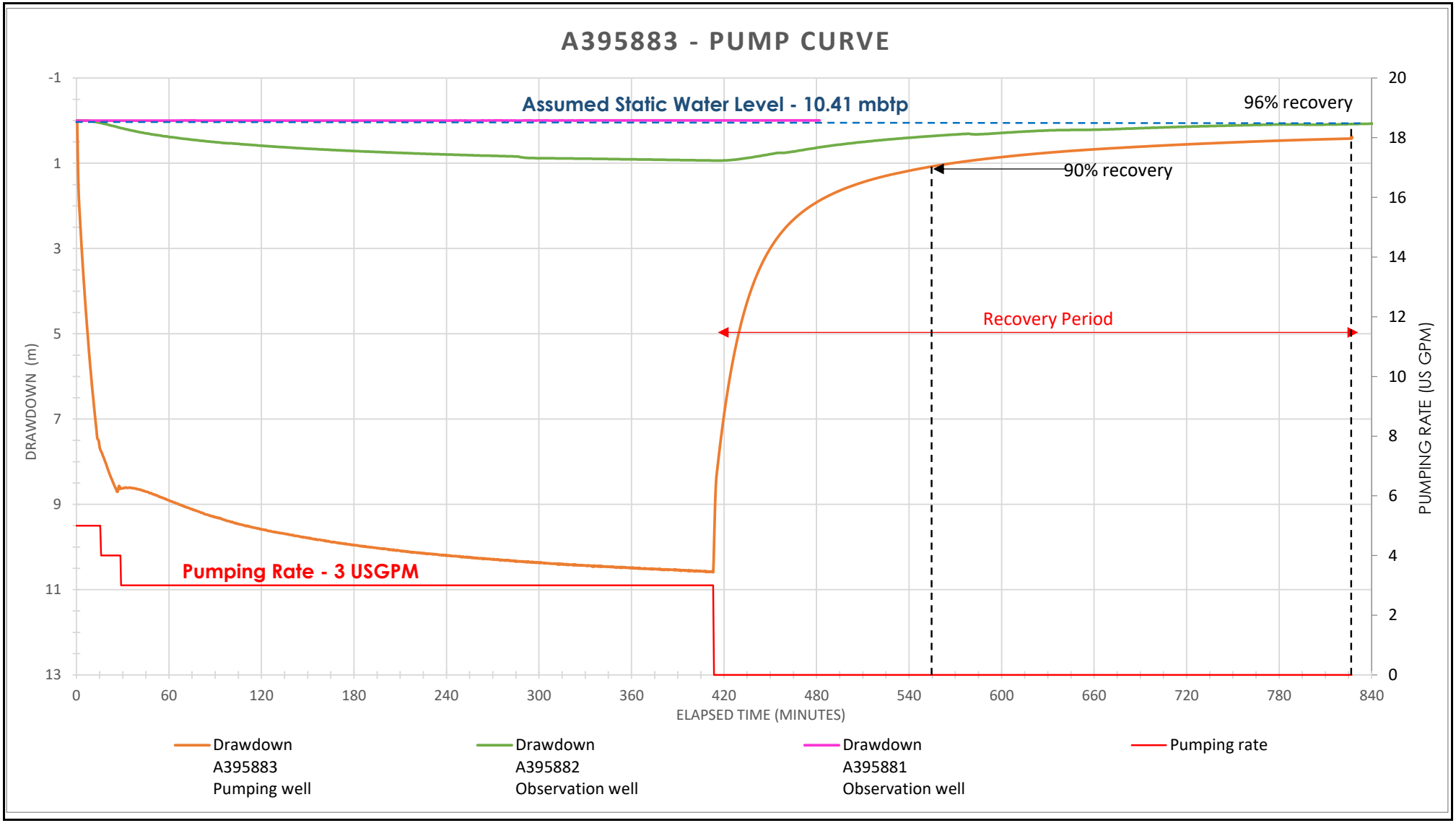
P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Created By: RB

Checked By: IA

Date: September 20, 2024

Project No.: 11056



Hydrograph

A395883

Pumping Date: September 10, 2024
Pumping Initiation Time: 10:12 AM

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
Canada K9J 0B9

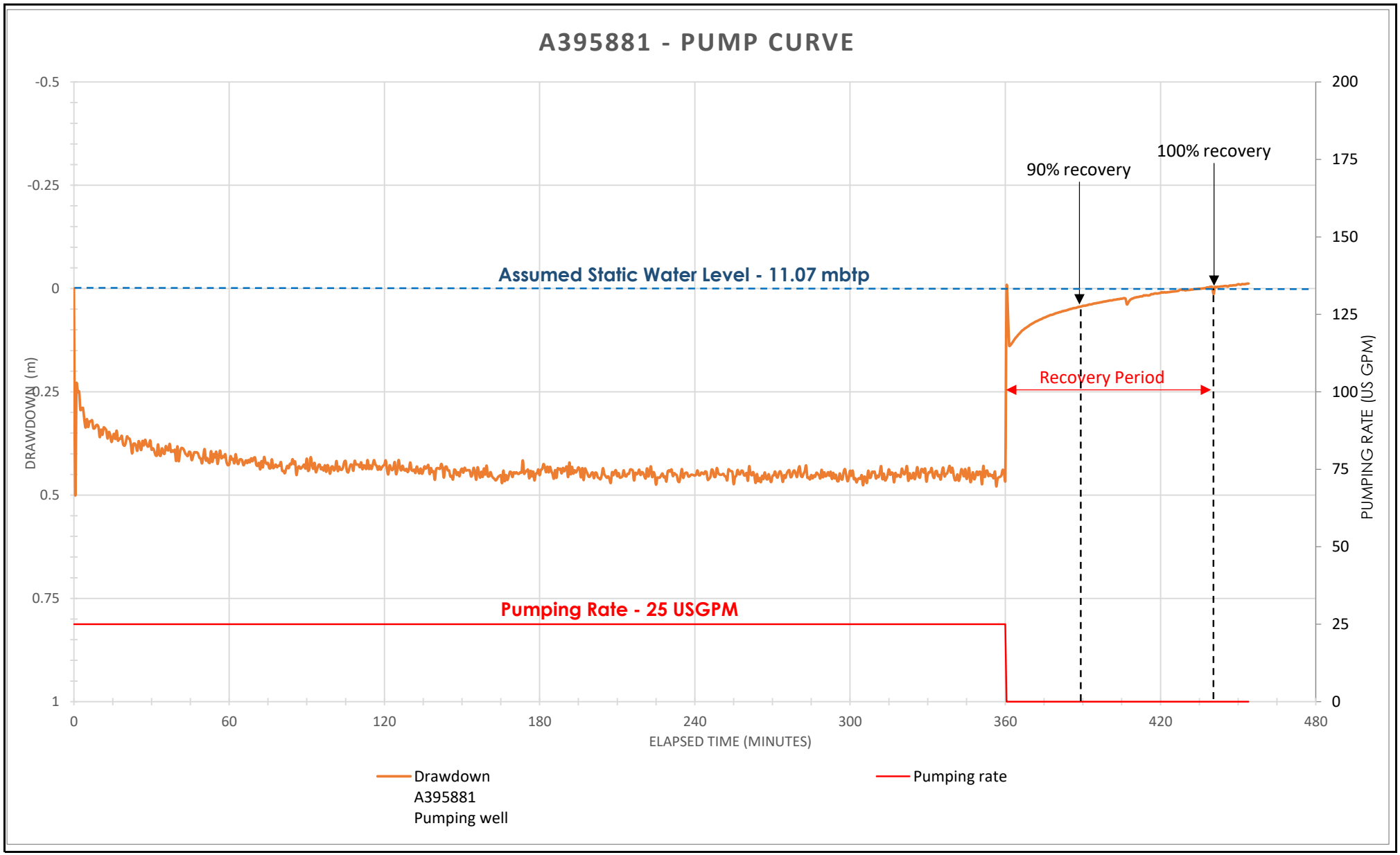
P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Created By: RB

Checked By: IA

Date: September 20, 2024

Project No.: 11056



Hydrograph

A395881

Pumping Date: September 11, 2024
Pumping Initiation Time: 9:26 AM

WILLS

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
Canada K9J 0B9

P. 705.742.2297
F. 705.748.9944
E. wills@dmwills.com

Created By: RB

Checked By: IA

Date: September 23, 2024

Project No.: 11056