

Landfill Impact Assessment

665 Albert Street Ottawa, Ontario

Prepared for:

Dream Impact Master LP

30 Adelaide Street East Toronto, Ontario M5C 3H1

April 22, 2022

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EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained on April 12, 2022 through a standard engagement letter signed by Dream Impact Master LP (Client) to conduct a Landfill Impact Assessment for the property located at 665 Albert Street, Ottawa, Ontario (hereafter referred to as the Site).

The Site is currently industrial/vacant, free of any permanent buildings or structures.

Pinchin was advised by the Client that the purpose of the Landfill Impact Assessment was to assess potential issues of environmental concern in relation to the subject property and its proximity to nearby Waste Disposal Sites (WDS). It is Pinchin's understanding that the Site consists of a 1.11 hectare (ha) parcel (approximately 2.74-acre) property located in an urban area that is to be re-developed as a residential/commercial land use. It is Pinchin's understanding that the City of Ottawa has identified the subject property as being located within a designated area related to known/proximal waste deposits (former private waste disposal sites number 6124 and number 6108). The Landfill Impact Assessment area refers to any land considered to be potentially impacted by waste disposal (landfill) site operations, generally within 500 meters of a waste disposal site (active or closed). As such the Client has retained Pinchin to conduct an assessment of the above noted property to ensure that:

- The proximity to the waste disposal site (WDS) and potential nuisance effects associated with the location of the development are clearly outlined on the title of the property to accurately inform future owners;
- To guarantee that remedial measures are complied with; and
- To ensure that property owners understand that the Landfill Impact Assessment for one development may not apply to another.

Based on the results of the Landfill Impact Assessment completed by Pinchin, no potential contaminant pathway or nuisance source was identified that is likely to result in potential subsurface impacts at the Site, as a result of the presence of the former private waste disposal facilities #6124 and #6108. As such, no additional subsurface investigation work, remedial or mitigative measures are recommended at this time in relation to redevelopment of the Site and the former waste disposal sites; however, as per the recommendations within the 2022 Golder Phase II ESA Report, soil impacts at the Site would require remediation or a risk assessment as part of the redevelopment.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.



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1.0 INTRODUCTION

1.1 Background

Pinchin Ltd. (Pinchin) was retained on April 12, 2022 through a standard engagement letter signed by Dream Impact Master LP (Client) to conduct a Landfill Impact Assessment for the property located at 665 Albert Street, Ottawa, Ontario (hereafter referred to as the Site).

The Site consists of the municipal address 665 Albert Street and consists of the land listed at the following Property Identification Numbers:

- PIN 04112-0242(LT);
- PIN 04112-0244(LT);
- PIN 04112-0250(LT);
- PIN 04112-0251(LT); and
- PIN 04112-0263(LT).

The Site is currently vacant with the exception of the Pimisi LRT Station and associated LRT line, however; it is assumed that the land and structures associated with the LRT will not be transferred to the Client. Historic development at the Site and in the surrounding area was of mixed land use including residential, commercial, industrial and institutional land uses.

Pinchin was advised by the Client that the purpose of the landfill impact assessment was to assess potential issues of environmental concern in relation to the subject property and its proximity to nearby Waste Disposal Sites (WDS). It is Pinchin's understanding that the Site consists of a 1.11 hectares (ha) (2.74 acres) parcel located in an urban area that is to be re-developed as a residential/commercial land use. It is Pinchin's understanding that the City of Ottawa has identified the subject property as requiring a landfill impact assessment, as it located within a designated area related to known/proximal waste deposits. The landfill impact assessment has been based on the Guideline D-1, "Land Use Compatibility" (Guidelines), which specifies restrictions and controls on land use that the Ministry of the Environment, Conservation and Parks (MECP), formerly the Ontario Ministry of Environment and Climate Change, outlines for land use in the vicinity of landfills (active or closed). Typically, official plans require the application of the D-4 Guideline D-4 assessment area refers to any land considered to be potentially impacted by waste disposal (landfill) site operations, generally within 500 meters of the waste disposal site.

Factors to be considered for land users in the vicinity of non-operating landfill sites include: (i) ground and surface water contamination by leachate, (ii) surface runoff, (iii) landfill-generated gases, (iv) ground



settlement, (v) visual impact and (vi) soil contamination and hazardous waste. The Guideline notes "particular attention shall be given to the production and migration of landfill gas".

The Client has retained Pinchin to conduct a Landfill Impact Assessment of the above noted property to ensure that:

- The proximity to the waste disposal site (WDS) and potential nuisance effects associated with the location of the development are clearly outlined on the title of the property to accurately inform future owners;
- To guarantee that remedial measures are complied with; and
- To ensure that property owners understand that the Landfill Impact Assessment for one development may not apply to another.

1.2 Scope of Work

The Landfill Impact Assessment was completed in general accordance with MECP Guideline D-4, "Land Use On or Near Landfills and Dumps" (1994), including the following activities, which are all subject to the limitations outlined in Section 8.0 of this report:

- Assessment of all factors listed above to evaluate the presence and impact of any adverse effects or risks to health and safety, nuisance impacts and degradation of the natural environment, taking into consideration the proposed land use(s) and the uses permitted by local zoning bylaws;
- Communication with the City of Ottawa, and the MECP to request documentation on the relevant landfill site and additional information as required; and
- Completion of a report outlining environmental considerations and, where necessary, propose appropriate engineered remedial / control measures to prevent or minimize adverse effects.

1.3 Key Personnel

The Competent Environmental Practitioner (CEP) for the Site is Mr. Tim McBride of Pinchin Ltd. Mr. McBride's contact information is provided below:

Mr. Tim McBride, B.Sc., P.Geo., Q.P_{ESA} Pinchin Ltd. 662 Falconbridge Road Unit #3 Sudbury, ON P3A 4S4



1.4 Site Document Review

Data available to the public (i.e. Google Earth, Canada Atlas of Topographic Maps, and historic weather data) has been utilized to support the following sections of this report.

In addition, Pinchin has reviewed the following additional environmental reports prepared for the Site to assist in the development of a conceptual model for the subject Site:

- Report entitled "Phase III Environmental Site Assessment, Risk Assessment, and Risk Management Strategy, South LeBreton, Ottawa, Ontario" prepared by Intera Engineering Ltd. (Intera) for the Nation Capital Commission (NCC), dated January 18, 2007 (2007 Intera Phase III ESA Report);
- Report entitled "*Spring 2007 Groundwater Monitoring, South LeBreton, Ottawa Ontario*" prepared by Intera for the NCC, dated June 13, 2007 (2007 Spring Intera Groundwater Report);
- Report entitled "*Budget Cost Estimate for Remediation of South LeBreton*" prepared by Intera for the NCC, dated October 1, 2007 (2007 Intera Remediation Budget Estimate);
- Report entitled "Fall 2007 Groundwater Monitoring, South LeBreton, Ottawa Ontario" prepared by Intera for the NCC, dated March 4, 2008 (2007 Fall Intera Groundwater Report);
- Report entitled "2008 Groundwater Monitoring, South LeBreton and Preston Extension, Ottawa Ontario" prepared by Intera for the NCC, dated January 20, 2009 (2009 Fall Intera Groundwater Report);
- Report entitled "2008 Groundwater Monitoring, South LeBreton and Preston Extension, Ottawa Ontario" prepared by Intera for the NCC, dated January 20, 2009 (2009 Fall Intera Groundwater Report);
- Report entitled "Supplemental Phase II Environmental Site Assessment, South LeBreton Flats Blocks B1, B2, C1, C2, E1, E2, E3, G, H1 and H2 Ottawa Ontario" prepared by Intera for the NCC and dated February 2012 (2012 Intera Supplemental Phase II ESA Report);
- Memorandum entitled "Remedial Options Review and Class D Remediation Cost Estimates, South LeBreton Flats, Blocks B1, B2, C1, C2, E1, E2, E3, G, H1 and H2, Ottawa, Ontario (Revised Draft #2)" prepared by Golder Associates (Golder) for NCC, dated April 5, 2012 (2012 Golder Remedial Options Review);



- Report entitled "2012 Groundwater Monitoring, South LeBreton Blocks B1, B2, C1, C2, E1, E2, E3, G, H1, and H2, Ottawa Ontario" prepared by Intera Engineering Ltd. for the NCC, dated May 2012 (2012 Fall Intera Groundwater Report);
- Report entitled "*Geotechnical and Hydrogeologic Investigation Combined Sewage Storage Tunnel East-West Tunnel, Western Terminus Ottawa, Ontario*" prepared by Golder for the City of Ottawa, dated May 2013 (2013 Golder CSST Geotechnical and Hydrogeological Report);
- Document entitled "*OLRT Temporary Lease Property Report Card*" prepared for the City of Ottawa and dated April 15, 2015;
- Document entitled "*OLRT Temporary Lease Property Report Card*" prepared for the City of Ottawa and dated June 9, 2015;
- Report entitled "Summary of Subsurface Conditions & Construction Considerations South LeBreton Flats, Block B, C, D, E, F, G, and H, Ottawa, Ontario" prepared by Golder for the NCC and dated November 2015 (2015 Golder Subsurface Condition Summary Report);
- Memorandum entitled "Geotechnical Desk-Top Study NCC Property at 584 Wellington St. Potential Future Location of City of Ottawa Central Library, Ottawa, Ontario" prepared by Stantec for the City of Ottawa and dated April 5, 2016 (2016 Stantec Geotechnical Study);
- Figure entitled "*LeBreton Flats: Library Parcel*" provided by the NCC and dated Mary 27, 2021;
- Report entitled "*Phase One Environmental Site Assessment, 665 Albert Street, LeBreton Flats, Ottawa, Ontario*" prepared by Golder for the Client and dated March 2022 (2022 Golder Phase I ESA); and
- Report entitled "Draft *Phase Two Environmental Site Assessment, 665 Albert Street, LeBreton Flats, Ottawa, Ontario*" prepared by Golder for the Client and dated March 14, 2022 (2022 Golder Phase II ESA).

2.0 SITE DESCRIPTION

2.1 Site Location and Physical Description

The Site property is located within the City of Ottawa within the area known as LeBreton Flats. The Site consists of five individual parcels and is bounded to the northwest by the LRT rail line and Pimisi Station, to the southwest by Booth Street, to the south/southwest by Albert Street. The northeast boundary of the Site is situated approximately 166 m northeast of Booth Street. The Site location is indicated on Figure 1



(all Figures are provided in Appendix I). The Site is currently vacant land and is situated in an urban area that predominantly consists of residential and commercial land uses. Figure 2 illustrates the Site and surrounding area.

2.2 Legal Description of Site

The Site is located at 665 Albert Street, Ottawa, Ontario and occupies approximately 1.11 hectares of vacant land located within the area known as LeBreton Flats. The Site is zoned as MD[2509] H(83)-h, intended to accommodate mixed use land uses within the downtown of the City of Ottawa. The legal description of each of the parcels making up the Site are listed in Table 1 below.

Table 1: Legal Land Descriptions

Information	Description
Property Identification Number	PIN 04112-0242(LT)
Legal Description	Part of Wellington Street (Closed by By-Law Inst. No. LT1243128), Plan No. 2, being Parts 1 to 4, ON Plan 4R-32303;
	Part of Wellington Street, Closed by By-LayLT1243128 & OC1457912, Plan No. 2, being Parts of 11 to 17, Plan 4R-32006; Subject to an Easement in Gross over Parts 15 & 16 4R32006 and Part 3 4R32303 as in OC2376918; City of Ottawa.
Property Identification Number	PIN 04112-0244(LT)
Legal Description	Part Lloyd Street, Plan No. 2, being Part 9, Plan 4R-32006; S/T LT 1243142; City of Ottawa
Property Identification Number	PIN 04112-0250(LT)
Legal Description	Parts of Lots 6 & 7, Part of the Water Works Reserve, Part Alley closed by By-Law LT1243120 Plan 9481, being Part 2 on 4R-32006; City of Ottawa.
Property Identification Number	PIN 04112-0251(LT)
Legal Description	Lots 1, 2, 3, 4, 5, 6, 7 & 8 Plan 9481, Water Works Reserve On Plan 9481, Alley ON Plan 9481 (Closed by By-law LT1243120), Except Part 40 Plan 5R12914, Part 10- Plan 4R23452, Part 1 4R30019, Parts 20, 21, 22, 25 & 41 ON 4R32151 and Parts 2, 23 & 25 ON 4R32006; Subject to an Easment in Gross Over Parts 3, 24 & 26 ON 4R32006 and Parts 23, 26, 27, 29, 37, 38 & 42 ON 4R32151 as in OC2177774; Subject to an Easement in Gross over Part Lots 1, 2, & 3 Plan 9481, Part 5, 4R32006 and Parts 27 & 28, 4R32151 as in OC2376919; City of Ottawa



Information	Description
Property Identification Number	Part of PIN 04112-0263(LT)
Legal Description	-

2.3 Site History

The history of the Site and surrounding area (LeBreton Flats South) has been well documented with numerous previous environmental investigations having been conducted since 2007. Based on a review of these previous reports the Site was first developed with residential, institutional and commercial land uses in 1878. The Site and surrounding area underwent a transition from predominantly residential land uses to industrial and commercial land uses in the early 1900's. Following the Great Fire in approximately 1902 the Site was redeveloped and occupied by Continental Paper Products Company Ltd. (then called The Continental Bag & Paper Co. Ltd.) and a historical laundry service until approximately 1966 when it was acquired by the NCC. By 1965 the majority of buildings at the Site had been cleared with Wellington Street running approximately southwest to northeast, through the Site and the remainder of the Site occupied by a parking lot. In the 1980's/90s a transit way, in the form of a bus lane occupied the north most portion of the Site, which, in the mid 2010's was replaced by the light rail transport (LRT) and Pimisi Station which currently occupies the north portion of the Site. Wellington Street was diverted south of the Site in the 2000's with the remaining pavement removed in the 2010's. Most recently the Site was leased and used as a laydown area for the construction of the LRT line and Station. In its current state the Site consists of a gravel surfaced parking lot with the LRT line and Pimisi Station occupying the north portion.

Development of the Site and surrounding LeBreton Flats has been hindered by the presence contaminated soil and groundwater as a result of both the Great Fire in 1902, as well as previous land uses. Previous investigations have included the Site and surrounding area of LeBreton Flats and identified similar conditions. The majority of exceedances throughout the Site investigations appear to be within the surficial fill material. An investigation into the subsurface conditions at the Site was conducted and presented most recently within the 2022 Golder Phase II ESA. The findings of the 2022 Golder Phase II ESA Report identified elevated levels of PAHs, PHCs and metals relative to Table 3 of the MECP Site Condition Standards (SCS) for non-potable groundwater conditions. The exceedances listed were limited to the surficial two meters of soil. Groundwater samples at the Site, collected as part of the 2022 Golder Phase II ESA Report identified diverse of and networks of the MECP SCS Table 3 Guidelines. This report recommended the remediation of all fill materials at the Site prior to development. Several additional environmental investigations have included the characterization of the soil and groundwater conditions of the Site, as well as the surrounding area. The 2012 Intera Phase II ESA Report indicated PHCs, benzene and ethylene, as well as six instances of elevated metals at the Site, in addition to similar exceedances in the surrounding area. An analysis of the



frequency of exceedances with respect was conducted with the results indicating a decrease in observed contamination with respect to depth. Based on a review of the historic reports provided to Pinchin, contamination at the Site is a result of previous land uses (i.e. industrial), as well as the use of contaminated fill following the decommissioning of the former Canadian National Railway line within the South LeBreton Flats area (2022 Golder Phase II ESA Report and 2012 Intera Supplemental Phase II ESA Report). In general, contamination appears to be limited to imported fill material overlying native soil in the area.

2.4 Physical Setting

2.4.1 Topography and Hydrology

The physical setting of the Site is dominated by the Ottawa River situated approximately 550 m northwest of the Site, which flows southwest to northeast. An open aqueduct is situated approximately 50 m north of the Site in addition to a covered aqueduct situated approximately 80 m to the north. According to topographic information obtained from geoOttawa, the Site and surrounding area generally slope towards the Ottawa River and associated aqueducts to the north and northwest of the Site. According to ground surface elevations observed in borehole logs provided in the 2012 Intera Phase II ESA Report, ground surface at historic borehole 11-39, situated near the southeast corner of the Site is 62.81 meters above sea level (masl) while elevation at monitoring well 22-04, as observed in the 2022 Golder Phase II ESA Report is 60.47. In general, the Site slopes to the north and northwest toward the Ottawa River and aqueducts. Surface runoff is expected to follow the natural contours at the Site and flow towards the north; however, natural flow may be intercepted by engineered structures such as the LRT may deviate from natural flow patterns.

2.4.2 Geology

According to the *Ontario Geological Survey (2000) Quaternary geology, seamless coverage of the Province of Ontario; Ontario Geological Survey, Data Set 14---Revised*, the quaternary geology at the Site is made up of glacial till consisting of undifferentiated, predominantly sandy silt to silt matrix, commonly rich in clasts, often high in total matrix carbonate content. The Site Specific surficial geology has been well documented and was summarized within the 2012 Intera Supplemental Phase II ESA as consisting of five distinct lithologies. Cross sections of the geology encountered throughout the investigations area presented in Figures 4. The surficial layer throughout the majority of the study area (consisting of the south portion of LeBreton Flats) consisting of construction debris/fill overlying black sand fill. Underlying black sand fill was a third category of fill that was interpreted to consist of a mixture of imported fill and reworked native glacial till. This layer predominantly consisted of sand and gravel with some silt, clay and/or cobbles and boulders. A layer of organics was identified in the north portion of



LeBreton Flats south and was found to be between layers of fill. The thickness of the various layers of fill at the Site was reported as being between 1.5 and 4.4 m. Underlying fill glacial till, characterized as being dense to very dense, sand, silty sand, gravel and occasional cobbles, was observed. This layer was identified between 2.1 to 8.0 meters below ground surface (mbgs).

Underlying the glacial till and fill stratum is bedrock of the Verulam Formation. Limestone observed within this formation was characterized as being weathered near the surface, with weathering and fractures decreasing with increased depth. Bedrock was described as being grey to black with thin to medium bedding, and intermittent shale layers (2022 Golder Phase II ESA Report). Bedrock at the Site was encountered between 11.2 mbgs and 14.7 mbgs in the 2022 Golder Phase II ESA Report. The 2012 Intera Phase II ESA Report reported bedrock between 2.9 mbgs and 10.1 mbgs. Based on the cross section provided in this report bedrock at the Site, located on the east portion of the LeBreton Flats South, lies at approximately 56 masl to 58 masl. The bedrock contact at the east portion of the South LeBreton Flats is situated approximately 53 masl, with bedrock between the east and west situated as low as approximately 48 masl.

Using the historic borehole logs provided by the Client, Pinchin constructed a conceptual model of the Site and surrounding areas. Three transects of the model are present in Figure 4a, b and c.

2.4.3 Hydrogeology

Groundwater elevations at the Site were most recently evaluated using the monitoring wells installed during the 2022 Golder Phase II ESA. The results indicated that the groundwater depth ranged between 2.6 to 3.3 mbgs. The 2007, 2008, 2009 and 2012 Intera Groundwater Monitoring Reports indicated that ground water elevations generally ranged from 1.4 mbgs to 5.7 mbgs within the South LeBreton Flats. The groundwater elevations provided indicate a groundwater flow direction generally directed towards the northwest, towards the open aqueduct and the Ottawa River throughout each of the monitoring reports. The hydraulic gradient for the Site was calculated using the EPA On-Line Hydraulic Gradient Calculator. A gradient of 0.14 was calculated with a direction of 331°, approximately north-northwest.

Natural groundwater flow paths my be interrupted by the presence of underground structures and utilities. The 2016 Stantec Geotechnical Study indicated a utility corridor (municipal sewer) running approximately southwest to northeast through the Site, trending along former Wellington Street. Additionally, utilities appear to run north-south along Booth Street, west of the Site. These utilities may provide a preferential flow pathway, altering groundwater flow from the expected, natural pathways.

An analysis of hydraulic conductivity of the various lithologies within the South LeBreton flats was conducted and presented within the 2015 Golder Construction Considerations Report. This analysis indicated the hydraulic conductivity within the undifferentiated fill layers ranged from 1.0E⁻⁰³ m/s to 3.5E⁻⁰⁶



m/s. Hydraulic conductivity within the glacial till ranged from 1E⁻⁰⁵ m/s to 1E⁻⁰⁷ m/s and 1E⁻⁰⁶ m/s to 1E⁻⁰⁹ m/s within the bedrock (below significant weathering at the bedrock contact). The porosity of each formation was estimated. Considering the poorly sorted nature of the fill material porosity was estimated to be 20%. Similar to fill porosity in the glacial till was estimated to be 15%. Porosity within unfractured limestone was estimated at 15%. Using the hydraulic conductivity provided within the 2015 Golder Construction Considerations Report, the calculated gradient and estimated porosity the groundwater velocity was estimated to be 7E⁻⁰⁴ m/s to 7E⁻⁰⁶ m/s within the undifferentiated fill, 9.33E⁻⁰⁶ m/s to 9.33E⁻⁰⁸ m/s in glacial till and 9.33E⁻⁰⁷ m/s to 9.33E⁻¹⁰ m/s in unfractured limestone.

Based on the information provided groundwater at the Site behaves as an unconfined aquifer. Groundwater flow is generally directed towards the north-northwest with groundwater velocity decreasing with depth as the strata transitions from fill to glacial till, to limestone.

2.5 Proposed Site Operations

The Site currently consists of a vacant lot that is to be re-developed as residential/commercial land use. Detailed drawings of the proposed development were not provided to Pinchin however, based on information obtained from the 2022 Golder Phase I ESA Report, development is proposed to consist of two towers, one 30 storey and one 35 storey, mixed-use residential/commercial buildings.

Торіс	Findings					
Water Supply Source	According to the 2022 Golder Phase I ESA the Site is situated in an area that is serviced by municipal drinking water.					
Water Use	Water would primarily be used for domestic-related activities.					
Sanitary/Process Wastewater Receptor	Wastewater would be disposed of via the municipal wastewater systems.					
Pits, Sumps or Lagoons	None reported.					
Storm Water Flow and Receptor	Storm water conveyance would consist of overland flows via diffuse overland runoff, roadside ditching and natural percolation through the soil. Paved roads and access ways would likely rely on and off Site catch basins discharging into the municipal storm sewer.					
Wells	Pinchin completed a search of the MECP Water Well Records database and did not identify the presence of wells on Site or within 250 m of the Site that supply water for human consumption or for agricultural purposes. The results of the search of the Water Well Information System (WWIS) database records indicated that all records in the area were listed as monitoring or observation wells.					

2.6 Proposed Water and Wastewater Supply Systems



3.0 ACTIVITIES ON ADJACENT PROPERTIES

The Site is located in an urban area that predominantly consists of residential and commercial land. A description of the adjacent properties is summarized in the following table, based on Pinchin's observations from the Site and publicly accessible locations:

	North	East	South	West
Operation or Activity	Pimisi Station and LRT Line followed by an uncovered aqueduct then a paved parking lot	Vacant land the Albert Street and Slater Street.	Albert Street followed by residential dwellings.	Booth Street followed by Pimisi Station and vacant land.
Direction with Respect to Inferred Groundwater Flow	Upgradient.	Transgradient.	Downgradient.	Transgradient.

4.0 LANDFILLS LOCATED WITHIN GUIDELINE D-4 ASSESSMENT AREA

According to the City of Ottawa Former Landfill Database, the subject Site property is within 500 m of the following two non-operating Waste Disposal Sites (WDS):

- WDS Activity ID 6124; and
- WDS Activity ID 6108 (Nepean Bay Landfill).

In addition, Pinchin contacted the City of Ottawa Environmental Remediation Unit (ERU) to inquire about any information regarding former WDSs in the vicinity of LeBreton Flats. The ERU confirmed the presence of the two WDSs and provided additional information.

The location of these WDS relative to the subject property are indicated on Figure 2.

4.1 Landfill Background and Site Boundary Information

Waste Disposal Site, Activity No. 6124 (WDS# 6124)

According to the City of Ottawa's Old Landfill Management Strategy a historic landfill, WDS #6124, is located northwest of the Site. This landfill is bounded to the south by the open aqueduct, the Ottawa River to the west, Booth Street to the east. The north boundary of the historic landfill is situated approximately 90 m south of the Ottawa River. Information provided by the ERU indicated that this landfill operated from approximately 1910 to 1920. The 2022 Golder Phase I ESA Report for the Site identified two former facilities within the footprint of the WDS 6124. The Sachs Brothers Junk Yard operated from 1912 to 1956 and was situated approximately 215 m west-northwest of the Site and M. Levinson Salvage Co. Limited situated approximately 130 m west of the Site operated as a wholesaler of waste materials from 1920 to 1922 and 1960. Based on the information provided Pinchin is unable to determine the approximate



footprint of the facility, or the classification and quantity of the waste accepted at this facility. The footprint of the WDS # 6124, as specified by the City of Ottawa Former Landfills database, is currently bisected by the Sir John A Macdonald Parkway with vacant land and covered aqueduct in the south portion, and green space and Vimy Place followed by the Canadian War Museum in the north.

Nepean Bay Landfill, Activity No. 6108 (Nepean Bay Landfill)

The Nemean Landfill, Activity No. 6108 is a non operating landfill located approximately 400 m west of the Site. According to the summary of information provided by the ERU the Nepean Bay Landfill is located within UTM NAD Zone 27 Easting 443540 Northing 5028720 with an approximately area of 7.5 ha. The former landfill is bounded by the Ottawa River to the North, the LeBreton Flats aqueducts to the east, the Trillium pathway to the west and an LRT line to the south. Currently the Sir John A. Macdonald Parkway transects the former landfill with the remainder occupied by vacant greenspace. According to the City of Ottawa Former Landfills database, this facility operated between March 1963 to February 1964 and accepted domestic and industrial solid waste. In addition, the database specified an approximate waste depth of 3 to 12 mbgs and indicated that substantial fill cover consisting of sand or clay fill ranging in thickness from 0.5 to several meters was applied in approximately 1980. The database reported that during Site operation, a temporary dam was constructed across the bay with wastes deposited behind the dam face. The 2015 Golder Construction Considerations Report included the eastern most portion of the Nepean Bay Landfill (Block F) as well as the adjacent areas to the south and southeast (Blocks E and G, respectively). This report indicated that fill was present to a depth of approximately 12 mbgs within the footprint of the former Nepean Bay Landfill.

4.2 Topographic, Geologic and Hydrogeological Setting Relative to Landfill

Torrio	Findings							
Торіс	WDS # 6124	Nepean Bay Landfill						
Topography of Site and Surrounding Area	WDS #6124 is situated hydraulically downgradient of the Site. Topography at this location varies, with the south portion of the property sloping south toward the uncovered aqueduct. The remainder of the Site slopes north or west towards the Ottawa River.	The Nepean Bay Landfill is situated hydraulically crossgradient relative to the Site. The ground surface at Nepean Bay Landfill generally slopes north, toward the Ottawa River.						
Subsurface Soils	The subsurface conditions at the Site consist of varying layers of fill	Surficial cover ranges from 0.5 m to several m followed by varying						

The following is a description of the Site relative to private WDS # 6124 and the Nepean Bay Landfill, located north and northwest of the Site, respectively.



Tania	Findings								
Торіс	WDS # 6124	Nepean Bay Landfill							
	overlying native glacial till.	depths of waste deposits.							
Fill Materials	Fill ranges from 2.1 mbgs to 5.2 mbgs based on borehole logs MW01-07 and MW06-06.	Fill depth, included waste, ranges from 4 mbgs to 12 mbgs.							
Bedrock Type	Bedrock is located at approximately 77 mbgs, based on the Ontario MECP well records database. The type of bedrock was not specified in the records.	Bedrock is located at approximately 76 mbgs, based on the Ontario MECP well records database. The type of bedrock was not specified in the records.							
Nearest Open Water Body	The property is bounded to the west by the Ottawa River and to the south by an uncovered aqueduct.	The Site is bounded to the north by the Ottawa River.							
Inferred Groundwater Flow Direction	Based on the proximity to the Ottawa River groundwater at this location is expected to flow east toward the Ottawa River or south toward the aqueducts depending on the area of the property.	North and west toward the Ottawa River and the aqueduct inlet.							

4.3 Landfill Site Impacts – WDS # 6124

4.3.1 Groundwater Contamination by Leachate

Very little information is available regarding the subsurface conditions at this former landfill. A portion of the former landfill known as the Preston Street Extension underwent a Phase II ESA as reported in the 2009 Intera Groundwater Monitoring Report. The Preston Street Extension occupies the southwest portion of the former landfill footprint. This report identified wide-spread, low-level impacts of metals, and PAHs as well as localized PHC impacts. In addition, PAH and metals impacts were observed within groundwater monitoring wells during a previous Phase II ESA. The spatial extent of the impacts were not reported. Two monitoring wells were sampled on this portion of the property. MW06-13 was sampled once in 2006 and identified groundwater impacts including chromium, cobalt, copper, iron, manganese, sodium, vanadium and zinc. MW03-518 was sampled in 2006, 2008 and 2009 and identified impacts of various metals including boron, chromium, cobalt, copper, and sodium as well as PAHS in 2006 and 2009.

WDS #6124 is situated approximately 40 m northwest of the Site. The calculated hydraulic gradient at the Site indicated local groundwater flow was directed approximately north-northwest toward the uncovered aqueduct and the Ottawa River and placing the WDS #6124 hydraulically downgradient relative to the



Site. The Groundwater elevations presented in the 2009 Intera Groundwater Monitoring report indicate groundwater flow along the Preston Extension situated approximately 280 m west of the Site, was directed approximately south toward the uncovered aqueduct in 2006. Based on water levels observed at monitoring wells south of the uncovered aqueduct, which indicated a groundwater flow direction approximately north, the uncovered aqueduct creates a boundary condition for the shallow groundwater flow system. Deeper, regional groundwater flow is expected to be controlled by the Ottawa River, and flow towards the north.

The results of the 2022 Golder Phase II ESA Report no exceedances of the Table 3 SCS observed in groundwater. This report indicated that impacts at the Site are limited to soil in the south portion of the Site and are most prominent within the surficial 1-2 mbgs, above the observed water table. Based on the results of the 2022 Golder Phase II ESA as well as the groundwater flow patterns observed at the Site and in the surrounding area it is Pinchin's opinion that this historic landfill is unlikely to result in subsurface impacts at the Site. The results of the 2022 Golder Phase II ESA infer the observed soil impacts at the Site to be the result of poor quality fill placed at the Site.

4.3.2 Surface Water Contamination by Leachate/Surface Water Run-off

The WDS # 6124 is bounded to the west by the Ottawa River and to the south by the uncovered aqueduct, which separates this property and the Site. Based on topographic data obtained from geoOttawa the central and south portions of the WDS #6124 slope south, toward the uncovered aqueduct the west portion slopes west towards the Ottawa River and the east portion flows east towards the uncovered aqueduct. Surface water is anticipated to following topography and flow towards the uncovered aqueduct and/or the Ottawa River.

Surface water sampling was documented within the 2007 Intera Phase III ESA. A total of 13 surface water samples were collected from 12 locations within the uncovered aqueduct. Each of the samples were analyzed for metals, PAHs and PHCs. The results were compared to the CCME Guideline for Protection of Freshwater Aquatic Life (APV) and MOE Potable Water Quality Objectives (PWQO). Aluminum was found to exceed both guidelines in all samples, including the background sample, one exceedance of copper was considered to be an anomaly. One surface water sample collected from within the uncovered aqueduct adjacent the southeast boundary of the WDS # 6124 exceeded the PWQO for several PAHs. A follow up sample was collected from this location within which no PAHs were detected. The 2007 Intera Phase III ESA concluded that the surface water quality within the aqueduct was not impacted by PAHs and metals.



Based on the surface water flow direction, approximately southwest to northeast, and topography at the Site and the WDS #6124 (i.e. the Site and immediate surroundings slope towards the north while the WDS #6124 slope toward the south) it is Pinchin's opinion that the WDS #6124 is unlikely to results in surface water impacts at the Site.

4.3.3 Landfill Generated Gases

Based on a review of the available historic information regarding the landfill, the former waste disposal operations ceased in 1920. As the former landfill has now been closed for greater than 100 years, there does not appear to be any concerns arising as a result of the landfill generated gases, especially given the distance between the historic waste deposits and the subject Site.

4.3.4 Ground Settlement

Based on the location of the Site in relation to WDS #6124, ground settlement is not a concern.

4.3.5 Visual Impacts

The northern portion of the Site has been redeveloped to be of institutional land use. According to the 2022 Golder Phase I ESA Report this property has been redeveloped several times since landfill operations ceased in 1920. As a result, it is Pinchin's opinion that former landfilling activities at this property have not resulted in visual impacts with respect to the Site.

4.3.6 Soil Contamination and Hazardous Waste

Soil impacts of metals, PHCs and PAHs at this property as well as the Site have been well documented within previous environmental reports. These impacts have been concluded to be the result of poor quality fill used in the LeBreton Flats area. WDS #6124 has been redeveloped with an institutional building and landscaping on the north portion while the south portion appears to consist of a paved parking lot. Based on this information it is Pinchin's opinion that soil contamination at WDS #6124 is unlikely to result in adverse effects at the Site; however, existing soil impacts are present at the Site. As per the recommendations within the 2022 Golder Phase II ESA Report, soil impacts at the Site would require remediation of risk assessment as part of the redevelopment.

4.3.7 Dust, Odour, Noise, Vermin or Vector Impacts

As WDS #6124 is closed and has not received or deposited waste since 1920, there is no risk to the proposed development related to dust, odour, noise, vermin or vectors originating at this WDS. In addition, the risk of fire at the subject Site associated with the former WDS does not exist.



4.4 Landfill Site Impacts – Nepean Bay Landfill

4.4.1 Groundwater Contamination by Leachate

Groundwater sampling data at the Nepean Bay Landfill is limited; however, it is expected that landfilling activities at this landfill likely would have resulted in the development of a leachate plume. Based on the geology observed within boreholes advanced in the LeBreton Flats area and presented in cross section A-A' and C-C' a pathway for groundwater migration from the Nepean Bay Landfill to the Site is not present. Groundwater flow at the Site, as indicated by the calculated hydraulic gradient is towards the north-northwest while groundwater elevations collected on August 2007 and presented in the 2007 Intera Phase III ESA Report indicated a groundwater flow direction from north to northeast towards the Ottawa River and aqueducts. Based on these groundwater elevations and topography groundwater originating at the Nepean Bay Landfill likely discharged into the Ottawa River and aqueducts north of the Site. Based on surface water sampling conducted in 2007 and discussed in Section 4.4.2, as well as the groundwater sampling results at the Site, presented in the 2022 Golder Phase II ESA Report, the Nepean Bay landfill has not resulted in significant groundwater impacts to the groundwater at the Site.

4.4.2 Surface Water Contamination by Leachate/Surface Water Run-off

The Ottawa River is located immediately north of the former landfill site. Surface water drainage is anticipated to flow overland across the Nepean Bay Landfill from the south to the north and east. As per the database supplied by the ERU landfill cover consisting of clay and/or sand was applied in the 1980s. Surface water sampling data collected in 2007 and discussed in section 4.4.2 indicates that the former landfill did not have significant impacts to surface water in the vicinity of the Site at the time of sampling. As such, based on the inferred flow direction and the location of the former WDS #4111 with respect to the subject property, it is Pinchin's opinion that any leachate impacts to surface water are unlikely to impact the Site under review.

4.4.3 Landfill Generated Gases

The most recent reported monitoring in 2013, presented in the 2015 Golder Construction Considerations Report, reported a maximum methane concentration of 30% within the former landfill footprint and no detectable methane at Block E south of the former landfill and situated approximately 350 m southwest of the Site. According to the information provide by the ERU measured methane levels reportedly vary from 0 % to 88.7% across the footprint of the former landfill. While methane concentrations above the lower explosive limit (5%) present a concern locally, considering the separation distance between the Site and Nepean Bay Landfill, it is Pinchin's opinion that the generation of methane at this former landfill does not present a hazard at the Site.



4.4.4 Ground Settlement

Based on the location of the Site in relation to the Nepean Bay Landfill, ground settlement is not a concern.

4.4.5 Visual Impacts

As a result of the WDS being closed for over 55 years, natural vegetation and trees have created a natural buffer between the former WDS site and off-Site properties. In addition, majority of the former landfill is currently occupied by greenspace in addition to the Sir John A. Macdonald Parkway. Considering the redevelopment at the Site this former landfill does not contribute to adverse visual impacts at the Site.

4.4.6 Soil Contamination and Hazardous Waste

The City of Ottawa Former Landfills database indicated that impacts of metals (barium, beryllium, cadmium, copper, lead, nickel, molybdenum, and zinc were observed in soil local to the facility with impacts of PAHs in soil and groundwater. The 2015 Construction Considerations report indicated impacts of metals, PAHs and PHCs were present and ranged in depth from 2 mbgs to 7 mbgs. The source of these impacts were unable to be confirmed and are assumed to be a result of a combination of poor quality fill imported to the Site as well as former landfilling activities.

While similar soil impacts have been identified at the Site these impacts have been attributed to poor quality fill and are not the result of landfilling activities at the Nepean Bay Landfill. Additionally, the Nepean Bay Landfill has been redeveloped with landscaping and the Sir John A. Macdonald Parkway with little to no bare soil present, significantly reducing the probability of wind blown particulate to be deposited at the Site. Based on these considerations it is Pinchin's opinion the contaminated soil at the former landfill is unlikely to result in adverse effects at the Site; however, existing soil impacts are present at the Site. As per the recommendations within the 2022 Golder Phase II ESA Report, soil impacts at the Site would require remediation of risk assessment as part of the redevelopment.

4.4.7 Dust, Odour, Noise, Vermin or Vector Impacts

As the Nepean Bay Landfill last operated in 1964 and has since been redeveloped with greenspace and the Sir John A McDonald parkway, there is no risk to the proposed development related to dust, odour, noise, vermin or vectors originating at this WDS. In addition, an increased risk of fire as a result of the former WDS at the subject Site is not present.



5.0 REGULATORY INFORMATION AND CORRESPONDENCE

A Freedom of Information request was submitted to both the City of Ottawa and the MECP for information on file with respect to historic landfills in the vicinity of the Site. At the time of writing this report, no response had been received from the MECP. When a formal response is received, it will be reviewed by Pinchin. If there is any information that represents a potential issue of environmental concern, a copy of the response will be forwarded to the Client under separate cover. Our conclusions and recommendations may be amended based on this information. A copy of Pinchin's request submitted to the MECP is provided in Appendix II of this report.

Email correspondence with the County, the Town and the MECP are provided in Appendix III.

6.0 OVERVIEW

The following chart provides an overview of whether or not the Site located within the Guideline D-4 Assessment area will be impacted by the either of the landfills.

Impact of Landfill Operation On-Site		'DS 4113	Private WDS 4111		
Impact of Landhii Operation On-Site	Yes	No	Yes	No	
Groundwater Contamination by Leachate Generation		Х		Х	
Landfill Generated Gases		Х		Х	
Litter- As a result of natural sources such as wind or animals		Х		Х	
Odours- As a result of downgradient wind effects		Х		Х	
Surface Water Contamination by Leachate Generation/Surface Water Runoff		Х		Х	
Contaminant Discharge from vehicular traffic		Х		Х	
Dust Pollution		Х		Х	
Noise Pollution		Х		Х	
Visual Impacts		Х		Х	
Soil Contamination and Hazardous Waste		Х		Х	
Vermin or Vector Impacts		Х		Х	
Impacts as a result of a fire		Х		Х	



7.0 FINDINGS AND RECOMMENDATIONS

Based on the results of the Landfill Impact Assessment completed by Pinchin, no potential contaminant pathway or nuisance source was identified that is likely to result in potential subsurface impacts at the Site, as a result of the presence of the former private waste disposal facilities #6124 and the Nepean Bay Landfill. As such, no additional subsurface investigation work, remedial or mitigative measures are recommended at this time in relation to redevelopment of the Site and the waste disposal sites; however, existing soil impacts are present at the Site. As per the recommendations within the 2022 Golder Phase II ESA Report, soil impacts at the Site would require remediation or a risk assessment as part of the redevelopment.

8.0 TERMS AND LIMITATIONS

This Landfill Impact Assessment was performed, in order to identify potential issues of environmental concern associated with the property located at 665 Albert Street West, in Ottawa, Ontario. This Landfill Impact Assessment was performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site.

This report was prepared for the exclusive use of Dream Impact Master LP (Client), subject to the terms, conditions and limitations contained within master services agreement in place with the Client. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

If additional parties require reliance on this report, written authorization from Pinchin will be required. Such reliance will only be provided by Pinchin following written authorization from Client. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law.

The information provided in this report is based upon analysis of available documents, records and drawings, and personal interviews. In evaluating the Site, Pinchin has relied in good faith on information provided by other individuals noted in this report. Pinchin has assumed that the information provided is factual and accurate. In addition, the findings in this report are based, to a large degree, upon information provided by the current owner/occupant. Pinchin accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted, or contained in reports that were reviewed.



Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

9.0 REFERENCES

The following documents, persons or organizations provided information used in this report:

- 1. *"Budget Cost Estimate for Remediation of South LeBreton"* prepared by Intera for the NCC, dated October 1, 2007.
- 2. City of Ottawa, Environmental Remediation Unit.
- City of Ottawa Former Landfills Database (https://open.ottawa.ca/datasets/8a6f5f176b484f2e83142e0008904e82/explore?location= 45.241121%2C-75.752150%2C1.38). Accessed online on April 18, 2022.
- 4. Draft Phase Two Environmental Site Assessment, 665 Albert Street, LeBreton Flats, Ottawa, Ontario" prepared by Golder for the Client and dated March 14 2022.
- 5. "Fall 2007 Groundwater Monitoring, South LeBreton, Ottawa Ontario" prepared by Intera for the NCC, dated March 4, 2008.
- 6. geoOttawa (https://maps.ottawa.ca/geoottawa/). Accessed online on April 18, 2022.
- "Geotechnical Desk-Top Study NCC Property at 584 Wellington St. Potential Future Location of City of Ottawa Central Library, Ottawa, Ontario" prepared by Stantec for the City of Ottawa and dated April 5, 2016.
- "Geotechnical and Hydrogeologic Investigation Combined Sewage Storage Tunnel East-West Tunnel, Western Terminus Ottawa, Ontario" prepared by Golder for the City of Ottawa, dated May 2013.
- 9. Google Earth™.
- 10. "LeBreton Flats: Library Parcel" provided by the NCC and dated Mary 27, 2021.
- Ministry of the Environment, 1994 "Guideline D-4 Land Use On or Near Landfills and Dumps".
- Ministry of the Environment, Conservation and Parks, January 24, 2020 "Map: Well Records".
- 13. Ministry of the Environment, 1991 "Waste Disposal Site Inventory".

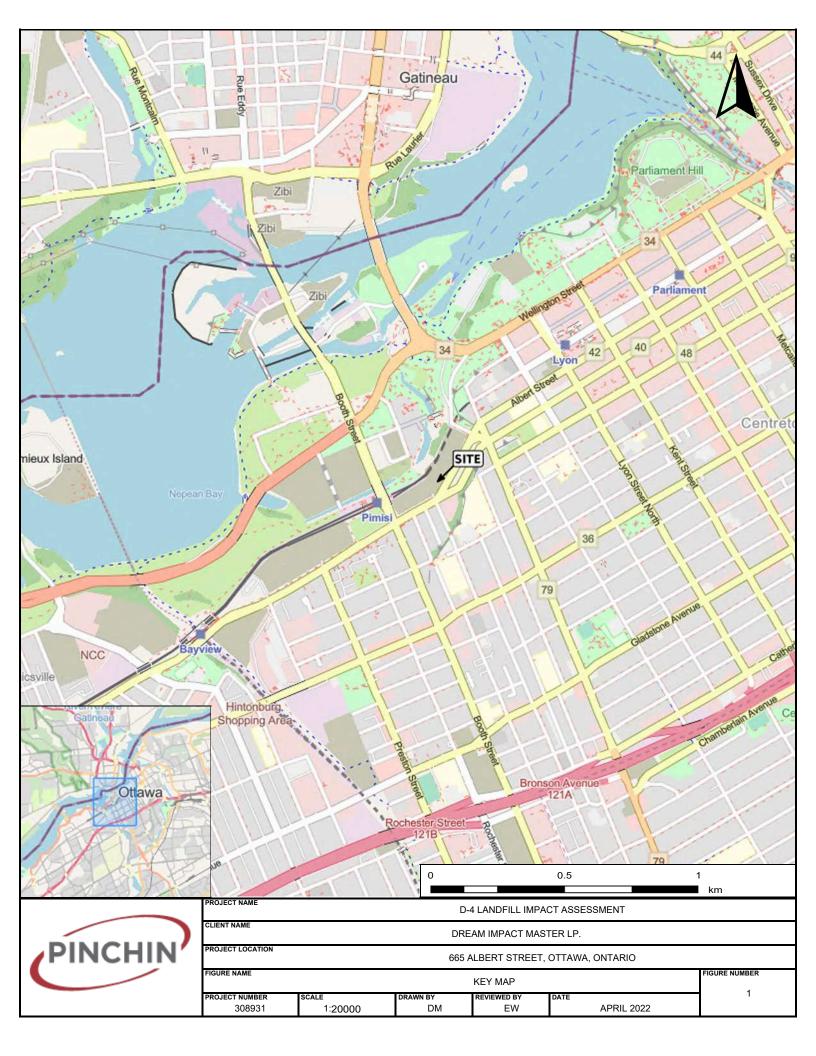


- "Old Landfill Management Strategy, Phase I Identification of Sites, City of Ottawa
 Ontario" prepared by Golder Associates for the City of Ottawa and dated October 2003.
- 15. "OLRT Temporary Lease Property Report Card" prepared for the City of Ottawa and dated April 15, 2015;
- 16. "OLRT Temporary Lease Property Report Card" prepared for the City of Ottawa and dated June 9, 2015.
- 17. "Phase One Environmental Site Assessment, 665 Albert Street, LeBreton Flats, Ottawa, Ontario" prepared by Golder for the Client and dated March 2022.
- "Phase III Environmental Site Assessment, Risk Assessment, and Risk Management Strategy, South LeBreton, Ottawa, Ontario" prepared by Intera Engineering Ltd. (Intera) for the Nation Capital Commission (NCC), dated January 18, 2007.
- 19. "Remedial Options Review and Class D Remediation Cost Estimates, South LeBreton Flats, Blocks B1, B2, C1, C2, E1, E2, E3, G, H1 and H2, Ottawa, Ontario (Revised Draft #2)" prepared by Golder Associates (Golder) for NCC, dated April 5, 2012.
- 20. "*Spring* 2007 Groundwater Monitoring, South LeBreton, Ottawa Ontario" prepared by Intera for the NCC, dated June 13, 2007.
- 21. "Summary of Subsurface Conditions & Construction Considerations South LeBreton Flats, Block B, C, D, E, F, G, and H, Ottawa, Ontario" prepared by Golder for the NCC and dated November 2015.
- 22. "Supplemental Phase II Environmental Site Assessment, South LeBreton Flats Blocks B1, B2, C1, C2, E1, E2, E3, G, H1 and H2 Ottawa Ontario" prepared by Intera for the NCC and dated February 2012.
- 23. "2008 Groundwater Monitoring, South LeBreton and Preston Extension, Ottawa Ontario" prepared by Intera for the NCC, dated January 20, 2009.
- 24. "2012 Groundwater Monitoring, South LeBreton Blocks B1, B2, C1, C2, E1, E2, E3, G,
 H1, and H2, Ottawa Ontario" prepared by Intera Engineering Ltd. for the NCC, dated May 2012.

Template: Master Report for Phase I ESA - Ontario, EDR, August 17, 2020

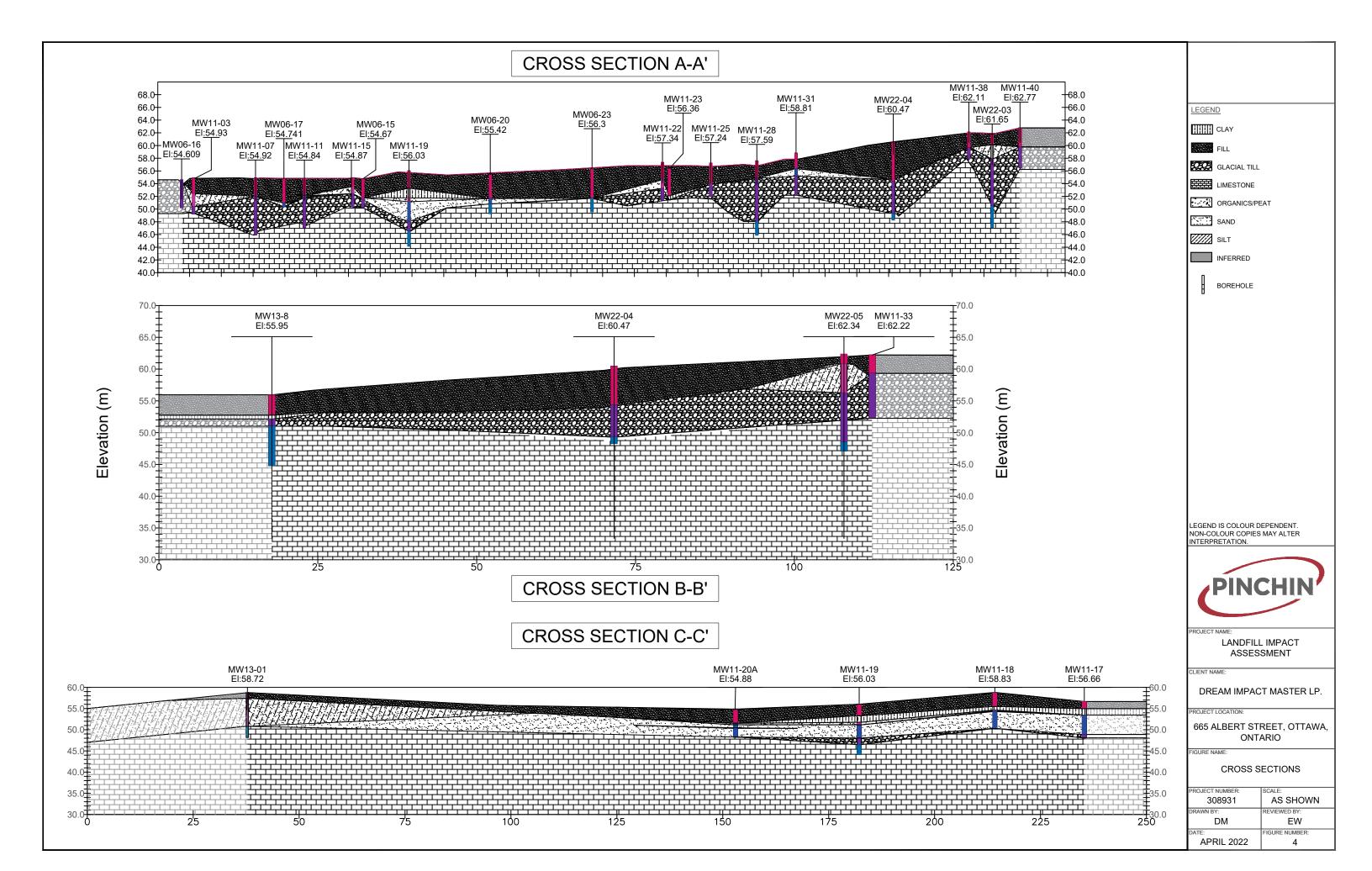
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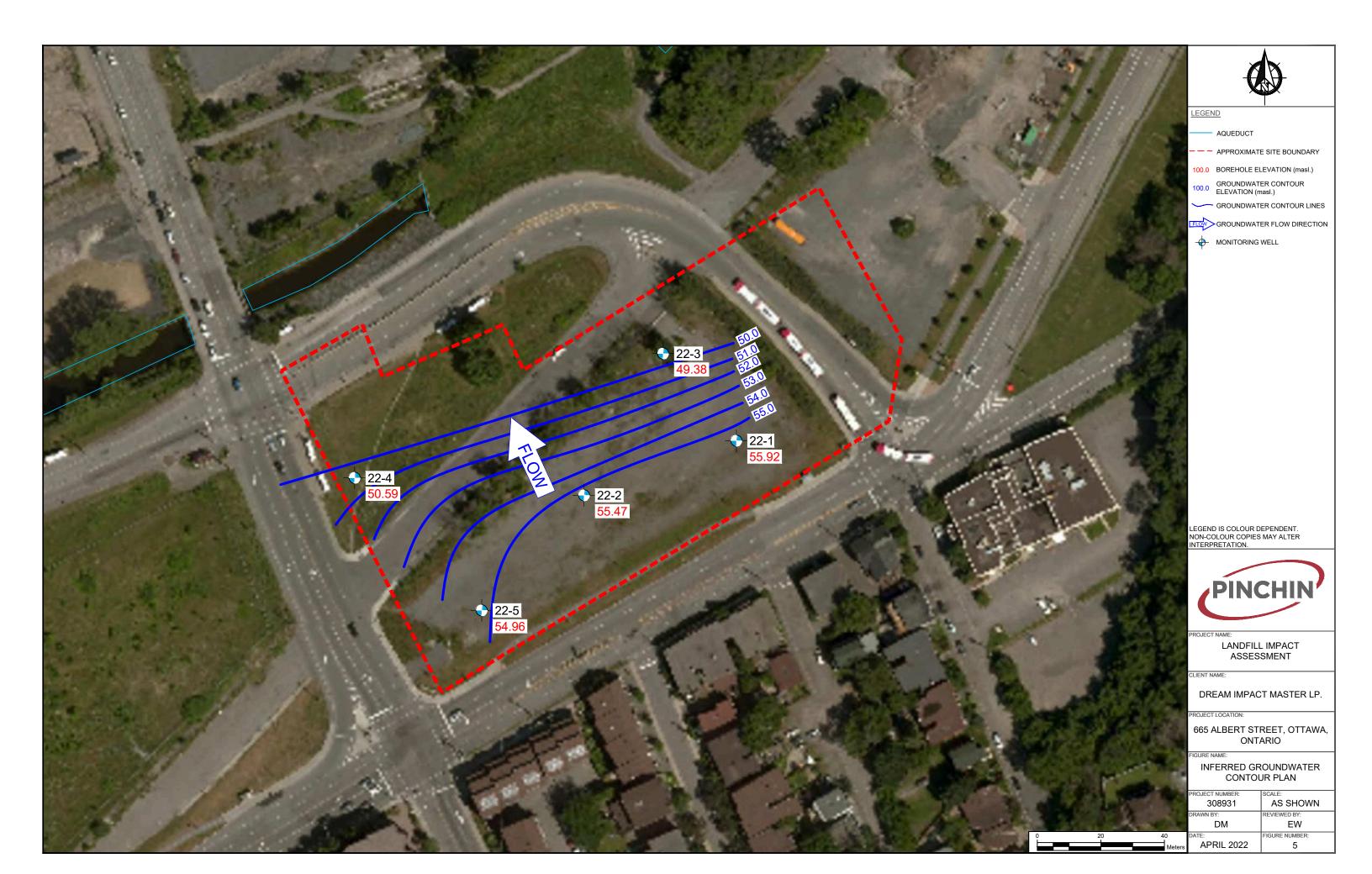
APPENDIX I Figures











APPENDIX II Borehole Logs PROJECT: 22511882

LOCATION: N 5030733.9 ;E 366525.1

RECORD OF BOREHOLE: 22-01

SHEET 1 OF 3

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: February 14-15, 2022

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

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7					₹ /)©		77/ 0.15 60/ 0.05		
8					11	ss	64/ 0.15		Silica Sand
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10 -					13	ss ss	50/ 0.05		
		CONTINUED NEXT PAGE							
	PTH S	CALE			V	14) GOLDER	LOGGED: ALB

PROJECT: 22511882

LOCATION: N 5030733.9 ;E 366525.1

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-01

BORING DATE: February 14-15, 2022

SHEET 2 OF 3

DATUM: Geodetic

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

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14					19	ss 50/ 0.05			
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PROJECT: 22511882 RECORD OF DRILLHOLE: 22-01 SHEET 3 OF 3 LOCATION: N 5030733.9 ;E 366525.1 DRILLING DATE: February 14-15, 2022 DATUM: Geodetic																					
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PROJECT: 22511882

LOCATION: N 5030713.1 ;E 366476.0

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-02

BORING DATE: February 16, 2022

SHEET 1 OF 3

DATUM: Geodetic

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

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	8		- Auger Refusal on boulder at 7.44 m depth								Silica Sand
	9					11	ss	50/ 0.10			Screen
	10		CONTINUED NEXT PAGE								
DEPTH SCALE LOGGED: ALB					1					<u> </u>	

LOCATION: N 5030713.1 ;E 366476.0

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-02

BORING DATE: February 16, 2022

SHEET 2 OF 3

DATUM: Geodetic

	0				MPL	ES	HEADSPACE COMBUSTIBLE	HYDRAULIC CONDUCTIVITY,	<u> </u>
DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE	5				HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] € ND = Not Detected 100 200 300 400	10^{-6} 10^{-5} 10^{-4} 10^{-3}	PIEZOMETER OR STANDPIPE INSTALLATION
OTH S	NG MI	DESCRIPTION	LUTATA PLOT ETEATA PLOT (w)	NUMBER	ТҮРЕ	BLOWS/0.30m		WATER CONTENT PERCENT	
DEP	BORI		DEPTH (m)	Ĩ	Ĥ	BLOW	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected 100 200 300 400	Wp H WI 20 40 60 80	LAE
- 10		CONTINUED FROM PREVIOUS PAGE	0,						
-		SILTY SAND, trace gravel; grey (GLACIAL TILL)		12	ss	50/			Screen
- - - - - -						0.03			-
- - - - 12 -	Power Auger 200 mm Diam. (Hollow Stem)			13	ss	50/ 0.03			
- - - - - - - - - - - - - - - - - - -	200 mm								-
- 14 -		Perchala continued on RECORD OF	48.27					7	-
-		Borehole continued on RECORD OF DRILLHOLE 22-02	14.2						
- - - - - - -									-
- - - - - - - - - -									
- - - - - - 17									
- - - - - - - - - - -									
10 17 228/11882/04/ 04/ 228/11882/04/ 04/ 228/12/ 228 19/ 200 248/12/ 200 248/1000000000000000000000000000000000000									
19 19 19									
GAL-N									
1882.									
L 20									-
DE DE 1:		SCALE	· · ·	V) GOLDE	R	LOGGED: ALB CHECKED:

LO	CATIC	T: 22511882 DN: N 5030713.1 ;E 366476.0 TION: -90° AZIMUTH:		REC	COF	RD		DRI DRI	ILLING ILL RIG	DATE 5: CM	E: F	=ebru 5	E: 22-02 lary 16, 2022 R: Downing Dril		I							SHEET 3 OF DATUM: Ge	
DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	FLUSH COLOUR	R TO COF	JN - J FLT - F SHR- S VN - V CJ - C ECOVE ECOVE	loint Fault Shear /ein Conjug		BD- Be FO- Fo OR- Ori CL - Cle FRACT INDEX PER 0.25 m	eddin liatic ontac thog eava T. DII C DII	g in t	PL - Planar CL- Curved UN- Undulating ST - Stepped IR - Irregular DISCONTINUITY TYPE AND SURR DESCRIPTIO	P K S F N Y DA	O- Polis - Slick M- Smo to - Rous 1B- Mec TA	oth ah	Breal HY CON	NOT abbr	E: For eviation breviat cols. ILIC IVITY ec	ken R addition s refer ions & Diame Oint L Inde (MPa	al to list tral pac RM x -Q a) AVC	С ү Э.	
- - - - - - - - - - - - - - - -	Rotary Drill NQ Core	BEDROCK SURFACE Grey, thin to medium bedded LIMESTONE and SHALE		48.27 14.20	1																		
- 16 - 16 - 17 		End of Drillhole Note(s): 1. Water level in screen measured at a depth of 7.88 m (Elev. 54.59 m) on February 25, 2022		46.62												>							
- - - - - - - - - - - - - - - - - - -																							
- - - - - - - - - - - - - - - - - - -								>	7	Y													
- 21 - 21 - 22 - 22																							· · · · · · · · · · · · · · · · · · ·
- 23 - 23 - 23 - 23 - 24 - 24																							
		SCALE				 \)	G	0		 D	ER									LOGGED: AI HECKED:	LB

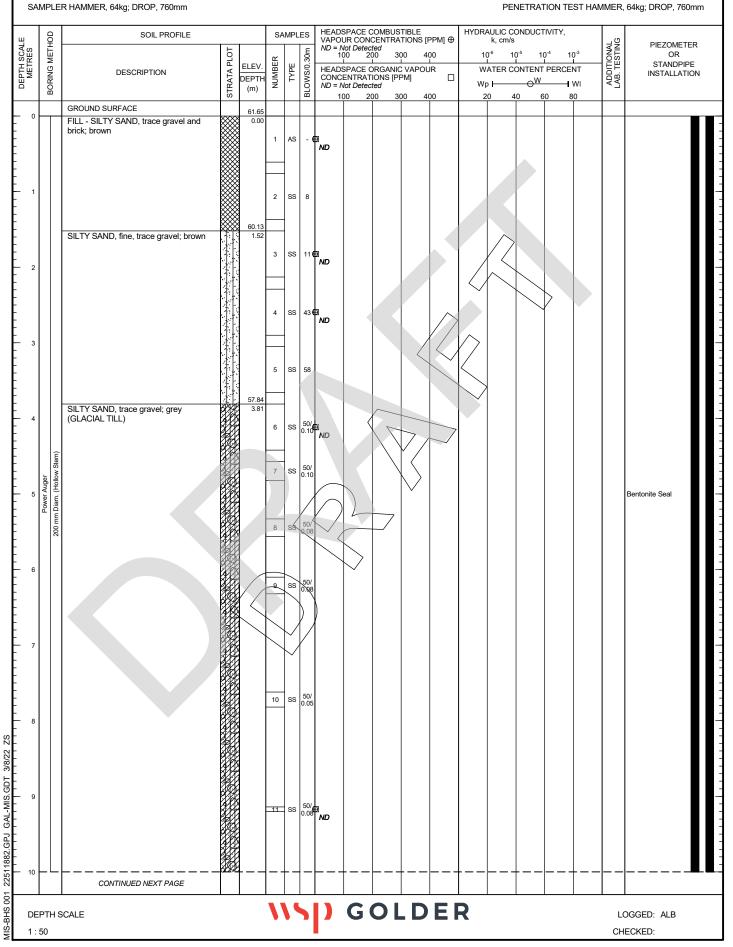
LOCATION: N 5030756.8 ;E 366500.4

RECORD OF BOREHOLE: 22-03

SHEET 1 OF 3 DATUM: Geodetic

BORING DATE: February 22, 2022

ATION TEST LIANAMED CALM DOOD 700-



LOCATION: N 5030756.8 ;E 366500.4

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-03

BORING DATE: February 22, 2022

SHEET 2 OF 3

DATUM: Geodetic

		r									_						
ш	Ę	SOIL PROFILE		SA	MPLE	s HEA VAP	DSPACE OUR CC	COMBU	STIBL	E IS [PPM] ∉ 400	HYDRAU	LIC CC , cm/s	NDUCTIVI	ΓY,	_	<u>0</u>	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		STRATA PLOT (m) (m)	۲.	TYPE		= /vot Det 100	200	300	400				10 ⁻³		LAB. TESTING	OR
EPTH MET	RING	DESCRIPTION	A ELEV.		TYPE		DSPACE	ORGAN ATIONS [I	IC VAI PPM]	POUR			NTENT PE		LIDO	AB. T	INSTALLATION
ā	BOI		(m)	Ī	i		= Not Det 100		300	400	20	4(Ľ	
- 10		CONTINUED FROM PREVIOUS PAGE	221212														
-	Power Auger 200 mm Diam. (Hollow Stem)	SILTY SAND, trace gravel; grey (GLACIAL TILL)															
-	lollow																
E	Power Auger Diam. (Hollov															ľ	Bentonite Seal
-	nn Di			12	SS 0	1/ 15											
- 11	200 1		50.48]												
E		Borehole continued on RECORD OF DRILLHOLE 22-03	11.17														
-												\geq					
F											Y Z						
12												\backslash					
F												\searrow	\mathbf{N}				
E													\searrow				
F																	
- 13										X	$ \rangle$						
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- 14								1	-								
F								XX	\rightarrow		7						
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- - 15							+		$\left \right\rangle$	/							
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- 17				$\left \right>$	M												
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ດ ທີ່ 19																	
3																	
2.GP																	
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1 225																	
MIS-BHS 001 22511882.GPJ GAL-MIS.GDT 38/22 ZS 0 0 01 01 01 01 01 01 01 01 01 01 01 01				1	16		C	0		שר	D						
HEISIN 1:		SCALE			• 1	' '	J			DE	n						GGED: ALB ECKED:
z :	50					-											

L	.00	CATIC	T: 22511882 DN: N 5030756.8 ;E 366500.4		RE	С	DR	RD	0	DF	RILLI	NG		≣:	Feb	E: pruary 22,)3							IEET 3 OF ATUM: Geod	
	-		TION: -90° AZIMUTH:	DOG			<u>COLOUR</u> <u>% RETURN</u>	F	SHR-		RILLII r	NG		TR/ eddir oliati		UN-I	Planar Curved Undulating	P(K	D- Poli - Slic VI- Sm	kensid	ed	NC	or additi	Rock		
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH % R		CJ - ECO\ TAL RE %	VERY SOLID CORE	R.C	2.D. %	FRAC INDE 0.25 r	T. X D	IP w.r.I CORE AXIS	DISC	Stepped Irregular CONTINUI PE AND SUI DESCRIPTI	TY DAT		ooth .gh chanica Jcon Jr		HYDRA NDU0 K, cm	Dian YPoint Ind (M	netral t Loac dex		
- - - - - - - 1	2		BEDROCK SURFACE Slightly weathered to fresh, thin to medium bedded, grey black LIMESTONE and SHALE		50.48 11.17																				Bentonite Seal Silica Sand	1,222,222,222,22 1,222,222,222,22 1,222,222
		Rotary Drill NQ Core	Fresh, thin to medium bedded, grey to black LIMESTONE and SHALE		<u>49.38</u> 12.27	2																			Screen	
- ' - 1 			End of Drillhole Note(s): 1. Water level in screen measured at a depth of 13.00 m (Elev. 48.65 m) on February 25, 2022		47.10 14.55																					
- - - - - - - - - - -	6																									-
- 1 - 1 																										-
- - - - - - - - - - - - - - - - - - -	9																									-
MIS-RCK 004 22511882.6PU GAL-MISS.GDI 3/8/22 25	0																									-
K 004 22511882.G																	D								 	
DX-SIM)EF : 5		SCALE			•	•	1	ľ		0			L		DE	R								ogged: Ale Ecked:	3

LOCATION: N 5030713.2 ;E 366411.4

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-04

BORING DATE: February 23, 2022

SHEET 1 OF 3

DATUM: Geodetic

L I	ПОН	SOIL PROFILE		SA	AMPL	_	DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY, k, cm/s	≓ິ2 PIEZOME	TER
METRES	BORING METHOD		STRATA PLOT ETEAT (m)	3ER	щ	BLOWS/0.30m	20 40 60 80	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³		IPE
WE.	DRING	DESCRIPTION	DEPTH	NUMBER	TYPE	NS/IO	SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - O			TION
	BC				_	BL	20 40 60 80	20 40 60 80		
0		GROUND SURFACE SILTY SAND, trace gravel; brown	60.47		-					
				1	AS	-				
1				2	SS	10				
				3	SS	6				
2					-					
					1					
				4	SS	8				
3					-					
5					1					
				5	SS	8				
									Bentonite Seal	
4				6	SS	16				
				0	33	10				
	Stem)									
	Power Auger 200 mm Diam. (Hollow Stem)			7	SS	7				
5	Power Auger Diam. (Hollov									
	0 mm									
	20			8	SS	14				
6			54.07							
		SILTY SAND, trace gravel; grey (GLACIAL TILL)	6.10							
				9	ss	27				
				~	\downarrow	//				
7					\downarrow	Y				
					1					, či
					-				Silica Sand	20,20
				10	SS	78				1,202
8										
					1					47. V.
					1					
9					1				Screen	<u> 10</u>
					1					
				11	SS	47				10.20
					-					1.20
10	_L	CONTINUED NEXT PAGE	292		+-	-	+	╂──┝─┼──┝─┼──	· ·	<u>_</u> 18
DE	PTH S	SCALE		V		2) GOLDE	ĸ	LOGGED: ALB	

PR	OJEC	T: 22511882		RE	CC	R	D	OF BO	REH	OLE	: 2	2-04					S⊦	IEET 2 OF 3	
LC	CATIC	N: N 5030713.2 ;E 366411.4						BORING	DATE:	February	/ 23, 202	22					DA	ATUM: Geodetic	
SA	MPLE	R HAMMER, 64kg; DROP, 760mm											PEN	ETRATI	ON TEST	r hamm	IER,	64kg; DROP, 760mr	m
Ш	ПОР	SOIL PROFILE			SAN			DYNAMIC PE RESISTANCE	NETRATI , BLOWS	DN /0.3m	~	HYDRA	ULIC CO k, cm/s	NDUCTI	/ITY,		μġ	PIEZOMETER	
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	<u> </u>	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	20 I SHEAR STRE Cu, kPa 20	I INGTH I	⊥ nat V. + rem V. ⊕	Q - • U - O		ATER CO				LAB. TESTING	OR STANDPIPE INSTALLATION	
- 10	Ē	CONTINUED FROM PREVIOUS PAGE SILTY SAND, trace gravel; grey	anan																14
- - - - - - - - - - - - - - - - - - -	Power Auger 200 mm Diam. (Hollow Stem)	(GLACIAL TILL) Borehole continued on RECORD OF DRILLHOLE 22-04		<u>49.29</u> 11.18	12	ss	50/ 0.05						\sim					Screen	
- - - - - - - - - - - - - - - - - - -															>				
- 14 												*							
- - - - - - - - - - - - - - - - - - -																			
MIS-BHS 001 22511882.GPJ GAL-MIS.GDT 38/22 ZS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																			
MIS-BHS 001 22 DE 1 :	:PTH S 50	CALE			\\ \\) G	01	- D	EF	R						DGGED: ALB ECKED:	

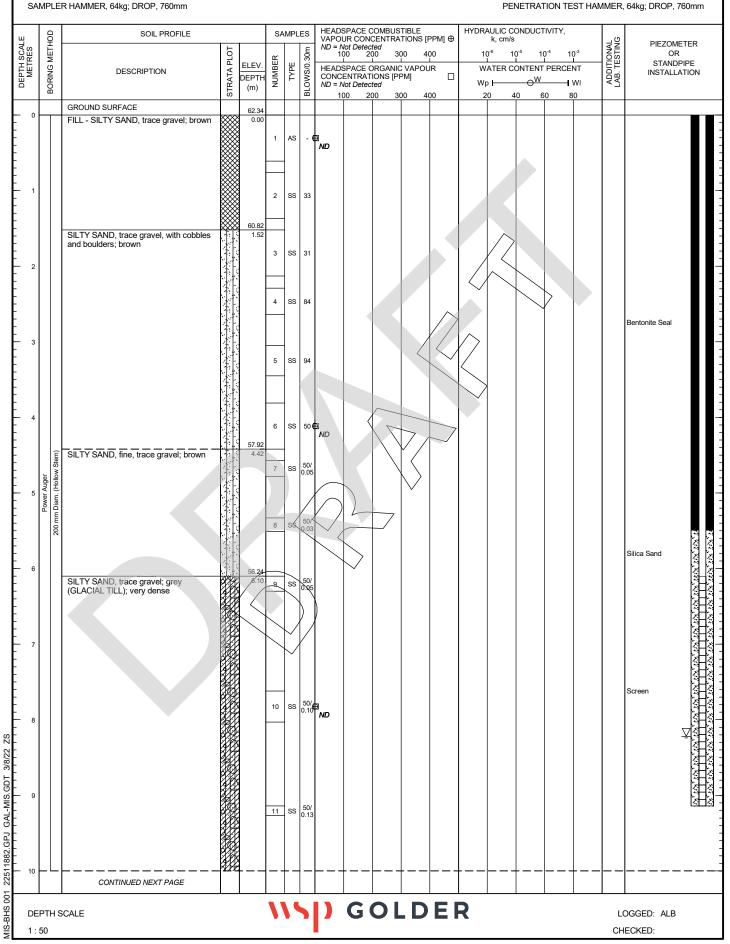
PROJECT: 22511882 LOCATION: N 5030713.2 ;E 366411.4 INCLINATION: -90° AZIMUTH:	RECORD OF DRILLH DRILLING DATE: DRILL RIG: CME	February 23, 2022 55	SHEET 3 OF 3 DATUM: Geodetic
DESCRIPTION	D ELEV. D DEPTH S RECOVERY D D FRACT	td UN- Undulating SM- Smooth abbreviations refer i gonal ST - Stepped Ro-Rough of abbreviations & BISCONTINUITY DATA HYDRAULIC Diamet PW.r.L. CORE TYPE AND SURFACE con it al profile for the DISCONTINUITY DATA HYDRAULIC Diamet CONDUCTIVITYPoint Index Auss	al olist rail adq.MC Q b AVG.
BEDROCK SURFACE Fresh, thin to medium bedded, grey black LIMESTONE and SHALE			
12 End of Drillhole Note(s): 1. Water level in screen measured at a depth of 10.70 m (Elev. 49.77 m) on February 25, 2022 14 14 15 16 16 16 17 18 18 19 20 19			
DEPTH SCALE		. DER	LOGGED: ALB CHECKED:

LOCATION: N 5030679.9 ;E 366442.7

RECORD OF BOREHOLE: 22-05

SHEET 1 OF 3 DATUM: Geodetic

BORING DATE: February 24, 2022



LOCATION: N 5030679.9 ;E 366442.7

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 22-05

BORING DATE: February 24, 2022

SHEET 2 OF 3

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	(m) (m) (m) (m) (m)	NUMBER	TYPE BLOWS/0.30m	VAPOUR CONCENTR	STIBLE ATIONS [PPM] ⊕ 300 400 IC VAPOUR PPM] □	WATER CONTENT	0 ⁻⁴ 10 ⁻³	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
DE	BOR		(m)	N	BLOV	ND = Not Detected 100 200	<u>300 400</u>	Wp - O''	WI 80	LA A	
- 10		CONTINUED FROM PREVIOUS PAGE	ANAM								
- - - - - - - - - - - - - - - - - - -	er Iow Stem)	SILTY SAND, trace gravel; grey (GLACIAL TILL); very dense		12	SS 0.1	3					-
- 12 - 12 - 13 - 13	Power Auger 200 mm Diam. (Hollow Stem)			13	SS 86						
-			48.50	14	ss 50						
		Borehole continued on RECORD OF DRILLHOLE 22-05	13.84								
MIS-BHS 001 22511882.GPJ GAL-MIS.GDT 3/8/22 ZS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0											-
225118 0											
The second secon] SCALE	<u> </u>	1	5) GO		R	I I		DGGED: ALB ECKED:

LO	CAT	CT: 22511882 ON: N 5030679.9 ;E 366442.7 ATION: -90° AZIMUTH:	RECORD OF DRILLHOLE: 22-05 DRILLING DATE: February 24, 2022 DRILL RIG: CME 55 DRILLING CONTRACTOR: Downing Drilling	SHEET 3 OF 3 DATUM: Geodetic
DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	OD DO WE ELEV. (m) VI PO CR JN FLT - Fault SHR: Shear BD- Bedding FO- Foliation OR- Orbigonal OR- Contact OR- Orbigonal OR- Orbigonal CL- Clavage PL - Planar CU- Curved N- Sincensity (N- Undulating SHR: Shear PO- Polished K- Sincensity (N- Vicing) CL- Contact OR- Orbigonal CL- Computed CL- Computed CL- Clavage PL - Planar CU- Curved N- Sincensity (N- Undulating SHR: Shear PO- Polished K- Sincensity (N- Vicing) SHR: Shear DEPTH (m) P P Planar PO- Polished K- Sincensity (N- Vicing) SHR: Shear N - Orbigonal (N- Clavage) (N- Contact (N- Contact ORE No Contact (N-	BR - Broken Rock ed NOTE: Fro additional abtreaks without for the list of abbreaks HYDRAULIC Diametral CONDUCTIVITY Diametral CONDUCTIVITY Diametral CONDUCTIVITY and Load RMC K, cm/sec IndexC Ja C C C C C C C C C C C C C C C C C C C
- 14 - 14 	Rotary Drill	BEDROCK SURFACE Slightly weathered to fresh, thin to medium bedded, grey black LIMESTONE and SHALE		
- - - - - - - - - - - - - - - - - - -		End of Drillhole Note(s): 1. Water level in screen measured at a depth of 8.22 m (Elev. 54.12 m) on February 25, 2022		
- 17 - 17 				
- - - - - - - - - - - - - - - - - - -				
- 20 - 20 				
DI 3/8/27 28				
1 22511882.GPJ GAL-MISS.GDI 3/8/22 25				
r r	PTH 50	SCALE	NS GOLDER	LOGGED: ALB CHECKED:

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-33

BORING DATE: December 8, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ļ	НОВ	SOIL PROFILE			SA	AMPLE		DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY, k, cm/s	μŞ	PIEZOMETER
METRES	BORING METHOD		STRATA PLOT		н.		BLOWS/0.30m	20 40 60 80	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³	ADDITIONAL LAB. TESTING	OR
MET	SNG	DESCRIPTION	VTA F	ELEV. DEPTH	NUMBER	TYPE	NS/0	SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - ○	WATER CONTENT PERCENT	DDIT B. TE	INSTALLATION
5	BOR		STRA	(m)	z		BLO/	20 40 60 80	Wp	LA A	
		GROUND SURFACE		62.22							
0		Dense dark grey crushed stone (Gravel	,	0.08							
		(lot BASE) Dense brown fine to medium sand,	′ 🗱		1	50 DO	46				
		some coarse sand, some gravel, trace silt (Gravel lot SUBBASE)	/ 🗱	61.69 0.53							
		Loose to very dense dark brown silty sand, trace to some gravel, brick, wood,			2	50 DO	9				
1		organics, concrete, occasional grey silty clay layer (FILL)									
				Š.	3	50 DO	60				
					Ľ	DO	00				
				×.	4	50 DO	12				
2											
					5	50 DO	56				
				×							
3		Compact to very dense brown to grev		59.32 2.90	1	50					
Ŭ		Compact to very dense brown to grey brown SILTY SAND to SANDY SILT, trace to some gravel (GLACIAL TILL)			6	50 DO	23				
						1					
					7	50 DO	48				
4					<u> </u>						
				Ś	8	50 DO	74				
	tom)										
	ger allour o			X		50					
5	Power Auger				9	50 DO	49				
	Power Auger				\vdash						
	000				10	50 DO	55				
						50					
6					11 12	00	>89				
					12	DO	>100				
					13	50 DO	>100				
7					14	I	>100				
					-						
		Very dense grey brown SILTY SAND,		54.60 7.62		50					
		trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL)		×	15	50 DO	>111				
8		seam (GLACIAL TILL)									
				\$	16		>105				
					17	50 DO	>50				
9				\$							
					18	50 DO	>100				
					19		>50				
10		End of Borehole	689	52.26 9.96			>110				
		Split Spoon Refusal		1							
				1							
				1							
11				1							
DE	PTH	SCALE								LC	GGED: RI
	55							Golder			ECKED: GDC

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-35

BORING DATE: December 12, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

E: December 12, 2011

ц Г.		탈	SOIL PROFILE	1.	1	SA	MPL		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	NG A	PIEZOMETER
DEP IN SUALE METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.30m	20 40 60 80 SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - ○	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ WATER CONTENT PERCENT Wp ├────────────────────────────────────	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
ı		ß		STR	(m)	z		BLO	20 40 60 80	20 40 60 80		
0		-	GROUND SURFACE Dense grey sand and gravel (Gravel lot		62.56 0.00							
			BASE)		62.25		50 DO	52				
			Compact brown medium to fine sand, trace gravel (Gravel lot SUBBASE)		0.31	1	DO	52				
1			Compact dark brown to black silty sand, trace gravel, ash, wood, brick, mortar (FILL)		61.65 0.91	2	50 DO	17				
		(ma)	Compact brown fine to medium sand,		60.88 1.68	3	50 DO	19				
2	Jer	llow St	trace gravel (FILL)			4	50 DO	24				
	Power Auger	, (Но	Dense to very dense light brown to		60.43 2.13	5	50 DO	45				
	Pow	200 mm Diam. (Hollow Stem)	Dense to very dense light brown to brown SILTY SAND, occasional gravel and medium sand layers, trace gravel (GLACIAL TILL)									
3		20				6	50 DO	65				
						7	50 DO	176				
4						8	50 DO	>50				
					58.16		00					
			End of Borehole Auger Refusal		4.40							
5												
6												
7												
8												
_												
9												
10												
DE	PT	rh s	CALE					(Golder		LO	GGED: BM
1:	50							1	Associates		CHE	CKED: GDC

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-37

BORING DATE: December 12, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	DOH.	SOIL PROFILE		1	SA	MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	≓원 PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.30m	20 40 60 80 SHEAR STRENGTH nat V. + Q. ● Cu, kPa rem V. ⊕ U. ○	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp → W I WI	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE Compact sand and gravel (Gravel lot BASE) Compact brown medium to fine sand, trace gravel (Gravel lot SUBBASE)		62.76 0.00 62.46 0.30			29			
1		Loose dark brown to black silty sand, trace gravel, occasional layers of ash, gravel, sandy mortar, glass, construction debris (FILL)		61.85 0.91	2		20			
2		Compact brown medium to fine sand, trace gravel (FILL)		60.63 2.13 60.32	3	50 DO 50 DO	6 34			
3	ger ollow Stem)	Dense to very dense grey brown SILTY SAND, some gravel, trace cobbles (GLACIAL TILL)		2.44	5	50 DO	73			
4	200 mm Diam (Hollow Stem)				6	50	>75 >65			
5					8		> 7 5 40			
6		End of Borehole		56.23 6.53	10	50 DO	>50			
7		Auger Refusal								
8										
9										
10										
DE	PTH	SCALE					(Golder		LOGGED: BM CHECKED: GDC

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-38

BORING DATE: December 19, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

0	CH L		SOIL PROFILE	Ι⊢		54	MPLI		DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY, k, cm/s	N	PIEZOMETER
METRES	BOPING METHOD	⊒ ≥	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.30m	20 40 60 80 	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ I I I WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
Σ	VIAOR		DESCRIPTION	TRAT	DEPTH (m)	NUN	∠	NO		Wp ⊢────────────────────────────────────	ADI	INSTALLATION
	-		GROUND SURFACE	S	62.11			8	20 40 60 80	20 40 60 80		
0			Compact to dense brown sand and gravel (Gravel lot BASE) /		0.00							
			Loose to compact brown medium to fine sand, some gravel (Gravel lot SUBBASE)			1	50 DO	35				
1					60.89 1.22	2	50 DO	8				
			Compact to very dense grey brown sand, some gravel, trace silt (FILL)		1.22	3	50 DO	15				
2	Power Auger	200 mm Diam. (Hollow Stem)				4	50 DO	52				
3		200 mn	Very dense grey brown SILTY SAND, some gravel, medium brown sand seams (GLACIAL TILL)		59.67 2.44	5	50 DO	61				
U						6	50 DO	112				
4					57.94	7	50 DO	148				
			End of Borehole Auger Refusal		4.17							
5												
6												
7												
8												
9												
10												
DEI	PTI	H S	CALE						Golder		LOG	GED: JDR

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-39

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: December 15, 2011

;]	Ц	SOIL PROFILE			SA	MPLES		/IC PEN TANCE,	ETRATI BLOWS	ON 5/0.3m	l'	HYDR	AULIC C k, cm/s	ONDUC	FIVITY,		μŪ	PIEZOMETER
RES	METH		PLOT		ĸ	30m	2				30					10 ⁻³	ESTIN	OR
METRES	BORING METHOD	DESCRIPTION		ELEV. DEPTH (m)	NUMBER	TYPE BLOWS/0.30m	SHEAI Cu, kP	R STREN a	IGTH	nat V. + rem V. ∉	Q - • U - O		ATER C		F PERC	ENT WI	ADDITIONAL LAB. TESTING	INSTALLATION
	â		ST	(,		ā	2	0 4	0 (60	30	2	20 4		50	80		
0	_	GROUND SURFACE Compact sand and gravel (Gravel lot		62.81 0.00														
		BASE)	_ 🗮	0.00		50												
		Compact brown to red sandy silt, trace gravel (FILL)			1	50 DO 19												
		graver (i iEE)																
				61.90		50												
1		Compact to dense light brown fine to medium sand, trace gravel, silt, and		0.91	2	50 DO 20												
		medium sand, trace gravel, silt, and mortar (FILL)																
						50												
					3	50 DO 40												
2				60.68		50 40												
		Dense sandy gravel to brown fine to medium sand and gravel (FILL)		2.13	4	50 DO 12	,											
		medium sand and gravel (FILL)																
	12					50				1								
	Ster				5	50 DO 61												
3	Power Auger 200 mm Diam (Hollow Stem)																	
	wer A					50												
	Polici	5			6	50 DO 99												
	00			59.15 3.66														
		Compact to very dense grey SILTY SAND, some gravel (GLACIAL TILL)		3.00		50												
4					7	50 DO 34												
						50												
					8	50 DO 21												
					_													
5						50												
					9	50 DO 33												
					10	50 DO >5												
6					11	50 DO >10	0											
			1112	56.46 6.35	12	50 DO >10	0											
		End of Borehole Auger Refusal		0.30														
7																		
8																		
9																		
10																		
								•										
																		GED: BM/JD

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-40

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: December 16, 2011

	ПОН	SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	Ì	HYDRAULIC CC k, cm/s	NDUCTIVIT	Y,	μģ	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	түре	BLOWS/0.30m	20 40 60 I I I I SHEAR STRENGTH nat V. Cu, kPa rem V.	80 + Q - ● ⊕ U - ○	10 ⁻⁶ 10 WATER CC Wp I	5 10 ⁻⁴ NTENT PEF	10 ⁻³ RCENT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	ğ		STI	(m)	<u> </u>		BL	20 40 60	80	20 40		80	+	
0		GROUND SURFACE Compact red to fine brown sand, some gravel (Gravel lot BASE)		62.77 0.00	-	$\left \right $							+ +	
				62.39	1	50 DO	13							
		Compact fine to medium brown sand, some gravel, red brick (FILL)		0.38										
					2	50 DO	19							
1				61.55		DO								
		Compact light brown fine to medium sand, trace gravel, silt, red brick (FILL)		61.55 1.22		5								
					3	50 DO	15							
2														
2					4	50 DO	25							
					<u> </u>									
	Stem)				5	50 DO	51							
3	Power Auger 200 mm Diam. (Hollow Stem)	Very dense grey brown SAND, some gravel, trace silt (GLACIAL TILL)		59.78 2.99										
	Power	gravel, trace silt (GLACIAL TILL)				50	50							
	0			59.11	6	50 DO	59							
	5	Very dense grey brown SILTY SAND, some gravel (GLACIAL TILL)		3.66										
4		,			7	50 DO	100							
					8	50 DO	>50							
							. 100							
					9	50 DO	>100							
5														
					10	50 DO	187							
						DO								
6					11	50 DO	>50							
		End of Borehole		56.52 6.25		-								
		Auger Refusal		0.25										
7														
8		Ÿ												
9														
J														
10														
DE														GED: JD

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-01

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: November 23, 2011

<u>ا</u> , ۲	Ē	SOIL PROFILE	· · ·		SAN	- 1	DYNAMIC PEN RESISTANCE,	BLOWS/	0.3m	N.	k	, cm/s		2gF	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	20 2 SHEAR STREM Cu, kPa 20 2	10 6 NGTH n r	atV.+ emV.⊕	Q - ● U - O		10 ⁻⁵	10 ⁻³ CENT -1 WI 80	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
0		GROUND SURFACE		56.36						,					
0		TOPSOIL Dark brown to black silty sand (FILL)		0.00											
				55.95	1	50 DO									
		Compact fine to medium brown silty sand, some gravel, trace brick (FILL)		0.41											
						50									
1	Stem)				2	50 DO									
	lger				_										
	Power Auger 200 mm Diam. (Hollow Stem)				3	50 DO									
	D Po			54.53											
2	200	Gravel (FILL)		1.83 54.23		50									
		Dense medium to fine grey to brown sand, trace gravel and silt (FILL)		54.23 2.13	4	50 DO									
					-										
		GRAVEL and COBBLES (GLACIAL		53.62 2.74 53.44	5	50 DO >	D								
3		TILL) End of Borehole		53.44 2.92	+										
		Auger Refusal													
4															
5															
Ű															
6															
0															
7															
8															
9															
10															
	этн :	SCALE					E A S							LO	GGED: BM

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-02

BORING DATE: November 24, 2011

SHEET 1 OF 2

DATUM: Geodetic

			SOIL PROFILE	1.		-	SAMP	1	DYNAMIC PENETRA RESISTANCE, BLOV	/S/0.3m	R.	HYDRAUL	IC CONDUC cm/s	JIIVIIY,	RGH	PIEZOMETER
METRES	BODING METHOD			STRATA PLOT		, {	н Н	BLOWS/0.3m	20 40		80	10 ⁻⁶		10 ⁻⁴ 10 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE
ME	UNIC		DESCRIPTION	ATA I	ELE\	<u>́н</u>	TYPE)/S/(SHEAR STRENGTH Cu, kPa	nat V. + rem V. €	- Q - ● 9 U - O				B. T	INSTALLATION
				STR	(m)		ž	BLG	20 40		80	Wp ⊢ 20		60 80		
~			GROUND SURFACE		55.											
0			TOPSOIL Compact black silty sand, trace ash and		0.	00 15										
			Compact black silty sand, trace ash and clay, occasinal layers of medium brown			13	1 50 DC	12								
			sand and gravel (FILL)													
							50									
1			Compact medium to fine brown sand,	×××	53.	96 04	2 50 DC	35								
			some gravel, trace silt (FILL)		s ''	Ē	_									
							3 50 DC	17								
							- DC)								
2						F										
2							4 50 DC	25								
		╎┟			52.	61 39										
			Coarse brown sand, some gravel, trace silt and brick, occasional layers of gravel (FILL)				50									
		Stem)	(* ****)				5 50 DC	38								
3		low St				┢	_									
	Power Auger	n. (Hollow					6 50	59								
	Powe	200 mm Diam.			51.	34										
		00 m.	Compact to dense coarse grey sand, some gravel, trace silt, with cobbles and			66										
4			boulders (FILL)				7 50 DC	24								
			COBBLES, BOULDERS, and GRAVEL		50. 4.	22	=									
			(GLACIAL TILL)			C		DD								
						Γ]									
5						0	2 NG RC	DD								
			Very dense grev coarse SAND_some		49.	10										
			Very dense grey coarse SAND, some silt, some gravel (GLACIAL TILL)				8 DC	>50								
					49.	23										
			COBBLES, BOULDERS, and GRAVEL		5.	77		DD								
6			Very dense grey coarse SAND and		48.	90	RC									
			GRAVEL, trace cobbles				9 50 DC	78								
					48.		DC	"								
		Η	End of Borehole	MA 126	6.			1								
7																
8																
9																
10				1												
DE	PT	нs	CALE												LO	GGED: BM
	50								Gold	er 🛛						CKED: JW

LC	ос	ATIC	T: 11-1122-0199 DN: See Site Plan TION: -90° AZIMUTH:		RE	0	RD	0	DF DF	RILLI RILL	NG RIG	DAT : CI	TE: ME 8	Nov 50	eml	ber	24,	20		g										OF : Geod	
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH <u>COLOUR</u>	SH VN CJ	E % 0	ear in njuga	R.	CC OF	FRAC	itact nogo avag CT. EX R	nal	e	UN- ST - IR -	Une Ste Irre COI	anar rved dulating epped egular NTINUITY TYPE AND S DESCRII		Slicke Smoo Roug Mech	ensid oth h	al Br HY CON	eak /DRA	NOTE abbre of abl symb	E: For sviation brevial ols. Dia TYPoi	additi ns ref tions a	AVC	it IC		
- - - - - - 5	5	Stem)	BEDROCK SURFACE COBBLES, BOULDERS, and GRAVEL (GLACIAL TILL)		50.78 4.22	C1 C2																							-		
- - - - - - - - - - - - -	Contract Access	>	Very dense grey coarse SAND, some silt, some gravel (GLACIAL TILL) COBBLES, BOULDERS, and GRAVEL		49.82 5.18 49.23 5.77	СЗ																							-		_
			Very dense grey coarse SAND and GRAVEL, trace cobbles End of Borehole		48.90 6.10 48.29 6.71																										
	3																														-
- - - - - - - - - - - - - - - - - - -																															-
MIS-RCK 004 1111220199.GPJ GAL-MISS.GDT 1/28/13 JEM T D P E E E E E E E E E E E E E E E E E E																															-
UIS-RCK 004	EP : 5		SCALE	<u> </u>	II			Ć			u Go ss	old OC	ler	te	<u>s</u>															: BM : JW	

RECORD OF BOREHOLE: 11-03

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 28, 2011

SHEET 1 OF 1

DATUM: Geodetic

		보	SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRA RESISTANCE, BLOV	S/0.3m	5.	HYDRAUL k,	cm/s		,	ĘĘ	PIEZOMETER
METRES		BORING METHOD		STRATA PLOT	ELEV.	Ш	ш	ʻ0.3m	20 40	60 80	`	10 ⁻⁶	10-5	10-4	10-3	ADDITIONAL LAB. TESTING	OR STANDPIPE
Ψ		RING	DESCRIPTION	ATA	DEPTH	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + C rem V. ⊕ U	2-● 5-0	WATI Wp H		rent pe O ^W		ADDI' AB. T	INSTALLATION
		B		STR	(m)			BL	20 40	60 80		20	40	60	80		
0	L	$\neg \downarrow$	GROUND SURFACE		54.93											+	
			Compact dark brown silty sand, trace gravel, organics (TOPSOIL)		0.00 54.75 0.18	1	50										
			Compact black silty sand, some gravel, ash, slag (FILL)			1	50 DO	10									
			Compact brown fine to medium sand,		54.32 0.61												
			Some gravel, some silt, brick (FILL)	\sim	0.74	2	50 DO	14									
1			gravel, ash, slag (FILL)				DO										
				×××	53.58 1.35												
			Loose brown fine to coarse sand, some gravel, trace silt (FILL)		1.30	3	50 DO	9									
					53.10												
2			Compact brown medium to coarse sand, some gravel, some fine sand, trace silt		1.83		50										
			(FILL)			4	50 DO	11									
		Stem)	Loose dark brown SILTY SAND, some		52.49	_											
	nger	follow	gravel, trace to some clay, organics	\mathbb{W}	2.51	5	50 DO	38									
	wer A	am. (F	gravel, trace to some clay, organics <i>J</i> Dense to very dense grey brown to brown SILTY SAND, some gravel, with cobbles and boulders				DO										
3	R	un Di	coddies and boulders														
		200 mm Diam. (Hollow 5				6	50 DO	33									
						7	50 DO	>50									
4																	
				\bigotimes	50.36		50 DO	74									
			Very dense grey SILTY SAND, some gravel, cobbles, boulders (GLACIAL TILL)		4.57		DO										
5			TILL)														
						9	50 DO	54									
							_										
			End of Borehole		49.24 5.69		50 DO	>50									
6			Auger Refusal Possible Bedrock		0.00												
0			POSSIDIE BEUTOCK														
7																	
8																	
9																	
10																	
	:p1	LH 6	CALE														GGED: RI
	.r~ I								Gold	r						LUC	

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-04

BORING DATE: December 1, 2011

SHEET 1 OF 1

DATUM: Geodetic

	ЦОН	SOIL PROFILE	1.		SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	국 일 PIEZOMET
METRES	BORING METHOD		STRATA PLOT		н		J.3m	20 40 60 80	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³	PIEZOMET OR OR STANDPIF INSTALLATI
MET	DN C	DESCRIPTION	TA F	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - O	WATER CONTENT PERCENT	
	BOR		3TRA	(m)	چ		BLO			
-		GROUND SURFACE	0)				_	20 40 60 80	20 40 60 80	
0		TOPSOIL	EEE	56.16						
		Compact black silty sand, some gravel,		0.15	1	50 DO	8			
		trace brick, ash, slag, wood and glass (FILL)			'	DO	°			
						50				
1					2	50 DO	16			
				:						
					3	50 DO	10			
		L	_	54.33						
2		Loose dark brown to red coarse sand, some gravel, trace brick, ash, silt and		1.83						
		slag (FILL)			4	50 DO	5			
					L					
				1	[
		Loose medium to fine orange sand, trace		53.42 2.74	5	50 DO	3			
3		slag and silt (FILL)		53.11						
		Very loose red coarse sand, trace silt (FILL)		3.05						
		Very loose black crushed asphaltic		52.81 3.35	6	50 DO	2			
		concrete (FILL)		1						
						1				
4		ORGANICS		52.20 3.96	7	50 DO	2			
		Grey CLAY	Ī	4.11						
	(moto	Grey SILTY SAND, some gravel	Ť	4.27	8	50 DO	>50			
		› ــــ ـــــ		51.59 4.57	Ľ	DO	- 00			
	Power Auger	Compact to dense grey to brown coarse SAND and GRAVEL, trace silt	\otimes	4.57						
5	ower									
					9	50 DO	49			
	000			*						
				X						
				2	10	50 DO	54			
6										
				49.96						
		Very dense SAND and GRAVEL, some cobbles, trace boulders (GLACIAL TILL)		6.20						
		,								
7										
					\vdash					
				1	11	50 DO	112			
					[``	DO	2			
8					<u> </u>	50				
-				1	12	50 DO	>75			
					⊢	$\left \right $				
					4.0	50				
9					13	50 DO	58			
Ŭ					⊢					
					1.	50	27			
					14	50 DO	27			
ŀ		End of Borehole		46.46 9.70	\vdash	$\left \right $				
10		Auger Refusal								
		1		1	L					1 1
DEF	ΡТΗ	SCALE						Coldor		LOGGED: BM
1:5	-							Golder		CHECKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-05

BORING DATE: November 23, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	THOD	SOIL PROFILE			SAN			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	k, cm/s	I ^R A	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - O	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ WATER CONTENT PERCENT Wp	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	BC		STF	(m)	-		В	20 40 60 80	20 40 60 80		
0		GROUND SURFACE TOPSOIL	EZZ	56.91 0.00	+	-	_			+ $+$	
		Dark brown to black silty sand, some gravel, trace brick (FILL) Compact brown medium to fine sand, some silt, some gravel (FILL)		0.13 0.30	1	50 DO	24				
1	6	Dark brown to black silty sand, some gravel (FILL) Loose to compact light brown fine sand, trace silt (FILL)		56.20 0.71 56.00 0.91	2	50 DO	15				
	200 mm Diam. (Hollow Stem)				3	50 DO	7				
2	200 mm Diar	Compact brown medium to fine SAND, trace silt, gravel		54.81 2.10	4	50 DO	24				
					5	50 DO	21				
3		Fad of Daraba's	\bigotimes	53.46	6	50 DO	>50				
4		End of Borehole Auger Refusal Possible Boulder		3.45							
-											
5											
6											
7											
8											
9											
-											
10											
	PTH S	CALE	1					Golder			GED: BM

PROJECT: 11-1122-0199 LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-06

BORING DATE: November 23, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

ц I	ЦОН	SOIL PROFILE	1.		SA	MPLE	S F	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	Ľ.	HYDRAULIC k, cn	CONDUCTIV n/s	ΠΥ,	اوبر ا	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	20 40 60 I I I SHEAR STRENGTH nat V Cu, kPa rem V. 6	80 F Q - ●	10 ⁻⁶ I WATER	10 ⁻⁵ 10 ⁻⁴	ERCENT	I ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
5	BORI		STRA ⁻	DEPTH (m)	Ν	⊢			80	Wp	40 60		LAE	
		GROUND SURFACE		54.79		+	\top			20			1 1	
0		Loose dark brown silty sand, trace	EZZ	0.00		+								
		gravel, organics (TOPSOIL)		0.13	1	50 DO	9							
		ash, brick, clay (FILL)		54.03		00								
		Loose brown fine to medium sand, some	*	0.76		50								
1		gravel, trace silt (FILL)		53.57	2	50 DO	9							
		Loose black silty sand, some gravel, ash, organics (FILL)		1.22										
		ash, organics (FILL) Loose brown SILTY SAND, some gravel		53.27 1.52	3	50 DO	6							
		Loose brown SILTY SAND, some grave	\otimes	1.52										
			\otimes											
2			\bigotimes	52.66	4	50 DO	53							
		Very dense brown fine to coarse SAND, some gravel, some silt	\otimes	2.13	Ĺ	DO								
		End of Borehole		52.33 2.46		+								
		Auger Refusal												
3														
4														
5														
6														
7														
8														
9														
10														
DEI	PTH S	SCALE						Golder					LC	GGED: RI
	50							ALLE VIOLOGI						

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-07

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: November 25 & 28, 2011

ļ	BORING METHOD	Ļ	SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRA RESISTANCE, BLOW	S/0.3m	R.	HYDRAUL k,	LIC CC cm/s	TOUCIN	IVIIY,		ĘĘ	PIEZOMETER
METRES	METI			STRATA PLOT		н).3m	20 40		io `	10 ⁻⁶	10	⁻⁵ 1	0 ⁻⁴ 1	0-3	ADDITIONAL LAB. TESTING	OR
MET	DNG		DESCRIPTION	VTA F	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + rem V. ⊕	Q - ● U - ∩				PERCE		DDIT B. TE	INSTALLATIO
	BOR			STRA	(m)]ع	[]	BLO				Wp ⊢ 20	4(LA A	
		+	GROUND SURFACE	0)	54.92				20 40	60 8	0	20	40) 6	0	80		
0		+	Compact dark brown silty sand, trace	EEE	54.92 0.00 54.74													
		┝	gravel, organics (TOPSOIL) Compact black silty sand, some gravel,		0.18		50 DO	12										
			ash, slag, organics (FILL)		;		00											
					54.01	2	50 DO	19										
1			Compact to loose brown fine to coarse sand, some gravel, trace silt, occasional		0.91													
			brown silt pockets (FILL)															
						3	50 DO	6										
					53.09													
2		F	Loose dark brown silty sand, some		1.83													
2			gravel, trace to some clay, organics, wood, ash, with brown clayey silt layers			4	50 DO	5										
			(FILL)		52.48													
		F	Loose dark grey silty clay to clayey silt, trace sand (FILL)		2.44]									1		
			Loose to very dense brown silty sand,	×	52.18 2.74	5	50 DO	8								1		
3		- K	some gravel (FILL)	1	2.89											1		
			Very dense to dense grey to brown fine to coarse SAND, some gravel, trace to	\otimes	X													
			some silt, with brown medium to coarse sand, trace to some fine sand, trace silt		2 2	6	50 DO	94										
			layers, with cobbles and boulders															
							50											
4		Stem)			2	7	50 DO	127										
	ger .	NO																
	Power Auger	Ĕ			3		50											
	Pov	n Dia			2	8	50 DO	41										
5		200 mm Diam. (Hollow Stem)		\otimes			-											
5	ľ	~				9	50 DO	50										
				\otimes	}		DO											
					2													
						10	50 DO	51										
6					}													
						11	50 DO	43										
				\otimes														
					Š													
7				\otimes		12	50 DO	63								1		
				\otimes	\$											1		
				\otimes			FO											
				\otimes]	13	50 DO	63										
8				\otimes		<u> </u>										1		
0				\otimes	\$		50									1		
				\otimes		14	50 DO	46										
		┝	Compact to dense brown medium to	₩	46.38 8.54	-												
			coarse SAND, some gravel, trace fine sand, trace silt		2	15	50 DO	>50										
9		+	End of Borehole		45.95 8.97	-	\vdash											
			Auger Refusal Possible Bedrock															
				1														
				1														
10																		
				1														
DE	PTH	ISC	CALE														LC	OGGED: RI
	50								Gold	I.							сц	ECKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-08

BORING DATE: November 30, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ц	우		SOIL PROFILE			- 0/1	MPL		DYNAMIC PENETRA RESISTANCE, BLO	\$3/0.311	$\overline{\ }$	к, 0	m/s			μŞ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD			LOT		н		.3m	20 40	60 80	`	10 ⁻⁶	10 ⁻⁵ 1	0 ⁻⁴ 10	0 ⁻³	ADDITIONAL LAB. TESTING	OR
ΞΨ	NG.		DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + rem V. 舟	Q - ●	WATER				DDIT B. TE	STANDPIPE INSTALLATION
ž	BOR			3TRA	(m)	l∃	-	BLO				vvp —				LA	
			ID SURFACE	0	54.29			-	20 40	60 80		20	40 0	<u>50 8</u>	0		
0	Т	Loose	dark brown silty sand and sandy		54.29 0.00												
		silt, trac	ce gravel, organics (TOPSOIL) dark brown to black silty sand,		0.13 53.88		50 DO	8									
		A some q	ravel, brick (FILL)	/	0.41 53.68												
		h.trace to	prown silty sand to sandy silt, some gravel (FILL)	,∰	0.61												
		Compa	ct brown fine to coarse sand,	' 🗱		2	50 DO	17									
1		occasio	ravel, trace to some silt, onal silty sand seam (FILL)														
						3	50 DO	16									
		Ê															
2		w Ste															
4	Auger					4	50 DO	15									
	Power Auger				51.85												
		E Very lo	ose black silty ORGANICS ey SILTY SAND, trace sand,		2.44 2.59												
		ର N trace ପା		. 🗮	2.39	5	50 DO	12									
3		SAND,	some gravel, with cobbles and				E0										
		boulder	S		*	6	50 DO	<100									
				\otimes													
					3	<u> </u>											
						_	50	_									
4						7	50 DO	59									
					3		50 DO	~100									
		End of	Borehole	\mathbb{N}	49.77 4.52	8	DO	<100									
		Auger F	Refusal														
5																	
6																	
7																	
ŕ																	
8																	
9																	
10																	
				_	•	-						• •			•		
	DTL	I SCALE						4	Gold							10)GGED: RI

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-09

BORING DATE: November 23, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

NOVEITIDEI 23, 2011

щ		보 L	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	≓ິິ2 PIEZOMETER
METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q - € Cu, kPa rem V. ⊕ U - C	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp	PIEZOMETER OR STANDPIPE INSTALLATION
-		×		STF	(m)	~		В	20 40 60 80	20 40 60 80	
0		-	GROUND SURFACE TOPSOIL	EEE	56.83 0.00						
		-	Dark brown to black silty sand (FILL) Compact dark brown silty sand (FILL)		0.13 0.30 56.22	1	50 DO	33			
1			Loose black silty sand, trace brick and glass (FILL)		0.61 55.84	2	50 DO	12			
		Ē	Loose medium to fine brown sand, trace silt (FILL)		0.99						
	Auger	(Hollow Ster	Compact medium to fine brown to grey		54.95 1.88	3	50 DO	9			
2	Power Auger	200 mm Diam. (Hollow Stem)	Compact medium to fine brown to grey sand, some silt and gravel, trace brick (FILL)			4	50 DO	39			
2		3			53.78	5	50 DO	32			
3			Brown to grey SILTY SAND, trace gravel and clay COBBLES and BOULDERS		3.05 53.59 3.24	6	50 DO	>50			
4			End of Borehole	×	52.85 3.98	7	50 DO	>60			
			Auger Refusal		3.96						
5											
6											
7											
8				1							
-											
				1							
9				1							
				1							
10											
DE	РΤ	TH S	CALE					1	Golder		LOGGED: BM

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-10

BORING DATE: November 23, 2011

SHEET 1 OF 1

DATUM: Geodetic

DEPTH SCALE O METRES	BORING METHOD	DESCRIPTION	LOT				٦	20 40		· ·				40-3	l≥Ę	PIEZOMETER OR
	BORING	DESCRIPTION		I '	r i		ς.	20 40	60	80	10 ⁻⁶	10 ⁻⁵	10-4	10 ⁻³	Q	OTANDODO
	30R		STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. rem V	+ Q-● ⊕ U-○	WAT	ER CONT			ADDITIONAL LAB. TESTING	STANDPIPE INSTALLATION
			TRA	(m)	R		BLO				vvp –				LAR	
0	-	GROUND SURFACE	0				-	20 40	60	80	20	40	60	80	+	
		Loose dark brown sandy silt_trace		54.76 0.00 54:58											+	
		gravel, organics (TOPSOIL) Loose black silty sand, some gravel,		0.18	1	50 DO	8									
		ash, slag (FILL)														
1					2	50 DO	8									
	Ê			53.59 1.17												
	v Ster	Very loose brown fine to medium sand, trace to some silt, some gravel, with black silty sand, organic layers (FILL)		1.17												
Ander	Hollo	black slity sand, organic layers (FILL)			3	50 DO	4									
Mer /	iam. (52.93 1.83												
2	Power Auger 200 mm Diam. (Hollow Stem)	Compact to very dense brown SILTY SAND, some gravel	\otimes	1.03		50										
	200			1	4	50 DO	11									
			\otimes		5	50 DO	41									
3					-	DO										
3					6	50 DO	>50									
			\mathbb{X}	51.33	U	DO	- 30									
		End of Borehole Auger Refusal		3.43												
4																
5																
6																
7																
8																
Ŭ																
9																
· 10																
		1	-1								<u>ı </u>		<u> </u>			
DEP	PTH S	SCALE					(Gold	er							GGED: RI CKED: JW

RECORD OF BOREHOLE: 11-11

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 24 & 25, 2011

SHEET 1 OF 1

DATUM: Geodetic

ц ,	ЦОН	╞	SOIL PROFILE	1.	·	34	MPLE	_0	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	k, cm/s	l 2 β	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - O	Wp Wi	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
_	ш	+	GROUND SURFACE	ò	54.84	_		ш	20 40 60 80	20 40 60 80		
0			Compact dark brown silty sand, trace (gravel, organics (TOPSOIL) Compact black silty sand, some gravel, mortar, ash, slag (FILL)		0.00	1	50 DO	13				
1			Compact brown fine to medium sand, trace gravel, trace silt, some coarse sand, occasional brown silt pocket, occasional black silty sand layer (FILL)		54.21 0.63 53.90 0.94	2	50 DO	6				
			Compact brown fine to coarse sand, trace silt, trace to some gravel, occasional brown silt pocket (FILL)		53.01	3	50 DO	26				
2			Loose grey silty clay, trace gravel, trace sand, black staining, occasional grey silty sand layer (FILL)		1.83	4	50 DO	8				
3			Loose dark brown to black silty ORGANICS Loose grey brown SILTY CLAY and CLAYEY SILT, trace sand		52.25 2.59 2.74 2.82 51.79	5	50 DO	6				
		Stem)	Lose grey SILTY SAND, some gravel Compact to very dense brown to grey fine to coarse SAND, trace to some gravel, trace to some silt		3.05	6	50 DO	28				
4	Power Auger	200 mm Diam. (Hollow				7	50 DO	40				
		200				8	50 DO	36				
5					49.35	9	50 DO	36				
6			Compact to very dense brown medium to coarse SAND, some gravel, trace fine sand, trace silt, occasional fine to medium sand layer, with cobbles and boulders		5.49	10	50 DO	21				
			Very dense fine to coarse grey and brown SAND, some gravel, trace to some silt, with cobbles and boulders (GLACIAL TILL)		48.59 6.25 47.98	11	50 DO	53				
7			Very dense brown silty fine SAND, occasional grey silt seam (GLACIAL \TILL) Very dense grey SILTY SAND, some		6.86 7.01	12	50 DO	100				
		_	gravel, with cobbles and boulders (GLACIAL TILL) End of Borehole		47.07	13	50 DO	>50				
8			Auger Refusal									
9												
10												
DE	PTF	150	CALE	1					Golder			GED: RI

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-12

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: December 1, 2011

ц ,	ЦОН		SOIL PROFILE	1.	,	SA	MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	Ľ.	HYDRAULIC CO k, cm/s		ĘĘ	PIEZOMETER
METRES	BORING METHOD	DE	SCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	20 40 60 80 I I I I SHEAR STRENGTH nat V. + Cu, kPa rem V. ⊕			NTENT PERCENT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
ŗ	BOR			STRA	(m)	R		BLO	20 40 60 80		Wp		LAI	
_		GROUND SURFA			54.55		+	\uparrow		-				
0		Loose dark silty gravel, organics	sand to sandy silt, trace		0.00									
		Loose black silty	sand to sandy silt,			1	50 DO	8						
		some gravel, as	- · ·		53.94 0.61									
		(FILL)	silty sand, some gravel		0.01		50							
1						2	50 DO	19						
		Compact to loos	e brown fine to medium		53.33 1.22									
		gravel (FILL)	ome silt, trace to some			3	50 DO	13						
2														
	1					4	50 DO	8						
	Auger				51.96									
	Power Auger	Very loose dark ORGANICS	brown to black silty	Ê	2.59	5	50 DO	4						
3	"	Very loose dark ORGANICS Very loose grey SILT, trace sance	SILTY CLAY to CLAY	\bigotimes	2.74									
-		Very loose to co	mpact grey SILTY	\otimes										
		SAND, some gra	avel			6	50 DO	24						
				\otimes		7	50 DO	>50						
4							DO	55						
4				\otimes	50.28									
		Very dense grey	v brown SILTY fine to ome gravel, occasional and pockets (GLACIAL	Ŵ	4.27									
		fine to coarse sa TILL)	and pockets (GLACIAL			8	50 DO	66						
5					49.37	9	50 DO	>50						
		End of Borehole Auger Refusal			5.18		ſ							
				1										
6														
7														
8				1										
				1										
				1										
				1										
9				1										
				1										
				1										
				1										
10				1										
10														
												I		
DEF	PTH	SCALE							Golder				LC	GGED: RI

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-13

BORING DATE: November 22, 2011

SHEET 1 OF 1

DATUM: Geodetic

			SOIL PROFILE			SA	MPLI	ES	DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY, k, cm/s	اوپ	PIEZOMETER
METRES	BORING METHOD			STRATA PLOT	ELEV.	ËR	ш	ʻ0.3m	20 40 60 80		ADDITIONAL LAB. TESTING	OR
WE	RING		DESCRIPTION	(ATA	DEPTH	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPanat V. + Q - ● rem V. ⊕ U - O	WATER CONTENT PERCENT	ADDI AB. T	INSTALLATION
1	C B C	ß		STR	(m)	2		BL	20 40 60 80	20 40 60 80		
0			GROUND SURFACE		56.59							
5			TOPSOIL Dark brown to black silty sand, trace		0.00		5					
			gravel and brick (FILL)			1	50 DO	9				
							50					
1						2	50 DO	17				
		┢	Loose to compact medium to fine brown	***	55.37 1.22							
			Loose to compact medium to fine brown sand, trace gravel and silt (FILL)			3	50 DO	4				
							DO					
2												
2						4	50 DO	14				
						5	50 DO	14				
3												
						6	50 DO	46				
		Stem)			52.02	Ĩ	DO					
	ter	S Nol	Dense coarse brown to black SAND and		52.93 3.66							
4	Power Auger	л. (Но	GRAVEL, trace cobbles and silt			7	50 DO	30				
	Powe	n Dian										
		200 mm Diam. (Hollow										
		Ā				8	50 DO	33				
5						9	50 DO	F 5				
						ฮ	DO	55				
				\bigotimes								
				\bigotimes		10	50 DO	50				
6				\bigotimes								
				\bigotimes		11	50 DO	19				
				\otimes								
7			0.111		49.63	12	50 DO	>80				
'			Cobbles and boulders (GLACIAL TILL)		6.96							
						13	50 DO	105				
					19 64							
8		+	End of Borehole	NAAV	48.61 7.98	14	DÖ	>50				
			Auger Refusal									
9												
10												
DE	PTł	H SC	CALE					(Golder		LOG	GED: BM
1:	50							1	Golder		CHEC	KED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-14

BORING DATE: November 22 & 23, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

S L		울ŀ	SOIL PROFILE	⊢			MPL		DYNAMIC PI RESISTANC			``		k, cm/s	ONDUCT		- 3	RG	PIEZOMETER
METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	20 SHEAR STR Cu, kPa	40 ENGTH	60 nat V.	80 + Q-•	10 ⁻¹ WA) ⁻⁵ 10 DNTENT		0 ⁻³ NT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
Σ		0RIN	DESCRIPTION	IRAT/	DEPTH (m)	NUM	∣≿	TOW	Cu, kPa		rem V	⊕ Ū- Ŏ	Wp	⊢	-O ^W			ADC LAB.	INSTALLATION
	\vdash	ш	GROUND SURFACE	S		-	-	8	20	40	60	80	20	4	06	0 8	30	$\left \right $	
0			Compact dark brown silty sand, some	EEE	55.28 0.00														
			gravel, organics (TOPSÓIL) Compact dark brown fine to medium		54.95 0.33	1	50 DO	26											
			sand, some gravel, asphalt pieces (FILL)		54.54														
			Compact black to dark brown silty sand, some gravel, ash, coal (FILL)		0.74	2	50 DO	22											
1					54.06														
			Compact brown fine to medium sand, some silt (FILL)		1.22		50												
			Compact black silty sand, some gravel,		53.66 1.62	3	50 DO	13											
			ash (FILL)	₩	1.62 53.45 1.83														
2			Compact dark brown sandy silt, some clay, trace to some gravel, organics, occasional brown fine to medium sand,			4	50 DO	14											
		Ster	occasional grey brown clayey silt to silty clay layers (FILL)		52.84														
	uger	Hollow	Very loose to dense grey brown fine to medium SAND, some silt, trace gravel	\mathbb{W}	2.44		-												
	ower A	iam. (medium SAND, some siit, trace graver		•	5	50 DO	2											
3	ď.) mm Diam. (Hollow			*														
		200	Dense to compact to very dense brown	\bigotimes	51.93 3.35	6	50 DO	33											
			Dense to compact to very dense brown medium to coarse SAND, some gravel, trace fine sand, trace silt																
					•	7	50	45											
4						ľ	50 DO	15											
					•	8	50 DO	85											
			Very dense grey fine to coarse sand,		50.40 4.88														
5			some gravel, some silt, with cobbles and boulders (GLACIAL TILL)			9	50 DO	102											
					49.77		DO												
			End of Borehole Auger Refusal		5.51														
6																			
-																			
7																			
8																			
٥																			
9																			
ฮ																			
10																			
iU																			
				•	-	•							•					• 1	
DE	PT	i'H S	CALE					(2014	er iate:							LO	GGED: RI

RECORD OF BOREHOLE: 11-15

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 24, 2011

SHEET 1 OF 1

DATUM: Geodetic

Ļ	ġ	요나	SOIL PROFILE			SA	,		DYNAMIC PENETRA RESISTANCE, BLOW	5/0.5111	k, cm/s	I	191	PIEZOMETER
METRES	l	BORING METHOD		LOT		ц		3m	20 40	60 80	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴	10 ⁻³	ADDITIONAL LAB. TESTING	OR
MET	0	D NG	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + Q - ● rem V. ⊕ U - ○	WATER CONTENT P		DDIT B. TE	STANDPIPE INSTALLATION
ž		BOR		STRA	(m)	Ŋ	-	BLO			Wp		LAA	
		-	GROUND SURFACE	0)	54.87				20 40	60 80	20 40 60	80	-+	
0		Т	Compact dark brown silty sand, trace		0.05									
			\gravel, organics (TOPSOIL)	~	54.54	1	50 DO	10						
			ach (Ell I)		0.33									
			Compact to very loose brown fine to medium sand, some coarse sand, trace											
1			occasional brown silt pockets, occasional cobble (FILL)			2	50 DO	14						
			occasional cobble (FILL)		50.55									
			Very loose dark brown and black silty		53.55 1.32									
			sand, trace gravel, trace clay, occasional grey silty clay to clayey silt layers			3	50 DO	4						
		Stem)	(ORGANICS)											
2	ger	Nolo				4	50 DO	4						
	er Au	Ш. Н				4	DO	4						
	Ро	m Dia	Loose dark brown to black fine to	X	52.43 2.44									
		200 mm Diam. (Hollow Stem)	medium SAND, some silt, some gravel, organics	\bigotimes		5	50 DO	9						
3			-	\bigotimes	51.82									
-		[Very dense to compact grey to brown SILTY SAND, some gravel, occasional	\bigotimes	3.05									
			SILTY SAND, some gravel, occasional cobble and boulder, with fine to medium sand, some gravel, some silt layers	\bigotimes		6	50 DO	57						
			sana, somo gravor, como sin layors	\bigotimes										
				\bigotimes		_	50							
4				\bigotimes		7	50 DO	14						
				\bigotimes		8	50 DO	>50						
		4	End of Borehole	\times	50.35 4.52									
			Auger Refusal											
5														
6														
0														
7														
8														
9														
10														
				-						. 1	. 1			
DE	ΡT	Ъ	CALE					1	Golde				10	GGED: RI

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-16

BORING DATE: November 28 & 29, 2011

SHEET 1 OF 1

DATUM: Geodetic

DESCRIPTION GROUND SURFACE TOPSOIL Compact black silty sand, some gravel, trace ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL) Very loose brown to grey coarse sand, trace silt and gravel (FILL)		ELEV. DEPTH (m) 54.61 0.00 0.15			mc.0/SWOJB 12	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + rem V. ⊕ 20 40 60 80	Q - ● U - O	-	10-5 10		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
GROUND SURFACE TOPSOIL Compact black silty sand, some gravel, trace ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)		DEPTH (m) 54.61				SHEAR STRENGTH nat V. + Cu, kPa rem V. ⊕		Wp —		WI	ADDITI LAB. TE.	STANDPIPE INSTALLATION
GROUND SURFACE TOPSOIL Compact black silty sand, some gravel, trace ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)		(m) 54.61									AD	2
TOPSOIL Compact black silty sand, some gravel, race ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)		54.61 0.00				20 40 60 80)	20				
TOPSOIL Compact black silty sand, some gravel, race ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)		0.00	1	50 DO	12					<u> </u>	++	
Compact black silty sand, some gravel, race ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)		0.00	1	50 DO	12						+ $+$	
race ash, brick, occasional layers of fine to medium brown sand and gravel (FILL) Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)			1	50 DO	12							
Very loose black coarse sand, some ash, gravel, trace silt and brick (FILL)												
]								
		3	2	50 DO	22							
		52.20										
		53.39 1.22										
Very loose brown to grey coarse sand, rrace silt and gravel (FILL)			3	50 DO	5							
Very loose brown to grey coarse sand, rrace silt and gravel (FILL)			ľ	DO	J							
race silt and gravel (FILL)		52.78 1.83										
				50								
			4	50 DO	4							
		3										
		3										
		3	5	50 DO	5							
		3										
		\$		1								
Compact modium to first start OANID		51.26 3.35	6	50 DO	19							
Compact medium to fine grey SAND, trace silt, trace gravel	\otimes	3.35										
	\otimes	ß	\vdash									
		8	7	50 DO	18							
		8	'	DO	10							
		8										
		8		50								
		8	8	50 DO	12							
		8										
		3										
		3										
	\mathbb{X}	2		1								
		3	9	50 DO	12							
		8										
		3		50								
		48.18	10	50 DO	>50							
End of Borehole Auger Refusal		6.43										
านชุด เ \อเนอลเ												
		1	1		ļ							
		1	-	<u> </u>		à						
ALE		1		<u> </u>		Golder						GGED: BM

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-17

BORING DATE: November 21, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

1.5	Ŧ		1.			, - r	ES	DYNAMIC PENETRAT RESISTANCE, BLOW	5/0.5111	N	,	cm/s			1491	PIEZOMETER
METRES	BORING METHOD		STRATA PLOT		ЦЦ		0.3m	20 40		80	10 ⁻⁶	10			ADDITIONAL LAB. TESTING	OR
E E	RING	DESCRIPTION	4TA F	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. H rem V. H	- Q- • • U- 0	WAT			ERCENT	DDIT 1. U	INSTALLATION
1	BOF		STR/	(m)	z		BLO	20 40		80	Wp⊢ 20	40	-O ^W 60	WI 80		
		GROUND SURFACE		56.66				20 40	00	00	20	40	60	80		
0		Compact dark grey crushed stone with	XXX	0.00												
		Organics (FILL) Compact brown to dark brown silty sand,	8	0.13	1	50 DO	17									
		some gravel, trace clay, brick (FILL)		56.05												
		Compact dark brown and black silty	\sim	0.61												
		sand to sandy silt, some gravel, ash, brick (FILL)		55.67	2	50 DO	22									
1		Compact brown sand, some silt, some		0.99		DO										
		gravel, with grey brown silty clay layers (FILL)														
					3	50 DO	14									
		Loose to very loose grey brown SILTY	₩	54.98 1.68	Ĵ	DO										
		CLAY, trace to some sand, trace gravel,	\bigotimes	1.00												
2		occasional sand pockets	\otimes		4	50 DO	7									
			\otimes		ŕ	DO	·									
			\bigotimes													
			\bigotimes]	5	50 DO	4									
			\bigotimes		J	00	·									
3			\otimes	53.46												
		Very dense to loose brown SAND, trace	\bigotimes	3.20	6	50 DO	16									
		to some silt, some gravel, occasional cobble and boulder, occasional coarse	\bigotimes		Ŭ	DO										
	2	sand layers, occasional silty sand layers,	\bigotimes													
	Sterr		\otimes		7	50 DO	34									
4	ger olow		\otimes	*												
ŀ	Power Auger 200 mm Diam. (Hollow Stem)		\bigotimes]												
(n Diar		\otimes		8	50 DO	46									
	D m		\otimes		0	DO	40									
5	۶ ۵		\bigotimes													
5			\boxtimes		9	50 DO	26									
			\otimes	*	Ū	DO	20									
			\bigotimes													
			\bigotimes		10	50 DO	4									
6			\otimes	3		DO	Ċ									
Ŭ			\otimes													
			\bigotimes		11	50 DO	62									
			\bigotimes			DO	02									
			\otimes													
7			\bigotimes		12	50 DO	27									
·			\bigotimes]	÷د ا	DO	-'									
			\otimes													
			\bigotimes		13	50 DO	104									
		Very dense grev SANDY SILT some	×	48.89												
8		Very dense grey SANDY SILT, some gravel, trace clay (GLACIAL TILL)			14	50 DO	>100									
┝		End of Borehole	pr/kl	48.07 8.59	15	50 DO	>70									
		Auger Refusal	1													
9		Possible Bedrock	1													
			1													
			1													
			1													
10			1													
			<u> </u>													
	יידר	SCALE													1.00	GED: RI
								Golde							1.00	AGED' RI

RECORD OF BOREHOLE: 11-18

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 22, 2011

SHEET 1 OF 1

DATUM: Geodetic

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

ļ	L L		SOIL PROFILE	1.	,	SA	MPLE	ES	DYNAMIC PENET RESISTANCE, BL	SWS	0.3m	R.	HYDRAUI k,	cm/s	DUCI	IVIII,		ا و بر	PIEZOMETER
METRES	RORING METHOD			LOT		Ř			20 40			30	10 ⁻⁶	10 ⁻⁶			10 ⁻³	ADDITIONAL LAB. TESTING	OR
MET	UND.		DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGT Cu, kPa	Ήr	at V. + em V. ∉	Q - • U - O		ER COI				B. TE	INSTALLATION
5	ROR ROR			STR/	(m)	z		BLO					Wp⊢ 20					∠ A	
-+			GROUND SURFACE		56.83				20 40	c	0	30	20	40	0	0	80		
0			Compact dark brown silty sand, trace		0.00														
			\gravel, organics (TOPSOIL)	8	0.13	1	50 DO	18											
			medium sand, some gravel, some silt, ash, brick, with occasional brown clayey																
			silt layers, some sand, trace gravel																
			(FILL)			2	50 DO	22											
1					55.69														
			Compact to dense dark brown to black fine to medium sand, some gravel, some		1.14														
			silt, brick, ash, organics, occasional grey brown silty clay layers (FILL)			3	50 DO	11											
2						4	50 DO	>50											
					54.39														
			Compact grey fine to medium sand, some gravel, some silt, brick (FILL)	XXX	2.44 2.59														
			Compact black silty sand, some gravel, ash (FILL)		53.93	5	50 DO	16											
3			Compact brown fine to coarse sand,	æ	2.90														
			some gravel, trace silt (FILL) / Compact dark brown to black silty sand,		53.48		50												
			some gravel, ash, coal (FILL) // Compact grey brown SILTY CLAY to	1	3.35	6	50 DO	14											
		2	Compact grey brown SILTY CLAY to CLAYEY SILT, some sand, trace gravel, occasional fine to coarse sand layer																
		Sten	occasional fine to coarse sand layer			7	50 DO	21											
4	nger	(Hollow Stem)		\otimes	52.61	'	DO	21											
	- 1	Diam. (F	Loose brown sandy silt, some clay, trace	×	4.22 52.41														
	Po	mm Dia	to some gravel (FILL)		4.42	8	50 DO	7											
		200 m	Loose to dense brown fine to medium SAND, trace to some silt, trace gravel	\otimes	4.57		DO												
5			SAND, Tace to some sitt, trace graver																
			Dense to loose brown medium to coarse	\bigotimes	51.65 5.18	9	50 DO	30											
			SAND, trace gravel, trace silt, trace fine		3 0.10														
			sand																
				\otimes		10	50 DO	6											
6				\bigotimes	50.73														
			Very loose brown fine to medium SAND, trace silt	\otimes	6.10		-												
				\otimes		11	50 DO	4											
							50												
7				\otimes		12	50 DO	19											
			Very loose to compact brown medium to	₩	49.51 7.32														
			coarse SAND, trace fine sand, trace silt, occasional fine to medium sand layer		Š	13	50 DO	1											
				\otimes			DO	Ċ											
8																			
						14	50 DO	11											
				\bigotimes	48.29														
Ì		1	End of Borehole Auger Refusal		8.54														
			U																
9																			
10																			
				•	•		· 1					•	•						
DEI	PTH	НS	CALE					- (Gol Asso	dar	*							LO	GGED: RI

RECORD OF BOREHOLE: 11-19

SHEET 1 OF 3 DATUM: Geodetic

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 25 & December 15, 2011

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

			SOIL PROFILE		,	SA	MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	<u>N</u> G R	PIEZOMETER
METRES			DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - O	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp - W	LAB. TESTING	OR STANDPIPE INSTALLATION
		ш	GROUND SURFACE	[S]			\vdash	ш	20 40 60 80	20 40 60 80	+ +	
0			TOPSOIL	EZZ	56.03 0.00		+				+	
			Compact brown silty sand, some gravel, trace slag (FILL)		0.13 55.67	1	50 DO	11				
			Compact fine to medium brown sand, some gravel, trace silt (FILL)		0.36 55.47							
			Grey clay (FILL)	/****	0.56							
1			Compact grey gravel, some sand, trace silt, slag, and brick (FILL)			2	50 DO	29				
			Black silty sand, trace brick (FILL)		54.71 1.32 54.51							
			Grey to brown fine to medium sand,		1.52	3	50 DO	52				
			trace silt (FILL)	₩	54.25 1.78 54.05							
2			Compact brown coarse sand, some	₩	54.05		50	~				
			gravel and clay, trace silt and brick (FILL)			4	50 DO	20				
			Grey to black CLAY	×	53.29 2.74	5	50 DO	5				
3			Grey to black CLAT		2.14							
-												
		2		\otimes		6	50 DO	4				
		200 mm Diam. (Hollow Stem)		\otimes								
	uger	Nollo-					50					
4	Power Auger	am. (F		\bigotimes	51.92	7	50 DO	4				
	g	n D D	Grey to blue CLAY Dark brown silty ORGANICS		4.11							
		200 r				8	50 DO	27				
					51.15	Ũ	DO					
5			Loose grey brown SAND and GRAVEL,	X	4.88							
			trace silt	\otimes		9	50 DO	9				
				\otimes								
							50					
						10	50 DO	7				
6												
				\otimes		11	50 DO	10				
					49.33		DO					
			Loose, coarse to medium brown SAND, some silt	Ŵ	6.70							
7			oomo oiit			12	50 DO	6				
				X	48.71							
			Loose medium to fine grey to brown SAND, trace silt	XX	7.32	13	50 DO	>50				
			Coarse grey to brown SAND, some gravel, with cobbles and boulders		7.54							
8		\square		X	48.03							
5			Cobbles and boulders (GLACIAL TILL)		8.00	~	NQ					
						C1	NQ RC	DD				
						-						
	Drill	Je l										
9	Rotary Drill	NQ Core				C2	NQ RC	DD				
	ш	-										
			Fresh, grey LIMESTONE BEDROCK		46.50 9.53							
			groy Envicor one DEDICOOC		3.00	СЗ	NQ RC	DD				
10	_	\Box		<u>F</u>		L -		_		↓ ↓ ↓	- -	
			CONTINUED NEXT PAGE									
_												
DE	۲T	нS	CALE						Golder		LOG	GED: BM



RECORD OF BOREHOLE: 11-19

SHEET 2 OF 3 DATUM: Geodetic

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: November 25 & December 15, 2011

	BORING METHOD	SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRA RESISTANCE, BLOV	/S/0.3m	R.		ONDUCT		NG	PIEZOMETER
METRES	MET		STRATA PLOT		н		BLOWS/0.3m	20 40	60	80	10	0 ⁻⁵ 10	0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE
Т. М	RING	DESCRIPTION	ATA I	ELEV. DEPTH	NUMBER	ТҮРЕ)/S//(SHEAR STRENGTH Cu, kPa	nat V. rem V. (+ Q-● ∌ U-O	W/	ONTENT		ADDI. AB. T	INSTALLATION
Ē	BOF		STR,	(m)	Ĭ		BLC	20 40		80	20 20		WI 80		
10		CONTINUED FROM PREVIOUS PAGE							T				<u> </u>		
10		Fresh, grey LIMESTONE BEDROCK			C3	NQ RC	DD								
						RC									
	E e														
11	Rotary Drill NQ Core		臣												
	× ~				C4	NQ RC	DD								
		End of Borehole		44.17 11.86											
12				11.00											
12															
13															
14															
15															
16															
17															
18															
19															
20															
DF	PTH 9	SCALE						Gold						10)GGED: BM
	50							Gold	er						ECKED: JW

		TION: -90° AZIMUTH:					.IN	D	RIL	.LIN	GC	ON		СТС	OR:			Drillir	Ig PO-	Polis	shed			BR	- Brr	hen	Rock		
	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH <u>COLOUR</u>	SH VN C. F TC CO		Shea /ein Conju DVEF SC COF	r Jgate RY ILID RE %		CO- OR- CL -	Bedd Folia Conti Ortho Cleav NDE PER 0.3 m	act ogona vage T. X B	al Angle	JN - U ST - S R - Ir	t TYP	ating ad ar NUITY	K - SM- Ro - MB- DATA	Slick Smo Rou Mec	ensio oth gh	al Bi	YDR. NDU K, cri	NOT abbre of ab	E: For eviation brevia ools. Dia TYPoi	additi ns refe tions a	ral adRM	st IC 2'	
3		BEDROCK SURFACE Cobbles and boulders (GLACIAL TILL)		48.03 8.00	C1																								
9					C2																								
D	Rotary Drill NQ Core	Fresh, grey LIMESTONE BEDROCK		46.50 9.53	СЗ																							_	
1					C4																								
		End of Drillhole		44.17 11.86																								_	
2																													
3																													
1																													
5																													
6																													
7																													
3																													

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-20

BORING DATE: November 28, 2011

SHEET 1 OF 1

DATUM: Geodetic

<u> </u>	P	SOIL PROFILE			SAI	MPLE	S	DYNAMIC PENETRA RESISTANCE, BLO	VS/0.3m	Ľ	HYDRAU	k, cm/s		IVIII,		μQ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		LOT		ц		.3m	20 40		30	10 ⁻⁶				0 ⁻³	ADDITIONAL LAB. TESTING	OR
E E	U N U N	DESCRIPTION	TA P	ELEV.	NUMBER	TYPE	VS/0	SHEAR STRENGTH Cu, kPa			WA			PERCE	NT	IED.	STANDPIPE INSTALLATION
	10 RII		STRATA PLOT	DEPTH (m)	Ń	ŕ-	BLOWS/0.3m				vvp					AD	
			S	. ,		_	B	20 40	60 8	30	20	40) 6	<u>ع 0</u>	0	$\left \right $	
0		GROUND SURFACE TOPSOIL	====	54.88			_										
				0.08 54.70 0.18		50											
	Ster	Compact dark brown to black silty sand, some gravel, trace ash and brick (FILL)			1	50 DO	28										
	ger																
	r Aug					-											
1	Power Auger 200 mm Diam. (Hollow Stem)				2	50 DO	24										
	m m																
	20				3	50 DO	>50										
				53.30	-	DO											
		End of Borehole Auger Refusal		1.58													
2		-															
-																	
3																	
-																	
4																	
·																	
5																	
ĩ																	
6																	
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DE	PTH S	CALE														LC	DGGED: BM
-	-							Gold	0 1 *								

RECORD OF BOREHOLE: 11-20A

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: December 1, 2011

SHEET 1 OF 1

DATUM: Geodetic

	Ş	žΙ	SOIL PROFILE			SA	MPLE	ES	DYNAMIC PENETRA RESISTANCE, BLO	VS/0.3m	Ľ	HYDRAU k	, cm/s				μĢ	PIEZOMETER
METRES	DODING METHOD			STRATA PLOT		Ř		Зm.	20 40	60	80	10 ⁻⁶	10	-5 10) ⁻⁴ 1	0 ⁻³	ADDITIONAL LAB. TESTING	OR
METI			DESCRIPTION	TΑΡ	ELEV.	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V.	+ Q-● ⊕ U-O	WA	FER CC		PERCE	NT		STANDPIPE INSTALLATION
-				TRA.	DEPTH (m)	Ñ	-	LOV	Cu, KPa	Teni v.	0-0	Wp		-0 ^W		WI	LAB	
	-	-	GROUND SURFACE	ŝ					20 40	60	80	20	40) 6	30	80 		
0		$ \dashv$	TOPSOIL	222	54.88 54.78													
		╎┟	Compact dark brown to black silty sand,	222	54.70 0.18													
			some gravel, trace ash and brick (FILL)															
1																		
		╎┝	Compact to dense brown to grey fine to	××	. 53.66 1.22													
			medium sand, trace silt, some gravel,			1	50 DO	21										
			concrete, asphalt (FILL)			1	DO	21										
2					52.75		50	<u></u>										
			Dense to loose dark brown with black silty sand, trace to some gravel, trace		2.13	2	50 DO	35										
			clay, ash, mica, organics, brick (FILL)															
						2	50											
		Stem)				3	50 DO	9										
3		₫	Compact grey brown clayey silt to silty		51.83 3.05													
	Power Auger	н). Но	clay, trace to some sand, trace gravel.		8 1		50	10										
	Powe	Diam.	wood, sheen, odours (FILL) Compact black fine to medium sand,		51.53 3.35	4	50 DO	10										
	-	200 mm	trace silt, trac egravel, black staining, odours, sheens (ORGANICS)		51.22 3.66													
		50(Compact grey brown fine SAND, with fine to medium sand seams/layers, trace	$ \otimes $		-	50											
4			fine to medium sand seams/layers, trace silt	\otimes	1	5	50 DO	12										
				\otimes	50.40													
			Compact grey CLAYEY SILT, some silt	×	50.46 4.42	~	50											
		[Compact grey brown medium to coarse SAND, trace fine sand	Ŵ	4.57	6	50 DO	14										
				₩	50.00 4.88													
5			Loose to very dense grey to brown fine to medium SAND, trace to some coarse	$ \otimes $		-	50											
			sand, trace silt	\otimes		7	50 DO	7										
							50	~										
6				\otimes		8	50 DO	36										
6				\bigotimes	:													
			Very dense grey fine to coarse SAND,	×	48.55 6.33	9	50 DO	35										
			some gravel, trace silt	\bigotimes	48.27													
			End of Borehole Auger Refusal		6.61													
7																		
8																		
9																		
10																		
DF	рт	H SI	CALE														10)GGED: RI
									Gold	0r								JOULD. MI

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-21

BORING DATE: December 6, 2011

SHEET 1 OF 1

DATUM: Geodetic

Ц		P P	SOIL PROFILE	1.	,	SAM			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	국 인 PIEZOMETER
METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q € Cu, kPa rem V. ⊕ U C	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ WATER CONTENT PERCENT Wp	PIEZOMETER OR STANDPIPE INSTALLATION
		m	GROUND SURFACE	ST	. ,	+		ā	20 40 60 80	20 40 60 80	
0	⊢	\mathbf{H}	Loose dark brown silty sand, organics		59.07 0.00	+	+	+			
			(TOPSOIL)		58.71	1	50 DO	5			
			Compact dark brown silty sand, some gravel, brick, organics, ash (FILL)		0.36						
						2	50 DO	>50			
1											
						3	50 DO	18			
					57.24 1.83	4	50	15			
2			Compact to very dense grey brown SILTY SAND, trace to some gravel		1.83	⁴	00	15			
						5	50 DO	54			
		Stem)				_					
3	3er	S Nollo				6	50	35			
	Power Auger	Щ. Н				ľ					
	Pov	200 mm Diam. (Hollow									
		200 r.				7	50 DO	76			
4			Very dense grey brown SILTY SAND, trace to some gravel (GLACIAL TILL)		55.11 3.96	_					
			trace to some gravel (GLACIAL TILL)			8	50 DO	>75			
						9	50 DO >	150			
5											
			Very dense grey SILTY SAND to SANDY SILT, trace to some gravel		53.89 5.18	10	50 >	102			
			(GLACIAL TILL)				50 >				
							50				
6											
					1 1	12	50 DO	-85			
			End of Borehole		52.62 6.45	+					
			Auger Refusal								
7											
8											
9											
10											
	L										1 1
DE	PT	ΉS	CALE					(Golder		LOGGED: RI
1:	50								Golder		CHECKED: JW

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-22

BORING DATE: December 7, 2011

SHEET 1 OF 1

DATUM: Geodetic

ш 7			SOIL PROFILE	1.		SA	MPLI		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	
METRES			DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q - € Cu, kPa rem V. ⊕ U - C	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp I → O ^W I WI	PIEZOMETER OR STANDPIPE INSTALLATION
		ă		STF	(m)	-		BL	20 40 60 80	20 40 60 80	⁻
0	_	-	GROUND SURFACE Very loose dark brown silty sand,	222	57.34 0.00						<u> </u>
			Very loose grey brown silty sand to sandy silt, trace to some gravel, trace clay, bricks, organics (FILL)		0.13	1	50 DO	3			
1						2	50 DO	4			
			Loose grey brown silty clay, some sand,		<u>55.51</u> 1.83	3	50 DO	4			
2		Stem)	trace gravel (FILL)			4	50 DO	6			
3	Power Auger	≥	Loose dark brown to black silty ORGANICS Loose to dense brown silty fine SAND,		54.60 2.74 2.90	5	50 DO	7			
	PG	200 mm Di	trace gravel, black staining (odours)		53.83 3.51	6	50 DO	48			
4			SAND, trace to some gravel, trace clay, black staining (odours), occasional black fine to medium sand layer Very dense grey brown silty sand to conch silt, trace to come gravel		53.27 4.07	7	00	>80			
			sandy silt, trace to some gravel, occasional fine to course sand layer (GLACIAL TILL)			8		42			
5						9 10	50 DO 50 DO				
6			End of Borehole		51.45 5.89	11	50 DO				
0			Auger Refusal								
7											
8											
9											
10											
DE	L PT	нs	CALE	1					Golder		LOGGED: RI

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-23

BORING DATE: December 6, 2011

SHEET 1 OF 1

DATUM: Geodetic

Ц		탈	SOIL PROFILE	1.		SA	MPLI		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	₽₽	PIEZOMETER
METRES		BORING METHOD		STRATA PLOT		н		BLOWS/0.3m	20 40 60 80	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³	ADDITIONAL LAB. TESTING	OR
ΞΨ		SING	DESCRIPTION	VTA F	ELEV. DEPTH	NUMBER	TYPE	WS/(SHEAR STRENGTH nat V. + Q - ● Cu, kPa rem V. ⊕ U - O	WATER CONTENT PERCENT	B. TO	INSTALLATION
۲		BOR		STRA	(m)	٦	-	BLO				
	-	_	GROUND SURFACE	0			_	-	20 40 60 80	20 40 60 80		
0	-		TOPSOIL	EEE	56.36 0.00		_					
			Compact brown fine to medium sand.	K	0.15		50 DO	10				
			trace silt, gravel, clay, brick, ash and mortar (FILL)			1	DO	13				
							50					
1						2	50 DO	11				
						3	50 DO	15				
2		Stem)			54.00		_					
	5	≥	Compact gravel layer (FILL)		54.23 2.13	4	50 DO	46				
	Power Auger	PHOI	Compact light brown to grey fine to medium sand, some gravel, trace brick,	Ŵ	2.29							
	ower	Diam.	medium sand, some gravel, trace brick, ash and mortar (FILL)									
	ľ	200 mm Diam. (Hol				5	50 DO	18				
3		200			53.31							
			Loose layers of brick, brown silty sand, mortar, ash, fine to medium dark brown		3.05							
			mortar, ash, fine to medium dark brown sand, and concrete, construction debris			6	50 DO	6				
			(FILL) Loose black silty sand, trace ash, slag,		52.75 3.61							
			cocasional layers of medium brown sand, gravel, brick, clay (FILL)		3.61							
4			sand, gravel, brick, clay (FILL)			7	50 DO	7				
					52.09							
			Compact dark grey SILTY CLAY, trace gravel, trace brick	\otimes	4.27							
			gravel, trace blick			8	50 DO	32				
					51.46							
5			End of Borehole	Ť	4.90							
			Auger Refusal									
6												
7												
				1								
				1								
8												
				1								
				1								
9				1								
				1								
				1								
				1								
10												
				<u> </u>								
יח	=p-	тн с	CALE									GED: BM
	-1.								Golder		LUG	

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-24

BORING DATE: December 5 & 6, 2011

SHEET 1 OF 1

DATUM: Geodetic

Ц	НОР	SOIL PROFILE	-		SA	MPLE	S	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	ζ.	HYDRAULIC CONDUCTIVITY, k, cm/s	국원 PIEZOME	TER
DEPTH SCALE METRES	BORING METHOD		STRATA PLOT	ELEV.	ER	_ س	BLOWS/0.3m	20 40 60 80			PIEZOME OR STANDPI INSTALLA	
ΞΨ	RING	DESCRIPTION	ATA	DEPTH	NUMBER	TYPE	/SWC	$\begin{array}{llllllllllllllllllllllllllllllllllll$	Q - ● U - O	WATER CONTENT PERCENT		
	BOI		STR.	(m)	Ż		BLC	20 40 60 80		20 40 60 80		
0		GROUND SURFACE		59.48								
0		Very loose dark brown silty sand, trace clay, organics (TOPSOIL) Very loose to very dense dark brown silty sand, trace clay, trace gravel, brick,		0.00 0.10	1	50 DO	4					
• 1		concrete, mortar, ash, metal, slag, concrete slab, grey crushed stone (FILL)			2	50 DO	8					
I						50 DO	4					
· 2				57.35								
		Very dense to dense brown grey brown SILTY SAND, some gravel, ashes on top of layer		2.13	4	50 DO	53					
3		Dense to very dense grey SILTY SAND,		56.43 3.05	5	50 DO	34					
		trace to some gravel, black staining (strong odours) (GLACIAL TILL)			6	50 DO	43					
· 4					7	50 DO	>70					
	w Stern)				8	50 DO	175					
5	Power Auger 200 mm Diam. (Hollow Stem)	Very dense grey SILTY SAND to SANDY SILT, trace to some gravel, odours (GLACIAL TILL)		54.60 4.88	9	50 DO	>150					
	200 mm				10	50 DO	180					
- 6					11	50 DO	>150					
7					12	50 DO	>100					
				51.86	13	50 DO	>50					
8		Very dense grey SILTY SAND to SANDY SILT, trace to some gravel, slight odours (GLACIAL TILL)		7.62	14	50 DO	•100					
					15	50 DO	134					
9					16	50 DO	125					
						50	>100					
10		End of Borehole Auger Refusal		<u>49.37</u> 10.11	18	50 DO	>50					
• 11												
DE	PTH	SCALE						Golder			LOGGED: RI	

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-25

BORING DATE: December 7, 2011

SHEET 1 OF 1

DATUM: Geodetic

ш	ПОН	SOIL PROFILE			SAI	MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3		HYDRAULIC CO k, cm/s		μġ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	20 40 60 I I I SHEAR STRENGTH nat Cu, kPa rem	80 V. + Q - ● V. ⊕ U - O		⁵ 10 ⁻⁴ 10 ⁻³ I I NTENT PERCENT ⊖ ^W WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	Я		STI	(m)	_		В	20 40 60	80	20 40			
- 0		GROUND SURFACE TOPSOIL	====	57.24 0.00									
		Loose to compact brown fine to medium sand, trace silt, gravel, ash, brick and mortar (FILL)		0.15	1	50 DO	7						
1							9						
2		Compact grey clay (FILL) Compact dark brown to black silty sand (FILL)		55.72 1.52 1.68			14						
L	Auger (Hollow Stem)	Compact brown fine to medium sand,		2.44	4	50 DO	40						
3	Power Auger 200 mm Diam (Hollow Stem)	trace gravel, trace concrete (FILL) Compact dark brown to black silty sand, some mica fragments (FILL)		54.50 2.74	5	50 DO	14						
		Compact to dense grey fine to medium SAND, some gravel, trace silt (GLACIAL TILL)		53.89 3.35			8						
4					7	50 DO >	>50						
_							68						
- 5		End of Borehole Auger Refusal		52.01 5.23	9	50 DO >	>50						
6													
7													
8													
9													
10													
DE	PTH	SCALE	_1		1	I	(Bassociat	I		1	LOG	GED: BM

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-26

BORING DATE: December 6, 2011

SHEET 1 OF 1

DATUM: Geodetic

ш J	우	SOIL PROFILE	1.	, I	SAI	- 1		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	k, cm/s	≓불 PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q - € Cu, kPa rem V. ⊕ U - ○ 20 40 €0 20	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp - OW - WI 20 40 60 80	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		55.78		+		20 40 60 80	20 40 60 80	
0				0.00		\neg				
		Loose grey clay, some sand (FILL)		0.13 55.32	1	50 DO	9			
• 1		Compact dark brown silty sand, some gravel, trace ash, brick and mortar, occasional layers of fine to coarse sand (FILL)		0.46		50	38			
					3	50 DO	25			
2	200 mm Diam (Hollow Stem)				4	50 DO	14			
	Dowe	Very loose black silty sand, trace ash, brick, wood and gravel, occasional		53.04 2.74	5	50 DO	8			
3	06	layers of fine sand (FILL)			6	50 DO	4			
4					7	50 DO	9			
		Very dense grey brown fine to medium SAND, some silt and gravel (GLACIAL TILL)		51.51 4.27	8	50 DO	110			
- 5		End of Borehole Auger Refusal		50.78 5.00	9	50 DO	>75			
6										
7										
8										
9										
10										
DE	PTH	SCALE	1	II				Golder		LOGGED: BM

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-28

BORING DATE: December 8, 2011

SHEET 1 OF 3

DATUM: Geodetic

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

	ПНОВ	SOIL PROFILE	-		SA	.MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	RGF	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - O	10 ⁶ 10 ⁵ 10 ⁴ 10 ³ WATER CONTENT PERCENT Wp ├──── ^W WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
\square	BC		STF	(m)	~		В	20 40 60 80	20 40 60 80		
0		GROUND SURFACE Very loose brown medium to fine sand	***	57.59 0.00						+ +	
		(FILL)		57.13	1	50 DO	2				
1		Compact black silty sand, some gravel, trace ash (FILL)		0.46	2	50 DO	17				
		Loose to compact brown medium to fine SAND, some gravel, trace silt and brick		56.37 1.22	3	50 DO	13				
2					4	50 DO	5				
3		Very dense brown to grey fine to medium SAND, trace gravel and silt (GLACIAL TILL)		54.85 2.74	5	50 DO	70				
					6	50 DO	>50				
4	iger ollow Stem)				7	50 DO	112				
	Power Auger 200 mm Diam. (Hollow Stem)				8	50 DO	119				
5	Ñ				9	50 DO	>60				
6					10	50 DO	108				
					11	50 DO	>100				
7				49.97	12	50 DO	>90				
8		Compact grey SILTY CLAY, some sand, trace gravel (GLACIAL TILL)		7.62	13	50 DO	80				
				48.75	14	50 DO	42				
9	Rotary Drill NQ Core	Grey CLAYEY SILT, some sand, trace gravel, with cobbles and boulders (GLACIAL TILL)		8.84	C1	NQ RC	DD				
10	NQ	Fresh, medium bedded, grey LIMESTONE BEDROCK, with thin beds of black shale		48.06 9.53	C2	NQ RC	DD				
		CONTINUED NEXT PAGE									



LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-28

BORING DATE: December 8, 2011

SHEET 2 OF 3

DATUM: Geodetic

y I	DOH	SOIL PROFILE	-		SA	MPL	ES	DYNAMIC PENETR RESISTANCE, BLC	DWS/0.3r		HYDRAU k	k, cm/s	JNDUCI	IVIII,		μĢ	PIEZOMETER
METRES	BORING METHOD		STRATA PLOT		н).3m	20 40	60	80		10) ⁻⁵ 10)-4 1	0 ⁻³	ADDITIONAL LAB. TESTING	OR
WET	SNIC	DESCRIPTION	VTA F	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	SHEAR STRENGT Cu, kPa	H nat V	. + Q-● /.⊕ U- ∩	WA		ONTENT	PERCE	NT	DDIT B. TE	STANDPIPE INSTALLATION
5	BOR		3TRA	(m)	۲ ۲		BLO				vvp					LAA	
		CONTINUED FROM PREVIOUS PAGE	0					20 40	60	80	20	4	06	υ 8	0		<u> </u>
10		Fresh, medium bedded, grev	<u> </u>	1	C2	NQ RC	DD										<u> </u>
		LIMESTONE BEDROCK, with thin beds of black shale		1		RU											
	Drill																
11	Rotary Drill NQ Core				СЗ	NQ RC	DD										
	œ[-		H														
				45.90													
		End of Borehole		11.69													
12		Auger Refusal															
13																	
14																	
15																	
16																	
10																	
17																	
18																	
19																	
20																	
	ртн с	SCALE							_							17	DGGED: BM
								Gol	der								

LC)C/	ATIO	Г: 11-1122-0199 N: See Site Plan 10N: -90° AZIMUTH:		RE	CO	RD		D D D	rili Rili Rili	LINC L RI	G: (G: (GCC	ATE: CME DNT	D 850 RAC	ecei 0 CTC	mbe	er 8 Ma	, 20 arath	11 non D]									DA	IEET 3		
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH <u>COLOUR</u>		N - J T - F HR- S N - V J - C RECO DTAL RE %	hear ein onjug VER	Y ID E %	(). IN F 0	conta Ortho	gona age B A	ngle		N-U T-Si {-In	lanar urved ndulatir tepped regular ONTINU TYPE / DE	ng JITY E		Slick Smo Roug Mech	ensio oth 1h	al Bi	YDR/ YDR/ NDU(K, cm	NOT abbr of al sym	E: Fo eviatio borevi bols.	ons re ations	oadra x - a) av	list			
- 9			BEDROCK SURFACE Grey CLAYEY SILT, some sand, trace gravel, with cobbles and boulders		48.75 8.84	C1		╢																			+			+		 	
			(GLACIAL TILL)		48.06																									_			
- - - - - - - - - - - - -	Rotary Drill	NQ Core	Fresh, medium bedded, grey LIMESTONE BEDROCK, with thin beds of black shale		9.53	C2																											
- - - - - - - - -						C3																											
- - - - 12			End of Drillhole		45.90 11.69			╢																						_			
- 13 - 13 - 13 																																	
- 14 - 15 - 15 																																	
- - - 16 - - -																																	
DE	EP		CALE						Ĩ		G	ol so	de Cia	r	es																IGGED		

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-29

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: December 5, 2011

	ГНОВ	SOIL PROFILE		r	SA	MPLES	RESISTANC			Ì,	k, cm/s			BG	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	20 SHEAR STR Cu, kPa 20	40 ENGTH 40	nat V. + rem V. ∉	BO - Q - ● → U - ○ BO			NT WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
0		GROUND SURFACE		55.66								 			
0		ORGANICS/TOPSOIL	EEE	0.00											
		Compact brown fine to medium sand, trace silt, gravel and ash (FILL)		0.15	1	50 DO 1									
1		Loose to compact dark brown to black silty sand, trace ash and gravel (FILL)		0.61	2	50 DO 1									
		Loose to very loose brown fine to		53.98 1.68		50 DO									
2		Compact dark brown to black SILTY		53.37 2.29		50 DO									
3	Nuger Hollow Stem)	SAND, trace gravel and clay		52.61	5	50 DO 1									
J	Power Auger 200 mm Diam. (Hollow	Loose dark brown SAND and GRAVEL		3.05 52.05	6	50 DO 6									
4		Compact dark grey to grey SILTY SAND, trace gravel		3.61	7	50 DO 2	3								
						50 DO 4									
5		Dense dark grey to grey SILTY SAND, trace gravel (GLACIAL TILL)		50.78 4.88		50 DO 9									
6						50 DO 4	2								
-		End of Borehole Auger Refusal		49.49 6.17											
7															
8															
9															
10															
	DTLI	SCALE													GGED: BM

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-31

BORING DATE: December 2, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

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PENETRATION TEST HAMMER, 64kg; DROP, 760mm
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s F	E E	2	SOIL PROFILE	⊢ I	r –		MPL		DYNAMIC RESISTA				ζ,	HYDRAU k				2	ING	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.3m	20 SHEAR S Cu, kPa	40 TREN		60 nat V. rem V.	80 + Q - ● ⊕ U - O		FER CO	NTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
ב	ACR			STRA	(m)	Z		BLO	20	40		60	80	Wp H 20				WI 80	LAA	
. 0			GROUND SURFACE		58.81				Ĩ							Ū				
U			TOPSOIL		0.00 58.61		50													
			Compact fine to medium light brown sand, trace silt (FILL)		0.20	1	50 DO	12												
		┝	Loose dark brown silty sand, trace		58.20 0.61															
			Loose dark brown silty sand, trace gravel, ash and brick (FILL)			2	50 DO	-												
1					57.64	2	DO	7												
		ſ	Very loose construction debris made up of layers of brick, ash, slag, mortar, insulation, and wood (FILL)		1.17															
			insulation, and wood (FILL)			3	50 DO	2												
2																				
						4	50 DO	9												
			Our first the second first to		56.37															
			Compact light brown to grey fine to medium SAND, trace silt and gravel		2.44		50													
		stem)			*	5	50 DO	15												
3	ger	Nollow S																		
	er Auç	н Н			•	6	50 DO	42												
	Pow	n Diar			55.15		DO													
	Power Auger	Ū 0	Dense to very dense grey brown fine to medium SAND, trace silt and gravel		3.66															
4			(GLACIAL TILL)			7	50 DO	75												
							50													
						8	50 DO	65												
-																				
5						9	50 DO	84												
					53.32		DO	•												
		ŀ	Very dense grey fine to coarse SAND, some silt, trace gravel (GLACIAL TILL)		5.49															
			some sill, liace graver (GLACIAL TILL)			10	50 DO	97												
6																				
						11	50 DO	69												
					52.18		DO	00												
		1	End of Borehole Auger Refusal	P (2)	6.63															
7			Auger Relusar																	
8																				
9																				
10																				
_				•	-							•			I				•	
DE	PTł	H S	CALE					(Go	olde	r ates								GGED: BM CKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-32

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: December 5, 2011

			SOIL PROFILE	1.		SA	AMPL		DYNAMIC PENETRA RESISTANCE, BLOV	10N /S/0.3m	<u>``</u> `	HYDRAU k	JLIC CC k, cm/s	NDUCT	ivii'Y,		4 G F	PIEZOMETER
METRES	DODING METHOD	ME		STRATA PLOT		к		.3m	20 40		80	10 ⁻⁶				10 ⁻³	ADDITIONAL LAB. TESTING	OR
MET	C N	צ	DESCRIPTION	TAF	ELEV.		TYPE	NS/0	SHEAR STRENGTH Cu, kPa	nat V	F Q-●			NTENT			B. H	INSTALLATIO
		Ъд		STRA	(m)	'∣⊇		BLOWS/0.3m						-0 ^W			LA A	
		+	GROUND SURFACE	0	56.1		+		20 40	60	80	20	40	<i>.</i> 6	0	80	+	
0		\square	TOPSOIL	EZZ	0.0	D	1			-	+						+	
		[Loose brown silty sand, some gravel (FILL)		0.1	5	50 DO	8										
			·····/		55.5													
			Loose to compact brown fine to medium sand, some gravel, trace brick, mortar	×	0.6		1											
1			and slag (FILL)			2	50 DO	9										
						3	50 DO	20										
2							50											
						4	50 DO	4										
		Ê	Loose brown to black fine to medium	××	53.7		-											
		あ	silty sand, occasional wood, brick, mortar, ceramic, trace clay (FILL)				50											
	Auger	Hollo	monar, ceramic, trace clay (FILL)			5	50 DO	4										
3	Power Auger	Jam.				\vdash	1											
	ď	١Ę	0.000		52.8	3 6	50 DO	8										
		200	Compact grey SANDY SILT, trace gravel and clay		3.3	"	00											
					, ,													
4				\otimes		7	50 DO	42										
·				\bigotimes]													
				\bigotimes			1											
				\otimes	1	8	50 DO	34										
				X	51.3	0												
5			Dense grey SANDY SILT, trace gravel and clay (GLACIAL TILL)		4.8	B 9	50 DO	>50										
			•		1	\vdash												
						\vdash	-											
						10	50 DO	63										
6		Ц		₿₿₿	50.2	1	00											
0			End of Borehole		5.9	(
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				1														
	рті	H 94	CALE															GGED: BM
									Gold	er								CKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-33

BORING DATE: December 8, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

TE: December 8, 2011

Operation Solut PROFILE PAMPLES Product E transmission Product E transmissi	PIEZOMETER
OPCUND SUPFACE O	OR STANDPIPE
OPCUND SUPFACE O	INSTALLATION
O ORCULUE SUFFACE 60:22 I <thi< th=""></thi<>	
Understanding Understanding 0 <td></td>	
2 Dense brown fine to medium sand. - <	
1 Loose buy dense data functional sity sand, trace to some gravel, brick, wood, organics, concrete, occasional gray sity city layer (FiL) 0.55 2 00 9 2 0 9 0 00 12 3 00 00 12 0 0 4 00 12 0 0 0 5 00 5 00 5 00 23 1 Compact to very dense brown to gray 0.00 12 0 0 1 Compact to very dense brown to gray 0.00 23 0 0 1 Compact to very dense brown to gray 0.00 7 00 48 1 0 00 6 00 23 1 0 0 0 66 11 0 1 10 00 65 100 11 0 1 11 50 100 111 100 111 100 111 1 11 50 110 100 111 100 111 100 111 </td <td></td>	
1 Lose to very dense dark throw sliv 2 0 9 2 0 9 0 9 3 0 0 0 0 4 00 12 0 9 5 00 6 0 23 1 0 0 0 0 2 0 9 0 0 3 0 0 0 0 4 00 12 0 12 5 00 6 00 23 1 0 0 0 0 0 1 0 0 0 0 23 1 0 0 0 0 23 1 0 0 0 0 24 1 0 0 0 0 24 1 0 0 0 0 10 1 0 0 10 0 50 1 0 0 10 00	
2 organics, concrete, accessional grey sinv 3 00 00 2 clay layer (FLL) 3 00 12 3 00 12 5 00 56 5 00 5 00 50 23 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <td< td=""><td></td></td<>	
2 3 4 5 6 6 7 6 7 6 7 7 6 7 7 8 7 7 8 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9	
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3 5 50 50 50 50 4 5 500 60 23 6 50 23 4 5 500 60 23 7 50 48 5 500 56 7 50 48 10 50 23 6 10 500 56 11 500 56 11 10 50 56 7 8 10 500 56 11 500 50 10 10 500 56 11 500 100 10 500 50 100 11 500 100 11 500 100 11 500 100 11 500 100 11 500 100 11 500 100 11 500 100 11 500 100 11 100 10 10 10 10 10 10 10 10 10	
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3 Compact to very dense brown to grey prown SILTY SAND to SANDY SILT. 200 6 50 23 4 0 500 48 0 900 48 1 10 500 48 10 10 500 48 1 10 500 48 11 500 48 1 10 500 56 11 500 56 1 10 500 56 11 500 500 1 10 500 500 11 500 500 1 10 500 500 100 10 500 500 1 10 500 500 11 500 500 100 10 500 100 10 10 500 100 10 500 100 10 10 500 100 10 10 500 100 10 10 500 100 10 10	
3 Compact to very dense brown to grey prown SILTY SAND to SANDY SILT. 200 6 50 23 4 0 500 48 0 900 48 1 10 500 48 10 10 500 48 1 10 500 48 11 500 48 1 10 500 56 11 500 56 1 10 500 56 11 500 500 1 10 500 500 11 500 500 1 10 500 500 100 10 500 500 1 10 500 500 11 500 500 100 10 500 100 10 10 500 100 10 500 100 10 10 500 100 10 10 500 100 10 10 500 100 10 10	
3 Compact to very dense brown to grey trace to some gravel (GLACIAL TILL) 2.50 6 50 23 4 Trace to some gravel (GLACIAL TILL) 7 50 48 9 50 7 50 48 10 10 50 55 6 11 50 56 7 12 50 10 11 50 56 11 50 56 11 50 56 11 50 56 12 50 100 13 50 100 14 50 100 15 500 100 16 11 50 56 17 50 50 100 18 19 560 100 19 10 50 50 10 50 100 100 11 500 100 100 111 500 100 100 112 500 100 111 <td></td>	
3 Compact to very dense brown to grey trace to some gravel (GLACIAL TILL) 2.50 6 50 23 4 Trace to some gravel (GLACIAL TILL) 7 50 48 9 50 7 50 48 10 10 50 55 6 11 50 56 7 12 50 10 11 50 56 11 50 56 11 50 56 11 50 56 12 50 100 13 50 100 14 50 100 15 500 100 16 11 50 56 17 50 50 100 18 19 560 100 19 10 50 50 10 50 100 100 11 500 100 100 111 500 100 100 112 500 100 111 <td></td>	
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5 ubit of the second secon	
5 ubit of the second secon	
6 11 50 >88 7 12 50 >100 13 50 >100 13 50 >100 14 50 >100 15 50 >100 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 50 16 50 >105 >105 >105 >105	
6 11 50 >88 7 12 50 >100 13 50 >100 13 50 >100 14 50 >100 15 50 >100 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 50 16 50 >105 >105 >105 >105	
6 11 50 >88 7 12 50 >100 13 50 >100 13 50 >100 14 50 >100 15 50 >100 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 50 16 50 >105 >105 >105 >105	
6 11 50 >88 7 12 50 >100 13 50 >100 13 50 >100 14 50 >100 15 50 >100 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 50 16 50 >105 >105 >105 >105	
6 11 50 >88 7 12 50 >100 13 50 >100 13 50 >100 14 50 >100 15 50 >100 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 50 16 50 >105 >105 >105 >105	
7 12 50 >100 13 50 >100 14 50 >100 14 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 54.60 50 >100 56.60 111 50 50 >105 50 16 50 >50	
7 8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional grey silt and the trace to some gravel, occasional grey silt seam, occasional grey silt trace to medium sand trace to medium sand trac	
7 Very dense grey brown SILTY SAND. trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 14 50 DO >100 8 16 50 DO >111	
7 Very dense grey brown SILTY SAND. trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 14 50 DO >100 8 16 50 DO >111	
7 Very dense grey brown SILTY SAND. trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 14 50 DO >100 8 16 50 DO >111	
8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam (GLACIAL TILL) 6 16 50 > 105 17 50 > 50	
8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 00 15 00 50 00 >111 16 50 DO >105 17 50 DO >50	
8 Very dense grey brown SILTY SAND, trace to some gravel, occasional grey silt seam, occasional fine to medium sand seam (GLACIAL TILL) 7.62 15 00 15 00 50 00 >111 16 50 DO >105 17 50 DO >50	
8 seam, occasional fine to medium sand seam (GLACIAL TILL) 16 50 DO >105 16 50 DO >50	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
17 50 >50	
9	
10 End of Borehole 52.26 20 50 bill bill bill bill bill bill bill bil	
Split Spoon Refusal	
и	
	ogged: Ri Iecked: Jw

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-35

BORING DATE: December 12, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

м РГЕ		BORING METHOD	SOIL PROFILE	L		SA	MPLE		DYNAMIC PENETR RESISTANCE, BLO	ATION NS/0.3m	Ì,		k, cm/s			NG	PIEZOMETER
DEPTH SCALE METRES		9 MET		STRATA PLOT	ELEV.	ER	١	BLOWS/0.3m	20 40	60	80	10			0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE
- W		RING	DESCRIPTION	tata	DEPTH	NUMBER	ТҮРЕ	OWS	SHEAR STRENGTH Cu, kPa	nat V. rem V.	+ Q-● ⊕ U-O			PERCE		ADDI AB. T	INSTALLATION
		ВО		STR	(m)	2		BL(20 40	60	80	20			30	L , T	
0	Ĺ		GROUND SURFACE		62.56												
-			Dense grey sand and gravel (Gravel lot BASE)		0.00 62.25		50										
			Compact brown medium to fine sand, trace gravel (Gravel lot SUBBASE)		02.23	1	50 DO	52									
			trace gravel (Gravel lot SUBBASE)														
					61.65	2	50 DO	17									
1			Compact dark brown to black silty sand, trace gravel, ash, wood, brick, mortar		0.91	-	DO										
			(FILL)														
					60.88	3	50 DO	19									
		200 mm Diam. (Hollow Stem)	Compact brown fine to medium sand,		1.68												
2	aer	ollow	trace gravel (FILL)		60.43	4	50 DO	24									
	/er Au	m. (H	Dense to very dense light brown to	Ì	2.13		50	45									
	Pov	m Dia	Dense to very dense light brown to brown SILTY SAND, occasional gravel and medium sand layers, trace gravel				DO	.0									
		200 n	(GLACIAL TILL)			6	50 DO	65									
3																	
з																	
						7	50 DO	176									
						\vdash											
4						8	50 DO	>50									
					58.16												
			End of Borehole Auger Refusal		4.40												
			Ū														
5																	
6																	
7																	
8																	
9																	
-																	
10																	
	L																
DE	P	TH S	CALE							0.7						LC	DGGED: BM
1:	50	n							Gold		,					СН	ECKED: JW

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 11-37

SHEET 1 OF 1 DATUM: Geodetic

BORING DATE: December 12, 2011

	ПОН	SOIL PROFILE	1.		SAM	PLES		cm/s	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	BLOWS/0.3m	Cu, kPa rem V. ⊕ U - O Wp ⊢	CTU/S 10 ⁵ 10 ⁴ 10 ³ ICONTENT PERCENT OW WI WI 10 0 0 0 0 0 0 0 0 0 0 0 0 0	OR STANDPIPE INSTALLATION
		GROUND SURFACE	s	62.76		+	20 40 60 80 20	40 60 80	
0		Compact sand and gravel (Gravel lot	**	0.00		+			
		BASE) Compact brown medium to fine sand, trace gravel (Gravel lot SUBBASE)		62.46 0.30	1	i0 29			
1		Loose dark brown to black silty sand, trace gravel, occasional layers of ash, gravel, sandy mortar, glass, construction debris (FILL)		61.85 0.91	2	i0 20			
					3 5	i0 IO 6			
2		Compact brown medium to fine sand, trace gravel (FILL)		60.63 2.13 60.32 2.44	4	i0 34			
3	Power Auger	Dense to very dense grey brown SILTY SAND, some gravel, trace cobbles (GLACIAL TILL)		1	5 0	i0 73			
	Power				6 D	i0 iO >7			
4					7 0	i0 0 0			
5					8	i0 O >7			
					9 0	i0 0 40			
6					10	i0 O >5			
		End of Borehole Auger Refusal		56.23 6.53	+				
7									
8									
9									
9									
10									
DEI	ΡТΗ	SCALE	1	I I		1	Golder		GGED: BM

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-38

BORING DATE: December 19, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

E: December 19, 2011

	UOH.		SOIL PROFILE	1.		S/	AMPL		DYNAMIC PENETRAT RESISTANCE, BLOW	0N S/0.3m	\mathbf{z}	HYDRAU k				RGA	PIEZOMETER
METRES	BORING METHOD			STRATA PLOT		ШШ		0.3m		60 80		10 ⁻⁶			0-3	ADDITIONAL LAB. TESTING	OR STANDPIPE
ЧШ	SING		DESCRIPTION	ATA	ELEV.		TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + rem V. ⊕	Q - ● U - O			PERCE		AB. T	INSTALLATION
ı	BOF			STR.	(m)	Ĭ		BLC		60 80		Wp H 20	40		WI 60	[∼] ``	
0		_	GROUND SURFACE		62.1	1								 			
U	Τ	- N	Compact to dense brown sand and gravel (Gravel lot BASE) /	/ 👹	<u>0.0</u> 0.1	0	_										
			Loose to compact brown medium to fine sand, some gravel (Gravel lot			1	50 DO	35									
			SUBBASE)														
							50										
1						2	50 DO	8									
		┟	Compact to very dense grey brown sand, some gravel, trace silt (FILL)	-	60.8 1.2	9	-										
			sand, some gravel, trace silt (FILL)			3	50 DO	15									
		v Ster															
2	Auger	Hollo					50										
	Power Auger	jam.				4	50 DO	52									
	ш	200 mm Diam. (Hollow Stem)	Very dense grev brown SII TV SAND		59.6 2.4		-										
		200	Very dense grey brown SILTY SAND, some gravel, medium brown sand seams (GLACIAL TILL)		2.4	5	50 DO	61									
ļ			JULINOIAL HLL)				DO	01									
3						-	1										
						6	50 DO	112									
						7	50 DO	148									
4					57.9	4	DO	0									
		T	End of Borehole Auger Refusal		4.1	7											
5																	
6																	
7																	
'																	
8																	
9																	
10																	
		1.01												 			
	РТН 50	150	CALE						Golde	r							DGGED: JDR ECKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-39

BORING DATE: December 15, 2011

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	DOH.		SOIL PROFILE	- <u> </u>	1	SA	MPLE		DYNAMIC PENETRA RESISTANCE, BLOW		Ì.	HYDRAUL k,	cm/s	UCTIVITY		NG	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	20 40 I I SHEAR STRENGTH Cu, kPa	60 nat V	80 F Q - ●		10 ⁻⁵			ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
2	BORIN			TRAT	DEPTH (m)	NN N	F	BLOW								AD LAB	
-		GROUND SUF		S	62.81		\vdash	-	20 40	60	80	20	40	60	80		
0		Compact san BASE)	d and gravel (Gravel lot		0.00					1							
		Compact brov gravel (FILL)	wn to red sandy silt, trace	-	0.15	1	50 DO	15									
					61.90												
1		Compact to d medium sand	ense light brown fine to I, trace gravel, silt, and		0.91	2	50 DO	20									
		mortar (FILL)					50										
						3	50 DO	40									
2		L			60.68 2.13	4	50 DO	120									
		Dense sandy medium sand	gravel to brown fine to I and gravel (FILL)		2.13												
		otem)				5	50 DO	67									
3	Auger	Mollow															
	Power Auger					6	50 DO	99									
		Compact to v	ery dense grey SILTY gravel (GLACIAL TILL)		<u>59.15</u> 3.66												
4		SAND, some	gravel (GLACIAL TILL)			7	50 DO	34									
						8	50 DO	27									
5							50										
						9	50 DO	33									
						10	50 DO	>50									
6						11	50	>100									
		End of Boreh	ole		56.46 6.35	12	50 DO	>100									
		Auger Refusa	al														
7																	
8																	
J																	
ļ																	
9																	
10																	
	оті	I SCALE		-			<u> </u>				1	• •			1		OGGED: BM/JD
DE		JUALE							Gold	r							ECKED: JW

LOCATION: See Site Plan

RECORD OF BOREHOLE: 11-40

SHEET 1 OF 1

DATUM: Geodetic

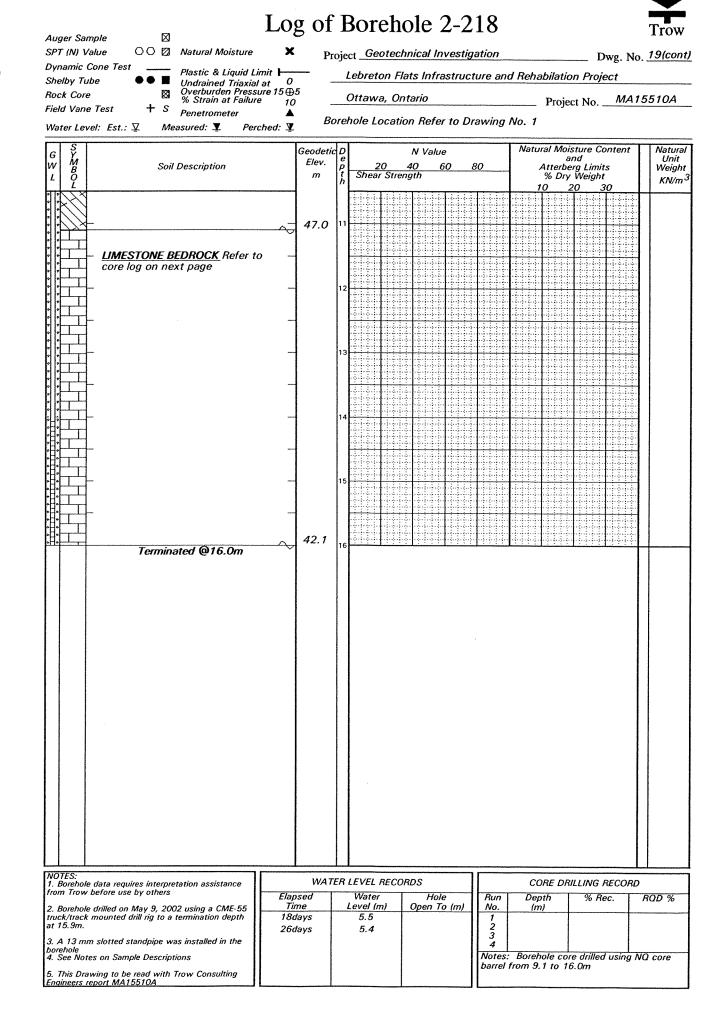
SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: December 16, 2011

PENETRATION TEST HAMMER, 64kg; DROP, 760mm
--

Ш			SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRAT RESISTANCE, BLOW	ION 5/0.3m	ì	HYDRAU	JLIC CC k, cm/s	NDUCT	IVITY,		4G F	PIEZOMETI
METRES	PODING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	20 40 I I SHEAR STRENGTH Cu, kPa			Wp	TER CC		PERCE	WI	ADDITIONAL LAB. TESTING	OR STANDPIP INSTALLATIO
		-	GROUND SURFACE	°.	62.77			ш	20 40	60	80	20	40) 6	<u>ع 0</u>	30		
0		\square	Compact red to fine brown sand, some	***	0.00	-												
			gravel (Gravel lot BASE)		62.39 0.38	1	50 DO	13										
			Compact fine to medium brown sand, some gravel, red brick (FILL)		0.38													
						2	50 DO	19										
1					61.55	2	DO	15										
			Compact light brown fine to medium sand, trace gravel, silt, red brick (FILL)		1.22													
						3	50 DO	15										
2						4	50 DO	25										
		(me																
	er	low Stu			59.78	5	50 DO	51										
3	er Aug.	200 mm Diam. (Hollow Stem)	Very dense grey brown SAND, some gravel, trace silt (GLACIAL TILL)		2.99													
	Pow	im Diai	· · · · · · · · · · · · · · · · · · ·			6	50 DO	59										
		200 n			59.11 3.66													
			Very dense grey brown SILTY SAND, some gravel (GLACIAL TILL)		3.00	7	50 DO	100										
4						[′]		100										
						8	50 DO	>50										
						9	50 DO	>100										
-							00											
5																		
						10	50 DO	187										
						10	DO	,										
6						11	50 DO	>50										
0					56.52		00											
		Ţ	End of Borehole Auger Refusal		6.25													
7																		
8																		
-																		
9																		
10																		
DE	PTI	ΉS	CALE														L	OGGED: JD
1:									Golde	T ates								ECKED: JW

PT (N) Vi ynamic (Cone Test	. ×	Pro	0			nical In							19
helby Tu	be	0						ostruct	ure and	d Reha	bilatio	n Proj		
ock Core ield Vane	% Strain at Failure	10	-	(Ottawa	a, Ont	ario				Projec	ct No.	MA1	5510A
Vater Lev	rel: Est.: 🛛 Measured: 🗶 Perched	d: ¥	Во	rel	hole La	ocatio	n Refe	r to Di	awing	No. 1				
G S Y			Geodetic	D			N Valu	e		Natu		sture C	ontent	Natur
	Soil Description		Elev. m 58.1	epth 0	2 Shear	0 4 Streng	40 (gth	50 8	30		Atterbe % Dry	nd rg Limit Weight 20 3	ts t 30	Unit Weigi KN/n
	TOPSOIL ~ 75mm FILL Silty sand with some gravel,				O									
	 trace concrete and brick pieces, occasional cobbles and boulders, 	-												2
	grey, wet (compact) -	_		1										
													·····	
		-												
	_	_		2	O									
														4
	_	-												
1.A.	FILL Silty sand and gravel,	~~	55.1	з										77
	 occasional cobbles and boulders, some clay , moist, grey to dark 				Ó									
	grey (loose to compact)	-1												2
	-	_		4										77
							OB	uncing					····	
	•••													2
	-			5										
	~	\sim	52.7											
		Ň	52.7											
	<u>.</u>	-		6										
	~				6	>								
					· · · · · · · · · · · · · · · · · · ·									22
	-	-		7										
	<u>-</u>													
	-Sand blow-up into augers from 8.2 to 7.2m depth					~								
\mathbb{N}		-		8		0								
	~													
	-	-		9										
						Ō								
														4
	-	-		10										
N/3														



	CATION	Robinson Consultants Inc. Lemieux Island Low Pressure	Trar	nsmi	ssion	Main, (Ottawa	, ON	DATU		(Geodet	
DA	TES: BOF	RING 05-30-03	WATE	ERLI	EVEL		06-20	-03	TPC I	ELEV.		54.55	CHECKED BY CM
DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	CO • %L	NCEN		ONS ppmv	SA	NUMBER	N-VALUE	WELL
	ш		S	3							Z	Z	
	54.63					 20 ▲ 100 	40 200	60 300	80 400				
0 +	54.5	100 mm ASPHALT	1							GS	1		Protective Casing a Bentonite Seal
-	54.4	Granulars								00	1		d d Dentointe Sear
-		Compact to loose, grey to brown sand and gravel, some			-2						-	0.1	Bentonite Seal
1		brick, some wood: FILL			-	•				SS	2	21	
					-4							1.15	51 mm, Schedule
-						A				SS	3	9	PVC Casing, with
-					-6								Sandpack Protective Casing
2				4 V V					-	SS	4	6	Concrete Seal
-				2 Y Y	-8								[]]
1				8.8.8.	-					SS	5	7	
3				9 V V	10		_	_					
-				XXX						SS	6	7	[目:]
-	51.0			XXX	-12								
-		Very loose, sandy gravel,		XXX	12					SS	7	3	
4	50.4	trace organics, wood: FILL		XXX						- 55	1	5	
	20.1	Very loose to compact, grey	- 💥	TXX	-14					-	0	2	
-		clay, trace gravel, wood: FILI	L 🔆	XXX	-	1				SS	8	2	
5				XXX	-16								
				XXX	-					SS	9	15	
-	49.1	Compact to dense, grey silty		X	-18				-		-		
-		sand, some clay: GLACIAL		1	-					SS	10	21	
6		TILL		1	-20	1	_		-		-		Backfill of Auger
-			.7		_					SS	11	25	Cuttings
-			•		-22					1	_		
7 -				1	-					SS	12	50/	
1	47.4	End of Borehole		1	-24				_	-		80mm	
-		End of Borenoic								-			
-		Auger Refusal on Inferred			-	-							
8		Bedrock			-26					-			
		Monitoring Wall Installed			F								
		Monitoring Well Installed			-28								
9					-					-			
,					-30								
-					-								
				-	-32								
10 -		TORY ANALYSES: MW03-22	022	har its	ad for	analysis of 1	BTEV T	PH (a r	han (od	1	-		677

LO	ENT	Robinson Consultants Inc. Lemieux Island Low Pressure	Tran	ismi	ssior				ieodeti	
DA	TES: BOF	RING 05-30-03 V	VATE	ER LI	EVEL	06-26-03 TPC I	ELEV.		5.669	CHECKED BY CM
	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS • %LEL	SA	NUMBER	N-VALUE	WELL
+	55.76		S	5		● 20 40 60 80 ▲ 100 200 300 400		-		
+	55.70	100 mm ASPHALT	-			100 200 500 400				Protective Casing a
	55.6	Grey sand and gravel: FILL					GS	1		Bentonite Seal
	0010	Compact, brown sand: FILL			-2 -			-		Bentonite Seal
1							SS	2	12	
-	54.5			0.000	-4					
		Compact, grey sand, brick,					SS	3	29	51 mm, Schedule PVC Casing, with
1	53.9	wood: FILL			Γ.		00	-	27	Auger Cuttings
-	33.9	Dense to loose, brown to grey			- 6					
		sand and gravel: FILL			-		SS	4	45	
-					- 8					
-				V			SS	5	5	
-					10		1			
-				× × ×			SS	6	11	
-	52.1			X X X			00			
1	52.1	Loose to very loose, grey			-12					
-		gravel, some sand, some rock		× ×			SS	7	8	X X
		fragments: FILL		X	-14					
-				X	-		SS	8	3	
				×××	-16					
-				×××	1		SS	9	3	X X
-				š	-		- 00	1	5	
-				8	-18					
-	1			8	+	A	SS	10	7	\bowtie
-	49.7			X	20		-	-		K K
-		Loose to compact, grey silty sand: GLACIAL TILL			-		SS	11	6	
-		Sand. OLACIAL TILL		1	-22		1			
-			2				SS	12	14	XX
-			•		Γ.,		- 00	12	1.1	
-	10.1			1	-24		-			
-	48.1	Compact to dense, grey to			-		SS	13	32	
-		brown silty sand, trace gravel:		1	-26					
-		GLACIAL TILL		1	-		SS	14	70	
					-28		1			\mathbb{X}
1						A	SS	15	50/	
-				1	-		-		100mm	
				1	-30					
1			X		-					Bentonite Seal
-	46.0		1	-	-32		1	-		

		Lemieux Island Low Pressure							ATUM			Geodeti 55.669	
DA	TES: BOI	RING 05-30-03	WATE		EVEL	06-	26-03	Ti	PC EL		MPL		CHECKED BI
DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	V/ CONCE • %LEL				TYPE	NUMBER	N-VALUE	WELL
	55.76					● 20 40 ▲ 100 20		80 400					
0		Poor to good, light grey limestone with occasional shale interbeds: BEDROCK			-34					HQ	16	49 %	51 mm, Schedule 40 PVC Casing, with Sandpack
1-					-36-					HQ	17	80 %	slot #10, PVC Scre with Sandpack
-	44.0		1		-38-				-				
2		End of Borehole Monitoring Well Installed			40				-				
					-42		-		-				
3					-44								
4					-46				-				
					-48				-				
15					-50	-							
16					-52								
					54				-				
17					-56				-			-	
					-58				-				
18					-60	-							
19					62	-							
					64	-			-				

Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS SAMPLES CGI (ppm) PID (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG
 ft
 m

 -4
 -3

 -1
 -1

 0
 1

 1
 1

 2
 3

 4
 5

 6
 7

 10
 11

 12
 13

 13
 13
 Stick-up Casing **GROUND SURFACE** 0 FILL 9 Brown topsoil. 50 0 203 mm diameter borehole Brown silty sand fill with organic material near surface. Dry, no odour. Brown silty sand fill with some clay and trace gravel. 7 Moist, no odour. 21 0 15 11 7 Dark brown sand and gravel fill. Dry, no odour. 14 2 10 2 6 mm diameter PVC Riser Brown silty sand fill with trace gravel. Dry, no odour. 5 7 0 10 Native Soil 10 3 8 24 Grey silt fill with some clay. Moist, no odour. 3 9 5 <u>ਹ</u> Black sand fill with some silt and gravel. Wet, landfill odour. Page 1 of 3

Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

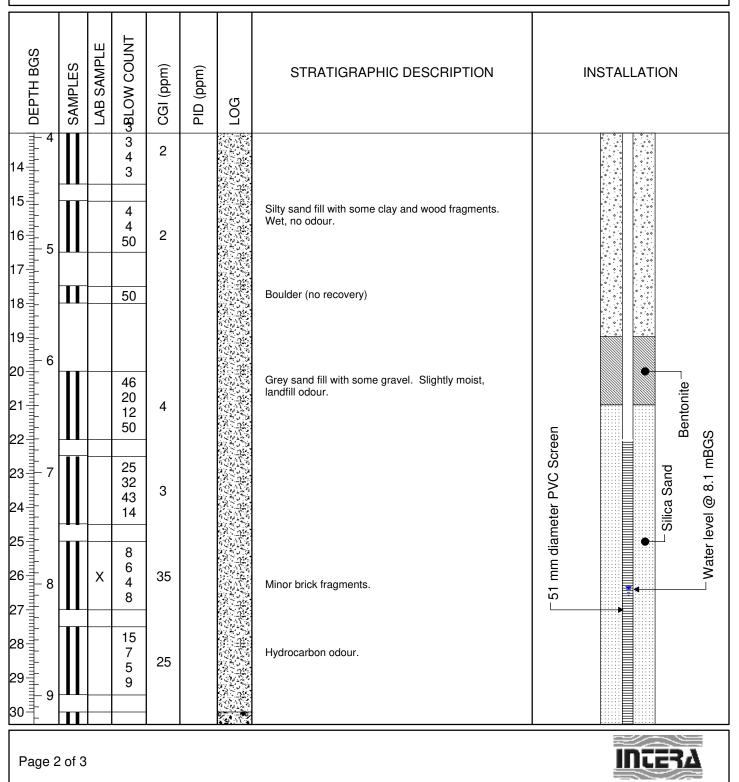
Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL



Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
31 32 33 34 35 36 36 36 37 36 37 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41			2 1 1	50			Sandy fill with glass and paper debris. Wet, landfill odour. Borehole terminated at 9.8 mBGS. BOREHOLE TERMINATED	Depth of MW06-9 = 9.8 mBGS
Page 3	3 of 3							INCERA

Borehole Number: BH06-11/MW06-11

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365928 E, 5030683 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG Ground Surface Elevation: 56.80 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS PID (ppm) SAMPLES CGI (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG
 ft
 m

 -4
 -3

 -1
 0

 1
 1

 2
 -4

 3
 4

 4
 5

 6
 7

 10
 11

 12
 11

 13
 13
 Stick-up casing **GROUND SURFACE** 0 7 FILL 0 Brown sand fill with gravel and brick. Dry, no odour. 11 50 Native soil Bentonite 16 14 0 22 27 1 mm diameter PVC riser 5 0 5 2 10 203 mm diameter borehole 6 9 mm diameter PVC screen Water level @ 4 mBGS 0 6 10 10 3 5 4 Brown sand fill with gravel and minor silt. 12 cm of rock fragments. Dry, no odour. 4 0 21 19 20 Brown sand and gravel fill. Dry, no odour. 0 4 51 50 14 Page 1 of 2

Borehole Number: BH06-11/MW06-11

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365928 E, 5030683 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG Ground Surface Elevation: 56.80 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 17			1 9 5 50	0			Gravel fill with minor sand. Wet, no odour. Borehole terminated at 5.6 mBGS.	Silica sand
18 19 20 21 21 22 23 7 7						9.20129 8.2013	BOREHOLE TERMINATED	Depth of MW06-11 =5.6 mBGS
24 25 26 26 27 28 27 28 28 29 29								
29 30 31 32 Page 2	2 of 2							INCERA

PROJECT: 11-1121-0229 LOCATION: See Site Plan

RECORD OF BOREHOLE: 13-1

BORING DATE: March 8, 2013

SHEET 1 OF 2

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	ДQ		SOIL PROFILE			SAI	MPLE	ES	DYNAMIC PENETRAT RESISTANCE, BLOW	ION \ 5/0.3m \	Н	IYDRAULIC CO k, cm/s	ONDUCTIVIT	Ύ,	٦Ū	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	20 40 I I SHEAR STRENGTH Cu, kPa	60 80 nat V. + Q - € rem V. ⊕ U - €	5	WATER CO	0 ⁻⁶ 10 ⁻⁴ DNTENT PER <u> W</u> 0 60	10 ⁻² RCENT 	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0			GROUND SURFACE		58.72											MON.
Ū			(SP/GP) SAND and GRAVEL, crushed, inferred presence of cobbles and/or boulders; grey. (FILL); non-cohesive, moist, compact		0.00											Silica Sand
1		-	(SM) SILTY SAND, some gravel; grey brown; non-cohesive, moist, compact		57.35			28 12								Silica Sand
2						3	ss	30			(C			мн	Native Backfill and Bentonite Mix
3					55.67											
	Power Auger	Stem)	(SM) SILTY SAND, some gravel to gravelly, inferred presence of cobbles and/or boulders; grey brown, (GLACIAL TILL); non-cohesive, moist, dense to very dense		3.05	4	SS	55			c	>			МН	
4	Pov	200 mm Diam. (Hollow				5	SS	>50								Bentonite Seal
6						6	SS	>50								Silica Sand
7																32 mm Diam. PVC 2 #10 Slot Screen
	8	ğ				C1	NQ RC	DD								
8		-	Borehole continued on RECORD OF DRILLHOLE 13-1		50.75		RC									
9																
10																
DEF 1:5		- I H SC	CALE		1		[Golde	r,						L DGGED: HEC ECKED: MJK

			T: 11-1121-0229		RE	CC	ORD	С											3-1									EET 2 OF 2
			N: See Site Plan TION: -90° AZIMUTH:						DF	RILL	RIG	6: C	ME	75	TOR				g Drilling								DA	TUM: Geodetic
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH <u>COLOUR</u>	SHF VN CJ RE	- Joi - Fai - Shi - Vei - Co	ear in njug: ERY	R 0 %	C	PE 0.3	ntac thog ava CT. EX R m	t onal	e	ST - IR -	Und Ste Irre		- Sli M- Sr to - Ro 1B- Me TA	lished ckens nooth ough echani	ided ical E + ST	ROC REN INDE	NO abb of a sym K IGTH EX	TE: Fe reviati bbrev bols. W E	or addi		
- 8 - - - - -			BEDROCK SURFACE Fresh thinly to medium bedded grey fine to medium grained non-porous strong to very strong nodular LIMESTONE, with black shale partings occasional interlaminates		50.75 7.97	1	100											•	,BD,PL,Rc ,BD,IR,Ro ,BD,PL,Rc ,BD,PL,Rc ,BD,CU,Rc		1.5 1 3 1 1.5 1 1.5 1 1.5 1							MON. WELL
- 9 - 9 - 10	Dotany Drill		- Broken core from 9.94 m to 9.97 m			2	100												,BD,PL,Rc BD,PL,Rc BD,PL,SA BD,PL,SA ,BD,PL,Rc ,BD,PL,Rc	1	1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1				ľ			JCS = 140.8 MPa
- - - - - - - - - - - - 11			End of Drillhole		48.11 10.61	3	100											•	,BD,PL,RC		1.5 1						- 10	N L. in Screen at
- - - - - - 12 - -	:																											
- - - - - - - - - - - -	:																											
- - - - - - - - - -																												
09(07/13 PLG																												
MIS-RCK 004 1111210229-1000.GPJ GAL-MISS.GDT 06/07/13 PLG																												
MIS-RCK 004 1:	EP : 50		CALE					ģ			 Go) 	lli der cia	lll te	 S													GGED: HEC ECKED: MJK

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 13-2

BORING DATE: March 8, 2013

SHEET 1 OF 2

DATUM: Geodetic

Ц	ПОН		SOIL PROFILE	1.		SA	MPL		DYNAMIC PENETRAT RESISTANCE, BLOW	S/0.3m		HYDRAUL k,	cm/s	NUUU	IVIIY,		μģ	PIEZOMETER
METRES	BORING METHOD			STRATA PLOT		н		BLOWS/0.30m	20 40	60 80	,	10-8	10 ⁻¹			10 ⁻²	ADDITIONAL LAB. TESTING	OR
MET	SNG		DESCRIPTION	VTA F	ELEV. DEPTH		түре	VS/0	SHEAR STRENGTH Cu, kPa	nat V. + Q - rem V. ⊕ U -	•]				PERCE	INT	DDIT B. TE	INSTALLATION
ż	BOR			STRA	(m)	' ⊇	[3LOV			Ĭ						LAA	
		-	GROUND SURFACE	0	57.4				20 40	60 80		20	40	6	0	80		
0		+	(SM/SP) gravelly SILTY SAND; grey		0.0		1						+					
			brown, (FILL); non-cohesive, moist, compact			1	SS											
						1	55	31										
1																		
						2	SS	28				0					м	
						\vdash												
		┢	(SP) SAND, some low to medium		55.8 1.5		1											
			(SP) SAND, some low to medium plasticity fines, inferred presence of cobbles and/or boulders; grey brown to			3	SS	6									мн	
2			loose		55.2													
			(SM) SILTY SAND, some gravel, inferred presence of cobbles and/or boulders; grey brown, (GLACIAL TILL); non-cohesive, moist to wet, dense to		2.1:													
			boulders; grey brown, (GLACIAL TILL);			4	SS	>50				0					мн	
		Stem)	non-cohesive, moist to wet, dense to very dense				-											
3	Jer l	200 mm Diam. (Hollow Stem)																
3	Power Auger	E H				5	ss	>50										
	Pow	n Diar				Ĕ												
		line 100																
	'	~																
4																		
						6	SS	>50										
5																		
5																		
6																		
				₿\$\$	51.0		-	>50										
	8	g	COBBLES and BOULDERS	6	6.3	C1	NQ RC	DD										
	+		Borehole continued on RECORD OF		50.7	, 	1											
7			DRILLHOLE 13-2															
·																		
8																		
9																		
	I																	
10																		
DE	PTH	I SC	CALE						200 M.								LC	GGED: HEC
1:									Golde	E atos								ECKED: MJK

			T: 11-1121-0229 N: See Site Plan		RE	C	ORD										3-2								HEET 2 OF 2 ATUM: Geodetic	
			TION: -90° AZIMUTH:						DRI DRI	LL R LLIN	IG: (G C('5 4C ⁻	TOR:	Do	ownii	ng Drilling	9						U	ATOM. Geodelic	
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	USH <u>COLO</u>	SHR VN CJ REC	COVE L SI % CO	ar ugate RY DLID RE %	1	PE 0.3	ntact nogo avag CT. EX R m	nal		IN- Ui T - St R - Irr	lanar urved ndulating tepped regular ONTINUITY TYPE AND S DESCRIF		lickens mooth tough lechan	ided ical Br	NOTE abbrev of abb symbo	- Brol For a viation: reviations s. WEA ERII IND	additic s refe ons & TH- NG EX	nal		
- - - 7 - -			BEDROCK SURFACE Fresh thinly to medium bedded grey fine to medium grained non-porous strong nodular LIMESTONE, with black shale partings and interlaminates		50.75 6.65	1	100									•	,BD,CU ,BD,CU ,BD,PL ,BD,PL ,BD,PL ,BD,PL	I,Ro ,Ro ,Ro ,Ro	1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1							
- - - - - - - - - -	Detect Dell	NQ Core				2	100									•	,BD,PL ,BD,PL ,BD,PL ,BD,PL ,BD,CL ,BD,CL ,BD,CL	,Ro ,SM ,SM ,Ro I,Ro	1.5 1 1.5 1 1 1 1.5 1 1.5 1 1.5 1 1.5 1						UCS = 84.1 MPa	
- - - - - - - -			End of Drillhole		<u>48.06</u> 9.34	3	100																			
- - - - - - - - - - - - - - - - - - -																										-
- - - - - - - - - - - - - - - - - - -																										-
																										· · · · · · · · · · · · · · · · · · ·
			CALE	L	<u> </u>			Ĵ		G	lill sol	der cia	⊥ te	····	1		<u>I</u>			<u> </u>			<u> </u>		L DGGED: HEC ECKED: MJK	

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 13-3 BORING DATE: March 7, 2013

SHEET 1 OF 2

DATUM: Geodetic

щ		员	SOIL PROFILE	1		SA	MPL		DYNAMIC PENETRA RESISTANCE, BLOV	VS/0.3m	ΠΥL	RAULIC (k, cm/	s	IVIIT,		۔ وبر	PIEZOMETER
DEPTH SCALE METRES		BORING METHOD		LOT		Ř		30m	20 40	60 80		10 ⁻⁸	10 ⁻⁶ 1	0 ⁻⁴ 10)-2	ADDITIONAL LAB. TESTING	OR
ЦЩ		9 Z	DESCRIPTION	TA P	ELEV.	NUMBER	TYPE	VS/0.	SHEAR STRENGTH Cu, kPa	nat V. + Q - •		WATER				3. TE	STANDPIPE INSTALLATION
Ľ		BOR		STRATA PLOT	DEPTH (m)	Ĩ	-	BLOWS/0.30m				Wp I				LAE	
	\vdash	-	GROUND SURFACE	S			$\left \right $	ш	20 40	60 80		20	40 6	60 80 	0	$\left - \right $	
0	⊢	\square	(SP) SAND, some gravel and non-plastic fines; grey brown, contains orange brick	***	55.43 0.00		$\left \right $										
			fines; grey brown, contains orange brick														
			fragments, (FILL); non-cohesive, moist, loose to compact			1 (GRAB										
1						2	SS	12				þ				м	
		tem)															
	Ŀ	low S															
2	r Aug	, (Ho				3	SS	7									
2	Powe	200 mm Diam. (Hollow Stem)	(SM) SILTY SAND; grey brown, contains		53.30 2.13												
		u m	fly ash, coal, glass, and orange brick fragments, (FILL); non-cohesive, moist,		2.10												
		2	compact			4	SS	17			0						
						1	33	17			0						
3					52.31	Ļ	ss										
			(SM) SILTY SAND, trace gravel, inferred presence of cobbles and/or boulders;	1	3.12		55	>5U									
			arev brown. (GLACIAL TILL):														
			non-cohesive, moist, dense to very dense														
					51.52	6	ss	>50									
4			Borehole continued on RECORD OF DRILLHOLE 13-3														
5																	
-																	
6																	
_				1													
7				1													
8																	
				1													
		1															
9																	
				1													
10																	
10																	
	L				I	L							1			I	
DE	PT	TH S	CALE					(Cold	۹ r						LC	DGGED: HEC
1:	50								Gold	iates						СН	ECKED: MJK

		JECT: 11-1121-0229	RECO	ORD	0								13-3								IEET 2 OF 2
		ATION: See Site Plan INATION: -90° AZIMUTH:				DRIL	L RIG	: CM	IE 75		R: [Down	ing Dril	-						DF	ATUM: Geodetic
DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	LEV. EPTH (m)	FLUSH <u>COLOUR</u>	SHR VN CJ	S % COF	r ugate RY RLID RE %	CO- OR- CL -	Beddir Foliatio Contac Orthog Cleava RACT. INDEX PER 0.3 m	ct gonal	gle	ST-S IR-I	Planar Curved Jndulating Stepped rregular CONTINUI	Ro - MB-	Polisher Slickens Smooth Rough Mechan	ical Bre	NC abl	WE ER INE	addition is refer ions & ATH- ING DEX		
		BEDROCK SURFACE Slightly weathered thinly bedded grey non-porous fine grained medium strou LIMESTONE, thin black shale lamina Fresh thinly to medium bedded grey fi to medium grained non-porous strong very strong LIMESTONE, with black shale partings and interlaminates, occasional nodules	51.52 3.91 1 4.24 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4										BDB	PL,Ro RIR,Ro CUJ,Ro CUJ,Ro CUJ,Ro CUJ,Ro CUJ,Ro PL,Ro PL,Ro PL,Ro PL,Ro PL,Ro PL,Ro PL,Ro PL,Ro	1 1						UCS = 122.1 MPa
DE 1 :		TH SCALE		(G		Go	olde OCi	er iato	es											DGGED: HEC ECKED: MJK

LOCATION: See Site Plan

RECORD OF BOREHOLE: 13-4

SHEET 1 OF 2

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: March 15, 2013

Ļ		BURING MEI HUD	SOIL PROFILE			SA	MPLI		DYNAMIC PENETRATIC RESISTANCE, BLOWS/		HYDRAULIC CONDUCTIV k, cm/s	нт, 	
METRES		ME		LOT		ĸ		BLOWS/0.30m	20 40 6	١.	10 ⁻⁸ 10 ⁻⁶ 10 ⁻⁴	10 ⁻²	OR OR
METI		Sz	DESCRIPTION	TA P	ELEV.	NUMBER	TYPE	/S/0.	SHEAR STRENGTH n Cu, kPa re	at V. + Q - ● em V. ⊕ U - ○	WATER CONTENT P	ERCENT	STANDPIPE
-		х Ск		STRATA PLOT	DEPTH (m)	N		NO1:			Wp - O''		LA
_			GROUND SURFACE	ŝ				В	20 40 6	0 80	20 40 60	80	MON.
0		\square	(SM) SILTY SAND, trace gravel; grev	**	55.36 0.00								won.
			brown, contains organic matter, (FILL); non-cohesive, moist, loose			1	SS	9					
			non-conesive, moist, loose				33	5					
					54.60								
			(SM/ML) SILTY SAND to SANDY SILT; dark brown, contains organic matter,		0.76								
1			dark brown, contains organic matter, (FILL); non-cohesive, moist, loose			2	ss	5					
		Stem)											
	er	Nol 0											
	r Aug	Hol.			53.68 1.68								
	Powe	Diam	(SP/GP) SAND and GRAVEL, crushed; grey, (FILL); non-cohesive, moist, loose		1.00	3	SS	10					
2		200 mm Diam. (Hollow S	to compact										
		50			53.00								Deptemite Cool
			(CI) SILTY CLAY; grey brown; cohesive, moist, stiff to very stiff		2.36								Bentonite Seal
					52.62 2.74	4	SS	7					
3			(SM) SILTY SAND, trace gravel; grey brown; non-cohesive, moist, loose		2.74								
з					52.16	_							
		L [(OL) ORGANIC SILT; dark brown; non-cohesive, moist, loose	鬨	51.98	5	SS	>50					
		\square	Grey LIMESTONE										
			Borehole continued on RECORD OF DRILLHOLE 13-4	1									
4				1									
5				1									
6													
				1									
7													
				1									
				1									
		·											
8													
				1									
				1									
9													
				1									
10													
10				1									
				<u> </u>									
DE	PT	нs	CALE										LOGGED: HEC
	50								Golder				

L	.OC	ATIC	T: 11-1121-0229 IN: See Site Plan FION: -90° AZIMUTH:		RE	C	ORD	0	DF DF	RILLI RILL	NG RIG	DAT : CI	TE: N ME 75	Marc 5	:h 15	5, 2	013		ng								SHEET 2 OF : DATUM: Geod	
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH COLOUR	SHF VN CJ	AL 5 % C	ear in njuga	R.	CC OF	Folia - Folia - Conth - Clea FRAC INDE PER 0.3 m	act ogona vage T. X B	Angle		:U-C IN-U IT-S R - In	lanar urved ndulating tepped regular ONTINUIT TYPE AND DESCI	K SM- Ro- MB- Y DATA		enside ith	I Brea RC STRE INI	NC	DTE: Fi breviat abbrev mbols.	or addi	fer to lis	t	
- - - - - - - -	4		BEDROCK SURFACE Fresh thinly to medium bedded grey fine to coarse grained non-porous strong to very strong LIMESTONE, with black shale partings and interlaminates, occasional nodules - Broken core from 3.55 m to 3.63 m - Broken core from 3.78 m to 3.82 m		51.93 3.43	1	100										•	,BD,F ,BD,F ,BD,F ,BD,F	PL,SM PL,Ro PL,Ro PL,SM PL,SM PL,SM	1 1.5 1.5 1	1 11 11						Bentonite Seal	
		NQ Core				2	100										•	,BD,F ,BD,F ,BD,F ,BD,F	2,500 2L,Ro 2L,Ro 2L,SM 2L,Ro 2L,Ro	1.5 1.5 1 1.5 1.5	1 1 1						Silica Sand	1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2
	6	DN N				3	100										•	,BD,F ,BD,F ,BD,F	PL,Ro PL,Ro PL,Ro PL,Ro PL,Ro	1.5 1.5 1.5 1.5	1 1 1 1 1 1						32 mm Diam. P #10 Slot Screen	
	8		End of Drillhole		47.66 7.70	4	100										•	,BD,F — ,BD,F	PL,Ro PL,Ro	1.5 1	1						Bentonite Seal	- at
	9																										Elev. 51.60 m o April 18, 2013	n -
- - - - - - - - - - - - -	0																											-
S.GDT 06/07/13 PLG	1																											-
1000.GPJ GAL-MIS	3																											-
RCK 004)EP : 5		CALE					Ć			ul Go <u>s</u> s	⊔⊥ old oc	ler Ler	iii es		1		I									LOGGED: HEC	

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 13-5

BORING DATE: March 13, 2013

SHEET 1 OF 2

DATUM: Geodetic

Ц			SOIL PROFILE	-	1	SAI	MPLE		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3		Indr	k, cm/s	ONDUCT	VIII,		ξĻ	PIEZOMETER
DEPTH SCALE METRES	DODING METHOD			STRATA PLOT	ELEV.	ER	, П	BLOWS/0.30m	20 40 60	80		1	0 ⁻⁶ 10		0-2	ADDITIONAL LAB. TESTING	OR
- ME	CINIC	D NIZ	DESCRIPTION	ATA I	DEPTH	NUMBER	TYPE	WS/C	SHEAR STRENGTH nat Cu, kPa rem	V. + Q - ● V. ⊕ U - ○		VATER C /p			NT WI	ADDI AB. T	INSTALLATION
د	Ca			STR	(m)	Ż		BLO	20 40 60	80			10 60		VVI 30	L	
0			GROUND SURFACE		55.39												
5		T	(SM) SILTY SAND, trace gravel; brown, (TOPSOIL); non-cohesive, moist		0.00												
			(SP/GP) SILTY SAND and GRAVEL,	1	0.15	1	SS	12									
			crushed; grey, (FILL); non-cohesive, moist, dense to loose														
1						2	SS	54			0					м	
		Ē															
		/ Sten															
	uger	follov															
	wer A	am. (F				3	SS	13									
2	Po	200 mm Diam. (Hollow Stem)															
		200 r															
						4	ss	9									
					52.49			Ŭ									
3			(SM) SILTY SAND, fine; grey brown,		2.90												
			(FILL); non-cohesive, moist, very loose (OL) ORGANIC SILT; dark brown;		52.19 3.20	5	ss	3							0	00-	
			non-cohesvie, moist, very loose		51.86	5	55	3								OC = 24.0%	
	_	H			3.53												
			Borehole continued on RECORD OF DRILLHOLE 13-5														
4																	
5																	
6																	
0																	
7																	
8		'															
Ĵ																	
9																	
10																	
				-						I		1					
DE	PT	HS	CALE					(Golder							LC	OGGED: HEC

			T: 11-1121-0229		RE	C	ORD	С										3-5								HEET 2 OF 2
			N: See Site Plan TION: -90° AZIMUTH:						DR	RILL	RIG:	C	'E: M ME 75 NTRA(ng Drilling							C	ATUM: Geodetic
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH <u>COLOUR</u>	SHF VN CJ	E % C	ear in njuga	R.C	FC CC OF CL	FRACT INDEX 0.3 m 0.3 m	ion act gona age	al Angle	UN ST IR	I- Un - Ste - Irre SCO w.r.t. RE IS	urved K ndulating SM		nical	Brea RO STREI IND	NO abb of a k syn CK NGTH	TE: Fo previation abbrevi nbols. WE EI	or addit	- Q AVG	
- - - 4	_		BEDROCK SURFACE Fresh thinly to medium bedded grey fine to medium grained non-porous strong to very strong LIMESTONE, with black		51.78 3.61	1	100 100		× (4 0	0.040		10					•	,BD,IR,Ro ,BD,CU,SM —,BD,PL,Ro	3 1 1 1 1.5 1		_ 2					-
- 4 		NQ Core	shale partings and interlaminates, occasional nodules - Broken core from 3.62 m to 3.68 m			3	100-0										• • • • • • •	BD PL_SM BD PL,Ro BD PL,Ro BD PL,Ro BD PL,Ro BD PL,Ro BD PL,Ro BD PL,SM BD PL,SM BD PL,SM BD,PL,SM BD,PL,SM	1 1 15 1 35 1 15 1 1 1 1							UCS = 151.4 MPa
- - - - - - - - - - - - - - - - - - -	5	NQ				4	0										•	,BD,PL,SM ,BD,PL,Ro ,BD,PL,Ro ,BD,PL,SM ,BD,PL,SM ,BD,PL,Ro ,BD,CU,Ro BD,IR Ro	1 1 1.5 1 1.5 1 1 1 1 1 1.5 1 1.5 1 1.5 1 3 1 1.5 1 1.5 1							-
			End of Drillhole		47.54	5	0										•	,BD,PL,Ro ,BD,PL,SM ,BD,PL,Ro ,BD,PL,SM ,BD,PL,SM	1 1 1.5 1 1 1 1 1							-
)																									
																										-
D 1	EP ⁻ : 50		CALE					G		Á	Go sso	ld DC	er iat	es	5											ogged: Hec Iecked: Mjk

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 13-6

BORING DATE: March 14, 2013

SHEET 1 OF 2

DATUM: Geodetic

9	Ş	Į	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENETRA RESISTANCE, BLOV	/S/0.3m	$\langle \rangle$	HYDRAUL k,	cm/s	,	ם ב	PIEZOMETER
METRES	PODING METHOD	- [STRATA PLOT]	щ		BLOWS/0.30m	20 40	60 80	· \	10 ⁻⁸	10 ⁻⁶ 1	D ⁻⁴ 10 ⁻²	ADDITIONAL LAB. TESTING	OR
E H			DESCRIPTION	TAP	ELEV. DEPTH	NUMBER	TYPE	/S/0.	SHEAR STRENGTH Cu, kPa	nat V. + 0	Q - ●	WAT	ER CONTENT		T LOB	STANDPIPE INSTALLATION
				TRA	(m)	S		LOW				Wp 🛏				
	_	-	GROUND SURFACE	s				В	20 40	60 80		20	40 6	0 80		MON.
0		\square	ASPHALTIC CONCRETE		55.70 0.00 0.08											MON.
1			(SP/GP) SAND and GRAVEL, crushed; grey, (FILL); non-cohesive, moist, compact to dense		0.08			20								
			(CI) SILTY CLAY; grey brown, (FILL);		54.33 1.37											
			Cohesive, moist, very stiff (SM) SILTY SAND and GRAVEL; grey		1.52											Bentonite Seal
2	sr	Stem)	(SM) SILTY SAND and GRAVEL; grey brown, contains orange brick fragments, (FILL); non-cohesive, moist, loose to compact			3	SS	9								
	wer Auge	iam. (Holl				4	SS	9				0			м	
3	Power Auger	200 mm D														
-						5	SS	14								Silica Sand
			(SM) SILTY SAND, some gravel; grey		52.04 3.66											
4			brown, (FILL); non-cohesive, wet, compact			6	SS	20								32 mm Diam. PVC #10 Slot Screen
			(OL) ORGANIC SILT, dark brown; non-cohesive, most, loose	Þ	51.05 4.65 4.80	7	ss	>50						0	OC = 16.2%	,
5			LIMESTONE Borehole continued on RECORD OF DRILLHOLE 13-6													
6																
7																
8																
9																
		'														
10																
DE	PTI	H S	CALE						Gold						L	.OGGED: HEC

LC	ЭС	ATIC	T: 11-1121-0229 NY: See Site Plan FION: -90° AZIMUTH:		RE	EC	ORD	C	DF DF	RILLI RILL	NG I RIG:	DAT : Cl	TE: N ME 75	Maro 5	ch 14	, 20 ⁻	13	3-6								IEET 2 OF 2 .TUM: Geodetic
DEPTH SCALE METRES		DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	-LUSH COLOUR RETURN	SHF VN CJ RE TOT CORI	- Joi - Fa R- Sh - Ve - Co ECOV	int ear in njuga /ERY SOLIE CORE	R.C	BE FC OF CL Q.D.	D- Bedd D- Folia D- Conta C- Ortho - Cleav FRAC INDE PER 0.3 m	ding ation act ogon vage T. X B	al :	PL - CU- UN- ST - DIS DIP w COF	- Pla - Cu - Un - Ste - Irre SCO	anar irved idulating epped		ickensi nooth ough	ded cal Br STF		IOTE: Ibbrevia f abbre ymbols	For ad ations i eviation 3. VEAT ERING	× A	
		NG COTE NG COTE DRILLIN	BEDROCK SURFACE Fresh thinly to medium bedded grey fine to coarse grained non-porous strong to very strong nodular LIMESTONE, with black shale partings and interlaminates End of Drillhole			āč 1 2 3 4	100 100 FLUSH		AL E % C	SOLIE	%		PER	В	Angle 응원값		v.r.t. RE S		RFACE ION No No NM NM NM NM NM NM NM NM NM NM NM NM NM	Jr Ja 1.5 1	n				× A	MON. WEL Bentonite Seal
MID-FOCK 004 11112/0228-1000.6PJ 6-41MIDS-6D/1 06/07/15 FL6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ŀ																									-
	EP : 5		SCALE					Ć			Go	old OC	ler ziat	e	5							<u> </u>				OGGED: HEC ECKED: MJK

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

RECORD OF BOREHOLE: 13-7

BORING DATE: March 11, 2013

SHEET 1 OF 2

DATUM: Geodetic

Щ	ДĢ	SOIL PROFILE	_		SA	MPL	ES	DYNAMIC PENETRA RESISTANCE, BLO	TION VS/0.3m	Ì	HY	DRAUL k,	IC CON cm/s	NDUCT	IVITY,		ں ب	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD				н К		.30m	20 40	60 8	i0		10-8	10 ⁻⁶	³ 10) ⁻⁴ 1	10 ⁻²	ADDITIONAL LAB. TESTING	OR STANDPIPE
ЧЧ МШ	RING	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa	nat V. + rem V. ⊕	Q - ● U - ○					PERCE		ABDI AB. TI	INSTALLATION
	BOF		STR.	(m)	Ź		BLO	20 40		0		Wp ⊢ 20	40			WI 80	<u>``</u>	
- 0		GROUND SURFACE		55.71														
Ū		(SP/GP) SAND and GRAVEL, crushed; grey, (FILL); non-cohesive, moist,		0.00														
		compact			1	GRAE	;											
- 1					2	SS	32											
					3	SS	20				0							
- 2				53.58							Ĩ							
	(ma	(SM) SILTY SAND; grey brown, contains fly ash and orange brick fragments, (FILL); non-cohesive, moist, loose to	, 🗱	2.13														
	er ow St	(FILL); non-cohesive, moist, loose to compact																
	Power Auger				4	SS	10				C	,						
- 3	Powe																	
-	Power Auger 200 mm Diam. (Hollow Stem)																	
					5	SS	7											
		(SM) SILTY SAND, some gravel.		52.05 3.66														
- 4		(SM) SILTY SAND, some gravel, inferred presence of cobbles and/or boulders; brown, (GLACIAL TILL);																
- 4		non-cohesive, moist to wet, compact			6	SS	20				þ							
					7	ss	>50											
- 5				1														
	\vdash	Borehole continued on RECORD OF	-67.64	50.21														
		DRILLHOLE 13-7																
- 6																		
- 7																		
- 8																		
J																		
- 9																		
- 10																		
DE	PTH	SCALE						100 Mar 100	~~								LC	OGGED: HEC
	50							Gold	er									ECKED: MJK

LO	CATI	CT: 11-1121-0229 ON: See Site Plan ATION: -90° AZIMUTH:	RI	ECC	ORD		ORILL ORILL	ING RIG	DATE : CME	: Ma E 75	arch 1	1, 2	013	3-7 g Drilling	J							IEET 2 OF 2 ATUM: Geodetic
DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	S WBOLIC LOG DEDLH (m)		USH <u>COLO</u>		Shear Vein Conjug OVER OVER	/ ID %	FO-I CO-(OR-(CL-(Q.D. II %	Beddin Foliatic Contac Drthog Cleava RACT. NDEX PER 0.3 m 0220	on ct onal		T - Ste R - Irre	dulating	K - S SM- S Ro - R MB- N DATA	olished lickensi mooth tough lechanie Jr Ja J	cal Bre STRE	NO	C - Brol TE: For a reviation bbreviati bbols. WEA ERII IND	TH- NG EX	al	
		BEDROCK SURFACE	50.2							111			•	— ,BD,PL	Ro	1.5 1						
- 6		Fresh thinly to medium bedded grey fine to coarse grained non-porous strong nodular LIMESTONE, with black shale partings and interlaminates - Broken core from 6.13 m to 6.18 m - Broken core from 6.34 m to 6.39 m		2	100								•	,BD,PL ,BD,PL ,BD,PL ,BD,PL ,BD,R, ,BD,PL ,BD,PL	Ro Ro Ro Ro Ro	1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1						
- 7		- Broken core from 6.78 m to 6.84 m											•	,BD,PL ,BD,PL ,BD,PL	Ro	1 1 1.5 1 1.5 1				-		UCS = 75.9 MPa
- 8	Rotary Drill NO Core			3	100								•	,BD,PL ,BD,PL ,BD,PL ,BD,PL	Ro SM Ro	1.5 1 1.5 1 1 1 1.5 1						
- 9				4	100								• • • •	,BD,PL ,BD,CL ,BD,PL ,BD,PL ,BD,PL ,BD,PL ,BD,PL ,BD,PL	,Ro Ro Ro Ro Ro Ro	1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1 1.5 1				-		
- 11		- Mud seam and vertical fracture from 10.98 m to 11.23 m End of Drillhole	44.48		100								•	,BD,PL ,BD,PL ,BD,PL ,BD,IR,	Ro	1.5 1 1.5 1 1.5 1 3 1				-		
- 12																						
- 13																						
- 14																						
- 15																						
DE 1 :		SCALE			(Ĵ	Ŋ	Go	olde OCI	er ate	es											DGGED: HEC ECKED: MJK

PROJECT: 11-1121-0229 LOCATION: See Site Plan

RECORD OF BOREHOLE: 13-8

BORING DATE: March 5, 2013

SHEET 1 OF 2

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ц		탈	SOIL PROFILE			SA	MPL		DYNAMIC PENETRA RESISTANCE, BLOV	/S/0.3m	Ľ.		RAULIC C k, cm/s		IVIII,	μĥ	PIEZOMETER
DEPTH SCALE METRES		BORING METHOD		STRATA PLOT		н.		BLOWS/0.30m	20 40		80		1	0-6 10		ADDITIONAL LAB. TESTING	OR
- E		SING	DESCRIPTION	VTA F	ELEV. DEPTH	NUMBER	түре	NS/0	SHEAR STRENGTH Cu, kPa	nat V. + rem V. #	• Q - ● • U - O	\			PERCENT	B. TIO	INSTALLATION
5		BOF		STR∕	(m)	۲		3LOV				v					
			GROUND SURFACE	0,	55.95				20 40	60	80		20 4	10 6	0 80	_	MON.
0			ASPHALTIC CONCRETE		0.00 55.75												
			(SP/GP) SAND and GRAVEL, crushed;		0.20												
			grey, (BASE); non-cohesive		0.38												
			(FILL); non-cohesive		55.19												
			(SM) SILTY SAND, some gravel, inferred presence of cobbles and/or		0.76	1	SS	>50									
1			boulders; grey, contains asphalt														
			fragments, (FILL); non-cohesive, moist, compact														
2		Ê				2	SS	18				0					📕
2		w Ste				-											📕
	Auger	Hollo				-											📕
	Power Auger	am.				3	SS	11									📕
	P	200 mm Diam. (Hollow Stem)															📕
3		200 r				L											📕
			(CI) SILTY CLAY: arey brown: cobocing		52.75 3.20												📕
			(CI) SILTY CLAY; grey brown; cohesive, moist, stiff to very stiff		3.20	4	SS	7					•	4			📕
			(SM) SILTY SAND, some gravel to		52.14 3.81												Bentonite Seal
4			gravelly, inferred presence of cobbles			5	SS	32				0				мн	
			and/or boulders; grey, (GLACIAL TILL); non-cohesive, moist, dense to very			5	55	32									
			dense			-											
							SS	20									📕
					51.01	6	22	33									📕
5		[Borehole continued on RECORD OF DRILLHOLE 13-8														
6																	
2																	
7																	
8																	
9																	
Э																	
10																	
	-				•								1				
DE	PT	ΉS	CALE					(Gold	er							OGGED: HEC
1:	50								Assoc	iates						CH	IECKED: MJK

		CT: 11-1121-0229 ION: See Site Plan	R	ECO	ORD									13-8						HEET 2 OF 2 ATUM: Geodetic
		ATION: -90° AZIMUTH:					DRILI DRILI	RIG	: CN CON	IE 75 TRAC	CTOR			ing Drilling	I					
DEPTH SCALE METRES	DRILLING RECORD		XWBOLIC LOG SYMBOLIC LOG (m)		FLUSH <u>COLOUR</u>	VN - CJ - REC	Shear Vein Conjug OVER SOL CORE	/ ID 1%	CO OR	Beddi Foliati Conta Orthou Cleave RACT INDEX PER 0.3 m	ct gonal age B Ang	le	CU-C UN-L ST-S IR-II	Planar Curved Jndulating Stepped rregular ONTINUITY I	URFACE	ckensid	NOTE abbre of abb k symbo CK NGTH EX	- Broke : For add iations re- reviations is. WEATH ERING INDEX	itional ifer to list & - Q AVG	-
5 - - - -		BEDROCK SURFACE Fresh thinly to medium bedded grey fine to coarse grained non-porous strong to very strong nodular LIMESTONE, with black shale partings and interlaminates			0								•	,BD,CU ,BD,CU ,BD,PL, ,BD,PL,	,Ro Ro	1 1 1.5 1 1.5 1 1 1				MON. WEI
- - - - - - - - - - - - - - - - - - -		Mud scorp from 7.11 m to 7.12 m		2	0								** * * *	BD,PL, BD,PL, BD,PL, BD,PL, BD,PL, BD,CU BD,PL, BD,CU BD,CU	RO RO RO RO RO RO RO RO	1.5 1 1.5 1 1.				Bentonite Seal ⊻_
- 8	Rotary Drill NO Core	- Mud seam from 7.11 m to 7.12 m		3	0								•	,BD,PL, ,BD,PL, ,BD,PL, ,BD,ST,	SM	1.5 1				Silica Sand
- 9 - 9 				4	0								• • •	,BD,PL, ,BD,PL, ,BD,PL, ,BD,PL, ,BD,PL, ,BD,IR,I ,BD,IR,I	Ro Ro SM Ro Ro Ro	1.5 1 1.5 1 1 1 1.5 1 1.5 1 1.5 1 3 1 3 1 1.5 1				#10 Slot Screen
- - - - - - - - - - - -		End of Drillhole	44.8 11.1		0								•	,BD,PL, ,BD,PL,	Ro Ro	1.5 1 1.5 1				Bentonite Seal
- 12																				W.L. in Screen at Elev. 49.24 m on March 25, 2013
MISS.GDT 06/07/13 PLG																				
MIS-RCK 004 1111210229-1000.GPJ GAL-MISS.GDT 06/07/13 PLG																				
MIS-RCK 004 DE 1 :		ISCALE	. 1			Ĝ		Go	old oc	er	<u>es</u> _	- 1		•			 			OGGED: HEC IECKED: MJK

RECORD OF BOREHOLE: 10-01

BORING DATE: March 17, 2010

SHEET 1 OF 2

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

2 FL	IHO	SOIL PROFILE	Τ⊢	1	54	AMPL		ppm					⊕		cm/s				₽g	PIEZOMETER
METRES	BORING METHOD		STRATA PLOT	ELEV.	ЗЕR	ш	BLOWS/0.3m	6 Headepa	12 29 Com		18 10ur Cor	24	11	10 ⁻⁶	10 =B C () ⁻⁵ 1 DNTENT	1		ADDITIONAL LAB. TESTING	OR STANDPIPE
μ	NINC	DESCRIPTION	RATA	DEPTH (m)	NUMBER	түре	-OWS	Headspac ppm	le com	ω. vap	JULI GOL	iu. [70LE							ADD LAB.	INSTALLATION
	B		ST				Ы	20	40)	60	80		10	2			40	<u> </u>	
0		Ground Surface TOPSOIL	EEE	58.26 58.11		$\left \right $					+		+						-	
		Compact brown to dark brown silty sand, some gravel, trace clay with brick and concrete (FILL)		0.15	1	50 DO	16€	,												
		and concrete (FILL)	`																	
						50														
1					2	50 DO	21€	,												
				ŝ																
					3	50 DO	21€	,												
2					4	50 DO	19	•												
				55.82		00	-													
		Very loose black sand, some gravel (FILL)		2.44		50														
		Loose grey brown silty clay, trace brick (FILL)		55.52 2.74	5	50 DO	2	⊕												
3																				
		Loose to compact grey SILTY SAND,		54.91 3.35	6	50 DO	15€	,												
	(L	some gravel, trace clay				$\left \right $														
4	Power Auger 200 mm Diam. (Hollow Stem)				7	50 DO	12€	,												
	Power Auger Diam. (Hollov																			
	Powe n Dian				8	50 DO	5 €													
	200 m				0	DO	50	, 												
5																				
					9	50 DO	5€	,												
					10	50 DO	1 €	,												
6		Compact brown fine SAND		52.16																
		Compact brown mile OAND			11	50 DO	16€	,												
				51.55		00														
_		Compact grey fine SAND		6.71		50														
7					12	50 DO	136	,												
		Very dense grey SILTY SAND, some gravel, trace clay		50.64		$\left \right $														
8		gravel, trace clay			13	50 DO	64€	,												
				49.75	14	50 DO	50 E	,												
		COBBLES and BOULDERS		0.01	15	NQ RC	DD													
9	≓ o		6																	
	Rotary Drill NW Casing																			
	NN NV		6		16	NQ RC	DD													
			÷																	
10	_L		-		17	╞┥	DD	+-			+	-	- +	· – – –			<u> </u>	+		
		CONTINUED NEXT FAGE																		
DF	PTH S	SCALE					(11.	er ates								LC	DGGED: D.G.

PROJECT: 10-1122-0044

RECORD OF BOREHOLE: 10-01

SHEET 2 OF 2 DATUM: Geodetic

LOCATION: See Site Plan

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: March 17, 2010

,	ac		SOIL PROFILE			SA	MPL	ES	Heads	space C	Drg. V	/apou	Conc. [PPM]	HYDR	AULIC C		CTIVITY,	Т	. (5	
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	Heads	6 i pace C	12 Comb	1 . Vapo	8 Jur Conc	24 [%LEL]	1 W	0 ⁻⁶ 1 /ATER C	I0 ⁻⁵ I ONTEN	10 ⁻⁴ T PERCI	10 ⁻³ L ENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		СОВ	BLES and BOULDERS	•						20	40		0	80			20	30	40		
	Rotary Drill	NW Casing	linued)		47.26		NQ RC NQ RC														
11	Rotary Drill	Fresl with i	h grey LIMESTONE BEDROCK interbedded shale				NQ RC	DD	T.C.R. (%)	S.C.R. (%)	86 0	^(%) 94									
12		End	of Borehole		46.37 11.89																
13																					
14																					
15																					
16																					
17																					
18																					
19																					
.5																					
20																					
DE	РТН	I SCALE	:						Â		 בו	പ്പം	• •			1				LC	OGGED: D.G.
1:	50								V	As	SO	OCI2	r <u>ates</u>							CHI	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-02

BORING DATE: March 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ц	ДOH	SOIL PROFILE			SA	MPL	ES	Headspace Org. Vapour Conc. [PPM] ppm	HYDRAULIC CONDUCTIVITY, k, cm/s	_ ଟୁଅ PIEZOMETE
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	6 12 18 24 Headspace Comb. Vapour Conc. [%LEL] ppm	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³	PIEZOMETE OR STANDPIPE INSTALLATIC
Ö	BOF		STR/	(m)	ž	ľ	BLO	20 40 60 80	Wp H WI 10 20 30 40	
· 0		Ground Surface		57.54						
-		Black sandy silt with organic matter (TOPSOIL)		57.39 0.15	1	50				
		Compact brown silty sand, some gravel, trace clay with cobbles and			1	50 DO	16€			
		boulders (FILL)			2	50 DO	55€			
• 1					2	DO	550			
					3	50 DO	86	,		
- 2					4	50 DO	8 €			
2					-	-				
					5	50 DO	13€	,		
				54.80						
- 3		Compact black sand, some gravel, trace silt (FILL)		2.74 54.49	_	50				
5		Compact brown silty clay and brown silty sand layers (FILL)		3.05	6	50 DO	22	₩		
					7	50 DO	20€	,		
· 4	Stem)									
•	lollow ;			53.27	8	50 DO	8 6	,		
	Power Auger 200 mm Diam. (Hollow Stem)	PEAT Loose grey SILTY fine SAND, trace	T	4.34		DO				
	Po Di	gravel				1				
- 5	200				9	50 DO	6 €			
-						-				
					10	50 DO	4 €	,		
- 6						50				
					11	50 DO	1€			
					-	1				
		Loose rusty fine SAND, trace gravel	-11	50.83 50.68	12	50 DO	з е	,		
- 7		Loose grey SANDY SILT Loose to dense brown coarse SAND	<u> II</u>	50.53 7.01						
		LOUGE TO GENSE DIOWIT COULSE SAIND			13	50 DO	1 €	,		
						00				
						1_				
- 8					14	50 DO	73€			
		Very dense grey SANDY SILT, some	ħ	49.34						
		gravel, trace clay			15	50 DO	65 E	,		
		End of Borehole	\$ <u>E</u>	. 48.80 8.74						
. 9		Auger Refusal								
10										
DE	PTH	SCALE					(Golder		LOGGED: D.G.
1	50						_ (Golder		CHECKED: K.P.H.

RECORD OF BOREHOLE: 10-03

BORING DATE: March 9, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

5, 2010

Ľ,	ЫЧ	SOIL PROFILE	1.	-	SA	MPL		Headspace Org. Vapou ppm		•	HYDRAU k		,		μÂ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		STRATA PLOT	D.D.Y	Ĥ		D.3m		8 24		10 ⁻⁶			0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR
ЧЦ ИЦ	SNIG	DESCRIPTION	ATA I	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	Headspace Comb. Vape	ur Conc.	[%LEL]			PERCE		ADDI AB. T	INSTALLATION
a	BOI		STR.	(m)	ź		BLC		0 80)	Wp H 10	2		WI 10	Ľ 1	
_		Ground Surface		57.06							Ĭ					
• 0		Loose black silty clay with organic matter (FILL)		0.00												
				50.00	1	50 DO	13€	,								
		Brick (FILL)		56.60 56.45												
		Compact brown sand, some gravel, trace clay with some brick and concrete		0.61												
- 1		(FILL)			2	50 DO	21	,								
		L		55.84												
		Very dense to compact brown to dark grey sandy silt with cobbles and		1.22												
		organic matter (FILL)			3	50 DO	70 (,								
2																
					4	50 DO	14€	·								
		Compact black agend agent strengt		54.62 2.44												
		Compact black sand, some gravel, trace silt (FILL)		8		50										
		Compact, brown, medium to coarse	×	54.32 2.74	5	50 DO	15€	'								
3		sand (FILL)														
	Stem			53.71 3.35		50 DO	10									
	Power Auger 200 mm Diam. (Hollow Stem)	Compact black sand, some gravel, trace silt (FILL)		4	6	DÖ	13€									
	Power Auger Diam. (Hollo	Compact, brown, medium to coarse		53.40 3.66												
	Pow Th Dia	Compact, brown, medium to coarse sand (FILL)			7	50 DO	14€	,								
• 4	00 m				Ľ	DO	0									
		Compact grey sand and gravel (FILL)	- 🗱	52.79 4.27												
				52.20	8	50 DO	18€	,								
		PEAT		52.39 52.28												
- 5		Compact grey SILTY CLAY Compact grey fine SAND		4.88		1										
					9	50 DO	18€	,								
		Compact grey SILTY SAND, some gravel, trace clay	<u>hi</u>	51.73 5.33												
		gravel, trace clay		1												
				!	10	50 DO	11€	,								
- 6		L		50.96												
		Loose to compact, brown, medium to coarse SAND		6.10												
					11	50 DO	5 €	·								
				;		50										
- 7					12	50 DO	16€	·								
		End of Borehole		49.74 7.32		\vdash					\vdash		 			
- 8																
· 9																
10																
DE	РТН	SCALE													LC	GGED: D.G.
								Golde	*							-

RECORD OF BOREHOLE: 10-04

BORING DATE: March 8, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

5

PENETRATION TEST HAMMER, 64kg; DROP, 760r	nm

ALE	0	дон	SOIL PROFILE			SA	MPL		Headsp ppm	ace Org	g. Vapou	r Conc.	[PPM] ⊕		AULIC C k, cm/s			T	AL	PIEZOMETER
DEPTH SCALE METRES		SORING ME	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m		ace Co	nb. Vap		24 c. [%LEL]	w w	ATER C			WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
				ω.					20) 4	40	60	80	1	10 2	20 3	30 ·	40		
- 0	⊢	+	Ground Surface Black sandy silt with organic matter	EEE	56.57 56.42							-		-						
			(TOPSOIL)/ Dense grey brown silty sand, some		0.15	1	50 DO	45€	e l											
			gravel (FILL)		55.99		DO		,											
			Compact black sandy silt, some gravel	颷	0.58															
			(FILL)			2	50 DO	21€	e l											
- 1							DO													
			Loose brown silty sand, some gravel	颷	55.35 1.22															
			(FILL)			3	50 DO	7 €)											
					54.82		00													
- 2			Loose to dense black sandy silt, some gravel (FILL)		1.75															
- 2		╎┟		₩	54.44 2.13	4	50 DO	47€	э											
			Compact, brown, medium to coarse sand, some gravel (FILL)																	
		Stem																		
	ger	ollo				5	50 DO	13€	÷											
- 3	Power Auger	Ë.																		
	Pow	n Diar																		
		200 mm Diam. (Hollow Stem)			53.06	6	50 DO	166)											
			Stiff grey silty clay (FILL)	×	3.51															
							-													
- 4						7	50 DO	56)											
							50													
						8	50 DO	5 €)											
			PEAT		51.77 4.88															
- 5			Stiff grey SILTY CLAY		4.00 51.39		50													
			Compact grey SANDY SILT, some	TT.	5.18	9	50 DO	136	•											
		╎┟	gravel Compact grey fine SAND		51.08															
			Compact grey me SAND			10	50 DO	176	э											
			End of Borehole		50.65 5.92		00													
- 6			Auger Refusal		5.52															
- 7																				
8																				
	l													1						
	l													1						
	l													1						
9																				
. 10	l													1						
10																				
	L			L						A	I	1		1	1		1		I	I
DE	PT	TH S	CALE							ľc.	مالام	r							LC	DGGED: D.G.
	: 5	0								Ass	olde socia	tes							СН	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-05

BORING DATE: March 10, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	UCH.		SOIL PROFILE	1.		SA	MPL		Head ppm	space	e Org	. Vap	our	Jonc. (F	PM]		k, cn	ı/s		IVITY,	T	AL	PIEZOMETER
METRES	BOBING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	Head ppm	6 I space	1 e Con		18 1 /apou	3 2 Ir Conc.	4 [%LEL]	v			TENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	ã	n	Output Destant	ST				ā		20	4	0	60) 8	0		10	20	3	0 ·	40		
0			Ground Surface Compact to dense black silty sand, some gravel, trace brick with cobbles and boulders (FILL)		55.61 0.00	1	50 DO	256)														
1			Dense grey brown sand, trace silt with cobbles and boulders (FILL)		54.39 1.22	2		426	•														
2						3	50 DO	36€															
	Auger	(Hollow Stem)	Compact dark brown sandy silt, some gravel (FILL)		53.17 2.44		50 DO 50 DO	426															
3	Power Auger	200 mm Diam. (Hollow Stem)	Loose black sandy silt, some gravel, trace wood (FILL)		52.59 3.02		50 DO	8 €															
4			Loose dark grey fine SAND, some gravel		51.95 3.66 51.42	7	50 DO	6 (₽														
			COBBLES and BOULDERS		4.19	8	NQ RC	DD	6	Э	17		17										
5					50.00 5.61	9 10	NQ RC NQ RC	DD DD	T.C.R. (%)	S.C.R. (%)		R.Q.D. (%)											
6	Rotary Drill	NQ Core	Grey LIMESTONE BEDROCK with interbedded shale			11	NQ RC	DD	10	0	32		9										
7			End of Borehole		<u>48.90</u> 6.71																		
8																							
9																							
10																							
DE	РТ 50		CALE					(Ô		Ga	old	ler	tes									DGGED: D.G. ECKED: K.P.H.

RECORD OF BOREHOLE: 10-06

BORING DATE: March 8, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

ш	Ċ	8	SOIL PROFILE			SA	MPL	ES	Headspace Org. Va ppm	pour Co	onc. [PPM]	•	HYDRA	ULIC CO k, cm/s	ONDUCT	IVITY,	Т	. (5	
DEPTH SCALE METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	6 12 Headspace Comb. ppm				10 WA Wp	6 10 TER CC		PERCE	NT WI	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0			Ground Surface Grey sandy silt, some gravel, trace brick (FILL)	0 3	55.04 0.00				20 40	60	80		10	2	0 3	0 4	0		
			Black silty sand (FILL)		54.51	1	50 DO	52€											
1		v Stem)	Loose to compact, brown, medium to coarse sand (FILL)		3 1	2	50 DO	13€											
	Power Auger	200 mm Diam. (Hollow Stem)			53.21 1.83	3	50 DO	5€											
2		200 mr	Compact coarse grey crushed stone (FILL)		1.83	4	50 DO	29€											
3			Grey silty clay (FILL)		52.30 2.74 51.97	5	50 DO 50 DO	76€											
-			End of Borehole Auger Refusal		3.07		DO												
4																			
5																			
6																			
7																			
,																			
8																			
9																			
10																			
DE 1 :			CALE						B Asso	ler									DGGED: D.G. ECKED: K.P.H.

RECORD OF BOREHOLE: 10-07

BORING DATE: March 8, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

5110, 2010

Ľ.	ПОН	SOIL PROFILE	1.		SA	MPL		Headspace Org.	• apou	CONC. [I	••••••j ••			T	μģ	PIEZOMETER
H SCA	A MET		PLOT	ELEV.	ER	ш	/0.3m	6 12		8 2	24	10) ⁻⁵ 10		ITION/	OR STANDPIPE
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	Headspace Comb ppm	o. vapo	ur Conc	. [%LEL]	WA Wp			ADDITIONAL LAB. TESTING	INSTALLATION
	ğ		ST	(m)			Ы	20 40	6	i0 8	30 I	10		10		
- 0		Ground Surface Black sandy silt with organic matter	/	55.38 0.05												
		(TOPSOIL) Compact black sand, some gravel	/ 🗱	0.00		50 DO	23€	,								
		(FILL)		54.77		00										
		Loose to compact, brown, medium to coarse sand, some gravel (FILL)		0.61												
- 1		······································			2	50 DO	20€	•								
	Stem)				3	50 DO	12€	,								
	Iger ollow (DO										
- 2	Power Auger Diam. (Hollov															
	Power Auger 200 mm Diam. (Hollow Stem)				4	50 DO	7€	,								
	200 r															
					5	50 DO	22									
- 3						00										
						50										
		PEAT		51.93 51.82	6	50 DO	17€									
		Compact grey SILTY CLAY Dense grey GRAVEL		51.55	7	50 DO	50 E	,								
- 4		End of Borehole	$\int_{-\infty}^{\infty}$	3.83												
		Auger Refusal														
- 5																
- 6																
- 7																
- 8																
- 9																
- 10																
- 9 - 10 DE: 1 :																
DE	r i H S	SCALE						H AGO	1de	r					LC	DGGED: D.G.

RECORD OF BOREHOLE: 10-08

BORING DATE: March 11, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ļ	무	F	SOIL PROFILE	-		0,	MPL		ppm				Conc.	••••	HYDR	k, cm/	S				اوږ	PIEZOMETER
DEPTH SCALE METRES	3 METI			PLOT	ELEV.	ER	ш	/0.3m	(1	12			24			10 ⁻⁵	10		0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR STANDPIPE
ME	BORING METHOD		DESCRIPTION	STRATA PLOT	DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	Heads ppm	bace C	omb	o. Vapo	ur Cono	:. [%LEL]		/ATER (p					ADDI LAB. T	INSTALLATION
	8	+	Outring Durfess	S				В	2	0	40	6	0	80		10	20	30) 4	40 	$\left - \right $	
0	T		Ground Surface Loose brown fine sand, some silt, trace	**	55.98 0.00						+			-	1		-					
			gravel, brick (FILL)			1	50 DO	8 €	÷													
					55.37																	
			Compact brown silty fine sand, some gravel with cobbles and boulders (FILL)		0.61		50															
1						2	50 DO	69€)													
		┢	Compact black sand, some gravel, trace silt, pieces of wood (FILL)		54.76 1.22																	
			trace silt, pieces of wood (FILL)			3	50 DO	27 (₽													
2																						
						4	50 DO	47 6	Ð													
		Stem)	Firm grey brown SILTY CLAY, some sandy gravel, organic layer from 3.66 to		53.54 2.44																	
	lger	NOIO	sandy gravel, organic layer from 3.66 to 3.73 m depth			5	50 DO	66	÷													
3	Power Auger	am. (H																				
	Р	200 mm Diam. (Hollow Stem)					E0															
		200				6	50 DO	11€	÷													
		╞	Compact grey SANDY SILT, trace		52.25 3.73	-	1															
4			gravel			7	50 DO	9 6	÷													
							50															
						8	50 DO	23€)													
5							-															
						9	50 DO	26€	Ð													
			Dense grey SANDY SILT, some gravel,		50.49 5.49																	
			trace clay		50.16	10	50 DO	35€	÷													
6	Drill	sing	Boulders	i. K	5.82		NO															
	Rotary Drill	NW Casing			49.63	11	NQ RC	DD														
	_		Grey LIMESTONE BEDROCK with interbedded shale		6.35																	
						12	NQ RC	DD	100	2	3	0										
7	Rotary Drill	NQ Core		臣					T.C.R. (%)	S.C.R. (%)		5.D. (%)										
	Rota	Z		臣								Н. О. D.										
					40.00		NQ RC	DD	100	2	20	0										
		+	End of Borehole		48.36 7.62						╈	- 1			1							
8																						
9																						
10																						
					-	•			Â											•		
DF	PT۲	1 S	CALE					- (7 7 Å	Er.	ה י	1401	ites								LC	GGED: D.G.

RECORD OF BOREHOLE: 10-09

BORING DATE: March 9, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

L.	DOF	SOIL PROFILE			SA	MPL	ES	Headspace Org. Vap	our Conc.	^[PPM] ⊕	HYDRAU	JLIC CONE k, cm/s	DUCTIVITY	,]	Ļģ	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	6 12 Headspace Comb. V ppm	18 I apour Cor	24 Ic. [%LEL]		TER CONT	ENT PERC		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
7	BOR		STRA	(m)	N	-	BLO	<u>20 40</u>	60	80	Wp 10		⊖ ^W	-1 WI 40	LAI	
0 -		Ground Surface Compact to dense grey brown sandy silt, some gravel, trace clay (FILL)		56.97 0.00		50 DO	9 6)								
1					2	50 DO	116)								
					3	50 DO	456)								
2		Compact black sand, some gravel, trace clay (FILL)		54.68 2.29		50 DO	476	,								
3	em)	Dense brown medium sand with cobbles (FILL)		54.33 2.64 53.95 3.02	5	50 DO	366	, ,								
	200 mm Diam. (Hollow Stem)	Loose grey to black SILTY CLAY, trace gravel with organic matter		53.16	6	50 DO	9 €									
4	200 mm [Compact brown medium to coarse SAND Compact to dense grey SANDY SILT, some gravel, trace clay		53.01 3.96		50 DO	15€	,								
5					8	50 DO	20€									
					9	50 DO	896	,								
6						50 DO	396									
7						50 DO 50 DO	49 (39 (
7		End of Borehole Auger Refusal		49.83 7.14												
8																
9																
10																
DE		SCALE	_	1	1	I		Gold	er		<u>ı </u>					OGGED: D.G. ECKED: K.P.H.

RECORD OF BOREHOLE: 10-10

BORING DATE: March 18, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

4	0	탈	SOIL PROFILE	1.		SA	MPL		Headspace Org	. Vapou	Conc. [I	PPM] ⊕		ONDUCT	IVITY,	T	چې	PIEZOMETER
METRES		BORING METHOD		PLOT	ELEV.	ER		0.3m				24 1	 D ⁻⁶ 10			0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR STANDPIPE
:ш . Д		BING	DESCRIPTION	STRATA PLOT	DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	Headspace Cor ppm	nb. Vap	our Conc	. [%LEL]		ONTENT			ADDI AB. T	INSTALLATION
נ		ß		STR	(m)	z		BLC	20 4	0 (50 8	30						
0			Ground Surface		57.82													
			Black sandy silt with organic matter (TOPSOIL)		0.05		50											
			Compact grey brown silty sand, some gravel with brick (FILL)			1	50 DO	14€)									
			3 • • • • • ()															
						2	50 DO	16€	,									
1					56.60		00											
			Compact black sand, some gravel, with brick and ashes (FILL)		1.22													
		Stem				3	50 DO	23	Ð									
	uger	Nollor	Compact brown to dark brown SAND	×	55.99 1.83													
2	Power Auger	200 mm Diam. (Hollow Stem)	Compact brown to dark brown SAND, some gravel, trace silt		1.03		50	16										
	Pc	D				4	50 DO	16										
		200				-												
						5	50 DO	10€	,									
3			0	-	54.77													
			Compact brown SAND and GRAVEL		3.05	6	50 DO	16€	,									
					_													
			Dense brown coarse SAND	688	54.16 3.66	7	50 DO	50 (,									
4			End of Borhole	12.	53.88 3.94	Ļ	DO											
			Auger Refusal															
5																		
-																		
6																		
6																		
7																		
8																		
9																		
9																		
DE	РΤ	THS	CALE														LC	DGGED: D.G.
									H AG	olde :	r							ECKED: K.P.H.

RECORD OF BOREHOLE: 10-11

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: March 18, 2010

ļ			SOIL PROFILE	1.		SA	MPL		Headspace ppm	· J ·	vapo		Φ		k, cn	ı/s		VITY,	T	₽₽	PIEZOMETER
METRES			DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspace	12 Com		18 Jour Cor	24 Inc. [%LEL]		IO ⁻⁶ I VATER	10 ⁻⁵	10 ⁻⁴ ENT P			ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
2				TRAT.	DEPTH (m)	NUN	≿	BLOW	ppm					w	/p —	(∋ ^w		WI	ADI LAB.	INGTALLATION
		-	Ground Surface	S	57.86			F	20	40	כ	60	80	-	10	20	30	4	0		
0			Black sandy silt with organic matter		0.08											-					
			Compact brown silty sand, some gravel			1	50 DO	15€	•												
			(FILL)																		
					56.87	2	50 DO	38	⊕												
1		Ī	Dense to loose brown and black sand, some gravel with brick, trace concrete		0.99		00														
			some gravel with brick, trace concrete and wood (FILL)				50														
						3	50 DO	57	⊕												
2																					
2						4	50 DO	6	⊕												
			Compact brown silty sand layers, some		55.42 2.44																
			clay, trace gravel with cobbles and boulders (FILL)			5	50 DO	246)												
3							50														
							50	~													
		Stem)			54.20	ь	50 DO	28€	7												
	Power Auger	Tollow	Very dense grey CLAYEY SILT, trace very fine sand with cobbles and		3.66																
4	ower A	Jiam. (F	boulders	\mathbb{H}		7	50 DO	53 (•												
	ď	J mm C			1																
		200		$\left[\right] \right]$		8	50 DO	34€	•												
				Ш																	
5				\mathbb{H}	1	9	50 DO	80€	•												
				ΥIL			50														
6				Ш		10	50 DO	74													
0					1	11	50 DO	50													
							00														
				Ш																	
7				\mathbb{H}	1	12	50 DO	50													
						13	50 DO	79													
				\mathbb{H}	49.96	.0	DO	. 5													
8		1	Fresh grey LIMESTONE BEDROCK with interbedded shale		49.96 7.90	14	NQ RC	DD	100	29	c	1									
							нu		\mid	\mid	F	-									
	, Drill	Sore				15	NQ RC	DD	(%) 100	44	(%) - 2	3									
	Rotary Drill	NQ Core					110		T.C.R. (%) 001 S.C.R. (%)		R.Q.D. (%)										
9				Ē		10	NO														
					48.36	16	NQ RC	DD	100	50	3										
		1	End of Borehole		9.50					-						\top					
10																					
10																					
	<u>рт</u>	<u> </u>																			
υE	۲I	n S	CALE						T PAV	Ge	olde	er ates								CH	OGGED: D.G.

RECORD OF BOREHOLE: 10-12

BORING DATE: March 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm
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S	C F	DOH I	SOIL PROFILE	F			MPL		ppm					Conc. [I	Ð				NDUCT]	ING	PIEZOMETER
METRES		Boring Method	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	түре	BLOWS/0.3m	Heads ppm			nb. V		r Conc	24 . [%LEL]	v v	Vp ⊢			PERCE	WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
			Ground Surface	ω.	56.68			ш 		20	4	0	60) 8	30		10	20	3	0 4	10		
0			Black sandy silt, with organic matter (TOPSOIL) // Dense grey brown silty sand, some gravel, with cobbles and boulders, trace		0.08	1	50 DO	15€	€														
1			wood at 1.22 m depth (FILL)			2	50 DO	25	Ð														
		w Stem)				3	50 DO	166	4														
2	Power Auger	200 mm Diam. (Hollow Stem)			54.55																		
		200 mm	Very dense black sand, some gravel, trace silt (FILL)		54.55 2.13 54.17	4	50 DO	60€	€														
3			Compact light brown sandy silt (FILL) Compact grey silty clay, trace sand (FILL) Dense dark grey silty clay to dark brown sandy silt with organic matter		2.59 53.71 2.97	5	50 DO	176	Ð														
			(FILL)		53.10	6	50 DO	336)														
4			Weathered LIMESTONE BEDROCK with interbedded shale		3.58	7	NQ RC		100		26		17										
	Rotary Drill	NQ Core				8	NQ RC	DD	T.C.R. (%)	S.C.R. (%)	30	R.Q.D. (%)	20										
5					51.52	9	NQ RC	DD	100)	26		21										
			End of Borehole		5.16				•														
6																							
7																							
8																							
9																							
10																							
DE	РТ	TH S	CALE	1					Â	P					<u> </u>	1					<u> </u>	LC)GGED: D.G.
1:										7.	G (NC	er	tes									ECKED: K.P.H.

RECORD OF BOREHOLE: 10-13

BORING DATE: March 9, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

0	UCH ⁷		SOIL PROFILE			SA	MPLI		Headspace Org. ppm					k, cm/s		T	AL	PIEZOMETER
METRES	BORING METHOD			STRATA PLOT	ELEV.	ЯËR	ш	BLOWS/0.3m	6 1			24	10			10 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE
Β	- UNIA		DESCRIPTION	IATA	DEPTH	NUMBER	ТҮРЕ	/SMC	Headspace Con ppm	ib. Vapo	ur Conc	. [%LEL]			ONTENT		ADDI AB. T	INSTALLATION
				STR	(m)	2		BL	20 4)6	0	30	10 10			40		
0	_	\square	Ground Surface		56.19													
Ĩ			Black silty clay with organic matter (TOPSOIL)	/	0.05		_											
			Compact brown sand, some gravel, trace brick with cobbles (FILL)	' 🗱		1	50 DO	14	,									
			trace block with cobbles (FILL)															
							50											
1						2	50 DO	20€	•									
					54.97 1.22													
		ē	Compact black sand, some gravel, trace silt (FILL)				50											
		Sten				3	50 DO	26€	• •									
	ıger	ollo	Compact brown sand, some gravel	-	54.36													
2	Power Auger	ا ب ل	(FILL)	⁄₩	54.21 1.98		50											
	Pov	m Dia	Compact black sand, some gravel, trace silt (FILL)			4	50 DO	24€	,									
		00 m		×	53.68													
		2	Loose brown SANDY SILT, some gravel, trace clay		2.51	F	50 DO											
			- · ·			5	DO	9 €	′									
3																		
						6	50 DO	3 🗧	,									
						-	υÜ	-										
						_	50											
4					52.18	7	50 DO	6€	,									
Í					4.01													
5																		
6																		
_																		
7																		
8																		
9																		
10																		
DE	ΡΤΙ	нs	CALE														LC	GGED: D.G.
		2							H AGG	bldei	Ľ.							ECKED: K.P.H.

RECORD OF BOREHOLE: 10-14

BORING DATE: March 12, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER	R, 64kg; DROP, 760mm

1			SOIL PROFILE			SA	MPL	.ES	Head: ppm	spac	e Org	. Vap	our	Conc. [F	PPM]	HYDR	RAULI k, c	C CC m/s	NDUC	FIVITY,	•	چ۲ ۲	PIEZOMETER
METRES	RORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	түре	BLOWS/0.3m		6 space			18 /apou 60	ır Conc.	24 [%LEL] [80	w	0 ⁻⁶ VATEI ∕p	10 R CC		PERCI	10 ⁻³ ENT WI 40	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
		1	Ground Surface		55.85					1	-			, (<u>, (</u>		1		
0 -			Dark brown sandy silt with organic matter (TOPSOL) // Compact dark brown sand, some gravel, trace silt and brick (FILL)		0.10		50 DO																
1	9r	ow Stem)	Compact, brown, medium to coarse sand, some gravel, trace silt (FILL)		54.63 1.22		50 DO 50 DO	26¢															
2	Power Auger	200 mm Diam. (Hollow Stem)				4	50 DO	176	•														
3					52.50 3.35		50 DO 50 DO																
			Compact light brown SANDY SILT		52.19 3.66	7	50 DO																
4	2	A Z	Fresh LIMESTONE BEDROCK with interbedded shale		51.86 3.99	8	NQ RC	DD	96	;	28		16										
5	Rotary Drill	NQ Core				9	NQ RC	DD	T.C.R. (%)	S.C.R. (%)	96	R.Q.D. (%)	96										
6 -			End of Borehole		<u>49.85</u> 6.00																		
7																							
8																							
9																							
10																							
DEI 1 :			CALE						Ĵ	ý,	Ga	old oc	ler Lia	tes									DGGED: D.G. ECKED: K.P.H.

RECORD OF BOREHOLE: 10-15

BORING DATE: March 12, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ.	ЬН	SOIL PROFILE	1.		SA	MPL		Headspace Org. Vapour ppm	•		CONDUCTIVITY /s		٦Å	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		STRATA PLOT	ELEV.	3ER	Ĕ	BLOWS/0.3m	6 12 1 Headspace Comb. Vapo			10 ⁻⁵ 10 ⁻⁴		ADDITIONAL LAB. TESTING	OR STANDPIPE
- WE	ORING	DESCRIPTION	RATA	DEPTH (m)	NUMBER	ТҮРЕ	LOWS	ppm					ADD	INSTALLATION
	ă		ST				BI	20 40 6	0 80	10	20 30	40		
- 0		Ground Surface Dark grey silty sand with organic matter	ESS	55.34 55.14							+ $+$			
		(TOPŠOÍL) Compact grey silty sand, some gravel,	۶.	0.20	1	50 DO	40 €	ə						
		Compact grey silty sand, some gravel, trace clay with cobbles (FILL)												
		Compact black sand, some gravel,	×	54.63 0.81		50								
- 1		trace silt (FILL) Loose, brown, fine to medium sand,		0.01	2	50 DO	14 (Ð						
	Ctom	trace gravel (FILL)												
	Auger				3	50 DO	7 E))						
	Power Auger													
2					4	50 DO	66	`						
	00			52.90	-	DO								
		Compact dark brown to black silt, trace brick and paper (FILL)		2.44										
					5	50 DO	20							
- 3		Loose coarse GRAVEL with dark	R	52.29 3.05		E0.								
		brown to black silt	, () }	51.96 3.38	6	50 DO	9					_		
		End of Borehole Auger Refusal		3.38										
4														
- 5														
- 6														
-														
• 7														
- 8														
0														
- 9														
9														
- 10														
10														
			•						I	• •	· I			
DE	РТН	SCALE					- (Golder					LC	GGED: D.G.

RECORD OF BOREHOLE: 10-16

BORING DATE: March 12, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ц	Ъ-ЧО	SOIL PROFILE			SA	MPL	ES	ppm	pace Or	j. vap	our C	Jonc. (F	PM] ⊕					viit,	Т	μĞ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD		LOT		<u>m</u>		.3m	6	6 [.]	12	18	2	4	1	0 ⁻⁶					ADDITIONAL LAB. TESTING	OR
U U U	ING I	DESCRIPTION	TA P	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	Heads ppm	pace Co	mb. Va	apou	r Conc.	[%LEL]	W	ATER	CONT	ENT F	PERCE	NT	DDIT B. TE	STANDPIPE INSTALLATION
n E	BOR		STRATA PLOT	(m)	N		BLO							Wp	₀ 					LAI	
		Ground Surface		55.72		-		2	0 4	40	60	. 2	0		0	20	30	4	0		
0		Black sandy silt with organic matter	1	0.08						1	+					+	$\neg \uparrow$				
		(TOPSOIL) Compact dark brown to brown sand, some gravel, trace silt with pieces of	1		1	50 DO	22	Ð													
		some gravel, trace silt with pieces of concrete (FILL)		×.																	
				Š.																	
1				×.	2	50 DO	53	₽													
		Loose to compact brown fine cond		54.50 1.22																	
	Ê	Loose to compact brown fine sand (FILL)		1.22	_	50															
	v Ster			×.	3	50 DO	136	Ð													
	Nollov																				
2	Power Auger 200 mm Diam. (Hollow Stem)			×	4	50 DO	4 €	a													
	Pol			×		DO															
	2001																				
					5	50 DO	з е	Ð													
3				52.70																	
-		Peat with sand and wood (FILL)		3.02																	
					6	50 DO	2 €	Þ													
				3																	
				E1 70	7	50 DO	1 €	Þ													
4		Fresh grey LIMESTONE BEDROCK with interbedded shale	- H	51.73 3.99		1				\square											
		with interdedded shale			8	NQ RC	DD	100	91		83										
	≓.		Ħ	1																	
	Rotary Drill NQ Core		臣					T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)											
5	NG		Ħ	1	9	NQ RC		1.C	S.C.	B.B.	100										
-			E	1	9	RC	00	100	100	1	100										
				50.21 5.51																	
		End of Borehole	Γ	5.51												T					
6																					
7																					
8																					
9																					
10																					
		SCALE						Â	G											LC	OGGED: D.G.
DE																					

RECORD OF BOREHOLE: 10-17

BORING DATE: March 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

March 15, 2010

		BORING METHOD	SOIL PROFILE	1.	1	SA	AMPL		Headspace Org	. vapou				k, cm/s		1V11Y,	T	RGA	PIEZOMETER
METRES		MET		STRATA PLOT	ELEV.	EB	μ.	BLOWS/0.3m				24	10				0-3	ADDITIONAL LAB. TESTING	OR STANDPIPE
ΜE		BING	DESCRIPTION	ATA	DEPTH		TYPE	/SMC	Headspace Co ppm	mb. Vapo	our Conc	. [%LEL]			ONTENT			ADDI: AB. T	INSTALLATION
		BO		STR/	(m)	ž	[BLC		40 (60	80	Wp 10				WI 40		
		\neg	Ground Surface		56.19	1				Í	-			. 2					
0		Π	Dark brown silty sand with organic material (TOPSOIL)																
			Loose to compact dark brown silty sand, some gravel with brick, cobbles	∕ 🗱	0.13	1	50 DO	13 €	€										
			sand, some gravel with brick, cobbles and boulders (FILL)																
1					3	2	50 DO	9	Ð										
			Compact black sand, some gravel,		55.05 1.14														
			trace silt (FILL)		E4 67		50												
		Stem)	Loose to compact, brown, medium to coarse SAND, trace gravel with cobbles and boulders		54.67	3	50 DO	18 €	€										
	er	low S	coarse SAND, trace gravel with cobbles and boulders																
2	Power Auger	, <u>Ы</u>					50												
	Powe	Diam				4	50 DO	7€)										
		200 mm Diam. (Hollow			1	⊢						1							
		20				-	50	200	<u>, </u>			1							
							50 DO	206	7										
3			Compact coarse GRAVEL with dark	ہ ک	53.14 : 3.05	\vdash	-					1							
			brown silty sand	° C		6	50 DO	18€	,			1							
				°,	,	Ē	00												
				° 0		\vdash						1							
4				。 0	9 		50 DO	23€)			1							
ŕ	-	╘	End of Borehole		52.08 4.11					-	+	-					-	+	
			Auger Refusal																
5																			
6																			
						1						1							
7						1													
						1													
						1													
8						1						1							
						1						1							
						1						1							
						1						1							
9																			
						1						1							
						1						1							
						1						1							
10						1						1							
						1						1							
	-	1		-	•														
DE	PT	TH S	CALE						H ASS	olde	r							LC	GGED: D.G.
1:	5	0							V JA SS	ociz	tes							CHI	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-18

BORING DATE: March 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ		₽	SOIL PROFILE			SA	MPL	ES	Head ppm	space	e Org	. Va	pour	Conc. [F	PM] ⊕	HYDR	AULIC k, cn	CO n/s	NDUCT	TIVITY,	Т	_jÿ	PIEZOMETER
DEPTH SCALE METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m			e Cor			ır Conc.	24 [%LEL]	w w	р —			PERCE	WI	ADDITIONAL LAB. TESTING	STANDPIPE INSTALLATION
	ŀ	-	Ground Surface		56.35					20	4	0	60) 8	0		10	20	3	i0 4	40		
- 0		Π	Black sandy silt with organic matter		56.22 0.13																		
			Loose black to dark brown sand, some		0.15	1	50 DO	8 €	•														
			clay, trace gravel (FILL) Dense grey brown silty sand, some		55.74 0.61																		
			gravel, trace clay with cobbles and boulders (FILL)		0.01	2	50 DO	446	`														
- 1						2	DO	440	7														
					54.90																		
		Stem	Wood (FILL)	₩	1.52	3	50 DO	14			⊕												
	luger	Hollow	Compact black sand, some gravel, trace silt (FILL)		54.47																		
- 2	Power Auger	iam. (Compact brown fine sand, some silt (FILL)		1.88		50 DO		~														
	ď	200 mm Diam. (Hollow Stem)	Compact black sand (FILL)	×	54.06	4	DO	29	⊕														
		200	Compact grey brown silty sand with cobbles and boulders (FILL)		2.36																		
			ייייטטטיט מויט טטוועכוס (ד ILL)			5	50 DO	16 €	Ð														
- 3			Compact draw brown clayou cond with		53.30 3.05																		
			Compact grey brown clayey sand with wood (FILL)		0.03	6	50 DO	12	Ð														
						5			÷														
					52.46	7	NQ RC	DD€	•														
- 4			Fractured LIMESTONE BEDROCK with interbedded shale		3.89	8	NQ RC	DD	10	0	29		0										
				Ħ	52.01	J	RC	50		_	23		Ľ										
	Jii (ę	Fresh LIMESTONE BEDROCK with interbedded shale		4.34				(%)	(%,		(%)											
	Rotary Drill	NQ Core					NG		T.C.R. (%)	o S.C.R. (%)		R.Q.D. (%)											
- 5	ľ			Ħ		9	NQ RC	DD	⊢ 10	0 0	98	۳.	94										
	⊢		End of Borehole	Ē	50.84 5.51					-	1	\vdash					-	+					
- 6																							
- 7																							
- 8																							
- 9																							
- 10																							
									ð														
DE	PT	TH S	CALE					(A V	G	əld	ler	tes								LC	OGGED: D.G.
1 :	: 5	50								7.			1	400								сц	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-19

BORING DATE: March 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

LE LE		릴	SOIL PROFILE			SA	MPL		DYNAN RESIS	AIC F	PENE CE, B	TRAT	10N 5/0.3m	Ì,	HYDR	AULIC C k, cm/s	ONDUC	FIVITY,	T	부형	PIEZOMETER
DEPTH SCALE METRES		BORING METHOD		STRATA PLOT	ELEV.	EB	ш	BLOWS/0.3m	2		40		60	80					0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR
EPTF ME		RING	DESCRIPTION	ATA	DEPTH	NUMBER	TYPE	/SWC	SHEAF Cu, kPa	R STF a	RENG	атн	nat V. rem V.	+ Q-● ∌ U-O	N N					ABDI'	INSTALLATION
	1	8		STR	(m)	z		BLO	2	0	40		60	80					0	_ _	
- 0			Ground Surface		56.42																
- 0			Black sandy silt with organic matter ((TOPSOIL)	The second secon	0.10																
			Compact to very dense grey brown silty sand, some gravel with brick, concrete,			1	50 DO	14													
			sand, some gravel with brick, concrete, and asphalt (FILL)																		
- 1						2	50 DO	50													
		Stem)																			
	Jer	Nollow					50														
	Power Auger	Ŭ.			54.74	3	50 DO	10													
	Pow	200 mm Diam. (Hollow Stem)	Compact black sand, some gravel	×	54.59 1.83																
- 2		um O	Compact brown silty sand, some gravel, trace black sand (FILL)		1.00		50														
		50	gravel, trace black sand (FILL)			4	50 DO	18													
			Dense grey brown silty clay, trace	₩	53.98 2.44		-														
			gravel (FILL)			5	50 DO	20													
					53.45	э	DÖ	36													
- 3	ĺ		Dense black SANDY SILT with organic /	pre		6	50 DO	50							1						
			Dense brown fine SAND, some silt	<u>~~~</u>	53.17 3.25	ŀ		-			+										
			End of Borehole Auger Refusal	1																	
			-	1																	
- 4																					
- 5																					
- 6																					
- 7																					
	ĺ			1											1						
- 8				1																	
				1																	
				1																	
				1																	
- 9				1																	
9	ĺ			1											1						
				1																	
- 10	ĺ			1											1						
	-				•	-	•			3						•	•				•
			CALE					(Go	lde	er ates								DGGED: D.G.
1:	: 5	50							V	A	SSC)Cİ	<u>ates</u>	,						СН	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-20

BORING DATE: March 22, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

	дон <u>.</u>	SOIL PROFILE	L	1	SA	MPL		Headspace Org. ppm	Vapour (ONDUCT		T	NG	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH		ТҮРЕ	BLOWS/0.3m	6 12 Headspace Com ppm				ATER CO	ONTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	BOR		STRA	(m)	R		BLOV	20 40	60	80	Wp 1		0 3		wi io	LAI	
0		Ground Surface Black sandy silt with organic matter		57.94													
		(TOPSOIL) Compact dark brown silty sand and brick (FILL)	1	0.00		50 DO	18€	,									
		Compact sand, some gravel, trace concrete and brick (FILL)		57.33 0.61													
1		concrete and brick (FILL)			2	50 DO	39 (>									
				56.11		50 DO	16	Ð									
2	(me	Loose to compact brown SILTY SAND with cobbles and boulders	Ĩ	56.11 1.83		50											
	Iger ollow Str				4	50 DO	8 €										
	Power Auger			55.20 2.74	5	50 DO	30€	,									
3	Power Auger 200 mm Diam (Hollow Stam)	Dense grey SILTY SAND, some gravel, trace clay		2.74		DO											
					6	50 DO	66€	,									
		Very dense grev CLAYEY SILT. some		54.28 3.66													
4		Very dense grey CLAYEY SILT, some very fine sand, trace gravel	\mathbb{H}	1	7	50 DO	97€	,									
				1													
					8	50 DO	86€										
5				52.86													
		End of Borehole Auger Refusal		5.08													
6																	
7																	
8																	
9																	
9																	
DE	PTH	SCALE					(Go	lder)GGED: D.G. ECKED: K.P.H.

RECORD OF BOREHOLE: 10-21

BORING DATE: March 22, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

TE: March 22, 2010

- -			SOIL PROFILE	1.		SA	AMPL		Headspace Org. ppm	Vapour	Conc. [PPM] ⊕				T	RG	PIEZOMETER
METRES	BOBING METHOD		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 12 Headspace Com				10 ⁻ WA	NTENT	PERCE	0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
2				STRA	DEPTH (m)	INN	⊢	BLOV	ppm 20 40	. 6	0	80	Wp 10			WI 40	AD	
0			Ground Surface Black sandy silt with organic matter	EEE	58.02									 				
			(TOPSOIL)			1	50 DO	11€	ə									
					57.26													
1			Compact brown silty sand, some gravel, trace clay (FILL)		0.76		50 DO	18€	ə									
			Compact black sand, some gravel		56.80 1.22													
			(FILL)			3	50 DO	19	•									
2			Compact brown to dark brown sandy silt, some gravel with cobbles and boulders (FILL)		56.19 1.83													
			boulders (FILL)			4	50 DO	13€	•									
		tem)			EE 00		50											
3	uger	200 mm Diam. (Hollow Stem)	Compact grey silty sand, some clay (FILL)		55.28 2.74 54.97		50 DO	10	⊕									
U	Power Auger	Diam. (Dense grey clayey silt, some very fine sand (FILL)		3.05		50 DO	33€										
		200 mm			54.36 3.66		DO	330	2									
4			Dense to very dense, grey SANDY SILT, some gravel, trace clay with cobbles and boulders		3.66	7	50 DO	42€	•									
4																		
						8	50 DO	54€	ə									
5																		
5						9	50 DO	•	→									
						10	50 DO	50€	<u>`</u>									
6							DO											
0			End of Borehole		51.85 6.17	11	50 DO	50€)					 				
			Auger Refusal															
7																		
,																		
8																		
~																		
Э																		
9																		
10																		
	PT	нs	CALE							14 -				 			LC	DGGED: D.G.
1 :									H AGO	nuel	r tes							ECKED: K.P.H.

PROJECT: 10-1122-0044

RECORD OF BOREHOLE: 10-22

LOCATION: See Site Plan

BORING DATE: March 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

1	Ц П	Ž	SOIL PROFILE	1.		SP	AMPL	_	ppm	-			PPM] ⊕		k, cm/s		IVITY,		₽₽	PIEZOMETER
METRES	BOBING METHOD		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspa				24 . [%LEL]		D ⁻⁶ 1	0 ⁻⁵ 1		0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
2	VIACA			STRAT.	DEPTH (m)	NUN	∠	BLOW	ppm 20				80	Wp	• I				ADI LAB.	INGTALLATION
0			Ground Surface		56.80					4		50	00			.0 3		+0		
Ŭ			Black sandy silt with organic matter (TOPSOIL)		0.10		50													
			Compact grey brown silty clay, trace gravel (FILL)		50.10	1		10€	·											
			Compact brown sand, some gravel, trace silt and cobbles (FILL)		56.19 0.61	2	50 DO	50€	•											
1																				
			Compact black sand, some gravel, trace silt (FILL)		55.58 1.22	3	50 DO	32	⊕											
		Stem)	trace silt (FILL)																	
	Auger	(Hollow Stem)	Very dense grey coarse gravel with cobbles (FILL)		54.97 1.83	4	50 DO	80	⊕											
2	Power Auger	Diam.	cobbles (FILL)		54.67 2.13		-													
		200 mm Diam.	Compact dark brown sand, some silt, trace gravel, cobbles and boulders (FILL)			5	50 DO	23€	•											
			PEAT		54.13 2.74															
3			Compact grey brown SILTY CLAY		53.75	6	50 DO	17€	,											
			Dense grey SILTY SAND, some gravel, trace clay with cobbles and boulders		3.05		DO													
						_	50													
					52.84	7	50 DO	65€	"											
4			End of Borehole Auger Refusal	<u>usr</u>	3.96															
5																				
6																				
7																				
8																				
9																				
9																				
10																				
							<u> </u>													
DE	PT	НS	CALE					(777		olde ocia								LC	DGGED: D.G.

RECORD OF BOREHOLE: 10-23

BORING DATE: March 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

			SOIL PROFILE	-	1	SA	MPL		Headspace Org					AULIC CO k, cm/s			Ţ	ING	PIEZOMETER
METRES	BODINO METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspace Co ppm			24 [%LEL]	W		ONTENT	0 ⁻⁴ 1		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
		n	Ground Surface	ST	. ,			ā	20 4	0 6	50 E	30					10		
0		\square	Ground Surface Dark grey silty sand with organic matter, trace brick (FILL)		56.24 0.00		50 DO	11 €											
					55.63	1	DO	114	7										
1			Dense black crushed shale (FILL)		0.61	2	50 DO	49 (Ð										
		w Stem)	Compact, brown, medium to coarse sand, some gravel with cobbles and boulders (FILL)		54.72 1.52	3	50 DO	16€	•										
2	Power Auger	200 mm Diam. (Hollow Stem)	boulders (FILL)				50												
	Po	00 mm Di				4	50 DO	11€	• •										
		3				5	50 DO	13€	,										
3																			
			Compact to dense dark grey silty clay with organic matter (FILL)		52.89 3.35	6	50 DO	15€	,										
					52.30	7	50 DO	50 (,										
4		Ţ	End of Borehole Auger Refusal		3.94														
5																			
6																			
7																			
8																			
9																			
9																			
10																			
DF	PT	нs	CALE	1	I	l					1	1	1			I	I		OGGED: D.G.
1 :			-						H G	olde: ociz	r tas								ECKED: K.P.H.

RECORD OF BOREHOLE: 10-24

BORING DATE: March 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

N S	Ē																	
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	6 12 Headspace Comb. ppm	18 Vapou		4 [%LEL]	WA	0 ⁻⁶ 10 ATER CO	NTENT	PERCE	NT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
	ă		ST	(11)			BL	20 40	60	80	0	10	0 2	0 3	0 4	0		
- 0		Ground Surface Black sandy silt with organic matter	X	56.93														
			/	0.10		50												
		Compact to very dense black and brown sand, some gravel with asphalt and brick (FILL)			1	50 DO	18	1										
• 1		Compact to very dense black sand,		55.71 1.22	2	50 DO	80	Ð										
	/ Stem)	Compact to very dense black sand, some gravel, with asphalt, trace brick (FILL)			3	50 DO	29 €)										
2	Power Auger 200 mm Diam. (Hollow Stem)			54.49	4	50 DO	51 6)										
- 3		Dense to compact dark brown and grey brown silty clay with some sand and brown silty sand, some gravel layers (FILL)		2.44	5	50 DO	38€)										
					6	50 DO	12€)										
- 4					7	50 DO	13€											
┝		End of Borehole	X	52.64 4.29		\vdash			-+									
		Auger Refusal																
- 5																		
- 6																		
-																		
- 7																		
- 8																		
- 9																		
Ĩ																		
10																		
		<u> </u>																
	ртн	SCALE						H Asso									10	GGED: D.G.

RECORD OF BOREHOLE: 10-25

BORING DATE: March 10, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

		DOH-	SOIL PROFILE	1.		SA	MPL		Heads ppm	pace Org	j. vapou	r Conc. [F	-rm] ⊕		k, cm/s		IIVITY,	T	NG	PIEZOMETER
METRES		BORING METHOD	DECODIDITION	STRATA PLOT	ELEV.	BER	ЪЕ	BLOWS/0.3m	Heads	6 i pace Co	12 mb. Vap	18 2 J our Conc.	24 I [%LEL]	1 w		0 ⁻⁵ 1 L ONTENT		0 ⁻³ ⊥ ⊥ NT	ADDITIONAL LAB. TESTING	OR STANDPIPE
۲ 2		BORIN	DESCRIPTION	TRAT	DEPTH (m)	NUMBER	түре	3LOW						Wp	⊳ ⊢			WI	ADC LAB.	INSTALLATION
	╞	ш	Ground Surface	ەن ا	55.79	-	\vdash		2	20 4	40 (50 E	30	1	0 2	20 3	i0 4	10		
0	F		Dark brown silty sand with organic matter (TOPSOIL)																	<u> </u>
			Dense grey brown to brown sand, some gravel, trace silt with cobbles and boulders, trace brick from 1.22 to 1.52		0.15	1	50 DO	29€)											
			m depth (FILL)			2	50 DO	46												
1																				
		v Stem)	Loose brown fine to medium sand (FILL)		54.27 1.52	3	50 DO	15€	•											
2	² ower Auger	200 mm Diam. (Hollow				4	50 DO	3 6	•											
		200 mm				5	50 DO	4				Ð								
3			Wood (FILL)		52.89 2.90		DO	-												
					52.13	6	50 DO	15				⊕								
4			Very dense coarse GRAVEL with dark brown silt (FILL)		3.66	7	50 DO	53	⊕											
	F	-	End of Borehole Auger Refusal	:0.:	4.14															
5																				
6																				
_																				
7																				
~																				
8																				
9																				
10																				
DE	P	TH S	SCALE						Â	G	olde								LC	DGGED: D.G.
1 :		50									und	L							сц	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-26

BORING DATE: March 24, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

March 24, 2010

Ľ,	DD-	SOIL PROFILE			SA	AMPL	.ES	ppm	iuspai 1	oc org	j. vaj	pour	00110. [1	PPM] ⊕	HYDR.	k, cm	/s		•••••	T	μÂΓ	PIEZOMETER
METRES	BORING METHOD		LOT		Æ		.3m		6	1	12	18	3 2	24	1		10-5			0-3	ADDITIONAL LAB. TESTING	OR
MET	SNG	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	Hea ppm	idspa	ce Cor	mb. \	/apoi	ur Conc	. [%LEL]	w				PERCE		DDIT .B. TE	STANDPIPE INSTALLATION
ž	BOR		STRA	(m)	Ъ		BLO		20		40	60		30	Wp	o —	20	- 0^W 3	I	WI 40	[₹₹]	
		Ground Surface		55.27					20	4	10	0	, ('			3		10		
0		Black sandy silt with organic matter (TOPSOIL)		0.08					\top								+			1		
		Compact grey crushed stone, some sand (FILL)	-∕ 🗱	54.81	1	50 DO	20€	Ð														
		sand (FILL) Compact black sand, some gravel	- ី	54.66																		
		\(FILL)	/	0.61																		
1		Compact to dense grey crushed stone, some sand (FILL)		3	2	50 DO	27€	Ð														
	Ê																					
	w Ste					50																
	Power Auger 200 mm Diam. (Hollow Stem)				3	50 DO	37€	Ð														
	ower.	Compact, brown, medium to coarse	-888	53.44 1.83		-																
2		Compact, brown, medium to coarse sand, trace crushed stone (FILL)			4	50 DO	146	4														
	200			50.00		DO	-+ 0	Í														
		Loose grey brown silty sand, trace crushed stone (FILL)	- 🗱	52.83 2.44		1																
		crushed stone (FILL)			5	50 DO	6 €	Þ														
3				52.22	L																	
-		Peat, trace wood (FILL)		52.22 3.05 51.97	6	50 DO	50€	Þ														
		Highly weathered LIMESTONE		51.79	Ŀ																	
		BEDROCK Grey LIMESTONE BEDROCK with interbedded shale	'臣	3.48				ΙT														
		Interbedded shale	臣																			
4			臣		7	NQ RC	DD	(%)	00	59	(%)	27										
	Rotary Drill NO Core		臣					T.C.R. (9			R.Q.D. (
	Rott		þ					Τ̈́	Ű	i 🗋	Н											
			臣		8	NQ RC	DD		00	100		100										
5				50.22	0	RC	00		00			100										
		End of Borehole		5.05					T													
6																						
7																						
_																						
8																						
9																						
10																						
	РТН	SCALE						Â			.1 -	10-	tes								LC	DGGED: D.G.
DE									9													

RECORD OF BOREHOLE: 10-27

BORING DATE: March 24, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ц	дон	SOIL PROFILE			SA	MPL		Headspace ppm	Org.	vapou	Conc. [erivij		k, cm/s	ONDUC	IIVIIY,	T	μģ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspace ppm	12 Com			24 	w	ATER C	I ONTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
ЧN	BORIN		TRAT,	DEPTH (m)	NUM	Ľ	BLOW:						Wp		—0 ^W		WI	ADI LAB.	INSTALLATION
		Ground Surface	s	55.59			_	20	40)	50	80		0 2	20 3	30 4	10		
- 0		Black sandy silt with organic matter (TOPSOIL)		0.05					1										
		Compact grey crushed stone, some sand, trace concrete (FILL)	8		1	50 DO	17 (•											
		Loose black sand, some silt, trace ash	-	55.06 0.53															
		and brick (FILL)			2	50 DO	6	Ð											
- 1				54.37	Ĺ	DO	Ű	*											
	2	Compact brown silty sand, some clay, trace gravel (FILL)		1.22															
	v Sterr				3	50 DO	25 6	•											
	Auger	Compact grey brown silty clay (FILL)	-	53.76 1.83															
- 2	Power Auger	Compact grey brown sitty clay (FILL)		1.00	4	50 DO	104												
	Power Auger 200 mm Diam. (Hollow Stem)			59.15	4	DO	10€												
	200	Loose brown coarse sand, trace gravel (FILL)		53.15 2.44															
					5	50 DO	8 €	,											
- 3		Compact grey brown SILTY CLAY		52.54 3.05															
				1	6	50 DO	12€	,											
				52.03 3.56															
		Weathered LIMESTONE BEDROCK		3.56 51.73															
- 4		End of Borehole Auger Refusal		3.86															
- 5																			
- 6																			
- 7																			
- 8																			
Ŭ																			
- 9																			
- 10																			
DF	ртн	SCALE						Â	~									10	OGGED: D.G.
									[÷n	Nde	r <u>\tes</u>								

RECORD OF BOREHOLE: 10-28

BORING DATE: March 22, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

μ	ПОН	SOIL PROFILE	1.		SA	MPLI		Headspace Org. Vap ppm	our Conc.	[PPM] ⊕	1			IVIIY,	T	وبر	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 12 Headspace Comb. V ppm	18 I apour Con	24 c. [%LEL]		⁸ 10 TER CO) ⁻⁵ 1 ONTENT		0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE
ΔUE	BORIN	DESCRIPTION	TRAT/	DEPTH (m)	MUN	Ł	BLOW				Wp		-0 ^W		WI	ADC LAB.	INSTALLATION
		Ground Surface	o.	56.33				20 40	60	80	10	2	0 3	0 4	40		
- 0		Black sandy silt with organic matter (TOPSOIL)		56.33 56.20 0.13													
		Compact brown coarse sand, some gravel (FILL)	1	0.13	1	50 DO	17										
		gravel (FILL)															
				55.42 0.91	2	50 DO	22	ə									
- 1		Loose to compact black sand, some gravel, some glass, trace wood from 1.83 m depth (FILL)		0.91		DO											
						50											
	(me				3	50 DO	10 🗄	€									
_	Power Auger 200 mm Diam (Hollow Stem)																
- 2	Power Auger				4	50 DO	4 €	,									
	Pow			53.89 2.44													
	200	Loose brown to grey brown SILTY CLAY		2.44	5	50 DO	9 🖶										
- 3						00	Í										
- 0																	
					6	50 DO	6 €										
		Dense brown SILTY SAND, some		52.67 3.66	-7	50 DO	∳										
- 4		Dense brown SILTY SAND, some gravel with cobbles and boulders		1		_	60 🗄	•									
	\square	End of Borehole		52.09	-	DO		-	_								
		Auger Refusal															
- 5																	
- 6																	
_																	
- 7																	
- 8																	
Ŭ																	
- 9																	
- 10																	
DE	PTH	SCALE							0.7							LC	GGED: D.G.
	50							H Gold	Υ Γ								ECKED: K.P.H.

RECORD OF BOREHOLE: 10-29

BORING DATE: March 22, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

511 22, 2010

ا _ ل	, F	2 -	SOIL PROFILE	L		SA			Headspace C ppm					k, cm/s				RA	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspace C			24 c. [%LEL]		TER CO	ONTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
-	BOBI			STRA	DEPTH (m)	ÎΝ	Ĩ,	BLOW	ppm 20	40	60	⊔ 80	Wp 10		0 3		WI 40	AD	
0	_,		Ground Surface		56.80							1					-		
		- N	Black sandy silt with organic matter (TOPSOIL)		56.67 0.13		50 DO	100											
			Compact brown silty clay, some sand, trace gravel (FILL)		56.19	1	DO	10€	7										
		F	Compact brown silty sand, some gravel, trace concrete (FILL)		0.61														
1						2	50 DO	28€	•										
		┝	Very dense black sand, some gravel,		55.58 1.22														
			trace brick (FILL)			3	50 DO	55	Ð										
		Stem)	-		54.97														
2	uger	low	Compact brown coarse sand (FILL)		1.83 54.67 2.13		50 DO	18	•										
	Power Auger	iam. (F	Compact grey brown silty clay (FILL)		2.13	4	DO	10	•										
	ď	200 mm Diam. (Hollow Stem)	loose dark brown silty sand with		54.21 2.59														
		20(Loose dark brown silty sand with organic matter (FILL)		2.00	5	50 DO	8 €	•										
3		┝	Hard grey CLAYEY SILT, some very	T A A A A A A A A A A A A A A A A A A A	53.75 3.05														
			fine sand	\mathbb{H}		6	50 DO	28€	>										
					1														
4				$\ $		7	50 DO	496	•										
4				Ш			00												
		+	End of Borehole	╢┟	52.37 4.43								$\left \right $					$\left \right $	
			Auger Refusal																
5																			
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7																			
í																			
8																			
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9																			
											1							1	
DE	PTI	H SC	CALE					1		olde soci								LC	GGED: D.G.

RECORD OF BOREHOLE: 10-30

BORING DATE: March 25, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ	P	SOIL PROFILE			SA	MPL	ES	ppm	oc org.	. vapoui	Conc. [PPM] ⊕	I II DR.	k, cm/s	ONDUC		T	ي ب	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	түре	BLOWS/0.3m	6 Headspac	1; ce Com			24 [%LEL]	w	ATER C	I ONTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
Ľ	BOF		STR/	(m)	Ŋ		BLO	20	40	06	0	80			<u> </u>		WI 10	∀ ■	
- 0		Ground Surface		57.87				Í											
		Black sandy silt with organic matter (TOPSOIL)		57.72 0.15		50 DO													
		Loose brown silty sand, some gravel (FILL)			1	DO	6€	,											
• 1					2	50 DO	4 €	•											
		Compact to dense light brown silty	-	56.65 1.22															
		Compact to dense light brown silty sand, some gravel, trace clay (FILL)			3	50 DO	176	,											
						00													
· 2						50													
					4	50 DO	35€	•											
	item)	Dense to very dense grey SILTY	- MA	55.43 2.44															
	uger ollow S	Dense to very dense grey SILTY SAND, some gravel, trace clay with cobbles and boulders			5	50 DO	49€	,											
3	Power Auger Diam. (Hollo																		
	Power Auger 200 mm Diam. (Hollow Stem)				6	50 DO	49€	,											
	200																		
					7	50 DO	86 E	,											
• 4																			
					8	50 DO	926	,											
						00													
					_														
• 5				1															
					9	50 DO	99 E	,											
]															
- 6	RD NW				10	50 DO	50												
Ŭ	ΞŻ					NO													
					11	NQ RC	DD												
		Fresh grey LIMESTONE BEDROCK with interbedded shale		51.19 6.68															
- 7	re re				12	NQ RC	DD	100	100	100									
	Rotary Drill NQ Core		臣			110													
	"		Ē					T.C.R. (%)		R.Q.D. (%)	1								
					13	NQ RC	DD	100	97	<u>۳</u> 91									
- 8																			
		End of Borehole		49.62 8.25														$\left \right $	
- 9																			
• 10																			
_		·			L						1	1	I	I	1	1	1		
DE	PTH S	SCALE					(G	olde ociz	r							LC	GGED: D.G.

RECORD OF BOREHOLE: 10-31

BORING DATE: April 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

$\begin{bmatrix} 5 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ -2 \\ $	ALE		НОВ	SOIL PROFILE	L-		-	SA	MPL	1	Head ppm		ce Or	rg. Va	apour	Conc.	. [PPI	^{M]} ⊕		k,	cm/s		τινιτη		T	NG	PIEZOMETER
Image: constraint of the construction of the construle of the construction of the construction of the c	METRES		RING MET	DESCRIPTION	TA PLOT		_EV.	JMBER	ΓYPE	WS/0.3m	Head	Ispa							v	NATE	ER CO	NTEN	T PER	CEN	т	DDITION	OR STANDPIPE INSTALLATION
0 conversion state state <t< th=""><th>2</th><th></th><th>BOR</th><th></th><th>STRA</th><th></th><th>m)</th><th>R</th><th></th><th>BLO</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	2		BOR		STRA		m)	R		BLO																	
a	0				223							Ţ	_		_		T										
a a b a a b a a b a <td></td> <td></td> <td></td> <td>matter (TOPSOIL)</td> <td>1.000</td> <td></td> <td>0.15</td> <td>1</td> <td>50</td> <td>254</td> <td> </td> <td></td>				matter (TOPSOIL)	1.000		0.15	1	50	254	 																
1 1 <td></td> <td></td> <td></td> <td>compact brown sand, some gravel with concrete and brick (FILL)</td> <td></td> <td></td> <td></td> <td>'</td> <td>DO</td> <td>250</td> <td>ľ</td> <td></td>				compact brown sand, some gravel with concrete and brick (FILL)				'	DO	250	ľ																
1 1 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>F</td> <td></td>							F																				
a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) Image: Particular Stand, some gravel (FILL) a Imad	1							2	50 DO	286	€																
a 1 1 1 1 0 4 0 0 a 1 4 0 0 0 0 0 0 a 1 1 0 0 0 0 0 0 0 0 a 1 1 0 </td <td></td> <td></td> <td></td> <td>Dense black sand, some gravel (FILL)</td> <td></td> <td><u> </u></td> <td>55.44 1.22</td> <td></td>				Dense black sand, some gravel (FILL)		<u> </u>	55.44 1.22																				
2 1 4 5 2 0						Š.		3	50	46	Ð																
a a b b b c d <lid< li=""></lid<>			Stem)						00																		
a a b b b c d <lid< li=""></lid<>	2	Auger	Hollow						50																		
a a b b b c d <lid< li=""></lid<>		ower #	Diam. (4	DO	42	₽																
3 -		4	1 mm C	Stiff brown SILTY CLAY, trace sand	Ê		54.22 2.44																				
a 			20					5	50 DO	32																	
- -	3						ļ																				
- -								6	50	7	₽																
1 End of Borehole Auger Retusal 4.27									00		Í																
1 End of Borehole Auger Retusal 4.27							ſ		50																		
End of Borehole Auger Refusal 6 7 7 8 9 9 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1	4							7	DO	126	₽																
s .	ŀ			End of Borehole			52.39 4.27					+															
6 7 8 9				Auger Herusar																							
6 7 8 9	_																										
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DEPTH SCALELOGGED: D.G.1:50CHECKED: K.P.H.				SCALE						((4		G	ol	deı	[_										

RECORD OF BOREHOLE: 10-32

BORING DATE: April 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

ų	ПОР	SOIL PROFILE			SA	MPL		Heads ppm	pace Or	rg. Vap	oour C	Conc. [F	PPM] ⊕	HYDR	AULIC (k, cm/	CONDUC s	TIVITY,	T	٦ģ	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	түре	BLOWS/0.3m	Heads		12 omb. V	18 1 /apou		24 . [%LEL]	w	ATER (ONTEN	T PERCE	0 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
DEP	BORIN		STRAT	DEPTH (m)	NUN	Υ	BLOW			40	60		°⊡ 30	w	p —	—0 ^W	I		ADI	INGTALLATION
- 0		Ground Surface		56.32				2		+0	00									
U		Dark brown sandy silt with organic matter (TOPSOIL)	/	0.05		E0			_		T									
		Compact to dense brown sand, some gravel, trace brick (FILL)			1	50 DO	126)												
- 1					2	50 DO	40 (•												
				55.10 1.22																
		Compact black sand, some gravel, trace brick (FILL)		1.22	3	50 DO	18	Ð												
	ĺ			54.49	3	DO	10	Φ												
- 2	r Sto	Dense brown fine sand (FILL)		1.83																
	r Auge				4	50 DO	25	⊕												
	Powe	Firm grey brown to grey SILTY CLAY		53.88 2.44																
	Power Auger 200 mm Diam (Hollow Stem)				5	50 DO	12 €	Ð												
- 3																				
					^	50		N												
					6	50 DO	5 (D												
						1														
- 4					7	50 DO	6	⊕												
		Weathered SHALE BEDROCK		52.05 4.27	8	50 DO	12	Ð												
		End of Borehole Auger Refusal		51.82 4.50		DO		-		+	+					+		-	+	
- 6																				
- 8																				
- 9																				
- 10																				
10																				
DE	РТН	SCALE		•				Â		<u></u>			·	•					LC)GGED: D.G.
	50								G	010 500	ier 'iat	tes								ECKED: K.P.H.

RECORD OF BOREHOLE: 10-33

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

BORING DATE: April 15, 2010

Щ		탈	SOIL PROFILE	-		SA	MPL		Headspace Org. Vapour Conc. [PPN ppm	M] HYDRAULIC CONDUCTIVITY, ⊕ k, cm/s	1 1 2	PIEZOMETER
DEP IN SCALE METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	түре	BLOWS/0.3m	6 12 18 24 Headspace Comb. Vapour Conc. [% ppm	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
		m i		ST	(11)			BL	20 40 60 80	10 20 30 40		
- 0			Ground Surface Black sandy silt with organic matter	===	56.23 56.08							
			(TOPSOIL)		0.15		50 DO	24 (
			Compact brown silty sand to sandy silt, some gravel with concrete (FILL)			1	DO	24 0				
						2	50 DO	38	\oplus			
- 1			Compact black and brown sand (FILL)		55.16 1.07							
						3	50 DO	28	Φ			
		Ê	Or and the second second second		54.40 1.83							
- 2		w Ste	Compact brown coarse sand, some gravel with cobbles (FILL)		1.63		50					
	Auge	(Hollo				4	50 DO	146				
	Power Auger	Diam.										
		200 mm Diam. (Hollow Stem)				5	50 DO	30 (>			
- 3		20										
]					
						6	50 DO	12€)			
							-					
				×	52.27 3.96	7	50 DO	22 (₽			
- 4			PEAT		3.96 51.96							
			Weathered SHALE BEDROCK		4.27	8	50 DO	26€	,			
	L	\square	End of Doroholo		51.56 4.67		00					
			End of Borehole Auger Refusal		4.0/							
- 5												
- 6												
- 7												
- 8												
- 9												
Ū												
- 10												
	L			1	I		I					I
			CALE					(Golder			OGGED: D.G.
1 :	: 50	0							Associates		CH	IECKED: K.P.H.

PROJECT: 10-1122-0044

RECORD OF BOREHOLE: 10-34

LOCATION: See Site Plan

BORING DATE: April 15, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

A L	IHOL	SOIL PROFILE		<u> </u>	34	MPL		ppm		I. Vapol					ONDUCT			₽₿	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	ТҮРЕ	BLOWS/0.3m	6 Headspa		2 nb. Var	18 Jour Cor	24 Inc. [%LEL]			0 ⁻⁵ 1 I ONTENT		0 ⁻³	ADDITIONAL LAB. TESTING	
л <u>Б</u> В	30RIN	DESCRIPTION	TRAT	DEPTH (m)	NUM.	Σ	3LOW						Wp	p			WI	ADC LAB.	INSTALLATION
	ш	Ground Surface		55.90			ш	20	4	0	60	80	1	10 2	20 3	i0 4	40	$\left \right $	
- 0		Black sandy silt with organic matter (TOPSOIL)	/	0.05							+								
		Compact to dense brown sand, some gravel with brick, concrete and asphalt	′ 🗱		1	50 DO	18€	•											
		(FILL)																	
					2	50 DO	39	<u>а</u>											
- 1				54.68	-	DO	00	•											
		Compact brown sand, some gravel (FILL)		1.22															
	(ma)	()			3	50 DO	12	€											
	Power Auger 200 mm Diam. (Hollow Stem)																		
2	ver Au				4	50 DO	10 €	Ð											
	n Dia					00													
	200 r					50													
					5	50 DO	15€	•											
• 3		Compact sand, some gravel with cobbles and boulders (FILL)		52.85 3.05															
		cobbies and boulders (FILL)			6	50 DO	16€	•											
				50.00															
4		PEAT		52.09 3.81	7	50 DO	5 6	Ð											
-		End of Borehole		51.76 4.14								_							
		Auger Refusal																	
- 5																			
- 6																			
- 7																			
- 8																			
- 9																			
- 10													1						
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DE	PTH S	SCALE					(7 7 4	Er.	144	r ates							LO	GGED: D.G.

RECORD OF BOREHOLE: 10-35

BORING DATE: April 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ		₽Į	SOIL PROFILE			SA	MPL	ES	Headspace Or ppm	g. Vapou	r Conc. [l	-PM] ⊕	HYDR.	AULIC C k, cm/s	ONDUC	UVITY,	Т	وب	PIEZOMETER
DEPTH SCALE METRES		Bohing method		LOT		с.		.3m				24					0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR
MET		5 Z	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m	Headspace Co	mb. Vap	our Conc	. [%LEL]		ATER C				B. TE	STANDPIPE INSTALLATION
DE		HOH I		3TRA	(m)	N		BLO									WI	LA	
	_		Cround Surface	<i>w</i>			-	-	20	40	50 i	30		0 2	20 3	30 4	40 		
- 0			Ground Surface Dark brown sandy silt with organic		55.66 55.51														
			matter (TOPSOIL)		0.15	1	50 DO	20€	,										
			Compact grey silty sand, some gravel, trace brick (FILL)																
						2	50 DO	18€	,										
- 1					54.44														
			Loose to compact brown medium sand, some gravel (FILL)		1.22														
		Stem)	some gravel (FILL)			3	50 DO	8 €	•										
	Jer	Nollow																	
- 2	Power Auger	н. Н					1												
-	Pow	Diar				4	50 DO	11€	,										
		200 mm Diam. (Hollow Stem)			53.22														
		5	Loose dark brown sand, some gravel with wood (FILL)		2.44														
						5	50 DO	10€	•										
- 3				×	52.61 3.05														
			Firm grey silty clay (FILL)		3.05		50												
				×	52.15	6	50 DO	5€	·										
			PEAT		3.51	7	50 DO												
		\square	End of Borehole	EEE	51.77 3.89	7	DO	4 €	,					-					
- 4			Auger Refusal		0.00														
- 5																			
- 6																			
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- 7																			
- 8																			
- 9																			
10																			
- 10																			
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DE	PT	ΉS	CALE					((YAY)G	olde socia	r							LC	GGED: D.G.
	50	~							7743		tog							сц	ECKED: K.P.H.

RECORD OF BOREHOLE: 10-36

BORING DATE: April 16, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Ļ			SOIL PROFILE			SA	MPL		Headspace O ppm	g. tapou	001101 [1	• •••]	HYDRA	k, cm/s		,		μģ	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	6 Headspace C ppm	omb. Vapo	our Conc		Wp	ATER CO		PERCE	WI	ADDITIONAL LAB. TESTING	STANDPIPE INSTALLATION
0			Ground Surface	0	55.96			_	20	40 6	50 8	30	1	0 2	0 3	4 04	40		
0			Dark brown sandy silt with organic (matter (TOPSOIL) // Compact dark brown medium sand, some gravely shale, trace brick (FILL)		0.08	1	50 DO	21€	,										
1						2	50 DO	21	,										
			Compact brown sand, some gravel (FILL)		54.74 1.22	3	50 DO	20	•										
2			Compact brown fine to medium sand (FILL)		<u>54.21</u> 1.75														
		Stem)	Loose dark brown silty sand, some wood (FILL)		53.52 2.44	4	50 DO	16€	,										
3	Power Auger	Diam. (Hollow	wood (FILL)			5	50 DO	4 €											
	٩	200 mm [PEAT		52.61 3.35 52.30	6	50 DO	5€	,										
4			Firm grey SILTY CLAY		3.66	7	50 DO	7 🖨	,										
			Compact black SILTY CLAY, trace gravel		51.69 4.27	8	50 DO	11	Ð										
5			Compact grey SILTY SAND, some gravel, trace clay with cobbles and boulders		51.08 4.88	9	50 DO	15€	,										
							50 DO	6											
6			End of Borehole Auger Refusal		50.12 5.84														
7																			
8																			
9																			
10																			
DE	PTI	нs	CALE					(Â.	olde: socia	r							LC	GGED: D.G.

RECORD OF BOREHOLE: 10-37

BORING DATE: April 19, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ.	ЪЧ	SOIL PROFILE			SA			ppm				[PPM] ⊕		k, cm/s	ONDUCI			μģ	PIEZOMETER
H SCA	BORING METHOD		STRATA PLOT	ELEV.	BER	ш	/0.3m	6	1	2	18	24					0 ⁻³ ⊥	ADDITIONAL LAB. TESTING	OR STANDPIPE
DEPTH SCALE METRES	ORING	DESCRIPTION	FRATA	DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	ppm	ace Cor	nb. vap	our Con	: [%LEL]			ONTENT			ADDI LAB.	INSTALLATION
-+	ш	Ground Surface	ی ۲			$\left \right $	8	20) 4	0	60	80	1	0 2	20 3	30 4	40		
- 0		Black sandy silt with organic matter		55.69 0.10								1							
		(TOPSOIL) Compact dark brown silty sand, some gravel (FILL)	1	0.10	1	50 DO	16€	•											
		gravel (FILL)																	
					2	50 DO	26€												
- 1				54.47	2	DO	200	,											
		Compact brown medium sand, some gravel with cobbles (FILL)		1.22		50													
	Ĩ			54.01	3	50 DO	8 €	,											
	Power Auger	Dense black sand, some gravel (FILL)		1.68	4	50 DO	80	⊕											
- 2	Power Auger			53.56	4	DO	00	Ű											
	Power	Compact brown silty sand, some gravel (FILL)		2.13	_	50													
	44 U				5	50 DO	12 (Ð											
	20																		
- 3				52.49	6	50 DO	10€	•											
		Compact grey CLAYEY SILT	Î	52.34 3.35															
		Compact grey SILTY SAND, some gravel, trace clay with cobbles and boulders			7	50 DO	186	,											
						DO		,											
- 4					8	50 DO	76	•											
-		End of Borehole		51.35 4.34	-	DO		, 											
		Auger Refusal																	
- 5																			
- 6																			
_																			
- 7																			
- 8																			
- 8																			
- 9																			
- 10																			
		1	<u> </u>	I					•		1		L	I	I		1	1	
DE	РТН	SCALE						7			r ates							10	GGED: D.G.

RECORD OF BOREHOLE: 10-38

BORING DATE: April 19, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

ALE	THOD	SOIL PROFILE		1	SA	MPL		Heads ppm	space			Conc.	[PPM] €			CONDU /s			- NG	PIEZOMETER
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	ТҮРЕ	BLOWS/0.3m		6 space	12 e Com		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24 c. [%LEL	<u>, </u>	WATER		IT PERC		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
_	BC		STF	()	-		Ч		20	40)	50 	80	+	10	20	30	40		
- 0		Ground Surface Black sandy silt with organic matter		56.00 0.10					+	+							_			
		(TOPSOIL) Compact dark brown silty sand, some gravel with brick and concrete (FILL)	/	0.10	1	50 DO	13€	•												
		gravel with brick and concrete (FILL)				50														
					2	50 DO	7 €	Ð												
- 1				54.78																
	tem)	Compact black sand, some gravel (FILL)		1.22		50		_												
	Power Auger 200 mm Diam (Hollow Stem)	Compact brown medium sand, some		54.32 1.68	3	50 DO	23	Ð												
2	Power Auger	gravel (FILL)																		
	Po				4	50 DO	23	⊕												
	006	Loose brown silty sand, some clay		53.56 2.44																
		(FILL)			5	50 DO	7 E	÷												
- 3		Loose dark brown gravel (FILL)		52.95 3.05																
					6	50 DO	7	⊕												
				52.34																
		Wood End of Borehole		3.76	7	50 DO	6	0	\square	+										
- 4		Auger Refusal																		
- 5																				
- 6																				
- 7																				
'																				
- 8																				
- 9																				
. 10																				
• 10																				
	рти	SCALE						Â	A			-		•						DGGED: D.G.
	50							J	J	Go	lde	r Mes								ECKED: K.P.H.

PROJECT: 10-1122-0044

RECORD OF BOREHOLE: 10-39

LOCATION: See Site Plan

BORING DATE: April 19, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

Щ			SOIL PROFILE			SA	MPL		Headspace Org. Vapour Conc. [PPM]	HYDRAULIC CONDUCTIVITY, k, cm/s	
DEPTH SCALE METRES	BOBING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	6 12 18 24 Headspace Comb. Vapour Conc. [%LEL] ppm	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ ⊥ WATER CONTENT PERCENT Wp	PIEZOMETER OR STANDPIPE ILLI INSTALLATION
	_	-	Output Durface	ί Ο					20 40 60 80	10 20 30 40	
0			Ground Surface Black sandy silt with organic matter		57.30 57.15						
			(TOPSOIL) Compact dark brown silty sand, some gravel (FILL)	1	0.15	1	50 DO	116	,		
			gravel (FILL)								
					XXX						
- 1					××		50 DO	14	€		
			Compact black sand, some gravel	×	56.16 1.22						
			(FILL) Compact brown medium sand, some	/ 🗱	× 1.22		50				
			Compact brown medium sand, some gravel (FILL)		××	3	50 DO	296			
			Compact grey silty sand and silty clay layers (FILL)		55.47 1.83						
- 2			layers (FILL)		X	4	50 DO	176)		
					X						
		Stem)									
	ıger	ollow				5	50 DO	86			
3	Power Auger	H).	Firm grey SILT, some very fine sand	- MA	54.25 3.05		-				
	Pov	200 mm Diam. (Hollow Stem)	3.0, 0.2., como rong into cand				50 DO	19€	,		
		200 n					00				
- 4						7	50 DO	31€)		
							50				
						8	50 DO	20€			
- 5											
-						9	50 DO	28€)		
							50				
					51.00	10	50 DO	816			
- 6			End of Borehole Auger Refusal		51.26 6.04						
			Auger Helusar								
- 7											
- 8											
- 9											
-											
- 10											
	L			1	1	L	I				
DE	PT	ΉS	SCALE					(Golder		LOGGED: D.G.
1 :	50	0							Golder		CHECKED: K.P.H.

RECORD OF BOREHOLE: 10-40

BORING DATE: April 19, 2010

SHEET 1 OF 1

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

			SOIL PROFILE	1.	i	S	AMPL		Headspace Org ppm	g. Vapou	r Conc. [PPM] ⊕		k, cm/s		FIVITY,	T	RGA	PIEZOMETER
METRES		ING ME	DESCRIPTION	STRATA PLOT	ELEV DEPT		TYPE	BLOWS/0.3m	6 Headspace Co ppm			24 :. [%LEL]	10 WA	TER CO	ONTENT	PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
2		вОн		STRA	(m)	P		BLOV				80	Wp 10		0 3		WI 40	LAI	
0			Ground Surface Black sandy silt with organic matter	EEE	57.5														
			(TOPSOIL) Compact dark brown silty sand, some gravel (FILL)		0.1	1	50 DO	11€	÷										
1						2	50 DO	10	Ð										
			Dense black sand, some gravel (FILL)		56.3 1.2		-												
			Wood (FILL)		55.7 1.8	3 78 30	50 DO	50	Ð										
2			Compact grey SILTY CLAY		55.4 2.1 55.1	3 4	50 DO	11	Ð										
			Compact to very dense grey shale in brown SAND and GRAVEL		2.4	14 5	50 DO	22€	Þ										
3	er	low Stem)				6	50 DO	89€	•										
4	Power Auger	mm Diam. (Hollow			<u>53.6</u> 3.9	<u>2</u> 7	50 DO	32€	 ₽										
-		200 m	Compact grey SILTY SAND, some gravel, trace clay		5.3														
5			Dense grey SILT, some very fine sand		52.7 4.8		50 DO	20€)										
-						9	50 DO	36€	•										
6						10	50 DO	26€	ð										
						11	50 DO	39€	Þ										
7						12	50 DO	546	 										
			End of Borehole Auger Refusal		50.2 7.3	21													
8			Auger Helusar																
9																			
10																			
	Ь	- н с	CALE																DGGED: D.G.
	: 5(H G	olde: ocia	r								ECKED: K.P.H.

Borehole Number: BH06-1/MW06-1

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366313 E, 5030755 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 54.09 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	DOG	STRATIGRAPHIC DESCRIPTION		INSTALLATION
$ \begin{array}{c} \text{ft} \text{m} \\ -4 \\ -3 \\ -2 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1 \\ -1$			2 3 50 22 34 50 18 15 10 50 14 7 50 50				GROUND SURFACE FILL Brown sand fill with gravel and wood debris. Dry, no odour. Brown sand with grey/black silt fill and gravel. Minor iron staining. Dry, no odour. Gravel fill with grey sand, minor silt. Dry, no odour. PEAT Black peat. Moist, no odour. BEDROCK Grey limestone bedrock.	51 mm diameter PVC riser	102 mm diameter drill hole Water level @ 2.2 mBGS
Page 1	of 2								INCERA

Borehole Number: BH06-1/MW06-1

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366313 E, 5030755 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 54.09 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 17 18 19 19 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10								Bentonite
23 ¹¹¹ 11 24 ¹¹¹ 11 25 ²¹ 26 ²¹ 28 ²							Borehole terminated at 9.1 mBGS.	51 mm diameter PVC screen
30 31 32							BOREHOLE TERMINATED	Depth of MW06-1 = 9.1 mBGS

Borehole Number: BH06-2/MW06-2

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366240 E, 5030732 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 54.33 mASL

DEPTH BGS DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	FOG	STRATIGRAPHIC DESCRIPTION		503 mm diameter porehole
-1 -1 -1 -1							GROUND SURFACE	Stick-up casing	diameter
0 1 1 2			15 10 8 10	5			FILL Brown silty sand fill. Dry, no odour.	Г 	PGS mm
2			7 6 4 7	0			Grey/brown silt and sand fill with gravel. Dry, no odour.	Native soil	Bentonite de 19 mBGS
5 6 6 7			2 6 2 25	0			Grey/brown silt and sand fill with brick and wood fragments. Slightly moist, no odour.	iser	Bentonite
, 1000 1000 1000 1000 1000 1000 1000 10							Grey limestone bedrock.	m diameter PVC riser	r drill hole
10 11 11 12								51 mm dia	102 mm diameter drill hole
12 13 14 14									102 n
Page 1	of 2		L	L	.				INTERA

Borehole Number: BH06-2/MW06-2

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366240 E, 5030732 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 54.33 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 17 18 19 19 20 21 21 21 21 21 21 21 21 21 21 21 21 21							Borehole terminated at 6.7 mBGS. BOREHOLE TERMINATED	Depth of MW06-2 = 6.7 mBGS
Page	2 of 2							INTERA



Borehole Number: BH06-3/MW06-3

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD 83 - 366190 E, 5030708 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 55.0 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	POG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
$ \begin{array}{c} ft \\ -4 \\ -3 \\ -2 \\ -1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ $			2 9 50 9 23 50 18 32 50	0			GROUND SURFACE FILI Brown silty sand fill with gravel. Dry, no odour. Grey/brown silt and sand fill with gravel. Dry, no odour. 12 cm of black shale fragments at 0.9 mBGS. Dark grey sand and gravel fill. Dry, no odour. BEDROCK Grey limestone bedrock.	51 mm diameter PVC screen 51 mm diameter PVC riser 51 mm diameter PVC riser 51 mm diameter PVC riser 5203 mm diameter borehole 102 mm diameter drill hole 01.8 mBGS
Page 1	l of 2							INCERA

Borehole Number: BH06-3/MW06-3

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD 83 - 366190 E, 5030708 N

MOE Well ID: A029553

Date Completed: June 19, 2006 Supervisor: ADG Ground Surface Elevation: 55.0 mASL

1

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 17 18 19 20 21 21 21 21 21 21 21 21 21 21 21 21 21							Borehole terminated at 6.1 mBGS. BOREHOLE TERMINATED	Depth of MW06-3 = 6.1 mBGS
Page	2 of 2							INCERA

Borehole Number: BH06-4/MW06-4

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366116 E, 5030662 N

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 54.54 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	DOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION			
Image: Second			4 11 10 18 14 15 14 14 15 25	5 n/a 0			GROUND SURFACE FILL Brown silty sand fill with trace clay and gravel, slag and wood fragments. Minor iron staining. Dry, no odour. Grey/brown silt and sand fill with gravel. Dry, no odour. BEDROCK Grey limestone bedrock.	51 mm diameter PVC screen 51 mm diameter PVC riser 51 mm diameter borehole 102 mm diameter drill hole 102 mm diameter drill hole 102 mm diameter drill hole			
Page 1	Page 1 of 2										

Borehole Number: BH06-4/MW06-4

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366116 E, 5030662 N

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 54.54 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION	
15 16 17 18 19 20 21 21 21 21 21 21 21 21 21 21 21 21 21							Borehole terminated at 5.5 mBGS. BOREHOLE TERMINATED	Pues esito iso Depth of MW06-4 = 5.5 mBGS	
Page 2	Page 2 of 2								

Borehole Number: BH06-6/MW06-6

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366010 E, 5030649 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 54.96 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS SAMPLES CGI (ppm) PID (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG ft m 203 mm diameter borehole -4Stick-up casing **GROUND SURFACE** 0 4 FILL 12 Topsoil near surface, underlain by dark brown silty 0 sand fill with trace gravel. Dry, no odour. 15 20 Native soil mm diameter PVC riser 5 Brown silt and sand fill with brick fragments and 9 minor iron staining. Slightly moist, no odour. 1 1 Bentonite 5 10 8 2 Brown silt and sand fill. Dry, no odour. 4 Υ., 5 9 cm of black slag fill with rock fragments at 2.1 6 mBGS. Moist, no odour. 2 5 18 79 2.1 mBGS 7 Dark brown silt and sand fill with trace gravel and mm diameter PVC screen roots. Wet, no odour. 11 0 1 5 Water level @ 3 5 Silica sand 12 0 6 4 5 4 14-1 Page 1 of 2

Borehole Number: BH06-6/MW06-6

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366010 E, 5030649 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 54.96 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	DOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION	
15							Borehole terminated at 4.6 mBGS.		
15						(a) - <u>1</u> ⁽¹) - (1)	BOREHOLE TERMINATED	Depth of MW06-6 = 4.6 mBGS	
16 5									
17									
18									
19									
20 6									
21									
22									
23 7									
24									
25									
26 8									
27									
29 <u>1</u> 9									
30									
29 30 31 31 32									
32									
Page 2	Page 2 of 2								

Borehole Number: BH06-7/MW06-7

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365882 E, 5030604 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 55.24 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS SAMPLES CGI (ppm) PID (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG Stick-up casing Native soil **GROUND SURFACE** 0 3 FILL 5 Brown topsoil. 0 10 Grey/brown silt and sand fill with trace gravel. 12 Slightly moist, no odour. Bentonite 4 @ 2.5 mBGS 10 0 9 7 mm diameter PVC riser 3 Water level 7 Brown silt and sand fill with black slag, brick and 10 203 mm diameter borehole gravel. Slightly moist, no odour. 13 2 9 A. H П 50 0 Dark brown silt and sand fill. Dry, no odour. 51 mm diameter PVC screen -51 3 11 Dark brown silt and sand fill with black slag fragments. Wet, no odour. 1 18 ŧ 0 18 1 76 50 Silica sand Grey and black sand with rock fragments. 7 4 16 0 23 14 13 Page 1 of 2

Borehole Number: BH06-7/MW06-7

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365882 E, 5030604 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 20, 2006 Supervisor: ADG/TLJ Ground Surface Elevation: 55.24 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	DOJ	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15							Borehole terminated at 4.6 mBGS.	
						<u> </u>	BOREHOLE TERMINATED	Depth of MW06-7 = 4.6 mBGS
16 5								
17								
18								
19								
20								
21								
22								
23 7								
24								
25								
26 8								
27								
20								
9								
29 1 30 31 31 32								
								INCERA
Page 2	2 of 2							INCERA

Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS SAMPLES CGI (ppm) PID (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG
 ft
 m

 -4
 -3

 -1
 -1

 0
 1

 1
 1

 2
 3

 4
 5

 6
 7

 10
 11

 12
 13

 13
 13
 Stick-up Casing **GROUND SURFACE** 0 FILL 9 Brown topsoil. 50 0 203 mm diameter borehole Brown silty sand fill with organic material near surface. Dry, no odour. Brown silty sand fill with some clay and trace gravel. 7 Moist, no odour. 21 0 15 11 7 Dark brown sand and gravel fill. Dry, no odour. 14 2 10 2 6 mm diameter PVC Riser Brown silty sand fill with trace gravel. Dry, no odour. 5 7 0 10 Native Soil 10 3 8 24 Grey silt fill with some clay. Moist, no odour. 3 9 5 <u>ਹ</u> Black sand fill with some silt and gravel. Wet, landfill odour. Page 1 of 3

Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

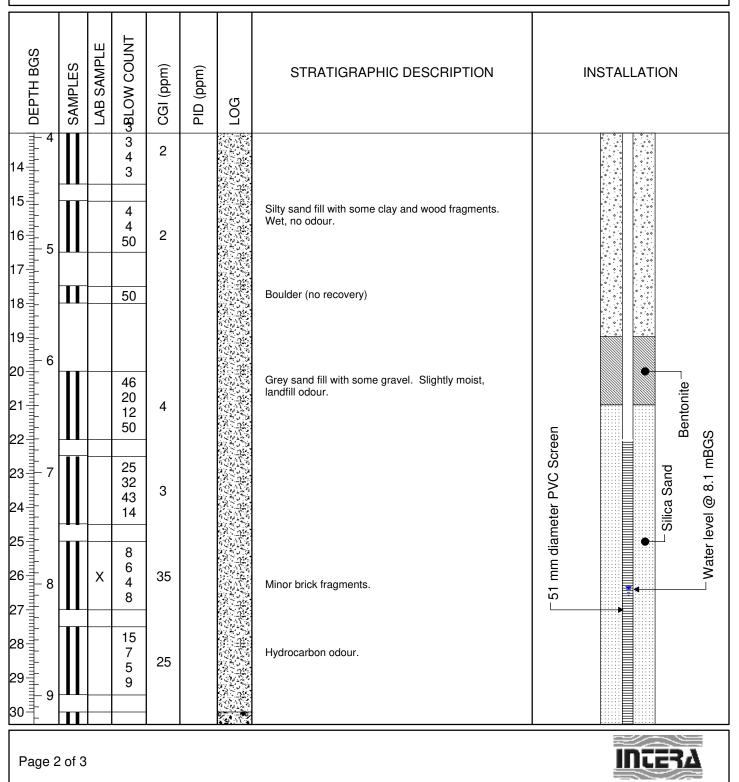
Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL



Borehole Number: BH06-9/MW06-9

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365843 E, 5030527N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG/SNG Ground Surface Elevation: 61.58 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION	
31 32 33 34 35 36 36 36 37 36 37 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41			2 1 1	50			Sandy fill with glass and paper debris. Wet, landfill odour. Borehole terminated at 9.8 mBGS. BOREHOLE TERMINATED	Depth of MW06-9 = 9.8 mBGS	
Page 3	Page 3 of 3								

Borehole Number: BH06-10/MW06-10

Project Number: 05-215-20

Client: National Capital Commission

Site Location: LeBreton Flats

Coordinates: MTM NAD83 - 365965 E, 5030592 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG

Ground Surface Elevation: 55.56 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
$ \begin{array}{c} ft \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 1 \\ 1 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 10 \\ 11 \\ 12 \\ 13 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14$			6 22 30 38 19 48 41 36 5 5 5 12 7 3 2 3 6 6 3 3 7 8 5 8 22	0 0 0 20 0			GROUND SURFACE FILL Brown sandy topsoil underlain by brown silt and sand fill with trace gravel and brick fragments. Dry, no odour. Grey/brown silty sand fill with gravel and cobbles. Dry, no odour. Grey and black silty sand fill with gravel and wood debris. Dry, no odour. Grey/brown silty sand fill with trace wood debris. Dry, no odour. Grey/brown silty sand fill with trace wood debris. Dry, no odour. Sand fill with garbage, paper, and plastic. Dry, andfill odour. Brown/black silty sand fill with wood debris. Moist, landfill odour.	51 mm diameter PVC Screen Bentonite Stick-up Casing
Page 1	1 of 2	2						INCERA

Borehole Number: BH06-10/MW06-10

Project Number: 05-215-20

Client: National Capital Commission

Site Location: LeBreton Flats

Coordinates: MTM NAD83 - 365965 E, 5030592 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG Ground Surface Elevation: 55.56 mASL

IIILETA

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION		
15 16 17 18 19 20 21 21 21 21 22 23 24 24 24 24 24 24 24 25 26 26 21 24 25 26 26 21 26 26 21 26 26 27 24 25 26 26 29 20 20 20 20 20 20 20 20 20 20 20 20 20			23 11 3 1 3 9 14 15	0			Grey clay fill with trace silt and gravel. Wet. SAND Grey sand fill with silt seams. Wet, no odour. Borehole terminated at 6.1mBGS. BOREHOLE TERMINATED	Depth of MW06-10 = 6.1 mBGS		
Baga	Page 2 of 2									

Borehole Number: BH06-11/MW06-11

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365928 E, 5030683 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG Ground Surface Elevation: 56.80 mASL

BLOW COUNT LAB SAMPLE DEPTH BGS PID (ppm) SAMPLES CGI (ppm) STRATIGRAPHIC DESCRIPTION INSTALLATION LOG
 ft
 m

 -4
 -3

 -1
 0

 1
 1

 2
 -4

 3
 4

 4
 5

 6
 7

 10
 11

 12
 13
 Stick-up casing **GROUND SURFACE** 0 7 FILL 0 Brown sand fill with gravel and brick. Dry, no odour. 11 50 Native soil Bentonite 16 14 0 22 27 1 mm diameter PVC riser 5 0 5 2 10 203 mm diameter borehole 6 9 mm diameter PVC screen Water level @ 4 mBGS 0 6 10 10 3 5 4 Brown sand fill with gravel and minor silt. 12 cm of rock fragments. Dry, no odour. 4 0 21 19 20 Brown sand and gravel fill. Dry, no odour. 0 4 51 50 14 Page 1 of 2

Borehole Number: BH06-11/MW06-11

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 365928 E, 5030683 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 21, 2006 Supervisor: ADG Ground Surface Elevation: 56.80 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 16 17			1 9 5 50	0			Gravel fill with minor sand. Wet, no odour. Borehole terminated at 5.6 mBGS.	Silica sand
18 19 20 21 21 22 23 11 11 11 11 11 11 11 11 11 11 11 11 11						9.20129 9.2013	BOREHOLE TERMINATED	Depth of MW06-11 =5.6 mBGS
24 25 26 26 26 27 28 27 28 28 20								
29 30 31 32 Page 2	2 of 2							INCERA

Borehole Number: BH06-14/MW06-14

Project Number: 05-215-20

Client: National Capital Commission

Site Location: Municipal Lands

Coordinates: MTM NAD83 - 366033 E, 5030715 N

Drilling Method: Hollow stem auger with split spoon

MOE Well ID: A029553

Date Completed: June 22, 2006 Supervisor: ADG

Ground Surface Elevation: 53.86 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
$ \begin{array}{c} ft \\ -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ $			3 12 15 50 10 37 28 38 1 1 1 2 50	0 10 15 n/a			GROUND SURFACE FILL Brown sandy topsoil underlain by brown silty sand fill with gravel. Dry, no odour. Rock fragments and minor sand. Wet, no odour. SAND Brown sand and organics. Wet, no odour. Borehole terminated (bedrock) at 3.0 mBGS BOREHOLE TERMINATED	51 mm diameter PVC screen Stick-up casing 51 mm diameter PVC riser 51 mm diameter PVC riser 51 mm diameter PVC riser 51 mm diameter PVC riser 0 mm diameter PVC riser 0 mm diameter borehole Silica sand Bentonite Native soil
Page 1	1 of 1							INCERA

	ATION ES: BORI (E) XOLLYAN 3 56.08 56.0	SOIL DESCRIPTION TOPSOIL Compact, brown silt and sand, trace gravel, trace organics, trace clay: FILL Stiff, grey brown silty clay, trace				_	P0 10 RECOVERY (mm)	N-VALUE OR RQD	PROJECT No. ONO1133 DATUM Geodeti UNDRAINED SHEAR STRENGTH - KPa 50 100 150 200 WP W W WATER CONTENT & ATTERBERG LIMITS DYNAMIC PENETRATION TEST, BLOWS/0.3m * STANDARD PENETRATION TEST, BLOWS/0.3m
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	56.0 54.6	Compact, brown silt and sand, trace gravel, trace organics, trace clay: FILL Stiff, grey brown silty clay, trace			AS				
	56.0 54.6	Compact, brown silt and sand, trace gravel, trace organics, trace clay: FILL Stiff, grey brown silty clay, trace		TXXXXXXXXX	AS				10 20 30 40 50 60 70 80
	54.6	trace gravel, trace organics, trace clay: FILL Stiff, grey brown silty clay, trace		XXXXX	AS	1.2			
2	54.6	clay: FILL Stiff, grey brown silty clay, trace				1			11111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 111111 1111111 1111111 1111111 1111111 1111111 11111111 111111111111111111111111111111111111
	54.6	Stiff, grey brown silty clay, trace		X 1					
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2			\otimes	8	33	2	200	10	1 1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>
2	54.0		×	₹		_			
2	54.0	gravel, trace organics: FILL		8	SS	3	250	11	11111 1 1111 11111 1111 1111 1111 1111
1				8					1111 1111 1111 1111 1111 1111 1111 1111 1111
-		Dense, grey brown silty sand and					+		
-		gravel: FILL			SS	4	200	27	
1		Frequent cobbles and boulders		8					
3 -		Flequent coopies and bounders		×.			-		
1				X	SS	5	150	36	
-				8					
1	52.0	•	\otimes	X	SS	6	150	50/	
1		Grey black limestone and shale	8					280 mm	
-		boulders	2	0	NQ	7	100%		
-					SS	8	0	50/	nu
5 -			2		NQ	9	100%	200 mn 100%	The second
1	50.8	Void			H-	-		10070	
-		Void							
6	50.1		-	X					
1	49.8	Compact, black silty sand and	\boxtimes	8	SS	10	300	19	1114 1111 1114 1111 1111 1111 1111 111
-		gravel, trace organics (wood chips): FILL	1						
-		Loose, grey SAND, trace to some	e		SS	11	510	7	1111 1111 1111 1111 1111 1111 1111 1111 1111
7-	48.9	silt and gravel			55	1.	510	1.	
+	40.7	Installed Well							$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
-									
1		End of Borehole							
8 -					11				
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9-									
1									
-									
10				_	11	_		_	Field Vane Test, kPa
	A-	∑ Inferred Groundwater Level							Remoulded Vane Test, kPa

	LIENT	Robinson Consultants Inc.								BOREHOLE						
•		LeBretons Flats, ABC Lines, Or RING 01 04 06 WAT)	01 0	4 18		PROJECT No	Geod					
DA	ATES: BOI	RING01 04 06 WAT	ERI	LEVI	5L			110	UNDRAINED S	SHEAR STRENGTH - KPa						
	(w)		5	/EL		SA	MPLES		50 10		20					
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	WATER CONTENT & ATTERBE DYNAMIC PENETRATION TES STANDARD PENETRATION TE	T, BLOWS/0.3m	₩ _₽ ₩ ₩ ↔					
	54.65					-			10 20 30 40	50 60	70 80					
0 -	54.6	TOPSOIL														
	53.9	Loose, brown black silty sand, trace gravel, trace to some clay:		~~~~~	AS	1			$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
1 -		FILL Loose, grey black silty sand, trace clay, debris (plastic): FILL		~~~~~	SS	2	330	4	1 1	I I						
				₹	SS	3	400	2	1 1 <td></td> <td></td>							
2 -	52.5	0.011.1					-		<u>1111</u> <u>1111</u> <u>1111</u> <u>1111</u> 1111 <u>1111</u> <u>1111</u> <u>1111</u> 1111 <u>1111</u> <u>1111</u>	1111 1111 1						
		Soft, black peat, some silt, some sand: ORGANICS			SS	4	260	13		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I					
3	51.0				SS	5	270	9		$\begin{array}{cccccccccccccccccccccccccccccccccccc$	I I					
4 -	51.0	Compact, grey SILTY SAND, some clay, trace gravel			SS	6	530	10		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
	-				SS	7	410	16								
5 -	49.2					-			1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
		Severely fractured, grey limestone: BEDROCK		I	NQ	8	100%	0%								
7 -					NQ	9	79%	36%								
	47.0	S		I						1111 1111 1						
	47.2	Installed Well	1	1	1				1 1	1111 1111 1						
8 -	-	End of Borehole							1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111	1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
	-															
9 -	-															
-10	- A-			1			<u> </u>		Field Vane Test, kP		G					

LO		Robinson Consultants Inc. LeBretons Flats, ABC Lines, O RING 01 04 06 WAT)	01.0	4 18	BOREHOLE No. <u>MW01</u> PROJECT No. <u>ONO113</u> DATUM <u>Geodet</u>
DA	TES: BOF	RING01 04 06 WAT	ERI		:L	CA	MPLES	4 10	UNDRAINED SHEAR STRENGTH - kPa
-	(m)		OT	VEL		SA			50 100 150 200
	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	ТҮРЕ	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	WP W W WATER CONTENT & ATTERBERG LIMITS HOW DYNAMIC PENETRATION TEST, BLOWS/0.3m * STANDARD PENETRATION TEST, BLOWS/0.3m
0 +	62.63		36						10 20 30 40 50 60 70 80
	62.6 61.9	TOPSOIL Firm, brown silty clay, trace gravel, trace organics, trace		KXXXXXX	AS	1			1 1
1 -		<u>debris (wood fragments)</u> : <u>FILL</u> Firm to stiff, brown grey sandy clay, some silt, trace gravel, trace debris (rubber, brick, wood):			SS	2	400	10	
2		FILL			SS	3	520	4	
					SS	4	270	4	
3					SS	5	530	35	
4 -					SS	6	140	3	
5					SS	7	90	8	
	57.3	Stiff, grey silty clay, some sand, trace gravel, rock fragments, trace debris (wood, plastic) : FILL			SS	8	170	3	
6					SS	9	310	8	1 1
7 -					SS	10	440	13	
8		Sand seam			SS	11	470	8	1 1
	53.6				SS	12	470	17	- 1111 1111 1111 1111 1111 1111 1111 1
9-	55.0	Compact, grey silty sand, rock fragments, trace debris (glass, brick, wood): FILL		ž	SS	13	460	19	
10 -	52.7		X	×					

CLI	ENT	Robinson Consultants Inc.													EHOLI			
LOC	ATION		ttaw	a, C	Intario	0		4.10							JECTN	No	Geo	
DA	TES: BOB	RING01 04 06 WAT	ERI	EVE	EL		010	4 18	-					DAT	TRENG			ueti
	(1		-			SA	MPLES				50		INED SI		IRENG			200
	U (I		PLO	LEVE		×	RY	w 0	-						w	H w		
	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	WATER CONTENT & ATTER				TTERBE	RG LIMI	-0			
°	ELE		ST	3	-	Ĩ	RE	żŌ						ST, BLOWS/0.3m TEST, BLOWS/0.3m				R
+			-	\square					5	I0	ARD P			0 50	0 60	0 70	0 8	30
0+		Decomposed paper, trace wood	×	포	SS	14	540	50/	11	111.		1111	1111	1111	1111	1111	1111	
1		fragments: FILL				-		330 mm			111	1111	1111		1111		1111	111
		Few cobbles		XXX	SS	15	170	27	11	11 1	111	1111	1111			1111	1111	11
1-	51.5	Auger Refusal at 10.52 m,			33	15	170		11	11 :	111	1111	1111	1111	1111	1111	1111	11
1		hammered spoon, then continued			SS	16	280	50/	- 11	11	111	1111	1111	1111	1111	1111	1111	
-	51.1	augering Dense, grey SILTY SAND, some		1				430 mm	1.1.1	11 -	• • • • •		1111	1111	1111	1:11	1111	11
2-		to trace gravel, trace clay								11	111	1111	1111	1111		1111	1111	11
-		Auger Refusal Inferred Bedrock at 11.55 m							11	11 1			1111	1111			1111	
-	7 11	Installed Well							11							1111		
13-		End of Borehole							11				1111	1111	+++++	++++	1111	
1.5									11	11			1111	1111	1111	1111	1111	
-										11		1111	1111	1111	1111	1111	1111	
									11			1111			1111	1111	111	111
14-										11		1111					111	
-									1.1	11			1111	1111				
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15-									1		+ + + + + + + + + + + + + + + + + + +	1111	1111	1111	1 1 1 1	1111		
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Borehole Number: MW06-5

Project Number: 05-215-22

Client: National Capital Commission

Site Location: Preston St. Extension

Date Completed: June 20, 2006

Supervisor: ADG/TLJ

Ground Surface Elevation: 54.72 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	LOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
т 4 -4 -3 -2 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1			7 10 9 21 10 14 6 13 4 50	0			GROUND SURFACE FILL Topsoil near surface, underlain by dark brown silty sand fill with trace gravel. Dry, no odour. Brown sand fill with gravel and trace clay. Minor iron staining. Dry, no odour. Dark brown and black silt and sand fill with gravel and cobble. Dry, no odour. BEDROCK	51 mm diameter PVC screen 203 mm diameter borehole Stick-up casing
Page 1	of 2							INCERA

Borehole Number: MW06-5

Project Number: 05-215-22

Client: National Capital Commission

Site Location: Preston St. Extension

Date Completed: June 20, 2006

Supervisor: ADG/TLJ

Ground Surface Elevation: 54.72 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	гое	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 17 18 19 20 21 21 22 23 24 24 25 26 26 21 24 25 26 26 27 24 26 27 26 26 27 26 27 26 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27							Borehole terminated at 5.4 mBGS. BOREHOLE TERMINATED	Depth of MW06-5 = 5.4 mBGS
Page 2	of 2							INCERA

Borehole Number: MW06-8

Project Number: 05-215-22

Client: National Capital Commission

Site Location: Preston St. Extension

Date Completed: June 21, 2006

Supervisor: ADG/SNG

Ground Surface Elevation: 62.50 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	907	STRATIGRAPHIC DESCRIPTION	INSTALLATION
и <u>т</u> <u>4</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u>			8 15 20 18 10 12 9 15 11 16 50 24 50	0			GROUND SURFACE FILL Dark brown silty sand fill with trace gravel and brick fragments. Dry, no odour. Brown sand fill. Dry, no odour. Dark brown silty sand fill with trace brick fragments. Dry, no odour. BEDROCK	51 mm diameter PVC screen 203 mm diameter borehole
Page 1	of 2							INTERA

Borehole Number: MW06-8

Project Number: 05-215-22

Client: National Capital Commission

Site Location: Preston St. Extension

Date Completed: June 21, 2006

Supervisor: ADG/SNG

Ground Surface Elevation: 62.50 mASL

DEPTH BGS	SAMPLES	LAB SAMPLE	BLOW COUNT	CGI (ppm)	PID (ppm)	FOG	STRATIGRAPHIC DESCRIPTION	INSTALLATION
15 16 16 17 18 19 20 19 20 21 21 21 21 21 21 21 21 21 21 21 21 21							Borehole terminated at 5.4 mBGS. BOREHOLE TERMINATED	Depth of MW06-8 = 5.5 mBGS
Page 2	of 2							INCERA

APPENDIX III Correspondence with Regulatory Agencies

Evan Westad

From:	ERU /UAE <eru-uae@ottawa.ca></eru-uae@ottawa.ca>
Sent:	Tuesday, April 19, 2022 2:16 PM
То:	Evan Westad
Cc:	ERU /UAE
Subject:	RE: LeBreton Flats Landfill
Attachments:	OLMS Phase 1 Ur-06. Oct2004.pdf

You don't often get email from eru-uae@ottawa.ca. Learn why this is important

This Email is from an **EXTERNAL** source. Ensure you trust this sender before clicking on any links or attachments.

Hi Evan,

I have attached a summary of information for the Former Nepean Bay Landfill from the Old Landfill Management Strategy 2004 study prepared by Golder Associated for the City in 2004.

I was also able to locate some information in the Federal Contaminated Sites Inventory here: <u>Site 00000015 - LeBreton Flats - Nepean Bay (tbs-sct.gc.ca)</u>

The only information our Unit has on the unnamed landfill identified as activity ID 6124 is that it reportedly operated between 1910 and 1920.

I hope this is helpful,

Regards,

Rich Barker | Specialist, Environmental Remediation (A) Environmental Remediation Unit Corporate Real Estate Office Planning, Real Estate and Economic Development

City of Ottawa | 110 Laurier Avenue West, 5th Floor West | Ottawa ON K1P 1J1 T. 613.580.2424 x. 12567 | F. 613.580.6051 | richard.barker@ottawa.ca

From: Evan Westad <ewestad@Pinchin.com> Sent: April 14, 2022 3:23 PM To: ERU /UAE <ERU-UAE@ottawa.ca> Subject: LeBreton Flats Landfill

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Good afternoon,

I'm completing a study on a property in LeBreton Flats in Ottawa and am looking for information on two waste disposal Sites. I have submitted an FOI request but don't think that will return information in time. I'm wondering if you can direct me to any publicly available information regarding the Nepean Bay Dump (Ottawa River Pkwy East of CPR Prince of Wales Bridge) activity ID 6108 and an adjacent Site with activity id 6124 (as per https://open.ottawa.ca/datasets/former-landfills/explore?location=45.412533%2C-75.720958%2C6.55). Any information available would be greatly appreciated.

Evan Westad, B.Sc., GIT Project Technologist, Environmental Due Diligence & Remediation

Pinchin Ltd.

662 Falconbridge Road, Unit 3, Sudbury, Ontario P3A 4S4 C: 705.207.0748 | pinchin.com

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Site ID # Ur-06 ANI	D Record # 080	MOE Site # x 1011	Category of Owner	Government	HLUI Activity ID # 6108
Other References	Gartner Lee, 1980 excerpts 2002	(Site #6); Intera, 1988 (Lf #6); City of	Ottawa Operations Branch, 1980	(Site 6); Dillon, 1984 (S	ite No. D-123); AMEC, April 2002 (Parcel E); AMEC,
Site Name	Nepean Bay				
Landfill Monitoring/ Remediation	monitoring was re waste was found	commended NCC fax dated October	1, 2002 indicates a preliminary r	emediation feasibility stu	Ottawa at the site and at other sites to the west; further udy was conducted in 1994, domestic and industrial solid reach significant concentrations upon spring thaw. No
Site Location	open green space	between Ottawa Parkway (N), CP rail	way (W), Scott St. (S) and LeBret	on Flats Aqueducts (E)	
Easting (UTM NAD 27)	443540		Northing (UTM NA	D 27) 5028720	
Ward #	14				
Size of Site	area approx. 7.5 h	la			
Waste Thickness	from approx. 3 to	12 m [AMEC, 2002]			
Active Time Period	March 1963 - Feb	. 1964			
Current Ownership	NCC				
PIN (s)	040970100, 0409	70062, 040970059, 040970046, 04097	0101		

Area Served	City of Ottawa
Type of Waste	domestic and industrial solid waste [NCC fax, Oct. 1, 2002]; concrete, glass, paper, wood, ashes, cinders, asphalt, plastic, rubber, metal and brick observed in fill [AMEC April 2002]
Nearby Industries	Canadian Pacific Railway Yards, West of Broad St. to Ottawa River [Intera #75]
Operator	City of Ottawa
Parameters of Concern	heavy metals (barium, beryllium, cadmium, copper, lead, nickel, molybdenum, zinc) in soil; PAHs (benzo(a)pyrene and dibenzo(a,h)anthracene) in soil and groundwater Trace levels of DCE, VC detected in limited number of sampling locations. [AMEC, April 2002]
Concentrations	in excess of applicable remediation criteria [AMEC, April 2002]
Magnitude	heavy metals not found near surface; volume of heavy-metal impacted soil evaluated at 312,000 m3; PAH impacts occur sporadically [AMEC, April 2002]
Methane (landfill gas)	up to 81.2 % methane v/v in December 2001 [AMEC, April 2002]; methane levels varied from 0 to 88.7% v/v in October 2002 [AMEC, excerpts 2002]; site studied in landfill gas utilization feasibility study but did not make it to extraction test screening level. Low levels of gas generation rates combined with a cover permeable to the atmosphere does not lend this site to gas collection [AMEC, excerpts 2002]
Ecological Receptors	ecosystem of Nepean Bay/Ottawa River
Distance to Nearest Human Receptor	closest existing houses are approx. 160 m south of site; site is immediately adjacent to LeBreton Flats where there is proposed residential development
Adjacent Land Use and Zoning	commercial and institutional (municipal facilities) on west side and currently undeveloped in all other directions; historical landfill Ur-5 (Bayview and Slidell) is located immediately west of site; the zoning is LI (major open space) and EW Sch.225 (waterway corridor) in the general area of the site
Adjacent Land Owners	City of Ottawa
Site Access	vacant land not used for recreational purposes; site is not fenced but access to the site is limited due to its location
Water Supply	municipally supplied water
Depth to Bedrock	between approx. 6 m at periphery to over 16 m in mid-west section [AMEC, 2002] to interbedded bioclastic limestone, crystalline limestone and shale
Depth to Groundwater	within the fill deposits, from 13.77m BGL on north side to 9.31 m BGL on southeast side and 4.55 m BGL on southwest side [AMEC, Dec. 3, 2001]
Distance to Surface Water	site is adjacent to Ottawa River on south side and to LeBreton Flats Aqueducts on east side
Topography	steeply sloping on the south and west sides to moderately inclined across the central, northern and eastern portions of the site [AMEC, April 2002]
Soil Cover Thickness	considerable earth fill placed over the waste for the construction of the Ottawa Parkway [GLL, 1980]; cover thickness varies from approx. 0.05 m (topsoil only) to several metres (topsoil underlain by sand or clay fill) [AMEC, April 2002]
Type of Overburden	topsoil, fill and native clay and/or till overlying limestone bedrock; estimated K = 4.2E-6 cm/s [AMEC, April 2002]
Direction of Groundwater Flow	radially south (towards Ottawa River), west and north [AMEC, April 2002]
Physical Setting	open green space with grass cover and tree plantings
Filysical Setting	