

July 25, 2013

Reference No. VAN-00213751-A0

Musqueam Capital Corporation 6615 Salish Drive Vancouver BC V6N 4C4

c/o Colliers International Consulting 19th Floor – 200 Granville Street Vancouver, BC V6C 2R6

Email: Gordon.easton@colliers.com

Attention: Gordon Easton, BA, M.E.S, MCIP

Re: Block F, Acadia and University Blvd., UBC Preliminary Geotechnical Report

Dear Sir:

1.0 INTRODUCTION

As requested, **exp** Services Inc. (**exp**) has completed a preliminary geotechnical report for the abovenoted site.

The geotechnical work was performed in general accordance with **exp**'s proposal dated 2013 June 11. The purpose of the exploration was to provide a geotechnical report outlining the soil conditions encountered. However, for preliminary discussion purposes, some geotechnical interpretations and opinions are provided to illustrate the effects of the site specific exploration data on development considerations. The final use and interpretation of the findings should be incorporated into a building project under the direction of the geotechnical engineer.

Analysis of the soil or ground water with respect to environmental issues was beyond the scope of the geotechnical investigations. Appendix A contains our "Interpretation & Use of Study and Report" and forms an integral part of this report and must be included with any copies of this report.

2.0 PROPOSED DEVELOPMENTS AND SITE DESCRIPTION

The community consultation process has examined a number of key features of the site and the subsequent site plans for finalizing a rezoning application for residential building development. As part of the servicing strategy, options are being considered for retaining and reconstructing a wetland area as well as a rain garden area along University Blvd. to act as part of the storm water management system.

The main project elements include the following:

- Park, Greenways, Trails, including wetlands
- Community Building
- Daycare Facilities
- Range of homes, from ground-oriented townhouses to lower and higher apartment buildings.

The site is located at the southwest corner of the intersection of University Blvd. and Toronto Road, near UBC in Vancouver, BC. The site is bounded by Acadia Road to the west, Toronto Road to the north,





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University Blvd. to the east and residential development, a church plus U-Hill School to the south. The site is triangular-shaped, and it has approximate dimensions of about 520m along Acadia Road and University Blvd., 60m on Toronto Road to 290m along the south side of the site.

The topography generally slopes down very gently toward the north and east. The current site is heavily forested with a mix of deciduous and coniferous trees and medium to thick undergrowth.

The topography adjacent to the site generally slopes down very gently and away from the site perimeters. The site is generally bounded by residential and urban developments.

3.0 GEOLOGICAL SETTING

The Geological Survey of Canada surficial geology map indicates the site is underlain by Vashon Drift and Capilano sediments. These materials generally consist of glacial drift, a silty sand and gravel. Pre-Vashon sands underlie the site at depth. Surficial deposits may include raised beach and silt materials, deposited since glacial activity within the last ten thousand years.

According to Vancouver's Old Streams Map (Public Library), a former stream headwaters may be situated east of the site. Materials associated with stream headwaters may include sand and silt and some organic rich materials.

Based on **exp** file information, the recent land uses in the vicinity of the site or on portions of the site may include the following:

- Pre-1920, logging;
- Circa 1920's, clearing on north-side of site and construction of University Blvd;
- Circa 1950's, construction of Acadia Camp and rapid urban expansion, e.g., U-Hill School, etc.

In general, the site and adjacent areas have likely undergone little change in the last 20 to 30 years, as compared to a few decades prior.

4.0 FIELD WORK AND LABORATORY TESTING

The geotechnical exploration for this project was conducted on 2013 July 17 and 18. The exploration consisted of the following:

- Four (4) hand dug pits to depths of 0.5 to 0.9m below existing ground surface (designated HP13-01 to HP13-04, inclusive)
- Five (5) test pits (designated TP13-01 and TP13-05) dug to depths from about 1.8 to 2.7m below existing ground surface using a rubber-tired backhoe.

At HP13-01, a percolation test was done by measuring the time for water to infiltrate into the hand dug pit. On the day of the field work, the weather was mainly sunny and warm. Generally, the ground surface in the vicinity of test area was free of ponding water.

The percolation test was completed by hand excavating to 0.17m below ground surface and placing water into the pit. Tests were repeated until the water percolation rate varied less than 2 minutes per inch in two (2) consecutive trials.

Three trials of percolation testing yielded an average of 8.8 minutes / 25mm drop in the water level.



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The geotechnical exploration was carried out under the supervision of a geotechnical technician from **exp**, who located the test pits, logged the subsurface conditions and gathered soil samples for further classification and laboratory testing. The laboratory tests included natural moisture content on selected soil samples. The test pits were backfilled with the excavated materials upon completion.

The approximate hand dug and machine dug test pit locations are shown on the attached Test Hole Location Plan, Figure 1 in Appendix B. Soil descriptions of each test pit including the moisture content test results are included in the test hole logs in Appendix C. The elevations shown on the test pit logs have3 been estimated based on topographic plan dated 2013 May 22 by R.F. Binnie & Associates Ltd.

5.0 SOIL AND GROUNDWATER CONDITIONS

The available test holes and nearby records generally encountered the following soil types:

| UNIT F | FILL |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Silty Sand Some till-like soil Some asphalt debris, a bottle and plastic wrap Moisture contents 13 to 23% Encountered at TP13-03 and 04 to depths of 0.3 to 0.5m |
| UNIT A | SILT to Organic SILT, PEAT |
| UNIT A1 | Topsoils, sods – thin |
| UNIT A2 | PEAT to Organic Silt |
| | Dark brown Soft to firm Moisture content: 75% to 350% Encountered at HP13-01 to 13-04 to depths of 0.2 to 0.5m |
| UNIT A3 | SILT and SAND Some organics Compact to stiff Moisture contents: 33 to 85% Encountered at 0.2 to 0.5m depths in HP13-01 and 13-04 Encountered to 0.3 to 1.1m depths in TP13-03 to 13-05; three of five test pits |
| UNIT B | SAND, some silt to Silty SAND |
| | Fine to medium grained Trace to some silt, trace to some gravel Compact to dense 1 to 2m thick in test pits |
| UNIT C | TILL-LIKE (Sandy SILT) SOILS |
| | Very stiff Some gravel Encountered at 1.6 to 1.8m depths in the test pits |
| UNIT D | SAND SOILS |
| | Not encountered in the recent test holes, but inferred at depth based on local knowledge Generally compact to dense |



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Groundwater

At the time of the test pits, slight groundwater seepage was encountered at depths of 1.6 to 1.8m, on top of the till-like soils. The pits were dry otherwise, except at about 0.3m depth in hand pits. The groundwater seepage is interpreted to be perched groundwater near the till-like soil surface. The perched water level may vary and fluctuate seasonally and in response to climatic conditions and local land use. Based on file information, the regional water table is anticipated to be at great depth in the order of about 60m below grade, at the bottom of the Quadra Sand.

It should be noted that the above subsurface conditions were encountered at the test hole locations only. The actual soil and groundwater conditions may vary between the test holes.

6.0 CHARACTERIZATION – SUBSURFACE CONDITIONS

The characterization of subsurface conditions should recognize key considerations.

Unit F – Fill Soils

The available records indicated fill depth ranges from 0.3 to 0.5m in two of the five pits.

Natural Soils

The natural soils were generally associated with the following stratagraphic sequence with increasing depths:

- Soft to firm, post-glacial soils, Unit A2
- Capilano Sediments, Unit A3, and Unit B
- Vashon Drift (glacial relationships, 10 14 Ma), Unit C
- Pre-Vashon, older than 10 14 Ma; Unit D

Percolation Test and Surface Water

The percolation test showed fair to good percolation rates, consistent with the silty materials encountered and an absence of ponding surface water. The presence of ponding surface water is expected to vary seasonally depending on several factors including the amount of precipitation (dry summers versus wet winters), and the amount of evaporation and evapotranspiration as well as subsurface infiltration characteristics.

7.0 DESIGN AND CONSTRUCTION CONSIDERATIONS

Local knowledge and experience has indicated that conventional concrete foundations may derive favorable support directly on the Unit C or D soils.

The Unit B sand and Unit A3 silt soils are usually considered less favourable than the other natural materials for building support. However, there are routine practices available to deal with the soils, including lower bearing pressure for lightly loaded conventional concrete foundations.

7.1 Footing / Slab Support

It is considered feasible to support proposed buildings on conventional concrete foundations. However, based on available test hole information, some subgrade preparation or equivalent may be anticipated



where footings are less than about 1.5m below existing grade. The subgrade preparation details should be a subject of geotechnical design for the building project. For example, for lower buildings the subgrade preparation may include:

- Design for building on competent natural ground and/or engineered structural fills;
- Excavation to remove unsuitable materials and provision of engineered or structural fills as appropriate for design.

The engineered fills/backfills needed may depend on the variance between design grades and actual "suitable bearing levels".

The footings placed on the dense till-like soil or dense sand may be designed for allowable bearing pressures in the range of 400 kPa to 500 kPa. Footings placed on structural fill over bearing layer soils may be designed for an allowable bearing pressure in range of 200 kPa. The allowable bearing may be increased by 1/3 for transient loading conditions.

7.2 Seismic Design Considerations

The seismic design of the proposed buildings is to incorporate the 2012 BC Building Code (BCBC). The design earthquake refers to a 2% probability of exceedance in 50 years.

Based on the subsurface profile as mentioned above, the average properties of the top 30m are consistent with dense soils, which are considered to be generally non-liquefiable during the design earthquake events of the 2012 BCBC.

For building design complying with 2012 BCBC, the subject site may be classified as Site Class C in accordance with 2012 BCBC (Table 4.1.8.4.A). This site classification may be used to determine the relevant design seismic parameters, such as, appropriate spectral response acceleration values Sa(T) for period T, as well as acceleration and velocity based site coefficients, Fa (for short period structures) and Fv (for long period structures), as per the 2012 BCBC (Table 4.1.8.4 B and C, respectively). In addition, a peak ground acceleration (PGA) of 0.47 may be used for the subject site, based on Appendix C of the 2012 BCBC.

7.3 Structural Fill

Structural fill material required to raise grade under proposed development should consist of well-graded, free draining granular soils as directed by the geotechnical engineer.

Based on the soils encountered in the drill holes, it is considered that most of the on-site soils will be unsuitable for reuse as structural fills for proposed buildings. In particular, the soils encountered in the test holes contained significant fines contents and/or organics. Fine granular soils are expected to be prone to a poor workability, especially during wet work conditions, e.g., late Fall and Winter construction seasons and under bank seepage conditions. However, there were also some soils (portions of Unit B and Unit D, sand to silty sand) which may be feasible to re-use. However, the practicality of re-use depends on many factors and it may only be considered by experienced earthworks contractors working under the most favorable climatic conditions (i.e., during summer months, periods of no rainfalls, etc.), and among other considerations.

7.4 Subsurface Drainage

It is considered feasible to provide conventional building perimeter drainage systems to control



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groundwater seepages for structural design purposes. The final sizing of the system may include inputs obtained during excavation and construction phases, under the direction of the geotechnical engineer. Details of the drainage should include backfill details which prevent surface water infiltration into backfills so as to impede seepage recharge into the sand (Unit D) aquifer. Surface water runoff should be directed to storm water management, separate from perimeter drainage systems.

7.5 Excavation

It is anticipated that open cut excavation could be completed using conventional excavating equipment. Experience has shown that some ripping of hard zones may be required. In addition, large boulders may be encountered which may require splitting and/or blasting for removal. Some groundwater seepage may also be encountered. It is considered that excavations could be kept free of standing water using conventional pumping sumps.

Temporary excavation slopes should be designed by the geotechnical engineer. The feasibility of open cut would also depend upon the actual location of the proposed building with respect to existing buried services, sidewalks, structures, etc. and conventional shoring using shotcrete and tieback anchors may be required at areas where space is limited. Conventional shotcrete and tieback anchor underpinning at adjacent structures is also considered feasible and it should be designed by the Geotechnical Engineer.

7.6 Further Study

It is anticipated that plans for building project would be reviewed by the Geotechnical Engineer prior to final design. Project specific recommendations may be anticipated.

8.0 CLOSURE

Exp Services Inc. has prepared this report based on referenced information and our understanding of the project as described in this report.

The report was prepared for the exclusive use of our client, Musqueam Capital Corporation and their designated consultants and agents, and may not be used by other parties without the written consent of **exp** Services Inc.

We trust that this report will meet your present requirements. Please contact the undersigned should you have any questions or require further assistance.

Sincerely,

exp Services Inc.

Don Sargent, P.Eng.

Senior Engineer

Enclosures:

Reviewed by:

Evan Sykes, P.Eng. Senior Engineer

 Appendix A – Use & Interpretation of Study and Report Appendix B – Test Hole Location Plan Appendix C – Test Hole Logs

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Appendix A

Use & Interpretation of Study and Report





INTERPRETATION & USE OF STUDY AND REPORT

1. STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental consulting unless specifically stated in the engineering report.

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 us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which 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. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are 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 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 OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS "APPROVED USERS". The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

5. INTERPRETATION OF THE REPORT

- a. Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates 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 and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations, or building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising 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 all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to change over time and those making use of the Report should be aware of fusion possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where 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 us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.
- C. To avoid misunderstandings, exp Services Inc. (exp) should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by exp. Further, exp should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor's work is being carried out in general conformity with exp's recommendations. Any reduction from the level of services normally recommended will result in exp providing gualified opinions regarding adequacy of the work.

6.0 ALTERNATE REPORT FORMAT

When **exp** submits both electronic file and hard copies of reports, drawings and other documents and deliverables (**exp**'s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by **exp** shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by **exp** shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of **exp**'s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except **exp**. The Client warrants that **exp**'s instruments of professional service will be used only and exactly as submitted by **exp**.

The Client recognizes and agrees that electronic files submitted by **exp** have been prepared and submitted using specific software and hardware systems. **Exp** makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

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Appendix B

Test Hole Location Plan





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Appendix C

Test Hole Logs

HP13-01 to 13-04, inclusive TP13-01 to 13-05, inclusive



| | RE | COR | RD (| OF | HA | ND | PIT : HP13-01 PAGE 1 OF 4 |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------|----------|-----------|------------|----------------------|-------------------------------------------------------------------------------------------|
| CLIENT Musqueam Capital Corp. | PROJECT NAME Testholes and Per | rcolation ⁻ | Tests | | | | |
| PROJECT NUMBER VAN-00213751-A0 | PROJECT LOCATION Block F, Aca | idia and U | Jniversi | ty Blvd | ., UBC | | |
| DRILLING DATE 17/7/13 | BOREHOLE LOCATION N: 54570 |)24 E: 48 | 3040 | | | | |
| DRILLING CONTRACTOR _ exp Services Inc. | ELEVATION _ 95.70 m | | | | | | |
| DRILLING METHOD Shovel | GROUND WATER LEVELS: $ abla$ At | TIME OF | DRILL | ING | | | |
| LOGGED BY DGS CHECKED BY | ${ar \Psi}$ Aft | ER DRIL | LING | | | | |
| | | | | SAM | PLES | | FINES CONTENT |
| D S E T P R T A H T (m) A | I | ELEV. DEPTH (m) | NUMBER | ТҮРЕ | RECOVERY % | POCKET PEN. (TSF) | (76) 20 40 60 80 PLASTIC & LIQUID LIMIT MOISTURE CONTENT PL MC LL 40 60 80 |
| PEAT, some organic silt, trace to some sand, roots and roo damp, (firm to stiff) (TOPSOIL) | tlets, amorphous dark brownish black, | | | | | | |
| | | 95.50 | S1 | GB | | | 19 |
| SILTY SAND to SAND & SILT, occasional charcoal, greyish fine-grained | brown, damp, (compact to dense) sand is | 0.20 95.40 | S2 | GB | | | 32 |
| SILTY SAND to SAND, some silt, frequent roots and organic brown with rust stains, damp, (compact to dense) | cs, seams of sand, seams of silt, light | 0.30 | 55 | GD | | | 29 |
| | | 95.19 | S4 | GB | | | |
| SAND, trace to some silt, light brown with rust stains, damp, | , (compact to dense) fine-grained | 0.51 | ~- | | | | 25 |
| -less silt with depth | | 04.70 | S5 | GB | | | • |
| · [조작소] Bottom of hole at 0.0 | 9m | 0.01 | | | | | |

| exp Services Inc | | | | | | | PAGE 1 OF 3 |
|---------------------------------------------------------------------------------|----------------------------------------------|------------------------|---------|---------|------------|----------------------|----------------------------------------------------------------------------------------------------|
| CLIENT Musqueam Capital Corp. PRC | OJECT NAME Testholes and Perc | colation T | ests | | | | |
| PROJECT NUMBER VAN-00213751-A0 PRO | OJECT LOCATION Block F, Acad | lia and U | niversi | ty Blvd | ., UBC | | |
| DRILLING DATE 17/7/13 BOF | REHOLE LOCATION N: 545698 | 37 E: 482 | 2991 | | | | |
| DRILLING CONTRACTOR _ exp Services Inc. ELE | EVATION _ 95.40 m | | | | | | |
| DRILLING METHOD Shovel GRC | OUND WATER LEVELS: $\underline{\nabla}$ At t | IME OF | DRILL | ING _ | | | |
| LOGGED BY CHECKED BY | | ER DRILL | ING | | | | |
| | | | | SAM | PLES | | FINES CONTENT |
| D S E T P R T A H T (m) A | - | ELEV. DEPTH (m) | NUMBER | ТҮРЕ | RECOVERY % | POCKET PEN. (TSF) | 20 40 60 80 PLASTIC & LIQUID LIMIT MOISTURE CONTENT PL MC LL PL MC LL 20 40 60 80 ∞ |
| PEAT, some organic silt, trace to some sand, roots and rootlets, dark (TOPSOIL) | k brownish black, damp, (soft) | 05.25 | S6 | GB | | | 3 |
| - grading to ORGANIC SILTY SAND, frequent roots and rootlets, dark t | brownish black, damp, | 95.25 0.15 95.10 | S7 | GB | | | 56 |
| SAND, trace silt, some hard chunks, tan with rust stains, damp to wet, | t, (dense) | 0.30 | S8 | GB | | | |
| Pottom of hole at 0.5m | | 94.89 | | | | | |

| | е | exp Services Inc | RE | COF | RD (| OF | HA | ND | PIT: HP13-03 PAGE 1 OF 2 |
|--------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------|--------------------|------------|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| CLII PRC DRII DRII DRII LOG | ENT _ DJECT LLING LLING LLING GGED | Musqueam Capital Corp. NUMBER VAN-00213751-A0 DATE CONTRACTOR exp Services Inc. METHOD Shovel SY DGS CHECKED BY | PROJECT NAME <u>Testholes and Perepresentation</u> PROJECT LOCATION <u>Block F, Act</u> BOREHOLE LOCATION <u>N: 5456</u> ELEVATION <u>95.50 m</u> GROUND WATER LEVELS: <u>A</u> AT | ercolation ⁻ adia and L 961 E: 48 • TIME OF TER DRIL | Tests Jniversi 2935 DRILL LING | <u>ty Blvd</u> | ., UBC | 2 | |
| | | | | | | SAM | PLES | | FINES CONTENT |
| DEPTH(m) | S T A T A | SOIL DESCRIPTION | | ELEV. DEPTH (m) | NUMBER | TYPE | RECOVERY % | POCKET PEN. (TSF) | (%) <u>20 40 60 80</u> PLASTIC & LIQUID LIMIT MOISTURE CONTENT PL MC LL PL MC LL <u>10 40 60 80</u> |
| | <u></u> | SOD | | 95.45 | | | | | |
| _ | | PEAT, trace to some sand, rootlets, amorphous,black, damp, (| (soft to firm) slight plastic | 0.05 | S9 | GB | | | 1168 • |
| - | <u>1, \1</u> \ <u>17</u> | -becomes stiff to very stiff and brown | | | S10 | GB | | | 22 |
| - | | SAND, trace silt, root remains, orangish ligh brown, damp to w | vet, (compact) fine-grained | 95.04 0.46 | S11 | GB | | | 30 • |
| - | | Bottom of hole at 0.8m | ı. | 94.69 | | | | | |

| | | | RE | COF | RD (| DF | HA | ND | PIT : HP13-04 |
|---------------------------------------------------------|-------------|-----------------------------------------------------------------|-------------------------------------------|------------|----------|---------|---------|---------|------------------|
| | E | exp Services Inc | | | | | | | PAGE 1 OF 2 |
| | | | | | | | | | |
| CLI | ENT | ■ Musqueam Capital Corp. | PROJECT NAME Testholes and Pe | rcolation | Tests | | | | |
| PRC | JECT | NUMBER VAN-00213751-A0 | PROJECT LOCATION Block F, Aca | adia and L | Jniversi | ty Blvd | I., UBC | ; | |
| DRI | LLING | DATE 17/7/13 | BOREHOLE LOCATION N: 54569 | 970 E: 48 | 2869 | | | | |
| DRILLING CONTRACTOR exp Services Inc. ELEVATION 95.50 m | | | | | | | | | |
| DRI | | METHOD Shovel | | TIME OF | DRILL | ING _ | | | |
| LOG | GED | BY _DGS CHECKED BY | ⊥¥_ AFT | ER DRIL | LING | | | | |
| | | | | | | SAM | PLES | | FINES CONTENT |
| DE | S | | | | | | % | л. И | (70) |
| P | R | SOIL DESCRIPTION | | DEPTH | BER | щ | ΠRΥ | SF) | |
| Ь. | Ť | | | (m) | UME | ΤΥF | NO N | NXE | MOISTURE CONTENT |
| (m) | A | | | | z | | REC | L C | |
| | 7 <u>71</u> | ORGANIC SILT, trace to some sand, roots and rootlets, dark l | brownish black, damp, (soft) (TOPSOIL) | | | | | | |
| - | 11 . 21.1 | | | | | | | | |
| | <u>\\</u> | | | 95.30 | S12 | GB | | | • 85 |
| | | SANDY SILT to SAND & SILT, rootlets and organics, brownish | black, damp, (stiff) plastic | 0.20 | S13 | GB | | | |
| - | | | | | | | | | |
| - | | | | 95 04 | | | | | |
| L | | -grades to SAND, trace to some gravel, trace to some silt, root | lets, light brown with rust stains, damp, | 0.46 | - | | | | |
| | | (compact to dense) sand is fine-grained | | | S14 | GB | | | |
| - | | | | 94.84 | | | | | |
| | | Bottom of hole at 0.7m. | | 0.66 | | | | | |

| * | | e> | | ECO | RD | OF | TE | ST | PIT : TP | 13-01 Ge 1 OF 3 |
|-------------|--------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|-------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| | | U / | | | | | | | | |
| | | | Indexe Name Capital Corp. PROJECT NAME _ Testholes and Person Project Location _ Place F. Acc | ercolation | Tests | ity Dlud | | | | - |
| EX | CA | | IDATE 18/7/13 TEST PIT LOCATION N: 545692 | 2 E: 4831 | 80 | | ., UDC | , | | _ |
| EX | CA | VATIO | I CONTRACTOR Backhoes Unlimited ELEVATION 99.90 m | | | | | | | |
| EX | CA | VATIO | I METHOD _Rubber Tire Back-Hoe GROUND WATER LEVELS: Z AT | TIME OF | EXCA | VATIO | N 1. | .8m vi | sible | |
| LO | GGG | ED BY | | | | ом | _ | | | |
| | _ | | - 74 1 | | | | | | 1 | |
| | | | | | | SAM | PLES | | FINES CON | TENT |
| E | | S T | | FLEV | | | % | U N | | |
| P | | R | SOIL DESCRIPTION | DEPTH | BER | щ | K | SF) | 20 40 60 | 0 80 |
| Ь | | τ | | (m) | ML | ĮΣ | N N | Ϋ́Ĕ | MOISTURE CO | JID LIMI I ONTENT |
| (m | 1) | A | | | ž | | SEC | PG | PL MC | |
| - | | 51.4. | | | | | <u>ц</u> | | 20 40 60 | 0 80 |
| | | | SODITOPSOIL | | | | | | | · · · · · · · · · · · · · · · · · · · |
| Ē | ľ | | | 99.75 | | | | | | |
| - | 0.2 | Ň | SAND, some gravel to gravelly, trace silt, occasional cobbles, roots and organics, orange, dry, (dense) gravel is sub-angular to sub-rounded, sand is fine to medium grained | 0.15 | | | | | | ••••••••••••••••••••••••••••••••••••••• |
| | þ. | o 0 | | | 04 | | | | | ••••••••••••••••••••••••••••••••••••••• |
| | à | 0 | | | 51 | GB | | | | |
| F |). D. | S. | | | | | | | | |
| | | 0.0 .0.1 | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| | Ĩ | D. | | | | | | | | |
| F | P. | 00 | | | | | | | | |
| | à | .Q. | | | | | | | | |
| | þ. | 2. 0. | | | | | | | | |
| F | a | .Q. | -becomes more gravelly and damp with depth | | S2 | GB | | | · · · I · · I · · I · · I · · I · · I · · I · · I · · I · · I · · I · · I · · I · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · · I · · · · · I · · · I · · · · I · · · I · · · I · · · I · · · I · · · · I · · · I · · · · I · · · · I · · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · I · · · · I · · · I · · · · I · · · · I · · · · I · · · · I · · · · I · · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| | i | D. | | | | | | | | ••••••••••••••••••••••••••••••••••••••• |
| 1 | | 0.0 | | | | | | | | |
| + | 0 | , Nº | | 98.83 | | | | | | |
| | . | | SAND, trace to some gravel, tan, damp, (compact to dense) fine to medium grained | 1 07 | 00 | | | | · · · § · · § · · § · · § · · § · · § · · § · · § · · § | ••••••••••••••• |
| | | | | | 53 | GB | | | | ••••••••••••••••••••••••••••••••••••••• |
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| | | | -becomes some gravel and well-graded by 1.5m | | S4 | GB | | | | •••••••••••••• |
| F | | | | | | | | | | |
| -13 | | | | | | | | | | · |
| 30/7/ | | | | 08.07 | | | | | | · · · · · · · · · · · · · · · · · · · |
| 6 | No. | XXX - | SANDY SILT. some gravel, light brownish grev with black gravel, damp, (very stiff) gravel is | 1.83 | | | | | | |
| 9.0 | K |) JA | sub-angular to angular (TILL-LIKE) | 1.00 | S5 | GB | | | | · · · · · · · · · · · · · · · · · · · |
| 2 | | | | | 00 | | | | ····· | ••••••••••••••• |
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| Ъ- | | | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| 1-A0 | Ŕ | H) | | | | | | | | |
| 375 | Ŕ | <u>H</u> | | | | | | | | ••••••••••••••••••••••••••••••••••••••• |
| 62 | 6 | H) | | | | | | | | |
| - I0S | X | | | | | | | | 16 | |
| РЦ | | 1) | | 97.41 | S6 | GB | | | • | ······································ |
| ж * | | | Bottom of test pit at 2.5m. | 2.49 | | | | | | |
| Ing | | | | | | | | | | |
| ND | | | | | | | | | | |
| I/HA | | | | | | | | | | |
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| TES | | | | | | | | | | |
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| | Ē | νn | RI | ECO | RD | OF | TE | ST | PIT : TP13-02 | | |
|-------------------------|-----------------------------|-------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|-----------|--------|------------|--------------------|-----------------------------------------------------------------------|--|--|
| | C | exp Services Inc | | | | | | | | | |
| CLIE | | Musqueam Capital Corp. | PROJECT NAME Testholes and Pe | ercolation | Tests | | | | | | |
| PRO | JECT | NUMBER VAN-00213751-A0 | PROJECT LOCATION Block F, Aca | Block F, Acadia and University Blvd., UBC | | | | | | | |
| EXC | AVAT | ION DATE 18/7/13 | TEST PIT LOCATION N: 5456878 | 8 E: 4831 | 2: 483106 | | | | | | |
| EXC | AVAT | ION CONTRACTOR Backhoes Unlimited | ELEVATION100.80 m | | | | | | | | |
| EXC | AVAT | ION METHOD Rubber Tire Back-Hoe | GROUND WATER LEVELS: $\overline{\sum}$ AT | TIME OF | EXCA | VATIO | N 1 | .8m in | ferred | | |
| LOG | GED | BY DGS CHECKED BY | | TER EXC | AVATI | /ATION | | | | | |
| | 0 | | | | | SAM | PLES | ES FINES CONTEN | | | |
| E P T H (m) | T R A T A | SOIL DESCRIPTION | | ELEV. DEPTH (m) | NUMBER | ТҮРЕ | COVERY % | OCKET PEN (TSF) | 20 40 60 80 PLASTIC & LIQUID LIMIT MOISTURE CONTENT PL MC LL | | |
| | | | | | | | R | Ľ | 20 40 60 80 | | |
| | <u>× v</u> 1/ <u>×</u> / | SODUIORSOIL | | | S7 | GB | | | | | |
| | | | | 100.65 | | | | | | | |
| F | | SAND, trace silt, occasional gravel and rootlets, orange, dry, (c | compact) sand is fine-grained | 0.15 | | | | 1 | | | |
| 1 | | | | | S8 | GB | | 1 | | | |
| F | | | | | | | | | | | |
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| _ | | | | 99.89 | | | | | | | |
| | | SAND, trace gravel, occasional cobbles, light brown with rust s | taining, dry, (compact to dense) | 0.91 | 50 | CP | | | | | |
| -1 | | well-graded | | | 39 | GD | | | | | |
| | | | | | | | | | | | |
| F | | | | | | | | | | | |
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| I | | | | | | | | 1 | | | |
| F | | ∇ | | 98.97 | 1 | | | 1 | | | |
| 1 | (H) | SANDY SILT, some gravel, light brownish grey with black grave | el, damp, (very stiff) gravel is | 1.83 | | | | 1 | | | |
| ſ | 8/H) | sub-angular to angular (TILL-LIKE) | | | | | | 1 | 12 | | |
| 2 | Ű | -houlder at 2m | | <u> </u> | S10 | GB | | 1 | | | |
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| ╞ | | | | | | | | | | | |
| | KS) | | | | | | | 1 | | | |
| F | KK A | | | | | | | 1 | | | |
| L | U/X | | | | 4 | | | 1 | 13 | | |
| L. | (M) | -becomes hard with less moisture @ 2.3m | | 09.41 | S11 | GB | | | | | |
| - | Y LEXE | Rottom of test nit at 2.4n | 3 | 2 2 2 0 | I | I | I | 1 | <u>1</u> | | |
| j | | bottom of test pit at 2.41 | | 2.39 | | | | | | | |
| 4 | | | | | | | | | | | |
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| | 'n | R | ECO | RD | OF | TE | ST | PIT: | ГР13-03 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------|-----------------|---------|------------|--------|-----------------------------------------|-----------------------------------------|
| ΕX | exp Services Inc | | | | | | | | PAGE 1 OF |
| CLIENT Mus | queam Capital Corp. PRC | DJECT NAME Testholes and Pe | ercolation | Tests | | | | | |
| PROJECT NUN | /IBER VAN-00213751-A0 PRO | DJECT LOCATION Block F, AC | adia and L 7 | Jniversi 149 | ty Blvd | ., UBC | | | |
| EXCAVATION | CONTRACTOR Backhoes Unlimited ELE | EVATION 99.80 m | 1 L. 4 023 | | | | | | |
| EXCAVATION | METHOD Rubber Tire Back-Hoe GRO | DUND WATER LEVELS: $\overline{\sum}$ AT | TIME OF | EXCA | VATIO | N <u>1</u> | 8m vis | sible | |
| LOGGED BY | DGS CHECKED BY | | TER EXC | Ανατισ | ON | - | | | |
| | | | | | SAM | PLES | | FINES | CONTENT |
| D S | | | | | | % | z | | (%) |
| | SOIL DESCRIPTION | | DEPTH | ER. | ш | RY | ET PI | 20 4 | 0 60 80 |
| H T | | | (m) | UMB | Т | OVE | CKE | PLASTIC MOISTU | & LIQUID LIMIT RE CONTENT |
| (m) A | | | | z | | REC | Ы | | |
| <u>×17</u> . | SOD/TOPSOIL | | 99 72 | | | | | 20 4 | <u> </u> |
| - 💥 | SILTY SAND, some gravel, seams of silt, pockets of till-like material, b | ottles, plastic bags, orangish | 0.08 | - | | | | · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| - 🕅 | brown, damp, (compact to dense) (FILL) | | | | | | | | ••••••••••••••••••••••••••••••••••••••• |
| | | | | | | | | 13 | |
| | | | 00.00 | S12 | GB | | | • | ······································ |
| - | -50mm layer of asphalt on north side @ 0.4m SANDY SILT, organics and roots, dark brown, moist, (stiff) (POSSIBLE | E ORIGINAL TOPSOIL) | 0.41 | | | | | | |
| - | | | 0.41 | S13 | GB | | | 33 | |
| | | | | | | | | | · · · · · · · · · · · · · · · · · |
| | | | | S14 | GB | | | 24 • | |
| - | | | 99.04 | | | | | | |
| - | SANDY SILT, organics and roots, orangish brown, damp, (stiff) sand is | s fine-grained | 0.76 | | | | | | · · · · · · · · · · · · · · · · · · · |
| _ | | | | S15 | GB | | | | •••••••••••••• |
| 1 | | | | | | | | | |
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| - <u> </u> য়ালন | SILTY SAND trace organics arey with black pockets damp (compare | * | 98.68 | - | | | | | |
| - 1993 | SILTT SAND, trace organics, grey with black pockets, damp, (compact | , , , , , , , , , , , , , , , , , , , | 1.12 | | | | | | |
| - | | | | | | | | ••••••••••••••••••••••••••••••••••••••• | |
| | | | | S16 | GB | | | | |
| - | | | | | | | | | |
| - 383 | | | | | | | | | ••••••••••••••••••••••••••••••••••••••• |
| - | | | 98.18 | | | | | 00 | |
| | SANDY SILT, some gravel, light brownish grey with black gravel, damp sub-angular to angular (TILL-LIKE) | p, (very stiff) gravel is | 1.62 | S17 | GB | | | 20 • | |
| | | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| - ₩ | | | | | | | | | |
| | | | | | | | | | |
| _2 | | | | | | | | | |
| | -boulder @ 2m | | | | | | | | |
| V /// V / | | | | | | | | 13 | |
| | | | | S18 | GB | | | | |
| - | becomes hard with loss maisture @ 2.2m | | | | | | | | |
| | -becomes hard with less moisture @ 2.2m | | 97.46 | | | | | | |

| \sim | R | ECO | RD | OF | TE | ST | PIT : TP13-04 |
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| e | exp Services Inc | | | | | | PAGE 1 OF 4 |
| NT Mu | squeam Capital Corp. PROJECT NAME _ Testholes and Pe | ercolation | Tests | | | | |
| JECT NU | MBER VAN-00213751-A0 PROJECT LOCATION Block F, Aca | adia and L | Jniversi | ity Blvd | I., UBC | ; | |
| | DATE 18/7/13 TEST PIT LOCATION N: 545697 CONTRACTOR Desktage Linitiation S10 mm | 1 E: 4828 | 35 | | | | |
| | METHOD Rubber Tire Back-Hoe GROUND WATER LEVELS: V AT | | EXCA | | N 1 | 8m vi | sible |
| GED BY | | | | | | | |
| | | | | JN | | | |
| | | | | SAM | PLES | | FINES CONTENT (%) |
| T | | ELEV. | ~ | | ۲% | PEN - | |
| R A | SOIL DESCRIPTION | DEPTH | 1BEF | Ц | ER, | ISF) | 20 40 60 80 PLASTIC & LIQUID LIMIT |
| T A | | (11) | NUN | ∣≿ | 0 CO | ۵ ٥ | MOISTURE CONTENT |
| | | | _ | | L R | | |
| | SOD/TOPSOIL/ROOTS | 96.05 | | | | | · · · · · · · · · · · · · · · · · · · |
| | SILTY SAND to SANDY SILTY, some till-like material, plastic bags, dark brownish orange, dry, (compact to dense) (FILL) | 0.05 | | | | | |
| | | 05.05 | S19 | GB | | | 23 |
| \sim | SILTY SAND, trace organics, black fleck, reddish orange, dry, (compact to dense) sand is fine-grained | 95.85 | - | | | | |
| | | 0.20 | | | | | 40 |
| | | | S20 | GB | | | |
| | | 95.59 | | | | | |
| | SAND, trace silt, occasional gravel, occasional hard chunks, light brown-tan with rust staining, moist, (dense) sand is fine to medium grained | 0.51 | | | | | |
| | | | | | | | |
| | | | S21 | GB | | | |
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| | | | S22 | GB | | | 26 |
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| | -becomes some silt by 1.8m | | - | | | | |
| | | | | | | | |
| | SANDY SILT some gravel light brownish grav with black gravel damp. (very stiff) gravel is | 94.27 | - | | | | 12 |
| <u>II</u> | sub-angular to angular (TILL-LIKE) | 1.83 | S23 | GB | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | 8 |
| | | | | | 1 | | |
| | -becomes grey and hard, less moisture by 2.1m | | S24 | GB | | | |
| | | Exp Services Inc VT Misqueam Capital Corp. ECT NUMBER VAN-00213751-A0 WATION NET II 19/7/13 VATION CONTRACTOR Backhoes Unlimited VATION METHOD Rubber Tire Back-Hoe SetD BY DGS CHECKED BY GROUND WATER LEVELS: SOLTOPSOIL/ROOTS SOLTOPSOIL/ROOTS SILTY SAND to SANDY SILTY, some till-like material, plastic bags, dark brownish orange, dry, (compact to dense) (FILL) SILTY SAND, trace organics, black fleck, reddish orange, dry, (compact to dense) sand is fine-grained SILTY SAND, trace organics, black fleck, reddish orange, dry, (compact to dense) sand is fine-grained SAND, trace silt, occasional gravel, occasional hard chunks, light brown-tan with rust staining, moist, (dense) sand is fine to medium grained -becomes some silt by 1.8m V SANDY SILT, some gravel, light brownish grey with black gravel, damp, (very stiff) gravel is subject to gravel, indict to moduler to anough (TILL-LIKE) | YT Maguean Capital Corp. PROJECT NAME Testholes and Percolation ECT NUMBER VAN400213751.40 PROJECT NAME Testholes and Percolation WATION DATE 18/7/13 PROJECT NAME Testholes and Percolation WATION CONTRACTOR Backhoes Unlimited Test PIT LOCATION N: 5458971 E.4828 WATION CONTRACTOR Backhoes Unlimited Status Test PIT LOCATION N: 5458971 E.4828 WATION METHOD Rubber Tire Back-Hoe Status Status Test PIT LOCATION N: 5458971 E.4828 WATON DATE CHECKED BY Status Status Status Test PIT LOCATION N: 5458971 E.4828 Sold DESCRIPTION Status Sta | YT Musqueam Capital Corp. ECT NUMBER (VAN-00213751-A0 PROJECT NAME [_testholes and Percolation Tests VATION DATE 18/7/13 VATION CONTRACTOR Backhoes Unlimited VATION Public Tire Back-Hoe GROUND WATER LEVELS: Int Time OF EXCA VATION SULTY SAND CHECKED BY GROUND WATER LEVELS: Int Time OF EXCA Solit DESCRIPTION ELEV Ground Water Levels: Int Time OF EXCA Solit DESCRIPTION ELEV Ground Water Levels: Int Time OF EXCA Solit DESCRIPTION ELEV Ground Water Levels: Int Time OF EXCA Solit DESCRIPTION ELEV Ground Water Levels: Int Time OF EXCA Solit DESCRIPTION ELEV Ground Water Levels: Solit DESCRIPTION Solit DESCRIPTION ELEV Ground Water Levels: Solit | VT Maguean Capital Corp. PROJECT NAME Testboles and Percolation Tests CET NUMBER VANION CONTRACTOR Bock F. Acadia and University Bidd VATION DATE 18/7/13 PROJECT LOCATION Bick F. Acadia and University Bidd VATION METOR Backhoes Unimited PROJECT LOCATION N 5456971 E: 482835 VATION METOR Backhoes Unimited GROUND WATER LEVELS: X T TIME OF EXCAVATION VED BY DGS CHECKED BY GROUND WATER LEVELS: X T TIME OF EXCAVATION VED BY DGS CHECKED BY GROUND WATER LEVELS: X T TIME OF EXCAVATION VED SOL/DOSOL/ROOTS SOL DESCRIPTION ELEV W Arter excavation VE SOD/TOPSOL/ROOTS 96.05 S19 GB SILTY SAND to SANDY SILTY, some till-like material, plastic bags, dark brownish orange, dry. 0.05 S20 GB SILTY SAND, trace organics, black fleck, reddish orange, dry. (compact to dense) sand is fine-grained 0.25 S20 GB SILTY SAND, trace organics, black fleck, reddish orange, dry. (compact to dense) sand is fine to medium grained 0.51 S21 GB V -becomes some silt by 1.8m becomes some gravel, light brownich grey wit | YT Musquaem Capital Corp. ECT NUMBER VANO0213751A0 WATION NDATE 197/13 VATION CONTRACTOR Backhoes Unlimited VATION CONTRACTOR Backhoes Unlimited VATION CONTRACTOR Backhoes Unlimited VATION NETHOD Rubber The Backhoes BED BY DCS CHECKED BY CHECKED BY SOLL DESCRIPTION Image: Solution of the soluti | YI Jusquam Capital Corp. ECT NUMBER VANO0213751-00 WATCON DATE 1807/13 VATION CONTRACTOR Backhoss VATION MATCO Reschoes JATION CONTRACTOR Backhoss VATION MATCO Reschoes JATION CONTRACTOR Backhoss JATION METCH Reschoes JATION CONTRACTOR Backhoss SOLI DESCRIPTION Image: Control on the descenter of the descen |



CLIENT Musqueam Capital Corp. PROJECT NAME ______ Testholes and Percolation Tests PROJECT NUMBER VAN-00213751-A0 **PROJECT LOCATION** Block F, Acadia and University Blvd., UBC EXCAVATION DATE 18/7/13 TEST PIT LOCATION N: 5457091 E: 483149 EXCAVATION CONTRACTOR Backhoes Unlimited ELEVATION 97.30 m GROUND WATER LEVELS: $\overline{igsymbol{ au}}$ at time of excavation _---EXCAVATION METHOD Rubber Tire Back-Hoe LOGGED BY DGS CHECKED BY SAMPLES FINES CONTENT (%) S T D E P T H POCKET PEN. (TSF) % ELEV. RECOVERY R NUMBER 20 40 60 80 SOIL DESCRIPTION DEPTH TYPE A T A PLASTIC & LIQUID LIMIT MOISTURE CONTENT (m) (m) PL MC LL **4**0 SOD/TOPSOIL/ROOTS 11/2 97.22 SANDY SILT, some organics, trace gravel, brown, dry, (loose to compact) sand is fine-grained 0.08 S25 GB 97.00 SAND, trace silt, occasional gravel, orangish tan with dark brown spots, dry, (dense) 0.30 S26 GB 6 S27 GB 1 17 95.78 S28 GB SANDY SILT, some gravel, light brownish grey with black gravel, damp, (very stiff) gravel is sub-angular to angular (TILL-LIKE) 1.52 14 GB S29 . 95.32 -becomes hard with less moisture @ 1.9m Bottom of test pit at 2.0m. 1.98

exp Services Inc