

July 12, 2019

Mr. Steve Wever, MCIP, RPP
GSP Group Inc.
72 Victoria Street South
Suite 201
Kitchener, ON
N2G 4Y9

**Wilson
Associates**

Consulting Hydrogeologists

Dear Mr. Wever:

Re: Hydrogeological Assessment (Nitrate Impact)
Proposed Residential Developments
Pletch and Weber Properties, Community of Belgrave
Parts of Lots 1, 2 and 3, Concession 5, Municipality of Morris-Turnberry (Morris)

It is proposed to expand residential development of the Community of Belgrave to the east and southeast onto portions of the Pletch Property and to the southwest onto a portion of the Weber Property. It is understood that it is proposed to develop approximately 9.4ha of the ± 32 ha Pletch Property, and approximately 8.2ha of the ± 21 ha Weber Property, the development areas generally abutting the existing development of Belgrave. Attached Figure 1 shows the general distribution of the proposed development lands.

As requested, a hydrogeological assessment was conducted in support of the proposed development areas. The assessment follows the guidance of Ministry of the Environment, Conservation and Parks (MECP) Procedure D-5-4 "Technical Guideline For Individual On-Site Sewage Systems : Water Quality Impact Risk Assessment", commonly known as the "nitrate guideline". It is understood that the proposed development areas will be serviced with water from the existing Belgrave municipal water supply, and sewage disposal occurring through individual subsurface sewage disposal systems.

Prior to undertaking an assessment of sewage system impact, soil and shallow groundwater conditions must first be identified, and a test pit program was undertaken throughout the development areas on May 13 and May 17, 2019. This report provides a summary of the hydrogeological setting of the site based on readily-available data, a summary of identified shallow subsurface conditions, and an assessment of the development potential of the site based on the sewage impact criteria of MECP Procedure D-5-4.

For the purposes of this assessment, the development areas will be referred to as the south parcel, which includes the southern ± 5.6 ha of the Pletch Property development area and the ± 8.2 ha Weber Property development area, and the north parcel, which includes the northern ± 3.7 ha of the Pletch property development area.

SITE SETTING, GEOLOGY AND HYDROGEOLOGY

The subject lands, which include the north and south development parcels, are located adjacent to the east, southeast and south west of the existing residential development of Belgrave. The south parcel is largely cleared, except for the forested areas along the southeast limits, and apart from a single residence, is mainly in agricultural use. The north parcel is also mainly cleared, with forest in the southwest corner and along the course of the Belgrave Creek tributary, the remainder in agricultural use or fallow. Lands immediately east of the south parcel are forested wetland and valley associated with the Belgrave Creek tributary. Lands to the south and further to the east of both parcels are in agricultural use. A cemetery abuts the southern boundary of the north parcel.

The south parcel exhibits a rolling relief, with lands sloping (overall slopes of 7m to 10m) to the southwest, south and southeast from the higher land to the north on which much of the existing Community is situated. The north parcel also exhibits a hilly relief, with overall slopes of 8m to 10m to the east and west towards the course of the Belgrave Creek tributary.

There are no surface water bodies on the south parcel. As above, the northwards-flowing Belgrave Creek tributary and associated wetland, is situated immediately east of the south parcel. The Belgrave Creek tributary flows northwards through the central portion of the north parcel.

The subject lands are located within the Horseshoe Moraines physiographic region of southern Ontario, an area locally consisting of a series of morainic ridges. According to the Ontario Geological Survey Map P.5957 "Quaternary Geology of the Wingham-Lucknow Area", the upper soils throughout the south parcel consist of Elma Till, a stony, sandy silt to silt glacial till. The upper soils throughout the north parcel are reported to consist of glaciofluvial outwash sand with minor gravel, and Modern alluvium of silt, sand and gravel along the Belgrave Creek tributary valley.

According to local water well records, the overburden in the close vicinity of the site (i.e. within about 500m) ranges from about 10m deep beneath the lowlands associated with Belgrave Creek and its tributaries to the immediate east of the south parcel, northwards through the north parcel, as well as to the west and northwest of the existing Community of Belgrave, up to about 20m deep below the upland area to the immediate north and northwest of the majority of the development lands. The majority of the overburden is reported by most water well records as clay with stones, hardpan, or silt with stones, generally consistent with Elma Till. It is noted that some older well records contain references to intermittent sand and gravel deposits at various depths, however these deposits are not typically reported in newer well records, suggesting interpretive and training differences between drilling contractors using older vs. newer drilling techniques in stony glacial till drilling conditions. For reference, the records for all reported water wells within 500m of the subjects lands, most of which now likely to be out of service, are attached.

The bedrock beneath the site consists of limestone, dolostone and shale of the Detroit River Group.

Due to the predominantly fine-grained overburden, the bedrock aquifer represents the only secure, viable regional source of potable groundwater. The Belgrave municipal water system is supplied with water from two drilled wells completed in the bedrock aquifer, these wells located on McCrea Street and Jane Street within the existing Community of Belgrave. The McCrea Street well is located approximately 175m north of the south parcel and approximately 275m west of the north parcel. The Jane Street well is located approximately 360m north of the south parcel and approximately 250m west of the north parcel. Copies of the water well records for McCrea Street Well (Well Record No. 3003252) and the Jane Street Well (Well Record No. 3004377) are attached for reference.

According to the Source Water Protection information provided by the Huron County Mapping Portal, there are no significant groundwater recharge areas or highly vulnerable aquifer areas mapped on the subject lands. However, significant groundwater recharge areas and highly vulnerable aquifer areas are mapped in lowland areas beginning approximately 75m to the west of the western limits of the south parcel, and approximately 40m north of the northern limits of the north parcel. The well head protection areas of the McCrea Street Well and the Jane Street Well extend generally southeastwards from the two wells, and extend mainly across the Pletch Property lands, and only a small portion of the northeasternmost corner of the Weber property lands. The distribution of the well head protection areas are illustrated on the attached diagram.

According to the data provided by the 2017 and 2018 Annual Reports for the Belgrave Drinking Water System (attached for reference), the nitrate content of the water from the McCrea Street Well and the Jane Street Well contains a very low level of nitrate (0.02mg/L to 0.03mg/L), well below the Ontario Drinking Water Quality Standard maximum acceptable level of 10mg/L. Nitrate is considered the "critical contaminant" in the context of the evaluation of sewage system impacts to groundwater, and a nitrate content in the range of 0.02mg/L to 0.03mg/L indicates that the groundwater of the bedrock aquifer is secure from sewage system and local agricultural nutrient impacts.

SUBSURFACE ASSESSMENT

Test Pits:

Thirteen test pits were excavated within the accessible portions of the south and north parcels using backhoe equipment on May 13 and May 17, 2019. The test pits were completed to depths of 1.52m to 1.98m below current grade, the soil profile logged in each pit, and representative soil samples were collected from each identified soil horizon for subsequent classification, analysis and storage. The attached diagram shows the approximate test pit locations. The following table provides a summary of the analytical results for representative soil samples.

Table 1 : Summary of Soil Analytical Data

Test Pit/ Sample	Depth (m)	Grain-Size Distribution				"k" (cm/sec)	T-Time (min/cm)
		Clay %	Silt %	Sand %	Gravel %		
TP2 S1	0.6	8	37	28	27	5×10^{-5}	30
TP3 S2	1.5	12	42	33	13	1×10^{-5}	35
TP5 S3	0.4	12	37	35	16	2×10^{-5}	35
TP7 S4	0.5	26	46	24	4	1×10^{-6}	45
TP7 S5	1.5	13	69	18	0	6×10^{-6}	40
TP8 S6	1.0	5	37	37	21	6×10^{-5}	30
TP9 S7	0.6	23	60	17	0	1×10^{-5}	45
TP10 S8	0.5	12	31	35	22	3×10^{-5}	35
TP12 S9	1.1	14	36	34	16	3×10^{-5}	35
TP13 S10	0.4	20	67	13	0	4×10^{-6}	45

Note: The above coefficients of permeability ("k" values) and T-times (percolation rates) are estimates based on field observation, laboratory grain-size analysis, experience with similar soils and guidelines of the Ontario Building Code.

In summary, the soil profile at the thirteen test pit sites was generally consistent with mapped soil conditions, mostly consisting of a stony, silt to sandy silt glacial till, which exhibits a percolation rate in the range of 30 to 40 minutes per centimetre. Isolated glaciolacustrine deposits of silt to clayey silt was encountered in some of the lowland test pits in the north parcel, and are interpreted to exhibit a percolation rate in the range of 45min/cm. The granular soils reported by geological mapping in the north parcel area were not encountered in the test pits.

Complete test pit logs and grain-size analysis curves for the above samples are attached.

Shallow Groundwater Conditions:

Emergent groundwater or evidence of elevated groundwater conditions (i.e. soil discolouration and/or mottling) was observed in most of the test pits, apart from two of the upland test pits, as follows:

- Test Pit 1: Emergent groundwater and evidence of high watertable below 1.1m
- Test Pit 2: Emergent groundwater and evidence of high watertable below 1.1m
- Test Pit 3: Emergent groundwater and evidence of high watertable below 1.2m
- Test Pit 4: Test Pit dry and no evidence of high watertable observed
- Test Pit 5: Test Pit dry and no evidence of high watertable observed
- Test Pit 6: Emergent groundwater and evidence of high watertable below 0.8m
- Test Pit 7: Emergent groundwater and evidence of high watertable below 0.7m
- Test Pit 8: Emergent groundwater and evidence of high watertable below 1.7m
- Test Pit 9: Emergent groundwater and evidence of high watertable below 1.4m
- Test Pit 10: Emergent groundwater and evidence of high watertable below 1.1m
- Test Pit 11: Emergent groundwater and evidence of high watertable below 0.8m
- Test Pit 12: Emergent groundwater and evidence of high watertable below 0.8m
- Test Pit 13: Emergent groundwater and evidence of high watertable below 0.9m

Septic System Design:

Under the Ontario Building Code (OBC), for a Class 4 sewage disposal system to operate effectively, the leaching bed must be located in soil with a percolation rate (T-time) of between 1 and 50 minutes per centimetre and the base of the absorption trenches must be situated at least 0.9m above the high ground water table, bedrock or a soil with a permeability of greater than 50 minutes per centimetre. To achieve a normal, in-ground installation, the high groundwater table, rock or soil with a permeability of greater than 50 min/cm must be situated at least 1.5 to 1.8 metres below grade.

Due to indications of seasonally elevated watertable conditions at most test pit locations, the bases of tile trenches on most proposed lots (except those on the highest land) will be required to range between 0.2m below grade to 0.1m above grade. For preliminary design purposes, a native soil T-time of 35min/cm should be assumed at most locations (or a loading rate of 8L/m²/day), which will require a sewage system contact area of 200m² for a 3-bedroom dwelling and 250m² for a 4-bedroom dwelling.

Site-specific test pits are recommended to confirm native soil conditions for each tile bed area at the sewage system permit stage of each lot.

SEWAGE SYSTEM IMPACT

MECP Procedure D-5-4 (entitled "Technical Guideline For Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment", also known as the "nitrate guideline") details the methodology of risk assessment for sewage disposal systems with a design capacity of less than 10,000L/day. Residential sewage systems will have a design flow of less than 10,000L/day.

Under Step 1 of the guideline, for developments where the average lot size for each private residence within a development is one hectare or larger, and no lot is smaller than 0.8ha, the risk that the limits imposed by the guideline may be exceeded is considered acceptable with no additional hydrogeologic assessment. As the proposed lots are understood to likely be mostly less than 1ha in size, Step 1 of the guideline does not apply.

Step 2 of the guideline assesses the risk of development to groundwater resources. Developments will normally be considered as low risk where it can be demonstrated that sewage effluent is hydrogeologically isolated from existing or potential supply aquifers. As described above, the overburden in the vicinity of upland portions of the site is locally upwards of 20m deep and consists mainly of fine-grained sediments. Although Procedure D-5-4 does not provide guidance as to what geological settings are considered "hydrogeologically isolated", Section 22.5.14 of the 2008 MECP "Design Guidelines for Sewage Works" defines a low risk environment as at least 10m thickness of a soil with a hydraulic conductivity of 10^{-5} cm/sec or less, for a distance of 100m from the sewage system. This is consistent with most other industry assumptions for consideration of hydrogeological isolation. The test pit program and local well records indicate that there are more than 10m of soils with a hydraulic conductivity of 10^{-5} cm/sec or lower, situated above the bedrock aquifer throughout most of the site, except likely in the lowlands along the course of the Belgrave Creek tributary immediately east and the lowlands west of London Road (conservatively estimated at below elevation 320m above sea level (masl)). As such, under Section 22.5.14 of the 2008 MECP guideline, and common industry assumptions, the fine-grained overburden in the uplands portions of the site more than 100m upgradient from the 320masl contour will provide a high degree of security to the regional bedrock aquifer. In this geologic setting, the risk of adverse sewage impact to groundwater resources in the bedrock is considered very low. Fine-grained soil adsorption processes will ensure that sewage effluent will not impact the bedrock aquifer.

Therefore the risk of developing residential lots using individual subsurface sewage disposal systems is considered acceptable under Step 2 of the MECP guideline on the portions of the site more than 100m upgradient from the 320masl contour, which includes most of the south parcel except the approximate area generally east of the existing Pletch house driveway and the extreme southwest corner of the south parcel (i.e. within about 50m of the southwest corner of the south parcel). The number of lots in the south parcel area (except as above) will not be limited by the "nitrate guideline", and must be sized according to actual sewage system envelopes, setbacks under the OBC, house envelopes, planning considerations, etc....

It is noted that this "hydrogeologically isolated" area is also situated mostly outside of the well head protection areas for the McCrea Street Well and the Jane Street Well.

For the remainder of the site (i.e. all lands of the north parcel, the south parcel lands approximately east of the existing Pletch house driveway, and the south parcel lands within about 50m of the extreme southwest corner of the south parcel), Step 3 of the MECP guidelines will apply due to the thinning overburden, proximity to lowland surface waters and the location of much of this area within the well head protection areas for the McCrea Street Well and the Jane Street Well.

To calculate the impact of development under the MECP guideline, a mass-balance calculation is used to assess the development impact potential of the proposed lots. Under the current MECP guideline only infiltrating precipitation and the volume of water contained in the sewage may be considered as dilutants for the nitrate contained in septic effluent. To establish the infiltration rate, the percentage of the local water surplus which may infiltrate is calculated using the Rational Method approach. According to the soils evaluation, the upper soil profile consists of medium-textured soils (infiltration factor 20%), the overall relief is rolling (infiltration factor 20%) and the cover will be cleared (infiltration factor 10%), all resulting in a conservative infiltration factor of 50%. The updated annual water surplus for the Lower Maitland Valley area (per the Tier 1 Water Budget summarized in Table 3.8 the 2014 Maitland Valley Source Protection Area Updated Assessment Report) is about 688mm/year (1164mm annual precipitation minus 476mm annual evapotranspiration). As such, the annual infiltration rate will be 344mm (50% of 688mm).

A background nitrate content of 1mg/L is assumed for this analysis, this based on the low nitrate content of the water from the municipal wells and the undeveloped character of the subject lands.

The following mass-balance formula is used to calculate the minimum average area for all lands of the north parcel, the south parcel lands approximately east of the existing Pletch house driveway, and the south parcel lands within about 50m of the extreme southwest corner of the south parcel:

$$Q_T C_T = Q_S C_S + Q_P C_P$$

Where:

Q_T = Sum of Q_S and Q_P

C_T = Maximum nitrate concentration (10mg/L)

Q_S = Volume of sewage (1,000 L/day/lot (per MECP guideline))

C_S = Nitrate content of sewage (40 mg/L)

Q_P = Infiltration (10,000L/ha/mm x 344mm = 3.44×10^6 L/year/ha)

C_P = Nitrate content of shallow groundwater (1mg/L assumed)

Therefore:

$$(Q_S + 3.44 \times 10^6 \text{ L/year/ha}) \times 10 \text{ mg/L} = (Q_S \times 40 \text{ mg/L}) + (3.44 \times 10^6 \text{ L/year/ha} \times 1 \text{ mg/L})$$

$$Q_S = 1.032 \times 10^6 \text{ L/yr/ha}$$

Using the Tier 1 water budget values from the 2014 Maitland Valley Source Protection Area Updated Assessment Report, under the MECP guidelines and which assume a sewage loading of 1,000L/day/lot (for the purposes of impact assessment), a development density of approximately 2.83 lots per hectare is supportable on conventional individual sewage disposal systems on all lands of the north parcel, the south parcel lands approximately east of the existing Pletch house driveway, and the south parcel lands within about 50m of the extreme southwest corner of the south parcel.

The above assessment approach, conducted in accordance with MECP Guidelines, does not consider sewage dilution by groundwater flow-through nor does it consider denitrification processes in the subsurface. As such, the assessment will over-estimate the actual degree of groundwater impact of the proposed lots, this considered a safety factor.

CONCLUSIONS AND RECOMMENDATIONS

1. Under the 1996 MECP "Technical Guideline For Individual On-Site Sewage Systems", for the portion of the south parcel which does not include lands approximately east of the existing Pletch house driveway, nor lands within about 50m of the extreme southwest corner of the south parcel, under the hydrogeological isolation considerations of the guideline, the number of lots will not be limited by the "nitrate guideline" in this area, and must be sized according to actual sewage system envelopes, setbacks under the OBC, house envelopes, planning considerations, etc... This "hydrogeologically isolated" area is also situated mostly outside of the well head protection areas for the McCrea Street Well and the Jane Street Well.
2. For the remainder of the site (i.e. all lands of the north parcel, the south parcel lands approximately east of the existing Pletch house driveway, and the south parcel lands within about 50m of the extreme southwest corner of the south parcel), Step 3 of the MECP guidelines will apply due to the thinning overburden, proximity to lowland surface waters and the location of much of this area within the well head protection areas for the McCrea Street Well and the Jane Street Well. A development density of approximately 2.83 lots per hectare are supportable on conventional individual sewage disposal systems for these areas, using water budget information provided by the watershed-specific Tier 1 water budget in the 2014 Maitland Valley Source Protection Area Updated Assessment Report.
3. Due to indications of seasonally elevated watertable conditions at most test pit locations, the bases of tile trenches on most proposed lots (except those on the highest land) will be required to range between 0.2m below grade to 0.1m above grade. For preliminary design purposes, a native soil T-time of 35min/cm should be assumed at most locations (or a loading rate of 8L/m²/day), which will require a sewage system contact area of 200m² for a 3-bedroom dwelling and 250m² for a 4-bedroom dwelling.
4. Site-specific test pits are recommended to confirm native soil conditions for each tile bed area at the sewage system permit stage of each lot.

Should there be any questions regarding the results of this assessment, please do not hesitate to contact this office.

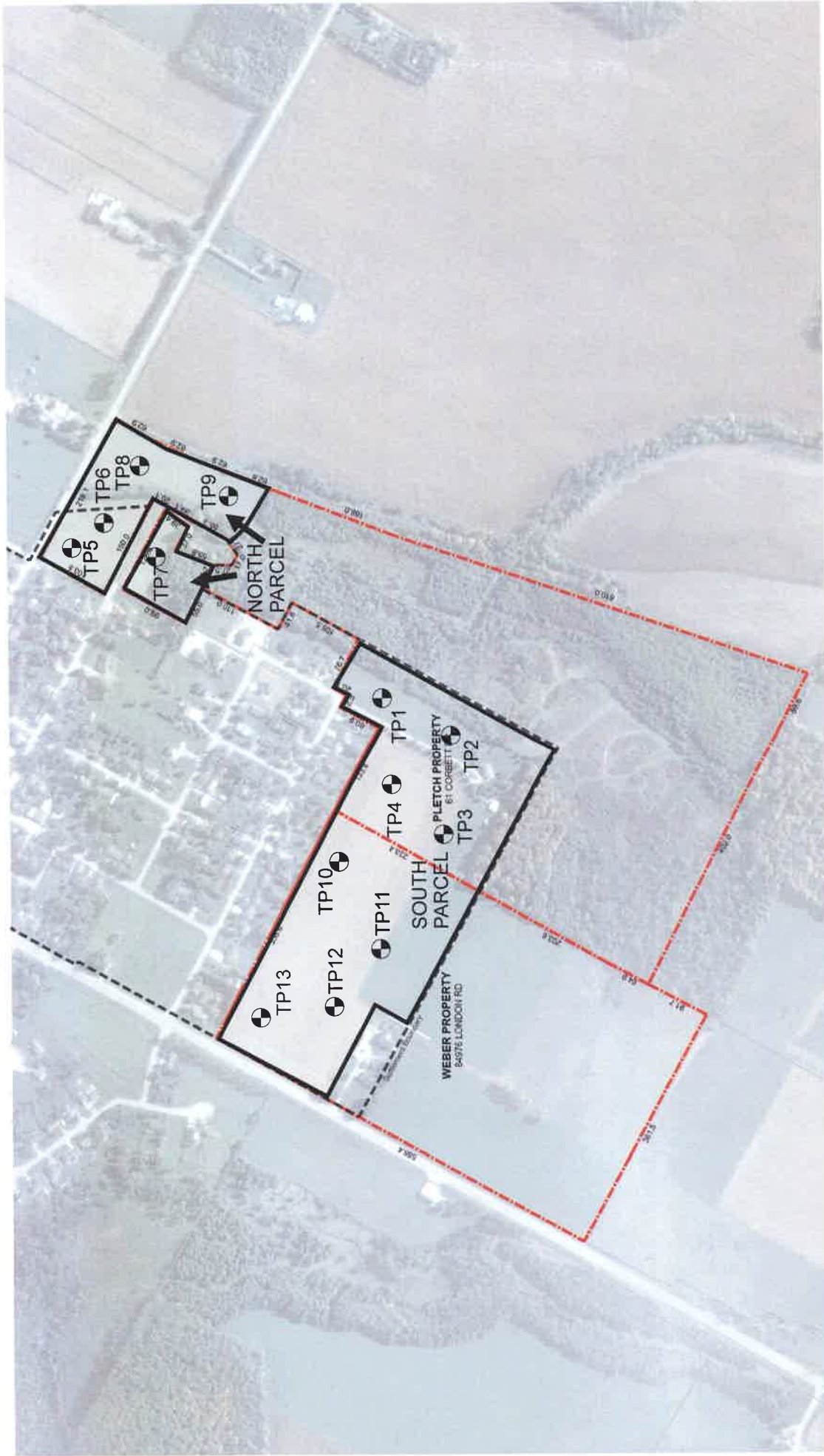
Yours sincerely,

IAN D. WILSON ASSOCIATES LIMITED



Geoffrey Rether, B.Sc., P. Geo.





BASE MAP
61 CORBETT DRIVE, BELGRAVE
MUNICIPALITY OF MORRIS-TURNBERRY

LOCATION OF STUDY AREAS
AND APPROXIMATE TEST PIT LOCATIONS
PLETCH AND WEBER PROPERTIES
COMMUNITY OF BELGRAVE

FIGURE 1

0 25 50 100 200
 Meters

Scale: 1:5000 | April 9, 2019 | Project No.: 18032 | Drawn By: JRN

NOTE: This extract has been prepared for general illustrative purposes only. Existing conditions, requirements and technical specifications are not shown and shall be addressed.



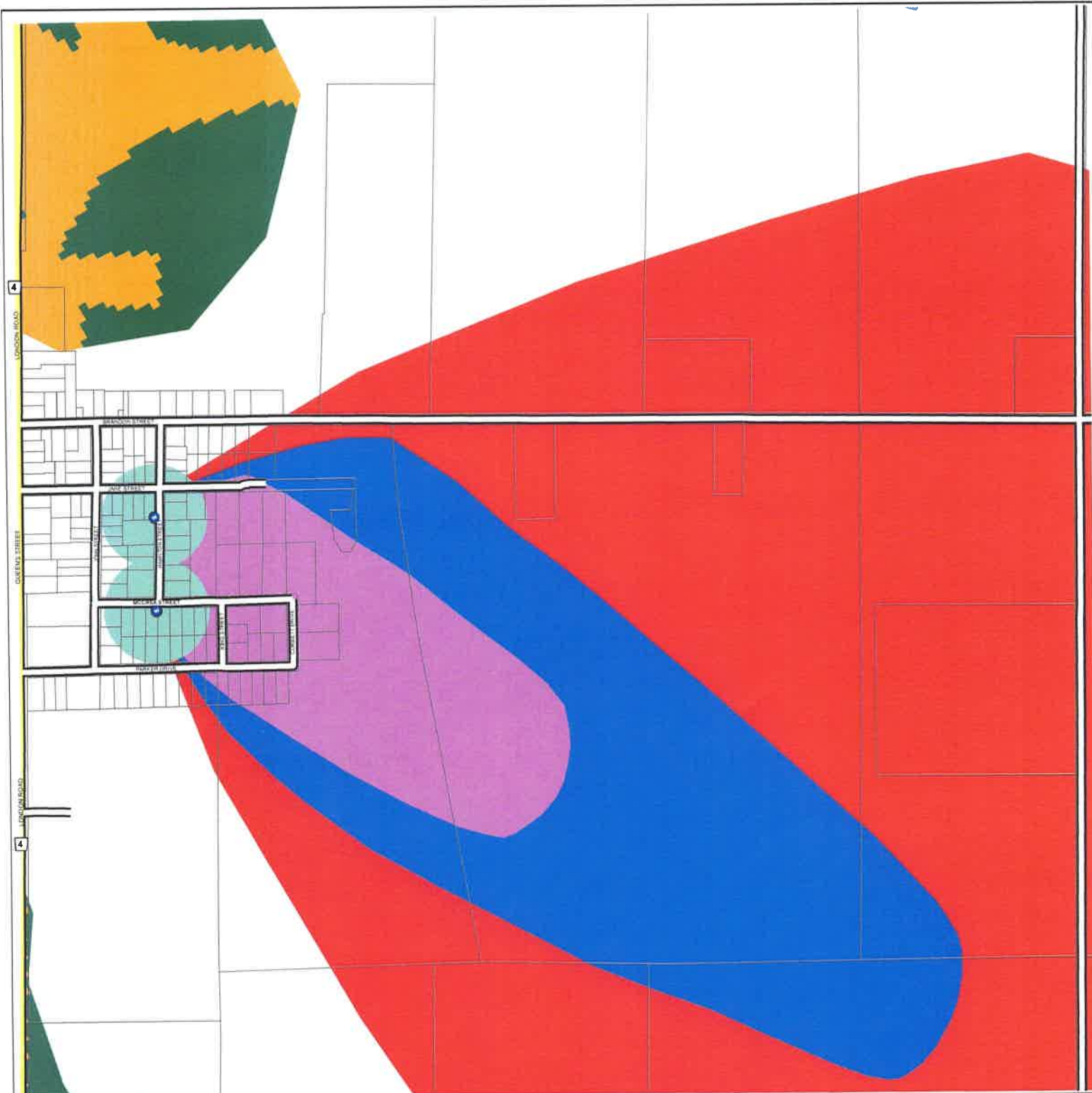
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MUNICIPALITY OF MORRIS-TURNBERRY OFFICIAL PLAN

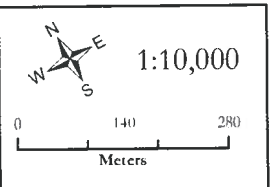
Amended by:
OPA # 6

APPENDIX "6B"

SOURCE WATER PROTECTION WELLHEAD PROTECTION AREAS BELGRAVE



Produced by the County of Huron GIS Services with data supplied under License by Members of the Ontario Geospatial Data Exchange, MVG, A, ABCA, SVCA, UTRCA and MNR&F. Orthoimagery flown in 2015.
This map is illustrative only. Do not rely on it as a precise indicator of routes, feature locations, nor as a guide to navigation.
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2/7/2018



- | | |
|----------------|--|
| COUNTY ROAD | VULNERABLE AREAS |
| MUNICIPAL ROAD | WELLHEAD PROTECTION AREAS |
| PARCEL FABRIC | Zone A - 100m zone |
| WATERBODY | Zone B - 2 year time of travel |
| WELL LOCATIONS | Zone C - 5 year time of travel |
| | Zone D - 25 year time of travel |
| | SIGNIFICANT GROUNDWATER RECHARGE AREA |
| | SGRA |
| | HIGHLY VULNERABLE AQUIFER |
| | HVA |

TEST PIT LOGS

Completed May 13, 2019

Test Pit 1

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.28	dark brown TOPSOIL
0.28 - 0.58	red-brown to brown, lightly compact, dry SILT with some sand and gravel and traces of clay (estimated percolation rate 30 min/cm)
0.58 - 1.78	brown, compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)

- Emergent groundwater and soil mottling below 1.1m.
-

Test Pit 2

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.20	dark brown TOPSOIL
0.20 - 0.78	light brown, lightly compact, dry SILT with some sand and gravel and traces of clay (estimated percolation rate 30 min/cm)
0.78 - 1.73	light brown, compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)

- Sample 1 - 0.6m
 - Clay = 8%
 - Silt = 37%
 - Sand = 28%
 - Gravel = 27%
 - Emergent groundwater and soil mottling below 1.1m.
-

Test Pit 3

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.25	dark brown TOPSOIL
0.25 - 0.81	light brown, lightly compact, dry sandy SILT with some gravel and traces of clay (estimated percolation rate 30 min/cm)
0.81 - 1.78	light brown, compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)

- Sample 2 - 1.5m
 - Clay = 12%
 - Silt = 42%
 - Sand = 33%
 - Gravel = 13%
- Emergent groundwater and soil mottling below 1.2m.

TEST PIT LOGS**Completed May 13, 2019****Test Pit 4**

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.25	dark brown TOPSOIL
0.25 - 0.81	light brown, lightly compact, dry sandy SILT with some gravel and traces of clay (estimated percolation rate 30 min/cm)
0.81 - 1.83	light brown, compact, dry sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)

- Test Pit dry and no evidence of high watertable observed.
-

Test Pit 5

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.25	dark brown TOPSOIL
0.25 - 0.56	red-brown, lightly compact, dry sandy SILT with some gravel and clay (estimated percolation rate 35 min/cm)
0.56 - 1.83	light grey, compact, dry sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)

- Sample 3 - 0.4m
 - Clay = 12%
 - Silt = 37%
 - Sand = 35%
 - Gravel = 16%
 - Test Pit dry and no evidence of high watertable observed.
-

Test Pit 6

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.25	dark brown TOPSOIL
0.25 - 0.71	red-brown to brown, compact, dry clayey SILT with some sand and traces of gravel (estimated percolation rate 45 min/cm)
0.71 - 1.37	brown, lightly compact, dry to wet sandy SILT till with some clay and gravel (estimated percolation rate 30 min/cm)
1.37 - 1.83	light brown, compact, wet SILT with some sand and clay (estimated percolation rate 40 min/cm)

- Emergent groundwater and soil mottling below 0.8m.

TEST PIT LOGS**Completed May 13, 2019****Test Pit 7**

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.33	dark brown TOPSOIL
0.33 - 0.76	red-brown to brown, compact, dry clayey SILT with some sand and traces of gravel (estimated percolation rate 45 min/cm)
0.76 - 1.25	brown, lightly compact, dry to wet sandy SILT till with some clay and gravel (estimated percolation rate 30 min/cm)
1.25 - 1.93	grey, compact, wet SILT with some sand and clay (estimated percolation rate 40 min/cm)
	<ul style="list-style-type: none">• Sample 4 - 0.5m<ul style="list-style-type: none">- Clay = 26%- Silt = 46%- Sand = 24%- Gravel = 4%• Sample 5 - 1.5m<ul style="list-style-type: none">- Clay = 13%- Silt = 69%- Sand = 18%- Gravel = 0%• Emergent groundwater and soil mottling below 0.7m.

Test Pit 8

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.33	dark brown TOPSOIL
0.33 - 0.81	red-brown, lightly compact, dry SILT with some sand and gravel and traces of clay (estimated percolation rate 30 min/cm)
0.81 - 1.91	light brown, compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 30 min/cm)
	<ul style="list-style-type: none">• Sample 6 - 1.0m<ul style="list-style-type: none">- Clay = 5%- Silt = 37%- Sand = 37%- Gravel = 21%• Emergent groundwater and soil mottling below 1.7m.

TEST PIT LOGS

Completed May 13, 2019

Test Pit 9

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.43	dark brown TOPSOIL
0.43 - 1.42	light grey, compact, dry to wet SILT with some sand and clay (estimated percolation rate 45 min/cm)
1.42	boulder refusal

- Sample 7 - 0.6m
 - Clay = 23%
 - Silt = 60%
 - Sand = 17%
 - Gravel = 0%
- Emergent groundwater and soil mottling below 1.4m.

TEST PIT LOGS**Completed May 17, 2019****Test Pit 10**

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.25	dark brown TOPSOIL
0.25 - 0.64	red-brown, lightly compact, dry silty SAND with some gravel and clay (estimated percolation rate 35 min/cm)
0.64 - 1.52	light grey-brown, very compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)
	<ul style="list-style-type: none">• Sample 8 - 0.5m<ul style="list-style-type: none">- Clay = 12%- Silt = 31%- Sand = 35%- Gravel = 22%• Emergent groundwater and soil mottling below 1.1m.

Test Pit 11

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.30	dark brown TOPSOIL
0.30 - 0.71	red-brown, lightly compact, dry silty SAND with some gravel and clay (estimated percolation rate 35 min/cm)
0.71 - 1.52	light grey-brown, very compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)
	<ul style="list-style-type: none">• Emergent groundwater and soil mottling below 0.8m.

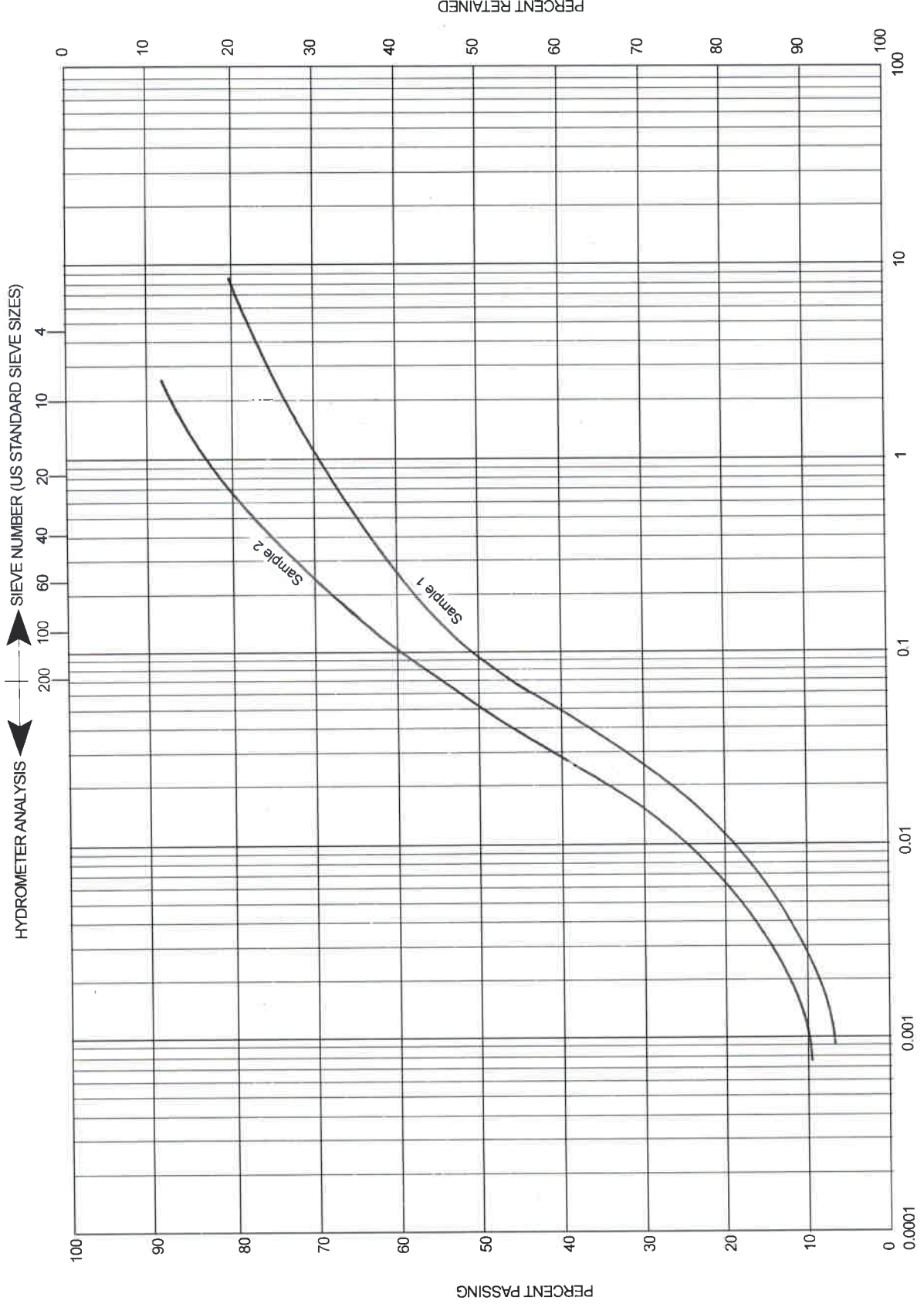
Test Pit 12

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.36	dark brown TOPSOIL
0.36 - 0.74	red-brown, lightly compact, dry silty SAND with some gravel and clay (estimated percolation rate 35 min/cm)
0.74 - 1.52	light grey-brown, very compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)
	<ul style="list-style-type: none">• Sample 9 - 1.1m<ul style="list-style-type: none">- Clay = 14%- Silt = 36%- Sand = 34%- Gravel = 16%• Emergent groundwater and soil mottling below 0.8m.

TEST PIT LOGS**Completed May 17, 2019****Test Pit 13**

<u>Depth (m)</u>	<u>Materials</u>
0 - 0.33	dark brown TOPSOIL
0.33 - 0.48	brown, compact, dry SILT with some clay and sand (estimated percolation rate 45 min/cm)
0.48 - 1.52	light grey-brown, very compact, dry to wet sandy SILT till with some clay and gravel, stony (estimated percolation rate 35 min/cm)
	<ul style="list-style-type: none">• Sample 10 - 0.4m<ul style="list-style-type: none">- Clay = 20%- Silt = 67%- Sand = 13%- Gravel = 0%• Emergent groundwater and soil mottling below 0.9m.

GRAIN SIZE DISTRIBUTION CHART
PROJECT / SAMPLE Belgrave - Pletch and Weber Properties - Sample 1 and Sample 2

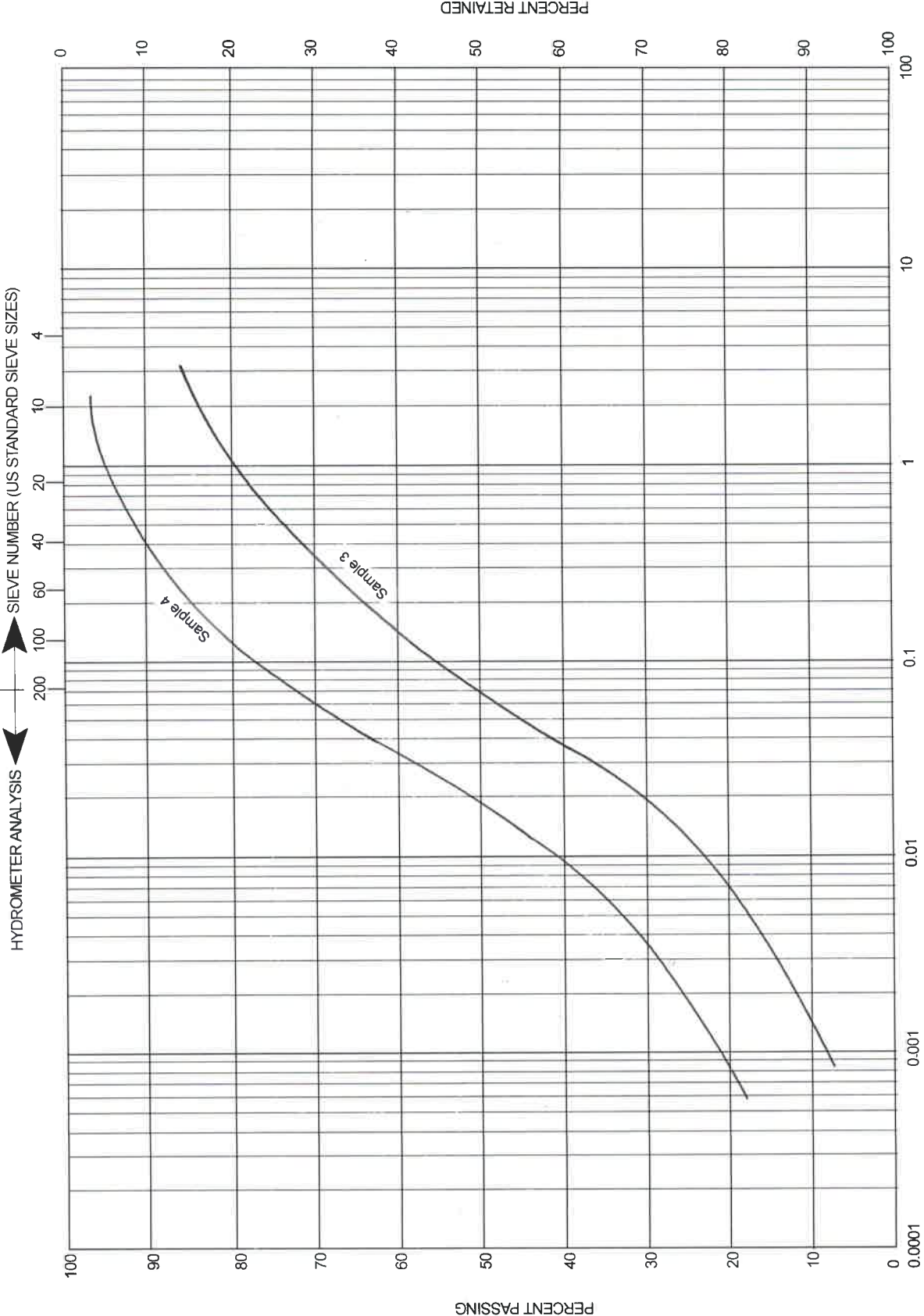


CLAY SIZE	SILT SIZE	SAND SIZE
GRAVEL SIZE	COBBLE SIZE	COBBLE SIZE

GRAIN SIZE DISTRIBUTION CHART

PROJECT / SAMPLE

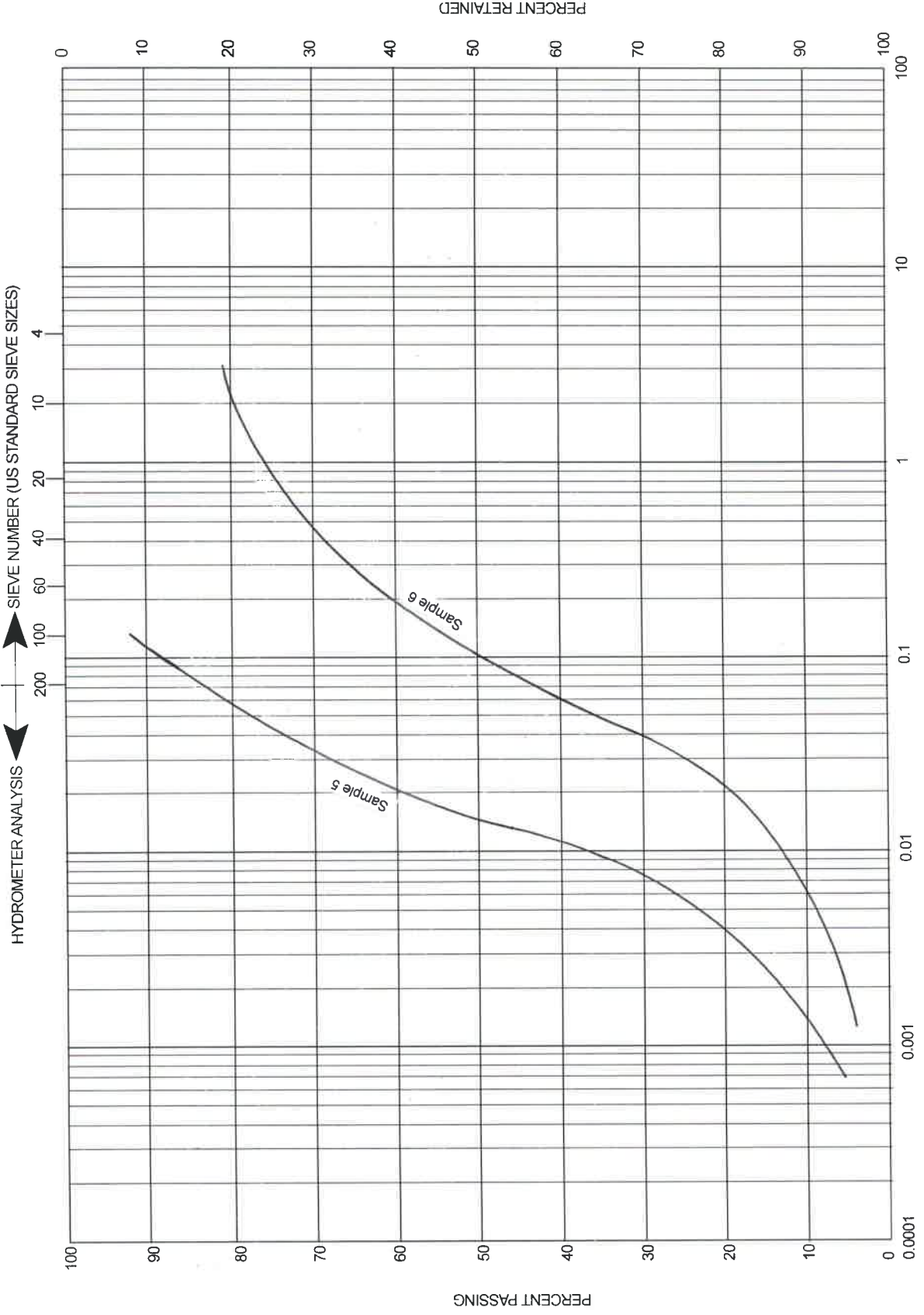
Belgrave - Pletch and Weber Properties - Sample 3 and Sample 4



CLAY SIZE	SILT SIZE	SAND SIZE	GRAVEL SIZE
COBBLE SIZE			

GRAIN SIZE DISTRIBUTION CHART

PROJECT / SAMPLE **Belgrave - Pletch and Weber Properties - Sample 5 and Sample 6**



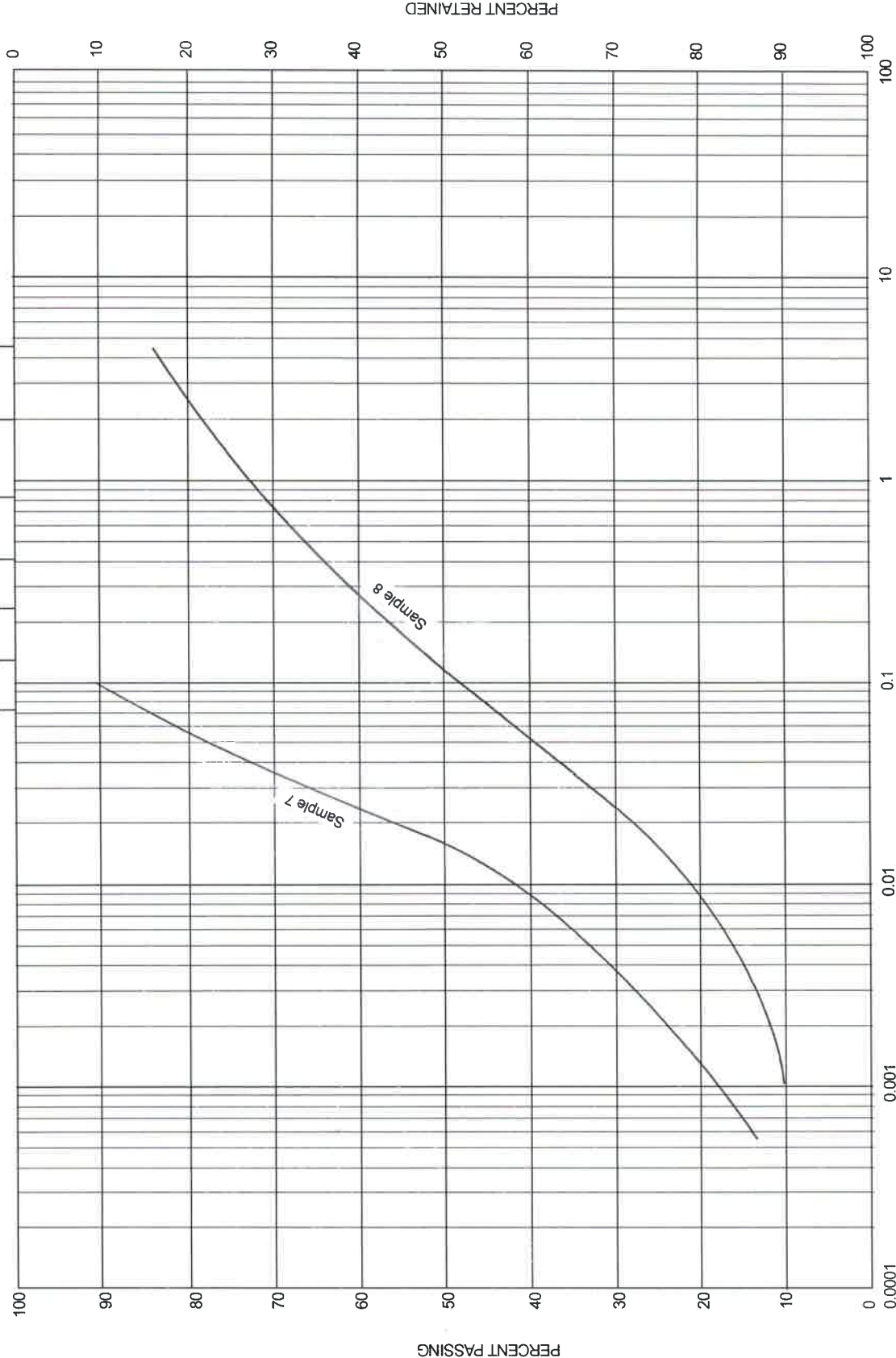
CLAY SIZE	SILT SIZE	SAND SIZE
GRAVEL SIZE	COBBLE SIZE	

GRAIN SIZE DISTRIBUTION CHART

PROJECT / SAMPLE Belgrave - Pletch and Weber Properties - Sample 7 and Sample 8

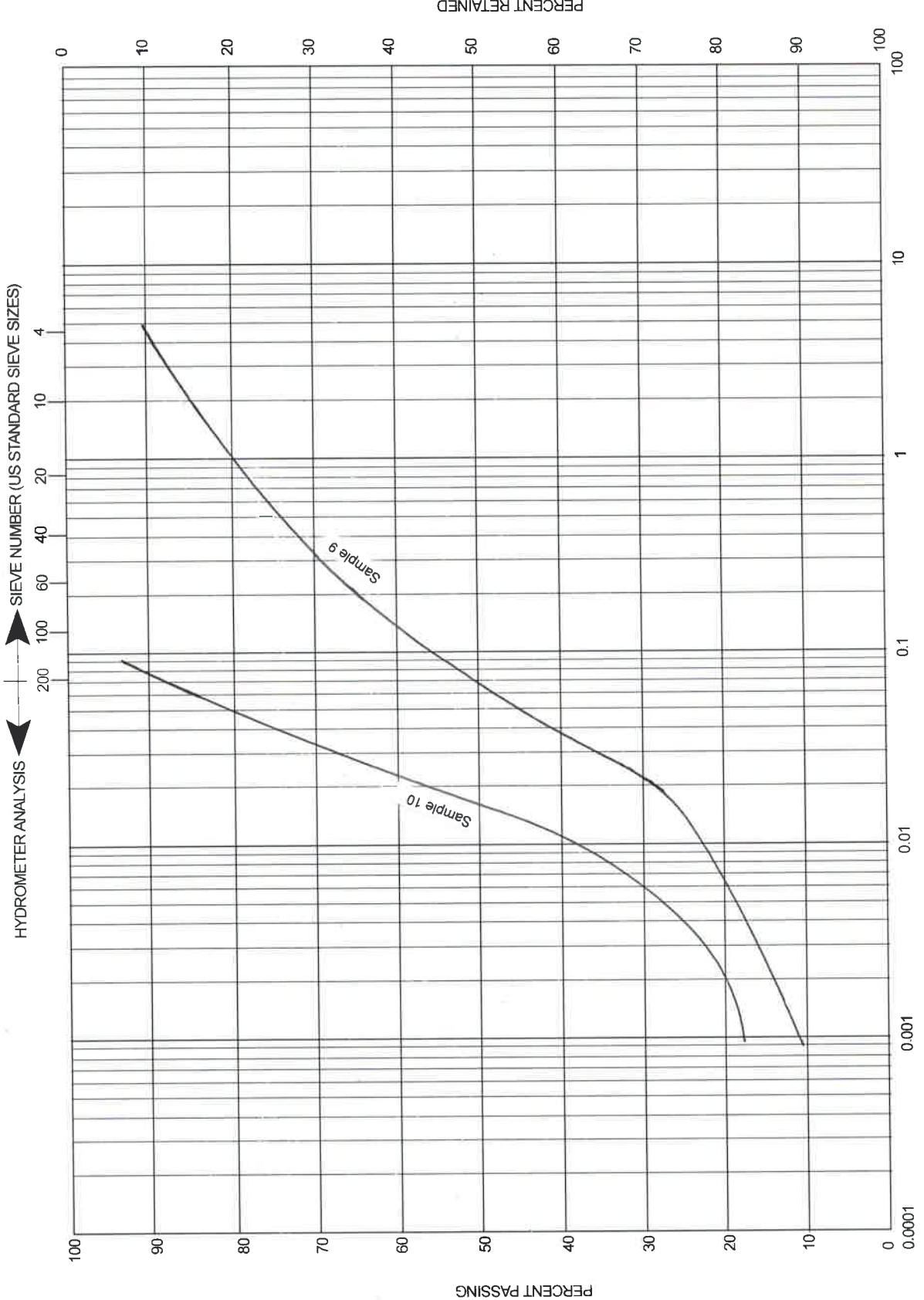

 HYDROMETER ANALYSIS


 SIEVE NUMBER (US STANDARD SIEVE SIZES)



CLAY SIZE	SILT SIZE	SAND SIZE	GRAVEL SIZE	COBBLE SIZE
-----------	-----------	-----------	-------------	-------------

GRAIN SIZE DISTRIBUTION CHART
PROJECT / SAMPLE Belgrave - Pletch and Weber Properties - Sample 9 and Sample 10



GRAIN SIZE IN MILLIMETRES		GRAVEL SIZE	COBBLE SIZE
CLAY SIZE	SILT SIZE	SAND SIZE	

3.3.4 Trihalomethanes and Haloacetic Acids

One distribution sample is taken every three months from a point in the distribution system and tested for Trihalomethanes (THMs) and Haloacetic Acids (HAAs). In 2017, samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 µg/L for THMs and it is expressed as a running annual average. Currently there is no MAC for HAAs. In 2017, the average THM was found to be 11.33 µg/L, which is within compliance. Refer to **Table 9**. for the summary of trihalomethane and haloacetic acid results.

3.3.5 Nitrate & Nitrite

One treated water sample is taken every three months and tested for nitrate and nitrite. In 2017, samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 1 mg/L for nitrites and 10 mg/L for nitrates. The results were found to be within compliance. Refer to **Table 9**.

Table 9. – Nitrate, Nitrite, THM and HAA Results at Belgrave Drinking Water System

Date	Nitrate		Nitrite		THMs		HAAs	
	# Samples	Result (mg/L)	# Samples	Result (mg/L)	# Samples	Result (µg/L)	# Samples	Result (µg/L)
Feb	1	0.012	1	<0.003	1	9.3	1	<5.3
May	1	0.024	1	<0.003	1	12	1	<5.3
Aug	1	0.027	1	<0.003	1	11	1	<5.3
Nov	1	0.032	1	<0.003	1	13	1	<5.3
Total	4		4		4		4	
Average		0.024		<0.003		11.33		<5.3
Maximum		0.032		<0.003		13		<5.3

3.3.4 Trihalomethanes

One distribution sample is taken every three months from a point in the distribution system and tested for Trihalomethanes (THMs) and Haloacetic Acids (HAAs). In 2018, samples were collected during the months of February, May, September and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 µg/L for THMs and it is expressed as a running annual average. Currently there is no MAC for HAAs. In 2018, the average THM was found to be 10.40 µg/L, which is within compliance. Refer to **Table 9.** for the summary of trihalomethane and haloacetic acids results.

3.3.5 Nitrate & Nitrite

One treated water sample is taken every three months and tested for nitrate and nitrite. In 2018, samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 1 mg/L for nitrites and 10 mg/L for nitrates. The results were found to be within compliance. Refer to **Table 9.**

Table 9. – Nitrate, Nitrite ,THM and HAAs Results at Belgrave Drinking Water System

Date	Nitrate		Nitrite		THMs		HAAs	
	# Samples	Result (mg/L)	# Samples	Result (mg/L)	# Samples	Results (µg/L)	# Samples	Result (µg/L)
Feb	1	0.022	1	<0.003	1	10	1	<5.3
May	1	0.006	1	<0.003	1	11	1	<5.3
Aug	1	0.077	1	<0.003	1	9.6	1	<5.3
Nov	1	0.007	1	<0.003	1	11	1	<5.3
Total	4		4		4		4	
Average		0.028		<0.003		10.40		<5.3
Maximum		0.077		<0.003		11		<5.3

Details of the development of the individual watershed elements and fluxes can be found in the *Ausable Bayfield Maitland Source Protection Region Tier 1 Water Budget Report* (Luinstra Earth Sciences, 2008) and that by McKague and Mao (2007).

Table 3.8 Tier 1 Water Budget for the Maitland Valley SPA. (All values expressed as mm/year of equivalent precipitation)

Tier 1 SubWat	GW-IN	PPT	IN	ET	Sur. Q	Rech.	Anthro	GW-Out	Bflow	Out
South Maitland	74	1119	1193	468	345	243	3	120	134	1044
Lower Maitland	34	1164	1198	476	311	342	8	107	214	1031
Middle Maitland	12	1031	1043	437	305	249	2	67	138	923
Little Maitland	462	996	1458	443	252	268	3	710	148	1528
G-B-Gullies	217	1058	1275	387	324	307	32	1	235	816
MVCA-gullies	90	1168	1258	354	432	324	2	215	254	1072
Nine Mile	275	1155	1430	419	304	393	1	305	282	1141
North Maitland	9	957	966	469	201	237	2	193	157	945

GW-IN = Groundwater flow in; PPT = Precipitation; ET = Evapotranspiration; Sur. Q = Streamflow; Rech. = Recharge; Anthro= Total Consumptive Water Use; GW-Out = Total groundwater flow out (includes Baseflow); Bflow = Baseflow.



Ministry
of the
Environment
Ontario

The Ontario Water Resources Act **40 P.14W**
WATER WELL RECORD

3004377

MUNICIPALITY: 300.09 CAN. CON. NO. 05

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT: Huron TOWNSHIP BOROUGH CITY TOWN VILLAGE: Morris Twp. CON. BLOCK TRACT SURVEY ETC: Con. 5

OWNER (SURNAME FIRST): BELGRAVE COMMUNITY WELL ADDRESS: Belgrave, Ont. DATE COMPLETED: DAY 03 MO OCT. YR 83.

ZONE: 17 EASTING: 470500 NORTHING: 4851000 ELEVATION: 1100

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	Topsoil			0	1
Brown	Sand	Clay, stones	Hard	1	18
Blue	Clay	Stones, gravel	Hard, mixed	18	60
Brown	Limestone		Soft	60	64
Grey	Limestone		Hard	64	72
Brown	Limestone		Medium hard	72	139

31 0001 02 001 862810512 006613051211 006418185 007215173 010718157073

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
00-76-129-137	1 <input checked="" type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
83-78	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
20-33	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

DEPTH - FEET	MATERIAL	WALL THICKNESS - INCHES	DEPTH - FEET
0-64	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0-64
64-6	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		64-6-0139
64-78	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		27-58

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	ELEMENT GROUP LEAD PALMER ETC.
10-15		
10-24		
25-28		

71 PUMPING TEST

PUMPING (LIST METHOD): air PUMP

PUMPING RATE: 0025 GPM

DURATION OF PUMPING: 01 15-30 17-18 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING	RECOVERY
059	067	15 MINUTES: 064 30 MINUTES: 066 45 MINUTES: 067 60 MINUTES: 067	1 <input checked="" type="checkbox"/> PUMPING 2 <input type="checkbox"/> RECOVERY

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 095 FEET

RECOMMENDED PUMPING RATE: 0025 UPM



FINAL STATUS OF WELL: 1 WATER SUPPLY 2 OBSERVATION WELL 3 TEST HOLE 4 RECHARGE WELL 5 ABANDONED - INSUFFICIENT SUPPLY 6 ABANDONED - POOR QUALITY 7 UNFINISHED

WATER USE: 07 1 DOMESTIC 2 STOCK 3 IRRIGATION 4 INDUSTRIAL 5 OTHER 6 COMMERCIAL 7 MUNICIPAL 8 PUBLIC SUPPLY 9 COOLING OR AIR CONDITIONING 10 NOT USED

METHOD OF DRILLING: 2 1 CABLE TOOL 2 ROTARY (CONVENTIONAL) 3 ROTARY (REVERSE) 4 ROTARY (AIR) 5 AIR PERCUSSION 6 BORING 7 DIAMOND 8 SETTING 9 DRIVING

CONTRACTOR: NAME OF WELL CONTRACTOR: Davidson Well Drilling Limited LICENCE NUMBER: 1737

ADDRESS: Box 486, Wingham, Ontario. NOG 2W0

NAME OF DRILLER OR BORER: D. Casemore LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: [Signature] SUBMISSION DATE: DAY 5 MO Oct. YR 83.

OFFICE USE ONLY

DATE SOURCE: 1 1797 CONTRACTOR: 59-61 DATE RECEIVED: 12 01 84

DATE OF INSPECTION: 20/08/84 INSPECTOR:

REMARKS: A.P. W.P. J.P.



40 P/14 W

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK CORRECT BOX WHERE APPLICABLE

11 3003252 30009 CON 05

COUNTY OR DISTRICT: Huron
TOWNSHIP BOROUGH CITY, TOWN, VILLAGE: Morris Twp.
CON. BLOCK TRACT SURVEY ETC: Con. N^o 5 (Plan 9) 41
DATE COMPLETED: 06 June 76
ELEVATION: 507.50 5 107.5 5 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Clay	Stones	Soft	0	6
Brown	Sand	Gravel	Soft	6	11
Brown	Clay	Stones	Soft	11	18
Grey	Hardpan	Gravel streaks	Hard	18	62
Lt. Brown	Limestone	Shale	Soft	62	68
Lt. Brown	Limestone		Medium soft	68	83
Grey	Limestone	Shale	Soft	83	89
Dk. Brown	Limestone		Medium soft	89	117
Brown	Limestone		Medium soft	117	125

31 0006051285 00116281185 001816051285 006212141174 00686151175 008361517585
 32 00872151785 01176156585 012561585

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0097-10 124	1 FRESH 3 <input type="checkbox"/> SULPHUR 2 SALTY 4 <input type="checkbox"/> MINERAL
16-18 0124	1 FRESH 3 <input type="checkbox"/> SULPHUR 2 SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 FRESH 3 <input type="checkbox"/> SULPHUR 2 SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 FRESH 3 <input type="checkbox"/> SULPHUR 2 SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 FRESH 3 <input type="checkbox"/> SULPHUR 2 SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

DEPTH - FEET	MATERIAL	WELL THICKNESS INCHES	SCREEN
0-10	STEEL	1.88	0070
10-11	<input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE		69-7
12-18	STEEL		0125
18-21	<input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE		
21-24	STEEL		
24-27	<input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE		

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER ETC.
10-12		
18-21		
24-28		

71 PUMPING TEST

PUMPING TEST METHOD: PUMP

PUMPING RATE: 0040 GPM

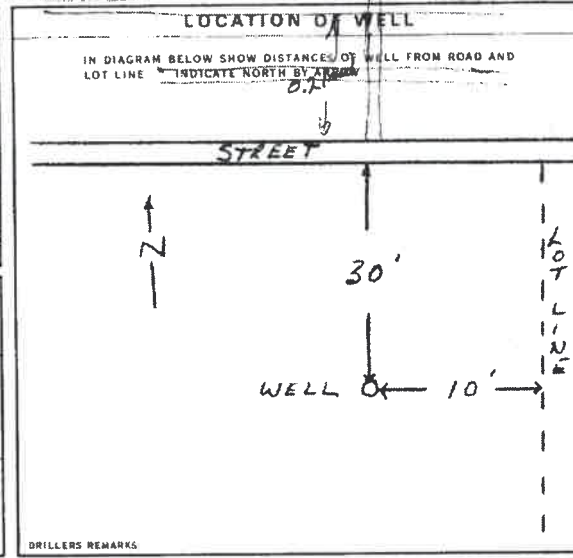
DURATION OF PUMPING: 15 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING
052 FEET	055 FEET	054 FEET 055 FEET 055 FEET 055 FEET

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 080 FEET

RECOMMENDED PUMPING RATE: 0040 GPM



FINAL STATUS OF WELL: 1

WATER USE: 01

METHOD OF DRILLING: 2

CONTRACTOR: Davidson Well Drilling Limited, 1737

ADDRESS: Box 486, Windsor, Ontario.

SIGNATURE OF CONTRACTOR: Douglas K. Davidson

SUBMISSION DATE: 15 June 76

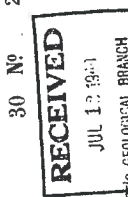
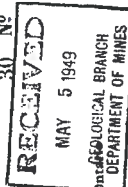
OFFICE USE ONLY

DATE OF INSPECTION: 29/9/77

INSPECTOR: P P WIP

UTM 117E 1470360J
 19E 1485120JN
 Elev. 1916 1705 ft.
 Basin 12121 1111

UTM 117E 1470360E
 19E 1485120EN
 Elev. 1916 1705 ft.
 Basin 12121 1111



The Well Drillers Act
 Department of Mines, Province of Ontario
 GEOLOGICAL BRANCH
 DEPARTMENT OF MINES

The Well Drillers Act
 Department of Mines, Province of Ontario
 GEOLOGICAL BRANCH
 DEPARTMENT OF MINES

Water Well Record

Water Well Record

County District: *Simcoe* Con. 8 Lot. 4 Pt. Lot. 42
 Acres: *1.0*

County District: *Simcoe* Con. 8 Lot. 4 Pt. Lot. 42
 Acres: *1.0*

Pipe and Casing Record

Pipe and Casing Record

Date: _____
 Developed Capacity: _____
 Length of casing(s): *4*
 Length of screen: _____
 Type of screen: _____
 Type of pump: _____
 Capacity of pump: _____
 Depth of pump setting: _____

Date: _____
 Developed Capacity: _____
 Length of casing(s): *4*
 Length of screen: _____
 Type of screen: _____
 Type of pump: _____
 Capacity of pump: _____
 Depth of pump setting: _____

Pumping Test

Pumping Test

Duration of Test: *20 min*
 Pumping Rate: *3.3 gpm*
 Drawdown: _____
 Static level of completed well: _____
 Is well a gravel-well type? _____

Duration of Test: *20*
 Pumping Rate: *2.0*
 Drawdown: _____
 Static level of completed well: _____
 Is well a gravel-well type? _____

Water Record

Water Record

Kind (fresh or mineral): _____
 Quality (hard, soft, contains iron, sulphur etc.): _____
 Appearance (clear, cloudy, coloured): *clear*
 For what purpose(s) is the water to be used? *domestic*
 How far is well from possible source of contamination? _____
 What is source of contamination? _____
 Enclose a copy of any mineral analysis that has been made of water

Kind (fresh or mineral): _____
 Quality (hard, soft, contains iron, sulphur etc.): _____
 Appearance (clear, cloudy, coloured): *fresh hard*
 For what purpose(s) is the water to be used? *domestic*
 How far is well from possible source of contamination? _____
 What is source of contamination? _____
 Enclose a copy of any mineral analysis that has been made of water

Well Log

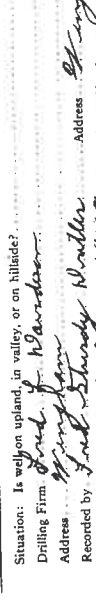
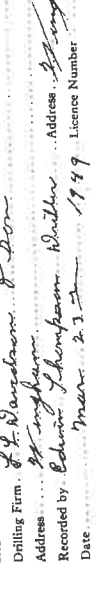
Well Log

Drift and Bedrock Record	From	To	Depth (ft.)	Kind of Water	No. of Feet Water Runs
<i>fill</i>	<i>68</i>	<i>114</i>	<i>46</i>		<i>77</i>
<i>rock</i>					

Drift and Bedrock Record	From	To	Depth (ft.)	Kind of Water	No. of Feet Water Runs
<i>gravel</i>	<i>35</i>	<i>97</i>	<i>62</i>		<i>84</i>
<i>rock</i>					

Location of Well
 In diagram below show distances of well from road and lot lines

Location of Well
 In diagram below show distances of well from road and lot lines



Situation: Is well on upland, in valley, or on hillside?
 Drilling Firm: *E. Davidson & Son*
 Address: *St Catharines*
 Recorded by: *Edward Thompson*
 Date: *Mar 23 1949*

Situation: Is well on upland, in valley, or on hillside?
 Drilling Firm: *E. Davidson*
 Address: *St Catharines*
 Recorded by: *Frank Sturdy*
 Date: *10 27 1949*

40 P / 14 West

UTM 11 7 12 14 17 18 19 20 21 22
Elev. 19 JR 1418.5 1417.0 1415.5
Basin 12 12 1 1 1 1 1 1 1 1

RECEIVED
JUL 28 1948
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

County of District Halton Township Wellesley-Tower-on-Cay
Con. Lot 1 Sub. Lot 5 Acres 7
Including pump) 1

Pipe and Casing Record
Casing diameter(s) 4 1/2
Length(s) of casing(s) 17
Length of screen 9
Type of screen gal
Capacity of pump 33
Depth of pump setting 19 ft

Pumping Test
Date Aut 17
Developed Capacity
Duration of Test
Pumping Rate
Drawdown
Static level of completed well 19 ft
Is well a gravel-wall type?

Water Record
Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur etc) hard
Appearance (clear, cloudy, coloured) clear
For what purpose(s) is the water to be used? domestic
How far is well from possible source of contamination?
What is source of contamination?
Enclose a copy of any mineral analysis that has been made of water

Well Log
Dirt and Bedrock Record
From 0 ft. To 27 ft.
37 ft. 43 ft. 43 ft. 112 ft.
Location of Well
In diagram below show distances of well from road and lot line
N
W
E
80 ft. W. road
10 ft. N. road
10 ft. S. road
This well is 5' in the village of Belgrave 75 ft. from 4 Highway 350 ft. from 4 cm. main - south side

Situation: Is well on upland, in valley, or on hillside?
Drilling Firm Belgrave
Address Belgrave
Recorded by Belgrave
Date 19 5

40 P / 14 West

UTM 11 7 12 14 17 18 19 20 21 22
Elev. 15 JR 1485.0 1480.0
Basin 15 JR 10 3 8 1



Water Well Record

County of District Halton Township Wellesley-Tower-on-Cay
Con. Lot 1 Sub. Lot 5 Acres 7
Including pump) 1

Pipe and Casing Record
Casing diameter(s) 4 1/2
Length(s) of casing(s) 17
Length of screen 9
Type of screen gal
Capacity of pump 33
Depth of pump setting 19 ft

Pumping Test
Date Aut 17
Developed Capacity
Duration of Test
Pumping Rate
Drawdown
Static level of completed well 19 ft
Is well a gravel-wall type?

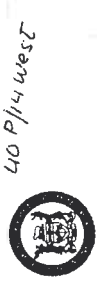
Water Record
Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur etc) hard
Appearance (clear, cloudy, coloured) clear
For what purpose(s) is the water to be used? domestic
How far is well from possible source of contamination?
What is source of contamination?
Enclose a copy of any mineral analysis that has been made of water

Well Log
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From 0 ft. To 27 ft.
37 ft. 43 ft. 43 ft. 112 ft.
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Situation: Is well on upland, in valley, or on hillside?
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Address Belgrave
Recorded by Belgrave
Date 19 5

40 P / 14 West

UTM 11 7 12 14 17 18 19 20 21 22
Elev. 15 JR 1485.0 1480.0
Basin 15 JR 10 3 8 1



Water Well Record

County of District Halton Township Wellesley-Tower-on-Cay
Con. Lot 1 Sub. Lot 5 Acres 7
Including pump) 1

Pipe and Casing Record
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Pumping Test
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Pumping Rate
Drawdown
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Is well a gravel-wall type?

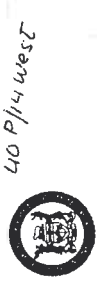
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Appearance (clear, cloudy, coloured) clear
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Situation: Is well on upland, in valley, or on hillside?
Drilling Firm Belgrave
Address Belgrave
Recorded by Belgrave
Date 19 5

40 P / 14 West

UTM 11 7 12 14 17 18 19 20 21 22
Elev. 15 JR 1485.0 1480.0
Basin 15 JR 10 3 8 1



Water Well Record

County of District Halton Township Wellesley-Tower-on-Cay
Con. Lot 1 Sub. Lot 5 Acres 7
Including pump) 1

Pipe and Casing Record
Casing diameter(s) 4 1/2
Length(s) of casing(s) 17
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Pumping Rate
Drawdown
Static level of completed well 19 ft
Is well a gravel-wall type?

Water Record
Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur etc) hard
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10 ft. N. road
10 ft. S. road
This well is 5' in the village of Belgrave 75 ft. from 4 Highway 350 ft. from 4 cm. main - south side

Situation: Is well on upland, in valley, or on hillside?
Drilling Firm Belgrave
Address Belgrave
Recorded by Belgrave
Date 19 5

40 P / 14 WEST

UTM 117 141710141010
Elev 191 1408511210010
Basin 191 1107101

RECEIVED
FEB 4 1947
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

Water Well Record

Con. 5 Lot 1 Pt. Lot 2
Acres 2

Pipe and Casing Record

Date
Developed Capacity
Duration of Test
Pumping Rate 162 P.M.
Drawdown NONE
Static level of completed well 50'
Is well a gravel-wall type?

Water Record

Kind (fresh or mineral)
Quality (hard, soft, contains iron, sulphur etc.)
Appearance (clear, cloudy, coloured)
For what purpose(s) is the water to be used?
How far is well from possible source of contamination?
What is source of contamination?
Enclose a copy of any mineral analysis that has been made of water

Location of Well

Drift and Bedrock Record	From	To
Clay	0 ft	10 ft
lappanly stone	10	70
white peck	70	80
white li. stone	80	87

In diagram below show distances of well from road and lot line

Diagram: SOUTH arrow, 4747 MORRIS, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

Situation: Is well on upland, in valley, or on hillside?
Drilling Firm
Address
Recorded by
Date

40 P / 14 WEST

UTM 117 141710141010
Elev 191 1408511210010
Basin 191 1107101

RECEIVED
DEC 2 1947
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

Water Well Record

Con. 5 Lot 1 Pt. Lot 2
Acres 2

Pipe and Casing Record

Date
Developed Capacity
Duration of Test
Pumping Rate 17 gal
Drawdown
Static level of completed well 62 ft
Is well a gravel-wall type?

Water Record

Kind (fresh or mineral)
Quality (hard, soft, contains iron, sulphur etc.)
Appearance (clear, cloudy, coloured)
For what purpose(s) is the water to be used?
How far is well from possible source of contamination?
What is source of contamination?
Enclose a copy of any mineral analysis that has been made of water

Location of Well

Drift and Bedrock Record	From	To
gravel	0 ft	52 ft
gravel	52	112

In diagram below show distances of well from road and lot line

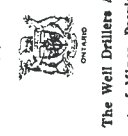
Diagram: NORTH arrow, 4747 MORRIS, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

Situation: Is well on upland, in valley, or on hillside?
Drilling Firm
Address
Recorded by
Date

40 P/14 used

UTM 11712 141710154101012
1914 418151811910101N
Elev. 1914 1101115
Bain 1211

30 No 1109
RECEIVED
MAY 5 1949
DEPARTMENT OF MINES



The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

Con. 5 Lot 1 / Pt. Lot 5
Algonquin R.R. 1 Acres 100
Including pump)

Pipe and Casing Record

Pumping Test

Date: *4*

Developed Capacity: *15 gal*

Duration of Test: *1.6*

Length of casing(s): *15 gal*

Length of screen: *15 gal*

Type of screen: *15 gal*

Type of pump: *15 gal*

Capacity of pump: *15 gal*

Depth of pump setting: *15 gal*

Water Record

Kind (fresh or mineral): *fresh hard*

Quality (hard, soft, contains iron, sulphur etc.): *fresh*

Appearance (clear, cloudy, coloured): *clear*

For what purpose(s) is the water to be used? *domestic & stock*

How far is well from possible source of contamination? *None*

What is source of contamination? *None*

Enclose a copy of any mineral analysis that has been made of water.

Well Log

Drift and Bedrock Record	From	To	Location of Well
	0 ft.	10 ft.	In diagram below show distances of well from road and lot line
<i>clay</i>	<i>60</i>	<i>105</i>	
<i>hard grey sand</i>			

Situation: Is well on upland, in valley, or on hillside? *Upland*

Drilling Firm: *W. W. Langdon & Son*

Address: *St. Catharines*

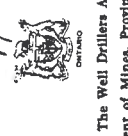
Recorded by: *Edwin Thompson*

Date: *April 27 1949* Licence Number: *1949*

40 P/14 used

UTM 11712 147075012
1914 48509501N
Elev. 1914 10851
Bain 1211

1110
RECEIVED
MAY 4 1951
DEPARTMENT OF MINES



The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

Con. 5 Lot 2 / Pt. Lot 107
ELGARVE ONT Acres 107
Including pump) \$306.500.

Pipe and Casing Record

Pumping Test

Date: *Apr 1949*

Developed Capacity: *20 gal per minute*

Duration of Test: *1/2 hr*

Length of casing(s): *10 to 20 ft*

Length of screen: *77 ft*

Type of screen: *1/2 in*

Type of pump: *hand pump*

Capacity of pump: *14 gal per minute*

Depth of pump setting: *38 ft*

Water Record

Kind (fresh or mineral): *fresh hard*

Quality (hard, soft, contains iron, sulphur etc.): *hard*

Appearance (clear, cloudy, coloured): *clear*

For what purpose(s) is the water to be used? *stock & home*

How far is well from possible source of contamination? *200 ft*

What is source of contamination? *Barren ground*

Enclose a copy of any mineral analysis that has been made of water.

Well Log

Drift and Bedrock Record	From	To	Location of Well
	0 ft.	10 ft.	In diagram below show distances of well from road and lot line
<i>gravel</i>	<i>13</i>	<i>40</i>	
<i>clay</i>	<i>40</i>	<i>70</i>	
<i>hard grey sand</i>	<i>70</i>	<i>103</i>	

Situation: Is well on upland, in valley, or on hillside? *Upland*

Drilling Firm: *Langdon & Son*

Address: *St. Catharines*

Recorded by: *Edwin Thompson*

Date: *Apr 20 1950* Licence Number: *1950*

1. PRINT NAME IN SPACES PROVIDED
2. CHECK CONCRETE METAL BRICK OTHER

3003394
30009 CAN
1-03208
Com. 5
5, Hingham, Ont.

DATE OF RECORD: 10/15/77
DATE OF TESTING: 10/15/77
WELL NO.: 001
LOT NO.: 105

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

DEPTH (FEET)	GENERAL DESCRIPTION	OTHER MATERIALS
0 - 1	Soft	
1 - 16	Soft, sandy	
16 - 23	Soft	
23 - 51	Hard	
51 - 54	Soft	
54 - 58	Soft	
58 - 109	Medium hard	
109 - 117	Soft	

WATER RECORD

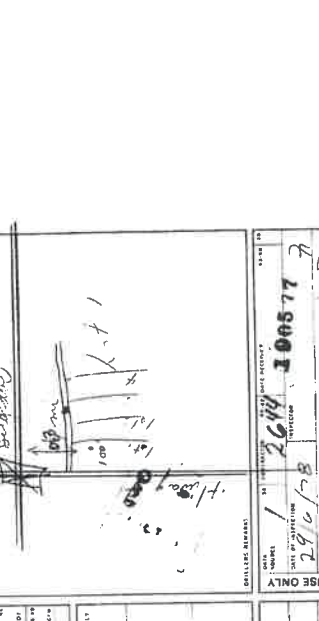
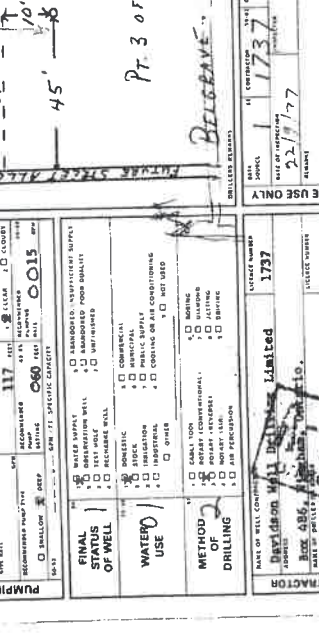
DATE	TIME	WELL NO.	WATER LEVEL (FEET)	WELL TYPE
10/15/77	08:00	001	105	Hand-dug

CASING & OPEN HOLE RECORD

DEPTH (FEET)	WATER RECORD	WELL TYPE
0 - 100	Hand-dug	Hand-dug

PLUGGING & SEALING RECORD

DATE	TIME	WELL NO.	WATER LEVEL (FEET)	WELL TYPE
10/15/77	08:00	001	105	Hand-dug



PUMPING TEST

DATE	TIME	WELL NO.	WATER LEVEL (FEET)	WELL TYPE
10/15/77	08:00	001	105	Hand-dug

CONTRACTOR

NAME	ADDRESS	PHONE	WELL NO.	DATE
Belgrave			001	10/15/77

OFFICE USE ONLY

DATE OF RECORD: 10/15/77
DATE OF TESTING: 10/15/77
WELL NO.: 001
LOT NO.: 105

CONTRACTOR

NAME: Belgrave
ADDRESS: [Redacted]
PHONE: [Redacted]
WELL NO.: 001
DATE: 10/15/77



WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ONE CONTACT BOX WHICH APPLIES

CONTRACTOR: **DAVIDSON**
ADDRESS: **Box 486, Kingham, Ontario**
CITY/TOWN/VILLAGE: **Kingham**
COUNTY OR DISTRICT: **Horrible Twp.**

WATER WELL IDENTIFICATION NO.: **3303553**
DATE OF RECORD: **10/27/77**

CONTRACTOR'S PHONE NO.: **3303553**
DATE OF RECORD: **10/27/77**

CONTRACTOR'S NAME: **DAVIDSON**
DATE OF RECORD: **10/27/77**

CONTRACTOR'S ADDRESS: **Box 486, Kingham, Ontario**
CITY/TOWN/VILLAGE: **Kingham**
COUNTY OR DISTRICT: **Horrible Twp.**

LOG OF OVERBURDEN AND BEDROCK MATERIALS SEE INSTRUCTIONS

GENERAL COLOUR	DEPTH (FEET)	DESCRIPTION
Brown	0 - 7	Soft
Brown	7 - 16	Soft
Brown	16 - 38	Gravel
Blue	38 - 71	Hard
Brown	71 - 72	Soft, broken
Lt. Br.	72 - 80	Hard
Brown	80 - 113	Limestone
Brown	113 - 126	Shale streaks

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF DRILLING

39 CONTRACTOR

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ONE CONTACT BOX WHICH APPLIES

CONTRACTOR: **DAVIDSON**
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LOG OF OVERBURDEN AND BEDROCK MATERIALS SEE INSTRUCTIONS

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Brown	71 - 72	Soft, broken
Lt. Br.	72 - 80	Hard
Brown	80 - 113	Limestone
Brown	113 - 126	Shale streaks

31 WATER RECORD

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34 LOCATION OF WELL

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31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF DRILLING

39 CONTRACTOR

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF DRILLING

39 CONTRACTOR

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF DRILLING

39 CONTRACTOR

FORM NO. 006-4-77

DATE OF RECORD: 1978
WELL NO.: 190980
CONTRACTOR: Davidson Well Drilling Limited
1737
DATE OF COMPLETION: 1978
DATE OF INSPECTION: 1978

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH, FEET TO FROM
Grey	Sand	Gravel, boulders	0 17
Lt. Brown	Hardpan	Stones	17 31
Lt. Brown	Limestone	Soft	31 39
Lt. Brown	Limestone	Medium soft	39 61
Lt. Brown	Limestone	Soft, broken	61 63
Lt. Brown	Limestone	Medium soft	63 87
Brown	Limestone	Medium soft	87 125

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH, FEET TO FROM
Brown	Clay	Stones, sand	0 16
Blue	Clay	Stones	16 37
Brown	Limestone	Soft, broken	37 42
Bk.-Blue	Limestone	Medium	42 67
Dk.Br.	Limestone	Medium	67 78
Red	Shale	Soft	78 81

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

71 PUMPING TEST

72 METHOD OF DRILLING

73 CONTRACTOR

74 OFFICE USE ONLY

71 PUMPING TEST

72 METHOD OF DRILLING

73 CONTRACTOR

74 OFFICE USE ONLY

FORM NO. 006-4-77

DATE OF RECORD: 1978
WELL NO.: 190980
CONTRACTOR: Davidson Well Drilling Limited
1737
DATE OF COMPLETION: 1978
DATE OF INSPECTION: 1978

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Lt. Brown	Limestone	Medium soft	39 61
Lt. Brown	Limestone	Soft, broken	61 63
Lt. Brown	Limestone	Medium soft	63 87
Brown	Limestone	Medium soft	87 125

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH, FEET TO FROM
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Blue	Clay	Stones	16 37
Brown	Limestone	Soft, broken	37 42
Bk.-Blue	Limestone	Medium	42 67
Dk.Br.	Limestone	Medium	67 78
Red	Shale	Soft	78 81

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

71 PUMPING TEST

72 METHOD OF DRILLING

73 CONTRACTOR

74 OFFICE USE ONLY

71 PUMPING TEST

72 METHOD OF DRILLING

73 CONTRACTOR

74 OFFICE USE ONLY

The Ontario Water Resources Act
WATER WELL RECORD

3005545

June St. Belgrave, ON N0G JEO

Com. 5

DATE COMPLETED
 12 NOV. 1992

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL DISCUSSION

OTHER MATERIALS

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMMON MATERIAL	THICKNESS (FEET)	DEPTH (FEET)
Brown	Topsoil	0	1
Clay	Clay	1	24
Grey	Clay	28	38
Grey	Hardpan	38	60
Brown	Limestone	60	62
Brown	Shale	62	66
Brown	Blue shale	66	110

WATER RECORD

CASING & OPEN HOLE RECORD

WATER RECORD

WATER FOUND	103
WATER LEVEL	107
WATER TEMPERATURE	18.8
WATER QUALITY	63-6

PLUGGING & SEALING RECORD

LOCATION OF WELL

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCE(S) OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

PUMPING TEST

FINAL STATUS OF WELL

FINAL STATUS OF WELL

WATER USE

METHOD OF CONSTRUCTION

CONTRACTOR

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The Ontario Water Resources Act
WATER WELL RECORD

3004793

June St. Belgrave, Ontario, N0G JEO

Com. 5

DATE COMPLETED
 12 NOV. 1988

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

OTHER MATERIALS

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMMON MATERIAL	THICKNESS (FEET)	DEPTH (FEET)
Brown	Topsoil	0	1
Clay	Clay	1	11
Grey	Hardpan	11	27
Grey	Hardpan	27	32
Brown	Limestone	32	39
Brown	Shale	39	65
Blue	Shale	65	68
Brown	Limestone	68	110

WATER RECORD

CASING & OPEN HOLE RECORD

WATER RECORD

WATER FOUND	106
WATER LEVEL	109
WATER TEMPERATURE	18.8
WATER QUALITY	60-0

PLUGGING & SEALING RECORD

LOCATION OF WELL

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCE(S) OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

PUMPING TEST

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WATER WELL RECORD

3004793

June St. Belgrave, Ontario, N0G JEO

Com. 5

DATE COMPLETED
 12 NOV. 1988

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

OTHER MATERIALS

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMMON MATERIAL	THICKNESS (FEET)	DEPTH (FEET)
Brown	Topsoil	0	1
Clay	Clay	1	11
Grey	Hardpan	11	27
Grey	Hardpan	27	32
Brown	Limestone	32	39
Brown	Shale	39	65
Blue	Shale	65	68
Brown	Limestone	68	110

WATER RECORD

CASING & OPEN HOLE RECORD

WATER RECORD

WATER FOUND	106
WATER LEVEL	109
WATER TEMPERATURE	18.8
WATER QUALITY	60-0

PLUGGING & SEALING RECORD

LOCATION OF WELL

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCE(S) OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

PUMPING TEST

FINAL STATUS OF WELL

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WATER WELL RECORD

3004793

June St. Belgrave, Ontario, N0G JEO

Com. 5

DATE COMPLETED
 12 NOV. 1988

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

OTHER MATERIALS

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMMON MATERIAL	THICKNESS (FEET)	DEPTH (FEET)
Brown	Topsoil	0	1
Clay	Clay	1	11
Grey	Hardpan	11	27
Grey	Hardpan	27	32
Brown	Limestone	32	39
Brown	Shale	39	65
Blue	Shale	65	68
Brown	Limestone	68	110

WATER RECORD

CASING & OPEN HOLE RECORD

WATER RECORD

WATER FOUND	106
WATER LEVEL	109
WATER TEMPERATURE	18.8
WATER QUALITY	60-0

PLUGGING & SEALING RECORD

LOCATION OF WELL

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCE(S) OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

PUMPING TEST

FINAL STATUS OF WELL

FINAL STATUS OF WELL

WATER USE

METHOD OF CONSTRUCTION

CONTRACTOR



Ministry of the Environment
Ontario

The Ontario Water Resources Act WATER WELL RECORD

3005616

30002 CON

DATE COMPLETED
AUG 25 1993

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
YELLOW	CLAY	STONES & Boulders	0	17
GREY	CLAY	STONES	17	35
GREY	CLAY		33	58
YELLOW	HARDPAN		53	65
BROWN	LIMESTONE	WHITE MARC	66	67
BROWN	LIMESTONE		89	110

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	67
BROWN	LIMESTONE		89	110

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	67
BROWN	LIMESTONE		89	110

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	67
BROWN	LIMESTONE		89	110

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	67
BROWN	LIMESTONE		89	110



Ministry of the Environment
Ontario

The Ontario Water Resources Act WATER WELL RECORD

3005615

30002 CON

DATE COMPLETED
AUG 25 1993

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	70
BROWN	LIMESTONE		80	80
BROWN	LIMESTONE		80	123

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	70
BROWN	LIMESTONE		80	80
BROWN	LIMESTONE		80	123

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	70
BROWN	LIMESTONE		80	80
BROWN	LIMESTONE		80	123

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	70
BROWN	LIMESTONE		80	80
BROWN	LIMESTONE		80	123

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS.

GENERAL COLOUR	DEPTH	GENERAL DESCRIPTION	DATE	TEST NO.
BLACK	TOP SOIL		0	17
YELLOW	CLAY		17	35
GREY	HARDPAN		33	58
BROWN	LIMESTONE		53	65
BROWN	LIMESTONE		66	70
BROWN	LIMESTONE		80	80
BROWN	LIMESTONE		80	123

Ontario
Ministry of Environment
and Energy

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3006529

30069.COM 05

County or District: **Bellevue** Municipality: **Bellevue** Con. block tract survey, etc.: **CON. 5** Date completed: **14 Apr. 99**

Address: **Bellevue, Ontario, N0G 1R0**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth (met)	From	To
Brown	Silt	Stones	Soft	0	6	
Brown	Clay	Stones	Med.	6	31	
Brown	Clay	Stones	Med.	31	37	
Brown	Limestone		Med.	37	119	

CASING & OPEN HOLE RECORD

Material	From	To	Notes
6	+2-0	54	
6	54	119	

PLUGGING & SEALING RECORD

Material and type	Depth set at	Notes
6	54	119

WATER RECORD

Kind of water	From	To	Notes
6	+2-0	54	
6	54	119	

PUMPING TEST

Time	Flow rate (GPM)	Water level (ft)	Notes
11:00	25	13	
13:00	11	11	
11:00	40	40	

FINAL STATUS OF WELL

Water supply Abandoned, poor quality Abandoned (Other)

Recharge well

WATER USE

Domestic Commercial Industrial Irrigation Other

METHOD OF CONSTRUCTION

Casing and Air percussion Rotary (concrete) Diamond Other

Name of Well Contractor: **Davidson Well Drilling Limited** License No: **1737**

Address: **Box 486, Mississauga, Ontario, N0G 2W0**

Signature of Well Contractor: **R. Laid** Date: **30 Apr. 99**

Signature of Inspector: **R. Laid** Date: **30 Apr. 99**

MINISTRY USE ONLY: **1737** Date of inspection: **14 Apr. 99** License No: **10446** Expiration date: **May 98**

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3006250

30069.COM 05

County or District: **Bellevue** Municipality: **Bellevue** Con. block tract survey, etc.: **CON. 5** Date completed: **14 Apr. 99**

Address: **Bellevue, Ontario, N0G 1R0**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth (met)	From	To
Brown	Silt	Stones	Med.	0	23	
Brown	Clay	Stones	Med.	23	41	
Brown	Limestone		Soft, layered	41	55	
Brown	Limestone		Med. soft	55	89	

CASING & OPEN HOLE RECORD

Material	From	To	Notes
6	+1-6	57-0	
6	57-0	89-0	

PLUGGING & SEALING RECORD

Material and type	Depth set at	Notes
6	57-0	89-0

WATER RECORD

Kind of water	From	To	Notes
6	+1-6	57-0	
6	57-0	89-0	

PUMPING TEST

Time	Flow rate (GPM)	Water level (ft)	Notes
43	58	43	
43	43	43	
43	75	75	

FINAL STATUS OF WELL

Water supply Abandoned, poor quality Abandoned (Other)

Recharge well

WATER USE

Domestic Commercial Industrial Irrigation Other

METHOD OF CONSTRUCTION

Casing and Air percussion Rotary (concrete) Diamond Other

Name of Well Contractor: **Davidson Well Drilling Limited** License No: **1737**

Address: **Box 486, Mississauga, Ontario, N0G 2W0**

Signature of Well Contractor: **R. Laid** Date: **30 Apr. 98**

Signature of Inspector: **R. Laid** Date: **30 Apr. 98**

MINISTRY USE ONLY: **1737** Date of inspection: **17 Sep. 98** License No: **10446** Expiration date: **May 98**

3007403

30009 CON 05

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County or District: Huron
Municipality: MARQUIS
Address: BURGANE CRT.
City/Town/Village: BURGANE CRT.
Cadastral No.: 19 0802
Date completed: 19 08 02
Lot No.: 1
Sublot No.: 1
Date of survey: 19 08 02
Scale: 1:100

LOG OF OVERBURDEN AND BEDROCK MATERIALS (See instructions)

General colour	Most common material	Other materials	Depth - feet	From	To
Dark	TOPSOIL		0	0	1
Brown	CLAY	LOAMY	1	1	16
Grey	CLAY	STONE	16	16	52
Brown	LIMESTONE	HARD	52	52	69
	LIMESTONE	LOOSE	69	69	77
		FIRM	77	77	97

WATER RECORD

Water found at (feet): 89, 95
Water level (feet): 78, 78
Pumping rate (GPM): 28, 28
Water at end of test (feet): 68, 68
Recommended pump rate (GPM): 15, 15

WATER USE: Irrigation, Domestic, Industrial, Other

METHOD OF CONSTRUCTION: Open hole, Drilled, Other

FINAL STATUS OF WELL

Abandoned well: Unfinished well: Other:

WATER USE: Irrigation, Domestic, Industrial, Other

METHOD OF CONSTRUCTION: Open hole, Drilled, Other

Hayden Water Wells
RR4 L-4-C-7
J. Hayden
249056
JAN 13 2003
7090
7030
CSS-ES3

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3006693

30009 CON 05

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

County or District: Huron
Municipality: MARQUIS
Address: MORTZIE TWP. (BURGANE)
City/Town/Village: MORTZIE TWP. (BURGANE)
Cadastral No.: 19 0802
Date completed: 19 08 02
Lot No.: 1
Sublot No.: 1
Date of survey: 19 08 02
Scale: 1:100

LOG OF OVERBURDEN AND BEDROCK MATERIALS (See instructions)

General colour	Most common material	Other materials	Depth - feet	From	To
Brown	CLAY	STONES	0	0	38
Grey	CLAY	STONES	38	38	60
Brown	Limestone		60	60	110

WATER RECORD

Water found at (feet): 95, 105
Water level (feet): 54, 54
Pumping rate (GPM): 65, 65
Water at end of test (feet): 54, 54
Recommended pump rate (GPM): 10, 10

WATER USE: Irrigation, Domestic, Industrial, Other

METHOD OF CONSTRUCTION: Open hole, Drilled, Other

FINAL STATUS OF WELL

Abandoned well: Unfinished well: Other:

WATER USE: Irrigation, Domestic, Industrial, Other

METHOD OF CONSTRUCTION: Open hole, Drilled, Other

Davidson Well Drilling Limited
Box 486, Hingham, Ontario, N0G 2A0
K. Leach
217839
AUG 03 2000
CSS-ES0

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3007775 3007775 3007775

County of District: **Halton** City/Town/Village: **Morris** Lot: **1**
 Address: **BELGRAVE** Date completed: **17 09 03**
 City/Town/Village: **Morris** No. of Wells: **1** Name of Well: **10**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common materials	Other materials	From	To	Remarks
Brown	TOPSOIL		0	1	
Brown	CLAY		1	16	
Brown	HARD		16	54	
Brown	SAND	SAND STRIPS	54	82	
Brown	LIMESTONE	SOFT	82	128	

WATER RECORD

Kind of water: Surface Well Other

Flow rate: **6** GPM

Water level: **37** ft

Water table: **55** ft

Water level at 100 ft: **126** ft

Water level at 200 ft: **188** ft

Water level at 300 ft: **86** ft

Water level at 400 ft: **178** ft

Water level at 500 ft: **86** ft

Water level at 600 ft: **178** ft

Water level at 700 ft: **86** ft

Water level at 800 ft: **178** ft

Water level at 900 ft: **86** ft

Water level at 1000 ft: **178** ft

PLUMBING & SEALING RECORD

Material used: **NONE**

From: **0** To: **80**

Remarks: **None**

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.

FINAL STATUS OF WELL

Water supply: Unabated Abated Abandoned (Other)

Water use: Domestic Industrial Other

Method of construction: Drilling Other

MINISTRY USE ONLY

Well No.: **7090** Date: **FEB 06 2004**

Well Name: **Haider Water Wells**

Well Location: **1034**

Well Type: **ES4**

Well Status: **ES4**

Well Depth: **1034**

Well Construction: **ES4**

Well Completion: **ES4**

Well Installation: **ES4**

Well Maintenance: **ES4**

Well Inspection: **ES4**

Well Testing: **ES4**

Well Monitoring: **ES4**

Well Reporting: **ES4**

Well Archiving: **ES4**

Well Access: **ES4**

Well Security: **ES4**

Well Safety: **ES4**

Well Health: **ES4**

Well Environment: **ES4**

Well Society: **ES4**

Well Culture: **ES4**

Well Economy: **ES4**

Well Politics: **ES4**

Well Law: **ES4**

Well Religion: **ES4**

Well Philosophy: **ES4**

Well Art: **ES4**

Well Science: **ES4**

Well Technology: **ES4**

Well Innovation: **ES4**

Well Creativity: **ES4**

Well Entrepreneurship: **ES4**

Well Leadership: **ES4**

Well Teamwork: **ES4**

Well Communication: **ES4**

Well Collaboration: **ES4**

Well Conflict Resolution: **ES4**

Well Decision Making: **ES4**

Well Problem Solving: **ES4**

Well Critical Thinking: **ES4**

Well Analytical Skills: **ES4**

Well Creative Thinking: **ES4**

Well Emotional Intelligence: **ES4**

Well Social Skills: **ES4**

Well Self-awareness: **ES4**

Well Self-management: **ES4**

Well Social awareness: **ES4**

Well Relationship management: **ES4**

Well Entrepreneurial mindset: **ES4**

Well Global citizenship: **ES4**

Well Sustainable development: **ES4**

Well Peace and non-violence: **ES4**

Well Gender equality: **ES4**

Well Quality education: **ES4**

Well Decent work and economic growth: **ES4**

Well Affordable and clean energy: **ES4**

Well Sustainable cities and communities: **ES4**

Well Responsible consumption and production: **ES4**

Well Climate action: **ES4**

Well Life below water: **ES4**

Well Life on land: **ES4**

Well Peace, justice and strong institutions: **ES4**

Well Partnerships for sustainable development: **ES4**

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Mark correct box with a checkmark, where applicable.

3007705 3007705 3007705

County of District: **Toronto** City/Town/Village: **Morris** Lot: **1**
 Address: **BELGRAVE** Date completed: **10 JUNE 03**
 City/Town/Village: **Morris** No. of Wells: **1** Name of Well: **10**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common materials	Other materials	From	To	Remarks
Brown	SANDY CLAY	STONES	0	18	
Grey	CLAY	STONES	18	52	
Brown	LIMESTONE		52	95	

WATER RECORD

Kind of water: Surface Well Other

Flow rate: **6** GPM

Water level: **31** ft

Water table: **31** ft

Water level at 100 ft: **31** ft

Water level at 200 ft: **31** ft

Water level at 300 ft: **31** ft

Water level at 400 ft: **31** ft

Water level at 500 ft: **31** ft

Water level at 600 ft: **31** ft

Water level at 700 ft: **31** ft

Water level at 800 ft: **31** ft

Water level at 900 ft: **31** ft

Water level at 1000 ft: **31** ft

PLUMBING & SEALING RECORD

Material used: **PLUMBING & SEALING RECORD**

From: **54** To: **95**

Remarks: **None**

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.

FINAL STATUS OF WELL

Water supply: Unabated Abated Abandoned (Other)

Water use: Domestic Industrial Other

Method of construction: Drilling Other

MINISTRY USE ONLY

Well No.: **737** Date: **JUL 05 2003**

Well Name: **Davidson Well Drilling Ltd. 1737**

Well Location: **486 Wingham, Ontario N0G 2H0**

Well Type: **70927**

Well Status: **70927**

Well Depth: **70927**

Well Construction: **70927**

Well Completion: **70927**

Well Installation: **70927**

Well Maintenance: **70927**

Well Inspection: **70927**

Well Testing: **70927**

Well Monitoring: **70927**

Well Reporting: **70927**

Well Archiving: **70927**

Well Access: **70927**

Well Security: **70927**

Well Safety: **70927**

Well Health: **70927**

Well Environment: **70927**

Well Society: **70927**

Well Culture: **70927**

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Well Philosophy: **70927**

Well Art: **70927**

Well Science: **70927**

Well Technology: **70927**

Well Innovation: **70927**

Well Creativity: **70927**

Well Entrepreneurship: **70927**

Well Leadership: **70927**

Well Teamwork: **70927**

Well Communication: **70927**

Well Collaboration: **70927**

Well Conflict Resolution: **70927**

Well Decision Making: **70927**

Well Problem Solving: **70927**

Well Critical Thinking: **70927**

Well Analytical Skills: **70927**

Well Creative Thinking: **70927**

Well Emotional Intelligence: **70927**

Well Social Skills: **70927**

Well Self-awareness: **70927**

Well Self-management: **70927**

Well Social awareness: **70927**

Well Relationship management: **70927**

Well Entrepreneurial mindset: **70927**

Well Global citizenship: **70927**

Well Sustainable development: **70927**

Well Peace and non-violence: **70927**

Well Gender equality: **70927**

Well Quality education: **70927**

Well Decent work and economic growth: **70927**

Well Affordable and clean energy: **70927**

Well Sustainable cities and communities: **70927**

Well Responsible consumption and production: **70927**

Well Climate action: **70927**

Well Life below water: **70927**

Well Life on land: **70927**

Well Peace, justice and strong institutions: **70927**

Well Partnerships for sustainable development: **70927**