

# **Geotechnical Assessment**

Clyde River Old Town Site Remediation Landfill, Landfarm, and Access Road Development Clyde River, NU

## Draft

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## Prepared for:

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## 1 INTRODUCTION

Stantec Consulting Ltd. (Stantec) – Geotechnical, has completed a geotechnical assessment for the proposed Clyde River Old Town Remediation project in Clyde River, Nunavut. Authorization to proceed with the work was received from Nunami Stantec Limited (Nunami Stantec) on behalf of the Government of Nunavut (GNU). Use of this report is subject to the Statement of General Conditions provided in **APPENDIX A** 

## 1.1 SITE LOCATION AND DESCRIPTION

The site is located near the community of Clyde River, NU (see Figure 1, in **APPENDIX B**). The Old Town site is situated on the east shore of Patricia Bay, approximately 7 km (by land) from the existing Clyde River, NU town site.

It is understood that the debris and possibly contaminated soil at the Old Town is to be remediated, and as part of the remediation, new facilities are to be constructed to accommodate the materials (waste) generated from the remediation. The new facilities are to include a landfarm near the Old Town site, a temporary (construction) access road from the existing Airport Road to the Old Town site, and a new cell at the existing landfill (see Figures 2, 3, and 4, respectively, in **APPENDIX B**).

## 1.2 SCOPE OF WORK

The scope of work for this investigation included the following:

- Geotechnical assessment at proposed landfarm location
- Geotechnical assessment along the proposed temporary access road alignment
- Geotechnical assessment at proposed landfill cell location
- Field reconnaissance to identify potential construction material borrow sources to be used during construction of above-noted facilities
- Preparation of a report presenting the factual information obtained during this investigation and to provide geotechnical recommendations related to the design and construction of the proposed facilities

An environmental assessment of the site was not included in the scope of this geotechnical investigation.

#### 1.3 SURFICIAL GEOLOGY

Based on published geological information<sup>1</sup>, the surficial geology in the area is expected to be undifferentiated, unconsolidated deposits, some stratified and locally fossiliferous; chiefly glacial deposits partially reworked by fluvial, lacustrine, marine, and frost action; minor interglacial strata. The bedrock is expected to be from the Aphebian Group formation which mainly consists of migmatite.

<sup>&</sup>lt;sup>1</sup> Jackson, G.D., 1982. Map 1582A, Geology Clyde River, District of Franklin, Northwest Territories. Geological Survey of Canada. Scale 1:250,000.

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Based on our understanding of the site, and based on a review of past environmental investigations completed by Nunami Stantec for this assignment<sup>2</sup>, it is anticipated that the near surface soils in the vicinity of the landfarm and temporary access road will consist of approximately 500 mm to 1000 mm of seasonally frozen and thawed silty clay, clayey silt, or sand underlain by permafrost consisting of frozen parent material.

## 2 METHOD OF INVESTIGATION

## 2.1 FIELD INVESTIGATION

The field investigation of the three facilities and identified potential borrow sources was performed from July 12 to 16, 2011. A total of 123 test pits were excavated by hand (50 mm diameter hand auger or shovel) or using a mid-sized track hoe (Takeuchi TB1140) contracted from Kudlik Construction Ltd. (Kudlik) of Iqaluit, NU. A summary of facilities and associated test pits is included below.

Facility	Test Pit Numbers	Figure Number	Excavation Method
Landfarm	TP019 to TP036	Figure 2	Hand
Temporary Access Road	TP001 to TP016, TP018, TP037 to TP044	Figures 3A to 3C	Hand
Landfill	LF001 to LF046	Figure 4	Track Hoe
Borrow Sources Search	TP045 to TP053	Figure 5	Hand and Track Hoe

Approximate test pit locations are presented in Figures 2 to 5, Appendix B.

Test pit locations were selected in the field at the time of the investigation using site aerial photographs, geological mapping, or contour mapping, and referencing available landforms, landmarks, and existing structures/facilities. Test pit locations were identified using a hand-help GPS unit. Locations and elevations of the test pits for the landfarm, temporary access road, and landfill were also obtained by Stantec Geomatics.

All test pits were excavated to depths in the order of 0.2 m to 1.3 m below grade. Excavation was halted at the noted depths due to refusal, either due to impenetrable permafrost or refusal on large boulders.

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<sup>&</sup>lt;sup>2</sup> May 3, 2011. Remedial Action Plan, Old Town Site, Clyde River, Nunavut. Nunami Stantec Limited.

The subsurface stratigraphy encountered at the test pit locations was recorded by Stantec – Geotechnical personnel as the test pits were advanced. Representative samples of the strata encountered during excavation were collected, including disturbed grab samples from the hand auger, shovel, or side walls of the pits excavated with the track hoe. Groundwater seepage and presence of ice (where observed) was also noted as the test pits were excavated.

Following completion of test pitting, all test pits were backfilled using excavated material. No standpipes or other instrumentation were installed.

## 2.1 Laboratory Testing

All samples recovered from the site were stored in moisture tight containers and were returned to our Edmonton laboratory for detailed classification and testing. Laboratory testing was performed on selected samples, including:

- Natural moisture content on all samples
- Atterberg Limits analyses on selected cohesive samples
- Grain size analysis via sieve (for coarse grained aggregates)
- Grain size analysis via hydrometer (for fine grained aggregates)

Select aggregate samples from the borrow sources search were also assessed in Clyde River using portable field laboratory testing equipment. The purpose of the field laboratory testing was to identify the quality (gradation) of the observed aggregates such that those areas deemed to have a high probability of containing appreciable quantities of good quality aggregate could be further investigated using the track hoe. The test results from the field assessed materials were verified in the Edmonton laboratory. The results of the laboratory testing are provided on the Test Pit Records in **Appendix C**, and are discussed in the text of this report. Samples remaining after testing will be stored for a period of three months after issuance of this report and will be discarded after this period unless otherwise directed.

## 3 SITE CONDITIONS

#### 3.1 Soil Conditions

The subsurface strata and groundwater conditions encountered in the test pits are described in detail on the Test Pit Records, with additional and supplementary information provided in this section. All soil descriptions and identifications were made in accordance with the Modified Unified Soil Classification System. The Test Pit Records, along with an explanation of the symbols and terms used in their description, are included in **Appendix C**.

The generalized stratigraphy encountered in the vicinity of the landfarm location generally consisted of surficial organics underlain by glacial lacustrine soils (clay, silt, and/or sand) underlain by permafrost. The stratigraphy encountered in the vicinity of the access road generally consisted of surficial organics underlain by sand or sand and gravel, silt, or clay, underlain by permafrost. The stratigraphy encountered in the vicinity of the landfill location generally consisted of surficial organics underlain by glacial lacustrine soils (clay and sand), underlain by permafrost. The stratigraphy encountered in the vicinity of the proposed borrow source locations generally consisted of surficial organics underlain by sand, sand and gravel, or silt, underlain by permafrost. Large boulders to greater than 4 m in diameter were noted throughout the areas of the landfarm, landfill, access road, and potential borrow areas.

It should be recognized that subsurface conditions often vary both with depth and laterally. The following is a summary of the subsurface conditions encountered at each of the proposed facility locations.

#### 3.1.1 Landfarm Location

A total of 18 test pits were excavated to depths in the order of 0.4 m to 0.8 m below existing grade for the proposed landfarm. Approximate test pit locations are indicated on Figure 2, **APPENDIX B**.

## 3.1.1.1 Surficial Organics

Surficial organics were encountered at all test pit locations and were noted to have a thickness varying between 10 mm and 0.1 m at the test pit locations. The surficial organic mat consisted of mosses and sod and were generally wet to saturated. Soft and wet surficial subgrade conditions were encountered throughout the landfarm location.

### 3.1.1.2 Clay

Clay was encountered underlying the surficial organics in Test Pits TP019 to TP023, TP025 to TP030, TP033 to TP035, and extended to depths ranging from 0.4 m to 0.8 m below existing grade. The clay was noted to contain some silt to silty, trace sand to sandy, was low to medium plastic, brown to grey, moist to saturated, and was noted to contain occasional gravel. In TP030 and 035, the soil composition was noted to be clay and sand.

In-situ moisture contents within the clay (or clay and sand) ranged from 11.4% to 21.2% with an average moisture content of 15%. Results from the Atterberg limits analysis conducted on a selected representative sample of the clay indicated an average Liquid Limit in the order of 20 to 30 and an average Plasticity Index of 5 to 10, indicative of low to medium plastic clay.

### 3.1.1.3 Silt

Silt was encountered underlying the surficial organics or clay in Test Pits TP021, TP024, TP029, and TP036, and extended to depths in the order of 0.4 m to 0.7 m below existing grade. The silt was generally noted to contain some clay to clayey, some sand to sandy, low to high plasticity, grey, wet to saturated, and was moderately to highly dilatant. Sloughing soil conditions and groundwater seepage were noted within the silt.

In-situ moisture contents of the silt ranged from 12.4% to 17.5% with an average moisture content of 15.2%.

#### 3.1.1.4 Sand

Sand was encountered underlying the surficial organics in Test Pits TP031 and TP032, and extended to depths in the order of 0.7 m to 0.8 m below existing grade. The sand was generally silty with trace clay to clayey, moist to saturated, and was noted to contain occasional gravel.

In-situ moisture contents of the sand ranged from 8.0% to 10.3% with an average moisture content of 9.0%.

## 3.1.1.5 Permafrost

Permafrost consisting primarily of frozen clay or silt was encountered at all test pit locations. The depth to permafrost was measured to be in the order of 0.4 m to 0.8 m below existing ground surface.

Test pits were excavated by hand, using a 50 mm diameter hand auger or shovel. Significant penetration into the permafrost was not possible by hand excavation methods, and as such samples were not available for laboratory testing.

## 3.1.2 Temporary Access Road Location

A total of 25 test pits were excavated to depths in the order of 0.3 m to 1.1 m below existing grade along the proposed temporary access road alignment. Approximate test pit locations are indicated on Figures 3 (A to C), **APPENDIX B**.

## 3.1.2.1 Surficial Organics

Surficial organics were encountered at all test pit locations (with the exception of Test Pits TP003, TP007, TP011, TP014, TP015, TP018, TP037, and TP041), and were noted to have a thickness varying between 10 mm and 0.2 m at the test pit locations. The surficial organic mat consisted of mosses and sod and were generally wet to saturated. Soft and wet surficial subgrade conditions were encountered along the majority of the access road alignment.

#### 3.1.2.2 Sand

Sand was encountered in all test pits (with the exceptions of TP001, TP004, and TP005), and extended to depths ranging from 0.2 m to 1.1 m below existing grade. The sand was noted to contain some silt to silty, trace clay, was fine to coarse grained, brown to grey, wet to saturated, and was noted to contain trace to some gravel. In TP002 and TP018, the soil composition was noted to be sand and gravel. In TP009, a buried layer of organics was encountered within the sand from 0.1 m to 0.15 m below existing grade. Sloughing soil conditions and groundwater seepage were observed within the sand.

In-situ moisture contents within the sand (or sand and gravel) ranged from 4.9% to 26.4% with an average moisture content of 11.6%.

#### 3.1.2.3 Silt

Silt was encountered in Test Pits TP005, 016, and 043, and extended to depths in the order of 0.4 m to 0.6 m below existing grade. The silt was generally noted to contain some clay to clayey, some sand to sandy, low to high plasticity, brown grey, wet to saturated, and was moderately to highly dilatant. Sloughing soil conditions and groundwater seepage were noted within the silt.

In-situ moisture contents of the silt ranged from 14.8% to 34.8% with an average moisture content of 24.8%.

## 3.1.2.4 Clay

Clay was encountered in Test Pit TP004 and TP038, and extended to depths of approximately 0.7 m below existing grade. The clay was generally sandy with some silt, low plastic, brown, and moist to wet. In TP038, the soil composition was noted to be clay and sand. An in-situ moisture content of the clay (or clay and sand) was found to be 11.4%.

### 3.1.2.5 Permafrost

Permafrost consisting primarily of sand or sand and clay was encountered at all test pit locations. The depth to permafrost was measured to be in the order of 0.2 m to 1.1 m below existing ground surface. Test pits were excavated by hand, using a 50 mm diameter hand auger or shovel. Significant penetration into the permafrost was not possible by hand excavation methods, and as such samples were not available for laboratory testing.

#### 3.1.3 Landfill Location

A total of 46 test pits were excavated to depths in the order of 0.33 m to 1.1 m below existing grade at the proposed landfill location. Approximate test pit locations are indicated on Figure 4, **APPENDIX B**.

## 3.1.3.1 Surficial Organics

Surficial organics were encountered at all test pit locations (with the exception of Test Pit LF032) and were noted to have a thickness varying between 10 mm and 0.1 m at the test pit locations. The surficial organic mat consisted of mosses and sod and were generally moist to saturated. Soft and wet surficial subgrade conditions were encountered at the landfill location.

Organic clay was encountered underlying the surficial organic mat or from surface in Test Pits LF022 to LF026, LF030, and LF032, and extended to depths in the order of 75 mm to 0.4 m below ground surface. The organic clay was medium to high plastic, dark grey to black, and moist to saturated.

Buried peat was encountered in Test Pit LF019 from a depth of 0.4 m to 0.43 m. The peat was clayey with trace sand, amorphous granular to fibrous, brown to black, and frozen at the time of the test pitting.

#### 3.1.3.2 Clay

Clay was encountered in all test pits (with the exception of Test Pits LF010, LF013, LF022 to LF024, and LF026), and extended to depths ranging from 0.27 m to 0.9 m below existing grade. The clay was noted to contain some silt to silty, trace sand to sandy, was low to medium plastic, brown to grey, moist to saturated, and was noted to contain occasional gravel. Occasional cobbles and boulders were also noted within the clay.

In Test Pits LF032, LF044, and LF046, the clay stratum was described as being clay and sand, some silt to silty, brown to grey, and contained many cobbles and boulders to greater than 0.3 m in diameter.

In-situ moisture contents within the clay (or clay and sand) ranged from 7.9% to 22.6% with an average moisture content of 13.6%. Results from the Atterberg limits analysis conducted on selected representative samples of the clay (or clay and sand) indicated average Liquid Limits in the order of 15 to 26, and average Plasticity Index in the order of 1 to 8, indicative of low plastic clay.

#### 3.1.3.3 Sand

Sand was encountered in Test Pits LF002, LF010, LF013, LF022, LF023, and LF043, and extended to depths in the order of 0.2 m to 0.8 m below existing grade. The sand was generally silty with trace clay to clayey, moist to saturated, and was noted to contain occasional gravel to gravelly, and occasional cobbles and boulders. Sloughing soil conditions and groundwater seepage were observed within the sand.

In-situ moisture contents of the sand ranged from 5.9% to 14.2% with an average moisture content of 9.7%.

## 3.1.3.4 Permafrost

Permafrost consisting primarily of frozen clay and sand or sand was encountered at all test pit locations. The depth to permafrost was measured to be in the order of 0.15 m to 0.9 m below existing ground surface. Test pits were excavated using a track hoe equipped with a frost bucket (bucket with several 'frost teeth'). Penetration into the permafrost with the track hoe was limited to only 50 mm to 0.15 m for the majority of the permafrost encountered, and as such samples were not available for laboratory testing. In Test Pits LF023, LF024, and LF026, the permafrost was less competent (thawing) and was moderately rippable with the track hoe frost bucket for this size of equipment, and penetrations in the order of 0.14 m to 0.35 m into the permafrost were possible.

Samples of the thawing permafrost from these three test pits were obtained. In-situ moisture contents of the permafrost ranged from 10.0% to 16.2% with an average moisture content of 13.6%.

#### 3.1.4 Potential Borrow Sources

A total of eight potential borrow sources were selected in areas with observed outcroppings of sand or sand and gravel, at areas currently being used as borrow sources, or at areas previously used as borrow sources. Test pits were excavated to depths in the order of 0.2 m to 1.3 m below existing ground surface. The potential borrow source locations are noted on Figure 5, **APPENDIX B**.

Given that the test pit locations were selected in areas either currently active or that were actively used in the past as borrow pits, the test pit records do not indicate any surficial organics. However, it should be expected that development of the potential borrow sources into active pits may require some stripping of organics to access material as the borrow area is expanded.

#### 3.1.4.1 Sand

Sand was the predominant material encountered at the borrow source locations. The sand was encountered from surface at the potential borrow sources in the vicinity of in Test Pits TP045, TP046, TP049, and TP050, and extended to depths in the order of 0.2 m to 1.0 m. The sand was generally silty with trace clay to clayey and some gravel to gravelly, moist to wet, and was noted to contain occasional to frequent cobbles and boulders to greater than 0.3 m in diameter. Sloughing soil conditions and groundwater seepage were observed within the sand.

In-situ moisture contents of the sand ranged from 5.9% to 14.2% with an average moisture content of 9.7%.

#### 3.1.4.2 Sand and Gravel

In situ (i.e. native) sand and gravel was encountered in varying quantities at the Test Pits in the vicinity of TP047 and TP048. The sand and gravel was noted to be poorly graded to gap graded, and was noted to contain trace to some silt, trace clay, was fine grained, rounded to subangular, brown to grey, and moist to wet.

#### 3.1.4.3 Permafrost

Permafrost consisting primarily of frozen sand or clay and sand was encountered at all test pit locations. The depth to permafrost was measured to be in the order of 0.2 m to 1.2 m below existing ground surface. Test pits were excavated using a track hoe equipped with a frost bucket (bucket with several 'teeth'). Penetration into the permafrost with the track hoe was generally limited to only 50 mm to 0.15 m for the majority of the permafrost encountered, and as such the rippability of the permafrost at these locations is considered low for this size of equipment.

## 3.1.4.4 Manufactured Aggregate Resources

One small manufactured aggregate stockpile (owner unknown) in the vicinity of TP051 and two large stockpiles (owned by Kudlik) in the vicinity of TP052 and TP053 were also observed and sampled to assess the potential quality of manufactured aggregate in Clyde River using locally available crushing and blending equipment and manufacturing.

In general, the manufactured aggregates consisted of moderately well-graded to well-graded sand and gravel, with a nominal top size in the order of 25 mm to 50 mm, and is described as sandy with trace silt and trace clay, angular to subrounded, and is generally classified as good quality manufactured aggregate.

# 3.2 Groundwater seepage

In general, groundwater seepage was encountered directly over the permafrost during test pitting in most test pits. Groundwater seepage notes are included on the Test Pit Records in **Appendix C**.

## 4 DISCUSSION AND RECOMMENDATIONS

Based on the information obtained during our geotechnical investigation, the site soil conditions encountered are typical for this area. The conditions are considered manageable for the proposed development; however, site development will likely be complicated by the presence of the soft and wet subgrade conditions.

## 4.1 Depth to Permafrost

The investigation was undertaken in mid-July. It is anticipated that the depth of seasonal thaw of the seasonal zone was not at its maximum. As such, it is anticipated that the total depth of thaw (depth to permafrost) will be slightly deeper than that noted during this investigation.

## 4.2 Landfarm Construction

In the vicinity of the proposed landfarm, excessively soft and wet subgrade conditions were encountered near the south end of the proposed location (in vicinity of Test Pits TP35 and TP36). Firmer, more stable ground was encountered to the north and west; however, subgrade conditions will likely vary significantly with changes in moisture content and seasonally. As such, it is recommended that some flexibility in the as-constructed landfarm location should be allowed for, as the final location may be dependent upon conditions at the time of construction.

The subgrade soils present at the proposed landfarm location generally consisted of low plastic clay and silt. These types of soils typically have relatively high permeability and are not considered suitable for use as a remoulded liner material from a retention standpoint. As such, a synthetic impermeable geomembrane is recommended for this location to properly retain possible contaminants that may leach from the contained materials.

The existing subgrade soils in the vicinity of the liner are also very wet (wet to saturated). These materials can be used as construction fill materials; however, significant drying of the soils should be expected. Given the relatively short construction season, it is considered highly probable that a large percentage of the existing soils could not be adequately dried for use as fill and would need to be wasted. As such, consideration should be given to using fill imported from other areas of the project locale, such as the sand which is readily available in this region, or possibly drier clay and silt soils from other portions of the works.

As noted previously, the measured depth to permafrost in this area was in the order of 0.4 m to 0.8 m. The maximum seasonal thaw depth is anticipated to be slightly deeper, in the order of up to 1.0 m. Given the anticipated usage and short to mid-term service life of the landfarm, it is recommended that a pad at least 1.0 m in thickness be built over the existing soils to protect them from exposure to seasonal thaw such that they remain in a frozen state during the operation of the landfarm and to preserve their natural state.

Prior to fill placement of the landfarm pad, and given the anticipated soft and wet subgrade conditions at the landfarm location, it is recommended to place a medium to heavy weight woven geotextile (such as Nilex<sup>TM</sup> 2006, or approved equivalent) directly over the existing organics. The requirement for the geotextile can be removed; however, a thicker pad in the order of 1.3 m thickness would be required to adequately bridge over the soft and wet subgrade if a geotextile is not used.

Stripping of the organics is not recommended, as stripping will expose the underlying soft and wet soils and will likely be difficult. Additionally, the organics will act as an insulator if left in place to provide additional insulating value to preserve the subgrade soils in a frozen state in the future. That being said, large cobbles and boulders greater than 0.5 m in diameter should be removed from the landfarm footprint prior to geotextile placement.

After placement of the woven geotextile, the 1.0 m thick landfarm pad construction should proceed. Fill soils shall be placed in lifts not exceeding 0.15 m in lift thickness. Each lift of fill shall be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Given the soft and wet subgrade soils, compaction should be limited to static compaction only (i.e. no vibratory compaction) until a cover of at least 0.6 m thickness of fill has been placed.

No equipment shall be allowed to travel directly over the geotextile. As such, fill shall be placed such that it is 'padded' out over the geotextile so that the equipment is always working off of a pad of fill materials and is not travelling over the geotextile. Trucks and other wheeled equipment shall not be allowed to travel over the pad until at least 0.6 m of fill has been placed and compacted over the geotextile.

The landfarm facility should be constructed with perimeter berms of sufficient height to enclose the expected materials. The berms should be constructed directly over the pad as noted above, with inner berms at slope angles of 3 Horizontal to 1 Vertical (3H:1V) or flatter. Depending upon the fill soils used as berm construction, the exterior slope angles would need to be in the order of 3H:1V for sand fill and in the order of 5H:1V for clay and silt fills. The berm crests should have a sufficient width (in the order of 3 m minimum) to permit equipment access and should be a crowned with minimum 2% slopes in order to prevent ponded surface water from softening the fill.

Fill lifts for berm construction should be level, uniform and horizontally parallel. Any large lumps greater than 0.1 m in diameter should be broken up prior to compaction. Cobbles greater than 0.1 m in diameter should be removed from the fill. The fill should be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Fill should be placed in lifts not exceeding 0.15 m in compacted thickness.

After construction of the pad and berms as noted above, the geomembrane should be placed immediately over the berm and pad so as to minimize degradation of the fill due to exposure to the elements. The exposed exterior side slopes will consist of exposed mineral soil. The exposed sand or silt (if used) are highly prone to erosion and should be protected from erosion with a cover of gravel at least 0.15 m in thickness, organics at least 0.1 m in thickness, or synthetic measures (such as rolled erosion control products), or the geomembrane may be installed such that it extends over and covers the exterior side slopes. The geomembrane must be placed in accordance with the manufacturer's specifications; however, the following provides general geomembrane construction considerations.

The geomembrane should be sandwiched between 2 layers of bedding sand at least 150 mm in thickness to minimize damage to the liner from protrusions from the fill (such as sharp rocks) or from the infill materials (metal debris or sharp rocks). If sand fill is used to construct the pad and berms, it is anticipated that the bottom layer of bedding sand is not necessary, provided that no large (50 mm diameter) gravel is present in the surficial portions of the sand fill. The top of the geomembrane would still require a protective layer of bedding sand. If clay or silt fill is used to construct the pad and berms, the top and bottom layers of bedding sand would be required.

As a means of possibly reducing the required pad thickness and associated fill volumes, consideration may be given to reducing the pad thickness to 0.5 m, provided that at least 0.5 m of waste infill material remains in place over the base of landfarm at all times in the summer thaw months during the operation of the landfarm to minimize thaw of the underlying native soils. Leaving at least 0.5 m of infill waste material in place during summer thaw will ensure that a cover of at least 1.0 m over the underlying frozen subgrade is maintained, minimizing seasonal thaw of the underlying natural soils. As noted above, a cover of at least 0.6 m of fill materials over the geotextile is still required prior to trafficking over the geotextile with construction equipment. If this option is utilized, strict construction equipment access controls will be required to restrict access onto the pad during construction. Furthermore, strict operations control will be required during the lifespan of the landfarm to ensure that proper seasonal cover (i.e. at least 0.5 m cover with infill waste material) is maintained at all times during the operation of the landfarm. If these controls can't be implemented or maintained, it is recommended to use the full thickness of 1.0 m for the pad as described above.

Given the proximity of the landfarm to Patricia Bay and potential environmental impacts that may arise if the landfarm were to leak, it is recommended to develop a construction Quality Assurance Control Plan (QACP) and erosion and sediment control (ESC) plan prior to construction such that rigorous construction quality is monitored and maintained throughout the construction process so as to minimize possible future releases of contaminants.

## 4.3 Landfill Construction

In the vicinity of the proposed landfill, the near surface soils were excessively soft and wet to the west (in vicinity of Test Pits LF001 to LF007 and LF025 to LF031) and south of the existing landfill cells and burn pit (in vicinity of Test Pits LF032 to LF046). Firmer, more stable ground was encountered to the north and east (in the vicinity of Test Pits LF008 to LF024); however, subgrade conditions will likely vary significantly with changes in moisture content and seasonally. As with the landfarm, it is recommended that some flexibility in the as-constructed landfill location be allowed as the final location may be dependent upon conditions at the time of construction.

The subgrade soils present at the proposed landfill location generally consisted of low plastic clay and silt. These types of soils typically have relatively high permeability and are not considered suitable for use as remoulded liner material from a retention standpoint. As such, a synthetic impermeable geomembrane is recommended for this location to properly retain possible contaminants that may leach from the contained materials.

The existing subgrade soils in the vicinity of the landfill are also very wet (wet to saturated). These materials can be used as construction fill materials; however, significant drying of the soils should be expected. Given the relatively short construction season, it is considered highly probable that a large percentage of the existing soils could not be adequately dried for use as fill and would need to be wasted. As such, consideration should be given to using fill imported from other areas of the project locale, such as the sand which is readily available in this region, or possibly drier clay and silt soils from other portions of the works.

As noted previously, the measured depth to permafrost in this area was in the order of 0.15 m to 0.9 m. The maximum seasonal thaw depth is anticipated to be slightly deeper, in the order of up to 1.2 m. Given the anticipated long term service life for the landfill, it is recommended that a pad at least 1.2 m in thickness be built over the existing soils to protect them from exposure to seasonal thaw such that they remain in a frozen state during the operation of the landfill and to preserve their natural state.

Prior to fill placement of the landfill pad, and given that the subgrade appears to be in much better condition that at the landfarm, it is recommended to place a medium to heavy weight non-woven geotextile (such as Nilex<sup>TM</sup> 4552 or approved equivalent) directly over the existing organics. The requirement for the geotextile can be removed; however, a thicker pad in the order of 1.5 m thickness would be required to adequately bridge over the soft and wet subgrade if a geotextile is not used.

Stripping of the organics is not recommended, as stripping will expose the underlying soft and wet soils and will likely be difficult. Additionally, the organics will act as an insulator if left in place to provide additional insulating value to preserve the subgrade soils in a frozen state in the future. That being said, large cobbles and boulders greater than 0.5 m in diameter should be removed from the landfill footprint prior to geotextile placement.

After placement of the non-woven geotextile, pad construction should proceed. Fill soils shall be placed in lifts not exceeding 0.15 m in lift thickness. Each lift of fill shall be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Given the soft and wet subgrade soils, compaction should be limited to static compaction only (i.e. no vibratory compaction) until at least 0.5 m thickness of fill has been placed.

No equipment shall be allowed to travel directly over the geotextile. As such, fill shall be placed such that it is 'padded' out over the geotextile so that the equipment is always working off of a pad of fill materials and is not travelling over the geotextile. Trucks and other wheeled equipment shall not be allowed to travel over the pad until at least 0.5 m of fill has been placed and compacted.

The landfill facility should be constructed with perimeter berms of sufficient height to enclose the expected materials. The berms should be constructed directly over the pad as noted above, with inner berms at slope angles of 3 Horizontal to 1 Vertical (3H:1V) or flatter. Depending upon the fill soils used as berm construction, the exterior slope angles would need to be in the order of 3H:1V for sand fill and in the order of 5H:1V for clay and silt fills. The berm crests should have a sufficient width of 3 m minimum to permit equipment access and should be a crowned with a minimum 2% crown in order to provide positive drainage and to minimize ponded surface water from softening the fill.

Fill lifts for berm construction should be level, uniform and horizontally parallel. Any large lumps greater than 0.1 m in diameter should be broken up prior to compaction. Cobbles greater than 0.1 m in diameter should be removed from the fill. The fill should be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Fill should be placed in lifts not exceeding 0.15 m in compacted thickness.

After construction of the pad and berms as noted above, the geomembrane should be placed immediately over the berm and pad so as to minimize degradation of the fill due to exposure to the elements. The exposed exterior side slopes will consist of exposed mineral soil. The exposed sand or silt (if used) are highly prone to erosion and should be protected from erosion with a cover of gravel at least 0.15 m in thickness, organics at least 0.1 m in thickness, or synthetic measures (such as rolled erosion control products), or the geomembrane may be installed such that it extends over and covers the exterior side slopes. The geomembrane must be placed in accordance with the manufacturer's specifications; however, the following provides general geomembrane construction considerations.

The geomembrane should be sandwiched between 2 layers of bedding sand at least 0.15 m in thickness to minimize damage to the liner from protrusions from the fill (such as sharp rocks) or from the infill materials (metal debris or sharp rocks). If sand fill is used to construct the pad and berms, it is anticipated that the bottom layer of bedding sand is not necessary, provided that no large (50 mm diameter) gravel is present in the surficial portions of the sand fill. The top of the geomembrane would still require a protective layer of bedding sand. If clay or silt fill is used to construct the pad and berms, the top and bottom layers of bedding sand would be required.

As a means of possibly reducing the required pad thickness and associated fill volumes, consideration may be given to reducing the pad thickness to 0.6 m, provided that at least 0.6 m of waste infill material remains in place over the base of landfill at all times in the summer thaw months during the operation of the landfill to minimize thaw of the underlying native soils. Leaving at least 0.6 m of infill waste material in place during summer thaw will ensure that the cover of at least 1.2 m over the underlying frozen subgrade is maintained, minimizing seasonal thaw of the underlying natural soils. As noted above, a cover of at least 0.6 m of fill materials over the geotextile is still required prior to trafficking over the geotextile with construction equipment. If this option is utilized, strict construction equipment access controls will be required to restrict access onto the pad during construction. Furthermore, strict operations control will be required during the lifespan and operation of the landfill to ensure that proper seasonal cover (i.e. at least 0.6 m cover with infill waste material) is maintained at all times during the operation of the landfill. If these controls can't be implemented or maintained, it is recommended to use the full thickness of 1.2 m for the pad as described above.

Given the proximity of the landfill to Patricia Bay and potential environmental impacts that may arise if the landfill were to leak, it is recommended to develop a construction Quality Assurance Control Plan (QACP) prior to construction such that rigorous construction quality is monitored and maintained throughout the construction process so as to minimize possible future releases of contaminants.

# 4.4 Temporary Access Road Construction

# 4.4.1 Subgrade Conditions

The subgrade conditions throughout the roadway alignment generally consisted of sand; however, localized soft and wet zones are anticipated along the roadway alignment. As noted previously, the measured depth to permafrost along the alignment was in the order of 0.2 m to 1.1 m. Given the anticipated short term service life of the access road (two years) and the potential heavy-truck traffic, it is recommended that the roadway embankment be constructed at least 1.2 m in thickness over the existing soils to protect them from exposure to seasonal thaw such that they remain in a primarily frozen state during the operation of the roadway and to preserve their natural state.

## 4.4.2 Design Assumptions

It is understood that the temporary access road is to be designed for use as a short-term, temporary, low-speed construction access only, and is not intended for use as a long-term formal public roadway. As such, it is proposed to incorporate the following design considerations into the design and construction of the temporary access road:

- Road width (shoulder to shoulder) of 4 m to 5 m (minimum)
  - Road designed for one-way traffic
- Pullouts provided at least every 500 m, at crests of hills, or at areas with limited sight lines, to allow oncoming traffic to pull over to accommodate passing of vehicles
  - o Road width 12 m (minimum) at pullout locations
- Road constructed entirely in fill (i.e. no cutting or balancing of fills)
- Side slopes in the order of 2H:1V for sand fills and 3H:1V for clay or silt fills
- Vertical slope angles a maximum of 8% (steeper slopes will be difficult for construction vehicles to traverse especially when loaded and at slow speeds)
- Minimum fill height of 1.2 m
- Temporary culverts at watercourse crossings where required

# 4.4.3 Roadway Construction

Throughout the roadway alignment, the subgrade generally consisted of silt and sand and appeared to be relatively stable ground with only localized and isolated soft and wet zones. However, subgrade conditions will likely vary significantly with changes in moisture content and seasonally. As such, it is recommended that some flexibility in the as-constructed roadway alignment be allowed as the final location may be dependent upon conditions at the time of construction.

As noted previously, the measured depth to permafrost in this area was in the order of 0.2 m to 1.1 m. The maximum seasonal thaw depth is anticipated to be slightly deeper. As such, it is recommended that a roadway embankment at least 1.2 m in thickness be built over the existing soils to protect them from exposure to seasonal thaw such that they remain in a primarily frozen state during the operation of the roadway and to preserve their natural state.

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Placing thinner roadway embankment fill may result in thaw and softening of the underlying subgrade. Thawed and softened subgrade will likely lead to localized subgrade failures, increased maintenance during construction traffic, and possible total loss of serviceability and possible loss of use of the roadway during construction activities.

As noted, it is recommended to construct the roadway entirely in fill and not to include any cutting as a means of balancing fill volumes. Cutting will expose the underlying frozen soils that will soften when thawed. Thawed and softened subgrade will likely lead to localized subgrade failures, increased maintenance during construction traffic, and possible total loss of serviceability and possible loss of use of the roadway during construction activities.

The existing subgrade soils in the vicinity of the roadway generally consist of sand; however, no active or apparent borrow sources of sand were evident along the roadway alignment. As such, it is recommended to use fill imported from other areas of the project locale, such as the sand which is readily available in this region, or possibly drier clay and silt soils from other portions of the works.

Given that the subgrade appears to be in much better condition that at the landfarm or the landfill, and given that the roadway is designed to be used as a short-term construction access only, the use of geotextile throughout the majority of the alignment is generally not required for an embankment height of 1.2 m, and fill can be placed directly over the subgrade. Note that the use of geotextile should be anticipated for isolated soft and wet zones. For preliminary design, it is anticipated that approximately 20% of the roadway length would require a medium to heavy weight non-woven geotextile (Nilex<sup>TM</sup> 4552 or approved equivalent).

Stripping of the organics is not recommended, as stripping will expose the underlying soft and wet soils and will likely be difficult. Additionally, the organics will act as an insulator if left in place to provide additional insulating value to preserve the subgrade soils in a frozen state in the future. That being said, large cobbles and boulders greater than 0.5 m in diameter should be removed from the landfill footprint prior to geotextile placement.

Fill soils shall be placed in lifts not exceeding 0.15 m in lift thickness. Each lift of fill shall be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Given the soft and wet subgrade soils, compaction should be limited to static compaction only (i.e. no vibratory compaction) until at least 0.5 m thickness of fill has been placed.

No equipment shall be allowed to travel directly over the subgrade. As such, fill shall be placed such that it is 'padded' out over the subgrade so that the equipment is always working off of a pad of fill materials and is not travelling over the subgrade. Trucks and other wheeled equipment shall not be allowed to travel over the embankment fill until at least 0.6 m of fill has been placed and compacted over the subgrade.

Given the temporary, non-public use planned for the access road, side slopes shall be at least 2H:1V for sand fills and 3H:1V for clay or silt fill. Fill lifts for roadway construction should be level and uniform. Any large lumps greater than 0.1 m in diameter should be broken up prior to compaction. Cobbles greater than 0.1 m in diameter should be removed from the fill. The fill should be moisture conditioned to within ±2% of optimum moisture content (OMC) and compacted to 95% standard Proctor maximum dry density (SPMDD). OMC and SPMDD are to be determined in accordance with ASTM D-698. Fill should be placed in lifts not exceeding 0.15 m in compacted thickness.

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The roadway should be surfaced with a 0.1 m to 0.15 m thick wear layer of gravel material to increase surface durability and dust control. Furthermore, the sand may have a high rolling resistance for the haul equipment, and the surfacing gravel will assist in providing traction and provide a more stable platform for the haul equipment to travel on. That said maintenance of the roadway should be expected throughout the duration of usage of the roadway.

Given the proximity of the roadway to Patricia Bay and potential environmental impacts that may arise if embankment fill were to erode, it is recommended to develop a construction Quality Assurance Control Plan (QACP) incorporating an erosion and sediment control (ESC) plan prior to construction such that rigorous construction quality is monitored and maintained throughout the construction process so as to minimize possible future releases of contaminants.

#### 4.4.3.1 Embankment Fill Alternatives

It is understood that fill quantity reducing alternatives may be required for the roadway for this project. As such, the following provides a summary and comparison of potential reduction methods.

#### MECHANICAL REINFORCEMENT

One option to reduce the required embankment fill height and still maintain a functional level of service would be to use a mechanical reinforcement, such as a woven geotextile, a geogrid, or a combination of the two. Using a woven geotextile (such as Nilex™ 2006, or approved equivalent) could reduce the overall required fill thickness from 1.2 m to 0.9 m. Using a roadway improvement geogrid (such as Tensar™ TX140, or approved equivalent) could reduce the overall required fill thickness from 1.2 m to 0.8 m. Using a combination of the two products (woven geotextile and geogrid) could reduce the overall required fill thickness by as much as 50%, from 1.2 m to 0.6 m. A cost benefit analysis of the costs of the materials versus the costs of borrow materials would need to be undertaken. If requested, this assessment could be undertaken during the detailed design phase. However, based on our experience, the costs associated with shipping the quantity of geotextile or geogrid typically makes these options cost prohibitive for projects in remote arctic locations.

#### ACCEPTANCE OF REDUCED SERVICEABILITY LEVEL

Another option to reduce the overall fill thickness would be to accept a reduced level of serviceability. This acceptance would need to be provided by the client. The design and construction considerations provided in the previous section were based on a periodic routine expenditure of maintenance and/or reconstruction by the contractor during the operation of the roadway. If it were decided by the client that the serviceability would be such that the contractor would be required to implement continuous and possibly large-scale reconstruction efforts during the operation of the roadway, the embankment height could be reduced. The embankment height would be designed after discussions with the client. Note that based on our experience, this type of design assumption typically results in higher bid costs from the contractor as they have to factor in the remedial measures into their bid price. Furthermore, this type of design assumption typically results in a higher potential for claims and impact to the schedule (i.e. delays) should be expected due to contractor efforts being required to repair the roadway rather than add to production.

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## 4.4.4 Watercourse Crossings

Several substantial crossings (referred to as Crossings #1 to #4 on attached Figures 3 (A to C), **APPENDIX B**), with observed water depths in the order of 200 mm to 300 mm (at the existing trail crossing locations) are present along the proposed alignment, primarily near the Old Town Site. All crossings were traversable with ATVs, and it is anticipated that construction equipment, such as haul trucks will also be able to traverse (ford) these watercourses. However, from an environmental standpoint it is anticipated that the largest crossing (Crossing #1) will require some form of crossing structure such as temporary culverts or bridge structures, especially if they are found to be fish-bearing watercourses.

Given the anticipated costs associated with temporary bridge structures, it is anticipated that temporary culverts will be used to facilitate crossing the larger watercourses if travel through the crossing is not permitted for environmental reasons. Note that this assignment does not include determination if it is allowable to travel through these water courses from the GNU, Department of Fisheries and Oceans, or other applicable regulatory agencies.

If traversing through the water courses or placing temporary culverts into the water courses to facilitate construction traffic is deemed unacceptable by regulatory agencies, we would provide foundation recommendations for the temporary bridge structures. However, the recommendations included herein are based on the premise that either traversing through the watercourses or installing temporary culverts will be permitted provided that actions are taken to minimize sediment releases into the water courses and adjacent Patricia Bay.

#### **TEMPORARY CULVERT CROSSINGS**

As noted, the observed crossing depths were in the order of 200 mm to 300 mm. These crossings can likely be traversed via temporary culvert infills. A general 'rule-of-thumb' for temporary culvert crossings is to ensure that the cross sectional area of the culverts installed is at least twice that of the cross sectional area of the water courses at the crossing locations. Using this rule-of-thumb should permit the volume of water present to flow through the culverts at roughly half full.

Typically, culvert cover is in the order of 1 to 2 times the culvert diameter. Using larger diameter culverts will result in requiring fewer culverts to cross the water courses; however, larger diameter culverts also require more fill cover over top to distribute vehicle loads so as not to overload the culverts structurally. Note that all culverts must be installed in accordance with the manufacturer's specifications. The final sizing and configuration of the temporary culvert crossings for the requisite water course crossings will be completed for the final design.

It should be noted that some regulatory agencies may require that a formal hydrological and hydraulic assessment be completed to properly size the culverts such that they permit unrestricted flow of the water courses to Patricia Bay. This formal study could be completed during final detailed design phases of the project if required.

To minimize sediment release, the culverts will be backfilled using clean, sound and durable rock with a minimum diameter of 200 mm (8"). Larger diameter rocks (in the order of 300 mm diameter) are recommended for placement directly into the watercourse adjacent to the culverts with incrementally smaller rocks placed over each lift; however, no rocks or particles smaller than 200 mm diameter are to be used within 3 m of the watercourse. The surfacing gravel noted previously will not be placed over the watercourse fills or within 3 m of the watercourse itself to minimize potential sedimentation into the watercourses. Unfortunately, this will result in relatively rough roadways at the crossing location.

#### 4.5 Potential Borrow Sources Evaluation

As noted, a total of eight potential borrow sources were identified during the site reconnaissance. These borrow sources were selected as either being currently active borrow sources or borrow sources previously active. Figure 5 in **APPENDIX B** shows the approximate borrow source locations.

It is anticipated that using these already developed borrow sources would not require further permitting or environmental review as they are already developed borrow sources. However, if environmental regulators require permits prior to use of materials from these borrow sources, it is recommended to obtain these permits prior to excavation and removal of materials. A review of the permits required to excavate material from the borrow areas was not part of the scope for this study.

The following provides estimated available quantities of borrow materials from the assessed borrow source locations based on the findings from this investigation and assuming use of materials from these sources is approved.

		Average Depth of Unfrozen Material (m)	Estimated Available Borrow Material Quantities *	
Borrow Source Location	Borrow Source Area (m²)		Sand (m³)	Natural Sand and Gravel (m³)
TP017 (Existing Quarry)	15,000 t 20,000	0.2	3,000 to 4,000	1,500 to 2,500 **
TP045	1,000 to 1,500	0.5	500 to 1,500	0
TP046	1,000 to 2,000	1.0	1,000 to 2,000	0
TP047	14,000 to 16,000	0.7	9,800 to 11,200	4,200 to 4,800
TP048	8,000 to 10,000	0.65	4,200 to 5,200	800 to 1,000
TP049	12,000 to 14,000	0.55	5,400 to 6,300	0
TP050 ***	4,000 to 5,000	0.6	2,400 to 3,000	600 to 700 ***
TP051	5,000 to 6,000	0.6	3,000 to 3,600	0
Estimated Total Volume of Available Materials			29,300 to 36,800	7,100 to 9,000

<sup>\*</sup> Estimated available quantities based on thawed soil depth noted during test pitting, and based on existing stripped (i.e. open) areas. Quantity noted does not include potential quantities available from opening and developing (i.e. stripping organics) additional areas to increase surface area of existing borrow areas.

<sup>\*\*</sup> Quarry appears to have been used in the past by others to obtain rock by blasting methods. Rip rap sized blast rock readily available in existing stockpiles or by blasting.

A stockpile (ownership unknown) was also present adjacent to TP050. Stockpile appeared to consist of well-graded 25 mm crush gravel, with estimated volume of 600 m<sup>3</sup> to 700 m<sup>3</sup>.

As noted, the estimated total volumes of available borrow materials presented above is based on readily available seasonally unfrozen materials from already established borrow source locations, and does not include increasing the size (surface areas) or depth of the borrow source locations.

Based on the preliminary design assumptions for the facilities, it is anticipated that there is a shortfall of borrow materials readily available for use at the investigated (i.e. existing) borrow areas. Note that actual required volumes will be finalized during the final detailed design phase. As such, it I anticipated that new borrow sources will need to be opened and developed to facilitate the construction of these new facilities. It should be noted that opening and developing new borrow sources is likely subject to environmental permitting and regulations. All required permits and approvals should be obtained prior to developing new borrow sources.

The most likely area for new borrow source development is in the vicinity of TP048 to TP051. This area currently encompasses three existing borrow sources, which could be combined into one large borrow area with a total area in the order of 100,000 m<sup>2</sup>. If this area were to be combined into one large borrow source, it is anticipated that an additional 30,000 m<sup>3</sup> to 50,000 m<sup>3</sup> of sand could be available.

As noted previously, the majority of the soils available in these borrow source locations consists primarily of sand with varying degrees of gravel. Based on our observations during this investigation, as well as discussions with Kudlik site representatives, it is understood that native well-graded gravel is not readily available in Clyde River, and that if 'engineered gravel' is required or preferred, it must be manufactured. Kudlik went on to say that it was 'easier and cheaper' for them to blast rocks from a quarry located near the north end of the proposed access road, haul the blast rock to their pits near the landfill, crush the blast rock using their mobile crusher and screens, and blend to the desired gradation rather than screen the gravels from the existing site soils and blend to the desired gradation.

Kudlik's reasoning was that 'less than 10%' of the site soils are gravels, resulting in 90% 'waste' sand when they need to produce gravel. Their estimated unit cost (2010 dollars) was in the order of \$300/m<sup>3</sup> for a well-graded 25 mm crush gravel, such as that used at the Clyde River Airport runway.

Given this anecdotal evidence on site, the anticipated high unit costs for gravels, as well as the fact that the only facility truly requiring gravel is the access road (which is designed as a short-term private access road), it is suggested that the requirements and designed use of engineered gravel be limited. For the access road, the only requirement for engineered gravel is for the surface course wearing layer. As such, this layer has been designed to be limited to 100 mm to 150 mm in thickness in an effort to reduce the required design quantities of this material.

## 5 CLOSURE

This report has been prepared for the sole benefit of Government of Nunavut c/o Nunami Stantec Limited and their agents, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and Government of Nunavut c/o Nunami Stantec Limited. Any use, which a third party makes of this report, is the responsibility of such third party. Use of this report is subject to the Statement of General Conditions provided in **Appendix A**.

It is the responsibility of Government of Nunavut c/o Nunami Stantec Limited, who is identified as "the Client" within the Statement of General Conditions, and its agents to review the conditions and to notify Stantec should any of these not be satisfied. The Statement of General Conditions addresses the following:

- Use of the report
- Basis of the report
- Standard of care
- Interpretation of site conditions
- · Varying or unexpected site conditions
- Planning, design or construction

We trust the above information meets with your present requirements. Should you have any questions or require further information, please contact us. This report has been prepared by Shawn McArthur, P.Eng., and was reviewed by Yves Cormier, P.Eng., PMP.

Respectfully Submitted,

#### **NUNAMI STANTEC LIMITED**

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# **APPENDIX A**

Statement of General Conditions

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Stantec and the Client. Any use which a third party makes of this report is the responsibility of such third party.

BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Stantec's present understanding of the site specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state or province of execution for the specific professional service provided to the Client. No other warranty is made.

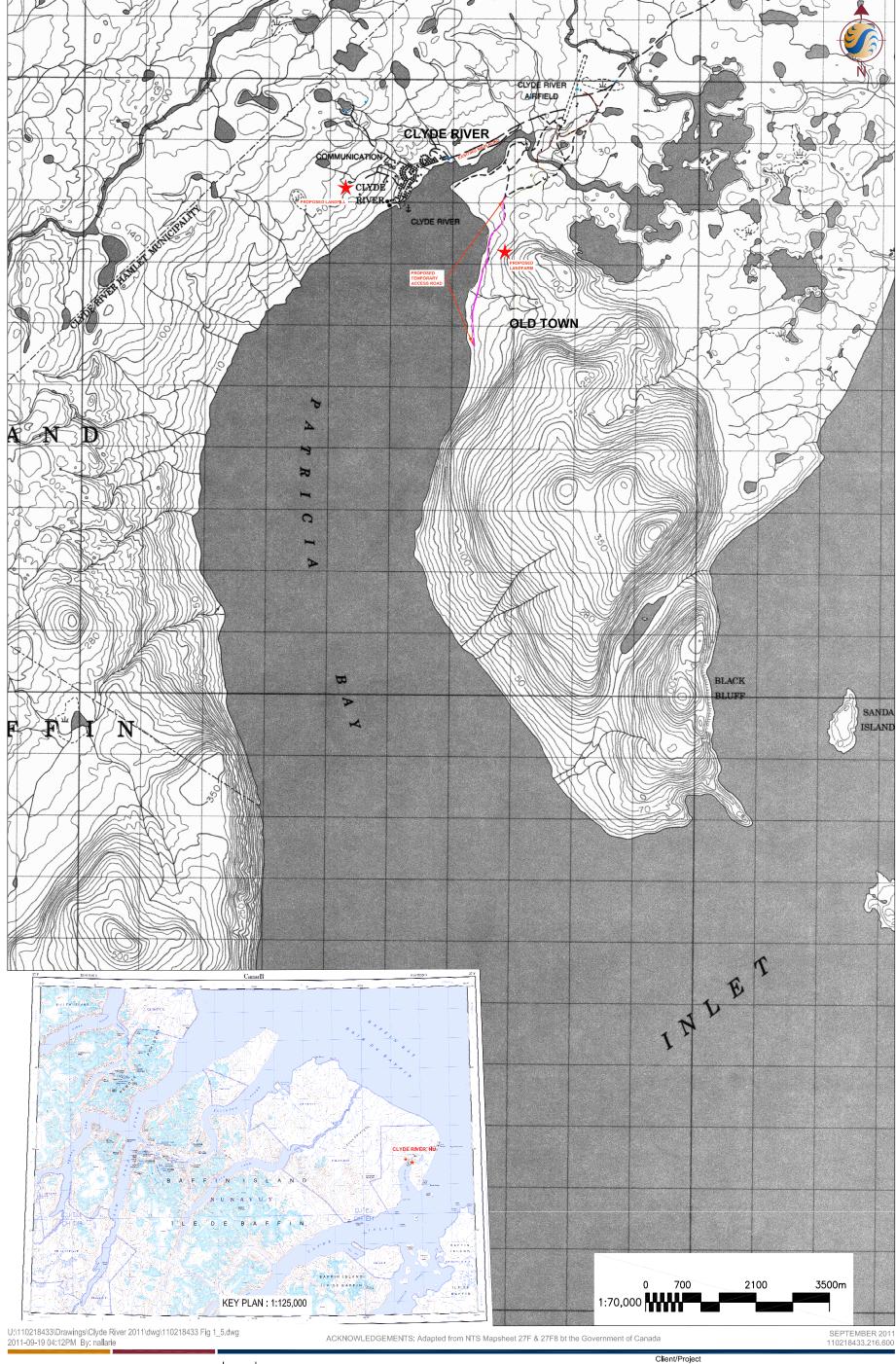
INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock and groundwater conditions as influenced by geological processes, construction activity, and site use.

VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec will not be responsible to any party for damages incurred as a result of failing to notify Stantec that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec, sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Stantec cannot be responsible for site work carried out without being present.

# **APPENDIX B**

Figures



Legend

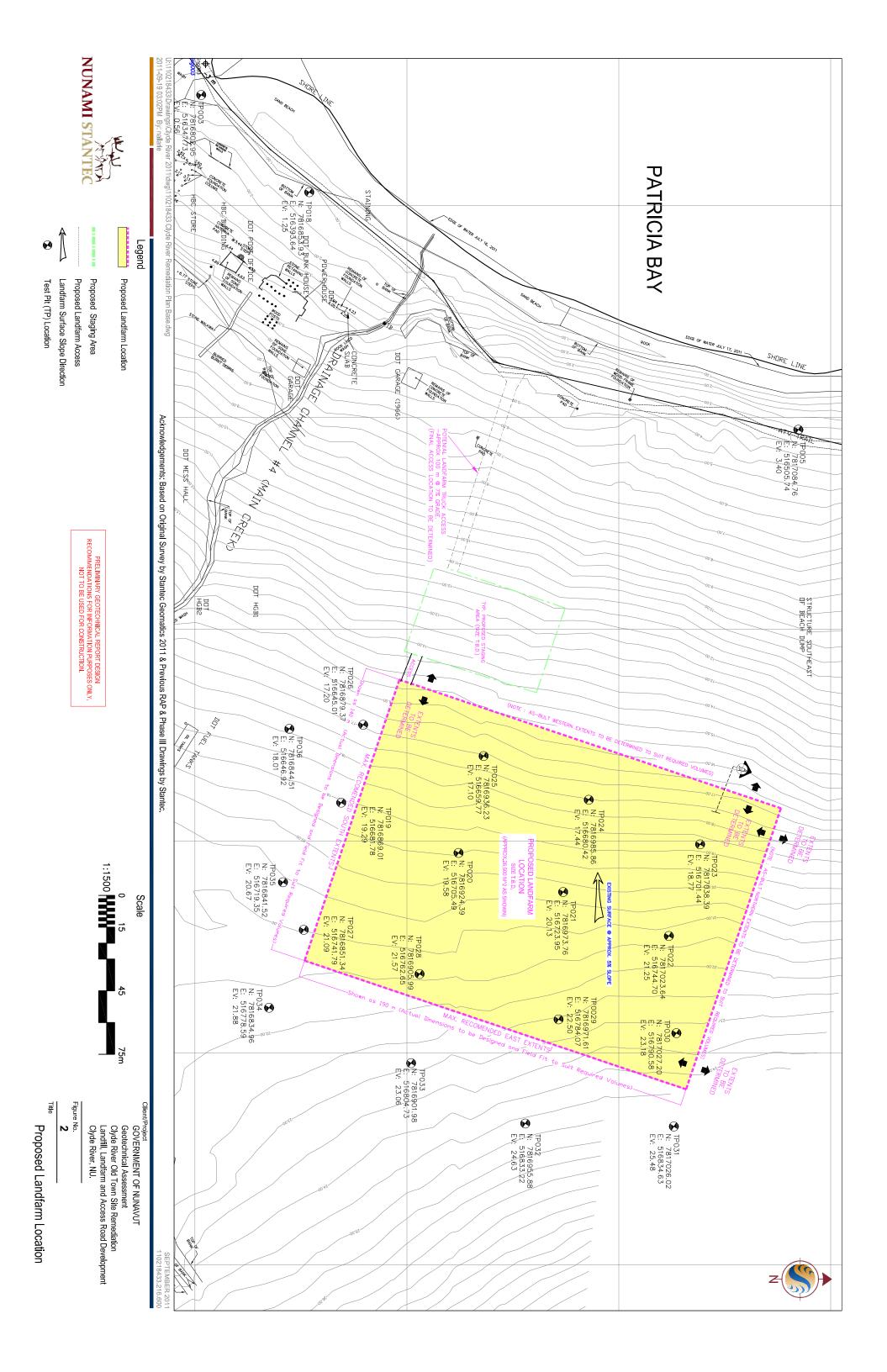


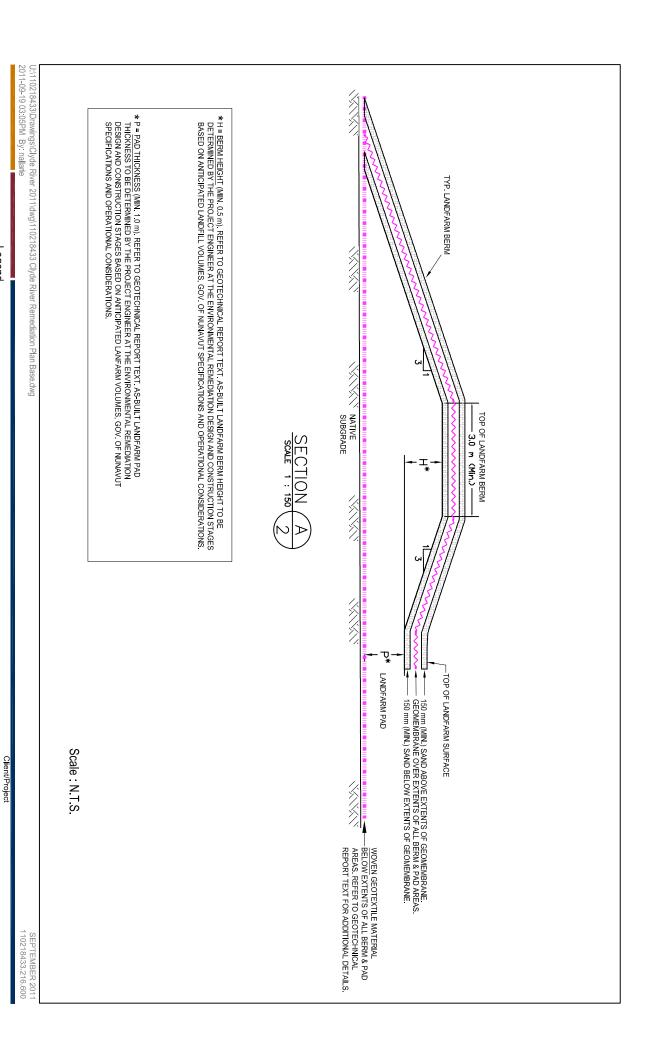
PROPOSED ENVIRONMENTAL REMEDIATION FACILITY SITES

PROPOSED TEMPORARY ACCESS ROAD

Client/Project
GOVERNMENT OF NUNAVUT
Geotechnical Assessment
Clyde River Old Town Site Remediation
Landfill, Landfarm and Access Road Development
Clyde River, NU.







**NUNAMI STANTE** 

WOVEN GEOTEXTILE MATERIAL
GEOMEMBRANE MATERIAL

\*\*\*\*\*\*\*

NATIVE SUBGRADE

PRELIMINARY GEOTECHNICAL REPORT DESIGN
RECOMMENDATIONS FOR INFORMATION PURPOSES ONLY.
NOT TO BE USED FOR CONSTRUCTION.

Figure No.

Clyde River, NU.

Clyde River Old Town Site Remediation

GOVERNMENT OF NUNAVUT Geotechnical Assessment

Landfill, Landfarm and Access Road Development

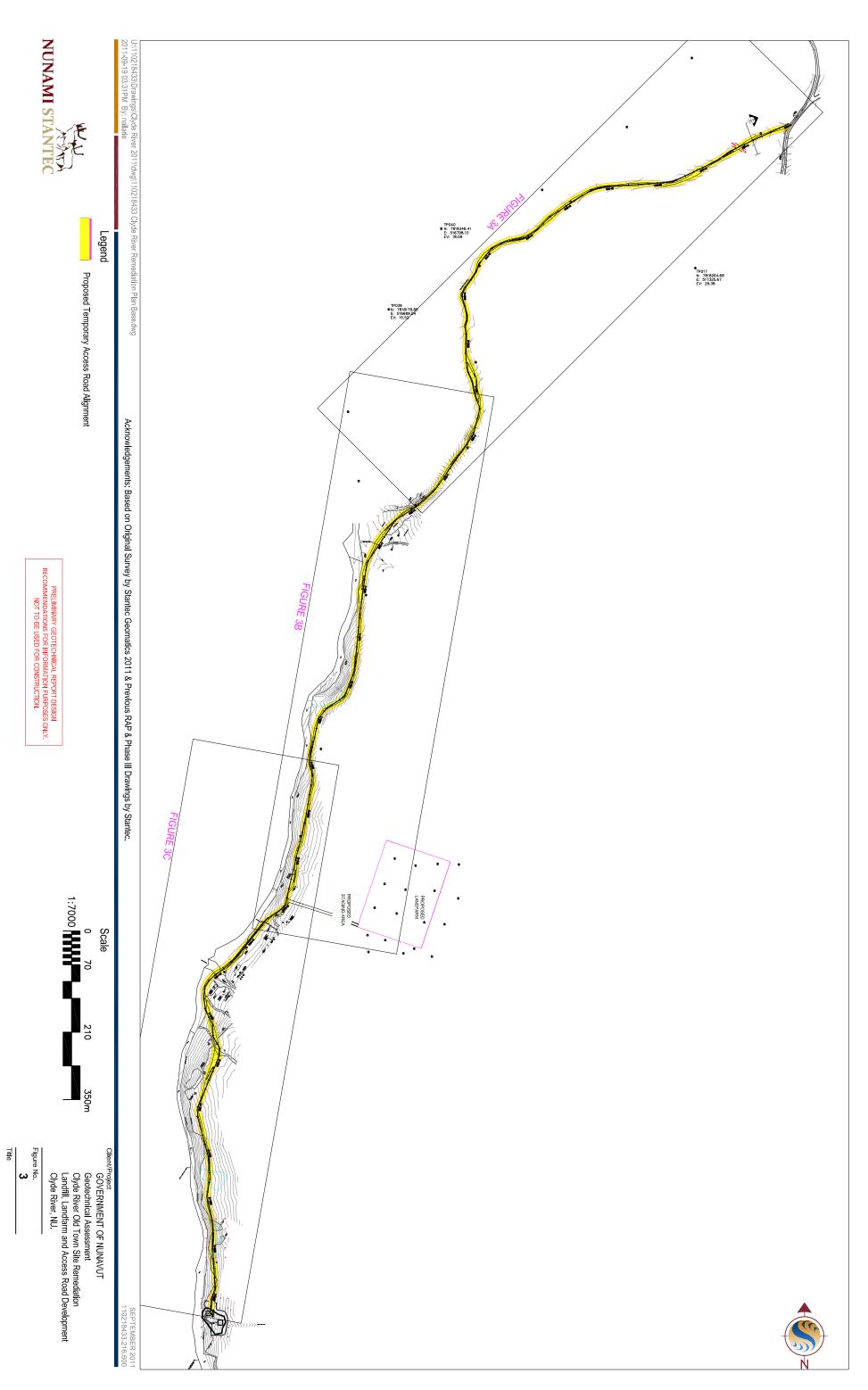
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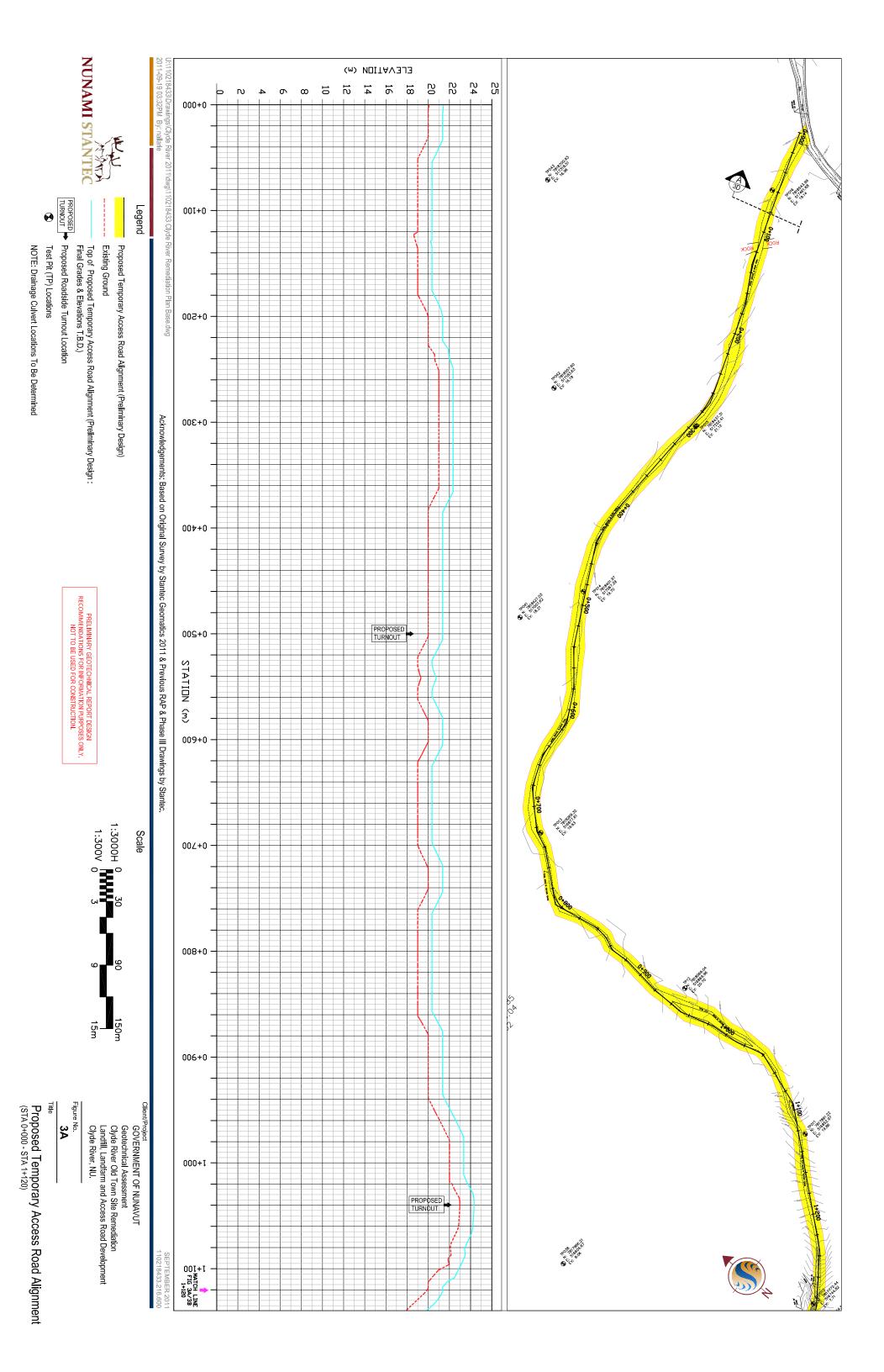
Typ. Proposed Landfarm Section A-A'

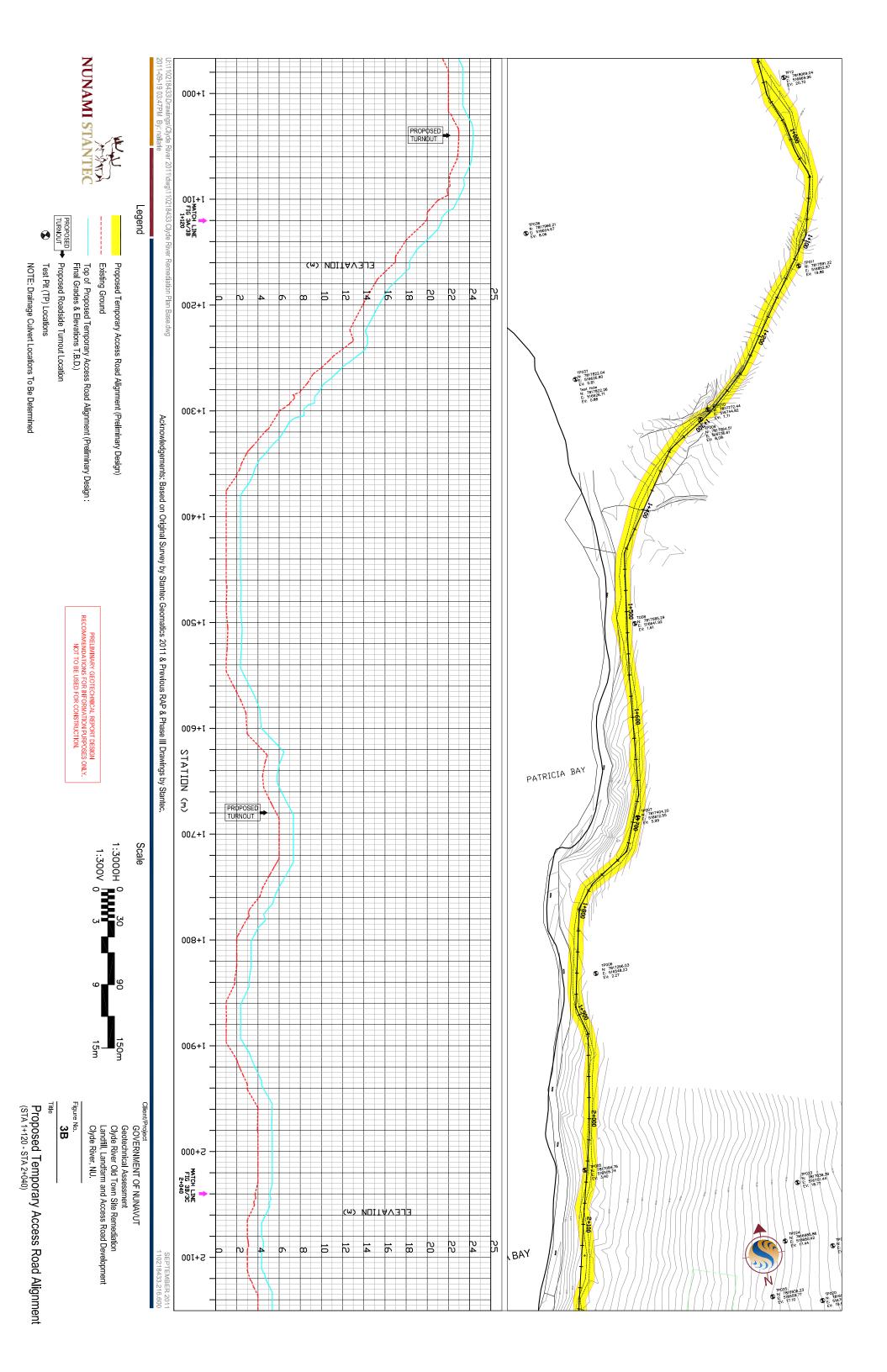
SAND LAYER

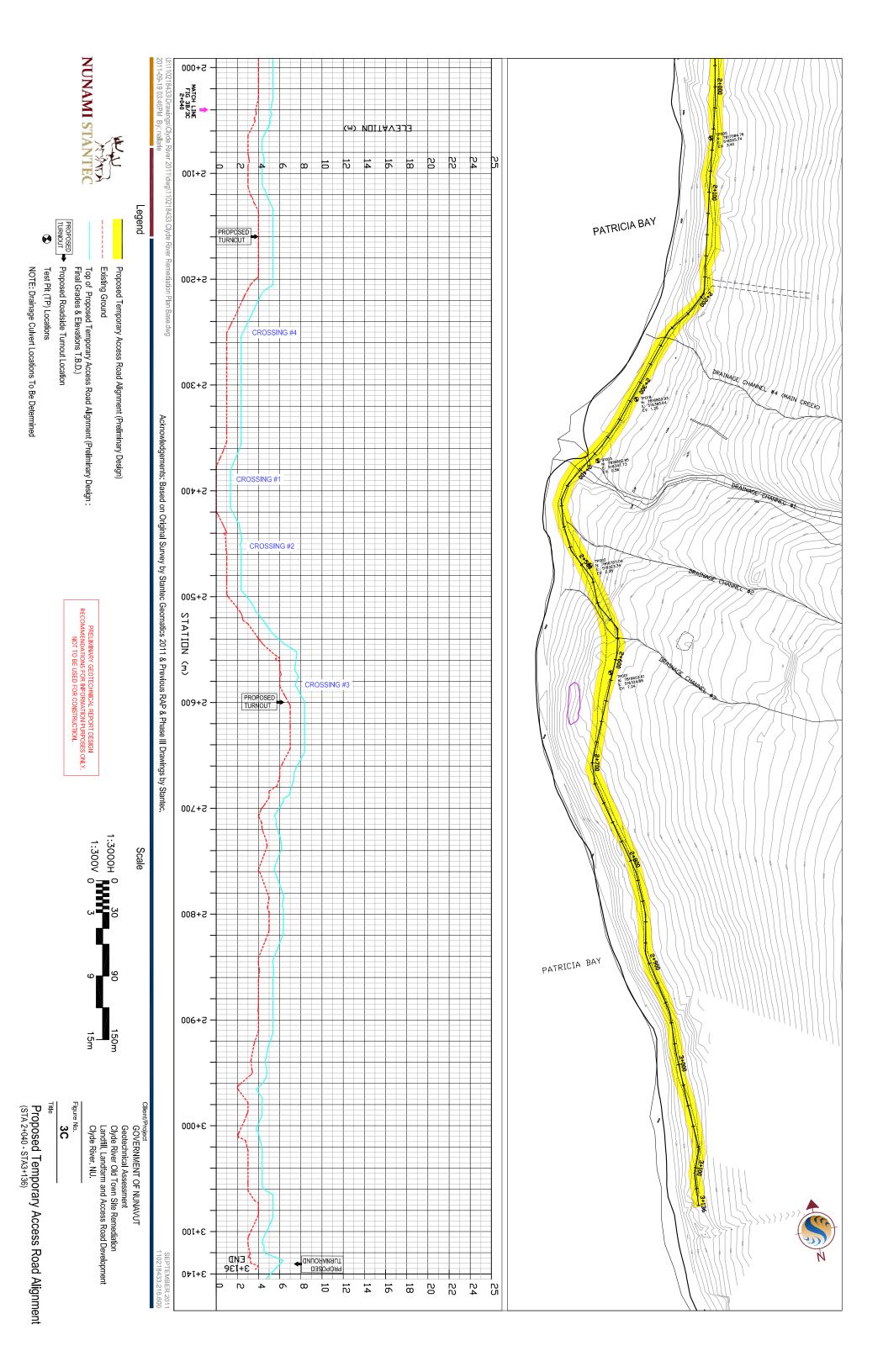
Legend

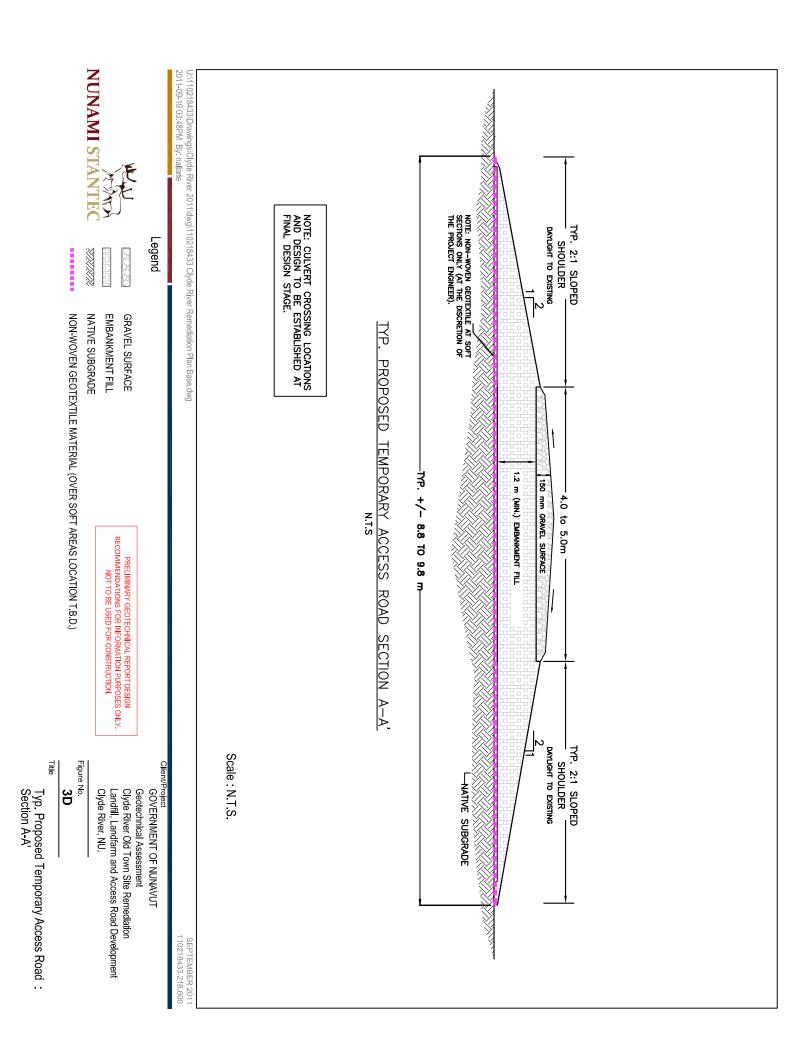


Proposed Temporary Access Road Alignment











KAVIK-STANTEC

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SURFACE SLOPE DIRECTION

PRELIMINARY GEOTECHNICAL REPORT DESIGN
RECOMMENDATIONS FOR INFORMATION PURPOSES ONLY.
NOT TO BE USED FOR CONSTRUCTION.

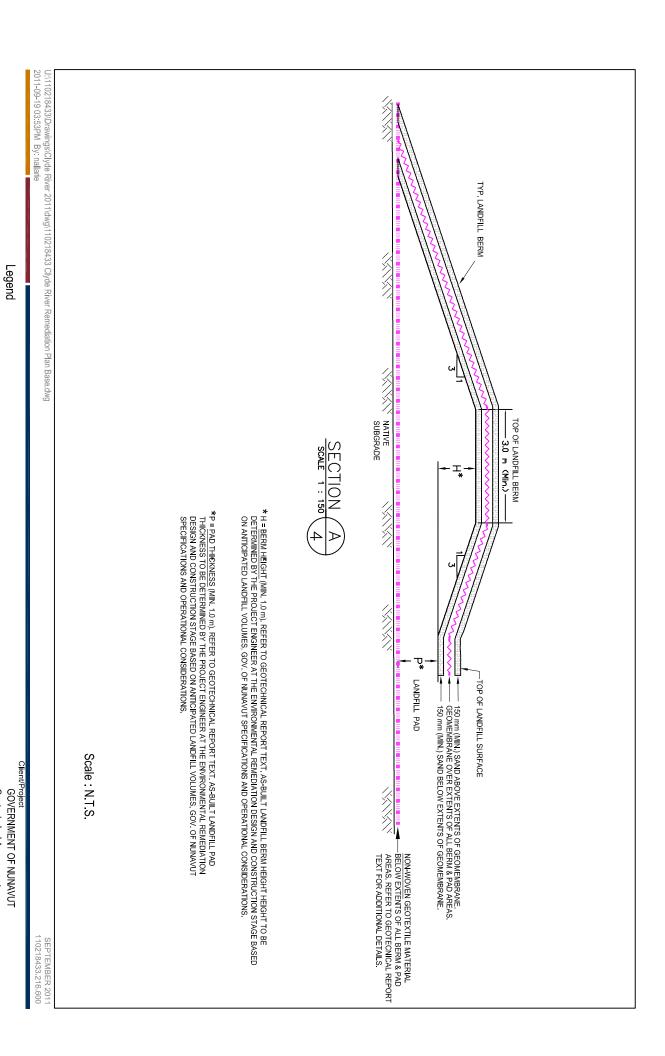
Figure No.

Title

Landfill, Landfarm and Access Road Development Clyde River, NU.

Proposed Landfill Location

TEST PIT (TP) LOCATIONS



**NUNAMI STANTE** 

WOVEN GEOTEXTILE MATERIAL
GEOMEMBRANE MATERIAL

SAND LAYER
NATIVE SUBGRADE

PRELIMINARY GEOTECHNICAL REPORT DESIGN
RECOMMENDATIONS FOR INFORMATION PURPOSES ONLY.
NOT TO BE USED FOR CONSTRUCTION.

Figure No.

Clyde River, NU.

Clyde River Old Town Site Remediation

Geotechnical Assessment

Landfill, Landfarm and Access Road Development

**4**A

Τte

Typ. Proposed Landfill Section A-A'

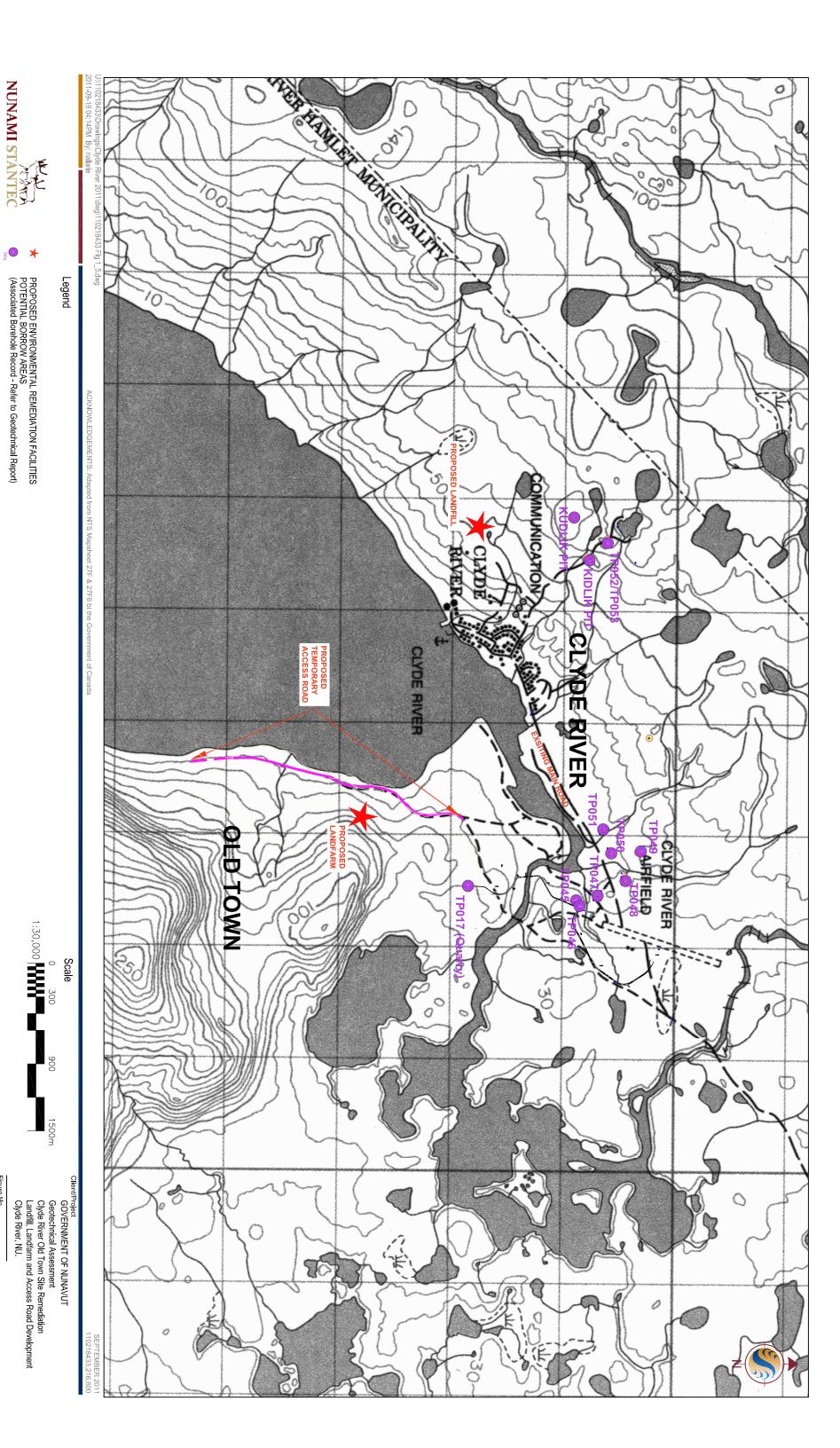


Figure No.

Potential Borrow Areas

# **APPENDIX C**

Standard Terms and Symbols

Borehole Records

## SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

## **SOIL DESCRIPTION**

## Terminology describing common soil genesis:

Topsoil	- mixture of soil and humus capable of supporting vegetative growth				
Peat	- mixture of visible and invisible fragments of decayed organic matter				
Till	- unstratified glacial deposit which may range from clay to boulders				
Fill	- material below the surface identified as placed by humans (excluding buried services)				

## Terminology describing soil structure:

Desiccated	- having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.			
Fissured - having cracks, and hence a blocky structure				
Varved	- composed of regular alternating layers of silt and clay			
Stratified - composed of alternating successions of different soil types, e.g. silt and sand				
Layer - > 75 mm in thickness				
Seam	- 2 mm to 75 mm in thickness			
Parting - < 2 mm in thickness				

## Terminology describing soil types:

The classification of soil types are made on the basis of grain size and plasticity in accordance with the Modified Unified Soil Classification System (MUSCS) and in accordance with the Canadian Foundation Engineering Manual 4<sup>th</sup> Edition (Canadian Geotechnical Society, 2006). The classification excludes particles larger than 75 mm (3 inches). The MUSCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

## Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris):

Terminology describing materials outside the USCS, (e.g. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present:

Trace, or occasional	Less than 10%	
Some	10-20%	
Frequent	> 20%	

## Terminology describing compactness of cohesionless soils:

The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test N-Value (also known as N-Index). A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value	
Very Loose	<4	
Loose	4-10	
Compact	10-30	
Dense	30-50	
Very Dense	>50	

# Terminology describing consistency of cohesive soils:

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests.

Consistency	Undrained Shear Strength		
Consistency	kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	
Soft	0.25 - 0.5	12.5 - 25	
Firm	0.5 - 1.0	25 - 50	
Stiff	1.0 - 2.0	50 – 100	
Very Stiff	2.0 - 4.0	100 - 200	
Hard	>4.0	>200	



## **ROCK DESCRIPTION**

Terminology describing rock quality:

remineregy accombing reen quanty:			
RQD	Rock Mass Quality		
0-25	Very Poor		
25-50	Poor		
50-75 Fair			
75-90	Good		
90-100	Excellent		

Rock quality classification is based on a modified core recovery percentage (RQD) in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be due to close shearing, jointing, faulting, or weathering in the rock mass and are not counted. RQD was originally intended to be done on NW core; however, it can be used on different core sizes if the bulk of the fractures caused by drilling stresses are easily distinguishable from *in situ* fractures. The terminology describing rock mass quality based on RQD is subjective and is underlain by the presumption that sound strong rock is of higher engineering value than fractured weak rock.

Terminology describing rock mass:

Spacing (mm)	Joint Classification	Bedding, Laminations, Bands	
> 6000	Extremely Wide	-	
2000-6000	Very Wide	Very Thick	
600-2000	Wide	Thick	
200-600	Moderate	Medium	
60-200	Close	Thin	
20-60	Very Close	Very Thin	
<20	Extremely Close	Laminated	
<6	-	Thinly Laminated	

Terminology describing rock strength:

Strength Classification	Unconfined Compressive Strength (MPa)	
Extremely Weak	<1	
Very Weak	1 – 5	
Weak	5 – 25	
Medium Strong	25 – 50	
Strong	50 – 100	
Very Strong	100 – 250	
Extremely Strong	> 250	

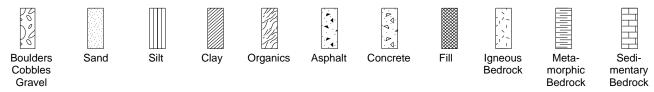
Terminology describing rock weathering:

Term	Description		
Fresh	No visible signs of rock weathering. Slight discoloration along major discontinuities		
Slightly Weathered	Discolouration indicates weathering of rock on discontinuity surfaces. All the rock material may be discoloured.		
Moderately Weathered	Less than half the rock is decomposed and/or disintegrated into soil.		
Highly Weathered	More than half the rock is decomposed and/or disintegrated into soil.		
Completely Weathered	All the rock material is decomposed and/or disintegrated into soil. The original mass structure is still largely intact.		



#### STRATA PLOT

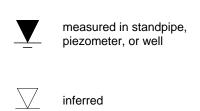
Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc.



## **SAMPLE TYPE**

SS	Split spoon sample (obtained by performing the Standard Penetration Test)	
ST	Shelby tube or thin wall tube	
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)	
PS	Piston sample	
BS	Bulk sample	
WS	Wash sample	
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.	





## **RECOVERY**

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

## **N-VALUE**

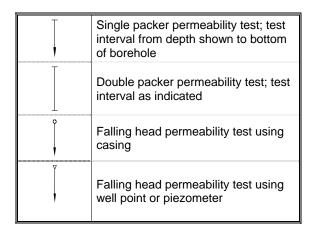
Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (64 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (305 mm) into the soil. For split spoon samples where insufficient penetration was achieved and N-values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50/75). Some design methods make use of N value corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

# **DYNAMIC CONE PENETRATION TEST (DCPT)**

Dynamic cone penetration tests are performed using a standard 60 degree apex cone connected to A size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (305 mm) into the soil. The DCPT is used as a probe to assess soil variability.

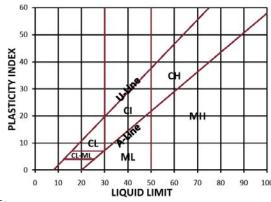
## **OTHER TESTS**

S	Sieve analysis
Н	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
Gs	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
С	Consolidation
Qu	Unconfined compression
I <sub>p</sub>	Point Load Index (I <sub>p</sub> on Borehole Record equals I <sub>p</sub> (50) in which the index is corrected to a reference diameter of 50 mm)





MAJOR DIVISION			MUCS	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA		
D SOILS	GRAVELS (MORE THAN HALF COARSE GRAINS LARGER THAN 4.75 mm)	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL GRADED GRAVELS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4 C_c = \frac{C_c}{D_{10}}$	$\frac{(D_{30})^2}{(0 \times D_{60})} = 1 \text{ to } 3$	
			GP	POORLY GRADED GRAVELS AND GRAVEL- SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING REQUIREM		
		GRAVELS	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS	ATTERBERG LIMITS BELOW 'A' LINE W <sub>P</sub> LESS THAN 4	
GRAINED		WITH FINES	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	12%	ATTERBERG LIMITS ABOVE 'A' LINE W <sub>P</sub> MORE THAN 7	
		CLEAN SANDS	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6 C_C = \frac{C_{10}}{D_{10}}$	$\frac{D_{30})^2}{(0) \times D_{60}} = 1 \text{ to } 3$	
COARSE	SANDS (MORE THAN HALF	(LITTLE OR NO FINES)	SP	POORLY GRADED SANDS, LITTLE OR NO FINES	NOT MEETING REQUIREM		
CO/	COARSE GRAINS SMALLER THAN 4.75 mm)	THAN	SM	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF	ATTERBERG LIMITS BELOW 'A' LINE W <sub>p</sub> LESS THAN 4	
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES	FINES EXCEEDS 12%	ATTERBERG LIMITS ABOVE 'A' LINE W <sub>p</sub> MORE THAN 7	
	SILTS (BELOW 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	W <sub>L</sub> < 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS PLASTICITY ( (SEE BELO	CHART	
SOILS		W <sub>L</sub> > 50	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
	CLAYS (ABOVE 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	W <sub>L</sub> < 30	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS			
FINE GRAINED		30 < W <sub>L</sub> < 50	CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	WHENEVER THE NATU CONTENT HAS I DETERMINED, IT IS BY THE LETT	NOT BEEN DESIGNATED	
		W <sub>L</sub> > 50	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	E.G. SF IS A MIXTURE SILT OR C	OF SAND WITH	
	ORGANIC SILTS & CLAYS (BELOW 'A' LINE)	W <sub>L</sub> < 50	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
		W <sub>L</sub> > 50	ОН	ORGANIC CLAYS OF HIGH PLASTICITY			
	HIGHLY ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR C OFTEN FIBROUS		
	BEDROCK			BEDROCK BR SEE REPORT DESCRIPTION		SCRIPTION	



NOTE:

1. BOUNDARY CLASSIFICATION POSSESSING CHARACTERISTICS OF TWO GROUPS ARE GIVEN GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL MIXTURE WITH CLAY BINDER BETWEEN 5% AND 12%

		SOIL CON	//PONENTS		
FRAC	TION	SIEVE S	SIZE (mm)	PERCENTAG	RANGES OF SE BY WEIGHT COMPONENTS
		PASSING	RETAINED	PERCENT	IDENTIFIER
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	FINE	19	4.75	50 - 35	AND
SAND	COARSE	4.75	2.00	25 20	
	MEDIUM	2.00	0.425	35 – 20	Y
	FINE	0.425	0.080	20 – 10	SOME
SILT (nor	n-plastic)			20 - 10	JOINE
0	r	0.	080	10 - 1	TRACE
CLAY (	plastic)			10 - 1	TRACE
		OVERSIZE	MATERIALS		
COBBL	ED OR SUB-ROU ES 75 mm TO 200 ULDERS >200 mm	) mm		ANGULAR ROCK FRAGMEN (S > 0.75 m³ IN V	

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS



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		- 25 mm minus, moderately to well graded, rounded to sub-angular, trace silt, trace clay, brown															- - - - - - - - - - - - -
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-		- flowing water at 0.3 m		X				-									-
				BS	1			-		0							-
-		\PERMAFROST, CLAY															
-		End of test pit at 0.61 m due to refusal on PERMAFROST, CLAY.															
- 1 -																	
-																	-
-																	-
-																	-
- 2 -																	-
<u> </u>			_	DR	ΔΙ	FT-			□ Dyi	namic C	one Pe	enetrat	ion Test	- N, bl	ows/0	.3 m	

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓE	ST .	PIT DR	RE AFT	COR	D	Da	Bor N E atum: TOO		oordinat	es OJECT		110 110	<b>;</b>	
L	OCATION	Clyde River, NU					<b>N</b> T .				_	ВН	SIZE		Tes	t Pit	
D.	ATES (mm	n/dd/yy): BORING		_ W			Not n	neasur 		raine	— d She	ar S	t.rena	-h (C	: : (11)	(kPa	) 🛕
Ê	E)N		0		SA	AMPLES	5	] 	Cu	based 50	on F	ocke 1(	treng t Pene )()	etrom 15	eter 0	: (k	Pa)★ 0
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sca	ale (kPa	)		1	
	EE		STR/	≱	N	ECOVI or CC	or RC	ONITO	WAT	ER COI	NTENT	' & A'	TTERBI	RG L		W <sub>P</sub>	W W <sub>L</sub>
						<u>«</u>		] Š	SPT	10 <sup>(N)</sup> 2	BLOW 0 3	0 4	3m 40 50 v Count	) 6			0 90
- 0 -		ORGANICS (25 mm)												- Cure		<u>,</u>	
-		CLAY (CL-CI), silty, some sand, low to medium plastic, brown.															
_		•															
-				X													-
-				BS	1					<b>1</b>							-
-				Ž			-	-									
		- grey at 0.65 m															
-		PERMAFROST, CLAY	Ħ														-
-		End of test pit at 0.78 m due to refusal on															
_		PERMAFROST, CLAY.															
<b>⊢</b> 1 −																	
-																	-
-																	
-																	-
<u> </u>																	-
-																	
-																	
_																	
2																	
- 2 -				1	•				<u> </u>	1		• • • • •					
			_	DR	ΔΙ	FT-			□ ру	namic C	one Pe	enetrat	ion Test	- N, bl	ows/0	.3 m	

Cl	LIENT _	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓES	ST	PIT DR	RE AFT	COR	D	Da	Bore N E tum: TOO		proinat	es OJECT	LF	007	,	
	ROJECT_ OCATION	Clyde River, NU									_		SIZE			t Pit	
D.	ATES (mn	n/dd/yy): BORING 7/15/2011/15/11		_ WA	ATER	LEVEI	Not n	neasur									
	Œ.		Ŀ		S	AMPLES	3		Und: Cu	rained based 5(	d She on P	ear S ocket	rengt Pene	th (Cetrometrone)	u): eter	(kPa : (k 20	.) ▲ :Pa)★ ()
<b>DEPTH(m)</b>	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATI	ER CON	NTENT	Cu Sca	le (kPa	)		W <sub>P</sub>	W W <sub>L</sub>
										0 20	0 3	0  4	0 50 Count	) 6			0 90
- 0 -		ORGANICS (25 mm)															
-		CLAY (CL-CI), silty, sandy, low to medium plastic, brown.		BS	1			-		O							-
-		- grey, occasional gravel at 0.35 m						_									-
		PERMAFROST, CLAY															_
-		End of test pit at 0.6 m due to refusal on PERMAFROST, CLAY.															
- 1 - - -																	-
																	-
- - - -																	-
- 2 -				n R		F <b>T</b> -			□ Dyi	namic C	one Pe	enetrati	on Test	- N, bl	ows/0	.3 m	

_	Sta	Nunami Stantec Ltd.	ΓE	<b>ST</b>	PIT DR	RE	COR	D	Da	Bor N E tum: TO	ehole Co				7008	3	
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.		1 <u>218</u> 4 St Pit	
		n/dd/yy): BORING 7/15/2011/15/11		_ WA	ATER	LEVE	Not n	neasur	ed		_	DI	SIZL				
	(u				SA	AMPLES	3		Und Cu	raine based	d She	ar S	treng t Peno	th (C	u): eter	(kPa	.) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	띪	₹Y mm E %	UE	WELL/ ETER		50	0		)() 	-+	0	20	0
DEF	ELEV		STRA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER COI			TTERBI		IMITS		W W <sub>L</sub>
- 0 -		ODC ANICS (25 mm)	7	_					'   : : : :	10 2	0 3	O 4 or Blow	0 50 V Count	O 6			0 90
		ORGANICS (25 mm) CLAY (CL-CI-SM), sandy, silty, low to medium															
_		plastic.															-
-				X				1									-
				BS	1						0						
		- frost crystals at 0.3 m															
-		PERMAFROST, CLAY, sandy, grey	#	-													-
		End of test pit at 0.42 m due to refusal on PERMAFROST, CLAY, sandy.															-
		TERM INOST, CENT, sundy.															
_																	-
_																	-
-																	-
- 1 -																	
_																	
-																	-
_																	
_																	-
																	_
-																	
-																	-
_																	
-																	-
- 2 -										<u> </u>							
				DR	ΛΙ	FT-			□ Dy	namic C	Cone Pe	enetrat	ion Test	- N, bl	ows/0	.3 m	

	Sta	antec Nunami Stantec Ltd.	TE	ST	PI -DI	T RA	RE	COR	D	Dat	Bore N E tum: TO0	ehole Co	oordina	tes	LI	<b>=00</b> 9	<b>—</b>		
P	ROJECT	Geotechnical Site Investigation										_		OJECT	Γ No.				_
	OCATION			· ·	, v TE	ן מי	EMEI	Not n	neasur	ed		_	BH	SIZE		Tes	st Pit	<u>[</u>	_
D		/dd/yy). BORING					IPLES			_	raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	i) <b>/</b>	
(m)	ELEVATION(m)		ro1						3"	Cur	50 50	)	10	00 	15	0	20	0	
DEPTH(m)	EVATION	SOIL DESCRIPTION	STRATA PLOT	TYPE		WDER FRY,	ORE %	N-VALUE or RQD %	OR WE		,		Cu Sca	ale (kPa	a)		·		
	ELE		STR	Ĺ			or CORE %	or R	MONITOR WELL/ PIEZOMETER					TTERB	ERG 1	LIMIT	W <sub>P</sub> S <b>I</b> ──	W ——	W <sub>L</sub>
									. ≥	SPT 1	0 <sup>(N)</sup> 2			3m 40 5 w Count				80	90
- 0 -		ORGANICS (10 mm)	1																
-		CLAY (CL-CI-SM), silty, trace to some sand, trace gravel, low to medium plastic, brown.		V															-
		trace graves, fow to mediani plastic, orown.		BS	5   1						0 <b>H</b>								
-																			
-																			-
		PERMAFROST, SAND, grey.																	
		End of test pit at 0.5 m due to refusal on																	
-		PERMAFROST, SAND.																	-
-																			
-																			-
-																			
- 1 -																			-
-																			-
																			-
-																			
																			-
-																			
-																			-
_																			
-																			-
- 2 -																			
				וח	<b>5</b> A					□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/0	).3 m		

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓES	<b>ST</b>	PIT DR	RE	COR	D	Dat	Bor N E um: TO	ehole C		tes OJEC		<del>-</del> 010			
	OCATION										_		I SIZE			st Pi		_
D.	ATES (mm	/dd/yy): BORING		_ W	ATER	LEVE	L Not n	neasur	ed		_							
	Ê				SA	AMPLE	S		Undı Cu k	caine based 50	d She	ear S	streng t Per	th (0 etror	Cu): meter	(kPa : (k 20	a) (Pa)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		es.	mm %	ш%	MONITOR WELL/ PIEZOMETER					ale (kP	-				
DEP1	LEVA	SOIL DESCRIPTION	RAT/	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	TOR V					a10 (111	٠,		TAT	TAT	W _
	Ш		S		Z	RECC	żδ	MONI					TTERE				~ <u>~</u>	— — •
- 0 -									1	0 <sup>(N)</sup> 2	0 3	or Blo	40 5 w Count				30 	90
		ORGANICS (25 mm)																
-		SAND (SM), silty, trace to some clay, occasional cobbles and boulders, brown.																-
_																		-
-								-										-
-				BS	1				0									-
				1														
-																		-
_		PERMAFROST, SAND, grey.	Ħ															
			H															
-		End of test pit at 0.8 m due to refusal on	Ħ															
-		PERMAFROST, SAND.																-
1																		
- 1 -																		
-																		-
_																		
-																		-
-																		-
-																		-
_																		
-																		-
-																		
- 2 -				1	1			-		I	L		1		L.ii	L.ii	1	
			_	DR	ΛΙ	FT-			□ Dyr	namic C	one P	enetra	tion Tes	st - N, b	lows / (	).3 m		

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓES	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO		oordina	tes OJEC		F01′			
	OCATION										_		SIZE			st Pit		
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_							
	Ê				SA	MPLES	3		Undı Cu k	aine ased	d She	ear S	treng t Pen	th ((	Cu):	(kPa	(Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5(	)		00 	15	0	20	0	_
٥	ELE		STR	F	S N	RECOV or CC	N-V/	MONITO		R CON (N) ,			TTERB 3m 40 5				W W 0 90	L L
- 0 -		ORGANICS (50 mm)	12						1	U 2	%MC %	or Blow	W Count	Scale			0 90	_
		CLAY (CL-CI), silty, some sand, low to medium																
-		plastic, brown.															-	
_								-									-	.
-				BS	1					αН							-	
		- grey, at 0.4 m																
-		PERMAFROST, SAND, grey															-	-
		End of test pit at 0.55 m due to refusal on	$\Box$															-
		PERMAFROST, SAND.																
-																	-	
-																		
																	-	
- 1 -																		-
-																	-	
_																		
-																	-	
-																	-	
-																	-	
																		.
-																		.
- 2 -																		_
				DR	ΔΙ	FT-			□ Dyr	amic C	one Pe	enetrat	ion Tes	t - N, b	lows / 0	).3 m		

C	LIENT	Nunami Stantec Ltd.	TE	<b>ST</b>	PIT DR	RE AFT	COR	D	Dat	Boro N E um: TOO	ehole Co				F012		433_
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		SIZE			<u>st Pi</u>	
		/dd/yy): BORING		_ W	ATER	LEVEL	Not n	neasur	ed		_						
	Ê				SA	AMPLES	i		Undı Cu k	raine	d She	ear S	treng t Pen	th ((	Cu) :	(kPa	a) ▲ Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)		)() 	15	0	20	00
	<u> </u>		STE	<u> </u>	2	RECO.	N-N P	MONIT		R COI	BLOW 0 3	$0^{1S/0}$ .	TTERB 3m 0 5	0 6	0 7	0 8	W W <sub>L</sub> 0
- 0 -		¬ORGANICS (25 mm)	14	T							%MC	or Blow	Count	Scale	(% or 1	1)	 
		CLAY, silty, trace sand, cobbles and occasional boulders (+ 300 mm diameter)															-
- -				BS	1			-		O							-
		PERMAFROST															
- - - 1 -		End of test pit at 0.6 m due to refusal on PERMAFROST.															-
-																	-
- 2 -				DR	ΑΙ	FT-		<u>I</u>	□ Dyr	namic C	Cone Pe	l : : : : : enetrat	ion Tes	t - N, b	lows/0	).3 m	1::::

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓE	ST	PIT DR	RE AFT	COR	D	Dat	Bor N E um: TO	ehole C		tes OJEC		<b>-</b> 013			
	OCATION										_		SIZE			st Pi		_
D.	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_							
	Ê		L		SA	AMPLES	6		Undr Cu b	raine based 50	d She	ear S	treng t Pen 00	th (etro	Cu): meter	(kPa : (k 20	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		ı.	RECOVERY mm or CORE %	ш%	MONITOR WELL/ PIEZOMETER					ale (kP					
DEPT	LEVA	SOIL DESCRIPTION	RAT/	TYPE	NUMBER	CORE	N-VALUE or RQD %	TOR \					(	-,		TAT	TAT	₩_
	Ш		S		z	RECC	żδ	MONI					TTERB 3m		LIMIT	W <sub>P</sub> S <b>├</b> ─	Ö	—; —; •
- 0 -									10	0 <sup>(N)</sup> 2	0 3	or Blow	W Count				<del>,</del>	90
		ORGANICS (25 mm)																
-		SAND (SC), clayey, trace to some silt, brown to grey, occasional boulders and cobbles.																-
-																		-
-				BS	1				0									-
-								-										-
-		SAND and GRAVEL, many cobbles.	72															-
_			70															
			30															
-		PERMAFROST, cobbles, grey	H															-
-		End of test pit at 0.85 m due to refusal on PERMAFROST, cobbles.																-
1		LIMITI ROST, coolies.																
- 1 -																		
-																		-
=																		
-																		-
-																		-
-																		-
_																		
-																		+
-																		-
- 2 -				1	1			1		L	L		1	i	!!	ıi		
				DR	ΔΙ	FT-			□ Dyn	amic C	one P	enetrat	ion Tes	it - N, b	lows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓE	ST	PIT DR	RE	COR	D	Datu	Bor N E ım: TO	ehole C	oordina	ates	LF	F014	4		
l	ROJECT_	Geotechnical Site Investigation									_	PR	OJECT	Γ No.	_11	0218	433	)
l .	OCATION	Clyde River, NU									_	BH	I SIZE		Te	st Pi	t	_
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur			_							
	Ê		_		SA	AMPLES	3		Undr Cu b	aine ased	d She	ear S	Streng	th ((	Cu): neter	(kPa	Pa)	*
H(m)	)NOI		PC		<u>~</u>	mm %	ш %	ELL/		50	J		00	15	OU	20		
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	VERY	N-VALUE or RQD %	OR W				Cu Sc	ale (kPa	1)				
_			S	_	₹	RECOVERY mm or CORE %	Ą p	MONITOR WELL/ PIEZOMETER					TTERB	ERG I	LIMIT	W <sub>P</sub> S <b>I</b> ──	W	₩ <sub>L</sub>
								_ ≥	SPT 10	) 2	BLOW 0 3	0	.3m 40 5 w Count	0 6			80	90
- 0 -		ORGANICS (25 mm)									******		W Count					
		CLAY (CI), sandy, some silt, medium plastic,																
		brown to grey																
-																		-
		- seepage at 0.3 m		BS	1					0								
-								-										-
		PERMAFROST, CLAY, grey	H															
		End of test pit at 0.55 m due to refusal on PERMAFROST, CLAY.																-
		LEKWIN KOST, CENT.																
-																		
																		-
-																		-
- 1 -																		
1																		
-																		-
_																		
-																		-
																		-
-																		
_																		
- 2 -								1	1::::1			11111	1::::		11111	HILL	1111	
				ne		-			□ Dyn	amic C	one P	enetra	tion Tes	t - N, b	lows / (	).3 m		

		antec Nunami Stantec Ltd.	TE	ST	PIT DR	RI AF	ECOR	D	Borehole N E Datum: TOG	Coordinates	LF015
PR	LIENT COJECT_ CATION	Geotechnical Site Investigation Clyde River, NU								PROJECT BH SIZE	No. <u>110218433</u> <u>Test Pit</u>
DA	ATES (mn	n/dd/yy): BORING	5/11	W	ATER	LEV	EL Not n	neasur			
H(m)	ioN(m)		PLOT			AMPLI		ELL/	Undrained Sh Cu based on	100	th (Cu) : (kPa) ▲ etrometer : (kPa)★ 150 200
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATER CONTENSPT (N), BLC		W <sub>P</sub> W W <sub>1</sub> ERG LIMITS   O
- 0 +		ODG ANTIGO (25	20	1					10 20 %MC	30 40 50 or Blow Count	
-		ORGANICS (25 mm)  CLAY (CL), silty, sandy, occasional cobbles boulders, low plastic brown.	s /								
-				BS	1			_	о—1		-
-		PERMAFROST, grey, boulders (+ 400 mm diameter)									-
-		End of test pit at 0.7 m due to refusal on PERMAFROST, cobbles / boulders.									-
- 1 -											
- 2 +		1		ne.					□ Dynamic Cone	Penetration Test	- N, blows / 0.3 m

CI PF	LIENT ROJECT	Nunami Stantec Ltd. Geotechnical Site Investigation	ΓE	ST	PIT DR	RE	COR	D	Da	Bor N E tum: TO	rehole C	PR	OJECT			5 02184	<u> 133</u>
	OCATION			***	, TED	x Exam	Not n	neacur	ed.		_	BF	ł SIZE		Tes	t Pit	
Di	ATES (mm	/dd/yy): BORING 7/15/2011/15/11		W A		AMPLE		Casur	-	raine	d Sh	ear S	Streng	th (C	Cu) :	(kPa	) 🛦
<b>DEPTH(m)</b>	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ТУРЕ	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WAT	ER CO	H NTENT	Cu Sc	Streng t Pen 00	.)		<del> </del>	Pa)★ 0 W W <sub>L</sub>
- 0 -								-	1	0 2	20 3	or Blo	40 50 w Count	0 6			0 90
- 0 -		ORGANICS (25 mm)	74														
-		CLAY, silty, sand lenses throughout, brown to grey		<b>(</b>				_									-
				BS	1			-		Đ							-
_																	
		PERMAFROST, SAND, many boulders, grey.	$\exists$														
- - - 1 -		End of test pit at 0.7 m due to refusal on PERMAFROST, SAND.															
-																	-
-																	
																	-
- - 2 -													tion Tesi				

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	ſΕ	ST	PIT DR	RE AFT	COR	D	Da	Bor N E tum: TO	ehole C		tes OJECT		F <b>0</b> 17		
	ROJECT_ OCATION										_		SIZE			st Pit	
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVEL	Not n	neasur	ed		_						
	(E		L		S	AMPLES	<b>i</b>		Und: Cu	raine based 5	d She	ear S	treng t Pen 00	th (0 etror	Cu): neter	(kPa : (k 20	.) ▲ Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					ale (kPa				<u> </u>
	<u> </u>		ST		ž	RECO or (	Ž b	MONIT		ER CO:	OBLOW 0 3	MS/0.	TTERB 3m 40 5	0 6	0 7	0 8	$ \begin{array}{ccc}                                   $
- 0 -		–ORGANICS (25 mm)	12								%MC	or Blo	w Count	Scale	(% or 1	1)	
	-	CLAY (CL), sandy, trace to some silt, low plastic, brown - seepage from surface															-
	-			BS BS	1			_		0							_
	_			<u> </u>				_									-
	-																-
	_	PERMAFROST, SAND and CLAY, boulders / rock, grey.	Ħ														-
	-	End of test pit at 0.75 m due to refusal on PERMAFROST, SAND and CLAY															-
- 1 -	_																
	-																-
	-																-
	-																
	-																-
- 2 -	-																-
			_	DR	ΔΙ	FT-			□ Dyi	namic (	Cone P	enetrat	ion Tes	t - N, b	lows / 0	).3 m	

C	Sta	Nunami Stantec Lt Geotechnical Site I	td.	E	<b>T</b>	PIT DR	RE	COR	D	Da	Bor N E tum: TO	ehole Co		tes OJEC		<b>-</b> 018			
	OCATION		mvesugueva									_		I SIZE			st Pi		_
D	ATES (mm	n/dd/yy): BORING	7/15/20117/15/11		_ WA	ATER	LEVE	L Not n	neasur			_							
	Œ.					SA	MPLE	S		Und: Cu ]	raine based 50	d She on F	ear S Ocke	treng t Per	th (etro	Cu) : neter (O	(kPa : (1 20	a) <b>4</b> (Pa) (0	k
DEPTH(m)	ELEVATION(m)	SOIL DESCR	RIPTION	STRATA PLOT		8	RECOVERY mm or CORE %	щ %	MONITOR WELL/ PIEZOMETER					ale (kP					
DEP	:LEV#	00.2 2 200.		TRAT	TYPE	NUMBER	OVER	N-VALUE or RQD %	TOR								$W_{\mathbf{p}}$	W	W <sub>T</sub> .
				S		_	REC	Z ō	MON		0 2			TTERE			s <del>I</del>		
- 0 -		ong Lyrag (25								] 	0 2	0 3 %MC	or Blo	W Count				30 1:::	90
		ORGANICS (25 mm) CLAY (CL-CI), sandy, s	silty, low to medium																
-		plastic, brown	,																-
-																			-
																			:[
-					(				_										-
_					BS	1			-		O : : :								
-		- grey at 0.6 m																	-
-		PERMAFROST, SAND	and CLAV gray																-
		TERMAI ROST, SAND	and CLAT, gicy.																
		End of test pit at 0.8 m of PERMAFROST, SAND																	
-		TERWIN ROST, STRVE	und CEITT																-
- 1 -																			$\perp$
-																			
-																			-
_																			
-																			-
-																			
-																			-
_																			
-																			-
- 2 -																			
				_	nR	ΛΙ	FT-			□ Dyi	namic C	one Pe	enetra	tion Tes	t - N, b	lows/(	D.3 m		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓES	ST	PIT DR	RE AFT	COR	D	Da	Bor N E tum: TO		Coordina	tes OJEC		F <b>0</b> 19			
	ROJECT_ OCATION										_		i size			st Pi		
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed		_							
	m)				S	AMPLES	3		Und: Cu l	raine based	d Sh	ear S Pocke	treng	th (	Cu):	(kPa	a) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		e,	r mm %	ш%	MONITOR WELL/ PIEZOMETER			0		00 	15	00	20		_
DEPT	LEVA	SOIL DESCRIPTION	IRAT/	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	TOR \					(	-,		TAT	w w	
	Ш		S		Z	RECC	żδ	MONI					TTERB		LIMIT	W <sub>P</sub> S <b>├</b> ─	•	ŀ
- 0 -									1	0 2	20 3	WS/0.	40 5				0 90	)
U		ORGANICS (10 mm)																
-		CLAY (CL-CI), some sand to sandy, silty, low to medium plastic, brown to grey.															-	
				X DC	ļ ,			-									-	
-		DEAT (05) Comme		BS BS	1 2			-		O				0			-	
		PEAT (25 mm), frozen.  PERMAFROST, SAND, grey, oxide stains (rust).		BS	3					O F	4							
		End of test pit at 0.5 m due to refusal on		A														
		PERMAFROST																
-																		
-																		
-																		
- 1 -																		_
-																		
-																		
																		_
-																		
-																		
- 2 -																		
_				DR	ΔΙ	FT-			□ Dyr	namic (	Cone P	enetra	tion Tes	t - N, b	lows/(	).3 m		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST I	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO	ehole Co		es OJECT		F020		
	ROJECT_ OCATION										_		SIZE			st Pit	
D	ATES (mm	n/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_						
	(u				SA	AMPLES	3		Und: Cu k	aine	d She	ar S	treng t Pen	th ((	Cu):	(kPa	ı) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	)() 	15	0	20	0
		<u> </u>	STE	<u> </u>	2	RECO.	N P P	MONIT		R CON (N), 0 2	BLOW 0 3	0 . 0 4	TTERB	0 6	0 7	0 8	W W <sub>L</sub> 0 90
- 0 -		ORGANICS (25 mm)		$\top$							%MC o	or Blow	Count	Scale	(% or 1	1)	
-		CLAY (CL), sandy, silty, low plastic, brown.															-
-	-			BS	1			_		D: :::							-
	-			<u> </u>				_									-
		PERMAFROST, CLAY															_
-		End of test pit at 0.6 m due to refusal on PERMAFROST, CLAY Note: More frozen peat found at north end of pit															-
-		from 0.3 to 0.4 m.															-
- 1 -	- -																
-																	-
	-																-
- 																	-
	-																-
-	-																-
- - 2 -																	-
			_	DR	ΔΙ	FT-			□ Dyr	amic C	one Pe	enetrat	ion Tes	t - N, b	lows / 0	).3 m	

	Sta	antec Nunami Stantec Ltd.	ΓE	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TO0	ehole Co				F021			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE			02184 st Pit		_
		/dd/yy): BORING		W	ATER	LEVEI	Not n	neasur	ed									
	m)		_		S	AMPLES	;		Undi Cu k	raine based 50	d She	ear S	treng t Pen 00	th (	Cu) : meter 50	(kPa : (k 20	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	Ë	₹Y mm E %	"ne	WELL			<i></i>		JU      ale (kPa			<del></del>		
DEF	ELEV		STRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					TTERB	ERG I	LIMIT	W <sub>P</sub> S <b>├</b> ──	W	W <sub>L</sub>
- 0 -		ODGANIGG (50)							1	0 <sup>(N)</sup> 2	0 3	or Blow	40 5 w Count				30 1:::	90
		ORGANICS (50 mm)  CLAY (CL-CI), silty some sand, low to medium																
		plastic, grey, wet.		BS	1					0:1	<b>—</b> 1							-
				4				_										-
		PERMAFROST, SANDY, boulders, grey.																-
		End of test pit at 0.33 m due to refusal on PERMAFROST, CLAY, sandy, boulders, grey.																
-																		
																		-
																		-
																		-
- 1 -																		
																		-
																		-
																		-
																		-
- 2 -																		
				ne.	ΑΙ	FT.			□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	olows / (	).3 m		

CL	Sta	Antec  Nunami Stantec Ltd.  Geotechnical Site Invest		res	T	PIT DR	RE	COR	D	D	atum	Bore N E n: TOO		Coord					1021		13_
	OCATION												_	I	BH S	IZE	_	<u>T</u>	est l	<u>Pit</u>	
DA	ATES (mm	/dd/yy): BORING	5/20117/15/11		_ WA			Not n	neasur				_								
Ē	(E)			6			MPLE:	<b>S</b>	<u>ا</u> ج	Uno Cu	dra ba	ined sed 50	d Sl on )	near Poc	Sti ket 100	reng Pen	th ( etro	Cu) mete 50	: (k	(kPa 200	<b>≜</b>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTIO	<b>DN</b>	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WAT SPT	rer	CON	JTEN BLO		ATT	ERB	ERG	LIMI		W —0	W <sub>1</sub>
0 +		Tong Angg (10		14.0						<u> </u>	:   :	اک <del>ا : : :</del>	€M(	30 0 or E	low C	Count		60 (% oi	70	80	90 
		ORGANICS (10 mm)	<i>.</i>																		
-		ORGANICS CLAY, brown, st	rong organic odour.		BS	1															- 9 0
		SAND (SC-SM), clayey, silty,	brown, wet.	X X	BS	2					Э										-
1		PERMAFROST, SAND																			
-		End of test pit at 0.8 m due to PERMAFROST, SAND - NOTE: Many boulders at sur																			
- 1 -		area.																			
- 2 -					n P									D:					/ 0.3 n		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO	ehole Co				F023			
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		-
		//dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_	DII	SIZL					-
	Ē					AMPLES			_	raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	a) <b>≜</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	5( 	) NTENT	1( Cu Sca	00 	15	50   LIMIT:	20     W <sub>P</sub>	W •	WL
- 0 -									10	0 <sup>(N)</sup> /20	0 3 %MC 0	O 4	0 5		60 7		0	90
		ORGANICS (25 mm)																
		ORGANICS CLAY		X														: - -
		SAND (SC-SM), silty, clayey, brown to grey.		BS	1					:O:								
	-	PERMAFROST, SAND, grey, ice lenses to 5 mm thick.		BS	1					О								
	-	End of test pit at 0.34 m due to refusal on PERMAFROST, SAND																-
	-																	
	-																	
- 1 -	_																	_
1	-																	
	-																	-
	_																	
	-																	-
	-																	_
2	-																	
- 2 -				DR	·				□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows / 0	).3 m	• • • • •	

Cl	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓE	ST I	PIT DR	RE	COR	D	Dat	Boro N E tum: TOO	ehole Co		tes OJECT		F <b>02</b> 4	ļ	
l	ROJECT_ OCATION										_		I SIZE			t Pit	
D.	ATES (mn	n/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed								
	(u				S	AMPLES	3		Und: Cu l	raine pased	d She	ar S	treng t Pen	th ((	Cu):	(kPa	) <b>▲</b> Pa) <b>★</b>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	ER COI	NTENT	Cu Sc	ale (kPa	1)		<del> </del>	W W <sub>L</sub>
						<u> </u>		_ ≥	SPT 1	0 <sup>(N)</sup> 2	BLOW 0 3	0 4	3m 40 50 w Count		60 70		90
- 0 -		ORGANICS (25 mm)									anc (	] i i i i	w counc	iiii			
-		ORGANICS CLAY, silty, brown.															
_		PERMAFROST, CLAY, sandy		BS	1					)::::H							
-		- ice lenses at 0.2 m		<u> </u>				_									-
-																	-
		End of test pit at 0.55 m due to refusal on	Ш														
- - - 1 -		PERMAFROST, CLAY.															-
-																	-
																	-
- 2 -				np					□ Dyr	namic C	Cone Pe	enetra	tion Test	t - N. b	lows / 0		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST	PIT DR	RE AFT	COR	D	Dat	Bor N E um: TO	ehole C		tes OJEC		-02		
	ROJECT_ OCATION										_		I SIZE			st Pi	
		/dd/yy): BORING <b>7/15/2011/15/11</b>	-	_ WA	ATER	LEVEI	Not n	neasur	ed		_						
	- E				SA	AMPLES	3		Und: Cu k	aine	d She	ar S ocke	treng t Pen	th (	Cu) : neter	(kPa	a) <b>▲</b> :Pa) <b>★</b>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			NTENT	Cu Sc	00 			W <sub>P</sub>	W W <sub>L</sub>
									SPT 1	0 <sup>(N)</sup> ,	O 3	0 4 or Blow	3m 40 5 w Count				80 90
- 0 -		ORGANICS (25 mm)	_/ <i>///</i>														
		ORGANICS CLAY (50 mm)	/[[														
-		CLAY, sandy, silty, sand lenses throughout, brown															-
				BS	1					O							-
																	_
		PERMAFROST, SAND and CLAY															
-		End of test pit at 0.7 m due to refusal on PERMAFROST, SAND and CLAY.															-
- 1 -																	
- -																	-
-																	-
- 2 -																	-
				DR	ΔΙ	FT-			□ Dyr	iamic C	Cone Po	enetrat	tion Tes	t - N, b	lows/(	).3 m	

C	LIENT	Nunami Stantec Ltd.	ΓΕ	ST   -	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TO	ehole Co		es OJEC		<del>-</del> 026			
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		SIZE			<u>st Pi</u>		
		n/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_							
	ē					MPLES				raine	d She	ar S	treng t Pen	th ((	Cu) :	(kPa	a) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	ËR	KY mm	.UE	WELL		50	)	1(	00 	15	0	20	00	
DEF	ELEV		STRA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					TTERB	ERG I	IMIT	W <sub>P</sub> S <b>├</b> ──	<i>W W</i>	W <sub>L</sub>
						<u>~</u>		. ≥	SPT 1	0 <sup>(N)</sup> 2	BLOW 0 3	0 4	3m 40 5 v Count				80 9	90
- 0 -		ORGANICS (25 mm)									anc (		V COUNT	Jeane I		., 		
-		ORGANICS CLAY																-
-		PERMAFROST, CLAY (CL), sandy,brown to		/														-
		grey, ice crystals throughout and occasional ice lenses to 5 mm thick		BS	1					0								
-				1			-	1										-
-			H															-
			H															
-		End of test pit at 0.5 m due to refusal on	Н															
-		PERMAFROST, CLAY.																
-																		-
-																		
-																		ŀ
- 1 -																		-
-																		
-																		-
-																		
-																		ŀ
-																		-
-																		
-																		-
-																		
- 2 -													<u> Liiii</u>				L	H
				DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/0	).3 m		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	Т	ES	T [	PIT DR	RE	COR	D	Dat	Boro N E um: TOO	ehole Co		tes OJEC		<b>-02</b> 7		
	ROJECT_ OCATION											_		I SIZE			st Pi	
		/dd/yy): BORING	15/11		_ WA	TER	LEVE	<u>Not n</u>	neasur	ed								
	Ê			_		SA	AMPLE	S		Und: Cu k	caine based	d She	ar S	treng t Pen	th (	Cu): meter	(kPa	a) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION		STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5(	)		OO   ale (kP	15		20	IU
D	ELE			STR/	<u></u>	N N	RECOVE or CO	N-VA or RG	MONITO		ER COI			TTERB				W W <sub>L</sub>
- 0 -		ORGANICS (50 mm)		71						1	0 2	0 3	O 4	W Count				60 90 
		CLAY (CL-CI), sandy, some silt, low to m	edium															
-		plastic, brown																-
-					BS	1			-		<b>&gt;⊩</b> 1							-
-																		-
-																		-
		-from 0.55 - 0.6 m: buried organic pocket north sidewall.	on															
-		PERMAFROST, CLAY, grey.		4	<u> </u>													-
-		End of test pit at 0.62 m due to refusal on PERMAFROST, CLAY.																
- 1 - - -																		
-																		-
-																		= = = = = = = = = = = = = = = = = = =
- 2 -																		_
				_	DR	ΔΙ	FT-			□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m	

	Sta	antec Nunami Stantec Ltd.	TES	<b>ST</b>	PIT DR	RE AFT	COR	D	Date	Bore N E um: TOG	ehole Co				F028			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		-
		n/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_	יים	JILL			<del>,, _</del>	<u> </u>	_
	<u> </u>					AMPLES				ained	d She	ar S	treng t Pen	th (	Cu) :	(kPa	a)	¥
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	1(	00 lale (kPa	15	50	20 W <sub>P</sub>	00 W	W <sub>T.</sub>
			8		_	P. P	<b>2</b> 0	MON		R CON (N), 0 20			TTERB			s Ē	80	90
- 0 -		ORGANICS (50 mm)							::::		\$MC 0	or Blow	Count				::: <u>:</u>	<del></del>
		ORGANICS CLAY (50 mm)																
	-	CLAY (CI), silty, sandy, occasional roots and rootlets, medium plastic, grey		BS	1			_										
		- seepage at 0.3 m																
		PERMAFROST, CLAY  End of test pit at 0.4 m due to refusal on																
- 1 -		PERMAFROST, CLAY.																
- 2 -																		
				NB	ΛΙ	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

	Sta	Nunami Stantec Ltd.	TE	<b>ST</b>	PIT DR	RE	COR	D	Dat	Bore N E um: TOO	ehole Co				F029		
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU				_	_				_		OJECT SIZE			<u>02184</u> st Pit	
		/dd/yy): BORING		_ WA	ATER	LEVEL	Not n	neasur	ed		_						_
	Ê		  -		S	AMPLES	1		Undr Cu k	rained based 5(	d She	ear S ocke	treng t Pen )()	th (etro	Cu) : neter	(kPa : (k 20	a) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		R CON	NTENT	Cu Sca	ale (kPa	a)		Wp	W W <sub>I</sub>
						<u> </u>		_ ≥	SPT 1	0 20	BLOW 0 3	0.0 or Blow	3m 40 5 W Count				90
- 0 -	-	ORGANICS (75 mm)  CLAY (CL-CI), silty, sandy, occasional cobbles (to 150 mm diameter), low to medium plastic, grey.  - rootlets (to 0.45 m)		7													-
	-			BS	1			_		0							-
		PERMAFROST, CLAY															
- 1 -	-	End of test pit at 0.6 m due to refusal on PERMAFROST, CLAY.															-
																	-
																	-
- 2 -				np	· ^ I	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows/(	).3 m	

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST	PIT DR	RE	COR	D	Dat	Boro N E tum: TO0	ehole Co		es OJECT		<del>-</del> 030		
	OCATION										_		SIZE			st Pi	
D	ATES (mm	/dd/yy): BORING	11	_ WA	ATER	LEVEL	Not n	neasur			_						
	Ê				SA	AMPLES	<b>i</b>		Und: Cu l	raine based 50	d She on P	ar S ocke 1(	treng t Pen	th (0 etror	Cu) : neter	(kPa : (k 20	a) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			,		ile (kPa		<u> </u>		
			STI		2	RECO or C	Į,	MONIT		ER COI	BLOW 3	S/0. 0 4	3m 0 5	0 6	0 7	0 8	0 $0$ $0$
- 0 -		ORGANICS (25 mm)									%MC c	or Blow	Count	Scale	(% or 1	1)	
		ORGANICS CLAY	- 4														
-		CLAY (CI), silty, sandy, medium plastic, grey brown, wet.	to														-
-				BS	1			_		O							-
				BS	1					o <b>H</b>							-
-																	-
-		DEDICATE OCT CLAV															
		PERMAFROST CLAY, sandy, grey.  End of test pit at 0.75 m due to refusal on															
-		PERMAFROST, CLAY, sandy, grey.															-
- 1 -																	
																	-
																	-
-																	
-																	
-																	
- 2 -																	
- 2 -				DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	on Tes	t - N, b	ows/0	).3 m	

CL PR	St.  JENT _  OJECT_ OCATION	Nunami Stantec Ltd.  Geotechnical Site Investigation Clyde River, NU	TE	ST	PIT DR	AF	ECOR	AD	Da	Boi N E itum: TO	rehole Co	PRO	OJECT			21843 t Pit	33
		n/dd/yy): BORING	5/11		ATER	R LEV	EL Not r	measur	ed			вн	SIZE		168	<u>t 1 1t</u>	
						AMPLI				raine based	d She	ar St ocket	reng Pen	th ((	Zu):	(kPa) : (kPa	<b>▲</b>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER CO	NTENT BLOW	& AI	le (kPa	ERG L	IMITS		ı ₩
- 0 +									1	10 2					0 70		90 
- - - -		ORGANICS (50 mm)  CLAY (CL-CI), silty, sandy, low to medium plastic, grey.		BS	1			_									
-		PERMAFROST CLAY and SAND with boul to + 300 mm diameter.	lders														-
-		End of test pit at 0.6 m due to refusal on PERMAFROST, CLAY and SAND with bou	ılders.														
- 2 +		1		.DR				1	□ Dy	namic (	Cone Pe	netrati	on Test	: : : : : : : : : : : : : : : : : : :	lows / 0.	3 m	

C	LIENT	Nunami Stantec Ltd.	ΓES	<b>ST</b> !	PIT DR	RE AFT	COR	D	Dat	Boro N E um: TOO	ehole Co		tes OJEC		<del>-</del> 032		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		I SIZE			st Pit	
		n/dd/yy): BORING		W	ATER	LEVE	Not n	neasur	ed								
	Ê				S/	AMPLES	3		Und: Cu k	raine based	d She	ar S	treng t Pen	th ((	lu) :	(kPa	ı) <b>▲</b> :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	ייזאיים	50		Cu Sca	00 			20 W <sub>P</sub>	M MI
						8		_ <b>∑</b>		0 2	BLOW 0 3	$0^{1S/0}$ .		0 6	0 7	0 8	30 90
- 0 - - -		ORGANICS CLAY, silty (150mm)  CLAY and SAND, many boulders (to + 300 mm diameter), brown to grey									*MC C	or Blot	w Count	Scale	(% or N		-
-				BS	1			_	C								-
 - -				<u>}</u>													-
- 1 -		PERMAFROST SAND and CLAY, gray.															
- - - - - 2		End of test pit at 0.75 m due to refusal on PERMAFROST SAND and CLAY.															-
			_	DR	<b>!Δ</b> !	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/0	).3 m	

C	Sta	Nunami Stantec I Geotechnical Site	∠td.	ΓES	<b>ST</b>	PIT DR	RE AFT	COR	D	Dat	Bor N E tum: TO		oordina PR	tes OJEC		<b>-03</b> 3			
	OCATION		III washawa									_		I SIZE			st Pit		-
D	ATES (mm	n/dd/yy): BORING _	7/15/2011/15/11		_ WA	ATER	LEVEI	Not n	neasur	ed		_							
	Ê			_		SA	MPLES	5		Und: Cu l	raine based 50	d She	ear S Pocke	treng t Per	th (etro	Cu): meter	(kPa : (k 20	a) ▲ :Pa)★	,
DEPTH(m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sc	ale (kP	a)		Wp	w	WL
	_			00		_	REC		MON		0 2	BLOW 0 3	7S/0.	TTERE 3m 40 5	0 6	50 7	70 8	o •	90
- 0 -		ORGANICS and ORG	ANICS CLAY (100 mm)																
-		CLAY, sandy to CLA	Y and SAND, brown																_
					BS	1			_		<b>○I</b> -I								_
		5000 at 0.6 m																	_
-		- grey at 0.6 m PERMAFROST, SAN	D and CLAY, grey.																-
-				Ħ															-
		End of test pit at 0.85 permafrost sand																	_
- 1 -																			
-																			
- 2 -																			
				_	nR	ΔΙ	FT-			□ Dyr	namic C	one P	enetrat	tion Tes	t - N, b	lows/0	).3 m		

	Sta	antec Nunami Stantec Ltd.	TES	T (	PIT DR	RE AFT	COR	D	Dat	Bore N E tum: TOO	ehole Co				F034			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		)218 st Pit		-
		//dd/yy): BORING	11	W	ATER	LEVEL	Not n	neasur	ed		_	Dii	SIZL		10,	<u> </u>	<u>,                                      </u>	-
						AMPLES				raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	() <b>≜</b> :Pa) <b></b>	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	00 ile (kPa	15	50	20     W <sub>P</sub>	0 W	W <sub>L</sub>
			-		$\vdash$	8		_ 8		0 20	BLOW 3	S/0. 0 4	3m 0 5	0 6	50 7	0 8	<sub>50</sub>	90
- 0 -		ORGANICS (50 mm)		T	+						%MC c	or Blow	Count	Scale	(% or 1	1)		+
	-	CLAY (CL), sandy, silty, low plastic, brown.																-
	-	- at 0.5 m: silty, some sand, grey		BS	1					0								
	-	- seepage at 0.6 m  PERMAFROST, SAND and CLAY, grey.  End of test pit at 0.9 m due to refusal on PERMAFROST, SAND and CLAY.		<u>}</u>														
_ 1 -																		-
- 2 -	-																	
			_	DB	Αι	FT.			□ Dyr	namic C	one Pe	enetrat	on Tes	t - N, b	lows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	TES	<b>ST</b> [	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOC	ehole Co				<del>-</del> 03			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.		02184 st Pit		
		/dd/yy): BORING	<u> </u>	_ W/	ATER	LEVEL	Not n	neasur	ed									
	Ê		-		S	AMPLES	<b>)</b>		Und: Cu k	caine based 50	d She	ar S ocke 1(	treng t Pen	th (0 etror	Cu) : meter	(kPa : (k 20	ı) ▲ :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	ER CON		Cu Sca	ale (kPa	1)		Wp	w w	I <sub>L</sub>
						<u>«</u>		_ ≥ _	SPT 1	0 <sup>(N)</sup> / <sub>2</sub>	BLOW 0 3	IS/0. 0 4	3m 10 5				0 90	0
- 0		ORGANICS (100 mm)		T														
	-	CLAY (CL), sandy, silty, trace to some sand, many boulders (to + 300 mm diameter), low plastic, brown.																-
	-			BS	1			_		o <del>l I</del>								-
		PERMAFROST, SAND and CLAY, grey.																
1		End of test pit at 0.6 m due to refusal on PERMAFROST, SAND and CLAY.																-
- I <sup>-</sup>																		-
																	-	-
- 2 -				DR	·	FT_			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

C	LIENT	Nunami Stantec Ltd.	ΓE	ST .	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TO	ehole Co		es OJEC		F036			
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		SIZE			<u>st Pi</u>		
		/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_							
	Ę.		L		S	AMPLES	6		Und: Cu k	raine	d She	ar S	treng t Pen	th ((	Cu):	(kPa	a) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		IR.	Y mm	三%	MONITOR WELL/ PIEZOMETER		50	<u> </u>		00 	15	0	20		_
DEP.	LEVA	OOL BLOOKIN HOW	TRAT,	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	TOR								Wp	w w	ĺτ
			Ś		_	NEC.	Z 5	MON		0 2			TTERB			s <del> </del> —	•	ij
- 0 -		ORGANICS (50 mm)							1	0 2  ::::	%MC (	O 4 or Blow	O 5				60 90	, _
		CLAY (CL), sandy, some silt, many cobbles and																
-		boulders (to + 300 mm diameter), low plastic,																
-		brown.		X				-										
_				BS	1					οн								
-		PERMAFROST, SAND and CLAY, brown to	#															
		grey.	耳	-														
		End of test pit at 0.5 m due to refusal on PERMAFROST, SAND and CLAY.																
-																		
-																		
-																		
- 1 -																		_
-																		
-																	-	
-																		
-																		_
-																		
-																		
_																		
-																		
- 2 -													L					_
				DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

C	LIENT	Nunami Stantec Ltd.	TE	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO	ehole Co				-037		433
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		SIZE			st Pit	
		/dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed								
	٦				SA	AMPLES	;		Undı Cu k	raine based	d She	ar S ocke	treng t Pen	th ((	Cu) :	(kPa	a) <b>▲</b> :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	00 	15	60	20	00
	Ш		S		Z	RECC	żō	MONI		0 20	BLOW 0 3	$0^{1S/0}$ .	TTERB	0 6	0 7	0 8	80 90
- 0 -		ORGANICS (75 mm)									₹MC (	or Blow	Count	Scale	(* or I	1)	
-		CLAY (CL), silty, sandy, low plastic, brown.		V				_									-
-				BS	1			_		0							-
-		PERMAFROST, SAND and CLAY, brown to grey.															_
-		End of test pit at 0.5 m due to refusal on PERMAFROST, SAND and CLAY.															-
-																	-
-																	-
- 1 -																	
-																	-
-																	-
																	_
-																	-
-																	-
- 2 -																	
				DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows / 0	).3 m	

	Sta	antec Nunami Stantec Ltd.	ΓΕ	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOC	ehole Co				F038	В		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		
		/dd/yy): BORING		_ W	ATER	LEVEI	Not n	neasur	ed									
	(c)				S	AMPLES	3		Undr Cu k	raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	ı) <b>▲</b> :Pa) <b>★</b>	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	OO 	15	0	20 W <sub>P</sub>	W	W <sub>T.</sub>
			S		_	P. P	2 0	MON	WATE SPT	R CON (N), 0 20	BLOW	& A'	TTERB 3m -0 5		LIMIT: 60 7	s Ē	0	- <b>i</b> 90
- 0		ORGANICS (50 mm)	7/	1					1		%MC 0	or Blow	Count		(% or 1			,0 <del> </del>
		CLAY (CL-CI), silty, sandy, low to medium																
		plastic, brown to gray.  - at 0.3 m: many boulders to + 500 mm diameter																
				BS	1					O <b>I</b> -	-1							
		PERMAFROST, SAND and CLAY at 0.5 m: ice crystal lenses (to 10 mm thick).																
		End of test pit at 0.6 m due to refusal on	$\Box$	+														$\vdash$
- 1 -		PERMAFROST, SAND and CLAY.																
	-																	
2	-																	
- 2			_	np	) A I	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE	COR	D	Date	Bore N E um: TOG	ehole Co				F039			
P	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECT SIZE		_11( Tes	)2184 st Pit		-
		//dd/yy): BORING	_	_ W	ATER	LEVEL	Not n	neasur	ed		_							_
	Ê		F		SA	AMPLES	l		Undr Cu b	ained	d She	ar S ocke	treng t Pen	th ((	Cu):	(kPa	a) <b>4</b> :Pa) <b>★</b>	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	A PLO		띪	Y mm E %	щ %	WELL/ ETER		50	,		ole (kPa	15		20		
DEP	ELEVA		STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		D (20)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	6 74		EDG 1		Wp	W	W <sub>L</sub>
			$\vdash$			R o		Σ	SPT 10	(N), 0 20	BLOW 3	s/0. 0 4	3m -0 5	0 6	LIMITS 50 7	0 8	<sub>30</sub>	90
- 0 -		ORGANICS (50 mm)		T							%MC c	or Blow	Count	Scale	(% or 1	1)		+
		CLAY (CL-CI), silty, sandy, many cobbles (to + 200 mm diameter), low to medium plastic, brown.																
		200 mm diameter), for to medium phasic, from																
																		-
		End of test pit at 0.4 m due to refusal on PERMAFROST, SAND and CLAY, brown to																
		grey.																-
																		-
																		-
																		-
- 1 -																		
																		-
																		-
-																		-
																		-
																		-
- 2 -																		
_			_	NP		FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows / 0	).3 m		

	Sta	Antec Nunami Stantec Ltd.	TES	<b>ST</b>	PIT DR	RE AFT	COR	D	Date	Bore N E um: TOG		oordinat			F040			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		
		//dd/yy): BORING		_ WA	ATER	LEVEI	Not n	neasur	ed		_	יות	. OILL			<del>),</del>	ι <u> </u>	
						AMPLES			_	ained	d She	ear S Pocke	treng t Pen	th (	Cu):	(kPa	a) ▲ EPa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	出	E %	B.%	WELL/ ETER		50	)	1(	00 	15	i0	20	00	
띰	ELEV/		STRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	P CON	ITENT	י ג. אי	פסקייי	FPC I	LIMIT	W <sub>P</sub>	W	WL
						2		_ ₹		(N) /20	BLOW 3	$0^{1S/0}$ .	3m -0 5	0 6	50 7	0 8	30 ·	90
- 0 -		ORGANICS (50 mm)									%MC (	or Blow	Count	Scale	(% or 1	1)		$\vdash$
	-	CLAY (CL), silty, sandy, low plastic, brown.																-
	-			BS	1			-		.0								-
	_	- frozen at 0.45 m			Ĺ			-										_
		PERMAFROST, SAND and CLAY, brown																
	-	End of test pit at 0.5 m due to refusal on PERMAFROST, SAND and CLAY.																-
	-																	
- 1 -																		
- 2 -				np	· ^ I	FT.		1	□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows/0	).3 m	<del></del>	

Cl	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST .	PIT DR	RE AFT	COR	D	Da	Bore N E tum: TOG		oordinat	es OJECT	LF	041 110		
	DCATION	Clyde River, NU							_		_	ВН	SIZE		Tes	t Pit	<u>.                                    </u>
D.	ATES (mm	n/dd/yy): BORING		W			Not n	neasur	-	wai na	- Cho	C	- xona	-h /c	· ·	/ lsDo	\ \ \ \ \
(1	(E)		ОТ		S	AMPLES	<b>i</b>	<b>\</b>	Cu 1	rained based 50	on P	ocke 10	t Pene 0	etrom	eter	: (k 20	Pa)★ 0
<b>DEPTH(m)</b>	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATI	ER CON	TENT	& A'	le (kPa			W <sub>P</sub>	W W <sub>L</sub>
- 0 -									1	0 20	) 3(	0 4	0 50	) 6			0 90
-		ORGANICS (50 mm)  CLAY (CL-CI), sandy, some silt to silty, cobbles and boulders, low to medium plastic, brown.  - grey lense from 0.1 to 0.2 m															-
-      -  -				BS	1			_									-
-																	
		PERMAFROST, SAND and CLAY, brown  Excavator refusal. End of test pit.	+														
- - - 1 -																	
_																	-
																	-
-																	-
- 2 -																	
				DR.	ΔΙ	FT-			□ Dyi	namic C	one Pe	enetrat	on Test	- N, bl	ows / 0.	.3 m	

Cl	LIENT	Nunami Stantec Ltd.	TE	ST <sub>.</sub>	PIT DR	Γ RE	COR	D	Da	Bore N E tum: TOO	ehole Co				<del>-</del> 042		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU		<u> </u>							_		OJECT SIZE	No.		12184 18t Pit	
D.	ATES (mm	n/dd/yy): BORING		W	ATEF	R LEVE	L Not n	neasur	_								
	Ē			<u> </u>	S	AMPLE	S		Und: Cu	rained based 50	d She on P	ear S ocket	treng Pen N	th (0 etrom	Cu): meter 50	(kPa : (kl 200	) ▲ Pa)★ )
DEРТН(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATI SPT		TENT	Cu Sca	le (kPa	erg I	LIMITS	W <sub>P</sub>	W W <sub>L</sub>
- 0		ORGANICS (75 mm)		П	+	++			1	.0 2					60 70		0 90
-		CLAY (CL-CI), sandy, silty, occasional gravel, boulder (to + 400 mm diameter), low to medium plastic, brown.															
     -				BS	1					0.⊩							-
		SAND (SC), clayey (35 mm)															
		PERMAFROST, SAND and CLAY, boulder / rock, brown															
- 1 -		End of test pit at 0.8 m due to refusal on PERMAFROST.															
-																	
-																	-
- 2 -				DE		FT.		1	□ Dyi	namic C	one Pe	enetrati	on Test	- N, b	lows / 0.	.3 m	

C	LIENT	Nunami Stantec Ltd.	ΓES	<b>ST</b>	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO	ehole Co		tes OJEC		<del>-</del> 043			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		I SIZE			<u>st Pi</u>		
				W	ATER	LEVEI	Not n	neasur	ed									
	Ę.				S	AMPLES	6		Undi Cu k	caine	d She	ar S	treng t Pen	th ((	Cu):	(kPa	a) ▲ :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50		Cu Sca	OO 			20     W <sub>P</sub>	W W <sub>1</sub>	L
			$\dashv$			2		Σ	SPT 1	$0^{(N)}$	BLOW 3	s/0. 0 4	TTERB 3m 40 5	0 6	0 7	0 8	0 90	)
- 0		ORGANICS (50 mm)		$\top$							%MC o	or Blow	w Count	Scale	(% or 1	1)		4
-	-	SAND (SC-SM), Clayey and silty, many boulders (to + 400 mm diameter), brown.															-	
-																	-	
 	-			BS	1			-		)							-	
-	-	- brown to grey, silty at 0.7 m															-	
-	-	PERMAFROST, SAND and CLAY, boulder / rock, grey															-	
- 1 -	-	End of test pit at 1.0 m due to refusal on PERMAFROST, SAND, CLAY, boulders / rock, grey.															-	
	- -																-	
	-																-	_
-	-																-	
-	-																-	
- 2 -				DR	<u> </u>	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows / 0	).3 m		_

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST	PIT DR	RE AFT	COR	D	Dat	Bor N E um: TO	ehole C		tes		<del>-</del> 044			
	OCATION										_		I SIZE			st Pit		
D	ATES (mm	n/dd/yy): BORING		_ W	ATER	LEVE	L Not n	neasur			_							
	Ê		_		SA	AMPLE	s		Undr Cu k	raine based 50	d She	ear S Pocke	streng t Pen	th (0 netror	Cu):	(kPa : (k 20	1) ▲ (Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sc	ale (kPa	a)		Wp	W W	I <sub>L</sub>
					<del>                                     </del>	REC		MOM		(N) 0 2			TTERB 3m 40 5				30 90	1
- 0 -		ORGANICS (50 mm)	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		$\vdash$	-			1		%MC	or Blo	w Count	Scale				,
-		CLAY and SAND, many boulders (to + 400 mm diameter), brown																-
-				BS	1			-		Ο								
-		- silty, brown to grey at 0.7 m		BS	1			_		D: <b>H</b>							-	-
-		PERMAFROST, SAND and CLAY, grey.		4		$\dagger \dagger$		-										.
- - 1 -		End of test pit at 0.9 m due to refusal on PERMAFROST.																
-																		
-																		-
	· -																	
-																		
-																		
- 2 -				$\perp$														
				DR	•ΔΙ	FT-			□ Dyn	amic C	one P	enetrat	tion Tes	st - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	TES	<b>ST</b>	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOC	ehole Co				F04			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE		110 Tes	0218 st Pit		-
		1/dd/yy): BORING	1	W	ATER	LEVE	L Not n	neasur	ed		_ 							
	Ę.				SA	AMPLE	S		Undr Cu k	ained	d She	ar S ocke	treng t Pen	th (	Cu):	(kPa	a) <b>≜</b> :Pa) <b>★</b>	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	ole (kPa	15	)U	20		TAT.
	<u> </u>		S		ž	RECC or (	Ζ'n	MONI	WATE SPT	R CON	NTENT BLOW	& A' S/0.	TTERB:		ыміт. 60 7		₩ 30	™ <sub>L</sub> 1
- 0		ORGANICS (75 mm)		T							%MC o	or Blow	Count		(% or 1			
	-	CLAY (CL-CI), sandy, some silty, boulders and cobbles throughout, low to medium plastic, brown.																-
	-	- brown to grey at 0.5 m		BS	1			_										
		PERMAFROST, SAND and CLAY, boulders at rock, grey	nd I	<u> </u>				_										_
1	_	End of test pit at 0.8 m due to refusal on PERMAFROST.																=
_ 1 -	-																	-
	-																	
- 2 -				ne	) A I	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	olows / (	).3 m		

C	LIENT	Antec  Nunami Stantec I	Ltd.	Ë	T (	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOO	ehole Co				<del>-</del> 046		433	
	ROJECT_ OCATION	Geotechnical Site Clyde River, NU	Invesugation									_		I SIZE			st Pit		
		n/dd/yy): BORING _	7/16/20117/16/11	_	_ W/	ATER	LEVEI	Not n	neasur			_		_					
	Ê			_		S/	AMPLES	3		Undı Cu k	raine based 50	d She	ar S	treng t Pen 00	th (0 etror	lu) : neter	(kPa : (k 20	1) <b>A</b>	
DEPTH(m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sca	ale (kP	a.)		Wp	W V	
				<b>.</b>		-	REC.		Į Į		R CON (N), 0 2			TTERB 3m 10 5				<del>0</del> 30 90	<b>+</b>
- 0 -		ORGANICS (25 mm)				₩	++					\$MC (	or Blow	w Count					_
-	-	CLAY and SAND, son cobbles, brown																	-
-	-																		-
- -	-	- silty, brown to grey a	ıt 0.5 m		BS	1				c	) : <b>H</b>								_
		PERMAFROST, SANI grey.	D and CLAY, boulders,																_
	-	End of test pit at 0.75 r PERMAFROST.	n due to refusal on																-    -
- 1 -																			
-	-																		-
																			_
-	-																		-
- 2 -																			
				_	DR	ΡΔΙ	FT-			□ Dyr	amic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

Cl	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST I	PIT DR	RE AFT	COR	D	Da	Bore N E tum: TOO	ehole Co		es OJECT	TF	P001	l	
	ROJECT_ OCATION										_		SIZE			st Pit	
D.	ATES (mn	/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur									
(	(m)		5		SA	AMPLES	8	,	Und Cu	rained based 50	d She on P )	ar S ocket 10	reng Pene	th (C etrom 15	u) : eter 0	( kPa : ( k 20	ı) ▲ :Pa)★ ()
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	R WELI		+			le (kPa	-+		+	
Ia	ョコョ		STR/	ξ.	NON	RECOV or CC	N-V/ or R0	MONITOR WELL/ PIEZOMETER		ER CON				ERG L		₩ <sub>P</sub>	W W <sub>L</sub>
- 0 -				- 1					1	0 <sup>(N)</sup> /20	) 3 %MC (	0 4	0 50	) 6			0 90
-		ORGANICS: (200mm) amorphous granular to fibrous, brown, wet.		BS	1				O								-
-		PERMAFROST SILT, some clay, trace sand, - ice lense up to 0.2 m thick		Å X													-
-		End of test pit at 0.3 m due to refusal on PERMAFROST.		Α													-
																	-
-																	-
- 1 -																	
-																	-
-																	-
-																	-
- 2 -																	-
				DR	ΔΙ	FT-			□ Dy	namic C	one Pe	enetrati	on Test	- N, bl	ows/0	.3 m	

C	LIENT	Nunami Stantec I Geotechnical Site	_td.	ΓES		PIT		COR			Boro N E um: TO0	ehole Co		tes OJEC		<b>200</b> 2			
	ROJECT_ OCATION		Illvesugation									_		I SIZE			st Pi		
D	ATES (mm	/dd/yy): BORING _	7/12/2011/12/11		_ WA	ATER	LEVE	L Not n	neasur	ed		_							
	Ê			  -		SA	AMPLE	S		Und: Cu k	caine based 50	d She	ear S Pocke	treng t Pen 00	th (0 etror	Cu): neter	(kPa : (k 20	a)	<b>k</b>
DEPTH(m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT		e:	RECOVERY mm or CORE %	щ%	MONITOR WELL/ PIEZOMETER					ale (kPa	-				
EP.	LEVA	GOIL DLOO	KII TION	TRAT,	TYPE	NUMBER	CORE	N-VALUE or RQD %	TOR								Wp	W	Wт
	Ш			S		z	REC	2 5	MON		0 2			TTERB 3m			s <del> </del> —	<u>;</u>	— <b> </b> ■
- 0 -										1	0 2	0 3	or Blow	W Count				80 1 : : :	90
		ORGANICS: (10mm). SAND & GRAVEL.		19															
		STAND & GRAVEL.		) 2															<u>:</u>
-				1 0	BS	1													:
				19															
		- free water at 0.3 m		) 2					1										
				50															-
				19															
		End of test pit at 0.5 m PERMAFROST.	due to refusal on																
																			-
-																			-
																			-
- 1 -																			
1																			
																			-
																			-
																			-
																			-
																			-
																			-
- 2 -																			
				_	np	ΛΙ	FT-			□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

CL	LIENT _	Nunami Stantec Ltd.	TE	ST	PIT DR	AF	ECOR 	D	Da	Boi N E tum: TO	rehole Co				P003	218433
	OJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		SIZE	No.		<u>t Pit</u>
		n/dd/yy): BORING	11	_ W.	ATEF	R LEV	EL Not r	measur	ed		_					
	Ê		Ē		S	AMPL	ES		Und: Cu	raine based	ed She	ar St ocket 10	reng Pene	th (Cetrom	Cu): neter	(kPa) ▲ : (kPa)★ 200
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			+	Cu Sca	le (kPa	.)		w <sub>p</sub> w 1
						Ä,		_ 8 €	SPT 1	ER CO (N),	NTENT BLOW:	s/0.3 ) 40	8m 0 50	0 6	0 70	80 9
- 0 -		SAND (beach sand), trace silt		BS	1				Ö		%MC o	r Blow	Count	Scale	(% or N	
- - - - -		PERMAFROST SAND.														
 - - - 1 -		End of test pit at 0.425 due to refusal on PERMAFROST.														
-																
- 2 +		1		DE				1	□ Dyi	namic (	Cone Pe	netratio	on Test	: : : : : : : : : : : : : : : : : : :	I : : : :       lows / 0.	3 m

CI PF	LIENT ROJECT	Nunami Stantec Ltd. Geotechnical Site Investigation	ΓΕ	ST !	PIT DR	RE	COR	D	Dati	Bore N E um: TOG	ehole Co	PR	OJECT	TF	2004	2184.	
	OCATION			<b>X</b> 7.	TED	LEVE	Not n	neasur	ed		_	BH	SIZE		Test	t Pit	
D		/dd/yy): BORING		VV F		AMPLES				aine	d She	ar S	treng	th (C	Cu) :	(kPa)	<b>A</b>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	R CON	TENT	Cu Sca	ale (kPa	.)	Cu): neter 0	v <sub>p</sub> v	a)★ V W <sub>L</sub>
			$\dagger$					_ ≥	SPT 10	0 <sup>(N)</sup> ,	BLOW 30 %MC c	S/0. 0 4 or Blow	3m 10 50 % Count	0 6	0 70		90
- 0 -		ORGANICS (10 mm)		(					<b> </b>								
-		Brown low plastic CLAY (CL), sandy, some silt, moist to wet.		BS	1			-									-
				BS	2												
-		PERMAFROST CLAY / SAND.  End of test pit at 0.7 m due to refusal on															-
- - 1 -		PERMAFROST															
-																	
																	-
-																	-
- 2 -																	
				ND	A 1				□ Dyn	amic C	one Pe	enetrat	ion Test	: - N, bl	lows / 0.:	3 m	

Cl	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST	PI'	T RE	COR	D	Da	Born N E stum: TOO		oordinat	es OJECT	TF	P005	5	
	OCATION	Clyde River, NU									_	ВН	SIZE		Tes	t Pit	·
D.	ATES (mm	/dd/yy): BORING	2/11 	V				neasur 		raina	—	222 5	trong	-h /c	122 .	/ leDo	\ <b>A</b>
(-	(E)		5		S	AMPLES	<b></b>	   <sub>]</sub>	Cu	based 5	on E	ocke 10	treng t Pen 00	etrom	eter	: (k	Pa)★ 0
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	NETER				Cu Sca	ile (kPa	)		+	
٥	ELE		STR	F	Š	RECOV or CC	o	MONITOR WELL/ PIEZOMETER					TTERBI 3m		IMITS	W <sub>P</sub>	W W <sub>L</sub>
- 0 -				A /I					1	10 <sup>(N)</sup> 2	0 3	0 4	0 50	O 6			0 90
		ORGANICS (25 mm)		В	S 1												
-																	
-		CH T/Aff > down a man of main															
-		SILT(ML), clayey, some sand, moist.															
-																	-
																	-
-																	
		PERMAFROST  End of test pit at 0.61 m due to refusal on	/														
-		PERMAFROST.															
-																	
-																	-
- 1 -																	
-																	
-																	
-																	
-																	
-																	-
-																	
-																	
- 2 -					ı			1		1	1	1	:.1	:	::1	:	
				.n	RΔ	FT-			□ ру	namic C	Cone Po	enetrat	ion Test	- N, bl	ows/0	.3 m	

C	LIENT	Nunami Stantec Ltd.		ES	<b>T</b>	PIT DR	RE AFT-	COR	D	Dat	Bore N E um: TO	ehole Co		tes OJEC		<b>200</b>			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU	on									_		OJEC. I SIZE			<u>st Pi</u>		_
			17/12/11		_ WA	ATER	LEVEL	Not n	neasur	ed		_							
	(u					SA	MPLES			Undi Cu k	caine	d She	ear S	treng t Pen	th (	Cu):	(kPa	a) ▲ :Pa)★	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION		STRATA PLOT		H.	RECOVERY mm or CORE %	핔 %	MONITOR WELL/ PIEZOMETER		50	J		00 	15	0	20		
DEP.	ELEVA	OOIL BLOOKII HOK		TRAT	TYPE	NUMBER	OVER	N-VALUE or RQD %	ITOR								Wp	W	W <sub>T.</sub>
				S		_	P.E.C.	<b>~</b> 0	MON		$0^{(N)}$			TTERB			s <del> </del> —		_i
- 0 -		TORGANICS (10)			_					1'	0 Z	%MC %	or Blo	W Count				80 	90
		ORGANICS (10 mm)  SAND, many cobbles and boulders.																	
-		, ,																	
-		End of test pit at 0.2 m due to refusa	ıl on																
		boulders																	
-																			-
-																			
-																			-
-																			-
- 1 -																			
-																			
-																			-
_																			
-																			-
-																			
-																			-
-																			-
- 2 -										:::::									
				_	nR	ΛΙ	-T-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

CI	Sta	Nunami Stantec Ltd.  Geotechnical Site Investige		ES	T [	PIT DR	RE	COR	D	Dat	Bore N E um: TOO	ehole Co		es OJECT		<b>200</b>			
	OCATION											_		SIZE			st Pi		_
D.	ATES (mm	/dd/yy): BORING	20117/12/11		_ WA	TER	LEVE	Not n	neasur			_							
	Ê			<u>.</u> L			MPLE	S		Undr Cu k	aine ased 50	d She	ar S ocke 1(	treng t Pen	th (0 etror	Cu) : meter	(kPa : (k 20	a) (Pa)	k
DEPTH(m)	)NOIL	SOIL DESCRIPTION		A PLO		H.	√ mm % ::	щ%	WELL					le (kPa					
DEP	ELEVATION(m)	33.2 2 2 3 3 m H3 N		STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								Wp	W	W <sub>T</sub> .
			'	S			REC	Z 5	MON		R CON (N), 0 2			TTERB			s <del>I</del>		
- 0 -		CAND (CM) - Her many hardle	1 11.1	· : V	/					11	) 2)	0 3 %MC 0	O 4 or Blow	O 5				80 	90
		SAND (SM), silty, many boulder some gravel, trace clay.	s and cobbles,		\ \														
-			: :																-
1	-		·	\(\)	) )														-
				X	) }														
			: :																
-			·  -		BS					0									-
	•			X	\														-
			:  :	\ \ \															
			ŀ	\ \ \															
1			:  -																-
			:																-
		PERMAFROST			)				-										
-		End of test pit at 0.85 m due to re PERMAFROST.	efusal on																
- 1 -		TERMATROST.																	+
_																			
-																			-
-																			-
_																			
																			-
-																			
-																			-
_																			
- 2 -													L	<u> </u>	LEEE	Liiii	Liiii	L	+
				_	NΒ	ΛΙ	:T-			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	 ΓΕ:	ST I	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TO0	ehole Co	oordina	tes	TI	P008			
P	ROJECT_	Geotechnical Site Investigation									_					0218 st Pit		
	OCATION  OATES (mm			 W/		LEVE	Not n	neasur	ed		_	ВH	SIZE		10	<u>St 1 11</u>	<u> </u>	
			П			AMPLES			_	raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	1) <b>▲</b>	_
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	A PLOT		er.	ww	ш%	WELL/ TER		50	)	10	00 	15	50	20	0	
DEP	ELEVA	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				& A	TTERB	ERG 1	LIMIT	W <sub>P</sub> S <b>I</b>	W W <sub>1</sub>	L
- 0 -									1	0 <sup>(N)</sup> 2	0 3	0 4	O 5				30 <sup>-</sup> 90	)
	-	ORGANICS SAND, some gravel, trace to some silt, trace clay, brown, moist.		BS	1					Þ							-	
	-	SAND, trace gravel, brown-grey.															-	
		PERMAFROST, grey CLAY.																
1.	-	End of test pit at 0.7 m due to refusal on PERMAFROST.															-	
	-																-	
	-																-	
- 2 -				DR	·	 F <b>T</b> -		1	□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	olows/(	0.3 m		

	Sta	antec Nunami Stantec Ltd.	ΓΕ	ST I	PIT DR	RE	COR	D	Dat	Bore N E um: TOC	ehole Co				<b>200</b> 9			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		-
		/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed		_	DI	SIZL					_
	Ê					AMPLES			_	aine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	ı) ▲ :Pa)★	k r
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	Cu Sca	JO 		50	20 W <sub>P</sub>		W <sub>T.</sub>
	ш		S		z	RECC	żδ	MONI		R CON (N), 0 20			TTERB			s Ē	80	90
- 0		SAND, fine to medium grained, light brown.									%MC d	or Blow	W Count					
		ORGANICS \[ \tag{-} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		X														-
	_	SAND, medium grained, brown.																-
	-			BS	1				O									-
	-																	
	-																	-
		- medium to coarse grained @ 0.7 m.																
	-	End of test pit at 0.8 m due to refusal on PERMAFROST.																
- 1 -	-																	
	-																	
	-																	
	-																	-
- 2	-																	
				nR	 Д	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	<b>ST</b>	PIT DR	RE AF1	COR	D	Dat	Bore N E um: TOO	ehole Co	ordinat	es	TF	<b>2</b> 010	)		
P	ROJECT_ OCATION	Geotechnical Site Investigation									_		OJECT	Γ No.		)2184 st Pit		_
		/dd/yy): BORING 7/12/2011/12/11		_ WA	ATER	LEVE	EL Not n	neasur	ed		_	DII	SIZE		10	<u> </u>	L	-
						AMPLE				raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	() A	<u> </u>
H(m)	ELEVATION(m)		STRATA PLOT		_ <u>~</u>	m %	ш%	ER L		50	)	10	00	15	50	20	0	
<b>DEPTH(m)</b>	LEVAT	SOIL DESCRIPTION	RATA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sca	ile (kPa	ι)		7.7	T-T	TAT.
	□		S	-	Ž	RECC	żδ	MONI	WATE SPT	R CON (N), 0 20	TENT BLOW	& A'	TTERB 3m				w —	₩ <sub>L</sub>
- 0 -									1	0` 20	) 30 %MC c	0 4	O 5				0	90
		ORGANICS (25 mm)		X X														
	-	SAND, brown.																-
	-			BS	1													-
		- grey from 0.2 - 0.5 m		X														
	1			Λ				1										-
	-																	-
	1	- brown from 0.5 - 0.7 m																
	-																	-
		- clayey from 0.7 - 0.9 m																
	_																	-
		- from 0.9 - 1.1 m: medium to coarse grained, wet																
- 1 -	-																	
		End of test pit at 1.1 m due to refusal on PERMAFROST, Sand.																
	-	- Note: located in erosion channel just north of																-
	-	test pit 009.																
	•																	
	-																	-
	_																	-
	-																	-
- 2 -																		
_			_	DB		FT.			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

	Sta	Antec Nunami Stantec Ltd.	TE	ST	PIT DR	RE AFT	COR	D	Dati	Bore N E um: TOG	ehole Co				<b>2</b> 01			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		)2184 st Pit		
		/dd/yy): BORING	/11	W	ATEF	R LEVE	L Not n	neasur	ed		_	Dii	SIZL		10,	<u> </u>	<u>,</u>	
		•				AMPLE			_	ained	d She	ar S ocke	treng t Pen	th (	Cu) :	(kPa	ı) <b>▲</b> :Pa)★	
DEPTH(m)	TION(n	SOIL DESCRIPTION	A PLO1		l K	r mm %::	ш%	WELL/		50	)	10	)() 	15	50	20	0	_
DEPT	ELEVATION(m)	SUIL DESCRIP HON	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu c	116 (	,		$W_{\mathcal{D}}$	W	W <sub>T.</sub>
			S			REC	Z ō	MON		R CON (N),			TTERB: 3m -0 5			s Ē—	•	<b>-i</b> 90
- 0 -		SAND, occasional gravel, brown.	[4. h	X		++							Count				, []]]	
	-	,		()       BS														-
																		-
																		_
	-																	
																		-
	-	SAND, light brown		≬ Bs	2				О									
		_PERMAFROST, SAND.		<u> </u>				_										<u> </u>
- 1 -	-	End of borehole at 0.925 m due to refusal on PERMAFROST, Sand.																
	-																	-
	-																	-
	-																	
	-																	
- 2 -	-																	
- 2 -				DE		FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE AFT	COR	D	Date	Bore N E um: TOG	ehole Co				<b>2</b> 012			
P	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECT SIZE	No.		)218 st Pi		-
		//dd/yy): BORING		_ WA	ATER	LEVE	L Not n	neasur	ed		_	DII	SIZE				-	_
	Ê					AMPLE			_	ained	d She	ar S	treng t Pen	th (	Cu) :	(kPa	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		H.	Y mm	щ%	WELL/		50	)	Cu Sca	le (kPa	15	5U	20	)U	
DEP.	=LEVA	SOIL BLOOKII HON	TRAT,	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								Wp	W	W <sub>T.</sub>
			8			REC		MON		R CON (N), 0 20			TTERB 3m 0 5			s Ē—	80	90
- 0 -		¬ORGANICS (25 mm)	22	VI					1		\$MC (	or Blow	Count				50  }}	<del>90</del>
		SAND (SM), silty, some clay, fine to medium		BS	1													
		grained, brown, wet.		BS	1						Φ.							
	-			4				1										-
		11 .02																-
		- cold at 0.3 m																
		PERMAFROST, SAND.																
	_	End of test pit at 0.4 m due to refusal on PERMAFROST, SAND.																-
	-																	-
	-																	-
- 1 -	_																	
	-																	
	-																	-
	1																	
	-																	-
	-																	-
	_																	
_																		
- 2 -			- 1	-	1			1								1		
				DR	А	FT.			□ Dyn	amic C	one Pe	enetrat	on Tes	t - N, b	lows/(	).3 m		

CLI	Sta ENT _ DJECT_	Antec Nunami Stantec Ltd. Geotechnical Site Investigation	TE	ST	PIT DR	r RI	ECOR	D	Da	Bor N E tum: TO	rehole Co				<b>2013</b>	3 )21843	33
	CATION	Clyde River, NU									_		SIZE			t Pit	
DAT	ΓES (mn	n/dd/yy): BORING	/11	_ WA	ATER	LEV.	EL Not r	neasur									
(E)	ON(m)		LOT		S	AMPLI		] ] ,	Und: Cu	raine based 5	d She on P	ar Stocket	reng Pen	th (0 etror	Cu): meter	(kPa) : (kPa) 200	<b>▲</b> a)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				& A1	3m	ERG I	LIMITS		v w → •
- 0 $\downarrow$		ORGANICS (50 mm)		VI					1	.0 2  ::::				Scale	60 70 (% or N		9( <del> :::</del>
-		SAND, fine grained, brown, wet.		A BS	1			_		0							
- 1		- wet at 0.35 m															
- 1 -		PERMAFROST, SAND.  End of test pit at 0.4 m due to refusal on PERMAFROST SAND.															
																	-
									1								
- 2 —		1		DR					□ Dyi	namic (	Cone Pe	enetrati	on Tes	t - N, b	l:::::l	.:::l: .3 m	:::

	Sta	antec Nunami Stantec Ltd.	ΓΕ	ST	PI'	r RE	COR	D	Dat	Bore N E um: TO0	ehole Co				P014			
P	ROJECT OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJEC I SIZE	Γ No.		0218 st Pit		-
		//dd/yy): BORING		_ W	ATEI	R LEVE	L Not n	neasur	ed		_	ъ.	ا ال			<u> </u>	<u>-</u>	_
	Ę.				S	AMPLE	s		Undı Cu k	raine	d She	ear S	treng	th (	Cu) :	(kPa	i)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		111	Y mm	п%	WELL		50	J		00 		50	20		
DEP.	ELEVA	SOIL DESCRIPTION	TRAT,	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								Wp	W	W <sub>T.</sub>
			8		_	REC		MON		R COI			TTERB 3m 10 5			s <b>—</b>	80	90
- 0 -		SAND, fine grained, trace silt, trace clay, brown.		XI									w Count				  ::::	:
		or a control of the c		BS	1				C									
				<u> </u>														
,																		-
																		-
				X			-	-										ŀ
				∦ ∦ BS	2				c									
				X														
		End of test pit at 0.7 m due to refusal on PERMAFROST SAND.																
																		-
																		-
- 1 -																		-
,																		-
																		-
																		-
·																		
- 2 -						1		1	: : : :	liiii	1::::	<u> Liiii</u>	1::::	LIIII	1::::	1::::	Liii	
				DE		FT.			□ Dyr	namic C	Cone Pe	enetrat	tion Tes	t - N, b	olows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓΕ	<b>ST</b>	PIT DR	RE	COR	D	Da	Bor N E tum: TO	ehole Co				<b>2</b> 01			
P	ROJECT OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.		0218 st Pit		-
		/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed		_							
	m)		  -		S	AMPLE	S		Und: Cu l	raine based 50	d She	ar S ocke 1(	treng t Pen	th (0 etror	Cu): meter	(kPa : (k 20	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	A PLO		   #	.∀ mm E %	₽%	WELL					le (kPa	-		<del></del>		
DEP	ELEVA		STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								$W_{\mathrm{P}}$	W	$W_{ m L}$
			"			REC	0	Ŭ M M		$0^{(N)}$			TTERB: 3m .0 5				80	90
- 0 -		SAND, some silt, occasional gravel.								-  ::::			Count				-  ::::	
	-			$\langle$				-										-
	-			BS	1					0								-
	-	- wet at 0.6 m																-
		End of test pit at 0.65 m due to refusal on PERMAFROST SAND.																-
	-																	-
- 1 -	-																	
	-																	-
	-																	-
																		-
	-																	-
																		-
- 2 -																	L	-
			_	np		FT.			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

C	LIENT	antec Nunami Stantec Ltd.	TE	<b>S</b>	T F	PIT	RE AFT	COR	D	Da	Bore N E tum: TOO	ehole Co				P016		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU		_								_		OJECT SIZE	' No.	_110 Tes	12184 18 Pit	
		n/dd/yy): BORING	1	_	WA	TER	LEVE	L Not n	neasur	ed								
	Ē					S/	AMPLE	S		Und Cu	rained based	d She	ar S ocket	treng	th (Cetrom	Cu): meter	(kPa : (k 20	) ▲ Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATI	ER CON	ITENT	Cu Sca	le (kPa	ERG L	LIMITS	W <sub>P</sub>	W W <sub>L</sub>
- 0 -					$\Box$	_	$\coprod$			1	0 <sup>(N)</sup> /20					60 70		0 90
~		ORGANICS (10 mm) SILT, sandy trace clay, brown to grey, moist.	-I															
-		SIL1, Sandy trace eray, brown to grey, moist.			BS	1			_		Ö							-
  - 	-	SAND, trace silt			BS	2					о <b>н</b>							
- - - 1 -		End of test pit at 0.6 m due to refusal on PERMAFROST, SAND.																-
-																		-
-																		-
- 2 -					\P	ΛΙ	FT.			□ Dy	namic C	one Pe	enetrati	on Tesí	- N, b	lows / 0	.3 m	

C.	LIENT	Nunami Stantec Ltd.	ΓE	ST	PIT DR	RE	COR	D	Da	Bore N E tum: TOO	ehole Co		es OJECT	TF	P017			
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECI SIZE	No.		<u> </u>		
		/dd/yy): BORING		_ W	ATER	LEVEL	Not n	neasur			_							
	Œ				SA	MPLES	i		Und: Cu l	rained based <b>5(</b>	d She on P	ar S ocke	treng t Pene 00	th (Cetrometrometrometrometrometrometrometrom	lu) : neter ()	(kPa : (k 20	ı) ▲ :Pa)★ ()	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	监	RECOVERY mm or CORE %	an %	MONITOR WELL/ PIEZOMETER					ile (kPa	-+		<u>_</u>		_
	ELEV,		STRAT	TYPE	NUMBER	r COR	N-VALUE or RQD %	MITOR								$W_{\mathbf{P}}$	w w	$I_{ m L}$
			<b>  "</b>			REC		Į Į		$0^{(N)}$			TTERBE 3m •0 50				0 90	<b>+</b> 0
- 0 -		SAND & GRAVEL, spoil at quarry surface.	76								%MC c	or Blow	Count	Scale				_
			50															
-																		-
-																		-
_																		_
_																		_
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				DR	ΑΙ	FT-			□ Dyi	namic C	one Pe	enetrat	ion Test	- N, bl	ows/0	.3 m		

C	LIENT	Antec Nunami Stantec I Geotechnical Site	Ltd.	res	ST I	PIT DR	RE AFT	COR	D	Dat	Bor N E um: TO		oordina	tes OJEC		P018			
	ROJECT_ OCATION		Investigation									_		i SIZE			st Pit		_
D	ATES (mm	n/dd/yy): BORING _	7/13/2011/13/11		_ WA	ATER	LEVE	L Not n	neasur										
	E E					SA	AMPLE	S		Und: Cu k	caine based 5	d She on I	ear S Pocke	treng t Pen	th (etro	Ju) : neter 50	(kPa : (k 20	ı) ▲ :Pa)★ )()	r
DEPTH(m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT	TYPE	NUMBER	ERY mm	LUE D %	R WELL					ale (kP					
<u>B</u>	ELE			STRA	Σ	NOM	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					TTERB	ERG I	LIMIT	W <sub>P</sub> S <b>I</b> ──	W 	W <sub>L</sub>
- 0 -										1	0 <sup>(N)</sup> 2	0 3	or Blo	40 5				30	90
- 0 -		SAND and GRAVEL		000000	BS	1													1
				000000															-
-		- free water at 0.65 m		00000															
-		End of test pit at 0.7 m PERMAFROST.	due to refusal on																-
- 1 -																			
- -																			
- 2 -																			
				_	DR	ΔΙ	F <b>T</b> -			□ Dyr	namic C	Cone P	enetra	tion Tes	it - N, b	olows / (	Э.3 m		

	Sta	antec Nunami Stantec Ltd.	TE	ST	PIT DR	RE	COR	D	Dat	Bore N E um: TO0	ehole Co				P019			
F	PROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJEC I SIZE			0218 st Pi		
		n/dd/yy): BORING	11	_ W.	ATER	LEVE	Not n	neasur	ed		_							
	Ê		-		S	AMPLE	S		Undi Cu k	raine based 50	d She	ear S Pocke	treng t Pen 00	th (	Cu) : meter 50	(kPa : (k 20	a) ▲ cPa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	MATTE			Cu Sca	ale (kP	a)		Wp		W <sub>L</sub>
						8		_ 8		0 2	BLOW 0 3	MS/0.	3m 10 5	0 6	50 7	70 8	30	90
- 0		ORGANICS (100 mm)									%MC (	or Blo	w Count	Scale	(% or	N)		$\vdash$
	-	CLAY (CL-CI), silty, trace to some sand, low t medium plastic.	0	BS	1					O:								-
	-			BS	2													_
1	-	End of test pit at 0.7 m due to refusal on PERMAFROST.																_
- 1 · 	-																	-
	-																	
- 2				ne		FT.		I	□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	olows/(	0.3 m	11111	

	Sta	antec Nunami Stantec Ltd.	TES	ST	PI'	T R	ECOR	D	Dat	Bore N E um: TOO	ehole Co				<b>2</b> 02			
P	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECT SIZE	Γ No.		0218 st Pit		-
		//dd/yy): BORING		_ W	ATE	R LEV	EL Not	measur	ed		_	יים	JILL			<i>50 -</i> -	<u> </u>	_
	<u> </u>					AMPL				caine	d She	ar S	treng t Pen	th (	Cu):	(kPa	ı) <b>≜</b> :Pa) <b>≯</b>	k .
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		E.	r mm 	ш%	WELL		50	)	Cu Sca	)() 	15	50	20		
DEPT	ELEVA	SOIL DESCRIPTION	TRAT/	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER						-,		Wp	W	Wт
			S S			REC	2 5	MOM	WATE	R CON 0 2	TENT BLOW	& A'	TTERB			s <del>I</del>	•	
- 0 -		ORGANICS (50 mm)							1	0 2	%MC (	O 4 or Blow	O 3				<del>  : : : :</del>	90
		gravel, low to medium plastic, brown, wet.						1										-
				BS	1					0								
																		-
				_	-			-										
-																		
		End of teet nit at 0.6 m due to refusal on			+													-
		PERMAFROST.																
																		-
- 1 -																		-
																		-
				BS	2													
			2					-										-
L.																		
																		-
	End of test pit at 0.6 m due to refusal on																	
																		-
- 2 -									1::::	l:::i	L:::	L::!i	<u> Irrii</u>	L::!i	<u> Lirii</u>	Liii	Liii	+
			_	n	<b>)</b>	FT.	_		□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

C	LIENT	Nunami Stantec I	Ltd.	ΓES	<b>ST</b>	PIT DR	RE	COR	D	Dat	Boro N E um: TOO	ehole Co		tes OJEC		202 <sup>-</sup>		
	ROJECT_ OCATION	Geotechnical Site Clyde River, NU	Investigation									_		OJEC I SIZE			<u>st Pi</u>	
		n/dd/yy): BORING _	7/13/20117/13/11		_ WA	ATER	LEVE	L Not n	neasur	ed		_						
	J.)			L		S	AMPLES	5		Und: Cu k	raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	a) ▲ :Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)		00 	15 a)		20	
	33			STR	<u>-</u>	Ñ	RECOV or CO	2 P 2 S S S S S S S S S S S S S S S S S	MONITO		CR COI			TTERB 3m				W W <sub>L</sub> 0 90
- 0 -		ORGANICS (25 mm)		74								%MC (	or Blo	w Count	Scale			
			some sand, low to medium															-
					BS	1												-
		SILT (ML), clayey, sor	me sand.		BS	2					0							-
		End of test pit at 0.65 permafrost.	m due to refusal on															-
- 1 -																		-
																		-
																		-
- 2 -																		-
				_	DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m	

CI	Sta	Nunami Stantec Ltd Geotechnical Site In	<b>l.</b>	ES	6 <b>T I</b> -	PIT DR	RE	COR	D	Da	Bore N E tum: TOO		pordinat	oject	TF	P022	2	
LO	OCATION		= 14.0 10.04 = 14.0 14.4					<b>N</b> T 4				_	ВН	SIZE		Tes	t Pit	
D	ATES (mn	n/dd/yy): BORING	7/13/20117/13/11		_ WA				neasur 		raine	- d She	ar S	trena	⊦h (C	'11) <b>:</b>	(kPa	) 🛕
(u	N(m)			6		SA	AMPLE:	S	]     ]~	Cu	rained based 5(	on P	ocke 10	t Pen	etrom	eter 0	: (k	Pa)★ 0
<b>DEPTH(</b> m)	ELEVATION(m)	SOIL DESCRI	PTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER COI		' & A'			IMITS	W <sub>P</sub>	W W <sub>L</sub>
- 0 -									_	SPI ]	10 20	DELOW SMC	0 4	0 50 Count	O 6			0 90
- 0 -		ORGANICS (25 mm)																
-		CLAY (CL-CI), silty, san plastic, wet.	dy, low to medium		BS	1					0							-
-		- moist at 0.3 m							_									-
					BS	2			_		0							-
-		End of test pit at 0.65 m of PERMAFROST.	lue to refusal on															-
- 1 - - -																		-
- 																		-
-																		-
- 2 -																		-
				_	nR	ΔΙ	FT-			□ ру	namic C	one Pe	enetrat	ion Test	- N, bl	ows/0	.3 m	

	Sta	antec Nunami Stantec Ltd.	TES	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E tum: TOO	ehole Co	oordinat	tes	TI	P02	3		
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE			0218 st Pit		
		n/dd/yy): BORING	1	_ WA	ATER	LEVEI	Not n	neasur	ed		_	DII	JIZE		10.	<u> </u>		
	<u> </u>					AMPLES			_	raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	ı) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	띪	KY mm E %	NE %	WELL/ ETER		5(	)	Cu Sca	)() 	15		20	0	
DEP	ELEV/		STRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER CON				ERG I	LIMIT	W <sub>P</sub> S <b>├</b> ──	W W	√ <sub>L</sub>
						<u> </u>		. ≥	SPT 1	0 <sup>(N)</sup> 20			3m lO 5 w Count				0 90	0
- 0		ORGANICS (50 mm)																
	-	CLAY (CL), silty, sandy, brown, low plastic, moist to wet.		BS	1					0								-
	-			BS	2					đН							-	-
- 1 ·	-	End of test pit at 0.6 m due to refusal on PERMAFROST.																_
																		-
																		-
- 2				np	· ^ I	FT.			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m	••••	

	Sta	antec Nunami Stantec Ltd.	 [E:	 \$1	Γ P -[	PIT DR	RE	COR	D	Dat	Bore N E tum: TOO	ehole Co				P024			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU		—								_		OJECT I SIZE	Γ No.		02184 st Pit		-
		//dd/yy): BORING		_	WA	TER	LEVE	Not n	neasur	ed		_	וומ	. SIZL	_		<del>)</del>		_
							MPLE			_	raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	ı) <b>≜</b> .Pa) <b></b>	k
DEPTH(m)	TION(r	SOIL DESCRIPTION	N PLO			œ	/ mm %	ш%	VELL		50	)		00 	15	<del></del>	20	0	
DEPT	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	(	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu DC.	ite (AL-	1,		$W_{\mathcal{D}}$	W	W <sub>T.</sub>
			S)	L			REC	<b>z</b> 5	MON		0 20			TTERB			s <del>I</del> —		<b>⊣</b> [
- 0 -		ODC ANICS (25 mm)		_							0 2	3 %MC (	O 4 or Blow	40 5				60 	90
		ORGANICS (25 mm) SILT, sandy, some clay, wet			BS	-1													
																			-
				Å															
				V V	BS	2					0								-
-	·			8															-
		- at 0.55: possible clay and silt, little recovery due		X					_										
		to free water.																	
-		End of test pit at 0.7 m due to refusal on	+																
	<b>-</b>	PERMAFROST.																	-
- 1 -																			
																			-
_																			
																			-
																			-
_																			
- 2 -									-								L	ı <u>.</u>	
			_	.П	ıD	ΛΙ	·T.			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΤΕ	ST	PIT DR	RE	COR	D	Date	Bor N E um: TO	ehole Co				<b>2</b> 02			
	ROJECT_	Geotechnical Site Investigation									_		ROJEC					
	OCATION	Clyde River, NU  n/dd/yy): BORING 7/13/2011/13/11		W	TED	IEVE	Not n	neasur	ed		_	BI	H SIZE		<u> 1e</u>	st Pi	ι	
D		rudyy). BORING				AMPLE				aine	d She	ar S	Streng	th (	Cu) :	(kPa	a) <b>A</b>	_
(m)	ELEVATION(m)		PLOT					ĒLL/ ĒR	Cu b	ased 5	on P		Strenget Pen		meter 0	20	iPa) <b>★</b> 00	
DEPTH(m)	LEVAT	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sc	ale (kPa	a)		TAT	W	TAT_
	ш		S		z	RECC	żδ	MONI			NTENT BLOW 0 3		TTERB					<b>-1</b>
- 0 -		ORGANICS (50 mm)	7/	_					11	) 2	%MC (	or Blo	W Count				30 9 	90 <del> </del>
		CLAY (CL), low plastic, sandy, silt, grey, wet.																
		22.11 (22), 10 ii passie, sailej, sai, g.e.j, ii ei						-										-
				BS	1					Ο								
				X														
		End of test pit at 0.4 m due to refusal on PERMAFROST.																
-																		
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- 1 -																		
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- 2 -				ne					□ Dyn	amic (	Cone Pe	enetra	tion Tes	t - N, b	lows / (	).3 m		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TI	ES	T [	PIT	RE	COR	D	Dai	Bor N E tum: TO	ehole C				<b>2</b> 02		433	
	ROJECT_ OCATION											_		I SIZE			st Pi		
D	ATES (mm	n/dd/yy): BORING	3/11		_ WA	TER	LEVE	Not n	neasur	ed									
	Ê					SA	MPLE	S		Und: Cu l	raine oased	d She	ear S	treng t Pen	th (	Cu):	(kPa	a) ▲ :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION		SIRAIA PLOI	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5		Cu Sca	OO 			20 	W W	L
				-			Ä,		Ĭ Š Ī		$0^{(N)}$			TTERB 3m 40 5				0 90	)
- 0 -		¬ORGANICS (25 mm)			T					1	Tiiii	%MC	or Blow	w Count	Scale				_
		CLAY (CL) low plastic and SAND (SM), silt	lty,																
-		wet.																	
-		- free water at 0.1 m																-	.
					BS	1						OH:							
-																			
					-				-									: : : :	
-																			_
		End of test pit at 0.4 m due to refusal on		4															_
		PERMAFROST.																	
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- 2 -																			
				_	DR	ΔΙ	FT-			□ Dyr	namic (	Cone Po	enetrat	ion Tes	t - N, b	lows/(	).3 m		-

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	S	T F	PIT DR	RE	COR	D	Da	Bor N E tum: TO	ehole C		ates		<sup>2</sup> 02			
	ROJECT_ OCATION											_		i SIZE			st Pi		_
D	ATES (mm	/dd/yy): BORING	/11	_	WA	TER	LEVE	L Not n	neasur	ed									
	Ê					SA	MPLE	S		Und: Cu	raine based 5	d She	ear S Pocke	Streng et Per	th ( netron	Cu): neter	(kPa : (k 20	a) (Pa)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		<u>س</u>	ËE	₹¥ mm tE %	.UE	MONITOR WELL/ PIEZOMETER			-		ale (kP		)U		<i>,</i>	
DEF	ELEV		STRA		TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	ONITOR	WATI	ER CO	NTENT	г & А	TTERE	ERG 1	TMTT	W <sub>P</sub> S <b>⊢</b>	W	W <sub>L</sub>
					$\dashv$		2		_ ₹		0 2	BLO	MS/0.		50 e	50 7	0 8	80	90
- 0 -		ORGANICS (10 mm) - extremely soft and spongy ground @ surface	re //									BPIC	l i i i	w count	Jeare				
-		CLAY (CL) sandy, silty, low plastic, brown,			_				-										:  -
-		moist to wet free water at 0.1 m			BS	1					0								-
-					$\dashv$				_										-
-																			-
					BS	2					0								
-					-														-
-																			
_		End of test pit at 0.8 m due to refusal on PERMAFROST.																	
- 1 -																			
1																			
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- 2 -															Liiii			Liii	
					۱R	ΛΙ	-T-			□ Dyi	namic (	Cone P	enetra	tion Tes	st - N, b	lows / (	).3 m		

С	LIENT	Nunami Stantec La Geotechnical Site 1	td.	E	<b>ST</b>	PIT DR	RE AFT	COR			Boi N E tum: TO	rehole C		ates		<b>2</b> 02			
	ROJECT_ OCATION		invesugauon									_		H SIZE			st Pi		
D	ATES (mm	n/dd/yy): BORING	7/13/20117/13/11		_ WA	ATER	LEVEI	Not n	neasur	ed									
	Ê			_		SA	AMPLES	3		Und: Cu	raine based	d Sh	ear S Pocke	Streng	th (	Cu):	(kPa	a) ▲ (Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCR	RIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			0		00	15 a)	9U	20 W <sub>P</sub>	W 1	W <sub>T.</sub>
				S		_	REC	<b>2</b> 0	MON		ER CO (N),			TTERE			s <del>I</del>	0 9 9	<b>-i</b> 90
- 0 -		\ORGANICS (10 mm)		1111	T					1	.0 <u>2</u>	%MC	or Blo	ow Count	Scale			,0 <i>)</i>	
		CLAY (CL) low plastic	and SAND (SM), silty,																
		moist to wet.			BS	1													-
																			_
					BS	2					Ö								_
					)   	_													
					\														
		End of test pit at 0.65 m PERMAFROST.	due to refusal on																
- 1 -																			
- 1 -																			
																			-
																			-    -
- 2 -																			
				_	DR	ΔΙ	FT-			□ Dyi	namic (	Cone F	enetra	tion Tes	st - N, b	lows / (	0.3 m		

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	S	T F	PIT DR.		COR			Bor N E tum: TO		oordina	tes OJEC		P029			
	OCATION											_		I SIZE			st Pi		
D.	ATES (mm	/dd/yy): BORING	1	_	WA	TER	LEVE	Not n	neasur			_							
	Œ						MPLE	S		Und: Cu l	raine based 5	d Shoon 1	ear S Pocke 10	treng t Pen	th (etror	Cu): neter ()	(kPa : (k 20	a) ▲ :Pa)★ :00	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		ш	Ä	RECOVERY mm or CORE %	NE %	MONITOR WELL/ PIEZOMETER					ale (kP	a)				
DEF.	ELEV,		STRAT		TYPE	NUMBER	CONE	N-VALUE or RQD %	ITOR								$W_{\mathbf{P}}$	W	WL
			- 0,				SEC.		Į Į				r & A NS/0. 80 4	TTERB 3m 10 5				80	<del> </del>   00
- 0 -		ORGANICS (10 mm)	17/1	<u> </u>						1	0 <u>2</u> 	%MC	or Blo	w Count	Scale			,, []]]	,  -
		CLAY (CL), silty, some sand.																	
-		SILT, sandy, some clay.		$\bigvee$															
-				X															-
				V															
				$\left  \right\rangle$	BS	1					0	н							
-				X															-
				V															
				$\mathbb{N}$															
-				V				-											
-		End of test pit at 0.65 m due to refusal on PERMAFROST.																	-
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_				.r	)R	ΛΙ	т.			□ Dyr	namic (	Cone P	enetrat	tion Tes	it - N, b	lows/(	0.3 m		

C	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	TI	ES	T [	PIT DR	RE	COR	D	Da	Bor N E tum: TO0	ehole Co		tes OJEC		<b>20</b> 30			
	ROJECT_ OCATION											_		I SIZE			st Pi		_
D	ATES (mm	/dd/yy): BORING	13/11		_ W <i>F</i>	ATER	LEVE	L Not n	neasur	ed									
	Ę			_		SA	MPLE	S		Und: Cu l	raine based 50	d She	ear S	treng t Pen	th (etro	Cu):	(kPa	a) A	r
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION		STRATA PLOT		œ	/ mm %	ш%	MONITOR WELL/ PIEZOMETER					ale (kP			20		
DEPI	LEVA	SOIL DESCRIPTION		RAT/	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	TOR V				cu be	u10 (111	. ,		TAT	W	TAT
	Ш			တ		z	RECC	żδ	MONI					TTERB 3m		IMIT	W <sub>P</sub> S <b>├</b> ──	<u>"</u>	— → I
- 0 -										1	0 <sup>(N)</sup> 2	0 3	or Blow	40 5 w Count				80	90
		ORGANICS (10 mm)																	:
-		CLAY (CL) and SAND (SM), silty, trace g	gravel.						-										-
_					2														-
					BS	1					0								
-					<b>)</b>														-
-					-				-										:   :  -
_		End of test pit at 0.5 m due to refusal on PERMAFROST.																	
		PERMAPROST.																	-
_																			
-																			-
- 1 -																			
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_																			
- 2 -					<u></u>					::::	<u> </u>	<u>Liiii</u>	Liii	1::::	<u> </u>	<u> </u>	Liiii	L	+
				_1	NR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	tion Tes	t - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓE	ST I	PIT DR	RE	COR	D	Dat	Bore N E um: TOO	ehole Co				<b>2</b> 03			
P	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		02184 st Pit		-
		//dd/yy): BORING		_ WA	TER	LEVE	EL Not n	neasur	ed		_	DII	SIZL					_
						AMPLE			_	raine	d She	ar S	treng t Pen	th (	Cu) :	(kPa	a)	<u>.                                    </u>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		œ	mm %	ш%	WELL		50	)	10	)() 	15	50	20	0	
DEPT	LEVAT	SOIL DESCRIPTION	IRATA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				cu sea	iie (RP	1)		W_	TAT	W <sub>T.</sub>
	ш		ြ		z	RECC	żδ	MONI		R CON (N), 0 2			TTERB				<u>"</u>	<b>⊣</b>
- 0 -		7079 11799 (42							1	0 2			O 5				30 1::::	90
		ORGANICS (10 mm)  SAND (SM), silty, some clay, occasional gravel,																
	-	moist to wet.		X				-										-
				X X														
	-			X														-
				BS	1					D: : : :								
				X X														
-	-	- at 0.5 m: wet to saturated		Å														
				Å  														-
				V .														
		End of test pit at 0.72 m due to refusal on																
	-	PERMAFROST.																-
- 1 -	-																	
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- 2 -																		
				DR	Λ.	= <b>T</b> _			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

C	LIENT	Nunami Stantec Ltd.	ΓE	ST	PIT DR	RE	COR	D	Dat	Bore N E tum: TOG	ehole Co				P032	2	
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.	110 Tes	<u> 2184</u> t Pit	
		/dd/yy): BORING		W	ATER	LEVE	L Not n	neasur	ed								
	(m		_		S	AMPLE	S		Undı Cu k	cained based 50	d She	ar S ocket	treng	th (Cetron	Cu): neter	(kPa : (kl 200	) <b>▲</b> ?a)★
DEРТН(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		<del></del>	TENT	Cu Sca	le (kPa	ERG L	IMITS	W <sub>P</sub>	W W <sub>L</sub>
- 0 -									1	0 20					0 70		90
		ORGANICS (25 mm) - extremely soft and spongy ground															
		SAND (SM), silty, trace clay, wet at 0.1 m: free water		X				_									
				BS	1				0								
		- at 0.4 m: clayey, slight plasticity		A A A A A A A A A A A A A A A A A A A				-									-
				BS	2			_									-
-		End of test pit at 0.8 m due to refusal on PERMAFROST.															
- 1 -																	
																	-
- 2 -				D.P.					□ Dyr	namic C	one Pe	enetrati	on Test	- N, bl	lows / 0.	3 m	

CL	Stant _	Antec Nunami Stantec Ltd. Geotechnical Site Investigation	TE	ST	PIT DR	T R AF	ECOR	D	Da	Boi N E atum: TO	rehole Co				P033		
	OCATION	Clyde River, NU									_		SIZE	_		t Pit	
DA	ATES (mn	n/dd/yy): BORING	1	W				neasur 				04		-b //	7 \ .	/l-D-	<u> </u>
(i	N(m)		þ		S	AMPL		] 	Cu	raine based 5	on P	ar Si ocket 10	reng Pen 0	etrom	Cu): meter 60	: (ki	) ?a)★ )
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			NTENT	& A7			I IMITS	W <sub>P</sub>	w w
- 0 -									SPI ]	10 2	BLOW 20 30			) 6	0 70		90
-		ORGANICS (10 mm)  SAND (SM), silty, some clay, occasional gravel moist to wet.	<b>,</b>	\ \ \ \ \ \ \ \ \													-
-				BS	1					Ó							-
				<u> </u>													-
-		End of test pit at 0.72 m due to refusal on PERMAFROST.															
- 1 <del>-</del> -																	
																	-
- 2 -				.DR	) • A I				□ Dy	namic (	Cone Pe	enetrati	on Test	t - N, b	lows / 0.	.3 m	

C	Sta	Nunami Stantec Ltd. Geotechnical Site Investigation	TE	ST	PIT DR	RE AFT	COR	D	Da	Bore N E tum: TOO		oordinat	es OJECT	TF		1 )2184	433_
	OCATION						Not n	MOOGIIM	od.		_	ВН	SIZE		Tes	t Pit	
D.	ATES (mn	n/dd/yy): BORING		W		AMPLES	Not n	lleasur	-	raine	— d Sh∈	ear S	treng	th (C	!u) :	(kPa	) 🛕
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	Cu 1	rained based 50	on P		t Pen 00 	-+	eter 0	: (k 200	Pa) <b>★</b> 0
٥	33		STR,	F	NON	RECOV or CC	or RC	MONITO		ER CON	BLOW 0 3	0 4	3m -0 50	) 6	імітя О 70	0 80	₩ ₩ <sub>L</sub> 0 90
- 0 -		ORGANICS (25 mm)	r (A)								%MC	or Blow	Count	Scale	(% or N	)	
-		CLAY (CL-CI)), low to medium plastic, silty, some sand, brown, wet.						_									-
-				BS	1					C	) <b> </b>						-
		- gravel inclusions at 0.5 m  End of test pit at 0.52 m due to refusal on PERMAFROST.						-									
-																	
- 1 - -																	
-																	-
- 																	-
-																	-
- - 2 -																	
				DR	ΔΙ	FT-			□ Dyi	namic C	one Pe	enetrati	ion Test	- N, bl	ows/0	.3 m	

CL PR	LIENT ROJECT	Nunami Stantec Lo	td.	TE		PIT DR	RE AFT	COR	D	Da		N E	ole C		ROJE	CT N	lo		<u> 218</u>		3_
	OCATION		7/13/20117/13/11	<u> </u>	***	. EED		Not n	neggur	ed he			-	B	H SIZ	Œ_		<u>Tes</u>	t Pi	<u>t                                     </u>	
רע	ATES (mm	/dd/yy): BORING	7/13/2011/13/11		W				Lasur		raiı	ned	She	ear	Stre	ngth	(Cu	) :	(kPa	a )	_
	E)			10		\ \ \	MPLES	)	<u> </u>	Cu :	base	50°	on I	ock ]	et P	ngth enetr	150	ter	20	Ра )	<b>*</b>
	ELEVATION(m)	SOIL DESCR	EIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			+		Cu S	cale (	kPa)	-				
	3			STR	-	Į D	RECO/ or C	7 º	MONIT	WATI SPT	ER (	CONT	ENT	- & 2 45/0	ATTE	RBERG				W 	•
,		_								1	.0	20	%MC	or Bl	40 ow Cou	50 nt Sca	60 le (%	or N		<del></del>	- 90 
		ORGANICS (10 mm)	and CAND allow most to	_																	
-		CLAY (CL) low plastic saturated	and SAND, silty, wet to		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				_												
-					BS	1					1	-1									] •
		-							-												
_		End of test pit at 0.6 m of PERMAFROST.	nue to refusai on																		
-																					
_																					
$\left  \right $																					

CI	LIENT	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓE	ST	PIT DR	RE AFT	COR	D	Da	Bore N E itum: TOO	ehole Co		es OJECT	TF	P036	6	
	ROJECT_ OCATION	Clyde River, NU									_		SIZE			t Pit	
D	ATES (mn	n/dd/yy): BORING 7/13/2011/13/11		W	ATER	LEVE	Not n	neasur									
	Ê		F		S	AMPLES	8		Und Cu	raine based 50	d She on P	ar S ocket	treng t Pene 10	th (Centrone : 15	u): eter	(kPa : (k 20	) ▲ Pa)★ 0
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					ile (kPa	-+			
	립		STE	-	N	RECO' or C	- <u>7</u> 0	MONIT		ER COM					IMITS		$0  \begin{array}{c} W & W_{L} \\ \hline 0 & 90 \end{array}$
- 0 -		\ORGANICS (10 mm)	 /ПП								%MC o	r Blow	Count	Scale	(% or N	)	
-		SILT (ML), clayey, some sand.		\ \ \ \ \				-									
-				BS	1					0							
- 		End of test pit at 0.4 m due to refusal on PERMAFROST.		X													
-																	-
-																	-
- - 1 -																	-
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-																	
_																	
-																	-
- - 2 -																	
				.DR	ΑΙ	FT-			□ Dy	namic C	one Pe	netrati	on Test	- N, bl	ows/0	.3 m	

	Sta	antec Nunami Stantec Ltd.	ΓE	<b>ST</b>	PIT DR	RE	COR	D	Dat	Bore N E um: TOO	ehole Co	oordinat	es	TF	203	7		
P	ROJECT_ OCATION	Geotechnical Site Investigation									_		OJECT SIZE	No.		)218 st Pi		_
		//dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed		_	DII	SIZE		10,	<u> </u>		-
	e e					AMPLES			_	raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		e:	Y mm	щ%	WELL		50	)	Cu Sca	)() 	15	0	20	00	
DEP.	ELEVA	GOIL BLOOKIN HON	TRAT,	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								$W_{\mathbf{P}}$	W	$W_{ m L}$
			0,		_	REC	- 0	M M		R CON 0 2			TTERB 3m .0 5				80	90
- 0 -		SAND (SM), silty, medium to coarse grained.		T									Count				, 	1
,	-			./			_											
				\\														
				BS	1					O.								
,	-			4				-										-
																		-
		- at 0.5 m: free water																
		End of test pit at 0.6 m due to refusal on																
	-	PERMAFROST.																
,																		
	-																	-
- 1 -	-																	
	-																	-
																		-
	-																	
,																		-
,																		
- 2 -																		
			_	np	Α.	FT.			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/0	).3 m		

	Sta	antec Nunami Stantec Ltd.	TES	ST   -	PIT DR	RE	COR	D	Da	Bore N E tum: TOO	ehole Co				<b>2</b> 03			
P	ROJECT_	Geotechnical Site Investigation Clyde River, NU									_			No.		02184 st Pit		-
	OCATION  OATES (mm			W/	ATER	LEVE	Not n	neasur	ed	_	_ 	ВН	SIZE	-	10	<u> 5t I 1t</u>	<u>.                                    </u>	-
						AMPLE			_	raine	d She	ar S	treng	th (	Cu) :	(kPa	a) <b>≜</b>	
(E)	ELEVATION(m)		STRATA PLOT		_	m %		HE H		50	)	10	00	15	50	20	0	
DEPTH(m)	EVAT.	SOIL DESCRIPTION	RATA	TYPE	NUMBER	VERY	N-VALUE or RQD %	OR W				Cu Sca	ile (kPa	1)				
			ST	-	¥	RECOVERY mm or CORE %	ξ <u></u>	MONITOR WELL/ PIEZOMETER		ER CON				ERG I	LIMIT	W <sub>P</sub> S <b>├</b> ──	W	WL
- 0 -								]	1	0 2			O 5				30	90
		ORGANICS (20 mm)	, 24															
	-	SAND (SM), silty, some clay, brown.		BS	1					O								-
	-	CLAY and SAND, grey		BS	2			_	C									-
1	-	End of test pit at 0.72 m due to refusal on PERMAFROST.																
- 1 - 	-																	
	-																	
- 2 -				DR		FT.		•	□ Dyi	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m	• • • • •	

C	LIENT	Nunami Stantec Ltd.	ΓE	<b>ST</b>	PIT DR		COR			Bore N E um: TO	ehole Co		tes OJEC		203			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		I SIZE			<u>st Pi</u>		-
		/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	ed		_							
	(n		L		SA	MPLES	6		Undi Cu k	caine	d She	ear S	treng	th (	Cu):	(kPa	a) ▲ Pa)★	,
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		띪	Y mm	н%	MONITOR WELL/ PIEZOMETER		50	)		00 	15 a)		20	00	
DEP	=LEVA	00.22200	TRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	ITOR								Wp	W	W <sub>I</sub> ,
	_		0		_	REC		MON		(N),			TTERB 3m			s <del>[</del> —	80	<del>-</del>
- 0 -		ORGANICS (10 mm)	,								%MC	or Blow	w Count	Scale			, 	+
		SAND (SM), silty, fine to medium grained, brown																
				V .														
-																		-
				∦ ∦ BS	1													
				XIIII														
-																		
				X			_	-										
		End of test pit at 0.6 m due to refusal on PERMAFROST.																
-		LAWI ROST.																-
-																		-
- 1 -																		
-																		-
-																		
																		Н
-																		-
-																		-
- 2 -										<u>Liiii</u>		Liii	1::::	Liii	<u>Liiii</u>	<u> Liiii</u>	L	+
				DR	ΛΙ	FT-			□ Dyr	namic C	one Pe	enetrat	tion Tes	t - N, b	lows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	TE	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E tum: TOG	ehole Co				P040		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.	110 Tes	2184 t Pit	
		n/dd/yy): BORING		W	ATER	LEVE	L Not n	neasur	ed		_	ы.	DILL			<u>v </u>	
	<u>-</u>					AMPLE			_	rained	d She	ar Si ocket	reng	th ((	Cu): neter	(kPa	) <b>▲</b> Pa)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			ITENT	& A7	le (kPa			P	W W <sub>L</sub>
						<u> </u>		_ Š	SPT 1	0 <sup>(N)</sup> 20					0 70		90
- 0 -		ORGANICS (10 mm)									- 5MC C	or Blow	Count	Scare	(* OF N	, 	
-		SAND (SM), silty, fine grained, brown.		BS	1					Ö							-
		- trace clay at 0.4 m		<u> </u>				_									- -
-		- at 0.65 m: grey, clayey, wet, cold.  End of test pit at 0.67 m due to refusal on	_														-
- - - 1 -		PERMAFROST.															-
-																	- - - - - - - - - -
-																	-
- 2 -				.DR	) A I				□ Dyr	namic C	one Pe	enetrati	on Test	- N, b	lows / 0.	.3 m	

	Sta	Nunami Stantec Ltd.	ſΕ	<b>ST</b>	PIT DR	RE	COR	D	Dat	Bore N E tum: TOG	ehole Co				P041		
	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU									_		OJECT SIZE	No.	110 Tes	<u> 2184</u> t Pit	
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur	_		_						
	Ē				S	AMPLES	8		Und: Cu l	rained based 50	d She on P )	ar St ocket 10	reng Pene	th (Cetrometh)	lu) : neter ()	(kPa) : (kF 200	) <b>▲</b> Pa)★ )
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	щ	3ER	RY mr RE %	O %	WELL		+		Cu Sca	le (kPa	)		+	
GE	ELEV		STRA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	ER CON	ITENT	s. 20.7	TERRI	ERG I	) IMITS	. P	w w <sub>L</sub>
						22		ΣE		0 <sup>(N)</sup> / <sub>20</sub>	BLOW	S/0.3 0 4	3m 0 50	) 6		80	90
- 0 -		SAND (SM), silty, trace clay, fine grained, brown.		X													
																	-
				BS	1					0							-
				<u> </u>													
_																	
		grey at 0.6 m															-
		End of test pit at 0.62 m due to refusal on PERMAFROST.															
- 1 -																	
																	-
																	-
																	-
																	-
- 2 -																	
ا آ				np	<b>A</b> I	FT.			□ Dyr	namic C	one Pe	enetrati	on Test	- N, bl	ows / 0.:	3 m	

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TE	ST I	PIT	RE	COR	D	Dat	Bor N E tum: TO	ehole Co		tes		<b>20</b> 42			
	OCATION												I SIZE			st Pi		_
D	ATES (mm	/dd/yy): BORING		_ WA	ATER	LEVE	Not n	neasur										
	Ê				SA	AMPLES	3		Und: Cu l	raine based	d She	ar S	streng t Pen	th (	Cu):	(kPa	a) <b>≜</b> :Pa) <b>★</b>	k
DEPTH(m)	ELEVATION(m)	COULD FOOD ID TO N	STRATA PLOT		2	' mm %	ш%	MONITOR WELL/ PIEZOMETER		3			OU 		OU		)U	
DEPT	EVA]	SOIL DESCRIPTION	RATA	TYPE	NUMBER	VER	N-VALUE or RQD %	OR V				cu se	aie (KP	ai j				
	<u> </u>		ST	·	<b>Z</b>	RECOVERY mm or CORE %	żδ	AONI					TTERB	ERG I	LIMIT	W <sub>P</sub> S <b>├</b> ──	W -	₩ <sub>L</sub>
								] -	1	0 2	O 3	0 4	40 5 w Count				30	90
- 0 -		ORGANICS (10 mm)	1															
		SAND (SM), silty, fine grained, brown.		X														-
				BS	1													
-				V .														-
		End of test pit at 0.35 m due to refusal on		A														
		PERMAFROST.																
-																		
-																		-
-																		
-																		-
- 1 -																		
-																		
-																		:  -
-																		-
_																		
-																		-
-																		
-																		-
_																		
- 2 -				1	<u> </u>			1		IIIII	IIIII	L	1::::	LIII	1::::	IIII		
				DR	ΔΙ	FT-			□ Dyr	namic C	Cone Pe	enetra	tion Tes	t - N, b	lows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ſΕ	ST	-D	IT R	RE AFT	COR	D	Dat	Bore N E um: TOG	ehole Co				<b>20</b> 4:			
P	ROJECT_ OCATION	Geotechnical Site Investigation  Clyde River, NU										_		OJECT SIZE	Γ No.		0218 st Pi		-
		//dd/yy): BORING		_ v	VAT	ER	LEVEI	Not n	neasur	ed		_	יים	SILL			J	·	_
	ē						MPLES			_	cained	d She	ar S	treng t Pen	th (	Cu) :	(kPa	a) (Pa)	k .
DEPTH(m)	ION(r	SOIL DESCRIPTION	PLO]			œ	, mm %	ш%	WELL/		50	)	1(	le (kPa	15	<del>0</del> 0	20	)()	
DEPT	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE		NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				ca sc	ile (RF6	.,		Wp	W	W <sub>T.</sub>
	Ш		S.			z	REC	Żō	MONI		R CON (N), 0 20			TTERBI			s <del>I</del> —	Ö	<b>⊣</b> [
- 0 -		ODC ANICC (50)	1/2							10	0 20			O 50				30 T:::	90
		ORGANICS (50 mm)  SILT, some sand, trace clay, brown.																	
		· · · · · · · · · · · · · · · · · · ·		В	s	1												o .	-
				X															-
				XIIII															
				В	S	2					0								
				X															-
		End of test pit at 0.5 m due to refusal on	Ш	X <u> </u>															
		PERMAFROST.																	
																			-
- 1 -																			+
																			-
																			-
·																			
-																			$\vdash$
																			-
																			-
- 2 -									<u> </u>			::!!	L:	1:::::		L	Lilli	L	+
					D	n E	·T.			□ Dyn	namic C	one Pe	enetrat	on Test	t - N, b	lows / (	).3 m		

Cl	LIENT	Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TOG	ehole Co				P044		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	' No.	110 Tes	<u> 12184</u> St Pit	
		n/dd/yy): BORING	_	_ WA	ATER	LEVEI	L Not n	neasur	ed								
	Ê		_		S	AMPLES	S		Undr Cu k	rained based 50	d She on P	ar St ocket 10	treng Pen	th (Cetrometrometrometrometrometrometrometrom	Cu): meter	(kPa : (k 20	.) ▲ :Pa.)★
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE			Cu Sca	le (kPa	.)		W <sub>P</sub>	W W <sub>L</sub>
						<u> </u>		_ ₹		0 20	BLOW 30	S/0.3 0 4	3m 0 50	0 6	50 70	0 8	0 90
- 0 -		ORGANICS (10 mm)									%MC o	r Blow	Count	Scale	(% or N	)	
- - -		SAND,trace to some silt, fine grained, brown		BS	1					0							-
-		- at 0.6 m: clayey, cold															
- - 1 -		End of test pit at 0.72 m due to refusal on PERMAFROST.															
-																	-
																	-
- 2 -		L		DR	· · ·			1	□ Dyn	namic C	one Pe	netrati	on Test	- N, b	l::::l	.:::: .3 m	

g	Sta	antec	1	ES	ST I	PIT	RE AFT	COR	D		Bore N E	ehole C	oordina	tes	TI	Page <b>P04</b>		1	
	LIENT	Nunami Stantec Ltd.					<b>A.</b> -			Date	ım: TO	3							
	ROJECT_	Geotechnical Site Invest	igation									_		OJEC					_
	OCATION		4/20117/14/11		***			- Not n	naaciir	od		_	BF	I SIZE		1 6	st Pi	<u>t</u>	-
D	ATES (mm	/dd/yy): BORING	1/2011/14/11		_ WA				licasur		aine	— d She	ar S	treno	+h (	C11) :	(kDa	a ) 🔏	_
-	( <u>E</u> )			5		SA	AMPLE	:S		Cu b	ased 50	on I	ocke 1	treng t Pen	etroi	meter 50	: (1	Pa)	t
DEPTH(m)	NOIT	SOIL DESCRIPTIO	N	A PL(		   #	X mm % III	щ%	WELI				Cu Sc	ale (kP	a )				
DEP	ELEVATION(m)		••	STRATA PLOT	TYPE	NUMBER	SORI	N-VALUE or RQD %	TOR								TAT	TAT	₩_
	ш			S		Z	RECOVERY or CORE ?	żδ	MONITOR WELL/ PIEZOMETER					TTERB	ERG 1	LIMIT	W <sub>P</sub> S <b>I</b> ──	~ -	WL
									-	10	O 2	0 3 %MC	or Blo	40 5 w Count	O 6	60 7		80	90
- 0 -		SAND and GRAVEL																	
		- some cobbles																	-
					$\langle$														
-	-																		-
					BS	1				:O::									
					$\langle$														
	-																		-
-		End of test pit at 0.5 m		12-1															
		W.																	
		Note: - Sample taken from existing b	orrow area on side																
	1	of road.																	-
	.																		-
- 1 -	-																		
-	1																		-
	.																		-
-																			
	-																		-
	]																		
																			-
- 2 -					1	<u> </u>			1				11111	11111	LIIII	11111		1:::	+
				_	NB	А	FT.			□ Dyn	amic C	one P	enetra	tion Tes	t - N, b	olows / 0	).3 m		

C	LIENT	Nunami Stantec Ltd.	TE	ST I	PIT DR	RE(	COR	D	Dat	Bore N E um: TOO	ehole Co				P046		433_	
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		SIZE			<u>st Pi</u>		
		/dd/yy): BORING		_ WA	ATER	LEVEL	Not n	neasur	ed		_							
	n)				SA	AMPLES			Undi Cu k	caine	d She	ar S ocke	treng t Pen	th ((	lu) :	(kPa	a) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)		00 	15	<u> </u>	20	00	
			STE		2	RECO.	V-N P ro	MONIT		R CON (N),	BLOW 3	S/0. 0 4	TTERB	0 6	50 7	0 8	W W 30 90	) 1
- 0 -		SAND, fine grained, grey									\$MC c	or Blow	v Count	Scale	(% or 1	1)	-	
				BS	1					O							-	
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		Notes: Sample taken from existing borrow area		V														
_				DR	ΔΙ	FT-			□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

C	Sta	Antec  Nunami Stantec I  Geotechnical Site	Ltd.	ΓΕ	ST I	PIT	RE	COR	D	Dat	Bore N E tum: TOG		pordinati	es OJECT	TF	P047	7	
	OCATION											_		SIZE			st Pit	
D.	ATES (mm	n/dd/yy): BORING _	7/14/20117/14/11		WA				neasur									
<u> </u>	( <u>m</u> )			<u> </u>		SA	AMPLES	<b>S</b>	_	Cu k	rained based 50	on P )	ar Si ocket 10	reng Pene	th (C etrom 15	u): leter 0	( KPa : ( k 20	) ▲ Pa)★ 0
<b>DEPTH(</b> m)	ELEVATION(m)	SOIL DESC	RIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	ER CON	ITENT	Cu Sca	le (kPa	)		W <sub>P</sub>	W W <sub>L</sub>
										1	0 <sup>(N)</sup> /20	BLOW %MC o	S/U 0 4 or Blow	0 50 Count	) 6			0 90
- 0 - - -		SAND and GRAVEL,	some cobbles	000000	BS	1												-
				000000														-
-				00000000000														-
- 1 - - -		Hand auger refusal. Notes: - Possible stockpile of	prepared material															-
- - 																		-
-																		
- 2 -			_		DR.		FT-			□ Dyr	namic C	one Pe	enetrati	on Test	- N, bl	ows / 0	.3 m	

	Sta	Antec Nunami Stantec Ltd.	TES	ST	PIT DR	RE	COR	D	Dati	Bore N E um: TOO	ehole Co				<b>2</b> 047			
P	ROJECT OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	Γ No.		)218 st Pit		-
		//dd/yy): BORING	Ĺ	_ W	ATER	LEVE	Not n	neasur	ed		_	ы.	JILL			JV = -		_
						AMPLES			_	aine	d She	ar S	treng t Pen	th (	Cu):	(kPa	() (Pa)	<u> </u>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		H.	Y mm	핔 %	WELL		50	)	10 Cu Sca	)() 	15	50	20	0	
DEP.	ELEVA	COLL DECOMIT HON	TRAT,	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								$W_{p}$	W	$W_{ m L}$
			- 65		_	REC	- 0	MOM		R CON (N), 0 20			TTERB 3m 10 5				0	90
- 0 -		SAND, some gravel to gravelly, occasional		Τ							%MC (	or Blow	Count					<del>-</del>
		cobbles, brown.																
																		-
																		-
	•																	
				X				-										-
				BS	1													
		PERMAFROST, SAND, clayey, grey.	$\pm$															-
		End of test pit at 0.9 due to refusal on	$\perp$	-														
- 1 -		PERMAFROST, SAND.																
1		- Note: Test Pit located in "Powerline Pit"																
																		-
																		-
																		-
<u> </u>																		L
-																		-
- 2 -		<u> </u>			1							LEE	<u> Hiiii</u>		Liii	<u>Liiii</u>		+
				NB	АІ	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows/(	).3 m		

Stantec  JENT Nunami Stantec Ltd.  OJECT Geotechnical Site Investigation  OCATION Clyde River, NU		•	DR	AF	ECOR	- <del>-</del>	Da	N E tum: TO	G —		OJECT SIZE		P <b>047</b> <u>110</u> Tes		
ATES (mm/dd/yy): BORING $\frac{7/17/201}{1}$	17/11	WA	ATER	LEV	EL Not 1	neasur	ed		_	ьп	SIZE		105	<u> </u>	:
				AMPL			_	raine based	d She	ar St	reng	th (	Cu):	(kPa : (k	) <b>▲</b> Pa)★
SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	50 ER CO			le (kPa			200 	W
				22		] <u>§</u>			BLOW 0 30	s/0.3 ) 40	8m 0 50	0 6	50 70	) 80	0
SAND, some gravel to gravelly, occasiona cobbles, brown.	al								she o	I Blow	Count	Scare	, , , , , , , , , , , , , , , , , , ,		
SAND, fine to medium grained, light brown grey.	wn to	BS	1			-									
PERMAFROST, SAND, clayey, grey.															
End of test pit at 1.0 due to refusal on PERMAFROST, SAND.  - Note: Test Pit located in "Powerline Pit"	"														

		antec Nunami Stantec Ltd.	TE	ST	PIT DR	r RI AF1	ECOR	D	Bore N E Datum: TOG		oordinat	es	TF	P047	C		
P	LIENT ROJECT	Geotechnical Site Investigation								_		OJECT	No.				-
	OCATION			W	ATED	IFV	FI Not n	neasur	ed	-	BH	SIZE	_	Tes	t Pit		
		/da/yy). DORING				AMPLI			Undrained Cu based	She	ear S	treng	th ((	Cu):	(kPa	) <b>A</b>	_
(m)	ELEVATION(m)		PLOT					3.5	50	OII F	1(	00	15	0	20	) )	
DEPTH(m)	EVATI	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			Cu Sca	ile (kPa	.)				
	ᆸ		STE	-	2	SECO.	⊼ . > R	ONIT	WATER CON				ERG I	IMITS	W <sub>P</sub>	W 	₩ <sub>L</sub>
0									10 20			3m .0 50 Count		0 7		0	90
- 0 -		SAND, gravelly to some gravel, brown.		BS	1												-
		SAND (SM), silty, trace clay, brown, fine to medium grained.  PERMAFROST SAND and CLAY, with cobbles															-
1		boulders, brown to grey.  End of test pit at 0.8 due to refusal on PERMAFROST, SAND and CLAY, cobbles / boulders															_
- 1 -		- Note: Test Pit located in "Powerline Pit"															
- 2 -				n P					□ Dynamic Co	one Pe	enetrat	ion Test	: - N, b	lows / 0	.3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE AFT	COR	D	Datu	Bore N E ım: TOG	hole Co				P047	7D		_
P	PROJECT_ LOCATION	Geotechnical Site Investigation	_								_		OJECT SIZE			)2184 st Pit		
		n/dd/yy): BORING			ATER	LEVE	Not n	neasur	ed		_	DΓι	SIZE			<u>)l I I.</u>		
						AMPLE			_	aineo	l She	ar S	treng t Pen	th (d	Cu):	(kPa	) <b>▲</b> Pa)★	_
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50	)	10	00 	15	0	20	<u> </u>	
<b>L</b>			STR	<u> </u>	) N	RECOV or C		MONITO	WATE: SPT 1(	R CON (N),	BLOW 30	s/0.3 0 4	TTERBI	0 6	50 7	0 8	$ \begin{array}{ccc}  & W & W_1 \\  & & & & \\  & & & & \\  & & & & \\  & & & &$	Ŧ
- 0	<del></del>	ORGANICS (10 mm)		$\Box$	$\vdash$	++			 		%MC c	r Blow	Count					_
		SAND, gravelly, trace clay, trace silt, occasional cobbles.															-	
		SAND (SM), silty, trace clay, grey.		BS BS	1												- -	
1		PERMAFROST SAND and CLAY, brown to grey.	H															_
- 1 ·		End of test pit at 0.9 due to refusal on PERMAFROST, SAND and CLAY Note: Test Pit located in "Powerline Pit"															-	
2																	-	
- 2				DE	ΡΛΙ	FT.			□ Dyn	amic C	one Pe	enetrati	ion Test	t - N, b	olows / (	).3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST_	PIT DR	RE AFT	COR	D	Dat	Bore N E :um: TOC	ehole Co	ordinat	es	TI	P04	7E		
F	PROJECT_ OCATION	Geotechnical Site Investigation									<del>-</del> -		OJECT SIZE	Γ No.		)2184 st Pit		
		/dd/yy): BORING		_ W	ATER	LEVE	Not n	neasur	ed		_		) <u>.</u>					
	Ê				S	AMPLES	3		Undi Cu k	raine	d She	ar S	treng	th (	Cu) :	(kPa	.) <b>▲</b> :Pa)★	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		50		Cu Sca	le (kPa	15	50	20	0	
٥			STR	F 	N N	RECOV or CC	N-V/ or RC	MONITC		CR COM						W <sub>P</sub> ≤ 10 8	•	₩ <sub>L</sub>
- 0		SAND, some gravel, trace silt, trace clay, brown.	12, 5,										Count					<del> </del>
																		_
		SAND (SM), silty, trace clay, trace gravel, medium grained, grey.																-
	-	mediani granica, grej																_
																		-
																		_
				BS	1			-										_
- 1 ·		PERMAFROST SAND (SM) and CLAY (CL), silty, grey.		4														
	-	End of test pit at 1.1 due to refusal on PERMAFROST, SAND and CLAY.  - Note: Test Pit located in "Powerline Pit"																
																		_
																		-
_																		
- 2				DE	ΑΙ	FT.			□ Dyr	namic C	one Pe	enetrati	ion Test	t - N, b	lows/(	).3 m		

	Sta	antec Nunami Stantec Ltd.	ſ <b>E</b> \$	ST	PIT DR	RE	COR	D	Date	Bore N E um: TOG	hole Co	ordinat	es	TF	P047			
P	ROJECT_ OCATION	Geotechnical Site Investigation									_ _ _		OJECT SIZE	No.		)2184 st Pit		-
Г	OATES (mm	/dd/yy): BORING		_ W	ATER	LEVE	L Not n	neasur	ed		_							
	ű.				S	AMPLE	S		Undr Cu b	ained	l She	ar S ocke	treng t Pen	th (	Cu) :	(kPa	) <b>≜</b> Pa) <b>★</b>	,
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	SO			ile (kPa			20 	₩ <b>₩</b>	W <sub>L</sub>
			$\Box$			<u>~</u>		_ š_	SPT 10	O 20					50 7		0	90
- 0		ORGANICS (100 mm)									*MC C	or Blow	Count	Scale	(* or 1	1)		
		SAND, trace clay, trace silt, trace gravel, brown.																
	-	SAND (SM), silty, trace clay, occasional cobbles and boulders, grey.																-
				BS	1													
	1			1				1										-
	_																	-
		PERMAFROST SAND and CLAY.	Ħ															_
		End of test pit at 0.9 due to refusal on PERMAFROST, SAND and CLAY.																
- 1 ·	_	- Note: Test Pit located in "Powerline Pit"																
	-																	-
	-																	_
- 2				ne	<u> </u>				□ Dyn	amic C	one Pe	enetrat	on Tes	t - N, b	lows/0	).3 m		

CLIE PRO	OU ENT JECT_ ATION	Nunami Stantec Lo Geotechnical Site I Clyde River, NU	td.		• •	DR	AF7	<u>Γ</u> -	PRD	Da	N E tum: TO	rehole Co	PR		Γ Νο.	<b>2047</b> 110 Tes		
		/dd/yy): BORING	7/16/20117/16/11		_ WA	ATER	LEVI	EL N	ot measur	ed		_	DII	JIZE		100		
							AMPLI			_	raine based	d She	ar S	treng t Pen	th ((	Cu):	(kPa	() ▲ (Pa)★
	ELEVATION(m)	SOIL DESCR	EIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	VALUE	Or RQD % MONITOR WELL/ PIEZOMETER		5	0	Cu Sca	)() 	15 		20	0
	<u> </u>			ST		Ž	RECC or (	ż	MONI			BLOW 20 3	0 4	3m -0 5	0 6	IMITS 0 70	) 8	80 9
		SAND, some gravel												- Count	Scare	( COL N	,	
		SAND, oxide staining SAND, some gravel to g	ravelly, brown.															
-					BS	1												
-																		
-		PERMAFROST, SAND End of test pit at 1.02 dt PERMAFROST, SAND - Note: Test Pit located slope of Hill"	ue to refusal on and CLAY.															

	Sta	antec Nunami Stantec Ltd.	TE	ST	PIT DR	T RI	ECOR	D	Datui	Bor N E m: TO	ehole Co				P04			
PI	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE			0218 st Pi		_
		n/dd/yy): BORING	11	_ WA	ATER	LEV	EL Not r	neasur	ed			211	2122					_
	Ê		<b>—</b>		SA	AMPL	ES		Undra Cu ba	aine ased	d She	ar St ocket 10	reng Pen	th (0 etror	Cu) :	(kP	a) 4 kPa):	*
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATER		NTENT	Cu Sca	le (kPa	a)		Wp	W —	WI
						<u>~</u>		_ <b>\S</b> _	SPT (	(N),			3m 0 5	0 6			80	90
- 0 -		SAND, trace to some gravel, trace fines, brown	- 0.0														T	1
-		- rootlets at 0.1 m																-
- 		- wet at 0.4 m																-
_				BS	1													
		PERMAFROST, SAND and CLAY, grey.																
-		End of test pit at 0.8 due to refusal on PERMAFROST, SAND and CLAY Note: Test Pit located in "Powerline Pit: 800	m"															
- I - - -																		-
-																		-
- 2 -		1		DR		FT.	_	1	□ Dyna	amic C	Cone Pe	netrati	on Tes	t - N, b	lows/	0.3 m	1:::	

	Sta	antec Nunami Stantec Ltd.	ΓΕ	ST	PIT DR	RE	COR	D	Date	Bore N E um: TOG	ehole Co	oordinat	es	TF	P047	7I		
P	ROJECT_ OCATION	Geotechnical Site Investigation									_		OJECT SIZE	Γ No.		02184 st Pit		-
		//dd/yy): BORING		_ W.	ATER	LEVE	L Not n	neasur	ed		_	ъ.,	. Diee			<i>y</i> =	•	_
	e e					AMPLE			_	ained	d She	ar S	treng t Pen	th (	Cu) :	(kPa	a)	<u> </u>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		H.	Y mm	щ%	WELL/		50	)	Cu Sca	)() 	15	.0	20	00	
DEP	ELEVA	SOIL DESCRIPTION	TRAT/	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								Wp	W	WL
			00		<u> </u>	REC	- 0	MOM	WATE SPT 10	R CON (N), ) 20	TENT BLOW	& A' IS/0. 0 4	TTERB		LIMIT: 50 7		80	90
- 0 -		SAND, trace to some gravel,occasional cobbles.		Τ							%MC (	or Blow	Count		(% or 1		 	<del>-</del>
,																		
																		-
																		-
		SAND (SM), silty, some gravel, occasional		X				-										-
		cobbles, brown.		BS	1													
		PERMAFROST, SAND and SILT, grey.	$\Box$															-
		End of test pit at 0.9 due to refusal on	日															-
1		PERMAFROST, SAND and SILT.																
- 1 -		- Note: Test Pit located in "Powerline Pit : 900 m"																
																		-
																		-
,																		
																		-
																		-
																		-
																		+
- 2 -															L		Liii	1
			_	NE	А	FT.			□ Dyn	amic C	one Pe	enetrat	ion Tes	t - N, b	lows / 0	).3 m		

g	§ Sta	antec	7	ΓES	ST I	PIT DR	RE	COR	D		Bore N E	ehole C	oordina	ites	TI	Page P048			
C	LIENT	Nunami Stantec L	∡td.		•					Date	um: TO	<del>-</del>						422	
	ROJECT_	Geotechnical Site Clyde River, NU	Investigation									_		OJEC			)218 st Pi		-
	OCATION ATES (mm	/dd/yy): BORING _	7/14/20117/14/11		WA	TER	IEVE	л Not n	neasur	ed		_	BF	I SIZE		10	SLII	ι	-
Ъ	ATES (IIII)	dudyyy). BOKING =	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		_ W.F		AMPLE				aine	d She	ear S	Streng	rth (	Cu) :	(kPa	a) 🗸	_
æ	ELEVATION(m)			9					∃~	Cu b	ased 50	on E	Pocke 1	et Pen 00	etro 1:	meter 50	20	(Pa) 10	k
DEPTH(m)	/ATIO	SOIL DESC	RIPTION	STRATA PLOT	Щ	BER	RECOVERY mm or CORE %	LUE D%	MONITOR WELL/ PIEZOMETER				Cu Sc	ale (kP	a)				
H	ELEV			STRA	TYPE	NUMBER	COVE	N-VALUE or RQD %	KITOF								$W_{\mathbf{P}}$	W	$W_{ m L}$
							RE o		∑ E		R COI (N), ) 2			TTERB 3m 40 5		ыміт: 50 7		80	90
- 0 -		CAND and CDAVEL	reall and ded		Л					:::::		%MC	or Blo	w Count	Scale			,;;;;	<del>; </del>
		SAND and GRAVEL,	wen graded	0															
	-			) 4															-
				79	BS	1													
				19	$\langle$														
	-			) 9															-
				0															
				) 6															
-		Hand auger refusal on o	cobbles. End of test pit.	<b>5</b> 0															
	-																		-
																			-
- 1 -																			
	-																		-
	-																		
																			-
-	-																		$\vdash$
	-																		-
	-																		-
- 2 -																			
					DR	ΛΙ				□ Dyn	amic C	one P	enetra	tion Tes	t - N, b	olows / C	).3 m		

C	LIENT	Nunami Stantec Ltd.	TE	ST	PIT DR	RE	COR	D	Dat	Bore N E um: TOO	ehole Co				<b>204</b> 8			
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJEC' SIZE			<u>0218</u> st Pi		-
		//dd/yy): BORING		W	ATER	LEVEL	Not n	neasur	ed		_	וום	. OILL			<del>)</del>	<u> </u>	-
						AMPLES				raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	a)	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		8	17 mm E %	B %	WELL/ ETER		50	)	10	00 lale (kPa	15	50	20	)0	
DEP	ELEV		STRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATE	R COM	TENT	& A'	TTERB	ERG I	LIMIT	₩ <sub>P</sub> S <b> </b> —	W	W <sub>L</sub>
									SPT 1	0 <sup>(N)</sup> ,	BLOW 3	S/0. 0 4 or Blow	3m 40 5 v Count		60 7		30	90
- 0 -		SAND, gravelly, trace fines, many cobbles, occasional boulders, brown.																-
- - 																		-
-		CLAY (CL), silty, trace to some sand, occasional gravel, grey.																-
- 1 - - 2 - -		PERMAFROST		BS	1				С									-
-		End of test pit at 1.3 due to refusal on PERMAFROST.  Note: Located at "Snowman Pit"																
-																		
- 2 -					<u> </u>				□ Dyr	namic C	one Pe	enetrat	ion Tes	t - N, b	lows/0	0.3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	ST	PIT DR	RE	COR	D	Dat	Bore N E tum: TOG	hole Co	ordinat	es	TI	<b>2</b> 048	8B		
F	PROJECT_ OCATION	Geotechnical Site Investigation									_		OJECT SIZE	Γ No.		02184 st Pit		-
		//dd/yy): BORING		W	ATER	LEVE	L Not n	neasur	ed		_		D1	_				-
	Ê				SA	AMPLE	s		Und: Cu k	rained	d She	ar S	treng t Pen	th (	Cu):	(kPa	() A	r
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш	ñ	₹Y mm E %	UE %	WELL		50		Cu Sca	le (kPa	15		20	0	
DEP	ELEV/		STRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER CON				ERG I	JIMIT	W <sub>P</sub> S <b>I</b> ──	W 	W <sub>L</sub>
- 0			$\forall$			IE		_ ≥	SPT 1	0 <sup>(N)</sup> /20	BLOW ) 30	S/0.7 ) 4 or Blow	0.0 50 Count				80	90
	-	SAND and GRAVEL, trace silt, trace clay, many cobbles, occasional boulders, brown.																-
	_	CLAY (CL-CI), sandy, silty, low to medium																-
	-	plastic, grey, moist to wet.		BS	1			-		0								
- 1 -	-																	
		PERMAFROST, SAND and CLAY and boulders.  End of test pit at 1.2 due to refusal on																-
	-	PERMAFROST, SAND, CLAY and boulders.																
	-																	
- 2	_			_ De		FT.			□ Dyr	namic C	one Pe	enetrati	on Tes	t - N, b	lows/(	0.3 m		

	Sta	antec Nunami Stantec Ltd.	ΓES	<b>ST</b>	PIT DR	RE	COR	D	Dat	Bore N E :um: TOO	ehole Co	ordinat	es	TF	P048	BC		
P	ROJECT_ OCATION	Geotechnical Site Investigation									_ _		OJECT SIZE	No.		0218 st Pit		_
		//dd/yy): BORING		WA	ATER	LEVEI	Not n	neasur	ed		_	υ	JILL			<del>,,</del>		_
						AMPLES				raine	d She	ar S	treng t Pen	th (	Cu):	(kPa	a)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT		iš.	r mm ::%	ш%	WELL/		50		Cu Sca	ole (kPa	15	i0	20	00	
DEPT	LEVA'	SOIL DESCRIPTION	TRAT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu L.	116 (	,		W <sub>D</sub>	W	Wτ
	ш		S.		Z	RECC	Ζō	MONI	WATE SPT	R CON (N), 0 20	TENT	& A	TTERB		LIMIT	s <del>İ</del>	<u></u>	
- 0 -		CAND grouply many askilos and hauldens trace							1	0 20	) 3( %MC o	) 4 or Blow	O 5		60 7		80   : : :	90
		SAND, gravelly, many cobbles and boulders, trace fines, brown.																
																		-
-																		-
		CLAY (CL) and allow assessional applying	1///															-
		CLAY (CL), sandy, silty, occasional cobbles, occasional boulders, grey.																
																		-
		PERMAFROST, SAND and CLAY, boulders,	H															
- 1 -		grey.																
		End of test pit at 1.1 due to refusal on	H	+														
		PERMAFROST, SAND and CLAY, boulders.																
		-																
																		-
																		-
L -																		
																		-
	-																	-
																		-
- 2 -			Ш	<u> </u>											Liiii		L	-
			_	ne		FT.			□ Dyr	namic C	one Pe	netrati	on Tes	t - N, b	olows / 0	).3 m		

	Sta	Numani Stantas I td	ΓE		PIT DR	RE	COR	D	Dat	Bor N E um: TO	ehole Co				P04			
l .	ROJECT_	Geotechnical Site Investigation									_		OJEC.					
	OCATION			***	A TED	LEVE	Not n	neasur	ed		_	BH	I SIZE		<u> 1e</u>	st Pi	ι	
Ъ	ATES (mm	/dd/yy): BORING		w		AMPLE		ireasur (	_	raine	d She	ar S	Streng	th (	Cu) :	(kPa	a) <b>A</b>	_
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or core %		MONITOR WELL/ PIEZOMETER	Cuk	pased 5	on P	10	Strenget Pen 00	15	meter 50	20	íPa) <b>★</b> 00	
<u>a</u>	ELE		STR/	<u></u>	NON	RECOVI or CO	N-VALUE or RQD %	MONITO			NTENT BLOW 0 3		TTERB 3m 40 5				₩ 80 •	₩ <sub>L</sub>
- 0 -		SAND, gravelly, cobbles and boulders throughout,	12.5								%MC (	or Blo	w Count	Scale			,, [::::	+
		brown.																-
		SILT, sandy, some clay, occasional gravel.																_
		PERMAFROST, SAND and CLAY, grey.		BS	1													[ -
1			H															
- 1 -		End of test pit at 1.0 due to refusal on PERMAFROST, SAND and CLAY.																
-	-																	$\vdash$
- 2 -																		
- 2 -				DE	) A I	c <b>T</b>			□ Dyn	namic (	Cone Pe	enetra	tion Tes	t - N, b	olows / (	0.3 m		

CLIENT PROJECT		TE	ST	PIT DR	AF	ECOR 	RD	Da	Bor N E tum: TO	rehole Co G —	PRO	DJECT	Γ Νο.	P <b>048</b>	2184	
LOCATIO	ON <u>Clyde River, NU</u> mm/dd/yy): BORING <u>7/16/2017/16</u>	<del></del>	W	ATED	IEW	EL Not r	measur	ed		_	ВН	SIZE		<u>Tes</u>	t Pit	
		711	W		AMPLI				raine	d She	ar St	reng	th (	Cu):	(kPa	) 🛦
DEPTH(m) ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5	0	10	0	15	inecer i0	200	) 
		· ·			REC	<b>z</b> ō	MON			NTENT BLOW 20 30				LIMITS 50 70		0
- 0	SAND, gravelly, cobbles and boulders, brown	n. (1)												(% or N		
	CLAY (CL-CI), low to medium plastic, sandy some silt, brown to grey.	y.	) BS	1												
. 1 -	PERMAFROST, SAND and CLAY, brown to grey.															
	End of test pit at 1.1 due to refusal on PERMAFROST, SAND and CLAY.															
								1								
- 2 -					FT.			□ Dvi	namic (	Cone Pe	enetrati	on Tes	.t - N. b	slows / 0.	.3 m	

	Sta	antec Nunami Stantec Ltd.	TE	ST	PIT DR	RE AFT	COR	D	Dat	Bor N E um: TO	ehole C				<b>20</b> 48			
	ROJECT_	Geotechnical Site Investigation Clyde River, NU											ROJECT			<u>0218</u> st Pit		-
	OCATION OATES (mm	/dd/yy): BORING	-	W	ATER	LEVEI	Not n	neasur	ed		_	BI	H SIZE	_	16	<u> </u>	ι	-
						AMPLES			_	raine	d She	ear S	Streng	th (	Cu) :	(kPa	a) <b>A</b>	<u> </u>
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	ш				WELL/ ETER	Cu L	5	0	1	00 	15	50	20	00	
DEI	ELEV		STRA <sup>-</sup>	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER					ATTERB	ERG I	LIMIT	W <sub>P</sub> S <b>├</b> ─	W •	W <sub>L</sub>
- 0 -									10	0 2	BLOV 8MC	or Blo	40 5				30	90
0	-	SAND and GRAVEL, many cobbles, occasional boulders, brown.	00000000															-
	-		0000000															-
		SILT, clayey, some sand to sandy, grey.		BS	1					D:								-
1		PERMAFROST, SAND and CLAY, grey.																_
- 1 -	-	End of test pit at 1.0 due to refusal on PERMAFROST, SAND and CLAY.																-
	-																	_
	_																	
- 2 -	-																	_
				DE	) A I	-			□ Dyn	amic (	Cone P	enetra	tion Tes	t - N, b	lows / (	0.3 m		

CLIENT _ PROJECT_ LOCATIO	Nunami Stantec Ltd. Geotechnical Site Investigation		ST	DR	AF	ECOR	RD	Da	N E tum: TO	rehole Co	PR		T No.			
	m/dd/yy): BORING			ATER	LEV	EL Not	measur	ed		_	ВЕ	i SiZE		10	<u>)t 1 1</u> 1	<u>.                                    </u>
					AMPL				raine	d She	ar S	treng	gth ((	Cu) :	(kPa	a) 🛭
ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5	0	10	00 	15	0	20 W <sub>D</sub>	W 00
		6			REC		MON			NTENT BLOW 20 3						80
-	SAND and GRAVEL (pit run), occasional cobbles and boulders, trace fines, brown.	000000											Scale			
		0000000														
	SAND (SM), silty, some clay, cobbles and	50														
	SAND and CLAY, boulders, grey.		BS	1												
	SAND (SM), silty, some clay, cobbles and boulders, grey.															
	PERMAFROST															
_	End of test pit at 1.1 due to refusal on PERMAFROST															
-																
-																
_																

C	LIENT	Antec Nunami Stantec Ltd. Geotechnical Site Investigation	Т	E	ST	PIT DR	RE AFT	COR	D	Dat	Bore N E um: TO0	ehole Co		tes OJEC		<b>20</b> 49			
	ROJECT_ OCATION											_		SIZE			st Pi		_
D	ATES (mm	/dd/yy): BORING	14/11		_ WA	ATER	LEVE	Not n	neasur	ed		_							
	Ê			_		S	AMPLE	S		Und: Cu k	raine based 50	d She	ear S ocke	treng t Pen 00	th (detror	Cu): meter	(kPa : (1 20	a)	k
DEPTH(m)	) NOIL	SOIL DESCRIPTION		N PLO		e:	√ mm %::	ш %	WELL TER					ale (kPa					
DEP	ELEVATION(m)	SOIL DESCRIPTION		STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER								Wp	W	₩
	Ш					z	PEC.	Ζō	MONI		R COI			TTERB 3m			s <del>[</del> —	Ö	—i
- 0 -					71					1	0 2	0 3	O 4	40 5				<del></del>	90 +
		SAND and GRAVEL, trace silt, occasional cobbles, brown	]																
-			[:		BS	1													-
-						1													-
			ŀ																
-																			-
		End of test pit at 0.45 m																	
-																			-
-																			-
- 1 -																			
-																			
																			-
-																			-
																			-
-																			-
-																			-
																			1
- 2 -																			
				_	nR	ΔΙ	FT-			□ Dyr	namic C	Cone Pe	enetrat	ion Tes	t - N, b	lows / (	).3 m		

CI	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	ΓE	ST	PIT DR	RE	COR	D	Da	Bore N E tum: TOO	ehole Co		es OJECT	TF	<b>P05</b> 1		
	OCATION	Clyde River, NU									_		SIZE			st Pit	
D	ATES (mm	n/dd/yy): BORING		WA			Not n	neasur 	_			7		-1- /6		/1-D -	<u> </u>
(1	(m)		ο		SA	AMPLES	i	_	Cu 1	rained based 50	on P )	ear S ocke 10	treng t Pen )()	tn (C etrom 15	u) : eter 0	: (k 20	:Pa)★ 0
<b>DEPTH(m)</b>	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		ER CON		& A'				W <sub>P</sub>	W W <sub>L</sub>
- 0 -	2.50					_		_	SPT 1	0 20	BLOW %MC o	0 4	0 50	) 6			0 90
- U - - -		GRAVEL - 25 mm minus, moderately to well graded, rounded to sub-angular, trace silt, trace clay, brown	00000														-
			00000	) ) ) ) ) ) ) ) ) ) )	1				0								-
-			000000000000000000000000000000000000000														-
- - 1 -	1.50		20	X X X													_
-		Notes: - Stockpile owner unknown (Vertical scale represents height of stockpile)															-
																	-
-																	-
- 2 -																	-
				DR	ΔΙ	FT-			□ Dyi	namic C	one Pe	enetrat	ion Test	- N, bl	ows/0	.3 m	

		antec Nunami Stantec Ltd.	TE	ST	PI -DI	RAF	REC	COR	D	Dat	Bor N E tum: TO	ehole C	oordina	tes	TI	P05 <sup>-</sup>	1A		
	LIENT ROJECT	Geotechnical Site Investigation										_	PR	OJEC.	Γ No.				_
	OCATION							Not n	naaciir	od.		_	BH	I SIZE		Tes	st Pi	<u>t                                     </u>	_
Ъ	ATES (mm	/dd/yy): BORING		v		SAMP		110111	licasur		raine	— d She	ear S	treng t Pen	th (	Cu) :	(kPa	a) 4	
(E)	N(m)		LOT						∃ 2	Cu l	oased 5	on F	ocke 10	t Pen 00	etro	meter 50 L	: (1	(Pa)	k
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE		IDER ERY n	NE %	N-VALUE or RQD %	R WE				Cu Sc	l ale (kPa	a)		'		
۵	EFE		STR.	۲	Ž	RECOVERY mm	2	o R.V.	MONITOR WELL/ PIEZOMETER	WATE	ER CO	NTENT	' & A	TTERB	ERG 1	LIMIT	₩ <sub>P</sub>	W	WL
	2.50								Ĕ		0 <sup>(N)</sup> 2	OBLOW 0 3	1S/0.		0 6	50 7	0 8	80	90
- 0 -	2.30	SAND, trace silt, trace clay, occasional cobbles,										*Inc	li iii	w count	Scare	(* 01 )			1
-		fine to medium grained.		V					-										-
				В	3 1														
-				V					-										
																			-
-																			-
	1.75																		-
	1.75	SAND and CLAY PERMAFROST	Ħ																
	1.65	- light seepage at 0.85 m  End of test pit at 0.85 due to refusal on	$\perp$																1
		permafrost.																	-
- 1 -		- Note : Borrow source prospecting near TP 51 location.																	
																			-
																			-
																			-
																			1
																			-
- 2 -			1		<b>)</b>		<u> </u>			□ Dyr	namic (	Cone Po	enetrat	tion Tes	t - N, b	olows / (	).3 m	<del></del>	

CI	LIENT	Nunami Stantec Ltd.	ΓE	ST_	PIT DR	r AF	ECOR T-	D	Da	Bor N E tum: TO	rehole Co				P <b>051</b>		
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		SIZE	No.		t Pit	
DA	ATES (mm	n/dd/yy): BORING		W	ATER	LEV	EL Not r	neasur	ed		_						
	Ê		F		S	AMPL			Und: Cu	raine based 5	d She	ar St ocket 10	reng Pene	th (Cetrometh)	Cu): meter	(kPa : (k 20	ı) ▲ :Pa)★ ()
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WATI			Cu Scal	le (kPa	.)		W <sub>P</sub>	W W
	2.50					Z.		] <u>§</u> "			BLOW:	s/0.3 ) 4(	5m ) 50	0 6	50 70	) 8	0 90
- 0 -	2.30	SAND, trace silt, fine to medium grained, brown.									SMC O	r Blow	Count	scare	(s Or N		
	1.90	- light seepage at 0.4 m - grey at 0.5 m		BS	1					Ö							
-	1.90	PERMAFROST, SAND, clayey, grey.  End of test pit at 0.7 due to refusal on															
-		PERMAFROST, SAND, clayey.  - Note: Borrow source prospecting near TP 51 location.															
- - -																	-
- - - -																	-
- 2 -		1		DR	·		_	1	□ Dyi	namic (	Cone Pe	netratio	on Test	- N, b	lows / 0.	l .3 m	::::

_	Sta	antec Nunami Stantec Ltd.	TE	ST	PIT DR	R R	ECOR	D	Da	Bor N E tum: TO	rehole Co				P051		
PF	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU									_		OJECT SIZE	No.		218433 t Pit	-
		n/dd/yy): BORING	1	WA	ATER	LEV	EL Not r	neasur	ed		_						
	Ê				S	AMPL	ES		Und: Cu l	raine based 5	d She	ar St ocket 10	reng	th (Cetrom	Cu): neter	(kPa) ▲ : (kPa)★ 200	
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER				Cu Sca	le (kPa	.)	1	W <sub>P</sub> W	W
	2.50					Ä,		MOM	SPT 1	$10^{(N)}$	BLOW 20 30	s/0.3 ) 4	8m 0 50	0 6	0 70	80 9	90
- 0 <del>-</del> -	2.50	SAND, trace silt, trace clay, fine to medium grained, brown.		V							%MC o	r Blow	Count	Scale	(% or N		-
-	2.10	- grey at 0.3 m - seepage at 0.35 m  PERMAFROST, SAND, clayey, grey.		BS	1					Ö							-
	2.00	End of test pit at 0.5 due to refusal on PERMAFROST, SAND, clayey Note: Borrow source prospecting near TP 51 location.															
- I - - - -																	-
- - -																	
- 2 -				DR	·	FT.		1	Dyı	namic (	Cone Pe	netrati	on Test	- N, bi	lows / 0.	3 m	

CL PR	IENT OJECT	Nunami Stantec Ltd. Geotechnical Site Investigation		ST	DR	AF	ECOR 	D	Da	Bor N E tum: TO	rehole Co G —	PRO	OJECT	Γ Νο.	2051	2184	
	CATION	Clyde River, NU  1/dd/yy): BORING 7/16/2017/16/11		W	A TED	LEV	EL Not r	neasur	ed		_	ВН	SIZE		Tes	t Pit	
DA		/dd/yy): BORING		W A		AMPL				raine	d She	ar St	reng	th ((	Cu) :	(kPa	) 🛕
DEРТН(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER		5	0	Cu Sca	O le (kPa	15 	50	200 — W <sub>P</sub>	?a)★ ) ———
						Ä,		Ŭ Ø Ē			NTENT BLOW 20 30	S/0.3	8m 0 5	0 6	50 70	) 80	) •9(
- 0 -	2.50	SAND, trace silt, trace clay,occasional gravel, many cobbles and boulders (+ 400 mm diameter), brown.									%MC c	er Blow	Count	Scale	(% or N		
-		- light seepage at 0.4 m		BS	1												
 - -		- at 0.5 m: becomes grey, end of gravel.															
	1.70	PERMAFROST SAND, clayey, boulder.  End of test pit at 0.5 due to refusal on PERMAFROST, SAND & BOULDER (1.3 m															
- 1 -		Diameter) Note: Borrow source prospecting near TP 51 location.															
- 2 +				DR					□ Dyı	namic (	Cone Pe	netrati	on Tes	t - N, b	:::::   lows / 0	.::::  .3 m	<u>: : : : : : : : : : : : : : : : : : : </u>

CL	JENT	Nunami Stantec Ltd.	TE	ST	PIT DR	r RI	ECOR 	D	Da	Boi N E itum: TO	rehole Co				P <b>051</b>		
	OJECT_ CATION	Geotechnical Site Investigation Clyde River, NU									_		SIZE	No.		<u>t Pit</u>	
DA	ATES (mn	n/dd/yy): BORING		W	ATER	LEV	EL Not r	neasur	_								
	Ē		TC		S	AMPL	ES		Und Cu	raine based 5	d She on P	ar St ocket 10	reng	th (C etrom	Ju) : neter 00	(kPa : (k 20	ı) ▲ :Pa)★ 10
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	WAT	ER CO	NTENT		le (kPa			W <sub>P</sub>	W W
	2.50					₢		] <u>§</u> "			BLOW 20 30	s/0.3 ) 4	3m 0 50	0 6	60 70	0 8	80 90
- 0 +	2.30	SAND, trace silt, trace clay, fine to medium grained, brown.															
-		- grey at 0.3 m		BS	1						O						-
- <del> </del>	2.00	- buried organics at 0.4 m.  PERMAFROST SAND & CLAY, grey,		54													
-	1.85	occasional gravel and cobbles.  End of test pit at 0.65 due to refusal on															
-		PERMAFROST, SAND & CLAY.  - Note: Borrow source prospecting near TP 51 location.															-
																	-
																	-
- 2 +		1		DR				ı	□ Dy	namic (	Cone Pe	netrati	on Tes	t - N, b	lows / 0	.3 m	

CI	LIENT	Nunami Stantec Ltd.	TE	ST	PIT DR	R AF	ECOR	D	Da	Bor N E tum: TO	rehole Co				P <b>051</b>		33
	ROJECT_ OCATION	Geotechnical Site Investigation Clyde River, NU											SIZE	NO.		t Pit	
DA	ATES (mn	n/dd/yy): BORING		W	ATER	LEV	EL Not r	neasur			_						
	(m)		<u>۲</u>		S	AMPL	ES	_	Und: Cu l	raine based 5	d She on P	ar St ocket 10	reng Pen	th (C etrom 15	Cu): neter	(kPa) : (kF 200	, ▲ ?a)★ )
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER			NTENT	& AI			IMITS	W <sub>P</sub>	W ₩:
	2.50					<u>«</u>		_ ≥	SPT 1	.0 <sup>(N)</sup> 2	BLOW 20 30				0 70		90
- 0 <del>-</del> - -		SAND, many cobbles and boulders, trace clay, trace silt, fine to medium grained, brown.															-
		- coarse grained lense (50 mm) at 0.35 m - seepage, oxide stains at 0.4 m - grey, occasional gravel sizes at 0.45 m															-
	1.70			BS	1					р							
-	1.70 1.65	PERMAFROST SAND, grey.															-
- 1 -	1.00	End of test pit at 0.85 due to refusal on PERMAFROST, SAND Note: Borrow source prospecting near TP 51															-
-		location.															-
- 2 -		1		.DR				1	□ Dyi	namic (	Cone Pe	netrati	on Test	t - N, b	lows / 0.	L .3 m	

C	LIENT	Nunami Stantec Ltd.		ES	T [	PIT DR/	REC	COR	D	Date	Bore N E um: TOG	ehole Co		es OJECT		P052	2		
	ROJECT_ OCATION	Geotechnical Site Investi Clyde River, NU	igation									_		SIZE	. INO.		<u>st Pi</u>		-
			1/20117/14/11		. WA	TER	LEVEL	Not n	neasur	ed		_							
	n)					SA	MPLES			Undr Cu b	ained	l Shea	ar St	reng	th ((	Cu):	(kPa	ı) <b>≜</b> :Pa) <b>★</b>	,
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTIO	N	STRATA PLOT	PE	BER	RE %	LUE ID %	MONITOR WELL/ PIEZOMETER		50		10	le (kPa	15	0	20	0	
DE	ELE			STRA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR	WATE	R CON	ITENT	& AT	TERBI	ERG L	IMIT	W <sub>P</sub>	W	W <sub>L</sub>
- 0 -		CD LYTHY							_	SPT 10	0 <sup>(N)</sup> /20	BLOWS 30	5/0.3 ) 4 r Blow	om O 50 Count				0	90
		GRAVEL - 25 mm minus, moderately to rounded to sub-angular, trace s brown	1.7	00000															
	-		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	00000															
				0000															
				00000															_
				000000															_
- 1 -		Notes: - Stockpile owner unknown		12															
																			_
																			_
																			-
- 2 -																			
				_	nR	ΔΕ	т.			□ Dyn	amic C	one Pe	netrati	on Test	: - N, b	ows/0	).3 m		

C	Sta	Nunami Stantec Ltd.  Geotechnical Site Investigation	TEST PIT RECORD -DRAFT- Bortel N E Datum: TOG									oordinat	es OJECT	TF	P053	3	
	OCATION	Clyde River, NU									_		SIZE			t Pit	
D.	ATES (mm	/dd/yy): BORING		_ WA				neasur									
_	(E)		6		SA	AMPLES			Cu 1	rained based 50	d She on P )	ar S ocket 10	treng t Pene 00	th (C etrom 150	u): leter 0	(kPa : (k 20	) ▲ Pa)★ 0
DEPTH(m)	ELEVATION(m)	SOIL DESCRIPTION	STRATA PLOT	щ	3ER	RY mn	.UE D %	WELI		+		Cu Sca	ile (kPa	)		-+	
핌	ELEV		STRA	TYPE	NUMBER	RECOVERY mm or CORE %	N-VALUE or RQD %	MONITOR WELL/ PIEZOMETER	MA MI	ER CON	mana	c 7.0	IIII ED DI	ana r	TMTMC	Wp	W W <sub>L</sub>
						E C		ΣΩ	SPT 1	0 20	BLOW 30	s/0.3 ) 4	3m 0 50	) 60	0 70	0 80	0 90
- 0 -		GRAVEL	19	Τ							%MC o	r Blow	Count	Scale	(% or N	)	::::
-			9														
			30														
-			) 4														
-			50														
-			0														
_			50														
-			000														
-			36														
			0														
-			0														
-			36														
  - 1 -		W.	12														
		Notes: The following also found in gravel Pit 001:															
-		- 0.075 mm minus crush and 0.15 m minus crush - Stockpile owner unknown															
-		Stockpile owner unanown															
-																	
-																	
																	-
-																	
-																	
_																	
- 2 -		I	1 1	1	1			1		1::::1	::::1	::::		11111	<u> </u>	11111	
			_	DR	ΔΙ	FT-			□ Dyi	namic C	one Pe	netrati	on Test	- N, bl	ows/0	.3 m	