





Environmental Assessments & Approvals

January 31, 2024

AEC 21-158

1000062217 Ontario Inc. 12 Trotter Court Barrie, ON L4N 5S4

Attention: Mr. David Seaman Project Manager

Re: D-5-4 Guideline Assessment Proposed Housing Development (Armstong Estates) 937045 Airport Road, Mansfield, ON Lot 11, Concession 7, Township of Mulmur, County of Dufferin

Dear Mr. Seaman:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to submit a Ministry of the Environment, Conservation and Park's (MECP's) D-5-4 Guideline assessment for the above-noted property. This work supports a proposed Draft Plan of Subdivision located on Lot 11, Concession 7 (Mansfield), in the Township of Mulmur, County of Dufferin. This report has been compiled to address comments provided by R.J. Burnside & Associates Limited (Burnside). Burnside has been retained by the Township of Mulmur (the "Township") to provide technical review comments for environmental issues related to planning submissions on behalf of the Township. Burnside has requested that a formal D-5-4 Guideline study be completed for the proposed development site.

Based on the results of this study, it is concluded that the environmental conditions at the Site will allow for at least 71 residential dwellings to be developed in compliance with the MECP's D-5-4 Guideline document without adversely impacting viable ground water resources within this Community.



If you have any questions or require additional information, feel free to contact the undersigned.

Yours truly, AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jackie Coughlin, B.A.Sc., P.Eng. Senior Environmental Engineer

M.A.Sc P.Eng. David Ke cheson

Senior Environmental Engineer

Attach:

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1.0 INTRODUCTION

Azimuth Environmental Consulting (Azimuth) was retained by 1000062217 Ontario Inc. (the "Client") to provide a sewage impact evaluation to support the creation of 71 new residential dwellings. The property on which the development is proposed is located at 937045 Airport Road in the Settlement of Mansfield, ON (the "Site") (Figures A and B¹). The Site exists on Part of Lot 11, Concession 7, Township of Mulmur, County of Dufferin.

The Ministry of the Environment, Conservation and Parks (MECP) D-5-4 Guidance² document will be used to provide this environment assessment. The D-5-4 Guideline was designed as a guide for land use planning authorities on how to decide whether on-site sewage systems are appropriate for a new development (*i.e.*, sub-surface sewage systems). It is our understanding that the Township of Mulmur (the "Township") endorses the use of this guideline for this type of assessment.

The remainder of this report presents the background information and provides the results of our evaluation and associated conclusions and recommendations.

1.1 Background

The Site consists of a 21.5 ha parcel of land and is located in the northeast quadrant of the County Road 17 and Airport Road intersection in Mansfield (Figure B). The Site is currently being utilized for agricultural purposes and is surrounding by residential, commercial and agricultural land uses.

A small ephemeral creek segment exists within the Site (Figure B). For the purpose of this presentation, the lands to the north of the creek corridor will be called the 'North Precinct' and the lands to the south of the creek corridor will be called the 'South Precinct'.

The Armstrong property is proposed to be subdivided into a number of lots/ units. The South Precinct is planned to house 28 two-bedroom semi-detached bungalows. The North Precinct will house 43 single family detached homes. The North Precinct will also contain a parkland parcel.

¹ Some figures and drawings are contained within Appendix A

² <u>https://www.ontario.ca/page/d-5-4-individual-site-sewage-systems-water-quality-impact-risk-assessment</u>



1.2 Regulatory Process

The D-5-4 Guideline lays out a three-step process. For clarity, it will be briefly overviewed below.

The first step is considered to be a minimum lot size assessment. The MECP suggests that if the development has lots which on average are greater than 1 hectare (ha) in size³; then there should be sufficient attenuative processes such that a formal hydrogeologic assessment is not required. The Armstrong Development has lot sizes smaller than 1 ha in size on average.

The second step addresses whether the development is "isolated". Specifically, the MECP states that where it can be demonstrated that the sewage effluent is hydrogeologically isolated from the existing or potential supply aquifer(s); then risk from the septic impacts for the development would be deemed low.

The D-5-4 Guidance document goes on to state that the consultant must "... evaluate the most probable groundwater receiver for sewage effluent ...". The local and regional geologic setting will be presented below. The geologic setting establishes the framework for the hydrogeologic setting which is also presented. It is our opinion that there is merit for this consideration. However, it has not been presented for this evaluation.

According to the D-5-4 Guidance document "... [w]here it cannot be demonstrated that the sewage effluent is hydrogeologically isolated from all existing or potential supply aquifers, a hydrogeologic study is required to assess the risk that the development's individual on-site systems will cause concentrations of nitrate-nitrogen in groundwater to exceed 10 mg/L, at the downgradient property boundary ...", (i.e., the third step).

This assessment will provide a predictive assessment based on this third option.

2.0 GEOLOGIC SETTING

The hydrogeologic setting for the proposed development is founded on the regional geology. By establishing the geologic setting, it will be possible to assess the hydrostratigraphic units present. The regional geology of the Nottawasaga watershed has been recently studied by the Ontario Geological Survey (OGS) and summarized in published literature including Mulligan *et al.* (2018). Mulligan *et al.* (2018) in their article indicate that "... detailed sedimentological analysis of these glaciolacustrine deposits will enhance understanding of the three-dimensional (3D) distribution and

³ Subject to several other requirements.



character of sediments within the shallow subsurface, ... information that is essential for future hydrogeological investigations in the region ...".

2.1 Regional Geology

2.1.1 Regional Geologic Overview

Much of the regional geology discussion will make reference to this recent OGS research initiative within the Nottawasaga River basin. However, the geologic profile beneath the Site and beyond, (as it pertains to the D-5-4 Guideline); consists of an upper sediment package overlying a regionally continuous aquitard layer called the Newmarket Till. Below this aquitard and primarily to the east of the Site are deeper sediments which provide a potable water supply for residential purposes. This deeper sediment package overlies a shale bedrock which is also extensively used for potable water supplies in Mulmur Township. The majority of the upper sediment package at the Site is unsaturated. A glaciolacustrine silt layer which lies immediately over the upper Newmarket Till is saturated; but does not provide an adequate resource for potable supply.

2.1.2 Detailed Regional Geology

According to Mulligan et al. (2018), "... eight stratigraphic units ... represent a record of



Figure 1 - Idealized Borehole Log

changing environmental conditions during deglaciation and exhibit strong controls on shallow groundwater flow in the region ...". The stratigraphic succession presented by Mulligan et al. (2018) begins with the Newmarket Till as a base unit which is identified as stratigraphic unit 1 (SU1). The Newmarket Till was "... locally overlain by iceproximal debris flow deposits (SU2). These glacial sediments are overlain by glaciolacustrine silt rhythmites (SU3) that pass upwards into deltaic sand (SU4) and channelized fluviodeltaic sand and gravel (SU5). Lying above the fluvial deposits is widespread interbedded glaciolactrine sands and silt (SU6), which coarsen up-section toward the ground surface. The succession is locally capped by glaciofluvio-deltaic (SU7) and younger fluvial (SU8) deposits ...", (Mulligan et al., 2018). The idealized stratigraphic log presented in Mulligan et al. (2018) is depicted to the left (Figure 1).



Not all of these stratigraphic units are present in the Mansfield area. At the Site, SU1, SU3 and SU4 are present. Mansfield exists on the flank of the Niagara Escarpment and the extreme western extent of the Mulligan *et al.* (2018) study area. However, the Mulligan *et al.* (2018) paper illustrates the interpreted glacial progression over a larger scale than their identified study area which incorporates the Mansfield area.

The Niagara Escarpment was created by differential erosion of thick successions of soft shales underlying more resist dolostones. The Niagara Escarpment is punctured by a



Figure 2 - Digital Elevation Map of the Mansfield Area

series of northeast trending re-entrant valleys that were incised by fluvial and glacial erosion (Straw 1968). The Mansfield area is situated between two of these more significant features that contribute to Boyne and Pine River valleys. These incised stream corridors are evident on the digital elevation mapping (DEM) shown above (Figure 2). The on-Site stream corridor in the southern portion of the property represents one of these more minor erosional features which also can be seen in the DEM mapping.

The main channel for the Pine River valley cuts across County Road 17 about 800 m west of the main intersection at Mansfield in a northeasterly direction and cuts across Airport Road about 500 m north of the main intersection. Thus the Site lies in close proximity to this re-entrant valley feature.

The Paleozoic bedrock surface is overlain by Quaternary sediments. These deposits



from Mulligan et al (2018) Figure 3 - Laurentide Ice Sheet (~16 kyrs)

across Southern Ontario are attributed primarily to the Wisconsin Episode. The early- to mid-Wisconsin Episode deposited the deeper sediment layers. During the late Wisconsin Episode, the Laurentide Ice Sheet advanced into the Mansfield area (see red dot on Figure 3) from the north and northeast and deposited the Newmarket Till. In fact, the Newmarket Till was deposited over most of Southern Ontario and measures over 60 m in thickness at some locations (Gerber, 1999).



During the early stages of ice recession, the margin of the Laurentide Ice Sheet thinned and became lobate (see Figure 3). Interlobate deposition allowed for thick accumulations of glaciofluvial and glaciolacustrine sediments forming the Oak Ridges Moraine (ORM) to the south of the Site between the Simcoe ice lobe and the Ontario ice lobe. However, a succession of shoreline features and associated glaciolacustrine and lacustrine deposits occurred in a series of lakes in the Nottawasaga watershed during the later phases of deglaciation.

The first of these lakes to develop north of the ORM was Glacial Lake Schomberg as



from Mulligan *et al* (2018) Figure 4 - Laurentide Ice Sheet (~15.6 kyrs)

meltwaters were dammed between the Niagara Escarpment to the west, the Simcoe ice lobe to the north and the ORM to the south (see Figure 4). Mulligan *et al.* (2018) assert "... [t]he overall fine-grained texture of SU3 suggests a low-energy, subaqueous (glaciolacustrine) depositional environment, consistent with an ice-marginal lake ...". Unit thicknesses logged along the Nottawasaga River were locally exceeding 12 m thick. The rhythmites were felt to

record annual deposition cycles, although other factors were also identified. Silt and clay couplets ranged from a few millimeters up to 4 cm thick. Near the top of the SU3, coarser-grained sediments are more abundant. Mulligan *et al.* (2018) explains that the "... gradational up-section textural changes combined with the consistency of northward paleocurrent directional indicators in sands within SU3 suggest continuous sedimentation patterns, consistent with gradual ice retreat from the Nottawasaga watershed.

There is a gradual transition from the silt and clay rhythmites with sand interbeds of SU3 into a thick unit of rippled, cross stratified, very fine- to fine-grained sand with silt interbeds comprising SU4.



from Mulligan et al (2018) Figure 5 - Laurentide Ice Sheet (~15 kyrs)

The "... [s]ubsequent retreat of the Simcoe ice lobe from the Niagara Escarpment in the north allowed waters of Lake Schomberg to partially drain and coalesce with those occupying the Lake Huron basin forming Lake Algonquin (see Figure 5). The expectation is that the Mansfield area was above the estimated ~260 metres above the mean sea level (masl) shoreline elevation for



the early Lake Algonquin water level. Over time this water elevation decreased to \sim 200 masl during the Kirkfield low; but then rebounded slowly to \sim 240 masl during the main Lake Algonquin period. In all cases, the reported surface water elevation of Lake Algonquin never approached the Mansfield topographic elevation.

2.2 Geologic Setting in Mansfield area

The regional geologic interpretation provides for a sound understanding of the depositional processes that have resulted in the local geologic setting. The information presented below is intended to focus on the local interpretation and reconcile the Site specific drilling information with that presented in the regional interpretation.

2.2.1 Sub-Regional Geologic Database Source

The evaluation of the Mansfield geologic setting will rely on a sub-provincial database called the Oak Ridges Moraine Groundwater Program (ORMGP, 2023). The development of this database began with a coalition of 14 government agencies in southern Ontario. More recently, consulting companies are working collaboratively to better understand and manage water resources. With the ORM as a central landscape feature, the program's database and interpretations stretch from the Halton and Nottawasaga Watersheds in the west to the Trent River in the east and reach from the shores of Lake Ontario northwards to beyond Lake Simcoe and the Kawartha Lakes.

The ORMGP has built upon an original geological interpretation of the ORM sediments undertaken during the 1990s by the Geological Survey of Canada (GSC). Between 2001 and 2010, five key phases of renewed geological interpretation have led to the development of interpreted digital geological layers across different parts of the ORMGP area. The focus has been on the unconsolidated glacial sediments that, in places, can extend around 200 m in thickness. In all cases, geological layers were developed using visual interpretation of well records on three dimensional dynamic cross-sections.

For all of the phases of the geological interpretation, key aspects of the work included expert interpretation of geologic data and data integration across the ORMGP study area. Geological 'picks' of the main regional geological layers are made at boreholes on cross sections. These are stored in the ORMGP database and used as the main input in the kriging or interpolation of the geological surfaces. Higher quality PQ cored wells, as well as consultant logged wells are evaluated first, followed by lower quality water wells from the provincial database (*i.e.*, MECP water well records). Three-dimensional digital geological contact lines are also used to constrain the interpolation of layers between boreholes. Geological contact lines are used to define layer pinch-outs, subglacial erosion on top of and through confining aquitards (*e.g.* tunnel channels), and to reflect



conditions where a well drilled into a layer provides evidence that the bottom of the layer exists at some depth below the well bottom ("pushdown").

The ORMGP database for the Mansfield area is illustrated below (Figure 6). Each of the dots represents a borehole log contained within the database. The orange circle near the central of the figure depicts the Mansfield crossroad. It is important to appreciate the size of the database being used for the geologic interpretation rendered by the ORMGP consortium.



from ORMGP (2023) Figure 6 - Geologic borehole database

The blue dots represent bedrock wells. The dark red dots represent overburden wells. Scattered within this database are other borehole logs (*ex.* MTO holes, *etc.*) that are presented as green dots on the figure.

The geological interpretation illustrates the importance of integrating all data types in the geologic/ hydrostratigraphic interpretation process. Effective database querying allows for the identification of complex patterns and correlations between the lithology and other hydrogeologic indicators (*e.g.*, well screen placement) helping to at least partly overcome data quality deficiencies in driller's logs.

Since 2010, several Source Water Protection studies have also seen consultants incorporate changes/ refinements to the ORMGP digital geological surfaces. Where



appropriate, these changes are now being incorporated into an updated geological framework. In addition to the above, the geological interpretation is continually evolving. With the addition of new wells (both from the MECP as well as other consultant BHs) to the database, geological interpretations can subtly change as new wells are reviewed and additional geological picks are incorporated into the database and used in re-interpretations.

2.2.2 Extent of the Newmarket Till

The first stratigraphic unit discussed by Mulligan *et al.* (2018) was the Newmarket Till. This regionally extensive aquitard separates the upper sediment package from the deeper sediment package which lies above the shale bedrock (*i.e.*, Georgian Bay Formation). An isopach map of this unit from the ORMGP database in the Nottawasaga watershed is shown below (Figure 7). The values on the map represent metres of formation thickness. The red dot on this map reflects the location of Mansfield. The black line represents the edge of the Niagara Escarpment.



from ORMGP (2023) Figure 7 - Newmarket Till Isopach

This isopach map illustrates the stratigraphic thickness of the Newmarket Till formation. A more regional representation is being provided before a more local segment is presented so that a better sense of the information at a local level can be construed. The same isopach of the Newmarket Till is presented below for the Mansfield area along with a map of the topographic surface of the Newmarket Till (Figures 8 and 9 [overleaf], respectively). Once again the values on the map represent metres of formation thickness. The isopach mapping indicates that there is a considerable thickness of the Newmarket Till in the general vicinity of the Site.





from ORMGP (2023) Figure 8 - Newmarket <u>Till</u> Isopach in Mansfield Area



from ORMGP (2023) Figure 9 - Newmarket Till Surface Elevation

To the west of the Site, this reach of the Pine River valley has cut through the overburden deposition down to the bedrock contact as it flows northeast (see Figures 15 and 16). This is one of the numerous re-entrant valleys cut into the Niagara Escarpment.



Mulligan *et al.* (2018) indicated that these stream corridors continued to provide fluvial sediments into the Nottawasaga River basin once the glacial lake levels had declined to the Lake Algonquin levels. The same is evident for the Boyne River valley south of Mansfield. Northeast of the Site in the next concession, the Newmarket Till is shown to locally thin east of the 7th Line. However, a more apt description would be to suggest that this thinning of the isopach is correlated to this reach of the Pine River valley.

The contour map of the upper Newmarket Till surface shows the surface topography in metres above mean sea level (Figure 9). The upper Newmarket Till contact map shows that this regional aquitard unit continues to the east throughout the study area. The Site drilling program illustrates a greater incline in the upper Newmarket Till at the eastern extent of the Site than that shown regionally (Figures 9 and 10 [below]). The contoured surface contact of the upper Newmarket Till is sloped to the east (*i.e.*, ENE - Figure 10). Therefore, ground water percolating vertically down in the upper sediment package to this aquitard would coalesce at the till contact and then flow laterally along the surface to the ENE.



Figure 10 - Till Contact Elevation

As noted above, the unit is absent within the Pine River corridor located west of the Site and traversing to the northeast. During the 2023 drilling program, the upper Newmarket Till was also shown to be lost toward the western extent of Site (Figure 10). This



unconformity is presumed to have resulted from the glacial Pine River corridor extended into the Site on the western and northwest limits of the property and partially scoured this feature from the original Site setting. However, this absence to the west is inconsequential to the regional integrity of the Newmarket Till unit beneath the Site and further east (*i.e.*, down gradient of the Site).

The loss of the entire overburden thickness to the west in the Pine River valley creates a sub-watershed boundary which is discussed in greater detail below (Section 3.2).

2.2.3 Extent of Glacial Lake Schomberg Unit (Upper Sediment Package - SU3) Overlying the Newmarket Till is the glacial Lake Schomberg deposition (Stratigraphic Unit 3 [SU3 - Mulligan *et al.*, 2018]). The surface contact of the glacial Lake Schomberg sediments is provided in Figure 11 (below). The surface elevation is shown in metres above the mean sea level and reflects the surface topography.



from ORMGP (2023) Figure 11- Glacial Lake Schomberg Surface Elevation

The ORMGP isopach of this sediment package shows that the surface "lows" in the upper Newmarket Till contact were filled by this glacial lake deposition and accounts in part for the isopach thicknesses where the upper Newmarket Till was thinned in the past (Figure 12 [overleaf]). The Newmarket Till is known to have been eroded/ scoured elsewhere in the province. Much more significant erosional features in the Newmarket Till contact are described by the Geological Survey of Canada (GSC) in their multi-year



investigation into the origins of the ORM (Russell *et al.*, 2002; Russell *et al.*, 2000; Pugin *et al.*, 1996; Sharpe *et al.*, 1996).



Figure 12 - Glacial Lake Schomberg Isopach Thickness in Mansfield Area

The 2023 drilling program indicates that the upper sediment package is thicker toward the east as the upper Newmarket Till declines in this direction. It is 14.3 m thick at MW105; but tends to be ~9 to 10 m thick over the eastern half of the Site. The creek valley cutting through the Armstrong property is 9 m deep at the eastern extent of the creek. The upper sediment package shallows to the west as it approaches the western terminus end of the upper Newmarket Till midway through the Site. The upper sediment package is ~5 m thick in this area of the Site.

The sediment package is estimated to be \sim 30 m thick where the upper Newmarket Till is absent on the western third of the Site. Materials were described as being a fine sand below the surficial sand unit and down to \sim 20 m depth. The expectation is that the glacial Lake Schomberg deposited materials in the former Pine River valley including the western portion of the Site. As the glacial lake retreated into the Nottawasaga Basin the Pine River has re-established its flow pathway and appears to have scoured any materials temporarily deposited in the current river alignment.

According to Mulligan *et al.* (2018) there is no evidence of unconformities that could be attributed to rapid changes in water level in the SU3 deposition (*i.e.*, glacial Lake



Schomberg). This has also prevented the identification of depositional differences between glacial Lake Schomberg sediments (SU3) and the early Lake Algonquin sediments (SU4).

Mulligan *et al.* (2018) do note that there was up-section increase in sand within SU3. This was attributed to the declining water level and/ or increasing influence of fluviodeltaic systems during gradual or stepwise water level fall from 300 masl (glacial Lake Schomberg) to below 250 masl (early Lake Algonquin) as ice withdrew from the Nottawasaga area. This upward coarsening was seen in the on-Site boreholes drilled to the Till surface.

The geologic descriptions provided from this literature review appear to accurately match the depositional environment that was encountered during the Peto MacCallum Limited (PML) field exploration program (2021) and the subsequent drilling program in 2023 (Section 2.3). According to the PML (2021) report, "... [b]elow the topsoil and/ or fill, a sand/silty sand/ sand and gravel unit was encountered in all boreholes ...", (page 6, Section 4.2.1, 3rd paragraph). The PML (2021) report goes on to state "... [b]elow the upper sand/silty sand/sand and gravel unit ... a sandy/silt/silt unit was encountered ..." (page 6, Section 4.2.1, 4th paragraph). An even finer soil was encountered below the silt unit being a sandy clayey silt/clayey silt/clay silt till unit which represents the Newmarket Till (page 7, Section 4.2.1, 1st paragraph). Thus, the vertical soil profile is considered to be downward fining as has been described above.

2.3 Supplemental 2023 Drilling Program

In May 2023, eleven (11) boreholes were advanced to various depths on the Site in order to better determine the extent of the Newmarket Till beneath the Site (Figure 10). Within the western third of the Site, the upper Newmarket Till was not encountered. Coincidentally, the drilling program commenced at MW103 which encountered the till unit and proceeded east in a clock-wise manner. Thus, the absence of the upper Newmarket Till was not revealed until the end of the drilling program. BH101 was bored to a depth of 18.9 metres below ground surface (*i.e.*, 282.6 masl) before the hole was terminated (Figure 10). The same general finding occurred at BH108 which was in proximity to MW1. A series of exploration holes at BH110 and BH111 stepped toward MW102 which had encountered the upper Newmarket Till at a depth of 4.6 metres below ground surface (*i.e.*, 304.1 masl). Neither of these final two holes encountered the upper Newmarket Till when drilled to 11.3 m depth (*i.e.*, <300 masl).

As noted above, the absence of the upper Newmarket Till locally in the western third of the Site was associated with the historical presence of the Pine River valley and its scouring of the upper Newmarket Till in this portion of the Site. It was interpreted that



the history Pine River valley scoured the Newmarket Till into the west and northwest portion of the Site.

The Newmarket Till was proven to be located on the Site in the central and eastern sections and the specific depths can be found in the Table A.

Borehole/Monitoring Well ID	Newmarket Till Contact (mbgs/ masl)
MW101	18.9 / 282.6 missing
MW102	4.6 / 304.1
MW103	10.9 / 303.6
MW104	12.2 / 297.8
MW105	14.5 / 295.4
MW106	4.6 / 306.5
MW107	9.1 / 300.5
MW108	14.3 / 299.2 missing
MW109	9.1 / 301.4
MW110	11.3 / 299.7 missing
MW111	11.3 / 298.2 missing

Table A: Newmarket Till Contact

Notes: mbgs - metres below ground surface masl - metres above the mean sea level

The other noticeable observation with the exploration holes that did not encounter the upper Newmarket Till is that the soils were dry throughout the profile. Moist to wet soil conditions were encountered immediately above the upper Newmarket Till (Appendix D).

2.4 Geologic Cross Sections

The ORMGP database permits the construction of representative cross-sections.



from ORMGP (2023) Figure 13 - West-East Cross Section Alignment



A long west to east cross section through the Site was constructed from 4th Line E through to Regional Road 13 and running parallel to the 10th Sideroad⁴ (see Figure 13 [above]).



from ORMGP (2023) Figure 14 - South-North Cross Section Alignment

The numbers shown on the graphic are the geologic data points in the vicinity of the cross section line. Similarly, a long north to south cross section through the Site was constructed from the 5^{th} Sideroad through to 15^{th} Sideroad and running parallel to Airport Road (see Figure 14).

The resulting W-E and S-N cross sections (Figures 15 & 16 - overleaf) are illustrated below and are based on the geological surfaces that have been interpolated from the borehole logs present throughout the Mansfield area.

Considerable expertise has gone into the selection of these geologic surfaces (Kassenaar *et al.*, 2003) and as highlighted previously. Thus the geologic information being presented is considered representative of the geologic setting. It is also

consistent with that encountered during the Site drilling programs. The cross sections illustrate the location of selected MECP water well records that exist in proximity to the section lines.

The ORMGP utilizes a standard naming convention which needs to be described for the Site setting and geologic presentation provided above. For the west-east cross-section, the bedrock contact is the basal layer shaded red (Figure 15 [above]). It represents the Paleozoic strata associated with the Niagara Escarpment (*i.e.*, Georgian Bay Formation). The cross section displays a dark green strata being described as the upper Newmarket Till. This is equivalent to the first stratigraphic unit described by Mulligan *et al.* (2018) or the SU1. Overlying this are three layers described as the Halton Till, Oak Ridges Moraine deposits and Undifferentiated Upper Sediments. For this Site, these layers represent the glacial Lake Schomberg deposition or the SU3 from Mulligan *et al.* (2018).

⁴ 10th Sideroad is also referred to as Regional Road 17 and/or County Road 17







The geologic model must retain all identified strata and therefore when specific units appear absent they are assigned an inconsequential thickness (*i.e.*, >0.1 m) which will not show up in the interpreted surfaces; but preserves the continuity of the geologic model. This accounts for the orange layer which is described as the *equivalent upper aquifer sediments* and the olive layer described as the *equivalent upper till*. In essence, borehole log describing a sandier material will be assign into the orange layer and finer grained sediments will be assigned into the olive layer.

A basal Quaternary unit is shown in the cross section illustrations and named the *equivalent lower aquitard* (*i.e.*, Scarborough Formation). This may represent the "slumped material" layer described by Mulligan *et al.* (2018) in the first stratigraphic unit or it could also represent the remnants of older sediments deposited during the early- and mid-Wisconsin glaciation. Intuitively, the same geologic sequencing is present in the south-north cross section (Figure 16 [above]).

Returning to the west-east cross section through the Site and paralleling the 10th Sideroad, there are several key findings presented in this illustration. As indicated previously, the Pine River exists just west of the Site and Airport Road. The river valley falls to northeast and this reach crosses Airport Road north of the Site. Given the absence of the Newmarket Till on the western area of the Site, it can be suggested that the Pine River historically scoured out the Newmarket Till and the lower sediment package as the glacial retreat commenced resulting in the loss of the Newmarket Till formation on the west and northwest area of the Site. The expectation is that the glacial Lake Schomberg then deposited the upper sediment package across the Site and into the Pine River valley over the next 2,000 to 3,000 years. Mulligan *et al.* (2018) noted that the Lake Schomberg glaciolacustrine deposition exceeded 12 m and infilled valleys present over the Newmarket Till surface.

Subsequent scouring of the Pine Valley re-entrant valley is indicated by Mulligan *et al.* (2018) by noting that "... [t]he thick packages of rippled and deformed sands of SU4 suggest relatively high rates of sediment supply, delivered by sediment-laden streams reworking glacial deposits along elevated ground to the south and west ...". In essence these stream corridors provided much of the SU4 sediments spread into the Nottawasaga basin.

The elevation drop into the Pine River valley in proximity to the Airport Road is shown to be more than 20 m. The cross section representation indicates that the Quaternary sediments have been removed in the river valley (Figure 16 [above]).



This is consistent with the fluvial deltaic contribution indicated by Mulligan *et al.* (2018) during the latter depositional stage of the SU3 and into SU4. Sediment laden flow into the Nottawasaga watershed was occurring as the glacial lake elevation declined from 300 masl to the early Algonquin Lake elevation below 250 masl. Mulligan *et al.* (2018) indicates that this fluvial contribution continues throughout the Late Wisconsin retreat as the waters drained to the Kirkfield low and later to the Stanley low.

As noted these re-entrant valley features were incised during and prior to the Quaternary (Straw, 1968; Kor and Cowell, 1998; Eyles, 2012); but served as fluvial corridors during the final glacial retreat. As such, the overburden sediments have been scoured from these Escarpment drainage features. In terms of the Site condition, it represents a flow divide between up gradient lands and those down gradient of the river valley. As a result, the Site is at a sub-watershed boundary location. The Site receives no up gradient ground water contribution in the upper sediment package/ units which overlie the upper Newmarket Till. This accounts for the absence of a water table condition or the minimal saturated soil condition reported by PML while monitoring the upper sediment sequence (PML, 2022).

A two kilometer geologic section through Mansfield along the 10th Sideroad is presented in Figure 17 [overleaf]. The section shows the presence of the upper Newmarket Till along the eastern half of the section. The upper sediment package exists above this unit as encountered in the Site drilling program. However, the upper Newmarket Till was lost just east of Airport Road on the Site. Along 10th Sideroad, the till sheet extends further west than that seen on the Site.

West of the Site, the sediments are thought to consist of diamict beds created by the glacier retreat and/ or glaciofluvial/ glaciolacustrine deposition during the Lake Schomberg period.

The west to east cross section also shows a relatively thick Newmarket Till aquitard lying beneath the Site and extending to the east. As shown above with the isopach mapping, this sequence thins to the east; but then thickens further east. The aquitard feature is regionally continuous to the east of the Site. The Site drilling shows the till sequence was encountered between ~5 m below ground surface (mbgs) to the west and up to ~14 mbgs along the eastern property boundary.

Beneath the intact till sequence is a deeper sedimentary package described in the regional cross-sections of consisting of three units being the Thorncliffe, Sunnybrook and Scarborough formations (see Figures 15 and 16 [above]). These have been called the lower sediment package and were deposited before that last Wisconsin advance.





Figure 17 - West to East Section along 10th Sideroad



The same general condition appears to exist at the Boyne River as depicted in the south to north cross section. The overburden soils appear to have been scoured from the stream alignment. The sequence generally shows a till cap (*i.e.*, Newmarket Till - SU1 - Mulligan *et al.* [2018]) that overlies a lower sediment package deposited from the early-to mid-Wisconsin glaciation. This basal unit marginally thickens to the south.

Beyond the Site to the north, the Pine River valley is encountered and illustrates the same general profile. The river appears to have scoured out the overburden sediment in this depiction and also suggests that a portion of the bedrock was plucked or scoured (Figure 16). The Newmarket Till is draped into the river valley from both directions; but pinches out at the base of the river valley. This occurs because the till overrode the reentrant valleys when deposited; but then was scoured during the glacial retreat.

3.0 HYDROGEOLOGIC SETTING

3.1 Regional Hydrogeologic Setting

The regional hydrogeologic setting is controlled in a large part by the Niagara Escarpment. The Niagara Escarpment is a layered limestone feature with ground water flow primarily through laterally continuous bedding plane fractures. The ground water being discharged from the Niagara Escarpment via these conductive bedding plane fractures is typically masked at the face where a weathered/ eroded/ stress relieved talus feature facilitates vertical interconnection and discharge from the base of the feature. Where conductive overburden soils exist immediately adjacent to the escarpment, the ground water discharge from the bedrock feature will flow into these units. Where the soil permeability is insufficient to convey the waters, a head water stream will exist.

Flow from the Niagara Escarpment is not uniformly consistent along its lateral face. This accounts for the sporadic nature of the headwater streams associated with this contribution. Since the ground water is conveyed along various lateral bedding plane fractures, it will emerge at different horizons from the Niagara Escarpment. As such, bedrock contributions can also occur away from the upper edge of the escarpment owing to the presence of layered limestone as it exits into the Nottawasaga watershed.

3.2 Local Hydrogeologic Setting

The Site is situated immediately down gradient of the Pine River valley as depicted in the west to east cross section above and presented in the digital elevation map below (Figures 15, 17 and 18 [overleaf]).





from ORMGP (2023) Figure 18- Digital Elevation Map - 10 m contour interval

Two critical elements occur in the Mansfield area. First, the Pine River valley effectively intercepts any up gradient ground water flow in the overburden sediments, especially the upper sediment package. The western edge of the Site therefore exists at a sub-watershed boundary. In fact, the Boyne River valley to the south and the Pine River valley to the north pinch together west of the 5th Line which limits any ability of ground water flow in the upper reaches of the overburden profile to be conveyed eastward.

As indicated above, the Site is believed to exist in proximity to the shoreline of glacial Lake Schomberg. Mulligan *et al.* (2018) indicated that the water surface was believed to exist at ~300 masl. The Site drilling program reported an upper sediment package of between 5 to 14 m thick for a Site with a surface elevation of ~310 masl. The loss of the upper Newmarket Till part way through the Site limits any ground water flow in the upper sediment package east of this unconformity. West of this unconformity, the overburden thickness is quite deep (*i.e.*, >30 m). The Site drilling program showed that the sediments west of the unconformity are dry to at least 18 m depth and likely much deeper.

As noted above, the Pine River valley intercept at the bedrock contact does not connect to the upper sediment package. The upper Newmarket Till separates the upper sediment package from the lower sediment package and the lower sediment package is draped over the bedrock. Thus, base flow from the escarpment discharge is routed to the lower sediment package below the upper Newmarket Till.



At the Site, infiltrating precipitation will percolate vertical down to the first impervious boundary which is considered to be the upper Newmarket Till east of the unconformity and coalesces in the unit immediately above this barrier. At some distance down gradient of the Pine River valley, a permanent water table condition may develop in the conductive surficial sediments of the upper sediment package; but it would exist down gradient of the Site. This was illustrated in the ground water monitoring data collected at the Site.

3.2.1 Ground Water Elevation Data

The PML (2021) report provided information on the ground water regime encountered at the Site during and following the field investigations. In their report, PML provides a summary table which is presented below (Table B - overleaf) with some supplemental information. The Site data indicated that there were a couple of dry wells higher in the upper sediment profile. It is now known that several of these wells were located west of the unconformity. The water table is anticipated to be more than 30 mbgs in this area of the Site.

The PML data (2021) also indicates that the ground water encountered east of the unconformity was below the more granular materials in all but one borehole (*i.e.*, MW5). The water elevation for MW7 is taken in the till unit and thus represents a potentiometric value as opposed to the overlying water table condition.

PML have also conducted monthly water level monitoring on the ground water wells that they installed in 2021. In their letter report entitled "Ground Water Level Monitoring - Proposed Residential Development - 937045 Airport Road, Mansfield, Ontario" and dated July 18, 2022; monthly ground water measurements from May 2021 to May 2022 were provided as summarized in Table C (overleaf).

The underlying till unit "perches" the water table condition in the silt unit of the upper sediment package. However, the limited infiltration at this headwater location results in a minimal saturated soil condition.

In lower permeability units, the topography of the soils dictates the water table setting and it is anticipated that this would be true for this Site. Infiltrating ground waters following the path of least resistance will drain vertically down through the granular materials and into the basal silt unit above the upper Newmarket Till. The till unit limits further vertical percolation and "perches" the water in the basal silt unit which then drains according to the topographic relief of the till contact which slopes to the northeast (see Figures 9 and 10 - above).



Table B:Ground Water Monitoring Data

Borehole	Elevation of	Elevation of	First Strike	Upon	Elevation of	Water Leve	el Elevation
ID	sandy unit base	silty unit base	during drilling	completion of	monitoring	20-May-21	11-Jun-21
	(mASL)	(mASL)	(mASL)	augering	well base	(mASL)	(mASL)
				(mASL)	(mASL)		
1	310.3	<306.7	No water	No water	307.2	<307.2	<307.2
2	309.9	<306.3	No water	No water	306.8	<306.8	<306.8
3	<305.6		No water	No water			
4	307.2	<304.3	307.8	No water			
5	303.7	<302.7	304.6	304.9	303.1	305.0	304.9
6	304.3	301.4	303.7	303.3			
7	302.7	302.7	303.3	307.2	300.4	303.1	302.8
8	304.4	300.9	303.5	305.3	302.4	302.7	302.7
9	309.3	<306.4	308.3	No water			
10	307.6	<304.0	307.4	306.2	304.4	306.3	306.2
11	307.0	<302.6	304.5	303.6	303.0	304.5	304.3
12	305.1	299.0	305.7	No water	301.3	302.3	302.2

Borehole	Ground	Elevation of						Wate	er Level Elev	ation					
ID	Elevation	monitoring	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
	(mASL)	well base	(mASL)	(mASL)	(mASL)	(mASL)	(mASL)	(mASL)	(mASL)						
		(mASL)													
1	313.20	307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2	<307.2
2	312.80	306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8	<306.8
5	309.20	303.1	305.0	304.9	304.7	304.2	304.7	304.7	304.8	305.1	305.0	304.8	305.0	305.2	305.0
7	304.05	300.4	303.1	302.8	303.3	302.8	302.9	303.0	303.1	303.1	303.1	302.9	302.9	303.1	303.1
8	309.85	302.4	302.7	302.7	302.6	302.5	302.4	302.5	302.5	302.5	302.6	302.5	302.5	303.8	302.7
10	310.50	304.4	306.3	306.2	306.0	306.0	306.1	305.8	305.6	305.2	305.6	305.9	305.9	306.1	306.2
11	309.05	303.0	304.5	304.3	304.1	304.3	304.0	304.1	304.3	304.1	304.3	304.3	304.4	304.5	304.5
12	308.00	301.3	302.3	302.2	302.0	301.9	301.8	301.8	301.9	301.8	302.0	302.4	302.3	302.4	302.2

 Table C1:
 Ground Water Monitoring Data - Elevations

 Table C2:
 Ground Water Monitoring Data - Depth to Water

Borehole	Ground	Depth of						W	ater Level De	pth					
ID	Elevation	monitoring	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
	(mASL)	well base	(mbgl)	(mbgl)	(mbgl)	(mbgl)	(mbgl)	(mbgl)	(mbgl)						
		(mbgl)													
1	313.20	6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0
2	312.80	6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0	>6.0
5	309.20	6.1	4.2	4.3	4.5	5.0	4.5	4.5	4.4	4.1	4.2	4.4	4.2	4.0	4.2
7	304.05	3.7	1.0	1.3	0.8	1.3	1.2	1.1	1.0	1.0	1.0	1.2	1.2	1.0	1.0
8	309.85	7.5	7.2	7.2	7.3	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.4	6.1	7.2
10	310.50	6.1	4.2	4.3	4.5	4.5	4.4	4.7	4.9	5.3	4.9	4.6	4.6	4.4	4.3
11	309.05	6.1	4.6	4.8	5.0	4.8	5.1	5.0	4.8	5.0	4.8	4.8	4.7	4.6	4.6
12	308.00	6.7	5.7	5.8	6.0	6.1	6.2	6.2	6.1	6.2	6.0	5.6	5.7	5.6	5.8



The ground water monitoring data reinforces the hydrogeologic model presented above. The infiltrating precipitation percolates to depth and wets the basal silt unit. This wetted condition does not change substantially throughout the year. Thus, no seasonality was observed in the collected data (Appendix E). This likely occurs because the depth of the basal silt unit is sufficiently deep enough to mitigate evapotranspiration influences and there is no substantial lateral recharge from up gradient source(s). At the up gradient subwatershed boundary the wetted condition is limited.

3.2.2 2023 Supplemental Drilling Ground Water Elevation Data

Seven (7) additional monitoring wells were installed as part of the 2023 drilling program (Figure 10). The initial water level data for these new monitoring wells is presented in Table D (below). The monitoring results are similar to the findings presented in the PML (2021) report.

Borehole/	Ground	Depth to	Depth of	Wat	epth	
Monitoring	Monitoring Elevation		Monitoring	Jun-23	Jul-23	Aug-23
Well ID	(masl)	Contact	Well Base	(mbgs/	(mbgs	(mbgs/
		(mbgs/	(mbgs/	masl)	masl)	masl)
		masl)	masl)			
102		4.6	4.6	4.3	-	4.5
	308.7	304.1	304.1	304.4		304.2
103		10.7	10.6	>10.6	-	>10.6
	314.5	303.8	303.9	<303.9		<303.9
104		12.2	11.4	7.8	7.8	7.8
	310.0	297.8	298.6	302.2	302.2	302.2
105		14.3	14.6	8.1	8.1	8.2
	309.9	295.6	295.3	301.8	301.8	301.7
106		4.6	4.8	4.4	-	4.6
	311.1	306.5	306.3	306.7		306.5
107		9.1	9.3	5.8	5.9	6.0
	309.6	300.5	300.3	303.8	303.7	303.6
109		9.1	9.1	4.6	4.7	4.8
	310.5	301.4	301.4	305.9	305.8	305.7

 Table D:
 2023 Supplemental Drilling Ground Water Data

The water elevation data reaffirms the conceptual geologic setting. The upper sediment package east of the unconformity possesses a limited degree of saturation since it represents a subwatershed divide. A water table condition is absent immediately east of this unconformity and is minimally saturated further east of the divide.



A pressure transducer was installed in November 2022 to monitor the water table condition in the upper sediment package. The transducer was instrumented to record water pressure in MW5 on a five minute frequency and the saturated condition has been monitored for the past year (Figure 19 [below]). The purpose of the detailed monitoring was to determine whether regional storm events, the Spring freshet or other significant climatic events resulted in a response that would not be seen during routine monthly monitoring.



Figure 19 - Pressure Transducer Monitoring Data

As anticipated, the detailed water level monitoring did not reveal short-term temporal influences which would alter the original interpretation of the data. A small seasonal increase occurs over the Spring freshet; but it was not deemed to be significant. With a better understanding of the local geologic setting, the interpretation of the water level monitoring data is more evident and reflects the headwater condition present at the Site.

3.2.3 Ground Water Flow

The PML (2021) report estimated the lateral hydraulic conductivity of the three soil units which were described in the soil profile at the Site (Table E - [overleaf]). These estimates were based on grain size analyses; but should provide a "ball park" estimate of the unit properties. Any in-situ testing of the unsaturated soils would tend to over-



estimate the bulk hydraulic properties since it would be more representative of a wetting curve condition.

Soil Description	Estimated	"T" - Time
	Hydraulic	(min/cm)
	Conductivity	
	(m/s)	
Sand Unit	10^{-6} to 10^{-7}	12 to 20
Silt Unit	10^{-7} to 10^{-8}	20 to 50
Till Unit	10^{-9} to 10^{-10}	>50

Table E: Permeability Estimate

The slope of the upper Newmarket Till surface provides the lateral hydraulic gradient for the ground water movement. The relative slope of the till surface as kriged from the borehole data should be reasonably accurate for these purposes. Using the elevation data presented in Figure 10 yields a surface slope of ~ 0.0275 m/m and translates to average linear velocity of $9x10^{-9}$ m/s or ~ 0.3 m/a. At this estimated rate, the ground water movement is limited and accounts for the basal saturation since the soils are not rapidly draining in the direction of flow.

The low ground water flow rate is also reflected in the seasonal flow of the adjacent creek which cuts through the Site. The creek's base elevation at the outflow location from the Site is reported to be ~297 masl. If the ground surface at the Site in the vicinity of MW12 (*i.e.*, adjacent to the creek corridor) is ~308 masl; then the till contact will be about ~299 masl based on the borehole log provided in the PML (2021) report. This till surface elevation is equal to or above the creek's base elevation at the outflow from the Site (*i.e.*, ~297 masl).

The Site monitoring data suggests that the saturated condition persists year round in the silt unit (PML, 2022). Thus, flow into the creek from the adjacent silt soils should occur year round given the elevation data; but the creek is deemed to be dry over the majority of the year. In reality, seepage into the stream corridor is likely occurring; but at a very low rate which does not support a "flowing" condition as inferred in the above-noted flow calculation.

An interpreted regional water table map is illustrated below (Figure 20 - overleaf). This kriged surface is based on the boreholes showed in Figure 20 and larger stream corridors present/ mapped on the landscape. The borehole database is selected by using borehole information from locations that are less than 20 m in depth. As can be seen, two shallow



water wells are denoted near the Airport Road and 10th Sideroad intersection which will be discussed in greater detail in Section 3.3 (below).



 $\begin{array}{l} {\rm from \ ORMGP\ (2023)} \\ {\rm Figure\ 20\ -\ Water\ Table\ Contour\ Map} \end{array}$

The topography of the Pine River valley has been imposed on this water table interpretation and this influence is seen in the contouring immediately northwest of the Site. This makes sense from a hydrogeologic perspective and depresses the water table condition owing to this sub-watershed divide. However, the topography of creek corridor on the Site does not appear to be imposed on this depiction. The expectation is that the creek corridor should have some local influence.

The purpose of presenting this regional perspective is to gain an understanding of the direction of the regional flow regime in which the Site resides. Thus, the regional ground water trend toward the northeast is important in this context as opposed to the specific water table elevation results.

The water table condition in this regional depiction is roughly 10 m lower than that observed using the Site ground water monitoring wells. This occurs because of the influence of the upper Newmarket Till and possibly the low permeability of the basal silt unit which will "mound" the water table.



The regional ground water flow is shown to be northeast of the Site. The water table elevation reflects the regional Newmarket Till topography (Figure 9) which controls the shallow ground water at the Site and beyond. As is illustrated on Figure 20, there are no shallow boreholes down gradient of the Site for an appreciable distance. This does not mean that there are no boreholes. As illustrated on Figure 6, there are many boreholes; but few that are shallow in nature due to the limited ground water resource.

The interpreted shallow ground water flow based on Site specific readings is presented on Figure 21 (overleaf). In proximity to the unconformity, there is no saturated condition. Soils were noted to be moist immediately above the upper Newmarket Till contact; but a saturated water table condition was not encountered.

East of the unconformity, a water table condition was measured in the upper sediment package immediately above the till contact. As noted above, finer-grained soils were predominant just above the upper Newmarket Till contact.

The shallow ground water flow east of the unconformity is easterly. There is an expectation that localized flow into the on-Site creek would occur from both sides of the creek valley. It is possible that all of the shallow ground water flow in the South Precinct flows to the creek.

3.3 Water Well Data

3.3.1 Water Well Survey

A door-to-door well survey was conducted in early July. The residences identified in Figure 22 were surveyed as part of this effort. Where no direct contact was made, a letter requesting information was left at the residence. In total, five (5) residence responses were received. No shallow wells were found in this survey.

Information provided by one resident revealed the existence of the "Mansfield Water Works By-law (No.: 25-2010)" which requires mandatory municipal hookup to the potable water supply of all buildings within the Community of Mansfield⁵. The By-law provided the need to eventually hook-up to the municipal water works by 2020 (*i.e.*, Part 4 of the By-law).

When initially introduced, the Municipality reportedly required that residents to abandon their private well when arranging for the municipal hook-up. One respondent acknowledged they had filled their drilled well with sand on their property in order to comply with that municipal requirements at that time.

⁵ <u>https://mulmur.ca/content/live/mansfield-water/25-2010-consolidated-mansfield-waterworks-by-law-1.pdf</u>




Figure 21 - Shallow Ground Water Flow Regime





Figure 22 - Water Well Survey Parcels



Based on this information, it is our impression that all properties within the Community of Mansfield are likely to be municipally serviced.

3.3.2 MECP Water Well Records

The known MECP water wells for the Mansfield area were evaluated to assess the potential to influence down gradient wells as a result of the Site development. Our evaluation found 72 water wells in the nine Township lots surrounding the Site location (Figure 23 - below). The MECP water wells existing in Lots 10, 11 and 12 within Concessions 6, 7 and 8 were compiled. This collection of water wells extend well beyond the 500 m radius that had been advocated for the assessment.



from WWIS database (2023) Figure 23 - MECP Water Wells

Of the 72 water wells compiled (Appendix B), 14 well records were identified as abandoned wells and have a gray colouring on Figure 23. Of the remaining 58 water wells, 23 were identified as bedrock wells and have an orange colouring on Figure 23. The remaining 35 water wells were constructed in the overburden.

As highlighted above, a disproportionate number of the bedrock wells were found to the west of the Site where the overburden sediments thin toward the brow of the Niagara Escarpment. Only two bedrock wells exist to the east (*i.e.*, Concession 8) and four were located to the south (*i.e.*, Lot 10, Concession 7). The remaining 17 bedrock water wells



exist to the west in Concession 6. These water wells were not considered to be significant for the water table discussion at the Site.

Finally of the 35 overburden water wells identified within the search area, it is noted that 27 wells had a depth greater than 20 m and have a yellow colouring on Figure 23. These wells were considered to collect a potable supply within a deeper confined aquifer system which lies beneath the upper Newmarket Till. Eight overburden wells were reported to have been constructed shallower than 20 m depth and have a light blue colouring on Figure 23. These wells are tabulated below.

Well ID	Distance from	Direction	Water	Pumping	Drilling
	Site centroid	from Site	Bearing Zone	Rate	Date
	(m)	centroid	(mbgl)	(L/min)	
17-00766	399	SW	3.7	4.5	Oct-61
17-02588	656	NW	6.4	1.1	Aug-79
17-00767	326	SW	8.7	0.5	Nov-61
17-02494	1,915	E	9.1	9.1	Aug-78
17-00739	598	SW	13.4	2.3	Jan-64
17-03120	1,665	SE	14.0	9.1	Aug-84
17-05058	2,477	Е	18.6	31.8	Aug-97
17-02015	2,404	SE	18.7	9.1	Nov-75

Table F:Shallow Water Well Records

Four of these eight shallow wells exist a significant distance east of the Site and would not be influenced by the Site development in any significant manner. Similarly, two of these shallow wells (*e.g.*, 17-02588 & 17-00739) are considered to be offset from the Site and tangential to the shallow ground water flow at the Site. These wells would not be influenced by the Site development (Figure 23).

The remaining two wells are considered to be situated on the historical lots existing along 10^{th} Sideroad east of Airport Road. The sketches on the water well records would suggest these wells are within a couple of residential lots of the intersection on either side of the road.

Given the construction dates in 1961, these wells are relatively old and were used prior to the municipal servicing of the Community. The water well record (WRR) No.: 17-00766 was drilled in 1961 to increase the depth of an existing well from 3.7 mbgl to 4.5 mbgl. However, a sandy clay unit was encountered at the base of the existing well and therefore the operation only created a reservoir for the existing well. With a till contact at 3.7 mbgl (~307.3 masl), it is interpreted that this well location is up gradient in terms of the till contact topography (Figure 10). Any effluent discharge from the proposed development



would vertically percolate to a greater depth. Ground water movement upslope to this well location is not anticipated given the upper Newmarket Till topography.

In contrast and as presented above, WWR No.: 17-00767 encountered a downward fining stratigraphy. A sandy clay unit was encountered from 4.9 mbgl (~306.1 masl) to the well base at 8.7 mbgl. Water was encountered in the sandy clay unit starting at 7.0 mbgl. The results mirror the findings from the PML (2021) and Azimuth (2023) field investigations and attest to the consistency of the hydrogeologic setting over decades.

The reader is also cautioned in reviewing this water well record to correctly interpret the information presented (Appendix B). It is known that only a limited pumping rate can be sustained from the upper sediment package in a "sandy clay" unit. Thus, it is our opinion that the information presented should be interpreted to mean that 50 gallons were extracted from the well over an 8 hour test period which translates to a pumping rate of 0.5 L/min. This rate is in keeping with the other hydrogeologic data presented.

Finally, the inability to collect ground water from the silt unit in the upper sediment package was also observed when attempting to capture water quality samples from the existing Site monitoring well network (see Section 3.4).

The residences along the 10th Sideroad are considered to be up gradient of the Site given the surface slope of the upper Newmarket Till unit (Figures 9 and 10). Ground water flow in the saturated silt unit is limited. This is substantiated by the dry creek conditions present throughout the majority of the year as highlighted above. The potential for influence from the Site development on the surrounding residences is unlikely given the environmental setting.

The MECP literature recommends that a potable water well yield should be 13.7 L/min at a minimum to be considered a viable potable water supply (MECP, 2016⁶). As presented in Table F (above), only one of the eight shallow overburden wells meets this standard. Furthermore, most of these reported well yields are significantly under this water quantity threshold. This data attests to the inadequacy of the upper sediment package providing a viable residential water supply in the vicinity of the Mansfield community. In fact, the absence of a viable water supply in the upper sediment package accounts for the fact that most water wells within the provincial database have been constructed into the deeper overburden sediments below the Newmarket Till or the underlying shale bedrock.

⁶ D-5-5 Guideline - Section 4.3.2 <u>https://www.ontario.ca/page/d-5-5-private-wells-water-supply-assessment</u>



According to the Township, all residences along the 10th Sideroad are connected to the municipal supply. This makes sense; especially if the residence had originally relied upon the shallow water table condition. The shallow water table condition does not provide a viable water resource for potable supply given its orientation at the edge of the Pine River valley and the loss of the upper permeable horizon to the west owing to the depositional circumstances affecting the Mansfield area.

The geologic and hydrogeologic information presented above illustrate that the upper sediment package (*i.e.*, silt unit) is not a viable ground water supply for potable use in the Community of Mansfield as defined by MECP guidance (*i.e.*, D-5-5 Guideline).

3.4 Ground Water Chemistry Data

The D-5-4 Guideline requires that the background nitrate concentration be determined and the source(s) of the background nitrate concentration. This has been completed for the Site and included both inorganic and isotopic evaluation of the Site ground water condition.

3.4.1 Inorganic Ground Water Chemistry Data

All ground water monitoring wells capable of yielding a volumetric sample have been collected and evaluated for an inorganic suite of parameters (Table G - [overleaf]). At several monitoring well locations, inorganic parameters have been collected on several occasions. The westernmost monitoring wells which encountered the upper Newmarket Till did not yield a sufficient sample volume (*i.e.*, MW102, MW103 and MW106).

In general, the ground water samples contain a considerable quantity of suspended solids which would further impair the potable water quality. A sample from MW10 which was allowed to sit; resulted in half the volume collected in a sampling bottle being composed of sediment/ "fines". As noted in Table G, turbidity measurements were typically above 10,000 NTU.

Only two of the original wells (*i.e.*, MW7 & MW10) were sampled during the PML (2021) Site investigation because an insufficient quantity of water existed in most of the monitoring wells at the Site. While not all of the PML (2021) wells were constructed to the upper Newmarket Till contact; it does show that there was a limited ground water regime in the upper sediment package. In addition, the monitoring wells once evacuated/ purged did not readily flow back into the well screens such that a sample could be collected.

The background nitrate concentration distribution measured across the Site is discussed below (Section 3.4.3).



Table G: Inorganic Ground Water Sampling Results

8	Client ID [.]		Stream	Stream	MW 11	MW 11	MW 11	MW 11	MW 12	MW 12	MW 12	MW 12	MW5	MW5	MW 5	MW 5	MW7	MW7	MW 7	MW 8
	Cilent ID.		22 009116 1	22 012727 2	22 009114 1	22 012522 4	22 016745 1	22 010994 5	22 009114 2 1	22 012522 5	22 016745 2	22 010994 6	22 22080 2	22 25405 1	22 012522 1	22 010994 1	21 17064 1	22 22090 2	22 010994 2	22 012522 2 1
	Sample ID:		21 Apr 22	5 lup 22	21 Apr 22	23-013532-4	7 101 22	2 Aug 22	23-000114-2 2	9 Jup 22	7 10143-2	2 Aug 22	14 Oct 22	22-33403-1	23-013532-1	2 Aug 22	11 Jun 21	14 Oct 22	2 Aug 22	23-013532-2 Z
-	Date Collected:		21-Apt-23	5-Juli-23	21-Apt-23	0-JUII-23	7-Jul-23	2-Aug-23	21-Apt-23	6-JUII-23	7-Jui-23	2-Aug-23	14-001-22	29-IN0V-22	0-JUII-23	Z-Aug-23	TT-JUII-2 T	14-00I-22	2-Aug-23	6-JUII-23
Parameter	Units	R.L.																		
Alkalinity(CaCO3) to pH4.5	mg/L	5	253	279	220	232		215	226	236		225			238	219			322	194
Bicarbonate (as CaCO3)	mg/L	5	253	279	220			215	226			225				219			322	
Carbonate (as CaCO3)	mg/L	5	<5	<5	<5			<5	<5			<5				<5			<5	
Hydroxide	mg/L	5	<5	<5	<5			<5	<5			<5				<5			<5	
pH @25°C	pH units		8.1	7.9	8.1	8.0		7.9	8.0	8.0		7.7			8.1	7.4	7.8		7.6	8.0
Conductivity @25°C	µmho/cm	1	1080	596	478	496		455	573	572		537			528	514			778	541
Colour	TCU	2	11	4	<2	<2		<2	<2	<2		<2			3	3			<2	<2
Turbidity	NTU	0.1	12	144	57400	22300		3170	22300	9010		13100			26800	17600			18900	949
Promido	mall	0.1	<0.4	<0.4	<0.4	0.4		<0.4	<0.4	0.4		<0.4			04	<0.4			<0.4	0.0
Elugrido	mg/L	0.4	-0.4	-0.4	-0.4	<0.1		-0.4	<0.1	0.4		-0.4			<0.4	-0.4			-0.4	<0.4
	iiig/L	0.1	<0.1 101	<0.1	-0.1	<0.1	E A	<0.1	~0.1	0.1	7 7	~0.1		7.0	-0.1	<0.1 5.2			<0.1 54.2	10.7
Chioride	mg/L	0.5	191	20.7	4.1	4.0	5.4	4.0	0.0	0.9	1.1	1.3		7.9	4.0	5.2			54.2	10.7
Nitrate (N)	mg/L	0.05	0.1	0.8	7.1	0.3	0.3	0.8	14.1	13.6	13.5	13.3	18.0	17.2	11.2	11.3	1.0	2.3	2.8	17.5
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05			<0.05	0.48	<0.05		< 0.05	<0.05
Sulphate	mg/L	1	16	13	6	6	6	6	13	15	13	9		8	8	7			11	14
BOD ₅	mg/L	3	<3	<3	<3	<3		<3	<3	<3		<3			<3	<3			<3	3
Phosphorus (Total)	mg/L	0.01	0.03	0.21	0.02	0.02		0.02	0.03	0.02		0.01			0.02	0.09	0.08		0.02	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	0.5	0.8	0.2	0.1		0.2	0.2	0.2		0.1			0.2	0.8			0.2	0.2
Ammonia (N)-Total (NH3+NH4)	ma/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	0.06	< 0.05		< 0.05			< 0.05	< 0.05			< 0.05	< 0.05
Ammonia (N)-unionized	ma/L	0.01				< 0.01				< 0.01					< 0.01					< 0.01
o-Phosphate (P)	mg/l	0.002	0.009	0.111	0.010	< 0.002		< 0.002	0.012	0.007		< 0.002			0.002	0.004			0.007	0.029
Dissolved Organic Carbon	mg/L	0.2	1.9	4.0	0.9	27		2.6	1.0	27		2.3			2.6	28			2.6	2.6
	mg/L		1.9	0	0.9	2.1		2.0		2.1		2.5			2.0	12			2.0	2.0
	m=#	0.00	24	29	004	200		9	-0			070			070	13	405		9	270
naidness (as CaCO3)	mg/L	0.02	288	2/5	264	260		243	200	258		2/2			2/2	205	435		401	2/8
Auminum	mg/L	0.01	0.073	0.05	0.059	0.04		0.04	0.104	0.04		0.04			0.04	0.04	0.07		0.06	0.04
Aluminum (Total)	mg/L	0.01															0.84			
Barium	mg/L	0.001	0.016	0.022	0.019	0.02		0.019	0.021	0.023		0.017			0.026	0.029			0.026	0.031
Boron	mg/L	0.005	0.012	0.006	0.013	0.009		0.006	0.009	0.006		0.005			<0.005	0.006	0.01		0.008	0.006
Calcium	mg/L	0.02	102	96	92	91		85	87	83		91			92	90			124	91
Iron	mg/L	0.005	<0.005	< 0.005	<0.005	<0.005		< 0.005	0.061	<0.005		< 0.005			< 0.005	< 0.005	0.809		<0.005	< 0.005
Magnesium	mg/L	0.02	8	9	8	8		7	12	13		11			10	10			22	13
Manganese	ma/L	0.001	0.072	0.027	< 0.001	< 0.001		< 0.001	0.003	< 0.001		< 0.001			0.001	0.064			0.117	0.001
Potassium	mg/l	0.1	1.4	1.2	0.5	0.7		0.4	0.6	0.9		0.2			1.1	1			1.2	1
Silica	mg/L	0.02	3.3	61	72	7.3		4 7	11.2	12.0		6.5			77	51			82	10.1
Sodium	mg/L	0.02	113	19	1	1.0			19	20		3			2	2			12	2
Streptium	mg/L	0.001	0.20	0.16	0.15	0.14		0.13	0.15	0.18		0.13			0.12	0.12			0.24	0.15
Suonuum	iiig/L	0.001	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.10		<0.05			<0.05	<0.05			<0.05	<0.15
	mg/L	0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05			<0.05	<0.05			<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005		<0.005			<0.005	<0.005			<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005		<0.005			0.006	0.007	0.062		<0.005	0.007
Antimony	mg/L	0.0001	0.0002	0.0005	0.0001	<0.0001		0.0002	0.0003	0.0001		0.0002			0.0001	0.0003	0.0005		0.0002	0.0002
Arsenic	mg/L	0.0001	0.0002	0.0001	<0.0001	0.0001		<0.0001	0.0002	0.0002		0.0002			<0.0001	0.0001	0.0002		0.0001	0.0001
Beryllium	mg/L	0.002															< 0.002			
Cadmium	mg/L	0.000015	<0.000015	<0.000015	< 0.000015	< 0.000015		<0.000015	<0.000015	<0.000015		< 0.000015			<0.000015	<0.000015	0.00011		0.000017	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	0.001	< 0.001		< 0.001	< 0.001	<0.001		< 0.001			<0.001	< 0.001	0.002		< 0.001	0.001
Chromium (VI)	mg/L	0.001															<0.001			
Cobalt	mg/L	0.0001															0.0004			
Copper	ma/L	0.0001	0.001	0.0008	0.0005	0.0004		0.0004	0.0006	0.0004		0.0004			0.0005	0.0009	0.0054		0.0007	0.0008
Lead	ma/l	0.00002	0.00004	< 0.00002	< 0.00002	<0.00002		< 0.00002	0.00011	0.00006		< 0.00002			< 0.00002	< 0.00002	0.00056		< 0.00002	0.00004
Mercury	mg/L	0 00002	2.00004	2.00002	2.00002	2.00002		2.00002		2.00000		2.00002			2.00002	1.00002	<0.00002		2.00002	
Molybdenum	mg/L	0.00002	0 0002	<0.0001	<0.0001	<0.0001		<0.0001	0.0003	0 0003		<0.0001			0 0001	0.0001	0 0004		0.0003	0.0001
Nickel	mg/L	0.0001	0.0002	0.0001	<0.0001	<0.0001		<0.0001	<0.0000	<0.0000		<0.0001			<0.0001	0.0001	0.0004		0.0000	0.0001
Solonium	ma/l	0.0002	<0.0003	<0.0009	-0.0002	-0.0002		-0.0002	<0.0002	-0.0002		-0.0002			-0.0002	<0.0003	<0.0004		<0.000	<0.0003
Silver	m=/	0.001	<0.001	<0.001	<0.001	<0.001		<0.001	-0.001	~0.001		<0.001			<0.001	<0.001	-0.0001		<0.001	<0.001
	iiig/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	-0.0001		<0.0001			<0.0001	<0.0001	0.0005		<0.0001	<0.0001
	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	~0.00005	~0.00005		<0.00005			<0.00005	<0.00005	~0.00005		~0.00005	~0.00005
lungsten	mg/L	0.01	0.0005						0.00105			0.0005			0.000		<0.01			
Uranium	mg/L	0.00005	0.00025	0.0002	0.00012	0.00011		0.0001	0.00103	0.00212		0.00028			0.00015	0.00014	0.00037		0.00042	0.0002
Vanadium	mg/L	0.0001	0.0002	0.0005	0.0003	0.0003		0.0003	0.0006	0.0005		0.0004			0.0003	0.0003	0.0013		0.0004	0.0005
Zirconium	mg/L	0.003															0.003			
TDS (Calc. from Cond.)	mg/L	3				257				297					273					280
Anion Sum	meq/L		10.8	6.7	5.1	5.4		5.0	6.1	6.2		5.8			5.9	5.5			8.4	5.7
Cation Sum	meg/L		10.7	6.3	5.3	5.3		4.9	6.2	6.0		5.6			5.6	5.4			8.6	5.7
% Difference	%		0.3%	2.7%	2%	1%		113%	1%	1%		209%			3%	106%			102%	1%
Ion Batio	-		101 000%	106 000%	96%	102%		102%	98%	103%		104%			1 1	10			10	1.0
Sodium Adsorption Patio	-		2.90	0.49	0.03	0.03		0.04	0.51	0.53		0.09			0.05	0.05			0.25	0.05
TDS (Ion Sum Cale)	- ma/l	1	600	335	300	280		264	300	230		315			310	200			420	325
	iiig/L	'	000		300	200		204	500			315			310	290			429	0.6
Docalc.)/EC(actual)	-		0.5	007	0.6	U.6		0.6	0.6	0.6		0.6			0.6	0.6			0.6	0.0
Conductivity Calc	µmno/cm		1080	607	498	502		4/4	585	581		548			542	522			/94	561
Conductivity Calc / Conductivity						1.01				1.02					1.03					1.04
Langelier Index(25°C)	-		1.0	0.9	0.9	0.9		0.7	0.8	0.8		0.6			1.0	0.3			0.8	0.8
Saturation pH (25°C)	-		7.1		7.1	7.1		7.2	7.2	7.2		7.1			7.1	7.2			6.9	7.2

-019884-3
-Aug-23
191
191
<5
<5
7.6
F73
573
<2
34600
<0.4
<0.1
14.8
19.5
<0.05
17
<3
0.01
0.2
<0.05
0.004
29
10
13
285
0.06
0.034
0.006
93
<0.005
-0.000
10 004
<0.001
0.8
7.0
2
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Table G: Inorganic Ground Water Sampling Results

8	Client ID:		MA/10	MAV10	MA/10	MM/ 10	MAX 10	MM/ 104	MAX 104	MA/ 104	MM/ 105	MAV 105	MW/ 105	MM/ 107	MA/ 107	MM/ 107	MM/ 100	MM/ 100	MM/ 100
	Client ID:		IVIVVIU	IVIVVTU	IVIVVTU	IVIVV TO		10100 104	10100 104	10100 104	10100 105	1010 105	10100 105	10107			10100 109	10100 109	10100 109
	Sample ID:		21-17964-2	22-32089-1	22-35405-2	23-013532-3	23-019884-4	23-013532-6	23-016745-3	23-019884-7	23-013532-7	23-016745-4	23-019884-8	23-013532-8	23-016745-5	23-019884-9	23-013532-9	23-016745-6	23-019884-10
	Date Collected:		11-Jun-21	14-Oct-22	29-Nov-22	8-Jun-23	2-Aug-23	8-Jun-23	7-Jul-23	2-Aug-23	8-Jun-23	7-Jul-23	2-Aug-23	8-Jun-23	7-Jul-23	2-Aug-23	8-Jun-23	7-Jul-23	2-Aug-23
Parameter	Units	R.L.						1			İ					Ì			
Alkalinity(CaCO3) to pH4.5	ma/l	5				295	285	215		207	223		223	253		251	283		277
Picarbonato (as CaCO3)	mg/L	5					285			207			223			251			277
Bicalbonate (as CaCOS)	ilig/L	5					200			201			225			201			211
Carbonate (as CaCO3)	mg/L	5					<0			<0			<>			<0			<0
Hydroxide	mg/L	5					<5	1		<5			<5			<5			<5
pH @25°C	pH units		8.0			8.0	7.8	8.0		7.7	8.0		7.8	8.0		7.7	8.0		7.8
Conductivity @25°C	umho/cm	1				733	826	572		537	643		628	750		754	895		979
Colour	ТСШ	2				<2	<2	<2		<2	<2		<2	<2		<2	<2		<2
T	NTU	-				20000	7550	24700		40500	47700		4000	40000		40000	42000		40000
Turbialty	NIU	0.1				32600	7550	31700		16500	47700		4000	13300		12800	13900		10800
Bromide	mg/L	0.4				0.4	<0.4	0.4		<0.4	0.4		<0.4	<0.4		<0.4	0.4		<0.4
Fluoride	mg/L	0.1				<0.1	<0.1	<0.1		<0.1	<0.1		<0.1	<0.1		<0.1	<0.1		<0.1
Chloride	mg/L	0.5			137	57.7	84.3	7.2	7.6	7.3	14.8	15.6	16.3	80	90.2	87.8	88.9	108	108
Nitrate (N)	ma/l	0.05	13.6	14.6	11.1	2.8	4.1	19.7	20.6	17.6	17.4	17.5	18.9	3.2	2.7	2.4	7.1	6.5	6.4
Nitrito (N)	mg/L	0.05	<0.05			<0.05	<0.05	<0.05		<0.05	<0.05		<0.05	<0.05		<0.05	<0.05		0.14
	ilig/L	0.03	-0.05			-0.05	-0.03	-0.03		-0.03	-0.03		-0.03	-0.03		-0.03	-0.00		0.14
Sulphate	mg/L	1			14	10	10	0	0	1	31		21	10	9	0	20	50	55
BOD ₅	mg/L	3				<3	<3	<3		<3	<3		<3	<3		<3	<3		<3
Phosphorus (Total)	mg/L	0.01	6.95			0.01	0.02	0.01		0.02	0.02		0.02	0.02		0.01	0.02		0.01
Total Kieldahl Nitrogen	ma/l	0.1				0.3	0.3	0.1		0.2	0.2		0.2	0.1		0.1	0.3		0.3
Ammonia (NI)-Total (NIU2+NIU4)		0.05				<0.05	<0.0	<0.05		<0.05	<0.05		<0.05	<0.05		<0.05	<0.05		<0.05
	iiig/L	0.05				~0.05	~0.05	-0.05		~0.05	-0.05		~0.05	~0.05		~0.05	~0.05		~0.05
Ammonia (N)-unionized	mg/L	0.01				<0.01		<0.01			<0.01			<0.01			<0.01		
o-Phosphate (P)	mg/L	0.002				< 0.002	0.004	< 0.002		0.003	0.005		< 0.002	< 0.002		0.004	< 0.002		0.019
Dissolved Organic Carbon	mg/L	0.2				1.5	2.6	2.3		2.1	2.2		3.3	1.0		4.0	1.4		3.4
COD	ma/L	5			T	<5	9	<5		12	<5		12	<5		7	<5		14
Hardness (as CaCO3)		0.02	336			265	288	289		269	311		312	257		246	200		318
Aluminum		0.02	0.05			200	0.05	0.04		0.05	0.05		0.06	0.04		0.04	0.04		0.06
	iiig/L	0.01	0.05			0.04	0.05	0.04		0.05	0.05		0.06	0.04		0.04	0.04		0.06
Auminum (Total)	mg/L	0.01	23.4																
Barium	mg/L	0.001				0.025	0.032	0.024		0.023	0.044		0.037	0.052		0.041	0.085		0.068
Boron	mg/L	0.005	0.065			0.084	0.147	0.012		0.01	0.008		0.007	0.007		0.008	0.03		0.033
Calcium	ma/l	0.02				90	99	101		94	102		103	85		81	96		102
Iron	mg/L	0.005	44.7			<0.005	<0.005	<0.005		<0.005	<0.005		<0.005	<0.005		<0.005	<0.005		0.06
	ilig/L	0.005	44.7			<0.003	<0.003	<0.005		<0.005	<0.005		<0.005	<0.005		<0.005	<0.005		0.00
Magnesium	mg/L	0.02				10	10	9		9	14		13	11		11	15		15
Manganese	mg/L	0.001				<0.001	<0.001	0.002		0.001	0.006		0.001	0.001		<0.001	0.009		0.007
Potassium	mg/L	0.1				2	1.8	0.8		0.7	1.3		0.7	1.1		0.7	3.1		1.8
Silica	ma/L	0.02				5.9	3.9	7.7		5.2	9.8		6.5	9.1		6.1	8.8		6.8
Sodium	ma/l	0.2				46	64	4		4	11		5	59		62	71		86
Strontium	mg/L	0.001				0.17	0.19	0.14		0.14	0.19		0.17	0.15		0.14	0.20		0.20
Strontum	mg/L	0.001				0.17	0.16	0.14		0.14	0.10		0.17	0.15		0.14	0.20		0.20
Tin	mg/L	0.05				<0.05	<0.05	< 0.05		<0.05	<0.05		<0.05	<0.05		<0.05	<0.05		<0.05
Titanium	mg/L	0.005				< 0.005	< 0.005	< 0.005		< 0.005	< 0.005		< 0.005	<0.005		< 0.005	< 0.005		<0.005
Zinc	mg/L	0.005	0.102			< 0.005	< 0.005	< 0.005		< 0.005	< 0.005		< 0.005	< 0.005		< 0.005	< 0.005		<0.005
Antimony	ma/l	0.0001	< 0.0001			0.0001	0.0002	< 0.0001		0.0003	< 0.0001		0.0001	< 0.0001		0.0003	0.0001		0.0002
Arsenic	ma/l	0.0001	0,0006			<0.0001	<0.0001	<0.0001		<0.0001	0.0001		0.0001	0.0001		0.0001	0.0002		0.0002
Dendliver	mg/L	0.0001	<0.0000			-0.0001	-0.0001	-0.0001		-0.0001	0.0001		0.0001	0.0001		0.0001	0.0002		0.0002
Beryllum	mg/L	0.002	<0.002																
Cadmium	mg/L	0.000015	0.000042			<0.000015	<0.000015	<0.000015		< 0.000015	<0.000015		<0.000015	<0.000015		<0.000015	<0.000015		<0.000015
Chromium	mg/L	0.001	0.003			<0.001	<0.001	< 0.001		<0.001	< 0.001		0.001	0.001		0.001	<0.001		0.001
Chromium (VI)	mg/L	0.001	0.001																
Cobalt	ma/L	0.0001	0.002																
Copper		0.0001	0.0067			0 0009	0 0008	0.0003		0 0003	0 0004		0 0004	0 0002		0 0009	0.0005		0 0005
Load		0.0000	0.0007			<0.0003	<0.0000	<0.0000		<0.0000	<0.0004		<0.0004	<0.0002		<0.0003	<0.00000		0.0005
Leau	iiig/L	0.00002	0.0021			~0.00002	~0.00002	~0.00002		~0.00002	~0.00002		~0.00002	~0.00002		~0.00002	~0.00002		0.00005
wercury	mg/L	0.00002	0.00004																
Molybdenum	mg/L	0.0001	<0.0001			0.0001	0.0001	0.0015		0.0009	0.0009		0.0003	0.0002		< 0.0001	0.0009		0.0004
Nickel	mg/L	0.0002	0.0035			0.0004	0.0003	< 0.0002		< 0.0002	0.0002		< 0.0002	< 0.0002		< 0.0002	0.0003		0.0003
Selenium	ma/L	0.001	<0.0001			< 0.001	< 0.001	< 0.001		< 0.001	0.001		< 0.001	< 0.001		< 0.001	0.002		0.002
Silver	ma/l	0.0001	< 0.0001			< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		<0.0001	<0.0001		< 0.0001	< 0.0001		<0.0001
Thallium		0.00005	<0.00005			<0.00005	<0.00005	<0.00005		<0.00005	<0.00005		<0.00005	<0.00005		<0.00005	<0.00005		<0.0001
Tuesetee	iiig/L	0.00005	-0.00005			-0.00005	-0.00005	-0.00005		-0.00005	-0.00005		-0.00005	~0.00005		-0.00005	-0.00005		-0.00005
rungsten	mg/L	0.01	<0.01																
Uranium	mg/L	0.00005	0.00021			0.00016	0.00014	0.0003		0.00028	0.00277		0.00061	0.00064		0.00022	0.00062		0.00181
Vanadium	mg/L	0.0001	0.0044			0.0003	0.0003	0.0003		0.0003	0.0003		0.0004	0.0004		0.0004	0.0003		0.0005
Zirconium	mg/L	0.003	0.036																
TDS (Calc from Cond.)	ma/l	3				382		297			334			302			474		
														0.02			-,- ,		
																			10.5
Anion Sum	meq/L					8.0	8.6	6.1		5.7	6.8		6.7	7.8		7.8	9.3		10.2
Cation Sum	meq/L					7.4	8.6	6.0		5.6	6.7		6.5	7.7		7.7	9.2		10.2
% Difference	%					4%	7%	1%		153%	0.4%		163.0%	0.1%		102.0%	0.5%		5%
Ion Ratio	-					11	1 0	10		10	10		10	10		10	10		10
Sodium Adsorption Patio						1.00	1.64	0.10		0.11	0.26		0.12	1 61		1 72	1.0		2 10
	-					1.23	1.04	0.10		0.11	0.20		0.13	1.01		1.73	1.00		2.10
IDS (ION SUM Calc)	mg/L	1				406	459	346		323	385		3//	412		411	503		562
TDS(calc.)/EC(actual)	-					0.6	0.6	0.6		0.6	0.6		0.6	0.5		0.5	0.6		0.6
Conductivity Calc	µmho/cm					726	829	588		553	655		644	754		757	890		984
Conductivity Calc / Conductivity						0.991		1.03			1.02			1.01			0.994		
Langelier Index(25°C)	-					10	0.7	0.0		0.5	0.0		07	0.0		0.6	10		07
Saturation pH (25°C)	-					7.0										3.0	7.0		3.7
Gaturation pri (20 C)	1 -	1		1	1	7.0	7.0	'I (.1		7.2		1	1.1	7.1	1	(.2	1.0		1.0



In 2021, MW7 and MW10 were sampled. Both results report elevated metal constituents, which was assumed to represent sediment entrapment in the ground water samples. For example, the iron concentration in the MW10 sample was reported to be 44.7 mg/L. This value suggests the water sample was quite turbid since it suggests the iron concentration is well above the saturation limit for ground water alone. Similarly, an elevated manganese concentration was noted for the MW7 sample among other minor metal constituents which is also indicative of sediment entrainment. However, neither would influence the nitrate concentration present in the samples.

Since then Azimuth has collected numerous samples including the newest monitoring wells constructed in 2023. In general, the major ion chemistry indicates a calcium carbonate geochemical signature which is indicative of the host geology. Magnesium is present from 10% to 20%. A minor halite signature is evident in down gradient wells and represents up to 35% of the major ion total. This is attributed to a road salt influence at this headwater location.

3.4.2 Nitrate Fertilizer Use

The agricultural field was fertilized on May 5, 2023. A fertilizer mixture of three products was applied to the field being:

• pelletized urea product (46-0-0) ⁷	199.26 lbs/acre;
• pelletized mono ammonium phosphate (11-52-0)	25.92 lbs/acre;
• pelletized potassium-magnesium sulfate (0-0-21)	122.85 lbs/acre
	348.03 lbs/acre

This same formulation was used the previous two years and applied on May 20, 2021 and May 9, 2022. In total, \sim 1,000 kg/a of nitrogen as N is applied across the agricultural fields for each of these applications. In comparison, the proposed residential development would discharge roughly half of this annual loading rate (*i.e.*, 519 kg/a).

In general, the applied phosphate and potassium volumes will be sorbed onto the upper topsoil where root uptake will occur. In contrast, the nitrogen is not as readily sorbed and thus a portion will percolate with the rainwater deeper into the soil profile. This accounts for the elevated nitrate concentrations detected in the monitoring wells across the Site. The urea base product is also nitrified as it percolates vertically through the soil profile. As a result, the dominant nitrogen species detected in the ground water is nitrate.

⁷ The values in parenthesis represent the percent of nitrogen, phosphorus and potassium present in the product.



3.4.3 Nitrate Ground Water Chemistry Data

An elevated nitrate concentration is evident in the shallow ground water collected from the upper sediment package. Nitrate is the dominant nitrogen species present based on the water quality sampling results (see Table G). The ground water quality data is summarized below (Table H). The elevated nitrate concentration measured across the Site is attributed to agricultural inputs as is presented in Section 3.4.4.

Sampling Location NO' as N (mg/L) MW5	Table II Ground Wa	
MW5 (mg/L) MW5 18.0 November 2022 17.2 June 2023 11.2 August 2023 11.3 MW8 11.3 June 2023 10.7 August 2023 16.7 August 2023 14.8 MW10 14.8 June 2021 13.6 October 2022 14.6 November 2022 11.1 June 2023 2.8 August 2023 4.1 MW11 1 April 2023 6.3 July 2023 5.4 August 2023 6.3 July 2023 6.3 MW12 1 April 2023 13.6 July 2023 13.6 July 2023 13.6 July 2023 13.7 July 2023 13.6 July 2023 13.6 July 2023 13.7 July 2023 17.6 MW105 1 July 2023<	Sampling Location	NO ³ as N
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July 2023 2.7 August 2023 2.4	June 2023	3.2
August 2023 2.4	July 2023	2.7
	August 2023	2.4

 Table H
 Ground Water Nitrate Data



Sampling Location	NO ³ as N
	(mg/L)
MW109	
June 2023	7.1
July 2023	6.5
August 2023	6.4
MW7 - Newmarket Till	
June 2021	1.6
October 2022	2.3
August 2023	2.8

 Table H
 Ground Water Nitrate Data

The nitrate concentrations appear to be consistent at sampling locations over time. The difference in the MW10 data is likely due to the presence of the ground water pedestal which was avoided in the 2022 agricultural year and presumable with the agricultural application in this area in the Spring of 2023. This situation would also be reflected in the MW109 sampling data. This finding is significant since the nitrate concentration is rapidly depleted when fertilizer applications are curtailed in this corner of the agricultural field. However, the nitrate attenuation could require a couple of years to fully dissipate as seen in the deeper MW109 results from 2023.

Similarly, the lower nitrate concentration at MW107 is considered to reflect the up gradient boundary of the agricultural field adjacent to 10^{th} Sideroad. The same would be true for those monitoring wells located close to the up gradient edge of an agricultural field (*i.e.*, MW11).

The water quality results are important to the evaluation of the hydrogeologic setting. The water quality in the upper Newmarket Till unit does not appear to be experiencing downward percolation of the elevated nitrate waters. The consistent sample results of the nitrate concentration at $\sim 2 \text{ mg/L}$ as N at MW7 are much lower than those concentrations reported in the overlying silt unit of the upper sediment package (see Table G).

Agricultural pursuits in the Mansfield vicinity have been present for over a century. This time should be more than sufficient to permit percolation of the elevated nitrate waters vertically down into the upper Newmarket Till unit even with a low hydraulic conductivity value. The absence of the elevated nitrate concentration in the upper Newmarket Till unit indicates that other factors are in play with this environmental setting. Denitrification is most likely occurring in the till since anaerobic conditions could exist in this aquitard, along with access to labile organic carbon (Robertson *et al.*, 1996; Rodvang & Simpkins, 2001).

According to Rudolph (1997) "... [n]itrate is usually limited to the upper portion of the aquifer and concentrations tend to diminish with depth (Trudell *et al.*, 1986; Geyer *et al.*, 1992; Starr and Gilham, 1993). This layering of nitrate can be referred to as stratified



contamination (Akindunni *et al.*, 1995) ...". While this process is dependent on specific aquifer properties, it is reasonable to suggest that most Southern Ontario aquifers/ aquitards possess these characteristics.

In the absence of vertical nitrate migration due to denitrification, the lateral migration becomes the main migration pathway along the surface contact of the upper Newmarket Till (or in proximity to this feature), albeit at the diminished flow rate as highlighted above.

3.4.4 Isotopic Ground Water Chemistry Data

All ground water monitoring wells with a suitable sample volume were collected on July 7, 2023 for isotope analyses. Six ground water monitoring wells were sampled (*i.e.*, MW11, MW12, MW104, MW105, MW107 & MW109). Sample bottles were filled to capacity and then placed on ice in a cooler and transport to our office for processing.

The captured water was decanted and then transferred to a clean, new 500 mL plastic bottle which was filled to capacity by partially crushing the bottle and then freezing the contents. Once frozen the samples were transported to the isotope laboratory. A sufficient sample volume was collected so that the same water could be evaluated for key inorganic parameters requested by the isotope laboratory (*i.e.*, nitrate, sulphate, chloride) at a commercial analytical laboratory. The results of the isotopic analysis are presented in Table I (below).

The isotope sampling measured a negative δ^{18} O value and a δ^{15} N result between 6 and 8. These results are graphically presented as point data in Figure 24 (overleaf - blue diamonds).

	δ^1	⁸ O	δ^{12}	⁵ N	Water Chemistry				
	VSMOW		А	ir	N	SO_4	Cl		
					mg/L	mg/L	mg/L		
July 2023									
MW11	-9.5	-10.0	6.4		6.3	6.0	5.4		
MW12	-9.1		8.0		13.5	13.0	7.7		
MW104	-9.9		6.0	6.7	20.6	8.0	7.6		
MW105	-10.8		6.8		17.5	33.0	15.6		
MW107	-9.8		7.5	7.5	2.7	9.0	90.2		
MW109	-9.1		6.0		6.5	56.0	108.0		

Table I:Isotope Chemistry Results



The graphical representation was taken from Senger $(2016)^8$. Senger (2016) derived this graphical representation using precipitation data from Birks *et al* (2004). Atmospheric nitrate data was taken from Kendall *et al*. (2007). Manure and septic data was derived from Aravena *et al*. (1993), Wassenaar (1995), Girard & Hillaire-Marcel (1997), Kendall (1998), Choi & Ro (2002), Griggs & Kump (2003), Curt *et al*. (2004), Kellman (2005), and Katz *et al*. (2009). Data for ammonium in fertilizer was taken from Wassenaar (1995), Vitoria *et al*. (2004), Bateman & Kelly (2007), and Flood (2011). Soil data was derived from Kendall (1998).

The 2023 results show a negative δ^{18} O value which is indicative of a precipitation source. The Canadian Network for Isotopes in Precipitation has calculated amount-weighted mean annual values δ^{18} O-H₂O at Egbert, Ontario. Between October 1998 and September 2002 the averaged values were -10.6 ‰ (Birks *et al.*, 2004).

The July 2023 isotope data are tightly grouped as portrayed in the figure above and indicative of a single source. The negative δ^{18} O values coupled with the δ^{15} N results are interpreted to represent the urea signature associated with the May 2023 fertilizer application which was highlighted above. The percolation of this recently applied source was measured in the July 2023 ground water sampling events.

It is reported that no manure application has occurred on the Site for the past decade. As noted above, a similar chemical formulation has been used over the past three years on this agricultural field.

The percolation of the urea fertilizer source through the unsaturated zone to the wetted silt layer has oxygenated the nitrogen source so that the dominant nitrogen species in the ground water is nitrate. As noted above, the nitrate concentration in the wetted silt layer is highest at the down gradient property boundary (*i.e.*, the eastern property boundary) and was lowest along the up gradient property boundary (*i.e.*, the southwestern property boundary). The nitrate concentration increase measured across the agricultural field is attributed to the fertilizer application. Since the isotope signature is consistent at all sampling points, the nitrate concentration measured is ascribed to the fertilizer source.

Once the agricultural activities cease on these lands, it is assumed that the nitrate concentration would diminish to traditional background levels (*i.e.*, 0.2 mg/L as N). In light of this situation, it is assumed that the background nitrate concentration can be set to this traditional level for the purposes of assessing the residential development.

⁸ Senger, N., 2016 Multi-decade comparison of groundwater nitrate in the Nottawasaga River Watershed M.Sc. Thesis, UWaterloo





Senger (2016) Figure 24 - δ^{15} N vs δ^{18} O Comparison



3.4.5 Surface Water Chemistry Data

The on-Site creek channel is considered to be a remnant of the deglaciation processes from the late-Wisconsin retreat. The creek channel is deeply incised from past glacial flow and subsequently vegetated. Site evaluation confirmed the watercourse on the Site receives flow from the south through a 1.7 m wide by 0.9 m high corrugated steel pipe (CSP) culvert at the 10th Sideroad. This culvert accepts a combination of roadside ditch drainage and drainage from the adjacent residential neighbourhood.

Although sections of the Pine River are classified as coldwater, temperature monitoring by NVCA summarized in the Integrated Watershed Management Plan resulted in 'cool' classifications in the southern portion of the subwatershed by Airport Road (in proximity to the Site), and 'cool/warm' classifications just downstream (NVCA, 2018). On the Site, conditions in the tributary are considered marginal and unsuitable for most fish species including salmonids (Azimuth, 2021). Given the small size of the channel and muck, and densely vegetated channel conditions with limited flow, the creek presents more as a warm water system. Given Site conditions and lack of any notable barriers to fish movement (aside from lack of flow and seasonal inundation), the creek is conservatively considered to provide seasonal, direct fish habitat; however, the habitat quality is considered low (Azimuth, 2021). The report also described the creek channel substrate consisted of muck/organic soils with sparse gravel.

The Site study did comment that "... visible minimal spring flows were noted, while the channel was mainly dry (with no visible flow) by the summer ...", (Azimuth, 2021). Based on field observations, the wetland area within the creek channel was generally dry by late Spring and no evening calling amphibians were found during the field program. Based on these feature attributes, unique ecological functions would not be attributed to the wetland on the Site.

The creek was not considered significant or sensitive; but the findings do provide a few important points from a hydrogeologic perspective. Baseflow from the silt unit into the creek is considered to be present; but insignificant to the feature. Seepage occurs; but is inconsequently by the summer when the channel is described as "dry". The other notable point made is that the creek channel substrate is mucky and organic rich. This substrate condition is anticipated to mitigate any nitrate migration to the creek. Robertson *et al.* (1999) documented that vigorous denitrification occurred in the riverbed sediment as a result of the development of anaerobic conditions. In this environment, nitrate can be converted to nitrogen gas by a reaction involving organic matter. The nitrate concentration decreased from about 20 mg/L to less than 0.5 mg/L in the last meter of the flow path before discharging into a river. The process was attributed to the increased availability of organic carbon in the riverbed sediments. The substrate conditions described by Robertson *et al.* (1999) replicate those described at the on-Site creek. Puckett *et al.* (2008) indicated that sites having longer residence times through the



streambed sediments provided a greater opportunity for biogeochemical reactions such as denitification to occur. The slow ground flow/ seepage from the silt unit would cater to a longer residence time which is anticipated to address the nitrate issue in terms of the river channel.

This hypothesis appears to fit well this the stream data collected for the creek. Two water quality samples were collected from the creek at the exit point from the Site in the Spring 2023 (Table G). In both cases the nitrate concentration in the captured samples was minimal. The second sample reported a diminishing flow in the creek by early June and three weeks later the stream flow was not observed and no sample could be collected.

Based on this information, it is our opinion that the elevated nitrate concentration in the ground water at the Site is having a no meaningful impact on the adjacent creek tributary. The same negligible influence would be anticipated when the proposed development is constructed.

3.5 Hydrogeologic Interpretation

The ground water percolation into the basal silt unit of the upper sediment package east of the unconformity is considered the receiving formation for the majority of treated effluent from the proposed Armstrong development. As noted above, this basal silt unit lies directly above the regional aquitard (*i.e.*, upper Newmarket Till). The geologic and hydrogeologic information presented above have substantiated this conceptual understanding. The underlying upper Newmarket Till will effectively isolate shallow ground water flow in the upper sediment package.

Similarly, the information presented shows that the treated effluent would reside in the basal silt unit; not unlike the agricultural fertilizers that have been applied to these lands for decades. As shown, the underlying Newmarket Till unit would minimize further vertical percolation from occurring. Minor vertical percolation into the underlying Newmarket Till will not pose a significant threat to underlying ground water resources. Furthermore, research has shown that aquitard systems effectively mitigate nitrate migration (Robertson *et al.*, 1996; Rodvang & Simpkins, 2001). The fertilizer applications that have historically occurred on these lands provide a precedent to understand the nitrate movement in this system.

Lateral migration of the ground water in the silt unit of the upper sediment package becomes the critical pathway for nitrate migration. Within the silt unit, lateral migration is effectively negated since the estimated rate of flow is inconsequential. Even if a worst case approach were employed, where the rate of flow was increased tenfold; the net overall effect would not be significant.



All of the evidence presented attests to the fact that the receiving formation is not a viable potable water supply. The geologic setting indicates that a finer grained material was deposited in the Nottawasaga watershed by the glacial Lake Schomberg. The geologic research also indicates that the deposition was found to be downward fining as revealed in the Site drilling program and in various water well records. Finally, the presence of the Pine River valley a short distance up gradient of the Site also plays a pivotal role in the hydrogeologic setting by having eroded the overburden cover and preventing any up gradient flow from occurring in the shallow sediment package east of the unconformity. This re-entrant stream course creates a sub-watershed boundary condition which contributes to the minimal saturated condition at the Site and beyond.

The historic water well database reveals virtually no use of this silt unit in the upper sediment package as a viable potable supply within the Mansfield Community. Reported well yields from the documented shallow wells confirm the inability of the upper sediment package to provide a viable potable supply as defined by MECP literature (*i.e.*, D-5-5 Guideline). The water well database also confirmed that there are no shallow well users down gradient of the Site for distances greater than 500 m.

It is reasonable to presume that when presented with a more reliable water supply via a municipal system that the sporadic users of this shallow unit within the Mansfield Community would opt for this alternative. Municipal records confirm that all residences in proximity to the 10th Sideroad and Airport Road intersection are connected to the municipal supply as required by the Township By-law. The net result is that the geologic setting and hydrgeologic environment create a shallow system which is impractical for domestic supply or agricultural use. The shallow system is effectively isolated from deeper ground water resources east of the unconformity and the nitrate migration is limited to the shallow system.

The soils west of the unconformity are dry for an appreciable depth. Site exploration wells demonstrated that the fine grained soils encountered to depths in excess of 18 m showed no evidence of any soil moisture content. There is an expectation that nitrate rich waters percolation to depth in this area of the Site will be subject to denitrifying processes. It is suggested that oxygen is likely to be limited deep within the overburden profile and if so then denitrification is anticipated by facilitative bacteria which will scavenge the oxygen from the nitrate.

Rivett *et al.* (2008) in their evaluation of nitrate attenuation in ground water noted that "... [d]enitrification is focused upon as the dominant nitrate attenuation process in groundwater. As denitrifying bacteria are essentially ubiquitous in the subsurface, the critical limiting factors are oxygen and electron donor concentration and availability. Variability in other environmental conditions such as nitrate concentration, nutrient



availability, pH, temperature, presence of toxins and microbial acclimation appears to be less important, exerting only secondary influences on denitrification rates ...".

However, the percolating liquid will also have a Dissolved Organic Carbon (DOC) signature which reportedly aids in denitrifying processes. Buss *et al* (2005) indicated that "... [t]he rate of denitrification is most often related to the amount of DOC in porewater or groundwater, or the amount of soluble organic carbon rather than the total amount of solid organic carbon present (though the two may correlate) ...". This environmental setting above the deep till unit which covers the municipal aquifer should effectively attenuate the nitrate source.

As noted above, the current agricultural application rate on the Site (*i.e.*, \sim 1,000 kg/a) is twice the residential loading rate for the proposed development. Thus, the expectation is that if the agricultural pursuits on this Site over the past 100 year could influence the deep aquifer system it would have occurred by now.

Annual reporting on the Mansfield municipal supply has documented a background nitrate concentration of ~ 2 mg/L as N (see Table J).

I able 5	Municipal Wen Testing Results
Year	Nitrate
	Concentration
	(mg/L as N)
2017	1.5
2018	2.0
2019	1.8
2020	2.2
2021	2.0

Table JMunicipal Well Testing Results

The raw water data would indicate that the aquifer which supplies the municipal well at Mansfield is not being significantly impacted by the historical agricultural practices in the Mansfield area. The hydrogeologic setting is anticipated to aid in this situation. The municipal well lies east of the Pine River valley and is up gradient of all agricultural lands observed to be in production at the present time that are east of the Pine River valley. With ground water flow easterly from the Niagara Escarpment, the well head is anticipated to draw the majority of its resource from the ground water discharge being emitted from the Niagara Escarpment. However, as portrayed in Figure 17 (above), the municipal well is also covered by a deep till unit which would mitigate any nitrate seepage in a manner similar to that observed in the upper Newmarket Till for this Site (*i.e.*, MW7 data - Table G).



4.0 D-5-4 GUIDELINE REQUIREMENTS

4.1 Step Three Assessment - Nitrate Attenuation - Predictive Assessment

For convenience, a nitrate attenuation assessment is being used to evaluate the proposed development's influence on the environment. The assessment below demonstrates that the proposed development will not create an adverse risk where the concentrations of nitrate-nitrogen in ground water is expected to exceed 10 mg/L at the down gradient property boundary.

4.2 Proposed Development Layout

As described above, the Armstrong property is proposed to be subdivided into a number of lots/ units, but more generally will be split into a north section and a south section. A tributary cutting through the Armstrong property divides the southeast corner (the "South Precinct") of the Armstrong property from the remainder of the property (the "North Precinct"). The South Precinct is planned to house 28 two-bedroom semi-detached bungalows. The North Precinct will house 43 single family detached homes (Figures 25 and 26 [overleaf]).

4.3 Soil Suitability for Septic Systems

Review comments from Burnside dated April 5, 2023 questioned the suitability of these permeable soils for on-Site sewage treatment. As has been discussed previously, the surficial soils are quite permeable.

The tertiary sewage treatment system⁹ to be used for this development converts the nitrogen species in the septic tank effluent to a nitrate source. The effluent from the septic tank is percolated through a moist, but unsaturated porous media; which aerates the process water and allows a microbial community to nitrify the percolating water in the biofilter unit.

This nitrate-rich water is partially re-circulated back into the septic tank and facilitative bacteria use the available oxygen from the nitrate to process the septage. This process releases the nitrogen as a gas (N_2) from the septic tank. In doing so, it denitrifies the septic waters, which inevitably reduces the overall nitrate concentration from the tertiary treatment system. As a result, the effluent from the tertiary treatment system is fully nitrified and released as nitrate to the dispersal bed. The importance of this is that an unsaturated vertical column of soil is not required to nitrify the sewage discharge as is necessary for a conventional septic system.

CAN/BNQ 3680-600, "Onsite Residential Wastewater Treatment Technologies"





Figure 25 - North Precinct Lot Layout





Figure 26 - South Precinct Lot Layout



Regardless, the soil profile of the upper sediment package encountered during the Site drilling programs is downward fining. The Burnside concerns about rapid vertical percolation of the treated effluent from a conventional septic system would not be realized in this downward fining deposition.

As has been previously noted, the upper sediment package is considered to be a lake-lain deposition. The coarser surficial sediments are associated with a near shore deposition as Glacial Lake Schomberg retreated northeast into the Nottawasaga Basin (Mulligan *et al.*, 2018). The fine sand and silty soils encountered below the upper sand unit represent the lake lain sediments when the water elevation in Glacial Lake Schomberg was initially established (Mulligan *et al.*, 2018).

These finer sediments in the upper sediment package would dissipate the rapid vertical percolation and allow the aerobic conversation of the urea to nitrate, if conventional septic system were employed. In fact, a granular urea based agricultural fertilizer has been historically used on these lands. The expectation is that its dispersion into the environment is equivalent to that occurring with a septic discharge. All of the ground water sampling conducted on the Site has shown that the dominant nitrogen species in the shallow ground water owing to the fertilizer application is nitrate (Table G). Thus, Azimuth does not have any meaningful concern about this situation as it pertains to the Armstrong property.

4.4 Predictive Nitrate Attenuation Assessment

The nitrate attenuation in the natural environment is achieved through several processes described in the D-5-4 Guidance document including absorption, denitrification, filtration and biodegradation. However, the D-5-4 Guidance document only considers dilution in order to provide a conservative assessment.

The D-5-4 Guidance document cites a contaminant source of at least 40 grams/lot/day per residential dwelling unit (*i.e.*, Section 5.6.2). This value is based on a daily residential flow of 1,000 L/day and a minimum value of 40 mg/L nitrate (*i.e.*, NO₃ as N) from the discharge of a conventional septic system.

The Waterloo Biofilter is a CAN/BNQ 3680-600 certified treatment technology and is classified as a Level IV system (OBC s.8.6.2.2). The Waterloo Biofilter system typically removes 50 to 65% total nitrogen (TN) in a recirculation mode of operation even during winter months. This treatment efficiency is based on years of verification testing of the system. The biofilter operation also reduces total suspended solids (TSS) and biochemical oxygen demand (BOD). All of this is achieved by dispersing septic tank effluent over an unsaturated (but moist) column of foam filter media composed of porous foam cubes. The unsaturated percolation of the septic tank effluent aerates the effluent and the total nitrogen (TN) is converted to nitrate using the biomass sorbed to the porous



foam cubes. The aeration also addresses BOD demands and the filtration through the foam media also improves the water quality in terms of TSS.

As noted above, recirculation of half this aerated liquid back through the septic tank provides an oxygen source for facultative bacteria and in doing so the nitrogen is released as N_2 gas. All of the nitrate introduced back into the septic tank will be exploited for microbial processes which accounts for the ability to remove 50% to 65% of the TN.

The portion of the treated effluent which is not returned to the septic tank is fully aerated and present as nitrate. This effluent is conveyed to an appropriate sized dispersal bed for release into the environment. The dispersal beds are sized to address the hydraulic dissipation of the effluent since further subsurface treatment in the soil profile is not required. For this evaluation a nitrate load rate of 20 grams/residence/day will be used¹⁰.

Any concerns associated with the use of tertiary treatment systems can be addressed through one or more of the various types of agreements (*e.g.*, occupancy permit, subdivision agreement, purchase and sale agreement, registration on the deed, and/ or septic maintenance agreement) as is typically used for other municipalities.

4.4.1 Infiltration Rate

Burnside in their April 5, 2023 correspondence indicate that the proposed value of infiltration of 235.6 mm/yr is considered representative of the coarse grained material described in the Peto MacCallum Limited report (PML, 2021).

4.4.2 South Precinct

The South Precinct on the Armstrong property is 6.161 ha in size (Table K - overleaf). This precinct includes four residential blocks. Blocks 44, 45 & 47 each contain eight (8) two-bedroom semi-detached bungalows and Block 46 contains four (4) two-bedroom semi-detached bungalows (Figure 26 [above]). In total, there are 28 two-bedroom semi-detached bungalows proposed.

These two-bedroom semi-detached bungalows are to be marketed as "aging in place" homes. The footprint of each bungalow dwelling is 111.52 m^2 . This accounts for the impervious surface allocated to each of the residential blocks (see Table K). Notwithstanding, runoff from rooftops (typically 75%) from each of the dwellings would be available for infiltration over lawns area, thus our evaluation is conservative since all impervious area (*e.g.*, dwelling, walkways, internal roadways) have been excluded from the dilution calculation.

 $^{^{10}}$ 20 mg/L - NO₃ (as N) * 1,000 L/lot/day = 20 g/residence/day

Parcel ID	Description	Total Area	Impervious Surface	Pervious Surface
		(ha)	(ha)	(ha)
Block 44	2-Bedroom Bungalow	0.561	0.089	0.472
Block 45	2-Bedroom Bungalow	0.701	0.089	0.611
Block 46	2-Bedroom Bungalow	0.271	0.045	0.226
Block 47	2-Bedroom Bungalow	0.634	0.089	0.544
Block 48	SWMP	0.160		0.160
Block 50	Unused block	0.049		0.049
Block 51	EP lands	1.918		1.918
Block 52	EP lands	1.212		1.212
Block 61	Corner Triangle	0.005	0.005	-
Block 62	Corner Triangle	0.005	0.005	-
Block 63	Road Widening	0.115	0.115	-
Block 64	Road Widening	0.031	0.031	-
Street 'C'		0.500	0.500	-
Total		6.161	0.969	5.192



Each of the four development blocks in the South Precinct will house their own communal tertiary sewage treatment system. According to the Ontario Building Code (OBC - O.Reg. 332/12 [as amended]), each two-bedroom semi-detached bungalow will generate a peak sewage design flow of 1,100 L/day. The communal tertiary sewage treatment system would be sized to handle this peak volume.

This peak sewage volume is unlikely to ever actually occur since it would require all residences within the block(s) to generate this peak volume simultaneously. Regardless, the peak daily design volume for a shared tertiary treatment system on each block will be <10,000 L/day. The maximum peak daily flow on any of the blocks will be 8,800 L/day. Sewage volumes that are <10,000 L/day do not require approval from the MECP. Rather, the approval process is governed under the OBC and through the Township.

4.4.2.1 Sewage Treatment and Disposal

For the purposes of this evaluation, the proposed septic system will consist of a tertiary treatment unit (*e.g.*, Waterloo Biofilter or approved equivalent) with discharge to an inground Type A Dispersal Bed designed with an estimated percolation rate (T-time) of ≤ 12 to 15 min/cm. The minimum volume of the septic tank is estimated to be < 20,000 L (*i.e.*, twice the estimated design volume).

The Type A Dispersal Bed will be constructed in a manner consistent with that stipulated in OBC (Section 8.7.7.1). The Dispersal Bed system requires even distribution of the treated effluent over an adsorption system consisting of a 300 mm stone layer overlying 300 mm of an unsaturated sand layer. The sand layer is sized so that its area (A) is equivalent to the product of the peak flow (Q) and the native soil percolation rate (T) divided by 850 (*i.e.*, A = QT/850 for t \leq 15 min/cm).

The overlying stone layer is designed to provide an area equal to 50 L of treated water per square meter of stone (A = Q/50 for Q>3,000 L/day).

The preliminary design details for a Dispersal Bed and a sewage layout plan (including OBC setbacks and STP footprint) for each block is provided on the above noted figure and the example calculations are provided below:

Stone Layer

The calculation for the stone area layer is based on the following OBC formula:

$$A = \frac{Q}{50}$$
, where:

A = area of the stone layer (m^2) ; Q = peak daily septic discharge = 8,800 L/day;



Loading rate = $50 \text{ L/m}^2/\text{day}$ for Q>3,000 Lpd

Therefore,

$$A = \frac{8,800}{50} = 196 \text{ m}^2$$
 (effective area illustrated is 200 m²)

Sand Layer

The calculation for the sand layer is based on the following OBC formula:

$$A = \frac{QxT}{850}$$
, where,

$$Q = \text{ peak daily septic discharge } = 8,800 \text{ L/day};$$

$$T = \text{ infiltration rate for underlying soils } = \le 15 \text{ min/cm};$$

$$8,800 \text{ r15}$$

 $A = \frac{8,800 \times 15}{850} = 155.3 \text{ m}^2 \text{ (effective area illustrated is 160 m}^2)$

Based on the above, the minimum required area of the stone layer is 200 m^2 and the minimum required area of sand filter medium is 160 m^2 . A conceptual design drawing for the Dispersal Bed is provided in Appendix A (Drawing E).

4.4.2.2 Average Daily Flow

The average daily volume for a two-bedroom semi-detached bungalow is typically between 750 and 1,000 L/day. The D-5-4 Guidance document cites a 1,000 L/day sewage volume. The D-5-4 Guidance document suggests the sewage volume should not exceed 1,000 L/day when evaluating contaminant attenuation for residential development (*i.e.*, Section 5.6.2.(b)(v)). For the purposes of the analysis a value of 1,000 L/day will be used.

4.4.2.3 Nitrate Dilution Calculation

As noted above, the D-5-4 Guidance document only allows dilution as a quantifiable attenuation mechanism for nitrate. No dilution consideration for up gradient flow will be used in the assessment. The assumptions utilized in this dilution evaluation for the South Precinct are as follows:

- the area contributing to ground water flow is based on the size of the property (exclusive of hard surfaces);
- annual dilution infiltration rate of 235.8 mm/a;
- septic effluent average concentration of 20 mg/L (tertiary treatment); and
- average daily flow of 1,000 L/day (average flow per dwelling, [MECP, 2016]).

The standard mass balance calculation is outlined below:

$$C_{\rm T} = \frac{Q_1 C_1 + Q_2 C_2}{Q_T}, \text{ where}$$

- Q_1 = (contribution from property) = total area (m²) * infiltration (m/a) (5.192 ha *235.8 mm/a infiltration = 12,243 m³/a);
- C_1 = (background nitrate concentration from precipitation) ~0.2 mg/L;
- Q₂ = (contribution from the dispersal bed) = 1,000 L/day per dwelling = 28,000 L/day for the precinct;
- C_2 = (septic effluent nitrate concentration) = 20 mg/L (tertiary treatment);
- Q_T = (total off-Site discharge) = Q_1+Q_2 ; and
- C_T = nitrate criteria at down gradient evaluation point.

The predicted concentration in the shallow ground water regime at the down gradient property boundary using tertiary treatment is 9.2 mg/L (as NO₃-N). The calculations are provided in Appendix C.

4.4.3 North Precinct

The North Precinct on the Armstrong property represents the precinct north of the creek and is 15.344 ha in size (Table L - overleaf). This precinct includes 43 four-bedroom single family homes (Figure 25 - above).

The conceptual footprint of each four-bedroom single family dwelling is 350 m^2 . This accounts for the impervious surface allocated to each of the residential lots. Notwithstanding, runoff from rooftops (typically 75%) from each of the dwellings would be available for infiltration over lawns area, thus our evaluation is conservative since all impervious area (*e.g.*, dwelling, walkways, internal roadways) have been excluded from the dilution calculation.

Each estate lot will house their own private tertiary septic bed system. According to the Ontario Building Code (OBC - O.Reg. 332/12 [as amended]), each four-bedroom home will generate a peak sewage design flow of 3,500 L/day.

4.4.3.1 Sewage Treatment and Disposal

For the purposes of this evaluation, the proposed septic system will consist of a tertiary treatment unit (*e.g.*, Waterloo Biofilter or approved equivalent) with discharge to an inground filter bed designed with an estimated percolation rate (T-time) of ≤ 12 to 15 min/cm. The minimum volume of the septic tank is estimated to be $\leq 7,000$ L (*i.e.*, twice the estimated design volume).



Table L:North Precinct Area

Parcel ID	Total Area	Impervious	Pervious
	(ha)	Surface	Surface
		(ha)	(ha)
Lot 1	0.315	0.035	0.280
Lot 2	0.301	0.035	0.266
Lot 3	0.266	0.035	0.231
Lot 4	0.270	0.035	0.235
Lot 5	0.221	0.035	0.186
Lot 6	0.214	0.035	0.179
Lot 7	0.214	0.035	0.179
Lot 8	0.226	0.035	0.191
Lot 9	0.246	0.035	0.211
Lot 10	0.288	0.035	0.253
Lot 11	0.207	0.035	0.172
Lot 12	0.256	0.035	0.221
Lot 13	0.218	0.035	0.183
Lot 14	0.221	0.035	0.186
Lot 15	0.221	0.035	0.186
Lot 16	0.252	0.035	0.217
Lot 17	0.226	0.035	0.191
Lot 18	0.246	0.035	0.211
Lot 19	0.246	0.035	0.211
Lot 20	0.213	0.035	0.178
Lot 21	0.213	0.035	0.178
Lot 22	0.213	0.035	0.178
Lot 23	0.242	0.035	0.207
Lot 24	0.227	0.035	0.192
Lot 25	0.203	0.035	0.168
Lot 26	0.213	0.035	0.178
Lot 27	0.213	0.035	0.178
Lot 28	0.213	0.035	0.178
Lot 29	0.213	0.035	0.178
Lot 30	0.213	0.035	0.178
Lot 31	0.213	0.035	0.178
Lot 32	0.213	0.035	0.178
Lot 33	0.215	0.035	0.180
Lot 34	0.215	0.035	0.180
Lot 35	0.212	0.035	0.177
Lot 36	0.212	0.035	0.177
Lot 37	0.248	0.035	0.213



Parcel ID	Total Area	Impervious	Pervious
	(ha)	Surface	Surface
		(ha)	(ha)
Lot 38	0.362	0.035	0.327
Lot 39	0.400	0.035	0.365
Lot 40	0.330	0.035	0.295
Lot 41	0.257	0.035	0.222
Lot 42	0.200	0.035	0.165
Lot 43	0.201	0.035	0.166
Block 49 - SWM	0.701		0.701
Block 53 - Sidewalk	0.036	0.036	-
Block 54 - Sidewalk	0.017	0.017	-
Block 55 - Parkland	1.420		1.420
Block 56 - ROW	0.208	0.208	-
Block 57 - ROW	0.099	0.099	-
Block 58 - Access	0.042	0.042	-
Corridor			
Block 59 - Corner Δ	0.005	0.005	-
Block 60 - Corner Δ	0.005	0.005	-
Block 65 - Road	0.078	0.078	-
Widening			
Street 'A'	1.224	1.224	-
Street 'B'	1.012	1.012	-
Street 'C'	0.078	0.078	-
Street 'D'	0.113	0.113	-
Total	15.344	4.421	10.922

Table L:North Precinct Area

The filter bed will be constructed in a manner consistent with that stipulated in OBC (Section 8.7.5). The filter bed system requires even distribution of the treated effluent over an adsorption system consisting of a 300 mm stone layer overlying 300 mm of an unsaturated sand layer. The sand layer is sized so that its area (A) is equivalent to the product of the peak flow (Q) and the native soil percolation rate (T) divided by 850 (*i.e.*, A = QT/850 for t ≤ 15 min/cm). The overlying stone layer is designed to provide an area equal to 50 L of treated water per square meter of stone (A = Q/50 for Q>3,000 L/day).



The preliminary design details for a Dispersal Bed and a sewage layout plan for a representative lot is provided on Figure 27 (overleaf) and the example calculations are provided below.

Stone Layer

The calculation for the stone area layer is based on the following OBC formula (Section 8.7.5.2.(5)):

 $A = \frac{Q}{100}$, where:

A = area of the stone layer (m²); Q = peak daily septic discharge = 3,500 L/day;

Therefore,

$$A = \frac{3,500}{100} = 35 \text{ m}^2$$

Sand Layer

The calculation for the sand layer is based on the following OBC formula:

$$A = \frac{QxT}{850}$$
, where,

$$Q =$$
 peak daily septic discharge = 3,500 L/day;

T = infiltration rate for underlying soils =
$$\leq 15 \text{ min/cm}$$
;

$$A = \frac{3,500x15}{850} = 61.8 \text{ m}^2 \text{ (effective area illustrated is 64 m}^2)$$

Based on the above, the minimum required area of the stone layer is 35 m^2 . The conceptual design provides an area which is 7 m by 5 m. The required area of sand filter medium has been conceptually designed as an 8 m by 8 m plot (Appendix A - Figure D).

4.4.3.2 Average Daily Flow

The average daily volume for a single residential lot is typically between 800 and 1,000 L/day. The D-5-4 Guidance document cites a 1,000 L/day sewage volume. The D-5-4 Guidance document suggests the sewage volume should not exceed 1,000 L/day when evaluating contaminant attenuation for residential development (*i.e.*, Section 5.6.2.(b)(v)). For the purposes of the analysis a value of 1,000 L/day will be used.





Figure 27 - Individual Lot Tertiary Treatment System



4.4.3.3 Nitrate Dilution Calculation

The Design Guidelines for Sewage Works (MECP 2008 - Section 22.5.14) state "... where it can be shown that the uppermost subsurface unit(s) at an infiltration facility have a vertical hydraulic conductivity of 10^{-5} cm/sec or less, is at least 10 m (33 feet) thick and extends at least 100 m (330 ft) downgradient of the infiltration area, attenuation calculations may not be required ...". The lower silt unit in the upper sediment package meets the permeability requirements and is greater than 10 m thick on the western third of the precinct.

The point being made by the MECP is that slow moving formations pose minimal environmental concern. This occurs because the mass flux of the source in a low permeability unit becomes insignificant for the ground water migration. Thus if conditions similar to that identified above exist; then this should factor into the overall assessment.

The assumptions utilized in this dilution evaluation for the severed parcel are as follows:

- the area contributing to ground water flow is based on the size of the property (exclusive of hard surfaces);
- annual dilution infiltration rate of 235.8 mm/a;
- septic effluent average concentration of 20 mg/L (tertiary treatment); and
- average daily flow of 1,000 L/day (average flow per dwelling, [MECP, 2016]).

The standard mass balance calculation is outlined below:

$$C_{\rm T} = \frac{Q_1 C_1 + Q_2 C_2}{Q_T}$$
, where

- Q_1 = (contribution from property) = total area (m²) * infiltration (m/a) (10.922 ha *235.8 mm/a infiltration = 25,754 m³/a);
- $C_1 =$ (background nitrate concentration from precipitation) ~0.2 mg/L;
- Q₂ = (contribution from the dispersal bed) = 1,000 L/day per dwelling = 43,000 L/day for the precinct;
- $C_2 =$ (septic effluent nitrate concentration)= 20 mg/L (tertiary treatment);
- Q_T = (total off-Site discharge) = Q_1+Q_2 ; and
- C_T = nitrate criteria at down gradient evaluation point.



The predicted concentration in the shallow ground water regime at the down gradient property boundary using tertiary treatment is 7.7 mg/L (as NO₃-N). The calculations are provided in Appendix C.

5.0 CONCLUSION

Based on the results of the sewage impact study, it is concluded that the environmental conditions upon the Site will allow at least 71 residential dwellings to be developed without adverse impact to the local ground water regime. The results of the nitrate dilution calculation show that the net loading of the property is as high as 9.2 mg/L provided that tertiary treatment technology is used. The use of tertiary treatment technology is sufficient to protect the natural environment and will not result in any negative impact on the ground water quality.

The footprint of an individual filter bed has been provided to illustrate that the individual lots are sufficiently sized to accommodate a disposal bed, reserve bed and associated buildings (*e.g.*, dwelling, garage and driveway) while meeting all OBC setbacks in the final design. Similarly, the footprint of a tertiary treatment unit and dispersal bed is also provided to illustrate that the blocks are sufficiently sized for a shared system and the system capabilities have been properly assessed. The exact location of each disposal bed system and the percolation rate used in the final design should be confirmed during the permitting approvals process.

Any concerns associated with the use of tertiary treatment systems can be addressed through one or more of the various types of agreements (*e.g.*, occupancy permit, subdivision agreement, purchase and sale agreement, registration on the deed, and/ or septic maintenance agreement) as is typically used at other municipalities. For the 'shared' tertiary treatment units, it is noted that the number of bedrooms cannot exceed 16 bedrooms / block which can be enforced through the building permit process and/ or the Subdivision Agreement.



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APPENDICES

Appendix A:Figures and DrawingsAppendix B:MECP Water Well RecordsAppendix C:Nitrate CalculationAppendix D:Soil LogsAppendix E:Ground Water Hydrographs



APPENDIX A

Figures and Drawings











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APPENDIX B

MECP Water Well Records



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Pagin 22				.1 1	,	
County or District Dufferin To	ownship	, Village, To	wn or City 🦯	11111741Y		
Con 17 Lot D	ate com	pleted (i£ day	month	year)	
	ress	M	an the franklik	<u> </u>		
Casing and Screen Record			Pumping	Test		
Inside diameter of casing 30	Static	level		? 		
Total length of casing 44	Test-j	pumping rat	е //	.	G.P.M.	
Type of screen	Pump	oing level		<u>ç</u>		
Length of screen	Dura	tion of test p	umping /	Hice		
	Wate	r clear or clo	udy at end of t	est C.I.o.	e.t	
Depth to top of screen	Reco	mmended p	imping rate	1/2	G.P.M.	
Diameter of finished hole	with	nump setting	r of the the	72. feet belo	w ground surface	
	with	pump setting	1	Water Becord		
Overburden and Bedrock Record		From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)	
				37 6	Frede	
Seale Barro (1/an		0	6			
(iraiel		6	9			
Herr Sandy Brown Chay		9	24			
Sundy Brown Chay & Boulders		24	_18			
Breun Sand		28	<u> </u>		•	
- Sandy British Clarg						
For what purpose(s) is the water to be used?			Location (of Well	II from	
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Is well on upland, in valley, or on hillside? if a kind	Í	,	····		200	
Drilling or Boring Firm		N 612	61		lie let	
M& Babaik Well Boring				Alan	1	
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Teliacton Ont		Lot 10	50	1.44		
Licence Number 7777 1240			6-5	T.	N	
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Name of Driller of Borer			4	.5	/	
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(Signature of Licensed Drilling or Boring Contractor)	4.5	Con	VĪ		388 LIT	
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County or Districy). ff	Township/Borough/City/I	own/Village	Con block tract surv	ey, etc. Lot 25-21			
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41 WATE Water found	ER RECORD 51 Kind of water diam	CASING & OPEN HOLE Wall Material thickness	RECORD Siz Depth - feet Image: Size	zes of opening ³¹⁻³³ Diameter lot No.)	³⁴⁻³⁸ Length ³⁹⁻⁴⁰			
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95 2 0 3	Fresh ³ Sulphur ¹⁹ ⁴ Minerals Salty ⁶ Gas	3 Concrete 4 Open hole 5 Plastic 188	0 20 61	PLUGGING & SEALI	NG RECORD			
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Ministry of the Environment, **Conservation and Parks**

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Regulation 903 Ontario Water Resources Act of Page

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COUNTY OR DISTRICT	2. CHECK X CORRECT	TOWNSHIP, BOROUGH,	CITY, TOWN, VILLAGE	<u> </u>	CON., BLOCK,	TRACT, SURVEY, ETC.		25-27
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NAME OF WELL CONTRACTOR	DI DA KA LICENCE NUMBER	DATA 58 CONTRACTOR 59-62 DAY SOURCE	1 307 7 6 63-68 80
e Aughtor ho	andlight 3602	DATE OF INSPECTION	
NAME OF DRILLE OR BOARD	LICENCE NUMBER	B REYARKS: 15/1/1/24	D
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COUNTY OR DI	2. CHECK 🖄 CORR STRICT	ECT BOX WHERE APPLICABLE	TOWN VILLAGE	ISTON C	CON BLOCK. TRA LOM MT IAC RC BASIN CODI	CT. SURVEY ETC DATE COMP DAY_2 E II	LOT 23-27 PLETED 44-53 9 MO 03 YR 90 10 IV
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Envi	ironment	VVAIE		
Untario	1. PRINT ONLY IN S 2. CHECK 🗵 CORRE	PACES PROVIDED		LOT (25-27)
COUNTY OR DISTRICT		TOWNSHIP BOROUGH CITY, TOWN, VILLAGE	EHS 7	10
		ALLIST	DATE DAY.	AO NO CH YR D
			ELEVATION RC BASIN CODE II	
		OF OVERBURDEN AND BEDROCK	C MATERIALS (SEE INSTRUCTIONS)	
GENERAL COLOUR		OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET
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BROUN	SAND	SILT	COARCE	18 30
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1 JKUIN	U JHRU	line line		
31				
			43 54 54 512E (S) OF OPENING 31-33 (SLOT NO)	65 75 40 DIAMETER 34-38 LENGTH 39-40
41 WATER FOUND	KIND OF WATER	INSIDE MATERIAL THICKNESS EDITA		DEPTH TO TOP 41-44 30
10-13 I	FRESH 3 USULPHUR 14 SALTY 4 UMINERALS	10-11 1 USTEEL	13-16 STAINLES	S HA FEET
1 15-18 1	6 GAS	A DOPEN HOLE	HO 61 PLUGGING &	SEALING RECORD
20-23 1	G GAS FRESH 3 DSULPHUR 4 DMINERALS	17-18 1 □ STEEL 2 □ GALVANIZED 3 □ CONCRETE	20-23 DEPTH SET AT FEET MATER	LEAD PACKER, ETC.)
25-28 1	$ \begin{array}{c c} SALTY & 6 \Box GAS \\ \hline FRESH & 3 \Box SULPHUR \\ 4 \Box MINERALS \\ \end{array} $	4 OPEN HOLE 5 D PLASTIC	27-30 18-21 22-25	THCLER &
30-33 1	□ SALTY 6 □ GAS □ FRESH 3 □ SULPHUR 34 4 □ MINERALS	1 □ STEEL 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE	26-29 30-33 80	S MADE ME
	SALTY 6 GAS			WELL
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	PUMPING WATER	LEVELS DURING 2 RECOVERY S 30 MINUTES 45 MINUTES 60 MINUTES	LOT LINE INDICATE NORTH OF ARROW	
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	DPUMP TYPE RECOMMEND PUMP TYPE RECOMMEND	DED 43-45 RECOMMENDED 46-49 PUMPING RATE X GPM		NOTH
50-53			ATR I	
FINAL	54. 1 K WATER SUPPLY 2 D OBSERVATION W	S ABANDONED, INSUFFICIENT SUPPLY		A 2
STATUS OF WEL	3 🗌 TEST HOLE 4 🗍 RECHARGE WEL	7 🗌 UNFINISHED L 🔹 DEWATERING	30	00'
	55-56 1 DOMESTIC 2 D STOCK	S COMMERCIAL		j6
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	57 1 CABLE TOOL	6 DORING	E BARD	-
METHO OF		ENTIONAL) 7 □ DIANOND RSE) 4 □- JETTING 9 □ DRIVING		72558
CONSTRUC			DRILLERS REMARKS	63.68 80
	15 11 K-11	Well CONTRACTOR'S ULLING LIDUICENCE NUMBER	DATA SOURCE SA CONTRACTOR S9-52 DATE	JUN 26 1990
	#2 PACKTON	1061A0	Date of inspection	
NAME OF	Well TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER		
Sign Fur	The AVI. LUTILE		OPFI	CSS.ES
	$\frac{\sqrt{WV}}{\sqrt{WV}}$			FORM NO. 0506 (11/86) FORM
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😵 Onta	ario Ministry of the Environment			Th	WATER	WELL RECOR
Print only in space Mark correct box	ces provided. with a checkmark, where applic		17056	555	Municipality 177006	
County or District		Township/Borough/City	Town/Village	211	Con block tract	survey, etc. Lot 25-00
l Ne i la k	LE DIAT	Address		Ela		pleted day month veal
21	U T				Basin Code	
2		OF OVERBURDEN AND BED	ROCK MATERIALS (see instruct	ions)	Deoth - feet
General colour	Most common material	Other materials		Genera	I description	From To
<u>u</u>	PREVIOUSLY	DRITTED				0 - 10 9
8	Abaudonment	RECORD				"
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×	Ben				Per 1 Per 1	25
	<u> </u>					
31						
					t opening 31-33	
Water found at - feet	Kind of water	de Material Wall n Material thickness inches	Depth - feet From To	U (Slot No U U Materia	l and type	Depth at top of screen
10-13 1 E 2 E	Fresh 3 Subjut 14 Salty 6 Gas	11 1 Steel 12 2 Galvanized 3 Concrete	<i>b</i> 2	s		41-44 loet
2	Fresh 3 Sulphur 19 Salty 6 Gas	4 ⊡ Open hole 5 ⊡ Plastic ¹⁸ 1 ⊡ Steel ¹⁹	20-23	61	PLUGGING & SE Annular space	ALING RECORD
25.28	Salty Gas	2 Galvanized 3 Concrete 4 Open hole 5 D Plastic		Depth set From	at - feet To 14:17 m O	type (Cement grout, bentonite, etc.
30-33	☐ Fresh 4 ☐ Minerals 24	-25 1 Steel 26 2 Galvanized 3 Concrete	27-30	124 ¹⁸⁻²¹	128 6" Sent	Leplug PEllet
	☐ Fresh ₄	Copen hole Den hole Den hole Den hole		28'6"	140 - 4" A	EA STONE
71 Pumping test n 1 Pump 2	method ¹⁰ Pumping rate	11-14 Duration of pumping 15-16 IS-18 GPM Hours Mins		LO LO		-
Static level	Water level 25 Water levels during 22-24 15 minutes 30 minut	1 Pumping 2 Recovery 1 Pumping 2 Go minutes 1 60 minutes 2 60 minutes	Indicate	north by arro	w.	
F 5 SZ feet	feet	feet feet feet		WHY R	<u>d 17</u>	1
Becommanded	CDM Purperintake set at	43-45 Recommended 46-49				(States)
□ Shall	Deep pump setting	feet GPM				T
	S OF WELL 54	ient suonty 9 🗆 Unfinished			2' South of	Nueth
 ² Observati ³ Test hole ⁴ Recharge 	ion well 6 dandoned, poor qu 7 Abandoned (Other) e well 8 Dewatering	ality ¹⁰ Replacement well			WALI-INS	
WATER USE	55-56	g TELPot use		89		
 2 Stock 3 Irrigation 4 Industrial 	6 🗋 Municipal 7 🗌 Public supply 8 🗌 Cooling & air condit	ioning		FROM E	dge T	
METHOD OF				201	C. Mar	
 Cable too Rotary (c Rotary (n 	ol ⁵ Air percussion conventional) ⁶ Boring reverse) ⁷ Diamond	9 🗋 Driving 10 🗖 Digging 11 V Other Alternia		to Edg	ENCE	017250
⁴ □ Rotary (a		Line & Grout				- 411359
Name of Well Cont	ractor	Well Contractor's Licence No Tric 3406	Data source	58 Contractor	L06 59-62	Date received 63-68 MAR 2 2 2001
Address RC# 1	Genud Unller	· · · · · · · · · · · · · · · · · · ·	Date of inspection		Inspector	
Name of Well Tech	Grenets	Well Technician's Licence No.	A Hemarks			CSS.ES1
Signature of Techn	ician/Contractor	Submission date	z			

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0506 (11/98) Front Form 9

Ontario Ministry of the Environment			The C	Ontario Water WATER WE	Resources Act
Print only in spaces provided. Mark correct box with a checkmark, where applica	ble. [11]	1705	656		E E E E E E E E E E
County or District	Township/Borough/City/To	own/Village	Ci-Id °	on block tract surve	y, etc. Lot
	Address	- Masi	a noutle	Date completed	29 09 00 day month year
21 U	Northing		Eligyation RC Bi	asin Code II	
	F OVERBURDEN AND BEDR	OCK MATERIALS	s 30 31 S (see instructions))	47 Donth - foot
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			135		
41 WATER RECORD 21 51 51	CASING & OPEN HOLE F		54 Sizes of open	ing 31-33 Diameter	75 80 34-38 Length 39-49
Water found Kind of water linside diam inches	Wall Material thickness inches	Depth - feet From To	Material and 1	type	inches feet Depth at top of screen 30
10-13 1 Gresh 4 Juninerals 2 Salty 6 7 Gas	1 Steel 12 2 Galvanized 3 □ Concrete	+6" ?"	¹⁰ S		a) 1.33
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20:23 1 Gesh 3 Sulphur 24 4 Minerals 2 San 6 Gas	 2 Galvanized 3 Concrete 4 Open hole 		Depth set at - fe From To	et Material and type (C	cement grout, bentonite, etc.)
25-28 1 □ Fresh 4 Sulphur 29 2 □ Salty 6 □ Sas	5 □ Plastic 1 □ Steel ²⁶ 2 □ Galvanized	27-:		25 RENTO	ute Grant
30-33 1 □ Fresh 3 □ Subpeur 34 60 2 □ Salty 6 □ Gas	3 Concrete 4 Open hole 5 Plastic		122'4" 14	TH PER	TE MEPILG STONE
71 Pumping test method ¹⁰ Pumping rate ¹¹	Duration of pumping			ION OF WELL	
Static level end of summing Static level end of summing Water levels during	M Hours Mins		bram below show di te north by arrow.	stances of well from	road and lot line.
19-21 22- 15 minutes 19-21 22- 15 minutes 26-28 30 minutes	60 minutes 32-34 60 minutes 35-37				
feet feet feet feet feet feet feet	feet feet feet feet 42				7
Recommended pump type Recommended 43	feet Clear Cloudy -45 Recommended 46-49 pump rate 0 0	24			
Shallow Deep pump county	GPM GPM		5'	Énst	f
FINAL STATUS OF WELL 54	nt supply 🤔 🗌 Unfinished				1
2 Observation well b ☐Abandoned, poor qual 3 ☐ Test hole 7 ✓ Abandoned (Other) 4 ☐ Recharge well 8 ☐ Dewatering	ity ¹⁰ L Replacement well	18		Pump	1
WATER USE 55-56	Notusa	A At	80'	HLUSE	HIG " North
Continue Cal Continue Cal Continue Cal Continue Cal Continue Cal Irrigation T Public supply Continue & air condition	10 Dther	Ren 2	F Road	L	OF She Crown
		C I			SIC COMER
1 Cable tool 5 Air percussion 2 Rotary (conventional) 6 Boring 3 Pattern (conventional) 7 1	⁹ Driving ¹⁰ Digging				J
 Hotary (reverse) Diamond Rotary (air) Jetting 	LINE & GAOUT				217358
Name of Well Contractor	Well Contractor's Licence No.	Data source	58 Contractor	59-62 Date rec ΜΔ	R 2 2 2001
Address	uc 5406	Date of inspec	tion Insp	ector	
Name of Well Technician	Well Technician's Licence No.	Remarks			
Signature of Technician/Contractor	Submission date 00				USS.ES1
2 MINISTRY OF THE ENVIE					0506 (11/98) Front Form 9

N	STRUDU Ntario	/ C // Ministry of the Environme	ent Well Ta	g Number (Place りた ての	sticker and pr	int number below)	Regulation 903	Wel Ontario Water	Record
Instruction	s for Completi	ng Form		NO-TI	1 G			pa	age _/ of _/
 For use All Secti Question All metr Please p Well Owner 	in the Province ons must be com ns regarding com e measuremen print clearly in blu ''s Information	of Ontario on mpleted in full mpleting this a ts shall be re ae or black ink and Locatio	ly. This docum to avoid delays pplication can t ported to 1/10 only. on of Well Info	ent is a perma s in processing be directed to t th of a metre. prmation	nent lega J. Further the Water	II document. P instructions an Well Manager	Lease retain for future d explanations are ava ment Coordinator at 4 Ministry Use	e reference. ilable on the bar 416-235-6203. Only	Ck of this form.
	11.) E.7 E.P.				A.A. (1.4	MEL			
RR#/Street Nu GPS Reading	MAD Zor	ne Easting	North	hing U	ity/Town/Vi MA/ nit Make/M	illage NSFIEC Iodel Mode	Site/Compar of Operation: Undif	rtment/Block/Tra	ct etc.
Log of Over	B 3 / rburden and B	edrock Mate	フォーチン rials (see inst	tructions)	WAD 4	70	Differ	rentiated, specify	· · · · · · · · · · · · · · · · · · ·
General Colour	Most common	material	Other Ma	aterials		Genera	I Description	Dept Fror	n Metres n To
	16	comm	ISSION	1			T.D. FOUNI	0 1	5 M
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YELLAND	BENTUN	DE HO	LE PLU	(<u>G</u>			:	13	0
BROWN	SAND	2			MA	TIVE	· .	2	0
·····			CASINC	S REM	OUE	D		2	0
Hole	Diameter		Cons	truction Recor	d		Test	of Well Yield	
Depth M From	etres Diameter To Centimetres	Inside diam centimetres	Material	ⁱ Wall thickness centimetres Casing	Depth From	Metres To	Pumping test method Pump intake set at - g (metres) Pumping rate -	Draw Down Time Water Level min Metres Static Level 15	Recovery Time Water Level min Metres
Water Water found at Metres Gas Other: Gas Gas	r Record Kind of Water Fresh Sulphur Salty Minerals Fresh Sulphur Salty Minerals		Plastic Concrete Galvanized Steel Fibreglass Plastic Concrete Galvanized Steel Fibreglass Plastic Concrete Salvanized	.188	0	15	(litres/min) Duration of pumpinghrs + min Final water level end of pumpingtres Recommended pump typeShallow □ Deep Recommended pump depthmatrice	2 3 4 5	2 3 4 5
Gas	Fresh Sulphur Salty Minerals	Outside diam	Steel Fibreglass	Screen	U	K	Recommended pump rate. (litres/min) If flowing give rate - (litres/min)	10 15 20 25	10 15 20 25
Clear and se	ediment free		Salvanized	•	•		If pumping discontin- ued, give reason.	30	30
Chloringtod	fy		No C	asing or Scree	en			40 50	40 50
								60	60
Depth set at - M	etres Material and ty	pe (bentonite slurry	, neat cement slurry) etc. Volume	Placed	In diagram below	v show distances of well fro	om road, lot line, a	nd building.
15 (A BO	UE				EVERET	TRD.	-1
		Method of Con	struction			7 7 7			•
Cable Tool	entional) Air per se) Boring	(air) cussion Water U	Diamond Jetting Driving		Digging Dther	d XIL	— 366 m -	→× 15 M	ATED
	[] Industr	ial	Public Supr	ply 🗌 (Other			V ····································	
Stock		ərci a i Dal	Cooling & a	ir conditioning		Audit No.	36705 Date	e Well Completed	MM DD
Water Supply Observation Test Hole	y Recharge w well Abandoned	Final Status rell , insufficient suppl , poor quality	of Well Unfinished y Dewatering	Abandon MOT KA	ed, (Other) - 0 um E	Was the well ov package delivered	vner's information Date	2006 e Delivered YY	YY MM DD
	Well Cor	ntractor/Techn	ician Informatio	on All Contractoria Lic	ence No	Data Source	Ministry Use	e Only htractor	
Name of Well Co FRED Business Addres 3519 Name of Well Te	ontractor <u>CoNSTA</u> ss (street name, num <u>57 H</u> bochnician (last name,	ber, city etc.)	SONI LTO	Vell Technician's Lie	cence No.	Date Received	y ^Y ZŨOĢ ^{MM} DD Date	I Record Number	YY MM DD
Signature of Ter	M CON.S7 chnician/Contractor	ABLE Contrac	7 Da	te Submitted _{YYYY} 2006	MM DD 5 10 Well Ow	ner's Copy 🗖	Cette fo	ormule est dispoi	nible en français

		linistry of	ng Number (Place s DE CO	ticker and print	number below)	Regulation 903 On	Well Record tario Water Resources Act
Provide of Ontatio city. The Second is a parameter legal document. Please relian for futures reference. At Sections metabolise represents on the control of the avoid delays in the Yater Well Management Conditions are abala on the law of the Yater Well Well Well Well Well Well Well We	Instructions for Completing	Form	NO- T.	AG			page of
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Case Support Partial Concrete Other State	at Metres / Kind of Water	Steel Fibreglass				Final water level end	3
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Based Other Screen Image: Status Minerals Image: Status	Other:	Steel Fibreglass	,			type.	4
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Business Address (street name, number, city etc.) Date of Inspection 35/9 57H L/NE BKADFOKD Name of Well Technician (last name, first name) Well Technician's Licence No. Date of Inspection VYYY MM DD KEV/N ONSTABLE Date Submitted Dat	FRED CONSTARI	E TSON LTA	1663			1	663
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KEVIN (ONSTABLE) 10230 Signature of Technician Sontractor Date Submitted X 2006 5 10	Name of Well Technician (last name, first	st name)	Vell Technician's Lice	ence No.	Remarks	Well Re	cord Number
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Ontario Ministry of	Nell Tag Number (Place	e sticker and print number below)	Regulation 903 O	Well Record			
16 STRUDWICK	NOT	TAC		page / of			
Instructions for Completing Form For use in the Province of Ontario	only. This document is a perma	anent legal document. P	J lease retain for future r	eference.			
 All Sections must be completed in Questions regarding completing this 	full to avoid delays in processing	g. Further instructions an	d explanations are availament Coordinator at 41	ble on the back of this form. 6-235-6203			
All metre measurements shall be Diagon print deprive in blue or black	e reported to 1/10 th of a metre.		Ministry Use O	only			
Please print cleany in blue of black							
Address of Well Location (County/District/Mu	inicipality)	vnship	Lot	Concession			
DUFFER RR#/Street Number/Name		MULMER City/Town/Village	Site/Compartn	nent/Block/Tract etc.			
GPS Reading NAD Zone Eastin	ng Northing U	MANSFIELD Jnit Make/Model Model	of Operation: Undiffer	rentiated			
8 3 17 57	7277 4890862	MP 410	Differen	ntiated, specify			
General Colour Most common material	Other Materials	Genera	al Description	Depth Metres			
DEC	OMMISSION			Well Record Leguiation 903 Ontario Water Resources Act page of page of cations are available on the back of this form. Differentiated on the back of this form. Concession Concession			
BROOMN SAND	a second a s		.*	44 41			
YELLOW BENTONITE	HOLE PLUG			41 40			
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BROWN SAND	110661640		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				
YELLOW BENTONITE	HOLE PLUG			6 2			
BROWN SAND CLA	9V	ALF A		20			
Hole Diameter	Construction Reco	DED	Test o	of Well Yield			
Depth Metres Diameter Inside	Wall	Depth Metres	Pumping test method	Draw Down Recovery			
From Io Centimetres diam centimetres	centimetres	From To	Pump intake set at - St	nin Metres min Metres			
	Casing		(metres) Le	vel 25			
15.2	VSteel Fibreglass	44 0	(litres/min)				
Water Record			Duration of pumping	2 2			
at Metres / Kind of Water	Steel Fibreglass		Final water level end of pumping	3 3			
Gas Salty Minerals			Recommended pump	4 4			
m Fresh Sulphur			Recommended pump	5 5			
Other:	Galvanized		Recommended pump	10 10			
Gas Salty Minerals Outside	Steel Fibreglass Slot No.		rate (litres/min)	15 15			
After test of well yield, water was		UR	(litres/min)	20 20 20 25 25 25 25 25 25 25 25 25 25 25 25 25			
Clear and sediment free	Gaivanized No Casing or Scre	en	If pumping discontin- ued, give reason.	30 <u>30</u> 40 40			
	Open hole			50 50			
Blugging and Sopling Boo		andonment		60			
Depth set at - Metres Material and type (bentonite	slurry, neat cement slurry) etc. Volum	e Placed In diagram belo	w show distances of well from	road, lot line, and building.			
44 0 AS AB	OUE		y arrow.	↑ I			
			EVERETT	ROAD N			
	· · · · · · · · · · · · · · · · · · ·			CON7			
Method of	Construction		ę.	~			
Rotary (conventional)		Other	- 235 M -	-7^			
_ Rotary (reverse)Boring Wat	ter Use		·	20710			
Domestic Industrial	Public Supply	Other	40	7 9			
Irrigation Municipal	Cooling & air conditioning	Audit No. Z	36798	Well Completed			
Water Supply Recharge well Unfinished Abandoned, (Other) Was the well owner's information Date Delivered YYYY MM							
□ Observation well □ Abandoned, insufficient supply □ Dewatering □ Package delivered? □ res □ No □ Test Hole □ Abandoned, poor quality □ Replacement well □ □ □							
weil Contractor/ lecnnician information Data Source Contractor Name of Well Contractor Well Contractor's Licence No. Data Source Contractor							
FRED CONSTAGLE DON LID IOO2 Business Address (street name, number, city etc.) Date of Inspection YYYY MM DD							
3519 5TH LINE Name of Well Technician (last name, first name)	35/9 57H L/NE SKADFORD Name of Well Technician (last name, first name) Well Technician's Licence No. Remarks						
KEUIN CONSTABL Signature of Technician/Contractor	F Date Submitted						
x Man Constate	tractor's Copy		Cette for	mule est disponible en français			
Ontario Measurements recorde	Ministry of the Environment d in:	Well Ta Mer (Blace Sticker Tag#: A1	and/or Print Below) 40255	Regulation 903 O	Well Record ntario Water Resources Act Page of		
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Well Owner's Inform	mation	alian					
MULM	UR Last Name / Organiz	CUN SHIP	E-mail Address	РРММ 904 ЛАЛИАТА. НА	Well Constructed by Well Owner		
Mailing Address (Street I	Number/Name)	Municipality	Province	Postal Code T	elephone No. (inc. area code)		
Well Location	(Charat Numbershipmer)	True tie	,				
Address of Well Location	(Street Number/Name)		MEL	10	Concession 7		
County/District/Municipa	Ity DUFFERIN	City/Town/Village		Provinc	rio Postal Code		
UTM Coordinates Zone	Easting Northing	Municipal Plan and Sub	olot Number	Other			
NAD 8 3	<u>D'7'///////////////////////////////////</u>	Sealing Record (see instructions on the second see instructions)	he back of this form)				
General Colour	Most Common Material	Other Materials	Gene	ral Description	Depth (m/ft) From To		
BLACK	TCPSOIL	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		SOFT			
12Karly	GRAUEL	SIONE		LOOSE	1 4		
BRUN		- DIAL		TINE	$\frac{4}{20}$		
BRUN	SAND	SUT CLAY	1	ALEPEN			
BRANN	SAND			IMSE	125 135		
BRANN	CLAY			SOFT	135 138		
and GREY	SAND	GRAVEL		LOOSE	138 149		
GRET	SHALE			<u>CRISP</u>	149 150		
Depth Set at (m/ft)	Annular Space Type of Sealant Use	d Volume Placed	After test of well yield,	Results of Well Yield water was: Dra	W Down Recovery		
From To	(Material and Type)	(m³/ft³)	Clear and sand fr	ree Time (min)	Water Level Time Water Level (m/ft) (min) (m/ft)		
190 4	EXENDERL 67 MU	A RODION	If pumping discontinue	d, give reason: Static Level	75.5		
	LA IVIL	UDIFTIUA.	-1	1	88-0 1 110		
			Pump intake set at (n		93.8 2 97.8		
Method of Const	truction	Well Use	Pumping rate (Vmin /		98-3 3 88.3		
Cable Tool	Diamond Public	Commercial Not used	Duration of pumping	2KW 4	1020 4 862		
Rotary (Reverse)	Driving	Test Hole Monitoring Cooling & Air Coorditioning	hrs + m	nîn 5	103.8 5 84.1		
Air percussion	Digging Digging Difference Difference	E COORIG & For Contentioning	112.		108 × 10 ×2.0		
Const	ruction Record - Casing	Status of Well	If flowing give rate (I/n	nin / GPM) 15	109 15 777.X		
Inside Open Hole O Diameter (Galvanized, F	R Material Wall De Fibreglass, Thickness	Ppth (<i>m/ft</i>) Water Supply	Recommended pump	depth (m/ft)	111.02 20 16.8		
(cm/in) Concrete, Plan	stic, Steel) (cm/in) From	Test Hole	Recommended pump	rate 30	111.9 23 10.10		
LO'4 SIEE	L 188 +d		(Umin / GPM)	GPN 40	111.5 30 16.5		
		Observation and/or Monitoring Hole	Well production (I/min	PMCPPHORD	$\frac{11}{119} \frac{1}{50} \frac{1}{M} \frac{1}{1}$		
		(Construction)	Disinfected?	60	112.260 MST		
Cons	truction Record - Screen	Insufficient Supply	Leave tracel	Map of Well Loca	tion		
Outside Diameter (Plastic, Galvan	al De ized, Steel) Slot No. From	pth (<i>m/ft</i>) Water Quality	Please provide a map t	pelow following instruction	ns on the back.		
612 STAIN	Juce indul id	specify		Walt			
<u></u>	MEDIA111	Other, specify		in Lin	ATTO TOWER		
I	Water Details	Hole Diameter		WHIL H	IMEIL ILLUEIL		
Water found at Depth Kin	d of Water: VFresh Untest	ed Depth (m/ft) Diameter From To (cm/in)					
Water found at Depth Kin	d of Water: Fresh Unteste	ad 0 140 8314					
(m/ft) Gas Water found at Depth King	Other, specify	140 150 618		PUMP Haus	SE .		
(m/ft) 🗍 Gas 🗍	Other, specify	_		- 1			
Well C Business Name of Well Cor	Contractor and Well Technic	ian Information	Ai	RPCRT LUAI	0		
KAD WEIL I	RILLING LTD	4645	K				
SG9 SINFINI	90 10, REFT	N NIFAL THIMSA	Comments:				
Province Postal	Code Business E-mail A	ddress		s			
Bus.Telephone No. (inc. area	code) Name of Well Technician	(Last Name, First Name)	information package	13050MA	MINISTRY Use Only idit No.		
105112909 Vell Technician's Licence No.	SICL KIUALS	Contractor Data Submitted	delivered Date Wo	r Completed	z159728		
241215	The James	20130SA7	No 201	1131015T23	JUN 2 4 2013		
506E (2007/12) © Queen's Pr	rinter for Ontario, 2007	Ministry's Copy		•••••••••••••••••••••••••••••••			

Ministry of the Environment Measurements recorded in:	Well Tag No. (Place Sticker al ABANDCN N	ndlor Print Below)	Well Record ion 903 Ontario Water Resources Act Page of
Well Owner's Information		L	
First Name	ion	E-mail Address	Well Constructed
MULNER IWNSI	111 Municipality	Brovingo Bostal Ca	by Well Owner
Mailing Address (Street Number/Name)	wuncipaity		
Well Location			
Address of Well Location (Street Number/Name)	Township	Lot	Concession M
County/District/Municipality		MEL	Province Postal Code
DUFFERIN	City/10wn/village		Ontario
UTM Coordinates Zone Easting Northing	Municipal Plan and Suble	ot Number	Other
NAD 8 3 5770044841	5/6/4/1		
Overburden and Bedrock Materials/Abandonment S	ealing Record (see instructions on the	back of this form)	Depth (<i>m/ft</i>)
General Colour Wost Common Material		General Descripti	From To
		· · · · · · · · · · · · · · · · · · ·	
Annular Space	Values Direct	Results of V	Nell Yield Testing
From To (Material and Type)	volume Placed (m³/ft³)	Clear and sand free	Time Water Level Time Water Level
-8 130 HOLEPHIA	25 BAG AP	Other, specify	(min) (m/ft) (min) (m/ft)
BO MY LACHER OF S	iale perco	If pumping discontinued, give reason	n: Static Level
TOU IMA WHORED MEH S	NLNE AS UHL		1 1
	HAPILOX.	Pump intake set at (m/ft)	2 2
Method of Construction	Well Use	Pumping rate (Ilmin / GPM)	3 3
Cable Tool Diamond Public	Commercial Not used	Duration of pumping	4 4
Rotary (Conventional) Jetting Domestic Rotary (Reverse) Driving Livestock	Test Hole Monitoring	hrs + min	5 5
Boring Digging Irrigation	Cooling & Air Conditioning	Final water level end of pumping (m/	ft) 10 10
Other, specify Other, specify	······································	If flowing give rate (Imin / CDM)	15 15
Construction Record - Casing	Status of Well	In nowing give rate (IImin (GPM)	
Inside Open Hole OR Material Wall Dep	th (<i>m/ft</i>)	Recommended pump depth (m/ft)	
(<i>cmlin</i>) Concrete, Plastic, Steel) (<i>cmlin</i>) From	To Crest Hole		25 25
(214 STEEL 1188 t)		Recommended pump rate (Ilmin / GPM)	30 30
AP	Dewatering Well		40 40
<u>a Alexandri I. Al</u>	Monitoring Hole	Well production (<i>limin / GPM</i>)	50 50
	(Construction)	Disinfected?	
	Abandoned,		60 60
Construction Record - Screen	Abandoned, Poor	Map of V	Vell Location
Diameter (Plastic, Galvanized, Steel) Slot No. Erom	th (<i>m/ft</i>) Water Quality	Please provide a map below followin	g instructions on the back.
	specify	ALPPOPT	1
		RO - Ir	N
Water Details	Hole Diameter		K MWATER
Water found at Depth Kind of Water: Fresh Untested	Depth (<i>m/ft</i>) Diameter		TANER
Gas Other, specify	4	1	LA L
(<i>m/ft</i>) Gas Other, <i>specify</i>	۶		PUMP HOUSE
Water found at Depth Kind of Water: Fresh Untested		OLL)	WELL.
(<i>m/ft</i>) Gas Other, <i>specify</i>			
Well Contractor and Well Technicia	an Information		
AB INFIN DUILLING IT	Well Contractor's Licence No.		
Business Address (Street Number/Name)	Municipality	Comments:	· .
SLA SIDERLAN ID. BEFTC	N NEW THIMSA	77+	
Province Postal Code Business E-mail Add	dress	• 8	
Bus Telephone No. (inc. arra codel Namo of Mall Tachalata)	_ I_IZILLING COM · [Well owner's Date Package Deliver	ed Ministry Use Only
	Last Name, HIST Name)	delivered	15 Audit No.
Well Technician's Licence No. Signature of Technician's Licence No.	ontractor Date Submitted	Yes Date Work Completed	41/0618
dy 25 THOM	2013MIN 41ST	INO 201306	03 Rechard 2 1 2014
0506E (2007/12) © Queen's Printer for Ontario, 2007	Ministry's Copy	то со 1995 - 19	

					akRidg	es _{groui}		
ID: 10 Eastin Drill N Water Water Botto	D: 1007882221 Easting: 577,739.0 Drill Method: Water Level Count: 14 Water Quality Count: 0 Bottom Depth (m): 61.0			W Na Pr W Re To	Vell/BH Name: 73 orthing: 4,891,27 imary Purpose: U /L Start Date: 05/0 ec Pumping Rate otal Screens: 1	5974(7.0 Jnkno)6/20. : 55.0	Original Name: 7359746 Date Completed: 05/06/202 On Secondary Purpose: Unknow WL End Date: 05/06/2020 Ground Level: 310.0 Screen 1 Depth (m): 257.3 -	0 /n 249.3
Elev. (masl)	Depth. (m)	Mat 1		Mat 2		Mat 3	Description	
310.0	0.0		Sand		Gravel			
307.6	2.4							
305.2	4.8		Sand		 Silt	+		
302.8	7.2							
300.4	9.6							
298.0	12.0							
295.6	14.4		Clay		Silt			
293.2	16.8							
290.8	19.2		Clay		Silt			
288.4	21.6							
286.0	24.0							
283.6	26.4							
281.2	28.8		Clay					
278.8	31.2		Fine Sand		Silt			
276.4	33.6							
274.0	36.0		Clay		Silt	+		
271.6	38.4							
269.2	40.8							
266.8	43.2							
264.4	45.6							
262.0	48.0							
259.6	50.4		Sand			+		
257.2	52.8							
254.8	55.2							
252.4	57.6							
250.0	60.0							

^{>} On	tario	Ministry o Conserva	of the Enviro Ition and Pa	nment, V Irks	Nell Tag ABA	No. (Place Sticker and NDON N	d/or Print Below)	Regulation	903 Ontari	Well Re o Water Resou Page c	COL Irces A
	r's Informa							<u></u>			
Name	1 13 1 1 / 1	1 La	st Name / O		D LL	·	E-mail Address			U Well Co by Well	nstructe Owner
ing Addres	ss (Street Nur	K mber/Name	<u>1</u> (MNC	<u>MU</u>	inicipality	Province	Postal Code	e Telepi	hone No. (inc. ar	ea code)
n macani kasili kalimati			ana isa kuna		al an the factor						
IL Locatio	on ell Location (S	street Numb	er/Name)	<u></u>	Tor	wnship	L. 0	Lot IA	Conc	ession > 11	< <u>~</u>
					C;		<u>IUK</u>		Province	Postal C	ode
nty/Distric	t/Municipality	DUF	FERIN	J					Ontario		
/ Coordina	ates Zone E	asting		thing	1/ 17 ML	unicipal Plan and Sublo	t Number		Other		
NAD 8 rburden	and Bedroo) / / /// :k Materia	Is/Abandor	<u> </u>	<u>lo /</u> ng Recor	d (see instructions on the	back of this form)	-5.29 <u>.</u> 5.24			(m/#)
neral Colo	our M	lost Comm	on Material		Othe	r Materials	Ge	neral Descriptio	n	From	<u></u>
							· ·				
		5	Annular	 Space				Results of V	Vell Yield Te	sting	
epth Set	at (<i>m/ft</i>)	<u>a din na n</u> atahanggin	Type of Sea	lant Used	an an a' an	Volume Placed (m ³ /ft ³)	After test of well yie	ld, water was: Id free	Draw D Time Wat	own <u>Re</u> ter Level Time V	covery Vater L
	17~	HME	Piil			29,8465	Other, specify		(min)	(m/ft) (min)	(m/ft,
	102	<u>nuc</u> S				1. BASS	If pumping disconti	nued, give reasor	Level		
	[1]]								_ _1		
							Pump intake set at	(m/ft)	2	2	
		-		Angene angene	Well lis		Pumping rate (1/mir	1/GPM)	3	3	
able Tool	Ju of Const	Diamond	Pul	olic [Commer	cial 🔲 Not used	Duration of pumpir		4	4	
totary (Co totary (Re	nventional) (verse)	Jetting		mestic estock	🔄 Municipa 📄 Test Hole	al Dewatering	hrs +		5	5	
Boring		Digging	Irrig	gation	Cooling à	& Air Conditioning	Final water level er	nd of pumping (m	/#) 10	10	
ther, spec	cify			ner, specify			If flowing give rate	(Vmin / GPM)	15	15	
aide	Const			ing Denth	(m/ft)	Status of Well	Recommended pu	mp depth (m/ft)	20	20	
ameter cm/in)	(Galvanized, F Concrete, Plas	-ibreglass, stic. Steel)	Thickness (cm/in)	From	То	Replacement Well			25	25	
14	STEEL		1.88	-10	180		Recommended pu (I/min / GPM)	imp rate	30	30	
			100	pppa	<u>λχ</u>	 Dewatering Well Observation and/or 	Well production (1/	min / GPM)	40	40	
				1111		 Monitoring Hole Alteration 			50	50	
						Construction)	Disinfected?		60	60	
	Cons	truction R	ecord - Sci	reen		Insufficient Supply		Map of	Well Locatio	ол	
outside	Mater	rial	Slot No.	Depth	(<i>m/f</i> t)	Water Quality	Please provide a	map below follo	wing instruction	ons on the back	· /
cm/in)	(Plastic, Galvar	nized, Steel)		From		HOF IN PIP			~1.00	5-	l
						Other, specify	1	LCUN	TY KU	1/2	-
			<u> </u>	<u> </u>			 ज 1				9
ter found	at Depth Ki	Water De nd of Water	tails r: □Fresh	Untested	Dep	th (<i>m/ft</i>) Diameter		_			
(m/	/ft) 🗌 Gas 🗌	Other, spa	ecify		From	To (cm/in)	HIKYCKI	THA	NSCH		
ter found	iat Depth ∣Ki /#) □Cas □	nd of Water	r: [_]Fresh ecify	Untested			- <i>K</i> D '	TPE	+1) <u> </u>	7 carl-la	
ter found	at Depth Ki	nd of Wate	r: Fresh	Untested					/	COMERU COMERU	-17-
(m/	/ft)	Other, sp	ecify				_ 3		\wedge		וא: ~
si <mark>ness</mark> Na	arrie of Well Ç	ontractor			waana W	ell Contractor's Licence N	<u>~</u>			~	
8B	MATI	JRN	ING L	<u> ()</u>		4645	Comments	l			
	aress (Street			FFILL	NA I	EN TERUMS	dh.				
	Pos		Busines				Well owner's	ate Package Deli	vered	Ministry Us	e Only
	S L.(Code) N	ame of Well	Technician (I	Last Name		information /	20200	ST I L	^{3dit No.} Z 33	<u>35(</u>
OSI	7292	<u>150</u>	Kai	ALSVI	L KOI	BERT.	delivered D		ated	· · · · · · ·	ົງທີ
Il Technici		o. Signatur	e of Technici	and/or Co	ontractor D	are submitted AAAAAAASTI		10000	<u>508</u>	MAY L J L acceived	5ZÜ
MILL			4 - 4		<u>_</u>	<u></u>			h-	© Queen's Printer f	or Ontari

<u>Option</u>	S									
					S			Ioraine		
ID: 10 Eastin Drill	0078855 ng: 577, Method	68 785.0			We No Pri	ell/BH Name: 735 orthing: 4,891,243. mary Purpose: Ur	9755 0 Iknown	Ori Dat Sec	ginal Name: 73597 te Completed: 04/2 condary Purpose: U	55 5/2020 nknown
Wate Grou Scree	er Level nd Leve en 1 Dep	Count l: 310. oth (m	: 0 6): 268.8 -	268.5	Wa Bo	ater Quality Coun ttom Depth (m): 4	t: 0 42.1	Rec Tot	: Pumping Rate: al Screens: 1	
Elev. (masl)	Depth. (m)	Mat 1			Mat 2		Mat 3		Description	



Lot 10

Concession 8



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ノク	001602 0042	628	0053	128	00	62628		*				
			32							65		
	WATER RECORD	51	CASING & C	OPEN HO	LE REC	ORD	Z SIZE(S) (OF OPENING	31-33	DIAMETER	34-38 LEN	GTH
EP FOUND	KIND OF WATER	INFIDE	MATERIAI	WALL	DEPTH	- FEET				11	NCHES	
10-13		INCHES		INCHES	FROM	TO		L AND TYPE		DEPTH OF SCR	TO TOP EEN	41-44
-	2 CASALTY AND MINEPAL	10-11 1	STEEL 12			13 - 16	S					FEE
52		2	GALVANIZED									,
10-16	1 G FRESH 3 G SULPHUR	30	CONCRETE	3	0	0042	61	PLUG	GING &	SEALING	RECOR	D
		17-18 1	STEEL 19			20-23	DEPTH SET	AT · FEET	MATER		CEMENT	GROUT.
20-23	1 C FRESH 3 SULPHUR 24	2	GALVANIZED	16		0062	FROM	το	MAILR	AL AND TYPE	LEAD PACKE	ER, ETC.
	2 SALTY 4 MINERAL	30 3	CONCRETE		42	614	10-13	14-17				
25-28	$1 \square$ FRESH $3 \square$ SULPHUR 29	4	OPEN HOLE	BUSE	•							·- · • · • · · - · · -
	2 🗋 SALTY 4 🗍 MINERAL	24-25 1				27-30	18-21	22-25				
30-33	1 - FRESH 3 - SULPHUR 34 80	3	CONCRETE				26-29	30-33	80			
	2 SALTY A TIMINERAL											



FORM 7 MOE 07-091

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Min of the	istry he		The Ontario Water Resources Ac	
Env	rironment			
Ontario	1. PRINT ONLY IN SPACE 2. CHECK 🔀 CORRECT E	SOX WHERE APPLICABLE	703120	
COUNTY OR DISTRICT	ERIN	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON . BLOCK, TRACT, SURVEY ETC.	> LOT 25-27
		ADDRESS MANS/ICLE	DATE CO	MPLETED ANG. P
21	ZONE EASTING	NORTHING RC.	ELEVATION RC. BASIN CODE H	
		OF OVERBURDEN AND BEDROCK	(MATERIALS (SEE INSTRUCTIONS)	<u></u>
GENERAL COLOUR	NOST COMMON NATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET
BROWE	Top Sora		1.1400	O /'
BROWN	SAND CH	17.	* ,	1' 20'
GRET	6-17.			20 30
CRET	50~0		1005E	30 46
		$\frac{1}{32}$	54 54 55 55 55 55 55 55 55 55 55 55 55 5	L
WATER FOUND AT - FEET	KIND OF WATER	IDE MATERIAL MATERIAL DEPT		INCHES FEET
10-13 1 D	FRESH 3 [] SULPHUR	10-11 I STEEL 12		OF SCREEN FEET
15-18 70	FRESH 3 [] SULPHUR 19	C GALVANIZED CONCRETE CARGE O 4 OPEN HOLE	61 PLUGGING & SEA	LING RECORD
20-23 1	FRESH 3 SULPHUR 24	17-18 1 GALVANIZED	20-23 DEPTH SEVAL FEET" MATERIAL AN	ID TYPE (CEMENT GROUT) LEAD PACKER, ETC)
25-28 1 []	FRESH S [] SULPHUR	3 CONCRETE 4 CONC	10-13 14-17	
30- <u>3</u> 3 1	SALTY 4 [] MINERAL 34 C FRESH 3 [] SULPHUR	Z GALVANIZED Z GONCRETE	26-29 30-33 80	
	SALTY 4 MINERAL			
71 1 D PUMP	The BAILER	GPMHOURS	LOCATION OF WE	- L
STATIC LEVEL	WATER LEVEL 25 END OF WATER LEVELS PUMPING 22:24 IE MINUTES 1 20	DURING	IN DIAGRAM BELOW SHOW DISTANCES OF WELL LOT LINE INDICATE NORTH BY ARROW.	FROM ROAD AND
	42 FEEL FEEL FEEL	$\frac{39^{9-31}}{59^{2-34}} = \frac{32 \cdot 34}{59^{2-34}} = \frac{32 \cdot 34}{59^{2-34}} = \frac{332 \cdot 34}{59^{2-34}} = \frac{335 \cdot 37}{59^{2-34}}$		
IF FLOWING, GIVE RATE	38-41 PUMP INTAKE SET AT	WATER AT END OF TEST 42	$\mathcal{N} \iff \mathcal{V}$	JUIEN DO
RECOMMENDED PUN	GPM IP TYPE RECOMMENDED PUMP Same	FEET CLEAR Z L CLOODT 43-45 RECOMMENDED 46-49 PUMPING	V Strain	r'w Et tot
SO-53	DEEP SETTING	FEET RATE GPM		100
FINAL	SA WATER SUPPLY	5 ABANDONED, INSUFFICIENT SUPPLY		
STATUS OF WELL	4 C RECHARGE WELL	7 C UNFINISHED		
55	S-56 1 - DOMESTIC 5 [2 - STOCK 6	COMMERCIAL UNICIPAL		
WATER USE	3 I IRRIGATION 7 [4 INDUSTRIAL 4	DUBLIC SUPPLY COOLING OR AIR CONDITIONING		
	57 OTHER	• NOT USED		
METHOD	CABLE TOOL CABLE TOOL CONVENTIONAL CONVENTIONAL CONVENTIONAL CONVERSES	BORING DIAMOND JETTING		
DRILLING	4 ROTARY (AIR) 5 AIR PERCUSSION	DRIVING	RILLERS REMARKS	N N N N N N N N N N N N N N N N N N N
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Ontario	I. PRINT ONLY IN Z. CHECK 🛛 CORF	SPACES PROVIDED	703407 MUNICIP		<u>i </u>
DUFFE	RINI	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK TRACT, SURVEY, ETC. 8 EHS		EP 1 10
		252YOUNG	ST. ALLICTON. DAY	23 MO	48-53
<u>21</u>	ZONE EASTING	NORTHING RC	ELEVATION RC BASIN CODE		i i i i i
	L	OG OF OVERBURDEN AND BEDROCI	MATERIALS (SEE INSTRUCTIONS)		<u> </u>
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FROM	I - FEET
BROWN	SAND	GRAJEL	MIXTURE	0	14
,	<u> </u>		SURFACE SAND	14	65
GREY	CLAY	STONES	STONEY CLAX	65	16-
 		SAND	RUNNY SANDACLAY	162	16
2.1	ji s		LARD GLAV	118	17

JAND	CLEAN WATER BEAKING	172 180
· - • -····		
14 15 Z1		
ATER RECORD	51 CASING & OPEN HOLE RECORD Z SIZE (SLOT NO.) 31-33 DIAMI	ETER 34-38 LENGTH 39-
KIND OF WATER	INSIDE WALL DEPTH - FEET	INCHES FE
FRESH 3 SULPHUR 14	INCHES INCHES FROM 10 0 10 10 10 10 10 10 10 10 10 10 10 1	OF SCREEN
SALTY 4 MINERAL	(GALVANIZED 100 -1 man Stanless stall	72 FEET
FRESH 3 SULPHUR	f = concrete 100 $f = 212$ [61] PLUGGING & SEA	
ET SALTY & ET MINERAL		
SALTY 4 MINERAL	17-18 OPEN HOLE 19 20-23 DEPTH SET AT - FEET MATERIAL AND	
SALTY 4 MINERAL FRESH 3 SULPHUR 24 SALTY 4 MINERAL	# OPEN HOLE 17-18 I STEEL 19 20-23 DEPTH SET AT - FEET MATERIAL AN I GALVANIZED I CONCRETE	D TYPE (CEMENT GROUT
SALTY 4 MINERAL FRESH 3 SULPHUR 24 SALTY 4 MINERAL FRESH 3 SULPHUR 29	17-18 Image: Steel in the s	D TYPE (CEMENT GROUT LEAD PACKER, ETC.)
SALTY Image: Mineral FRESH Image: Sulphur SALTY Image: Sulphur FRESH Image: Sulphur FRESH Image: Sulphur SALTY Image: Sulphur	Image: state of the state o	LING RECORD
	ADD ADD ADD ADD ADD ADD ADD ADD	SAND CIEAN, WATER BEAKING SAND CIEAN, WATER BEAKING Material Status Status Material Status Status Salty 4 MINERAL Steel Steel Salty 4 MINERAL Steel Steel



\bigtriangledown	Minist of the	ry	20-90	\ A /A"	TEI	The Ont	ario Wal	er Resource	es Act	$\mathbf{c}\mathbf{o}$	
Ontario	Envirc	onment		VVA	470				CON.		
	1675167	1. PRINT ONLY IN 2. CHECK 🗵 CORF	SPACES PROVIDED	<u>11</u>	1/1	1435		1,7,0,0,6	H,S,	E	
COUNTY OR DI		91 N/	TOWNSHIP, BOROUGH, C	TTY, TOWN, VILLAGE			CON BLOC	K TRACT, SURVEY	ETC		10 25-27
			6 H	ICH PARK	AVE	ToR	ANTO		DATE COMPL	етер мо 5	48-53 YR.90
8 <u></u>						TION	RC BASH			10	
, 2	•	10 12 L(DG OF OVERBURDE	N AND BEDF	OCK MA	TERIALS	SEE INSTRU	JCTIONS			47
GENERAL CO	OLOUR	MOST COMMON NATERIAL	OTHER M	ATERIALS			GENERAL DE	SCRIPTION		DEPTH FROM	FEET
Brow	\wedge	topso:1								0	1
Brown	^	Sand	have			-				1	22
Brown	^	Sand								22	51
Brown		duif								51	56
Bhe		claif	Sand			0	<u>,</u>			56	96
6.		Sand					in e			96	1751
Creif Creif		Sand	lager 1			N	Andin	·····		///	157
Gry		Sand	Garer			/ \$	P in P	<u>~</u>		153	168
						,	<u> </u>			/ 2 - 2	
31				<u> </u>							
	WATFI							DPENING 31-	65 -33 DIAMET	ER 34-38	75 80 ENGTH 39-40
WATER FOUND AT - FEET	D	UND OF WATER	INSIDE DIAM MATERIAL	WALL THICKNESS	DEPTH - FE		MATERIAL A	20	6	INCHES DEPTH TO TOP	3 FEET
134	13 1 🛋 Fi 2 🗌 Si	RESH 3 □ SULPHUR ALTY 4 □ MINERALS 6 □ GAS	10,11 1 STEEL	112 1 54 3	<u>A</u>	13-16	ss A	tescope	0	of screen	8 FEET
15-1	18 1 [] F 2 [] 5	RESH 3 DSULPHUR 19 4 DMINERALS ALTY 6 DGAS	4 OPEN HOLE 5 DELASTIC	./88	0 /	48	61	PLUGGING	& SEAL	NG RECO	RD
20-2:		RESH 3 \Box SULPHUR 24 4 \Box MINERALS	17-18 1 □ STEEL 2 □ GALVANIZED 3 □ CONCRETE	19		20-23	FROM	TO MA	TERIAL AND	TYPE LEAD PA	NT GROUT
25-2	28 1 [] F	RESH 3 SULPHUR 29 4 MINERALS	4 □ OPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL	26		27.30	0 10-13	148" K	pul	an pol	iplug
30-3:	13 1 D FI	RESH 3 SULPHUR 34 80 4 NINERALS	2 GALVANIZED 3 CONCRETE 4 OPEN HOLE				151"	39-33 80	rut	tings (r
PUMPING	TEST METHOD	10 PUMPING RATE	11-14 DURATION OF	PUMPING	7	J L <i>‡</i>		ATION OF	WELL		<u> </u>
		BAILER	О	5-16 17-18 IOURS		IN DIAGRA	M BELOW SH	IOW DISTANCES	OF WELL F	ROM ROAD A	ND
	VEL	END OF WATER L PUMPING 22-24 15 MINUTES	EVELS DURING 2 [30 MINUTES 45 MINUT	RECOVERY		LOT LINE	INDICATE	NORTH BY ARR	.wc		N
H 88	? _{FEET} 1	26.3 26-2 FEI	12 12 1. Treet	32-34 35-3 FEET FEE	<u> </u>	++	l'ou.	nty Rd	17		\mathbf{A}
	TNG. TE			AR 2 CLOUDY		╉╼╊╼╸	1	<u>,</u>			
	ENDED PUMP T	YPE RECOMMENDED PUMP DEEP SETTING	43-45 RECOMMENDE PUMPING V () FEET RATE	10 GPW			\downarrow				
50-53		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			350	m			
FIN	AL TUS	1 🚺 WATER SUPPLY 2 🗋 OBSERVATION WEL	S 🗌 ABANDONED. INS	UFFICIENT SUPPLY OR QUALITY			l		Lo	+ 10	
OF W	VELL	3 DX TEST HOLE 4 🗍 RECHARGE WELL	7 UNFINISHED		ا رُ						
WAT	TER	1 DOMESTIC 2 DOMESTIC 3 DIREGATION	5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY			▲ 3	xews				
US	SE	4 D INDUSTRIAL	■ COOLING OR AIR CON ■ □ COOLING OR AIR CON	DITIONING OT USED			110	m			
METH	57	I CABLE TOOL	• 🛛 BORING		1	<u> </u>	¥				
CONSTR		ROTARY (CONVEN BOTARY (REVERSE POTARY (AIR) AIR PERCUSSION	IGNAL) C DIAMON D IETTING D DRIVING DIGGINI	р ; 5 Потнея	DRILLER	S REMARKS		i	Lot	9 7	177
C Fr-	TO CON	A Stable i S	on htd we	LL CONTRACTOR		RCE	58 CONTRAC	6 3	JUL	30 199	63-68 80
LODRES:	36 /	najor Mack	Conzie Dr 1	Nosdbin		OF INSPECTION	N	INSPECTOR			
HIN KI	OF WELL T	Constable		ELL TECHNICIAN'S DENCE NUMBER		ARKS					
	TURE OF TEC	CHNICIAN / CONTRACTOR	SUBMISSION DATE	5 .90	OFFI					CSS.I	ES
	STRY O	E THE ENVIRON			╴┙╽╌╌				FOR	M NO. 0506 (1	1/86) FORM 9

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Ministry of the Environment

The Ontario Water Resources Act WATER WELL RECORD

Print only in spaces provided.

Mark correct box with a checkmark, where applicable.





County or District	uffern	Township/Borough/City/Town/Village	3	Con block	tract survey	/, etc.	Lot 25-27
		Address			Date completed	20 day	Month year
21		asting Northing	RC Elevation RC 1 1 1 25 26 30	Basin Code			
	LOG O	F OVERBURDEN AND BEDROCK MA	TERIALS (see instruction	ins)		3	
General colour	Most common material	Other materials	General	description		D From	epth - feet To
Greu	Coarse Sand	Medium Gravet			. <u>.</u>	0	66
Brown	Clay	Fine Gravel		<u>-</u>		66	100
Greu	Clau	Fine Gravel	Soft		<u>. </u>	NU	132
Greu	Clad	Med Gravel	Hard			136	2 4
Grey	Med Sand					4]	49



Y	Or	nta	rio	N tł	linistry of te Environ	ment	Well Ta	Number (P)	ace sticker and pri	nt number below)	Regu	lation 90	3 Ontari	Well F	Record
Instruc	tions	s for	Comple	tin	g Form			a 016						page	of
 For All Que All Ple 	^r use i Sectio estior metr ase p	in the ons n ns reg e me orint c	Provin lust be arding c asurem learly in	ce o com om ents blue	of Ontario pleted in fu pleting this s shall be e or black i	only. This ull to avoi applicati reported nk only.	docum d delays on can b to 1/10 ⁴	ent is a perr s in processi be directed t th of a metre	nanent lega ing. Further i o the Water	I document. P instructions and Well Manager	lease retain d explanation ment Coord Min	for futuns are av inator al	re refere vailable o 416-23 se Only	ence. n the back c 5-6203.	of this form.
Wall O	wndr	'e Ini	formati	n ·	and Locat	tion of M	loll Info	rmation	MUN		ON 46	5		LOT	111
DU RR#/Stre 58	FF		Name	Co	FERIN) RO	17	-	MULM City/Town/Vi	UR TU Ilage	<i>ລ</i> ຂ s	ite/Comp	10 artment/l	CS Block/Tract e	HSE etc.
GPS Re	ading		NAD 8 3	Zone	Easting	660	Nort	191703	Unit Make/M	odel Mode) ETRA	e of Operation	n: Dif	differentiated,	ed Ave specify	eraged
Log of General (M	ost com	non i	drock Ma material	terials (s	Other Ma	terials		Genera	al Description			Depth From	Metres
BLOU	NN	\$	CANK									0	15	0	4.6
BLOW	UN V	1	Parte		CLAY	SA	ND					15	44	4.4	13.4
GRE	1		-LANC	5		CL	AYEY	r .				53	84	16.2	25.6
GRE	Y		SAN	٥		SI	-ΤÝ					84	94	25.6	28.7
CRE	Y Y		CLA	2		sa Sa	NOY					100	100	30,5	30.5
GRE	Ý		SAN	0		SIL	τÝ					115	137	35.1	41.8
Cille	Y Hole	Diame	SAA eter		[Cons	struction Red	ord][13/ Te	st of We	4//8 Yield	43.6
Depth	N	1etres	Diame	ter res	Inside	Mate	ial	Wall	Depth	Metres	Pumping te	est method	Draw	Down ater Level Tim	Recovery e Water Level
		10			centimetres			centimetres	From	То	Pump intak	e set at -	min Static	Metres mir	n Metres
						Steel	Fibreglass	Casing			(metres) Pumping ra	se -	Level 1		24.6
	Wate	r Rec	ord		15.9	Plastic	Concrete d	0.48	0.74	42.7	Duration of	pumping	2	7.4 2	24.1
Water fou atM	und etres	/ Kin	d of Wate	r		Steel	Fibreglass				Final water	level end	n 3 1	7.9 3	23.5
Gas		Fresh Salty	Sulpi	nur rals		Plastic Galvanize	Concrete d				Recommen	7 metre	s 4	854	23.0
	n [Fresh	 Sulp	• . nur		Steel Plastic	Fibreglass Concrete				type. Shall Recommen	ow Dee		191 5	12.5
Othe	r:	, Saity	· · · · ·			Galvanize	d	Screen	1		depth. 3	metre	s 10	71.2 10	207
Gas	n L	Salty	Sulp	rals	Outside	Steel	RESS.	Slot No.			rate. (litites) If flowing gi	/min) ve rate -	15 :	2.6 15	19.4
After tes	t of we	ll yield	water wa	s	14.1.	Stillsit		14	42.7	43.6	(litres	/min) discontin-	25	J.3 25	17.9
Othe	r, spec	ify			1-1-0		No	Casing or Sc	reen		ued, give re	ason.	40 2	5.3 40	17.0
Chlorina	ted 😽	Yes	No			Open hole	e						50 60 2	5.6 60	16.6
Depth se	ətat-M	Plug	ging an	l Se	aling Reco	rd		arspace D	Abandonment Ime Placed	In diagram belo	w show distand	Location	of Well from road	, lot line, and l	ouilding.
From	6	То		a typ					bic metres)	Indicate north b	y arrow.			1	12
														ſ	iu k Gouli
															4 Der
					1					DUFE	EK IN	RD	17		IR
Cable	Tool		Ro	N tary (air)		on Diamond		Digging		50'	\sim		0	SIMCOCS
Rotar	y (conv y (revei	entiona rse)	il) Air Bo	perc ring	cussion		letting Driving		Other	02	1	0001	n -		4
Dome	estic			ustri	Wate	r Use	Public Sup	ply [Other						N
Stock	ion		□Co □Mι	mme nicip	al		Not used	air conditioning		Audit No. 7	166	<u>n</u> q -	ate Well C	Completed	MMOT PP/
K Wate	r Suppl	y [Rechar	ge we	Final Stat	us of Wel	I Jnfinished	Aban	doned, (Other)	Was the well o	wner's informat		ate Delive	red YYYY	MM DD
Obser	rvation Hole	well	Abando	ned, ned,	insufficient su poor quality	upply []]	Dewatering Replaceme	ant well	-		M	inistry U	se Only	2004	
Name of	WellC	ontract	or , o	Con	tractor/Tec			Vell Contractors	s Licence No.	Data Source		0	Contractor	70	88
Business		ss (stre	et name	77 humb	ber, city etc.)			1.222.4	2<<	Date Received	1 2 200		ate of Insp	ection YYYY	MM DD
Name of	WellT	echnic	an (last na	me, i	first name)	IOPIH		Vell Technician'	s Licence No.	Remarks		* \ V	Vell Recor	d Number	
Signatur	e of Te	12	n/Contract				D	ate Submitted YY	YY MM DD				1	7063	276
0506E (0	9/03)				Cont	tractor's Co	ру 🗌 🛚	/linistry's Cop	y Well Ow	ner's Copy 📋		Cette	formule	est disponib	le en français

🗑 Ontario	Ministry of he Environr	nent Well Tag	y Number (Place	e sticker and print	tnumber below)	Regulation 903	Ontario	Well R Water Res	ecord
Instructions for Completin	a Form		40250	229	÷ .			page	of
 For use in the Province All Sections must be con Questions regarding com All metre measurement 	of Ontario of npleted in fu apleting this is shall be r	only. This docum Il to avoid delays application can b eported to 1/10	ent is a perm s in processin be directed to th of a metre.	anent legal g. Further ir the Water \	document. Ple structions and Vell Managem	ease retain for future explanations are ava ent Coordinator at 4 Ministry Use	referer ilable on 116-235	nce. the back of -6203.	this form.
Please print clearly in blu Well Owner's Information	and Locat	ion of Well Info	ormation	MUN	со	N		LOT	
						NUL - DD Let Cana			
RR#/Street Number/Name GPS Reading NAD Zo 8 3	74 Be Easting	02 48 9	hing 15166	City/Town/Vil	stield del Mode	of Operation: Undi	rtment/B fferentiated	lock/Tract ef	iC. raged
Log of Overburden and B	edrock Mat	terials (see ins Other Ma	tructions)		General	Description		Depth	Metres
	Indiana							0	2
Roun Sanch	6	Stowel						2	98
Gray Clay		gravel						98	250
Repurs Sand		gravel						250	276
		U			-				
Hole Diameter		Con	struction Rec	ord		Tes	t of Wel	l Yield	
Depth Metres Diameter	Inside		Wall	Depth	Metres	Pumping test method	Draw	Down I	
From To Centimetres	diam	Material	thickness centimetres	From	То	AZR	min I	ver Level 11m veres mir	Metres
0 2766"			Casing			Pump intake set at - (metres) 240	Static Level	03'	
		Fibreglass	3			Pumping rate -	1	1	
	61	Plastic Concrete	·/88	+2	271	Duration of pumping	2	2	
Water Record						2_ hrs + min			
at Metres Vind of Water		Plastic Concrete				Final water level end of pumping	3	3	
Colores Salts Minerals		Galvanized			~	Recommended pump	4	4	_
Eresh Sulphur		Steel Fibreglass	6			type.			
Gas Salty Minerals	, 	Plastic Concrete				Recommended pump	5	5	
			Screen		I	Recommended pump	10	10	
Gas Salty Minerals	Outside	Steel Fibregias	s Slot No.	1		rate. (Intrest min)	15	15	
Other:	diam	Plastic Concrete			1	(litres/min)	20	20	<u> </u>
After test of well yield, water was	5 ⁿ	Galvanized	18×5'	271	276	If pumping discontin-	30	30	
Other, specify	-	No	Casing or Scr	een		ued, give reason.	40	40	
Chlorinated Dres No		Open hole					50	50	
		ed E		handonment					
Depth set at - Metres Material and s	ealing Reco	urry neat coment slurr	nu) etc Volur	ne Placed	In diagram belov	w show distances of well f	rom road,	lot line, and I	ouilding.
From To			(cubi	c metres)	Indicate north by	/ arrow.			A
0 30 Gr						1			4-
						.10.8			
		<u> </u>			- 200		on .	1458	8474
						+			
	Method of C	Construction			12				×
Cable Tool	y (air)	Diamond		Digging	8	N.			
Rotary (convenuencial) Air pe)		ـــــــــــــــــــــــــــــــــــــ		4.5	11-			
	Wate	r Use			NX				
Stock Com	trial nercial	Public Sup	pply L	Other					
	ipal	Cooling &	air conditioning		Audit No. 7	25416	ate Well C	ompleted	
Recharge	rinai Stat	Unfinisher	d Abano	loned, (Other)	Was the well or	wner's information Da	ate Deliver	ed YYYY	MM DD
Cbservation well	d, insufficient su	upply	Ig		package deliver	ed? Yes No			
Test Hole Abandone	d, poor quality	Replacem	ient well Lion			Ministry Us	se Only		
Name of Well Contractor		alls	Well Contractor's	Licence No.	Data Source	C	ontractor	576	
High and Was	mber. city etc.)	ENI	V J TC		Date Received	XYYY MM DD D	ate of Insp	ection YYYY	MM DD
Box 141 Dur	ham	NOGI	RO		JEP (J 8 2005			
Name of Well Technician (last name	e, first name)	1	Vell Technician's	Licence No.	Remarks	W	ell Record	1 Number	
Signature of nechnician/Contractor		E	Date Submitted	Y MM DD					
X TURA	• •		Ministry's Corr			Cette	formule	est disponib	le en francais
0506E (09/03)	Con	tractor's Copy	withistry's Copy			06110			



Lot 11

Concession 6

$TM = \begin{bmatrix} z \\ 0 \\ R \end{bmatrix} = \begin{bmatrix} z \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$	E N /) /) The Wat D Water.	ontar ter-well Drill repartment o -Wel	lers Act, 1954 of Mines	GROUND ^I WATER APR 1 7 19 ONTARIO WAT RESOURCES COMM	BRANCH 57 TER MISSION
	Dufferin		ip, Village, Town or	City. Mulmu	r
			n Village, Town or C	Sity)	
Date completed	(month)	(year)	luuress		
Pipe and Casi	ng Record			Pumping Test	
Casing diameter(s) Length(s)	6 /4 F 5	20	Static level Pumping rate Pumping level Duration of test	90	
Well Lo	og			Water Record	
Overburden and Bedrock Record	From ft.	To ft,	Depth (s) at which water (s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Dry Sand	0	100			
Quicksand Shale	/00	250	140	<u> </u>	Salty
Water Very Mu Well	ddy + unso Abanduned	1)sfact-r	/		
For what purpose(s) is the wat Is water clear or cloudy? Is well on upland, in valley, or	er to be used? Clondy on hillside?		L In diagram below road and lot lir	ocation of Well w show distances on ne. Indicate north	f well from by arrow.
Drilling firm	Bellerby		ی دون دون	Mansfield	N

> I certify that the foregoing statements of fact are true.

Date Apr. 17/57 Signature of Licensee

UTM $ z $ $ q _R$ $ q _R$ Elev. $ q _R$ $ 0 _{4.5}$ $ z _{5.5}$ $ z _{5.5}$	S^{E}	ONTA cer-well Dri epartment	RECEIVI JUN 2519 ONTARIO WAT illers ACCESSISTICES COMI of Mines	ED 17 N 157 MISSION	[º 741
Lot - 11	A. 11.	`	ip, Village, Town or C Village, Town or Ci	Sity	<u>n.v.</u> r
Date completed(day)	(month)	(year)	.ddress	.a.m.c.f.ell	f
Pipe and Casing	g Record			Pumping Test	
Casing diameter(s) Length(s) Type of screen Length of screen	auled.		Static level Pumping rate Pumping level Duration of test		
Well Log				Water Record	
Overburden and Bedrock Record	From ft.	To ft. 1 440	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
and y clay	140	250			-
For what purpose(s) is the water Is water clear or cloudy?	to be used?		Lo In diagram below road and lot line	cation of Well show distances o . Indicate north	f well from by arrow.
Is well on upland, in valley, or or Drilling firm	hillside? ellerby 	K.d.	- Africador	Mans fi	,e //
V					CSS 58

CSS

WATER PERDURCES Hurontario Street East, 06 (N)DIVISION ЛO Z UTM 12 R Ontario Water Resources Commission Act ONTARIO RESCURCES 0,4:5 ſ Ъ RE (Elev. JL N/ UR Basin ...Township, V Date completed 2 Con month Address MANS FIELD PO. **.** Owner UA **Pumping Test** Casing and Screen Record 80' Static level 4 Inside diameter of casing.... G.P.M. Test-pumping rate Total length of casing huston S. S. NO. 8 meak 180 Pumping level Type of screen 5'0 hrs 6 Duration of test pumping... Length of screen Water clear or cloudy at end of test 12 3 Depth to top of screen G.P.M Recommended pumping rate Diameter of finished hole feet below ground surface 120 with pump setting of. Water Record Well Log Kind of water Depth(s) at From To (fresh, salty, sulphur) which water(s) found Overburden and Bedrock Record ft. ft. Ø 27 129 12 Ð 129 Location of Well For what purpose(s) is the water to be used? In diagram below show distances of well from Inter sec road and lot line. Indicate north by arrow. Is well on upland, in valley, or on hillside? Π Drilling or Boring Firm Address Z (N Licence Number. 1.6 Name of Driller or Borer Ł Address. Date (Signature of Licensed Drilling or Boring Contractor) ۶ **CSS.S8** Form 7 15M-60-4138 OWRC COPY

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ン ario	1. PRINT ONLY IN S	PACES PROVIDED	702297		7.0.0.6	IS E	£ 11/2
Y OR DISTRICT	Z. CHECK 🗵 CORRI	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	3	CON BOCK. T	RACT, SURVEY, ETC.		LOT 25-2
		DUR FIELN			DATE C		ња-53 В ук 2 1
		908501 15	ELEVATION 3.5	S BASIN C			IV
1	M 10			30 31 S (SEE INSTRUC	FIONS)		
RAL COLOUR	MOST	OTHER MATERIALS		GENERAL DESC	RIPTION	DEPTH FROM	1 - FEET TO
ALLA	COMMON MATERIAL					0	15
ZOWN	SAND	CLAY	SA,	NEKC	LAK		
REY	CLAX	GRAJEL GR.	TT H.	ARD GA	TTY Cht	94 15	100
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1.*	, ,	Lif ITT	LJRI	FIR FR R	FARING	1/05	114
LOWN	SAND		WAIS				
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			man	1911	162 CAL	<u></u>	 _ _ 1
00/	562805 00						
		CASING & OPEN HOLE	RECORD	54 Z (SLOT 0) SIZE (S) OF 0 (SLOT 0)	PENMG 4	DIAMETER 34-38	
TER FOUND	KIND OF WATER	INSIDE WALL	DEPTH - FEET		ND TYPE	DEPTH TO TO OF SCREEN	100
20-23 1 25-28 1 2 25-28 1 2	FRESH ³ SULPHUR ¹⁹ SALTY ⁴ MINERAL FRESH ³ SULPHUR ²⁴ SALTY ⁴ MINERAL FRESH ³ SULPHUR ²⁵		20-23	61 DEPTH SET AT FROM 10-13	PLUGGING &	SEALING REG	CORD EMENT GROUT D PACKER. ETC
30-33	SALTY 4 MINERAL	24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE	27-30	18-21	22-25		
30-33 1 z	SALTY 4 MINERAL FRESH 3 SULPHUR SALTY 4 MINERAL	24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE	27-30	18-21	22-25 30-33 80	WELL	
30-33 1 Z PUMPING TEST 1 1 X PUMI	SALTY 4 MINERAL FRESH 3 SULPHUR 3 SALTY 4 MINERAL METHOB P M BAILER	24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 0 17-18 ATE 11-14 BURATION OF PUMPING 17-18 GPM GPM HOURS 0 17-18	27-30	18-21 26-29 LOC AGRAM BELOW SI	22-25 30-33 60 ATION OF V 40W DISTANCES OF	WELL WELL FROM ROA	D AND
30-33 1 2 PUMPING TEST 1 PUMI STATIC LEVEL	SALTY 4 MINERAL FRESH 3 SULPHUR 3 SALTY 4 MINERAL METHOB P M BAILER WATER LEVEL WATER LEVEL PUMPING 3 WATE	24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE 3 CONCRETE 4 OPEN HOLE ATE ATE 11-14 BURATION OF PUMPING GPM Q2L 15-16 00 IS-10 GPM 12 PUMPING R LEVELS DURING 2 RECOVERY	27-36 IN DI LOT L	18-21 26-29 LOC AGRAM BELOW SI LINE INDICAT	22-25 30-33 EO ATION OF M HOW DISTANCES OF E NORTH BY ARROW	WELL WELL FROM ROA	D AND
30-33 1 2 1 MPING TEST 1 MPUMI STATIC LEVEL 19	SALTY 4 MINERAL FRESH 3 SULPHUR 3 SALTY 4 MINERAL METHOB R 10 PUMPING R P M BAILER 25 WATER LEVEL END OF PUMPING VATER LEVEL 21 22-24 15 MINUT 100 FFFT 100	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	27-36 IN DI LOT L	18-21 26-29 LOC AGRAM BELOW SI LINE INDICAT	22-25 30-33 60 ATION OF A HOW DISTANCES OF E NORTH BY ARROW	WELL WELL FROM ROA	D AND
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	WATER FOUND AL - FEET	KIND OF WATER	INSIDE MATERIAL INCHES	WALL THICKNESS INCHES	DE FROI	M TO		ERIAL AND TYPE	• *	INCHES DEPTH TO TOP OF SCREEN	41-44 30
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	5 20-23 1	SALTY 4 \square MINERAL FRESH 3 \square SULPHUR ²⁴	4	19 19		20-23	DEPTH	SET AT - FEET	MATERIAL AN	D TYPE (CEME LEAD P)	ENT GROUT. ACKER, ETC.)
	7Q5-20 1 C] SALTY ⁴ MINERAL] FRESH 3 SULPHUR ²⁹	24-25 1 1 0751	E LE 26		27-30	1	0-13 14-17			
	30-33 1 [FRESH 3 SULPHUR 34 BI	C GALVANIZ GALVANIZ GALVANIZ GONCRET	ED E			26	-29 30-33 80			
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		T FEET FE 38-41 PUMP INTAKE	EET FEET	FEET F	EET 42			,		9/12	l l
	RECOMMENDED PL	GPN IMP TYPE RECOMMENDE	FEET 1 C	LEAR 2 CLOU	DY -49					2	
	C SHALLON	N DEEP SETTING	FEET. RATE		iPM					781	
	FINAL	SA 1 WATER SUPPLY		NSUFFICIENT SUPP	.,,	2					-A,
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	WATER	DOMESTIC	5 🗍 COMMERCIAL 6 🗍 MUNICIPAL						* *		
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	METHOD	57 1 K CABLE TOOL	6 [] BORIT	NG OND				ľ		X	94.
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1	NAME OF WELL	CONTRACTOR	1 . A. K.I	LICENCE NUMBER		DHILLERS REMAR	58	CONTRACTOR 59-6	2 DATE RECEIVE	6 1 .A	63-61 ×0
	HO ADDRESS	Atons Well	anding the	5602	<u>د</u>	U DATE OF INSPI	ECTION	INSPECTOR		312	60
	NAME ORILI	Stayney LER OR BORN	14	LICENCE NUMBER							
	SIGNATURE OF	CONTRACTOR L	SUBMISSION	19 8	5	DFFIC				ree	ES
	MINISTR	Y OF THE ENVIRON	MENT COPY	MQ YR.				<u></u>		FORM NO. 0506	-4-77 FORM 7
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Ontario Envir	ronment			17	0435	1				06
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21				<u>ч 7</u>	MATERIAL	S (SEE INS	31 TRUCTIONS)	<u></u>		
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GENERAL COLOUR	COMMON NATERIAL	<u></u>		<u> </u>		<u></u>			0	
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41 WA	TER RECORD	51 CASING &	OPEN HOLI					31-33		17 FEET
WATER FOUND AT - FEET	KIND OF WATER	INSIDE DIAM MATERIAL INCHES	WALL THICKNESS INCHES	FROM	TO		HAL AND TYPE		DEPTH TO TOP OF SCREEN	41-44 30
10/112	CV FRESH 3 □ SULPHUR □ SALTY 4 □ MINERALS 6 □ GAS	1911 1 DISTEEL 1 21 GALVANIZED	188 1	- 1	102	<u> </u>	UNLESS Y			
15-18 1 2	☐ FRESH 3 □SULPHUR ¹⁹ ☐ FRESH 4 □MINERALS ☐ SALTY 6 □GAS	4 DOPEN HOLE 5 DPLASTIC			20.23	DEPTH S	PLUGGIN ET AT - FEET			MENT GROUT
20-23 1	FRESH 3 SULPHUR 24	17-18 1 D STEEL 2 D GALVANIZED 3 D CONCRETE	3			FROM	10			PACKER. ETC I
25-28 1	6 GAS	4 0 0PEN HOLE 5 0 PLASTIC	6		27-30	5	-21 22-25	ſŚĔ	NSEA	Ь <u> </u>
30-33	GAS	1 USTEEL 2 GALVANIZED 3 CONCRETE 4 COPEN HOLF				26-	29 30-33 80			
2	4 JMINERALS	5 DPLASTIC]					
71 PUMPING TEST M	2 DB BAILER		-16 30 17-	18 —		L	OCATION			
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	GPM	FEET 1 CLEA		Y			at -	71 71	1020	<u>ب</u> ۲,
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FINAL	SA WATER SUPPLY	S ABANDONED. INS	UFFICIENT SUPPL R QUALITY	Y	4)		-1 -1		Λ	L
OF WELL	S TEST HOLE	7 UNFINISHED			Ŭ		~	k		
	55-56 1 DOMESTIC	5 COMMERCIAL 6 MUNICIPAL					à	だ		
WATER USE	3 D IRRIGATION 4 D INDUSTRIAL	7 D PUBLIC SUPPLY	DITIONING							
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METHOD	CABLE TOOL	6 DORING ENTIONAL) 7 DIAMON	Ð		pur	EERIN	CNY	Tas -		
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	OF TECHNICIAN/CONTRACTO	RATE SUBMISSION DATE	7 9	71	OFFI				С	SS.ES
L K.en	not y M.	14/NON DAY	0¶R.	<u> </u>	<u>-</u>	<u> </u>	n de la composition de la comp		FORM NO. 050	06 (11/86) FORM
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Print only in spaces provider Mark correct box with a cher	d. ckmark, where applicable.	11	1705727		n. 5. E l 1. L. 1. 106 22. 20. 24
County or District	° /	ownship/Borough/City/T	own/Village	Con block tract surve	ey, etc. Lot 25-27
I DUFFER	/ N/	Address	nyk	Date	48-53
		MANSFI	ELD	completed	day month year
1 2				Basin Code	
	LOG OF OVER	RBURDEN AND BEDR	OCK MATERIALS (see instruc	tions)	47
General colour Most	common material	Other materials	Gener	al description	Depth - feet From To
BROWN SA	NO				08
BROWN LL	A-1	STUNES	STON	JEI CLAY	8 27
BROWN SA	ND	CLA-1	SANK	N CLAN	27 1436
GREY LA	- A-1	/	HAR	0	3647
GRE-1 SH	ALE		HARC	2	47 120
-					
31					
32					
41 WATER RECORD		ING & OPEN HOLE R	43 54 ECORD Sizes o (Slot No	f opening 31-33 Diameter	75 80 34-38 Length 39-40
At - feet Kind of water found to Kind of water	ater diam M	aterial thickness inches	From To		nches feet
120 ² Salty 6	$\begin{array}{c c} \text{Subplut} & \text{II} \\ \text{Minerals} \\ \text{Gas} \end{array} \begin{array}{c} 10-11 \\ 1 \\ 2 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3$	eel ¹² alvanized			Depth at top of screen 41-44
15-18 1 Gresh 3 Green 4 Green	Sulphur 19 Minerals	pen hole astic			
20-23 1 C Fresh 3 C	Gas 17-18 1 St Sulphur 24 2 Gi Minerals 2 Gi Gi	eel ¹⁹ alvanized	20-23	Annular space	Abandonment
² Salty ₆	Gas 3 Cc Gas 4 O O Sulphur 29 5 Pl	oncrete pen hole astic	From	To Material and type (Ce	ment grout, bentonite, etc.)
² Salty ₆	Minerals 24-25 1 Str Gas 2 Gas Gas <td>eel ²⁶ alvanized</td> <td>27-30</td> <td>18 GENSE</td> <td>AL Lul-</td>	eel ²⁶ alvanized	27-30	18 GENSE	AL Lul-
$\begin{array}{c c} 30-33 \\ 1 \\ 2 \\ \hline \end{array} \begin{array}{c} \text{Fresh} & 3 \\ 4 \\ \hline 2 \\ \hline \end{array} \begin{array}{c} \text{Salty} \\ 6 \\ \hline \end{array} $	Sulphur 34 60 3 ☐ Co Minerals 4 ☐ Op 0 5 ☐ Pi	oncrete pen hole	1.20 a 1 ²⁶⁻²⁹	9 1 FIOLE P	aun Least
AIR Burnaing toot mathed 10				O BENSFA	HNU GKHYEL
71 Pump 2 Bailer	GPM	17-18 15-16 17-18 17-18 Hours Mins	LO		and and lat line
Static level end of pumping	Water levels during 1 Pump	ing ² Recovery	Indicate north by arro	w. h	bad and lot line.
28 118	10 110 110 11	10 minutes 32-34 10 110		10	
Lif flowing give rate	Pump intake set at Water	O feet I O feet at end of test 42	,		20
Recommended pump type	feet [Recommended 43-45 Reco	Clear Cloudy	WELL		D STY
☐ Shallow ☐ Deep	pump setting pump feet	p rate GPM	X 50 F	·	ズボ
FINAL STATUS OF WELL	54				0 2
¹ Water supply ⁵ ² Observation well ⁶	Abandoned, insufficient supply ⁹ Abandoned, poor quality ¹⁰	Unfinished Replacement well	ω		In F
³ Test hole ⁷ ⁴ Recharge well ⁸	■ Abandoned (Other) □ Dewatering	-1	٨	Yzmile,	
WATER USE				4	10-6
² Stock 6 ³ Irrigation 7	Commercial 9 Municipal 10 Public supply	Other	DUFFERIN	COUNTY	Times
4 🗍 Industrial 8	Cooling & air conditioning		RD 17	1	
			• (VILLADE	itim
² Dotary (conventional) ⁶ ³ Actary (reverse) ⁷	Boring 10 Diamond 11	Digging		OF MAND	
4 Ly Rotary (air) 8	Jetting			<u> </u>	218502
Name of Well Contractor	We	Il Contractor's Licence No.	Data 58 Contractor	59-62 Date receiv	ed 63-68 80
MIGHTON'S L	JELL DRILLING	5602	Bource 36	Inspector	0 2 2001
KR2 STA	INER ON		SO Bomotio		
LARRY M	iGHTON T				CSS 734
Signature of Technicial/Contractor	Minton sut	prission date	N N		Not the second of
LI JUNY VI VINC A	day				

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0506 (11/98) Front Form 9

() Onta	ario Ministry of the		s, ren registringerninn.	The Ontai WAT	rio Water Re ER WELL	sources Act RECORD
Print only in spac Mark correct box	Environment ces provided. < with a checkmark, where applica	ble. [11]	17058	45 L17		
County or District	UFFERIN	Township Prough/City/ M Address	Town/Village	Con bl	ock tract survey, e	etc. Lot $25-27$
21	M 10	Northing		evation RC Basin Co		ay month year
General colour	LOG O	F OVERBURDEN AND BEDR	OCK MATERIALS (See instructions)	<u> </u>	Depth - feet
	TCDG QU	Other materials			-	From To
Band		SAIN		<u> </u>	-	
Band	San				J	21 95
Bould	Sell	LIOY				95 118
Bouhl	Sado				SF	118 125
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					╶┵┷┷┙┕┷┷┷╍	
10 14 41 WATE	4 15 21 ER RECORD 51	CASING & OPEN HOLE	43 RECORD	Sizes of opening	65 31-33 Diameter 34	75 80 38 Length 39-40
Water found at - feet	Kind of water diam inches	Wall Material thickness inches	Depth - feet From To			es 4 feet
	Fresh 3 □ Sulphur 14 1 4 □ Minerals 10-11 □ Salty 6 □ Gas	1 M Steel 12 2 Galvanized	13-16	STAIN /	FSS	pth at top of screen 41-44
15-18 1	Fresh 3 Galas	3 □ Concrete 4 □ Open hole 5 □ Plastic	+2 120			
20-23 1	☐ Saity 6 ☐ Gas 17-18	1 Steel	20-23	61 HLUGGII Annular sp		Abandonment
2	4 Minerals 3 Salty 6 Gas	3 Concrete 4 Open hole		Depth set at - feet From To N	laterial and type (Cemen	t grout, bentonite, etc.)
25-26 1 C 2 C	□ Fresh 3 □ Suppor 29 3 □ Suppor 29 3 Salty 6 □ Gas 24-25	1 Cabuatic	27-30	18-21 22-25	HELEPLUE	
³⁰⁻³³ 1 [☐ Fresh ³ ☐ Sulphur ³⁴ ⁶⁰ ☐ Salty ⁴ ☐ Minerals	Concrete Open hole		26-29 30-33 80	<u> </u>	
		5 🗆 Plastic				•
71 Pumping test m	nethod A/1 Pumping rate 15 gp	14 Duration of pumping 15-16 17-18 M Hours Mins			F WELL	· · · · · · ·
Static level w	Water level 25 Water levels during	1 Pumping 2 🗆 Recovery	In diagra	im below show distance north by arrow.	s of well from road	and lot line.
	22-24 15 minutes 30 minutes 26-28 1/8 1/8 1/8 29	-31 45 minutes 32-34 1/8 35-37	4			
UC feet	ate 38-41 Pump intake set at	eet feet feet Water at end of test 42				
Recommended p	GPM fe	eet Clear Cloudy	N			0
Shallow	Deep pump setting 115	eet pump rate X GPM		Quiter 1/1	AL-	EFIELD
					• . MFIT	>
¹ il Water sup ² Observatio	pply 5 □ Abandoned, insufficien on well 6 □ Abandoned, poor quali	t supply 9 🗆 Unfinished		COUNTY RC	001	
 ³ ⁴ ⁴ ⁴ Recharge 	7 Abandoned (Other) well 8 Dewatering	·, <u> </u>				
WATER USE	55-56					
Domestic Domestic Domestic Definition	5 Commercial 6 D Municipal 7 D Public supply	9 🖸 Not use • 10 🗋 Other			Antor	00
4 🗌 Industrial	8 Cooling & air conditioni	ing		-ىر	FUKHUKI	
² Botary (co ³ Rotary (re	verse) 7 Diamond	¹⁰ Digging ¹¹ Other	н. С. С. С		1	05500
4 🗌 Rotary (air	ir) ⁸ 🗋 Jetting		а.		2	20038
Name of Well Contra	actor	Well Contractor's Licence No.	> Data	58 Contractor	59-62 Date received	1 1002 ⁶³⁻⁶⁸ 80
K& 19 WE	<u>AL IJKILLINK LT</u>	U 764S	Date of inspection	4645	JUN	4 2002
TO Box	320 BEETCN.	CNT LOGIAO				
Name of Well Techr	nician Anna Anna Si	Well Technician's Licence No.	Remarks			
Signature of Terminic	ician/Convector				- USS	5.ES2

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Print only in spaces provided. 1706071 Mark correct box with a obeckmark, where applicable. 1 County or Djaget Address of Wall Location County or Djaget Address of Wall Location 21 Jone Easing Water for an end of the stand	Con. Survey, etc. L eted 28 day ii iii Dep From 0 23 23 02 10 10 10 10 10 10 10 10 10 10	Lot 22 23 2 Lot 25 27 month year iv iv iv iv iv iv iv iv iv iv
County or Dialect County or Dialect County or Dialect TownshipeBoroph/City/Town/Village Con block, iract i Advanced on the consent in the con	survey, etc. L eted 28 day ii ii Dep From O 23 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	Lot 25-27 month year iv pth - feet To 2.3 7.8 7.8 7.8 10 10 10 10 10 10 10 10 10 10
Address of Well Location Date (Orrept 9370053 A): Orf + Cost. Date Corrept (Orrept) 21 Zone Easing 21 Image: State in the second s	eted 28 day ii ii Dep From 0 2 2 2 3 2 3 2 3 2 3 3 2 3 2 3 3 3 3 3	5 3940
21 Zono Easang Northing RC Elevation Elevation RC Elevation Elevation RC Elevation RC Elevation RC Elevation Elevation Elevation Elevation <td< td=""><td>ii iii Der From O 23 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2</td><td>iv iv pth - feet To 2.3 C.2 9.8 9.8 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1</td></td<>	ii iii Der From O 23 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	iv iv pth - feet To 2.3 C.2 9.8 9.8 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1
i i	Dec. From 0 2 23 02 23 02 23 02 1 1 1 1 1 1 1 1 1 1 1 1 1	th - feet To L L Z 78 78 78 78 78 78 78 78 78 78
General colour Most common material Other materials General description Brown Top So.! Sond Clay Brown Gravel Sond Clay Gruy Shale Clay Lay as Gruy Shale I/ord Gruy Shale I/ord Shale I/ord I/ord Gruy Shale I/ord Shale Gruy Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image: Shale Image:	Deg. From Q 2 Q </td <td></td>	
Brown Top So.1 Brown Grown Grown Grown Grown Grown Grown Grown Clay Clay Grown Shale Clay Lay as Hord Grown Shale Hord Hord Grown Shale Hord Hord Grown Shale Hord Hord Grown State level Material Water found Material	23 23 62 	
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10 14 15 21 32 33 34 34 34 34 35 35 35 35 35 35 35 35 35 35 35 35 36 35 36 35 36 35 36 35 36 35 36 35 36 35 36 <td< td=""><td>neter 34-38 Ler</td><td>ngth 39-40</td></td<>	neter 34-38 Ler	ngth 39-40
ater found - feet Kind of water - feet Mailerial Wail thickness inches Depth - feet Mailerial Mailer	inches	
0-10-13 1 Miserals 0 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1 13-16 1	(Depth at for	feet
97 1	Depin ar log	feet
20-23 1 Fresh 3 Sulphur 24 2 Salty 6 Gas 3 Concrete 183 1 20-23 20-23 1 Annular space 2 Salty 6 Gas Gas 1 9 1 183 1 20-23 1 10 <td< td=""><td></td><td></td></td<>		
25-28 1 Fresh 3 Sulphur 29 2 Salty 6 Gas 60 60 24-25 1 Steel 26 30-33 1 Fresh 3 Sulphur 24-25 1 Steel 26 27-30 97 18-21 22-25 18-21 18-21 18-21 18-21 <td>Abandon</td> <td>bentonite, etc.)</td>	Abandon	bentonite, etc.)
2 Saity 6 Gas 30:33 1 Fresh 3 Sulphur 34 2 Saity 6 Galvanized 2 Galvanized 2 Saity 6 Galvanized 2 Galvanized 2 Saity 6 Gas 8 2 Galvanized 2 Saity 6 Gas 98 18-21 22-25 26-29 30-33 80 2 98 26-29 30-33 1 Pumping test method 10 Pumping rate 11-14 Duration of pumping 15-16 1 Pump 2 Bailer 11-14 Duration of pumping 15-16 1 Pump 2 Bailer 11-14 Duration of pumping 15-16 1 Pump 2 Bailer 11-14 Duration of pumping 15-16 1 Pump 2 Bailer 25 Water level 4 10 1 Pumping 2 Recovery 4 4 1 1	Plug	
2 Satty 6 Gas 6 Gas 6 Copen note 1 Pumping test method 10 Pumping rate 11:14 Duration of pumping Hours Hours <td></td> <td></td>		
Pumping test method 10 Pumping rate 11.14 Duration of pumping Mins 1 Pump 2 Bailer Bailer 11.14 Duration of pumping 15.16 Mins In diagram below show distances of well fr Static level Water level end of pumping 25 Water levels during 1 Pumping 2 Recovery A In diagram below show distances of well fr		
Static level Water level 25 Water levels during 1 D Pumping 2 D Recovery		
	om road and I	lot line.
$\begin{bmatrix} 19^{-21} \\ 20^{-4} \end{bmatrix} \begin{bmatrix} 22^{24} \\ 54^{-7} \end{bmatrix} \begin{bmatrix} 30 \text{ minutes} \\ 26 \cdot 28 \end{bmatrix} \begin{bmatrix} 30 \text{ minutes} \\ 29 \cdot 31 \end{bmatrix} \begin{bmatrix} 60 \text{ minutes} \\ 32 \cdot 34 \end{bmatrix} \begin{bmatrix} 10 \text{ minutes} \\ 35 \cdot 37 \end{bmatrix}$	4 5	ġ
feet feet <th< td=""><td></td><td>0</td></th<>		0
Recommended pump type Recommended 43-45 Recommended 46-49 pump setting 7 pump rate 7		
Snallow Grueep 97 feet 3 GPM	341	
INAL STATUS OF WELL 54	•	
2 Observation well 5 □ Abandoned, poor quality 10 □ Replacement well 3 □ Test hole 7 ⊡ Abandoned (Other) 4 □ Replacement well 10 □ Replacement well 10 □ Replacement well 10 □ Replacement well 10 □ Replacement 10 □ Replacement well 10 □ Replacement 10 □ Replacement well 10 □ Replacem		
1 D Omestic s Commercial 9 O Not use 2 Stock 6 Municipal 10 Other ··· ··		
4 Industrial 8 Cooling & air conditioning	0 0 9	hand
IETHOD OF CONSTRUCTION 57	60	→ #17
2 Rotary (conventional) 6 Boring 10 Digging 3 Rotary (reverse) 7 Diamond 11 Other 4 Rotary (air) 8 Jetting 11 Other	nanstie 257'	∍י¤ 707
	201	131
arme of Well Contractor View Ltd Well Contractor's Licence No. Z Data source 7143	INL 027	2003 63-68
Ritter And All the All 198 158 U		
lame of Well Technician's Licence No.		
ignature of lechnician contractor	036	S.ES3

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Solution Ministry of Environ and Energy	nment	<i>The Ontario Wa</i> WATER V	<i>ter Resources Act</i> VELL RECORD
Print only in spaces provided. Mark correct box with a checkmark, where applica	able. 11	5150 Municipality P10-06 14 14	HS E 06 7 R 4 5 9 9 22 2.5 24
County or District	Township/Borough/City/Town/Village	For block tract	survey, etc. Lot 25-27
	Address of Well Location		43.53
	BOX155 MANSA	TIE Comp	leted 9 day 6 month 3 year
	Easting Northing F 1 1 1 1 1 2 17 18 24 25	RC Elevation RC Basin Code	
LOG O	F OVERBURDEN AND BEDROCK MATE	RIALS (see instructions)	Depth - feet
General colour Most common material	Other materials	General description	From To
BROWN Fill			0 18"
CERTY Stale 10	lay dauger		18" 14
GRAY SHALF	and an all		14 21
GREY SHALF A	BLACK SHALF	Dolmand to South	21 /
		<u> </u>	
31	Lillin In detter		
41 WATER RECORD 21 51	CASING & OPEN HOLE RECORD	54 Sizes of opening 31-33 Dia	65 75 80 meter 34-38 Length 39-40
Water found Kind of water diam	Wall Depth - fe Material thickness From	To U (Slot No.)	inches feet
10-13 1 Fresh 3 Sulphur 14 Inches	1 Di Steei 12	13-16 Material and type	Depth at top of screen 30
5 - C 2 ⁻ Saity 6 Ex Gas	al Concrete	2/	feet
2 Gas 17.18	5 Plastic		LING RECORD
1 Gresh 3 Sulphur 24	1 □ Steel 2 □ Galvanized 3 □ Concrete	Depth set at - feet	Abandonment
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	4 Open hole	From To Material and ty	pe (Cement grout, bentonite, etc.)
2	1 □ Steel 26 2 □ Galvanized	27-30 22-25 22-25) C / franny
30-33 1 □ Fresh 3 □ Sulphur 34 60 2 □ Salty 4 □ Minerals	 Concrete Open hole 	26-29 30-33 60	
6 🔲 Gas	5 LI Plastic		
Pumping test method 10 Pumping rate 11-1 71 Image: Pumping test method 10 Pumping rate 11-1 1 Image: Pumping test method 10 Image: Pumping rate 11-1	⁴ Duration of pumping A Hours Mins	LOCATION OF WELL	
Static level end of pumping 25 Water levels during	Pumping 2 🗆 Recovery	n diagram below show distances of well find in the second se	rom road and lot line.
19-21 22-24 15 minutes 30 minutes 26-28 29-	45 minutes 31 32-34 60 minutes 35-37		
2 ATteet TO feet 90 feet 90 feet	et SPO feet PC5 feet	y / le	



and the second


Ministry of the Environment and Climate Change

Veasurements recorded in: Metric Imperial



Well Record

Regulation 903 Ontario Water Resources Act

Page____ of

Address of Well Location (Street Number/Name)	Township	Lot	Concessio	
	<u>NUM</u>	MEK	Drovinco	Postal Code
County/District/Municipality	City/ iown/village		Ontario	
ITM Coordinates Zone . Easting . Northing	Municipal Plan and Sublo	t Number	Other	
NAD 83 677271848912301				
Overburden and Bedrock Materials/Abandonment Sealing Rec	cord (see instructions on the	back of this form)	L.,	
General Colour Most Common Material O	ther Materials	General Description		Depth (<i>m/ft</i>) From To
Annih Cann	≤ 117	LAACE		04
$\frac{1}{2}$		$\frac{11}{100}$	<u></u>	MAL
<u>NKLUN</u> <u>LLH</u>		$\frac{1}{1} \frac{1}{2} \frac{1}$	<u>-</u>	$\frac{1}{21}$
DROWN SHALL	L <u>JJH</u>	LHMEKE		$\alpha \omega 1 \omega $
15KAIN SAND		LOOS	No.	110/12/0
GREY CLAY		HARD		IZLO D
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ooroonaleeenneerimisissinkkelekinkinkinkinkinkinkinkinkinkinkinkinkink		
Annular Space		Results of W	all Yield Testing	
Depth Set at ( <i>m/ft</i> ) From To (Material and Type)	Volume Placed	After test of well yield, water was:	Draw Down	I Time Water Level
$\frac{1}{n} = \frac{1}{n} = \frac{1}$	1	Cother, specify	(min) $(m/ft)$	(min) (m/ħ)
$\frac{U}{A} \frac{AU}{A} \frac{HUEHUA}{A}$		If pumping discontinued, give reason:	Static Ing	
	<u></u>		1 1 1 2	1 1/MA
		Pumn intako sot at (m/tt)		
		1000000000000000000000000000000000000	$  ^2  _{107}$	$ ^2 I\Omega$
		Pumping rate (Ilmin / GPM)	13109	3/1/20
	JSC Aproint IT Notwood		4 100	4 1 1 1 1 1
Rotary (Conventional) Usetting	ipal	Duration of pumping		
□ Rotary (Reverse) □ Driving □ Livestock □ Test -	-tole			
Boring Digging Digging Coolin	ig & Air Conditioning	$\frac{1}{1}$	10 109	$  10   10 \rangle$
Other, specify		If flowing give rate (1/min / GPM)	$  _{15} _{1} \cap Q$	15 MM
Construction Record - Casing	Status of Well		20 100	
Inside Open Hole OR Material Wall Depth (m/ft)	Water Supply	Recommended pump depth (m/ft)	- UY	
<i>(cm/in)</i> Concrete, Plastic, Steel) <i>(cm/in)</i> From To	Replacement Well      Test Hole	100 FT.	$ ^{25} _{109}$	$ ^{25} /(\Omega \Omega)$
1.14 STEEN 188 42 121	Recharge Well	( <i>I/min / GPM</i> )	1 30 1Mg	30 1/3/3
	Dewatering Well	X6/1U	40 100	40 177
	Monitoring Hole	Well production (I/min / GPM)		
		Disinfected?		$  \sim   1 $
	Abandoned,	Yes No	60 104	60 1 CM
Construction Record - Screen	Insufficient Supply	Map of W	ell Location	
Outside Material Depth ( <i>m/ft</i> )	Water Quality	Please provide a map below following	instructions on the t	ack.
(cm/in) (Plastic, Galvanized, Steel) OICLIVO. From To	Abandoned, other, specify			
SUD STAINLASS 12 122				
$\frac{2}{2} \propto \frac{1}{2} $	Other, specify		· · · · · · · · · · ·	
			•	



$\sim$	Tag#: A248	504				
Ministry of the Environment and Climate Change	Well Tag No. (Place Sticker an	d/or Print Below)	_	V	Vell R	ecord
Measurements recorded in: 🗌 Metric 🔲 Imperial	H248SC4		Regulation	903 Ontario V Pag	<i>later Reso</i> e	of
Well Owner's Information						
MULMER TOUNSH	μP	E-mail Address			Well Co by Wel	onstructed I Owner
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephon	e No. <i>(inc.</i> a	rea code)
Well Location Address of Well Location (Street Number/Name)				Concess		-1 1
	MULN	<u>ler</u>	<u>    15</u>	Concess	<u> E</u>	HS
DUFFERIN	City/ Iown/Village			Province Ontario	Postal (	Code
NAD 8 3 57 68 58 48918	$\lambda \lambda \beta$	Number		Other		
Overburden and Bedrock Materials/Abandonment Sea General Colour Most Common Material	Iling Record (see instructions on the Other Materials	back of this form)	ral Description		Dept	n ( <i>m/ft</i> )
					From	<u> </u>
ALTE	RATION TO C	RIGINAL	WELL			
	DRULED JUI	V IT V	991			
	KELOKI) #	103119				<del></del>
						. <u>.</u>
Annular Space		F	Results of We	Il Yield Testin	9	
Depth Set at (m/ft) From To (Material and Type)	Volume Placed (m³/ft³)	After test of well yield, v	water was: ree	Draw Down Time Water Le	Rei vel Time V	covery Vater Level
0 10 HOLEPLUG	H APPLOX.	If pumping discontinue	d, give reason:	(min) (m/ft) Static	(min)	(m/ft)
KEPLACED SEAL	IFTER			1	1	
WEID WHS SLEEV		Pump intake set at (m/	<del>R</del> )	2	2	
Method of Construction	Well Use	Pumping rate (Vmin / G	PM)	3	3	
Cable Tool Diamond Public Rotary (Conventional) Jetting Domestic	Commercial Not used	Duration of pumping		4	4	
Rotary (Reverse)     Driving     Livestock       Boring     Digging     Irrigation	Test Hole Monitoring Cooling & Air Conditioning	Final water level end of	nin Pumping <i>(m/ft)</i>	10	10	
☐ Air percussion P III Didustrial ☐ Other, specify LUMP TRUCK ☐ Other, specify _		If flowing give rate (1/mir	n/GPM)	15	15	
Construction Record - Casing	(m/ft) Water Supply	Recommended nump	lenth (m/fi)	20	20	
Diameter (Galvanized, Fibreglass, (cnvlin) Concrete, Plastic, Steel) (cnvlin) From	To Replacement Well			25	25	
614 STEEL 1.88 +2	5 FT.  Recharge Well Dewatering Well	( <i>I/min / GPM</i> )	rate	30	30	
0/4-5/2 STEEL 1.88 5	Monitoring Hole	Well production (Vmin /	GPM)_	40	40	
SA STEEL IXX 7	<u>Y</u> <u>X</u> <u>F</u> (Construction) → <u>Abandoped</u>	Disinfected?		60	60	
Construction Record - Screen	Insufficient Supply		Map of We	Location		
Outside Material Depth Diameter (Plastic, Galvanized, Steel) Slot No. From	(m/ft) Water Quality To Abandoned, other,	Please provide a map	below followir	ig instructions or	n the back.	٨
	Other, specify		HOFLS			IN
Water Details Water found at Depth Kind of Water: Fresh Untested	Hole Diameter Depth (m/ft) Diameter			- D		
( <i>m/ft</i> ) Gas Other, specify	From To (cm/in)	<u>_</u>		E		er and a second
( <i>m/ft</i> ) Gas Other, <i>specify</i>		4	MAIL	LCUNT	YRD	11)
( <i>m/ft</i> ) Gas Other, specify		n a a a - a			,	
Well Contractor and Well Technician Business Name of Well Contractor	Unformation Well Contractor's Licence No.	HIKICKI KI				
KOB WELL WRILLING KM	4645 Municipality	Commonto	The second s			
3569 SIDEROAD 10 BEETCH	J NEW TECHNSE	74 74		••		
ON LOGIAO Business Erneil Addr	PRILLING · COM	Well owner's Date Pa	ackage Delivere	d Min	istry Use (	Only
Bus Telephone No. (inc. area code) Name of Well Technician (L	ast Name, First Name)	package delivered	1806	05 Audit No.	Z287	207
Well Technician's Licence No. Signature of Technician/add/or Cor		ves Date W	ork Completed		IUN 2 G	2018
0506E (2014/11)	Ministry's Copy		<u>100001</u>	© Queer	o's Printer for (	Ontario, 2014



### Lot 11

**Concession 7** 

$\frac{1}{2}$ $\frac{1}$	ources Commission LL REC Township, Village Date completed Idress Marn	on Act CORD Town or City (day Sfield	GROUND WAT 17 JAN9 ONTARIO RESOURCES Mulmur Mou month Dat	ER BRANC! 6 1962767 WATEP COMMISSION
Casing and Screen Record		Pumping	Test	
	Static level	<u> </u>	23'	<del></del>
Inside diameter of casing $3c$	Tast pumping	rate	50 Gallo	G.P.M.
Total length of casing.	Test-pumping	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Type of screen	rumping leve	1	e	
Length of screen	Duration o <del>l te</del>	<del>st pumpin</del> g	T DYS,	
Depth to top of screen	Water clear or	cloudy at end of	test C/	SQT.
Diameter of finished hole <b>30</b>	Recommende	d pumping rate.		G.P.M.
	with pump se	tting of	feet belo	w ground surface
Well Log			Water	r Record
Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
			23'	Fresh.
Sandy Brown Clay	0	2		
Gravel	2	10		
Sand	16	28%		
Sanay ciay				· · · · · · · · · · · · · · · · · · ·
For what purpose(s) is the water to be used?		Location	of Well	
House bold	In dia	gram below show	distances of we	ll from
I line line of on pilleide? up lond	road a	and lot line. Inc	licate north by	arrow.
Is well on upland, in valley, of on miside:		Ŵ	1	7
Drilling or Boring Firm				
Babuik Well Boring			1 .	
Address 126 Loure Hve			180	
Islington. Unt				
Licence Number			OT	*
Name of Driller or Borer Mike 5. Babuik				<del>,</del> 70
Address Same as above		<i>'</i> ⁰ [ <del>]</del>	ManssinII	N
Date Tan. 15 1962			- reid	1
m. & Babut				/
(Signature of Licensed Drilling or Boring Contractor)		/		
Form 7 15M Sets 60-5930		/	CSS.S	9 <b>4</b>
OWRC COPY				
	1	1		

Aurontario Street East, Q WATER RESOLIDER DIAISION No 768 UTM -! NOV 30 1965 5 |R The Ontario Water Resources Commission Ac ONTARIO WATER 0.0.0 7 R RECO Elev. 1 durces commission Township, Village, Town or City. MULMUR FFERIN Lot // # Date completed 2 4 // month Cor MANSFIELD lress **Pumping Test** Casing and Screen Record Inside diameter of casing 4" **9** G.P.M. Total length of casing **70** Test-pumping rate Pumping level. Type of screen Duration of test pumping 13 la a 4 2 p.m. Length of screen Water clear or cloudy at end of test Depth to top of screen **5** G.P.M. Recommended pumping rate Diameter of finished hole 4 Water Record Well Loa Kind of water Depth(s) at То From (fresh, salty, sulphur) which water(s) found Overburden and Bedrock Record ft. ft. Ô ٥ 2 5 0 ファ Location of Well For what purpose(s) is the water to be used?.../ In diagram below show distances of well from - Stock road and lot line. Indicate north by arrow. Is well on upland, in valley, or 9n hillside? Drilling or Boring Firm Address  $\langle \rangle$ 16 Licence Number to Rd. Name of Driller or Borer. Address Date. (Signature of Licensed Drilling of Boring Contractor) Al- OF 10 sidered Form 7 15M-60-4138 - N/12E CSS.S8 200' E. of Co. Rd. 10 OWRC COPY

UTM $ z $ $ q _R$ $ z $ $ q _R$ $ z $ $ q _R$ $ z $ Elev. $ q _R$ $ z $ $ q _R$ $ z $  z  $ q _R$ $ z $ $ q _R$ $ z $  z   z	urces L Cownsh	Commission <b>REC</b> hip, Village, T	Act ORD Fown or City.	WATER 17 DI NOV ONTARIO RESOURCES, MOL MANS	2 1955 WATER COMMISSION	B
Con I HA E. H.S. Lot 11 (eleven) I	Date co	mpleted		Month .	year)	6.5
a i L Garage Decend			Pumpi	ng Test		
	Sta	tic level	· ····			
Inside diameter of casing.		st-numning r	ate 😁			G.P.M.
Total length of casing	Du	mping level				
Type of screen		ration of test	numping	<u> </u>		
Length of screen		tor clear or c	loudy at end	of test		
Depth to top of screen	D C	commended	numping rat	e —		G.P.M.
Diameter of finished hole 26.		th nump setti	pumping rat	feet }	elow ground	d surface
	WI				ater Record	
Well Log Overburden and Bedrock Record		From ft.	To ft.	Depth(s) a which water found	t Kind o (s) (fresh sulp	f water , salty, hur)
T. I Q.ILE		0	3			
SANDYLOME		3	27			/
HARD CLAY		27	37			
SAND + TRAVEL		37	43			
dRy CLAY+SANd		45 54	63			
no WOTER						
For what purpose(s) is the water to be used?	Ce	In diagram $road$ and $N$	Locatio am below sho d lot line, I	n of Well ow distances of <del>nd</del> icate north	well from by arrow	
Address		Ŋ		V' -	017	N.
Licence Number 1808 Name of Driller or Borer BABUIK WELL BC Address 126 LAUREL AVE /SLING Date SEP 9 /65	TON	ng			60- 02)	
(Signature of Licensed Drilling or Boring Contractor) Form 7 15M-60-4138 OWRC COPY	Xov		0		CSS.S8	

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JIM 11712 JT A G 7 210 CODED	<b>)</b>	170	0957		
SB 4 R 418 9 1 0 1 0 Construction of the Water manageme	nt in Ontari	o 3	9		
tev. 5TR 1036 The Ontario Water Reso	urces	Commission			
asin 222 WAIER WEL	▫▙	KEU	URD	MULM	UR
County or DISTREE DOFFERIN	'ow <b>ns</b> h	ip, V <u>illage, T</u>	<del>own or Gi</del> ty	NTHN >	HQ IIQ
Con. 7 14.5.E. Lot 11.W.H.	Date co	mpleted	<b>ζ ω</b> (day	NCV month	year)
	dress	MAN	ISFIE	LD	
Casing and Screen Record	·····		Pumping	g Test	
Inside diameter of casing 4"	Sta	tic level			
Total length of casing 107'	Tes	t-pumping ra	ite 5		G.P.M.
Type of screen Johnston Stanley Steel ne 10	Pui	nping level	70	10	
Length of screen	Du	ration of test j	pumping	in .	/
Depth to top of screen 137	Wa	ter clear or cl	oudy at end of	test Clear	~ ~ ~ ~ ~
Diameter of finished hole 44	Re	commended I	oumping rate		G.P.M.
	wit	h pump settir	ng of <b>/ O</b>	feet belo	w ground surface
Well Log	1		<u> </u>	Depth(s) at	Kind of water
Overburden and Bedrock Record		From ft.	To ft.	which water(s) found	(fresh, salty, sulphur)
Top Soil		0	1		·
gravely aling		10	100		Λ
fine black way		100	103		Inch
Water bearing same	Ļ	103	107	103	P=10
(medición to fine	->-			104	
12/1 clald			Location	of Well	
For what purpose(s) is the water to be used?		In diagra	m below show	distances of we	ell from
in the line of an Killside? ( colord		road and	lot line. Ind	licate north by	arrow.
Is well on upland, in valley, of on unistice					4
Drilling or boring Firm for fragment			11	N. J. Suduron	1
Address Stomer			3		C. R.J. Nº10
Address			1-4-	7110'29	Ē
Licence Number 2973			(     )		
Name of Driller or Borer De A Linge highto		)	$-H \rightarrow$	toot	50
Address Marner		A	مستر العلو	fu Ra /	-
Date 30/11/168		and			
Kineth - 4. mighton		main	J.		
(Signature of Licensed Drilling or Boring Contractor)			R		
Form 7				С	SS.S8

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		VATER	WE		EC		сол. 44	IA-IIE
	PRINT ON	LY IN SPACES PROVIDED CORRECT BOX WHERE APPLICA	BLE 1 2	170144	+6	10 14	$\frac{H_1S_1}{E_1}$	LOT 25-
4		et. Frank	2 Mi	ETATTO	"VII	- HSE	DATE COMPLETED	011
		HING	MANS	FIELS RC. ELEVATION			DAY 20 MG	YRZ.
Z	M 10 12		10950 24			TRUCTIONS)		
ENE	RAL COLOUR MOST COMMON MATERIA		ER MATERIALS		GENERAL	DESCRIPTION	FRO	DEPTH - FEET M TO
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	<u>}</u>							
31 32		<u>annal 28105</u>	Q16030517					
2 41	WATER RECORD	21 51 CASIN	IG & OPEN HO	LE RECORD	SIZE(S) (SLOT N	OF OPENING	65 5 31-33 DIAMETER	75 34-38 LENGTH
AT	FEET KIND OF WATER	UR INSIDE MATER	HAL WALL THICKNESS INCHES	DEPTH - FEE! FROM TO 13-16		AL AND TYPE	DEPTH T OF SCRE	CHES O TOP 41-44 EN
-	2 SALTY 4 MINERA 15-18 1 FRESH 3 SULPHI	.L 2 □ GALVA JR 19 3 □ CONC 4 □ OPEN	ANIZED RETE		61	PLUGGIN	G & SEALING I	RECORD
	20-23 1 FRESH 3 SULPHI 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-23 20-20-20-20 20-20-20-20 20-20-20-20 20-20-20-20-20-20-20-20-20-20-20-20-20-2	UR 24 17-18 1 [] STEEL 2 [] GALV/ AL 3 [] CONC	- 19 ANIZED DETE	20-23	DEPTH SE FROM	T AT - FEET	MATERIAL AND TYPE	(CEMENT GROUT
· .	25-28 1 . FRESH 3 SULPHI 2 . SALTY 4 MINER,	UR 29 4 0 OPEN AL 24-25 1 5TEEL	HOLE	27-30	18-2	1 22-25		
	30-33 * 1 _ FRESH 3 _ SULPH	UR 3480 3 GONC AL 4 OPEN	RETE HOLE		26-2	9 30-33 80		
71	PUMPING TEST METHOD         10         PUMP           1         PUMP         2         BAILER	UNG RATE 11-14 DURAT	10N OF PUMPING 15-16 1	7-18 /INS	L(	CATION O	FWELL	
	STATIC WATER LEVEL 25 LEVEL PUMPING 19-21 22-24 15	WATER LEVELS DURING	1 PUMPING 2 RECOVERY	IN DI LOT	AGRAM BELO' LINE. INDI	W SHOW DISTANCE CATE NORTH BY AF	S OF WELL FROM I ROW.	ROAD AND
G TES	- FEET FEET	26-28 29-31 FEET FEET	32-34 3 FEET	5-37 FEET		1		
MPIN	IF FLOWING. 38-41 PUMP GIVE RATE GPM.		CLEAR 2 CLOU	IDY		mere	75 10	
2	RECOMMENDED FOMP TYPE RECO PUMP SHALLOW DEEP SET 50-53 CPM	MMENDED 43-45 RECOM PUMPI ING FEET RATE		GPM.		1 Per 1	ing	
	FINAL 1 U WATER SU	IPPLY SABANDONE	ED. INSUFFICIENT SUPP		Ļ		4	k
·	STATUS OF WELL 2 OBSERVAT 3 TEST HOL 4 RECHARGE	E ABANDONE E ADANDONE E WELL	ED			/		
	S5-56 1 DOMESTIC	5 COMMERCIAL 6 C MUNICIPAL 0 7 PUBLIC SUPPL	Y					
		AL / 8 COOLING OR A	NOT USED		/	1		
		OL 6 D B CONVENTIONAL) 7 D C	BORING DIAMOND		-+	Ank	v č h k L	
		REVERSE) 8 🗌 J AIR) 9 🗍 D	DRIVING			7		
	5 🗋 AIR PERC	USSION		DRILLERS REMA	RKS:			
		USSION	LICENCE NUMBER		RKS: 58 C	ONTRACTOR 59-62	DATE RECEIVED	01 <b>7</b> 9
ACTOR	s air perc	- <b>p</b> 2012 .	LICENCE NUMBER		RKS: 58 C SPECTION	ONTRACTOR 59-62 3602 INSPECTOR	DATE RECEIVED	01 <b>73</b>
PNTRACTOR	ADDRESS	- granz. gun: tr	LICENCE NUMBER	DRILLERS REMA SOURCE DATA SOURCE DATE OF INS US REMARKS: US	RKS: 58 C SPECTION	ONTRACTOR 59-62	DATE RECEIVED	01 <b>73</b>

Ministry of Environment and Energy		Th	e Ontario Water Resources Act WATER WELL RECORD
Print only in spaces provided. Mark correct box with a checkmark, where applicable.		1705216	$\underbrace{\begin{array}{c} \text{Municipality}\\ 1 & 7 & 6 \\ 10 & 14 \end{array}}_{15} \underbrace{\begin{array}{c} \text{Con.}\\ H & S & E \\ 15 & 22 & 23 \\ 24 & 24 \\ 22 & 23 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 & 24 \\ 24 &$
County or District	Township/Borough/City/To Address RR/M	mur. nur. ansfield	Con block tract survey, etc. Lot 25-27 Date Completed day month year
21 <u>1 2</u>	Northing	RC         Elevation         RC           24         25         26         30	Basin Code         II         IV           Image: Imag
LOG OF OV General colour Most common material	ERBURDEN AND BEDR Other materials	Gene	ral description To
Brownclay sand. Blue clay snot Blue clay saud Blue clay boulde Grey sand.	, stones reg	·	0 20 20 67 67 130 130 140 140 145
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	32       CASING & OPEN HOLE       32       Wall       Material     thickness       inches     inches       Steel     12       Galvanized     / Steel       Open hole     // Steel       Plastic     / Steel       Steel     26       Galvanized     Concrete       Open hole     Plastic       Steel     26       Galvanized     Concrete       Open hole     Plastic	43 <b>RECORD</b> Depth - feet From To 13-16 <b>43</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b> <b>512es</b>	of opening     31-33     Diameter     34-38     Length     39-40       vp.)     inches     Length     39-40       ial and type     inches     Length     39-40       Ial and type     inches     Length     39-40       Vp.)     inches     Length     39-40       Vp.)     inches     Length     39-40       Ial and type     Depth at top of screen     30       Ial and type     Depth at top of screen     30       Ial and type     Abandonment     14-14       Ial - feet     Material and type (Cernent grout, bentonite, etc.)       Ial - 14-12     22-25     30-33       30-33     80
71       Pumping test metrol       10       Pumping rate       Fill       Dr         1       Pumping       Parping       Pumping rate       GPM       Dr         Static level       Water level end of pumping       25       Water levels during       1 EPU         19-21       22-24       15 minutes       30 minutes       44         10       feet       feet       feet       feet       feet         11 filowing give rate       38-41       Pump intake set at       W       W       feet         1       Shallow       Deep       Pump setting       set aband	yution of pumping Hours Mins Imping 2 Recovery 5 minutes 12 Teet 60 minutes 12 Teet 7 Cloudy 14 Clear Cloudy 14 Clear Cloudy 15 Clear Cloudy 16 Clear Cloudy 16 Clear Cloudy 17 Clear Cloudy 18 Clear Cloudy 19 Clear Cloudy 10 Clear Clear Cloudy 10 Clear Clear Clear Clear Clear 10 Clear Cle	In diagram below sh Indicate north by arr 10th St	DOCATION OF WELL ow distances of well from road and lot line.
METHOD OF CONSTRUCTION 5' 1 Gapte tool 5 Air percussion 2 Gapte tool 7 Boring 3 GRotary (conventional) 6 Boring 4 Rotary (air) 8 Jetting Name of Wert Contractor Addrees Name of Wert Contractor Addrees	P Driving      Digging      Other      Well Contractor's Livence No.      Well Technician's Licence No.	Data se Contrac source Date of inspection Remarks	197372 tor 561 Date received 0CT 27 1998 Inspector
Signature of Technician/Contractor	Submission date day mo yr		CSS. ES9 0506 (07/94) Front Form 9

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😵 Onta	ario Ministry of the Environment			<b></b>	The Ontario WATE	Water F R WEL	Resour	ces Act CORD
Print only in space Mark correct box	ces provided. with a checkmark, where applica	ble. [11]	17(	0607			<b>E</b>	22 23 24
County or District		Township/Borough/City/T	Town Village		Con block	tract survey	, etc. Lo	25-27
Address						Date .	<u>0</u>  ↓ 30 0	48-53
Northing RC Elevation RC Basin Code ii							day n	iv
					$ \underset{30}{\square} \qquad \underset{31}{\square} \qquad \underset{31}{\square} $	1	1.1.1.1	47
General colour	Most common material	Other materials			General description		Dept	h - feet To
BROWN	TOPSOIL			<del></del>			0	2
BROWN	CLAY	STONES			STONEY C	LAY	2	12
RED	LL AY	STONES		<	JUNEYL	2AY	12	63
GREY	LLAY				HARD '		63	140
GRE-	SAND	CLA.		SAI	VOY LLAY [	YFAIR	140	16
GREY	SAND	GRAVEL		100	DIRTY	/	161	180
GRE!	SHALE	LAYEN'S VS	Elt 1		HARO	<del></del>	/ <b>B</b> Ø	200
		· · · · · · · · · · · · · · · · · · ·						
31		Lulup Ht Cola	20					
32			<u>s</u> a					
41 WATE Water found	Kind of water	CASING & OPEN HOLE R	ECORD Depth - f	feet	Sizes of opening 3 (Slot No.)	Diameter	34-38 Leng	th 39-40
at - feet	Giam diam inches	Material thickness inches	From	To 13-16	Material and type	"	Depth at top	of screen 30
15-18	$\begin{array}{c c} 3 & \text{Safty} & 4 & \square \text{ Minerals} \\ \hline 3 & \text{Safty} & 6 & \square \text{ Gas} \\ \hline 7 & \text{Eresch} & 3 & \square \text{ Sulphur} & 19 \end{array}$	2 □ Galvanized 3 □ Concrete 4 □ Open hole	+2 1	175   [	<i>מ</i>			feet
2 [	3 Fresh 4 □ Minerals 3 Satty 6 □ Gas 4 17-18	5 □ Plastic		* 20-23	61 PLUGGING	& SEALING	Abandonm	) . Ient
2023 1 [	☐ Fresh 3 ☐ Sulphin 24	2  Galvanized 3  Concrete 4  Open hole			Depth set at - feet From To Mate	erial and type (Ce	ment grout, be	entonite, etc.)
25-28 1 [ 2 [	☐ Fresh ³	5 □ Plastic		27-30	<u>310-13</u> 18-21 22-25	BEN	SEAL	
³⁰⁻³³ 1 [	] Fresh ³ 🗌 Sulphur ³⁴ ⁶⁰ 4 🔲 Minerals	2 Galvanized 3 Concrete 4 Open hole			26-29 30-33 80	<u> </u>		
				L				
71 Pumping test m	Bailer     CF	M Hours Mins		In diagram b	LOCATION OF elow show distances of	WELL	oad and lot	line.
Static level 6 19-21	Vater level 42 Water levels during 42-24 15 minutes 30 minutes	Pumping 2 Recovery     45 minutes     60 minutes		Indicate nort	h by arrow.			
L D Z		-31 32-34 35-37		00	,			
If flowing give ra	ate 38-41 Pump intake set at	Water at end of test 42 eet Clear Cloudy		0				
Recommended p	ump type Recommended 43	⁺⁴⁵ Recommended ⁴⁶⁻⁴⁹ pump rate		×				
50-53		GPM		Ĩ	VILLAC	νĒ		
FINAL STATUS	5 OF WELL 54 pply 5 Abandoned, insufficien	t supply 9 🗆 Unfinished	$\omega$	2	OF	-10 4	JELL	E
<ul> <li>² Observation</li> <li>³ Test hole</li> <li>⁴ Becharge</li> </ul>	on well 6 Abandoned, poor quali 7 Abandoned (Other) well 8 Dewatering	ty 10  Replacement well		50	1	x	400 F	T
WATERUSE	55-56			2	La milita	4		
¹ Domestic ² Stock	5 Commercial 6 Municipal 7 Rithia cumptu	9 🗌 Not use 10 🗌 Other			12 111-2	_1_		
4 🗌 Industrial	<ul> <li>B Cooling &amp; air condition</li> </ul>	ing	) '	5 4	DYFFERIN	6041	57	
		9 🗀 Driving		0	RO j	7		
² ☐ Rotary (co ³ ☐ Rotary (re ⁴ ☐ Rotary (air	nventional) 6 Boring verse) 7 Diamond r) 8 Jetting	¹⁰ Digging ¹¹ Other		~	5		2364	468
Name of Well Contra M. 1. 1110	actor NSWELL DR. 11	Well Contractor's Licence No.	Data source	58	Contractor 3602	59-62 Date rece	ived 227	003 ⁶³⁻⁶⁸ 80
Address 2	STAYHIER C	ILT .	O B Date o	finspection	Inspector			
Name of Well Techr	nician M. / HT.	Well Technician's Licence No.	Remar	ks	I			
LARKY Signature of Technik	cian/Contractor	Submission date	NIST				ંકક્ર	ES3
Farry	Mughton	day 8 mo 7 yr	Σ				0506 (07/00	) Front Form 9
2 - MINIS	TRY OF THE ENVIRONM	VENT COPY						_
😵 Ont	Ario Ministry of Environ and Energy	nment	The O V	<i>ntario Water</i> VATER WEI	Resources Act _L RECORD			
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Print only in space Mark correct box	ces provided. with a checkmark, where applica	ble. 11	706171	Municipality Co 17 10 14 15 15	n. 51 E 1 1 22 23 24			
County or District		Township/Borough/City/Town/Vil	age C	on block tract surve	ey, etc. Lot 25-27			
		Address of Well Location		Date completed	GU 09 C			
21			RC     Elevation     RC     B.	asin Code ii				
General colour	LOG O Most common material	Other materials	General desc	cription	Depth - feet			
		One Opus CO			From To			
Parta Par			1700					
SKEYTERCUT	N LKILL LUITING			500 R.W.	$\frac{180}{2\pi0}$			
GRET	LLAY			<u>x=</u>	400 400			
GREY	SHALE	4469344957	<u> </u>	,	and and			
31 32 41 Water found at - feet	RRECORD 51 Kind of water inches	CASING & OPEN HOLE RECOP	D     Sizes of opening       pth - feet     Sizes of opening       To     To	ng 31-33 Diameter	34-38 Length 39-40-			
	Fresh         3         Sulphur         1.4           4         Image: Minerals         10-11           Salty         6         Gas	1 $\square$ Steel 12 2 $\square$ Galvanized $1 \square \square \square \square$	AAPLOX ⁶	(The	41-44			
15-18 1 E	Fresh 3 🗆 Sulphur 19 4 🗆 Minerals	4 □ Open hole 5 □ Plastic		GGING & SEALING	BECORD			
20-23 1	Fresh 3 Sulphur 24	1 ☐ Steel ¹⁹ 2 ☐ Galvanized	20-23 Ann Depth set at - fee	ular space	Abandonment			
2 2 2 25-28 1 2 2 2 2 2 30-33 1 2	Salty     6     Gas       Fresh     3     Sulphur     29       Salty     4     Minerals       6     Gas       Fresh     3     Sulphur       24-25	3 □ Concrete     1 × ×     1 ∧ ×       4 □ Open hole     1 × ×     1 ∧ ×       5 □ Plastic     5 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	From         To           From         To           Prom         To           Prom	Material and type (Co	ement grout, <u>hentanite, p</u> tc.)			
2 L Pumping test m 71 Pump 2 I Static level v 19-21	Sairty     6     Gas       nethod     Ank     Pumping rate     11-       Batter     25     GPI       Vater level     25     Water levels during       22-24     15 minutes     30 minutes       22-24     15 minutes     30 minutes	5       Plastic         14       Duration of pumping         M       15.16         1       Pumping         2       Recovery         31       32.34	LOCATI In diagram below show dis Indicate north by arrow.	ON OF WELL tances of well from	road and lot line.			
	$\alpha \mu_{\text{feet}} \mid \alpha \mu_{\text{feet}$	$eet \alpha'' \omega_{feet} \alpha'' \omega_{feet}$			Ň			





AAGU COCATIO

0506E (12/2007)

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



of

Regulation 903 Ontario Water Resources Act Page

Measurements recorded in: Metric

🗌 Imperial

085738 Д

Address of Well Location (Street Number/Name)		Township	Lot and	Concess	sion
County/District/Municipality		City/Town/Village	······································	Province	Postal Code
UTM Coordinates Zone Easting Northing	· / 2 •	Municipal Plan and Suble	l pt Number	Official	
NAD 8 3 1 / 5/ / 7 96 42 9	1478 Sealing Reci	ord (see instructions on the	back of this form		
General Colour Most Common Material	Ot	her Materials	General Description		Depth (m/ħ)
Red Brown Clay Sand	Gravel		Harp		1 2- 4.87
Ciey Clay	Man	Sand	Joneson		T. 87 9.17
Grey Fine Sand	Medini	n Sand	Lose		34,13 32.70
		······		<b></b>	
			· · · · · · · · · · · · · · · · · · ·		
Annular Space	~d	Volumo Placed	Results of We	ell Yield Testin	1g
From To (Material and Type)		$(m^3/\hbar^3)$	Clear and sand free	Time Water Le	avel Time Water Level
- 6.07 Enviropius Meain	<u>1</u> m	1100103103	If pumping discontinued, give reason:	Static Level 1607	6
				1 17.9	2 1 27.43
	<u> </u>		Pump intake set at (m/ft)	2 19.5	D = 2 + 26 + 51
Method of Construction	Well U	se	Pumping rate (I/min) GPM)	3 04()- /-	d = 3 + 45.60
Cable Tool Diamond Public Rotary (Conventional) Jetting Domestic		ercial Not used	Duration of pumping	4 0.1 ° 3	$\frac{1}{15}$ $\frac{4}{5}$ $\frac{1}{24}$ $\frac{1}{17}$
Rotary (Reverse)     Driving     Livestock     Boring     Digging     Irrigation	Test Ho     Cooling	ble I Monitoring	Final water level end of pumping (m/it)	10 25.2	9 10 2 03
Air percussion     Industrial     Other, specify     Other, specify	cify		If flowing give rate ( <i>l/min / GPM</i> )	15 26.6	7 15 19.20
Construction Record - Casing Inside Open Hole OR Material Wall D	epth ( <i>m/ît)</i>	Status of Well	Recommended pump depth (m/ft)	20 27.4	3 20 18.38
Diameter (Galvanized, Fibreglass, (cm/in) Concrete, Plastic, Steel) (cm/in) From	n To	Replacement Well     Test Hole	<u>30.91</u>	25 27.9	8 25 17.67
15.24 Steel 188 +D.6	<u>0  34,  3</u>	Recharge Well     Dewatering Well	(Umin) GPM) 30	30 28.1	6 30 1/ 3/
db. 41 Open Hole 0	6.04	Observation and/or     Monitoring Hole	Well production (min) GPM)	40 22,3	A 50 1 71
		Alteration (Construction)	Disinfected?	60 282	54 60 State
Construction Record - Screen		Insufficient Supply	Map of We	ell Location	- Alle
Outside Material D Diameter (Plastic, Galvanized, Steel) Slot No. From	epth ( <i>m/ft</i> ) n To	Water Quality Abandoned, other,	Please provide a map below following	instructions on th	e back.
12.71 Stainles Steel #8 34	13 34.57	specify 	Maschald	Alsont	La
		C Other, specify	I I I I I I I I I I I I I I I I I I I		
Water Details	Prod Den	Hole Diameter	(3)		House
34. B (m/ft) ⊿Gas □Other, specify	From	To (cm/in)	4. ³⁹ .us	1999/00 -220 ⁹⁷⁸⁻ 1999000	
Water found at Depth Kind of Water: Fresh Untes ( <i>m/ft</i> ) Gas Other, specify		1 10 25.40			
Water found at Depth Kind of Water: Fresh Untes	sted Day 12	36.57 12.70			
Well Contractor and Well Techni	ician Informa	tion		e 300	
Hall Calvin Merklinger Well Drillin	A P	7 Q   P	Everet	ł	
Business Address (Street Number/Name) 4-131-15th Live RR#3 Cooler	num S		Comments:		
Province Postal Code Business E-mail	Address		Well owner's Date Package Dathere		jistry Use Only
Bus.Telephone No. (inc. area code) Name of Well Technicia	an (Last Name,	First Name)	information package 200907	0al Audit No	
Well Technician's Licence No. Signature of Technician and/or	CONVII r Contractor Da	te Submitted	Pate Work Completed	AUG	i t 7 žodo [–] C
05055 (12/2007)	yose il	10101012 06	2No 2004071	U A Received	Printer for Ontaria 2007

Ministry's Copy

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#### Lot 11

**Concession 8** 

	· · · · · · · · · · · · ·	MINISTRY OF THE ENVI The Ontario Water Re	RONMENT sources Act	41 F/1E
UU		TER WELL	<b>RECORD</b>	63/78
Ontario	1. PRINT ONLY IN SE 2. CHECK 🔀 CORRE	ACES PROVIDED	702494 <u>17006</u>	HS E 18 15 E 22 23 24
COUNTY OR DISTRICT	DUFFERIN	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY,	
		ADDRESS EVERETT		DAY MO. MO. Y.
	^V _T 10 M 10 10 12 N 12 N 12 N 12 N 12 N 12 N 12 N 12 N			
GENERAL COLOUR	NOST COMMON MATERIAL	G OF OVERBURDEN AND BEDROCK OTHER MATERIALS	MATERIALS (SEE INSTRUCTIONS) GENERAL DESCRIPTION	DEPTH - FEET FROM TO
Bach	30P 5014		MARO.	0 ''
Baon	CCAY			1' 20'
BROW-	SAND C.A.	• • • • • • • • • • • • • • • • •	PACITED	$\frac{\mathcal{P}_{0}}{\mathcal{P}_{0}}$
Baoun	SANO		bsch20	35 50*



(fi)	PURSING TEST METHOD	10 PUMPING RATE 11-14 DURATION OF PUMPING	LOCATION OF WELL	
	I PUMP 24 STATIC W LEVEL	ATER LEVEL 25 END OF WATER LEVELS DURING 2 RECO	IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD	AND
G TES	032 FEET	$48_{\text{FEET}} 45 \text{ minutes} 30 \text{ minutes} 45  $	5 35-37 FEET WEEDE	
	RECOMMENDED PUMP T	GPM FEET 1 CLEAR 2 YPE RECOMMENDED 43-45 RECOMMENDED	CLOUDY 46-49 MULLING TOS RECATION	
a	D SHALLOW 4	DEEP PUMP 046 FEET PUMPING 2 	GPM JOOO COANTR EVERE	TT
	FINAL STATUS OF WELL	Image: Water supply     5     ABANDONED, INSUFFICIE       2     OBSERVATION WELL     6     ABANDONED, POOR QUAL       3     TEST HOLE     7     UNFINISHED       4     RECHARGE/WELL     7     UNFINISHED	SUPPLY Iou' FROM ROAD	
	WATER 0 USE	1     DOMESTIC     S     COMMERCIAL       2     STOCK     6     MUNICIPAL       3     IRRIGATION     7     PUBLIC SUPPLY       4     INDUSTRIAL     8     COOLING OR AIR CONDITIONI       1     OTHER     9     NOT USED		
	METHOD OF DRILLING	1       CABLE TOOL       Image: Boring         2       ROTARY (CONVENTIONAL)       7       DIAMOND         3       ROTARY (REVERSE)       8       JETTING         4       ROTARY (AIR)       9       DRIVING         5       AIR PERCUSSION       1       1	DRILLERS REMARKS:	





The Ontario Water Resources Act WATER WELL RECORD

multiple

2010

-

Print only in spaces provided.

Mark correct box w	vith a checkmark, wher	e applicable.	11	17	7050	58	Municipality $17006$	Con. CON:	22 23 24
County or District	KIN		Township/Borough Address	/City/Town	FULM RR4:	UR MANSF	Con block tract s	urvey, etc. Lot $\frac{1}{250}$	25-27 1 8 9-53 7
1 2	10	12	Northin		RC Eleva	tion RC	Basin Code	day mo	nth year iv
		LOG OF O\	ERBURDEN AND	BEDROCK M/	ATERIALS (	see instructio	ns)	Der	oth – feet
General colour	Most common mate	rial	Other mate	rials		General de	escription	From	То
BRAUM	54111		STON	ES_		HA	TRD	0	18
GREV	CLAV					SOFT		18	27
GREY	CLAY		SAND	)	54	AND 4	ICGA	4 27	54
BROWN	SAND				<u> </u>	EAN	WATER	2	
					BE	FARIN	SAND	54	61
:									
	·						<u> </u>		· · · · · · · · · · · · · · · · · · ·
					· ·· · ··				
						·			
31									
32						54		<u> </u>	<u>75</u> BC
41 WATE		51	CASING & OPEN Wall	HOLE RECOF	D – feet	Sizes of op (Slot No.)	ening ³¹⁻³³ Diar	neter ³⁴⁻³⁸ Leng	th 1677
Water found at – feet	Kind of water	diam inches	Material thickr inche	ness From	То			✓ inches Depth at top	of screen 30
54 2 2	Fresh 3 🛛 Sulphur 14 4 🗍 Minerals 6 🗌 Gas	10-11 1	Steel 12 Galvanized	88 +1-	13-16		ILECC ST	FEL SA	41-44 feet
15-18 1	Fresh 3 🗌 Sulphur 19 A 🗌 Minerals	P4 4 E	Open hole Plastic	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	58		PLUGGING & SF		
20-23 1	Fresh 3 Gas	17-18 1 2	] Steel ¹⁹ ] Galvanized		20-23		Annular space	Abandonn	ient
2 🗆	Salty ₆ Gas	3 4	Concrete			From	To Material and ty	pe (Cement grout, be	entonite, etc.)
25-28 1 🗌 2 🗌	Fresh 3 🗌 Sulphur ²⁹ Salty 🗧 Gas	24-25 1 [	_ ⊢lastic ] Steel ²⁶		27-30	510-13	4 BEI	VSEA	2
30-33 I []	Fresh 3 🗌 Sulphur 34 6 Salty 4 🗌 Minerals	2 L 3 [ 4 [	Gaivanized Concrete Open hole Rights			26-29	30-33 80		i <u>tere</u> r ;



Solutions for Completing	inistry of e Environment	A 09	3054	t nember below)	Regulation 90	Well 03 Ontario Water R pag	Record Resources Act
<ul> <li>For use in the Province o</li> <li>All Sections must be com</li> <li>Questions regarding com</li> </ul>	f Ontario only. This pleted in full to avoid pleting this application	document is a perm I delays in processir on can be directed	nanent legal ng. Further in to the Wate	document. Pleastructions and r Well Help D	ease retain for futu explanations are av esk (Toll Free) at	ire reference. vailable on the back 1-888-396-9355.	k of this form.
All metre measurements     Please print clearly in blue	shall be reported t	to 1/10 th of a metre			Ministry U	se Only	
Mall Owner's Information	of black link only.	all Information	MUN	00	IN	LC	т
(Cultor R	t and t				14		
RR#/Street Number Name	Easting	Northing	City/Town/Vil	lage	Site/Com	oartment/Block/Trac	zt etc.
813 /17	1 155196119	4829801	Spur1	rak		ifferentiated, specify	
Log of Overburden and Be	drock Materials (s	ee instructions)		Genera	Description	Depth	Metres
Alerk Ten	aul	onier materials		Conora		From	
Row Maps	Tout			See 18		1	22
Alue slog!	rail.					22	\$6
Treg said						86	90
							1000
		. 1.		1	-		
	au	Me	eserin	at an	2 upen	il	
Hole Diameter		Construction Rec	ord		T	est of Well Yield	Recovery
From To Centimetres	linside diam Mater	ial Wall thickness	Depth	Metres	pamp.	Time Water Level	Time Water Leve
0 20 8	centimetres	centimetres	From	То	Pump intake set at	Static / /// Static	min Metres
13 90 6.		Casing			(metres) 88	Level 192	1 78
	6. Plastic	Concrete	1-1	~ ~ ~	(litres/min)	1342	- 10-2
Water Record	Galvanized	188	ts	86.	Duration of pumping	2 60-3	2 70-5
at Metres Kind of Water	Steel	Fibreglass			Final water level en	d 3 66 6	3 61-3
Gas Salty Minerals	Galvanized			Section and	Becommended num	es 10 4 77-X	1 60-5
m Fresh Sulphur	Steel	Fibreglass			type. Shallow De		4 00
Gas Salty Minerals	Plastic	Concrete		125-50	Recommended pur depth. 58 metr	10 5 78-7	5 581
m Fresh Sulphur		Screen	Tres.		Recommended pur	IP 10 55	10 55-
Gas Salty Minerals	Outside Steel	Fibreglass Slot No.			If flowing give rate -	15 /	15 52-1
After test of well yield, water was	Plastic	Concrete 12	86	90	(litres/min)	25	25 1
Clear and sediment free	Galvanized	No Cooling on Co	00	L	If pumping discontin- ued, give reason.	30	30
Other, specity		No Casing or Sc	reen		Kun au	50 40	50
Chlorinated Yes No	Open hole				und -	60 88	60 48-3
Plugging and Se	aling Record [	Annular space	Abandonment	In diagram belo	Locatio	n of Well	od building
From To Material and typ	e (bentonite siuny, neat cer	nent siurry) eic. (cub	ic metres)	Indicate north by	arrow.	non road, iot into, a	no bullang.
a ge enve	and pley	4.	page	0	0 0 0	Jahren	wild
				Cou	intry Nd.	17 meny	
		경우님이 이 이 가격			10	a	
				1 h	V	a la r	
Cable Tool Botany (	lethod of Construction	on iamond [	Diaging	8		3	
Rotary (conventional)     Air perc	ussion	etting	Other	A	15 Mu	de Si	
Boring	Water Use	mving		T.			
Domestic Industria	al P	ublic Supply [	Other	Provide State	NI	R	
Irrigation	al C	ot used	Martin .	Audit No. 🛶	ECODO	Date Well Completed	/ 104 Hore
Water Supply	Final Status of Well	atialahad	lanad (Others)	Weetheren	26933	Jed 1	01 17
Observation well Abandoned,	insufficient supply	ewatering	Jonea, (Other)	package delivere	ad? Yes No	2011	01 17
Test Hole Abandoned, Well Cont	poor quality R tractor/Technician	eplacement well formation			Ministry L	Jse Only	
Name of Well Contractor		Well Contractor's	Licence No.	Data Source		Contractor	
Business Address (street name, numb	er, city etc.)	2001		Date Received	YYYY MM DD	Date of Inspection YY	YY MM DD
Name of Well Technician (last name of	irst name)	Well Technician's	Licence No.	FEB	0 3 2011	Noll Record Number	
Save	nor name)	T2	18-10.	riemarks		waii necoro number	
Signature of Technician/Contractor		Date Submitted YYY	Y MM DD	-			
0506E (08/2006)		Minia	truia Com		Cette	e formule est dispor	nible en françai

Measurements	Ministry of the Environme and Climate Change recorded in: Metric Imperia	Well Tag No. (Place Sticker Tag#: A1	and/or Print Below) 96819 Regulatio	Well Record on 903 Ontario Water Resources Act Page of
Address of Well	Location (Street Number/Name)	Township	Lot Lot	Concession X F-1+S
County/District/	Aunicipality DUFFELIN	City/Town/Village		Province Postal Code Ontario
NAD   8   3	$\frac{1}{5781148489}$	12157	idiot number	Other
Overburden a	id Bedrock Materials/Abandonmen	t Sealing Record (see instructions on	the back of this form)	Denth (m/ft)
	Most Common Material	Other Materials	General Descriptio	n From To
<u>nvaun</u>	SHNL	GKHUEL	LOOSE	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
DKUUN			DOF1	$\frac{14}{MC} \frac{18}{C1}$
GKET		C	INTELD	-13 $36-0$ $21$ $120$
LOKE 1	CDTT		LH YEKE	$\frac{1}{2} \qquad \frac{1}{2} \qquad \frac{1}$
GRAN	<u>SUNC</u>			$= \frac{1}{1} $
	· · · · · · · · · · · · · · · · · · ·	······································		·······
		+	*******	······································
	Ánnular Space	3	Results of W	lell Yield Testing
Depth Set at ( From	n/ft) Type of Sealant U To <i>(Material and Type</i>	sed Volume Placed (m³/ñť³)	After test of well yield, water was:	Time Water Level Time Water Level
D	O HOLE PLUG	4	Other, specify	( <i>min</i> ) ( <i>m/ft</i> ) ( <i>min</i> ) ( <i>m/ft</i> )
			If pumping discontinued, give reason	Level 12
				1  130
			$= \int \nabla \partial f = \int $	2 114 2 128.4
Method	of Construction	Well Use	Pumping rate (Vmin / GPM)	3 117 3 127
Cable Tool		Commercial Not used	Duration of pumping	4 119 4 1alo
Rotary (Conve Rotary (Rever	ntional) 🔲 Jetting 🛛 VI Domestic se) 🗌 Driving 🗌 Livestock	Municipal Dewaterin	$g = \frac{1}{2} hrs + \frac{1}{2}$ min	5 123 5 125
Boring	Digging Irrigation	Cooling & Air Conditioning	Final water level end of pumping (m/fi	10 124 10 121
Other, specify	Other, spa	cify	If flowing give rate (I/min / GPM)	15 127 15 119
Incida	Construction Record - Casing	Depth (m/ft) Status of Well		20 129 20 1110
Diameter (G (cm/in) Co	alvanized, Fibreglass, Thickness From From From From From From From From	m To To Replacement We	$      \langle \nabla \mathcal{A} \in \mathcal{T} \rangle$	25 132 25 114
1_114	TCCI I.VV +2	∐ Test Hole ) 」スス □ Recharge Well	Recommended pump rate	30 122 30 112
			<u>3 GPN</u>	40 13 40 11
			vveil production (Umin / GPM)	





Ministry of the Environment and Climate Change

[]/mperial

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

# Well Record

**Regulation 903 Ontario Water Resources Act** 

Page

of____

Measurements	recorded in:	🔲 Metric
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112

A252752

#### Address of Well Location (Street Number/Name) Township Concession Lot -71 BQ min County/District/Municipality City/Town/Village Province Postal Code fferin Ontario 1-0 ans UTM Coordinates Zone , Easting Municipal Plan and Sublot Number Northing Other 4891 1648 NAD 8 3 78 1 14 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (mm) General Colour Most Common Material Other Materials General Description From rown 15 ana am 5 32 rown tones $O \setminus I$ tones 4 $\sim c^{2}$

Greb .	Sand	Grave	2			1.58	16.5
		· · · · · · · · · · · · · · · · · · ·			······································		
			······				
						2111.1.1.1.1.1.1.2.2.2.2.2.2.2.2.2.2.2.	
Depth Set at (mft)	Annular Spa Type of Sealant I	ce lsed	Volume Placed	After test of well vield, water was:	Draw Down	g Be	
From To	(Material and Typ	pe)	( <i>m³/ft³</i> )	Clear and sand free	Time Water Le	vel Time	Water Level
0' 20'	Growt			Other, specify	(min) (mt)	(min)	(m(ft)
				If pumping discontinued, give reason:	Level 45		
·······		·			1	1	
				Pump intake set at (m(it)	2	2	
·····				150'			
Method of Cor	nstruction	Well Us	e	Pumping rate (Vmin (GPM))	ວ 		
Cable Tool	Diamond Dublic		cial 🗌 Not used	Duration of numping	4	4	
Rotary (Conventional)     Rotary (Reverse)	Driving	: Municipa	Dewatering     Monitoring	hrs + min	5	5	
Boring	Digging	Cooling a	& Air Conditioning	Final water level end of pumping (n)	10	10	
Other, specify	<u>∩</u> DR □ Industrial	ecify		1436	15	1 =	
Cor	Istruction Record - Casing		Status of Moll	I If flowing give rate (I/min / GPM)	15	[ [ ]	
Inside Open Hole	OR Material   Wall	Depth ( <i>mft</i> )	Water Supply	Recommended pump depth (n(fit))	20	20	,
Diameter (Galvanize (cm/n) Concrete, I	d, Fibreglass,   Thickness   Plastic, Steel)   <i>(cm/in)</i>   Fi	om To	Replacement Well	1.50	25	25	
[11 S.+a		2. 110.	Recharge Well	Recommended pump rate	30	30	
	$C = a/20^{\circ} T_{a}$	$c_{160}$	- Dewatering Well	ZGPM	40 1152;	40	
6 K'	acker 13	1.138	Observation and/or     Monitoring Hole	Well production (Vmin KGPM)			······
S" Ste	el 188" 13	58' 160'	Alteration (Construction)	Disinfegted?	50 145	6 50	
				Ves 🗌 No	60 143	60	114.9
Cor	nstruction Record - Screen	I	Abandoned, Poor	Map of We	ell Location		
Outside Ma Diameter (Diastie Oak	aterial Slot No.	Depth ( <i>m/ft</i> )	Water Quality	Please provide a map below followir	ng instructions o	n the back.	$\wedge$
(cm/in) (Plasuc, Gan	Fi	om To	specify				
<u>3" Sta</u>	intess \$20					o-ie.	- N
5" Sta	· nlocc #17 1/	165	Ciner, specity				$\Xi_{\ell_{\ell}}$
	Water Details	<u> </u>	ole Diameter				
Water found at Depth	Kind of Water: Presh	ested _ Dept	h ( <i>mft</i> ) Diameter			- Wen	
/6/*(m@) 🗌 Gas	Other, specify	From		-5 -		こが	Carrière
Vater found at Depth	Kind of Water:	ested	20 8			v	
Water found at Depth	Kind of Water: Fresh Uni	ested 20'	165' 6"		2	1 <del> </del>	
(m/ft) 🔲 Gas	Other, specify			County_	Rela	<u> </u>	
We	ell Contractor and Well Tech	nician Informati	on				
Business Name of Well	Contractor	Wel	I Contractor's Licence No.				
Business Address (Stree	<u> 1 Mater M</u> et Number/Name)	ens L		Commonto			
Rox 141	Discham		ZCP.V				
Province	stal Code Business E-ma	ail Address					
Unt W	OGIRIO			Well owner's Date Package Delivere	d Mir	iistny Use	Only
Bus. Telephone No. (inc. a) $1 \leq i \leq $	area code) Name of Well Techni	cian (Last Name, I	First Name)	package 20180	20 Audit No	• 72 9 3	3309
Well Technician's Licence	No. Signature of Technician and	or Contractor Dat	e Submitted	Date Work Completed			
1314156			MIKOVIST	DONO DONK COZI	21716A	UG U 3	2018





#### Lot 12

**Concession 6** 

WATER RES er P DIVISION UTM . J. 12 4 1. 1 17.1/Nº E ( DIDIR J N OHTA e Ontario Water Resources Commission Act RESOURCE Elex. RECORD D | R / FR WF lmin Basin Township, Village, Town or City County or 1964 H.S.E. month year) ress mansfield ont **Pumping Test Casing and Screen Record** Static level fround to water 20 feet Inside diameter of casing 30 inches Test-pumping rate 1/4 gallon 122 min G.P.M. Total length of casing 31 fut Pumping level .... Type of screen Duration of test pumping Length of screen... Water clear or cloudy at end of test Depth to top of screen Recommended pumping rate //4 G.P.M. Diameter of finished hole 30 inches Water Record Well Log Kind of water Depth(s) at From ft. То which water(s) (fresh, salty, Overburden and Bedrock Record ft. found sulphur) 12 0 soil 16 12 30 30 fut is from the bottom fress Location of Well In diagram below show distances of well from road and lot line Indicate north by arrow. Is well on upland, in valley, or on hillside? upland Drilling or Boring Firm 123 ..... Address for through W Licence Number / 27 7 BM go B. M. Cobicos Name of Driller or Borer 10 side in Address Date .... nature of Licensed Drilling or Boring Contractor) Form 7 15M-60-4138 CSS.S8 5, c. OWRC COPY

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Ontario	1. PRINT ONLY IN SI 2. CHECK 🔀 CORRE	ACES PROVIDED		170	11692	<u>·</u> ]	1700b	1/5 1		22 23 24 01 25-27
COUNTY OR DISTRICT	EFRIN	TOWNSHIP, BOROUGH	H, CITY, TOWN, VILLAG	E S	7		LOCK PRACT. SURVEY.		9	12
			MANSŦ	IELD		/				E 74
		ING		RC. E		RC.	BASIN CODE つつ AIII		··· . 977	322
1701692	17 57560	G OF OVERBUR	DEN AND BED	DROCK I	MATERIAL	S (SEE IN:	STRUCTIONS)			
GENERAL COLOUR	MOST COMMON MATERIAL	OTHE	R MATERIALS			GENERAL	DESCRIPTION		FROM	TO
BROWN	TOP JOIL			<b>**</b>			. <u></u>		0	1
RED	CLAY				SHAL	FW	TH CLAY	RIDGES	8	18
RED	SHALE	C			1-1	ARD	LAYERS		18	65
11		BLUE	LAYERS						65	102
<u></u>					-					
				G			BLADITIT 1			I I I
	1602 000		01871705		<u>265 / 1 7</u>					
41 WA		51 CASIN	IG & OPEN HC		ORD	Z SIZE (SLOT	54 () OF OPENING NO.)	65 31-33 DIAMETER	34-38 L	75 80 ENGTH 39-40
WATER FOUND AT - FEET	KIND OF WATER	INSTDE DIAM. MATER INCHES	WALL THICKNESS INCHES	DEPTH	TO		RIAL AND TYPE	DE OF	TH TO TOP	FEET 41-44 80
0045 2	TRESH ³ □ SULPHUR ¹⁴ SALTY ⁴ □ MINERAL     19	2 GALVI	12 .188	0	2					FEET
	FRESH 3 SULPHUR SALTY 4 MINERAL	06 4 0 OPEN	RETE ) HOLE L ¹⁹		0022	61 DEPTH S		ATERIAL AND TY		ENT GROUT
	FRESH ³ SULPHUR ²⁴ SALTY ⁴ MINERAL29		ANIZED RETE	2191	102	10	-13 14-17			
25-28 1	FRESH 3 SULPHUR     SALTY 4 MINERAL     34	24-25 1 🗌 STEE 2 🗌 GALV	L 26 ANIZED		27-30	18	-21 22-25			
30-33 1 2	FRESH 3 SULPHUR SALTY 4 MINERAL	3 🗌 CONC 4 🗍 OPEN	RETE	<u> </u>			50.55			
71 PUMPING TEST M	ETHER 10 PUMPHE AAT		15-16 30	17-18	·	L	OCATION O	F WELL	75	9/
STATIC LEVEL	WATER LEVEL 25 END OF WATER PUMPING WATER	LEVELS DURING	1 PUMPING 2 RECOVERY		IN DIA LOT L	AGRAM BELO INE. INC	OW SHOW DISTANCE	S OF WELL FR ROW.	OM ROAD /	AN D
SE 0254	21 22-24 15 MINUTES	-28 0 % 30 MINUTES 45	$\tilde{S} D \frac{32-34}{\text{FEET}} 08^{\circ}$	35-37			ζ			
U IF FLOWING. GIVE RATE	38-41 PUMP INTAKI	SET AT WATE	CLEAR 2 CLC	42 DUDY			15'th sit	RD		
RECOMMENDED	GPM RECOMMEND	ED 95 43-45 DE CO	23 Zz	46-49 GPM				e d		- 171
50-53		PECIFIC CAPACITY			Con		CONV	LL		mu
FINAL	1 WATER SUPPLY 2 OBSERVATION W	5 ABANDON ELL 6 ABANDON	ED, INSUFFICIENT SUI	PPLY	Y_	2 2	1 + 10	201		JP E
OF WELL	3 TEST HOLE 4 RECHARGE WELL	7 [] UNFINISH	1ED		)	<u> </u>	1071	<u>&gt;                                    </u>	) (	\ ^{\\\\}
WATER	1 DOMESTIC 2 STOCK 3 IRRIGATION	<ul> <li>L COMMERCIAL</li> <li>MUNICIPAL</li> <li>PUBLIC SUPP</li> </ul>	LY		14 1	· #.	1011	2 8	Ř	
USE (	4 🗆 INDUSTRIAL	8 🗌 COOLING OR ,	AIR CONDITIONING 9  NOT USED		/0	1,4	lot 1	\ r	1ª	
METHOD	57 1 CABLE TOOL 2 CONVE	6 🗍 NTIONAL) 7 🗍	BORING DIAMOND				10 th site	Rd.		
OF DRILLING	G 3 C ROTARY (REVER	SE) 8	JETTING Driving			) 	S			
NAME OF WEI			LICENCE NUMBE		DATA SOURCE	58		DATE RECEIVED	270	674
HO ADDRESS	MICHTON	HJONS	5602		DATE OF INSP	PECTION	3604	2	706	74
NAME OF DRI	STAPNE	اک,	LICENCE NUMBE	ER						P VO
SIGNATURE C	by hightan'	SUBMISSI	ON DALE	74	FFICE			CSS.58	-	<u>·                                     </u>
Ken	reth M. my	them DAY 2	<u>5 NO. 6</u>	v #	0		<u></u>	<u></u>	FO	RM 7 07-0
MINISTR	AT OF THE ENVI	KONMENI (								

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Dontario	L PRINT ONLY IN SPACE		WE		<b>RE</b> 2002		DRD	) 4 HS	[ <i>A</i> ]]	E. 106
DUNTY OR DISTRICT	2. CHECK 🛛 CORRECT B	SOX WHERE APPLICABL TOWNSHIP, BOROUGH.	E 1 2 CITY, TOWN, VILLAG	E 3	9	CON. BLOC	14 (, TRACT, SURVEY,	ETC.	1	22 23 24 OT 25-27
h. EGI	enl	MIL	LMUR	2		6.7	E.H.S.	DATE COMPLE		
		12	ANSF			R <u>C BAS</u> II	N CODE	DAY		- <b>A</b> .
M 10	12	17 18	1550		175	<b>S</b> 30 31	4		<u> </u>	47
	LOG		EN AND BED	ROCK MA	TERIALS				DEPTH	· FEET
ENERAL COLOUR	MOST DMMON MATERIAL	OTHER	MATERIALS			GENERAL DE			FROM	то
3Rown To	PSOIL					<u></u>				5-
REY C	LAY				•	na Nana ang Mana			5	12
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REDLODAL	SHALE				HAN	PDLA	YERS		25	80
RROWN S	HALF					1			80	84
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31 popubo	2 1 000.512	0586 0	01271771	002	52177	374 00	8071773	008	46 177	3
32 012011						نيا ليل		65		
41 WATER	RECORD	51 CASING	S& OPEN HO			C SLOT NO.)	OPENING	31-33 DIAMETE	ER 34-38 INCHES	LENGIH 39. Fe
AT - FEET	D OF WATER	DUM MATERIA Nehes	L THICKNESS	FROM	10		AND TYPE		DEPTH TO TOP	41-44
0074 SALT				00	20			G & SFAL	NG REC	
		4 OPEN H	OLE 4		20-23	DEPTH SET A		MATERIAL AND	TYPE (CEN	IENT GROUT.
20-23 1 G FRES 2 G SALT	SH 3 0 SULPHUR		ITE			10-13	14-17			
25-28 1 🗍 FRES 2 🗌 SALI	SH 3 3 SULPHUR 29	24-25 1 STEEL 2 GALVAN	26 HIZED		27-30	18-21	22-25			
30-33 1 G FRES 2 G SALI	SH 3 ] SULPHUR ³⁴⁶⁰ TY 4 ] MINERAL	3 🗌 CONCR 4 🗌 OPEN H	ETE IOLE			26-29	30-33 80			
71 PUMPING TEST METHOD	10 PUMPING RATE	IC-14 DURATIO	N OF PUMPING	7-18		LOC	CATION	OF WELL	-	
STATIC WAT	ER LEVEL 25 END OF WATER LEVE	ELS DURING		MINS	IN DIAG LOT LIN	RAM BELOW : IE. INDICA	SHOW DISTANC TE NORTH BY A	ES OF WELL F RROW.	ROM ROAD	AND
U 19-21	22-24 15 MINUTES 26-28	30 MINUTES 45 M	INUTES 60 MINU	TES 25-37			N			
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20-23 1 [] FRES 2 [] SALT 25-28 1 [] FRES	SH     3     SULPHUR     24       IY     4     MINERAL       SH     3     SULPHUR     29       SH     3     SULPHUR     29	17-18 I □ STEEL 19 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 24-23 I □ STEEL 26	20-23 27-30	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25	MATERIAL AND TYPE	CEMENT GROUT AD PACKER, ETC
20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES	3	17-18 I □ STEEL 19 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 24-25 I □ STEEL 26 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE	20-23 27-30	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80	MATERIAL AND TYPE	CEMENT GROUT. AD PACKER, ETC
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20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 71 PUMPPING TEST METHOD 1 _ PUMPTET	SH     3     SULPHUR     24       YY     4     MINERAL       SH     3     SULPHUR     29       YY     4     MINERAL       SH     3     SULPHUR     34,800       YY     4     MINERAL       IO     PUNPING RATE       VGAILER     25	17-18 1 STEEL 19 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 10-14 DURATION OF PUMPING 15-16 30 L 10 DURATION OF PUMPING	20-23 27-30	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC	MATERIAL AND TYPE LE	CEMENT GROUT.
20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 1 _ FRES 2 _ SALT 1 _ FRES 2 _ SALT 1 _ FRES 2 _ SALT 2 _ SALT 2 _ SALT 1 _ FRES 2 _ SALT 2	SH     3     SULPHUR     24       YY     4     MINERAL       SH     3     SULPHUR     29       YY     4     MINERAL       SH     3     SULPHUR     24       YY     4     MINERAL       YY     4     MINERAL       YY     4     MINERAL	17-16       I       STEEL       I         2       GALVANIZED       GALVANIZED         3       CONCRETE       GALVANIZED         24-25       I       STEEL       26         2       GALVANIZED       GALVANIZED         3       CONCRETE       GOVEN HOLE         1       DEPEN HOLE       I         1       DURATION OF PUMPING       I         0000       GPN       HOURS       I         1       DURATION OF PUMPING       I         0000       I       I       I         00000       I       I<	20-23 27-30 27-30 17-18 1N DIAGRAM LOT LINE.	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	CEMENT GROUT.
20-23 1 FRES 2 SALT 25-28 1 FRES 2 SALT 20-33 1 FRES 2 SALT 30-33 1 FRES 2 SALT 30-33 1 FRES 2 SALT 2 S	SH     3     SULPHUR     24       YY     4     MINERAL       SH     3     SULPHUR     29       YY     4     MINERAL       SH     3     SULPHUR     29       YY     4     MINERAL       SH     3     SULPHUR       YY     4     MINERAL       10     PUMPING RATE       WATER     25       WATER     1       22-24     IS MINUTES       15     FEET       34-01     PUMP INTAKE	17-18       I       STEEL       II         2       GALVANIZED       GALVANIZED         3       CONCRETE       GALVANIZED         4       OPEN HOLE       Z6         2       GALVANIZED       GALVANIZED         3       CONCRETE       GALVANIZED         3       CONCRETE       GOVEN HOLE         1       DURATION OF PUMPING       IS-16         0000       GPN       O/       15-16         0000       GPN       O/       HOURS       I         0000       GPN       I       DEPUMPING       I         0000       GPN       I       II       DEPUMPING       I         0000       GPN       I       III       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	20-23 27-30 27-30 17-18 41 VS 1N DIAGRAM LOT LINE. 15 7-37 FEET 42	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	CEMENT GROUT.
20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES 30-33 1 _ FRES 30-34 1 _ FRES 30-35	SH 3 SULPHUR       24         Y4 MINERAL         SH 3 SULPHUR         SH 3 SULPHUR         Y4 MINERAL         SH 3 SULPHUR	17-16       I       STEEL       IP         2       GALVANIZED       GALVANIZED         3       CONCRETE       CONCRETE         4       OPEN HOLE       Z6         2       GALVANIZED       GALVANIZED         3       CONCRETE       CONCRETE         4       OPEN HOLE       III         1000       JURATION OF PUMPING       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	20-23 20-23 F 27-30 27-30 IN DIAGRAM LOT LINE. 5 7-37 FEET 42 10 10 10 10 10 10 10 10 10 10	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	CEMENT GROUT.
20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES 30-33 1 _ FRES 30-32 1 _ FRES	SH       3       SULPHUR       24         YY       4       MINERAL         SH       3       SULPHUR       29         YY       4       MINERAL       34 60         SH       3       SULPHUR       24         SH       3       SULPHUR       34 60         YY       4       MINERAL       34 60         SH       3       SULPHUR       34 60         NO       0       MINERAL       25         NO OF       22-24       IS MINUTES         10       22-24       IS MINUTES         115       FEET       1       5         38-41       PUMP INTAKE S       6         GPM       RECOMMENDED       6         GEE       RECOMMENDED       6	17-16       I       STEEL       I         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         24-25       I       STEEL         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         1       DURATION OF PUMPING         1       DURATION OF PUMPING         1       PUMPING         1       PUMPING         2       RECOVERY         30 MINUTES       45 MINUTES         30 MINUTES       45 MINUTES         30 MINUTES       45 MINUTES         560 MINUT       FEET         1       FEET         7       FEET         7       SET AT         7       WATER AT END OF TEST         1       TECMER AT END OF TEST         7       1         7       SECOMMENDED         4       GOL         4       FEET	20-23 20-23 P 20-23 P 27-30 27-30 17-18 UT LINE ES 7-37 FEET 42 10 10 10 10 10 10 10 10 10 10	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	CEMENT GROUT.
20-23 1 Gradient Frees 2 SALT 25-28 1 Gradient Frees 2 SALT 30-33 1 Gradient Frees 2 SALT 30-33 1 Gradient Frees 2 SALT 30-33 1 Gradient Frees 1 Gradient Frees	SH       3       SULPHUR       24         Y4       MINERAL       29         SH       3       SULPHUR       29         Y4       MINERAL       34 60         SH       3       SULPHUR       24         SH       3       SULPHUR       34 60         Y4       MINERAL       34 60         SH       3       SULPHUR       34 60         NO       0       MINERAL       25         WATER       25       WATER LU         NO OF       1       SWATER LU         NO OF       1       SWATER LU         22-24       IS MINUTES       1         1/5       FEET       1       5         38-41       PUMP INTAKE S       6         GPM       E       RECOMMENDED       6         MEEP       GPM       FT. SPE       5	17-16       1       STEEL       19         2       GALVANIZED       3       CONCRETE         4       OPEN HOLE       26         2       GALVANIZED       3         3       CONCRETE       4         4       OPEN HOLE         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         10       JURATION OF PUMPING         11-14       DURATION OF PUMPING         12       RECOVERY         2       RECOVERY         30       MINUTES         30       MINUTES         30       MINUTES         45       MINUTES         560       AS         561       JURATION OF TEST         11       JURATION OF TEST         12       RECOMMENDED         43-45       RECOMMENDED         43-45       RECOMMENDED         43-45       RECOMMENDED         43-45       RECOMMENDED	20-23 20-23 0 F 27-30 27-30 17-18 1N DIAGRAM LOT LINE. 5 5 5 7 37 FEET 42 10 10 10 10 10 10 10 10 10 10	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	AD AND
20-23 1 _ FRES 2 _ SALT 25-28 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 30-33 1 _ FRES 2 _ SALT 2 _ SALT 30-33 1 _ FRES 2 _ SALT 2	SH       3       SULPHUR       24         Y4       MINERAL         SH       3       SULPHUR       29         Y4       MINERAL       29         Y4       MINERAL       34 60         SH       3       SULPHUR       34 60         Y4       MINERAL       35         Y4       MINERAL       35         Y4       MINERAL       35         Y4       MINERAL       35         Y4       Y       Y	17-16     I     STEEL     I       2     GALVANIZED       3     CONCRETE       4     OPEN HOLE       2     GALVANIZED       3     CONCRETE       4     OPEN HOLE       2     GALVANIZED       3     CONCRETE       4     OPEN HOLE         1-14     DURATION OF PUMPING       15-16     DURING       1     DURATION OF PUMPING       2     RECOVERY       30     MINUTES       30     MINUTES       30     MINUTES       4     OPEN HOLE       1     Set AT       FEET     1       FEET     1       1     Set AT       FEET     Set AT       S     ABANDONED, INSUFFICIENT SUPP       COLE     ABANDONED, POOR QUALITY       1     UNFINISHED	20-23 20-23 0 F 27-30 27-30 17-18 NI VS 1N DIAGRAM LOT LINE. ES F-37 FEET 42 JDY RE-49 GPM 	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	MATERIAL AND TYPE LE	AD AND
20-23 1 Gradient for the formation of t	SH       3       SULPHUR       24         Y4       MINERAL       23         SH       3       SULPHUR       29         Y4       MINERAL       34 60         SH       3       SULPHUR       24         SH       3       DUNPING RATE       24         SH       NINERAL       25       WATER LUND         NO OF       NATER       25       FEE         36-41       PUMP INTAKE S       FEE       5         GPM       FEE       FEE       FEE         GPM       FEE       FEE       FEE         GPM       FEE       GPM./FT. SPE       1         WATER SUPPLY       2       OBSERVATION WEL       3         3       TEST HOLE       1       RECHARGE WELL <tr< td=""><td>17-16       I       STEEL       I         2       GALVANIZED       GORCRETE         4       OPEN HOLE       26         2       GALVANIZED       GORCRETE         3       CONCRETE       GORCRETE         4       OPEN HOLE       26         2       GALVANIZED       GORCRETE         4       OPEN HOLE       15-16         1       DURATION OF PUMPING       15-16         1       DURATION OF PUMPING       1         1       Set AT       1         2       RECOVERY       60 MINUTES         30 MINUTES       45 MINUTES       60 MINUT         5       RECOMMENDED       4         7       UNFINISHED       2         2       RECOMMERCIAL       4</td><td>20-23 20-23 P 20-23 P 20-23 P P P P P P P P P P P P P</td><td>EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A</td><td>DF WELL ES OF WELL FROM ROU RRROW.</td><td>AD AND</td></tr<>	17-16       I       STEEL       I         2       GALVANIZED       GORCRETE         4       OPEN HOLE       26         2       GALVANIZED       GORCRETE         3       CONCRETE       GORCRETE         4       OPEN HOLE       26         2       GALVANIZED       GORCRETE         4       OPEN HOLE       15-16         1       DURATION OF PUMPING       15-16         1       DURATION OF PUMPING       1         1       Set AT       1         2       RECOVERY       60 MINUTES         30 MINUTES       45 MINUTES       60 MINUT         5       RECOMMENDED       4         7       UNFINISHED       2         2       RECOMMERCIAL       4	20-23 20-23 P 20-23 P 20-23 P P P P P P P P P P P P P	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 80 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A	DF WELL ES OF WELL FROM ROU RRROW.	AD AND
20-23 1   FRES 2   SALT 25-28 1   FRES 2   SALT 30-33 1   FRES 2   SALT 2   SALT 30-33 1   FRES 2   SALT 2   SALT	SH       3       SULPHUR       24         Y4       MINERAL       29         Y4       MINERAL       34 60         SH       3       SULPHUR       29         Y4       MINERAL       34 60         SH       3       SULPHUR       34 60         Y4       MINERAL       35 70         Y4       MINERAL       35 70         Y4       MINERAL       36 70         Y4       MINERAL       36 70         Y4       MINERAL       36 70         Y4       MINERAL       36 70         Y4       MINERAL       37 70         Y4       MINERAL       37 70         Y4       MATER SUPPL	17-18       I       STEEL       II         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         24-25       I       STEEL         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         2       GALVANIZED         3       CONCRETE         4       OPEN HOLE         1       DURATION OF PUMPING         1       Is-16         0       Is-16         1       Is-16         1       Is-16         1       Is-17         1       Is-18         1       Is-18 </td <td>20-23 20-23 0 F 27-30 27-30 17-18 NI VI AGRAM LOT LINE. ES F-37 FEET 42 JDY K6-49 GPM DU LV LV LV LV</td> <td>EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 60 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A CONTRACT ON CONTRACT INDICATE NORTH BY A CONTRACT ON CONTRACT CONTRACT ON CONTRACT O</td> <td>The second secon</td> <td>AD AND</td>	20-23 20-23 0 F 27-30 27-30 17-18 NI VI AGRAM LOT LINE. ES F-37 FEET 42 JDY K6-49 GPM DU LV LV LV LV	EPTH SET AT - FEET ROM TO 10-13 14-17 18-21 22-25 26-29 30-33 60 LOCATION ( BELOW SHOW DISTANC INDICATE NORTH BY A CONTRACT ON CONTRACT INDICATE NORTH BY A CONTRACT ON CONTRACT CONTRACT ON CONTRACT O	The second secon	AD AND
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15-18 1 20-23 1 2 25-28 1 2 25-28 1 2 30-33 1 2	FRESH       3         SALTY       4         FRESH       3         SALTY       4         SALTY       4         FRESH       3         SALTY       4         SALTY       4         FRESH       3         SALTY       4         FRESH       3         SALTY       4         SALTY       4         SALTY       4	SULPHUR 19   MINERAL   SULPHUR 24   MINERAL   SULPHUR 29   MINERAL   SULPHUR 34   MINERAL	30 30 24	GALVANIZED CONCRETE OPEN HOLE STEEL ALVANIZED OPEN HOLE JEEL GALVANIZED GALVANIZED CONCRETE OPEN HOLE	3 Gauge * 16 Gauge	0 7 <del>1</del> 15 <del>1</del>		61 DEPT FRO	PLUGG           H SET AT - FEET           M         10           10-13         14-17           18-21         22-25           26-29         30-33	50 50 50 50 50 50 50 50 50 50 50 50 50 5	SEALING AL AND TYPE	RECORD
	етнор 2 <b>1</b> ваш ер			1-14 DURATION OF	PUMPING 5-16 00	17-18			LOCATION	N OF V	VELL	
STATIC LEVEL STATIC LEVEL IS SU IF FLOWING GIVE RATE RECOMMENDED F SO-53		23 WATER 24 24 24 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25	EVELS DURIN 30 MINUTE 21 22 30 MINUTE 24 24 5 5 5 5 6 19 5 6 19 5 6 19 5 19 5 19 10 10 10 10 10 10 10 10 10 10	G 1 G 2 S 9-31 EET WATER AT EN WATER AT EN 1 XD CLE/ PLM COMMENDE PLM COMMENDE EET RATCOOM	DUNS PUMPING RECOVERY S 60 MINUT 2-34 DIS 018 FEET DIS 0F TEST AR 2 CLO	42 42 42 42 42 42 42 42 42 42 42 42 42 4		AGRAM B LINE D D D D T T T V E	ELOW SHOW DIST. INDICATE NORTH	ANCES OF BY ARROW	18. 5Krn	ROAD AND
FINAL STATUS OF WELL WATER USE	55-55 1 2 0 0 2 0 2	WATER SUPPLY DBSERVATION WE FEST HOLE RECHARGE WELL DOMESTIC STOCK IRRIGATION INDUSTRIAL OTHER CABLE TOOL	5 [] 7 ] 5 [] COM 6 [] MUN 7 [] PUB 8 [] COO	ABANDONED, INS ABANDONED POI UNFINISHED IMERCIAL NICIPAL ILLIC SUPPLY ILLING OR AIR COI ILLING OR AIR COI	UFFICIENT SUP OR QUALITY NDITIONING NOT USED	PLY			MARKETFIC		10	SIDERD
		KOTARY (CONVEL ROTARY (REVERS ROTARY (AIR) AIR PERCUSSION	NTIONAL) SE)	<ul> <li>DIAMON</li> <li>JETTING</li> <li>DRIVING</li> </ul>	G G LICENCE NUMBER		DRILLERS REMA	RKS5	e contractor	59-62 DATE		
Glenn	n Mason	1			3662		DATE OF INS	PECTION	3662 INSPEC	TOR	21	1179
	1, Col	gan, O	ntari	o LOG	1GO			ر <u>ل مع</u>	1950	C	SS.S8	P-9W
	TY OF TH	Maso HE ENVI	) RONME	DAY 16	10 <u>11</u> 11	<u>.</u> 79	OFF					FORM NO. 0506

Ministry of the Environment	WAT	The Ontario	Water Resources	<b>ECORD</b>
Ontario	SPACES PROVIDED	1703646		
	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON	BLCK, TRACT, SURVEY, ET	
	NANSFIE	LDE		
	NG RC			
L	DG OF OVERBURDEN AND BEDROO		INSTRUCTIONS)	DEPTH - FEET
GENERAL COLOUR COMMON MATERIAL				0 6
IN SHALE	CLAX	MIXT	URE	6 18
11 25 11		HARD :	SLAB SHA	ILE 18 60
GREY			<u>n 18</u>	60 10
	<u> </u>			
				65 75 00 33 DIAMETER 34-38 LENGTH 39-40
41 WATER RECORD	51 CASING & OPEN HOLE F		LOT NO I	
AT - FEET IN THE STATEMENT INTER STATEMENT INTER STATEMENT INTER STATEMENT	INCHES INCHES FR	UM TO J3-16		OF SCREEN FEET
$\frac{15 \cdot 16}{70} \stackrel{1}{\underset{2}{\swarrow}} \frac{1}{5} \stackrel{\text{FRESH}}{\underset{3}{\twoheadrightarrow}} \frac{3}{3} \stackrel{\text{Sulphur}}{\underset{4}{\amalg}} \stackrel{19}{\underset{1}{\twoheadrightarrow}} \frac{1}{6} \stackrel{19}{\underset{6}{\amalg}}$	64 30 CONCRETE 1/88 7.	2 18 61		SEALING RECORD
20-23 1 FRESH 3 I SULPHUR 24 2 SALTY 6 GAS	1 □ STEEL 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE	FRC	10-13 10-17 S	enal and tipe Lead packer. ETC )
25-28 1 [] FRESH 3 [] SULPHUR 4 [] MINERALS 2 [] SALTY 6 [] GAS	5 🗆 PLASTIC 24-23 1 🗆 STEEL 2 🛄 GALVANIZED	27.30	18-21 22-25	
30-33 1 FRESH 3 SULPHUR 34 2 3 SALTY 6 GAS	A □ CONCRETE A □ OPEN HOLE 5 □ PLASTIC		26-29 30-33 60	
71 PUMPING TEST NGAHOD 10 PUMPING RA	TE II-14 DURATION OF PUMPING 4 GPM		LOCATION OF	OF WELL FROM ROAD AND
STATIC WATER LEVEL 25 LEVEL PUMPING WATER	1      2 PUMPING     1      2 PUMPING     2      2 RECOVERY     30 MINUTES   45 MINUTES   60 MINUTES	LOT LINE	INDICATE NORTH BY ARRO	
51 16 FEET 70 FEET 20	8-28         29-31         32-34         33-37           FEET         FEET         FEET         FEET           FEET         FEET         FEET         FEET           FEET         FEET         FEET         FEET		,	
CPM				<b>&gt;</b>
RECOMMENDED PUMP TYPE RECOMMEND	15 FEET RATE 4 GPM	- 0		E
FINAL 1 K WATER SUPPLY	🕽 🔲 ABANDONED, INSUFFICIENT SUPPLY		0°	
STATUS     2 ID OBSERVATION W       STATUS     3 ID TEST HOLE       OF WELL     4 ID RECHARGE WELL	ELL • ABANDONED POOR QUALITY 7 UNFINISHED L 9 Dewatering			
	S CONMERCIAL B D MUNICIPAL			
	7 DUBLIC SUPPLY 8 COOLING OR AIR CONDITIONING 9 NOT USED		-	
57 ↓ □ CABLE TOOL METHOD 2 □ ROTARY (CONVI	6 DORING ENTIONAL) 7 DIAMOND		ς	
		DOLL LEDS DEMARKS		38034
NAME OF WELL COMBACTOR	WELL CONTRACTOR'S LICED OF NUMBER			AILG 2 3 1988
ADDRESS	× Arilling Mar 3602	CATE OF INSPECTION	INSPECTOR	
A H3 Stayner	Well technician's			
SIGNATURE OF TECHNICIAN/CONTRACTO	R SUBMISSION DAT & SR	OFFI		CSS.ES
MINISTRY OF THE ENVIR	ONMENT COPY	J <u>L</u>		FORM NO. 0506 (11/86) FORM

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On	tario	1. PRINT ONLY IN S	SPACES PROVID	ÞED	11	17	049	03	NUNICIP		ι <b>Ε</b> , ,	06
cou	NTY OR DISTRICT	2. CHECK I CORR RIN - 28-47	TOWNSHI	E APPLICABLE P. BOROUGH CITY ULMU DDRESS	R R	AGE		CON	BLOCK TRACT.	14 15 SURVEY ETC DATE COMP	LETED	12. """ 95
21					<u>, N)</u>	<u>ANS</u>	<u><u><u> </u></u></u>		BASIN CODE		мо	···· · · · · · · · · · · · · · · · · ·
Ļ	2 M 10		DG OF OV		AND BE		ATERIA	LS (SEE	31 INSTRUCTIONS			47
GEN	IERAL COLOUR	NOST		OTHER MAT	ERIALS			GENE	RAL DESCRIPTIC	) N	DEPTH FROM	- FEET
F	R								<del></del>	· · · · · · · · · · · · · · · · · · ·		1
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/31							<u>,     ,  </u>					
-[4	WATER RE		51		OPEN HO	LE RECO	RD		54 SI OF OPENING	31-33 DIAMET	ER 34-38	75 80 ENGTH 39-40
WAT	TER FOUND T - FEET KIND C	F WATER	INSIDE DIAM INCHES	MATERIAL	WALL TH CKNESS INCHES	DEPTH -	FEET		ERIAL AND TYPE	4	INCHES	FEET 41-44 30
		3 ]SULPHUR 4 ]MINERALS 6 ]GAS	10-11	STEEL GALVANIZED	100	,	13-16	s.			OF SCREEN	FEET
	42 ¹ FRESH 2 SALTY	3 □SULPHUR 4 □MINERALS 6 □GAS	8 4 5	CONCRETE	•188	<i>T</i> /	20.23	61 DEPTH	PLUG	GING & SEAL		RD
	7	3 - SULPHUR 4 - MINERALS 6 - GAS	234	USTEEL GALVANIZED CONCRETE OPEN HOLE				FROM	10 0-13		TYPE LEAD PA	CKER. ETC )
	23-28 1 FRESH 2 SALTY	3 SULPHUR 4 MINERALS 6 GAS	24-25 1 2	D PLASTIC STEEL GALVANIZED			27-30	8	-21 22-25	Den	sen	
	30-33 1 [] FRESH 2 [] SALTY	$\begin{array}{c c}3 & \Box \text{ sulphur } 34 \text{ 10} \\4 & \Box \text{ minerals} \\6 & \Box \text{ gas}\end{array}$	3 4 5	CONCRETE			}	26	30-33	80	· · ·	
71	PUMPING TEST METHOD	10 PUMPING RATE	<b>8</b>	4 DURATION OF PL	5 MPING 6 1	7-18		L	OCATIO	N OF WEL	L	
	STATIC WATER L LEVEL PUMPI	EVEL 25 DF WATER Li NG	EVELS DURING	1 2	PUMPING		IN DIA LOT L	GRAM BEL	.OW SHOW DIST DICATE NORTH	ANCES OF WELL I BY ARROW.	FROM ROAD A	ND
TEST	47 12	22-24 20 50	30 MINUTES	45 MINUTES 123	34 60 MINUT	ES 5.47		1	•	c,		
PING	IF FLOWING. GIVE RATE	FEET FEE 38-41 PUMP INTAKE S	SET AT	WATER AT END		42 42	0	4				
MUA	RECOMMENDED PUMP TYPE	GPN RECOMMENDED	43-45	RECOMMENDED PUMPING	2 [] CLOU	DY 5-45	~ ~		~ 1		8	21 A
	SHALLOW DEE	P SETTING	40 FEE		6	GPM	K	12	150		00	
	FINAL ³⁴	WATER SUPPLY OBSERVATION WEL	5 [] A	BANDONED, INSUE	FICIENT SUPP	LY	V	11			²	
	OF WELL	] TEST HOLE ] RECHARGE WELL	ט 🗅 י	NFINISHED EWATERING				JE .				
	WATER V	DOMESTIC STOCK	5 COMM	ERCIAL CIPAL				Me			h	$\mathcal{N}$
I	USE	INDUSTRIAL		NG OR AIR CONDI	USED		ſ	$\succ$			JAN'	•
-	METHOD "	CABLE TOOL		6 BORING			ý	<b>,</b>		ſ	Cet /	
co		] ROTARY (CONVENT ] ROTARY (REVERSE) KOTARY (AIR)	ional)	<ul> <li>DIAMOND</li> <li>JETTING</li> <li>DRIVING</li> </ul>							1 2	7001
	NAME OF WELL CANTON	AIR PERCUSSION					LERS REMARK	s.		8.62 DATE DEPENDE	13	LOUI
OR	minton	is Willd	rilly	Att LICEN	963		OURCE		360	<b>2</b> 0CT 1	6 1995	-J-08 80
RACT	#2 \$	tagnap	)			JSE C	ENADER		Marell			
ONTI	Jarry 7	nighter	w		NCE NUMBEL						e e constante de	
Ö	SIGNATURE ORTECHNIC	A Tur	tan "	AY LEMO.	10 9	5 6					CSS.ES	5
	MINISTRY OF TH		AENT CO	PY						FOF	RM NO. 0506 (1	1/86) FORM 9

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Ministry of Environme and Energ	f ent IV	•			The	<i>Ontario Wa</i> WATER W	ter Resour IELL RE	ces Act CORD
rint only in spac ark correct box	es provided. with a checkmark, where a	pplicable.	12	7050	49	Municipality 17006 PLANT	Соп.  H.S. Е. К 2933	 ₩ H *
County or District		Township/B	orough/City/Town/Vi	llage Ø		Con block tract	survey, etc.	ot 2 2-27
		Address	IL C'AL	×		Date	pleted 30	91
		<i>M</i> A	Northing	C Elevi	ation RC	Basin Code	ii iii	
21	т м 10 L	OG OF OVERBURDEN	AND BEDROCK	25 26 MATERIALS	(see instruct	ions)		47
General colour	Most common material	Othe	r materials		General	description	From	Depth – feet To
BLACK	TOPSOIL	<u></u>	۲. 	7			0	
BROWN	LLA.	570	NES	ST	ONEY	CLAY		18
REO	CLAY			HAR!	0 4 SOF	TLAYER	5 5	38
KED Gaza	SHALE						` <i>38</i>	41
GREY	SHALE			HAI	RD AI	NO SOT	CT 41 EAS	131
						2117-		
			2					
32	14 15 21				Sizes of	opening 31-33	65 Diameter 34-38	ength 39
Vater found	Kind of water	Inside diam Magerial	Wall [ thickness From	Depth - feet		)	inches	fee
41 6443	Fresh 3 Sulphur 14	inches 10-11 1 V Steel 12 2 □ Galvanized ,		44	Material S	and type	Depth at	top of screen
1305-18 1	Fresh     3     Sulphur     19       Annu Arrow     4     Minerals	3 Concrete Concrete Concrete Concrete Concrete Concrete Concrete Concrete Concrete Plastic	•188 +1/	2 40		PLUGGING &	SEALING REC	ORD
20-23 1 [	☐ Saity ₆ ☐ Gas ☐ Fresh 3 ☐ Sulphur ²⁴	17-18   □ Steel 19 2 □ Galvanized		20-23	Depth set at	Annular space	Aband	onment
25-28 1 [	☐ Salty ₆ ☐ Gas □ Fresh ₃ □ Sulphur ²⁹		150 -1 MM	2 131	From	To Material an	NSEAL	
30-33	□ Salty 4 □ Minerals 6 □ Gas	24-25 1 ☐ Steel 26 2 ☐ Galvanized 3 ☐ Concrete		27-30	18-21	22-25		
2 [	☐ Fresh ₄ ☐ Minerals ☐ Salty ₅ ☐ Gas	4			26-29	30-33 80		
Pumping test r	method 10 Pumping rate	GPM GPM	1g 17-18 Mins		LC	CATION OF WE	LL	· · .
Static level	Water level end of pumping Water levels d	luring 1 🗍 Pumping 2	Recovery	In diagrai Indicate i	m below show north by arrow	v distances of well	from road and	lot line.
18.84	130 ²²⁻²⁴ 15 minutes 30	0 minutes 45 minutes 29-34 32-34	60 minutes		IDE RO	15	- Ant	
If flowing give	feet         feet           rate         38-41         Pump intake set a	at Water at end of te	st 42		ن ک	1 1/2	Ê	
Recommende	d pump type Recommended pump setting	43-45 Recommended pump rate	46-49		Ψ ¥	milies	24	
Shallow	Deep	12 feet 2	C GPM		ΛE	WELL	2 DA	WILES
	US OF WELL 54 upply 5 🖸 Abandoned,	insufficient supply 9 D Unfinis	hed U	)	12	7 x 500t		Γ, E
2 Observa 3 Test hole 4 Recharg	ation well 6 🗌 Abandoned, e 7 🗋 Abandoned ( ge well at 🗋 Dewatering	(Other)	p sade /		HH HH		TH I	OF.
WATERUSE	55-56		· · · · · · · · · · · · · · · · · · ·		12		7 "	nansfi
1 Domest 2 C Stock 3 C Irrigatio	tic 5 Commercial 6 Municipal n 7 Public supply	g ☐ Notuse 10 ☐ Other. Y	ed		E		4	$\wedge$
4 🗋 Industri	al ₈ Cooling & ali	r conditioning				A sal		1
	CONSTRUCTION 57 oot 5 🖸 Air percussio	on 9 🖸 Driving			L	SUNTY KE	רו ח	
3 C Rotary	(reverse) 7 Diamond (air) 8 Jetting	1 Other.	3 	* - <b>S</b>		5	1585	77
Name of Well Cor	ntractor 7.1 Mm	11 LT. D Well Contractor	pr's Licence No.	Data source	58 Contraccto	ېر 59-6:	Date received	1997
Address D D	# 2 VILLUNE	ung 500		Date of inspectio	on .	Inspector		
Name of Well Tec	shnician	Well Technicia	an's Licence No.	Remarks				1
7	N in h tan	1-0	150 115				C66 60	TT (
Signature of Teth	nician/Cintractor	Submission d					000.08	7.

😵 Onta		iistry he /ironmer	nt					TI	ne Ontari WAT	<i>io Water</i> ER WE	<i>Resou</i> LL RE	rces Act ECORD
Print only in spac Mark correct box	es provided. with a checkmar	k, where	applicable	θ.	11	17(	)59(	02		õe H	S _I E	
County or District	EKIN			Township	/Borough/City/ MUL	Town/Village かにん			Con blo	ck tract surv	ey, etc.	Lot 25-27
				Address	RR#	t, M	AN	SFIR	-12	Date completed		6 02
21		Ţ			Northing	F		vation R	C Basin Cod			
		M 10	LOG OF	OVERBURDEN	18 I AND BEDF		s 26 ERIALS (s	³⁰ see instruc	31 tions)			47
General colour	Most comm	on materia	al 🛛	Oth	er materials			Gene	ral description	·····	From	To
BROW	J TO	- 50	7								0	1
BROWN		AND	0								8	10
GREY	<u>ر ،</u> د	CAT	7								10	14
GREY	Ċ	.07		57	TONES	;		MAR	1		14	18
		BED	Roc	KO		SHALR	E /	'N	80770	M		
	A 3	· · ·	AR	<i>H</i> 5 C0		BORE						
31 32 41 Water found	R RECORD	<u>+ + + -</u>	51 Inside		PEN HOLE I				of opening No.)	31-33 Diamete	r ³⁴⁻³⁸ Le	1 75 80 ngth 39-40 feet
at - feet           8 - 10           15-18           1	Fresh 3 Sulph Salty 6 Gas Fresh 3 Sulph A Gas A	ur 14 als ur 19 als	diam inches 10-11 36	Material           1         Steel         12           2         Galvanized           3         Concrete           4         Open hole           5         Plastic	thickness inches	From	то ¹³⁻¹⁶ 19		ial and type		Depth at to	p of screen 30 41-44 feet
20-23 1 2 2 2 25-28 1 2 2 2 30-33 1	6         Gas           3         Sulph           4         Minera           6         Gas           7         Sulph           8         Gas           9         Fresh           3         Sulph           4         Minera           5         Gas           4         Minera           6         Gas           6         Gas           6         Gas           6         Gas           9         Sulph           4         Minera           6         Gas           1         Fresh           3         Sulph	ur 24 als ur 29 als ur 34 60	24-25	1         Steel         19           2         Galvanized         3           3         Concrete         4           4         Open hole         5           5         Plastic         1           1         Steel         26           2         Galvanized         3           3         Concrete         4			20-23	Depth se From	Annular space	aterial and type (	Abandor Cement grout,	bentonite, etc.)
2 □ 71 Pumping test mm 1 □ Pump 2 □ Static level w 19-21 19-21 If flowing give ra Recommended pu Shallow 50-53	3 Satty     4 ☐ Miner: 6 ☐ Gas       ethod     10       Pump       Bailer       /ater level nd of pumping       22-24       15 mi       feet       38-41       GPM       ump type       Deep	ais bing rate rater levels d nutes 26-20 feet b intake set a mmended setting	11-14 GPM luring 1 [ 0 minutes 29-31 feet t feet 43-45 feet	A      Dopen hole     S     Plastic      Duration of pumpi     15-16     Hours      Pumping     2      45 minutes     32-34     feet      Water at end of tes     Clear      Recommended     pump rate	ing 17-18 Mins Go minutes 35-37 feet st 42 Cloudy 46-49 GPM	TO 17+L LIN K	In diagran Indicate n A ( )	Li n below sh north by arr	OCATION OI ow distances ow.	F WELL s of well from	m ANS	ot line. $F_{1 \in L} D$ $I_2 Km$
FINAL STATUS 1 Water supp 2 Observatio 3 Test hole 4 Recharge to WATEB USE 1 M Domestic	S OF WELL ply 5 A on well 6 A 7 A well 8 D 5 C	54 bandoned, i bandoned ( bandoned ( ewatering 55-56 commercial	insufficient su poor quality Other)	upply ⁹ □ Unfinisi ¹⁰ □ Replace 8 □ Not use	ned ement well			GALA	6E	Hou	SE	~
Bonnesite     Stock     Stock     Inrigation     Industrial  METHOD OF C     D     Cable tool     Rotary (cou     Rotary (cair     Rotary (air	CONSTRUCTION 5 A 5 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1	Unicipal ubic supply coling & air 57 ir percussion oring tiamond etting	, conditioning n	<ul> <li>Priving</li> <li>Driving</li> <li>Driving</li> <li>Digging</li> <li>Other</li> </ul>	, ,			V 	1	<b>₩</b> €	249	9223
Name of Well Contra Vohn VS Address BRA Name of Well Techn Vot String	actor $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ ician $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$ $\mathcal{D}$	Ba: 0 2	Erz	Well Contracto 303 Well Technicia	n's Licence No. 3 D In's Licence No. 3 3 7	Data source Date o Date o	f inspection ks	58 Contracto	<b>3</b> 0	59-62 Date re	P 2 5	2002 *** **
Signature of Technic	Sian/Contractor			Submission da day mo	ate yr	SINIM				しこ	0506 (07/	(00) Front Form 9

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#### Lot 12

**Concession 7** 



#### Lot 12

**Concession 8** 

Minist of the	try		The O	ntario Water Resou	rces Act	
Ontario Enviro	onment	WAI			RECU	RD
	1. PRINT ONLY IN 2. CHECK 🛛 CORF	SPACES PROVIDED 11	1/048			
COUNTY OR DISTRICT	( ) l	TOWNSHIP, BOROUGH, CITY, TOWN VILLAGE		CON BLOCK TRACT SURV	E 4	らね
		RP#2	MANIS	FIELD	DATE COMPLETED	·** 92
				RC BASIN CODE		
1 Z	<u>u 10</u> 12 L(	DG OF OVERBURDEN AND BEDR	DCK MATERIAL	S (SEE INSTRUCTIONS)		47
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS		GENERAL DESCRIPTION	DEPTH FROM	- FEET TO
BROWN	SAND	SILT			0	92
BROWN	CLAY			SOFT	92	100
BLUE	CLAY	SAND			100	110
BROWN	SAND	SILT	0		110	134
KLUE	CLAY	STONES, MUDE	HALE	·	134	170
BLUE	SHALE				140	197
	<u> </u>					· ·
		1			<u> </u>	
					31-33 DIAMETER 34-38	ENGTH 39-40
WATER FOUND AT - FEET	KIND OF WATER	INSIDE MATERIAL WALL THICKNESS	DEPTH - FEET	H HIOS	101 G INCHES	7 FEET
177 : *	FRESH 3 $\Box$ SULPHUR SALTY 4 $\Box$ MINERALS 6 $\Box$ GAS	10-11 1 12 12	13-16	" STNIS ST	TEEL OF SCREEN	27
	FRESH 3 USULPHUR 19 SALTY 4 MINERALS	6 3 CONCRETE 4 COPEN HOLE 5 DPLASTIC	0 127	61 PLUGGI	NG & SEALING RECO	RD
20-23 1 []	$\frac{6}{10 \text{ GAS}}$ FRESH 3 SULPHUR 24 SALTY 4 MINERALS	17-18 1 STEEL 19 2 GALVANIZED 3 CONCRETE	20-23	DEPTH SET AT - FEET FROM TO	MATERIAL AND TYPE (CEME LEAD PA	NT GROUT CKER. ETC )
25-28 1	$6 \square GAS$ FRESH 3 $\square$ SULPHUR 29 $4 \square$ MINERALS	24-25 26	54 159	10-13 14-17		
30-33 1	FRES∰ 3 □ SULPHUR 34 4 □ MINERALS	1 □ STEEL 2 □ GALVANIZED 0 3 □ CONCRETE 4 □ OPEN HOLE		26-29 30-33 80	•	
	SALTY 6 GAS	E 11-14 DURATION OF PUMPING	<u>_</u>			
71 1 D PUMP 2	KBAILER	45 сри <u>2 15-16</u> 17-18			OF WELL	ND
	WATER LEVEL 25 END OF WATER DUMPING	LEVELS DURING	LOT LI	NE INDICATE NORTH BY	ARROW.	
	126 120	24 123-31 126-14 126-37	1 At H	INE	$\uparrow$	
IF FLOWING. GIVE RATE	38-41 PUMP INTAKE	SET AT WATER AT END OF TEST 42	1 1 1	$\sim$		
	GPM TYPE RECOMMENDE PUMP	TO 43-45 RECOMMENDED 46-45		100'00		-
SHALLOW	DEEP SETTING	DZ FEET RATE Z GPM		A	-011	-
FINAL	WATER SUPPLY	5 CABANDONED, INSUFFICIENT SUPPLY	]	· ·		
STATUS OF WELL	3 TEST HOLE	y UNFINISHED		1 MI		
55-5	DOMESTIC	S 🗌 COMMERCIAL 6 🔲 MUNICIPAL		1		
WATER USE	3 IRRIGATION 4 INDUSTRIAL	7 D PUBLIC SUPPLY COOLING OR AIR CONDITIONING		1 -		
s	C OTHER	• LI NOT USED		MANSFI	ELD - LUE	RETI
METHOD OF	2 CABLE TOOL 2 ROTARY (CONVEN 3 C ROTARY (REVERS	6 L BURING ITIONAL) 7 D DIAMOND E) 8 D JETTING			ROAD	
CONSTRUCTIO	N 4 D ROTARY (AIR) S D AIR PERCUSSION	DIGGING OTHER	DRILLERS REMARK	S.	10	759 <b>0</b>
NAME OF WELL CO	ONTRACTOR	WELL CONTRACTOR'S		5" COMPACTOR 7 5		63-64 <b>8</b> 0
ADDRESS	1 WELL	VILLING 4118	DATE OF INSPE	CTION INSPECTOR	1 I IMI UT 133	
NAME OF WELL	TECHNICIAN	NOISHEION Well Technician's				
SIGNATURE OF TE	ECHNICIAN/CONTRACTOR	SUBMISSION DATE	L L L			
Plan	aller	COTT DAY MO YR	ō		CSS.I	
MINISTRY	OF THE ENVIRO	DNMENT COPY		· · · · · · · · · · · · · · · · · · ·	FURM NU. 0506 (	17 00) FUN

Ontario Ministry of Environme and Energy	ent Jy					,	<b>T</b>	he Onta WA	ario Wa TER V	ter R VELI	esourc L RE(	<i>es Act</i> CORD
Print only in space Mark correct box	es provided. with a checkmark, where	applicable.		11 1 2	17	1049	130		unicipality 17006	Con. <b>H S</b>	; €	22 23 24
County r District	Server No	IFFATA.	Township	Borough/City/	Town/Village	÷		Con	block tract	survey	, etc. Lc	あ_12
	Eint	-//////	Address	PULL AI	<u>"UIL</u> 1/T(	TNA	1		Date		18	1295
;i	9.; Z01	ne Easting		Northing	110	RC Ele	evation	RC Basin	Code	iletea	day m	ionth year
21 			···EPRIIRDE			TERIALS		30 31			· · · · · · · · · · · · · · · · · · ·	47
General colour	Most common materia		Oth	ner materials	HUUR HE	I Enime	(See me Ge	ineral descrip	otion y	,	- De	pth – feet
BROWN	SAND				<u></u>		<u>ě</u>	LOOSI	Ē	<i>M</i>	0	35
BRUN	SINT		CLAY	FINE S	SAND		- 1	AYER	£Δ		35	50
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GREY	(LAY							•		<u>-</u>	78	88
BRaunt	SILL		<u>) (CAK</u>	<u> </u>	N/J						88	100
BROWN	LIKAVEL		Canici	JAT				LOUSE	<u>E</u>		$\frac{100}{100}$	1010
GREY			KAJEL	<u> </u>	<u>Y</u>	+		De 10	~		106	112
GKET	<u> </u>				<u></u>	Care	L n (	<u>LENSE</u>	<u>L</u> VOTEN		110	1 der
UKEY	SHALE					LKIJI	Ľ_U	UNIM			100	- an
31		·····										
32		· · · · · · · · · · · · · · · · · · ·			 		ula sina sina. Tili la sina sina sina sina sina sina sina sin			L		
41 WATE	ER RECORD	51 Inside	CASING & (	OPEN HOL		5 - feet	Sizer (Slot	es of opening ot No.)	31 33 Di	iameter	34-38 Leng	/5
at - feet	Kind of water	diam inches		thickness inches	From	To	Matr	terial and type			iches Depth at top	of screen 30
020 -	Salty 4 Minerals 6 Gas		Steel Galvanized Concrete	1.100	1.7	08	sc					- feet
15.00 1 10	Fresh 3 Diprod A Dinerals Salty 6 Gas		Open noise Plastic	110		7(1)	61	PLUG	GING & S	EALIN	G RECOF	ID
20-23 1	Fresh 5 G Sulphur 24 A D Minerals Salty A Gas		Steer Galvanized Concrete	52011ea	195	1125	Depth se	et at - feet	space Material and		<u>] Abandonm</u>	ent
25-28 1 2	Fresh a Sulphur 29	57 50	Open now Plastic	100	//	1 LL	90-13	10		·yhr (		
30 - 33	Fresh 3 Sulphur 34 60	15/2 30	Galvanized Concrete		11.6		15 21	1 22-25				
2	Salty 6 Gas		Open hole Plastic	<u></u> ]	165	204	/	a 30-33 a	80			]
71 Pumping test met	thod A R Pumping rate	3 GPM	ration of pumping	g Mins				LOCATION	N OF WELI	L		7
Static level Wat	ater level 25 Water levels du	Juring (D) Pur	mping 2[	☐ Recovery		In diagram Indicate n	n below she worth by arr	now distance row.	es of well fr	rom npai	id and lot li	ine.
10 C 2	$2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2} = 2^{2$	minutes 45	minutes 64	10 minutes 9 911 55-51	1	· (					WET L	7/1
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□ Shaliow 0	Deep pump setting	Ho feet	np rate	GPM		1		N		-1	44	
FINAL STATUS	OF WELL 54				1			• •••		٦ ا	[1]	
Water support Observation	iy 5 🗌 Abandoned, n. n well 6 🗌 Abandoned, p 7 🗋 Abandoned (f	nsufficient suppy poor quality /Other)	/ 9 🗌 Untinisine 10 🔲 Replacer	ad #ment well		i (					/ [	
a □ Recharge w	vell 3 Dewatering										)	Ami
WATER USE	55-56 5 [] Commercial Municinal	``````````````````````````````````````	₀ □ Not user	d	)					1,	ノ	
: ☐ Stoon . ☐ Irrigation . ☐ Industrial	<ul> <li>Public supply</li> <li>Cooling &amp; air</li> </ul>	/ conditioning	10 [] Utner	•	1		$\diamond$			17	-	
METHOD OF CO	ONSTRUCTION			]		t la	they -		¥	+		<u> </u>
Cable tool	s 🗌 Air percussion nventional) 6 🗋 Boring	n	9 Driving	, )	0,	6860		· .				
a 🗌 Rotary (air)	erse) / Diamond / g 🗍 Jetting	·	a Domer	]		ř I				15	420	7
Name of Well Contrac	ictor		Well Contractor	's Licence No.	Data Sour	<u> </u>	56 Contrac	cetor A /		Date recei	lived	63-65 80
Address and	KILL I. KILLINIT		<u> </u>	5_1		e Hinspection	4	64i	Ō	Арк	151	1996
KK # 2	BEETCH LW	<u>i lo</u>	16 IAC	)		)? ii i i i i i i i i i i i i i i i i i	<u>_</u>	1.10-				
CARL	M. Comer				STRY	ks ,		<i>34</i> -				
Signature of Jechnicia	The formation	5	Submission date	1 ,96	MIN					(	CSS E	a
					· • •		<u> </u>		<u> </u>	07	506 (07/94) F	ront Form 9

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County/District/Municipality

UTM Coordinates Zone

NAD 8 3

General Colour

Ministry of the Environment Well Tag No. (Place Sticker and/or Print Below)

MUI

Municipal Plan and Sublot Number

Township

Other Materials

City/Town/Village

Postal Code

Depth (*m/ft)* om To

From

of

**Regulation 903 Ontario Water Resources Act** 

Page

Concession ~

Province

Other

Ontario

Lot

General Description

 $\sim$ 

Measurements recorded in: Metric

Address of Well Location (Street Number/Name)

, Easting

Most Common Material

lmperial

Northing

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

DACK		109501			<u>()</u>		A	Í	
BRAN	N	SAND			LOOSE	^!,		1	AZ
GREY		CIAY		SILT	LAYEREC	1//~~1/4-1	22	310	
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6ROW	)Ŋ	$\Omega hac$		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ENE			53	65
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BRAU	<u>IN</u>	SAND		·· <b>???????????????????????????????????</b>	LOOSE	** •		75	· <u>85</u>
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							*****		
		Annular Space			Results of We	Il Yiel	d Testing		
Depth Se	et at ( <i>m/ft</i> )	Type of Sealant Us	ed	Volume Placed	After test of well yield, water was:	Dr	aw Down	F	Recovery
		(Material and Type)		$(m^3/\hbar^3)$	Clear and sand free	Time	Water Level	Time	Water Level
$\mathcal{O}$	dO.	HOLE PILLS		4	U Other, specify		( <i>m/it</i> )	( <i>min</i> )	( <i>m/lt</i> )
				******	If pumping discontinued, give reason:	Level	12		
						1	13	1	60
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Pump intake set at (m/ft)	2	15	2	53
Neff	10d of Co	nstruction	Wall Hee		Pumping rate (I/min / GPM)	3	110	3	48
					$I \wedge A O n I$	A	$\hat{\boldsymbol{\Omega}}$		s J C

Rotary (C Rotary (F Boring Air percu	Conventional) Conventional) Severse) Driving Digging Secify		mestic estock gation lustrial her, <i>specify</i>	Commer Municipa Test Hol	cial I Not used al Dewatering e Monitoring & Air Conditioning	Duration of pumping hrs + min Final water level end of pumping ( $m/ft$ ) LSFT If flowing give rate ( $l/min / GPM$ )	4 5 10 15	$\frac{N}{\Delta lo}$	4 5 10 15	45 39 35 22
	Construction R	ecord - Cas	sing		Status of Well			7/~~		
Inside	Open Hole OR Material	Wall	Depth	n ( <i>m/ft</i> )	Water Supply	Recommended pump depth (m/ft)	20	<u> </u>	20	<u>AX</u>
Diameter (cm/in)	(Galvanized, Fibreglass, Concrete, Plastic, Steel)	Thickness ( <i>cm/in</i> )	From	То	Replacement Well	757	25	38	25	25
6'4	STEL	188	42	80	Recharge Well	Recommended pump rate (I/min / GPM)	30	44	30	21
					Observation and/or	Well production (I/min/GRM)	40	49	40	17
						Disinfected?	50	53	50	110
				**************************************	Abandoned,	Yes No	60	LS	60	13
	Construction R	ecord - Scre	en	<b>€</b>	Abandoned Poor	Map of We	all Loc	ation		
Outside	Material		Depth	( <i>m/ft</i> )	Water Quality	Please provide a map below following i	instructio	ons on the ba	ack.	
<i>(cm/in)</i>	(Plastic, Galvanized, Steel)	Slot No.	From	То	Abandoned, other, <i>specify</i>	$r \sim 0$	7 /	8). NHL	F	<b>A</b>
5'a	STAINLESS	14	81	85				- Wr		N
307/20002502/21/20002/22/2000/20/22/20/00/20/20/20/20/2					U Other, specify	14010	£	]		





### APPENDIX C

#### **Nitrate Calculations**

#### **REASONABLE USE CALCUATIONS**

Armstrong Estates, Mansfield

#### **Detailed Calculation**

 $C_e = (C_p * P * A + C_s * Q_s + C_b * Q_b)/(P * A + Q_s + Q_b)$ 

where		<b>393.0</b>	mm/a	<b>Orangeville station</b> - annual precipitation
		235.8	mm/a	60% of total precipitation
Downgradient Area	(A)	109,221	m²	Pervious Area
Annual Infiltration Rate	(P)	236	mm	Orangeville station
Diluting Volume	(P*A)	25 754	m ³ /a	
Dhating Volume	(1 /1)	0.2	mg/L	Nitrate concentration in precipitation
Average Daily Sewage Volume	(0)	43		Housing Units
Triorage Daily Bewage Volume	$(\mathbf{Q}_{\mathbf{S}})$	1.000	L/dav	Input (average Design Flow from D-5-4 Guidance)
		43,000	L/day	Sewage Volume for North Precinct
		15,706	m³/a	
Effluent Nitrate Concentration	(C _s )	20.0	mg/L	Waterloo Biofilter performance criteria
Estimated Site Concentration	(C _e )	7.7	mg/L	North Precinct

## **REASONABLE USE CALCUATIONS**

Armstrong Estates, Mansfield

#### **Detailed Calculation**

$$C_e = (C_p * P * A + C_s * Q_s + C_b * Q_b)/(P * A + Q_s + Q_b)$$

where		<b>393.0</b> 235.8	<b>mm/a</b> mm/a	<b>Orangeville station</b> - annual precipitation 60% of total precipitation
Downgradient Area Annual Infiltration Rate	(A) (P)	51,919 236	m² mm	Pervious Area Orangeville station
Diluting Volume	(P*A)	12,243 0.2	m ³ /a mg/L	Nitrate concentration in precipitation
Average Daily Sewage Volume	(Q _s )	28 1,000 28,000 10,227	L/day L/day m ³ /a	Housing Units Input (average Design Flow from D-5-4 Guidance) Sewage Volume for South Precinct
Effluent Nitrate Concentration	(C _s )	20.0	mg/L	Waterloo Biofilter performance criteria
Estimated Site Concentration	(C _e )	9.2	mg/L	South Precinct



## APPENDIX D

Soil Logs

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

#### eto MacCallum Ltd. ENGINEERS 0 NSULTING

# LOG OF BOREHOLE/MONITORING WELL NO. 1 17T 576894E 4891433N

BORI	NG METHOD Continuous Flight Solid Ste		jers				CHEA		NOT	(kDa)	7.5	-			ECHNIC		
EPTH LEV etres)	SOIL PROFILE	STRAT PLOT	NUMBER	SAME	N" VALUES	EVATION SCALE	HEAN +FIEL ▲ POC 5 DYNAN STAND	R STRE D VANE KET PE 0 10 10 11C CON ARD PE		I (KPa) NETER METER 50 2 ETRATION T	OQU OQ 00 ON × EST ●	PLAS LIMIT W _P H	TIC MO CO ATER C	TURAL STURE NTENT W 	LIQUID LIMIT Wi IT (%)	UNIT WEIGHT	GROUND WATE OBSERVATION AND REMARK GRAIN S DISTRIBUTI
	SURFACE ELEVATION 313.20	0				Ш	2	0 4	0 6	3 0	80	1	0 20	30	40	kN/m ³	GR SA SI
0.40	gravel, moist	$\left[ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \right]$	1	SS	5	313	1					0					Stick-up casing
0.70	SAND: Loose, brown, sand, trace silt, moist	hiii															
12.00	SANDY SILT: Loose to compact, brown, sandy silt, trace clay, trace gravel, very moist		2	SS	4	312	•						c		_		
			3	SS	15								0				
<u>2.1</u> 111.1	SAND: Dense, brown, sand, trace silt,					311		$\overline{\langle}$						-			Bentonite seal
	trace to some gravel, moist		4	SS	42				~			0					
2.9 10.3	SILTY SAND: Very dense to dense,					310					/						
	brown, silly sand, trace gravel, moist		5	SS	80/290 mm						/	ן ו	2				
						300				/							
13						308				1							Filter sand
			6	SS	31	1		1				0					
55						308	3		1								50 mm slotted
307.7	SAND: Very dense, brown, stratified sand, trace silt, trace gravel, moist					20	,		$\backslash$								
6.5			7	SS	53	307			•			0		_	_		Linon completion of au
306.7	BOREHOLE TERMINATED AT 0.5 III															2	No water No cave
																	Water Level Readings Date Depth
																	2021-05-20 DRY 2021-06-11 DRY
							8					Ì					
															23		
							2										
										99							
							1										
NOT	ES		<b>A</b> (- 0411		ALIPH C												(



### LOG OF BOREHOLE/MONITORING WELL NO. 2

1 of 1

17T 577120E 4891551N

	SOIL PROFILE			SAMP	PLES	щ	SHEA	R STRE	NGTH	(kPa)	-							
EPTH LEV etres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCAL	+FIEL A POC 5 DYNAM STANE	D VANE KET PE	△TOR NETROI 0 15 E PENE NETRA	VANE METER 50 20 TRATIO TION TI 0 8	OQU OQ 20 DN × EST •	PLAST LIMIT W _P WA			LIQUIE LIMIT 	UNIT WEIGHT		ROUND WATER DBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION GR SA SI&C
	SURFACE ELEVATION 312.80 TOPSOIL: Brown, silty sand, trace	5	1	SS	4	-	•									KIN/III		Stick-up casing
).60	gravel, moist	$\sim$																
2.20	some silt, trace gravel, moist		2	SS	2	312	•						0					
					F							0						
			3	55	5	311	Ť											
			4	SS	7							0						Bentonite seal
2.9 09.9	SILTY SAND: Loose, brown, silty sand,					310												
	trace gravel, very moist		5	SS	7	-								0		3		
4.0			•	8		309		$\overline{\}$										
08.8	SANDY SILT: Very dense, brown, sandy silt, with sand layers, trace clay, very	].[.						/										Filter sand
	moist		6	SS	59	308	3						0					
																		50 mm slotted pi
					5	307												
			7	SS	64								0					]
<u>6.5</u> 306.3	BOREHOLE TERMINATED AT 6.5 m																Upon No wa	completion of auger
							i e										No ca Wate	ive r Level Readings: Denth E
																	2021-2021-	05-20 DRY -06-11 DRY
			5															
			i i															
	5 1																	
									-									
					60													
			_		1		1	-	1	1		1				1		1

$\frown$			0		-			7		2	1	7/7		 			_/
PMI	1	۲	e	Ũ	D	Π	1	k	R	10				1	L	Π	$D_{\mu}$
	1					7	T		 ~	-		~	,	 ~			~

## LOG OF BOREHOLE NO. 3

17T 577257E 4891636N

				SAM		1	SHE	R STR	ENGT	H (kPa)								
DEPTH ELEV metres)		STRAT PLOT	NUMBER	ТҮРЕ	"N" VALUES	ELEVATION SCALE	+FIE A PO DYNA STAN	LD VAN CKET PI 50 1 MIC CO DARD P 20	E △TO ENETRO 00 1 NE PEN ENETRA	RVANE DMETEF 50 2 ETRATI ATION T	OQU QO QO ON × EST ●	PLASTI LIMIT W _P WA	TER CO		LIQUIE LIMI7 	UNIT WEIGHT	GROUND WAT OBSERVATIO AND REMARI GRAIN DISTRIBU	ER NS (S SIZI
0.20	TOPSOIL: Brown, silty sand, moist		1	22	5	-									+0	KIN/M	GR SA S	JI&C
310.40	SAND: Very loose to compact, brown, sand, trace to some silt, trace gravel.			55	5	310	Ĭ											
	moist to very moist		2	22	3	-						0						
			2	- 33	5	_	Ĭ											
			3	SS	4	309						0		-	_			
				जरमाः		-												
			4	22	11													
						308										1		
			5	22	16	-						ö						
			J	00	10	307						Ŭ						
						000000												
			6	22	16	306						-	0					
5.0 305.6	BOREHOLE TERMINATED AT 5.0 m		v											-			Upon completion of a	uae
																	No water No cave	.9-
							e.											
																	8	
																	r.	
																8		
	0																	
																	8	
				5														
NOT	ES			A				1			-						x	7
																	/	1

PMI	P	2	ú	0	h	4	k	7/	A			//			7	L	t	d.	
	C 0	N	S	U	L	Τ	1	N	G	F	N	G	1	N	F	F	R	S	

# LOG OF BOREHOLE NO. 4 17T 577078E 4891413N

	SOIL PROFILE			SAMF	PLES	Щ	SHEA	R STR	ENGTH	l (kPa)	0.0	DI 107		TURAI	102	115	2	
DEPTH ELEV netres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCAI	+FIEL POC 5 DYNAN STAND 2	D VANE KET PE 0 10 MIC CON DARD PE 0 4		RVANE METER 50 2 ETRATION ATION T 50 8	○Qu ○Q 00 ON × EST ● 80	PLAS LIMIT W _P W/ W/	ATER C		E LIQU F LIN M M MT (%) 40			GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZ DISTRIBUTION GR SA SI&C
0.15 09.15	TOPSOIL: Brown, silty sand, moist SAND: Loose to compact, brown, sand, trace silt, trace gravel, cobbles and	A	1	SS	4	309	•						0					
	boulders, moist to wet		2	SS	13		•					0						
			3	SS	8	308							¢					First water strike at 1.5 m
<u>2.1</u> 307.2	SANDY CLAYEY SILT: Hard, brown, sandy clayey silt, trace gravel, DTPL		41	66	22	307							~ ►			_		
<u>2.9</u> 306.4	SANDY SILT: Very dense to dense,		4	55	33			~					5					
	brown to grey, sandy silt, trace gravel, trace clay, moist		5	SS	74	306				7		- 0				-		
						305			/									
50			6	SS	48								0					
304.3	BOREHOLE TERMINATED AT 5.0 m																	Upon completion of auge No water No cave
							0											
	÷.																	
						2												
																		/
NOT	ES																	

1

PMI		P	e	ti	0	Λ	4	k	20	cl	5					7	L	t	d.
	С	0	N	s	U	L	Τ	1	N	G	Ε	N	G	1	N	Ε	Ε	R	S

LOG	OF	BOREHOL	E/MONI	TORING	WELL	NO.	5
		17	T 577238E 489	1392N			

	PRO.	IECT Proposed Residential Developmer ATION 937045 Airport Road, Mansfield, O	nt N						E	BORII	VG DA	TE M	ay 13, 2	2021				. REF GINEE	ER ER	21BF0 GW	)19
	BORI	SOIL PROFILE	an Au(	Jeis	SAM	PLES	ш	SHE	EAR	STRE	NGTH	(kPa)					120	ANNIC			
	DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	ТҮРЕ	"N" VALUES	ELEVATION SCAL	+F		C CON		VANE METER 0 2 TRATI	OQU QOQ QO ON × EST •	PLAS LIMIT W _P H				IQUID LIMIT w _L 	UNIT WEIGHT	G	ROUND WATER DBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION (%)
0.0-	0.20	SURFACE ELEVATION 309.20 TOPSOIL: Brown, silty sand, trace	~ ~	4	22	6	309		20	4	0 6	5 8	30			0 3	J 4	0	kN/m		GR SA SI&CL Stick-up casing
4	309.00	gravel, moist SAND AND GRAVEL: Very dense to	0		- 55	0	-				5										
1.0		dense, brown, sand and gravel, trace silt, moist	0	2	SS	54					~			0							
4			0				-308														
2.0-			0	3	SS	46					۴			0							
2.0			0			20	307	,		1											Bentonite seal
	2.9		0	4	55	29	-			Ī				9							
3.0-	306.3	SAND: Compact to loose, brown, sand, trace to some silt, trace gravel, moist to		5	SS	27	306	s	-	•				0			_				
- Pro-		wet							/	/											
4.0							305	5	4												Filter cond
							-		/							~					Filler Sallu
5.0 -				6	SS	9	_									0					First water strike at 4.6 m
4	5.5	SANDY SILT: Compact brown sandy					304		$\square$												50 mm slotted pipe
6.0-	303.7	silt, trace gravel, trace clay, very moist							V												
i i	6.5			7	SS	23	303	3	-	•					0						alan na sa kaga ka sa ƙwa
	302.7	BOREHOLE TERMINATED AT 6.5 m																		Upon Wet c	completion of augering ave at 4.3 m
7.0-																				Water	Level Readings: Denth Elev
daa																				2021-	05-20 4.2 305.0 06-11 4.3 304.9
8.0																					
o for																				1	
9.0																			i I		
la.																					
10.0																					
10.0																					
Ta no							,														
11.0																					
, dia																			į.		
12.0																					
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13.0																					
																					1
14.0 -								5													11
-																			í.		
15.0 -	NOT	ES	1		1		_	-						1	1			1	1	<u>I</u>	
																					you
			11.000	001 0	N NOT	ODT 0004 0	0 10 1		7	- 24											<u>****</u>

PML		P	e	t	0		4	k	3/	cl	Gê					7	L	t		100
	С	0	N	S	U	L	T	1	N	G	Ε	N	G	1	N	Ε	Ε	R	S	

# LOG OF BOREHOLE NO. 6 17T 577273E 4891513N

	SOIL PROFILE			SAM	PLES	щ	SHEA	R STR	ENGT	⊣ (kPa	)		N		Terrane		
EPTH ELEV netres)	DESCRIPTION	STRAT PLOT	NUMBER	ТҮРЕ	"N" VALUES	LEVATION SCAL	+FIEL A POC 5 DYNAN STAND	D VANI KET PE 0 1 MIC COM	E ATO ENETRO DO 1 NE PEN ENETR	RVANE DMETER 50 2 ETRAT	○Qu ₹ ○Q 200 00 × TEST ●				E LIQU T LIN W		GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION (%
0.18	SURFACE ELEVATION 304.50 TOPSOIL: Dark brown, silty sand, moist	নি নি.	1	SS	3	Ū	•	0 4	0	50	80	10	0 2	0 30	40	kN/r	n ³ GR SA SI&CL
	brown, silty sand, wet					304											First water strike at 0.8 m
			2	55	8									0			
			3	SS	10		•						0				
<u>2.3</u> 302.2	SILT: Compact, brown, sandy silt, trace sand, trace gravel, trace clay, wet		4¹	SS	13	302								0			
<u>3.1</u> 301.4	CLAYEY SILT: Stiff to very stiff, grey,		5	SS	14					4 and 1 a 2 a				0	5		
	sand, WTPL					30^											
5.0			6	SS	20	300								0			
299.5	BOREHOLE TERMINATED AT 5.0 m																Upon completion of augering Water at 1.2 m Cave at 1.8 m
		0															
										i.							
											1						
																ŝ	
											1						
					6												
																	1
NOT	ES						- Annie										1/



### LOG OF BOREHOLE/MONITORING WELL NO. 7

1 of 1

17T 577292E 4891491N

	1000	TION 937045 Airport Road Mapsfield O	N							BODI		ATE	1av 12	0021			EF.	، ، د		9	
	BORI	<b>NG METHOD</b> Continuous Flight Solid Ste	m Au	aers					,	BURI	100	AIL	vidy 12, 1	2021		TECH	NICI	AN	CM		
	Born	SOIL PROFILE			SAM	PLES	ALE	S				H (kP	a) F_⊖Qu	PLASTIC.	NATURA			-	CIVI		
	DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	түре	"N" VALUES	ELEVATION SC/	D'S	POCH 50 YNAMI TANDA	KET PE		OMETI 150 NETRA	TION ×				VIT VL I	UNIT WEIGH	GF OI A	ROUND WATE BSERVATION ND REMARKS GRAIN SI DISTRIBUTIO	R S S IZE DN (%)
.0 -	0.20	SURFACE ELEVATION 304.05 TOPSOIL: Brown, silty sand, moist	~~~	1	SS	3			20	4	0	60	80	10	20 3	40	k	N/m ³		GR SA SI8 Stick-up casing	CL
	303.85	SAND: Very loose to loose, brown, sand, trace silt, wet																			
.0-	1.4			2	SS	8	303	3			-				0		_			First water strik 0.8 m	e at
- The second	302.7	CLAYEY SILT: Stiff, brown, clayey silt, sandy silt layers, trace sand, WTPL		3	SS	12			•						0					Bentonite seal	
.0-	2.1 302.0	CLAYEY SILT TILL: Stiff, grey, clayey silt, trace gravel, trace sand, cobbles and	0		00	14	302	2													
.0-		boulders, APL to WTPL		4	55	14	301		Ī					0						Filter sand	
Teor.				5	SS	13	- 301		•						0						
.0			0.0				300	0												50 mm slotted p	oipe
							_											-	<u>.</u> []:]		
i.0 -	5.0 299.1	BOREHOLE TERMINATED AT 5.0 m		6	SS	14		-	6			-		.0			-		Upon co	mpletion of aug	ering
a trans																			Volter a No cave Water L	evel Readings:	
.0-																			Date 2021-05 2021-06	-20 1.0 -11 1.3	<u>Elev.</u> 303.1 302.8
.0-																					
1.0 -																					
9.0 -																					
of Long																					
0.0 -																					
and the																					
.0-																					
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-0.2																					
3.0 -																					
da est																					
1.0-																					
ta di cua																					~
5.0 —	NOTE	ES																		/	1
																				(1	

PMP		P	e	Û	0		И	k	370	cl	50			//		1	L	ti		
	С	0	N	S	H	1	Τ	1	N	G	F	N	G	I	N	Ε	Ε	R	S	

LOG OF BOREHOLE/MONITORING WELL NO. 8	
17T 577389E 4891551N	

LOCA	ATION 937045 Airport Road, Mansfield, 0	ont ON							BOR	ING DA	ATE N	1ay 13,	202	21		E	ML RE	F. ER	GW	-019
BORI	NG METHOD Continuous Flight Hollow	Stem	Auç	gers	CANA		115	SHF	EAR STR	ENGT	H (kPa	)	Т			1	ECHNI		СМ	
DEPTH ELEV (metres)	DESCRIPTION	TRAT PLOT		NUMBER	BAIM	V" VALUES	EVATION SCALE	+FI	IELD VAN OCKET P 50			E O Q R O Q 200			NATU MOIS CON V		LIQUIE LIMI [*] 	UNIT WEIGHT		GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZE
	SURFACE ELEVATION 309.85	S.		1235		F	ELE	SIA	20	40	60	80		10	20	30	40	kN/m	3	GR SA SI&CL
0.13 309.72	TOPSOIL: Brown, silty sand, moist		Ŝ	1	SS	7		•						0						Stick-up casing
	trace organics, moist	$\langle \times \rangle$	$\mathcal{A}$																	
		$\otimes$	X	2	SS	64	309	-			•		+	0	-			1		
1.4		$\mathbb{N}$	<u>X</u> -				-													
308.5	some silt, trace gravel, moist to wet			3	SS	26	200		•	1				0						
	19 GNS 72		:  -	-			0		/											
				4	SS	15		1	1				0			2			1000	
			:  -	-		1.5	307				_		-	-						Bentonite seal
				5	22	16	-							0						
			•	0	00	10	-													
							306	-	1		-	_	+			+		-		
									N											
			::-	6	22	25	-		1					0				2		
			-	0	33	20	305		Ť										Skali	
5.5																				
304.4	SILT: Compact, brown, silt, trace to some sand, trace gravel, trace clay, moist to	e					304										_			Filter sand
	wet		-	-1		05														
				1	55	25			ľ											First water strike at
							303	-				_	+					-	I:E	6.4 m     50 mm slotted pipe
							i.													
							_												E	<u>:</u>
				8	SS	24	302						t		0			-		
							6												ż.	
													1							
9.0	CLAYEY SILT TILL: Hard, brown to grey	1. 10.	_				301													
000.0	clayey silt, trace sand, trace gravel,									X										
	Cobbles and boulders, Ar L		X	9	SS	44	300			6				(	>					
10.0 299.9	BOREHOLE TERMINATED AT 10.0 m	XF	p]•	181.2								-	1						Upo	n completion of augering
			1																vvet	cave at 4.6 m
																	8		Date	er Level Readings: <u>Depth</u> Elev
								ŝ											202 202	1-05-20 7.2 302 1-06-11 7.2 302
												9								
NOTI	ES																			11
																				V
PML		P	e	ti	D	h	4	k	376	cl	Gé					1	L	ŧ		
-----	---	---	---	----	---	---	---	---	-----	----	----	---	---	---	---	---	---	---	---	
	С	0	N	S	U	L	Т	I	N	G	Ε	N	G	1	Ν	Ε	Ε	R	S	

# LOG OF BOREHOLE NO. 9 17T 576946E 4891305N

	PRO. LOCA BORI	JECT Proposed Residential Developmen ATION 937045 Airport Road, Mansfield, O ING METHOD Continuous Flight Solid Ste	t N m Auç	gers				BOF	ING DA	ATE Ma	ay 14, 2	2021		F E 7	PML RE NGINE	ER ER	21BF019 GW CM
	DEDTU	SOIL PROFILE	LOT	R	SAMF	PLES	N SCALE	SHEAR STR +FIELD VAN POCKET F	RENGT	H (kPa) RVANE OMETER	OQU OQ	PLAS LIMIT WP	LIC NAT MOIS CON	URAL STURE ITENT W	LIQUIE LIMIT Wi	VEIGHT	GROUND WATER OBSERVATIONS
	ELEV (metres)		STRAT P	NUMBE	TYPE	"N" VALL	ELEVATIO	DYNAMIC CC STANDARD I 20	NE PEN PENETR 40	IETRATIC ATION TE	ON × EST •	w. 1	ATER CO	о ОNТЕР 30	JT (%) 40	A LIND	AND REMARKS GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
0.0	0.05 311.30 0.70	gravel, moist SAND: Compact, brown, sand, trace silt,		1	SS	19	311	-				0					
1.0	310.65	Moist SAND AND GRAVEL: Very dense to dense, brown, sand and gravel, trace silt, cobbles and boulders, moist to very moist	× ک	2	SS	84	310			$\triangleright$	>0	þ					
2.0	2.1	SILT: Dense brown to grey silt trace	о Ат	3	SS	39						0	8				
30	505.5	sand, trace clay, trace gravel, moist to wet		4'	SS	44	309		•				0				
3.0				5	SS	33	308	-					0		_		First water strike at 3.1 m
4.0	4.0 307.4	SILTY SAND: Dense, brown, silty sand, trace gravel, moist					307										
5.0	5.0 306.4	BOREHOLE TERMINATED AT 5.0 m		6	SS	34	-						0	-	_		Upon completion of augering
6.0																	No cave
an chann																	
7.0																	
8.0																	
9.0																	
10.0																	
10.0																	
11.0																	
12.0																	
13.0																	
14.0																	
15.0 -	NOT	ES										<u> </u>					
	PMI - PL	I OG GEO/ENV WITH MWS 218E010 2021-06-02 BH	1065	GP.L O	N MOT	GDT 2021-0	6-18 0	59:10 AM								T. 41	Y

PMP		P	e	t	D		И	k	70	cl	ĥ	7/		//		7	L	ti		3
	C	0	M	\$	11	1	T	1	M	ß	F	N	G	1	N	F	F	R	S	

		LOG	OF	B	OR	EHOL	. <b>E</b>	/ <b>MC</b> 57716	<b>DN</b> 32E 4	<b>ITC</b> 89130	RII 6N	NG	W	ELI		10.	10					1 of	1
	PRO. LOCA	JECT Proposed Residential Developme ATION 937045 Airport Road, Mansfield, C	nt DN						вс	RING	DATE	E Ma	y 14, 2	2021			PML I ENGI	REF	R	21BF GW	)19		
	BOR	SOIL PROFILE	em Au	gers	SAM	PLES	ш	SHE	AR S	TREN	GTH (	kPa)			2010		TECH	INIC	IAN	CM			-
	DEPTH ELEV (metres)	DESCRIPTION	RAT PLOT	NUMBER	ТҮРЕ	" VALUES	VATION SCALE	+FIE APO DYNA	ELD V/ CKET 50 AMIC (		TORV TROM 150 ENET	ANE ETER 20 RATIO	OQU OQ 0			ATURA DISTUR DNTEN W 			UNIT WEIGHT	(	ROUND V DBSERVA AND REM	VATER TIONS IARKS RAIN SIZE	
0.0	0.40	SURFACE ELEVATION 310.50	ST	-		Z	ELE	STAN	20	40	1RA11 60	ON TE 80	51 0	1	0 2	0 30	40		kN/m ⁴	8	DISTR GR 5	BUTION	(%) L
0.0	310.40	TOPSOIL: Brown, silty sand, moist SAND: Loose to compact, brown, sand, trace to some silt, trace to some gravel,		1	SS	4	310	•							0						Stick-up	casing	
1.0		moist		. 2	SS	24								0									
2.0-				3	SS	13	-309	•	4					o						ALCONTRACTOR OF ALCONTRACTOR ALCONTRACTOR ALCONTRACTOR ALCONTRACTOR ALCONTRACTOR ALCONTRACTOR ALCONTRACTOR ALC			
				4	SS	12	308		_						,						Bentonite	) seal	
3.0	2.9 307.6	SILTY SAND: Compact, brown, silty sand, trace gravel, wet		5	SS	17	-307		•		_				0						First wate 3.1 m	ər strike a	at
4.0				•			306														Filter san	ıd	
5.0				6	SS	17	205								0						50 mm s'	lotted pip	e
6.0				7	SS	22	300								0								
7.0	<u>6.5</u> 304.0	BOREHOLE TERMINATED AT 6.5 m					-304													Upon Wet o Wate Date	completion ave at 4.3 n Level Read	of augeri n dings: epth Ele	ng ev.
8.0-			а. 19 19																	2021- 2021-	05-20 06-11	4.2 30 4.3 30	)6.3 )6.2
9.0-																							
0.0																							
1.0-																							
2.0-				2														101					
3.0-																							
4.0-																						1	/
- 5.0																							1
X	NOT	ES																				l	1

PF LC BC	ROJI DCA	ECT Proposed Residential Developmen TION 937045 Airport Road, Mansfield, C	nt DN em Au	aers			17T	577306	E 489 BORI	1413N NG DA	TE Ma	iy 12, 2	2021		PN EN TF	IL REI	F, ER CIAN	21BFI GW CM	019
		SOIL PROFILE			SAM	PLES	LE	SHEA			I (kPa)	0.00	DIAST		URAL				
DEP ELE met	TH EV res)	DESCRIPTION	RAT PLOT	JUMBER	түре	" VALUES	VATION SCA				METER	0 Q 00 00 × NO					JNIT WEIGH		GROUND WATER OBSERVATIONS AND REMARKS
		SURFACE ELEVATION 309.05	ST	2		7	ELE	STANE 2	0 ARD PI	ENETRA 10 6	0 8	EST • 0	10	20	30	40	kN/m ³	3	DISTRIBUTION (% GR SA SI&CL
<u>0.</u> 308	85	TOPSOIL: Brown, silty sand, trace gravel, moist SAND: Loose to compact, brown, sand, trace silt, trace to some gravel, cobbles		1	SS	8							0						Stick-up casing
	1	and boulders, moist		2	SS	17	308						0						
2				3	SS	18		-					0						
307	7.0	SANDY SILT: Compact, brown, sandy silt, trace gravel, trace clay, moist with wet layers		4	SS	11	307	•					0						Bentonite seal
	2			51	SS	13	306	•						¢			-		
							305										-		
				6	SS	16	304							o					Filter sand First water strike at 4.6 m
			;, ;,																50 mm slotted pipe
6	5			7	SS	11	-303	•						0					
302	2.6	BOREHOLE TERMINATED AT 6.5 m																Upon Wet c Water	completion of augering ave at 5.5 m Level Readings:
																		2021- 2021- 2021-	05-20 4.6 304. 06-11 4.8 304.
								E.											
																	5		
								6											
																			/

F	PROJ LOCA	IECT Proposed Residential Developmen ATION 937045 Airport Road, Mansfield, O ING METHOD Continuous Flight Hollow S	it N tem A	ugers			17T	57745	1E 489 BOR	1453N ING DAT	<b>E</b> May 12,	2021		Pi Ei Ti	ML REI NGINE	F. ER CIAN	21BF GW	019	
		SOIL PROFILE	D	e gon	SAM	PLES S	N SCALE	SHEA +FIE ▲PO	AR STF LD VAN CKET P	ENGTH	(kPa) VANE ○Q ⁄IETER OQ	U PLAS	TIC NA MOI COI	TURAL STURE NTENT		EIGHT		GROUND V OBSERVA	WATER TIONS
DE El (me	EPTH LEV etres)		STRAT PL	NUMBE	ТҮРЕ	"N" VALU	ELEVATION	DYNA STAN	MIC CO DARD F	NE PENE ENETRAT 40 60	TRATION 200 ION TEST 0 80	< Wp	ATER C	ONTEN	w _L T (%) 40	UNIT W	3	AND REM	ARKS
	).20 )7.80	TOPSOIL: Brown, silty sand, moist SAND: Loose to compact, brown, sand, trace silt, moist to wet	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1	SS	7		•					0			KIN/II		Stick-up	casing
0				2	SS	8	307	-					•	_					
				3	SS	10	306					0							
				4	SS	15						ō						First wate 2.3 m	er strike at
0 - 30	<u>2.9</u> 05.1	SILTY FINE SAND: Compact, brown, silty fine sand, wet		51	SS	15	305	•					0			-		Bentonite	e seal
							304												
1				6	SS	13	202						o					Filter san	d
30	5.5 02.5	SANDY SILT: Compact, brown, sandy					503												
		silt, trace clay, trace gravel, cobbles and boulders, moist to very moist		7 ¹	SS	25	302		•				0					50 mm sl	otted pipe
							301								-	-			
in Er				8	SS	19						0							
							300												
) = 29	9.0 99.0	SANDY SILTY CLAY: Stiff, grey, sandy silty clay, trace gravel, APL	ŀ.				299									-			
	0.0 98.0	BOREHOLE TERMINATED AT 10.0 m	1	9 ¹	SS	14	298	•					0		1		Upon	completion	of augering
- III																	No wa No ca Water Date	iter ve Level Reac D€	lings:
,																	2021- 2021-	05-20 06-11	5.7 302.3 5.8 302.2
			9																
			8																
T			and a																
لسساس																			
N	ΙΟΤΕ	S										L						5	11/

Fin Petn MacCallum I td



Project Name/ Project Client	21-158	Project Address	937045 Airport Road	Date	October 14th 2022
Test Pit Number	TP 1	Contractor	David Seaman	Elevation	
Equipment	Rubber Track Mini-Excavator	Test Pit Size	2m x 4m	Datum	
Temperature	5°	Weather	Cloudy	Sample Type	

De	pth			Sa	mples		
From (m)	To (m)	Soil description		No.	Depth (mbgs)	Screening Parameters	Remarks / Chemical Analysis
0.00	0.30	TOPSOIL: Dark brown to black, sand, trace silt, gravel, moist to very moist	, trace				
0.30	1.20	SAND AND GRAVEL: Compact, brown, sand a gravel, with cobbles and boulders, moist	and				
1.20	3.10	SAND: Compact, light brown to brown, sand, tr trace gravel, moist	ace silt,				
		Test Pit Terminated at <u>3.1m</u>					
Commen	ts			Water	Conditions	in Test Pit	
Standpipe 1	l installed at	bottom of testpit.					
Standpipe	i - Diy - 202	2// 10/ <i>5</i> 1		t unon co	moletion		
			⊡ mo	/ upon co	mpletion		
						IOB No.	21-158
					TEST	PIT No.	1
					FIELD	STAFF	AT



Project Name/ Project Client	21-158	Project Address	937045 Airport Road	Date	October 14th 2022
Test Pit Number	TP 2	Contractor	David Seaman	Elevation	
Equipment	Rubber Track Mini-Excavator	Test Pit Size	2m x 4m	Datum	
Temperature	6°	Weather	Cloudy	Sample Type	

De	pth			Sa	mples		
From (m)	To (m)	Soil description		No.	Depth (mbgs)	Screening Parameters	Remarks / Chemical Analysis
0.00	0.40	TOPSOIL: Brown to black, sand, trace silt, trace moist to very moist	gravel,				
0.40	0.70	SILTY SAND: Compact, brown, silty sand, trace moist	e gravel,				
0.70	1.30	SAND AND GRAVEL: Compact, brown, sand a gravel, with cobbles and boulders, moist	ind				
1.30	3.10	SAND: Compact, brown, sand, trace to some silt, gravel, moist	, trace				
		Test Pit Terminated at <u>3.1m</u>					
Commen	ts			Water	Conditions	in Test Pit	
Standpipe 2 Standpipe 2	2 installed at 2 - Dry - 202	bottom of testpit. 2/10/31	☐ We	t upon co	ompletion mpletion		
L				J	IOB No.	21-158	
					TEST	PIT No.	2
					FIELD	STAFF	AT



Project Name/ Project Client	21-158	Project Address	937045 Airport Road	Date	October 14th 2022
Test Pit Number	TP 3	Contractor	David Seaman	Elevation	
Equipment	Rubber Track Mini-Excavator	Test Pit Size	2m x 4m	Datum	
Temperature	8°	Weather	Cloudy	Sample Type	

De	pth			Sa	mples		
From (m)	To (m)	Soil description		No.	Depth (mbgs)	Screening Parameters	Remarks / Chemical Analysis
0.00	0.25	TOPSOIL: Black to brown, sand, trace silt, trace trace organics, moist to very moist	gravel,				
0.25	0.75	SILTY SAND: Compact, brown, silty sand, trace moist	e gravel,				
0.75	3.10	SAND AND GRAVEL: Compact to dense, brow and gravel, with cobbles and boulders, moist	vn, sand				
		Test Pit Terminated at <u>3.1m</u>					
Commen	ts			Water	Conditions	in Test Pit	
Standpipe 3 Standpipe 3	3 installed at 3 - Dry - 202	bottom of testpit. 22/10/31					
			We	t upon co	ompletion		
			🗹 Dry	upon co	mpletion		
					J	OB No.	21-158
					TEST	PIT No.	3
					FIELD	STAFF	AT



Project Name/ Project Client	21-158	Project Address	937045 Airport Road	Date	October 14th 2022
Test Pit Number	TP 4	Contractor	David Seaman	Elevation	
Equipment	Rubber Track Mini-Excavator	Test Pit Size	2m x 4m	Datum	
Temperature	10°	Weather	Parly Sunny	Sample Type	

Depth			Sa	mples	Sanooning		
From (m)	To (m)	Soil description		No.	Depth (mbgs)	Screening Parameters	Remarks / Chemical Analysis
0.00	0.40	TOPSOIL: Black to dark brown, sand, trace to so trace gravel, trace organics, moist	me silt,				
0.40	1.00	SAND: Compact, brown, sand, some silt, trace gr moist	avel,				
1.00	1.70	SAND AND GRAVEL: Compact, brown, sand an gravel, with cobbles and boulders, moist	nd				
1.70	3.40	SAND: Compact, light brown to brown, sand, trac trace gravel, moist	ce silt,				
		Test Pit Terminated at <u>3.4m</u>					
Commen	ts			Water	Conditions	in Test Pit	
Standpipe 4	installed at - Dry - 202	bottom of testpit. 2/10/31	Water Conditions in Test Pit				
<u> </u>			-	-	J	IOB No.	21-158
				TEST PIT No. 4			
					FIELD	STAFF	AT



Project Name/ Project Client	21-158	Project Address	937045 Airport Road	Date	October 14th 2022
Test Pit Number	TP 5	Contractor	David Seaman	Elevation	
Equipment	Rubber Track Mini-Excavator	Test Pit Size	2m x 4m	Datum	
Temperature	10°	Weather	Parly Sunny	Sample Type	

De	pth			Sa	mples	Sereening	
From (m)	To (m)	Soil description		No.	Depth (mbgs)	Screening Parameters	Remarks / Chemical Analysis
0.00	0.35	TOPSOIL: Black to dark brown, silty sand, trace trace organics, moist	gravel,				
0.35	0.60	SILTY SAND: Compact, brown, silty sand, trace moist	e gravel,				
0.60	3.60	SAND AND GRAVEL: Compact to dense, brown and gravel, with cobbles and boulders, moist	n, sand				
		Test Pit Terminated at <u>3.6m</u>					
Commen	ts			Water	Conditions	in Test Pit	
Standpipe 5	5 installed at 5 - Dry - 202	bottom of testpit. 22/10/31	└ We ✓ Dry	t upon co	ompletion		
					J	IOB No.	21-158
					TEST	PIT No.	5
					FIELD	STAFF	AT



Project:					Project	Project Number: Client: Borehole ID: BH 101				
	Sewa	age Im	npact St	tudy		21-158B	David Seaman			
Project Lo	cation:						Drilling Contractor:	Drilling Method:		
		Armst	rong Su	ubdivisi	on, Mans	field, Ontario	Orbit Garant Drilling	Hollow Stem Augers		
Logged B	y:				Date:		Stickup (m):	Well Depth (mbgs):		
		A. Ti	urner		2	23-May-2023				
					Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM:	(NAD 8	3, Zon	e 17T)			311.22				
Easting:	576951	_			Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):		
Northing:	489138	9		1	_					
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Wel Construction	Lithology Description Soil Group Name: grain Rock Description: modi characteristics, solutions,	ifier, color, hardness/degree of concentration, bedding and joint s, void conditions.			
	SS 1/SS 2	4,3	75,75	> > > > > > > > > > > > > > > > > > >		TOPSOIL: Dark bro	wn, sand, some silt, trace g	gravel, trace organics,		
	SS 3	50+	50			moist (0.0 - 0.4m)	looso, brown to dark brown	silty sand trace gravel		
		23 14	75 83			moist. (0.4 - 1.5 m)		, sity sand, trace gravel,		
	SS 6/SS 7	23,24	92,83			SAND: Compact to	very dense, brown, coarse sand, some gravel			
5	SS 8	28	92			to gravelly, moist (1.	5 - 2.3m)	- (0.0.)		
	SS 9	32	83			SAND: Becoming fir	ne sand, stratified, moist (1	.5 - 16.8m)		
	55 10	25	92							
	SS 11	31	92							
10	SS 12	26	92							
	SS 13	32 35	83 83							
		00	00							
15	SS 15	45	75							
	SS 16	37	83			SAND: Becoming m	ore coarse (16.8 - 18.9m)			
	SS 17	36	83							
	0017	50	00	•.•.•.•		Borehole terminated	l at 18.9 mbgs			
20						Upon completion of	augering;			
	_					No water				
—	4					No cave				
—	-									
25	-									
	_									
—	-									
	Ground	Wate	er Leve	l Upon	Well Co	mpletion (mbgs)				
	Seal (gi	rout /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1		



Proj	Project: Project Number:							Client:	Borehole ID: BH 102		
		Sewa	age In	npact S	tudy		21-158B	David Seaman			
Proj	ect Lo	ocation:						Drilling Contractor:	Drilling Method:		
			Armst	trong Si	ubdivisio	on, Mans	field, Ontario	Orbit Garant	Hollow Stem Augers		
Log	ged B	y:				Date:		Stickup (m):	Well Depth (mbgs):		
			Α. Τ	urner			17-May-2023	Stick Up Casing	4.6		
						Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM	l:	(NAD 83	3, Zon	e 17T)			308.68	4.25	50.8		
East	ing:	577143				Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):		
Nort	hing:	4891471		n	n	10-Slot I	PVC, Schedule 40	Schedule 40 PVC	1.5		
Depth Below	Ground Surtace (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Descripti Soil Group Name: grain Rock Description: modif characteristics, solutions,	on size,color, density/consistency, m fier, color, hardness/degree of cor void conditions.	oisture, stratification, other descriptors		
		SS 1	10	66			TOPSOIL: Brown, s	and, trace silt, trace gravel,	trace organics,		
		SS 2	37	42			moist (0.0 - 0.3m)				
							GRAVELLY SAND:	Dense, brown, gravelly sar	nd, trace organics,		
		SS 3	13	83			moist (0.3 - 1.5m)				
2		SS 4	13	92		ि ये । य	SAND: Compact, br	own to light brown, fine san	d, trace to some silt,		
							trace gravel, moist (*	1.5 - 3.0m)			
		SS 5	19	83			SANDY SILT: Comp	pact, brown, sandy silt, very	moist (3.0 - 4.6m)		
4											
4											
		SS 6	13	92			TILL: Compact, brov	wn, sandy silt with clayey silt layers, trace gravel,			
							cobbles and boulder	s, moist (4.6 - 5.2m)			
6							Borehole terminated	at 5.2 mbgs			
							Upon completion of	augering:			
							No water	<u> </u>			
							No cave				
8											
10											
12											
L											
	V	Ground	Wate	er Level	l Upon	Well Cor	mpletion (mbgs)				
		Seal (gr	out /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1		



Proje	ect:					Project	Number:	Client:	Borehole ID: BH 103		
		Sewa	age In	npact S	tudy		21-158B	David Seaman			
Proje	ect Lo	ocation:						Drilling Contractor:	Drilling Method:		
			Arms	trong Si	ubdivisio	on, Mans	field, Ontario	Orbit Garant	Hollow Stem Augers		
Logo	ged B	y:				Date:		Stickup (m):	Well Depth (mbgs):		
			Α. Τ	urner			16-May-2023	Stick Up Casing	10.7		
						Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM	:	(NAD 83	3, Zon	ie 17T)			314.48	Dry	50.8		
East	ing:	577168				Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):		
Nort	hing:	4891602	2	1	n	10-Slot	PVC, Schedule 40	Schedule 40 PVC	3		
Depth Below	Ground Surrace (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Description: Soil Group Name: grain Rock Description: modi characteristics, solutions,	ion size,color, density/consistency, m fier, color, hardness/degree of cor , void conditions.	oisture, stratification, other descriptors		
	_	SS 1	6	33	<u>00000</u>		TOPSOIL: Brown, s	and, trace silt, trace gravel,	trace organics,		
		SS 2	7	42			moist (0.0 - 0.28m)				
							SAND: Loose to cor	mpact, brown to light brown	, coarse sand, trace to some		
		SS 3	15	66			silt, trace gravel, mo	ist (0.28 - 6.1m)			
2		SS 4	15	75							
		SS 5	21	83							
4											
4											
		SS 6	8	83			Silt seam, very mois	t at 4.6m			
6		SS 7	28	92	1111		SILT: Compact, bro	wn, silt, trace to some sand	, very moist (6.1 - 7.6m)		
									·		
		SS 8	35	83			SAND: Dense, brow	n to light brown, sand, som	e silt with silt layers, trace		
							gravel, moist (7.6 - 1	0.7m)			
8							<u> </u>				
		SS 9	33	83							
10							TILL: Dense, brown	to grey, sandy silt, trace to	some gravel, cobbles and		
		SS 10	47	92	****		boulders, moist (10.	7 - 11.5m)			
						Borehole terminated at 11.5 mbgs					
					~ ~ ~ ~ ~ ~ ~ ~	Upon completion of augering;					
12							No water	-			
							No cave				
		Ground	Wate	er Level	l Upon	Well Co	mpletion (mbgs)				
		Seal (gr	out /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1		



Project:					Project	Number:	Client:	Borehole ID: BH 104		
Sewage Impact Study 21-158B							David Seaman			
Project Lo	cation:						Drilling Contractor:	Drilling Method:		
		Armst	trong Su	ubdivisi	on, Mans	field, Ontario	Orbit Garant Drilling	Hollow Stem Augers		
Logged By	<b>/</b> :				Date:		Stickup (m):	Well Depth (mbgs):		
		A. T	urner		1	6-May-2023	Stickup Casing	12.2		
					Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM:	(NAD 83	3, Zon	ne 17T)			309.97	7.84	50.8		
Easting:	577454				Well Sci	een Type:	Riser Pipe Type:	Well Screen Length (m):		
Northing:	4891722	2		1	10-Slot F	VC, Schedule 40	Schedule 40 PVC	3		
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Descripti Soil Group Name: grain Rock Description: modi characteristics, solutions,	ion size,color, density/consistency, moisture, stratification, other descriptors fier, color, hardness/degree of concentration, bedding and joint , void conditions.			
	SS 1/SS 2	4,3	66,58			TOPSOIL: Brown, s	and, trace to some silt, trac	e gravel, trace organics,		
	SS 3	3	42			moist (0.0 - 0.4m)	o compact, brown to light br	rown fine sand trace		
	- 55 4 - 55 5	4	50 50			to some silt trace or	avel moist to wet (0.4 - 9.1	m)		
	SS 6	25	83			ie eenie eni, naee gi		,		
5										
	SS 7	26	92							
	SS 8	13	83			First ground water st	rike at 7.6m			
	922	20	83		모그지	SANDY SILT. Com	to slity at 7.6 m pact brown sandy silt wet	(9 1 - 10 7m)		
10 —	SS 10	20 14	83			SILTY SAND: Comp	pact, brown to grey, silty fine	e sand, wet (10.7 - 12.2m)		
	-									
	SS 11	50+	83	ÌÌÌÌÌÌ		TILL: Very dense, g	rey to red, clayey silt with sa	and layers, trace gravel,		
	_					cobbles and boulder	s, very moist (12.2 - 12.5m)	)		
15	-					Rorehole terminated	at 12.5 mbgs			
	-					Upon completion of	augering;			
	-					Water at 9.1m	5 G,			
						No cave				
20	-									
	-									
	-									
	1									
25										
20	-									
	-									
	-									
30										
T	Ground	Wate	er Leve	l Upon	Well Co	mpletion (mbgs)	<b>⊢</b> ⊣			
	Seal (gr	out /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1		



Project: Project Number:							Client:	Borehole ID: BH 105		
	Sewa	age In	npact St	tudy		21-158B	David Seaman			
Project Lo	cation:						Drilling Contractor:	Drilling Method:		
		Armst	trong Si	ubdivisi	on, Mans	field, Ontario	Orbit Garant Drilling	Hollow Stem Augers		
Logged B	y:				Date:		Stickup (m):	Well Depth (mbgs):		
		Α. Τ	urner			17-May-2023	Stickup Casing	14.3		
					Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM:	(NAD 83	3, Zor	ne 17T)			309.86	8.17	50.8		
Easting:	577471				Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):		
Northing:	4891578	3	r	1	10-Slot I	PVC, Schedule 40	Schedule 40 PVC	3		
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Descripti Soil Group Name: grain Rock Description: modi characteristics, solutions,	ion size,color, density/consistency, moisture, stratification, other descriptors ifier, color, hardness/degree of concentration, bedding and joint , void conditions.			
	SS 1/SS 2	3,2	75,66			TOPSOIL: Brown, s	and, trace to some silt, trac	e gravel, trace organics,		
		13 13	66 75			SAND: Verv loose to	o compact, brown to light bi	rown, coarse to fine sand.		
	SS 5	11	66			trace to some grave	I, moint to very moist (0.5 -	12.2m)		
	SS 6	18	83			_				
5	_									
	SS 7	25	92			Booming oilty fing a	and			
	558	14	83			First around water st	trike at 7.9m			
	SS 9	16	92			i not ground water of				
10	SS 10	20	83							
	_									
	SS 11	31	92			SANDY SILT: Dens	e, brown, sandy silt, wet (12	2.2 - 13.7m) to sandy, trace gravel		
	SS 12	25 16	75 83	ÛÜ		becoming "till-like"	verv moist (13.7 - 14.3m)	to sandy, trace gravel,		
15		10	00	\$\$ <u>\$</u> \$		TILL: Compact, bro	wn to grey, clayey silt, trace	sand, trace gravel,		
						cobbles and boulder	rs, very moist (14.3 - 15.1m)	)		
	_									
	_					Borehole terminated	l at 15.1 mbgs			
20	_					Water at 7 0m	augening;			
	-					No cave				
	_									
25	-									
	_									
	-									
30 —	_									
·	-									
	Ground	Wate		l I Unon		mpletion (mbgs)				
	Seal (gr	out /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1		



Proje	Project: Project Number:						Number:	Client:	Borehole ID: BH 106
		Sewa	age In	npact S	tudy		21-158B	David Seaman	
Proje	ect Lo	ocation:						Drilling Contractor:	Drilling Method:
			Arms	trong S	ubdivisio	on, Mansf	ield, Ontario	Orbit Garant	Hollow Stem Augers
Logg	jed B	y:				Date:		Stickup (m):	Well Depth (mbgs):
			Α. Τ	urner		-	18-May-2023	Stick Up Casing	4.6
						Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)
UTM	:	(NAD 83	3, Zon	e 17T)			311.1	4.4	50.8
Easti	ing:	577011				Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):
Nort	hing:	4891274	4			10-Slot F	VC, Schedule 40	Schedule 40 PVC	1.5
Depth Below	Ground Surrace (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Descripti Soil Group Name: grain Rock Description: modi characteristics, solutions,	size,color, density/consistency, m fier, color, hardness/degree of cor void conditions.	oisture, stratification, other descriptors
		SS 1	3	75			TOPSOIL: Brown to	dark brown, sand, trace to	some silt, trace gravel
		SS 2	10	75			trace organics, mois	t (0.0 - 0.6m)	
							SAND: Compact, br	own, coarse sand, trace silt	t, some gravel,
		SS 3	15	83			moist (0.6 - 2.3m)		
2		SS 4	14	83			SANDY SILT: Com	pact, brown, sandy silt, with	clayey silt layers,
							trace gravel, very mo	oist (2.3 - 4.0m)	
		SS 5	17	92					
		SS 6	33	83					
4							SAND: Dense, brow	n, fine to coarse sand, som	he silt, stratified, trace to some
		SS 7	36	83			gravel, moist (4.0 - 4	l.6m)	
		SS 8	22	83			TILL: Compact to de	ense, brown to grey, sandy	silt with clay seams,
6							trace gravel, cobbles	s and boulders, moist (4.6 -	6.0m)
0							Borehole terminated	at 6.0 mbgs	
							Upon completion of	augering;	
							No water		
							No cave		
8									
10									
40									
12									
_		Ground	Wate	er Leve	l Upon	Well Cor	npletion (mbgs)		
		Seal (gr	out /	hole pl	ug)		Silica Sand Pack	Well Screen	Page 1 of 1



Proje	ect:					Project	Number:	Client:	Borehole ID: BH 107		
		Sewa	age In	npact S	tudy		21-158B	David Seaman			
Proje	ect Lo	cation:						Drilling Contractor:	Drilling Method:		
			Arms	trong Su	ubdivisio	on, Mans	field, Ontario	Orbit Garant	Hollow Stem Augers		
Logg	jed B	y:				Date:		Stickup (m):	Well Depth (mbgs):		
			Α. Τ	urner			18-May-2023	Stick Up Casing	9.1		
						Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)		
UTM:	:	(NAD 83	3, Zon	ne 17T)			309.59	5.79	50.8		
Easti	ing:	577391				Well Sc	reen Type:	Riser Pipe Type:	Well Screen Length (m):		
North	hing:	4891354	1	•	n	10-Slot	PVC, Schedule 40	Schedule 40 PVC	3		
h Below d Surface	iu suriace 1bgs)	ole Type / No.	Value	ample very (%)	hology	oring Well struction	Lithology Descripti Soil Group Name: grain	i <b>on</b> size,color, density/consistency, m	oisture, stratification, other descriptors		
Dept	u) u)	Samp	ż	Sá Reco	Litl	Monite Cons	Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.				
		SS 1	5	75			TOPSOIL: Dark bro	wn to brown, sand, some s	ilt to silty, trace gravel,		
_		SS 2	35	66			trace organics, mois	t (0.0 - 0.6m)			
							SAND: Compact to	dense, coarse sand, trace	silt, some gravel to gravelly,		
		SS 3	30	75			moist (0.6 - 4.6m)				
2		SS 4	18	83			Becoming fine sand,	trace gravel at 1.5m			
_											
		SS 5	20	92							
4											
		SS 6	22	83			SILTY SAND: Comp	pact, brown, silty fine sand,	very moist to wet (4.6 - 7.6m)		
6 -											
		SS 7	14	92			First ground water st	trike at 6.1m			
8 -		SS 8	14	92	<u> </u>		SANDY SILT: Comp	pact, brown, sandy silt, wet	(7.6 - 9.1m)		
0											
_											
		SS 9	60	92	HH)		<u><b>TILL:</b></u> Very dense, b	rown to grey, silty sand to s	andy silt, trace gravel,		
10							cobbles and boulder	s, very moist (9.1 - 9.8m)			
10											
							Borehole terminated	at 9.8 mbgs			
							Upon completion of	augering;			
12 -						Borehole flushed out with drilling mud and water before monitoring well install					
							no final water level re	eading obtained			
_	_						No cave				
Ground Water Level Upon Well Completion (mbgs)											
	Seal (grout / hole plug)     Silica Sand Pack     Well Screen     Page 1 of 1										



Project:					Project Number:		Client:	Borehole ID: BH 108			
	Sewa	age Im	npact St	tudy		21-158B	David Seaman				
Project Lo	cation:						Drilling Contractor:	Drilling Method:			
		Armst	rong Su	ubdivisi	on, Mans	field, Ontario	Orbit Garant Drilling	Hollow Stem Augers			
Logged By	/:				Date:		Stickup (m):	Well Depth (mbgs):			
		Α. Τι	urner		2	23-May-2023	Stickup Casing				
					Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)			
UTM:	(NAD 83	3, Zon	ie 17T)			312.78					
Easting:	576917				Well Sci	/ell Screen Type:         Riser Pipe Type:         Well Screen Length (m):					
Northing:	4891440	391440									
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Description Soil Group Name: grain Rock Description: modi characteristics, solutions,	ion size,color, density/consistency, moisture, stratification, other descriptors ifier, color, hardness/degree of concentration, bedding and joint , void conditions.				
	SS 1/SS 2 SS 3 SS 4 SS 5/SS 6 SS 7 SS 8 SS 9 SS 10 SS 11 SS 12 SS 13	2,6 6 33 20,28 23 19 32 26 32 28 24	66,75 75 83 83,83 75 83 92 83 83 83 92 92			TOPSOIL: Brown to moist (0.0 - 0.3m) <u>SAND:</u> Loose, brow <u>SANDY SILT:</u> Loose (1.5 - 2.3m) <u>SAND:</u> Dense, brow gravelly, moist to vel <u>SILT:</u> Compact, bro moist (3.0 - 3.9m) <u>SAND:</u> Compact, br moist, (3.9 - 4.6m) <u>SILTY SAND:</u> Comp (4.6 - 6.1m) <u>SAND:</u> Compact to moist, (6.1 - 14.3m) Borehole terminated Upon completion of No water No cave	o dark brown, sand, some s in, fine to coarse sand, trac e, brown, sandy silt, trace g <i>n</i> , fine to coarse sand, som ry moist, (2.3 - 3.0m) wn, silt, trace clay with sand rown, sand, some silt to silty pact, brown, silty sand, trac dense, light brown, fine sar I at 14.3 mbgs augering;	ilt, trace gravel, trace organics, e gravel, moist (0.3 - 1.5m) ravel, moist to very moist, ne silt, some gravel to d seams, some gravel, /, trace to some gravel, e gravel, moist to very moist, nd, trace silt, trace gravel,			
	Ground Seal (gr	Wate out /	er Leve hole pl	l Upon ug)	Well Co	mpletion (mbgs) Silica Sand Pack	Well Screen	Page <u>1</u> of <u>1</u>			



Project:					Project	Number:	Client:	Borehole ID: BH 109				
	Sewa	age In	npact St	tudy		21-158B	David Seaman					
Project Lo	ocation:						Drilling Contractor:	Drilling Method:				
		Arms	trong Su	ubdivisio	on, Mansf	ield, Ontario	Orbit Garant	Hollow Stem Augers				
Logged B	у:				Date:		Stickup (m):	Well Depth (mbgs):				
		Α. Τ	urner		1	19-May-2023	Stick Up Casing	9.1				
					Ground	Elevation (masl):	Water Level (mbgs):	Well Diameter (mm)				
UTM:	(NAD 83	3, Zon	ie 17T)			310.45	4.55	50.8				
Easting:	577162				Well Sci	reen Type:	Riser Pipe Type:	Well Screen Length (m):				
Northing:	4891306	6			10-Slot F	-Slot PVC, Schedule 40 Schedule 40 PVC 1.5						
Depth Below ound Surface (mbgs)	ound Surface (mbgs) ample Type / No. N - Value Sample ecovery (%) Lithology			Lithology	onitoring Well Construction	Soil Group Name: grain size, color, density/consistency, moisture, stratification, other description Rock Description: modifier, color, hardness/degree of concentration, bedding and joint						
٦ ٩	S		R		ž	characteristics, solutions,	, void conditions.					
	_					Auger probe down to	o 3.0m from surface before	starting to sample. Monitoring				
						well is nested next to	PML BH10. Lithology for t	op 2.9 metres is utilized from				
						PML BH 10 Log;						
						TOPSOIL: Brown, silty sand, moist (0.0 - 0.1m)						
2						SAND: Loose to cor	mpact, brown, sand, trace to some silt, trace to some					
						gravel, moist (0.1 - 2.9m)						
	SS 1	7	75			SAND: Loose to cor	mpact, coarse to fine sand, trace to some silt, trace					
	SS 2	15	83			gravel, stratified, mo	ist to very moist (2.9 - 4.6m	)				
4												
	SS 3	13	92	• • • • • • • •		SILTY SAND: Comp	pact, brown, silty fine sand,	wet (4.6 - 6.9m)				
	SS 4	14	92									
	-					First ground water strike at 5.5m						
6	SS 5	15	92			Ŭ						
	SS 6	13	92									
	SS 7	14	83			SANDY SILT: Compact, brown, sandy silt with silt layers, trace clay						
8	SS 8	12	92			wet. (6.9 - 9.1m)	, ,					
	55.9	29	83			TILL: Compact, brow	act, brown to grey, clayey silt, trace sand, trace gravel,					
		20				cobbles and boulder	s, about plastic limit (verv m	noist to wet). (9.1 - 9.8m)				
10	-											
	Berehele terminated at 0.0 mbras											
	-				Lipon completion of augering:							
Borehole flushed out with drilling mud and water before monitoring well												
12	-				no final water level reading obtained							
No cave												
Ground Water Level Upon Well Completion (mbgs)												
Seal (grout / hole plug) Silica Sand Pack Well Screen Page 1 of 1												



Project:					Project	Number:	Client:		Borehole ID:	BH 110		
	Sew	age In	npact S	tudy		21-158B	Dav	/id Seaman				
Project L	ocation:						Drilling (	Contractor:	Drilling Method:			
		Arms	trong S	ubdivisio	on, Manst	field, Ontario	Or	bit Garant	Hollow Stem Augers			
Logged I	Зу:				Date:		Stickup (	(m):	Well Depth (mbgs):			
		Α. Τ	urner			24-May-2023						
	() ( ) = =	. –			Ground	Elevation (masl):	Water Le	evel (mbgs):	Well Diameter (mm)			
UTM:	(NAD 8	3, Zor	ne 17T)			310.95		-				
Easting: Northing	577015 : 489140	8	•		Well Sc	ell Screen Type: Riser Pipe Type: Well Screen Leng						
Depth Below Ground Surface (mbgs) Sample Type / No. No. N - Value Sample Recovery (%) Lithology			Monitoring Well Construction	Lithology Description Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.								
				*****		Auger probe down to 3.0m from surface before starting to sample. Soil						
						cuttings analyzed du	Iring drilling the upper 3.0m region included;					
						TOPSOIL: Dark bro	wn, sand, some silt, trace gravel, moist					
<u> </u>						<u>SAND:</u> Brown, grave	elly coarse sand, moist					
Z _							-					
	_											
	SS 1	18	75			SAND: Compact, br	rown to light brown, fine sand, trace to some silt, trace to					
4 —	SS 2	15	83			some gravel, stratifie	əd, moist (3.0 - 11.3m)					
_	_											
	SS 3	20	92									
-	SS 4	21	83									
6 —		10										
-	555	16	83									
	- 330	0	92									
-		14	92									
8 —	- 55 / - 55 8	18	92									
_												
	SS 9	26	92									
	SS 10	20	92									
10												
_	SS 11	12	92			Borehole terminated	l at 11.3 m	nbgs				
						Upon completion of	augering;					
					No water							
	4					No cave						
	▼       Ground water Level Upon Well Completion (mbgs)         Seal (grout / hole plug)       Silica Sand Pack         Well Screen       Page 1 of 1											



Project:						Project	Number:	Client:		Borehole ID:	BH 111		
Sewage Impact Study							21-158B	Dav	id Seaman				
Projec	ct Lo	cation:						Drilling C	ontractor:	Drilling Method:			
			Arms	trong S	ubdivisio	on, Manst	field, Ontario	Orl	bit Garant	Hollow Stem Augers			
Logged By:						Date:		Stickup (	m):	Well Depth (mbgs):			
A. Turner						2	24-May-2023						
						Ground	Elevation (masl):	Water Le	vel (mbgs):	Well Diameter (mm)			
UTM:		(NAD 83	3, Zon	ie 17T)			309.31						
Easting: 577083						Well Sc	reen Type:	Riser Pip	е Туре:	Well Screen Length (m):			
North	ing:	4891432	2										
Depth Below Ground Surface	Depth Below Ground Surface (mbgs) Sample Type / No. N - Value Sample Recovery (%) Lithology					Monitoring Well Construction	Lithology Description <u>Soil Group Name:</u> grain size,color, density/consistency, moisture, stratification, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.						
		SS 1	3	75			TOPSOIL: Brown to dark brown, sand, trace to some silt, trace gravel,						
		SS 2	3	66			trace organics, mois	t (0.0 - 0.6	m)				
							SAND: Very loose, I	brown to dark brown, sand, trace to some silt, trace					
0		SS 3	3	75			gravel, moist (0.6 - 1	1.5m)					
2 -		SS 4	19	83			SILTY SAND: Very	loose, brown, silty sand, trace gravel, moist (1.5 - 2.3m)					
	CLAYEY SILT: Compact, I								oact, brown, clayey silt, trace gravel, about plastic limit,				
		SS 5	33	83			moist, (2.3 - 3.0m)						
1		SS 6	30	83			SILTY SAND: Dens	e, brown, silty sand with silt layers, trace gravel, moist					
-							(3.0 - 4.6m)						
		SS 7	53	25			SAND: Dense to ver	ry dense, light brown, fine sand, trace silt, some gravel to					
		SS 8	29	75			gravelly, stratified, moist (4.6 - 11.3m)						
6 -													
Ŭ		SS 9	31	83									
8 -		SS 10	34	83			Silt layer at 7.6m						
Ŭ													
		SS 11	28	83									
10 -													
10													
		SS 12	29	92			Borehole terminated at 11.3 mbgs						
			Upon completion of augering;										
12							No water	o water					
No cave													
	Seal (grout / hole plug)												



#### **APPENDIX E**

Ground Water Hydrographs





























