THURBER ENGINEERING LTD.

December 30, 2016 File: 13823

City of Coquitlam
Parks Recreation and Culture Services
3000 Guildford Way
Coquitlam, BC
V3B 7N2

Attention: Wai-Sue Louie, MBCSLA, CSLA

MACKIN PARK PLAYING FIELDS
PRELIMINARY GEOTECHNICAL ASSESSMENT

Dear Wai-Sue:

As requested, Thurber Engineering Ltd. has conducted a geotechnical investigation for the above project. This report describes the results of the investigation and provides geotechnical recommendations for preliminary cost estimating related to selection of a preferred playing field design methodology.

It is a condition of this letter that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

1. INTRODUCTION

The City of Coquitlam (the City) is proposing to complete upgrades to the playing fields located in Mackin Park. We understand that seasonally the current fields become saturated and periodically flood. To reduce flooding and water ponding on the fields we expect that grades will be raised. Alternatively, it may be possible to reduce ponding with installation of drainage measures.

The City would like geotechnical input to assess the soil and ground water conditions at the site and provide preliminary geotechnical recommendations related to the proposed upgrade options. We understand that the City is currently considering three upgrade options: synthetic turf field, sand turf grass field or upgrades to the current fields to improve drainage. Currently, the extent of the proposed upgrades and field elevation has not been finalized. Based on the drawing provided by the City we understand that three field configuration options that will allow for soccer, cricket, baseball and football are being considered. The currently contemplated options involve different orientations and arrangements of the fields and different sized playing field areas.

Our scope of work is to complete a site investigation and provide preliminary geotechnical engineering comments and recommendations for potential field upgrades. Our comments are based on proposed field surface options including synthetic turf and sand turf grass fields and address associated walk/driveways, fences and storage units.

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thurber.ca

2. SITE INVESTIGATION

Site investigations in Mackin Park were undertaken in 2001 and 2009 by Jacques, Whitford and Associates Ltd. (JWA) and Golder Associates respectively. The JWA work was undertaken to assess unevenness and undulations in the playing field surface along with poor drainage conditions and develop recommendations to improve surface conditions.

To supplement this previous work, Thurber completed 14 test holes (THs 16-01 through 16-14) on July 6 and 7, 2016 to depths ranging from 3 to 18 m below ground surface using a track-mounted drill rig. Dynamic cone penetration tests (DCPTs) were completed at select test holes. The number of blows required to advance the DCPT 300 mm were recorded. The DCPT tip has a similar size and shape to the standard penetration test (SPT) split spoon sampler and is driven using the same hammer energy. In our experience, DCPT blow counts are approximately equivalent to SPT N-values which provide an indication of the in-situ density and strength of the soil.

The soil conditions were logged in the field and representative disturbed samples were collected from the augers for routine moisture content and visual classification testing in our laboratory.

Test hole locations are shown on Dwg. 1.

3. RESULTS OF INVESTIGATION

3.1 Soil Conditions

The results of the field and laboratory testing are provided on the attached test hole logs. The logs provide complete, detailed descriptions of the soil conditions encountered and should be used in preference to the generalized summary provided below.

The test hole logs indicate that the site is underlain by a thin layer of topsoil, sand fill, woodwaste fill, peat, organic silt, silt, clay and dense till-like silty sand. The sand fill thickness varies from 0.3 m to 1.6 m, the woodwaste varies in thickness from 0.2 m to 2.0 m and the peat varies in thickness from 0.3 m to 4.0 m. Underlying the peat there is a variable stratum of organic silt, silt, clay and peat extending to a depth of about 19 m on the south edge of the site.

Till-like soil, comprising dense, silty sand, underlies the site. The depth to the top of the till-like layer varies across the site generally becoming deeper towards the south.

3.2 Groundwater Conditions

Groundwater levels were measured in the open hole on the completion of drilling. Water levels at the time of drilling were generally 0.8 to 1.8 m below the ground surface. The depth of groundwater will vary in response to seasonal precipitation and regional water table. City personnel report that

seasonally water is observed ponded in the fields indicating that the water table is near the ground surface.

4. ENGINEERING ASSESSMENT AND RECOMMENDATIONS

4.1 General

Based on our site investigation and experience in the area, development on this site will require careful consideration of the geotechnical and hydrological issues. We understand that seasonally the fields become saturated and periodically flood. To reduce this grades will need to be raised and drainage installed.

The soil conditions and subsurface profile indicate that the site will be prone to both total and differential settlements if site grades are raised. Settlement will be the primary geotechnical issue when assessing potential site upgrades and new field options. As such, careful consideration of field options and locations will be required. Sources of potential settlement include the presence of woodwaste, peat and/or topsoil, relatively thick compressible silt and clay. In addition, organics including wood, woodwaste, and peat located above the water table will decompose and cause differential settlement. Organics located below the water table will decompose at a slower rate causing long term settlement and differential settlement. The variable thickness of the soil overlying the dense till will increase the differential settlement due to the different rates of secondary settlement. The current unevenness, undulations and localized poor drainage is likely evidence of that variable differential settlement is occurring.

Based on the investigation completed, a conventionally constructed (i.e. not pile supported) synthetic turf field at the will likely experience settlement that will result in poor performance of the surface. However, if the City decides to proceed with a conventional synthetic turf field constructed at grade, it would likely be most appropriate on the north side of the site. Also, consideration could be given to construction of a synthetic turf field on the upland portion of the site outside, north of the study area where soil conditions are likely more favorable for this type of field.

Liquefaction in a major seismic event could cause large total and differential settlement and lateral movement. Our preliminary recommendations are provided below.

4.2 Field Options

4.2.1 Upgrade Drainage of Existing Fields

Drainage improvements to the current field could comprise installation of lateral subsurface drains. The drains should comprise a perforated, 100 mm diameter, rigid PVC pipe surrounded by at least 300 mm of clear crushed gravel or washed rock. The perforations on the PVC pipe should be installed facing down. A non-woven geotextile Nilex 4545 or approved equivalent should be placed between the clear crushed gravel and the backfill.

A detailed topographic plan of the site will be required to determine the exact location of the drains. For preliminary planning purposes drains spaced about 4.5 m apart should be considered. The drains will be subject to periodic failure if the regional water level rises to the level of the field. During these periods the drains will not prevent water from ponding on the fields but will assist in increasing the rate of drainage once the regional water levels drop sufficiently low.

4.2.2 Grade Supported Sand Turf Field

The site is underlain by fill with discontinuous wood waste, possibly some localized peat and/or topsoil, over potentially compressible silt which are all potential sources of settlement requiring preloading if grades are to be raised at the site.

Sand turf fields are generally more tolerant of settlement than synthetic turf and can be levelled with localized grading when differential settlement occurs. Further, playing performance of sand turf fields are less sensitive to settlement. Therefore, it is our opinion that a sand turf field should the preferred option for a new grade supported field at this site. The requirement for preloading will be a function of the thickness of new fill placed and the settlement tolerance of the natural surfacing. Anticipated site preparation would typically be as described below.

Selective excavation will be required to remove organic soils where present at the base of the fill and to remove woodwaste where present in the fill above the permanent groundwater level. Fill to raise grades should typically comprise clean (less than 5% passing the 0.075mm sieve), well graded sand and gravel. Fill should be placed in maximum 300 mm thick lifts and compacted to at least 95% Standard Proctor maximum dry density (SPMDD). All subgrade preparation, fill placement and compaction should be inspected by Thurber. Additional details can be provided if required.

Placement of fill to raise grades above the seasonal flood level will likely cause consolidation of the peat, organic silt and clays. As the thickness of the compressible layers varies between locations, the resulting consolidation settlement will not be uniform. The amount of settlement could be reduced by preloading.

Secondary creep of organic soils may cause long term settlement of the field. The amount of long term settlement would be reduced, but not eliminated, by preloading. The presence of woodwaste and peat poses a risk of differential settlement with or without preloading. Decay of wood and woodwaste, where present, is another potential source of long term settlement.

The design elevation of a new sand turf field should be determined based on the minimum level to provide drainage during local flood and high water events allowing for the anticipated ongoing settlement. For preliminary planning, we suggest that approximately 2 to 3 m of combined permanent and preload fill may need to be placed on the site. The amount of fill required and the anticipated settlement would vary across the site depending on the underlying soil conditions and would be estimated during detailed design. Settlement of the fill is expected to be significant and

it should be anticipated that most the fill place on the site will become permanent fill with only some of the material being removed following preloading.

Due to the soft and weak underling soils, the placement of the permanent and preload will likely need to be completed in stages. The required preload duration will be a function of the desired permanent elevation (i.e. thickness of permanent fill), settlement tolerances and height of preload fill placed but is anticipated to be in the order of 12 months. The actual duration will depend on settlement monitoring during and following fill placement. The results of the settlement monitoring will be used to determine when the preload fill can be removed. Secondary creep will continue to occur following preload removal resulting in on-going, long-term settlements.

Regardless of completion of the above work, differential settlement will likely occur. Accordingly, it is our opinion that the use of a natural turf is preferable for a grade supported field so that grades can more easily be adjusted in the future, if required.

4.2.3 Grade or Pile Supported Synthetic Turf Field

4.2.3.1 Grade Supported

Our experience is that synthetic turf fields have stringent settlement requirements, particularly with respect to overall flatness and differential settlement. At this site, the variable thickness of the underlying compressible soils and organic material mean that there is a very high risk of large total and differential settlement along with ongoing secondary creep settlement. As such, it is our opinion that a grade supported synthetic turf field is not a good option for this site.

If the City decides to proceed with the design of such a field, further investigation and analysis would be required to estimate the potential settlements and the City would need to accept the risks associated with poor performance of the field. If a grade supported synthetic turf field is required and the City accepts the associated risk of settlement and poor performance, it may be possible to locate a field with a smaller footprint (i.e. one soccer field) where the thinnest compressible soils are found. It may be possible to construct the field using the preload methodology described above within such an area. If this design approach is preferred, constructing a sand turf field in that area and then monitoring the settlement over about 24 months to assess the secondary creep may provide further understanding on how well a synthetic turf field may perform.

4.2.3.2 Pile Supported

Consideration could be given to constructing a synthetic turf playing field on piles. Piles would be required to be founded in the dense till. The type and location of piles will need to be selected based on discussions with the turf designers and civil/structural engineers. The final design could potentially include a structural slab founded on piles or a pile supported load transfer platform. Piles may comprise timber, concrete or steel depending on cost, availability and material properties required.

Once loading conditions are known, additional design and analysis including pile design should be completed by Thurber. Pile installation inspection should be completed by Thurber during construction.

4.3 Field Structures

The design of all field structures will be dependent on the upgrades completed at the site. The recommendations provided below are preliminary and should be reassessed once a field upgrade methodology is chosen.

4.3.1 Structures

For small relatively light baseball backstops, storage units, path lighting and fences conventional spread footings founded within the surficial fill layer are feasible. The existing fill should be sub-excavated to 0.5 m below base of footing and replaced with clean (less than 5% passing the 0.075 mm sieve) well graded 19 mm minus crushed sand and gravel and compacted to 100% SPMDD.

For preliminary design purposes, footings should be designed using the following bearing pressures:

Limit State	Bearing Pressure (kPa)
Service Limit State	20
Ultimate Limit State (Geotechnical Resistance Factor of 0.5 Applied)	30

Strip and pad footings should be subject to minimum 450 mm and 600 mm footing width, respectively. A minimum depth of cover of 450 mm should be provided for frost protection of exterior footings.

Settlement of the structures should be considered and an allowance made to adjust the structures, if required. Further details on settlement and deformation can be provided once design structure loads and site grades are known. More heavily loaded structures may require piled foundations.

When site preparation and footing excavation commences on the site, Thurber must be notified. Further, Thurber must inspect the prepared footing bearing surfaces upon completion of excavation.

4.3.2 Large Permanent Structures

The site is underlain by soils considered susceptible to liquefaction and/or strain softening in a large seismic event. If any permanent and/or habitable structures are contemplated on the site, it

will be necessary to design them to avoid collapse in the design seismic event. Additional details can be provided if required.

4.3.3 Pavement Structure for Walkways and Driveways

Based on the results of our investigation, the subgrade below proposed paved areas will be loose surficial sand to sand and silt. The exposed subgrade should be compacted to 98% SPMDD and inspected by Thurber prior to placement of any fill. The minimum pavement structure for paved areas subjected to light traffic is as follows:

75 mm	Asphalt Pavement
150 mm	Granular Base
200 mm	Select Granular Subbase (SGSB)

The SGSB may be deleted where the native sand and gravel is present at ground surface. Additional sub-excavation and geotextile may be required where soft soils are found near the surface. Material quality, placement and compaction of the pavement granular materials should conform to Master Municipal Construction Document (MMCD) specifications. Thurber should review the proposed location and loading.

5. CLOSURE

We trust that this letter provides sufficient information for your needs. Please call us if you have any questions.

Yours truly,
Thurber Engineering Ltd.
David Regehr, P.Eng.
Review Principal

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
B. F. SINGLETON-POLSTER
37218
May 16, 2017

Ben Singleton-Polster, P.Eng.
Project Engineer

Attachment: Statement of Limitations and Conditions
Dwg. 1, 2
Symbols and Terms
Test Hole Logs (TH16-01 through TH16-14, AH/DCPT08-01, AH00-01 through AH00-05)

THURBER

STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

5. INTERPRETATION OF THE REPORT

a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.

d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

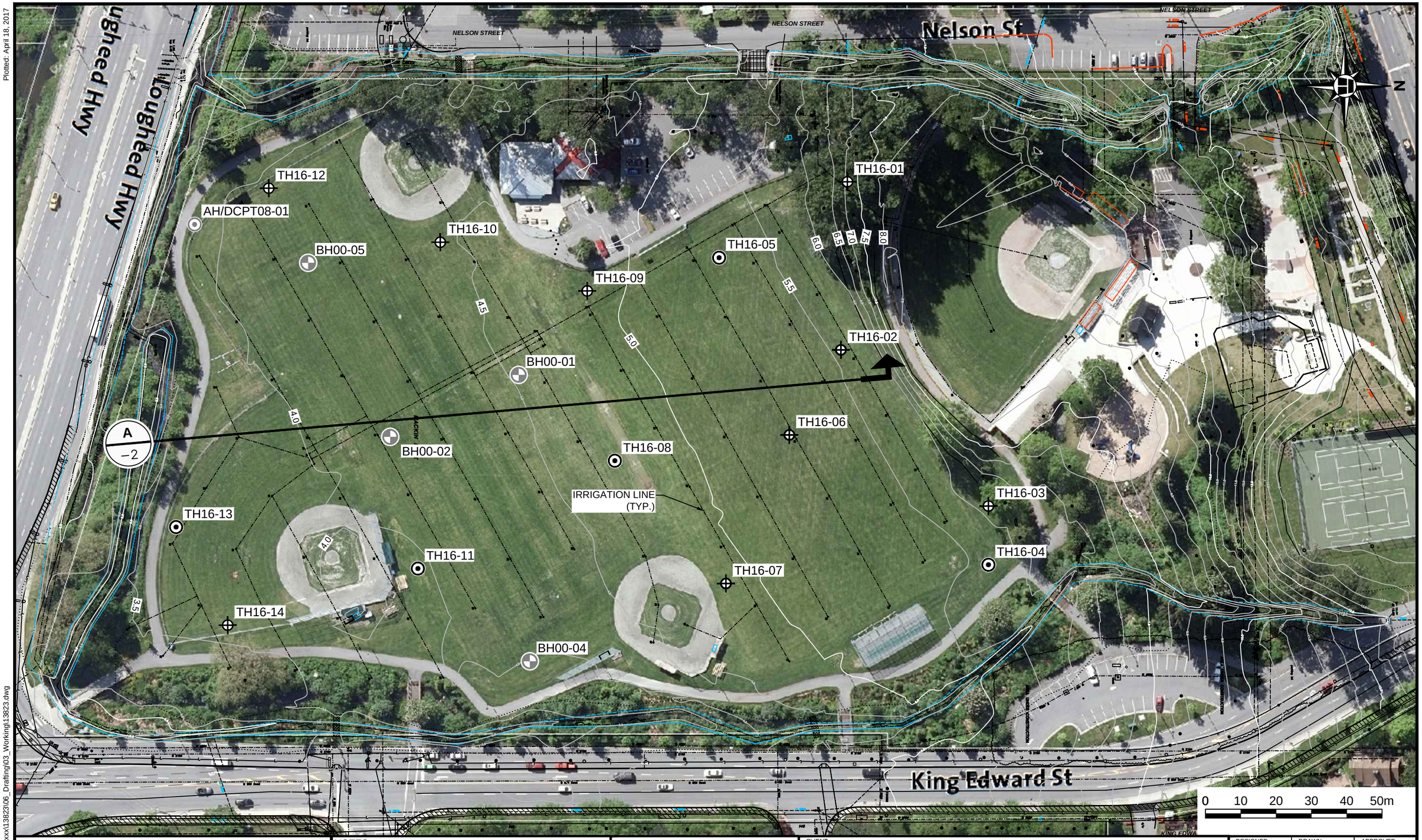
6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.

Plotted: April 18, 2017



LEGEND:

- TEST HOLE (THURBER - 2016)
- TEST HOLE WITH DCPT (THURBER - 2016)
- AUGER HOLE WITH DCPT (GOLDER - 2008)
- BOREHOLE (JACQUES WHITFORD & ASSOCIATES - 2000)

NOTES:

1. BASE PLAN PROVIDED BY THE CITY OF COQUITLAM.
2. TEST HOLE LOCATIONS ARE APPROXIMATE.

THURBER ENGINEERING LTD.

CLIENT: CITY OF COQUITLAM

TEST HOLE LOCATION PLAN

MACKIN PARK PLAYING FIELDS — COQUITLAM, BC

DESIGNED	DRAWN	APPROVED
PSM	NAK	DNR

DATE	SCALE
18/04/16	1:1,000

PROJECT No.	DWG. No.	REV.
13823	1	-

CANCEL PRINTS BEARING EARLIER NUMBER

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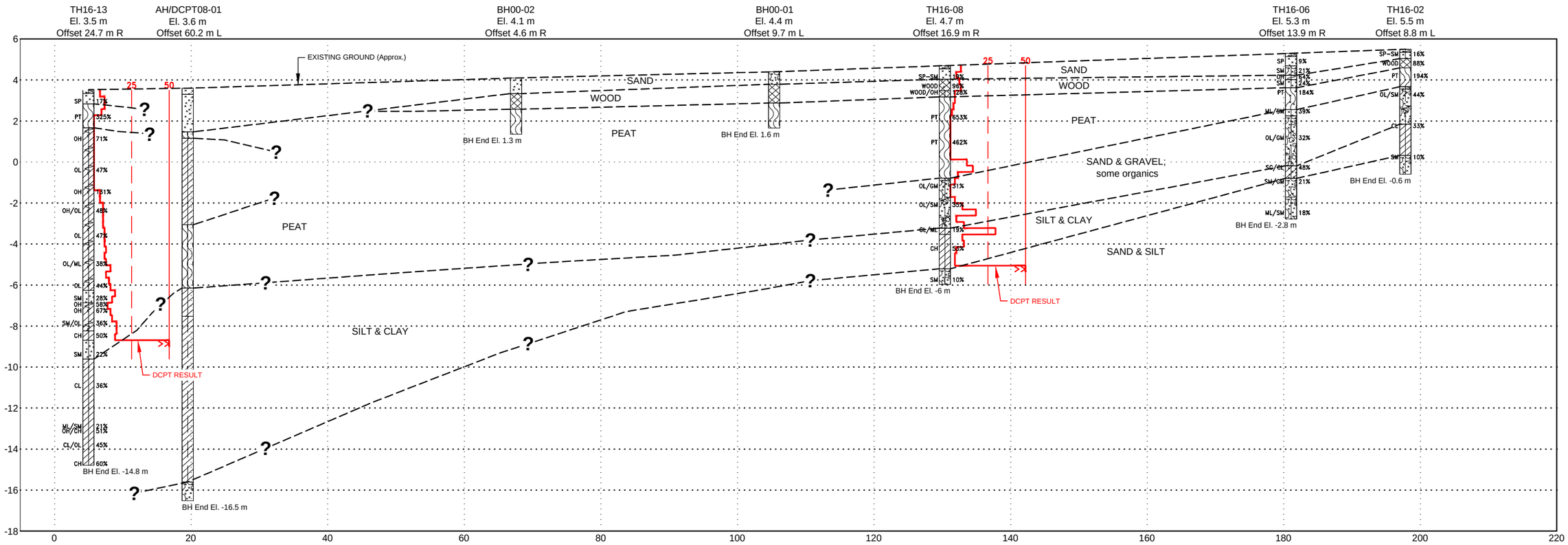


NOTES:

1. The soil profile shown on this drawing is derived from data collected at discrete test locations. Actual soil conditions and stratigraphy between test holes may differ. Profile is drawn for illustrative purposes only.

0 5 10 15 20 30m
HORIZONTAL SCALE 1:600

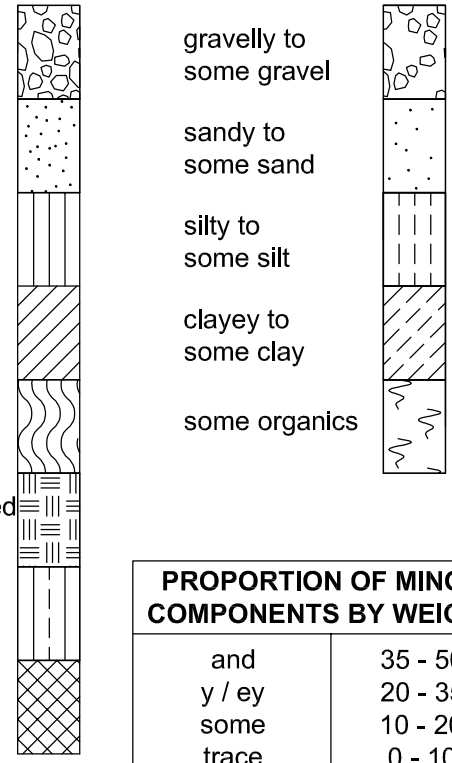
0 2 4 6 8 10 12m
VERTICAL SCALE 1:200

LEGEND:	NOTES:			
		THURBER ENGINEERING LTD.	CLIENT: CITY OF COQUITLAM **ILLUSTRATIVE STRATIGRAPHIC SECTION 'A'** MACKIN PARK PLAYING FIELDS — COQUITLAM, BC	DESIGNED: BSP; DRAWN: NAK/RRS; APPROVED: DNR DATE: 18/04/17; SCALE: AS SHOWN PROJECT No.: 13823; DWG. No.: 2; REV.: -

SYMBOLS AND TERMS
FOR SOIL DESCRIPTION AND TEST HOLE LOGS

BASIC SOIL SYMBOLS

Predominant Material	Secondary Material
GRAVEL	gravelly to some gravel
SAND	sandy to some sand
SILT	silty to some silt
CLAY	clayey to some clay
PEAT / ORGANICS	some organics
Undifferentiated BEDROCK	
ORGANIC SILT	
FILL / DEBRIS	

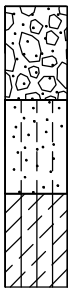


SYMBOL VARIATIONS - EXAMPLES (1)

SAND and GRAVEL

SAND, silty

SILT with some clay



PROPORTION OF MINOR COMPONENTS BY WEIGHT (2)

and	35 - 50%
y / ey	20 - 35%
some	10 - 20%
trace	0 - 10%

DENSITY OF GRANULAR SOILS

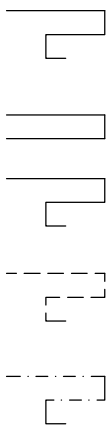
Description	SPT N (5) (6)
Very Loose	0 - 4
Loose	4 - 10
Compact	10 - 30
Dense	30 - 50
Very Dense	> 50

CONSISTENCY OF COHESIVE SOILS

Description	Undrained Shear Strength (kPa) (6)
Very Soft	< 12
Soft	12 - 25
Firm	25 - 50
Stiff	50 - 100
Very Stiff	100 - 200
Hard	> 200

PENETRATION TESTS

Dynamic Cone Penetration	
Standard Penetration	
Becker Closed Casing	
Becker Open Casing	
Bounce Chamber Pressure	



CLASSIFICATION BY PARTICLE SIZE

Name		Size Range (6) (mm) (3)	U.S. Standard Sieve Size Retained	U.S. Standard Sieve Size Passing
Boulders		> 200	8 inch	-
Cobbles		75 - 200	3 inch	8 inch
Gravel:	coarse	19 - 75	0.75 inch	3 inch
	fine	5 - 19	No. 4	0.75 inch
Sand:	coarse	2 - 5	No. 10	No. 4
	medium	0.4 - 2	No. 40	No. 10
	fine	0.075 - 0.4	No. 200	No. 40
Fines (Silt or Clay) (4)		< 0.075	-	No. 200

(1) Only selected examples of the possible variations or combinations of the basic symbols are illustrated.
(2) Example: SAND, silty, trace of gravel = sand with 20 to 35% silt and up to 10% gravel, by dry weight. Percentages of secondary materials are estimates based on visual and tactile assessment of samples.
(3) Approximate metric conversion.
(4) Fines are classified as silt or clay on the basis of Atterberg limits.
(5) SPT N values on test hole logs are uncorrected field values.
(6) Reference Canadian Foundation Engineering Manual 4th Edition, 2006.

THURBER

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-01

LOCATION: See Dwg. 13823-1
N 5453807, E 509892

TOP OF HOLE ELEV: 7.1 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

DEPTH (m) | PENETRATION (blows/300 mm) | WATER CONTENT (%) ○ Disturbed ● Undisturbed | WATER LEVEL Plastic Limit – Liquid Limit | SAMPLES ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa) ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%) ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm) ■ GASTECH reading ⊠ PID reading | ELEVATION m

10 20 30 40 50 60 70 80 90 100

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0		SM	Firm, dark brown, moist SAND and SILT with some fibrous organics (TOPSOIL).	7
1			Compact, brown, dry, silty, fine to medium SAND with some gravel and cobbles and a trace of organics (FILL). - No visible organics below 0.8 m depth	6
1.6 ▼				5.5 ▼
2		GM	Compact to loose, brown to grey, wet GRAVEL and SAND with some silt and a trace of cobbles (FILL).	5
2	384 ○	PT	Soft, dark brown, wet, fibrous PEAT.	
3		OH	Very soft, dark brown, wet, ORGANIC SILT and fibrous PEAT with a trace of sand.	4
			Brown to grey, wet, silty SAND and GRAVEL with a trace of fibrous organics.	
4		SM	- coarse sand lenses below 4.3 m depth	3
5		SM/GM	Loose, brown, wet, silty, fine to medium SAND and GRAVEL with traces of organics and cobbles (TILL-LIKE).	2
6			Loose, brown, wet, silty, fine to medium SAND with some gravel (TILL-LIKE).	1
7		SM	- dense, brown to grey below 7.3 m depth	0
8				-1
		SM	- very dense below 8.5 m depth	
9				-2
			End of test hole at required depth. Test hole caved to 2.3 m below ground. Water observed at 1.5 m below ground.	
10				

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-02

LOCATION: See Dwg. 13823-1
N 5453809, E 509941

TOP OF HOLE ELEV: 5.5 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): Peak, Residual, Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve, △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0		SP-SM	Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	5
		WOOD	Compact, brown, wet, fine SAND with some silt and traces of gravel and fibrous organics.	
1			Compact, brown, moist to wet WOODWASTE with some silt and traces of sand and fibrous organics (FILL).	
	194	PT	Firm, dark brown, moist, fine grained PEAT with some fibrous organics.	4
2		OL/SM	Compact, brown to dark brown, wet, silty SAND with some gravel, fibrous organics and organic silt and a trace of cobbles.	3
3			- some orange-red staining (oxidation) below 3.0 m depth - some grey-brown clay pockets between 3.4 m and 3.7 m depth	2
4		CL	Firm, brown to grey mottled orange (oxidation), moist CLAY and SILT to clayey SILT with traces of sand, organics and gravel. - soft below 4.3 m depth	1
5		SM	Dense, brown to grey, moist to wet, silty, fine to medium SAND with some gravel and a trace of clay (TILL-LIKE).	0
6			End of test hole at required depth. Test hole caved to 2.1 m below ground. Water observed at 1.2 m below ground.	-1
7				-2
8				-3
9				-4
10				

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Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-03

LOCATION: See Dwg. 13823-1
N 5453846, E 509989

TOP OF HOLE ELEV: 6.2 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	6
1	OL/SM	Loose, dark brown, wet, silty, fine to medium SAND with some gravel, organic silt and fibrous organics.	5
2	OL/SM		4
3	SM/GM	Loose, dark brown, wet, fine to medium SAND and GRAVEL with some silt and traces of organic silt and fibrous organics.	3
4	SM	Dense, brown to grey, wet, silty, fine to medium SAND with some gravel and a trace of clay (TILL-LIKE).	2
5		End of test hole at required depth. Test hole caved to 1.2 m below ground. Water observed at 0.8 m below ground.	1
6			0
7			-1
8			-2
9			-3
10			

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-04

LOCATION: See Dwg. 13823-1
N 5453840, E 510006

TOP OF HOLE ELEV: 5.6 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	5
	SP-SM	Compact, brown, moist, fine to medium SAND with traces of silt and fibrous organics (FILL).	
1	OL/SM	Loose, dark brown, wet, silty, fine SAND with some organics and cobbles (FILL).	4
2		- wood debris and cobbles increasing below 1.5 m depth	
	GP-GM/SP-SM	Loose, dark brown, wet SAND and GRAVEL with some fibrous organics and a trace of silt.	3
3	OL/GM	- some silt below 3.0 m depth	
4	SM	Compact, brown to grey, moist, silty, gravelly, fine to medium SAND with a trace of clay (TILL-LIKE). - grey below 4.0 m depth - dense below 4.3 m depth	2 1
5		End of test hole at required depth. Test hole caved to 2.1 m below ground. Water observed at 1.4 m below ground.	0
6			-1
7			-2
8			-3
9			-4
10			

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Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-05

LOCATION: See Dwg. 13823-1
N 5453783, E 509917

TOP OF HOLE ELEV: 5.4 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	5
1	100 blows/300 mm	Loose to compact, brown, wet, medium to fine SAND with traces of silt and fibrous organics (FILL).	4
	132 blows/300 mm	Compact, dark brown, wet WOODWASTE with some sand lenses (FILL).	
		Soft, brown, wet SILT with some fine sand and fibrous organics.	
2		Compact, grey, wet, gravelly, fine to medium SAND with some silt and a trace of fibrous organics.	3
		Loose, dark brown, wet, fine to medium SAND with some silt and fibrous organics and trace gravel pockets.	
3		Loose to compact, dark brown to reddish brown, wet, fine to medium SAND and GRAVEL with some silt and wood debris and a trace of cobbles. - some coarse sand lenses and cobbles between 2.7 m and 3.0 m depth	2
4		Loose, grey to brown, wet, gravelly, fine to medium SAND with some silt and a trace of cobbles. - compact below 4.6 m depth	1
5		Very dense, brown to grey, wet, silty, gravelly, fine to medium SAND (TILL-LIKE).	0
6		End of test hole at required depth. Test hole caved to 3.2 m below ground. Water observed at 1.5 m below ground.	-1
7			-2
8			-3
9			-4
10			

SP
WOOD
OH
SM
OL/SM
OL/SM
GM
SM
SM

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. **TH16-06**

LOCATION: See Dwg. 13823-1
N 5453785, E 509970

TOP OF HOLE ELEV: 5.3 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0			Compact, light brown, dry SILT and SAND with some fibrous organics (TOPSOIL).	5
		SP	Compact, brown, moist, fine to medium SAND with traces of silt and fibrous organics (FILL).	
1		SM	Grey to brown, moist, silty, fine to medium SAND with some gravel and organic silt and traces of fibrous organics and clay (FILL).	
		OH	Soft, dark brown, wet SILT with some organic silt and fibrous organics and a trace of sand (FILL).	4
		SM	Compact, brown, wet, fine to medium SAND with some silt and a trace of fibrous organics.	
2	184	PT	Soft, dark brown, wet, sandy, fibrous PEAT with some fine grained organics. - firm below 2.0 m depth	3
		ML/SM	Loose, light brown, wet, SILT and fine to medium SAND with traces of organic silt and fibrous organics.	
3			Loose, brown, wet, silty SAND and GRAVEL with some fibrous organics and a trace of organic silt.	2
4		OL/GM	- trace cobbles below 4.3 m depth	1
5			- compact below 5.5 m depth	0
		SC/CL	Soft, grey, wet, fine to medium SAND and SILT with some clay and a trace of gravel.	
6		SM/GM	Grey, wet, silty SAND and GRAVEL with a trace of clay.	-1
7			Dense, grey, wet SILT and fine to medium SAND with some gravel and traces of clay and cobbles (TILL-LIKE).	-2
8		ML/SM	End of test hole at required depth. Test hole caved to 2.0 m below ground. Water observed at 1.5 m below ground.	-3
9				-4
10				

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LOG OF TEST HOLE

TEST HOLE NO. TH16-07

LOCATION: See Dwg. 13823-1
N 5453765, E 510013

TOP OF HOLE ELEV: 4.8 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0			Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	
		SP-SM		
	113	WOOD	Compact, brown to grey, moist, fine to medium SAND with some silt and a trace of fibrous organics (FILL).	
1				4
		OL/SM	Compact to dense, dark brown to brown, wet WOODWASTE with a trace of sand (FILL).	
			Dense, dark brown, moist SILT and fine to medium SAND with some fibrous organics and traces of clay and gravel (FILL). - compact with some gravel below 1.2 m depth - loose and wet below 1.5 m depth	3
2		SW-SM/GW-GM	Compact, grey, wet SAND and GRAVEL with traces of silt and fibrous organics (FILL). - some silt below 2.7 m depth	2
3			Soft, brown, moist PEAT with some silt and a trace of cobbles. - some silty SAND lenses between 3.4 m and 3.5 m depth	
		OL/SM	Loose, brown, wet, silty, fine SAND with some organic silt and fibrous organics and a trace of gravel.	1
4		OL/SM		
5			- 200 mm thick layer of PEAT at 4.9 m depth	0
		OL/GM	Loose, brown, wet, silty, SAND and GRAVEL with some organic silt and fibrous organics.	-1
6				
7		ML/SM	Loose, grey, wet, gravelly SILT and medium to fine SAND with a trace of clay.	-2
		OL/SM	Loose, brown, wet GRAVEL and fine to medium SAND with some fibrous organics and silt.	-3
8		ML/SM	Very dense, grey, wet SILT and fine to medium SAND with some gravel and traces of clay and cobbles (TILL-LIKE).	-4
9			End of hole at required depth. Borehole caved to 2.4 m below ground. Water observed at 0.9 m below ground.	
10				-5

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Sheet 1 of 2

LOG OF TEST HOLE

TEST HOLE NO. **TH16-08**

LOCATION: See Dwg. 13823-1
N 5453732, E 509976

TOP OF HOLE ELEV: 4.7 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0			Compact, light brown, dry SILT and SAND with some fibrous organics (TOPSOIL).	
		SP-SM	Loose, brown, moist, fine SAND with traces of silt and fibrous organics (FILL).	4
1		WOOD	Compact, brown, moist WOODWASTE with some fine sand (FILL).	
	128	WOOD/OH	Soft, dark brown to black, moist WOODWASTE and ORGANIC SILT (FILL).	
2			Firm, brown, wet, fibrous PEAT with some fine grained organics.	3
	653	PT		2
3			- soft with occasional large wood pieces below 3.0 m depth	
	462	PT		1
4				
5				0
6		OL/GM	Loose, dark brown, wet SAND and GRAVEL with some silt and fibrous organics and traces of organic silt and cobbles.	-1
			- silty with some gravel below 6.1 m depth	
7		OL/SM		-2
				-3
8		CL/ML	Soft, grey, moist SILT with some clay and sand and a trace of gravel.	
			Stiff, grey, wet CLAY and SILT.	-4
9		CH	- firm below 8.8 m depth	
10				-5

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Sheet 2 of 2

LOG OF TEST HOLE

TEST HOLE NO. **TH16-08**

LOCATION: See Dwg. 13823-1
N 5453732, E 509976

TOP OF HOLE ELEV: 4.7 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
10		Dense, grey, wet, silty GRAVEL and fine to medium SAND (TILL-LIKE).	
11	SM		-6
12		End of test hole at required depth.	-7
13		Test hole caved to 5.5 m below ground.	-8
14		Water observed at 1.2 m below ground.	-9
15			-10
16			-11
17			-12
18			-13
19			-14
20			-15

10 20 30 40 50 60 70 80 90 100

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

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LOG OF TEST HOLE

TEST HOLE NO. TH16-09

LOCATION: See Dwg. 13823-1
N 5453729, E 509935

TOP OF HOLE ELEV: 4.8 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 6, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, light brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	
	SP-SM	Compact, brown, moist, fine to medium SAND with traces of silt, fibrous organics and gravel (FILL).	
1	WOOD	Compact, brown, wet WOODWASTE with some fine sand (FILL).	4
	SM/OL	Firm, dark brown, moist, fine SAND and ORGANIC SILT with some fibrous organics.	
2	PT	Firm, brown, moist, fine grained and fibrous PEAT.	3
			2
3		End of test hole (terminated due to proximity to underground utility). Test hole caved to 1.2 below ground. Water observed at 0.9 m below ground.	
4			1
5			0
6			-1
7			-2
8			-3
9			-4
10			-5

10 20 30 40 50 60 70 80 90 100

187 ○

476 ○

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Sheet 1 of 2

LOG OF TEST HOLE

TEST HOLE NO. TH16-10

LOCATION: See Dwg. 13823-1
N 5453681, E 509921

TOP OF HOLE ELEV: 4.4 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0			Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	
		SP-SM	Compact, brown, moist, fine SAND with traces of silt and fibrous organics (FILL).	4
1	187	WOOD	Compact, brown, moist WOODWASTE with a trace of sand (FILL).	
			- loose and wet below 1.5 m depth	3
2				2
3	554	PT	Soft, brown, wet, fine grained PEAT with some fibrous organics.	
			Soft, grey to brown, wet fibrous PEAT and SILT with trace to some clay.	1
4	137	OH		
			- grey below 4.3 m depth	0
5	495	PT	Soft, dark brown, wet, fine grained and fibrous PEAT.	
				-1
6			- some large wood pieces between 5.8 m and 5.9 m depth	
		OL/SM	- some grey, silt, sand and gravel seams between 6.4 m and 7.0 m depth	-2
7				-3
8			Loose, brown to grey, wet, sandy GRAVEL with traces of silt and fibrous organics.	
		GP-GM		-4
9		OL/SM	Loose, grey, wet, silty GRAVEL and SAND with some cobbles and traces of organic silt and fibrous organics. - grey and silty with no visible gravel below 9.1 m depth	-5
10				

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

Sheet 2 of 2

LOG OF TEST HOLE

TEST HOLE NO. TH16-10

LOCATION: See Dwg. 13823-1
N 5453681, E 509921

TOP OF HOLE ELEV: 4.4 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
10		ML/SM	
		CL/CH — Firm to stiff, blue to grey, wet CLAY and SILT.	-6
11			
		CL/CH — - soft and clayey with traces of sand and organics below 11.4 m depth	-7
12			
		- very soft with some fine gravel below 12.2 m depth	-8
13		CL/CH	
			-9
14		- soft and sandy below 13.7 m depth	
			-10
15			
			-11
		SM/GM — Dense to very dense, grey, wet SILT, SAND and GRAVEL with traces of clay and cobbles (TILL-LIKE).	
16			-12
		End of test hole at required depth. Test hole caved to 7 m below ground. Water observed at 1.2 m below ground.	
17			-13
18			-14
19			-15
20			

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Sheet 1 of 2

LOG OF TEST HOLE

TEST HOLE NO. **TH16-11**

LOCATION: See Dwg. 13823-1
N 5453687, E 510009

TOP OF HOLE ELEV: 4.0 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

DEPTH (m) | PENETRATION (blows/300 mm) | WATER CONTENT (%) ○ Disturbed ● Undisturbed | WATER LEVEL Plastic Limit – Liquid Limit | SAMPLES ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa) ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%) ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm) ■ GASTECH reading ⊠ PID reading | ELEVATION m

10 20 30 40 50 60 70 80 90 100

Depth (m)	Elevation m	Comments		Soils Description
0				Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).
1	3		SP-SM	Compact to dense, brown, moist, fine to medium SAND with traces of silt and fibrous organics (FILL). - grey below 0.9 m depth
		128	WOOD	Firm, dark brown, wet WOODWASTE and ORGANIC SILT (FILL). - black with some silt below 1.2 m depth
2	2			Firm, dark brown to brown, moist to wet, fine grained and fibrous PEAT. - some wood fragments between 2.1 m and 2.4 m depth
		753	PT	
3	1			- soft below 3.0 m depth
		476	PT	
4	0			Soft, brown to grey, wet SILT with some organics and clay and a trace of sand.
			OH	
5	-1			
		311	PT	Soft, dark brown, wet, fibrous and fine grained PEAT.
6	-2			- some silt below 6.1 m depth
7	-3	124	OH	Soft, grey to brown, wet fibrous PEAT and SILT with a trace of clay.
8	-4			- ORGANIC SILT and PEAT lens between 7.8 m and 8.0 m depth
			OL/SM	Very soft, grey to brown, wet, fine to medium SAND and SILT with some fibrous organics and a trace of organic silt.
9	-5			- firm, green to grey with occasional cobbles and coarse sand lenses
			SM/ML	
10				

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Sheet 2 of 2

LOG OF TEST HOLE

TEST HOLE NO. **TH16-11**

LOCATION: See Dwg. 13823-1
N 5453687, E 510009

TOP OF HOLE ELEV: 4.0 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS		SOILS DESCRIPTION	ELEVATION m
10			CL	Soft, blue to grey, wet, clayey, sandy SILT.	
11					-7
			CH	- firm and no visible sand between 11.6 m and 13.7 m depth	
12					-8
	112		CH		
13					-9
				- soft with some sand and trace gravel below 13.7 m depth	
14			CL		-10
			SM	Compact to dense, brown to grey, wet, silty SAND with some gravel and a trace of clay (TILL-LIKE).	
15					-11
				End of test hole at required depth. Test hole caved to 7.2 m below ground. Water observed at 1.5 m below ground.	
16					-12
17					-13
18					-14
19					-15
20					

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-12

LOCATION: See Dwg. 13823-1
N 5453632, E 509897

TOP OF HOLE ELEV: 4.0 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): Peak, Residual, Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve, △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	
1	SM	Compact, brown to dark brown, moist, fine to medium SAND with a trace of silt (FILL). - grey below 0.6 m depth	3
	326 WOOD	Compact, brown, moist WOODWASTE with a trace of sand (FILL).	
2		Soft, brown, wet, fibrous PEAT.	2
	246 PT	- silty below 2.6 m depth	
3	OH	Soft, brown to grey, wet SILT with some fibrous organics and clay.	1
4	OH		0
5		End of test hole at required depth. Test hole caved to 2.4 m below ground. Water observed at 0.9 m below ground.	-1
6			-2
7			-3
8			-4
9			-5
10			

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

Sheet 1 of 2

LOG OF TEST HOLE

TEST HOLE NO. **TH16-13**

LOCATION: See Dwg. 13823-1
N 5453606, E 510003

TOP OF HOLE ELEV: 3.5 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION m
0			Compact, brown, wet SILT and SAND with some fibrous organics (TOPSOIL).	3
		SP	Compact, brown to grey, moist, fine to medium SAND with traces of silt and fibrous organics (FILL).	
1	325	PT	Firm, brown to dark brown, moist, fine grained and fibrous PEAT.	2
2		OH	Soft, brown to grey, wet SILT with some fibrous organics and trace to some clay. - grey below 2.3 m depth	1
3				0
4		OL		-1
5	131	OH		-2
		OH/OL	- trace fine sand below 5.5 m depth	
6				-3
7		OL		-4
8		OL/ML		-5
9		OL	- some fine sand lenses and a trace of organic silt between 9.1 and 9.8 m depth	-6
10				

LOG OF TEST HOLE (LAST DCPT >100) 13823 R1.GPJ THURBER BC.GDT 10-8-16- THURBER BC NEW.GLB

LOG OF TEST HOLE

TEST HOLE NO. TH16-13

LOCATION: See Dwg. 13823-1
N 5453606, E 510003

TOP OF HOLE ELEV: 3.5 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
10	SM	Loose, grey, silty, fine to medium SAND with traces of clay, gravel and fibrous organics.	
	OH	Firm, brown to grey, wet SILT with some clay and fibrous organics and traces of sand and organic silt.	-7
11	OH	- some fibrous peat below 10.7 m depth	
	SM/OL	- 100 mm thick layer of SAND and ORGANIC SILT at 11.3 m depth	-8
12	CH	Firm to stiff, blue to grey, moist CLAY and SILT with a trace of organics.	
		Compact, grey, wet, fine SAND with some silt and a trace of fibrous organics.	-9
13	SM		
		Soft, grey, wet, clayey SILT with a trace of sand.	-10
14			
	CL		-11
15			
			-12
16			
	ML/SM OH/CH	- 200 mm thick layer of SAND at 16.3 m depth	-13
17			
	CL/OL		-14
18			
	CH		
		End of test hole at required depth. Test hole caved to 10.1 m below ground. Water observed at 1.8 m below ground.	-15
19			
			-16
20			

Sheet 1 of 1

LOG OF TEST HOLE

TEST HOLE NO. TH16-14

LOCATION: See Dwg. 13823-1
N 5453619, E 510023

TOP OF HOLE ELEV: 3.5 m

METHOD: Solid Stem Auger

DRILLING CO.: On-Track Drilling Inc.

INSPECTOR: PSM

THURBER

CLIENT: City of Coquitlam

PROJECT: Mackin Park Playing Fields, Coquitlam, BC

DATE: July 7, 2016

FILE NO.: 13823

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: Disturbed, Undisturbed, No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual ◆ Remolded | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION m
0		Compact, brown, moist SILT and SAND with some fibrous organics (TOPSOIL).	3
1	SP-SM	Compact, brown, moist, fine to medium SAND with traces of silt and fibrous organics (FILL). - grey below 0.5 m depth	2
2	125 OH	Firm, red to brown, moist, sandy ORGANIC SILT with some fibrous organics (FILL). - trace silt between 0.9 m and 1.2 m depth	1
3	359 PT	Firm, brown to dark brown, moist to wet, fibrous PEAT with some organic silt. - silty below 2.4 m depth	0
4	141 PT/OH	Soft, brown to grey, wet, fibrous PEAT and SILT with traces of clay and sand.	-1
5	OH	End of test hole at required depth. Test hole caved to 3.0 m below ground. Water observed at 1.5 m below ground.	-2
6			-3
7			-4
8			-5
9			-6
10			

PROJECT No.: 08-1411-0198

RECORD OF AUGERHOLE: AH/DCPT 08-01

SHEET 1 OF 2

LOCATION: Mackin Park, Coquitlam, B.C.

BORING DATE: February 4, 2008

DATUM: Ground Surface

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m
0	On Track Drilling Ltd. Track Mounted Auger (Solid Stem)	Ground Surface					
		Loose, moist, grey, medium SAND. (FILL)		0.00			
				0.30			
1		Loose to compact, moist, brown, silty SAND, with some gravel and wood fragments. (FILL)			1	AS	
2		Very soft, moist, red-brown, amorphous PEAT, with organics.		2.13	2	AS	
				2.44			
3							
4							
		Very soft, moist, grey, clayey SILT to CLAY and SILT. - trace to some organics below 6.1m depth.			3	AS	
5							
6							
7				6.86			
					4	AS	
8		Soft, moist, red-brown, amorphous PEAT, with some organics (rootlets) and trace to some silt.					
9					5	AS	
10				9.75			
		Very soft to soft, wet, grey SILT, with some clay, trace organics. - sand lense (127mm thick) at 11.13m depth.			6	AS	
11				11.13			
12							
					7	AS	
13		Very soft to soft, wet, grey CLAY, with some silt to silty.					
14							
					8	AS	
15		CONTINUED NEXT PAGE					

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20, 40, 60, 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 10, 20, 30, 40

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp, W, Wl; 50, 100, 150, 200

ADDITIONAL LAB. TESTING: M

PIEZOMETER OR STANDPIPE INSTALLATION: Inferred Groundwater Table ▽

BOREHOLE 08-1411-0198.GPJ GLDR_CAN.GDT 5/3/09

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: CHC

CHECKED:

PROJECT No.: 08-1411-0198

RECORD OF AUGERHOLE: AH/DCPT 08-01

SHEET 2 OF 2

LOCATION: Mackin Park, Coquitlam, B.C.

BORING DATE: February 4, 2008

DATUM: Ground Surface

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (50 100 150 200)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
15	On Track Drilling Ltd. Track Mounted Auger (Solid Stem)	Very soft to soft, wet, grey CLAY, with some silt to silty. *(continued)*			9	AS					
16											
17											
18					10	AS					
19				19.20							
20		Dense to very dense, wet, grey, silty SAND, trace gravel. (Till-like)			11	AS					
		End of AUGERHOLE.		20.12					176		
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

BOREHOLE 08-1411-0198.GPJ GLDR_CAN.GDT 5/3/09

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: CHC

CHECKED:

JACQUES WHITFORD
AND ASSOCIATES LIMITED

BOREHOLE RECORD

AH00-01

CLIENT Coquitlam
PROJECT Makin Park
LOCATION Coquitlam, BC
DRILLING DATE August 2, 2000 DRILLING CO. JWA DRILLING METHOD Hand Auger

PROJECT No. BCV40430
DATUM Sea Level
ELEVATION 4.368

DEPTH (m)	USC	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	FL	2.5 mm of grass, topsoil and rootlets (FILL).			
	FL	Loose, tan, fine to medium Sand, occasional gravel or cobble, moist (FILL).	GS	1-1	
		-wet at 0.5 m			
	FL	Loose, red/brown, hog Fuel/Wood Chips, wet, some methane odor (FILL).	GS	1-2	
1	FL		GS	1-3	
	PT	Soft, dark brown, organic SILT to PEAT, trace to some clay, fibrous, wet.	GS	1-5	
		-becomes moist at 1.7 m			
2	PT	-becomes wet at 2.15m	GS	1-4	
		End of Hole at 2.74 m.			
3					

□ Insitu Shear Vane (kPa) ■ Remoulded Shear Vane (kPa)
△ Pocket Penetrometer (kPa)
50kPa 100kPa 150kPa 200kPa
W_P W W_L Moisture Content & Atterberg Limits
● Dynamic Penetration Test, blows/0.3m
10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Pea Gravel Drill Cuttings Sand

Logged by: BG
Reviewed by: KER
Date: August 3, 2000

Jacques Whitford
Consulting Engineers
Environmental Scientists
Information Consultants

JACQUES WHITFORD
AND ASSOCIATES LIMITED

BOREHOLE RECORD

AH00-02

CLIENT Coquitlam
PROJECT Makin Park
LOCATION Coquitlam, BC
DRILLING DATE August 2, 2000 DRILLING CO. JWA DRILLING METHOD Hand Auger

PROJECT No. BCV40430
DATUM Sea Level
ELEVATION 4.081

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	FL		2.5 mm of grass, topsoil and rootlets (FILL).			
			Loose to compact, tan, fine to medium Sand, dry to moist.	GS	2-1	
	FL		-wet at 0.6 m			
1			Loose to compact, dark red/brown, Hogfuel/Woodchips, wet, some methane odor (FILL).	GS	2-2	
	FL					
			Soft, dark brown, organic SILT to PEAT, trace to some clay, wet, fibrous.	GS	2-3	
2	PT		- fibrous			
				GS	2-4	
			End of Hole at 2.74 m.			
3						

Insitu Shear Vane (kPa) ☐ Remoulded Shear Vane (kPa) ☐
Pocket Penetrometer (kPa) △
50kPa 100kPa 150kPa 200kPa
W_P W W_L Moisture Content & Atterberg Limits
Dynamic Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90

290 297 627

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Pea Gravel Drill Cuttings Sand

Logged by: BG
Reviewed by: KER
Date: August 3, 2000

Jacques Whitford
Consulting Engineers
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JACQUES WHITFORD
AND ASSOCIATES LIMITED

BOREHOLE RECORD

AH00-03

CLIENT Coquitlam
PROJECT Makin Park
LOCATION Coquitlam, BC
DRILLING DATE August 2, 2000 DRILLING CO. JWA DRILLING METHOD Hand Auger

PROJECT No. BCV40430
DATUM Sea Level
ELEVATION 3.613

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	FL		2.5 mm of grass, topsoil and rootlets (FILL).			
	FL		Loose to compact, tan, fine to medium Sand, moist (FILL).	GS	3-1	
	FL		Loose to compact, dark red/brown, Hogfuel/Woodchips, moist, some methane odor (FILL).			
▼	FL		Soft, black, organic Silt, some gravel to gravely, fibrous, moist (FILL).	GS	3-2	
1	FL		-wet at 0.91 m	GS	3-3	
	FL		-becomes light grey at 1 m			
	PT		Soft, dark red/brown, PEAT and organic SILT, trace to some clay, amorphous, moist.	GS	3-4	
	PT		-becomes fibrous at 1.45 m	GS	3-5	
2	PT					
	PT			GS	3-6	
			End of Hole at 2.74 m.			
3						

Insitu Shear Vane (kPa) ☐ Remoulded Shear Vane (kPa) ☐
Pocket Penetrometer (kPa) △
50kPa 100kPa 150kPa 200kPa
W_P W W_L
Moisture Content & Atterberg Limits
Dynamic Penetration Test, blows/0.3m
10 20 30 40 50 60 70 80 90

331 108 234 492 451

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Pea Gravel Drill Cuttings Sand

Logged by: BG
Reviewed by: KER
Date: August 3, 2000

Jacques Whitford
Consulting Engineers
Environmental Scientists
Information Consultants

JACQUES WHITFORD
AND ASSOCIATES LIMITED

BOREHOLE RECORD

AH00-04

CLIENT Coquitlam
PROJECT Makin Park
LOCATION Coquitlam, BC
DRILLING DATE August 2, 2000 DRILLING CO. JWA DRILLING METHOD Hand Auger

PROJECT No. BCV40430
DATUM Sea Level
ELEVATION 4.108

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	NUMBER	MOISTURE CONTENT (%)
0	FL		2.5 mm of grass, topsoil and rootlets (FILL).			
	FL		Loose to compact, tan, fine to medium Sand , dry to moist (FILL).	GS	4-1	
	FL		Loose to compact, dark red/brown, Hog Fuel/ Woodchips, moist, some methane odor (FILL).	GS	4-2	
1	PT		Soft, dark brown, PEAT and organic SILT, trace to some clay, amorphous, wet. -black from 1.0 m to 1.2 m -becomes moist at 1.2 m -becomes fibrous at 1.4 m	GS	4-3	
2				GS	4-4	
			End of Hole at 2.74 m.			
3						

□ Insitu Shear Vane (kPa) ■ Remoulded Shear Vane (kPa)
△ Pocket Penetrometer (kPa)
50kPa 100kPa 150kPa 200kPa
W_P W W_L Moisture Content & Atterberg Limits
● Dynamic Penetration Test, blows/0.3m
10 20 30 40 50 60 70 80 90

173 >
209 >
710 >

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Pea Gravel Drill Cuttings Sand

Logged by: BG
Reviewed by: KER
Date: August 3, 2000

Jacques Whitford
Consulting Engineers
Environmental Scientists
Information Consultants

JACQUES WHITFORD
AND ASSOCIATES LIMITED

BOREHOLE RECORD

AH00-05

CLIENT Coquitlam
PROJECT Makin Park
LOCATION Coquitlam, BC
DRILLING DATE August 2, 2000 DRILLING CO. JWA DRILLING METHOD Hand Auger

PROJECT No. BCV40430
DATUM Sea Level
ELEVATION 4.324

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	FL		2.5 mm of grass, topsoil and rootlets (FILL).			
			Loose to compact, tan, fine to medium Sand, moist (FILL).	GS	5-1	
	FL					
			Loose to compact, dark red/brown, Hogfuel/Woodchips, moist, some methane odor (FILL).	GS	5-2	
1	FL					
			Soft, dark brown, PEAT with organic SILT, amorphous, wet to moist.	GS	5-3	
				GS	5-4	
2	PT		-becomes fibrous at 2.1 m			
				GS	5-5	
			End of hole at 2.74 m			
3						

□ Insitu Shear Vane (kPa) ■ Remoulded Shear Vane (kPa)
△ Pocket Penetrometer (kPa)
50kPa 100kPa 150kPa 200kPa
W_P W W_L Moisture Content & Atterberg Limits
● Dynamic Penetration Test, blows/0.3m
10 20 30 40 50 60 70 80 90

144 331 272 518

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
Piezometer Backfill Type: Bentonite Pea Gravel Drill Cuttings Sand

Logged by: BG
Reviewed by: KER
Date: August 3, 2000

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