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HYDROGEOLOGICAL REPORT

Proposed 28 Lot Residential Development 893 & 911 Lockhart Road Innisfil, Ontario

Prepared For: Soheil and Mohamad Fayaz

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1 Introduction

Central Earth Engineering Inc. (CEE) was retained by Soheil and Mohamad Fayaz to complete a hydrogeological investigation and report for the proposed 28 lot residential development to be located at 893 and 911 Lockhart Road, in Innisfil, Ontario. A site location plan is provided as Figure 1. The portion of the property to be developed with the residential dwellings is rectangular in shape and measures approximately 240 metres long (east to west) by 80 metres wide (north to south). The majority of the property is generally vacant and vegetated with trees and grass, with the exception of a single-family residential dwelling located at 893 Lockhart Road. The site gently slopes from near Elev. 245 metres at the southwestern limit of the site to near Elev. 239 metres at the northeastern limit of the site. An aerial image of the site with existing topography is shown on Figure 2A.

CEE was provided with the following drawing in preparation of this report: "Concept Plan 9a," Project No. FAY-19035, dated August 15, 2019, by Jones Consulting Group Ltd. It is understood that the site has a total area of 2.22 hectares and the proposed development will consist of demolishing any existing structures and constructing a new 28-lot residential subdivision. It is unknown if the proposed dwellings will have basement levels. A 20-metre-wide roadway will run through the site and will connect to Lockhart Road in two locations near the east and west ends of the site. A stormwater management area with an area of 0.15 hectares will be constructed near the northeastern entrance to the site. Proposed site grades were not provided to CEE but there are not expected to be any significant grade changes to accommodate the development. The proposed preliminary site conditions are shown on Figure 2B.

This area of Innisfil is not municipally serviced. Based on our correspondence, it is understood that this development will not proceed until such time that the property will have municipal water and sanitary services, such that no private wells or septic systems will be required. This report has been prepared reflecting this, and the scope of work did not include a D-5-4 (individual on-site sewage system study) or a D-5-5 (private wells water supply assessment).

This report has been prepared following Conservation Authority guidelines for hydrogeological report submissions. CEE has also been retained to complete a geotechnical report for the site under a separate cover.

2 Site Setting

2.1 Physiography, Surficial and Bedrock Geology

The site is located within the physiographic area denoted as the Peterborough Drumlin Field (Chapman & Putnam, 1984). Based on surficial and bedrock geology mapping of the site by the Ontario Geological Survey, the surficial geology at the site consists stone-poor, sandy silt to silty sand textured glacial till on Paleozoic terrain. Surficial geology at the site also consists of coarse-textured glaciolacustrine deposits of sands and gravels. At depth, limestone and shale bedrock of the Verulam Formation is present.



2.2 Topography and Drainage

The existing site slopes gently from the southwest towards the northeast, with grades near Elev. 245 metres at the southwestern property limit to Elev. 239 metres near the northeastern property limit. Existing site contours are shown on Figure 2A. The land surrounding the site gently slopes to the east and northeast. No surface water features were observed on the site.

This site is in the Innisfil Creeks subwatershed, which is part of the Lake Simcoe watershed. The Ontario Flow Assessment Tool (OFAT) by MNRF and existing topography show the site and surrounding area generally drain into a creek located northeast of the site. The creek generally flows to the east and eventually outlets into Lake Simcoe, about 1.7 km east of the site.

2.3 MECP Well Records

Ministry of Environment, Conservation and Parks (MECP) water well records were obtained within 500 metres of the site area to assess the general nature of the groundwater resource in near vicinity of the site, and historical/current uses of wells in the area. Thirty-four (34) well records were found, and a summary of the data obtained from this review is presented below. The approximate MECP well locations are shown on Figure 4 and the well records are included in Appendix D.

The well records provide generic information about where groundwater was encountered. The records indicate that groundwater was encountered at depths ranging from 1.4 to 18 metres below grade. It is noted that the wells were installed in different stratigraphic units and for different purposes (e.g. monitoring, domestic use, etc.) and may not reflect a stabilized groundwater level. The wells were installed for the following uses:

- Nineteen (19) of the wells were installed for domestic use;
- Eight (8) were not used or were decommissioned;
- Three (3) were used for monitoring purposes;
- Two (2) were used for farming;
- One (1) was used for municipal purposes.

The stratigraphic descriptions within the MECP monitoring well records are typically inaccurate due to the methodology in which they are determined (observations of cuttings and no consistency between descriptions of soil between different drillers). Though this is the case, an overall sense of the deep stratigraphy can be determined by looking at commonalities between most stratigraphic descriptions and where the wells were terminated in an aquifer. In the area surrounding the site, the well records generally indicate that there is an upper layer of "sand," followed by "clays," sometimes followed by deeper "sand" deposits. This is relatively consistent with the CEE borehole findings discussed in Section 4.

2.4 Visual Inspection of Site

The portion of the property to be developed with the residential dwellings is rectangular in shape and measures approximately 240 metres long (east to west) by 80 metres wide (north to south). The parcel of land at 911 Lockhart Road is vacant and is vegetated with trees and some grass and the parcel of land at 893 Lockhart Road contains a single-family residential dwelling. The site gently slopes from near Elev. 245 metres at the southwestern limit to



near Elev. 239 metres at the northeastern limit. An aerial image of the site with existing topography is shown on Figure 2A.

Based on our preliminary visual estimates, it appears the following hard cover and soft cover surfaces exist:

- Hard Cover existing dwelling and driveway (3%).
- Soft Cover forested area, some grass areas (97%).

In general, surface drainage occurs as sheet drainage across the site, and will generally flow to the northeast based on the site topography. A roadside ditch runs adjacent to Lockhart Road and likely helps to convey runoff to the east / northeast.

2.5 Regulatory Requirements

2.5.1 Source Water Protection

The following documents should be used in determination of the regulatory requirements when it comes to maintaining hydrogeological function at this site:

- "Lake Simcoe Protection Plan", dated July 2009, by MOECC, MNR & LSRCA.
- "Approved South Georgian Bay Lake Simcoe Source Protection Plan", dated January 26, 2015, by LSRCA.
- "Lake Simcoe Protection Plan Water Budget Policy for LSPP 4.8-DP and 6.40-DP," dated November 2018, by LSRCA.

The Lake Simcoe Protection Plan (LSPP) Designated Policy (DP) 6.36 builds on the Provincial Policy Statement (PPS) and *Clean Water Act, 2006*, to define a Significant Groundwater Recharge Area (SGRA). The definition from the LSPP is below.

- "6.36-DP: A significant groundwater recharge are is an area identified,
 - as a significant groundwater recharge area by any public body for the purposes of implementing the PPS;
 - o as a significant groundwater recharge area in the assessment report required under the Clean Water Act. 2006, for the Lake Simcoe and Couchiching/Black River Source Protection Area; or
 - by the LSRCA in partnership with MOE and MNR as an ecologically significant groundwater recharge area in accordance with the guidelines developed under policy 6.37."

Based on Simcoe County online mapping, the following is noted:

- Wellhead Protection Area (WHPA): The site is not located within a WHPA Q1 or Q2 (Figure 5A);
- Significant Groundwater Recharge Area (SGRA): The site is not located within an SGRA (Figure 5B).
 However, upon consultation with LSRCA it was indicated that Simcoe County mapping does not show the
 most updated LSPP SGRA mapping for the site. LSRCA provided a map showing that 893 and 911
 Lockhart Road are both located within an ESGRA, and as such the site is within an SGRA as defined in
 the LSPP (map from LSRCA is provided in Appendix G); and
- Highly Vulnerable Aquifer (HVA): The site is not located within an HVA (Figure 5C).



"Lake Simcoe Protection Plan Water Budget Policy for LSPP 4.8-DP and 6.40-DP," (by LSRCA, dated November 2018) Section 6.0 describes the policy hierarchy for water balance required for Lake Simcoe Watershed. The policies from most to least stringent are described below:

- 1. Source Protection Plan Land Use Policy (SPP LUP) 12: "Planning Approval Authorities shall only permit new major development (excluding single detached residential, barns and non-commercial structures that are accessory to an agricultural operation) in a WHPA-Q2 where the activity would be a significant drinking water threat, where it can be demonstrated through the submission of a hydrogeological study that the existing water balance can be maintained through the use of best management practices such as low impact development. Where necessary, implementation and maximization of off-site recharge enhancement within the same WHPA-Q2 to compensate for any predicted loss of recharge from the development."
- 2. Designated Policy (DP) 6.40: "Outside of the Oak Ridges Moraine area, an application for major development within a significant groundwater recharge area (SGRA) shall be accompanied by an environmental impact study that demonstrates that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved or restored."
- 3. Designated Policy (DP) 4.8 d): "An application for major development shall be accompanied by a stormwater management plan that demonstrates: through an evaluation of anticipated changes in the water balance between pre-development and post-development, how such changes shall be minimized."

The proposed development is not within a WHPA-Q2, therefore SPP LUP-12 does not apply. The development is within an SGRA as defined by the LSPP, therefore DP-6.40 applies and is addressed in the report in Section 5. The proposed development at the site is considered a major development by the Lake Simcoe Protection Plan (LSPP) since more than 500 m² of impervious surface (dwellings, roadway) will be created. As the development is considered a "major" development, DP-4.8 applies and will be addressed in this report using a water balance as discussed in Section 5.3.

The site is within an LSPP SGRA/ESGRA but the proposed land use will be low density residential and the site is not within an HVA or WHPA. Based on Table 2 in "Lake Simcoe Protection Plan Water Budget Policy for LSPP 4.8-DP and 6.40-DP," infiltration-based practices are permitted for this site for runoff from impervious areas, vegetated areas, and rooftops.

The following policy will also apply at the site:

"Phosphorous Offsetting Policy", dated September 2017, by LSRCA.

Section 4.4 Phosphorous Offsetting Policies in the above document discusses the applicable policies, including that the application for a major development "... shall be accompanied by a Preliminary Phosphorous Budget as part of an overall Functional Servicing Report or Preliminary Stormwater Management Report." Phosphorous offsetting must be carried out as part of the stormwater management report to be completed for the site by others. Some additional details are provided in Section 5.4.3 of this report.

The following document is also referenced for content in the hydrogeological report:

"Engineering Design Standards Specification Manual," Revision 5 dated May 2019, by the Town of Innisfil.



2.5.2 Temporary Groundwater Dewatering

The volume of water entering the excavation will be based on both ground water infiltration and precipitation events. Based on recent regulation changes made by O.Reg. 63/16, the following dewatering limits and requirements are as follows:

- Construction Dewatering less than 50,000 L/day: The takings of both groundwater and stormwater do not
 require a hydrogeological report and does not require a Permit to Take Water (PTTW) from the Ministry
 of Environment, Conservation and Parks (MECP).
- Construction Dewatering greater than 50,000 L/day and less than 400,000 L/day: The taking of
 groundwater and/or stormwater requires a hydrogeological report and registration on the Environmental
 Sector Activity Registry (EASR) but does not require a Permit to Take Water (PTTW) from the MECP.
- <u>Construction Dewatering greater than 400,000 L/day:</u> The taking of groundwater and/or stormwater requires a hydrogeological report and requires a Permit to Take Water (PTTW) from the MECP.

3 Procedures and Methodology

Prior to the commencement of drilling activities, the locations of underground utilities including natural gas, electrical, telephone, water, etc. were marked out by public and private utility locating companies. The fieldwork for the drilling program was carried out on October 24th, 2019. A total of four boreholes (Boreholes 1 to 4) were advanced on site by Drilltech Drilling using a track-mounted drill rig. To advance the boreholes, continuous flight solid stem augers and standard soil sampling equipment was utilized. All samples were collected as per ASTM D1586 to assess the strength characteristics of the substrate.

Borehole 4 was advanced adjacent to Borehole 1 to facilitate the installation of a shallower monitoring well, and as such, was augered straight to a depth of 4.6 metres without recovering soil samples.

The boreholes were advanced to depths of 4.6 to 9.6 metres below existing grade. The horizontal locations were laid out in the field by CEE prior to the drilling operations. Ground surface elevations of the boreholes were measured using survey equipment in reference to a geodetic benchmark (iron bars located at the eastern and western ends of the site) with known geodetic elevations. GPS measurements measured with a handheld GPS unit and referenced to the NAD 83 geodetic datum.

The CEE field staff examined and classified characteristics of the soils encountered in the boreholes, including the presence of fill materials, made groundwater observations during and upon completion of the drilling, recorded observations of borehole construction, and processed the recovered samples. Soil sampling was conducted at regular intervals for the full depth of the borehole. The boreholes were backfilled upon completion. All recovered soil samples were logged in the field, carefully packaged and transported to the laboratory for more detailed examination and classification. In the laboratory, the samples were classified as to their visual and textural characteristics and geotechnical laboratory testing was carried out with the results included in Appendix B. Four (4) monitoring wells were installed (one per borehole) to facilitate long-term ground water monitoring.



4 Subsurface Conditions

4.1 General Overview

The detailed soil profiles encountered in the boreholes are indicated on the attached borehole logs in Appendix A and a subsurface profile is included as Figure 3. The borehole locations are shown on Figure 2A (aerial image) and 2B (proposed site) and the geotechnical laboratory results are included in Appendix B. It should be noted that the conditions indicated on the borehole logs and subsurface profile are for specific locations only and can vary between and beyond the borehole locations. It should be noted that the soil boundaries indicated on the borehole logs and subsurface profile are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect approximate transition zones and should not be interpreted as exact planes of geological change.

In addition, the descriptions provided in the borehole logs are inferred from a variety of factors, including: visual observations of the soil samples retrieved, laboratory testing, measurements prior to and after drilling, and the drilling process itself (speed of drilling, shaking/grinding of the augers, etc.). The passage of time also may result in changes in conditions interpreted to exist at locations where sampling was conducted.

Borehole 4 was advanced within 2 metres of Borehole 1 to facilitate the installation of a shallower monitoring well to determine perched water conditions in this area of the site. This borehole was augered straight to a depth of 4.6 metres without recovering soil samples. Due to the proximity of Borehole 4 to Borehole 1, the stratigraphic conditions are inferred to be consistent between these two boreholes.

4.2 Stratigraphy

Boreholes 1 to 3 encountered a layer of topsoil at the ground surface that ranged from 150 to 200 mm thick.

Boreholes 1 to 3 encountered a deposit of sand with some silt to being silty underlying the topsoil. The reddish-brown to brown and moist sand extended to depths of 0.8 to 1.0 metres below grade (Elev. 242.6 to 238.4 metres). The Standard Penetration Test (SPT) results ("N" Values) measured in the sand ranged from 3 to 8 blows per 300 mm of penetration, indicating a very loose to loose relative density.

All three boreholes encountered a deposit of glacial till with a cohesive matrix consisting of clayey and sandy silt with trace gravel underlying the upper sand deposit. The clayey and sandy silt glacial till was encountered at depths of 0.8 to 1.0 metres below grade (Elev. 242.6 to 238.4 metres) and extended to depths of 3.1 to 6.1 metres below grade (Elev. 238.7 to 236.2 metres). The glacial till was brown to greyish-brown and moist. The SPT "N" Values measured in the glacial till ranged from 7 to 30 blows per 300 mm of penetration. Pocket penetrometer testing was also carried out on the recovered (but disturbed) glacial till samples to obtain a general sense of the undrained shear strength of the cohesive soil. The pocket penetrometer results indicate the undrained shear strength ranges from approximately 50 to greater than 225 kPa (typically greater than 225 kPa), indicating a firm to hard consistency.

The glacial till was interbedded by deposit of cohesionless soils with Boreholes 1 and 2. It is expected that these interbedded deposits are discontinuous and are of limited extent across the site. The cohesionless deposits were as follows:



- Borehole 1 encountered a silty sand with trace gravel from a depth of 3.1 metres (Elev. 240.2 metres) to
 a depth of 4.6 metres below grade (Elev. 238.7 metres). The silty sand was brown and wet, and the SPT
 "N" Value was 23 blows per 300 mm, indicating a compact relative density.
- Borehole 2 encountered a silt with some sand and trace clay from a depth of 1.0 metre (Elev. 242.3 metres) to 2.5 metres below grade (Elev. 240.8 metres). The silt was brown and moist, and the SPT "N" Values were 12 and 10 blows per 300 mm of penetration, indicating a compact relative density.

The glacial till deposit encountered in Boreholes 1 to 3 was underlain by a cohesive deposit of clayey silt with some sand. The grey and moist clayey silt was encountered at depths of 3.1 to 6.1 metres below grade (Elev. 238.7 to 236.2 metres). The clayey silt extended beyond the vertical depth of investigation in Boreholes 1 and 2 at 9.6 metres below grade (Elev. 233.7 to 233.6 metres) and extended to a depth of 9.1 metres (Elev. 230.1 metres) in Borehole 3. The SPT "N" Values measured in the clayey silt ranged from 21 to 90 blows per 300 mm of penetration. Pocket penetrometer testing was also carried out on the recovered (but disturbed) soil samples to obtain a general sense of the undrained shear strength of the cohesive soil. The pocket penetrometer results indicate the undrained shear strength ranges from approximately 175 to greater than 225 kPa (typically greater than 225 kPa), indicating a very stiff to hard consistency.

A deposit of fine to medium sand with trace silt was encountered in Borehole 3 underlying the clayey silt deposit. The fine to medium sand was encountered at a depth of 9.1 metres (Elev. 230.1 metres) and extended beyond the vertical depth of investigation at 9.6 metres below grade (Elev. 229.6 metres). The sand was greyish-brown and wet, and the SPT "N" value measured in the sand was 28 blows per 300 mm of penetration, indicating a compact relative density.

4.3 Ground Water

4.3.1 Ground Water Levels

Unstabilized ground water level measurements and cave measurements were taken upon completion of drilling of each borehole. These measurements provide a rough estimate of the possible excavation and temporary ground water control constructability considerations that may arise. The unstabilized water level after completion of drilling ranged from being 2.3 metres below grade to being dry. Monitoring wells were installed in Boreholes 1 to 4 to facilitate measurements of stabilized and long-term ground water levels. The results shown on the borehole logs in Appendices A and are summarized in the table below.

Monitoring	Well Scre	en Location	Strata Screened	Depth / Elevation (m) of Groundwater Table		
Well	Depth (m)	Elevation (m)	Strata Screened	Oct. 30 th , 2019	Nov. 15 th , 2019	Dec. 2 nd , 2019
1	6.9 to 8.4	236.3 to 234.8	Clavov Silt	3.4 / 239.8*	2.2 / 241.0	3.3 / 239.9*
2	7.7 to 9.2	235.6 to 234.1	Clayey Silt	7.5 / 235.8*	3.3 / 240.0	7.5 / 235.8*
3	7.4 to 8.9	231.8 to 230.3	Clayey Silt (and likely underlying Fine to Medium Sand)	6.7 / 232.5	6.4 / 232.8	6.4 / 232.8
4	3.1 to 4.6	240.3 to 238.8	Silty Sand	2.1 / 241.3	1.8 / 241.6	1.8 / 241.5

*Note 1: Due to the very low hydraulic conductivity of the clayey silt deposit, it is expected that the water level readings taken on October 30 (approx. 1 week after drilling) and December 2 (approx. 2 weeks after conducting rising head test) may not be reflective of the stabilized groundwater elevation.



Based on the results of the water levels and moisture contents of the recovered soil samples, it is expected that the prevailing groundwater table is located on the order of about 2 to 3 metres below grade across the site. It is expected that the groundwater flow gradient is from the higher elevation in the southwest of the site to the lower elevation in the northeast of the site.

The water level within Borehole 3 was noted to be significantly deeper, on the order of 6 metres below grade. This monitoring well was likely partially screened in the underlying wet sand deposit which may have a different piezometric head than the surficial clayey silt and upper silty sand deposits.

The cohesionless soils at the site are relatively permeable and will allow for the free flow of water when wet, whereas the clayey silt glacial till and clayey silt deposits have a significantly lower permeability, precluding free flow of water.

CEE is also carrying out monthly groundwater level measurements for one year which will be summarized in a separate letter report.

4.3.2 In-Situ Permeability and Infiltration

Four rising head tests were completed in the monitoring wells installed in Boreholes 1 to 4 on November 15th, 2019. Water was manually purged from the monitoring wells using LDPE piping and a foot valve. The static water level within each monitoring well was measured prior to the start of testing, and the change in water level was monitored at select time intervals once the water had been purged from the monitoring well. The tests were completed to estimate the horizontal hydraulic conductivity (K) of the soils at the well screen depths.

A hydraulic conductivity value was calculated from the rising head data using Hvorslev's solution (1951). Due to low permeability, the rising head tests conducted in the monitoring wells installed in Boreholes 1 and 2 (installed within the clayey silt) were of such low permeability that they did not recover sufficiently to reach T_0 , which is the time required for the water level to rise to 37% of the initial change (i.e. drop) in water level. As such, the results were approximated by extrapolating a line of best fit to estimate T_0 . The semi-log plot for drawdown versus time for the two tests with adequate recovery (monitoring wells installed in Boreholes 3 and 4) are provided in Appendix C and are summarized in the table below.

Manitarina Mall	Well Scree	n Location	Ctrata Carranad	Hydraulia Canductivity	
Monitoring Well	Depth (m)	Elevation (m)	Strata Screened	Hydraulic Conductivity	
1	6.9 to 8.4	236.3 to 234.8	Clavery Cill	10 ⁻⁹ m/s*	
2	7.7 to 9.2	235.6 to 234.1	Clayey Silt	10 ⁻⁹ m/s*	
3	7.4 to 8.9	231.8 to 230.3	Clayey Silt (and likely underlying Fine to Medium Sand)	1 x 10 ⁻⁶ m/s	
4	3.1 to 4.6	240.3 to 238.8	Silty Sand	4 x 10 ⁻⁶ m/s	

^{*}Estimated through extrapolation of initial rising head test data conducted which showed almost no recovery of the lowered groundwater over 1 hour time.



The screen for Monitoring Well 3 was installed mostly within the clayey silt deposit but extends into the upper zone of the underlying wet and fine to medium sand deposit. The hydraulic conductivity measured in Well 3 is expected to be more representative of the underlying fine to medium sand and not the clayey silt deposit.

In addition to the above-noted permeability data, the hydraulic conductivity of the soils encountered on site was estimated from grain size distribution curves (as provided in Appendix B). According to Freeze and Cherry (1979), the typical hydraulic conductivity of the strata investigated are:

Sand: 10⁻³ m/s to 10⁻⁵ m/s
 Silty Sand: 10⁻³ m/s to 10⁻⁷ m/s
 Silt: 10⁻⁵ m/s to 10⁻⁹ m/s
 Glacial Till: 10⁻⁶ m/s to 10⁻¹² m/s
 Clayey Silt: 10⁻⁸ m/s to 10⁻¹¹ m/s

The actual measured hydraulic conductivity of the silty sand and clayey silt deposits are within the expected range. It is noted that the upper sand to silty sand deposit in Boreholes 1 to 3 and the silt in Borehole 2 are above the current groundwater table. For the purposes of design, following hydraulic conductivities are recommended for this site:

Upper Sand to Silty Sand Deposit (Near Surface): 1 x 10⁻⁵ m/s
 Silt (Borehole 2): 1 x 10⁻⁷ m/s
 Wet Silty Sand (Boreholes 1 and 4): 5 x 10⁻⁶ m/s
 Clayey Silt Glacial Till and Clayey Silt Deposits: 1 x 10⁻⁹ m/s

Determination of percolation rates are based on the "Ministry of Municipal Affairs and Housing (MMAH) Supplementary Guidelines SB-6, Percolation Time and Soil Descriptions, September 14, 2012". It is expected that potential infiltration measures that may be implemented at the site will likely be made in the upper 2 metres of existing ground surface. Under the Unified Soil Classification System, the upper sand with some silt to silty sand would be characterized as S.M. and the clayey silt glacial till and silt in Borehole 2 would be characterized as M.L. Based on this document, the soil type, and the results of the hydraulic conductivity testing, the estimated percolation rate (T-Time) for the near surface soils would be as follows:

Upper Sand to Silty Sand (S.M.): 12 mins/cm (50 mm/hr)
Silt in Borehole 2 (M.L.): 20 mins/cm (30 mm/hr)

Clayey Silt Glacial Till (M.L.): Over 50 mins/cm (less than 12 mm/hr)

4.3.3 Baseline Groundwater Chemical Testing

To assess the suitability for discharge of pumped groundwater to the land surface during potential dewatering activities, one (1) unfiltered and one (1) filtered groundwater sample were collected from the monitoring well installed in Borehole 1 on November 15th, 2019. The samples were collected and placed into pre-cleaned laboratory-supplied vials and/or bottles provided with analytical test group specific preservatives, as required. Dedicated nitrile gloves were used during sample handling. The groundwater samples were submitted to CALA-accredited Caduceon Environmental Laboratories for analysis.



The groundwater samples were compared to Provincial Water Quality Objectives (PWQO). The results are provided in Appendix F and the exceedances are summarized in the table below.

Sample ID	Ground Water Sample Parameter Exceedances to PQWO		
BH 1 (Unfiltered)	Zinc, Lead, Iron, Copper, Cobalt		
BH 1 (Filtered)	Copper		

It is expected that the measured levels of metals in the groundwater are naturally occurring and primarily from suspended solids within the groundwater sample (with the possible exception of copper). This is corroborated by the fact that the unfiltered sample had significantly more total metal concentrations than the sample that was run through a 75 µm filter. Groundwater quality mitigation measures are discussed in Section 5.4.3.

5 Discussion and Analysis

5.1 Proposed Development Plan

It is understood that the site has a total area of 2.22 hectares and the proposed development will consist of demolishing any existing structures and constructing a new 28-lot residential subdivision. It is unknown if the proposed dwellings will have basement levels. A 20-metre-wide roadway will run through the site and will connect to Lockhart Road in two locations near the east and west ends of the site. A stormwater management area with an area of 0.15 hectares will be constructed near the northeastern entrance to the site. Proposed site grades were not provided to CEE but there are not expected to be any significant grade changes to accommodate the development. The proposed preliminary site conditions are shown on Figure 2B.

This area of Innisfil is not municipally serviced. Based on our correspondence, it is understood that this development will not proceed until such time that the property will have municipal water and sanitary services, such that no private wells or septic systems will be required. This report has been prepared reflecting this, and the scope of work did not include a D-5-4 (individual on-site sewage system study) or a D-5-5 (private wells water supply assessment).

5.2 Ground Water Control Methodology

5.2.1 Temporary Construction Ground Water Control

Grading plans were not provided to CEE. It is unknown if excavations or utilities will extend below the prevailing groundwater table. During times of high precipitation, some water may also collect at the base of excavations.

It is expected that the groundwater table is located on the order of about 2 to 3 metres below grade across the site. The cohesionless soils at the site are relatively permeable and will allow for the free flow of water when wet, whereas the clayey silt glacial till and clayey silt deposits have a significantly lower permeability, precluding free flow of water.

It is noted that the upper surficial sand deposits and the silt interbedded within the glacial till in Borehole 2 were above the groundwater table. Due to a relatively low permeability, excavations made below the groundwater table



within the cohesive glacial till or clayey silt will likely not encounter significant amounts of free-flowing water. Temporary groundwater control within the cohesive soils can likely be accomplished using local sump and pump systems, and less than 50,000 L/day of construction dewatering is expected. Per O.Reg. 63/16, the takings for both groundwater and stormwater will not require a hydrogeological report, registration on the Environmental Sector Activity Registry (EASR), nor a Permit to Take Water (PTTW) from the Ministry of Environment, Conservation and Parks (MECP).

Although the site soils are predominantly cohesive, the glacial till in Borehole 1 was interbedded with a discontinuous layer of wet silty sand located in the groundwater table. There may be other discontinuous zones of wet cohesionless soils at the site that were not captured by the boreholes. Free flowing water will enter excavations made into the cohesionless layers below the groundwater table. Preliminary dewatering calculations show that the expected water taking is also less than 50,000 L/day for this scenario.

It is expected that the groundwater inflows from these interbedded cohesionless deposits will not yield significant amounts of groundwater, and can likely be controlled by placing strategically placed pumps at the base of the excavation.

The zone of influence for drawdown is estimated to be small (i.e. 10 metres or less) and will only occur in relatively short time period during the installation of site servicing. Therefore, any limited dewatering is not expected to impact the nearby domestic water wells shown on the MECP Well Record database. These domestic wells are also typically screened within deeper sand deposits below the clayey silt deposits, and the construction dewatering and excavations will not extend below the clayey silt deposits. Negligible impacts to groundwater levels or flow directions, base flow to nearby creeks, or other impacts to environmental features are expected due to the dewatering being temporary only and a small zone of influence.

The exact scenario where these groundwater control techniques will work are estimates only and are directly correlated to how coarse or fine the native soils are in an excavation and how deep the construction excavations will extend. If the groundwater table is not controlled during construction, the base of the excavations will probably be unstable, leading to difficulties in excavating and placement of pipes or footings. Once final grading and utility plans become available, the plans should be sent to CEE for review to confirm the assumptions made in this preliminary assessment of temporary groundwater control.

5.2.2 Permanent Building Drainage

For new structures that will be slab on grade with no basement levels, perimeter and under-slab drainage at the foundation level is not required, provided that the underside of concrete slab is at least 200 mm above the prevailing grade of the site and the surrounding surfaces slope away from the building at a gradient of at least 2% to promote surface water run-off and to reduce groundwater infiltration adjacent to foundations. To minimize infiltration of surface water, the upper 150 mm of backfill could comprise relatively impervious compacted soil material (such as the clayey silt glacial till or clayey silt deposits from the site).

Where basements are constructed, all basement foundation walls must be provided with damp-proofing provisions in conformance to the Ontario Building Code. Backfill along the foundation wall must consist of Granular 'B' Type 1 (OPSS 1010) for a minimum lateral distance of 600 mm out from the foundation wall. Alternatively, if a filtered cellular drainage media is provided adjacent to the foundation wall, the backfill may consist of common earth fill.



For buildings with basements, a perimeter drainage system must be installed that will remove any water that infiltrates into the building backfill, to ensure that any water does not infiltrate into the basement. The perimeter drains must consist of minimum 100 mm diameter perforated pipes wrapped in filter socks, sufficiently covered on all sides by 19 mm clear stone. Perimeter drains should be directed to the sump underneath the basement floor in solid pipes so as not to surcharge the underfloor drainage layer with water. All sump pumps should be on emergency power for redundancy in case of a power outage. A typical detail is included in the geotechnical report for the site under a separate cover.

If the basement level is set near or within the prevailing groundwater level, it is possible that perimeter drainage issues may occur in the future (e.g. sump pump failure, blockage of drainage pipes, etc.), which would lead to potential foundation cracking and basement flooding. These issues are typically more prevalent in soils that have a high permeability (i.e. sands) where higher groundwater flow and discharge occurs. Basements can be set below the groundwater table provided these risks are fully acknowledged and all obligations set by the governing bodies in the jurisdiction are met which stipulate minimum clearance distances between basement slab elevation and seasonal high groundwater table. It is noted that the Town of Innisfil typically requires a separation of 0.5 metres from the seasonally high groundwater table and any proposed basement slab, regardless of soil type.

The proposed grades for the site are unknown. CEE is also carrying out monthly groundwater level measurements for one year which will be summarized in a letter report.

5.3 Water Balance

5.3.1 Water Balance Components

A water balance is an accounting of the water resources within a given area. The water balance equates the precipitation (P) over a given area to the summation of the change in ground water storage (S), evapotranspiration/evaporation (ET), surface water runoff (R) and infiltration (I) using the following equation:

$$P = S + I + ET + R$$

The components of the water balance vary in space and time and depend on climatic conditions as well as the soil and land cover conditions (i.e., rainfall intensity, land slope, soil hydraulic conductivity and vegetation). For example, runoff occurs at a higher percentage during periods of snowmelt when the ground is frozen or during intense rainfall events.

Precise measurement of the water balance components is difficult, and as such, approximations and simplifications are made to characterize the water balance of a property. Field observations of the drainage conditions, land cover and soil types, groundwater levels and local climatic records are important inputs to the water balance calculations.

- <u>Precipitation (P):</u> For the purposes of approximating the annual precipitation at this site, the monthly rainfall between 1981 and 2010 was used based on Government of Canada historical weather data for the Barrie WPCC weather station (Climate ID 6110557 44.38 N, Longitude 79.69 W, Elevation 229 metres), which is located relatively close to the site.
- <u>Storage (S):</u> Although there are groundwater storage gains and losses on a short-term basis, the net change in groundwater storage on a long-term basis is assumed to be zero.



- Evapotranspiration/Evaporation (PET): The evapotranspiration and evaporation components vary based
 on the characteristics of the land surface cover (i.e., type of vegetation, soil moisture conditions,
 perviousness of surfaces, etc.). Potential evapotranspiration refers to the water loss from a vegetated
 surface to the atmosphere under conditions of an unlimited water supply. Evaporation occurs from a hard
 surface (such as flat rooftops, asphalt, etc.).
- Water Surplus (R + I): The difference between the mean precipitation and evapotranspiration is referred to as the water surplus. The water surplus is divided into two parts: as surface or overland runoff (R) and the infiltration into the surficial soil (I). The infiltration is comprised of two end member components: one component that moves vertically downward to underlying aquifers (referred to as percolation, deep infiltration or net recharge) and a second component that moves laterally through the near surface soil profile or shallow soils as interflow that re-emerges locally to surface (i.e., as runoff) at some short distance and time following precipitation.

5.3.2 Approach and Methodology

The analytical approach to calculate the water balance involves monthly soil-moisture balance calculations to determine the pre-development infiltration volumes. The detailed water balance calculation is provided in Appendix E, which are summarized in this and subsequent sections of the report. The following assumptions were used as part of the soil-moisture balance calculations:

- A soil moisture balance approach assumes that soils do not release water as potential recharge while a soil moisture deficit exists.
- During wetter periods, any excess of precipitation over evapotranspiration first goes to restore soil
 moisture. Considering the nature of the cohesionless near surface soils (sand to silty sand) and a mostly
 forested site, a soil moisture storage capacity of 250 mm was used.
- Once the soil moisture deficit is overcome, any further excess water can then pass through the soil as infiltration and either become interflow (indirect runoff) or recharge (deep infiltration).

Monthly potential evapotranspiration calculations accounting for latitude, climate and the actual evapotranspiration and water surplus components of the water balance based on the monthly precipitation and soil moisture conditions was calculated. The MOECC SWM Planning and Design Manual (2003) methodology for calculating total infiltration based on topography, soil type and land cover was used, and a corresponding infiltration factor was calculated. The water surplus was multiplied by the infiltration factor to determine both the pre-existing and post-condition annual volumes for run-off and infiltration for the property.

A post-development water balance scenario was also calculated based on the proposed land development plan, as discussed in Section 5.3.3. The drawing, "Concept Plan 9a," (Project No. FAY-19035, dated August 15, 2019, by Jones Consulting Group Ltd.) shows preliminary information only (e.g. it does not show house footprints, exact locations of roads, sidewalks, and driveways, etc.), and CEE had to make assumptions about the increase in hard surfaces to calculate the post-development scenario. The water balance can be updated once site plans are finalized.

It is noted that the infiltration and runoff values presented in Appendix E are estimates only. Single values are used for the water balance calculations, but it is important to understand that infiltration rates are dependent upon the hydraulic conductivity of the surficial soils which may vary over several orders of magnitude. As such, the margins



of error for the calculated infiltration and runoff component values are potentially quite large. These margins of error are recognized, but for the purposes of this assessment, the numbers used in the water balance calculations are considered reasonable estimates based on the site-specific conditions and useful for comparison of pre- to post-development conditions.

5.3.3 Pre and Post Water Balance

The detailed water balance calculations are included in Appendix E. The pre-development calculations are summarized in the table below:

Pre-Develop	ment Land Use	Pre-Development Average Annual Runoff Volume	Pre-Development Average Annual
Soft Cover	Hard Cover	(m³/year)	Infiltration Volume (m³/year)
97% (grass areas, forest) 3% (Dwelling, driveway)		1,990	5,848

The post-development calculations are summarized in the table below:

Post-Develop	oment Land Use	Post-Development Average Annual Runoff Volume	Post-Development Average Annual	
Soft Cover Hard Cover		(m³/year)	Infiltration Volume (m³/year)	
35% (grassed and landscaped areas)	65% (estimated buildings and pavement areas)	11,970	2,110	

These calculations suggest that, without mitigation such as low impact development measures, the proposed development will decrease average infiltration by about 3,738 m³/year. The proposed development will increase runoff by about 9,980 m³/year (601% increase). The potential impacts of these changes and recommended mitigation measures are discussed below.

5.4 Recommended Mitigation Measures

5.4.1 Runoff Quantity

Urban development of an area affects the natural water balance. The most significant difference is the addition of impervious surfaces as a type of surface cover (i.e., roads, parking lots, driveways, and rooftops). Impervious surfaces prevent infiltration of water into the soils and the removal of the vegetation reduces the evapotranspiration component of the natural water balance. The evaporation component from impervious surfaces is relatively minor (estimated to be 15% of precipitation) compared to the evapotranspiration component that occurs with vegetation in this area (up to two thirds of precipitation). So, the net effect of the urbanization of the site is that most of the precipitation that falls onto impervious surfaces increases the surplus water resulting in more direct runoff from developed areas and reduced natural infiltration.

In conjunction with increased runoff, there is a reduction in infiltration to the shallow groundwater system. A reduction in infiltration can potentially lead to a lowering of the local water table and reduce the potential for this seasonal water table intersection and discharge.



Methods which do not necessarily increase infiltration rate, but decrease the volume and concentration of surface water runoff can be considered at this site:

- Increasing the topsoil thickness by about two times the normal thickness (up to 30 cm) to retain more water in storage; and
- Implementation of rainwater harvesting which intercepts, diverts and stores roof runoff (i.e. cisterns) for future use.

It is noted for this site that the upper 0.8 to 1 metre of sand encountered near the ground surface is underlain by low-permeability clayey silt glacial till that has a low infiltration rate. Infiltration is comprised of two end member components: one component that moves vertically downward to underlying aquifers (referred to as percolation, deep infiltration or net recharge) and a second component that moves laterally through the near surface soil profile or shallow soils as interflow that re-emerges locally to surface (i.e., as runoff) at some short distance and time following precipitation. It is expected that surface water that infiltrates into the ground at this site mostly consists of the second infiltration component of lateral near-surface flow that emerges locally to surface due to the underlying low-permeability glacial till.

5.4.2 Mitigation Measures for Maintaining Infiltration

The site is within an LSPP SGRA/ESGRA but the proposed land use will be low density residential and the site is not within an HVA or WHPA. Based on Table 2 in "Lake Simcoe Protection Plan Water Budget Policy for LSPP 4.8-DP and 6.40-DP," infiltration-based practices are permitted for this site for runoff from impervious areas, vegetated areas, and rooftops.

The increases in surface water runoff that will occur with urban development and mitigation of the potential impacts to the local water table due to reduction of infiltration may be minimized by using appropriate stormwater management and using low impact development (LID) measures to promote infiltration. These measures can be implemented on-site.

The basic premise for low impact development is to try to minimize changes to runoff and infiltration. As outlined in the MOECC SWMP Design Manual (2003) and Low Impact Development Stormwater Management Planning and Design Guide published by the CVC and TRCA (2010), there are a suite of techniques that may be considered to promote infiltration and reduce runoff. In order to maintain ground water function at the site the following typical LID measures can be considered as part of typical site developments:

- Collection of runoff from the building rooftops and redirection to grass areas and overland flow. If feasible, it is recommended that there be a minimum 5 metre flow path over pervious areas to allow this mitigation method to be fully effective;
- Provision of gentle slopes in open areas or along drainage ditches in order to allow time for water infiltration;
- Construction of engineered infiltration measures such as soakaway pits, infiltration galleries or bioswales (subsurface infiltration methods can only be considered in areas where there is sufficient soil permeability and depth to water table to accommodate the systems within the unsaturated zone); and
- Construction of grass channels or filter strips which allow infiltration, discharge at a lower rate and direct roof runoff to overland flow.



Implementation of LID measures will not only allow for infiltration of the surface water into the near-surface groundwater regime but allow for increase in natural filtration of surficial runoff, prevent sedimentation transport and potential erosion, and help reduce flooding by increasing the transit time for water on the site. These types of LID techniques promote natural infiltration by providing additional water volumes in the pervious areas. This is particularly effective in the summer months, when natural infiltration would not generally occur because the additional water overcomes the natural soil moisture deficit.

It is understood that stormwater from the roof areas and pervious areas for the site will be infiltrated, and details will be provided by others in a stormwater management report for the site (by others). This includes demonstrating through plans and sections (including all dimensions, materials used and including the seasonal high groundwater level) how this infiltration deficit will be mitigated. In addition, the stormwater management report will need to include calculations to demonstrate that the LID facilities will be adequately sized both volumetrically and for area to allow completed drawdown within a 24 to 48 hours time period.

As it is a requirement of maintaining the same levels of infiltration post construction, no appreciable change in the groundwater table elevation should occur over the long-term condition. As such, the no adverse effects to the groundwater quantity of neighbouring properties that utilize drinking water wells as the source of their potable water.

5.4.3 Groundwater Quality

Depending on land use, runoff from urban developments may contain a variety of dilute contaminants such as suspended solids, chloride from road salt, oil and grease, metals, pesticide residues, bacteria and viruses. For groundwater, generally except for the dissolved constituents such as nitrogen and salt, most contaminants are attenuated by filtration during groundwater flow through the soils.

Phosphorous will be removed from the site through implementation of measures such as LID or end treatments. This will be addressed in the stormwater management report prepared for the site by others. "LSRCA Technical Guidelines for Stormwater Management Submissions" (dated September 1, 2016, by LSRCA) states that 80% removal of annual Total Phosphorous is required for major developments and provides a list of typical phosphorous removal rates for various stormwater management best management practices. LID measures are recommended for this site to maintain the pre to post development water balance. LID's used in a treatment train approach remove phosphorous, and some typical removal rates are 60% for infiltration trenches, 65% for vegetated filter strips, and 87% for perforated pipe infiltration / exfiltration system based on the LSRCA guidelines.

In addition to removing phosphorous, LID measures or end treatments such as oil/grit separators or wet ponds also help to remove suspended solids and other contaminants in runoff prior to infiltration or conveying the flows off the site, especially when a treatment train approach is taken for stormwater management. The stormwater management facilities (to be designed by others) must be designed such that the water quality is maintained or improved prior to discharging water from the site or infiltrating water into the ground.

The results of the groundwater chemical testing compared to Provincial Water Quality Objectives (PWQOs) as provided in Appendix F and summarized in Section 4.3.3 show that there are several exceedances for metals in the unfiltered groundwater sample. Field filtering using a 75-micron filter was also carried out prior to collecting the second sample to provide a general reference to how filtering during actual dewatering activities can improve groundwater quality. The results show that filtering removes the metal exceedances (except for copper) since



metals usually bind to sediment that is readily removed using filters. Prior to groundwater discharge, it is recommended that another filtered and unfiltered groundwater sample be collected and sampled from two different monitoring wells to verify if the exceedance for copper is an isolated instance. If the copper exceedance remains, the groundwater will need to be treated prior to discharge to the land surface. Other filtration systems using activated carbon or adsorption technologies may be required to remove the copper, but copper removal methods will be determined by the professional dewatering contractor.

The potential for effects on groundwater quality from infiltration in the proposed development area is expected to be limited due to the residential nature of the site and will not affect local drinking water wells in the vicinity of the site. Any potential changes to the shallow groundwater quality are not expected to influence the surface water quality in the flow to either Lake Simcoe or the minor watercourses further south considering the limited groundwater discharge volumes.

6 Limitations and Conclusion

6.1 Limitations

The investigation and comments are necessarily on-going as new information of underground conditions becomes available. More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, Central Earth Engineering should be contacted to assess the situation and additional testing and reporting may be required.

Central Earth Engineering should be retained for a general review of the final design drawings and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, Central Earth Engineering will assume no responsibility for interpretation of the recommendations in the report. For example, it should be appreciated that modifications to bearing levels may be required if unforeseen subsoil conditions are revealed after the excavation is exposed to full view or if final design decisions differ from those assumed in this report.

The comments given in this report are intended only for the guidance of the design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc. could be greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

This report was prepared by Central Earth Engineering for the account of Soheil and Mohamad Fayaz. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Central Earth Engineering accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.



6.2 Conclusion

It is recognized that municipal/regional governing bodies, in their capacity as the planning and building authority under Provincial statues, will make use of and rely upon this report, cognizant of the limitations thereof, both as are expressed and implied.

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to contact our office.

Yours Truly,

Central Earth Engineering Inc.

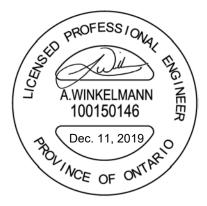
Alexander Winkelmann, P.Eng.

President

Russell Wiginton, P.Eng.

B. Wigner

Project Engineer







Figures -

FIGURE 1 - SITE LOCATION PLAN

FIGURE 2A - BOREHOLE LOCATION PLAN (AERIAL IMAGE)

FIGURE 2B - BOREHOLE LOCATION PLAN (PROPOSED SITE)

FIGURE 3 - SUBSURFACE PROFILE

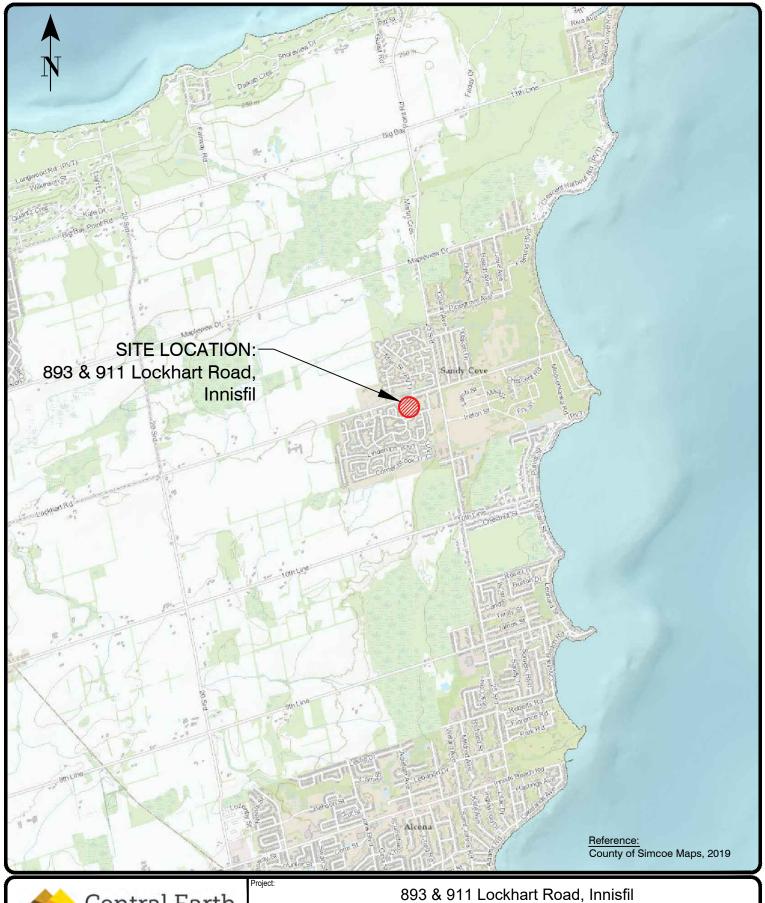
FIGURE 4 - MECP & CEE WELL LOCATION MAP

FIGURE 5A - WELLHEAD PROTECTION AREA MAP

FIGURE 5B - SIGNIFICANT GROUNDWATER RECHARGE MAP

FIGURE 5C - HIGHLY VULNERABLE AQUIFER MAP







893 & 911 Lockhart Road, Innisfil							
SITE LOCATION PLAN							
Approved by:	A.W.	Date:	November 2019	Project No.:	19-1171A		
Drawn by:	RW	Scale:	1.40000	Figure No.:	1		



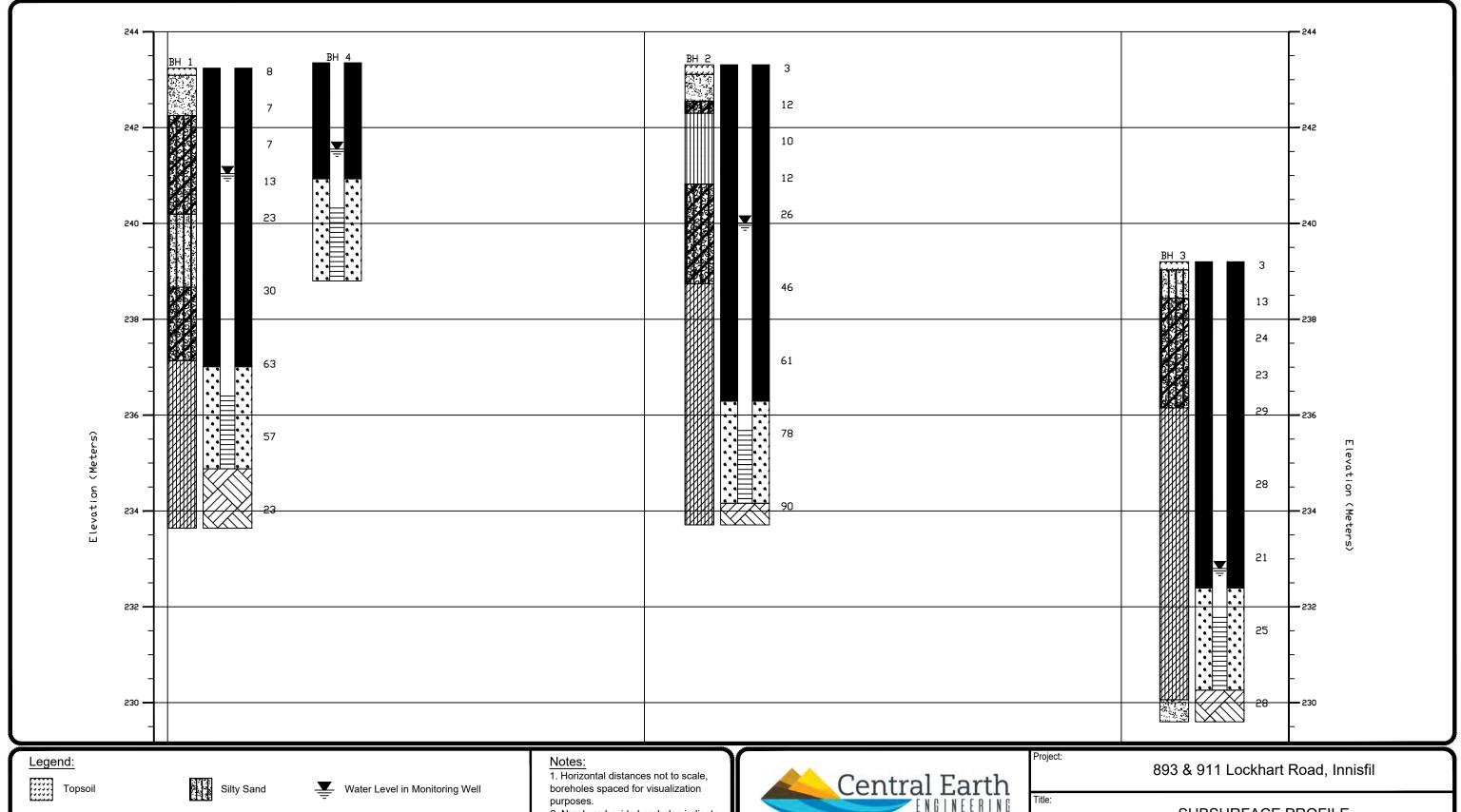


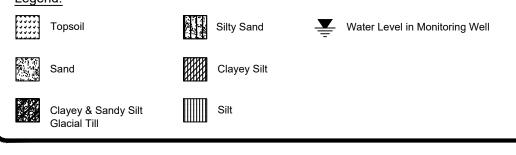
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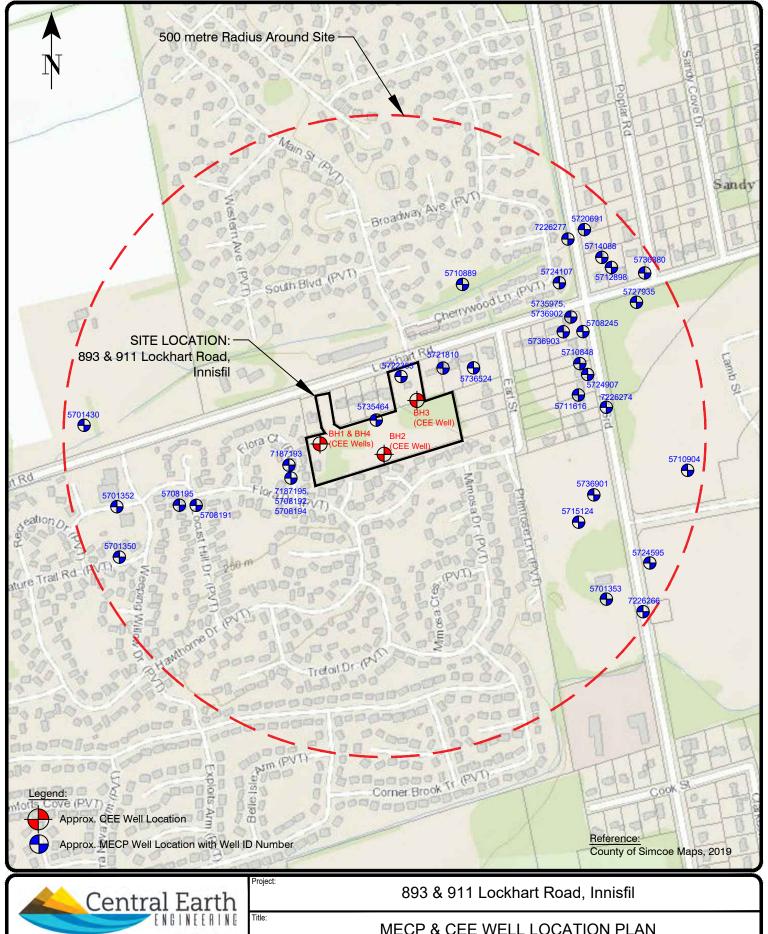


2. Numbers beside boreholes indicate SPT "N" Values obtained in the borehole.



Geotechnical Engineering and Construction Materials Testing & Inspection

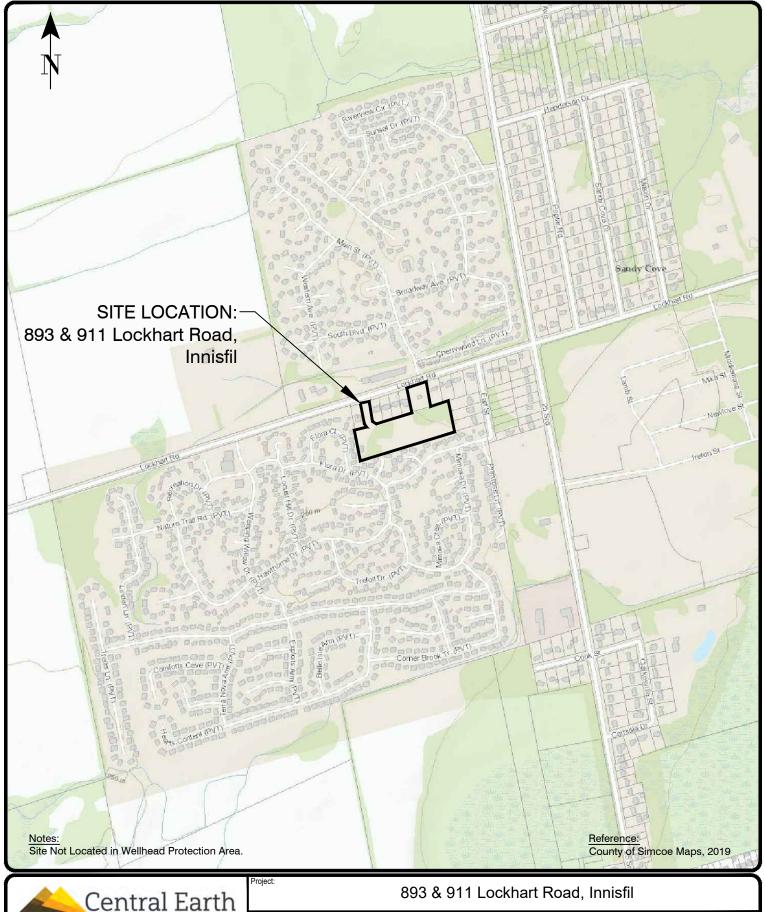
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Approved by:	A.W.	Date:	November 2019	Project No.:	19-1171A
Drawn by:	R.W.	Scale:	As Shown	Figure No.:	3



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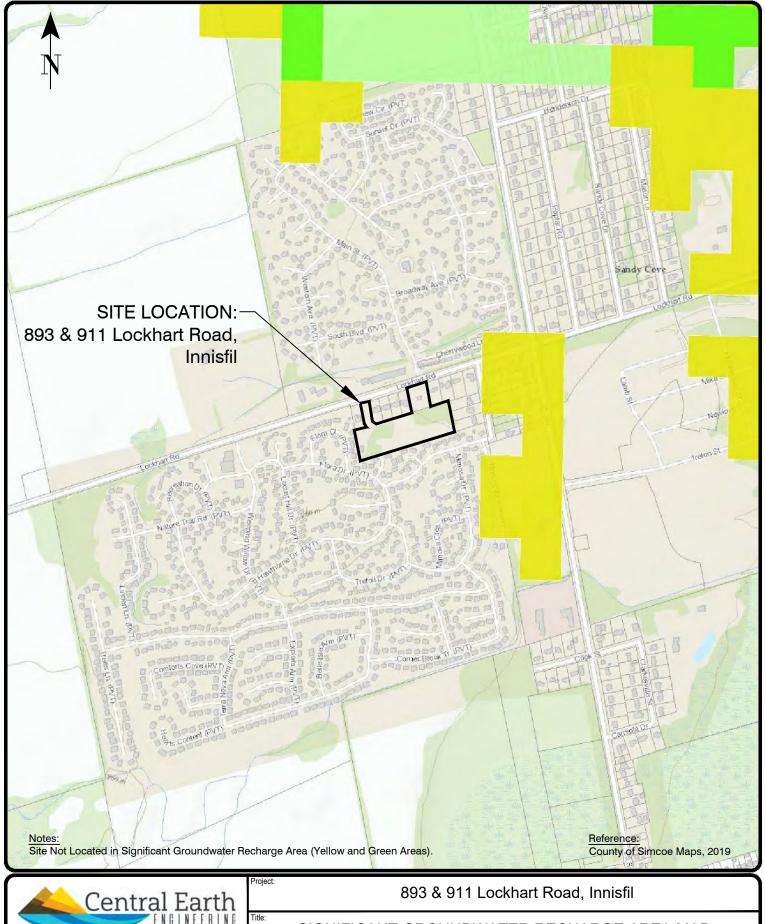
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laterials Testing & Inspection Velham Rd, Unit 14, Barrie, ON, L4N 0B7 705) 719-7994 E: info@centralearth.ca	Approved by:	A.W.	Date:	November 2019	Project No.:	
	Drawn by:	R.W.	Scale:	N.T.S.	Figure No.:	

19-1171A 4





		893 & 9	11 Lockhart Roa	d, Innistil			
Title:	Title: WELLHEAD PROTECTION AREA MAP						
Approved by:	A.W.	Date:	November 2019	Project No.:	19-1171A		
Drawn by:	R.W.	Scale:	N.T.S.	Figure No.:	5A		



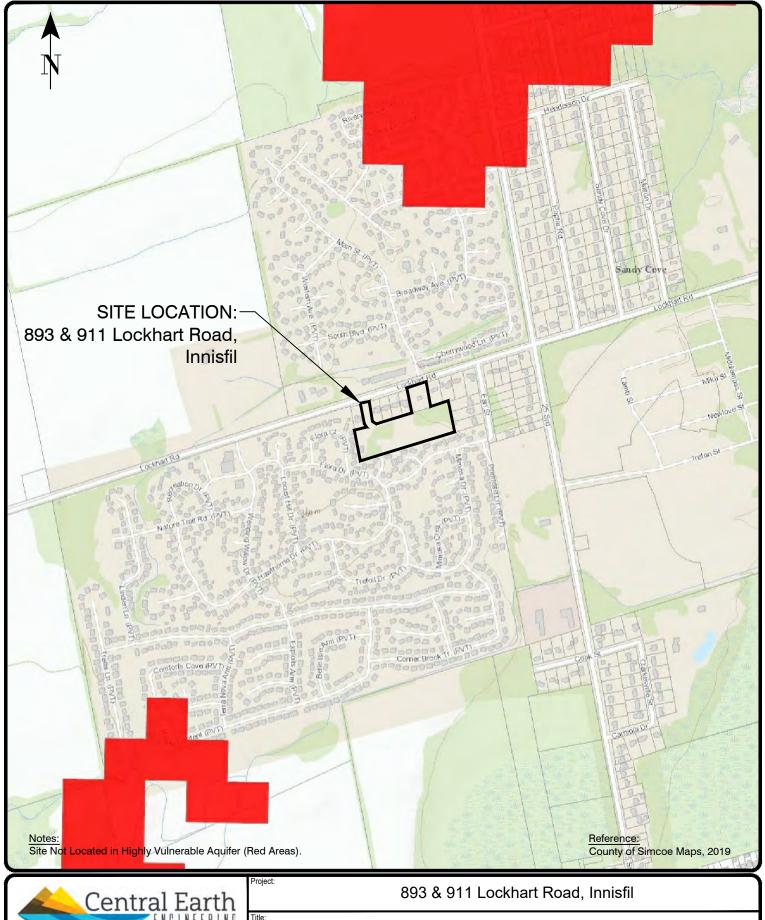


Materials Testing & Inspection

647 Welham Rd, Unit 14, Barrie, ON, L4N 0B7 P: (705) 719-7994 | E: info@centralearth.ca SIGNIFICANT GROUNDWATER RECHARGE AREA MAP

 Approved by:
 A.W.
 Date:
 November 2019
 Project No.:
 19-1171A

 Drawn by:
 R.W.
 Scale:
 N.T.S.
 Figure No.:
 5B





893 & 911 Lockhart Road, Innisfil					
Title:					
Approved by:	A.W.	Date:	November 2019	Project No.:	19-1171A
Drawn by:	R.W.	Scale:	N.T.S.	Figure No.:	5C

Appendix A -

BOREHOLE LOGS



Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz Project Name: 893 & 911 Lockhart Road

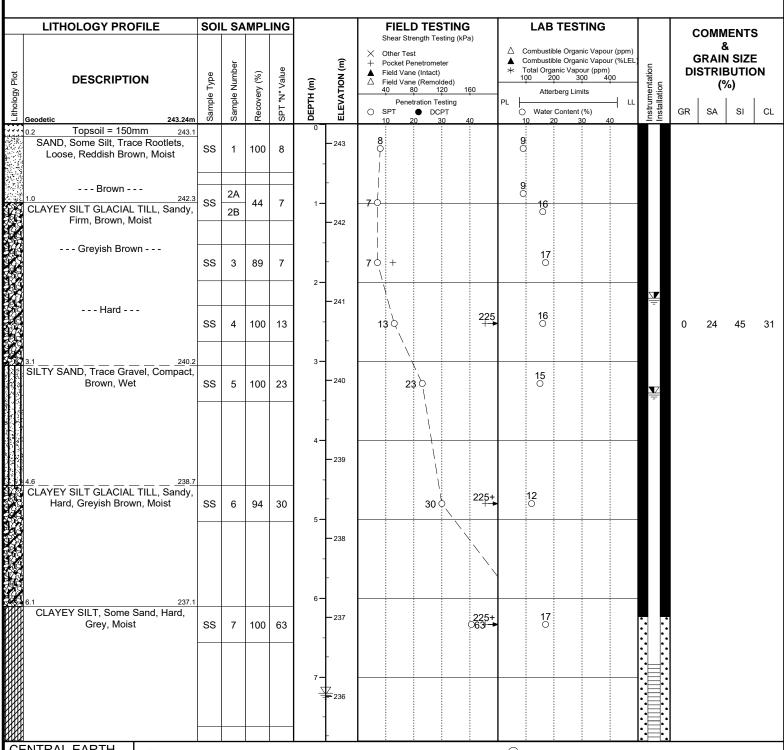
Project Location: Innisfil, Ontario RD Northing: 4911952 Date Started: 2019-10-24 Logged By:

Drilling Method: Solid Stem Augers

Drilling Location: Directly behind 913 Lockhart Rd. Reviewed By: AW Easting: 615209 Date Completed: 2019-10-24

Drilling Machine: Track Mount

Central Earth



CENTRAL EARTH **ENGINEERING**

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 F: info com W: centralearth.com

Groundwater depth encountered on completion of drilling: **7.2m**

Cave depth after auger removal: 8.5m

Observed on Nov. 15/19 at a depth of: 2.2m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:50 Page: 1 of 2

Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz

Project Name: 903 % 044 Lealthout Panel

Project Name: 893 & 911 Lockhart Road

Project Location: Innisfil, Ontario

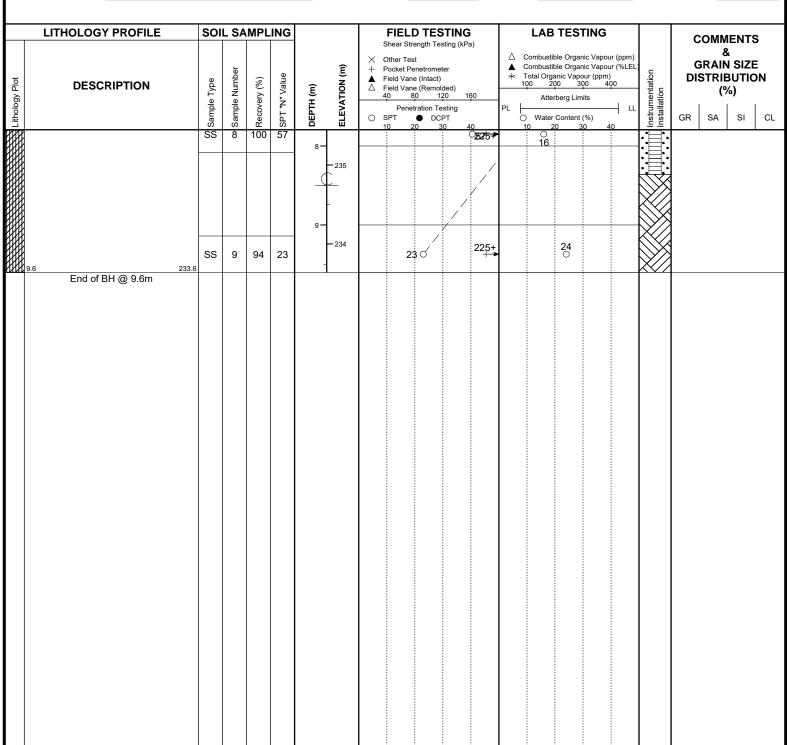
Drilling Location: Directly behind 913 Lockhart Rd.



Drilling Method: Solid Stem Augers Drilling Machine: Track Mount

Logged By: RD Northing: 4911952 Date Started: 2019-10-24

Reviewed By: ____AW Easting: ____615209 Date Completed: _2019-10-24



CENTRAL EARTH ENGINEERING

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 F: info com

W: centralearth.com

Groundwater depth encountered on completion of drilling: 7.2m

Cave depth after auger removal: 8.5m

Groundwater depth observed on Oct. 30/19 at a depth of: 3.4m

Observed on **Nov. 15/19** at a depth of: **2.2m**

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

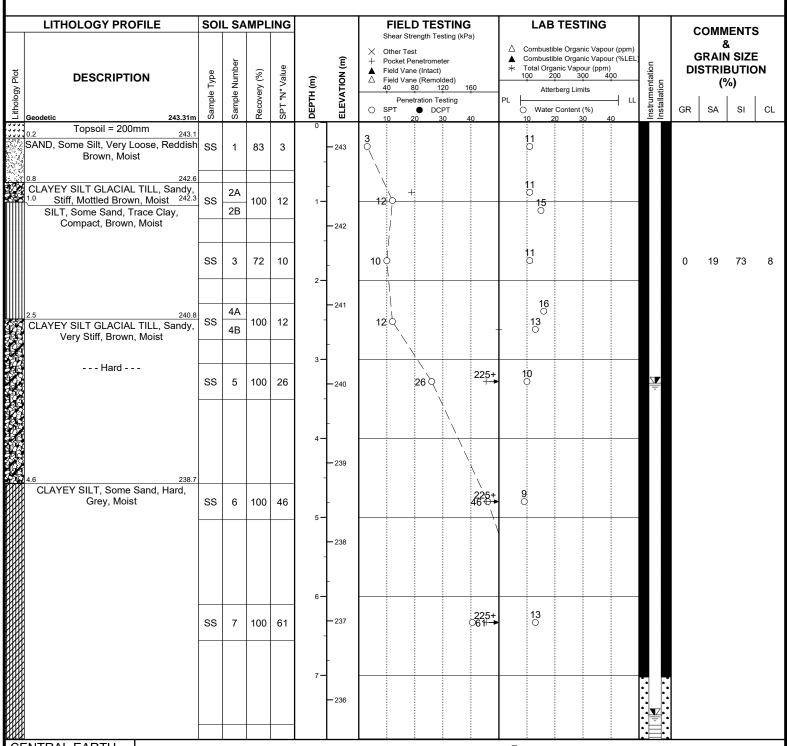
Scale: 1:50 Page: 2 of 2

Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz

Project Name: 893 & 911 Lockhart Road Drilling Method: Solid Stem Augers Drilling Machine: Track Mount Project Location: Innisfil, Ontario RD Northing: 4911934 Date Started: 2019-10-24 Logged By:

Drilling Location: Forested area 70m behind 901 Lockhart Rd. Reviewed By: AW Easting: 615316 Date Completed: 2019-10-24



CENTRAL EARTH **ENGINEERING**

W: centralearth.com

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 F: info com

Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Observed on Nov. 15/19 at a depth of: 3.3m

Central Earth

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:50 Page: 1 of 2

Project Location:

Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz

Project Name: 893 & 911 Lockhart Road

Innisfil, Ontario

Drilling Location: Forested area 70m behind 901 Lockhart Rd.



Drilling Method: Solid Stem Augers Drilling Machine: Track Mount

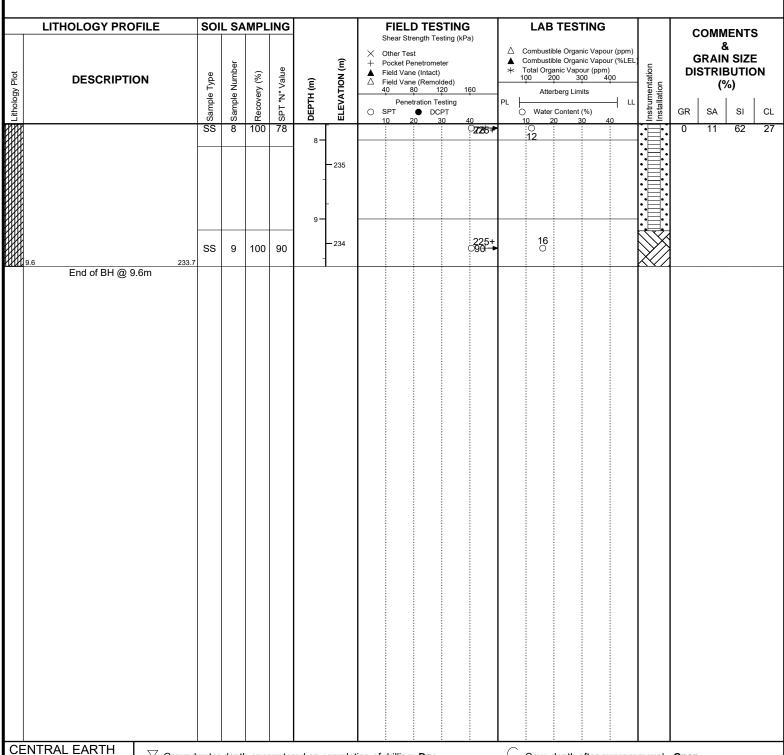
RD Northing: 4911934 Logged By:

AW

____ Easting: 615316 Date Completed: 2019-10-24

2019-10-24

Date Started:



Reviewed By:

ENGINEERING

W: centralearth.com

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 F: info com

Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Observed on Nov. 15/19 at a depth of: 3.3m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:50 Page: 2 of 2

Project Number: 19-1171A

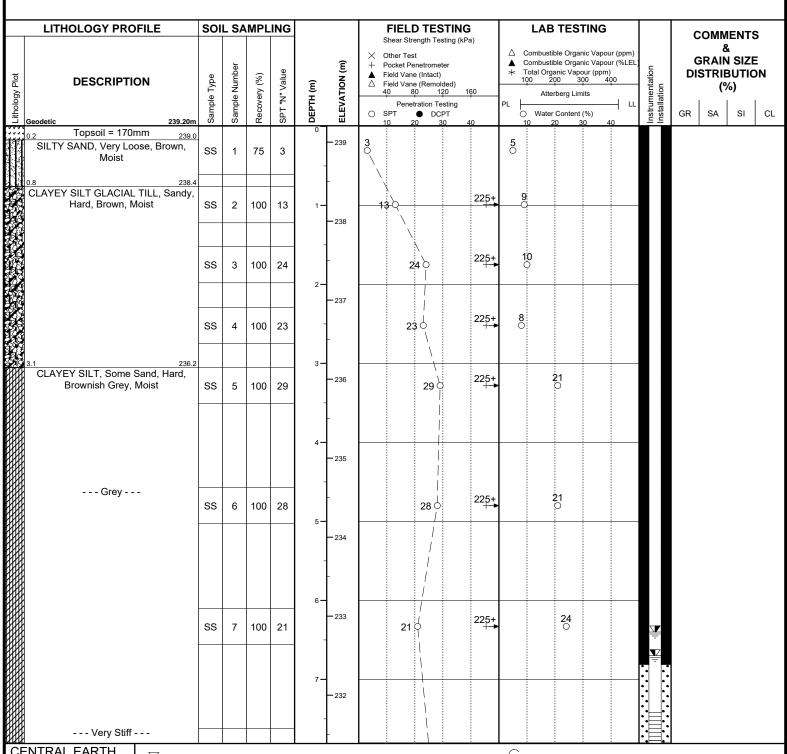
Project Client: Soheil & Mohamed Fayaz

Project Name: 893 & 911 Lockhart Road

Project Name:893 & 911 Lockhart RoadDrilling Method:Solid Stem AugersDrilling Machine:Track MountProject Location:Innisfil, OntarioLogged By:RDNorthing:4912017Date Started

Project Location: Innisfil, Ontario Logged By: RD Northing: 4912017 Date Started: 2019-10-24

Drilling Location: Backyard of 893 Lockhart Rd. Reviewed By: AW Easting: 615371 Date Completed: 2019-10-24



CENTRAL EARTH ENGINEERING

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 E: info.com W: centralearth.com Groundwater depth encountered on completion of drilling: **6.7m**

Cave depth after auger removal: Open

Groundwater depth observed on Oct. 30/19 at a depth of: 6.7m

Observed on **Nov. 15/19** at a depth of: **6.4m**

Central Earth

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:50
Page: 1 of 2

RECORD OF BOREHOLE No. 3

Drilling Location:

Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz

Project Name: 893 & 911 Lockhart Road Project Location: Innisfil, Ontario

Backyard of 893 Lockhart Rd.



__ Drilling Machine: Track Mount Drilling Method: Solid Stem Augers

RD Northing: Logged By: 4912017 AW Easting:

615371 Date Completed: 2019-10-24

2019-10-24

Date Started:

										· _			
	LITHOLOGY PROFILE	SOI	L SA	MPL	ING			FIELD TES		LAI	B TESTING		COMMENTS
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m) ELEVATION (m)	× Ot + Po ▲ Fie	cher Test pocket Penetrom eld Vane (Intact eld Vane (Remo 80 Penetration T	eter) olded) 20 160 esting	Combus * Total Or 100 Att PL O Wate	tible Organic Vapour (ppm) tible Organic Vapour (%LEL ganic Vapour (ppm) 200 300 400 erberg Limits	Instrumentation Installation	& GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
M		SS	8	100	25		10	20 25 O	30 40 +	10	20 30 40 0 26		
	9.1 230.1 FINE TO MEDIUM SAND, Trace Silt, Compact, Greyish Brown, Wet 9.6 229.6 End of BH @ 9.6m	SS	9	100	28	8 — — — — — — — — — — — — — — — — — — —		28		110			0 97 (3)
	ENTRAL FARTH												

Reviewed By: __

CENTRAL EARTH **ENGINEERING**

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 E: info.com

W: centralearth.com

Groundwater depth encountered on completion of drilling: **6.7m**

Cave depth after auger removal: Open

Observed on Nov. 15/19 at a depth of: 6.4m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:50 Page: 2 of 2

RECORD OF BOREHOLE No. 4

Project Number: 19-1171A

Project Client: Soheil & Mohamed Fayaz

Project Name: 893 & 911 Lockhart Road
Project Location: Innisfil, Ontario

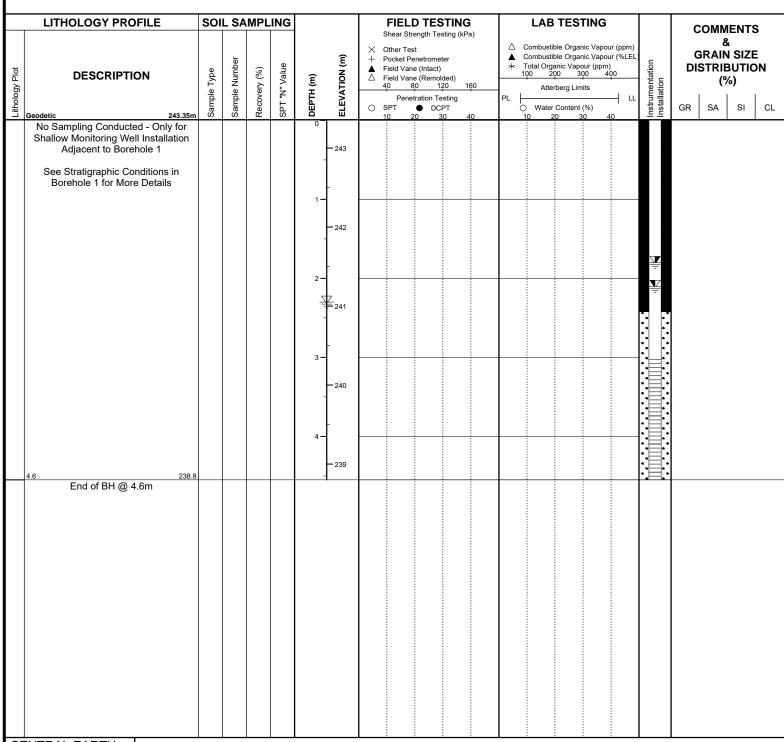
Drilling Method: Solid Stem Augers

Drilling Machine: Track Mount

Logged By: RD Northing: 4911953

Central Earth

Drilling Location: Immediately Adjacent to BH1 Reviewed By: AW Easting: 615211 Date Completed: 2019-10-24



CENTRAL EARTH ENGINEERING

647 Welham Road, Unit 14 Barrie, Ontario L4N 0B8 T: (705) 719-7994 F: info com

W: centralearth.com

Groundwater depth encountered on completion of drilling: 2.3m

Cave depth after auger removal: N/A

Groundwater depth observed on Oct. 30/19 at a depth of: 2.1m

Observed on **Nov. 15/19** at a depth of: **1.8m**

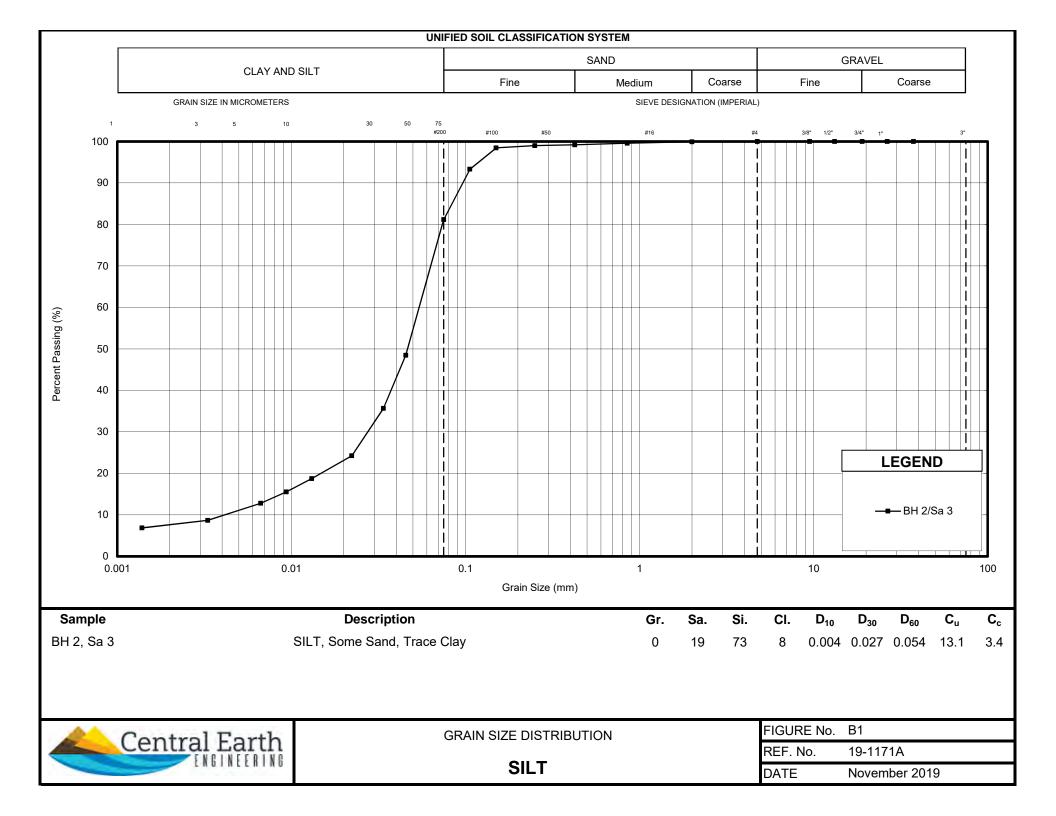
Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

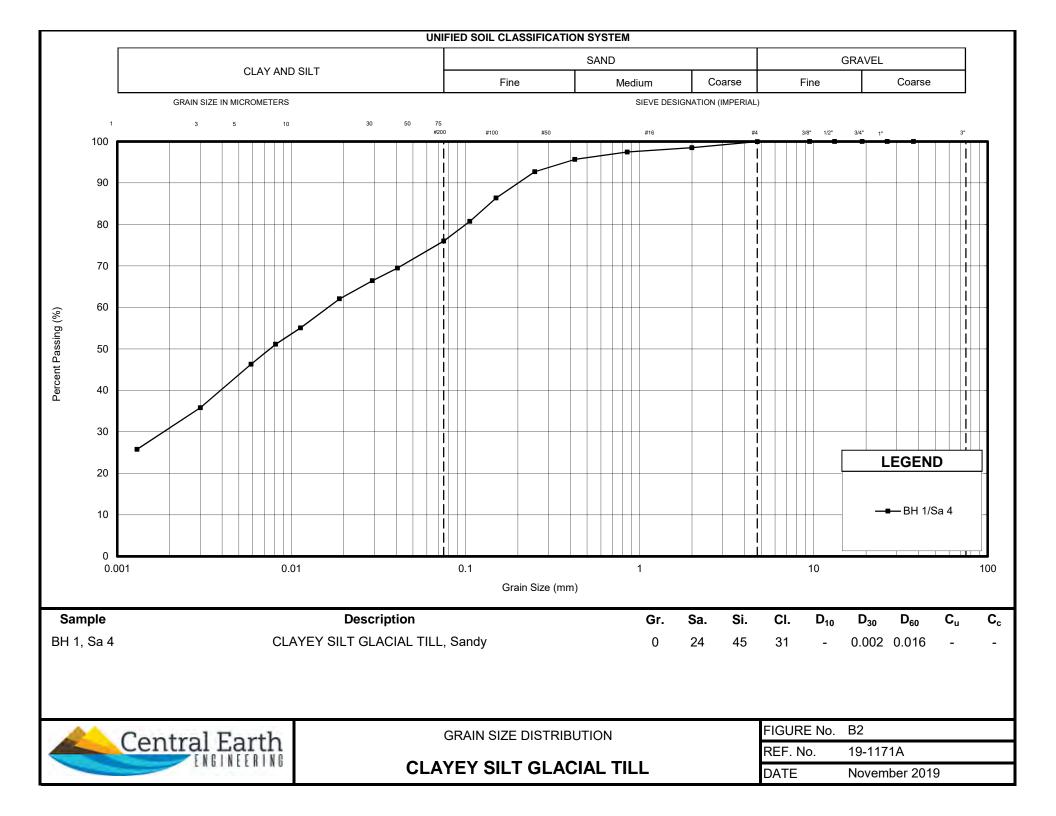
Scale: **1:50**Page: **1 of 1**

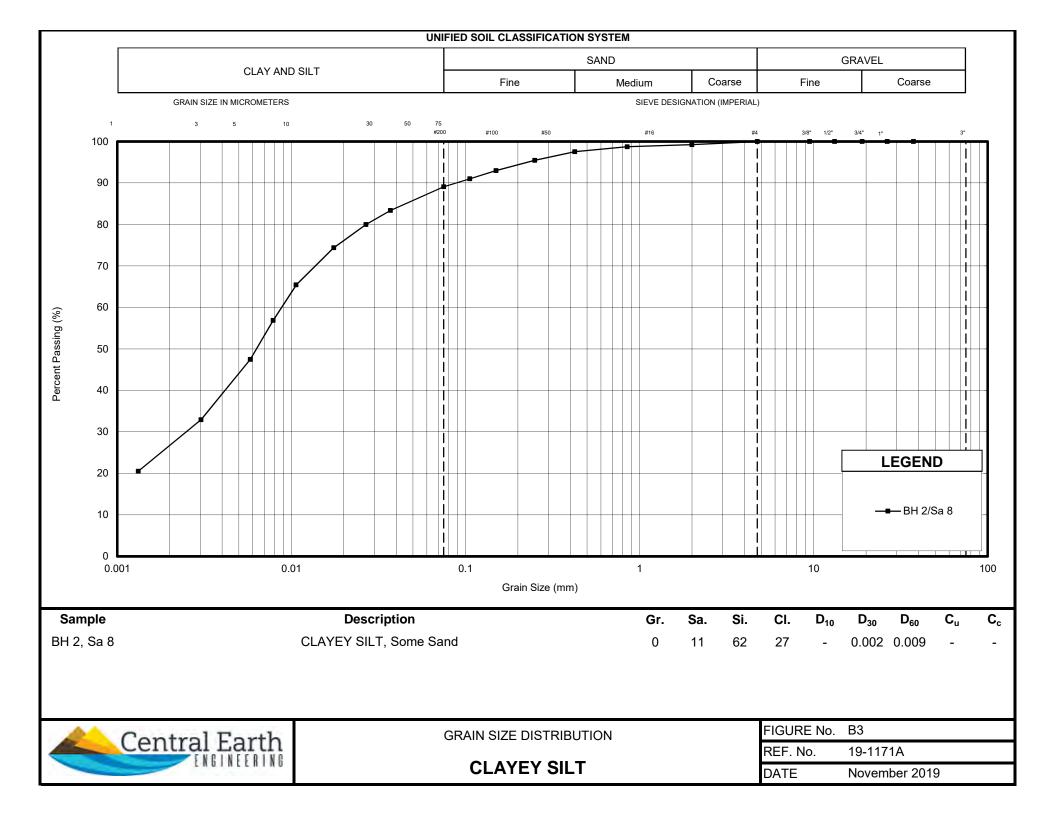
Appendix B –

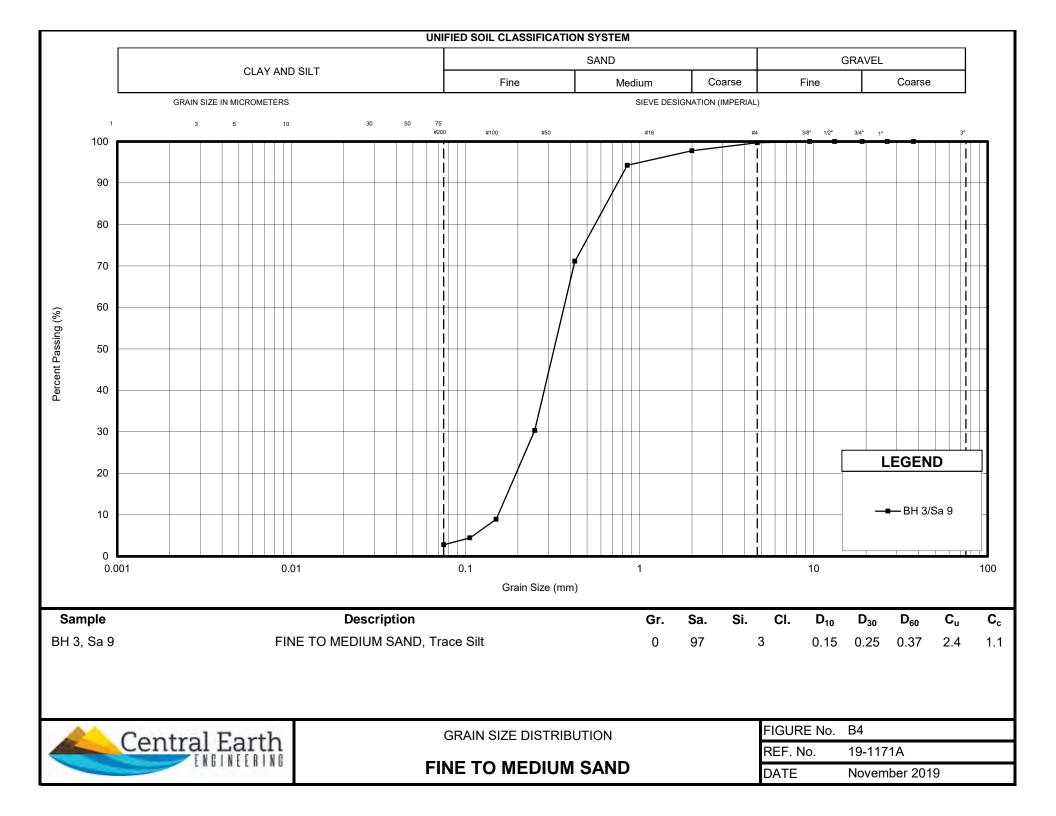
GEOTECHNICAL LABORATORY DATA











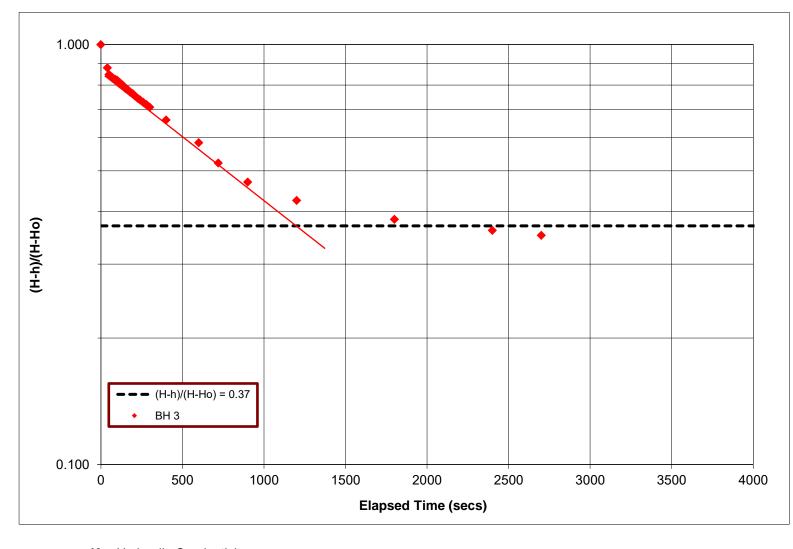
Appendix C –

RISING HEAD TEST DATA



Recovery Testing - Hvorslev Method (1951)

Time	Elapsed Time (mins)	Elapsed Time (sec)	Water Level (m)	H-h	(H-h)/(H-Ho)
			6.400		
	0.00	0	9.500	3.100	1.000
	0.67	40	9.130	2.730	0.881
	0.83	50	9.030	2.630	0.848
	1.00	60	9.010	2.610	0.842
	1.17	70	8.990	2.590	0.835
	1.33	80	8.970	2.570	0.829
	1.50	90	8.960	2.560	0.826
	1.67	100	8.950	2.550	0.823
	1.83	110	8.930	2.530	0.816
	2.00	120	8.910	2.510	0.810
	2.25	135	8.880	2.480	0.800
	2.50	150	8.840	2.440	0.787
	2.75	165	8.820	2.420	0.781
	3.00	180	8.790	2.390	0.771
	3.25	195	8.770	2.370	0.765
	3.50	210	8.740	2.340	0.755
	3.75	225	8.710	2.310	0.745
	4.00	240	8.690	2.290	0.739
	4.33	260	8.660	2.260	0.729
	4.67	280	8.630	2.230	0.719
	5.00	300	8.600	2.200	0.710
	6.67	400	8.450	2.050	0.661
	10.00	600	8.210	1.810	0.584
	12.00	720	8.020	1.620	0.523
	15.00	900	7.860	1.460	0.471
	20.00	1200	7.720	1.320	0.426
	30.00	1800	7.59	1.190	0.384
	40.00	2400	7.52	1.120	0.361
	45.00	2700	7.49	1.090	0.352



- **K** = Hydraulic Conductivity
- **r** = radius of well casing
- **R** = Radius of well screen or filter pack
- L = Length of the well screen (in Slug Test) or the length of submerged portion of the well screen (in Rising Head)

 T_0 = time for water level to rise or fall to 37% of the initial change

Notes:

- 1 All water levels are in metres from ground surface
- 1 R is radius of sand pack
- 2 T_o is determined from plots where (H-h)/(H-Ho) = 0.37
- 3 Analysis based off of Horslev (1951)

r (m) =	0.025
L(m) =	0.6
R(m) =	0.05
T_o (sec) =	1,200

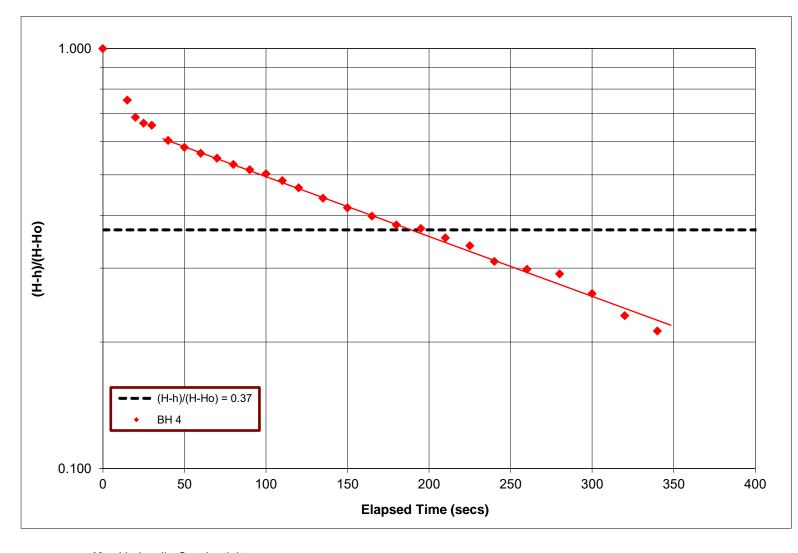
K (m/s) = 1E-06



APPENDIX:	C1
REF. No.:	19-1171A
DATE:	December 2019

Recovery Testing - Hvorslev Method (1951)

BH 4									
Time	Elapsed Time (mins)	Elapsed Time (sec)	Water Level (m)	H-h	(H-h)/(H-Ho)				
			1.800						
	0.00	0	4.480	2.680	1.000				
	0.25	15	3.820	2.020	0.754				
	0.33	20	3.640	1.840	0.687				
	0.42	25	3.580	1.780	0.664				
	0.50	30	3.560	1.760	0.657				
	0.67	40	3.420	1.620	0.604				
	0.83	50	3.360	1.560	0.582				
	1.00	60	3.310	1.510	0.563				
	1.17	70	3.270	1.470	0.549				
	1.33	80	3.220	1.420	0.530				
	1.50	90	3.180	1.380	0.515				
	1.67	100	3.150	1.350	0.504				
	1.83	110	3.100	1.300	0.485				
	2.00	120	3.050	1.250	0.466				
	2.25	135	2.980	1.180	0.440				
	2.50	150	2.920	1.120	0.418				
	2.75	165	2.870	1.070	0.399				
	3.00	180	2.820	1.020	0.381				
	3.25	195	2.800	1.000	0.373				
	3.50	210	2.750	0.950	0.354				
	3.75	225	2.710	0.910	0.340				
	4.00	240	2.635	0.835	0.312				
	4.33	260	2.600	0.800	0.299				
	4.67	280	2.580	0.780	0.291				
	5.00	300	2.500	0.700	0.261				
	5.33	320	2.420	0.620	0.231				
	5.67	340	2.37	0.570	0.213				



- **K** = Hydraulic Conductivity
- **r** = radius of well casing
- **R** = Radius of well screen or filter pack
- L = Length of the well screen (in Slug Test) or the length of submerged portion of the well screen (in Rising Head)

 T_0 = time for water level to rise or fall to 37% of the initial change

Notes:

- 1 All water levels are in metres from ground surface
- 1 R is radius of sand pack
- 2 T_o is determined from plots where (H-h)/(H-Ho) = 0.37
- 3 Analysis based off of Horslev (1951)

r (m) =	0.025
L(m) =	1.5
R(m) =	0.05
T_o (sec) =	190

K (m/s) = 4E-06



APPENDIX:	C2
REF. No.:	19-1171A
DATE:	December 2019

Appendix D –

MECP WELL RECORDS



UTM 17 Z 6 14887 E SR 49111 J 4 N Ontario Water Resc			$Act \int_{0}^{t} \frac{dt}{dt}$	ST NO	
Elev. DR OBILIO WATER WEI	LL	REC	ORDESOU	NTARIO WATER RCES COMMISSI	ON
Basin VV SIMCOE HB County or District	Townshi	p. Village, To	own or City	INHISFIE	He.
Con. H. X. Lot 2224	Date cor	npleted	/2 (day	AUG month	/963 year)
Casing and Screen Record			Pumping		
Inside diameter of casing 30"	Stati	ic levei		9 47.	
Total length of casing 40 FT.	Test	-pumping ra	te	5	G.P.M.
Type of screen	Pum	ping level			
Length of screen	Dura	ation of test p	umping		
Depth to top of screen	Wat	er clear or clo	oudy at end of	test C1	EAR
Diameter of finished hole 30 "					G.P.M.
Diameter of finished note	,				w ground surface
Well Log		1 1		1	Record
Overburden and Bedrock Record		From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
BROLUN CLA)		J	8		
520 67 m	-	< "	19	19	FR 58/4
233855 394757		19	40		
For what purpose(s) is the water to be used?			Location		
				distances of well icate north by	
Is well on upland, in valley, or on hillside?	ر ا	- i	iot inic. The	icate norm sy	***
Drilling or Boring Firm	XI	- 1072	•		4
ONTARIO WELL DIGGING	107	20 110	ON INISH	OLLE	Annual Control of the
Address COMPANY					
R.R. # NEWMARKET, ONT.	X	.	1.4 MI	. 1	
Licence Number 727		1 200 000	1.4 mi	140	
Name of Driller or Borer S. 1900 PE				2,	
Address		3			
Date AUG 16/63				, v	/
(Signature of Licensed Drilling or Boring Contractor)				Merr	6
Form 7/15M-60-4138					N.p
OWRC COPY		İ		CSS.S8	G. Ser

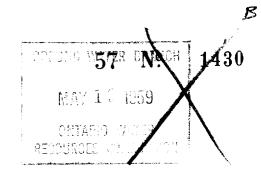
	T. C.			
.UM 1417 61/14/8/71/1E			WATER RESOU 5 DIVISION	3CES 1352
The Ontario Water Reso	ources Commission	Act	FEB 2316	aag 🚪
	L REC	u	ONTARIO WAT	
Basin COF	Township, V illago, T	enn en Eity	RESOURCES COMM	ESIO LAC
Con. 10 Lot 25 I	Date completed	/8 (day	/2 month	1965 year)
	dres (AP)	Stran	I and	yeal)
		Pumpin	a Toet	<u></u>
Casing and Screen Record	Static level	•	~	
Inside diameter of casing 52 FT.	Test-pumping ra			
Total length of casing 3211. Type of screen ICHNSON 5.5. SLOT 12	Pumping level	45	FT	
Length of screen 3 FT	Duration of test p	numning	1 111	
Length of screen 52 FT	Water clear or cle			
Depth to top of screen 52 FT Diameter of finished hole 5"	Recommended p			
Diameter of finished note	1			w ground surface
Well Log	1			Record
Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
DUFWELL ,	0	40		
SAND PLAY (CREY)	40	43		
FINE TO MED SAND (CAE)	r) 45	55	49.55	FRESH
(TORE CLAY (")	55	57		
EARM	1	Location	-£ W-II	
For what purpose(s) is the water to be used?	In diagram		distances of we	ll from
I PI AND			licate north by	
Is well on upland, in valley, or on hillside? UPLAND Drilling or Boring Firm (NELSEN WATER WELLS	1,1		A	
RS. *		I e	\mathcal{T}	†
Address BARRIE ONT	‡		1	Lot Latab
pHINE 728 8218	1 1 7		7	, 5 mil
Licence Number 1933		The second secon	er der der de de region i vertre de ration de ration de la derive participat de la description de la d	
Name of Driller or Borer ANDREAS KNELSEN	12	1 .	X	109
Address SAME	H-St /	1/3	MILES	* -
Date Dec. 18 1965	136 /	VYB	KAR	1
Placky Thulain	120 V			·
(Signature of Licensed Drilling or Boring Contractor)		1		
Form 7 15M-60-4138				(
O W R C COPY			CSS.5	8

No. of the second secon	No Reco		-	and the second s	er i deservate de la magnetica. La la
UTM 177 2 6115649 E			:	57, N	1853
S R 419 1 1 1 1 4 9 17 N Ontario Water Re	esources	Commission	Act	F. 18 (1000
Elev. SR DM 8 WATER WE				COLEGE Colege	MATER MERITAN
Basin County or District S, M co &			•	PESOUPOUL CO	
Con. X Lot 25	Date cor	npleted	17	JUNE	1965
					J ear)
Owner (print in block letters)	Address.				
Casing and Screen Record			Pumpin		
Inside diameter of casing 30"			•		
Total length of casing 20F1.					G.P.M.
Type of screen	Pum	ping level			
Length of screen	I				
Depth to top of screen	I				EAR
Diameter of finished hole 70"	1				G.P.M.
	with	pump settii	ng of / 8	feet belo	w ground surface
Well Log			1	Water	r Record
Overburden and Bedrock Record		From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
BLUE CLAY		_ <i>O</i>	16		FRES
BOURSE SANO		16	20	<i>/</i>	
					
For what purpose(s) is the water to be used?			Location	of Well	
				distances of we	
Is well on upland, in valley, or on hillside? UPLANIO	m/		iot line. Inc IEW Howas	dicate north by	arrow.
Drilling or Boring Firm	P. K.	GN X	IEW FIORE		
ONTARIO WELL DIGGING	10	7	190	577.	
Address COMPARY			¥.		
R.R. # NEWMARKET, ONT.				•	\uparrow
Licence Number / 236				1.8	
Name of Driller or Borer		$\frac{1}{2}$			< > 0
Address				(OT 65 -	
Date				7	
(Signature of Licensed Drilling or Boring Contractor)				· 25 mi	
(Signature of Licensed Drilling or Boring Contractor)					/
Form 7 15M-60-4138				90'	4)-1 ⁵
OWRC COPY				, 000	58 H
				455.	JU /*/

Basin 22



The Water-well Drillers Act, 1954 Department of Mines



CSS.58

			.ddi	ress Town or C	ity)			
(day)	(month)	(year)						
Pipe and Casin	g Record				Pumping Test			
Casing diameter(s) 1/4 mch Length(s) 1/4 mch Type of screen 1 ooks out 2 b 1/4 + 1 b Length of screen 1 feet 1				Static level 33 Pumping rate 13 f hu Pumping level 45 Duration of test 2 hus				
Well Log	•				Water Record			
Overburden and Bedrock Record	From ft.	To ft.		Depth(s) at which water(s) found	No. of feet water rises	Kind of wate (fresh, salty, or sulphur)		
brown along with		9						
Jamel & gravel	9	30						
sand fush	42	52		Si	19	fresh		
For what purpose(s) is the water				In diagram below	ocation of Well	f well from		
Is water clear or cloudy?	n hillside?!!p.l	assal		16	e. Indicate north	by arrow.		
Name of Driller African Address LD House 25	lunguer. Larr			CON	£ 24	1/2 mile		
I certify that the statements of fac	foregoing t are true.	hr	Hww no 11		ow 10	youth M		

		The	The second secon			310/8	E
Care Sign Sign Sign Sign		TBA			GORI		
				1570819	MUNICIP.	CON.	10
· • · · · · · · · · · · · · · · · · · ·		BOX WHERE APPLICATION		3	CON., BLOCK, TRACT, SUI	TVEY, ETC.	22 23 24 LOT 25-27
COUNTY OR DISTRICT		TOWNSHIP, BOROUGH,	VILLE .	•	10		024
OWNER (SURNAME FIRST	28-47	ADDRESS	Lindres	it to	cut	DATE COMPLETED	48-53
	ZONE FASTING 4	NORTHING	RC.	ELEVATION	RC. BASIN CODE	DAYMO	YR:
21	¥ 17 7	17 18 18	24 25	0800	<u>30</u> <u>31</u>		47
	LOG	OF OVERBURD	EN AND BEDRO	CK MATERIALS	(SEE INSTRUCTIONS)		
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER N	MATERIALS		GENERAL DESCRIPTION	FROI	M TO
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5/2/			<u></u>				5- 220
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	14 15	32		43	SIZE(S) OF OPENING (SLOT NO.)	65 31-33 DIAMETER 3	75 80 34-38 LENGTH 39-40
41 WATE		51 CASING &	WALL	OFRILL FEET			NCHES FEET
AT - FEET	FRESH 3 SULPHUR	DIAM. MATERIAL	THICKNESS FE		MATERIAL AND TYPE	DEPTH TO	EEN
2	S MINERAL 19	10-11 1 STEEL 2 GALVANIZ	† II		ν		FEET
	FRESH 3 SULPHUR SALTY SINERAL	3 ☐ CONCRETI 4 ☐ OPEN HO		20-23	61 PLUGGING	& SEALING	(CEMENT GROUT,
	FRESH 3 SULPHOR SALTY 4 MINERAL	GALVANIZ	l 11		FROM TO 10-13 14-17	MATERIAL AND TYPE	LEAD PACKER, ETC.)
25-28 1 🔲	FRESH 3, D PHUR 29	4 DEN HO	l II	27-30	18-21 22-25	<u></u>	
30-33	FRESH 3 SULPHUR 34 80	2 GALVANIZ			26-29 30-33	80	
	SALTY 4 MINERAL	4 OPEN HO					
71 PUMPING TEST METH		11-14 DURATION	15-16 17-18		LOCATION	OF WELL	
STATIC	2 DAILER WATER LEVEL 25 WATER WATER	GPM	HOURSMINS.	IN DIA LOT LI	RAM BELOW SHOW DISTANC NE. INDICATE NORTH BY A	CES OF WELL FROM ROAT	D AND
LEVEL 19-21	22 15 MINUTES 26-2	30 MINUTES 45 MI	2 RECOVERY NUTS 60 MINUTES 32-34 35-37				
FEET FEET	FEET F	FEET	FEET FEET			ft	
Z IF FLOWING, GIVE RATE	38-41 PUM INTAKE S	water at	LEAR 2 CLOUDY			A Contraction of the second	SM
RECOMMENDED PUM	P TYPE RECOMMENDED PUMP	43-45 RECOMME PUMBING		000		7 4	>
□ SHALLOW 50-53	DEEP SETTING	FEET RATE	GPM.		3/11/11:5	>	
	54 GPM./FT. SPECIF	······································	AND LIFE TO LET LE CLIBBLY				
FINAL	1 WATER SUPPLY 2 OBSERVATION WEL 3 TEST HOLE		INSUFFICIENT SUPPLY POOR QUALITY				
OF WELL	1 ☐ RECHARGE WELL	/ UNFINISHED				30	
	1 DOMESTIC 2 STOCK	5 COMMERCIAL 6 MUNICIPAL				G, b	
WATER	3 IRRIGATION 4 INDUSTRIAL	7 PUBLIC SUPPLY 8 COOLING OR AIR	CONDITIONING		V	H	7
<u></u>	OTHER	9 <u> </u>	NOT USED	3		Ž	7
METHOD	1 CABLE TOOL 2 ROTARY (CONVENT		OND	1 1			7
OF DRILLING	A D ROTARY (REVERSE	9 DRIV					
	5 AIR PERCUSSION		LICENCE NUMBER	DRILLERS REMARKS		9-62 DATE RECEIVED.	63-68 80
NAME OF WELL C	ONTRACTOR VALLE	Pagino	S 2 0 6	SOURCE /		2005) (' L
ADDRESS	-ton Box	245		DATE OF INSPECT	ION INSPECT)R	
NAME OF DRILLE	R OR BORER		LICENCE NUMBER	S REMARKS:			The state of the s
Z / ',	ONTRACTOR	SUBMISSION D	ATE	문		CSS.S8	
SIGNATURE OF C	UNINACION .	DAYO	MO. 0 9 YR. 71	<u> </u>		THE PERSON OF TH	J.B.
OWRC C	OPY						



The Ontario Water Resources Commission Act
WATER WELL RECORD 319 12

Water management in Ontario 1. PRINT ONLY IN SF	ACES PROVIDED T BOX WHERE APPLICABLE	5/08192 . S 7.005	CON. 15 22 23 24
COUNTY OR DISTRICT SIMCOE	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	misfi/ CON., BLOCK, TRACT, SURV	EY, ETC. LOT 25-27
	R 43 HH	Avert Strond	DATE COMPLETED 48-53 DAY 15 MO YR 21
	11675 4	ELEVATION RC. BASIN CODE	II III V
LO	G OF OVERBURDEN AND BEDRO	DCK MATERIALS (SEE INSTRUCTIONS)	
GENERAL COLOUR COMMON MATERIAL	OTHER MA	GENERAL DESCRIPTION	DEPTH FEET FROM TO
BROWN 14.	114		0 10
HART PAIN	Eley.	<u>i</u>	10 20
BLUE CLAY			20 49
middium sai	3250		49 60
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32 10 14 15 21	32	43 SIZE(S) OF OPENING Z (SLOT NO.)	65 75 80 31-33 DIAMETER 34-38 LENGTH 39-40
WATER RECORD WATER FOUND WATER FOUND WATER FOUND KIND OF WATER	DIAM. MATERIAL THICKNESS	DEPTH - FEET W MATERIAL AND TYPE	05 000 FEET OP 41-44 80
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25-28 1 FRESH 3 SULPHUR 29 2 SALTY 4 MINERAL	4 OPEN HOLE 24-25 1 STEEL 26	27-30 18-21 22-25	
30-33 1 FRESH 3 SULPHUR 34 6 2 SALTY 4 MINERAL	2 GALVANIZED 3 CONCRETE 4 OPEN HOLE	26-29 30-33 80	
PUNPING TEST METHOD 10 PUMPING RAT	E 11-14 DURATION OF PUMPING	LOCATION	OF WELL
STATIC WATER LEVEL 25	0035 _{GPM} 24 15-16 15-18 NMINS. R LEVELS DURING 1 DUMPING	IN DIAGRAM BELOW SHOW DISTANCE LOT LINE; INDICATE NORTH BY ARR	S OF WELL FROM ROAD AND OW.
LEVEL PUMPING 19-21 19-21 22-24 15 MINUTE 26	2 RECOVERY		} 半
O31 FEET 046 FEET 38-41 PUMP INTAKE		Post	\$ in
GPM. GPM. GPM. GPM. RECOMMENDED PUMP TYPE RECOMMENDED	D 43-45 RECOMMENDED 46-49		(5)
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DRILLING 4 ROTARY (AIR) 5 AIR PERCUSSION	9 DRIVING	DRILLERS REMARKS:	
WAME OF WELL CONTRACTOR VAIS &	ACTION OUT LICENCE NUMBER	DATA SOURCE / 58 CONTRACTOR 59-	62 DATE RECEIVED 0971 63-68 80
Nobliston Bo.			Hang
NAME OF DRILLER OR BORER	LICENCE NUMBER	REMARKS:	, , , , , , , , , , , , , , , , , , ,
SIGNATURE OF CONTRACTOR	SUBMISSION DATE	OFFICE.	CS\$.88 J.B.
weeker or	DAY 20 MO. 09 YR. 71] [υ.υ.

The Ontario Water Resources Commission Act

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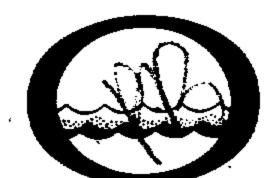
WATER WELL RECORD

Water management in Ontario 1. PRINT ONLY IN SPA 2. CHECK ☑ CORRECT	BOX WHERE APPLICABLE	3 9 10 14 15	22 23 24
COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	025 ²⁵⁻²⁷
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	1/673 RC.	ELEVATION RC. BASIN CODE II	MO YR
1 2 10 12	24	26 790 5 23	47
LOC	G OF OVERBURDEN AND BEDRO	GENERAL DESCRIPTION	DEPTH - FEET
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31 00/8628 002	1 14 0058305	<u>0068 09 </u>	
32 10 14 15 21 41 WATER RECORD	51 CASING & OPEN HOLE	PECORD Z SIZE(S) OF OPENING 31-33	55 75 80 DIAMETER 34-38 LENGTH 39-40
WATER FOUND KIND OF WATER	INSIDE WALL D	DEPTH - FEET	5. 000 9 FEET DEPTH TO TOP 41-44 80
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15-18 1 FRESH 3 SULPHUR	GALVANIZED 3 CONCRETE 4 OPEN HOLE	20.40	EALING RECORD
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2 SALTY 4 MINERAL	4 OPEN HOLE		
PUMPING TEST METHOD 10 PUMPING RATE 1 PUMP 2 PUMPING PATE	GPM. 24 15-16 00 17-18 HOURS 00 MINS.	LOCATION OF V	
LEVEL PUMPING	R LEVELS DURING 2 RECOVERY 45 MINUTES 60 MINUTES	LOT LINE. INDICATE NORTH BY ARROW.	
- 03/ 19-21 046 22-24 15 MINUTES 26-2	29-31 32-34 35-37	\ \	17
Z IF FLOWING, 38-41 PUMP INTAKE	SET AT WATER AT END OF TEST 42		350 pt 1 m
RECOMMENDED PUMP TYPE RECOMMENDED PUMP		Ween	, 35
SHALLOW DEEP PUMP SETTING 6		1 + 8 =	- 44
54	5 ABANDONED, INSUFFICIENT SUPPLY	33,	7 9
FINAL STATUS OBSERVATION WEI	LL 6 ABANDONED, POOR QUALITY 7 UNFINISHED	6 6	368
OF WELL 55-56 1 Comments	5 COMMERCIAL		036
WATER USE 9 STOCK 3 IRRIGATION 4 INDUSTRIAL	6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING		4
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METHOD 1 CABLE TOOL 2 ROTARY (CONVENT		3 7	N n
OF DRILLING 3 □ ROTARY (REVERSI 4 □ ROTARY (AIR) 5 □ AIR PERCUSSION	E) 8 □ JETTING 9 □ DRIVING	DOWNERS DEMARKS	
NAME OF WELL CONTRACTOR VAIN	E / 1300/7- LICENCE NUMBER	DRILLERS REMARKS: DATA SOURCE 58 CONTRACTOR 59-62 DATE R	200971 63-68 80
O Dilling + Cont	ngeling 3 200	SOURCE / 5206 DATE OF INSPECTION INSPECTOR	Δυυ, - Λ
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WATER WELL F	RECORD

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1 2 10 14 15 21	51 CASING & OPEN HOLE	RECORD Z SIZE	54 65 E(S) OF OPENING 31-33 DIV OT NO.)	METER 34-38 LENGTH 39-40
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20-23 1 FRESH 3 SULPHUR 24 2 SALTY 4 MINERAL	2 GALVANIZED 3 CONCRETE	FROI	M TO MATERIAL 7	LEAD PACKER, ETC.)
25-28 1 FRESH 3 SULPHUR 29 2 SALTY 4 MINERAL	4 ☐ OPEN HOLE 24-25 1 ☐ STEEL 26 2 ☐ GALYANIZED	27-30	18-21 22-25	
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71 PUMPING TEST METHOD 10 PUMPING RATE	11-14 DURATION OF PUMPING 15-16 17-18		LOCATION OF W	ELL
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LEVEL PUMPING 19-21 22-24 15 MINUTES 26-28	30 MINUTES 29-31 45 MINUTES 32-34 60 MINUTES 35-37		1	
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SHALLOW DEEP SETTING	PUMPING FEEI RATE GPM.		3/2	
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STATUS				rion in
OF WELL 55-56 1 DOMESTIC	5 COMMERCIAL		61 6	6. 4 c
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NAME OF WELL CONTRACTOR VA 12013	1, 130612 LICENCE NUMBER 1, 171111111111111111111111111111111111	DATA 5	8 CONTRACTOR 59-62 DATE REC	200971 63-68 80
Dalkling & Contra		O DATE OF INSPECTION	5206 INSPECTOR	2000-
ADDRESS Noblition BOX NAME OF DRILLER OR BORER	LICENCE NUMBER	REMARKS:		(P)
D SIGNATURE OF CONTRACTOR	SUBMISSION DATE	OFFICE		· a
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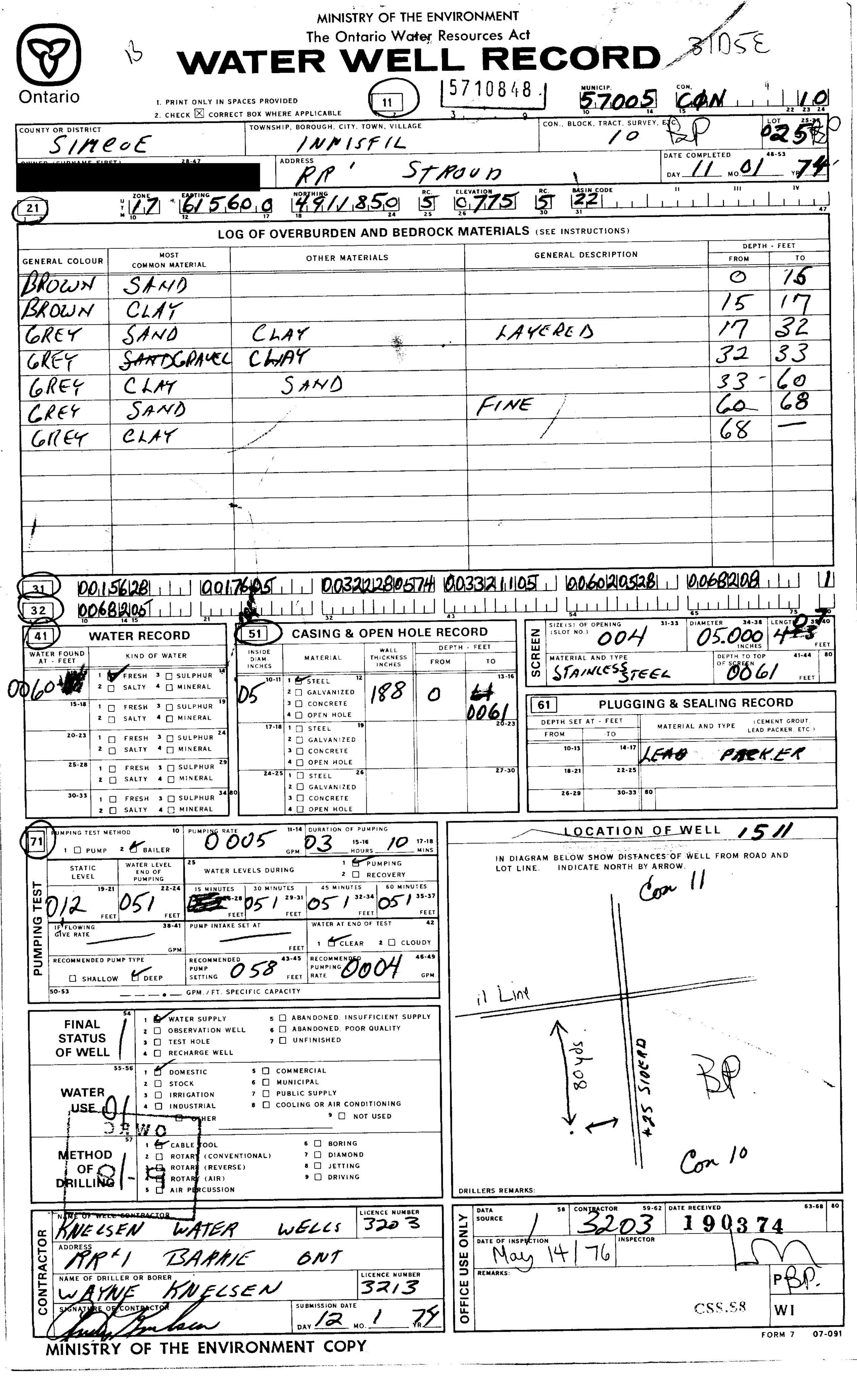


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WATER WELL RECORD

31 D/52

ITY OR DISTRICT		TOWNSHIP, BOROUGH,	CITY, TOWN, VILLAGE	5708245	CON., BLOCK, TRACT, SURVEY,	ETC.	22 23 LOT 25-2
SIM	COE	ADDRESS 0	SFIL	•	51DC	DATE COMPLETED	48-53
	ZONE EASTING	NORTHING	/ > //	ELEVATION R	C. BASIN CODE	U III	YR
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· · · · · · · · · · · · · · · · · · ·		SILT SAXI	D CLAY	WET	PACKEIS	4/2	62
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2				13	54	65	75
WATER	RECORD	51 GASING &	OPEN HOLE	RECORD	(SLOT M9.)	041000	LENGTH 03
TER FOUND	(IND OF WATER	INSIDE MATERIAL			00 6	DEPTH TO TO OF SCREEN	
2 0 SA		10-11 1 STEEL 2 GALVANIZ	ED 184 0	39			FEET
15-18 1		3 CONCRET	E ´	0059 6	DEDTH SET AT - FEET	TOTAL AND TYPE	CEMENT GRO
20-23 1	RESH 3 SULPHUR	17-18 1 STEEL 2 GALVANIZ 3 CONCRET	ŒD		FROM TO MA		AD PACKER, E
25-28 1 FF	RESH 3 SULPHUR		1 11	27-30	18-21 22-25	. 70 00	
2 □ S/ 30-33 1 □ FI	RESH 3 SULPHUR 34	2 GALVANIZ 3 CONCRET	E		26-29 30-33 80	· · · · · · · · · · · · · · · · · · ·	<u></u>
PUMPING TEST METHO		TEL 00014 DURATION			LOCATION O	F WELL	
1 D PUMP 2	BAILER	GPM. 01	HOUR MINS.	IN DIAGR	AM BELOW SHOW DISTANCES	OF WELL FROM ROAD AN	ND
LEVEL	WATER LEVEL 25 END OF WAT PUMPING 22-24 15 MINUT		PUMPING RECOVERY NUTES 60 MINUTES	LOT LINE	. INDICATE NORTH BY ARROW		
015	16 046	6-28 046 9-31	62-34 0465-37			T	SIMO
FEET IF FLOWING, GIVE RATE	FEET S8-41 PUMP INTAK	E SET AT WATER AT	END OF TEST 42	XI			SIMCO
RECOMMENDED	GPM. RECOMMEND	FEET	NDED 46-49		LINIE	INNISFIL	
SHALLOW 50-53	DEEP SETTING	CIFIC CAPACITY	000 GPM.	X	7,50	i i	
	WATER SUPPLY		INSUFFICIENT SUPPLY		7, 8	•	
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OF WELL	4 ☐ RECHARGE WEL	5 COMMERCIAL			2213		
WATER	2 ☐ STOCK 3 ☐ IRRIGATION	6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY			40i 1	-ot	
USE 0/	4 INDUSTRIAL OTHER	B COOLING B AIR	CONDITIONING NOT USED		25 2	26)
	CABLE TOOL	6 D BOR					
METHOD OF	² ☐ ROTARY (CONVE ³ ☐ ROTARY (REVER ⁴ ☐ ROTARY (AIR)	_ _	ING			•	
DRILLING	5 AIR PERCUSSIO			DRILLERS REMARKS:		DATE DECEIVED	63
NAME OF WELL CO	NTRACTOR WATE	R WELLS	3203	DATA	58 CONTRACTOR 59-62 3-203	DATE RECEIVED 107	1
ADDRESS	· · · · · · · · · · · · · · · · · · ·			DATE OF INSPECTION			
NAME OF DRILLER	OD BODED		LICENCE NUMBER	REMARKS:			<u> </u>
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MINISTRY OF THE ENVIRONMENT The Ontario Water Resources Ac

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WATER	WELL	REC	ORD

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	NTY OR DISTRICT		TOWNS	HIP, BOROUGH, CITY	TOWN, VILLAGE		ч	CON., BLOCK, TRACT, SURVE	Y, ETC.	LOT 25-27
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32) <u> </u>	14 13 21	293 las	32 17	1/sT	4.3		54 SIZE(S) OF OPENING	65 31-33 DIAMETER 34-38	75 80
WA1	ER FOUND	TER RECORD	INSIDE DIAM.	CASING & C	WALL THICKNESS	RECORD	CREEN	(SLOT NO.)	31-33 DIAMETER 34-38	LENGTH 39-40
	10-13	FRESH ³ SULPHUR SALTY ⁴ MINERAL	14 INCHES	1 STEEL 12	INCHES FR	ROM TO)	MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN	41-44 80 FEET
	5-18 1 -	FRESH 3 SULPHUR SALTY 4 MINERAL	19 6"	2 GALVANIZED CONCRETE OPEN HOLE			6	PLUGGING	& SEALING REC	
	20-23 1	FRESH 3 SULPHUR SALTY 4 MINERAL	24 17-18	1 STEEL 2 GALVANIZED			·	ROM TO M		NENT GROUT, PACKER, ETC.)
d	25-28 _	FRESH 3 SULPHUR SALTY 4 MINERAL	29	3			27-30	30-12 0297 18-21	drill cu	Hings
<u>/ Y</u>	30-33	FRESH 3 SULPHUR	34 80	2 ☐ GALVANIZED 3 ☐ CONCRETE				26-29 30-33 80		
<u> </u>	UMPING TEST MET	SALTY 4 MINERAL THOO 10 PUMPING		4 OPEN HOLE	MPING			LOCATION O	F WELL	
	PUMP STATIC	2 □ BAILER WATER LEVEL 25	G	15-16 PMHOUR			IN DIAGRAM	BELOW SHOW DISTANCES		AND
TEST	LEVEL	END OF WAT		g 2 🗆 1	RECOVERY 60 MINUTES	'	LOT LINE.	INDICATE NORTH BY ARE		
	FEET		FEET F	9-31 32-3 EET FEI	ET FEET			1	T.10.2	6001
PUMPING	GIVE RATE	GPM GPM	TAKE SET AT	WATER AT END O	2 CLOUDY			/	Je-	
	RECOMMENDED PUN	PUMP		RECOMMENDED PUMPING RATE	46-49 GPM	CON.	XI /		25 8	26
	50-53	GPM./FT	SPECIFIC CAPACI	TY					<u>£_</u> _	
	FINAL STATUS	1 WATER SUPPL 2 OBSERVATION 3 TEST HOLE	WELL 6	ABANDONED, INSUFF ABANDONED, POOR (Unfinished					7	
	OF WELL	A ☐ RECHARGE WE				COH	X		<u>.</u>	
	WATER	2 STOCK 3 IRRIGATION	6 ☐ MUN 7 ☐ PUBI	ICIPAL LIC SUPPLY		``			3/14	,
	USE	4 INDUSTRIAL OTHER	8 coo.	LING OR AIR CONDIT					T	
	METHOD	CABLE TOOL CON	VENTIONAL)	6 BORING 7 DIAMOND						
	OF DRILLING	3 ROTARY (REVI	ERSE)	8 DETTING 9 DRIVING						:
_	NAME OF WELL		7		ENCE NUMBER	DRILLERS R		58 CONTRACTOR 59-62 C	ATEREOMET A	63-68 80
OR B	ADDRESS A	rider &	Trille		1816	SOURCE O DATE OF	/ MSPECTION	4816 INSPECTOR	0°605 74	
ONTRACTOR	NAME OF DRILLE	raigher	at .	Tues	ENCE NUMBER	N REMARK	1/12/	74	/ \	
NO.	Har	y Kess	re .	LICE		OFFICE L	-•		<u>[</u>	PIO
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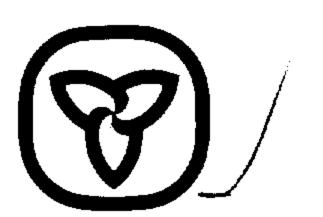
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31 D/5E

WATER WELL RECORD

57 005 C INN ISFI製 SIMCOE WNER (SURNAME FIRST) % Kleinfeldt & Assoc. Brampton Sandy cove D. A.3 Acres Ltd. 82^J OCT 20, 1975 5 23 770 4911682 615769 LUG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS) DEPTH - FEET MOST COMMON MATERIAL OTHER MATERIALS GENERAL COLOUR Med. 0 9 & some clay Sand 27 47 174 47 201 sand & clay 207 Z80 283 280 limestone OWRC 10009 109105 1 0027 10510 1 10047 108 1 1 1 10474 128 05 1 10207 108105 1 10200 105PX SIZE(S) OF OPENING (SLOT NO.) 51 **CASING & OPEN HOLE RECORD** WATER RECORD DEPTH - FEET WALL THICKNESS INCHES WATER FOUND KIND OF WATER MATERIAL MATERIAL AND TYPE T FRESH 3 SULPHUR
SALTY 4 MINERAL 1 STEEL Z GALVANIZED CONCRETE PLUGGING & SEALING RECORD ¹ ☐ FRESH ³ ☐ SULPHUR 2 SALTY 4 MINERAL OPEN HOLE AT - FEET 20.2 MATERIAL AND TYPE (CEMENT GROUT, 1 STEEL 1 FRESH 3 SULPHUR
2 SALTY 4 MINERAL 2 GALVANIZED 3 CONCRETE 1283 drill cuHings 0000 1 FRESH 3 SULPHUR
2 SALTY 4 MINERAL OPEN HOLE 27-30 1 G STEEL 2 GALVANIZED
3 CONCRETE 1 | FRESH 3 | SULPHUR
2 | SALTY 4 | MINERAL 30-33 80 LOCATION OF WELL 1 | PUMP 2 D BAILER IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW. WATER LEVEL END OF PUMPING 22-24 1 D PUMPING WATER LEVELS DURING TES 60 MINUTES TEST 45 MINUTES LOT26 LOT FEE1 25 1 CLEAR 2 CLOUDY COH. XI RECOMMENDED PUMP SETTING ☐ DEEP - GPM. / FT. SPECIFIC CAPACITY SABANDONED, INSUFFICIENT SUPPLY 1 WATER SUPPLY **FINAL** 2 OBSERVATION WELL **STATUS** TEST-HOLE

RECHARGE WELL 7 UNFINISHED OF WELL 5 COMMERCIAL CONX 2 STOCK
3 RRIGATION 6 □ MUNICIPAL 6 □ PUBLIC SUPPLY WATER 3 | 4 | COOLING OR AIR CONDITIONING USE INDUSTRIAL ☐ OTHER 9 | NOT USED CABLE TOOL
ROTARY (CONVENTIONAL) 6 BORING **METHOD** OF 3 ROTARY (REVERSE) 8 | JETTING DRILLING S AIR PERCUSSION 605 74°° OFFICE USE ONLY REMARKS 435.88 WΪ THE ENVIRONMENT COPY



MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

31058 WATER WELL RECORD 5711616 Ontario 57005 1. PRINT ONLY IN SPACES PROVIDED 2. CHECK X CORRECT BOX WHERE APPLICABLE CON., BLOCK, TRACT, SURVEY TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE COUNTY OR DISTRICT INNISFIL 10 T的SIMCOF DATE COMPLETED **ADDRESS** DAY 26 NO 0 STROUD 6,7,5,60,0 49,1,180,0 BASIN CODE 22 LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS) DEPTH . FEET MOST OTHER MATERIALS GENERAL DESCRIPTION **GENERAL COLOUR** FROM ΤO COMMON MATERIAL -WITCH. SAND GREY CLAY 25 SAND BROWN 38 25 GREY SAND CLAY 44 38 GREY SANO 44 SILT CLAY+SAND GREY 65 53 GREY SAND 0038 20528 0005128 SIZE(S) OF OPENING **CASING & OPEN HOLE RECORD WATER RECORD** DEPTH - FEET FEET WALL WATER FOUND INSIDE KIND OF WATER MATERIAL THICKNESS AT - FEET DIAM. 41-44 MATERIAL AND TYPE FROM TO INCHES JOHNSON S.S. FRESH 3 | SULPHUR 10-11 1 STEEL FEET 2 SALTY 4 MINERAL 2 🗌 GALVANIZED 3 CONCRETE ¹ ☐ FRESH 3 ☐ SULPHUR 61 PLUGGING & SEALING RECORD 4 OPEN HOLE 2 SALTY 4 MINERAL DEPTH SET AT - FEET 17-18 1 STEEL (CEMENT GROUT, MATERIAL AND TYPE 1 FRESH 3 SULPHUR 24 LEAD PACKER, ETC.) FROM TO 2 GALVANIZED 2 SALTY 4 MINERAL 3 CONCRETE 10-13 14-17 1 FRESH 3 SULPHUR 29 4 OPEN HOLE 24-25 1 STEEL 27-30 22-25 18-21 2 SALTY 4 MINERAL 2 🗌 GALVANIZED 1 | FRESH 3 | SULPHUR 34 BO 30-33 80 3 CONCRETE 26-29 2 SALTY 4 MINERAL 4 | OPEN HOLE DURATION OF PUMPING 10 PUMPING RALE PUMPING TEST METHOD LOCATION OF WELL 1 D PUMP 2 BAILER IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND 1 X PUMPING WATER LEVEL STATIC INDICATE NORTH BY ARROW. WATER LEVELS DURING LOT LINE. END OF 2 RECOVERY LEVEL PUMPING 30 MINUTES 45 MINUTES 60 MINUTES TES PUMPING PUMP INTAKE SET AT WATER AT END OF TEST IF FLOWING. GIVE RATE 1 CLEAR 2 CLOUDY FEET **GPM** RECOMMENDED PUMP TYPE 43-45 46-49 RECOMMENDED SHALLOW DEEP GPM. 50-53 GPM./FT. SPECIFIC CAPACITY 1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY **FINAL** 2 | OBSERVATION WELL 6 ABANDONED, POOR QUALITY **STATUS** 3 TEST HOLE 7 UNFINISHED OF WELL 4 RECHARGE WELL 55.56 DOMESTIC 5 COMMERCIAL 2 STOCK MUNICIPAL WATER 3 | IRRIGATION 7 DUBLIC SUPPLY USE 8 COOLING OR AIR CONDITIONING 4 | INDUSTRIAL 9 D NOT USED ☐ OTHER CABLE TOOL 6 BORING **METHOD** 2 ROTARY (CONVENTIONAL) 7 🔲 DIAMOND OF 8 | JETTING 3 ROTARY (REVERSE) 9 DRIVING 4 🔲 ROTARY (AIR) DRILLING 5 AIR PERCUSSION DRILLERS REMARKS: 58 CONTRACTOR 59-62 DATE PEIVO 63-68 80 LICENCE NUMBER NAME OF WELL CONTRACTOR 3202 MELSEN WATER WELLS CONTRACTOR DATE OF INSPECTION BARRIE SE REMARKS: LICENCE NUMBER NAME OF DRILLER OR BORER WILSON CSS.S8 SUBMISSION DATE NTRACTOR WI

DAY 26 MO.

07-091

FORM 7

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

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J. Moore	DAY 28 MO CON YR. 75			F	ORM 7 07-091

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The Ontario Water Resources Act WATER WELL RECORD 31D5E

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MINISTRY OF THE ENVIRONMENT The Ontario Water Resources Act

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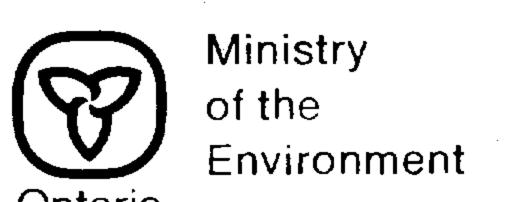
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FORM NO. 0506—4—77 FORM 7



The Ontario Water Resources Act

WATER WELL RECORD

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71	MPING TEST METHOD	50 PUMPING RATE	19-14 DURATION OF PUMPING	, , , , ,		LO	CATION	OF WEL		
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D	KILLING	ROTARY (AIR) AIR PERCUSSION	3 DRIVING 34	3 .	RILLERS REMARKS	S :		<u>.</u>	Ut	335
æ	AME OLDMEOGRAI	WELL DIGGI	NG LICENCE NUMI		SATA SOURCE	s3 (co •	FRA(TO♥ 59.	DATE RECEIVE		87
CT0	······································	E, ONTARIO (705) 436-43	5 0			710%	INSPECTOR			
Z	AME OF DRILLER OR BOR	1705) 430-430 MOORE	341	3						
	IGNATURE OF CONTRACTO		DAY 1 MO SO	,36		<i>:</i>			CSS.E.	S
	HVM !		A CONTRACTOR OF THE PROPERTY O	e en grade de l'Arthresse de	مندي ريووني <u>.</u> -	A STATE OF THE PARTY OF THE STATE OF THE STA	: <u></u>		FORM NO. 050	26—4—77 FORM 7



The Ontario Water Resources Act WATER WELL RECORD

Ontario 1. PRINT ONLY IN SPACES PROVIDED 2. CHECK CORRECT BOX WHERE A		5724107	5,7,0,0,5	CON.
	DROUGH, CITY, TOWN, VILLAGE	C	ON . BLOCK, TRACT, SURVEY, ETC	Lot 25-27 25
	21:000		DAT	E COMPLETED 44.53
	NG RC.	ELEVATION AC		
LOG OF OVER	BURDEN AND BEDROO	CK MATERIALS (SE		
GENERAL COLOUR COMMON MATERIAL	OTHER MATERIALS	GEN	IERAL DESCRIPTION	DEPTH - FEET FROM TO
Brown Joro	· .		DACHEO	024
31				
32	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	43	54 IZE ST OF OPENING 31-33	55 75 80 DIAMETER 34-38 LENGTH 39-40
WATER FOUND INSIDE		ECORD Z	SLOT NO 1	INCHES FEET
AT - FEET DIAM INCHES 10-13 I FRESH 3 SULPHUR 14	THICKNESS FRO	13-16 ON W	MATERIAL AND TYPE	DEPTH TO TOP 41-44 30 OF SCREEN
15-16 15-16 3 STULPHUR 19 3-13	MCVANIZED ONCRETE OPEN HOLE LIASTIC	24 61	PLUGGING &	SEALING RECORD
20-23 1 FRESH 3 SUSUPPUR 24 10:5	STEEL GALVANIZED		OM 10	(CEMENT GROUT LEAD PACKER, ETC.)
25-26 1 FRESH 3 CISULPHUR 28 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CONCRETE PPEN HOLE PLASTIC 26	27-30	10-13 14-17 10-21 22-25	
30-33 1 FRESH 3 SULPHUR 34 9C 3 G	STEEL GALYANIZED CONCRETE OPEN HOLE		26-29 30-33 80	
	DURATION OF PUMPING		LOCATION OF V	WELL
STATIC WATER LEVEL 25	15-16 17-18 HOURS MINS		BELOW SHOW DISTANCES OF	
STATIC END OF WATER LEVELS DURING 19-21 22-24 IS MINUTES 30 MINUTES 10-21 20-20 20-31	24 DESCOVERY 45 MINUTES 60 MINUTES 38-34 35-37	LAT LINE	INDICATE NORTH BY ARROW	1-50
	FEET FEET WATER AT END OF TEST 42	4-1-1		2012
GPM FEET	1 CLEAR 2 CLOUDY	1		13 C 133
Shallow DEEP SETTING 2 Z-CET	PUMPING S GPM	>	11 2	of the
50 15	NOONED, INSUFFICIENT SUPPLY	3000	4	3 17
		1		10 10
55-56 DOMESTIC S COMMER	CIAL	,	\ {	19 63
WATER IRRIGATION PUBLIC	SUPPLY OR AIR CONDITIONING		ي م	Por 12
57 1 CABLE TOOL	NOT USED	•	•	11,
METHOD 2 ROTARY (CONVENTIONAL) 7 OF 3 ROTARY (REVERSE)	☐ DIAMOND ☐ JETTING			35086
CONSTRUCTION ROTARY (AIR) AIR PERCUSSION	DRIVING OTHER	DRILLERS REMARKS		
NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S	DATA SOURCE DATE OF INSPECTION	4919 DATE	NOV 2 9 1988
ADDRESS NAME OF WELL TECHNICIAN SIGNATURE OF TECHNICIAN/CONTRACTOR SUBI		SE	INSPECTOR	
NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER	T REMARKS		
SIGNATURE OF TECHNICIAN/CONTRACTOR SUBI	MISSION DATE	OFFICE		CSS.ES
MINISTRY OF THE ENVIRONMENT CO		<u> </u>	·	FORM NO. 0506 (11/86) FORM 9



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The Ontario Water Resources Act WATER WELL RECORD

Ontario 1. PRINT ONLY IN S		5724595 57005	A ÇON III'Ğ
2. CHECK ⊠ CORRE	TOWNSHIP, BOROUGH, CITY, TOWN VILLAGE	CON . BLOCK, TRACT, SURVE	
SINCOE	Taxisti/	10	DATE COMPLETED 41.53
OWNER (SURNAME FIRST) RICE (OUS+ (O)	Ital Straid	ONT	DAY MO 9 YR. 98
ZONE EASTING	NORTHING TO THE		
1 2 10 12	OG OF OVERBURDEN AND BEDRO		
MOST		GENERAL DESCRIPTION	DEPTH · FEET
GENERAL COLOUR COMMON MATERIAL	OTHER MATERIALS		FROM TO
BROWN SANDY	LOAM		2 /
GREY SAND	Silt Boulde	ERS	1 20
GREY SAND	Silt		20 45
GREY SILT	SANCE		45 85
GREY SAND	5114		85 130
GREY C/AY		50f4	130 263
Rock			263 265
31			
32] [65 60
41 WATER RECORD	51 CASING & OPEN HOLE		31-33 DIAMETER 34-38 LENGTH 39-40
WATER FOUND KIND OF WATER	INSIDE WALL DIAM MATERIAL THICKNESS INCHES INCHES	TO MATERIAL AND TYPE	INCHES FEET
10-13 FRESH 3 SULPHUR 2 SALTY 4 MINERALS 6 GAS	10-11 1 Loteel 12 2 Galvanized	13-16	FEET
15-18 1 FRESH 3 SULPHUR 19	3□ CONCRETE 4□ OPEN HOLE	/ 122-10 61 PLUGGIN	IG & SEALING RECORD
20-23 1 FRESH 3 SULPHUR 24	17-18 1 STEEL 2 GALVANIZED	20-21 DEPTH SET AT - FEET FROM TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
2 SALTY 6 GAS	3 □ CONCRETE	22-10 265	
25-28 t FRESH 3 SULPHUR 4 MINERALS 2 SALTY 6 GAS	24-25 1 STEEL 2 GALVANIZED		
30-33 1 FRESH 3 SULPHUR 34 4 MINERALS 2 SALTY 6 GAS	3 CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC	26-29 30-33	
PUMPING TEST METHOD 10 PUMPING RAT	TE 11-14 DURATION OF PUMPING	LOCATION	OF WELL
71 1 PUMP 2 BAILER	15-16 17-1 GPM HOURS MINS	•	
1 LEVEL BUMBING 1	LEVELS DURING	LOT LINE INDICATE NORTH BY	ARROW.
19-21 22-24 15 MINUTES	35-3		
	EET FEET FEET FEE E SET AT WATER AT END OF TEST 4	-1 1 '1 1	
TIF FLOWING. GIVE RATE GPM RECOMMENDED PUMP TYPE RECOMMENDED PUMP PUMP RECOMMENDED PUMP PUMP RECOMMENDED PUMP PUMP	FEET 1 □ CLEAR 2 □ CLOUDY ED 43-45 RECOMMENDED 46-4	↓ 	7
RECOMMENDED PUMP ITPE RECOMMENDED PUMP SETTING	PUMPING FEET RATE GPM	1 77	
50-53]	
FINAL 1 WATER SUPPLY 2 OBSERVATION WE	# ABANDONED. INSUFFICIENT SUPPLY ELL # ABANDONED POOR QUALITY		
STATUS STEST HOLE OF WELL STEST HOLE RECHARGE WELL	7 UNFINISHED	150 FEET	
55-56 1 □ DOMESTIC	5 COMMERCIAL	1	
WATER 2 STOCK 3 IRRIGATION	 ■ MUNICIPAL プ PUBLIC SUPPLY ■ COOLING OR AIR CONDITIONING 		
USE 4 INDUSTRIAL	ORY NOT USED		
ST CABLE TOOL	● □ BORING		
METHOD 2 ROTARY (CONVE		"1	37049
CONSTRUCTION 4 OROTARY (AIR) 5 AIR PERCUSSION		DRILLERS REMARKS	
NAME OF WELL CONTRACTOR	DRILLING JUDGER OF STREET		MAR 1 7 1989
LUNNEY WELL	DRITTING SHOP	SOURCE 3406	I IIIII I I 1333
& RR# GRAND U	Alky WELL TECHNICIAN	N S S S S S S S S S S S S S S S S S S S	
ADDRESS RR# GRAND NAME OF WELL TECHNICIAN D. BUTT	LICENCE NUMBER	CE	
SIGNATURE OF TECHNICIAN/CONTRACTOR		OFFICE BILLIAN	CSS.ES
11011	DAY MO YR		



The Ontario Water Resources Act

WATER WELL RECORD

Onta	rio	1. PRINT ONLY IN SPACES 2. CHECK 🗵 CORRECT BO		11	57,249	07	5,7005	[CON.	22 23 74
COUNT	Y OR DISTRICT	T	OWNSHIP, BOROUGH, CITY			CON BLO	OCK, TRACT, SURVEY.	ETC	25-27
	SIMCOE		ADDRESS	SFIL				DATE COMPLETED .	3" 39
			NORTHING	RC.	5 TRO		SIN CODE	DAY <u>50 HO</u>	YR.
21	T 10	12	17 18	24 25	26	30 3			47
	T	LOG O	FOVERBURDEN	AND BEDRO	CK MATERIA	ALS ISEE INST	RUCTIONS)	DEP	TH - FEET
GENE	RAL COLOUR COL	MOST MMON MATERIAL	OTHER MAT	ERIALS		GENERAL	DESCRIPTION	FROM	TO
		5 1 <u>L</u>		<u> </u>		<u> </u>	<u></u>		
8		AND							5
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51	COWN	5-7110	··· <u>·</u>						
									
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			<u>. </u>						
31									
32			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		43			65	75 80
41		ECORD 5	CASING &	OPEN HOLE	RECORD	Z ISLOT NO		IT-33 DIAMETER 34-31	LENGTH 39-40
	- FEET	OF WATER DI	MATERIAL HES	THICKNESS	d M TO] <u> </u> /	L AND TYPE	DEPTH TO TO	
	2 G SALTY	A TANNERALE I	10A1 1 STEEL 2 GALVANIZED 3 CONCRETE		13 -11		N M V E C		FEET
	15-18 FRESH 2 SALTY	3 USULPHUR	4 OPEN HOLE 5 PLASTIC	5	20-2	61 DEPTH SET	AT - FFFT	ATERIAL AND TYPE	CORD
	ZO-23 FRESH	4 MINEDALS	1 STEEL 2 GALVANIZED 3 CONCRETE			F R O M	10	ATERIAL AND THE LEA	D PACKER, ETC)
	25-28 1 FRESH	3 DSULPHUR	4 GPEN HOLE 5 PLASTIC 24-25 1 STEEL	•	27-30	0 18-21	22-25		
1	30-33 1 FRESE	3 USULPHUR 34 50 4 MINERALS	2 GALVANIZED 3 GONCRETE 4 GOPEN HOLE			26-29	30-33 80		
	PUMPING TEST METHOD	6 DGAS	5 PLASTIC	PUMPING		LO	CATION O	F WELL	
71	Þ □ PUMP ² /□ 8		GPMHC	-16 17-18 DURS MINS	IN			OF WELL FROM ROA	DAND
 -	LEVEL PUM	D. OF WATER LEVELS	DURING 2	PUMPING RECOVERY S 60 MINUTES			ATE NORTH BY AR		
TEST	O	26-20	29-31	2-34 35-37 FEET FEET	1,		1		
N S	FEET IF FLOWING. GIVE RATE	SO-41 PUMP INTAKE SET AT	WATER AT EN	O OF TEST 42	W		=	=	λ Δ
N N	RECOMMENDED PUMP TYPE	RECOMMENDED	FEET 1 CLEA 43-45 RECOMMENDED PUMPING	R 2 CLOUDY				ILA?	
<u> </u>	SHALLOW 50.53	SETTING 3	5 FEET RATE	GPM GPM					
	54	WATER SUPPLY	5 ABANDONED, INS	UFFICIENT SUPPLY		410	45€ 55		
	STATUS ,	OBSERVATION WELL	6 ABANDONED POO	R QUÂLITY			8	3	
	OF WELL 4	DOMESTIC 5	DEWATERING COMMERCIAL				才		A STATE OF THE STA
	WATER	STOCK FIRRIGATION 7	☐ MUNICIPAL ☐ PUBLIC SUPPLY				NEW	400	
	USE 1	INDUSTRIAL *	COOLING OR AIR CON					1	
	METUAD	CABLE TOOL	BORING 7 DIAMONI		4	-7015 SC	0		
CO		ROTARY (CONVENTIONAL ROTARY (REVERSE) ROTARY (AIR)	JETTING DRIVING			MI	75		12399
		AIR PERCUSSION	· · · · · · · · · · · · · · · · · · ·	OTHER	DRILLERS REM		- 6 2 5	DATE RECEIVED	63-68 80
Œ	NAME OF WELL CONTRA	16 1	TZ WEI	ENCE NUMBER	Source		δ ₁		989
CTOR	ADDRESS) D.	ASAWT	,	O DATE OF IN	SPECTION	3.0	•	
UNTRA	NAME OF WELL TEC	HNICIAN	WE	LL TECHNICIAN'S	□ REMARKS		<u> </u>	:	· · · · · · · · · · · · · · · · · · ·
So	SIGNATURE OF TECH		SUBMISSION DATE	U> 50) FF			CS	S.ES
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Ministry of the Environment

The Ontario Water Resources Act WATER WELL RECORD

	ironment	WA	ERV	VELL	RECORD
Ontario SIMCOE	1. PRINT ONLY IN	, ,,	572793	5 15,70,051	
COUNTY OR DISTRICT	Z. CHECK ⊠ CORR	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE		CON . BLOCK, TRACT, SURVEY	15 22 23 74 ETC LOT 25-27
Tenic	ßl	Simone			DATE COMPLETED 44-53
		#4 Ston	ed Out.	LOL-2MO	DAY 28 NO 03 YR 90
		NG R	C. ELEVATION	RC BASIN CODE	
	- 10 12	24	5 26 114 5	30 31	45
	L C	OG OF OVERBURDEN AND BEDR	OCK MATERIALS		DEPTH - FEET
GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS		GENERAL DESCRIPTION	FROM TO
BROWN	Clay	FINES SAND		YERS	0 38
GREY	Clay Sau	Silf LAYERS		<i></i>	33 72
Blue	Clay	with Sandy Sil	F LAYE	RSF SOME GA	TAUE / 72 /85
BI- GREY	Clay (ERAUEL Silty.	Sand	LAYERED	185 298
	HARODAN	/			298 303
	Rock	/			303 307
		,			
	Ŷ				
31					
32	ثبيا لبلتلييا	علىلىلىپا لىلىلىل	علىللىنى ا	لتلليبيا لتا	1
	TER RECORD	51 CASING & OPEN HOLE	RECORD	SIZE(S) OF OPENING Z (Stating)	11-33 DIAMETER 34-38 LENGTH
WATER FOUND AT - FEET	KIND OF WATER	INSIDE WALL DIAM MATERIAL THICKNESS INCHES INCHES	DEPTH - FEET FROM - TO	MATERIAL AND TYPE	INCHES FEET DEPTH TO TOP 41-44 30
	FRESH 3 DSULPHUR SALTY 4 DMINERALS GGAS	10-11 1 STEEL 12 GALVANIZED	13-16	S	
	FRESH 3 SULPHUR 19	3 □ CONCRETE 4 □ OPEN HOLE	1 307 E	61 PLUGGING	& SEALING RECORD
	FRESH 3 DSULPHUR 24	17-18 1 STEEL 19 2 GALVANIZED	16-23	FROM CO TO	ATERIAL AND TYPE (CEMENT GROUT)
	SALTY 6 GAS	3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC		307 180 (May Sturny
2 [SALTY 6 GAS	24-25 28 1 STEEL 2 GALVANIZED	27-30	180 6 22-25	Unterlua
	FRESH 3 SULPHUR 34 O 4 MINERALS SALTY 6 GAS	3 □CONCRETE 4 □OPEN HOLE 5 □ PLASTIC		26-29 10-33 80	
PUMPING TEST ME	THOD 10 PUMPING RAT	i ,	1	LOCATION O	F WELL
	BAILER WATER LEVEL 25	15-16 17-18 GPMHOURSMINS 1 [] PUMPING		RAM BELOW SHOW DISTANCES	S OF WELL FROM ROAD AND
STATIC LEVEL	END OF WATER I	LEVELS DURING RECOVERY	LOT LIN		
<u> 1</u> 22	26-2	8 29-31 32-34 35-33	11		\$ ₹
Z IF FLOWING. GIVE RATE	T FEET FE 38-41 PUMP INTAKE				
IF FLOWING. GIVE RATE RECOMMENDED PU	GPM RECOMMENDE	1 CLEAR 2 CLOUDY D 43-45 RECOMMENDED 46-49	-	IN PINE	
SHALLON	W DEEP SETTING	PUMPING FEET RATE GPM		1112	
10-53			<u> </u>		€ 💥
FINAL STATUS	1 WATER SUPPLY 2 98SERVATION WE				255
OF WELL	3 TT TEST HOLE 4 RECHARGE WELL	7 UNFINISHED DEWATERING			(-> ->
•	DOMESTIC	S COMMERCIAL MUNICIPAL			Va
WATER	3 IRRIGATION 4 INDUSTRIAL	7 DEPUBLIC SUPPLY COOLING OR AIR CONDITIONING			A
	OTHER	P OF NOT USED			
METHOD	1 CABLE TOOL 2 TO ROTARY (CONVEN	6 BORING ITIONAL) 2 DIAMOND	Small	LAYERS OF	SAND FOUND
OF CONSTRUCTI	ION 4 D ROTARY (REVERS		From 72	to 298 cont	Sand found
	S AIR PERCUSSION	□ DIGGING □ OTHER	QRILLERS REMARKS		
NAME OF WELL		WELL CONTRACTOR	I ≥ leouser	" 3406	MAR 1 4 1991
ADDRESS NA	UEY WELL	Sailling 3406	OATE OF INSPECTA		* ** ***
NAME OF WE	LL TECHNISMAN RAW	WELL TECHNICIAN'S	REMARKS		
SIGNATURE OF	SERRIFS	SUBMISSION DATE	FICE		
	// Y	DAY 28 MO 03 YR	7 2		CSS.ES
	all so	1900			FORM NO. 0506 (11/86) FORM 9

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		1 2		10	14 15		22 23 24
County or District	SINCOE	Township Borough/City/T	own/Village	Con block	k tract survey,	etc. Lot	35-27
	JIMI DE	Address	OVICE	l	Date completed	17 0	21 OI
	Ш	Northing	RC Ele	evation RC Basin Code		day m	onth year iv
21	V 1000	2 17 18 15 PER 1	24 25 26	30 31			47
General colour	Most common material	F OVERBURDEN AND BEDRO Other materials	JCK MIA I ERIALS (General description		Depth	r - feet
BURCH	TORONI			SOFT		From	1
Bandal	SAJO	SUT		SOFT		1	3
Barriel	GRAVEI	ا بيدا الس		LMSE	-	3	5
BANIN	CIAY	**********		OFNS	E	5	9
BROWN	SANO	SILT		4005	E	9	20
Braun	SAND	****		COARS	E	20	25
GREY	CLAY	SILT		LAVERI		25	40
						•	
31				بالبليب البا	سيا ليك		البلا
32	4 15 21	CASING & OPEN HOLE R	J L43	54 Sizes of opening	65 31-33 Diameter	34-38 Lengt	75 80
Water found at - feet	Kind of water 51 Inside diam	Wall Material thickness	Depth - feet		1	ches	4 feet
76 ¹⁰⁻¹³ 1 C	Fresh 3 Sulphur 14 inches	inches 12 Steel 12	From To 13-16	Material and type	I .	Depth at top o	of screen 30
	Sality 6 Gas Fresh 3 Sulphur 19	G Galvanized G Galvanized G Goncrete G Gopen hole	ta 20	STAINL	622	αl	feet
2 [Salty 6 Gas	, C Steel	20-23	61 PLUGGING Annular space	& SEALING I	RECORD Abandonm	
1 11 L	☐ Fresh 3 ☐ Sulphul 24 ☐ Minerals ☐ Salty 6 ☐ Gas	2 Galvanized 3 Concrete 4 Open hole		From 10	terial and type (Cem	_	ntonite, etc.)
	☐ Fresh 3 ☐ Sulphur 29 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	1	27-30	0013 1 8 17 1	HOLEPLU		16.6
30-33	Fresh 3 Sulphur 34 60	2 Galvanized 3 Concrete 4 Open hole		26-29 30-33 80		utti	<u> 1977</u>
	1 4	5 🗀 Plastic					
71 Pumping test m	□ Baller 70 GF	Duration of pumping 15-16 17-18 Hours Mins	In diagra	LOCATION OF am below show distances		ad and lot	line
I. I Static level I	Vater level 25 Water levels during 22-24 15 minutes 30 minutes	Pumping 2 Recovery	Indicate	north by arrow.	OI WEII HOITH TO	au anu ioi	
	15 15 15	15 15 1	_				T
If flowing give re	ate 38-41 Pump intake set at	Water at end of test 42	1				
Recommended p	4	eet Clear Cloudy Glear Cloudy Glear Gloudy N			20		
Shallow 50-53		eet GPM				d'	oth ROAD
FINAL STATU	S OF WELL 54					SIDE	KPAD
1 Water sup 2 Observation 3 Test hole	on well 6 Abandoned, poor qual						
4 ☐ Recharge			,				
WATER USE	55-56 5 Commercial	9		Ca 1 # 11			
2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial	6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air condition		4	CON #11		T	-
METHOD OF	CONSTRUCTION 57				ļ	0'0	<u>'</u>
1 🔲 Cable too	onventional) 5 ☐ Air percussion 6 ☐ Boring	9 ☐ Driving 10 ☐ Digging		•			+
3 ☐ Rotary (re 4 ☐ Rotary (ai		11 Other				225	477
Name of Well Cont	/	Well Contractor's Licence No.	> Data	se Contractor	59-62 Date receiv		63-68 80
K&B WE	ELL DRILLING LTI	1 4645	Data source Date of inspection	4645	MAY	3 0 20	001:
I PO BOX	1320 BHTON, O		USE				*
Name of Well Tech	nician W.J. ACUJAISKI	Well Technician's Licence No.	Remarks				

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County or District	Township/Borough/City/TownVillag		ey, etc. Lot 25-27 26
SINCOE	Address Address	Date Date	48-53
	738 LOCKHART	RC Elevation RC Basin Code ii	day month year
21 U U U U U U U U U U U U U U U U U U U	17 18 24	25 26 30 31	47
	RBURDEN AND BEDROCK MA		Depth - feet
General colour / Most common material	Other materials	General description	From To
BROWN SAND			0 21
6054 1 1 h			21 101
GRET SAND		5147	21 105
COCY CLOY			10- 75
GRET CLAY			105 235
1200 11 5 2 10			253 270
19 KUWW 3747013			255 070
26			
31 , , , , , , , , , ,			
32		54 66	75 80
	SING & OPEN HOLE RECORD	Sizes of opening 31-33 Diameter	
at - feet Kind of water diam inches	Material thickness inches From	To Material and type	inches feet Depth at top of screen 30
2 Salty 6 Gas	Steel 12 Galvanized 219	13-16	266 feet
2 Salty 6 Gas	Open hole Plastic	61 PLUGGING & SEALIN	
20-23	Galvanized Concrete	Depth set at - feet Material and type (C	Abandonment ement grout, bentonite, etc.)
25-28 1 Fresh 3 Sulphur 29 5	Open hole Plastic	27:30 From To Indicate and type (C	
2 Sarry 6 Gas 2 2 2 30-33 1 Fresh 3 Sulphur 34 60 3 3	Galvanized Concrete	18-21 22-25	
	Open hole Plastic	26-29 30-33 80	
71 Pumping test method 10 Pumping rate GPM GPM	ration of pumping 15-18 Hours Mins	LOCATION OF WELL	
Static level Water level 25 Water levels during 1 Pur		In diagram below show distances of well from Indicate north by arrow.	road and lot line.
19-21 22-24 15 minutes 30 minutes 45 minutes 28-98	minutes 60 minutes	In diagram below show distances of well from Indicate north by arrow	OFAIT
Feet 250 175 feet 100 Get 175 feet 100 Get 175 feet 175 f	feet feet feet feet feet feet feet feet	554	(. 1/-
GPM feet GPM 43-45 Recommended 43-45 Recommended	Clear Cloudy	1174 LINE	LAKE
Neconinerated pump type Neconinerated Ne	ump rate GPM		
50-53		1	
FINAL STATUS OF WELL 1 Water supply 2 Observation well 54 5 Abandoned, insufficient supply 6 Abandoned, poor quality	9 ☐ Unfinished 10 ☐ Replacement well		
3 ☐ Test hole 7 ☐ Abandoned (Other) 4 ☐ Recharge well 8 ☐ Dewatening		1251H SIDE	
WATER USE 55-56 1	9 ☐ Not use		
2 ☐ Stock 6 ☐ Municipal 3 ☐ Irrigation 7 ☐ Public supply	10 Other		
4 Industrial 8 Cooling & air conditioning			
	9 □ Driving	8TH LINE	\
2 ☐ Rotary (conventional) 6 ☐ Boring 3 ☐ Rotary (reverse) 7 ☐ Diarmond 4 Rotary (air) 8 ☐ Jetting	10 Digging 11 Other		235528
Name of Well Contractor LONE STAR WELL DUSGING	Well Contractor's Licence No.	a 58 Contractor 59-62 Date rec	
Address	Dat	e of inspection Inspector	0 0 2001
Name of Well Technician		narks	
JAMES MOORE	34 T-401 E		
	Submission date 10 01 day mo yr		

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5736524 11 Mark correct box with a checkmark, where applicable.

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10	14	15		22	23	2

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Water found Kind of water Sizes of opening 31-33 Diameter 34-36 Length 39-40 Material and type Sizes of opening 31-33 Diameter 34-36 Length 39-40 Material and type Sizes of opening 31-33 Diameter 34-36 Length 39-40 Material and type Sizes of opening 31-33 Diameter 34-36 Length 39-40 Material and type Sizes of opening 31-33 Diameter 34-36 Length 39-40 Material and type Depth at top of screen 31-36 Material and type Depth at top of screen 31-36 Material and type Depth at top of screen 31-36 Material and type Depth at top of screen 31-36 Material and type Depth at top of screen 31-36 Material and type Depth at top of screen 31-36 Material and type Depth set at - feet Dep
Season S
Conceral colour Most common material Other materials General description Depth - feet From To O O O O O O O O O
General closur Most common material Other materials General description From 10 NO 10 NUE CLAY GRAVEL + SAND GREY COARS: SAND GREY GRAVEL + SAND GREY GRAVEL + SAND GREY GRAVEL - SAND GRAVEL
SREY COARS SAND GRAVEL + SAND GRAVEL - SAND GRAVEL + SAND GRAVEL - SAND GRAV
SREY COARSE SAND GRAVEL + SAND GRAVEL - SAND GRA
31 WATER RECORD Size of opening Size of o
31 32 41 WATER RECORD Water form To inches 10 Steel
32 10 14 15 15 15 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 16
32 10 14 15 15 15 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 16
32 10 14 15 15 15 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 16
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32 10 14 15 15 15 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 15 16 16
WATER RECORD Water found at - feet ## WATER RECORD
Water found at - feet Wind of water Wall bit of water From To Waterial and type Wate
15-18 1 Fresh 4 Minerals 2 Salty 6 Gas 3 Concrete 4 Open hole 5 Plastic 17-18 1 Steel 19 Open hole 5 Plastic 24-25 1 Steel 3 Concrete 4 Open hole 5 Plastic 24-25 1 Steel 26 Gas 26 Gas 26 Gas 26 Gas 27-30 26-29 30-33 80
15-18 1 Fresh 3 Sulphur 19 4 Open hole 5 Plastic 17-18 1 Steel 19 20-23 20-23 1 Fresh 4 Open hole 5 Plastic 20-23 20-2
20-23 Fresh 3 Sulphur 24 Galvanized 3 Concrete 4 Open hole 5 Plastic Salty 6 Gas 3 Sulphur 29 24-25 Galvanized 3 Concrete 4 Open hole 5 Plastic 5 Plasti
25-28
30-33
71 Pumping test method 10 Pumping rate 0 11-14 Duration of pumping 17-18 Hours Mins LOCATION OF WELL In diagram below show distances of well from road and lot line.
71 Pump 2 Bailer GPM 15-16 Hours Mins In diagram below show distances of well from road and lot line.
I. I STATIC SEVEL 1
SU SU feet feet feet feet feet A
Lift flowing give rate 38-41 Pump intake set at Water at end of test
If flowing give rate Pump intake set at Water at end of test GPM Feet Cloudy Recommended pump type Recommended
Deep pump setting pump rate pump rate pump rate
FINAL STATUS OF WELL 54
Recommended pump type Recommended Recomm
4 Recharge well 8 Dewatering WATER USE 55-56
WATER USE 55-56
3 Irrigation 7 Public supply 4 Industrial 8 Cooling & air conditioning
METHOD OF CONSTRUCTION 57 1
2
Name of Well Contractor. A Well Contractor's Licence No. Data se Contractor 59-62 Date received 63-68 8
TONS WELL DRILLING /NG. 7193. Source 7143 DEC 17 2001
Name of Well Contractor, 1945 Well Contractor's Licence No. 1945 Date of inspection Name of Well Contractor, 1945 Date of inspection Name of Well Technician Name of Wel

Ministry of the

The Ontario Water Resources Act WATER WELL RECORD

0506 (07/00) Front Form 9

Environment Print only in spaces provided. 5736901 5.7005 CON 122 23 24 Mark correct box with a checkmark, where applicable. 11 County or District Township/Borough/City/Town/Village Con block tract survey, etc. ナンハン・ラナ 10 Address 79 Date ر year completed Ĭ L LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions) Depth - feet General colour Most common material General description Other materials prown .00m Mau Brown Ō <u>Sano</u> tine ayered irei brei Medium 31 WATER RECORD CASING & OPEN HOLE RECORD Water found at - feet Inside diam inches SCREEN Depth Kind of water From То 3 Sulphur
4 Minerals
6 Gas Depth at top of screen 1 Steel
2 Galvanized
3 Concrete
4 Open hole
5 Plastic **Fresh** 8 294 2 🗌 Salty 1 Fresh 2 Salty 3 ☐ Sulphur 4 ☐ Minerals **PLUGGING & SEALING RECORD** 6 Gas 1 Steel
2 Galvanized
3 Concrete
4 Open hole
5 Plastic 3 Sulphur
4 Minerals
6 Gas .188 ☐ Abandonme 1 🗆 Fresh Depth set at - feet 2 Salty Material and type (Cement grout, bentonite, etc.) 3 Sulphur
4 Minerals
6 Gas Hole Plug 1 Steel
2 Galvanized
3 Concrete
4 Open hole
5 Plastic 2 G Sattv Bentonite 188 3 | 4 | 6 | Sulphur Minerals Gas 2 - Salty Pumping test method Duration of pumping Pumping page **LOCATION OF WELL** 1 🗆 Pump 2 🗹 Baile GPM In diagram below show distances of well from road and lot line. Indicate north by arrow. Water levels during □ Pumping 2 Recovery end of pumping TEST 15 minutes 30 minutes 50 feet 45 minutes 9-21 PUMPING If flowing give rate Water at end of test Y N Cloudy ☐ Clear **GPM** Recommended pump type pump setting ☐ Shallow Deep GPM FINAL STATUS OF WELL 1 Water supply
2 Observation well
3 Test hole
4 Recharge well 25 S/R WATER USE 55-56 1 Domestic
2 Stock
3 Irrigation
4 Industrial 9 ☐ Not use 10 ☐ Other **#1972** METHOD OF CONSTRUCTION 57 Cable tool
Cable tool
Rotary (convention
Rotary (reverse)
Rotary (air) 5 Air percus
6 Boring
7 Diamond
8 Detting 9 ☐ Driving
10 ☐ Digging
11 ☐ Other 226326 Name of Well Contractor Drilling Frc ONLY 7143 source JUN 2 4 2002 Date of inspection Alliston Ont. USE Remarks MINISTRY

3003

Ministry of the Environment

Print only in spaces provided.

The Ontario Water Resources Act
WATER WELL RECORD

0506 (07/00) Front Form 9

Mark correct box with a checkmark, where applica	ble.	3/36902	5.700.5 CON: 1 1 1 22 23 24
County or District SIMCOE	Township/Borough/City/	TownVillage	Con block tract survey, etc. Lot 25-27
Owners surrame SINCOE	Address 902	OCKHART ROAS	Date completed 29 05 05
Zone E U U U U U U U U U U U U U U U U U U	Easting Northing	RC Elevation RC	Basin Code ii iii iv
LOG O	F OVERBURDEN AND BEDR	OCK MATERIALS (see instruction	
General colour Most common material	Other materials	General d	escription Depth - feet From To
Blue Cau		Hhad	17 12
Blue Clay	Sand + Snav	el Lauered	120 27
Grey Med Sand	Gravel	Loose	37 44
J			
31	111111111111111111111111111111111111111		
10 14 15 21 41 WATER RECORD 51	CASING & OPEN HOLE F		65 75 80 90ing 31-33 Diameter 34-38 Length 39-40
Water found at - feet Kind of water Inside diam inches	Wall thickness inches	Prom To (Slot No.) State Control Contro	1 type Depth at top of screen 30
3 / 2 Salty 4 Minerals 2 Salty 6 Gas	1 Steel 2 Galvanized 3 Concrete 4 Open hole	$\int_{0}^{13-16} \int_{0}^{13-16} $	Septiment of screen 33
2 Salty 6 Gas	5 Plastic		LUGGING & SEALING RECORD
20-23 1	2 Galvanized 3 Concrete 4 Open hole	Depth set at -	nnular space
25-28 1 Fresh 3 Sulphur 29	5 Plastic 1 Steel	27-30	(1) 3/8 Hole plug
30-33	3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	26-29	Bentonite
71 Pumping test method 10 Pumping rate 71 Con	4 Duration of pumping		TION OF WELL
Statis laural Water level 25 Water laural and a statis	15-16 17-18 Hours Mins Pumping 2 □ Recovery	In diagram below show of indicate porth by arrow	TION OF WELL listances of well from road and lot line.
W 79-21 15 minutes 30 minutes	45 minutes 60 minutes	maidate north by arrow.	
feet feet feet feet feet feet feet feet	et feet feet feet Water at end of test 42		4
recommended pump type recommended recomm	Recommended 46-49		25th 51R
☐ Shallow ☐ Deep pump setting 58 fee	pump rate // GPM	A LOCKHART	- RD >/*
FINAL STATUS OF WELL 1 Water supply 5 Abandoned, insufficient	supply 9 🗆 Unfinished	4	4
2 Observation well 6 Abandoned, poor quality 3 Test hole 7 Abandoned (Other) 4 Recharge well 6 Dewatering	¹⁰ ☐ Replacement well		XO3KM
WATER USE 55-56 1 D Domestic 5 Commercial			WELL
2 ☐ Stock 6 ☐ Municipal 3 ☐ Irrigation 7 ☐ Public supply	9 Not use 10 Other		
4 ☐ Industrial 8 ☐ Cooling & air conditionin METHOD OF CONSTRUCTION 57	g		V
	⁹ Driving ¹⁰ Digging		
3 ☐ Rotary (reverse) 7 ☐ Diamond 4 ☐ Rotary (air) 8 ☐ Jetting	11 Other		226325
Name of Well Contractor	Well Contractor's Licence No.	Data 58 Contractor source	59-62 Date received 63-68 80
Tom's Well Drilling Inc.	01	Date of inspection Ins	43 JUN 24 2002 -
8 John Ave. Alliston Name of Well-Technician August 1981		Remarks	
Signature of Technician Contracts	Submission days 02	O Date of inspection Ins	

Water found at - feet

	-	-p		14.	
Mark	correct	box with a	checkmark,	where	applicable.

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the	
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	tai io	of the Environme	nt						WATER W	ELL RE	CORD
	aces provided ox with a chec		applicabl	'e.	11 2	57	369	03	Municipality 5,7,0,0,5	Con.	1 10
County or Distri	ict 5/m	ICOE	· · · · · · · · · · · · · · · · · · ·	Townsh	nip/Borough/City	Town/Villag	e		Con block tract s	survey, etc. Le	ot 4 25-27
Owner's surner	18/ O/	NTARIO	Name 272	Address	90?	LOCK	HART	- ROAD	Date comple	eted 30	0500 o
21		Zc U M 10	L 12	sting	Northing	24	25 26	evation RC	31	ii iii	iv 47
			LOG OF	OVERBURDE	N AND BED	ROCK MAT	TERIALS (see instruction	s)	D	h fo at
General colour	Most o	common materi	al	0	ther materials			General de	escription	From	h - feet To
BHOWN	1 201	VO			773.W.			11	W184 E	0	12
BLUE	(4)	94						HARD.		12	30
BLUE	CLA	94		SAND	+GRA	UEL.	1	AYERE	0	30	37
GREY	MED	SAND		GRA	UEL		1	OOSE		37	44
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31 , , ,	<u> </u>	11 . 4		1.1	1 1 1 1	1.1	11 1	1 11	1 1 1 1 1 1		
32 , , ,	 			_ 							
41 WAT	ER RECORD	21	51	CASING & C	PEN HOLE	RECORD	1	Sizes of ope	ming 31 Seat Dian	neter 34-38 Leng	75 80 th 39-40
Water found at - feet	Kind of wa	ater	Inside diam	Material	Wall thickness	Depth		(Slot No.)	18	5 inches	feet
27913 1	A Liesii 🗸 🗀 i	Sulphur 14 Minerals	inches 10-11	1 DSteel	inches 2	From	To 13-16	Material and		Depth at top	of screen 30
15.10	☐ Salty 6 ☐	Gas Sulphur 19	18	2 Galvanized 3 Concrete 4 Open hole		[() [20	<u>"</u>	3/3	90	feet
2	☐ Salty 6 ☐			5 ☐ Plastic	9		20-23		UGGING & SEAL		
	Calby 4	Sulphur 24 Minerals Gas	1 1	2 ☐ Galvanized 3 ☐ Concrete	1 188		4/11	Depth set at - f	——— Material and he	☐ Abandonm	
25-28 1	□ Fresh ³ □	Sulphur 29 Minerals		4 ☐ Open hole 5 ☐ Plastic	1100	1	10	From T	20 4/1/C/	A116	, 2.0./
30,33	Salty 6		i I	1 Steel 2 Galvanized 3 Concrete		5	27-30	18-21	22-25	, <u>, , , , , , , , , , , , , , , , , , </u>	
	☐ Fresh 4 ☐ ☐ Salty 6 ☐ ☐	Minerals	1	4 ☐ Open hole 5 ☐ Plastic			_	26-29	30-33 80		
Pumping test		Pumping rate	//1 11-14	Duration of pum	ping			1004	TION OF WELL		
1 Pump 2		25 Water levels of	GPM	Pumping 15-16		17N	In diagrar	m below show d	TION OF WELL istances of well fro	om road and lot	line.
	end of pumping	Water levels d	uring 1	45 minutes	2 Recovery		Indicate r	north by arrow.			
	Ø8 feet	$\partial \mathcal{E}_{\text{\tiny feet}}^{\text{\tiny o}}$		08° feet	A feet					_	
If flowing give	rate 38-41	Pump intake set a	t	Water at end of t	est ⁴²					A	
Recommended		Recommended pump setting	feet 27 43 45	Recommended	☐ Cloudy 46-49	All				2	th
☐ Shallow	Deep	bough secting	OD feet	pump rate	/O _{GPM}					Si	R
FINAL OTATI		*		••••				1 NKH	ART RD.	'	

	2 Galby 4	Minerals	3			
71	Pumping test method 10	Pumping rate // GPM	Duration of pumping 15-16 17-18 Hours Mins			
F	Static level Water level end of pumping	Water levels during 1	Pumping 2 Recovery			
PUMPING TEST	$23^{9/1}$ 26^{-7}	15 minutes feet 30 minutes feet feet	45 minutes 60 minutes of feet			
UMP	If flowing give rate 38-41 GPM	Pump intake set at feet	Water at end of test ⁴²			
	Recommended pump type Shallow Deep	Recommended pump setting feet	Peccommended 10 46-49 pump rate GPM			
	50-53					
	FINAL STATUS OF WELL 1					
W	ATER USE 1	55-56 5 Commercial 6 Municipal 7 Public supply 8 Cooking & air conditioning	9 Not use 10 Other			
MI	THOD OF CONSTRUCT Cable tool Cable tool Rotary (conventional) Cable tool Rotary (reverse) Cable tool Rotary (air)	CTION 57 5	9 Driving 10 Digging 11 Other			
Na Na	oprof Well Contractor WELL	PHILLING IN	Well Contractor's Licence No.			

7N	LOCATION OF WELL In diagram below show distances of well from road and lot line. Indicate north by arrow.
	LOCKHART RD. LOCKHART RD. VO.3km WELL
	226323

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JOM'S WELL DRILLING /NC	Well Contractor's Licence No.	NLY	Data source	58 Contractor	143	59-62	Date receiv	^{ed} 7 4	2002
JOHN AVE, ALLISTON, ON		USE O	Date of inspection		Inspector				LVVC
JENISE FIORAN	Well Technician's Licence No.	STRY	Remarks						
ignature of Technician/Geographon	Sultimission date of the day mo	Z							

Ontario	Ministry of	Well Tag No. (Place Sticker ar	nd/or Print Below)		Well Record
	the Environment	No Trid		Regulation 903 Ontario	
Measurements recorded	Notice to the second se			J ra	ge
Well Owner's Inform First Name	Last Name / Organization		E-mail Address		☐ Well Constructed
J.	Sand	y Cove Acres Ltd. Municipality	Province ,	Postal Code Telepho	by Well Owner ne No. (inc. area code)
Mailing Address (Street No	ockhart Rel. Innis	A. A. Internation	Ont.	495367706	
Well Location					
Address of Well Location (Township Innist	3 (Lot Conces	10
County/District/Municipalit	y /	City/Town/Village	\mathcal{L}_{i}	Province	Postal Code
UTM Coordinates Zone , E		Municipal Plan and Suble	t Number	Ontario Other	19513167
NAD 8 3 1 7		9113			
		ealing Record (see instructions on the		eral Description	Depth (6/ft)
	Nost Common Material	Other Materials	Conc		64'6 2'
Abandonmen	t of 6" Dia- Dr	THEEL WAY		Burtonite Chips	
+ 0+	- Wall TO	North Well		Native Soil	21 0'
In Pil.	- 10ev 1.0	TOPITA WOUL		I VATIVE JOT	
Carre la	A L' Roland la	enoud (p. 10)			
Cosing Remu	oved 5. Below 6	rappid covi		WALET	
Cincil Tike	Removed		+ M.P. = 60	sand / evel	
Cinara me	Rumoure		U.	MINIO CV	
	Annular Space		Contracting the state of the st	Results of Well Yield Testi	
Depth Set at (<i>m/ft</i>) From To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)	After test of well yield,	free Time Water L	evel Time Water Level
			Other, specify If pumping discontinue	(min) (m/f	t) (min) (m/ft)
			I partipling discontinue	Level 1	1
		-	Pump intake set at ((61)	
				2	2
Method of Const	ruction	Well Use	Pumping rate (I/min /		3
	☐ Diamond	☐ Commercial ☐ Not used ☐ Municipal ☐ Dewatering	Duration of pumping		4
Rotary (Reverse)	☐ Driving ☐ Livestock	☐ Test Hole ☐ Monitoring	hrs + Final water level end	min 5	5
☐ Boring	☐ Digging ☐ Irrigation ☐ Industrial	Cooling & Air Conditioning	Final water level end t	of partipling (mm) 10	10
Other, specify	Other, specify	Status of Well	If flowing give rate (I/	min / GPM/	15
Inside Open Hole OF	ruction Record - Casing R Material Wall Dep	th (Mitt) Water Supply	Recommended pum	p depth (m/ft)	20
Diameter (Galvanized, F (Min) Concrete, Plas		To Replacement Well Test Hole		25	25
6 steel		//// Recharge Well	Recommended Fum (I/min / GPM)	p rate 30	30
7,00		Dewatering Well Observation and/or	Well production (I/mi	n / GPM) 40	40
		Monitoring Hole Alteration	Disinfected?	50	50
		(Construction) Abandoned,	Yes No	60	60
Cons	truction Record - Screen	Insufficient Supply Abandoned, Poor		Map of Well Location	
Outside Materi Diameter (Plastic, Galvan	Slot No	th (m/ft) Water Quality To Abandoned, other,	Please provide a map	below following instructions on t	ine back.
(cm/in) (Flastic, Salvari	110111	specify Not Needed			$\beta = \beta = 1$
,		Other, specify		7	T-UM TIE
ROLL STORE S	Water Details nd of Water:	Hole Diameter d Depth (m/ft) Diameter			1013
(m/ft) Gas	Other, specify	From To (cm/in)		50	m (1)
Water found at Depth Kir (m/ft) Gas	nd of Water: Fresh Unteste	d			
	nd of Water: Fresh Unteste	d	-		
(m/ft) Gas				Flora Dr.	
Business Name of Well Co	Contractor and Well Techniciontractor	Well Contractor's Licence No.			
Business Address (Street	Number/Name)	7 2 2 1 Municipality	Comments:		
Business Address (Street					
Province Post	al Code Business E-mail Ac	ddress	Well owner's Date	Package Delivered M	inistry Use Only
Bus. Telephone No. (inc. are.	N3K4 into 6 a code) Name of Well Techniquan	wellin tratius com (Last Name, First Name)	information package	Audit N	ło.
	8 9 6 of Technician and/or Co		I delivered	Y Y M M D D Work Completed	z143757
Well Technician's Licence No.			No 20	1120821 ReceS	EP 1 7 2012
0506E (2007/12) © Queen's	Printer for Ontario, 2007	Ministry's Copy	1		

Measurements recorded in a Lineary Department of the Company Information Company Infor	Ontario Ministry o	"	Tag No. (Place Sticker ar	nd/or Print Below)	B	Well Record
Well Coverage and Service States of Consequence States of Conseque	the Enviro		No Tag	:	Regulation 903 Onta	t a
Secure Country	Well Owner's Information					
Manufaction Ma	First Name Last I		up Arnes 14d	E-mail Address		
Method of Construction Construction Constructi	Mailing Address (Street Number/Name)	1 - CI	Municipality	Province	1	
Annual Special Part Provided	**************************************	d. Innistil		_ Ont	L9 556 + +1	01514131611151711
Comprehensive Co	Address of Well Location (Street Number	81 1		1	Lot Cor	ncession
The Consistence of Experience of Construction Constructio	County/District/Municipality	ouse Station		1	Province	Postal Code
Overburners and Beautical Manufaction Control of the State of the Control of the State of the Control of the State of the	Simoe			()		0 195367
Operated Cools. Month Comment Marketins Comment Description Co				ot Number	Other	
Abdition in the Comment of the Comme	Overburden and Bedrock Materials/	Abandonment Sealing Re	ecord (see instructions on the		Description	Depth (M/ft)
The fit - Noth Fo. South Noth Casinett Title Reflected Annother Space Original Sea (Note) The Reflected Season		A 4	Other Materials	Gene		
Cass et findly The littlewed Amulai Space Capit Set stimby Type of Section Use Commerced Capit Set stimby Capit Set	Meandonment of Q) Dra. Iva ika	wey		PURIORITECH	p3 110 3
Cass et findly The littlewed Amulai Space Capit Set stimby Type of Section Use Commerced Capit Set stimby Capit Set	T. DH - 1/21/	I.D Sout	L WILL		Native Seil	2' 0'
Annual Space					70,00,700	
Annual Space	Casina Penoved 5	5' Below Groun	ed Level			
Annular Space Comments Comm	0					
Copin Sear a (with) Service To (Material and Type) Service To	Cament Tile Remo	ved		* M.P. = ON	ound livel	
Copin Sear a (with) Service To (Material and Type) Service To						
Copin Sear a (with) Service To (Material and Type) Service To					Possilts of Wall Viold T	asting
Method of Construction Demond Dem	Depth Set at (m/ft) Typ	pe of Sealant Used		After test of well yield,	water was: Draw	Down Recovery
Mathod of Construction Demond Well Use Demond D	From To (Ma	aterial and Type)	. (m³/ft³)		(min)	
Cable Tool Diamond Open Agency Conventional Destination of pumping rate (mm/l) 2 2 2 2 2 3 3 3 3 3				If pumping discontinue	an dive reason: !!	
Method of Construction Well Use Depth (Method Depth (M						
Method of Construction				Pump intake set at (n	n/ft) 2	2
Canter Tool Denmand Denmand Commencial Denmand	Method of Construction	Well	Use	Pumping rate (I/min /	GRM) 3	3
Rotary (Reverse) Dhinting Dhinting Disgling Industrial Disgling Industrial Disgling Industrial Displing Displing Industrial Displing Industrial Displing	Cable Tool Diamond	Public Com	nmercial Not used	Duration of pumping	4	
Art percussion Construction Record - Casing Construction Record - Construction Record - Construction Record - Screen	Rotary (Reverse) Driving	Livestock Test	t Hole		f numning (m/N)	
Construction Record - Casing Status of Well Construction Record - Casing Capp Maker Supply Capp	_ 3	Industrial	oling & Air Conditioning			
Inside Copen Hole OR Material This press Commended Copen Hole OR Material Copen Hole			Status of Well	If flowing give rate (I/r		
Concrete, Pleasic, Steel Confin From 10	Inside Open Hole OR Material	Wall Depth (A)tt)	☐ Water Supply	Recommended pump	o depth (m/ft)	\
Still	(Affin) Concrete, Plastic, Steel)	(cm/in) From 10	Test Hole	Recommended puris	o rate	
Construction Record - Screen	6" stee	- 10	Recharge Well Dewatering Well		30	
Construction Record - Screen Construction Record - Screen Construction Record - Screen Coutside Insufficient Supply Abandoned, Insufficient Supply Aband				Well production (I/mir	1 / GPM)	
Construction Record - Screen Data			1 -	II _Z		
Coutside Diameter (Cervin) Malerial Diameter (Cervin) Siot No. Depth (m/ti) To Water Cousity Water Security Siot No. Depth (m/ti) Water Security Water Secu				Yes No		
Diameter (cm/in) (Plastic, Galvanized, Steel) Sidt No. From To Specify St. Audid Other, specify	Outside Material	Depth (m/ft)	Water Quality	Please provide a map		
Water found at Depth Kind of Water: Fresh Untested Depth (m/ft) Diameter From To Cenfin)	Diameter (Plastic Galvanized Steel)	Slot No. From To	specify			N
Water found at Depth Kind of Water: Fresh Untested Depth (m/ft) Diameter From To (cm/in) Water found at Depth Kind of Water: Fresh Untested Depth (m/ft) Diameter From To (cm/in) Water found at Depth Kind of Water: Fresh Untested Ministry Use Only Water found at Depth Kind of Water: Fresh Untested Ministry Use Only Municipality Flow Well Contractor and Well Technician Information Business Name of Well Contractor Well						
Water found at Depth Kind of Water: Fresh Untested Depth (m/tt) Diameter From To To Com/in) Water found at Depth Kind of Water: Fresh Untested (m/tt) Gas Other, specify Water found at Depth Kind of Water: Fresh Untested (m/tt) Gas Other, specify Water found at Depth Kind of Water: Fresh Untested (m/tt) Gas Other, specify Well Contractor and Well Technician Information Well Contractor's Licence No. The first Number/Name The first Number/Name Municipality Comments: Comments: Comments: Well owner's Date Package Delivered Ministry Use Only Audit No. Postal Code Business E-mail Address Date Work Completed Yes Date Work Completed Y						, , 115
Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Business Name of Well Contractor Well Contractor Well Contractor Well Contractor Well Contractor Well Contractor Well Contractor's Licence No. Thinks Use Province Postal Code Postal Code Business E-mail Address Well Technician (Last Name, First Name) Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name) Single Manual Completed Well Technician Silicence No. Signature of Technician and/or Contractor Date Submitted Well Technician Silicence No. Signature of Technician and/or Contractor Date Submitted Yes No Recept 1 7 2012						1m+ 3
Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Business Name of Well Contractor Business Address (Street Number/Name) Province Postal Code Business E-mail Address Well Technician (Last Name, First Name) Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted No 20120821	(m/ft) Gas Other, specify	Fro	m To (cm/in)	-		
Well Contractor and Well Technician Information Business Name of Well Contractor Well Contractor Well Contractor Well Contractor's Licence No. Well owner's Date Package Delivered information package delivered delivered Yes Date Work Completed Yes No No Recept 1 7 2012					_	29m
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Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name) Si 9 8 4 6 5 8 9 Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Ves No No No No No No No N	Out LAWSBY					
Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted No. 10120821 Regep 1 7 2012	Bus. Telephone No. (inc. area code) Name	e of Well Technician (Last Na		package y y	YYMMDD	
N / I I CANALY MARKET CONTRACTOR OF THE CONTRACT	Well Technician's Licence No. Signature of	Technician and/or Contracto	or Date Submitted	Yes Date	100011	4 ~ 0047
0506E (2007/12) © Queen's Printer for Ontario, 2007 Ministry's Copy		Service Service	Ministry's Copy			GRA I L VAIR



Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below)

A162397

Well Record

Regulation	903	Ontario	Water	Resources	Act

Well-former in flower formation Security Stages Security Stage	Measurements recorded in:	Metric Imperial	LA	162317			Page	of 3
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Control cont			Т		Lot	Cond	cession	
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Method of Construction						1		
Method of Construction Well Use Catable Tool Catable Too					Pump Intake set at (m/π)	2	2	
Roberty Convertional selfing Developer Selfing Developer Selfing Sel	Method of Construction		Well Us	0	Pumping rate (I/min / GPM)	3	3	
Return (Revene) Driving Debring Debring Depring Deprin					Duration of pumping	4	4	
Construction Record - Casing Other, specify Other,			Test Hole	e SMonitoring	hrs + min		5	
Construction Record - Casing Status of Well Water Open Hote OR Material New Met Open Hote OR Material Thisposes Thisposes Open Hote OR Material Open Hote OR			☐ Cooling (& Air Conditioning	Final water level end of pumpir	ng <i>(m/ft)</i> 10	10	
Depth (m/n) Picast Depth (m/n) Well Contractor Person Depth (m/n) Depth (m/n) Prom To Depth (m/n) De					If flowing give rate (I/min / GP)	м) 15	15	
Discrete Ciglatenzier Ciglatenzier Ciglatenzier Cirching	1		(m/ft)	<u> </u>	Recommended pump depth	(m/ft) 20	20	
Recharge Well Devartering well Well production (Imin/GPM) Disinfected? Yes \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Diameter (Galvanized, Fibreglass,	Thickness		Replacement Well		1 1 1	25	
Devatating Well Construction (Winin / GPM) 40 40 40 40 40 40 40 4	2 Plastic	2 0	7	Recharge Well		30	30	
Maleration Mal					Well production (I/min / GPM)	40	40	
Construction Record - Screen Outside Diameter (Plastic, Galvanized, Sleet) Depth (Politic, Galvanized, Sleet) Demeter (cm/n) Depth (Politic, Galvanized, Sleet) Depth (Plastic, Galvanized, Sleet) Depth (Politic, Galvanized, Sl				1 —			50	
Construction Record - Screen Outside Diameter (cm/in) (Plastic, Galvenized, Steel) Siot No. Depth (m/it) Abandoned, Poor Water Quality Map of Well Location Water Quality Map of Well Location Water Quality Water Guality Please provide a map below following instructions on the back. Water Details Hole Diameter Depth (m/it) Diameter Prom To (cm/in) Diameter Depth (ind of Water Prom To (cm/in) Prom To (cm/in) Diameter Depth (ind of Water Prom To (cm/in) Diameter Depth (ind of Water Prom To (cm/in) Diameter Depth (ind of Water Prom To (cm/in) Diameter Depth (ind o				I — '		60	60	
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the state of the s	Weil Technician's Licence No. Signatur	e or rechnician and/or Col	1			17/2/2/ See	AUG 27	⁷ 2014
	0506E (2007/12) © Queen's Penter for O	nlario 8007	1 1 1			<u>- 1 (6 7) [</u>		ATT THE PROPERTY OF THE PARTY O

Ministry of the Environment

Measurements recorded in: Metric Merial

Well Tag No. (Place Sticker and/or Print Below)

g No. (Place Sticker and/or Print Below A135698

Well Record

	W W 🔾 I	18 8 07	COUNT
Regulation 903	Ontario Water	Reso	ources Act
	Page		of <u>3</u>

Well Owner's Information				-	
First Name Last Name / Organ		E-mail Address		☐ Well Co	nstructed
Mailing Address (Street Number/Name)	ration of the town at	1 Ernnl		by Well	
2101 Innix Peach Rd.	Municipality	Province Postal Code		e No. (inc. are	
Well Location	Simcoe	ON	1A117015	14360	tilo
Address of Well Location (Street Number/Name)	Township	Lot	Concess	ion	
2964 255 ideroad	Innis f. 1	130	Gomococ	1011	
County/District/Municipality	City/Town/Village		Province	Postal Co	ode ,
Simcoe	Innisti)		Ontario		
UTM Coordinates Zone Easting Northin			Other		
NAD 8 3 1 761 5 65 5 4 9	12000 Simcoe	7			
Overburden and Bedrock Materials/Abandonme				D4-	
General Colour Most Common Material	Other Materials	General Description	٦	Depth (From	M(NI)
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BROWN SAND	GRAUEL	DFAISE		2 :	15
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Provide Significant		DESIGN			<u> </u>
DRUWN STIVIS		PENSE		15	Z Q
			THE PARTY OF THE P		
			200	***************************************	
Annular Spac			ell Yield Testin	g	
Depth Set at (<i>m/ft</i>) From To (Material and Typ		After test of well yield, water was: ☐ Clear and sand free	Draw Down	Reco	
		Other specific	Time Water Le	1 1	ter Level (m/ft)
0 13 Bentanite	chips 29.25 cubic A	If pumping discontinued, give reason:	Static		
			Level		
			1	1	
		Pump intake set at (m/ft)	2	2	
		Pumping rate (I/min / GPM)	3	3	<u></u>
Method of Construction	Well Use	Trumping rate (///iii// GP/VI)			
☐ Cable Tool ☐ Diamond ☐ Public ☐ Rotary (Conventional) ☐ Jetting ☐ Domestic	Commercial Not used Municipal Dewatering	Duration of pumping	4	4	
☐ Rotary (Reverse) ☐ Driving ☐ Livestock		hrs+ mìn	5	5	
☐ Boring ☐ Digging ☐ Irrigation	Cooling & Air Conditioning	Final water level end of pumping (m/ft)	10	10	
☐ Air percussion ☐ Industrial ☐ Other, specify ☐ Other, sp.	ecify				
Construction Record - Casing	Status of Well	If flowing give rate (I/min / GPM)	15	15	
Inside Open Hole OR Material Wall	Depth (m/ft) Water Supply	Recommended pump depth (m/ft)	20	20	
Diameter (Galvanized, Fibreglass, Thickness (cm/in) Concrete, Plastic, Steel) (cm/in) From the control of the c		recommended pump deptit (mint)	25	25	
	Test Hole	Recommended pump rate			
2 Plastic 2 (Dewatering Well □ Dewatering Well	(I/min / GPM)	30	30	
	Observation and/or	Well production (I/min / GPM)	40	40	
	Monitoring Hole ☐ Alteration		50	50	
	(Construction)	Disinfected?	00		
	Abandoned, Insufficient Supply	Yes No	60	60	
Construction Record - Screen Outside	☐ Abandoned, Poor		ell Location		
Diameter (Plastic Galvanized Steel) Slot No	Depth (<i>m/ft</i>) Water Quality Mater Quality Abandoned, other,	Please provide a map below following	instructions on the	back.	
	specify			Ŋ	
2 Plastic 10 14			j	1	`
	Other, specify			•	
Water Details	Hole Diameter			Philippy (Philips	
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(m/ft) Gas Other, specify	From To (cm/in)	,	IOCHMAN	TOP	
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(m/ft) Gas Other, specify					
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(m/ft) Gas Other, specify Well Contractor and Well Techr		75			
(m/ft) Gas Other, specify Well Contractor and Well Techr Business Name of Well Contractor	Well Contractor's Licence No.		.a. á Í -)	
(m/ft) Gas Other, specify Well Contractor and Well Techr	Well Contractor's Licence No.	BH wasted 175 M	South of	Lockl	nart Rd
(m/ft) Gas Other, specify Well Contractor and Well Techr Business Name of Well Contractor Canadian Well Drilling	Well Contractor's Licence No. 7 0 7 5 Municipality	BH located 175 M			
Well Contractor and Well Techr Business Name of Well Contractor Canadian Well Drilling Business Address (Street Number/Name)	Well Contractor's Licence No. 7 ○ 7 5 Municipality Simc O €.	BH wasted 175 M			
Well Contractor and Well Techr Business Name of Well Contractor Canadian Well Drilling Business Address (Street Number/Name) Province Postal Code Business E-hail	Well Contractor's Licence No. 7 0 7 5 Municipality SIMCUE	Bit located 175 M Comments: 21.5 M East of Wes Well owner's Date Package Delivered	st curb o	1 25 S	ide Rd
Well Contractor and Well Techr Business Name of Well Contractor (and an Well Drilling Business Address (Street Number/Name) Province Postal Code Business E-mail Business E-mail Name of Well Technici	Well Contractor's Licence No. 7 0 7 5 Municipality SIMCUE	Bit located 175 M Comments: 21.5 M East of Wes	st curb o	n 25 S stry Use On	ide Ro
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Well Contractor and Well Techr Business Name of Well Contractor (and an Well Drilling Business Address (Street Number/Name) Province Postal Code Business E-mail Business E-mail Business E-mail A L I X O Business E-mail	Well Contractor's Licence No. 7 0 7 5 Municipality SiMCO C Address an (Last Name, First Name)	Bit located 175 M Comments: 2 1.5 M East of Wes Well owner's information package delivered Yes Date Work Completed	Minis Audit No	n 25 S stry Use On 1862	ide Rd V 215



0506E (2007/12)

Measurements recorded in:

Well Owner's Information

Ministry of the Environment

Metric

☑ 1mperial

Well Tag No. (Place Sticker and/or Print Below,

A135736

<u>.</u>					
Regulation	1 903 C	Ontario V	Vat	er Res	Record sources Act
ess				Well	Constructed ell Owner
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Lot		Concess	ION	******************************	***************************************
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generative.	***********				7
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Results of We		d Testin aw Down		R	ecovery
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at <i>(m/ft)</i>	2			2	
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nin / GPM)	4			4	
oing min	5		edi. Rege	5	
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e (I/min / GPM)	20			20	
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of west cu					

First Name	Last Name / Organi		OT OI	E-mail Address			_	Constructed ell Owner
Mailing Address (Street Number	/Name)	No control (Of Innisfil Municipality	Province	Postal Code		ne No. (inc.	area code)
2101 Innisti	1 Beach Ro	<u> </u>	Simoc	A ON	L951	A 1705	1986	3710
Well Location Address of Well Location (Street	Number/Name)	Т	ownship		Lot	Conces	sion	
3033 25 Side			Innisfil			231.030	•	•
County/District/Municipality	_	C	City/Town/Village			Province	Postal	Code
UTM Coordinates Zone , Easting	Simese		The isti	lot Number		Ontario Other		
NAD 8 3 1 7 6	55981491	2276	Simcoe			Ou let		
Overburden and Bedrock Ma	terials/Abandonmen			and the second s				
General Colour Most C	ommon Material	Oth	er Materials	Gene	ral Description	1	Dep From	oth (<i>m/ft</i>)
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PROWN SAMI	\	GRAVE	.1	LOOSE	*		2.5	5
BGRPY CIAV		SANI	Ď	CANCIPA	CIP	NISE	-	519"
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Donth Set of (==/fs)	Annular Space	ARCHITECTES CONTRACTOR TO SECURITION AND ASSESSED.	Velore Die	A STAN STAN STAN STAN STAN STAN STAN STA		ell Yield Testi	Mary Control of the C	ecovor.
Depth Set at (<i>m/ft</i>) From To	Type of Sealant Us (Material and Type		Volume Placed (m³/ft³)	After test of well yield, ☐ Clear and sand fi		Time Water I	evel Time	ecovery Water Level
0 16	Bentonite.	Lins	40 tabic Ft	Other, specify		(min) (m/t	t) (min)	(m/ft)
		<u> </u>		If pumping discontinue	d, give reason.	Level		
				Pump intake set at (n	n/ft)	2	2	
				Dumping rate (//wie /	CDM)	3	3	
Method of Construction		Well Us		Pumping rate (I/min /	GPIVI)	4	4	
☐ Cable Tool ☐ Diar☐ Rotary (Conventional) ☐ Jetti		☐ Commer	al 🔲 Dewatering	Duration of pumping		Transfer Comment		
☐ Rotary (Reverse) ☐ Drivi	ng Livestock	Test Hol		hrs + n		5	5	
☑ Boring ☐ Digg ☐ Air percussion	ing ☐ Irrigation ☐ Industrial	☐ Cooling	& Air Conditioning	Final water level end o	i pumping (<i>min)</i>	10	10	
Other, specify	Other, spe	cify		If flowing give rate (l/n	nin / GPM)	15	15	
	n Record - Casing	Depth (n(ft)	Status of Well			20	20	
Inside Open Hole OR Mater Diameter (Galvanized, Fibreglas	ss, Thickness		☐ Water Supply ☐ Replacement Well	Recommended pump	geptn (<i>m/π)</i>	25	25	
(cm/in) Concrete, Plastic, Ste	(Cironi)		Test Hole	Recommended pump	rate	30	30	
2" Plasfic	Sch 40 C	17	Recharge Well Dewatering Well	(I/min / GPM)				
			Observation and/or Monitoring Hole	Well production (I/min	/ GPM)	40	40	
	21.		Alteration	Disinfected?		50	50	
			(Construction) Abandoned,	Yes No		60	60	
Construction	n Record - Screen		Insufficient Supply Abandoned, Poor		Map of W	ell Location		
Outside Material Diameter (Plantic Columnia St	I Slot No. I	Depth (nt/ft)	Water Quality Abandoned, other,	Please provide a map	below following	instructions on t	ne back.	
(cm/in) (Plastic, Galvariized, St	Fro		Abandoned, other, specify				N	
2º Plastic	10 1	t 22	Other, specify		1. 1		1	`
					1 1		1	
Water	Details	Н	ole Diameter	14-37	7 🔯 📗			
Water found at Depth Kind of W	ater: ☐ Fresh ☐ Unte	sted Dept From	h (<i>m/ft</i>) Diameter					
(m/ft) ☐ Gas ☐ Other, Water found at Depth Kind of W	, , , , , , , , , , , , , , , , , , , ,			general de la company de la co	100		Millioneroeffice	
water found at Depth Kind of water $(m/ft) \square Gas \square Other$,		sted O	225 8"	Lockhar	TH 20		magazanana.	
Water found at Depth Kind of W		sted			1015			
(m/ft) Gas Other,					125			
Well Contra Business Name of Well Contracto	ictor and Well Techr	AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	ion Il Contractor's Licence No.		111			
Canadian Well [7		Rulas L. I II	7 M 15-	LLDI	. L L	l nu n
Business Address (Street Numbe	/Name)		nicipality	BH loca ted 11 Comments:	A I NOY	THET LA	- RAP	1
1243 HWY 27 Province Postal Code	·		imcoe	2M West of	west cu	ub of 25	Side K	.01
		Address			ackage Delivere	ed Na	nistry Use	Only
ON L O L 1 Bus. Telephone No. (inc. area code)	Name of Well Technic	an (Last Name, I	First Name)	information package		Audit N	D.	
7057189872	Archen	dui 0		delivered Date W	Y Y M M ork Completed	י וויין	z 155	726
Well Technician's Licence No. Signa	ture of Technician and	or Contractor Dat	e Submitted	Yes	1407		UG 27	2014
11 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11150		173 1 1 See 10 1 See 10 1	II IN INU INU INI	E TO KE	70 - 70 - 1 PRESERVED	THE REST LESS IN	A MARK

Ministry's Copy

Appendix E –

WATER BALANCE ANALYSIS



		N	ONTHLY ANI	D YEARLY WA	TER BALANCI	E COMPONEN	NTS							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	YEAR
c	Average Temperature: T (°C)	-7.7	-6.6	-2.1	5.6	12.3	17.9	20.8	19.7	15.3	8.7	2.7	-3.5	6.9
Potential Evapotranspiration Calculation	Heat Index: i=(T/5) ^{1.514}	0.00	0.00	0.00	1.19	3.91	6.90	8.66	7.97	5.44	2.31	0.39	0.00	36.8
Potential otranspira alculation	Unadjusted Daily Potential Evapotranspiration: U (mm)	0.0	0.0	0.0	25.2	59.0	88.5	104.1	98.1	74.7	40.6	11.5	0.0	501.7
P _C vapot Cal	Adjusting Factor for U (Latitude 44°)	0.81	0.82	1.02	1.12	1.26	1.28	1.29	1.20	1.04	0.95	0.81	0.77	-
ú	Adjusted Potential Evapotranspiration - PET (mm)	0.0	0.0	0.0	28.2	74.3	113.3	134.3	117.8	77.7	38.6	9.3	0.0	593.4
	Precipitation: P (mm)	82.5	61.8	58.1	62.2	82.4	84.8	77.2	89.9	94.0	77.5	88.9	73.6	932.9
	Adjusted Potential Evapotranspiration: PET (mm)	0.0	0.0	0.0	28.2	74.3	113.3	134.3	117.8	77.7	38.6	9.3	0.0	593.4
nents	P - PET	82.5	61.8	58.1	34.0	8.1	-28.5	-57.1	-27.9	16.3	38.9	79.6	73.6	339.5
odwc	Change in Soil Moisture Storage (mm)	0.0	0.0	0.0	0.0	0.0	-28.5	-57.1	-27.9	16.3	38.9	0.0	0.0	-
Pervious Components	Water Holding Capacity (max. 250 mm)	250.0	250.0	250.0	250.0	250.0	221.5	164.5	136.6	152.9	191.9	250.0	250.0	-
Pervic	Water Surplus Available for Infiltration or Runoff	82.5	61.8	58.1	34.0	8.1	0.0	0.0	0.0	0.0	0.0	21.5	73.6	339.5
	Potential Infiltration based on MOECC Infiltration Factor (mm)	66.0	49.4	46.5	27.2	6.4	0.0	0.0	0.0	0.0	0.0	17.2	58.9	271.6
	Potential Surface Water Runoff (mm)	16.5	12.4	11.6	6.8	1.6	0.0	0.0	0.0	0.0	0.0	4.3	14.7	67.9
ous	Precipitation: P (mm)							-						932.9
Impervious Components	Potential Evaporation: PE (mm), Assume 15%							139.9						
Co <u>m</u>	Potential Surface Water Runoff: P - PE (mm)							-						793.0

	PRE- AND POST-DEVELOPMENT WATER BALANCE (NO LOW IMPACT DEVELOPMENT MEASURES IN PLACE)										
		Total Land Area (m²)	Est. Fraction of Land	Est. Land Area (m²)	Runoff (m³/annum)	Infiltration (m ³ /annum)	% Runoff Change Pre to Post				
	Pervious Area	22200.0	97%	21534.0	1462.1	5848.4	601%				
Existing Land Use (Pre-Development)	Impervious Area	22200.0	3%	666.0	528.1	0.0	% Infiltration Change Pre to Post				
	TOTAL	-	100%	22200.0	1990.2	5848.4	36%				
	Pervious Area	22200.0	35%	7770.0	527.6	2110.3	Infiltration Required to Meet Pre-				
Proposed Land Use (Post-Development)	Seed Land Use Impervious Area (Estimated from "Concept Plan 9a")		65%	14430.0	11442.5	0.0	Development Conditions (m ³)				
	TOTAL	-	100%	22200.0	11970.0	2110.3	3738				

Notes

- 1. Both potential infiltration and surface water runoff are independent of temperature
- 2. Assumption is in January maximum soil moisture storage value is present (250mm)
- 3. Water Holding Capacity & Infiltration Factors taken from Table 3.1 of MOE SWMPDM, 2003
- 4. Average Temperature and Preciptation taken from Barrie WPCC between 1981 and 2010
- 5. Adjusting Factor for U based on Lorente, 1961

Infiltration Criteria

Topography Soils Cover

Site Description

Rolling Land - Average Slope 2.8 to 3.8 m/km
Open Sandy Loam
Woodland
Sum of Infiltration Factors

Infiltration Factor

0.2 0.4 0.2

Appendix F -

GROUNDWATER CHEMISTRY CERTIFICATES OF ANALYSIS





Final Report

C.O.C.: G85543 REPORT No. B19-37271

Rev. 1

Report To:

Central Earth Engineering Inc 647 Welham Rd, Unit 14, Barrie ON L4N 0B7 Canada

Attention: Alex Winkelmann

DATE RECEIVED: 18-Nov-19

DATE REPORTED: 27-Nov-19
SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

112 Commerce Park Drive Barrie ON L4N 8W8 Tel: 705-252-5743

Fax: 705-252-5746

JOB/PROJECT NO.: 893 & 911 Lockhart Rd, Innisfil

P.O. NUMBER: 19-1171A

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
Alkalinity (as CaCO3)	2	Holly Lane	SYL	19-Nov-19	A-ALK-03 (o)	SM 2320B
Cyanide	2	Kingston	US	19-Nov-19	A-CN-001 (k)	SM 4500CN
Colour	2	Holly Lane	LMG	20-Nov-19	A-COL-01 (o)	SM 2120C
Conductivity	2	Holly Lane	SYL	19-Nov-19	A-COND-02 (o)	SM 2510B
Anions	2	Holly Lane	LMG	22-Nov-19	A-IC-01 (o)	SM4110C
Nitrogen - Ammonia (N)	2	Kingston	TK	20-Nov-19	A-NH3-001 (k)	SM4500-NH3-H
o-Phosphorus (P)	2	Kingston	TK	20-Nov-19	A-o-PO4 K	PE4500-S
рН	2	Holly Lane	SYL	19-Nov-19	A-PH-01 (o)	SM 4500H
Turbidity	2	Holly Lane	LMG	20-Nov-19	A-TURB-01 (o)	SM 2130
Chromium (VI)	2	Holly Lane	LMG	26-Nov-19	D-CRVI-01 (o)	MOE E3056
Mercury	2	Holly Lane	PBK	20-Nov-19	D-HG-02 (o)	SM 3112 B
Metals - ICP-OES	2	Holly Lane	AHM	21-Nov-19	D-ICP-01 (o)	SM 3120
Metals - ICP-MS	2	Holly Lane	TPR	20-Nov-19	D-ICPMS-01 (o)	EPA 200.8
Calculation	2	Holly Lane	JGC	23-Nov-19	D-Ion Balance	Calc.

PWQO - Provincial Water Quality Objectives PWQO - Provincial Water Quality Objectives

R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an * Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie



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Fax: 705-252-5746

JOB/PROJECT NO.: 893 & 911 Lockhart Rd, Innisfil

P.O. NUMBER: 19-1171A

WATERWORKS NO.

	Client I.D.		BH 1 (un-	BH1 (filtered)	PWQO	
			filtered)		PWQO	
	Sample I.D).	B19-37271-1	B19-37271-2		
	Date Colle	cted	15-Nov-19	15-Nov-19		
Parameter	Units	R.L.				
pH @25°C	pH Units		8.02	8.00	8.5	
Conductivity @25°C	µmho/cm	1	508	509		
Alkalinity(CaCO3) to pH4.5	mg/L	5	202	199		
Hardness (as CaCO3)	μg/L	1000	571000	283000		
Cyanide (Free)	μg/L	5	< 5	< 5	5	
Chloride	mg/L	0.5	21.1	21.4		
Fluoride	mg/L	0.1	< 0.1	< 0.1		
Nitrite (N)	mg/L	0.1	< 0.1	< 0.1		
Nitrate (N)	mg/L	0.1	< 0.1	< 0.1		
Sulphate	mg/L	1	22	22		
Colour	TCU	2	< 2	< 2		
Turbidity	NTU	0.1	23.4	47.6		
Ammonia (N)-Total	mg/L	0.01	0.19	0.22		
o-Phosphate (P)	mg/L	0.002	0.171	0.144		
Calcium	μg/L	20	166000	64400		
Magnesium	μg/L	20	37900	29800		
Potassium	μg/L	100	2100	2000		
Sodium	μg/L	200	13100	13600		
Antimony	μg/L	0.1	0.2	< 0.1	20	
Arsenic	μg/L	0.1	1.9	1.5	5	
Barium	μg/L	1	134	98		
Beryllium	μg/L	0.1	< 0.1	< 0.1	11	
Boron	μg/L	5	21	20	200	

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Tel: 705-252-5743 Fax: 705-252-5746

JOB/PROJECT NO.: 893 & 911 Lockhart Rd, Innisfil

P.O. NUMBER: 19-1171A

WATERWORKS NO.

	Client I.D.		BH 1 (un-	BH1 (filtered)	PWQO
		_	filtered)	D40 07074 0	PWQO
	Sample I.I		B19-37271-1	B19-37271-2	
	Date Colle	ected	15-Nov-19	15-Nov-19	
Parameter	Units	R.L.			
Cadmium	μg/L	0.015	0.062	0.017	0.1
Chromium	μg/L	2	3	< 2	
Chromium (VI)	μg/L	1	< 1	< 1	1
Cobalt	μg/L	0.1	1.6	0.3	0.9
Copper	μg/L	2	12	14	5
Iron	μg/L	5	2200	210	300
Lead	μg/L	0.02	6.13	0.46	1
Mercury	μg/L	0.02	< 0.02	< 0.02	0.2
Manganese	μg/L	1	321	70	
Molybdenum	μg/L	0.1	0.4	0.7	40
Nickel	μg/L	0.2	7.7	5.1	25
Selenium	μg/L	1	< 1	< 1	100
Silver	μg/L	0.1	< 0.1	< 0.1	0.1
Thallium	μg/L	0.05	< 0.05	< 0.05	0.3
Uranium	μg/L	0.05	0.76	0.60	5
Vanadium	μg/L	0.1	3.1	0.6	6
Zinc	μg/L	5	21	8	20
Anion Sum	meq/L		5.09	5.04	
Cation Sum	meq/L		12.2	6.34	
% Difference	%		41.0	1 11.4 1	
Ion Ratio	AS/CS		0.418	0.795	
Sodium Adsorption Ratio	-		0.239	0.351	
TDS(ion sum calc.)	mg/L	1	386	273	
Conductivity (calc.)	µmho/cm		805	537	

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JOB/PROJECT NO.: 893 & 911 Lockhart Rd, Innisfil

P.O. NUMBER: 19-1171A

WATERWORKS NO.

	Client I.D.		BH 1 (un- filtered)	BH1 (filtered)		PW PWQO	QO
	Sample I.I) .	B19-37271-1	B19-37271-2		1 1140	
	Date Colle	ected	15-Nov-19	15-Nov-19			
Parameter	Units	R.L.					
TDS(calc.)/EC(actual)	-		0.760	0.537			
EC(calc.)/EC(actual)	-		1.58	1.06			
Langelier Index(25°C)	S.I.		1.09	0.666			

¹ Outside of 10% Acceptance Criteria

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² Revised report to add guidelines as per client request.



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P.O. NUMBER: 19-1171A

WATERWORKS NO.

Summary of Exceedances

Provincial Water Quality Objectives									
BH 1 (un-filtered)	Found Value	Limit							
Zinc (µg/L)	21	20							
Lead (µg/L)	6.13	1							
Iron (µg/L)	2200	300							
Copper (µg/L)	12	5							
Cobalt (µg/L)	1.6	0.9							
BH1 (filtered)	Found Value	Limit							
Copper (µg/L)	14	5							

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Appendix G -

ESGRA MAPPING FROM LSRCA



