SOIL-MAT ENGINEERS & CONSULTANTS LTD.

www.soil-mat.ca info@soil-mat.ca TF: 800.243.1922

Hamilton: 130 Lancing Drive L8W 3A1 T: 905.318.7440 F: 905.318.7455
Milton: PO Box 40012 Derry Heights PO L9T 7W4 T: 800.243.1922

PROJECT NO.: SM 301951-G July 20, 2022

CACHET DEVELOPMENTS
361 CONNIE CRESCENT, SUITE 200
Concord, Ontario
L4K 5R2

Attention: Marcus Gagliardi
Development Planner

PRELIMINARY HYDROGEOLOGICAL ASSESSMENT
PROPOSED RESIDENTIAL DEVELOPMENT
CLAYTON AND ELORA SANDS
ELORA, ONTARIO

Dear Mr. Gagliardi,

Further to your recent correspondence and discussions, SOIL-MAT ENGINEERS & CONSULTANTS LTD. has prepared the following preliminary hydrogeological assessment based on the updated groundwater information to date. These comments are further to our Preliminary Geotechnical and Hydrogeological Investigation reports for the subject lands [SM 301951A-G and SM 301951B-G, dated October 14, 2021 and March 11, 2022], and recent discussions with the design team. As such, this hydrogeological report should be read in conjunction with our previous reports stated above. It is also noted that this report marks the completion of all of the proposed drilling fieldwork, and as such a new borehole numbering system has been implemented.

1. INTRODUCTION

We understand that the project will involve the construction of a residential development on the Clayton Lands located at 75 Woolwich Street East [Clayton Lands] in Elora, Ontario, along with potential future development on the Elora Sands [Elora Sands] to the east. The development details are to be established, but are anticipated to consist of single-family dwellings and townhouses along asphalt paved roadways, including the installation of associated underground municipal services. The purpose of this hydrogeological assessment is to provide additional and more detailed information and comments to support the assessment of site servicing options for the proposed development, from a geotechnical point of view.

2. PROCEDURE

Ten [10] and fifteen [15] sampled boreholes were advanced on the Clayton and Elora Sands respectively, totalling twenty-five [25] boreholes at the locations illustrated in the attached Drawing No. 1, Borehole Location Plan. The boreholes were advanced using continuous flight power auger equipment between August 5, 2021 and April 18, 2022 under the direction and supervision of a staff member of SOIL-MAT ENGINEERS & CONSULTANTS LTD., to termination at depths of between approximately 2.1 and 8.2 metres below the existing ground surface.

Representative samples of the subsoils were recovered from the borings at selected depth intervals using split barrel sampling equipment driven in accordance with the requirements of ASTM test specification D1586, Standard Penetration Resistance Testing. After undergoing a general field examination, the soil samples were preserved and transported to the SOIL-MAT laboratory for visual, tactile, and olfactory classifications. Routine moisture content tests were performed on all soil samples recovered from the borings. Selected samples were also subjected to laboratory grain size analyses to allow for an estimate of the hydraulic conductivity of the subsurface soils. It is noted that slug testing will be performed on a number of the monitoring wells to get a more accurate in-situ measurement of the hydraulic conductivity, results of which will be summarised in a subsequent supplemental report.

Upon completion of drilling, groundwater monitoring wells were installed at Borehole Nos. 004, 101, 102, 104, 201, 201A, 202, 203, 204, 205, 206, 301 through 305, and 401 to allow for the future monitoring of the groundwater level. The monitoring well consisted of 50-millimetre PVC pipe screened in the lower 1.5 to 3.0 metres. The monitoring wells were encased in well filter sand up to approximately 0.3 metres above the screened portion, then with bentonite ‘hole plug’ to the surface and fitted with a protective steel ‘stick up’ casing. The remaining boreholes were backfilled in general accordance with Ontario Regulation 903, and the ground surface was reinstated even with the surrounding grade. The depths screening intervals for each monitoring well has been summarized below.

Monitoring Well ID	Depth (m)	Screening Interval (m)
MW004	4.6	3.0 – 4.6
MW101	6.1	4.6 – 6.1
MW102	4.6	3.8 – 4.6
MW104	7.6	4.6 – 7.6
MW201	4.6	3.8 – 4.6
MW201A	3.0	2.2 – 3.0
MW202	6.1	4.6 – 6.1

Monitoring Well ID	Depth (m)	Screening Interval (m)
MW203	6.1	4.6 – 6.1
MW204	4.6	3.0 – 4.6
MW205	4.6	3.0 – 4.6
MW206	7.6	6.1 – 7.6
MW301	7.6	6.1 – 7.6
MW302	7.6	6.1 – 7.6
MW303	7.6	6.1 – 7.6
MW304	6.1	4.6 – 6.1
MW305	3.0	2.3 – 3.0
MW401	6.1	4.6 – 6.1

The boreholes were located in the field by representatives of SOIL-MAT ENGINEERS, based on accessibility over the site, clearance of underground utilities, and the drawing that was forwarded to our office. Best efforts were made to minimize crop damage by locating the majority of the boreholes to the perimeter of the fields. The ground surface elevation at all of the borehole locations with the exception of Borehole Nos. 301 through 307 have been referenced to a geodetic benchmark, described as North American 1983 CSRS, as per the survey plan completed by POI Aerial, dated August 10, 2021, which was provided to our office. The ground surface elevations at Borehole Nos. 301 through 307 have been linearly interpolated based on the topographic survey provided by BSR&D (Reference No. 21-14-573-00-topo) dated January 4, 2022 which was provided to our office. Once a complete topographic survey has been completed with up-to-date geodetic elevations of Borehole Nos. 301 through 307, this report will be updated.

Details of the conditions encountered in the boreholes, together with the results of the field and laboratory tests, are presented in Log of Borehole Nos. 001 to 007, 101 to 104, 201 to 206, 301 to 307, and 401, inclusive, following the text of this report. It is noted that the boundaries of soil types indicated on the borehole logs are inferred from non-continuous soil sampling and observations made during drilling. These boundaries are intended to reflect transition zones for the purpose of geotechnical design and therefore should not be construed at the exact depths of geological change.

2. SUBSURFACE CONDITIONS

The subsurface are presented in detail in our referenced Preliminary Geotechnical Investigation report. To summarize, the soil conditions encountered on the Elora Sands generally consisted of a sandy silt/silty sand deposit in the upper levels with some areas and layers of clayey sandy silt till with depth. The soils encountered on the perimeter of the site were highly variable, often encountering layered deposits of clayey sandy silt till

or sand. Occasional deposits of gravelly sand were encountered within some of the boreholes. As such, the presence of permeable granular deposits or 'veins' should be expected across the site. In areas where the presence of a predominately clayey material is expected or would be beneficial, such as in the area of the proposed SWM pond, it may be prudent to advance a series of test excavations to confirm the condition of the subsurface soils including composition, groundwater conditions, suitability for use as an impermeable SWM pond liner, etc.

The Clayton Lands was generally characterised by an upper layer consisting of a clayey sandy silt till underlain by a sand deposit that extended to deep depths. Some isolated areas were encountered that contained a more impermeable clayey sandy silt till. Representative geological cross sections are illustrated in Drawing Nos. 3, 4 and 5, attached.

A review of available published information [Quaternary Geology of Ontario, Southern Sheet Map 2556] indicate the subsurface soils to be in areas noting to consist of stone-poor sandy silt to silty sand-textured till, ice-contact stratified deposits of sand and gravel, with minor silt and clay, as well as river deposits of coarse gravel. These conditions are consistent with the observations during drilling.

Grain size analyses were conducted on sixteen [16] selected samples of the native soils recovered from the boreholes. The results of this grain size testing can be found appended to the end of this report, and are summarized as follows:

TABLE A
GRAIN SIZE ANALYSES

Elora Sands							
Sample ID	Depth	% Clay	% Silt	% Sand	% Gravel	Hydraulic Conductivity, k [cm/s]	Estimated Infiltration Rate, [mm/hr]
BH003 SS3	1.5 m	22	44	28	6	10^{-7}	<10
BH004 SS5	3.0 m	2	7	80	11	10^{-2}	150 to 300
BH006 SS5	3.0 m	11	44	36	9	10^{-6}	10 to 15
BH201 SS2	1.5 m	5	17	76	2	10^{-4}	50
BH202 SS2	1.5 m	30	38	26	0	10^{-8}	<10
BH202 SS5	6.1 m	10	51	39	0	10^{-6}	10 to 15
BH203 SS2	1.5 m	3	17	37	43	10^{-4}	50 to 60
BH203 SS5	6.1 m	3	8	87	2	10^{-3}	125 to 150
BH204 SS2	1.5 m	16	34	30	20	10^{-7}	10
BH205 SS3	3.0 m	2	4	94	0	10^{-3}	150 to 300

Clayton Lands							
Sample ID	Depth	% Clay	% Silt	% Sand	% Gravel	Hydraulic Conductivity, k [cm/s]	Estimated Infiltration Rate, [mm/hr]
BH102 SS6	4.6 m	2	6	91	1	10^{-2}	150 to 300
BH103 SS3	1.5 m	14	45	34	7	10^{-6}	10
BH104 SS4	2.3 m	2	9	89	0	10^{-3} to 10^{-2}	100 to 150
BH302 SS2	1.5 m	2	3	95	0	10^{-2}	150 to 300
BH304 SS2	1.5 m	16	40	33	11	10^{-7}	10
BH305 SS2	1.5 m	7	16	77	0	10^{-4}	50 to 60

The field and laboratory testing demonstrate the native soils to generally consist of a sandy silt/clayey silt with some clay and traces of gravel in the upper levels, transitioning to a highly permeable sand with traces of clay, silt, and gravel at depth. According to the Unified Soil Classification System (USCS), the soils are classified as M.L. – inorganic silts and very fine sands, clayey silts with slight plasticity in the upper levels overlying S.P. – poorly graded sands, with little to no fines to S.M. – Sand-silt mixtures at depth.

The clay and silt soils would generally behave as a cohesive material with slight to medium plasticity, and low hydraulic conductivity, on the order of 10^{-6} to 10^{-7} cm/sec, and would be of low permeability to effectively impermeable. The on-site clayey soils would generally be considered suitable for use as an impermeable clay liner for the stormwater management (SWM) pond, however should be confirmed with more specific testing and assessment, and would require selecting sorting to separate out from more sandy deposits. Further testing should be conducted within the area of the proposed stormwater management pond [SWM] in order to confirm the suitability of the clayey material for use as an impermeable liner.

The sand deposit would tend to yield a highly permeable characteristic. Provided that the low impact development (LID) stormwater management systems are located within the highly permeable sand deposits, the hydraulic conductivity for this material would be on the order of 10^{-2} to 10^{-4} cm/sec yielding infiltrations rates in the range of 50 to 300 mm/hr. LID systems such as rear yard catch basins, infiltration swales, etc. will be highly effective within the permeable sand soils and will be able to help with natural groundwater recharge as well as maintain pre and post development runoff volumes, specifically on the Clayton Lands. As noted previously, slug testing is slated to be performed within a number of the monitoring wells across the site to yield a more accurate estimate of the hydraulic conductivity of the native soils. Once available,

information on the location of these LID systems should be forwarded to our office in order to target specific areas with the slug testing.

Groundwater Observations

Borehole Nos. 006, 102, and 004 were noted to have 'caved' to depths of between approximately 2.4 to 3.8 metres and 'wet' at depths of between approximately 2.0 to 3.4 metres, while Borehole No. 104 was noted to be open and 'wet' at a depth of 7.0 metres upon completion. Borehole Nos. 103 and 001 were noted to have cave to depths of 2.7 and 1.5 metres, respectively, and dry upon completion. The remainder of the boreholes were noted as being open and 'dry' [i.e. no free groundwater present] upon completion of drilling. It is noted that insufficient time would have passed for the static groundwater level to stabilise in the open boreholes.

As noted above, monitoring wells were installed at Borehole Nos. 004, 101, 102, 104, 201, 201A, 202, 203, 204, 205, 206, 301 through 305, and 401, to allow for future measurements of the static groundwater level. A data logger was in each of the monitoring wells to allow for continuous monitoring of the groundwater level between August 2021 to June 2022, the readings of which have been illustrated in graphs which can be found appended to the end of this report.

In addition, manual monitoring well readings were also taken from all of the installed monitoring well locations across the site on various dates, ranging from August 2021 to June 2022. These have been summarized in the following charts:

TABLE B
SUMMARY OF MANUAL GROUNDWATER READINGS (ELORA SANDS)

Borehole No. 004 (Ground Surface Elevation of 405.55 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
August 6, 2021	2.74	402.8
August 27, 2021	1.75	403.8
February 23, 2022	1.33	404.2
April 22, 2022	1.47	404.1
June 1, 2022	1.78	403.8

Borehole No. 201 (Ground Surface Elevation of 404.80 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	2.69	402.1
April 22, 2022	1.88	402.9
June 1, 2022	2.44	402.4

Borehole No. 201A (Ground Surface Elevation of 404.75 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	Dry	<401.8
April 22, 2022	2.05	402.7
June 1, 2022	2.43	402.3

Borehole No. 202 (Ground Surface Elevation of 406.59 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	5.5	401.1
April 22, 2022	4.76	401.8
June 1, 2022	5.43	401.2

Borehole No. 203 (Ground Surface Elevation of 407.13 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	Dry	<401.0
April 22, 2022	5.90	401.2
June 1, 2022	5.91	401.2

Borehole No. 204 (Ground Surface Elevation of 409.56 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	2.81	406.7
April 22, 2022	1.16	408.4
June 1, 2022	1.53	408.0

Borehole No. 205 (Ground Surface Elevation of 412.99 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	2.56	410.4
April 22, 2022	2.25	410.7
June 1, 2022	2.39	410.6

Borehole No. 206 (Ground Surface Elevation of 412.88 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 17, 2022	6.83	406.1
April 22, 2022	4.60	408.3
June 1, 2022	4.66	408.2

Borehole No. 401 (Ground Surface Elevation of 420.91 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
April 22, 2022	2.29	418.6
June 1, 2022	2.39	418.5

TABLE C
SUMMARY OF MANUAL GROUNDWATER READINGS (CLAYTON LANDS)

Borehole No. 101 (Ground Surface Elevation of 408.60 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
August 6, 2021	4.78	403.8
August 27, 2021	4.71	403.9
October 14, 2021	4.33	404.3
February 23, 2022	4.31	404.3
April 22, 2022	4.07	404.5
June 1, 2022	4.15	404.5

Borehole No. 102 (Ground Surface Elevation of 414.13 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
August 6, 2021	3.58	410.6
August 27, 2021	3.61	410.5
October 14, 2021	3.62	410.5
February 23, 2022	3.50	410.6
April 22, 2022	2.89	411.2
June 1, 2022	3.05	411.1

Borehole No. 103 (Ground Surface Elevation of 414.13 metres)		
	Groundwater Depth (m)	Groundwater Elevation (m)
August 6, 2021	6.78	408.1
August 27, 2021	6.96	407.9
October 14, 2021	7.09	407.8
February 23, 2022	6.83	408.0
April 22, 2022	6.13	408.7
June 1, 2022	6.28	408.6

Borehole No. 301 (Ground Surface Elevation of 412.75 metres)*		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 23, 2022	6.29	406.5
April 22, 2022	5.65	407.1
June 1, 2022	5.71	407.0

Borehole No. 302 (Ground Surface Elevation of 413.00 metres)*		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 23, 2022	6.62	406.4
April 22, 2022	6.06	406.9
June 1, 2022	6.12	406.9

Borehole No. 303 (Ground Surface Elevation of 414.00 metres)*		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 23, 2022	5.40	408.6
April 22, 2022	6.04	407.9
June 1, 2022	6.11	407.9

Borehole No. 304 (Ground Surface Elevation of 407.90 metres)*		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 23, 2022	2.87	405.0
April 22, 2022	2.60	405.3
June 1, 2022	2.96	404.9

Borehole No. 305 (Ground Surface Elevation of 408.60 metres)*		
	Groundwater Depth (m)	Groundwater Elevation (m)
February 23, 2022	Dry	<405.6
April 22, 2022	Dry	<405.6
June 1, 2022	Dry	<405.6

*Ground surface elevations have been interpolated based on contours from current topographic survey

The available data to date presented above illustrates a variable groundwater level, ranging from about 3 to 6 metres (elevations of between 407 to 411 metres) below the existing ground surface at Borehole Nos. 102, 104, 301, 302, and 303, at the southern half of the Clayton Lands, with the highest groundwater levels during the wet spring months. The groundwater drops to the southwest and to the north, as illustrated on Drawing No. 2, Groundwater Contour Map. The groundwater level drops to ranges of between 3 to 4 metres (elevations of between 404.5 to 405.3 metres) below the existing ground surface at the northern limits of the Clayton Lands. Based on the visual data displayed within the groundwater graphs, the data indicates a relatively stable groundwater level with small fluctuations between the 'wet' and 'dry' months of the year. This can be attributed to highly permeable fine to coarse grained sand and silty sand deposits within the southern half of the Clayton lands. The groundwater level within Borehole No. 304 was noted to be higher in comparison to the other wells, however may be more susceptible to precipitation, resulting in 'perched deposits' of water within the

more permeable above the clayey soils. The groundwater was noted to be deepest on the southern portion of the Clayton Lands, where the soil conditions at the borehole conditions generally indicated more permeable sandy soils until termination. The groundwater was shallowest at the northern portion of the Clayton lands, generally following the physical topography. Where encountered within the boreholes, the clayey deposits would tend to 'trap' the water within the low permeable layer and present a high groundwater condition than would otherwise be found within areas of permeable sandy soils. The manual readings gathered in April 2022 would be considered representative of a seasonal 'high'

The groundwater data gathered on the Elora Sands to date indicate a groundwater level on the order of 1.2 to 4.6 metres (elevations of between 408.5 to 410.7 metres) below the existing ground surface at Borehole Nos. 204, 205, and 206, predominantly located south of the landing strip within the farmer's field. The groundwater drops to the east towards a tributary of the Irvine Creek [also identified as Nichol Drain] with a groundwater elevation of between 402.8 to 404.2 metres measured manually periodically within Borehole No. 004 from August 2021 to June 2022. The groundwater level drops to the north as well towards Nichol Road 15 and where the storm water management pond is proposed. The groundwater level at this location is noted to be stabilizing at an elevation of between roughly 401 to 403 metres. The magnitude of fluctuations demonstrated within these areas are on the order of approximately 2 metres, according to the groundwater data graphs and may be attributed to the soil conditions, which is noted to be more layered.

It is also noted that the groundwater levels and elevations would tend to vary with the elevation changes across the site, which varies significantly. As such, it would be prudent to advance a series of test pits or additional boreholes across the site, specifically in the areas of notably higher groundwater levels and areas of large excavations for deeper services or pumping stations, in order to assess first hand how the groundwater will affect the excavations during site earthworks and servicing.

The direction of groundwater flow has been inferred from these groundwater levels, and has been illustrated on the groundwater contour map Drawing No. 2, Groundwater Contour Map. The direction of groundwater is locally flowing towards the Irvine Creek to the north and west on the Clayton Lands. The groundwater is flowing towards the tributary of the Irvine Creek [Nichol Drain] on the east side of the Elora Sands and to the north towards the Irvine Creek on the west side of the site. As such, the shallow groundwater is contributing to the base flow to the Nichol Drain. Best efforts should be exercised to maintain the overall natural drainage as part of the site grading, stormwater management plan and water balance across the site.

The subsurface soil and groundwater conditions described above are illustrated in the attached geological cross sections, Drawing Nos. 3, 4 and 5.

3. HYDROGEOLOGICAL SETTING AND WATER WELL STUDY

A review of available information, including water well records within an approximate 250 metre radius, was undertaken to inform the hydrogeological setting of the subject lands.

3.1.1 METHODS

Information was compiled for this hydrogeological assessment from sources including:

- Topographic, Bedrock Geology, and Soils maps.
- Ministry of Environment, Conservation and Parks [MOE] Water Well Records.
- Site visit of the property and review of adjacent lands.
- Site specific geotechnical investigation program involving a series of boreholes.

3.1.2 LIMITATIONS AND CONDITIONS

Information for this study was compiled from geological maps and well records for water wells drilled in the study area. Water well locations are approximated in well records using the UTM coordinate system and in some instances may be in error by more than 50 metres. Potential for mapping error therefore exists in correlation of well registration numbers with street addresses. Soils and bedrock descriptions in the well records are limited and generalized regarding formation lithology. Stratigraphic interpretation in this report is based on information from water well records, topographic maps, Paleozoic Geology maps of the area, and geotechnical investigations performed by SOIL-MAT ENGINEERS in the area.

3.2.1 GEOLOGY – OVERBURDEN SOIL

Local soils identified in the Ministry of Northern Development and Mine's "Quaternary Geology of Ontario, Southern Sheet Map M2556" are described predominantly as a silt to sandy silt 'till'. This is consistent with our geotechnical investigation, which found the overburden soils to consist primarily of sandy silt with some areas of sand with trace silt. Grain size analyses of representative soil samples yielded clay content in the range of 2 to 22 percent, silt content of 6 to 45 percent, sand content of 28 to 91 percent, and gravel content of 0 to 11 percent.

3.2.2 GEOLOGY – BEDROCK

Bedrock in the in the vicinity of the Site is recorded from the Ministry of Northern Development and Mine's "Bedrock Geology of Ontario, Southern Sheet Map M2344," as Limestone and Dolostone of the Guelph Formation. The depth to bedrock, as reported

in MOE water well records for wells in the proximity of the Site, is on the order of approximately 0.3 to 22.6 metres below ground surface.

3.2.3 GROUNDWATER CONDITIONS

The referenced geotechnical investigation for the site provides an estimate of the static groundwater level at approximately 2 to 7 metres below the existing grade. This is consistent with our experience on other nearby development projects. It is noted that the groundwater conditions within the overburden soils would be influenced by prevailing weather conditions and would experience seasonal fluctuation.

3.2.4 WATER WELL INVENTORY

MOE water well records revealed forty-four [44] wells located within an approximate 250 metre radius of the limits of the Site. The location of these available well records is illustrated in the attached Drawing No. 3. The water well records [https://www.ontario.ca/environment-and-energy/map-well-records] locations are approximated in well records using the UTM co-ordinate system and in some instances may be in error by more than 50 metres. Potential for mapping error therefore exists in correlation of well registration numbers with street addresses. Soils and bedrock descriptions in the well records are limited and generalized regarding formation lithology.

It is understood that the existing residential properties to the west and north are privately serviced with water wells or cisterns and septic systems, with the existing residential properties to the south and east are serviced with municipal water, storm and sanitary sewers.

The data contained in the water well records suggests that there are two [2] predominant aquifers in the Study Area, one which is considered a confined aquifer within the limestone bedrock at an estimated depth between 17.7 to 79.0 m bgs, with an average static water level of 11.3m. The other is an unconfined aquifer within the sandy silt, situated at an estimated depth between 2 and 7 m bgs. Data contained in MOE Water Well Records for forty-four [44] water wells within the *Study Area* are presented for statistical observations in Table A below.

The information gathered from the records indicates the following:

- Ground water was encountered as shallow as 17.7 metres below ground surface [“m bgs”] and as deep as 79.0 m bgs, with an average depth of 52.5 m bgs during the well drilling.
- Static water levels varied from 0.3 to 41.2 m bgs, with an average static level of 11.3 m bgs, and;
- The Pressure Head varied from 13.4 to 71.0 metres with an average of 41.2 metres.
- Recommended available pumping rates ranging between 3.5 and 25 gpm.
- The water bearing formation lithology reported in the majority of the wells was within the limestone bedrock.

Table 1: Water Well Records – Statistical Observations

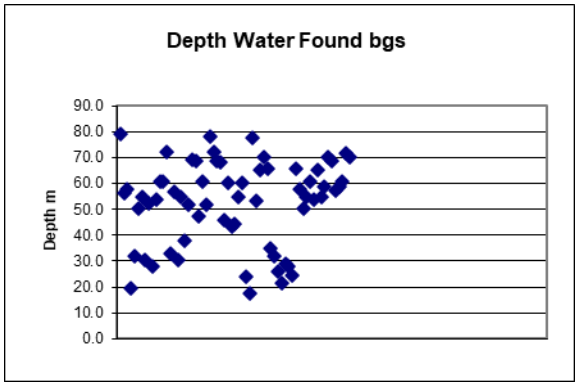
Part Lots 15-17 **Total wells =**
Concessions 8-10 **44**

Surface Elevation		Depth found bgs		Elevation found		Static depth bgs		Static Elevation		Pressure Head
fasl	masl	fasl	masl	fasl	masl	ft	m	fasl	masl	m
1380	420.7	*259*	79.0	*1121*	341.8	*26*	7.9	*1354*	412.8	71.0
1380	420.7	*184*	56.1	*1196*	364.6	*65*	19.8	*1315*	400.9	36.3
1358	414.0	*189*	57.6	*1169*	356.4	*20*	6.1	*1338*	407.9	51.5
1355	413.1	*64*	19.5	*1291*	393.6	*5*	1.5	*1350*	411.6	18.0
1350	411.6	*104*	31.7	*1246*	379.9	*23*	7.0	*1327*	404.6	24.7
1320	402.4	*165*	50.3	*1155*	352.1	*57*	17.4	*1263*	385.1	32.9
1300	396.3	*180*	54.9	*1120*	341.5	*47*	14.3	*1253*	382.0	40.5
1300	396.3	*100*	30.5	*1200*	365.9	*30*	9.1	*1270*	387.2	21.3
1300	396.3	*172*	52.4	*1128*	343.9	*53*	16.2	*1247*	380.2	36.3
1298	395.7	*91*	27.7	*1207*	368.0	*30*	9.1	*1268*	386.6	18.6
1305	397.9	*176*	53.7	*1129*	344.2	*30*	9.1	*1275*	388.7	44.5
1314	400.6	*200*	61.0	*1114*	339.6	*35*	10.7	*1279*	389.9	50.3
1314	400.6	*200*	61.0	*1114*	339.6	*135*	41.2	*1179*	359.5	19.8
1314	400.6	*237*	72.3	*1077*	328.4	*55*	16.8	*1259*	383.8	55.5
1315	400.9	*108*	32.9	*1207*	368.0	*36*	11.0	*1279*	389.9	22.0
1300	396.3	*186*	56.7	*1114*	339.6	*48*	14.6	*1252*	381.7	42.1
1290	393.3	*100*	30.5	*1190*	362.8	*35*	10.7	*1255*	382.6	19.8
1295	394.8	*180*	54.9	*1115*	339.9	*60*	18.3	*1235*	376.5	36.6
1300	396.3	*125*	38.1	*1175*	358.2	*20*	6.1	*1280*	390.2	32.0
1325	404.0	*170*	51.8	*1155*	352.1	*30*	9.1	*1295*	394.8	42.7
1335	407.0	*227*	69.2	*1108*	337.8	*50*	15.2	*1285*	391.8	54.0
1335	407.0	*226*	68.9	*1109*	338.1	*44*	13.4	*1291*	393.6	55.5
1335	407.0	*155*	47.3	*1180*	359.8	*66*	20.1	*1269*	386.9	27.1
1335	407.0	*200*	61.0	*1135*	346.0	*45*	13.7	*1290*	393.3	47.3
1330	405.5	*170*	51.8	*1160*	353.7	*46*	14.0	*1284*	391.5	37.8
1330	405.5	*257*	78.4	*1073*	327.1	*73*	22.3	*1257*	383.2	56.1
1330	405.5	*237*	72.3	*1093*	333.2	*33*	10.1	*1297*	395.4	62.2
1325	404.0	*225*	68.6	*1100*	335.4	*89*	27.1	*1236*	376.8	41.5
1325	404.0	*223*	68.0	*1102*	336.0	*61*	18.6	*1264*	385.4	49.4
1325	404.0	*150*	45.7	*1175*	358.2	*27*	8.2	*1298*	395.7	37.5
1325	404.0	*198*	60.4	*1127*	343.6	*47*	14.3	*1278*	389.6	46.0
1325	404.0	*142*	43.3	*1183*	360.7	*38*	11.6	*1287*	392.4	31.7
1350	411.6	*145*	44.2	*1205*	367.4	*39*	11.9	*1311*	399.7	32.3
1345	410.1	*180*	54.9	*1165*	355.2	*57*	17.4	*1288*	392.7	37.5
1345	410.1	*198*	60.4	*1147*	349.7	*53*	16.2	*1292*	393.9	44.2
1340	408.5	*78*	23.8	*1262*	384.8	*4*	1.2	*1336*	407.3	22.6
1325	404.0	*58*	17.7	*1267*	386.3	*1*	0.3	*1324*	403.7	17.4
1325	404.0	*255*	77.7	*1070*	326.2	*23*	7.0	*1302*	397.0	70.7

1315	400.9	*175*	53.4	*1140*	347.6	*24*	7.3	*1291*	393.6	46.0
1320	402.4	*214*	65.2	*1106*	337.2	*19*	5.8	*1301*	396.6	59.5
1310	399.4	*230*	70.1	*1080*	329.3	*15*	4.6	*1295*	394.8	65.5
1305	397.9	*215*	65.5	*1090*	332.3	*22*	6.7	*1283*	391.2	58.8
1305	397.9	*114*	34.8	*1191*	363.1	*1*	0.3	*1304*	397.6	34.5
1310	399.4	*105*	32.0	*1205*	367.4	*23*	7.0	*1287*	392.4	25.0
1305	397.9	*85*	25.9	*1220*	372.0	*6*	1.8	*1299*	396.0	24.1
1310	399.4	*70*	21.3	*1240*	378.0	*26*	7.9	*1284*	391.5	13.4
1310	399.4	*95*	29.0	*1215*	370.4	*22*	6.7	*1288*	392.7	22.3
1315	400.9	*91*	27.7	*1224*	373.2	*14*	4.3	*1301*	396.6	23.5
1315	400.9	*81*	24.7	*1234*	376.2	*35*	10.7	*1280*	390.2	14.0
1315	400.9	*215*	65.5	*1100*	335.4	*24*	7.3	*1291*	393.6	58.2
1310	399.4	*190*	57.9	*1120*	341.5	*30*	9.1	*1280*	390.2	48.8
1305	397.9	*165*	50.3	*1140*	347.6	*24*	7.3	*1281*	390.5	43.0
1310	399.4	*179*	54.6	*1131*	344.8	*20*	6.1	*1290*	393.3	48.5
1320	402.4	*200*	61.0	*1120*	341.5	*34*	10.4	*1286*	392.1	50.6
1320	402.4	*176*	53.7	*1144*	348.8	*30*	9.1	*1290*	393.3	44.5
1320	402.4	*214*	65.2	*1106*	337.2	*43*	13.1	*1277*	389.3	52.1
1315	400.9	*180*	54.9	*1135*	346.0	*38*	11.6	*1277*	389.3	43.3
1305	397.9	*193*	58.8	*1112*	339.0	*40*	12.2	*1265*	385.7	46.6
1305	397.9	*230*	70.1	*1075*	327.7	*39*	11.9	*1266*	386.0	58.2
1315	400.9	*225*	68.6	*1090*	332.3	*34*	10.4	*1281*	390.5	58.2
1305	397.9	*188*	57.3	*1117*	340.5	*26*	7.9	*1279*	389.9	49.4
1310	399.4	*192*	58.5	*1118*	340.9	*30*	9.1	*1280*	390.2	49.4
1310	399.4	*200*	61.0	*1110*	338.4	*77*	23.5	*1233*	375.9	37.5
1325	404.0	*235*	71.6	*1090*	332.3	*35*	10.7	*1290*	393.3	61.0
1325	404.0	*230*	70.1	*1095*	333.8	*44*	13.4	*1281*	390.5	56.7
		Avg.=	*52.5*	Avg.=	*350.1*	Avg.=	*11.3*	Avg.=	*391.3*	*41.2*
		SdevP=	*16.2*	SdevP=	*16.3*	SdevP=	*6.6*	SdevP=	*8.4*	*14.6*

Water bearing formation

Formation	#	%
Overburden	0	0
Bedrock	44	100



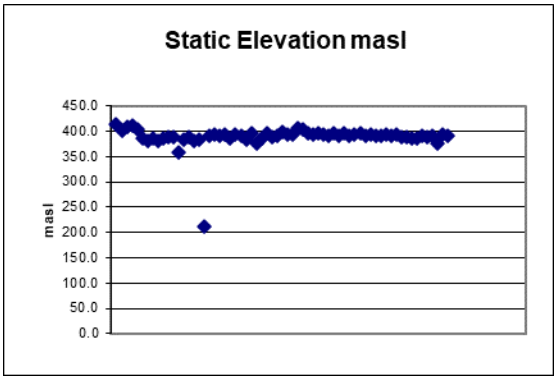


Table D – MOE Water Well Record Statistical Observations

The term aquifer here generally refers to a geologic unit(s) or formation permeable enough to yield economic quantities of water to wells. The term aquitard refers to a geologic unit(s) or formation with insufficient permeability to supply production wells. Aquifers and aquitards are interpreted here based on statistical observation of data contained in the MOE water well records. Hydrographs of water levels are normally not kept for private wells, therefore historical fluctuations in water levels are not known.

3.3 HYDROGEOLOGICAL SETTING

Based on the available information the following comments can be made:

- There are two [2] predominant aquifers in the Study Area, one which is considered a confined aquifer within the limestone bedrock at an estimated depth between 17.7 to 79.0 m bgs, with an average static water level of 11.3m. The other is an unconfined aquifer within the sandy silt, situated at an estimated depth between 2 and 7 m bgs.;
- In each case the aquifer within the limestone bedrock exhibited a positive pressure head [i.e., the static water level is above the elevation where the groundwater was encountered] in each well record, indicating the aquifer was under confined artesian conditions with respect to the confining layer.
- Pressure head (hydraulic head above aquifer) ranged from 13.4 to 71.0 metres with an average of 41.2 metres;
- Recommended available pumping rates ranging between 3.5 and 25 gpm.

Given the above, any active potable water wells in the area would be at greater depths as drilled bedrock wells. Such wells would be drawing water from within the limestone bedrock aquifer. The overburden soils consist of primarily sand and silty sands, with less permeable clayey silt. The shallow groundwater condition on the site is typical of an unconfined near surface aquifer, which would be influenced by seasonal weather conditions, drainage, and the presence of variable more permeable seams in the overburden soils.

4. EARTHWORKS AND SITE GRADING OPERATIONS

Based on the provided preliminary grading plan forwarded to our office by MTE (Project No. 50250-100, F16-FG.dwg) dated April 7, 2022 some cut and fill on the order of 2 to 4 metres will take place. Despite the moderate cut and fill operations, the preliminary grading plan has taken into consideration the groundwater elevations across this parcel of land, such that fill operations will take place on the northern portion of the site where groundwater was noted to be highest and cut operations in the middle and south portions of the site, where groundwater was observed to be deepest. It would be expected that natural surface drainage would result in pooling of water in low spots across the site, which are noted to be within the areas of fill. The predominantly sandy soils on the Clayton Lands will promote natural infiltration and will make site servicing easier, provided that contractors work their way from the low end of the site to the high end of the site.

At this time a preliminary site servicing and grading plan for the Elora Sands has not been provided to our office, as the potential development of those lands is a future

consideration. However, the existing topography of this parcel of land contains larger undulations and changes in elevations. Therefore, it is anticipated that the cut and fill operations for this parcel of land will require more significant regrading. It is recommended that the cut/fill operations be handled in a similar manner as the Clayton Lands, such that fill operations take place where groundwater is shallowest at the northern portion of the site and cut operations take place where the deepest groundwater was encountered at the southern end of the site. As noted above, the Elora Sands generally consists of sandy silt/silty sand within the upper levels, transitioning to a clayey sandy silt with depth, however is more variable at times with clayey or gravelly deposits. As such, 'perched' water deposits within the permeable seams may yield 'wet' excavated material. Contractors should anticipate difficulties with base stabilisation and engineered fill works when work is conducted during the 'wet' times of the year. It is recommended that where possible, earthworks be conducted during the dry summer months. Where engineered fill occurs during the 'wet' times of the year, considerable delays and challenges in achieving effective compaction associated with wet soil conditions may be incurred and should be anticipated. It may be necessary to spread a thin lift of wet backfill to 'air dry' for several days or more if engineered fill is undertaken during the 'wet' times of the year.

5. HYDROGEOLOGICAL CONSIDERATIONS

As noted above, it is understood that the development is anticipated to consist of single-family dwellings and townhouse blocks, including the installation of associated underground municipal services along asphalt paved roadways. Excavations for the proposed development services are expected to extend to depths of up to approximately to 2 to 5 metres below the existing ground surface, while excavations for foundations would be expected to extend up to approximately 1.5 to 2 metres. Measurements of the groundwater level at the monitoring well locations indicate a groundwater level on the order of approximately 2 to 7 metres below the existing ground surface, generally 3.5 to 7 metres over the Clayton lands presently proposed for development. The groundwater level is shallower to the east, approaching the Irvine Creek tributary [Nichol Drain], generally following the drop in topography toward the creek. As the conditions consisted mostly of the permeable sand on the Clayton Lands, the groundwater level between the 'wet' and 'dry' seasons of the year was relatively consistent with little to no fluctuation. These conditions, with relatively permeable soil conditions at depth, and groundwater at sufficient depth, are well suited to proposed development. The generally permeable condition of the native sand deposit present over the site will generally allow for natural drainage and movement of groundwater. As such, it is not considered likely that service trenches would present any conflict or impact to the natural groundwater conditions.

The exception might be deeper trunk sewers, which would warrant closer assessment as the detailed design proceeds.

Shallower groundwater was observed on the Elora Sands at the northern portion of the site where more clayey and gravelly deposits were encountered, as noted above. These deposits are likely to trap and create a 'perched' water condition which may exacerbate the infiltration of groundwater into open excavations, however would likely be able to be handled with conventional dewatering methods and techniques. Furthermore, the fluctuations in groundwater level were higher on the Elora Sands as the soils conditions encountered within the boreholes consisted of more clayey deposits.

The short-term excavations for the proposed servicing are generally anticipated to extend through the permeable sandy soils and into the clayey sandy silt till where deeper excavations are required. Where the site calls for the placement of engineered fill, raising the grade, it would create an even larger separation between the groundwater table and the proposed servicing and foundation construction. Excavations would be expected to be subject to relatively minor groundwater infiltration, such that it should be possibly to adequately control such infiltration using conventional construction dewatering techniques such as pumping from sumps in the base of the excavation. However, during wet times of year and in deeper excavations, some instability of the excavations should be expected. In the event that deeper excavations are required below the groundwater level or where more permeable sand and gravel seams are encountered, a greater rate of infiltration should be anticipated, requiring multiple pumps and possibly more sophisticated dewatering techniques for deeper excavations.

The rate of dewatering would be a function of the time of year, depth of excavation, length of trench opened by the contractor, etc. In most cases it is expected to be below 50,000 L/day, though for deeper excavations may be as much as up to 400,000 L/day. Where dewatering rates of greater than 50,000 L/day are anticipated it would be necessary to file an EASR notice for construction dewatering. However, it is not anticipated that dewatering would be greater than 400,000 L/day, and so the need for a permit to take water [PTTW] is not expected. As noted above, the advancement of a number of test pits, would be prudent to assist in refining the anticipated construction dewatering requirements as the design of the site grading and servicing proceeds.

The layering of sandy and clayey soils encountered specifically on the Elora Sands would allow for some natural drainage and movement of groundwater, however given the high silt content this should not be solely relied upon. As such, excavations may have the potential to intercept shallow groundwater on parts of the site and thus create a "French Drain" within the bedding material, with possible affect to the groundwater.

Consequently, if groundwater is encountered during digging of the service trenches, measures may need to be implemented to mitigate/eliminate groundwater interference. These would include clay cut-offs within the service trench fill encasing the pipe/service. Such clay cut-offs should be installed in accordance with OPSD 80.095, using a suitable clay soil or alternatively a blend of 1 part bentonite chips to 3 parts OPSS Granular A, or suitably clayey soil encountered on site. The need for such measures is best assessed as the detailed design proceeds, and in the field during construction. Regardless, any such locally lowering of the groundwater associated with site servicing would be limited to the near surface soils, and would not be expected to significantly impact the regional groundwater conditions.

Excavations for the proposed basement levels should be well above the groundwater level, pending review of the final site grading plans and foundation depths, along with more detailed assessment such as test pits in the area of observed shallow groundwater levels. With proper consideration to the site grading and design founding elevations, it is not anticipated that foundation excavations would require ongoing groundwater control, other than typical perimeter weeping tile and sump pumps.

The final grading of the site should appropriately consider the groundwater levels in order to minimise or avoid conflict or impact to the groundwater during pre and post construction. In this regard the grading and storm water management plan should accommodate surface runoff that follows the existing overall drainage patterns as much as possible.

It is also noted that the use of Low Impact Design [LID] methods as part of the stormwater management for the proposed development would be viable for much of the site and should be considered. The permeable sand deposit predominantly on the Clayton Lands, above the groundwater level, would afford an opportunity for natural infiltration of surface runoff, such as in 'dry' ponds, infiltration galleries, rear yard infiltration swales or galleries, etc. As noted above, the sand deposit would have hydraulic conductivity on the order of 10^{-2} to 10^{-3} cm/sec, correlating to design infiltration rates on the order of 100 to 300 mm/hr. The use of infiltration systems could be readily utilised for lot level infiltration of rain water from downspouts, and also within the overall SWM plan. The soil conditions on the Elora Sands are more variable and contain more clayey deposits which are considered to have a low permeability characteristic. Preliminary grain size analyses on the clayey sandy silt till indicate a hydraulic conductivity on the order of 10^{-6} to 10^{-8} cm/sec, correlating to design infiltration rates on the order of less than 10 to 15 mm/hr. As such, LID systems aren't recommended where areas of clayey sandy silt till are encountered [generally the lower areas of the site, towards the tributary to Irvine Creek] but should be considered in areas consisting

of the more permeable sandy deposits [generally the higher portions of the site, to the south]. This would be better addressed during the detailed design process, supported with the advancement of test pits at specific locations proposed for LID measures. It is noted that single well response testing will be performed in a number of the monitoring wells installed which will allow for a more accurate estimate of the hydraulic conductivity for the various soil layers.

Based on our observations and details of the proposed development, it is not anticipated that the proposed construction will have an adverse impact on the groundwater condition in the area, provided the comments and recommendations provided in this report are adhered to. There is not expected to be a significant or long-term impact on the development, such as ongoing dewatering, etc., provided the above discussion and recommendations are considered in the site grading, servicing and stormwater design.

As outlined above, the hydrogeological setting of the site is such that potable wells in the area would be drawing from a deep confined bedrock aquifer, and would be largely unaffected by potential construction activities encountering the shallow near surface groundwater regime. Construction of the proposed development would involve relatively shallow excavations only, with limited interaction with the shallow groundwater regime, and would not have an impact on deeper supply aquifers. As such, there would be no anticipated negative impact from the proposed development on nearby potable wells, including municipal supply wells. Further, as the proposed development would be provided with municipal water supply, there would be no impact to potential supply aquifers or associated water wells in the area, if any.

It is noted that the subject lands are within a Wellhead Protection Area (WHPA). However, based on the comments noted above, there will be no anticipated negative impact with respect to the deep bedrock aquifer serving as the potable supply source for private and municipal potable wells within the area.

6. STORMWATER MANAGEMENT (SWM) POND DESIGN CONSIDERATIONS

As noted above, the static groundwater level at the northern portion of the Elora Sands is on the order of 0.5 to 4.5 metres below the existing ground surface, at a relative elevation of roughly 403 to 401 metres, based on the available groundwater data to date. The groundwater charts for the monitoring wells at these locations have illustrated the large fluctuations that are experienced during the ‘wet’ and ‘dry’ seasons of the year. At this time the design details of the proposed SWM pond proposed at the north edge of the Elora Sands are not known, however it is anticipated that the pool will have a

permanent pool elevation near the observed groundwater level, and the use of an impermeable liner would be expected to be required.

In general, where the permanent pool elevation is below the static groundwater elevation, it will be necessary to provide a low permeability layer over the base of the pond to resist the infiltration of natural groundwater, and of sufficient weight to resist the hydrostatic uplift pressures. Conversely, where the permanent pool elevation is above the static groundwater level, a low permeability liner will be required to prevent the exfiltration of water out of the pond. This could be accomplished through the use of a compacted clay liner, or with a weighed down proprietary liner system, etc. The weight of the liner system would have to exceed the uplift pressure of the ground water during the most severe periods of the year, likely when maximum storage is required. In approximate terms for example, one metre of clay liner, or equivalent, would be required for about every two meters of water storage below static ground water level, i.e., when the water level in the pond is 2 metres below the static ground water table, the clay liner would have to be at least one metre thick; if 3 metres below the static level, then 1.5 metres thick, etc.

Where the permanent pool elevation is below the static groundwater elevation, it will be necessary to provide a low permeability layer over the base of the pond to resist the infiltration of natural groundwater, and of sufficient weight to resist the hydrostatic uplift pressures. Conversely, where the permanent pool elevation is above the static groundwater level, a low permeability liner will be required to prevent the exfiltration of water out of the pond. This could be accomplished through the use of a compacted clay liner, or with a weighed down proprietary liner system, etc. The weight of the liner system would have to exceed the uplift pressure of the ground water during the most severe periods of the year, likely when maximum storage is required. In approximate terms for example, one metre of clay liner, or equivalent, would be required for about every two meters of water storage below static ground water level, i.e., when the water level in the pond is 2 metres below the static ground water table, the clay liner would have to be at least one metre thick; if 3 metres below the static level, then 1.5 metres thick, etc. It is recommended that best efforts be made to design the static pool elevation close to the static groundwater elevation so that the natural seasonal fluctuations of the groundwater elevation dictate the permanent pool elevation. This would eliminate the need to construct a weighted liner to resist the hydrostatic uplift pressures of the static groundwater elevation. That being said, this would only work if the former solution could be achieved whilst attaining the required water storage volume for the development.

An impermeable compacted clay liner would consist of a sufficiently plastic clay soil, with a recommended minimum clay content of 20 per cent and plasticity index of 7. Based on the current laboratory testing of the native soils, the majority of the clayey silt soils are generally suitable for use as an impermeable liner for the proposed SWM ponds, however any sandy deposits or silt material encountered should be selectively sorted and separated from its distinctly different counterpart to avoid use of the more permeable material. As such, during site grading and servicing activities, it would be prudent to stockpile such clayey soil near the area of the proposed SWM pond for use as such an impermeable liner. Additional testing may then be conducted on the stockpiled material, to confirm its suitability for use as an impermeable clay liner.

As noted above, the clayey soils encountered might be suitable for use as an impermeable clay liner but would require additional testing on at the specific location of the SWM pond. The base of the SWM pond may be prepared by scarifying or 'discing' in the upper perhaps 0.3 to 0.5 metres to destroy any natural layering structure, moisture conditioned to within -2 to +4 per cent of its optimum moisture content, and recompacted in place, however the soils present at the proposed base of the SWM pond should be confirmed. In the event that an imported clayey soil is required for use as an impermeable liner, the clay liner should be placed in nominal lifts of 300 millimetres, sufficiently worked and moisture conditions as noted above, and compacted to 95 per cent of its SPMDD. It is noted as well, regardless of the provision of an impermeable liner, the sides of the pond should be well worked or scarified to destroy any natural layers or seams, specifically any more permeable sandy or gravely seams. Where such layers are encountered, a layer of available on-site clayey soil should be placed and compacted, as outlined above, to restrict the natural infiltration of groundwater into the pond through these more permeable horizontal seams.

Alternatively, weighed down proprietary liners could be considered, however the suppliers of such materials (such as Layfield, Terrafix, Suprema) would have to be consulted for recommendations on the appropriate product and installation methods for the site conditions. Such artificial liners would not require compaction efforts and could be weighed down with practically any available soil or granular material.

Interior pond slopes beneath the permanent pool elevation should be limited to inclinations no steeper than 4 horizontal to 1 vertical, with interior slopes above permanent pool elevation and exterior slopes no steeper than 3 horizontal to 1 vertical. Should steeper slopes be required, it will be necessary to provide some form of stabilisation such as the placement of coarse 'rip rap' stone, or proprietary product such as Turfstone or Cable-Crete, or construction as a reinforced earth embankment. It is recommended that all interior pond slopes be provided with at least some form of

nominal stabilisation/protection to control loss erosion/loss of ground. Above the pond level this may consist of appropriate vegetation.

Material utilised in construction of pond slopes must be free of significant organic deposits, construction debris, or any other deleterious materials which would affect stability of the pond walls. Our office should be retained to review any imported material to the site, as well as to provide quality control services during construction.

It is also noted that appropriate care and effort will be required by the contractor around inlet and outlet structures to ensure the impermeable liner is continuous and avoid the potential of 'piping'. In this regard the clay liner should be completely constructed prior to the installation of inlet/outlet structures. A bentonite clay material could be utilised within the fill around any structures to provide a continuous impermeable seal.

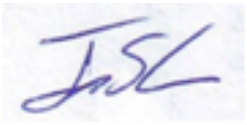
7. GENERAL COMMENTS

The comments provided in this document are intended only for the guidance of the design team. The material in it reflects SOIL-MAT ENGINEERS' best judgement in light of the information available at the time of preparation. The subsurface descriptions and borehole information are intended to describe conditions at the borehole locations only. It is the contractors' responsibility to determine how these conditions will affect the scheduling and methods of construction for the project. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SOIL-MAT ENGINEERS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that this geotechnical report is sufficient for your present requirements. Should you require any additional information or clarification as to the contents of this document, please do not hesitate to contact the undersigned.

Yours very truly,
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

Scott Wylie, B.Eng., EIT.



Ian Shaw, P. Eng., QP_{ESA}
Senior Engineer

Enclosures: Drawing No. 1, Borehole Location Plan
Drawing No. 2, Groundwater Contour Map
Drawing No. 3, Water Well Records
Drawing Nos. 4, 5 and 6, Geologic Cross Sections
Log of Borehole Nos. 001 to 007, 101 to 104, 201 to 206, 301 to 307 and 401, inclusive
Grain Size Analyses

Distribution: Cachet Developments [pdf]

LEGEND

- Borehole Location — BH#
- Monitoring Well Location — MW#
- Geological Cross Section Location

NOTES

1. This drawing should be read in conjunction with Soil-Mat Engineers & Consultants Ltd. Report No. SM 301591-G.

2. Borehole and monitoring well locations are approximate.

SOIL-MAT

ENGINEERS & CONSULTANTS LTD.

Geotechnical Investigation
Proposed Residential Development
7581 Nichol Road 15
Elora, Ontario

Borehole Location Plan

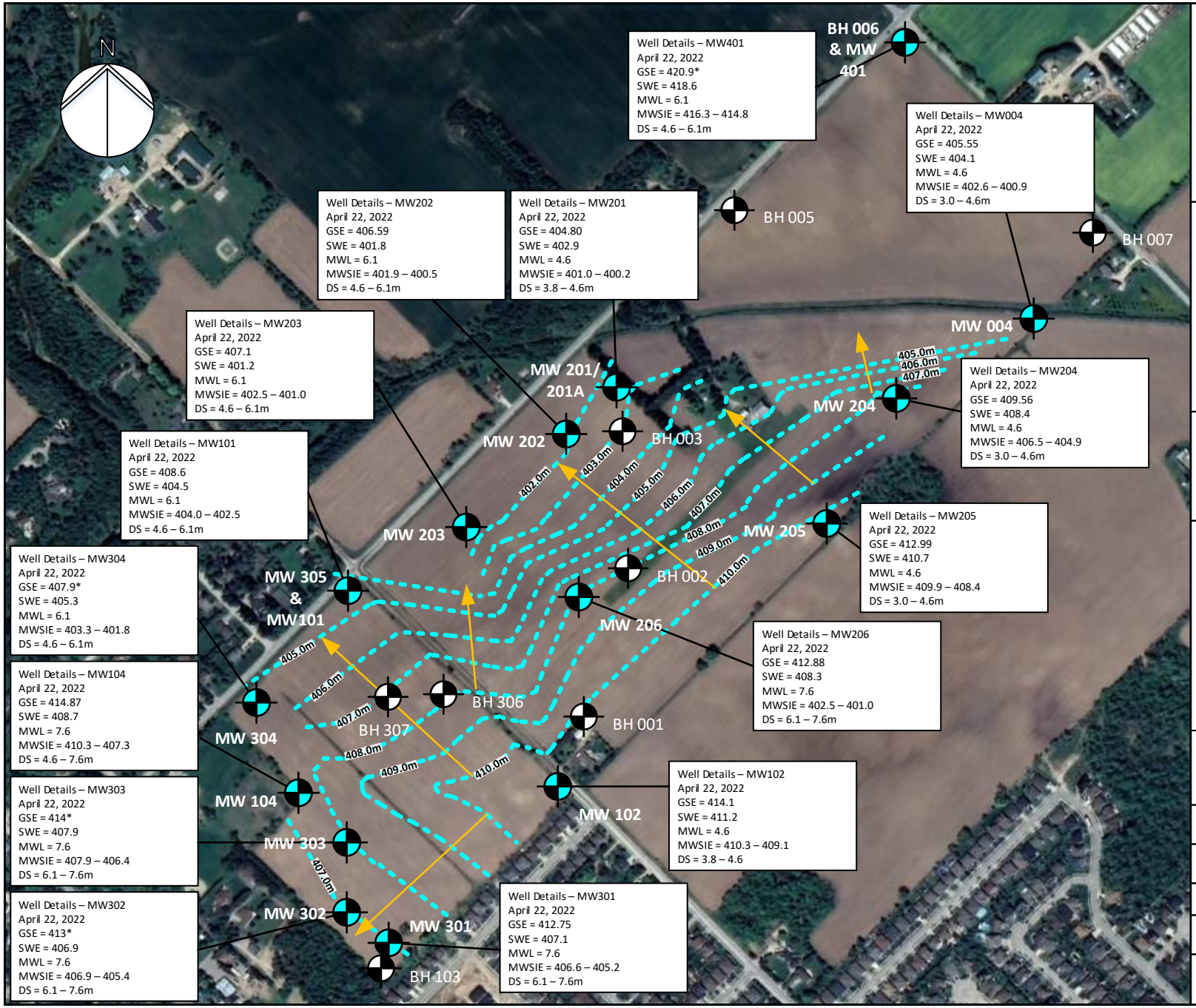
Project No. SM 301591-G

Date: June 2022

Drawn: SW | Checked: IS

SM 301591-G Borehole Location Plan

Drawing No. 1



LEGEND

Monitoring Well Location

MW#

GSE = Monitoring Well Ground Surface Elevation
SWE = Static Water Elevation [taken on April 22, 2022]
MWL = Monitoring Well Length
MWSIE = Monitoring Well Screen Interval Elevation
DS = Depth of Screen

NOTES

1. This drawing should be read in conjunction with Soil-Mat Engineers & Consultants Ltd. Report No. SM 301591-G.

2. Borehole and monitoring well locations are approximate.

*GSE interpolated between contour lines from topographic survey

SOIL-MAT

ENGINEERS & CONSULTANTS LTD.

Geotechnical Investigation
Proposed Residential Development
7581 Nichol Road 15
Elora, Ontario

Groundwater Contour Map

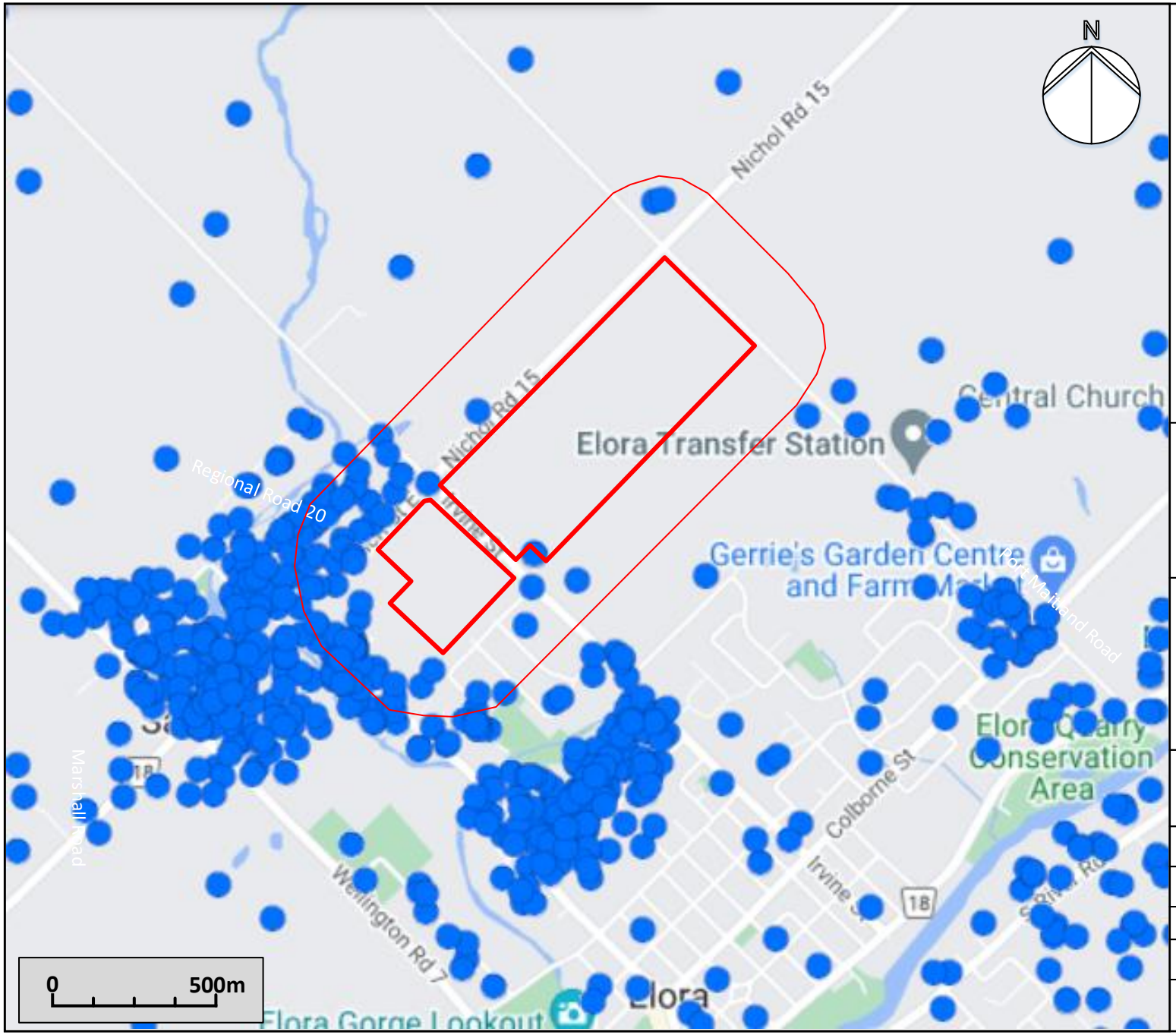
Project No. SM 301591-G

Date: June 2022

Drawn: SW | Checked: IS

SM 301591-G Groundwater Contour Map

Drawing No. 2



LEGEND

= Site

= Well Record

= Study Area

SOIL-MAT

ENGINEERS & CONSULTANTS LTD.

Groundwater Well Survey
Proposed Residential Development
Nichol & Clayton Lands
Elora, Ontario

Ministry of the Environment
Water Well Records Plots

Project No. SM 302951-E

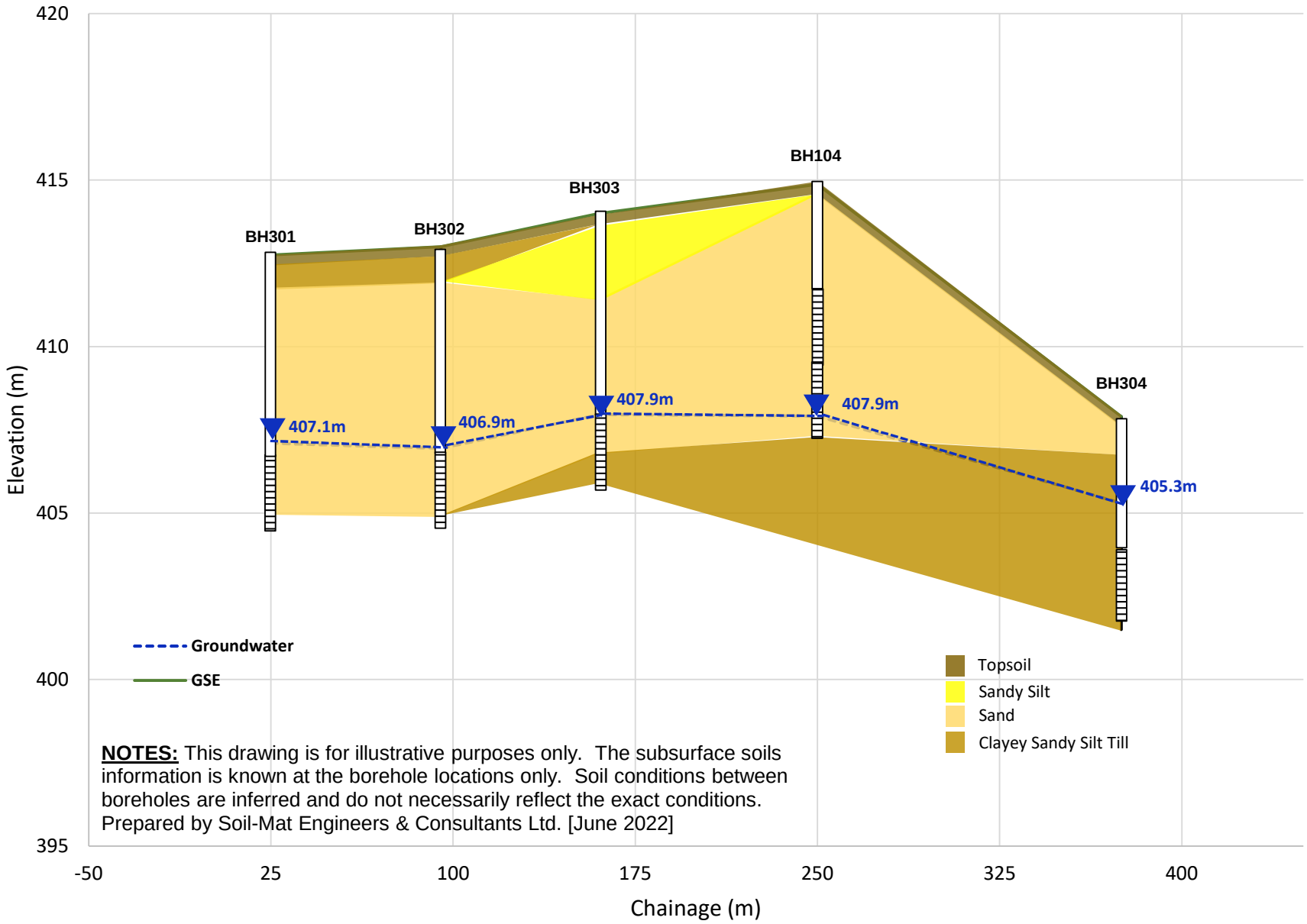
Date: July 2022

Drawn: PM | Checked: IS

SM 302951-E Water Well Records

Drawing No. 3

Geological Cross Section A-A

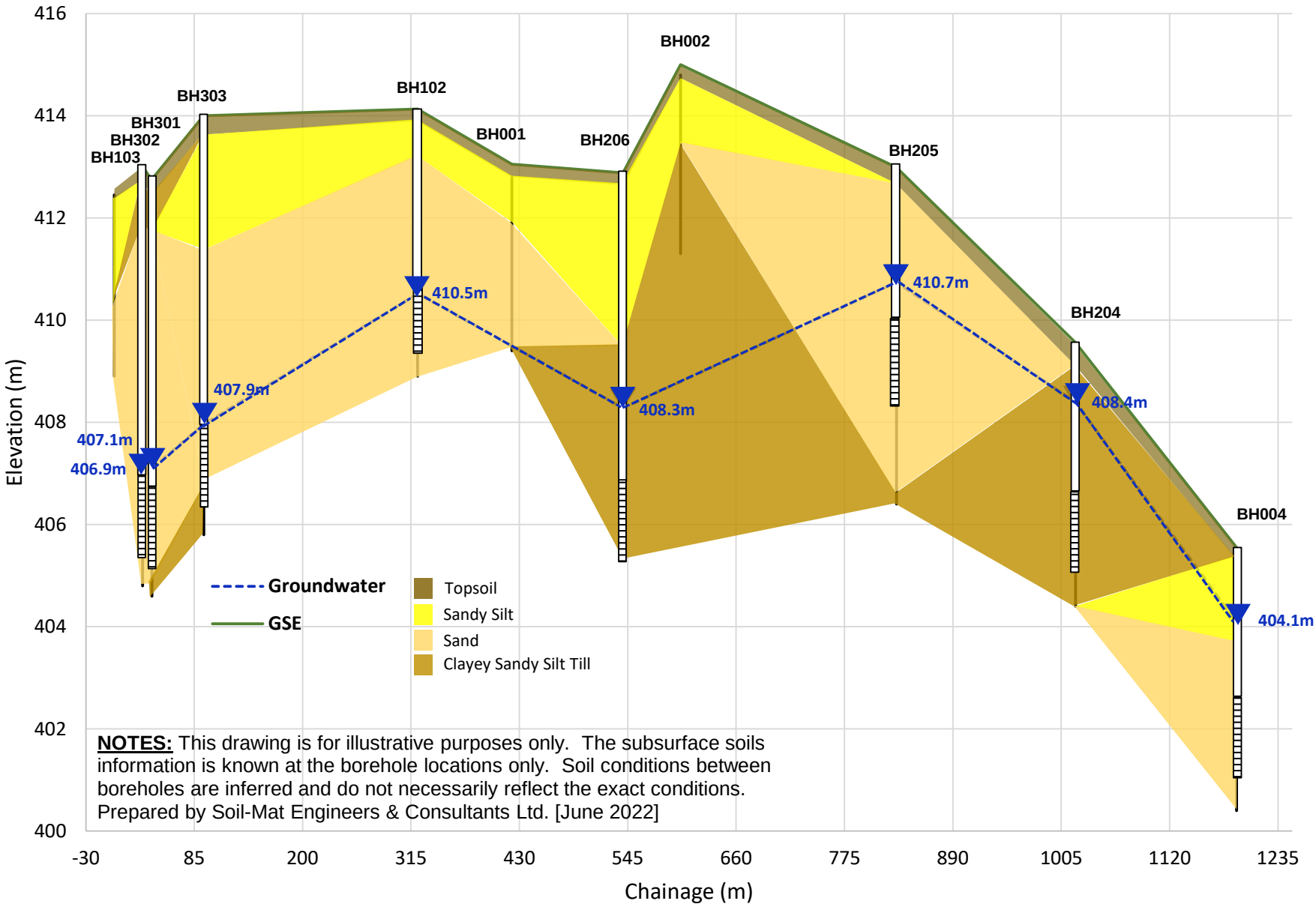


NOTES: This drawing is for illustrative purposes only. The subsurface soils information is known at the borehole locations only. Soil conditions between boreholes are inferred and do not necessarily reflect the exact conditions.
Prepared by Soil-Mat Engineers & Consultants Ltd. [June 2022]

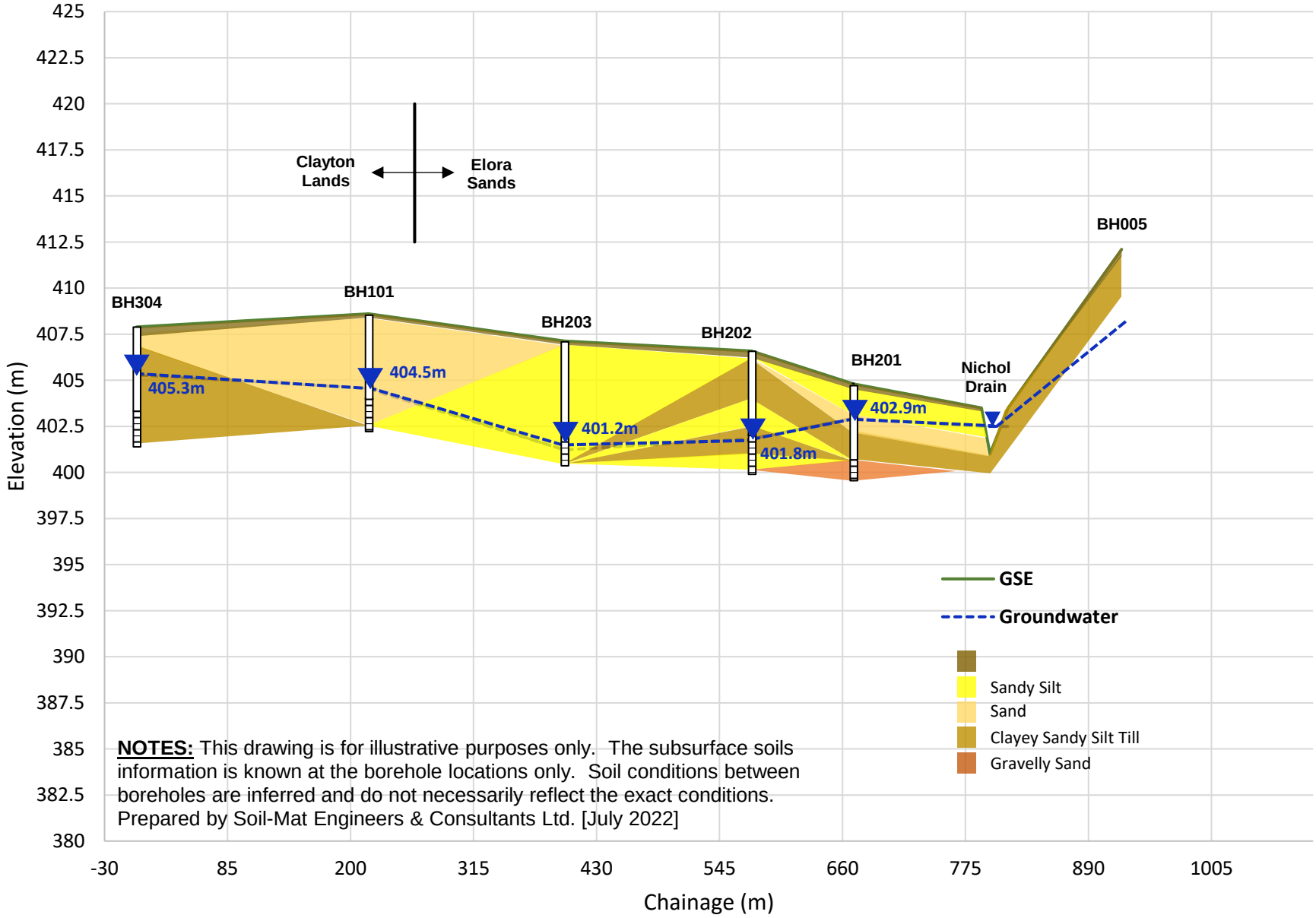
Drawing No. 4

Project No. SM 301951-G

Geological Cross Section B-B



Geological Cross Section C-C



NOTES: This drawing is for illustrative purposes only. The subsurface soils information is known at the borehole locations only. Soil conditions between boreholes are inferred and do not necessarily reflect the exact conditions.
Prepared by Soil-Mat Engineers & Consultants Ltd. [July 2022]

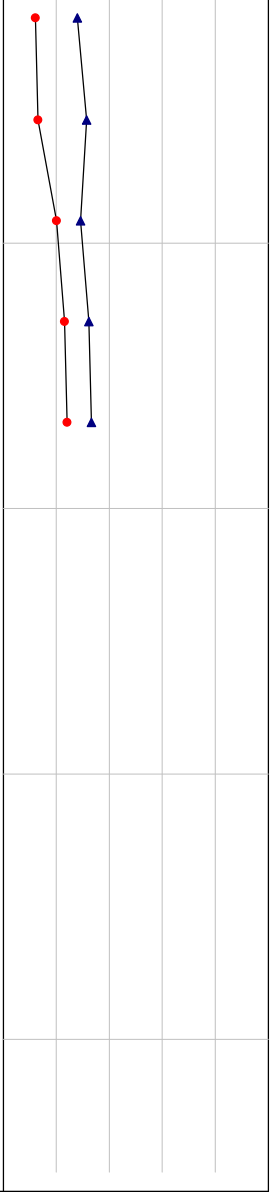
Log of Borehole No. 001

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838268
E: 545454

Depth (ft / m)	Elevation (m)	Symbol	Description	Well Data	SAMPLE Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
	413.05		Ground Surface								
0 / 0	412.80		**Topsoil** Approximately 250 millimetres of topsoil.		SS	1	4 5 7 6	12			
3 / 1	411.90		**Sandy Silt** Brown, trace clay, trace gravel, reworked in upper levels, compact.		SS	2	6 7 6 6	13			
			Sand Brown, trace clay, silt, and gravel, medium to coarse gradation, compact.		SS	3	5 8 12 14	20			
					SS	4	12 10 13 10	23			
11 / 3	409.40				SS	5	6 11 13 15	24			
12 / 4			End of Borehole								

Moisture Content w% (10 20 30 40)
Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using solid stem auger equipment on August 6, 2021 to termination at a depth of 3.6 metres.

2. Borehole was recorded as dry and caved to a depth of 1.5 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 6, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 002

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838469
E: 545516

Depth (ft)	Depth (m)	Elevation (m)	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		415.00	Ground Surface								
0	0	414.80	**Topsoil** Approximately 250 millimetres of topsoil.		SS	1	2 4 4 5	8			
3	1	413.50	**Sandy Silt** Brown, reworked in upper levels, trace clay, silt, and gravel, loose.		SS	2	4 3 6 8	9			
6	2	412.50	**Clayey Sandy Silt Till** Brown, trace to some gravel, stiff to very stiff.		SS	3	6 6 6 7	12		3.5	
9	3	411.30	Transition to grey.		SS	4	3 7 6 7	13		4.0	
12	4		End of Borehole		SS	5	9 7 15 18	22		>4.5	

Moisture Content w% (10 20 30 40)
Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using solid stem auger equipment on August 5, 2021 to termination at a depth of 3.7 metres.

2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 5, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 003

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838652
E: 545505

Depth (ft / m)	Elevation (m)	Symbol	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)	Moisture Content w% (10 20 30 40) / Standard Penetration Test blows/300mm (20 40 60 80)
0 ft / 0 m	409.93		Ground Surface									
0	409.93		**Topsoil** Approximately 150 millimetres of topsoil.		SS	1	4 6 10 8	16				
1			**Sand** Brown, reworked in upper levels, trace clay, silt, and gravel, compact.		SS	2	6 10 10 7	20				
2	408.10				SS	3	6 8 10 11	18				
2	407.80		**Clayey Sandy Silt Till** Brown, trace to some gravel, compact.									
			End of Borehole									

NOTES:

1. Borehole was advanced using solid stem auger equipment on August 6, 2021 to termination at a depth of 2.1 metres.

2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 6, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 004

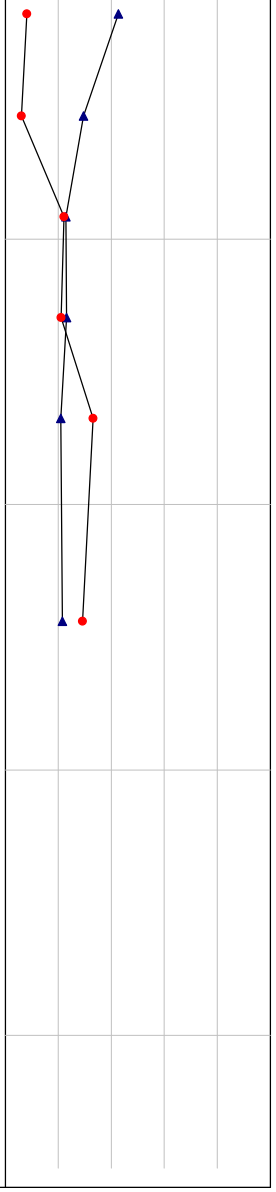
Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838792
E: 546044

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		405.55	Ground Surface							
0	0	405.35	**Topsoil** Approximatelty 200 millimetres of topsoil.							
1			**Sandy Silt** Brown, trace to some clay, trace gravel, reworked in upper levels, loose.	SS	1	2 3 5 6	8			
2										
3	1			SS	2	4 3 3 5	6			
4										
5										
6		403.70	**Sand** Brown, trace clay, silt, and gravel, medium to coarse gradation, wet, compact to dense.	SS	3	8 10 12 15	22			
7	2									
8				SS	4	8 10 11 10	21			
9										
10	3			SS	5	8 10 23 30	33			
11										
12										
13	4									
14										
15		400.70								
16	5	400.40	Transition to grey.	SS	6	3 11 18 23	29			
17			End of Borehole							
18										
19										
20	6									
21										
22										
23	7									
24										
25										
26	8									
27										
28										
29	9									

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using hollow stem auger equipment on August 5, 2021 to termination at a depth of 5.2 metres.

2. Borehole was recorded as open and 'wet' at a depth of 2.7 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

August 6, 2021 - 2.74 metres below ground surface.

August 27, 2021 - 1.75 metres below ground surface.

February 23, 2021 - 1.33 metres below ground surface.

April 22, 2022 - 1.47 metres below ground surface.

June 1, 2022 - 1.78 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: August 5, 2021
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 005

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838939
E: 545636

Depth (ft / m)	Elevation (m)	Symbol	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)	Moisture Content w% (10 20 30 40) / Standard Penetration Test blows/300mm (20 40 60 80)
0 / 0	412.10		Ground Surface									
0 / 0	411.90		**Topsoil** Approximately 200 millimetres of topsoil.		SS	1	2 4 5 7	9				
3 / 1			**Clayey Sandy Silt Till** Brown, reworked in upper levels, trace to some gravel, increasing clay content with depth, loose to compact.		SS	2	1 3 3 5	6				
6 / 2	410.00				SS	3	3 5 7 9	12				
7 / 2			End of Borehole									

NOTES:

1. Borehole was advanced using solid stem auger equipment on August 5, 2021 to termination at a depth of 2.1 metres.

2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 5, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 006

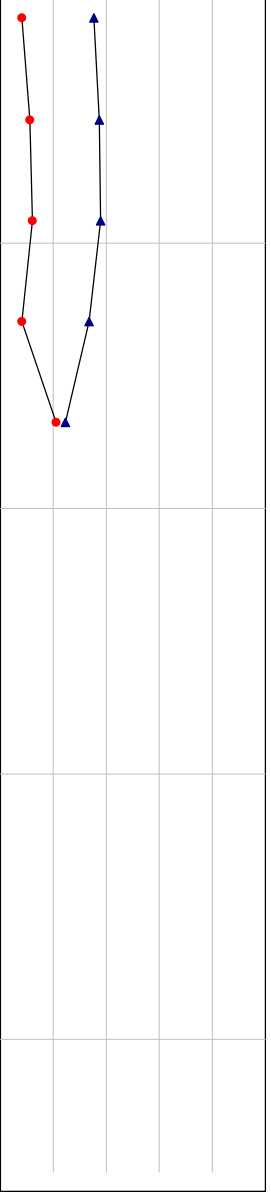
Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4839162
E: 545871

Depth (ft)	Depth (m)	Elevation (m)	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		420.91	Ground Surface								
0	0	420.70	**Topsoil** Approximately 200 millimetres of topsoil.		SS	1	4 4 4 4	8			
1			**Sand** Brown, reworked in upper levels, trace rootlets, loose to compact.		SS	2	3 5 6 6	11			
2	1	419.40	**Clayey Sandy Silt Till** Brown, trace gravel, increasing clay content with depth, loose to compact.		SS	3	5 6 6 7	12			
3					SS	4	3 4 4 4	8			
4	2	417.30			SS	5	5 11 10 15	21			
5			End of Borehole								
6	3										
7											
8	4										
9											
10	5										
11											
12	6										
13											
14	7										
15											
16	8										
17											
18	9										
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											

Moisture Content w%
10 20 30 40

Standard Penetration Test blows/300mm
20 40 60 80



NOTES:

1. Borehole was advanced using solid stem auger equipment on August 5, 2021 to termination at a depth of 3.6 metres.

2. Borehole was recorded as wet at depth of 2.0 metres, and caved to a depth of 2.4 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 5, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

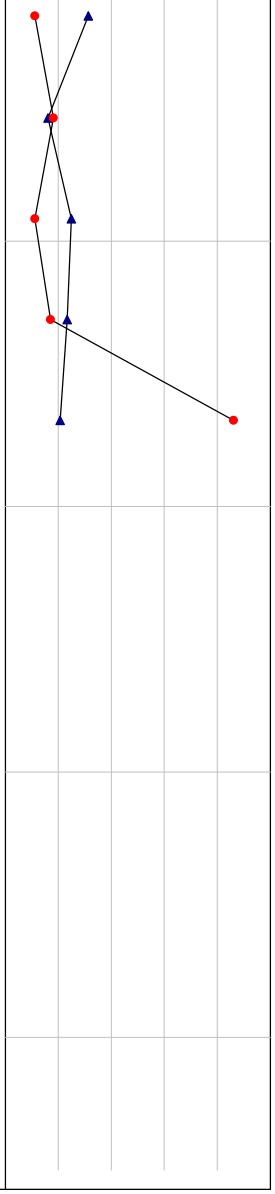
Log of Borehole No. 007

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838910
E: 546126

Depth (ft / m)	Elevation (m)	Symbol	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	408.39		Ground Surface								
0–1 / 0	408.10		**Topsoil** Approximately 250 millimetres of topsoil.		SS	1	3 5 6 7	11			
1–3 / 1			**Sandy Silt** Brown, trace rootlets, trace clay, reworked in upper levels, increasing clay content with depth, compact.		SS	2	10 8 10 10	18			
3–5 / 1–2	406.90		**Clayey Sandy Silt Till** Brown, trace to some gravel, stiff to hard.		SS	3	3 5 6 6	11		2.0	
5–8 / 2–3					SS	4	5 7 10 18	17		2.5	
8–12 / 3					SS	5	24 36 50/5"	100		>4.5	
12 / 4	404.70		End of Borehole								
13–29 / 4–9											

Moisture Content w% (10 20 30 40)
Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using solid stem auger equipment on August 5, 2021 to termination at a depth of 3.0 metres.

2. Borehole was recorded as open and dry upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 5, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 101

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838437
E: 545149

Depth (ft / m)	Elevation (m)	Symbol	Description	Well Data	SAMPLE: Type	SAMPLE: Number	SAMPLE: Blow Counts	SAMPLE: Blows/300mm	SAMPLE: Recovery	SAMPLE: PP (kgf/cm2)	SAMPLE: U.Wt.(kN/m3)	Moisture Content w% (10 20 30 40) / Standard Penetration Test blows/300mm (20 40 60 80)
0 ft / 0 m	408.60		Ground Surface									
0	408.30		**Topsoil** Approximately 250 millimetres of topsoil.									
1 – 3 / 1			**Sand** Brown, trace gravel.									
2 – 7 / 2												
3 – 10 / 3												
4 – 13 / 4												
5 – 17 / 5	403.10		Transition to grey in colour									
6 – 20 / 6	402.50		End of Borehole									
7 – 23 / 7												
8 – 26 / 8												
9 – 30 / 9												
33												

NOTES:

1. Borehole was advanced using hollow stem auger equipment on August 6, 2021 to termination at a depth of 6.10 metres.
2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.
3. Soil samples will be discarded after 3 months unless otherwise directed by our client.
4. A monitoring well was installed. No soil samples were retrieved. The following free groundwater level readings have been measured:

August 6, 2021 - 4.78 metres below ground surface.

August 27, 2021 - 4.71 metres below ground surface.

October 14, 2021 - 4.33 metres below ground surface.

February 23, 2022 - 4.31 metres below ground surface.

April 22, 2022 - 4.07 metres below ground surface.

June 1, 2022 - 4.15 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: August 6, 2021
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 102

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838180
E: 545422

Depth (ft / m)	Elevation (m)	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	414.13	Ground Surface								
0 / 0	413.90	**Topsoil** 250 millimetres of topsoil.								
3 / 1	413.20	**Sandy Silt** Brown, trace clay, trace gravel, reworked in upper levels, loose to compact.		SS	1	4 5 7 8	12			
				SS	2	2 3 6 5	9			
		Sand Brown, trace clay, silt, and gravel, medium to coarse gradation, loose to compact.		SS	3	3 9 12 14	21			
				SS	4	7 8 11 10	19			
				SS	5	6 9 11 17	20			
16 / 5	408.90	End of Borehole		SS	6	7 5 4 9	9			

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on August 6, 2021 to termination at a depth of 5.2 metres.
2. Borehole was recorded as caved to a depth of 3.8 metres and 'wet' at a depth of 3.6 metres upon completion and backfilled as per Ontario Regulation 903.
3. Soil samples will be discarded after 3 months unless otherwise directed by our client.
4. A monitoring well was installed. The following free groundwater level readings have been measured:

August 6, 2021 - 3.58 metres below ground surface.

August 27, 2021 - 3.61 metres below ground surface.

October 14, 2021 - 3.62 metres below ground surface.

February 23, 2021 - 3.5 metres below ground surface.

April 22, 2022 - 2.89 metres below ground surface.

June 1, 2022 - 3.05 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: August 6, 2021
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 103

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4837942
E: 545194

Depth (ft)	Depth (m)	Elevation (m)	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		412.55	Ground Surface								
0	0		**Topsoil** Approximately 100 millimetres of topsoil.		SS	1	5 5 7 8	12			
3	1		**Sandy Silt** Brown, trace to some gravel and clay, reworked in upper levels, compact.		AS	2	6 5 3 3	8			
6	2				SS	3	5 6 6 6	12			
7		410.30									
8			**Sand** Brown, trace clay, silt, and gravel, medium gradation, loose.		SS	4	2 3 3 2	6			
11	3				SS	5	2 1 1 2	2			
12		408.90									
13	4		End of Borehole								
29	9										

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using solid stem auger equipment on August 6, 2021 to termination at a depth of 3.6 metres.

2. Borehole was recorded dry and caved to a depth of 2.7 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Drill Method: Solid Stem Augers
Drill Date: August 6, 2021
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 104

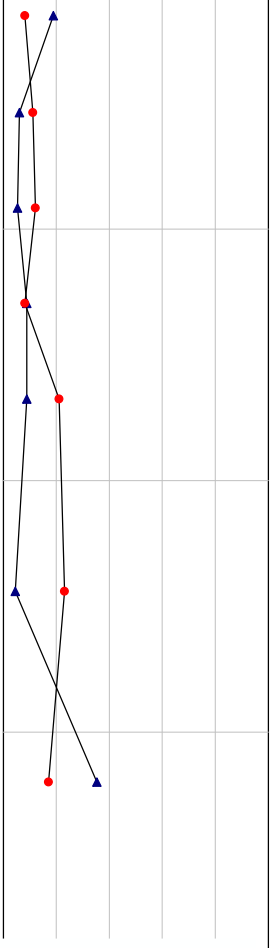
Project No: SM 301951-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838174
E: 545084

Depth (ft / m)	Elevation (m)	Description	Well Data	SAMPLE Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
	414.87	Ground Surface								
0 / 0	414.60	**Topsoil** Approximately 250 millimetres of topsoil.		SS	1	5 5 6 7	11			
1 /		**Sand** Brown, reworked in upper levels, trace clay, silt, and gravel, fine to medium gradation, compact.		SS	2	8 9 9 7	18			
2 / 1				SS	3	2 5 8 7	13			
3 /				SS	4	6 11 16 13	27			
4 / 2				SS	5	10 12 11 13	23			
5 /										
6 / 3				SS	6	5 10 13 15	23			
7 /										
8 / 4	408.80	Wet spoon		SS	7	9 9 8 6	17			
9 /										
10 / 5										
11 /										
12 / 6	407.30	End of Borehole								
13 /										
14 / 7										
15 /										
16 / 8										
17 /										
18 / 9										
19 /										
20 / 10										
21 /										
22 / 11										
23 /										
24 / 12										
25 /										
26 / 13										
27 /										
28 / 14										
29 /										
30 / 15										
31 /										

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using hollow stem auger equipment on August 6, 2021 to termination at a depth of 7.6 metres.

2. Borehole was recorded as open and 'wet' at depth of 7.0 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

August 6, 2021 - 6.78 metres below ground surface.

August 27, 2021 - 6.96 metres below ground surface.

October 14, 2021 - 7.09 metres below ground surface.

February 23, 2022 - 6.83 metres below ground surface.

April 22, 2022 - 6.13 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: August 6, 2021
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: EC
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 201

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838708
E: 545501

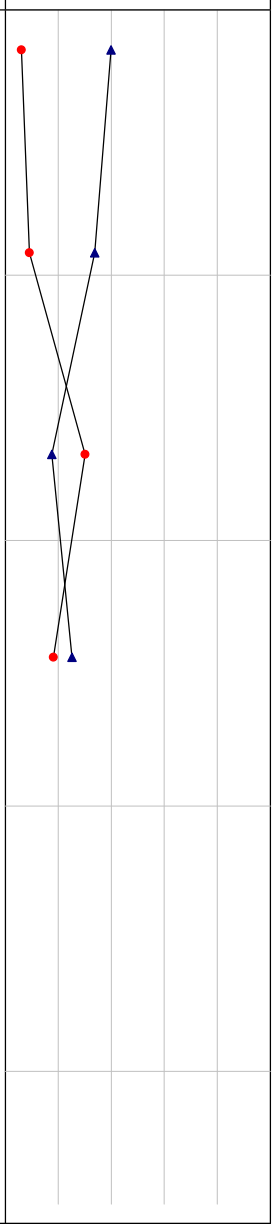
Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		404.80	Ground Surface							
0	0	404.35	**Topsoil** Approximately 450 millimetres of topsoil.	SS	1	5,3,3,3	6			
1			**Sandy Silt/Silty Sand** Brown, trace to some clay and gravel, loose.							
2										
3	1									
4										
5		403.10								
6			**Sand** Brown, loose.	SS	2	2,4,5,6	9			
7	2									
8		402.20								
9			**Clayey Sandy Silt Till** Brown, some gravel, ocasional cobbles, compact to dense							
10	3			SS	3	6,12,18,20	30			
11										
12										
13	4	400.70								
14			**Gravely Sand** Brown, trace silt, compact.							
15										
16				SS	4	10,9,9,13	18			
17	5	399.60								
18			End of Borehole							
19										
20	6									
21										
22										
23	7									
24										
25										
26	8									
27										
28										
29	9									

Well Data

SAMPLE

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 16, 2022 to termination at a depth of 5.2 metres.

2. Borehole was recorded as caved to a depth of 3.0 metres and 'wet' at a depth of 2.7 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - 2.69 metres below ground surface.

April 22, 2022 - 1.88 metres below ground surface.

June 1, 2022 - 2.44 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 16, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 201A

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838708
E: 545501

Depth ft	Depth m	Elevation (m)	Symbol	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	SAMPLE PP (kgf/cm2)	SAMPLE U.Wt.(kN/m3)	Moisture Content w% (10 20 30 40) / Standard Penetration Test blows/300mm (20 40 60 80)
0	0	404.75		Ground Surface									
10	3	401.70		End of Borehole									

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 16, 2026 to termination at a depth of 3.1 metres.

2. Soil samples will be discarded after 3 months unless otherwise directed by our client.

3. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - dry

April 22, 2022 - 2.05 metres below ground surface.

June 1, 2022 - 2.43 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 16, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 202

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838647
E: 545436

Depth (ft / m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	406.59	Ground Surface							
	406.14	**Topsoil** Approximately 450 millimetres of topsoil.							
		Clayey Sandy Silt Till Brown, some gravel, compact.	SS	1	2,2,3,2	5			
			SS	2	4,7,9,12	16			
	404.00	**Sandy Silt** Brown, dense.	SS	3	21,19,18,24	37			
	402.50	**Clayey Sandy Silt Till** Brown, some gravel and sand, very dense dense	SS	4	10,24,50/4	100			
	401.00	**Sandy Silt** Brown, very dense.	SS	5	34,50/4	100			
	400.20	End of Borehole							

Moisture Content w% (10 20 30 40)
Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 17, 2022 to termination at a depth of 6.4 metres.

2. Borehole was recorded as open and 'wet' at a depth of 0 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - 5.5 metres below ground surface.

April 22, 2022 - 4.76 meters below ground surface.

June 1, 2022 - 5.43 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 17, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 203

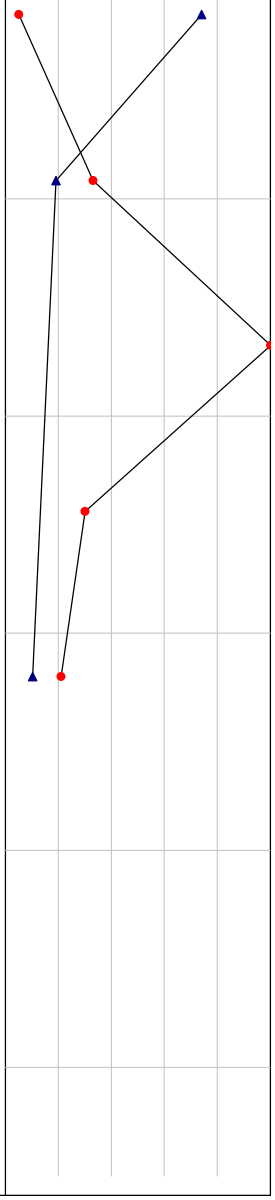
Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838523
E: 545307

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		407.13	Ground Surface							
0	0	406.88	**Topsoil** Approximately 250 millimetres of topsoil.							
1			**Sandy Silt** Brown, trace to some gravel, frequent cobbles, loose to very dense.	SS	1	9,3,2,1	5			
2										
3	1									
4				SS	2	8,16,17,27	33			
5										
6										
7	2									
8										
9				SS	3	50/6	100			
10	3									
11										
12										
13	4									
14										
15				SS	4	36,15,15,8	30			
16										
17	5									
18										
19										
20	6									
21				SS	5	7,9,12,14	21			
22		400.40								
23	7		End of Borehole							
24										
25										
26	8									
27										
28										
29	9									
30										
31										
32										
33	10									
34										
35										
36	11									

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 17, 2022 to termination at a depth of 6.7 metres.

2. Borehole was recorded as open and 'wet' at a depth of 0 metres upon completion and backfilled as per Ontario Regulation 903.

3 Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - dry

April 22, 2022 - 5.9 metres below ground surface.

June 1, 2022 - 5.91 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 16, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

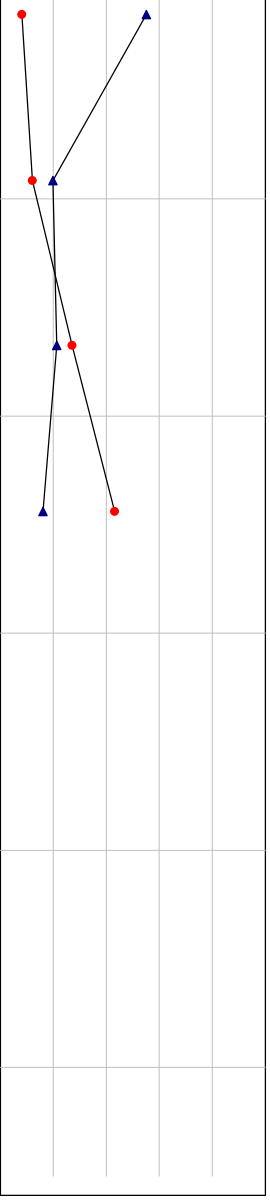
Log of Borehole No. 204

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838693
E: 545861

Depth (ft / m)	Elevation (m)	Description	Well Data	SAMPLE Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	409.56	Ground Surface								
0 / 0	409.16	**Topsoil** Approximately 400 millimetres of topsoil.								
1 / 0		**Clayey Sandy Silt Till** Brown, trace to some gravel, compact to dense.		SS	1	9,4,4,4	8			
2 / 1										
3 / 1				SS	2	4,5,7,17	12			
4 / 1										
5 / 2				SS	3	5,7,20,29	27			
6 / 2										
7 / 3				SS	4	15,21,22,36	43			
8 / 3	404.40	End of Borehole								
9 / 4		NOTES: 1. Borehole was advanced using hollow stem auger equipment on February 18, 2022 to termination at a depth of 5.2 metres. 2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903. 3. Soil samples will be discarded after 3 months unless otherwise directed by our client. 4. A monitoring well was installed. The following free groundwater level readings have been measured: February 17, 2022 - 2.81 metres below ground surface. April 22, 2022 - 1.16 metres below ground surface. June 1, 2022 - 1.53 metres below ground surface.								
10 / 5										
11 / 6										
12 / 7										
13 / 8										
14 / 9										
15 / 10										
16 / 11										
17 / 12										
18 / 13										
19 / 14										
20 / 15										
21 / 16										
22 / 17										
23 / 18										
24 / 19										
25 / 20										
26 / 21										
27 / 22										
28 / 23										
29 / 24										
30 / 25										
31 / 26										
32 / 27										
33 / 28										
34 / 29										
35 / 30										
36 / 31										

Moisture Content w%: 10 20 30 40
Standard Penetration Test blows/300mm: 20 40 60 80



Drill Method: Hollow Stem Augers
Drill Date: February 18, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 205

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838523
E: 545777

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		412.99	Ground Surface							
0	0	412.74	**Topsoil** Approximately 250 millimetres of topsoil.							
			Sand Brown, loose.	SS	1	6,5,3,2	8			
				SS	2	4,4,4,4	8			
				SS	3	4,4,5,6	9			
				SS	4	3,3,4,6	7			
		406.60		SS	5	5,4,50/5	100			
6	2	406.40	**Clayey Sandy Silt Till** Brown, trace to some gravel, very dense.							
			End of Borehole							

Moisture Content w% (10 20 30 40)
Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 18, 2022 to termination at a depth of 6.6 metres.

2. Borehole was recorded as 'dry' and caved to a depth of 4.8 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - 2.56 metres below ground surface.

April 22, 2022 - 2.25 metres below ground surface.

June 1, 2022 - 2.39 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 18, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

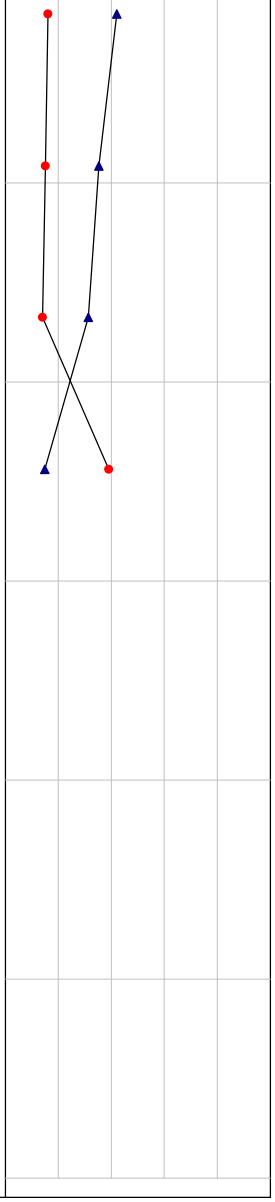
Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 206

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Road, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838460
E: 545394

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		412.88	Ground Surface							
0	0	412.58	**Topsoil** Approximately 300 millimetres of topsoil.							
1			**Sandy Silt** Brown, trace to some clay and gravel, compact.	SS	1	11,11,5,2	16			
2										
3	1			SS	2	7,7,8,9	15			
4										
5										
6	2			SS	3	3,4,10,12	14			
7										
8										
9	3			SS	4	10,15,24,30	39			
10		409.50	**Clayey Sandy Silt Till** Brown, trace to some gravel, compact to dense.							
11										
12										
13	4									
14										
15										
16										
17	5									
18										
19										
20	6									
21										
22										
23	7									
24		405.30								
25			End of Borehole							
26	8									
27										
28										
29										
30	9									
31										
32										
33	10									
34										
35										
36	11									
37										
38										
39										



NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 18, 2022 to termination at a depth of 7.6 metres.

2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 17, 2022 - 6.83 metres below ground surface.

April 22, 2022 - 4.6 metres below ground surface.

June 1, 2022 - 4.66 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 18, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 301

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4837975
E: 545199

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		412.75	Ground Surface							
0	0	412.50	**Topsoil** Approximately 250 millimetres of topsoil.							
3	1	411.70	**Clayey Sandy Silt Till** Brown, trace gravel, loose .	SS	1	2,1,3,4	4			
			Sand Brown, loose to compact.	SS	2	1,3,6,9	9			
	3			SS	3	7,7,6,9	13			
	4			SS	4	8,9,13,15	22			
	6			SS	5	6,7,10,13	17			
25	7	404.90								
26	8	404.60	**Clayey Sandy Silt Till** Brown, trace gravel, dense to very dense.	SS	6	3,13,32,42	45			

Well Data

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 22, 2022 to termination at a depth of 8.2 metres.
2. Borehole was recorded as open and 'wet' at a depth of 6.3 metres upon completion and backfilled as per Ontario Regulation 903.
3. Soil samples will be discarded after 3 months unless otherwise directed by our client.
4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 23, 2022 - 6.29 metres below ground surface.

April 22, 2022 - 5.65 metres below ground surface.

June 1, 2022 - 5.71 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 22, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 302

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838015
E: 545142

Depth (ft / m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	413.00	Ground Surface							
0 / 0	412.75	**Topsoil** Approximately 250 millimetres of topsoil.							
3 / 1	411.90	**Clayey Sandy Silt Till** Brown, trace gravel, loose .							
		Sand Brown, loose to compact.	SS	1	2,2,4,9	6			
			SS	2	2,4,6,8	10			
			SS	3	5,7,8,15	15			
			SS	4	5,8,9,11	17			
			SS	5	10,10,11,15	21			
26 / 8	404.80		SS	6	5,8,10,8	18			
		End of Borehole							

Well Data: Monitoring well installed

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 22, 2022 to termination at a depth of 8.2 metres.
2. Borehole was recorded as open and 'wet' at a depth of 6.6 metres upon completion and backfilled as per Ontario Regulation 903.
3. Soil samples will be discarded after 3 months unless otherwise directed by our client.
4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 23, 2022 - 6.62 metres below ground surface.

April 22, 2022 - 6.06 metres below ground surface.

June 1, 2022 - 6.12 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 22, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

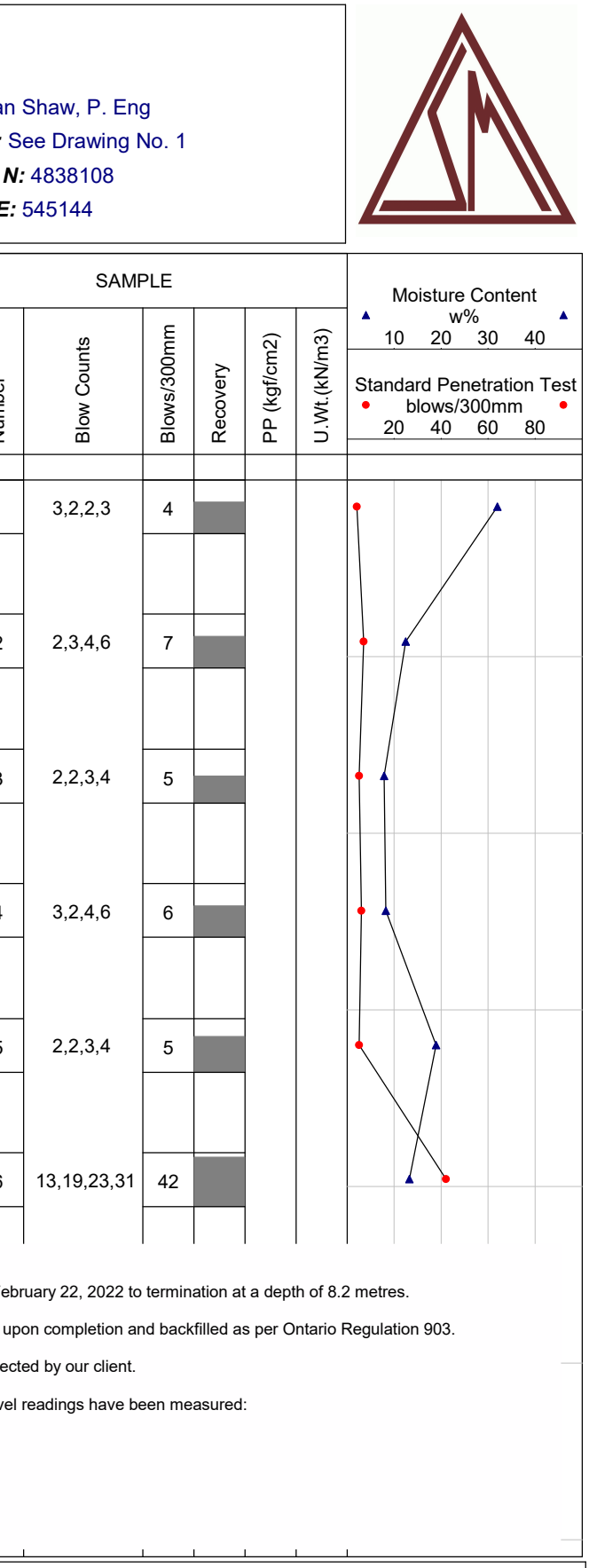
Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 303

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838108
E: 545144



NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 22, 2022 to termination at a depth of 8.2 metres.
2. Borehole was recorded as open and 'wet' at a depth of 5.4 metres upon completion and backfilled as per Ontario Regulation 903.
3. Soil samples will be discarded after 3 months unless otherwise directed by our client.
4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 23, 2022 - 5.4 metres below ground surface.

April 22, 2022 - 6.04 metres below ground surface.

June 1, 2022 - 6.11 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 22, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

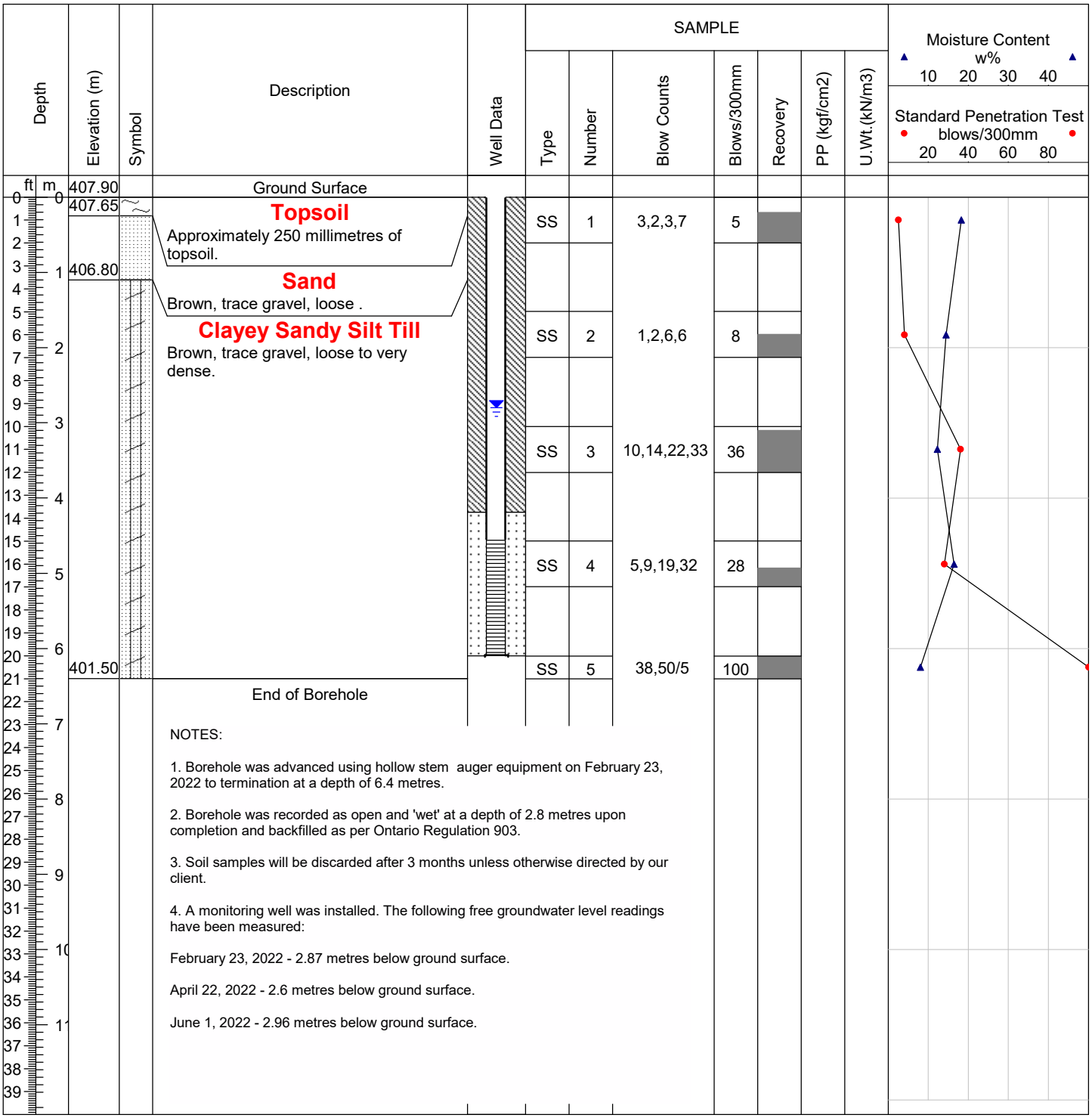
Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 304

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4538292
E: 545023



NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 23, 2022 to termination at a depth of 6.4 metres.

2. Borehole was recorded as open and 'wet' at a depth of 2.8 metres upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 23, 2022 - 2.87 metres below ground surface.

April 22, 2022 - 2.6 metres below ground surface.

June 1, 2022 - 2.96 metres below ground surface.

Drill Method: Hollow Stem Augers
Drill Date: February 23, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 305

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838438
E: 545144

Depth (ft / m)	Elevation (m)	Description	Well Data	SAMPLE Type	SAMPLE Number	SAMPLE Blow Counts	SAMPLE Blows/300mm	SAMPLE Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	408.60	Ground Surface								
0 / 0	408.35	**Topsoil** Approximately 250 millimetres of topsoil.		AS	1					
1 / 0		**Sand** Brown, trace gravel, loose to very loose.								
5 / 1				SS	2	2,3,4,4	7			
10 / 3				SS	3	2,1,1,5	2			
12 / 4	404.90	End of Borehole								

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using hollow stem auger equipment on February 23, 2022 to termination at a depth of 3.6 metres.

2. Borehole was recorded as open and 'dry' upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

February 23, 2022 - dry

April 22, 2022 - dry

June 1, 2022 - dry

Drill Method: Hollow Stem Augers
Drill Date: February 23, 2022
Hole Size: 200 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 306

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4838305
E: 545271

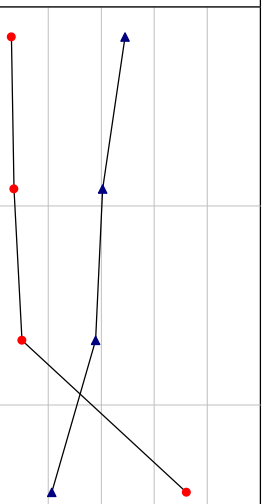
Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		412.85	Ground Surface							
0	0	412.60	**Topsoil** Approximately 250 millimetres of topsoil.							
1			**Sand** Brown, trace gravel, loose.	SS	1	2,2,4,5	6			
2										
3	1									
4										
5				SS	2	3,2,5,6	7			
6										
7	2									
8										
9										
10	3			SS	3	3,3,7,15	10			
11		409.40								
12			**Clayey Sandy Silt Till** Brown, some gravel, very dense							
13	4									
14										
15										
16				SS	4	20,34,38,50/4	72			
17	5	407.70								
18			End of Borehole							
19			NOTES:							
20	6		1. Borehole was advanced using solid stem auger equipment on February 23, 2022 to termination at a depth of 5.2 metres.							
21										
22			2. Borehole was recorded as caved to a depth of 2.4 metres and dry upon completion and backfilled as per Ontario Regulation 903							
23	7									
24										
25			3. Soil samples will be discarded after 3 months unless otherwise directed by our client.							
26										
27	8									
28										
29										
30	9									
31										
32										
33	10									
34										
35										
36	11									
37										
38										
39										

Well Data

SAMPLE

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



Drill Method: Solid Stem Augers
Drill Date: February 23, 2022
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 307

Project No: SM 301951B-G
Project: Proposed Residential Development
Location: 75 Woolwich Street East, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 3838296
E: 545199

Depth (ft / m)	Elevation (m)	Description	Well Data	SAMPLE Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
0 / 0	411.12	Ground Surface								
0 / 0	410.87	**Topsoil** Approximately 250 millimetres of topsoil.		SS	1	1,2,2,3	4			
		Clayey Sandy Silt Till Brown, some gravel, compact.								
6 / 2				SS	2	5,7,10,12	17			
10 / 3				SS	3	9,10,15,19	25			
16 / 5	405.90			SS	4	6,11,12,41	23			
		End of Borehole								

NOTES:

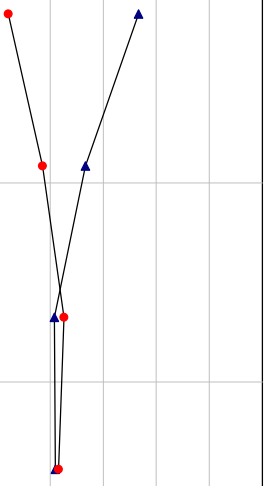
1. Borehole was advanced using solid stem auger equipment on February 23, 2022 to termination at a depth of 5.2 metres.

2. Borehole was recorded as open and 'wet' at a depth of 4.3 metres below the existing grade upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)



Drill Method: Solid Stem Augers
Drill Date: February 23, 2022
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Log of Borehole No. 401

Project No: SM 301951-G
Project: Proposed Residential Development
Location: 7581 Nichol Rd, Elora
Client: Cachet Development

Project Manager: Ian Shaw, P. Eng
Borehole Location: See Drawing No. 1
UTM Coordinates - N: 4839146
E: 545881

Depth (ft)	Depth (m)	Elevation (m)	Description	Type	Number	Blow Counts	Blows/300mm	Recovery	PP (kgf/cm2)	U.Wt.(kN/m3)
		420.91	Ground Surface							
0	0	420.66	**Topsoil** Approximately 250 millimetres of topsoil.							
1			**Silty Sand** Brown, trace to some gravel and clay, loose to compact.	SS	1	2,2,4,4	6			
2	1			SS	2	1,2,3,5	5			
3		419.10	**Clayey Sandy Silt Till** Brown, trace to some sand and gravel, compact to very dense	SS	3	1,4,9,7	13			
6	2			SS	4	6,15,50/4	100			
9	3			SS	5	6,17,16,24	33			
12	4									
15				SS	6	10,35,50/5	100			
16	5									
19										
20	6			SS	7	27,46,43, 50/3	89			
22		414.20	End of Borehole							
23	7									
26	8									
29	9									
33	10									
36	11									
39										

Moisture Content w% (10 20 30 40)

Standard Penetration Test blows/300mm (20 40 60 80)

NOTES:

1. Borehole was advanced using solid stem auger equipment on April 18, 2022 to termination at a depth of 6.7 metres.

2. Borehole was recorded as open and 'wet' at a depth of 4.7 metres below the existing grade upon completion and backfilled as per Ontario Regulation 903.

3. Soil samples will be discarded after 3 months unless otherwise directed by our client.

4. A monitoring well was installed. The following free groundwater level readings have been measured:

April 22, 2022 - 2.29 metres below ground surface.

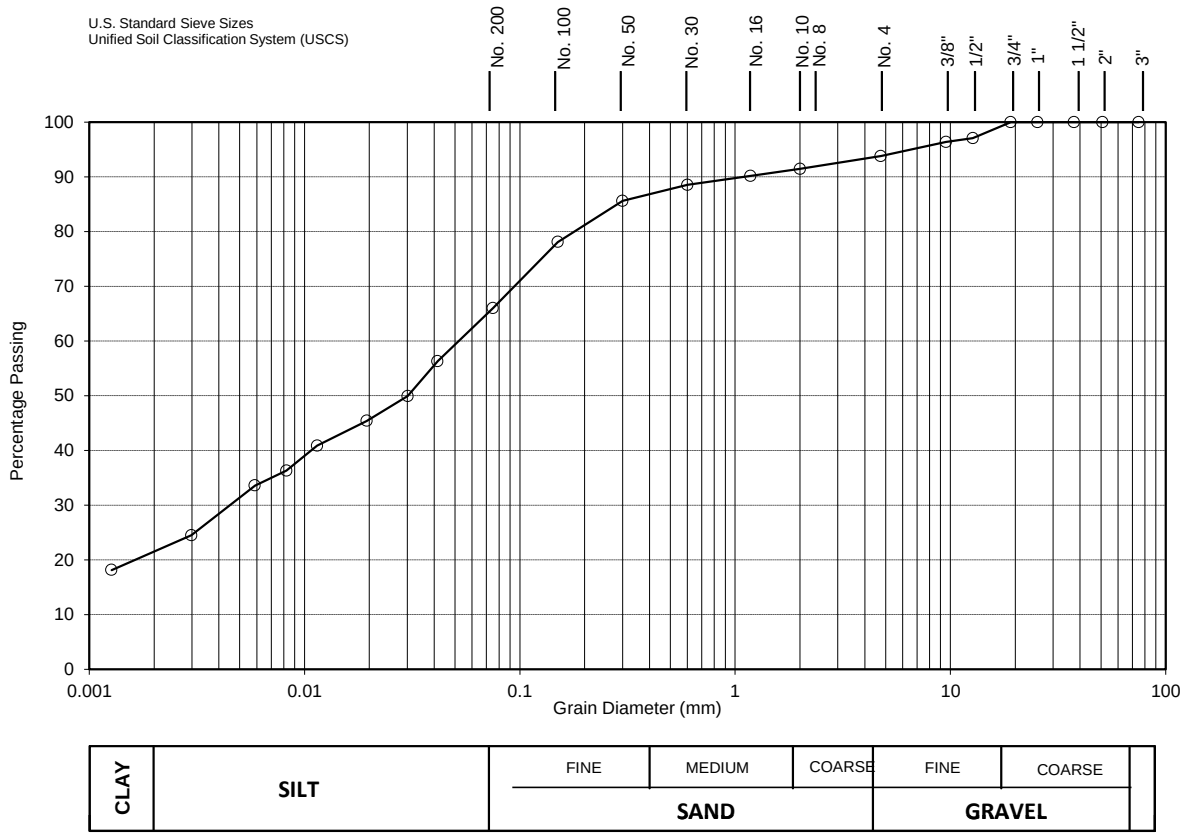
June 1, 2022 - 2.39 metres below ground surface.

Drill Method: Solid Stem Augers
Drill Date: April 18, 2022
Hole Size: 150 millimetres
Drilling Contractor: Altech

Soil-Mat Engineers & Consultants Ltd.
130 Lancing Drive, Hamilton, ON L8W 3A1
T: 905.318.7440 F: 905.318.7455
E: info@soil-mat.ca

Datum: Geodetic
Field Logged by: KJR
Checked by: SW
Sheet: 1 of 1

Mechanical & Hydrometer Analyses



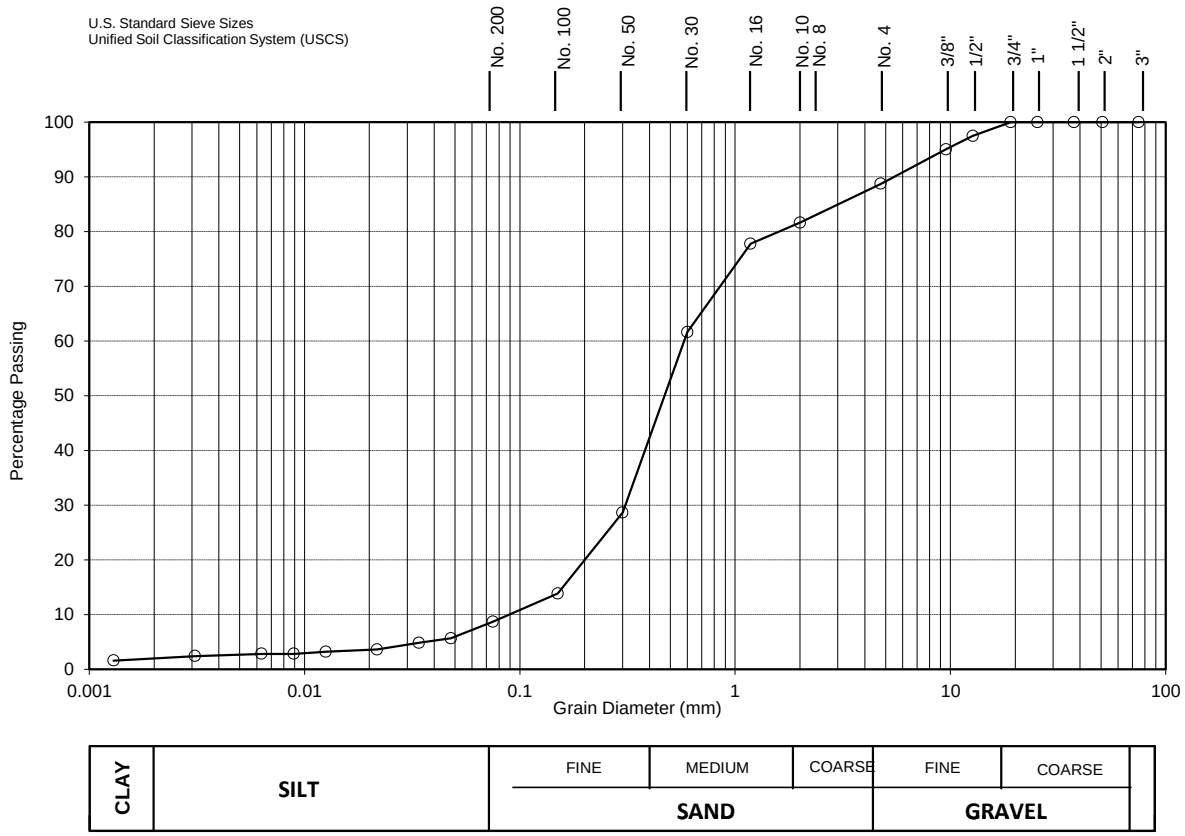
Lab No.:	**21-335**	Notes: Depth: 5'			
Borehole No.:	**003**				
Sample No.:	**3**				
CLAY [%]:	**22**	Soil Description:	**Brown Sandy Silt w/ some Clay and trace Gravel**		
SILT [%]:	**44**		**M.L. - Inorganic silts and very fine sands, clayey silts with slight plasticity**		
SAND [%]:	**28**				
GRAVEL [%]:	**6**	Estimated Infiltration Rate [mm/hr] :	**< 10**	Estimated Permeability, k [cm/s]	**10^{-7}**
D_{10} (Effective Diam. in mm):	**0.0005**	Coefficient of Uniformity C_U:	**102.0**	Coefficient of Curvature C_C:	**0.8**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Sideroad 15, Elora ON

August 2021	**Grain Size Analysis No. 1**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



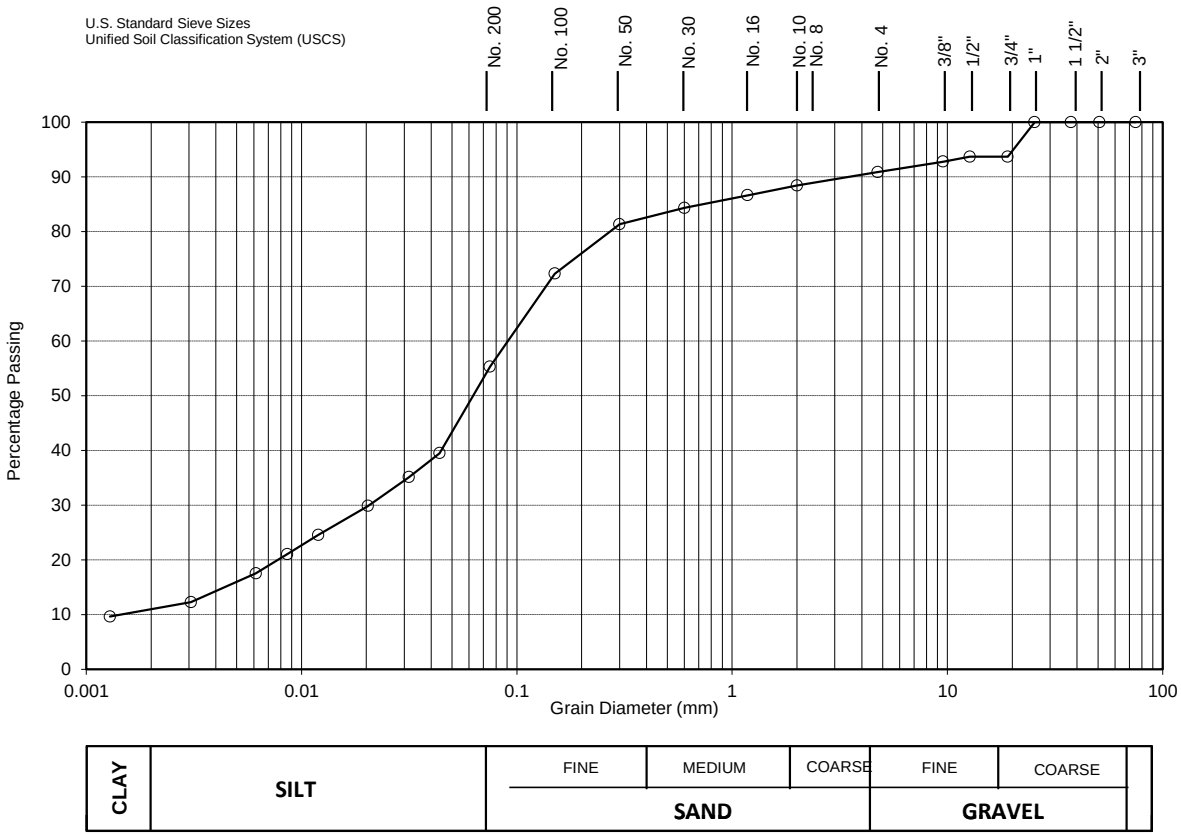
Lab No.:	**21-340**	Notes: Depth: 10'	
Borehole No.:	**004**		
Sample No.:	**5**		
CLAY [%]:	**2**	Soil Description: **Brown Sand w/ some Gravel and traces of Silt and Clay**	
SILT [%]:	**7**	**S.P. - Poorly graded sands, little or no fines**	
SAND [%]:	**80**		
GRAVEL [%]:	**11**	Estimated Infiltration Rate [mm/hr] : **150 to 300**	Estimated Permeability, k [cm/s] **10^{-2}**
D_{10} (Effective Diam. in mm):	**0.090**	Coefficient of Uniformity C_U: **6.6**	Coefficient of Curvature C_C: **1.8**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Sideroad 15, Elora ON

August 2021	**Grain Size Analysis No. 2**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



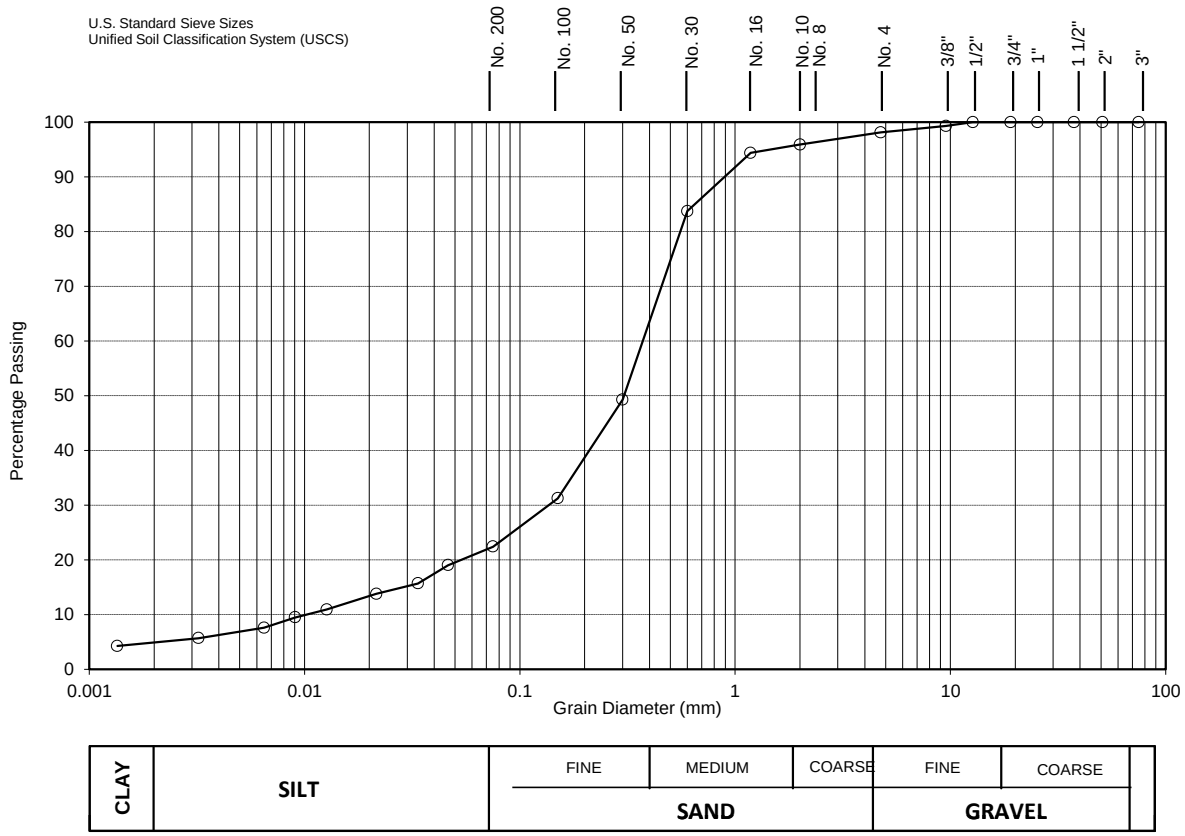
Lab No.:	**21-336**	Notes: Depth: 10'	
Borehole No.:	**006**		
Sample No.:	**5**		
CLAY [%]:	**11**	Soil Description: **Brown Sandy Silt w/ some Clay and trace Gravel**	
SILT [%]:	**44**	**M.L. - Inorganic silts and very fine sands, clayey silts with slight plasticity**	
SAND [%]:	**36**		
GRAVEL [%]:	**9**	Estimated Infiltration Rate [mm/hr] : **10 to 15**	Estimated Permeability, k [cm/s] **10^{-6}**
D_{10} (Effective Diam. in mm):	**0.0015**	Coefficient of Uniformity C_U: **60.0**	Coefficient of Curvature C_C: **3.3**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Sideroad 15, Elora ON

August 2021	**Grain Size Analysis No. 3**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



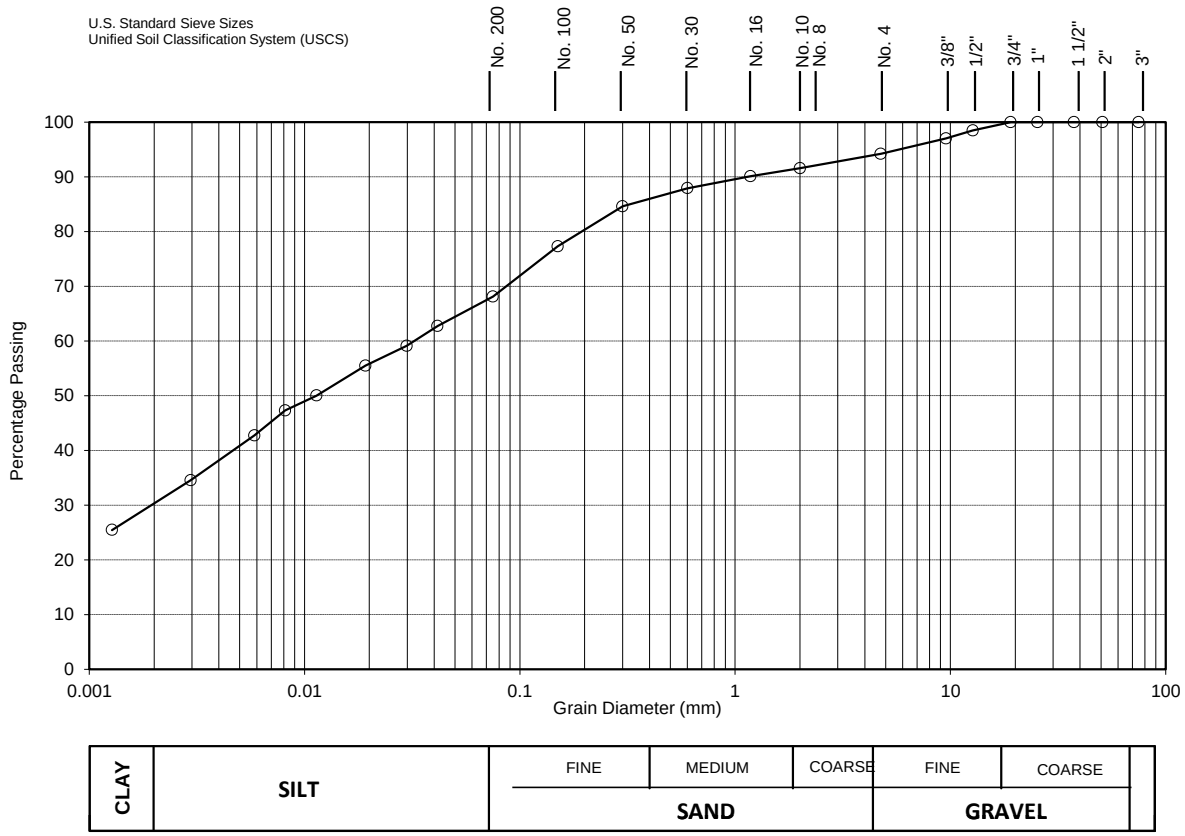
Lab No.:	**22-088**	Notes: Depth: 5'	
Borehole No.:	**201**		
Sample No.:	**2**		
CLAY [%]:	**5**	Soil Description:	**Brown Sand w/ Some Silt and traces of Clay and Gravel**
SILT [%]:	**17**		**S.M. - Silty sands, sand-silt mixtures**
SAND [%]:	**76**		
GRAVEL [%]:	**2**	Estimated Infiltration Rate [mm/hr] : **50**	Estimated Permeability, k [cm/s] **10^{-4}**
D_{10} (Effective Diam. in mm):	**0.0001**	Coefficient of Uniformity C_U: **40.0**	Coefficient of Curvature C_C: **5.4**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 4**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



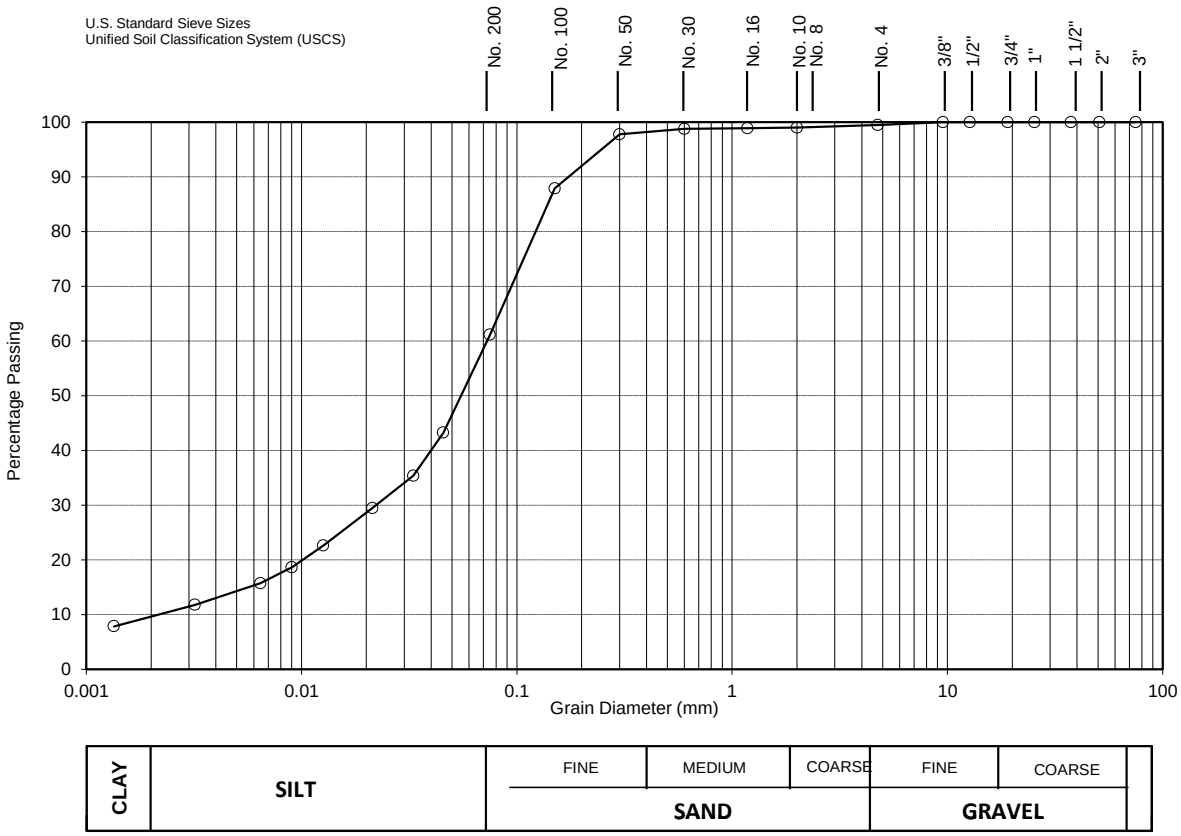
Lab No.:	**22-089**	Notes: Depth: 5'			
Borehole No.:	**202**				
Sample No.:	**2**				
CLAY [%]:	**30**	Soil Description:	**Brown Clayey Sandy Silt w/ a trace of Gravel**		
SILT [%]:	**38**		**M.L - Clayey silts with slight plasticity, silty or clayey fine sands,**		
SAND [%]:	**26**		**inorganic silts and very fine sands**		
GRAVEL [%]:	**6**	Estimated Infiltration Rate [mm/hr] :	**< 10**	Estimated Permeability, k [cm/s]	**10^{-8}**
D_{10} (Effective Diam. in mm):	**0.0004**	Coefficient of Uniformity C_U:	**80.0**	Coefficient of Curvature C_C:	**0.3**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 5**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



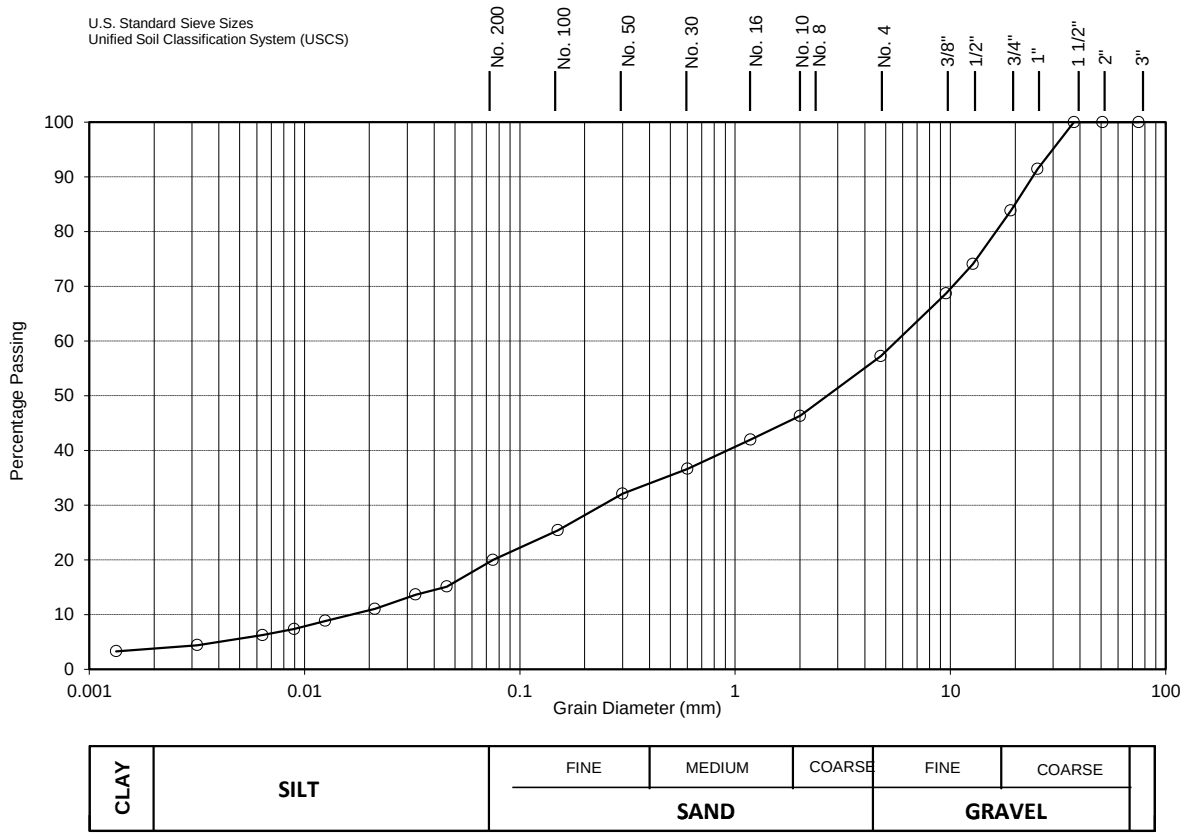
Lab No.:	**22-090**	Notes: Depth: 20'	
Borehole No.:	**202**		
Sample No.:	**5**		
CLAY [%]:	**10**	Soil Description: **Light Brown Silt and Sand w/ some Clay**	
SILT [%]:	**51**	**M.L. - Inorganic silts and very fine sands**	
SAND [%]:	**39**		
GRAVEL [%]:	**0**	Estimated Infiltration Rate [mm/hr] : **10 to 15**	Estimated Permeability, k [cm/s] **10^{-6}**
D_{10} (Effective Diam. in mm):	**0.0022**	Coefficient of Uniformity C_U: **33.2**	Coefficient of Curvature C_C: **3.0**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 6**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



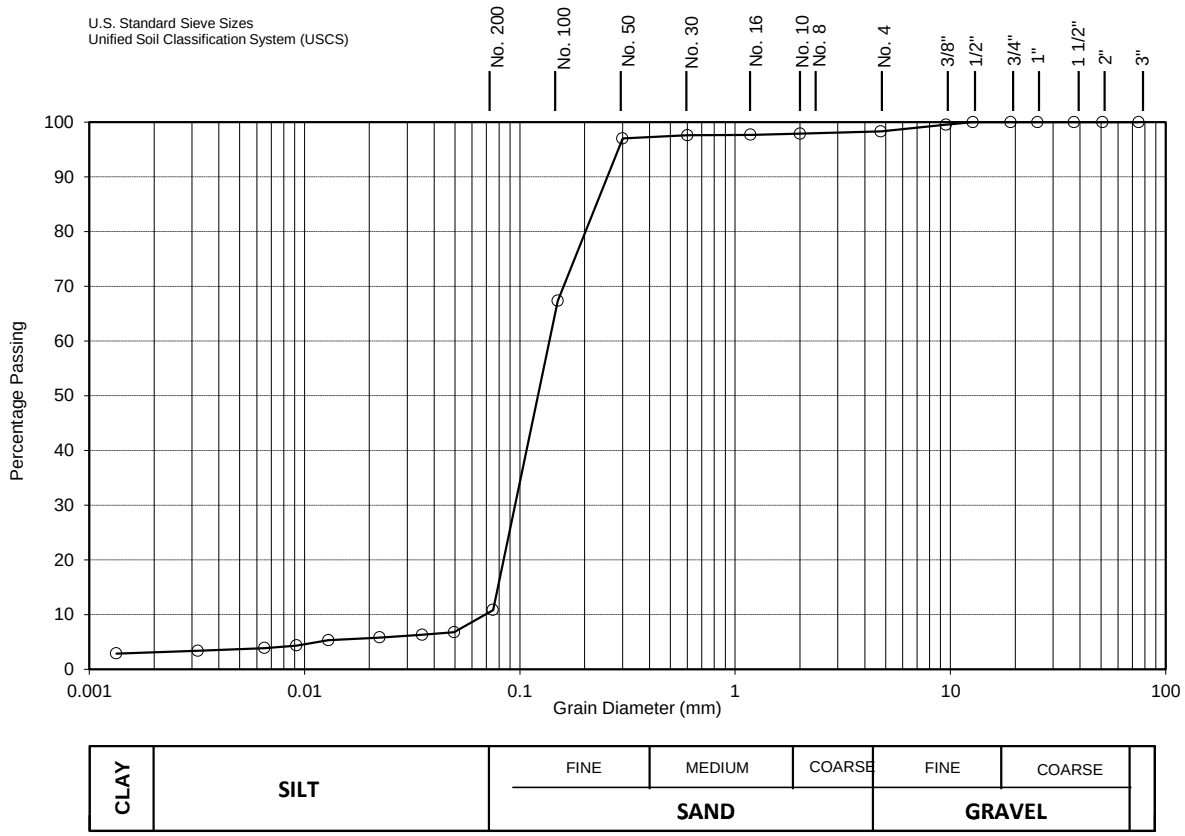
Lab No.:	**22-091**	Notes: Depth: 5'	
Borehole No.:	**203**		
Sample No.:	**2**		
CLAY [%]:	**3**	Soil Description:	**Brown Gravel and Sand w/ some Silt and a trace of Clay**
SILT [%]:	**17**		**G.M. - Gravel-sand-silt mixtures, silty gravels**
SAND [%]:	**37**		
GRAVEL [%]:	**43**	Estimated Infiltration Rate [mm/hr] : **50 to 60**	Estimated Permeability, k [cm/s] **10^{-4}**
D_{10} (Effective Diam. in mm):	**0.017**	Coefficient of Uniformity C_U: **335.3**	Coefficient of Curvature C_C: **0.6**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 7**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



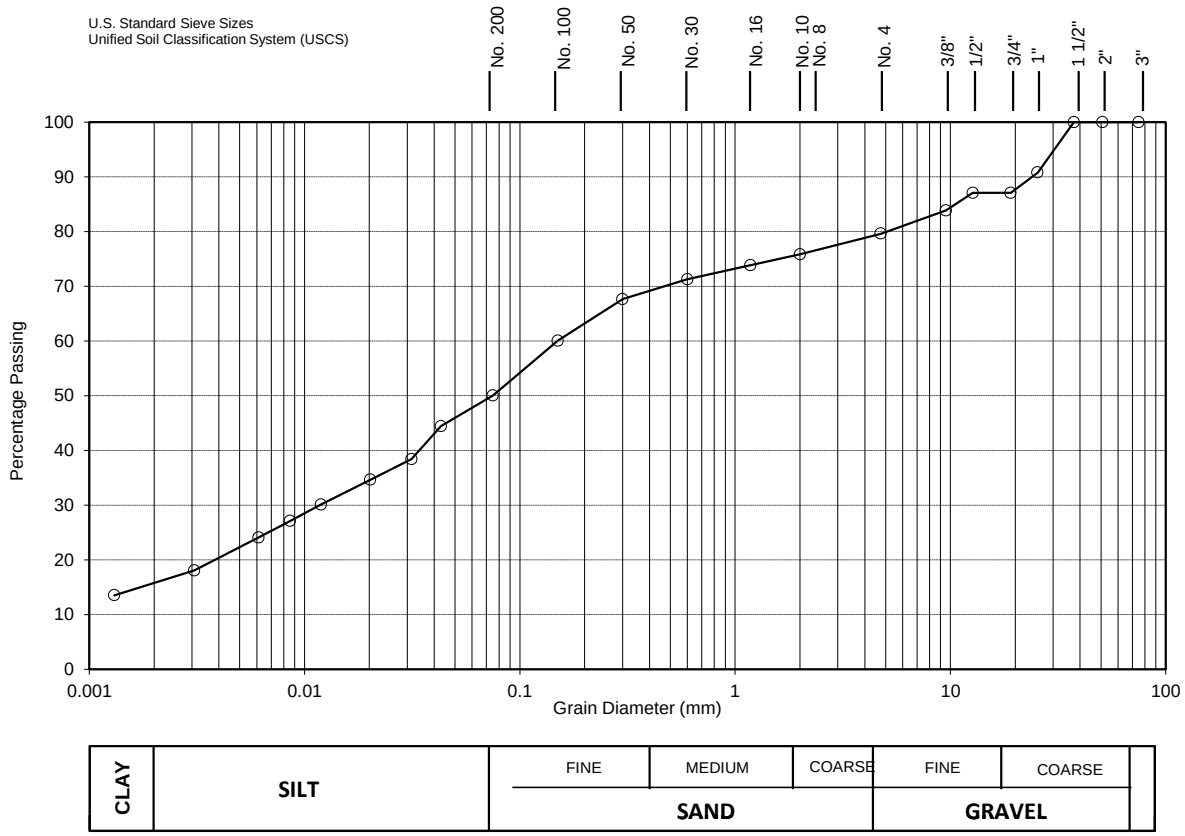
Lab No.:	**22-092**	Notes: Depth: 20'	
Borehole No.:	**203**		
Sample No.:	**5**		
CLAY [%]:	**3**	Soil Description: **Brown Sand w/ traces of Silt, Clay and Gravel**	
SILT [%]:	**8**	**S.P. - Poorly graded sands**	
SAND [%]:	**87**		
GRAVEL [%]:	**2**	Estimated Infiltration Rate [mm/hr] : **125 to 150**	Estimated Permeability, k [cm/s] **10^{-3}**
D_{10} (Effective Diam. in mm):	**0.07**	Coefficient of Uniformity C_U: **2.1**	Coefficient of Curvature C_C: **0.9**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 8**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



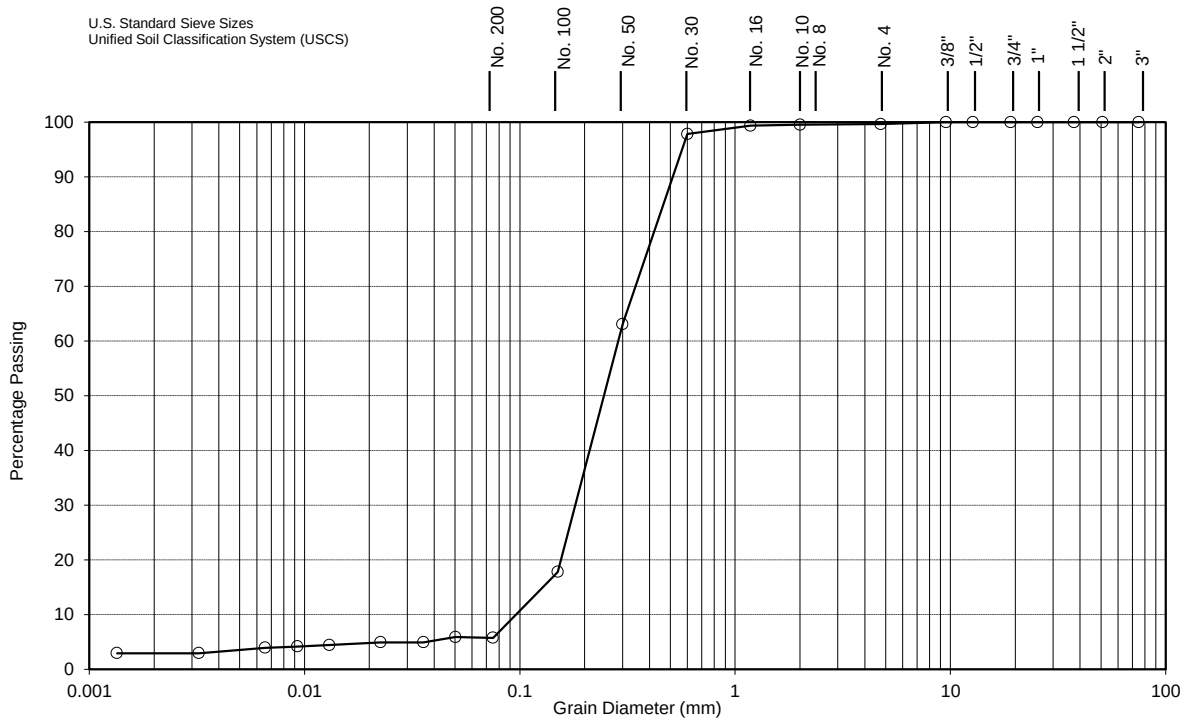
Lab No.:	**22-094**	Notes: Depth: 5'	
Borehole No.:	**204**		
Sample No.:	**2**		
CLAY [%]:	**16**	Soil Description: **Brown Sandy Gravelly Silt w/ some Clay**	
SILT [%]:	**34**	**M.L. - Silty or clayey fine sands**	
SAND [%]:	**30**		
GRAVEL [%]:	**20**	Estimated Infiltration Rate [mm/hr] : **10**	Estimated Permeability, k [cm/s] **10^{-7}**
D_{10} (Effective Diam. in mm):	**0.00085**	Coefficient of Uniformity C_U: **188.2**	Coefficient of Curvature C_C: **1.2**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 9**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

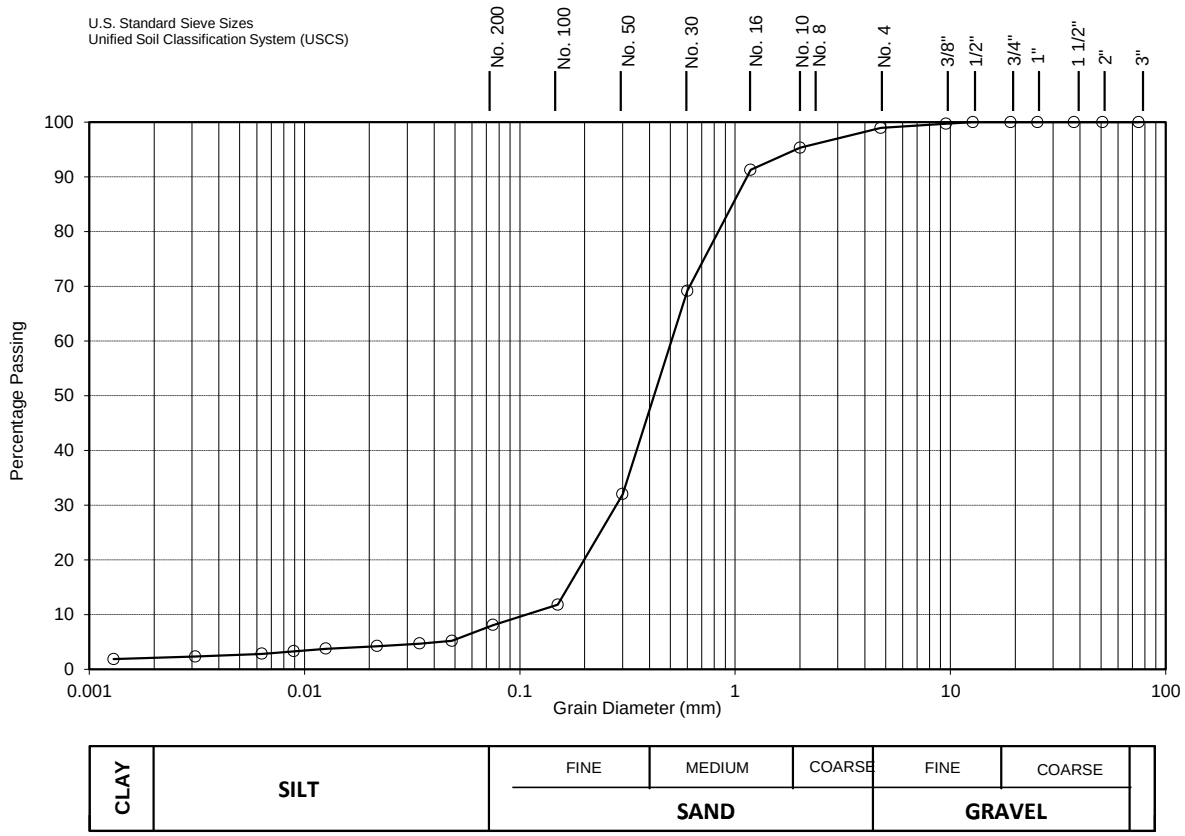
Lab No.:	**22-093**	Notes: Depth: 10'			
Borehole No.:	**205**				
Sample No.:	**3**				
CLAY [%]:	**2**	Soil Description:	**Brown Sand w/ traces of Silt and Clay**		
SILT [%]:	**4**		**S.P. - Poorly graded sands**		
SAND [%]:	**94**				
GRAVEL [%]:	**0**	Estimated Infiltration Rate [mm/hr] :	**150 to 300**	Estimated Permeability, k [cm/s]	**10^{-3}**
D_{10} (Effective Diam. in mm):	**0.095**	Coefficient of Uniformity C_U:	**3.1**	Coefficient of Curvature C_C:	**1.2**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

7581 Nichol Road 15, Elora ON

March 2022	**Grain Size Analysis No. 10**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



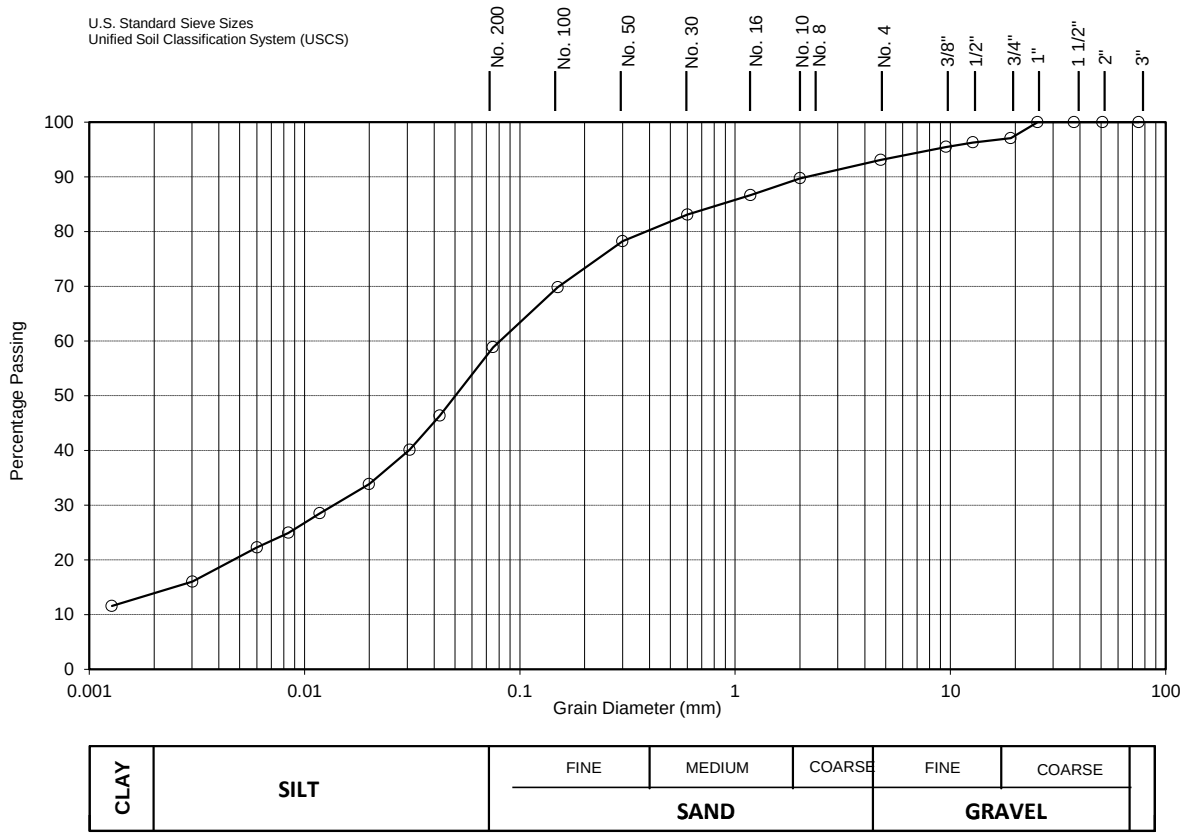
Lab No.:	**21-339**	Notes: Depth: 15'	
Borehole No.:	**102**		
Sample No.:	**6**		
CLAY [%]:	**2**	Soil Description: **Brown Sand w/ traces of Silt, Clay and Gravel**	
SILT [%]:	**6**	**S.P. - Poorly graded sands, little or no fines**	
SAND [%]:	**91**		
GRAVEL [%]:	**1**	Estimated Infiltration Rate [mm/hr] : **150 to 300**	Estimated Permeability, k [cm/s] **10^{-2}**
D_{10} (Effective Diam. in mm):	**0.10**	Coefficient of Uniformity C_U: **5.1**	Coefficient of Curvature C_C: **1.5**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

August 2021	**Grain Size Analysis No. 11**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



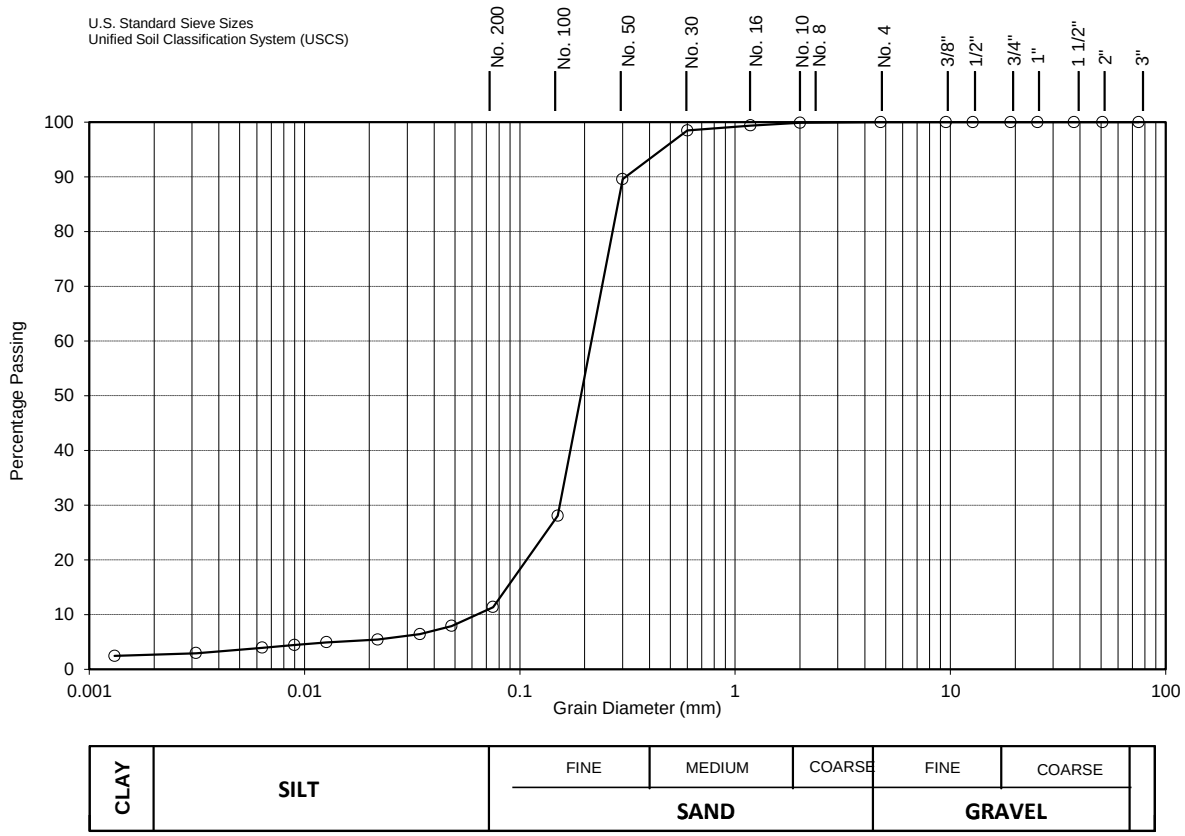
Lab No.:	**21-338**	Notes: Depth: 5'	
Borehole No.:	**103**		
Sample No.:	**3**		
CLAY [%]:	**14**	Soil Description: **Brown Sandy Silt w/ some Clay and trace Gravel**	
SILT [%]:	**45**	**M.L. - Inorganic silts and very fine sands, clayey silts with slight plasticity**	
SAND [%]:	**34**		
GRAVEL [%]:	**7**	Estimated Infiltration Rate [mm/hr] : **10**	Estimated Permeability, k [cm/s] **10^{-6}**
D_{10} (Effective Diam. in mm):	**0.00100**	Coefficient of Uniformity C_U: **80.0**	Coefficient of Curvature C_C: **2.1**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

August 2021	**Grain Size Analysis No. 12**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



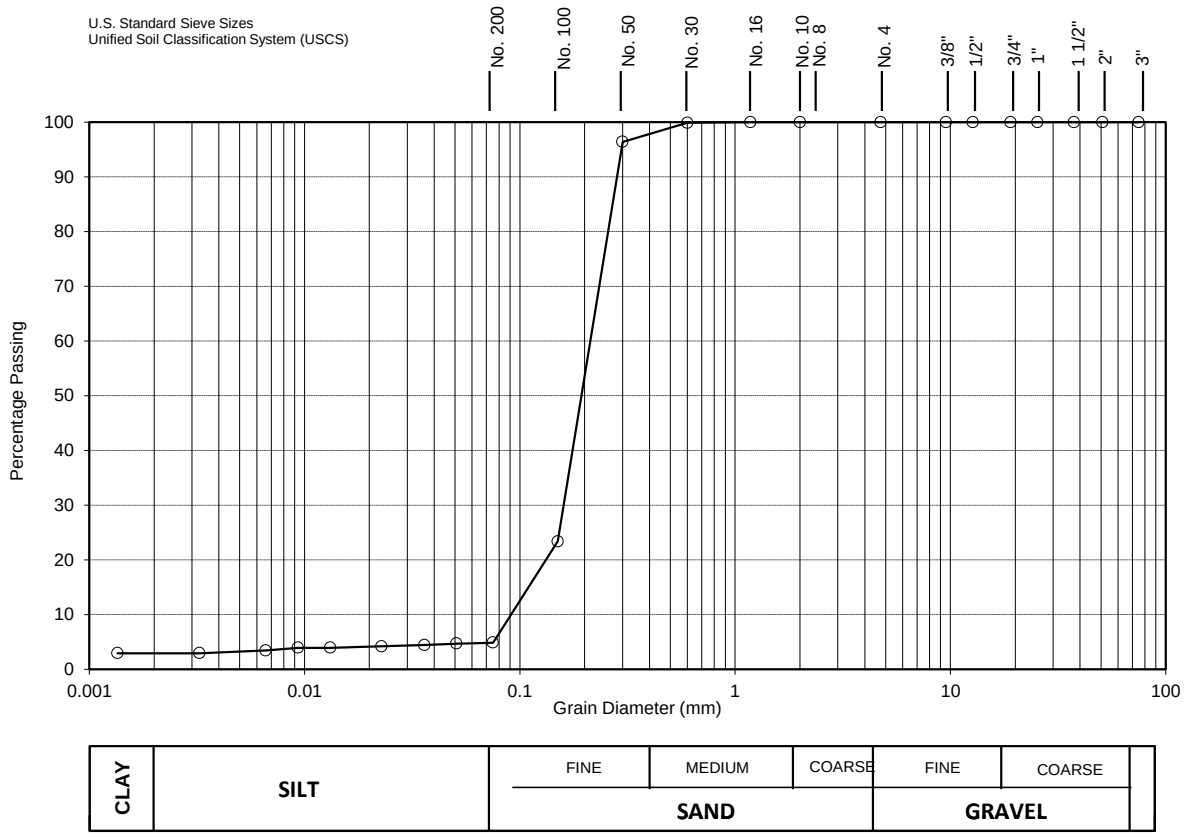
Lab No.:	**21-337**	Notes: Depth: 7.5'	
Borehole No.:	**104**		
Sample No.:	**4**		
CLAY [%]:	**2**	Soil Description: **Brown Sand w/ traces of Silt and Clay**	
SILT [%]:	**9**	**S.P. - Poorly graded sands, little or no fines**	
SAND [%]:	**89**		
GRAVEL [%]:	**0**	Estimated Infiltration Rate [mm/hr] : **100 to 150**	Estimated Permeability, k [cm/s] **10^{-3} to 10^{-2}**
D_{10} (Effective Diam. in mm):	**0.0600**	Coefficient of Uniformity C_U: **3.7**	Coefficient of Curvature C_C: **1.9**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

August 2021	**Grain Size Analysis No. 13**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



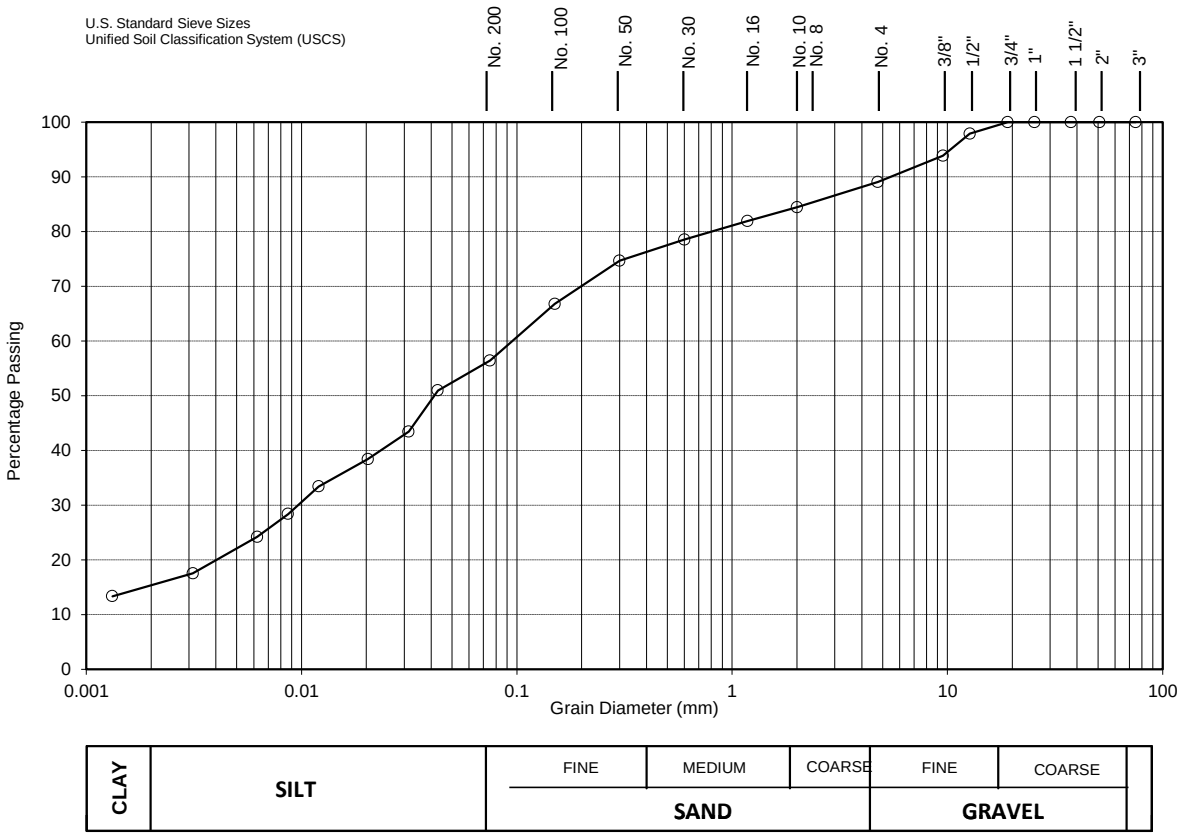
Lab No.:	**22-096**	Notes: Depth: 5'	
Borehole No.:	**302**		
Sample No.:	**2**		
CLAY [%]:	**2**	Soil Description: **Brown Sand w/ traces of Silt and Clay**	
SILT [%]:	**3**	**S.P. - Poorly graded sands, little or no fines**	
SAND [%]:	**95**		
GRAVEL [%]:	**0**	Estimated Infiltration Rate [mm/hr] : **150 to 300**	Estimated Permeability, k [cm/s] **10^{-2}**
D_{10} (Effective Diam. in mm):	**0.09**	Coefficient of Uniformity C_U: **2.3**	Coefficient of Curvature C_C: **1.5**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

March 2022	**Grain Size Analysis No. 14**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



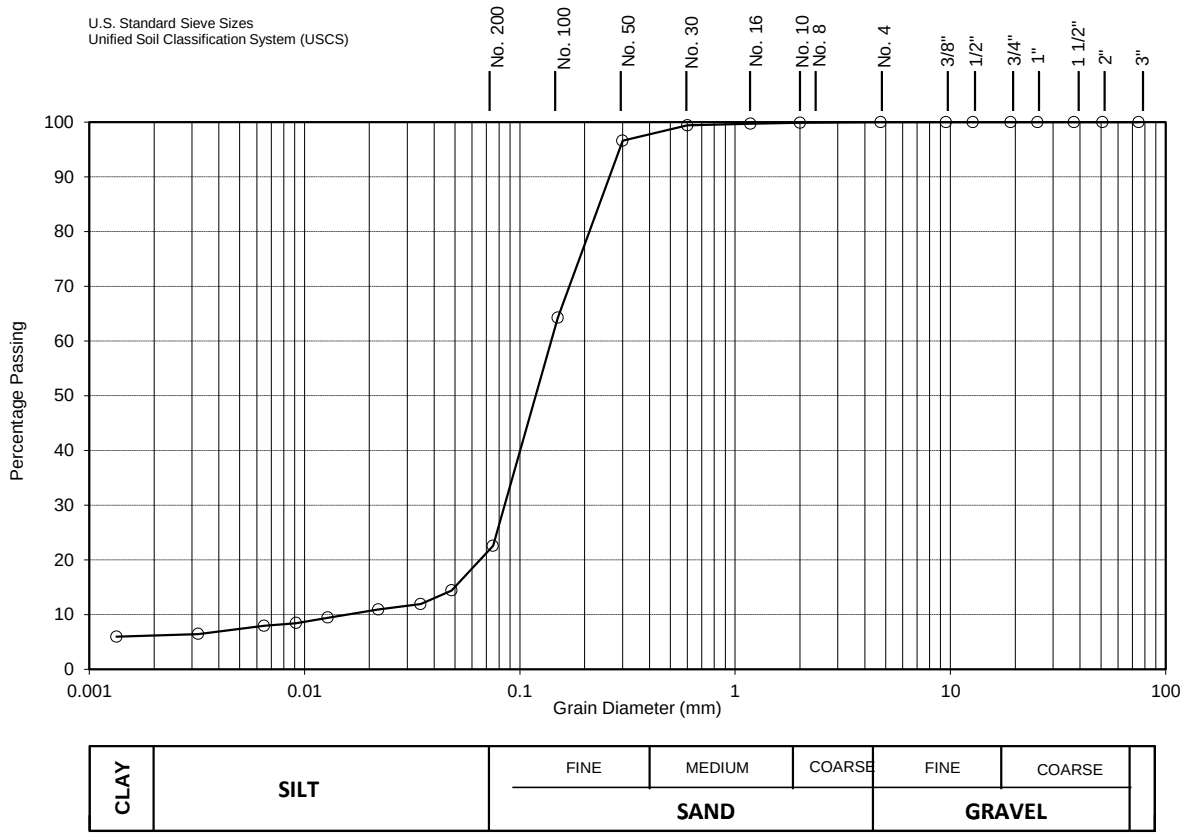
Lab No.:	**22-097**	Notes: Depth: 5'	
Borehole No.:	**304**		
Sample No.:	**2**		
CLAY [%]:	**16**	Soil Description: **Brown Sandy Silt w/ some Clay and Gravel**	
SILT [%]:	**40**	**M.L. - Inorganic silts and very fine sands, silty or clayey fine sands, clayey silts with slight plasticity to S.M. - Sand-silt mixtures**	
SAND [%]:	**33**		
GRAVEL [%]:	**11**	Estimated Infiltration Rate [mm/hr] : **10**	Estimated Permeability, k [cm/s] **10^{-7}**
D_{10} (Effective Diam. in mm):	**0.0009**	Coefficient of Uniformity C_U: **103.3**	Coefficient of Curvature C_C: **1.1**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

March 2022	**Grain Size Analysis No. 15**	**Project No.: SM 301951-T**

Mechanical & Hydrometer Analyses



Lab No.:	**22-098**	Notes: Depth: 5'	
Borehole No.:	**305**		
Sample No.:	**2**		
CLAY [%]:	**7**	Soil Description: **Brown Sand w/ some Silt and a trace of Clay**	
SILT [%]:	**16**	**S.M. - Sand-silt mixtures, silty sands**	
SAND [%]:	**77**		
GRAVEL [%]:	**0**	Estimated Infiltration Rate [mm/hr] : **50 to 60**	Estimated Permeability, k [cm/s] **10^{-4}**
D_{10} (Effective Diam. in mm):	**0.015**	Coefficient of Uniformity C_U: **10.0**	Coefficient of Curvature C_C: **3.3**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

75 Woolwich Street East, Elora ON

March 2022	**Grain Size Analysis No. 16**	**Project No.: SM 301951-T**