REPORT NO: 2418-1697

PRELIMINARY GEOTECHNICAL REPORT
DESKTOP STUDY
PROPOSED ROYAL CUBERA LASP
41 AVENUE SW(EDMONTON) & RANGE ROAD 243
PART OF SECTION 9-51-24-4
COMMERCIAL / INDUSTRIAL DEVELOPMENT
LEDUC COUNTY, ALBERTA

November 2012

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EXECUTIVE SUMMARY

J. R. Paine & Associates Ltd. has performed a limited geotechnical desktop study on the proposed Area Structure Plan (LASP) for the Royal Cubera Commercial and Industrial Development, 41 Ave SW and RR 243, in Leduc County, Alberta. The study consisted of the following steps:

- J.R. Paine library review
- Geological Map
- Air photo review
- Site observations

The highlights from the geotechnical study are summarized as follows:

- Site has two main soil types: lacustrine clay and glacial clay till.
- Site is suitable for industrial/comercial subdivision development with no major geotechnical constraints.
- Air photos showed potential disturbed areas which should be further investigated.
- Site has a variable low to high watertable which should be addressed.
- Several low areas were present on site which should be addressed.

Discussion was provided on the above soil highlights in the report. Testholes or other soil sampling and field investigation are recommended for all future land development design and construction.

PRELIMINARY GEOTECHNICAL REPORT

PROJECT: Proposed Royal Cubera LASP
41 Avenue SW (Edmonton) and Range Road 243
Part of Section 9-51-24-4

LOCATION: Leduc County, AB

CLIENT: Cancom Holdings Ltd.
C/o Stantec Consulting Ltd.
10160 – 112 Street
Edmonton, AB T5K 2L6

ATTENTION: **Eleanor Mohammed, HBA Env. Mgmt., RPP, MCIP, EP**

1.0 INTRODUCTION

This report presents the results of the desktop study performed for the proposed Royal Cubera Local Area Structure Plan (LASP). The objective of the study was to determine the predicted subsoil data for use in the geotechnical planning and preliminary design aspects of the LASP. Authorization to proceed was received from Eleanor Mohammed of Stantec Consulting Ltd. in August 2012.

In our analysis and discussion, it is assumed that this Area will be fully serviced.

There was no field investigation conducted for this study. The soils information for this report was obtained from the following sources:

- J.R. Paine and Associates Ltd. library review
- Geological Map
- Air photo review
- Site observations

As with all land development, a detailed soils investigation is recommended consisting of onsite testholes for all future design and construction in this Area.

2.0 SITE OBSERVATIONS

The site is located south of 41 Avenue SW Edmonton and west of Range Road 243. The Area consists of two and a half quarter sections: NE, SE, and the east ½ of SW 9-51-24-4. The surrounding area is farmland to the north, east and south. To the west, the land was stripped and partially graded as part of ongoing development. The majority of the site is flat rolling farmland with buildings located in the northwest and middle of the north quarter, as well as the northeast corner of the south quarter. There are several treed, low and marsh areas on site. Located in the south portion of the site are five antennas, 4 larger ones and one smaller one, each with a small building attached. A tree farm is located in the south half of the north quarter.

There is a pipeline that runs north-south along the SE /SW quarter sections border and a transmission line ROW that runs diagonal across the SE quarter.

No records of abandoned or active coalmines were found in the Coal Mine Atlas as published by the Government of Alberta, and therefore coalmines should not be an issue for this area.

3.0 AIR PHOTO REVIEW

It is noted that J.R. Paine & Associates Ltd. is not an air photo interpretation specialist and the air photo observations should not be construed as such. Aerial photographs of the subject property were reviewed for 1963, 1976, 1993 and 2010.

1963

The majority of the subjected property is farmland. A farm road is present in the middle of the north quarter possibly leading to buildings. There are several wet areas in the north quarter with a larger low area located in the middle. A low area in the northeast portion of the bottom quarter is noted, this area has light coloring. There are house and farm buildings located in the centre of the north quarter. There are low and treed areas in the southwest portion and the north end. A dugout is located in the southwest portion.

1976

The area is still mostly farmland and the natural features remain the same, with the exception of fewer low areas in the north quarter. Farm buildings are located in the centre of the north quarter, the northwest corner of the site, as well as below the low area in the northeast portion of the bottom quarter.

1993

The area is still mostly farmland and the natural features remain the same. Antennas are now present in south portion of the of the bottom quarter. The low area in the northeast portion of the bottom quarter is light colored and possible earthwork activity has occurred. There is a light patch in the center of the bottom quarter with a road leading to it and is likely associated with the antennas. A dugout is present in the north end of the site.

2010

The area is still mostly farmland, all nature features remain the same, all buildings and antennas are still present. The disturbed area has a drainage ditch and a pond of water and still looks slightly disturbed. There are buildings within the disturbed area. A tree farm is present and located northwest of the disturbed area. Road in the centre of the south quarter is still present. Piles of soil are present in the southwest quarter.

In summary, the main issues noted in the air photos were the farm buildings, low areas, antennas, and the possible disturbed area in the northeast area of the SE quarter. The recommended further site investigation for development should address these issues.

4.0 SITE GEOLOGY

From Quaternary Geology of Central Alberta (I. Shetsen, 1990) the general conditions for the entire LASP consist of either flat to undulating surface topography. The surficial geology was noted to be glacial draped moraine which consist of till of uneven thickness with minor

amount of water sorted material and local bedrock exposure. Till thicknesses is generally less than 25 meters on uplands and may reach up to 100 meters in buried valleys.

From the Geological Map of Alberta the general bedrock geology in the region was identified as the Horseshoe Canyon Formation of late Cretaceous age. The Horseshoe Canyon Formation generally comprised of grey feldspathic clayey sandstone, bentonitic mudstone and carbonaceous shale, with scattered coal and bentonite beds of various thickness.

5.0 SOIL CONDITIONS – RESEARCHED TESTHOLES

A detailed description of the soils encountered during a previous J. R. Paine and Associates Ltd. project performed in part of the LASP area during 2007 is provided on the attached testhole logs in the Appendix, along with a site plan showing their locations. There are 4 testholes in the north half of the SE quarter. In general, the testhole soil profile consisted of topsoil over silty clay over clay till.

Topsoil

Topsoil and intermixed marginal organic soil was found at the surface in all testholes that ranged from 300-450 millimetres in depth. It should be noted that the topsoil depth is known only at the individual testhole location.

Clay

Silty clay was encountered below the topsoil in all testholes. The clay material encountered was generally moist, light to medium brown and grey, and medium plastic. Atterberg limit test results were plastic limits between 14 and 16 percent and liquid limits between 41 and 44 percent. The clay layer also featured trace oxides, pebbles and coal. In general, the clay materials found in all testholes were firm to very stiff. This clay layer is lacustrine in nature, which differs from the glacial moraine geology described previously. Although, the trace pebbles and coal in the clay show that is was somewhat glacial in origin. Some geologists term this clay glacio-lacustrine to show its dichotomous nature.

Clay Till

Silty, sandy clay till was encountered in all testholes below the clay at depths ranging from 1.2 to 2.1 metres. The till material encountered was brown and grey, medium plastic. The clay till layer also featured trace coal, oxides, pebbles and sand pockets. In general, the clay till material found in all testholes were moist and stiff to very hard. The testholes were terminated in the clay till at 7.3 meters depth.

Groundwater

Groundwater level ranged from 1.5 meters below ground surface to dry in the reviewed testholes which shows a variable watertable level across the site. At the completion of drilling, no significant free water or slough were observed in any of the three testholes. Water table readings were taken 12 and 49 days after drilling. Due to mature crops, a second water level reading and horizontal locations were unattainable for Testholes 07-3 and 07-4, therefore the readings may not be stabilized. The results are shown in Table 1.

Table 1: Testhole Locations and Water Table Measurements

	Water Level Depth (m)		Approximate Location From North East Site Corner	
Testhole	July 9 (Day 12)	August 15 (Day 49)	Distance South	Distance West
TH 07 - 1	1.1 m	1.5 m	82 m	48 m
TH 07 - 2	Dry at 7.32 m	Dry at 7.32 m	345 m	387 m
TH 07 - 3	Dry at 7.32 m	N/A	N/A	N/A
TH 07 - 4	Dry at 7.32 m	N/A	N/A	N/A

It should be noted that water table levels may fluctuate on a seasonal or yearly basis with the highest readings obtained in the spring or after periods of heavy rainfall.

6.0 DISCUSSION & RECOMMENDATIONS

The surficial geology of the area consisted of draped glacial moraine which generally contains clay till soils at the surface below the topsoil. The actual soil conditions in the four testholes onsite had 1.2 to 2.1 meters of lacustrine clay followed by clay till. The topography across the site was similar so it is predicted that these two soil types should dominate the area.

Low areas on the site may have deeper organics or moister, softer near surface clays followed by the noted two main soil types. The following discussion and recommendations is provided for the limited Area Structure Plan and future development. It is understood that the site will consist of only industrial/commercial subdivisions with full services so the discussion is limited to this development.

6.1 General Site Suitability for Development

In general, the site appeared suitable for industrial commercial development given the expected clay and clay till soil conditions. The high watertable noted in the one testhole will need to be addressed in the future planning, design and construction.

The low areas noted onsite may have high watertables, deep organics and soft wet soils which will require attention. The potential disturbed area and potential resource well should be addressed during further site investigation.

6.2 Site Preparation and Grading

The clay and clay till should be suitable material for road the lot grading. The low areas onsite would benefit from a raise to the design grade to be farther above the watertable. Cuts should be avoided in high watertable areas and fills are encouraged. It is noted that this raise in grade is a geotechnical engineering comment; environmental and wetland issues are beyond the scope of this report.

The clay soils were generally over optimum and will require drying prior to compaction. The clay till soils were less moist and near optimum to above optimum. Some drying will be required while some of the soils will not require any drying prior to compaction.

6.3 Underground Utilities

The clay and clay till soils should provide suitable conditions for open-trenched underground utility installation. These soils are typically not prone to trench troubles such as sloughing, base heave or piping. Glacial soils are typically underlain by bedrock soils and therefore deep trunk sewers should have suitable soil conditions as well for open trenches. There

is the possibility of pre glacial sands or gravel deposits which would be difficult for open trench methods.

The watertable was high in some areas therefore low to moderate amounts of ingressing water in the trenches can be expected. Due to their low permeability, the clay soils should not require extensive dewatering in the form of well points. Sand lenses in the clay till may produce significant water until drained. In trench pumping should suffice for dewatering during construction.

Standard sand pipe bedding should work in most of the clay soils. However, at significant depths below the watertable, a washed rock and geotextile separator may be required. The washed rock and geotextile configuration should be determined in the field during construction.

The amount of drying required for the clay soils was described in section 6.1. Leduc County Standards call for compaction to standard proctor criteria which should be applicable to this site.

It should be noted that the ultimate performance of the trench backfill is directly related to the consistency and uniformity of the backfill compaction, as well as the underground contractors construction procedures. In order to achieve this uniformity, the lift thickness and compaction criteria should be strictly enforced.

6.4 Surface Utilities

The subsurface soil conditions encountered throughout this site are considered generally fair to satisfactory for the construction of roads, curbs, and sidewalks in undisturbed areas. Standard pavement structures and subgrade preparation should be feasible in most areas. The clays have a low to moderate frost susceptibility and cuts should be avoided in high watertable areas. The need for insulation is not expected to prevent frost heave road issues.

The clay soils were firm and very moist in the testholes therefore the subgrade strength may be insufficient for standard pavement structures without deep drying or cement stabilization. Uniform trench backfill procedures would improve the subgrade conditions and should be considered for development on this site.

The low areas and higher watertable areas where very moist materials are encountered at subgrade elevation, other alternative measures may have to be considered. These alternatives may include replacing the very moist materials with a drier clay material to obtain a more stable

and stronger subgrade. Another option would be the use of a pit-run gravel subbase.

Where storm sewers are present, an attempt can be made to lower the watertable in the high level areas. This may be accomplished by using sub-drains, usually consisting of perforated pipe and manhole inlets, to collect groundwater below the road area. Other options which may be utilized are hydraulically connecting the bedding materials to the manholes, or leaving the rings off of the storm sewers during construction, allowing groundwater to seep into the sewer. When employing this method, it is important to wrap the joints in filter cloth to prevent silting. The exact configuration and need for the sub-drains should be determined by further investigation and will require observations and decisions during construction.

6.5 Groundwater Issues

The site likely has areas of high watertable which should be accounted for in the site planning design and construction. Comments on the watertable issues are given in each sub-section of Section 6.0 and should be referenced.

6.6 Stormwater Management Facilities

The clay and clay till soils should yield sufficiently low permeability characteristics for water retention purposes, and no liners should be required. Standard SWMF design should be applicable to this area.

Dry pond construction below the watertable may produce constant water seepage into the outlets, and a soft, saturated pond bottom. Therefore, a dry pond would require specialized design and construction measures near or below the above noted watertable levels and locations. It is better to avoid the situation all together.

Sand layers are typically found in glacial clay till soils and large sand layers or pockets encountered during pond construction may need to be excavated and/or plugged with clay.

6.7 Building Foundations

The clay and clay till soils should provide adequate conditions for pile foundations to support large or small industrial/commercial buildings. Bored cast-in-place (CIP) concrete pile

foundations are typically the lower cost foundation alternative for buildings in the Edmonton/Leduc area and the soil conditions should be applicable for this foundation type. Belled, end-bearing CIP piles are applicable to the clay till soils, but skin friction piles can be used as well. Belled piles are typically better for the larger loads. Portion of the clay till in the testholes did have lower than normal strengths therefore piles may need to go deeper in some areas. Casing may be required to control water seepage in the high watertable areas.

Industrial/commercial subdivisions with large storage yards appear feasible in all site areas, however, the lacustrine clay may be weaker than desired for large vehicle loads. Bigger structures, or increased subgrade measures may be required in some areas.

The softer nature of the clay also applies to building slab-on-grade support and increased measures may be required. The upper clays were medium plastic which is good feature for slabs-on-grade as the potential swelling/shrinkage is relatively low.

6.8 Sloping Ground

A cursory visual review of the site and air photos showed no major slopes to be present on site. This should be confirmed by a review of a site ground contour plan.

7.0 CLOSURE

This preliminary report has been prepared for the exclusive and confidential use of Cancom Holdings Ltd., Leduc County, and Stantec Consulting Ltd. Use of this report is limited to the subject LASP site only. The recommendations given are based on the subsurface soil conditions encountered during test boring, researched soil data, current construction techniques and generally accepted engineering practices. No other warranty, expressed or implied, is made. Due to geological randomness of many soils formations, no interpolation of soil conditions between or away from the testholes has been made or implied. Soil conditions are known only at the test boring location. Should other soils be encountered during construction or other information pertinent become available, the undersigned should be contacted as the recommendations may be altered or modified.

Further site investigation is recommended for all future land development design and construction. The discussion and recommendations in this study could change upon further geotechnical investigation.

We trust this information is satisfactory. If you should have any questions or require further input, please do not hesitate to contact our office.

Respectfully Submitted,
J.R. Paine & Associates Ltd.

Rick Evans, P. Eng.
Manager, Geotechnical Engineering

Reviewed by John Schroder, P. Eng.

APEGA Permit # P401

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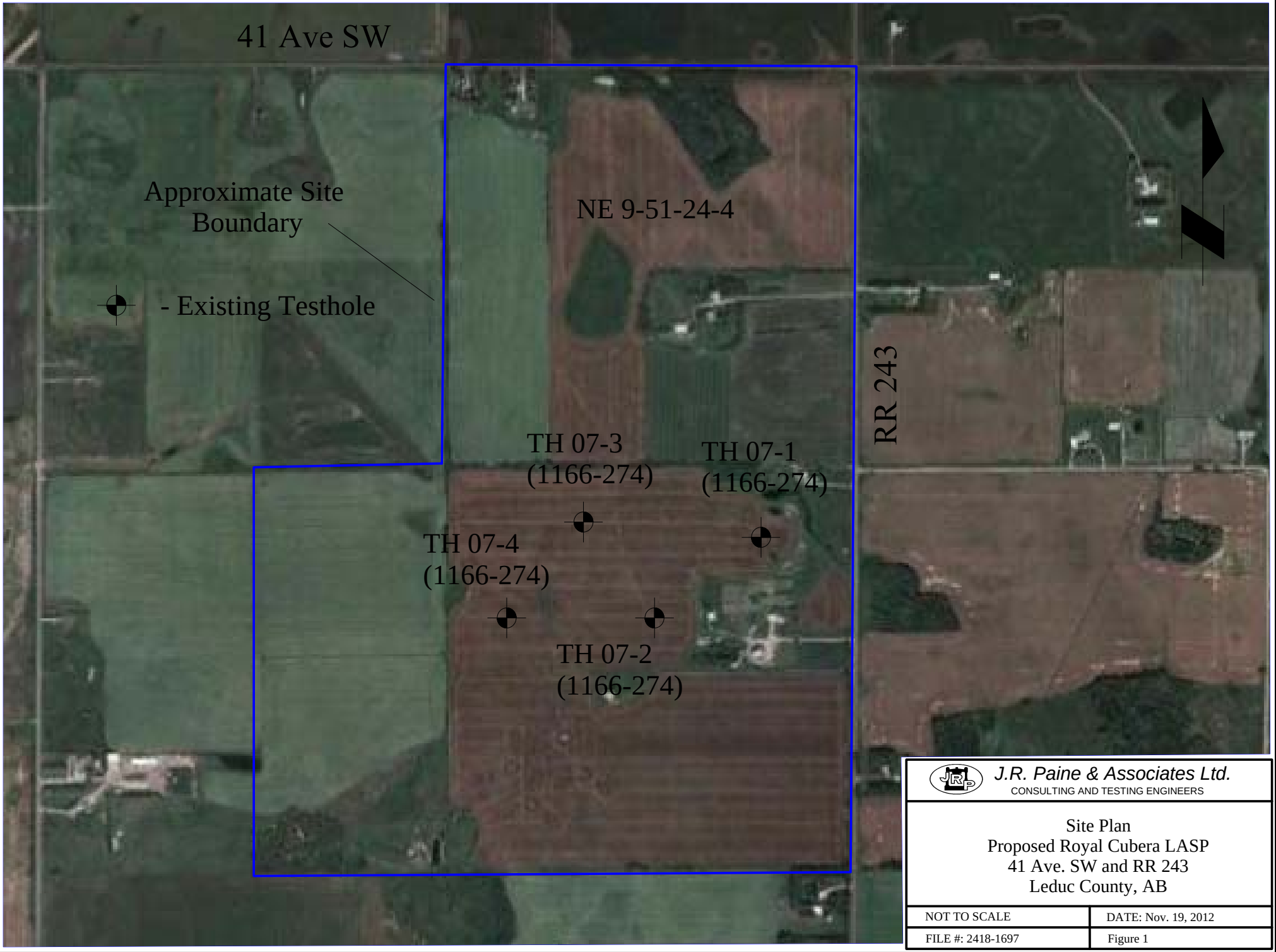


J.R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS

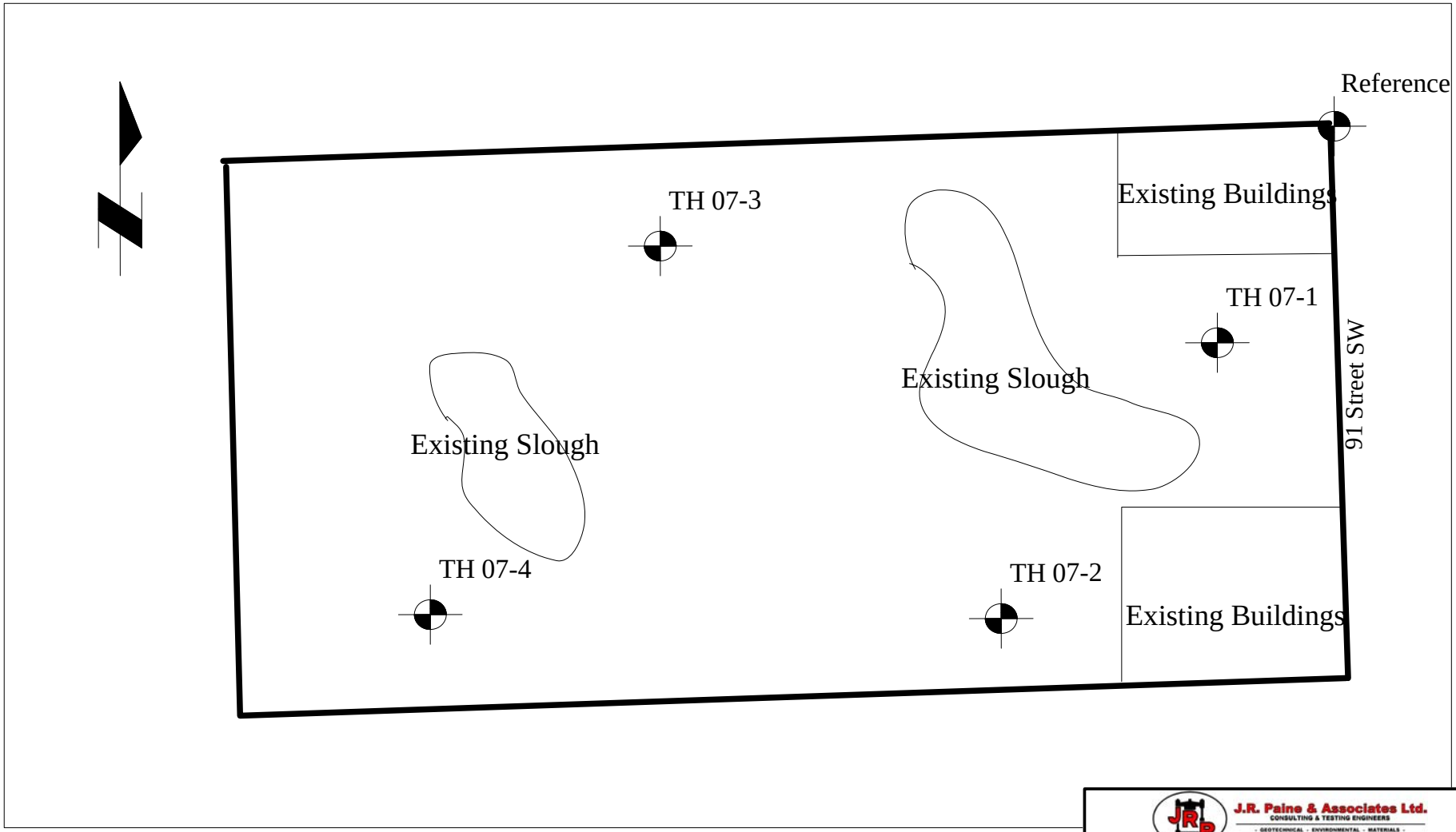
Site Plan
Proposed Royal Cubera LASP
41 Ave. SW and RR 243
Leduc County, AB

NOT TO SCALE	DATE: Nov. 19, 2012
FILE #: 2418-1697	Figure 1

J.R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS

2002 Air Photo
Proposed Royal Cubera LASP
41 Ave. SW and RR 243
Leduc County, AB

NOT TO SCALE	DATE: Nov. 19, 2012
FILE #: 2418-1697	Figure 1



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CONSULTING & TESTING ENGINEERS
- GEOTECHNICAL - ENVIRONMENTAL - MATERIALS -

Approximate Testhole Locations
Preliminary Geotechnical Assessment
N1/2 of SE 9 - 51 - 24 - W4M
SW of 91 Street and 41 Avenue SW
Edmonton, Alberta

SCALE: NTS	DATE: August, 2007
DRAWN BY: S MacFarlane	FILE #: 1166-274

PROJECT: Preliminary Geotechnical Assessment, N1/2 SE 9-51-24-W4M	PROJECT NO: 1166-274	BOREHOLE NO: **07-1**
CLIENT: Qualico Developments West Ltd.	DRILL METHOD: Solid Stem Auger	ELEVATION:
OWNER:	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	USC	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA
0	OR	**TOPSOIL** : highly organic,black, moist				
		450 mm				
		CLAY : silty, medium plastic, moist, soft to firm, medium brown, trace pebbles			23.3	
1	CI					
					22.4 (15.6 – 43.7)	P.L. = 15.6 L.L. = 43.7 M.C. = 22.4 **Soluble Sulphates:** Moderate to Severe
2		At 1.8m: Trace coal, oxides, iron stone inclusions, gravel up to 30 millimetres				
		2.1 m				
		CLAY TILL : silty, sandy, medium plastic, moist, stiff, grey and brown, trace coal, oxides and pebbles			19.3 18	
				10		
3					20.6	
		Below 3.4m: very sandy				
					18.7	
4					22	**Shelby Tube:** QU: 182.3 kPa DD: 1701 Kg/m^3 MC: 22.0 %
	TILL	Below 4.6m: grey			18.9	
5						
					19.8	
		Below 5.3m: trace water, very moist			20.4	
				7		
6						
		Below 6.1m: blueish grey, damp to moist, trace clay shale, very hard			22.5	
					21.5	
7					19.7	
				20		
		END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Slotted standpipe installed to 7.32 m. 12 day waterlevel reading: 1.09 m bgs. 49 day waterlevel reading: 1.5 m bgs.				
8						
9						
10						

SLOTTED PIEZOMETER

Elevation (m)

1.5

J.R. Paine & Associates Ltd.
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- GEOTECHNICAL - ENVIRONMENTAL - MATERIALS -

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Edmonton, AB T5S 1E7
Phone: (780) 489-0700
Fax: (780) 489-0800

LOGGED BY: Scott MacFarlane	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 27/6/07
Fig. No: 07-1	Page 1 of 1

PROJECT: Preliminary Geotechnical Assessment, N1/2 SE 9-51-24-W4M	PROJECT NO: 1166-274	BOREHOLE NO: **07-2**
CLIENT: Qualico Developments West Ltd.	DRILL METHOD: Solid Stem Auger	ELEVATION:
OWNER:	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	USC	SOIL DESCRIPTION	SPT (N)	OTHER DATA
0	OR	**TOPSOIL** : highly organic, black, moist 300 mm		
		CLAY : silty, medium plastic, moist, stiff to very stiff, light brown and grey, trace oxides and pebbles		
1	CI		7	
		Below 1.5m: very sandy 1.8 m		P.L. = 14.4 L.L. = 40.9 M.C. = 12.3 **Soluble Sulphates:** Negligible
2		**CLAY TILL** : silty, very sandy, medium plastic, damp to moist, very stiff to hard, light to medium brown, trace coal, oxides, pebbles, sand inclusions, iron stone inclusions		**Shelby Tube:** QU: 464.7 kPa DD: 1881 Kg/m^3 MC: 15.6 %
3				
4	TILL		12	
5				
6			14	
7			9	
		END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Slotted standpipe installed to 7.32 m. 12 day waterlevel reading: Dry to 7.32 m bgs. 49 day waterlevel reading: Dry to 7.32 m bgs.		
8				
9				
10				

POCKETPEN. (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

Pocket pen values: 19.2, 17.6, 12.3, 14.4, 40.9, 13, 15.6, 18.5, 19.8, 20.6, 20.6, 20.1, 20.6, 23, 18, 17.7

SLOTTED PIEZOMETER

Elevation (m)

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LOGGED BY: Scott MacFarlane	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 27/6/07
Fig. No: 07-2	Page 1 of 1

PROJECT: Preliminary Geotechnical Assessment, N1/2 SE 9-51-24-W4M	PROJECT NO: 1166-274	BOREHOLE NO: **07-3**
CLIENT: Qualico Developments West Ltd.	DRILL METHOD: Solid Stem Auger	ELEVATION:
OWNER:	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	USC	SOIL DESCRIPTION	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA
0	OR	**TOPSOIL** : moist, black, soft, some clay 300 mm			
		CLAY : silty, medium plastic, moist, firm, medium brown, trace coal and oxides		21.6	
1	CI		6	19.7	
		1.7 m		20.8	
2		**CLAY TILL** : silty, sandy, medium plastic, moist, very stiff to hard, grey and brown, trace coal, oxides and pebbles up to 40 millimetres		19.2	
				15.9	**Shelby Tube:** QU: 381.2 kPa; DD: 1842 Kg/m^3; MC: 15.9 %
3				18.8 (12.4 – 45.3)	P.L. = 12.4 L.L. = 45.3 M.C. = 18.8; **Soluble Sulphates:** Moderate
				17.8	
4		Below 4.0 m: dark grey	11	18.9	
	TILL			18.1	
5				19.3	
			9	17.6	
6				18	
				18.2	
7			6		No Recovery
		END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Slotted standpipe installed to 7.32 m. 12 day waterlevel reading: Dry to 7.32 m bgs.			
8					
9					
10					

SLOTTED PIEZOMETER

Elevation (m)

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LOGGED BY: Scott MacFarlane	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 27/6/07
Fig. No: 07-3	Page 1 of 1

PROJECT: Preliminary Geotechnical Assessment, N1/2 SE 9-51-24-W4M	PROJECT NO: 1166-274	BOREHOLE NO: **07-4**
CLIENT: Qualico Developments West Ltd.	DRILL METHOD: Solid Stem Auger	ELEVATION:
OWNER:	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	USC	SOIL DESCRIPTION	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA
0	OR	**TOPSOIL** 350 mm			
1	CI	**CLAY** : silty, medium plastic, moist, firm, light brown and grey, trace coal, oxides and gravel up to 80 millimetres 1.2 m	5	21.3, 20.6	
2		**CLAY TILL** : very silty, sandy, low to medium plastic, damp to moist, very stiff, light brown, trace pebbles	15	15.1, 12, 15.6	
3				16.3	
4	TILL	Below 3.5m: silty, sandy clay till, medium plastic, moist, very hard, grey and brown		19.1, 20.4	**Shelby Tube:** QU: 254.2 kPa DD: 1699 Kg/m^3 MC: 20.4 %
5		Below 4.9m: grey, trace bedrock and sand inclusions	13	19.2, 19.2 (15.8 38.4), 19.5	P.L. = 15.8 L.L. = 38.4 M.C. = 19.2 **Soluble Sulphates:** Negligible to Moderate
6				20	
7			14	20.4, 21.6	
8		**END OF TESTHOLE @ 7.3 m.** No water and no slough on completion of testhole. Slotted standpipe installed to 7.32 m. 12 day waterlevel reading: Dry to 7.32 m bgs.			
9					
10					

SLOTTED PIEZOMETER

Elevation (m)

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LOGGED BY: Scott MacFarlane	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 27/6/07
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