HOGGAN ENGINEERING & TESTING (1980) LTD.

GRANULAR INVESTIGATION
GREATER WHITEHORSE INVENTORY
OF SAND AND GRAVEL RESERVES
WHITEHORSE, YUKON (1995)

HOGGAN ENGINEERING & TESTING (1980) LTD.

REPORT NO: 8002-234

GRANULAR INVESTIGATION GREATER WHITEHORSE INVENTORY OF SAND AND GRAVEL RESERVES WHITEHORSE, YUKON (1995)

AUGUST, 1995

HOGGAN ENGINEERING & TESTING (1980) LTD.
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WHITEHORSE, YUKON
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GRANULAR INVESTIGATION

PROJECT: **Granular Investigation**
Greater Whitehorse Inventory
Of Sand and Gravel Reserves (1995)

LOCATION: **Various Locations**
Greater Whitehorse, Yukon

CLIENT: **GOVERNMENT OF YUKON**
Community and Transportation Services
Transportation Engineering Branch S-3
Box 2703
Whitehorse, Yukon, Y1A 2C6

Attention: Mr. Dick Stilwell, P. Eng.

1.0 INTRODUCTION

This report presents the results of the Granular Resource Investigation conducted within six areas located within the Greater Whitehorse area. The six areas investigated include the following.

Area 2	-Scout Lake Area approximately 2 kilometres south of kilometre 1500 of the Alaska Highway.
Area 3	-Kulan Industrial Subdivision Area, south-west of fire break.
Area 4	-Whitehorse Copper Mine Area, south of Copper Haul Road.
Area 5	-Grey Mountain/Riverdale Area, west and north of Grey Mountain Road at 1.8 kilometres from Alsek Road.
Area 7	-Kilometre 1444 to 1447 Alaska Highway, south side.
Area 9	-South Klondike Highway, 1.6 kilometres south of Alaska Highway and east 500 metres.

The objective of the Granular Resource Investigation was to undertake a field and laboratory work program to provide a reliable estimate of quality and quantity of granular resource at each site as well as a quantity of waste material (i.e.: clearing, organic and soil overburden) at each site.

Enclosed in the appendices of this report is the data which has been collected as part of this investigation.

Appendix A
- **Soil Classification System Utilized**

Appendix B
- **Site 2**
  - **-Site Sketches**
  - **-Test Hole Logs**
  - **-Test Summary Sheets**
  - **-Photographs**

Appendix C
- **Site 3**
  - **-As per Site 2**

Appendix D
- **Site 4**
  - **-As per Site 2**

Appendix E
- **Site 5**
  - **-As per Site 2**

Appendix F
- **Site 7**
  - **-As per Site 2**

Appendix G
- **Site 9**
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Appendix H
- **Drill logs produced on ESELOG Format computer diskette**

The results of the field and laboratory investigations are discussed in the body of the report on a site by site basis under the following headings.

- **Site Location**
- **Deposit**
- **Site Description**
- **Site Access**
- **Field and Laboratory Investigation**
- **Subsurface Soil Conditions**
- **Granular Reserves**
- **Quantity Estimates**

Authorization to proceed was received from Mr. Dick Stilwell of Government of Yukon, Community and Transportation Services, Transportation Engineering Branch. Field work was completed between June 9 and August 7, 1995.

2.0 FIELD AND LABORATORY INVESTIGATION

Prior to the initiation of all field work a thorough review of air photography and geotechnical data for the individual sites was undertaken by senior Hoggan Engineering staff. From this review a field program was detailed which would identify insitu soils in specific soil units and further highlight spatial variations in soils over the specific soil units.

All field work was conducted with either a 215 or 225 Caterpillar Backhoe or equivalent. This size of equipment was deemed to be of sufficient size to obtain the required depths of excavation for the investigation purposes, provide mobility to access difficult areas of the sites and to minimize damage to the vegetation.

For the six sites a total of 73 test pits were excavated. During excavation, accurate test hole logs were maintained which included inspection and classification of all materials and the depths which they were encountered. Also soil samples were obtained at regular intervals for laboratory testing to verify and enhance soil profile logs. In addition to soils samples taken throughout the test pit depths representative

large bulk samples were obtained from the complete test pit depth where suitable granular soils were encountered. The subsurface soil profiles are shown in detail on the individual soil profile logs enclosed in the Appendices of this report.

All test pits were field located utilizing a Held Compass and Metered Hip Chain. The locations of test pits relative to prominent site features are shown on Site Sketches enclosed in the Appendices of this report.

The laboratory testing program consisted of conducting tests on samples obtained during the field investigation. The testing was utilized to verify and enhance field soil classifications and to obtain quantitative and qualitative data regarding granular material suitability for production as construction material. The testing conducted included the following.

- **Moisture Content Determination**
- **Grain Size Analyses (pitrun samples)**
- **Sample Crushing (laboratory)**
- **Grain Size Analyses (crush samples)**
  - **Crush Counts (2 faces)**
- **Los Angeles Abrasion (crush samples)**

The laboratory test results are shown on the individual test summary sheets and the test pit soil profile logs enclosed in the Appendices of this report.

3.0 BORROW SITE DESCRIPTION AND EVALUATION

3.1 Area 2 - Scout Lake

•See Appendix B

3.1.1 Location:

Area 2 is located east of the Ibex Trail between kilometre 1.6 and kilometre 3.0. The Ibex Trail accesses the Alaska Highway at approximately kilometre 1500, left hand side. The investigated area extends from 200 metre to 700 metres east of the Ibex Trail.

3.1.2 Deposit: Ground Moraine

3.1.3 Access:

Access to the vicinity of the site was along the Ibex Trail which is a historic mining/logging trail. From the Ibex Trail to the site and within the site, access was within open terrain (historic burn vegetation) where possible or on trails constructed by the backhoe.

Access as required to all portions of the site was possible.

3.1.4 Site Description

The topography of the area was uneven with variations between gently rolling hummocks to large side slopes with grades up to 10-15 percent on the north limit of site. The topography was traversed by a 100 metre to 200 metre wide historic drainage channel which now serves as drainage on a seasonal basis.

The vegetation within the investigated area varied between open (historic burn areas) to dense growths of young pine to mixed stands of pine and poplar.

3.1.5 Field and Laboratory Investigation

The field investigation consisted of excavating 15 test pits with a Caterpillar 215 Backhoe. The test pit locations were spaced at 200 metres to identify soil variations in the morainal deposit.

The laboratory investigation consisted of moisture content determination on all samples retained (42). On 18 selected oven dried samples grain size analyses were completed.

3.1.6 Subsurface Soil Conditions

The detailed subsurface soil profiles are given on the individual test pit logs enclosed in Appendix B of this report. However, in general, the soil at the fifteen

test locations was predominately a damp, medium dense, fine to medium grained sand till material with silt and gravel and ranged to cobbles and large boulders in size. The silt, sand and gravel content varied widely both vertically in a single test pit and between test pit locations.

The fines content was found to vary from 10 to 50 percent and averaged 22 percent. Gravel content was found to vary from 9 to 58 percent and averaged 35 percent. Typical of morainal material cobble and boulder content also varied erratically between non-existent to cobble and boulder layers with individual boulder sizes ranging to in excess of 1.0 metre. The till materials extended to the maximum depth of excavation at all test locations. The depth of test pit excavation was limited at 12 of 15 test locations due to the presence of bedrock or large boulders. The average depth of excavation was 3.2 metres.

No subsurface groundwater or permanently frozen soils were found during this investigation.

3.1.7 Granular Reserves

The investigated portion of **Area 2** shows little potential for development of a granular source. Overall the fines content is too high and gravel content too low for the majority of a communities select granular quarry materials.

3.2 Area 3 - Near Kulan Industrial Subdivision

•See Appendix C

3.2.1 Location:

Area 3 is located south of the Kulan Industrial Subdivision within Whitehorse, Yukon. The investigated area extends approximately 900 metres south and west of the fireguard clearing.

3.2.2 Deposit: Morainal, Alluvial Bedrock Complex

3.2.3 Access:

Access to the investigated area was obtained by traversing an abandoned granular quarry which is located between Chadburn Crescent and Area 3.

No existing trails or paths were found within the area thus access to the various test locations was along trails constructed by the backhoe.

3.2.4 Site Description

The area adjacent to the fireguard was a marsh with small creeks and ponds present. The ground cover in the marsh consisted of moss and peat, with dense stands of mature spruce or grass and willow growths (adjacent to Test Pits 26-95, and 30-95 to 33-95).

In the south direction towards Test Pit 29-95, the ground elevated gradually above the marsh area. The land became uneven and the vegetation became primarily medium dense to dense stands of mature spruce with poplar and willow undergrowth.

Site drainage from area adjacent to Test Pits 26-95 to 29-95 consisted of a small stream/creek located to the east of the test pit locations.

3.2.5 Field and Laboratory Investigation

The field investigation consisted of excavating 8 test pits with a Caterpillar 215 Backhoe. The test pit locations were spaced at 100 metre to 250 metre intervals and orientated in two specific lines.

The laboratory investigation consisted of moisture content determination on all samples retained (20 total). On 9 selected oven dried samples grain size analyses were completed.

3.2.6 Subsurface Soil Conditions

The subsurface soil conditions encountered are shown in detail on the individual soil profile logs enclosed in Appendix C of this report. However, in general, the soil conditions varied between surifical sandy gravels which extended to 2.0 metres below the ground surface at Test Pit 26-95 to silts with sand to silty gravelly sand to silty sandy gravels with intermediate peat and ash, coal, and silty sand seams. The materials were moist to wet and soft where fine grained soils were encountered.

Adjacent to Test Pits 30-95 to 33-95 bedrock was encountered and bedrock outcropping were visible.

Groundwater seepage in to test pits was recorded within the marsh area with free surface water (ponds and small creeks) adjacent to test sites. Also,a subsurface groundwater table was encountered at Test Pit 29-95 at a depth of 2.5 metres.

3.2.7 Granular Reserves:

Little potential for development of a granular source quarry exists within the investigated **Area 3.**

Historically the granular quarry north of the fireguard had a profile similar to Test Pit 26-95, typically, a shallow surface seam of sandy gravel. The continuation of that source does not seem to be extensive south of the fireguard.

3.3 Area 4 - Whitehorse Copper Mine

•See Appendix D

3.3.1 Location:

The investigated area is located south of the Whitehorse Copper Mine within Whitehorse City Limits. The east limit of the site is located at kilometre 3.4 of the Copper Haul Road as referenced from the Alaska Highway at approximately kilometre 1464 (near McCrae Subdivision).

3.3.2 Deposit: Morainal, Bedrock, Alluvial Complex

3.3.3 Access:

Access to the site was from the Copper Haul Road which traversed either the north portion or north perimeter of the area. With the exception of a north-south tending power line in the centre of the site no other accessible routes were located. Due to the steep grades, heavy vegetation and the presence of rock outcroppings access to the south limit of the site was not possible.

3.3.4 Site Description

The investigated area extends east to west approximately 3.0 kilometres and north to south approximately 400 to 600 metres. The south portion of the area encompasses the base of a hill which rises sharply to the south. The north portion of the site is hilly and ridged and appears to be an alluvial terrace remnant.

The vegetation was predominantly mature spruce with very little under growth and to the odd poplar, locally.

3.3.5 Field and Laboratory Investigation

The field investigation consisted of excavating 13 test pits with a Caterpillar 225 Backhoe. The test pit locations were spaced at 150 metres to 275 metres to identify soils in accessible land formations.

The laboratory investigation consisted of moisture content determination on all samples retained (43 total). On selected oven dried samples grain size analyses (G.S.A.) were completed, these samples included 19 small bag samples and 6 bulk samples. Further laboratory testing included 3 trial sample crushes on Bulk Samples 49A, 55A and 61A (with G.S.A. and Crush Count) and a combined Los Angeles Abrasion test.

3.3.6 Subsurface Soil Conditions

The subsurface soil profiles are given in detail on the individual test pit logs enclosed in Appdendix D of this report.However, in general, the subsurface deposits on the south portion of the site were found to be predominately bedrock or morainal deposits over bedrock (See Plate 3.2) as noted at Test Pits 50-95, 52-95, 53-95, 56-95, 57-95, 58-95 and 59-95.

The morainal/bedrock zone varied to alluvial granular depositions at Test Pits 49-95, 51-95, 54-95, 55-95, 60-95, and 61-95. The sand and gravel materials were generally coarse grained with cobble and boulder contents ranging to 45 percent of the deposit. The fines content within the alluvial materials was less than 5 percent by weight. At Test Pits 49-95, 51-95, 55-95 and 60-95, the sands and gravels extended to the maximum depth of excavation of 4.0 metres. At Test Pits 54-95, and 61-95, the alluvial deposits were underlain by till material which extended to the maximum depth of excavation. The till materials had a fines content ranging to 20 percent at Test Pit 54-95 and high cobble and boulder contents.

3.3.7 Granular Reserves

The site shows potential for granular quarry development on a limited basis. The southern portions of the site including all the morainal and bedrock areas would be unsuitable for development. The fluvial deposits encountered on the north perimeter of the site would be suitable for most granular quarry requirements including Granular A,B, C, D (Government of Yukon Designation) and possibly asphalt and concrete aggregates and pitrun gravels. As with many granular sources the addition or rejection of rock, sands and/or fines may be required to produce specific materials. For Area 4 the materials encountered were generally coarse grained in nature and will likely require the addition of fines or fine sands and/or the rejection of rock to improve quality of product.

3.3.8 Quantity Estimates

It is difficult to estimate the quantities of suitable granular deposits in this area due to the uneven nature of the topography, the limited depth of deposit (See Test Pit 54-95 and 61-95)at various locations, and the variability between adjacent test pits.

For the purposes of this Quantity Estimate the quantities will be based on areas adjacent to Test Pits 49-95 and 51-95, and 60-95 where distinct landforms can be delineated and granular materials extended to the maximum depth of excavations.

- **Clearing Limits**
  - -(300m x 50m) 0.0001 hectares/m^2 = 7.5 hectares
    = 1.50 hectares (TP60-95 Area)

  - -(200m x 300m) 0.0001 hectares/m^2
    =6.0 hectares (TP49 & 51-95 Area)

- **Organic Stripping**
  - -75,000m^2 x 0.10m = 7,500m^3

- **Sandy Silt/Silt/Silty Sand Overburden**
  - -75,000m^2 x 0.07m = 5,000m^3

- **Granular Reserves**
  - -75,000m^2 x 3.8m = 285,000m^3

3.4 Area 5 - Grey Mountain/Riverdale

•See Appendix E

3.4.1 Location:

Area 5 is located north and west of the Grey Mountain Road at a point 1.8 kilometres from Alsek Road.

3.4.2 Deposit: Morainal To Alluvial Over Morainal Deposits

3.4.3 Access:

Access to the area was along Grey Mountain Road (1.8 kilometres) then along the Yukon Electric power transmission line for 1.85 kilometres. The power transmission line parallels the south limit of the site.

On the west end of the site access was facilitated using existing 4x4 trails and wide recreation trails. Within the centre and east portions of the site recreation trails narrowed and could not be utilized without altering the trail aesthetics (i.e.: widening and straightening). Therefore on the majority of the site, access was along a trail made by the backhoe.

Due to possible conflicts with recreation patrons of the area, as noted above , the field program was limited to portions of the site where minimum aesthetic influence to the patrons could be ensured.

3.4.4 Site Description

Area 5 is an elevated terrace which rises 10's of metres above the surrounding landscape on the south and east (adjacent to the power transmission line and Grey Mountain Road).

The terrace itself has a hummocky topography with hills with both gradual grades in the magnitude of 5 percent to steep grades in the magnitude of 15 percent.

North of Area 5 the landscape includes the base of Grey Mountain which rises at steep grades to the north.

Two historic drainage channels traverse the site from the north-east to south-west. The largest is located on the west limit of the site and the second in the east centre portion of the site.

The vegetation cover on the site is predominately spruce which varies from sparse to dense density.

No active drainage paths were encountered during this investigation.

3.4.5 Field and Laboratory Investigation

The field investigation consisted of excavating 12 test pits with a Caterpillar 225 Backhoe. The test pit locations were spaced at 250 metres to 300 metres to identify soils in accessible land formations.

The laboratory investigation consisted of moisture content determination on all samples retained (55 total). On selected oven dried samples, grain size analyses were completed, these samples included 25 small bag samples and 6 bulk samples.

3.4.6 Subsurface Soil Conditions

The subsurface soil profiles are given in detail on the individual test pit logs enclosed in Appendix E of this report. However, in general, the soils encountered on this site varied between silt, sand and gravel till (Test Pits 67-95, 68-95, 69-95, 70-95, 72-95 and 73-95) to sand and gravel alluvial deposits over till (Test Pits 64-95, 66-95 and 71-95) to sand and gravel alluvial deposits (Test Pits 62-95, 63-95 and 65-95) throughout the test pit depth.

The till material was predominately sand or gravel with silt contents, ranging between 12 and 60 percent and cobble and boulder contents ranging to 20 percent. The till materials were damp with medium compactness and had a grey-brown to beige-brown colour.

The alluvial sand and gravel materials varied from coarse grained with 30 percent cobble sized rock to fine grained with 5 to 10 percent cobble sized material. The fines content of the alluvial material was less than 10 percent and varied to as low as 2.3 percent. The gravels were damp and brown in colour.

Within the alluvial deposits at Test Pits 62-95 to 66-95, the organic overburden consisted of forest floor material with an average depth of 0.1 metres over silt, sandy silt and silty sand materials which extended to, on average, 0.25 metres below the ground surface.

No subsurface groundwater or permanently frozen soils were encountered during this investigation.

3.4.7 Granular Reserves

The west portion of **Area 5** within the limits of the historic meltwater channel has the potential for development as a granular source quarry. The suitable materials for quarry reserves would include only the alluvial deposits as noted on the soil profile logs obtained at Test Pits 62-95 to 66-95. The till materials underlying the alluvial depositions which also extend to the remainder of the site show little potential for development. The alluvial deposit encountered at Test Pit 71-95 may also be considered for development. However, based on this investigation the area shows a limited depth of source and we have insufficient evidence to predict the horizonal extent of the deposit.

The suitability for production of the alluvial quarry materials on an individual site may vary from poor to excellent depending on the sand, gravel and fines content variability. The rating would be for any number of quarry requirements including Granular A, B, C, D (Government of Yukon Designation) possibly asphalt and concrete aggregates and pitrun gravels. As with many granular sources the addition or rejection of rock, sands and/or fines may be required to produce specific materials.

3.4.8 Quantity Estimates

The following quantities are based on the estimated limit of the westerly meltwater channel and the depths of granular materials encountered at Test Pit 62-95 to 66-95 **(Note: the limited depth of alluvial deposit at Test Pit 64-95 and Test Pit 66-95 of 1.20 metres and 1.50 metres, respectively).**

- **Clearing Limits**
  -700m x 300m x 0.0001 hectares/m^2 = 21 hectares

- **Organic Stripping**
  -210,000 m^2 x 0.1m = 21,000m^3

- **Silt With Sand Overburden**
  -210,000m^2 x 0.15m = 32,000m^3

- **Granular Reserve**
  -210,000m^2 x 2.9m = 600,000m^3

3.5 Area 7 - Kilometre 1446 Alaska Highway

3.5.1 Location:

Area 7 is located south of the Alaska Highway between kilometre 1444 and kilometre 1447. The investigated area extends to 1000 metres south of the Alaska Highway.

3.5.2 Deposit: Spillway Channel Outwash Deposit

3.5.3 Access:

Access to the east portion of the site was made along the Alaska Highway right-of-way near the location of Test Pit 16-95 at a spot where highway cut slope was traversable by the backhoe. The noted existing trail on the east portion of the site can not be accessed from the Alaska Highway.

The west portion of the area was accessed on a existing trail to the kilometre 1446 LHS Quarry (range pit). The trail was through Lot 1071, a private lease.

The horizontal extent of the overall investigation was limited by the site topography. The area west of Test Pit 25-95 and south-east of Test Pit 18-95 could not be accessed with a Caterpillar 225 Backhoe due to steep grades.

3.5.4 Site Description

The investigation area was very uneven in nature. The east portion and west limit of the site had a predominately steep sided hummocky topography. The west centre portion of the site was hummocky on the north and encompassed the side slope of a hill on the south.

The vegetation was medium dense to dense mature spruce with poplar.

3.5.5 Field and Laboratory Investigation

The field investigation consisted of excavating 10 test pits with a Caterpillar 215 Backhoe. The test pit locations were spaced at 200 metres to 300 metres to identify soils in accessible land formations.

The laboratory investigation consisted of moisture content determination on all samples retained (51 total). On selected oven dried samples grain size analyses (G.S.A.) were completed, these samples included 19 small bag samples and 8 bulk samples. Further laboratory testing included 3 trial sample crushes on Bulk Samples 20A, 22A and 24A (with G.S.A. and Crush Count) and a combined Los Angeles Abrasion test.

3.5.6 Subsurface Soil Condition:

The subsurface soil profiles encountered on this site are shown in detail on the individual test pit logs enclosed in Appendix F of this report. However, in general, the soil encountered at the three test locations accessed on the east portion of the site indicate variable soils. At Test Pits 16-95 and 17-95, the soils profiles consisted of predominately silts with clay. At Test Pit 18-95, the material was a layered gravelly sand over sandy gravel complex with a 200 millimetre silt seam.

The west centre portion of the site as represented by Test Pits 19, 20, 21, 22 and 24-95, was predominately sandy gravels (with some gravelly sand at Test Pit 22-95). The gravels ranged from 10 percent to 50 percent cobbles in size with the odd to 5 percent boulder content to 500 millimetres in size, locally. At Test Pit 23-95, the material varied to a sandy gravel glacial till like soil which contained up to 15 percent fines. At Test Pit 25-95 the surface damp to wet silt with clay overburden extended to 2.50 metres in depth and were underlain by 1.5 metres sandy gravels with some silt and up to 25 percent cobble sized rock and the odd boulder to 300 millimetres.

The sand and gravel materials within the west portion of the area had an organic overburden material consisting of moss, peat and forest floor organics that extended to, on average, 80 millimetres below the ground surface. The organics were underlain by silt overburden with clay, and sand and gravel which extended to, on average, 320 millimetres (excluding Test Pit 25-95 where silt overburden extended to 2.50 metres) below the ground surface and ranged in depth between 0.00 and 1.00 metre.

No groundwater was encountered during this investigation.

Frozen soils were encountered at Test Pit 19-95 and 25-95 within the silt overburden materials. These frozen soils may represent the remnants of seasonal frost or an area discontinuous permafrost.

3.5.7 Granular Reserves

The east portion of the site shows little potential for development of a granular source quarry. This would be with regards to the soils encountered in the areas accessed (see Test Pit 16-95, 17-95 and 18-95). Some potential may exist in non-accessed areas (in east portion). However, this would be on a hill by hill, kettle by

major trail construction (including cuts and fills and clearing) work to allow access of a tracked vehicle.

The west portion of the site shows good potential for granular reserve development. The materials tended to vary dramatically both vertically and horizontally. Thus the suitability for various quarry materials on an individual site may vary from poor to excellent. The poor to excellent rating would be for any number of quarry requirements including Granular A, B, C, and D (Government of Yukon Designation) possibly asphalt and concrete aggregates and pitrun gravels. As with many granular sources the addition or rejection of rock, sands, and/or fines may be required to produce specific materials.

3.5.8 Quantity Estimates

The following quantities are based on the area encompassing Test Pits 19-95, 20-95, 21-95, 22-95, 23-95 and 24-95 and the previous Transportation Engineering Program within the west centre portion of the site (**Note: Area adjacent to Test Pit 25-95 has not been included**). Also assumed was that granular reserves only exist to the maximum depth of excavation.

- **Clearing Limits**
  -800m x 300m x 0.0001 hectares/m^2 = 24.0 hectares

- **Organic Stripping**
  -240,000 m^2 x 0.08m = 19,000m^3

- **Sandy Silt/Silt/Silty Sand Overburden**
  -240,000m^2 x 0.25m = 60,000m^3

- **Granular Reserves**
  -240,000 m^2 x 3.68m = 880,000m^3

3.6 Area 9 - South Klondike Highway
•See Appendix G

3.6.1 Location:

Area 9 is located east of South Klondike Highway, 1.6 kilometres south of the Alaska Highway. The investigated area extends from 500 metres to 1700 metres east of the South Klondike Highway.

3.6.2 Deposit: Spillway Channel Outwash Deposit

3.6.3 Access:

The access to the site was along an existing trail which enters the south-west corner of the area and traverses the south and east portion of the area. Access to individual test pit locations was generally along small existing logging trails or meadows. Site access overall would be considered good and allowed for investigation on all portions of designated Area 9.

3.6.4 Site Description

The site is generally level and is bounded on the north and north-east by a ridge which rises to a morainal deposit and on the east by hummocky terrain. The south-west extent of the investigation was the north limit of a kettle pond/marsh.

The vegetation cover was sparse to dense stands of mature spruce with young to old poplar. (Note: spruce is presently being harvested by small operators.)

3.6.5. Field and Laboratory Investigation

The field investigation consisted of excavating 15 test pits on an approximate 200 metre by 300 metre grid encompassing an area of 72 hectares. All test pits were advanced to a maximum depth of 4.00 metres.

The laboratory investigation consisted of moisture content determination on all samples retained (80 total). On selected oven dried samples grain size analyses were completed, these samples included 24 small bag samples and 15 bulk samples. Further laboratory testing included 3 trial sample crushes on Bulk Samples 1A, 6A and 12A (with G.S.A and Crush Count) and a combined Los Angeles Abrasion test.

3.6.6 Subsurface Soil Conditions:

The subsurface soil profiles on this site are given in detail on the individual test pit logs enclosed in Appendix G of this report. However, in general,the underlying materials on this site were predominantly sandy gravels with less than 5.0 percent fines with the exception of Test Pit 14-95 where the fines content varied to 5.3

percent. The sandy gravels ranged to cobbles and boulders in size with cobble content ranging to 40 percent and boulder contents to 400 millimetres in size ranging to 15 percent, locally. The sandy gravels extended to the maximum depth of excavation at all test hole locations.

The overburden materials consisted of 50 millimetres to 100 millimetres of forest floor organics over 50 millimetres to 220 millimetres of silt, sandy silt and silty sand materials with possibly some gravels and rootlets.

No groundwater or frozen soils were encountered during this investigation.

3.6.7 Granular Reserves

The materials on this site would generally be considered suitable for most granular quarry requirements including Granular A, B, C, D (Government of Yukon designation), possibly asphalt and concrete aggregates and pitrun gravels. As with many granular sources the addition of rejection or rock, sands and/or fines may be required to produce specific materials. For **Area 9** the materials encountered were generally coarse grained in nature and may require the addition of fines or fine sands and/or the rejection of rock to improve quality of product.

3.6.8 Quantity Estimates:

The following quantities are based on the depths of materials encountered at the individual test pit locations, and the development area extending to the investigation limits extending those shown on the Site Sketch.

•Clearing Limits
-(1200m x 600m) 0.0001 hectares/m^2 = 72 hectares

•Organic Stripping
-720,000m^2 x 0.075m = 54,000m^3

•Silt/Sandy Silt/Silty Sand Overburden
-720,000m^2 x 0.135m = 97,000m^3

Granular Reserves
-720,000m^2 x 3.83m = 2,750,000m^3

CONCLUSIONS

The investigations completed on the six areas Designated 2, 3, 4, 5, 7, and 9 within the Greater Whitehorse Region involved a three level work program as follows.

1) **Site Familiarization and Review**
   - Meeting with Transportation Engineering Project Manager, Mr. Dick Stilwell.
   - Detailed Airphoto review
   - Existing data review
   - Field reconnaissance

2) **Field Work Program**
   - Conducting a test pit program sufficient to identify soils in various suficial soil units.

3) **Laboratory Work Program**
   - Conducting a laboratory testing program to aid qualifying and quantifying soil characteristics.

Based on the above work program Hoggan Engineering & Testing (1980) Ltd. has evaluated the six sites with regards to the potential for granular quarry development based on geotechnical considerations.

Designated Area	Access	Potential Reserves (10^3 x m^3)	General Comments
2	N/A	None	•Sand & gravel glacial tills with silt, cobbles & boulders.
3	N/A	None	•Non-Granular soils.
4	Excellent	285	•Sand & gravel with oversize, variable source to coarse in nature. •Potentially discontinuous deposits.
5	Poor	600	•Sand & gravel with oversize, variable source. •Potentially limited depth of deposit.
7	Good	880	•No existing access but easement exists. •Sand and gravel with oversize, variable source. •Potentially depth of deposit may extend to in excess of 4.0 metres.

9	Good - Excellent	2,750	•Sand and gravel with oversize, variable source to coarse in nature. •Potentially depth of deposit may extend to in excess of 4.0 metres. •Granular deposit limits may extend south and east.

Futher geotechnical work should be undertaken prior to development to enhance the preliminary work program as outlined in this report. The work should take into consideration the following requirements.

1) **Delineating horizontal deposit limits**

2) **Evaluating vertical deposit limits**

3) **Spacial detailing deposit characteristics**

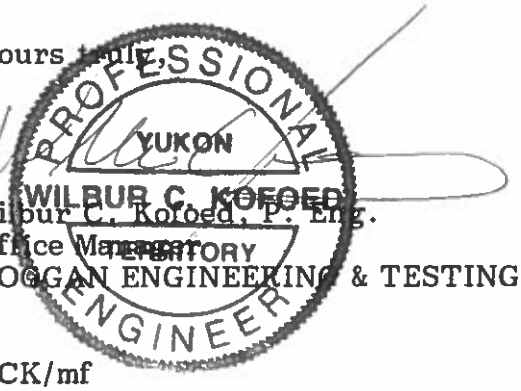
None or all of the three future investigation requirements, as noted above, may be applicable for any given area. For example, **Area 9** may have the development limits established by existing land rights, thus Requirement One would be a surveying program not geotechnical work. Also, for reasons other than geotechnical, an area may or may not be considered. Should the client require a review or input into a geotechnical work program to further detail of the above sites, Hoggan Engineering & Testing (1980) Ltd. forces would be available.

CLOSURE

The geotechnical investigation report has been prepared for the exclusive use of Government of Yukon, Community and Transportation Services, Transportation Engineering Branch and applies only to Proposed Granular Investigation, Greater Whitehorse Inventory of Sand and Gravel Reserves. The comments given are based on the subsurface soil conditions encountered during the field test program, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is used. Due to geotechnical randomness of many soil formations, no interpolations of soil conditions between test holes have been made or implied. Soil conditions are known only at the test hole locations. Should other soils be encountered or other information become available, the discussions may be altered or modified in writing by Hoggan Engineering & Testing (1980) Ltd..

We trust the above is satisfactory for your purpose. However, should any questions or comments arise, please feel free to contact the undersigned.

Yours truly,



Wilbur C. Kofoed, P. Eng.
Office Manager
HOGGAN ENGINEERING & TESTING (1980) LTD.

WCK/mf

APPENDICES

- **Appendix A**
  - **-Soil Classification**
- **Appendix B**
  - **-Site 2**
- **Appendix C**
  - **-Site 3**
- **Appendix D**
  - **-Site 4**
- **Appendix E**
  - **-Site 5**
- **Appendix F**
  - **-Site 7**
- **Appendix G**
  - **-Site 9**
- **Appendix H**
  - **-Test Pit Logs On Computer Diskette**

APPENDIX A
- **Soil Classification**

Table 1.1 Unified Soil Classification System (adapted from U.S. Army Corps of Engineers, 1953)

Major division			Group symbol	Typical name	Field identification procedure	Laboratory classification procedure (see Fig. 1.13)		
Coarse-grained soils, more than half of material larger than no. 200 sieve size	Gravels, more than half of coarse fraction larger than no. 4 sieve size	Clean gravels (little or no fines)	GW	Well-graded, gravel-sand mixtures, little or no fines	Wide range in grain sizes and substantial amounts of intermediate particle sizes	Determine percentages of gravel and sand from grain-size curve; depending on percentage of fines (fraction smaller than no. 200 sieve size) coarse-grained soils are classified as follows: Less than 5% = GW, GP, SW, SP More than 12% = GM, GC, SM, SC 5-12% = borderline cases requiring use of dual symbols	$C_u = D_{60}/D_{10} > 4$ $C_c = 1 < D_{30}^2/D_{10}\,D_{60} < 3$	
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines	Predominantly one size or a range of sizes with some intermediate sizes missing		Not meeting all gradation requirements for GW	
		Gravels with fines (appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures	Nonplastic fines or fines with low plasticity (for identification procedures see ML)		Atterberg limits below A line or PI < 4	Above A line with 4 < PI < 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Plastic fines (for identification procedures see CL)		Atterberg limits above A line with PI > 7	
	Sands, more than half of coarse fraction smaller than no. 4 sieve size	Clean sands (little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	Wide range in grain size and substantial amounts of all intermediate particle sizes		$C_u = D_{60}/D_{10} > 6$ $C_c = 1 < D_{30}^2/D_{10}\,D_{60} < 3$	
			SP	Poorly-graded sands or gravelly sands, little or no fines	Predominantly one size or a range of sizes with some intermediate sizes missing		Not meeting all gradation requirements for SW	
		Sands with fines (appreciable amount of fines)	SM	Silty sands, sand-silt mixtures	Nonplastic fines or fines with low plasticity (for indentification procedures see ML)		Atterberg limits below A line or PI < 4	Above A line with 4 < PI < 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Plastic fines (for indentification procedures see CL)		Atterberg limits above A line with PI > 7	
Fine-grained soils, more than half of material smaller than no. 200 sieve size					Identification procedures on fraction smaller than no. 40 sieve size			
					Dry strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near PL)	
	Silts and clays, liquid limit < 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	None to slight	Quick to slow	None	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium to high	None to very slow	Medium	
			OL	Organic silts and organic silty clays of low plasticity	Slight to medium	Slow	Slight	
	Silts and clays, liquid limit > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Slight to medium	Slow to none	Slight to medium	
			CH	Inorganic clays of high plasticity, fat clays	High to very high	None	None	
			OH	Organic clays of medium to high plasticity, organic silts	Medium to high	None to very slow	Slight to medium	
Highly organic soils			Pt	Peat and other highly organic soils	Readily identified by color, odor, spongy feel, and frequently by fibrous texture			

(see notes on p. 28)

NOTES ON SOIL CLASSIFICATION

The soil is named after its principal component, and modified by other components as follows:

Presence of Component	Modifier
greater than 15%	XXX-ey
11% to 15%	some XXX
5% to 10%	trace of XXX

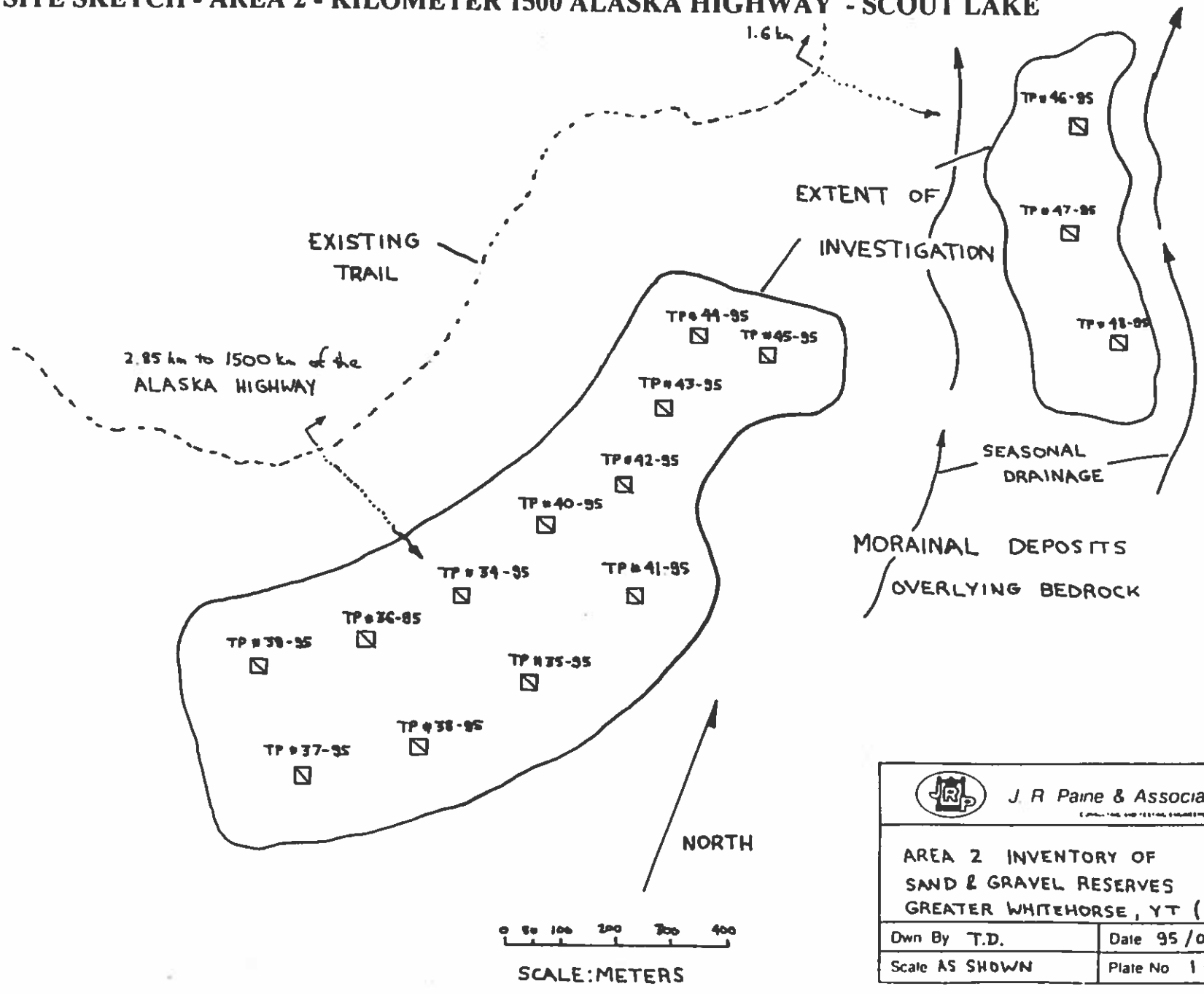
Examples

CLAY	SILT	SAND	GRAVEL	
65%	15%	10%	10%	CLAY, some silt, trace of sand, trace of gravel
5%	10%	45%	40%	GRAVELLY SAND, trace of silt, trace of clay
10%	65%	25%	---	SANDY SILT, trace of clay

Also, the USC Classification System is used.

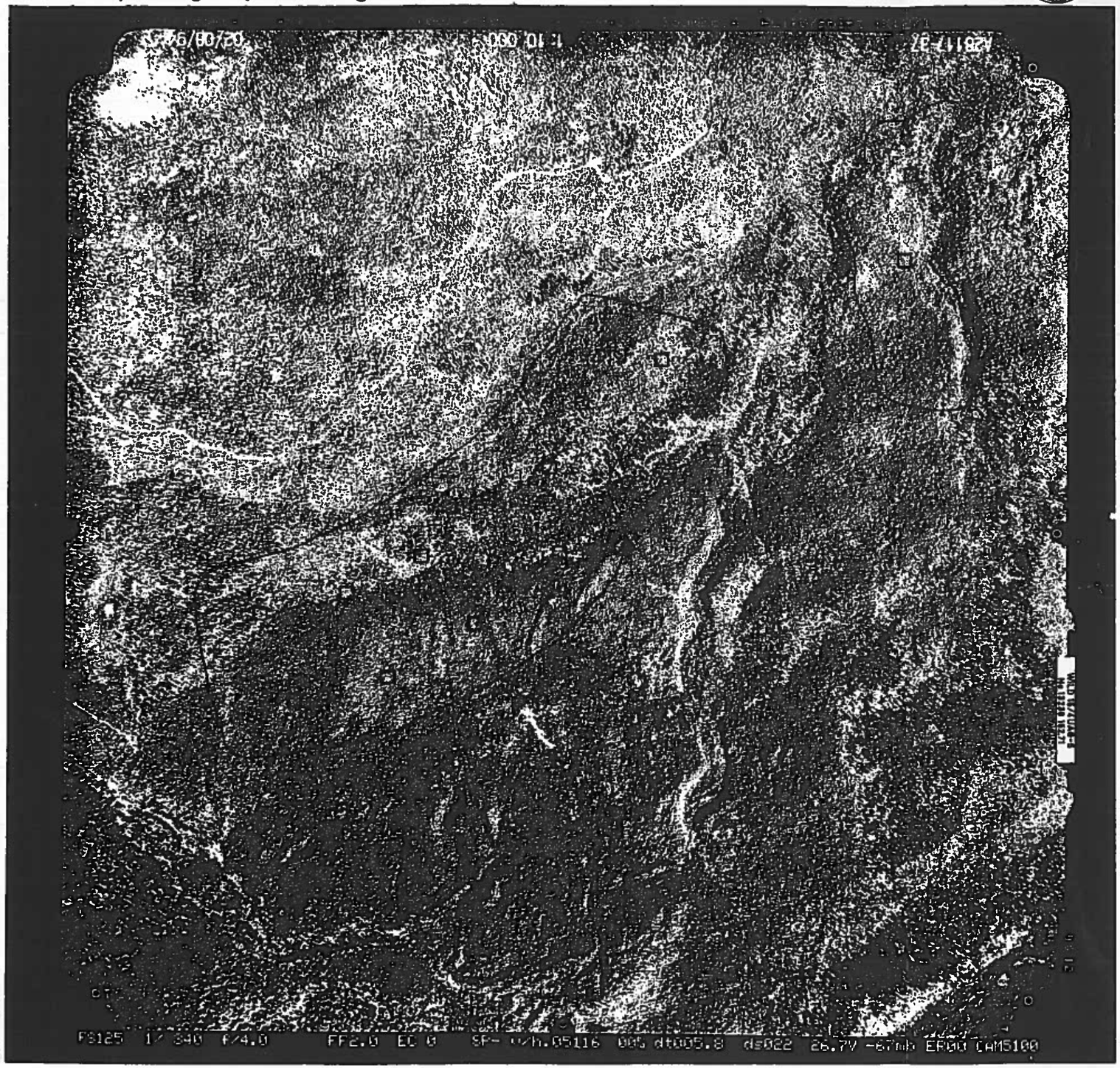
APPENDIX B
•Site 2

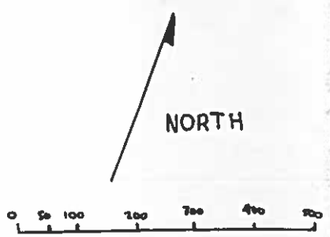
SITE SKETCH - AREA 2 - KILOMETER 1500 ALASKA HIGHWAY - SCOUT LAKE



J. R Paine & Associates Ltd	
AREA 2 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 1-1

SITE AIRPHOTOGRAPH COPY - AREA 2
KILOMETER 1500 ALASKA HIGHWAY - SCOUT LAKE





SCALE: METERS

J. R. Paine & Associates Ltd

AREA 2 INVENTORY OF
SAND & GRAVEL RESERVES
GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 1-2

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#34-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-needles, roots, organics, peat
			0.05m
		140	-sandy gravel, fine to medium grained sand sizes, trace of rootlets, loose, damp, brown
			0.50m
1.0		141	-gravelly silty sand(till), fine to medium grained sand sizes, loose, damp, light-brown
2.0			
3.0			3.00m
			End of Hole @ 3.00m
4.0			Notes: -refusal at 3.00m, boulders in size greater that 0.5m encountered
5.0			Vegetation: old burn area, dead trees on ground, mature spruce, odd young poplar
			Ground: level
6.0			
7.0			
8.0			

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC: PT, GW-GM, SM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/19
	Fig. No: 34	Page 1 of 1

95/08/08 11:45AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#35-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL
0.0			PT	
		142		
1.0		143	SM	
2.0		144		
3.0				
4.0				
5.0				
6.0				
7.0				
8.0				

0.0 – needles, weeds, rootlets, peat

0.05m

142 – silty gravelly sand(till), fine to medium grained sand sizes, odd boulder in size to 400mm, medium dense, damp, light-brown

143 – silty gravelly sand(till), fine to medium grained sand sizes, odd boulder in size to 400mm, medium dense, traces of oxidation, damp, light-brown

144 – silty gravelly sand(till), fine to medium grained sand sizes, odd cobble in size, odd boulder in size to 400mm, medium dense, light-brown

3.00m

End of Hole @ 3.00m

Notes: -refusal @ 3.00m, large boulders encountered

Vegetation: dense young spruce
Ground: level

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/19
Fig. No: 35	Page 1 of 1

95/08/24 08:11AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#36-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	DEPTH(m)
0.0			PT		0.0
					1.0
1.0		145	SM		
					2.0
2.0		146			
					3.0
3.0					
					4.0
4.0					
					5.0
5.0					
					6.0
6.0					
					7.0
7.0					
					8.0
8.0					

-needles, weeds, volcanic ash, rootlets, white/light grey

0.05m

-gravelly silty sand(till), fine to medium grained sand sizes, medium dense, odd cobble, odd boulder to 400mm in size, damp, light-brown

-gravelly silty sand(till), fine to medium grained sand sizes, medium dense, odd cobble, odd boulder in size to 400mm, damp, light-brown

3.00m

End of Hole @ 3.00m

Notes: -refusal @ 3.00m, large boulders encountered

Vegetation: dense, young poplar, mature spruce
Ground: slight slope S-N

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/19
	Fig. No: 36	Page 1 of 1

95/08/08 11:47AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#37-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-needles, volcanic ash & rootlets	PT		0.0
			0.05m			
		151	-silty sand(till), some gravel, loose-medium dense, damp, light-brown			
1.0				SM		1.0
		152	-silty gravelly sand(till), loose-medium dense, damp light-brown			
2.0						2.0
			2.50m			
3.0		153	-silty sandy gravel(till), fine to medium grained sand sizes, odd boulder to 500mm in size, medium dense, damp, light-brown	GM		3.0
			3.50m			
			End of Hole @ 3.50m			
4.0			Notes:			4.0
5.0			Vegetation: very dense, young spruce (trees <6" diameter) Ground: level, top of slope trending N-S Photo #23, spill piles			5.0
6.0						6.0
7.0						7.0
8.0						8.0

LIQUID: 10 20 30 40 | PLASTIC: 10 20 30 40 | PLASTIC M.C. LIQUID: 10 20 30 40

CLAY: 20 40 60 80 | SILT: 20 40 60 80 | SAND: 20 40 60 80 | GRAVEL: 20 40 60 80

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 3.5 m
REVIEWED BY: WCK	COMPLETE: 95/06/19
Fig. No: 37	Page 1 of 1

95/08/24 08:11AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#38-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL
0.0			-needles, weeds, volcanic ash	PT	
			0.05m		
1.0		147	-gravelly silty sand(till), silty lumps throughout, fine grained sand sizes, trace of rootlets, soft, damp, light-brown	SM	
			1.20M		
2.0		148	-sandy gravel, some silt(till), fine sand sizes, odd cobble & boulder to 400mm in size, medium dense, damp, light-brown	GM	
3.0		149	-sandy gravel, some silt(till), fine sand sizes, odd cobble & boulder to 400mm in size, medium dense, damp, light-brown		
			3.20M		
4.0		150	-silty sand, some gravel to gravelly (till), odd cobble & boulder in size to 600mm, medium dense, damp, light-brown	SM	
			4.00m		
			End of Hole @ 4.00m		
5.0			Notes:		
6.0			Vegetation: dense, young & mature spruce Ground: level, edge of ridge trending NW-SE		
7.0					
8.0					

LIQUID: 10 20 30 40 | PLASTIC: 10 20 30 40 | PLASTIC M.C. LIQUID: 10 20 30 40

CLAY: 20 40 60 80 | SILT: 20 40 60 80 | SAND: 20 40 60 80 | GRAVEL: 20 40 60 80

DEPTH(m): 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/19
Fig. No: 38	Page 1 of 1

95/08/08 11:48AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#39-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-needles, rootlets, ash
			0.05m
		154	-silty gravelly sand(till), fine to medium grained sand sizes, medium dense, damp, grey-brown
2.0		155	-silty gravelly sand(till), fine to medium grained sand sizes, medium dense, damp, light-grey
			*Seasonal Frost at 2.00m
		156	-silty gravelly sand(till), fine to medium grained sand sizes, medium dense to dense, damp, light-brown
3.0			3.00m
			End of Hole @ 3.00m
			Notes: -refusal @ 3.00m, large boulders encountered
			Vegetation: dense, young spruce Ground: slope trending N-S Photo #24, spill piles

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

USC: PT, SM, SM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/19
	Fig. No: 39	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#40-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-grass, moss & peat, rootlets
			0.10m
		157	-silty gravelly sand(till), fine grained, medium dense, damp, light-grey
1.0			
		158	-silty gravelly sand(till), fine grained, medium dense, damp, light-grey
2.0			1.80m
		159	-gravelly silty sand(till), fine grained sand sizes, odd boulder to 600mm, dense, damp, light-grey
3.0			
			3.50m
			End of Hole @ 3.50m
4.0			Notes: -refusal @ 3.50m, large boulders encountered
5.0			Vegetation: medium dense, young spruce & bushes Ground: level
6.0			
7.0			
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SM, SM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 3.5 m
REVIEWED BY: WCK	COMPLETE: 95/06/19
Fig. No: 40	Page 1 of 1

95/08/08 11:50AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#41-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-weeds, moss, peat
			0.08m
1.0		160	-sandy gravel, some silt, fine to medium grained, medium dense, traces of oxidation, damp, brown
2.0		161	-sandy gravel, some silt, fine to medium grained, medium dense, traces of oxidation, damp, brown
			2.50m
3.0		162	-gravelly sand, trace of silt, fine to medium grained sand sizes, medium dense, damp, light-grey
4.0		163	-gravelly sand, trace of silt, fine to medium grained sand sizes, medium dense, damp, light-brown
			4.00m
			End of Hole @ 4.00m
5.0			Notes: -some surface cobbles -testpit located in clearing
6.0			Vegetation: sparse, young poplar & shrubs Ground: level
7.0			
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT | GM | SP-SM

SOIL SYMBOL

DEPTH(m): 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/19
	Fig. No: 41	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#42-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			–needles, moss, volcanic ash, rootlets
			0.05m
1.0		164	–sandy gravel(till), some silt, fine to medium grained sand sizes, medium dense, traces of oxidation, damp, brown
2.0		165	–sandy gravel(till), some silt, fine to medium grained sand sizes, medium dense, traces of oxidation, odd cobble in size, damp, brown
			2.50m
			End of Hole @ 2.50m
			Notes: –refusal @ 2.50m, large boulders encountered –testpit located in small clearing
4.0			Vegetation: medium dense, mature spruce, young aspen & poplar Ground: level
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 2.5 m
REVIEWED BY: WCK	COMPLETE: 95/06/20
Fig. No: 42	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#43-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▯ SPT ▮ CORE

SOILS DESCRIPTION

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	DEPTH(m)
0.0			PT		0.0
		–needles, weeds, rootlets, peat			
		0.08m			
1.0		166 –silty gravelly sand(till), fine to medium grained sand sizes, odd boulder in size to 500mm, medium dense, damp, brown	SM		1.0
2.0		167 –silty gravelly sand(till), fine to medium grained sand sizes, odd cobble and boulder to 500mm in size to 500mm, medium dense, damp, brown			2.0
3.0					3.0
		3.00m			
		End of Hole @ 3.00m			
4.0					4.0
		Notes: –refusal @ 3.00m, large boulders encountered –pictures #25, boulder			
5.0					5.0
		Vegetation: medium dense, mature & young spruce & aspen Ground: level, slight slope S–N			
6.0					6.0
7.0					7.0
8.0					8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/20
Fig. No: 43	Page 1 of 1

95/08/08 11:52AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#44-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▯▯ SPT ▯▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-needles, weeds, rootlets, ash	PT		0.0
			0.08m			
1.0		168	-silty sandy gravel (till), fine to medium grained sand sizes, odd cobble and boulder in size to 500mm, medium dense, damp, light-grey	GM		1.0
2.0		169	-silty sandy gravel (till), fine to medium grained sand sizes, odd cobble and boulder in size to 1.0m, medium dense, damp, light-grey			2.0
			2.50m			
			End of Hole @ 2.50m			
3.0			Notes: -refusal at 2.50m, large boulders encountered			3.0
4.0			Vegetation: dense, mature spruce, odd young spruce Ground: slight slope S-N (5% grade)			4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 2.5 m
	REVIEWED BY: WCK	COMPLETE: 95/06/20
	Fig. No: 44	Page 1 of 1

95/08/08 11:52AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#45-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-grass, moss, ash & peat, rootlets
			0.08m
1.0		170	-gravelly sand (till), some silt, 5-10% cobbles in size to 200mm & the odd boulder in size to 1 meter, trace of oxidation, medium dense, damp, brown
2.0		171	-gravelly sand (till), some silt, 5-10% cobbles in size to 200mm & the odd boulder in size to 1 meter, trace of oxidation, medium dense, damp, brown
3.0		172	-gravelly sand (till), some silt, large boulders in size to 1 meter, trace of oxidation, medium dense, damp brown
		173	-gravelly sand (till), some silt, large boulders in size to 1 meter, trace of oxidation, medium dense, damp brown
			3.50m
4.0			End of Hole @ 3.50m
5.0			Vegetation: sparse to medium dense, young spruce & shrubs, odd mature spruce
			Ground: slope trending W-E
6.0			
7.0			
8.0			

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

USC: PT; SP-SM

SOIL SYMBOL

DEPTH(m): 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.5 m
	REVIEWED BY: WCK	COMPLETE: 95/06/20
	Fig. No: 45	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#46-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-weeds & grasses, peat & ash, rootlets
			0.05m
1.0		174	-gravelly sand (till), some silt, medium dense, damp, odd cobble, light brown
2.0		175	-gravelly sand (till), some silt, some cobbles, odd boulder to 500mm in size, loose, damp, light brown
			2.50m
			End of Hole @ 2.50m
3.0			Notes: -refusal at 2.50m, large boulders encountered -photo #26, spill piles
4.0			Vegetation: sparse to medium dense, young & mature spruce, odd shrubs Ground: testpit in valley running N-S
5.0			
6.0			
7.0			
8.0			

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

USC: PT, SM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 2.5 m
REVIEWED BY: WCK	COMPLETE: 95/06/20
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#47-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtboll Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, grasses, peat & rootlets	PT		0.0
			0.08m			
1.0		176	-sandy gravel(till), some silt, medium dense, trace oxidation, damp, light brown	GM		1.0
2.0		177	-sandy gravel(till), some silt, medium dense, trace oxidation, odd boulders in size to 500-1000mm in size, damp-moist, light brown			2.0
			2.50m			
			End of Hole @ 2.50m			
3.0						3.0
4.0			Vegetation: sparse, small shrubs, odd mature spruce & shrubs			4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC — M.C. — LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK | COMPLETION DEPTH: 2.5 m
REVIEWED BY: WCK | COMPLETE: 95/06/20
Fig. No: 47 | Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#48-95
Caterpillar 215 Backhoe	Area #2	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE NO	SOILS DESCRIPTION	USC
0.0		-moss, grass, peat & rootlets	PT
		0.05m	
1.0	178	-sandy silt (till), trace of gravel, odd cobble, odd boulder to 300mm in size, medium dense, damp, brown	ML
2.0	179	-sandy silt (till), trace of gravel, odd boulder to 300mm in size, medium dense, damp, brown	
		2.50m	
3.0	180	-gravelly sand (till), trace of silt, odd cobble, odd boulder to 300mm in size, medium dense, damp, brown	SW/SM
4.0	181	-gravelly sand (till), trace of silt, odd cobble, odd boulder to 300mm in size, medium dense, damp, brown	
		4.00m	
		End of Hole @ 4.00m	
5.0		Notes: -exposed boulders on surface in size greater than 0.5m -testpit located in narrow valley, running N-S	
6.0		Vegetation: medium dense, mature & young spruce on either side of valley	
7.0			
8.0			

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 | ▲ SILT ▲ 20 40 60 80 | ■ SAND ■ 20 40 60 80 | ◆ GRAVEL ◆ 20 40 60 80

SOIL SYMBOL

DEPTH(m) 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/20
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J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 141 Depth: 1.0 - 1.5 m
Location: Area # 2
TP # 34

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WJ C-/C Date: 1995/~~86~~ 07/15

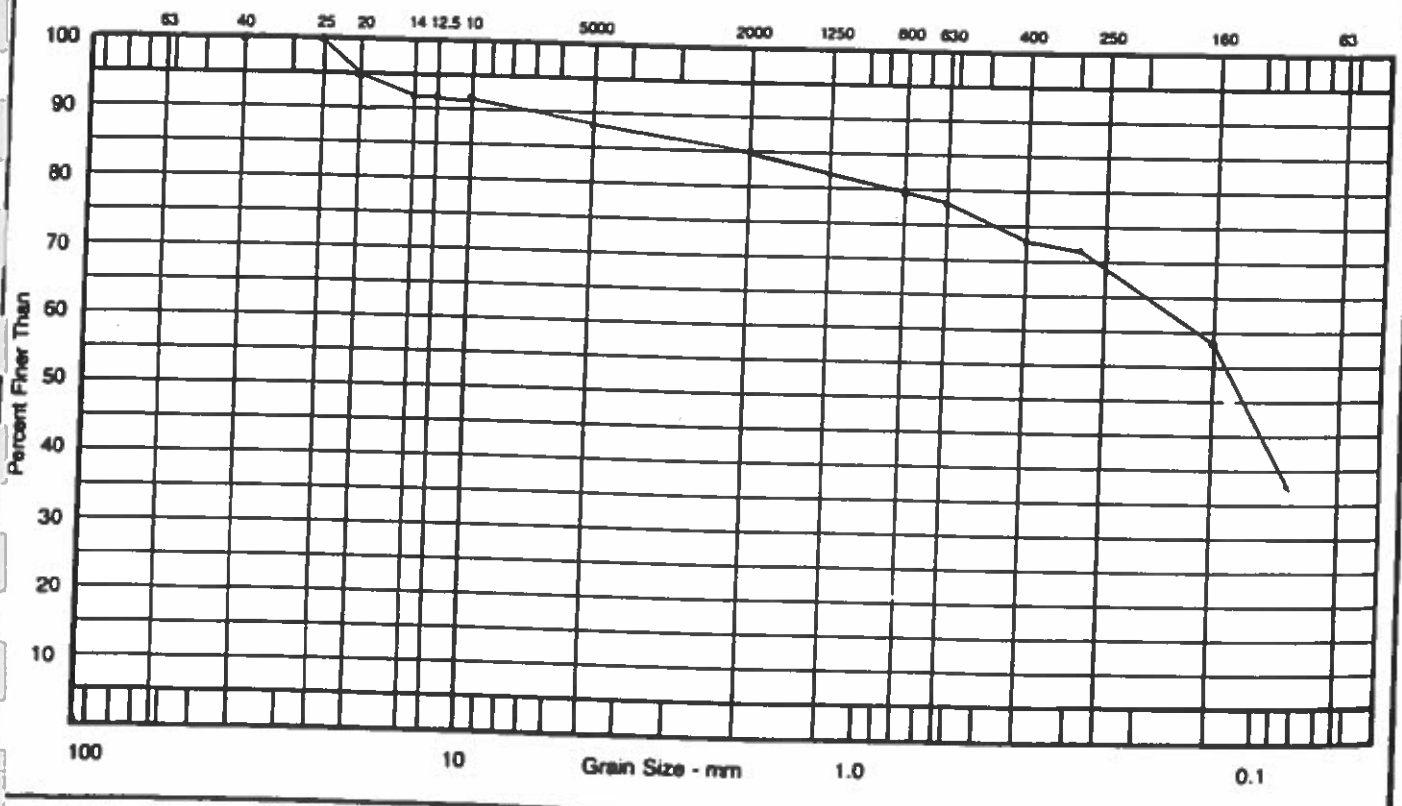
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					100
14000	14.0					95.2
12500	12.5					92.6
10000	10.0					92.6
5000	5.0					91.7
2000	2.0					88.3
1250	1.250					85.0
800	0.800					82.2
630	0.630					79.9
400	0.400					78.0
315	0.315					73.9
160	0.160					70.7
80	0.080					58.2
						43.8

Description of Sample: GRAVELLY SILTY SAND, SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture: 3.0 %
Gravel: 11.7 %
Sand: 44.5 %
Silt: 43.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 144 Depth: 1.8-2.2m
Location: Area #2
TP #35

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK/PR Job No.: 8002-234
Ck'd by: WJC Date: 1995/07/15

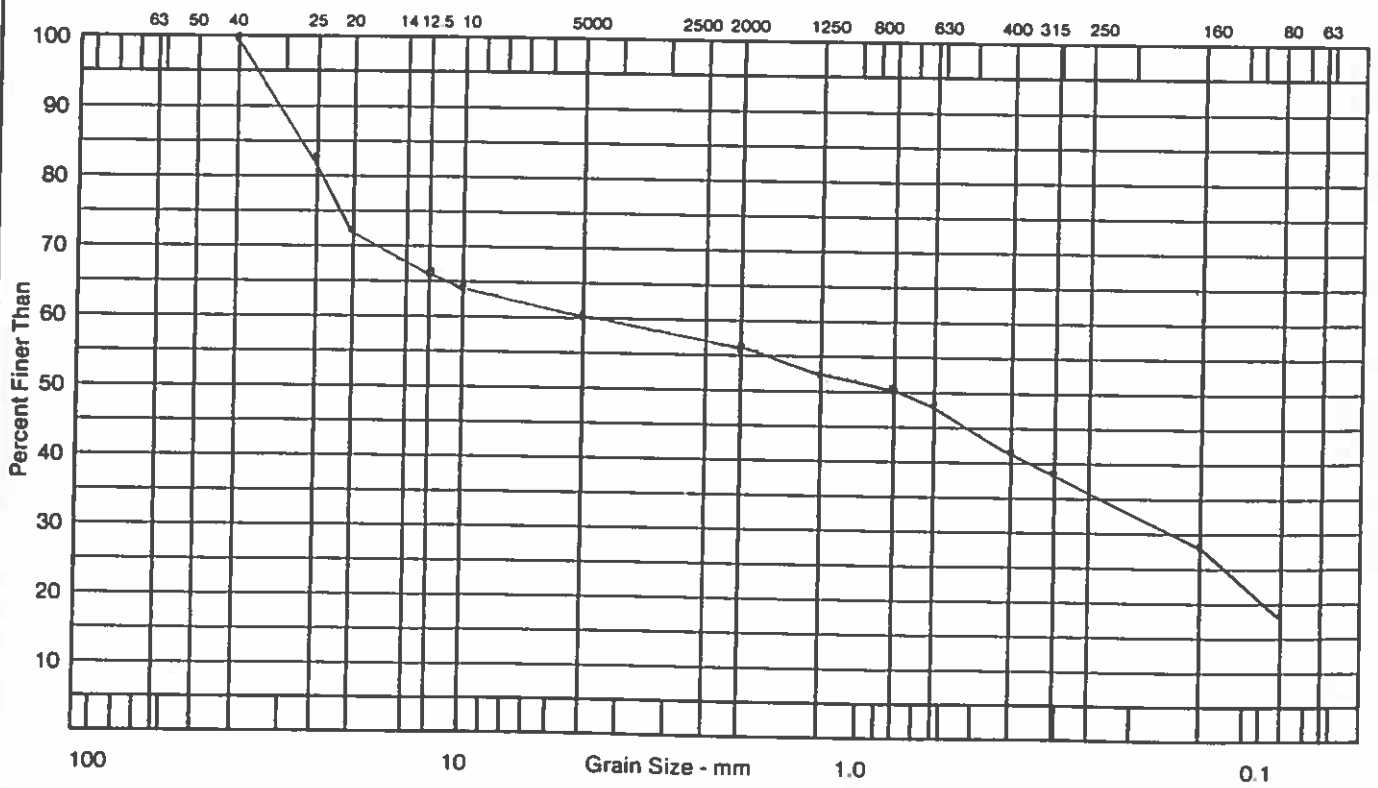
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40.000	40.0					100.0
25.000	25.0					82.5
20.000	20.0					72.1
12.500	12.5					66.8
10.000	10.0					64.6
5.000	5.0					60.9
2.000	2.0					55.8
1.250	1.25					52.7
800	0.800					50.0
630	0.630					48.0
400	0.400					41.9
315	0.315					38.1
160	0.160					28.2
80	0.080					18.5

Description of Sample: Silty Gravelly Sand - SM

Time of Sieving ____ Min. 15

Method of Preparation ____ Dry ____ Washed X

Remarks:
Moisture: 3.1%
Gravel: 39.1%
Sand: 42.4%
Silt: 18.5%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 146 Depth: 1.5 - 2.0 m

Location: Area # 2
TP # 36

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No. 8002-234

Ck'd by: DJC Date: 1995/07/06

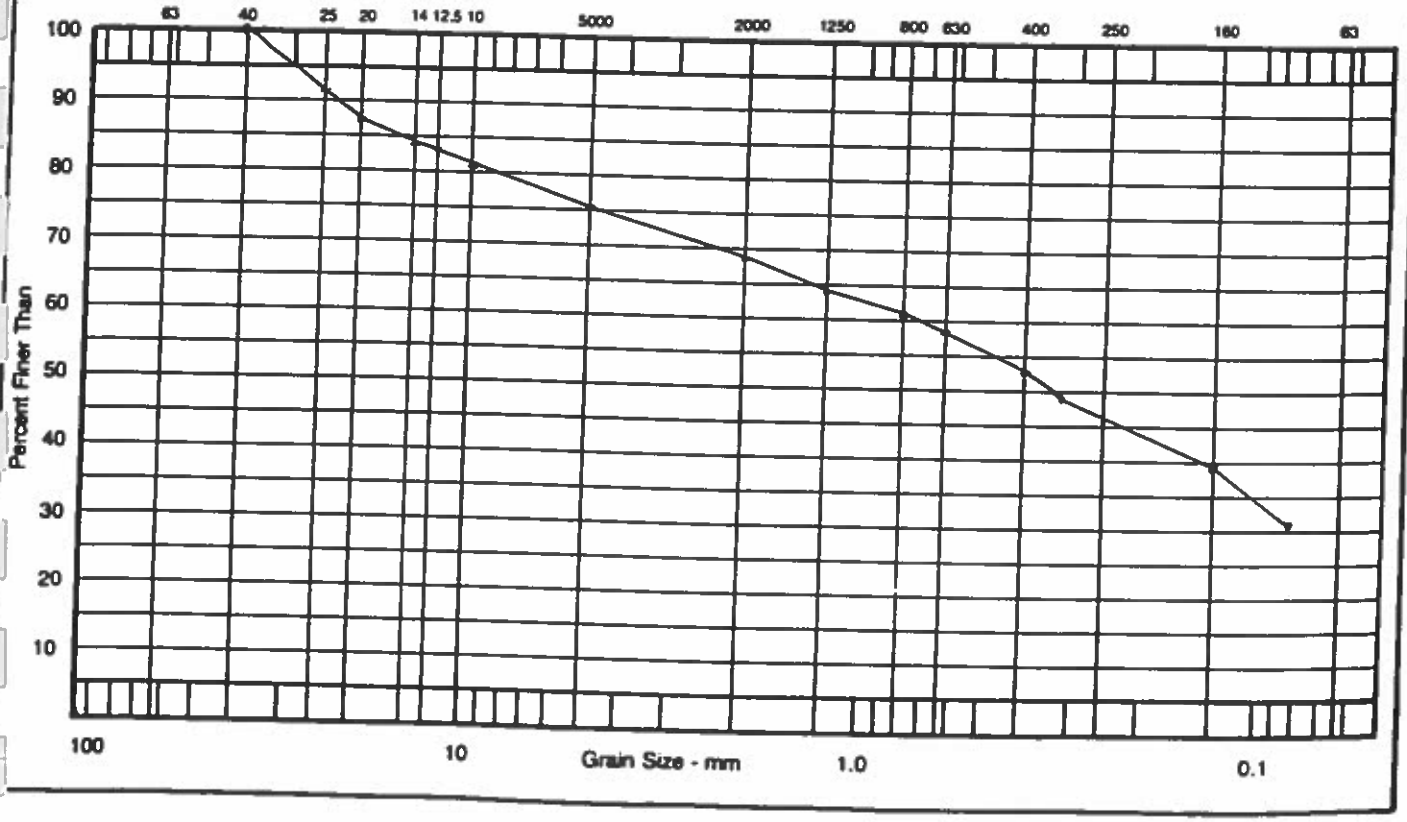
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					91.4
20000	20.0					87.3
14000	14.0					83.8
12500	12.5					82.8
10000	10.0					80.8
5000	5.0					75.6
2000	2.0					68.9
1250	1.250					64.1
800	0.800					60.4
630	0.630					58.0
400	0.400					52.5
315	0.315					48.9
160	0.160					39.9
80	0.080					30.7

Description of Sample: Gravelly Silty Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 4.4 %
Gravel : 24.4 %
Sand : 44.9 %
Silt : 30.7 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 152 Depth: 1.5-2.0m
Location: Area #2
TP #37

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK/PR Job No.: 8002-234
Ck'd by: WC/C Date: 1995/07/15

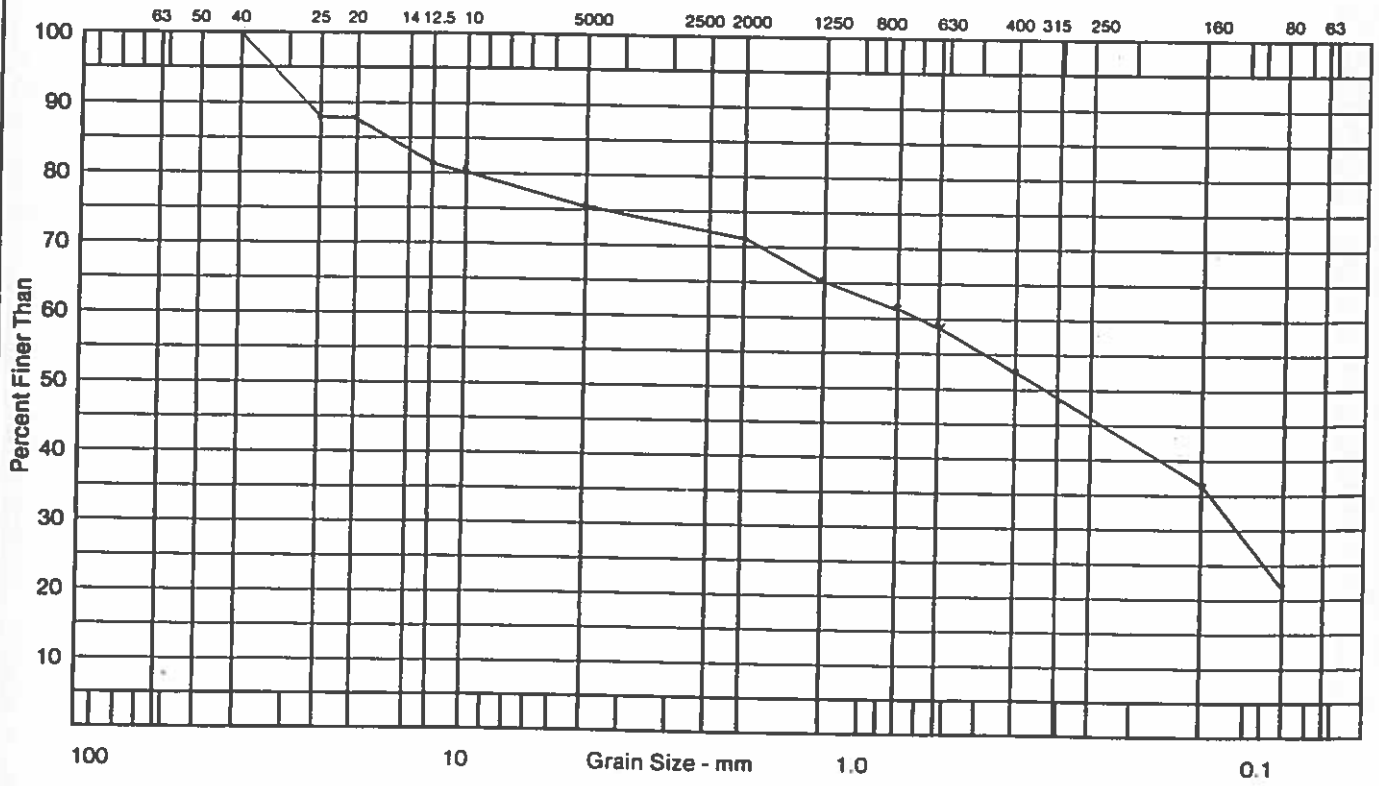
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40,000	40.0					100.0
25,000	25.0					87.9
20,000	20.0					87.9
12,500	12.5					81.0
10,000	10.0					80.0
5,000	5.0					75.3
2,000	2.0					70.4
1,250	1.25					65.7
800	0.800					61.5
630	0.630					59.1
400	0.400					52.6
315	0.315					48.7
160	0.160					36.4
80	0.080					22.2

Description of Sample: Silty Gravelly Sand - SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture: 5.0%
Gravel: 24.7%
Sand: 53.1%
Silt: 22.2%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 147 Depth: 0.5 - 1.0 m
Location: Area # 2
TP # 39

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No: 8002-234
Ck'd by: WLC Date: 1995/07/06

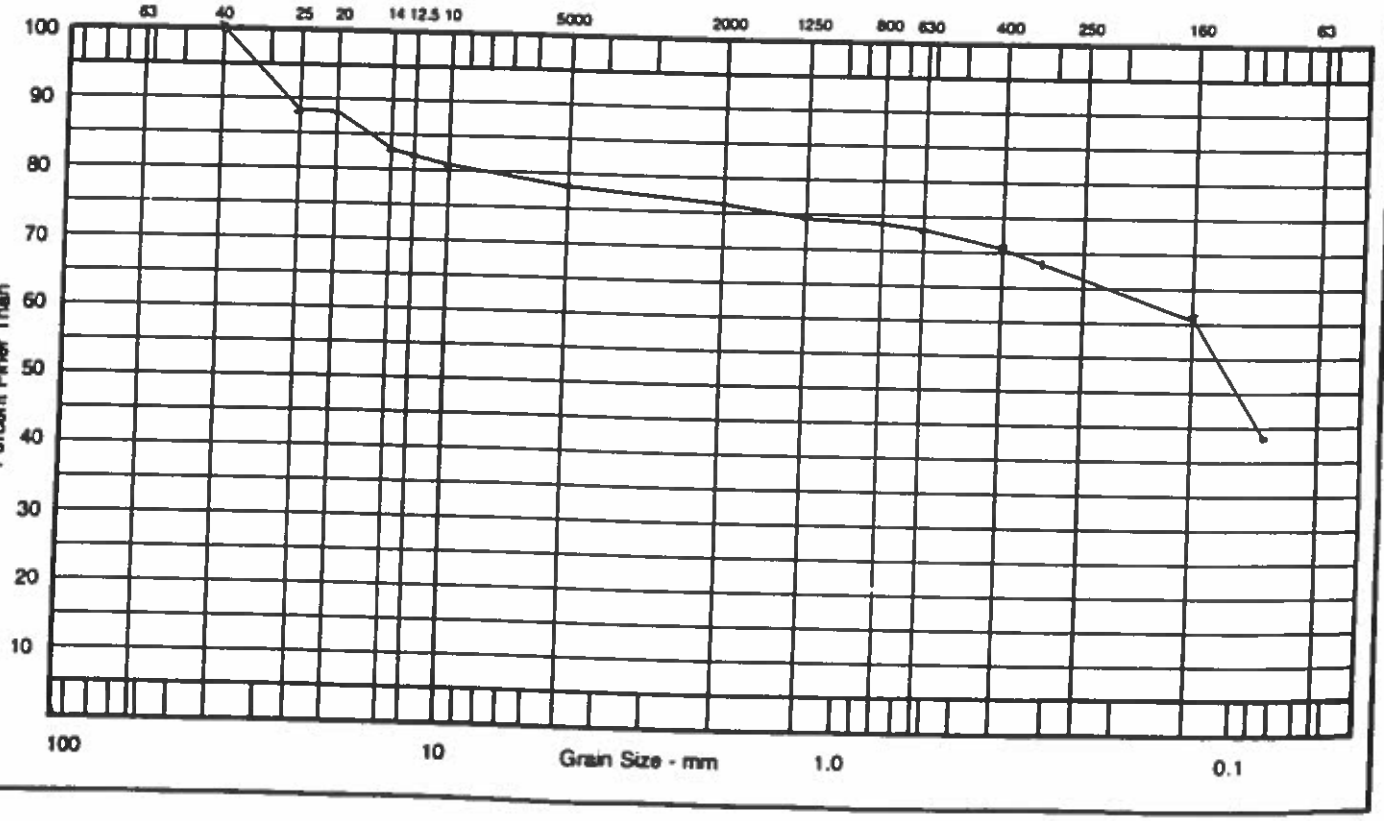
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Org Sample
40000	40.0					100
25000	25.0					88.1
20000	20.0					88.1
14000	14.0					82.4
12500	12.5					82.1
10000	10.0					80.6
5000	5.0					78.1
2000	2.0					76.1
1250	1.250					74.7
800	0.800					73.7
630	0.630					72.8
400	0.400					70.5
315	0.315					68.6
160	0.160					60.7
80	0.080					43.6

Description of Sample: Gravelly Silty Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 7.4 %
Gravel : 21.9 %
Sand : 34.5 %
Silt : 43.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 149 Depth 2.6 - 3.0 m

Location: Area # 2, TP # 38

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No 8002-234

Ck'd by [illegible] Date 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					62.7
20000	20.0					56.2
14000	14.0					51.0
12500	12.5					49.1
10000	10.0					46.6
5000	5.0					42.2
2000	2.0					37.7
1250	1.250					35.6
800	0.800					33.5
630	0.630					32.3
400	0.400					29.3
315	0.315					27.2
160	0.160					21.3
80	0.080					14.5

Description of Sample: Sandy Gravel, Some Silt, GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

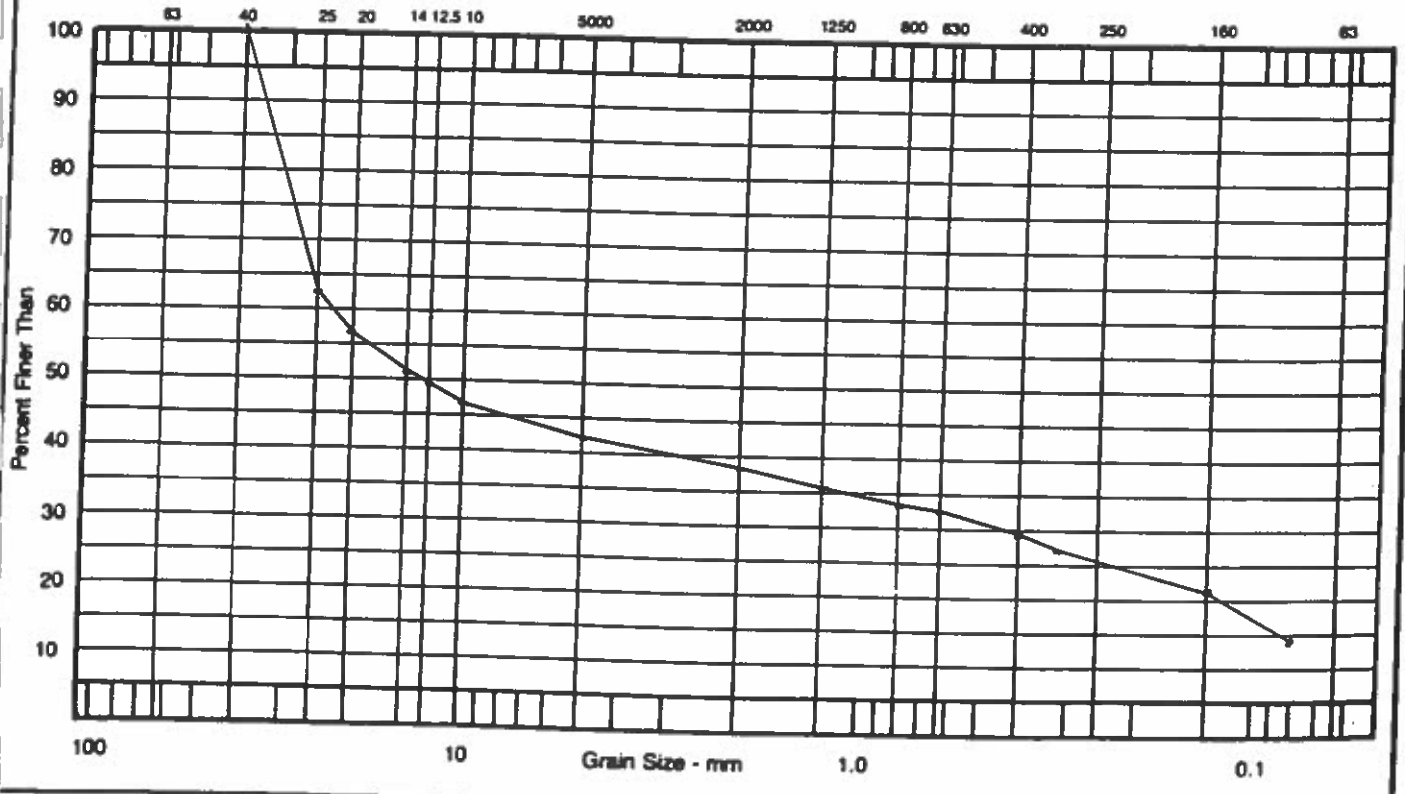
Remarks

Moisture : 2.3 %

Gravel : 57.8 %

Sand : 27.7 %

Silt : 14.5 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 155 Depth: 1.8 - 2.0 m
Location: Area # 2
TP # 39

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No. 8002-234
Ck'd by: WLR Date: 1995/07/06

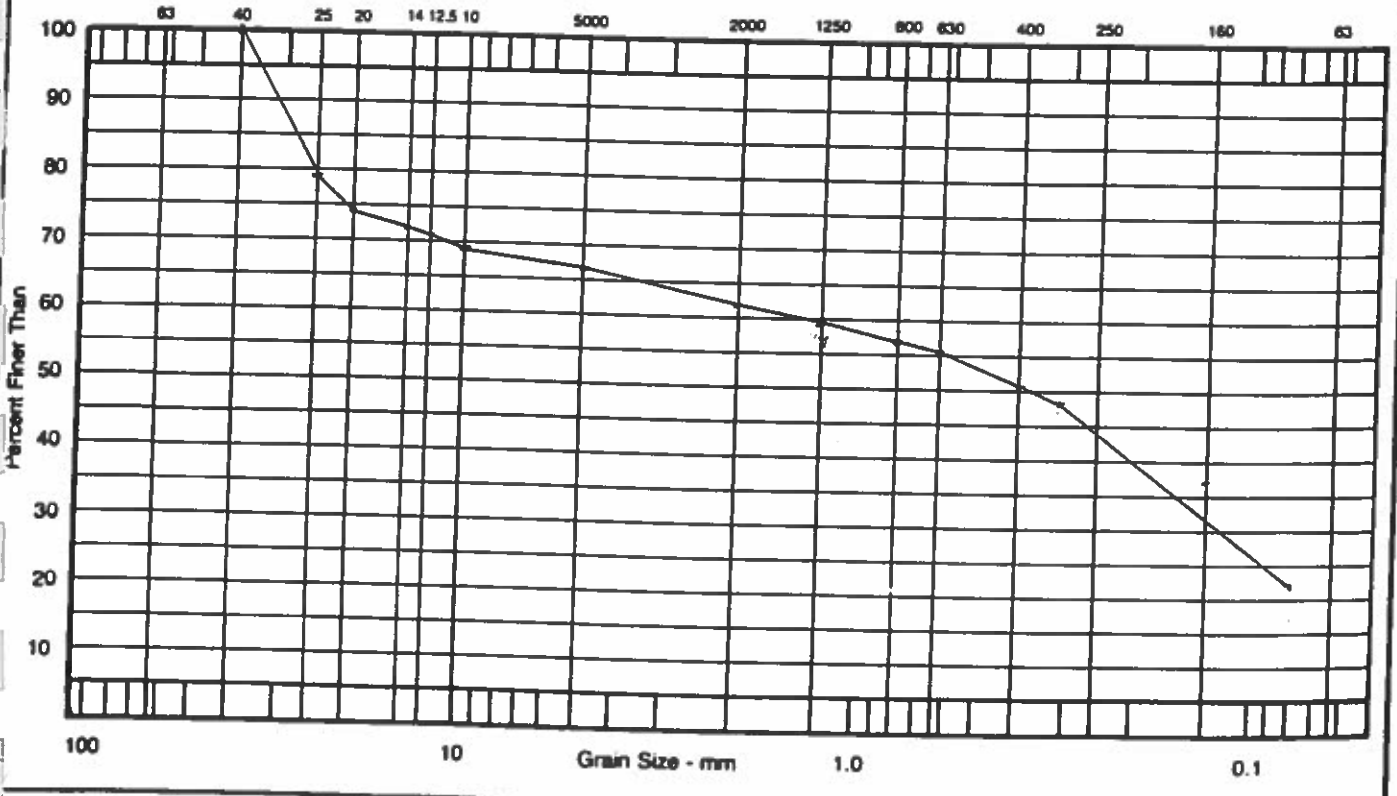
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					79.6
20000	20.0					74.3
14000	14.0					71.8
12500	12.5					71.0
10000	10.0					69.6
5000	5.0					66.5
2000	2.0					62.1
1250	1.250					59.3
800	0.800					57.0
630	0.630					55.1
400	0.400					50.4
315	0.315					47.7
160	0.160					37.2
80	0.080					22.2

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 4.0 %
Gravel : 33.5 %
Sand : 44.3 %
Silt : 22.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 158 Depth 1.8 - 2.0 m
Location: Area # 2
TP # 40

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: LwCL Date: 1995/07/06

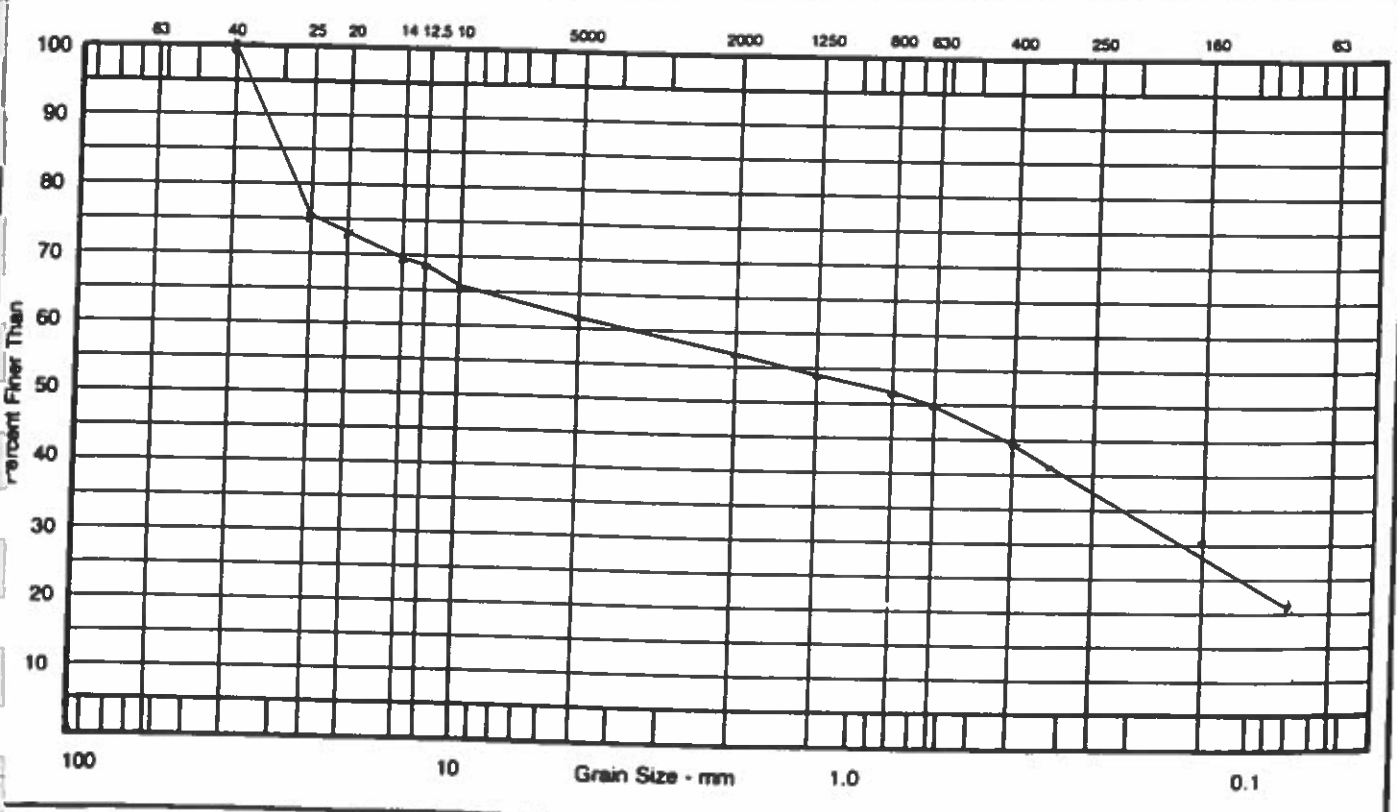
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					75.4
20000	20.0					73.2
14000	14.0					69.4
12500	12.5					68.1
10000	10.0					65.5
5000	5.0					61.2
2000	2.0					56.5
1250	1.250					54.1
800	0.800					51.4
630	0.630					49.6
400	0.400					44.6
315	0.315					40.9
160	0.160					30.3
80	0.080					20.2

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.6 %
Gravel : 38.8 %
Sand : 41.0 %
Silt : 20.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 160 Depth: 0.5 - 1.0 m
Location: Area # 2
TP # 41

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WLV Date: 1995/~~96~~/07/15

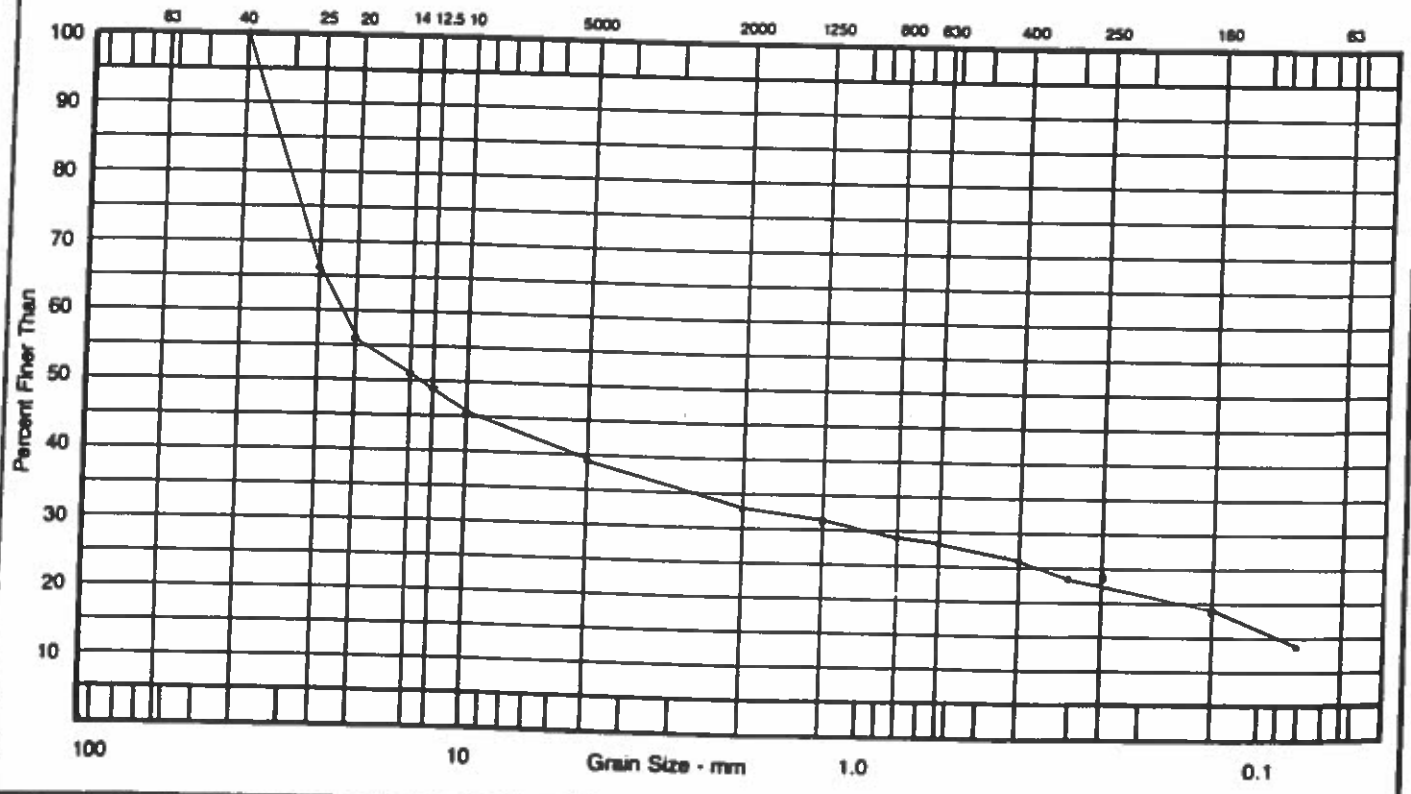
Sieve No	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					66.0
20000	20.0					56.2
14000	14.0					50.9
12500	12.5					49.7
10000	10.0					45.7
5000	5.0					39.0
2000	2.0					33.6
1250	1.250					31.5
800	0.800					29.6
630	0.630					28.6
400	0.400					26.2
315	0.315					24.5
160	0.160					19.6
80	0.080					14.3

Description of Sample: SANDY GRAVEL, SOME SILT, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 2.6 %
Gravel : 61.0 %
Sand : 24.7 %
Silt : 14.3 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 164 Depth 0.5 - 1.0 m

Location: Area # 2
TP # 42

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No 8002-234

Ck'd by W.C.L Date 1995/07/06

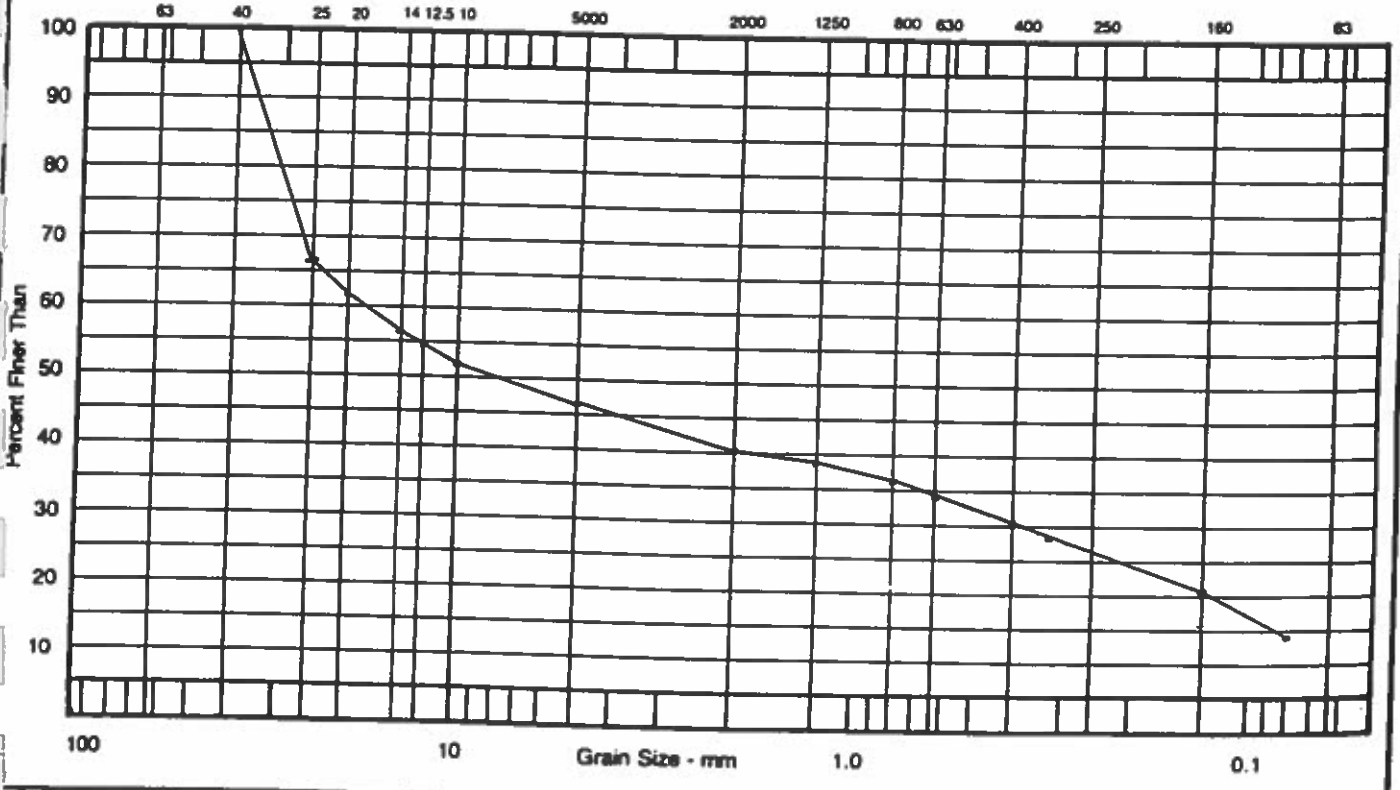
Sieve No	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100.0
25000	25.0					66.6
20000	20.0					61.9
14000	14.0					56.1
12500	12.5					54.8
10000	10.0					52.2
5000	5.0					46.1
2000	2.0					40.9
1250	1.250					38.5
800	0.800					36.0
630	0.630					34.5
400	0.400					30.6
315	0.315					27.8
160	0.160					20.7
80	0.080					14.4

Description of Sample
Sandy Gravel
Some Silt, GM

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 2.1 %
Gravel : 53.9 %
Sand : 31.7 %
Silt : 14.4 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 166 Depth: 0.8 - 1.0 m

Location: Area # 2, TP # 43

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No: 8002-234

Ck'd by: WCH Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					85.1
20000	20.0					82.7
14000	14.0					80.2
12500	12.5					77.9
10000	10.0					75.1
5000	5.0					68.9
2000	2.0					60.4
1250	1.250					54.8
800	0.800					50.7
630	0.630					47.9
400	0.400					41.6
315	0.315					38.0
160	0.160					30.3
80	0.080					24.1

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

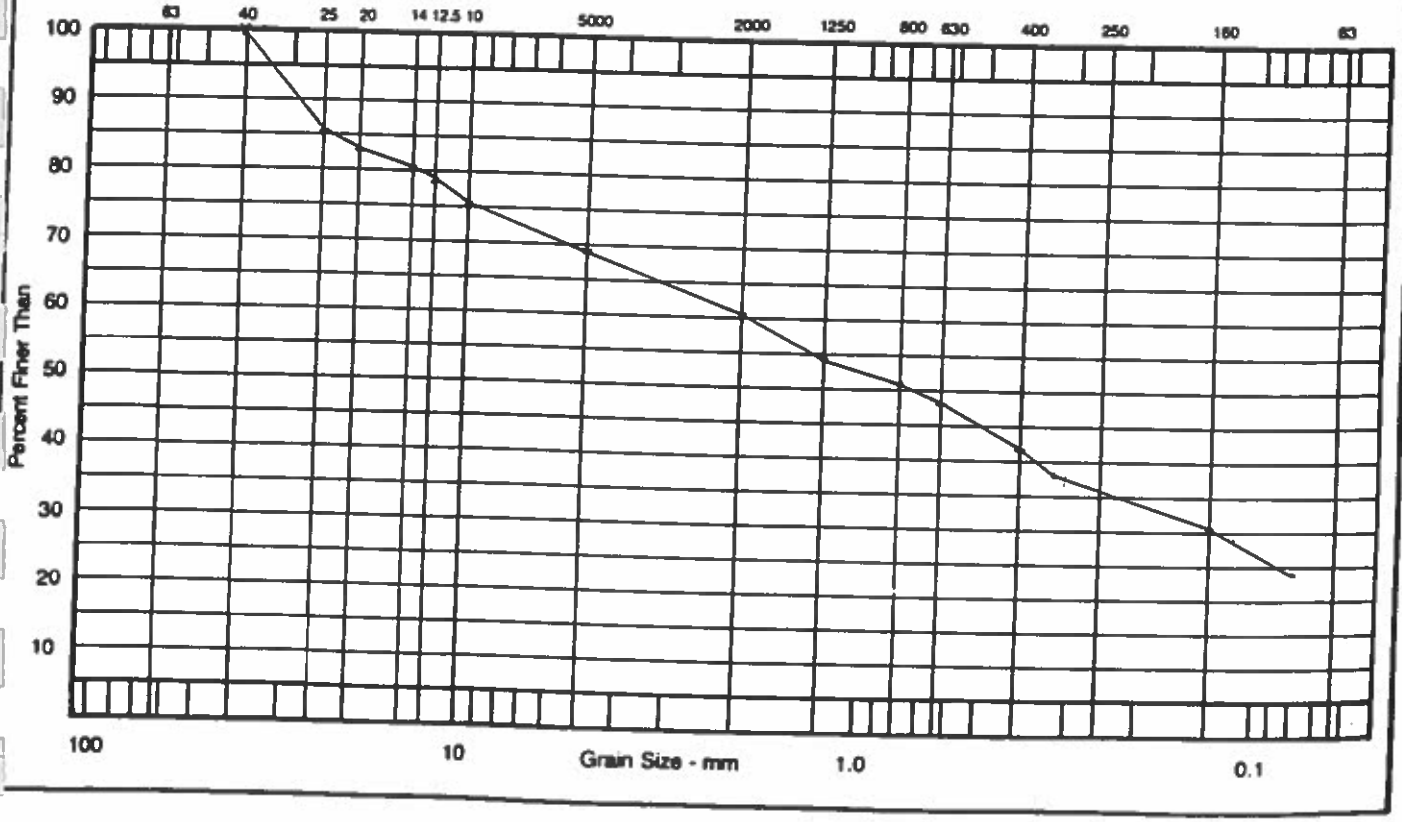
Remarks:

Moisture : 3.8 %

Gravel : 31.1 %

Sand : 44.8 %

Silt : 24.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 168 Depth: 0.8 - 1.0 m

Location: Area # 2
TP # 44

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No.: 8002-234

Ck'd by: WJC Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					81.8
20000	20.0					72.4
14000	14.0					68.3
12500	12.5					66.8
10000	10.0					64.0
5000	5.0					56.9
2000	2.0					50.2
1250	1.250					46.9
800	0.800					43.8
630	0.630					42.0
400	0.400					37.0
315	0.315					33.4
160	0.160					24.0
80	0.080					16.0

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

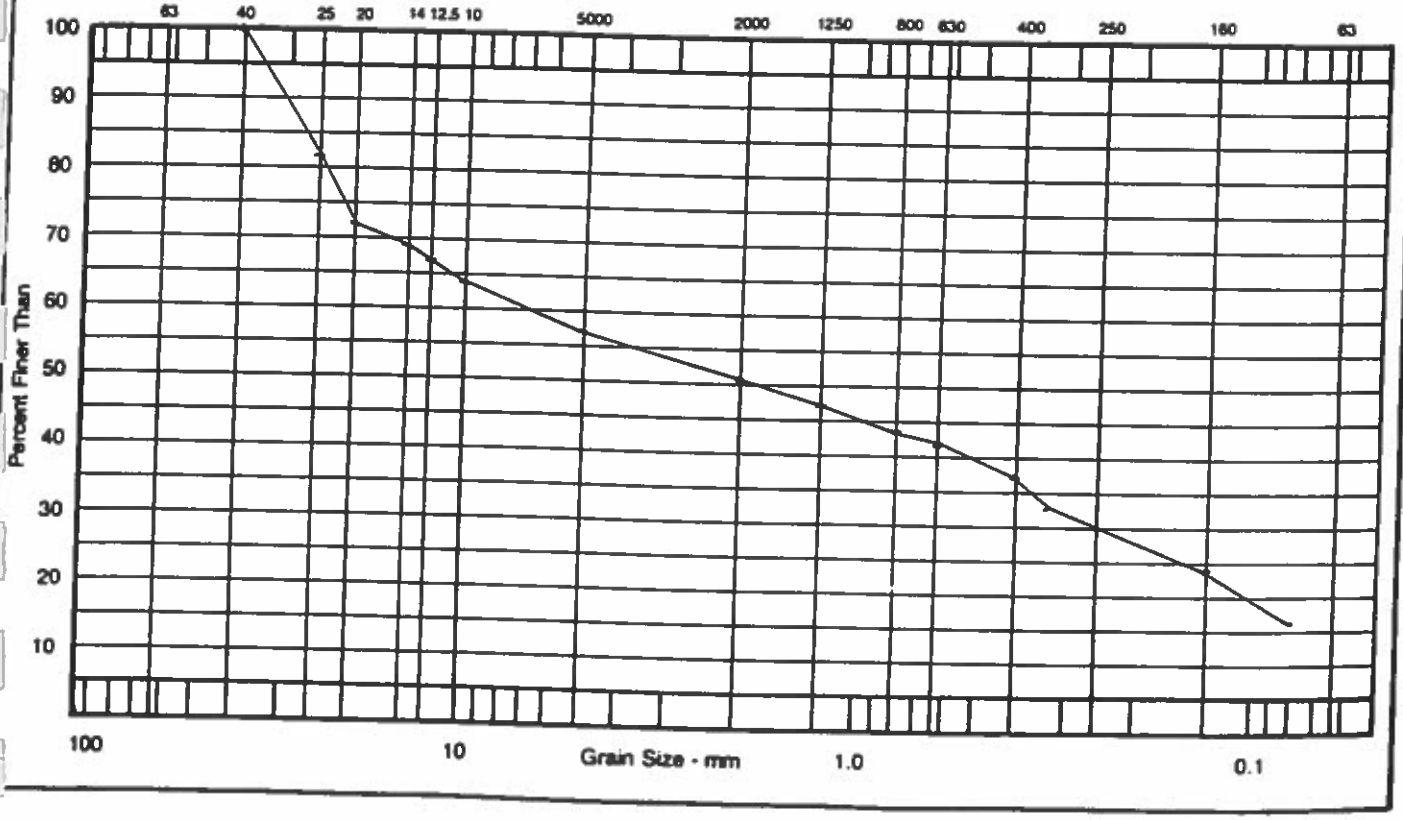
Remarks:

Moisture : 2.7 %

Gravel : 43.1 %

Sand : 40.9 %

Silt : 16.0 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 172 Depth: 2.8 - 3.0 m

Location: Area # 2, TP # 45

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No: 8002-234

Ck'd by: WCR Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					74.9
20000	20.0					70.7
14000	14.0					67.3
12500	12.5					66.3
10000	10.0					64.7
5000	5.0					61.2
2000	2.0					56.9
1250	1.250					53.7
800	0.800					50.9
630	0.630					48.2
400	0.400					40.2
315	0.315					34.5
160	0.160					21.6
80	0.080					10.5

Description of Sample: Gravelly Sand, Some Silt, SP-SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

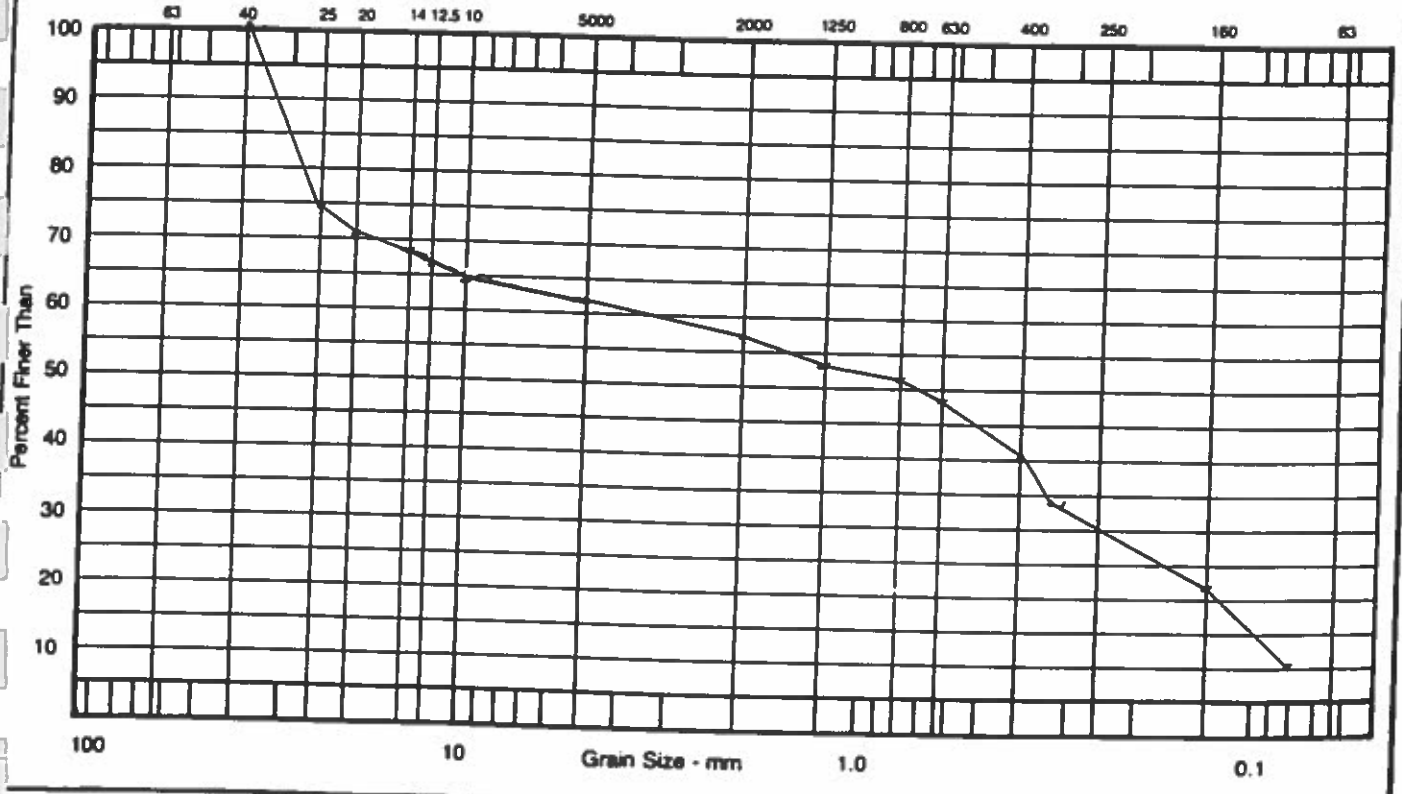
Remarks:

Moisture : 3.2 %

Gravel : 38.8 %

Sand : 50.7 %

Silt : 10.5 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 175 Depth 2.0 - 2.4 m

Location: Area # 2
TP # 46

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No. 8002-234

Ck'd by: WHL Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					74.2
20000	20.0					67.5
14000	14.0					65.4
12500	12.5					64.7
10000	10.0					63.3
5000	5.0					58.6
2000	2.0					55.1
1250	1.250					53.3
800	0.800					51.1
630	0.630					49.1
400	0.400					39.6
315	0.315					32.9
160	0.160					22.7
80	0.080					13.7

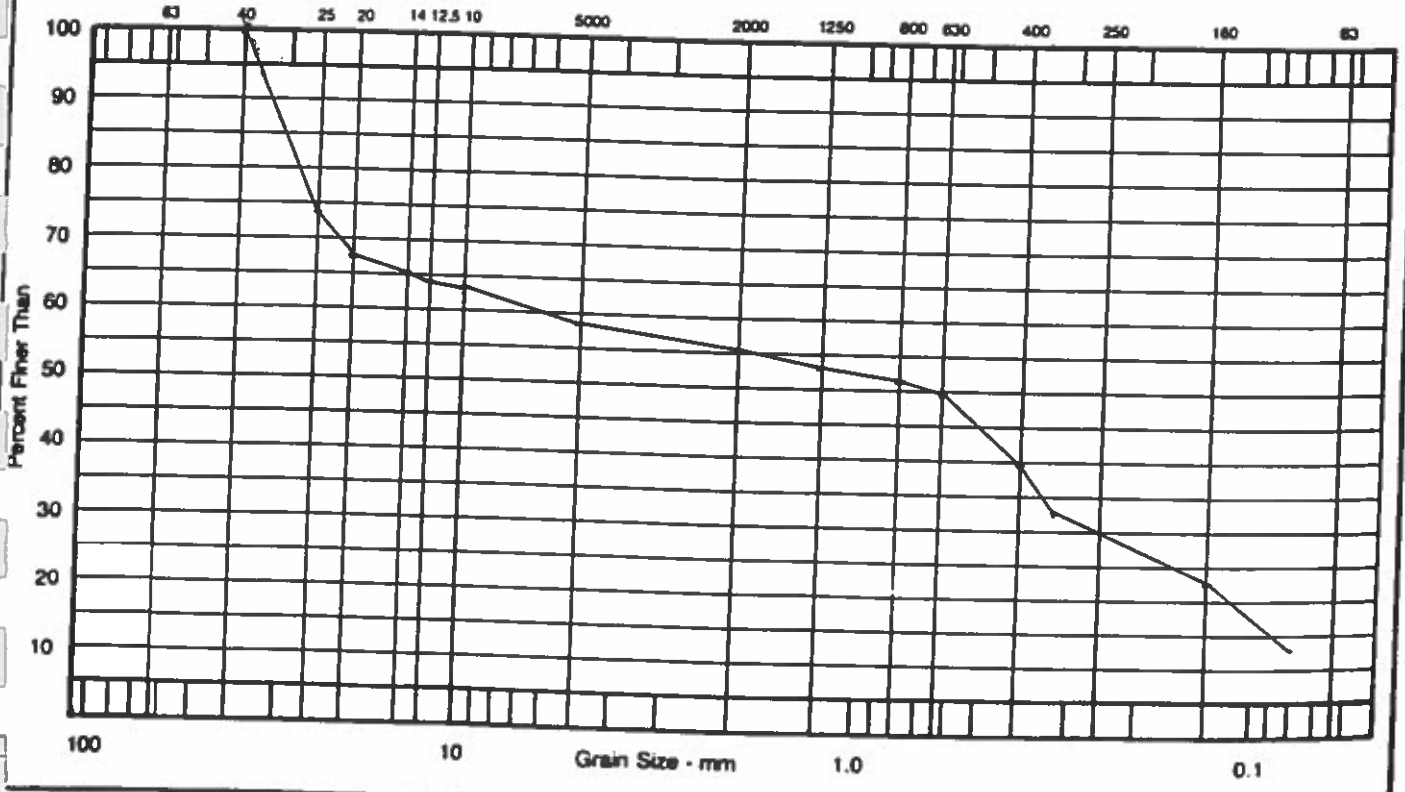
Description of Sample: Gravelly Sand
Some Silt, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 5.7 %
Gravel : 41.4 %
Sand : 44.9 %
Silt : 13.7 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 176 Depth 0.8 - 1.0 m
Location: Area # 2
TP # 47

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No. 8002-234
Ck'd by: WLF Date: 1995/07/06

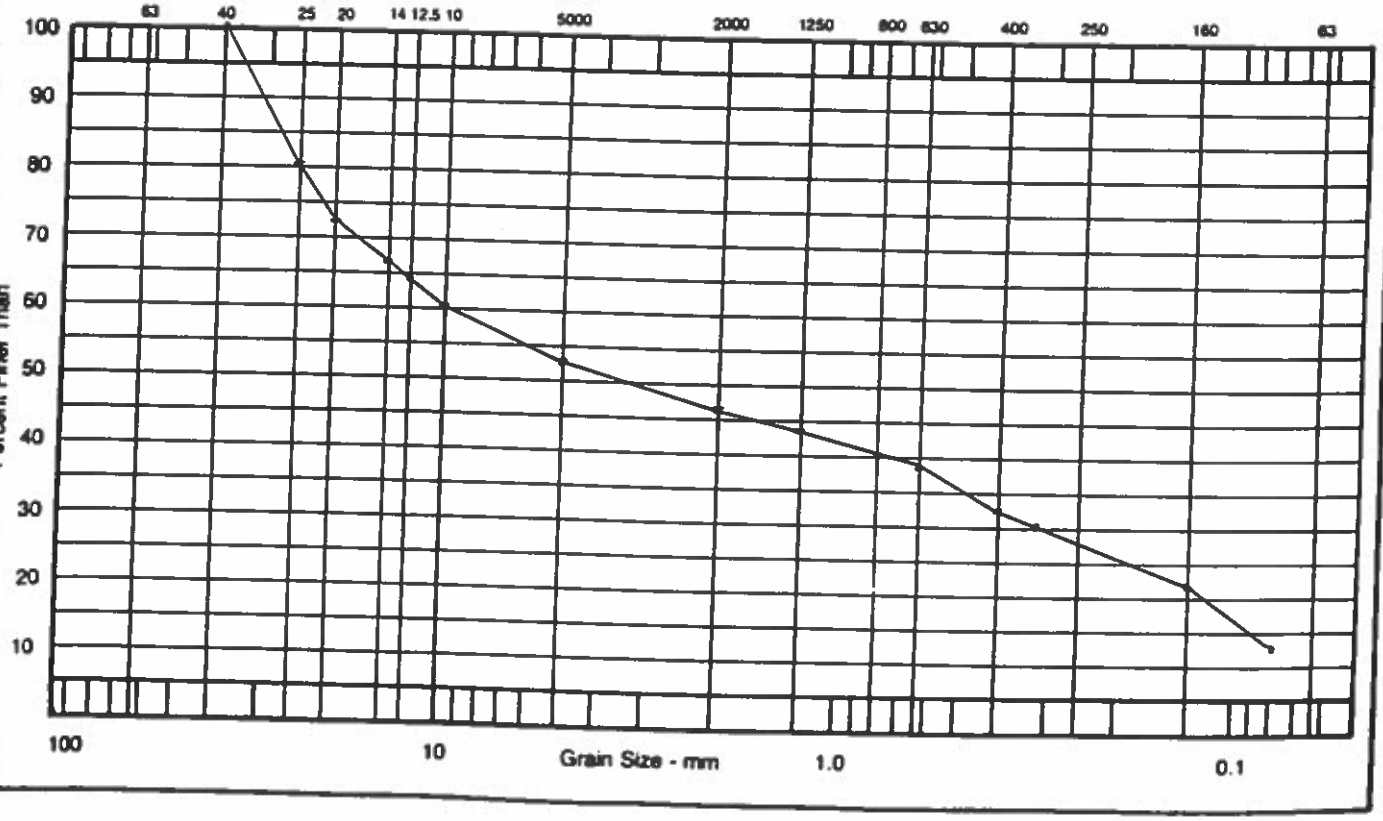
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					80.7
20000	20.0					72.4
14000	14.0					67.1
12500	12.5					64.8
10000	10.0					60.7
5000	5.0					52.7
2000	2.0					46.6
1250	1.250					43.7
800	0.800					40.6
630	0.630					38.7
400	0.400					33.7
315	0.315					30.3
160	0.160					21.8
80	0.080					13.5

Description of Sample: Sandy Gravel
Some Silt, GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 3.2 %
Gravel : 47.3 %
Sand : 39.2 %
Silt : 13.5 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 178 Depth 0.8 - 1.0 m
Location: Area # 2
TP # 48

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No: 8002-234
Ck'd by: [illegible] Date: 1995/07/06

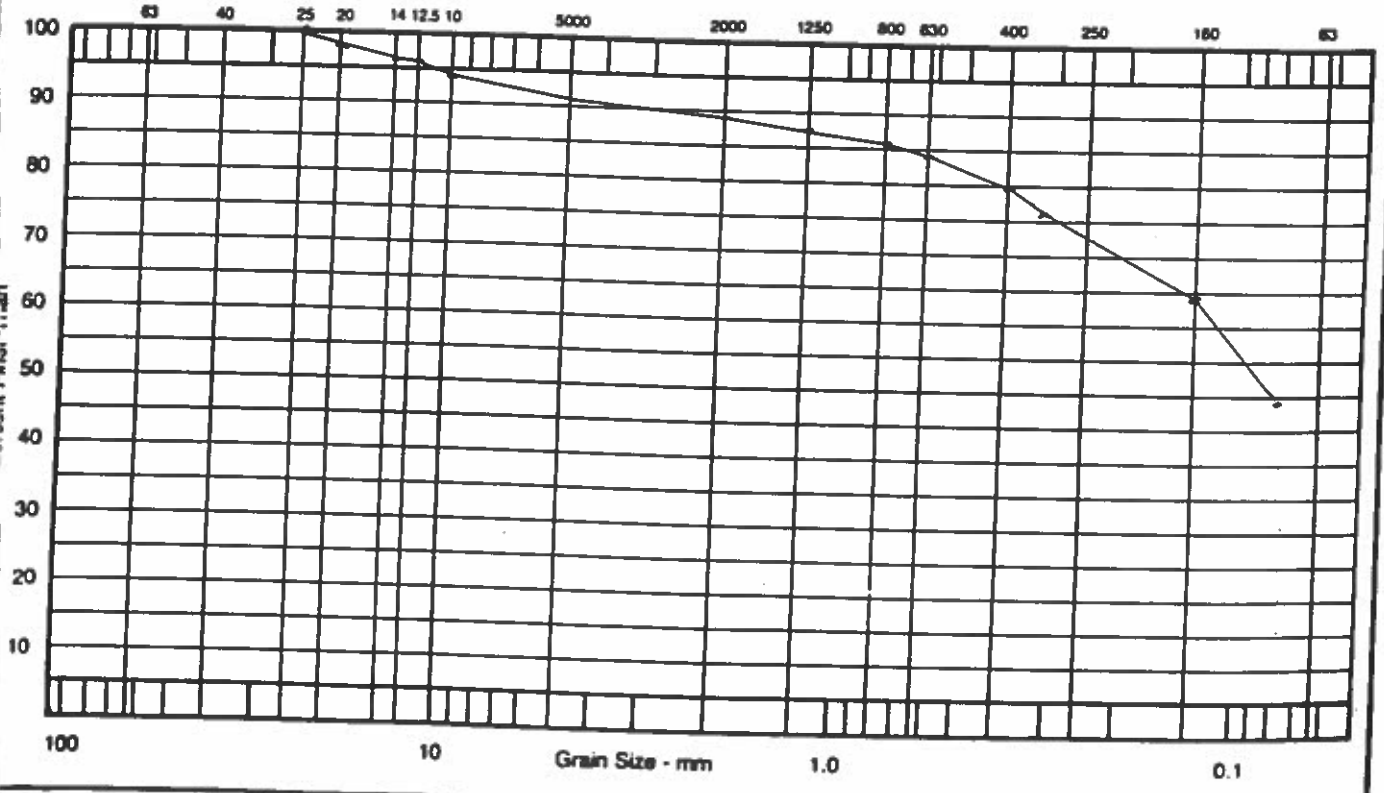
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					
25000	25.0					
20000	20.0					100
14000	14.0					97.2
12500	12.5					95.7
10000	10.0					95.7
5000	5.0					94.1
2000	2.0					91.4
1250	1.250					88.9
800	0.800					87.4
630	0.630					85.4
400	0.400					83.9
315	0.315					79.6
160	0.160					76.0
80	0.080					64.2
						48.9

Description of Sample: Sandy Silt Trace Of Gravel, ML

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 6.7 %
Gravel : 8.6 %
Sand : 42.5 %
Silt : 48.9 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 180 Depth: 2.80 - 3.0m
Location: Area # 2
TP # 48-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: JCL Date: 1995/06/16

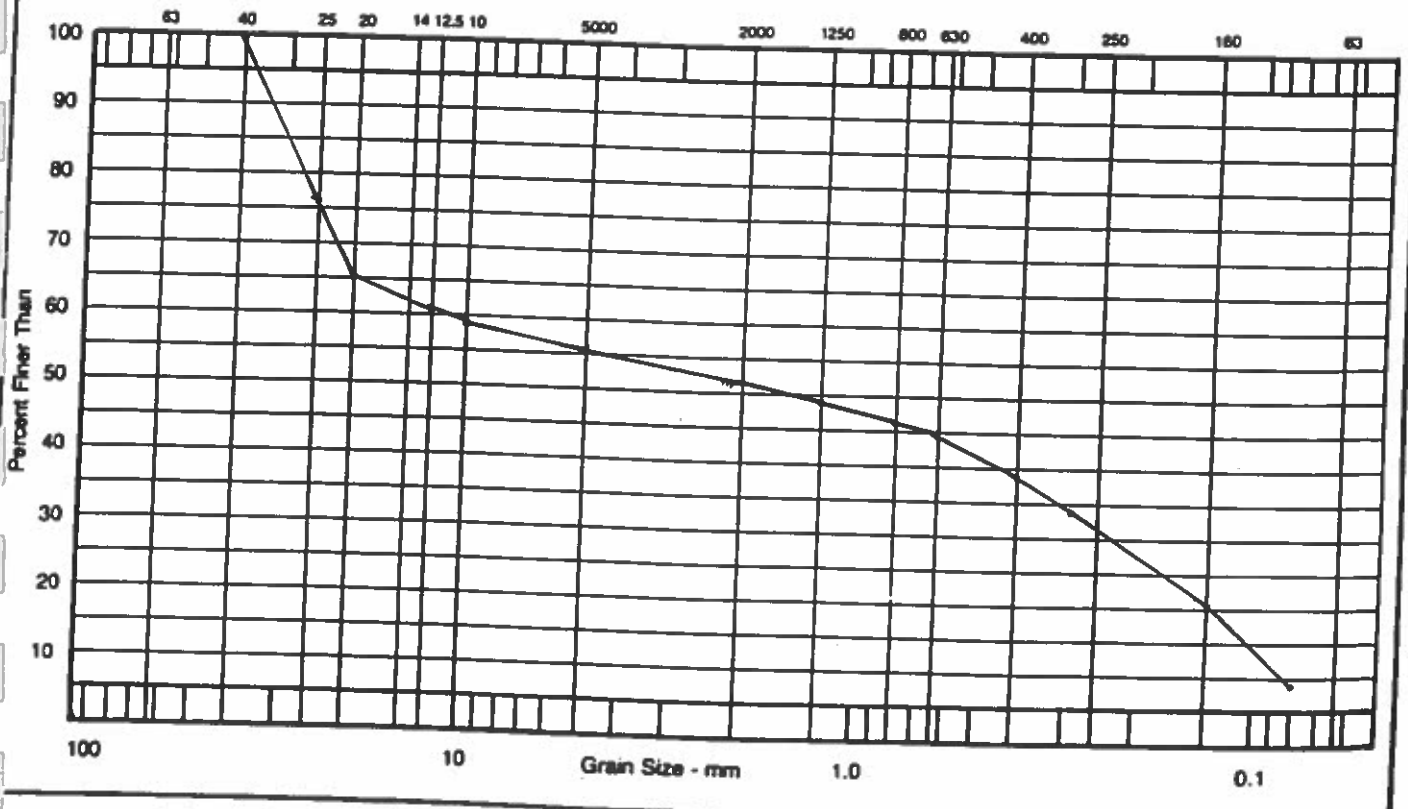
Sieve No	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					75.9
20000	20.0					65.2
14000	14.0					61.5
12500	12.5					60.7
10000	10.0					59.1
5000	5.0					55.4
2000	2.0					51.5
1250	1.250					48.8
800	0.800					46.6
630	0.630					44.8
400	0.400					38.8
315	0.315					34.0
160	0.160					20.5
80	0.080					9.6

Description of Sample: Gravelly Sand, SW-SM trace Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.9 %
Gravel : 44.6 %
Sand : 45.8 %
Silt : 9.6 %



Area # 2 8002-234

HOGGAN ENGINEERING & TESTING (1980) LTD.

Photo # 24

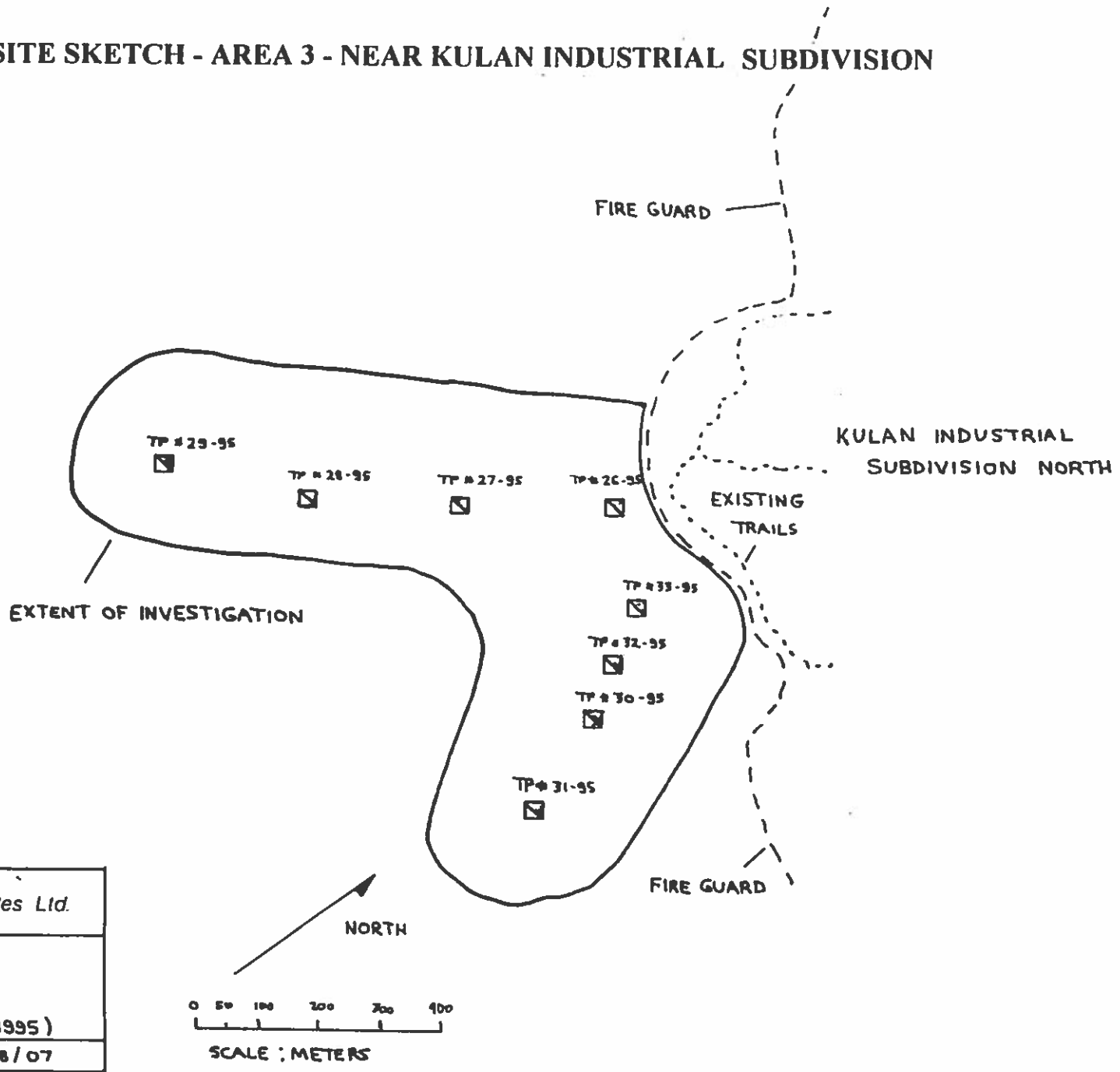
Photo # 26 TP # 43

Photo # 23

Photo # 25

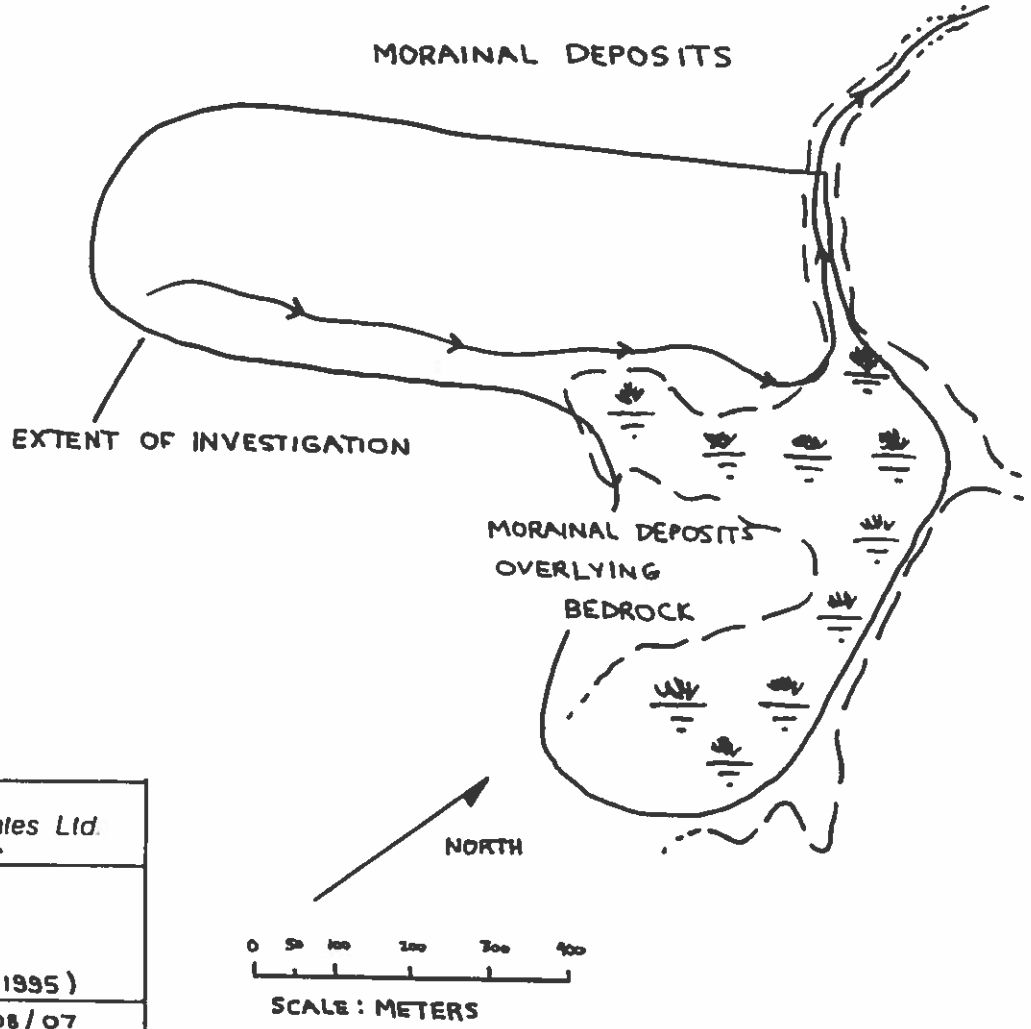
APPENDIX C
•Site 3

SITE SKETCH - AREA 3 - NEAR KULAN INDUSTRIAL SUBDIVISION



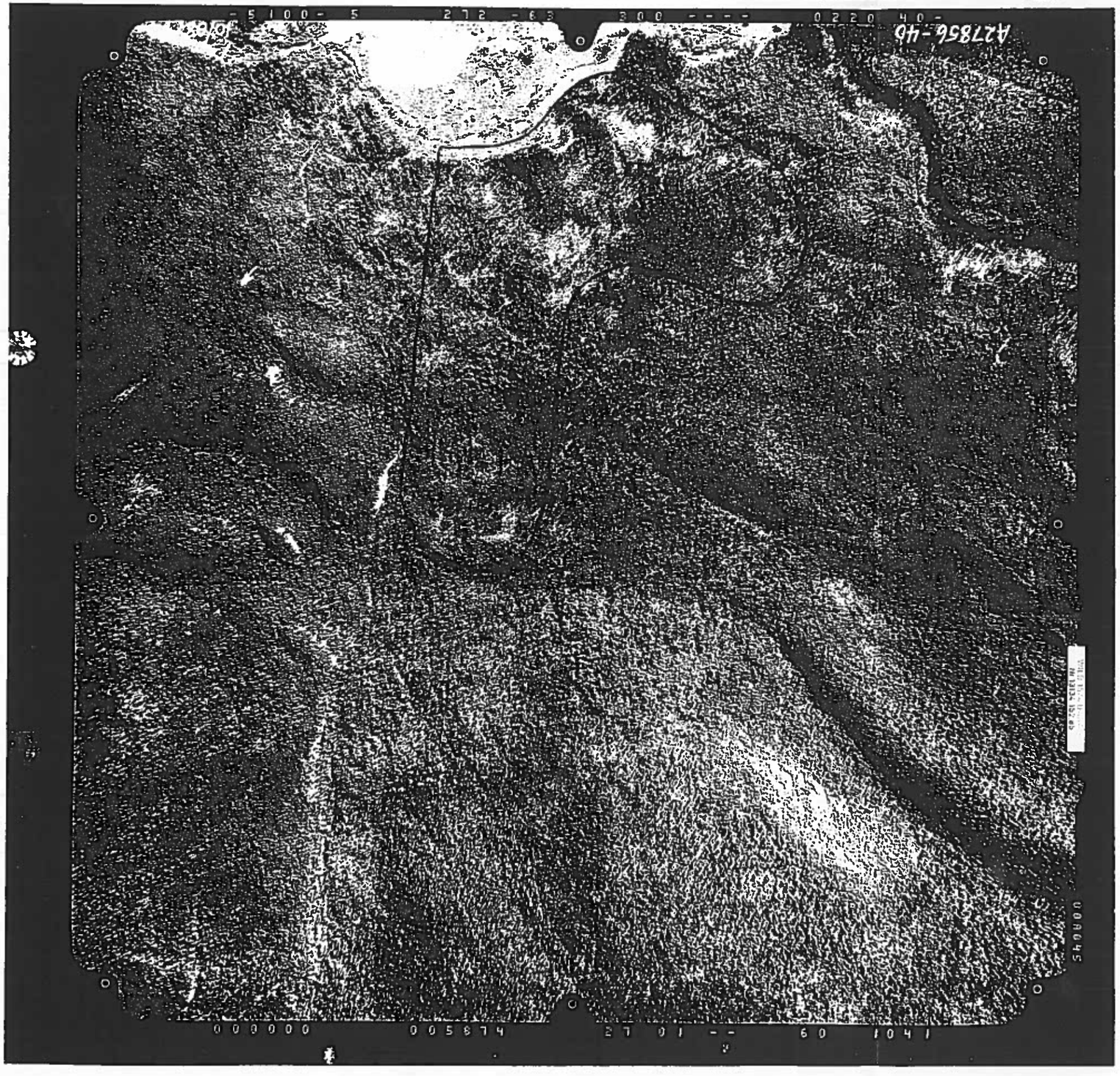
J. R. Paine & Associates Ltd.	
AREA 3 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 2-1

SITE SKETCH - AREA 3 - NEAR KULAN INDUSTRIAL SUBDIVISION



J. R. Paine & Associates Ltd.	
AREA 3 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 2-2

SITE AIRPHOTOGRAPH COPY - AREA 3 - NEAR KULAN INDUSTRIAL SUBDIVISION



NORTH

0 50 100 200 300 400

SCALE : METERS

J R Paine & Associates Ltd

AREA 3 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 2-3

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#26-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC — M.C. — LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			–moss, peat, rootlets	PT		0.0
			0.10m			
1.0		108	–sandy gravel, clean, medium dense, 20% cobbles to 150mm in size, trace of oxidation, moist, brown	GW		1.0
2.0		109	–sandy gravel, well graded, clean, medium dense, 20% cobbles to 150mm in size, trace of oxidation, moist, brown			2.0
			2.00m			
		110	–sand, some silt to silty, decayed wood and organics, some gravel, 5% boulders in size to 250mm, firm, wet, brown	SM		
3.0						3.0
		111	–sand, some silt to silty, decayed wood and organics, some gravel, 5% boulders in size to 250mm, firm, wet, brown			
4.0			4.00m			4.0
			End of Hole @ 4.00m			
5.0			Notes: –swamp & small creeks on N,E and W sides of site			5.0
6.0			Vegetation: dense, mature spruce Ground: level			6.0
7.0			Bulk Sample #26A-95: 0.10–2.00m, SW % moisture – 6.4% % gravel – 44.2% % sand – 52.1% % silt – 3.7%			7.0
8.0						8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/16
Fig. No: 26	Page 1 of 1

95/08/08 11:20AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#27-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▯ SPT ◧ CORE

SOILS DESCRIPTION

■ LIQUID ■ 10 20 30 40 | ▲ PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 | ▲ SILT ▲ 20 40 60 80 | ■ SAND ■ 20 40 60 80 | ◆ GRAVEL ◆ 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	DEPTH(m)
0.0			PT		0.0
		112	ML		
1.0					1.0
		113			
2.0					2.0
		114	SM		
3.0					3.0
		115			
4.0					4.0
5.0					5.0
6.0					6.0
7.0					7.0
8.0					8.0

-moss & peat

0.30m

112 -silt, trace of fine grained sand, some volcanic ash, soft, wet, brown-black (moisture content 62.4%)

1.50m

113 -silty gravelly sand, 2-5% boulders in size to 350mm, some oxidation, medium dense, damp, brown

114 -silty gravelly sand, 5% boulders to 350mm in size, some oxidation, medium dense, damp, brown

115 -silty gravelly sand, 5% boulders in size to 500mm, some oxidation, medium dense, damp, brown

4.00m

End of Hole @ 4.0m

Note: -no bulk sample
-surrounded by small ridges trending N-S & E-W
-no change in moisture
-photo #17, spill piles

Vegetation: dense, mature spruce
Ground: level

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/16
	Fig. No: 27	Page 1 of 1

95/08/08 11:21AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#30-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ☒ LOST ☒ AUGER ☰ BULK ▯▯ SPT ▯▯ CORE

SOILS DESCRIPTION

DEPTH(m) | SAMPLE TYPE | SAMPLE NO

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC | SOIL SYMBOL | DEPTH(m)

0.0 — PT / OV

-moss & peat

0.05m

-cobbles & boulders to 300-400mm in size, loose, some sand, some oxidation, dry, poorly graded

0.50m

End of Hole @ 0.50m

Notes: -no samples taken
-testpit located on small hummock
-visible cobbles on surface
-passed through path flagged with orange tape and slashes on trees
-surrounding area is bog & swamp

Vegetation: sparse to medium dense, mature & young spruce

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 0.5 m
	REVIEWED BY: WCK	COMPLETE: 95/06/16
	Fig. No: 30	Page 1 of 1

95/08/08 11:23AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#31-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	LIQUID 10 20 30 40 / PLASTIC 10 20 30 40 / PLASTIC M.C. LIQUID 10 20 30 40	CLAY 20 40 60 80 / SILT 20 40 60 80 / SAND 20 40 60 80 / GRAVEL 20 40 60 80	USC	SOIL SYMBOL	DEPTH(m)
0.0			-area is covered by surface water (swamp & bog) and rock outcrops -testpit location unsuitable for excavation -sparse to medium dense vegetation -large cobbles to boulders on surface in outcrops					0.0
1.0								1.0
2.0								2.0
3.0								3.0
4.0								4.0
5.0								5.0
6.0								6.0
7.0								7.0
8.0								8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: *.*
REVIEWED BY: WCK	COMPLETE: 95/06/16
Fig. No: 31	Page 1 of 1

95/08/08 11:24AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#32-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 3002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	LIQUID / PLASTIC / PLASTIC M.C. LIQUID (10 20 30 40)	CLAY / SILT / SAND / GRAVEL (20 40 60 80)	USC	SOIL SYMBOL	DEPTH(m)
0.0			-area is covered by surface water (swamp & bog) and rock outcrops -testpit location unsuitable for excavation -sparse to medium dense vegetation -large cobbles to boulders on surface in outcrops					0.0
1.0								1.0
2.0								2.0
3.0								3.0
4.0								4.0
5.0								5.0
6.0								6.0
7.0								7.0
8.0								8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: *.*
REVIEWED BY: WCK	COMPLETE: 95/06/16
Fig. No: 32	Page 1 of 1

95/06/06 11:24AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#33-95
Caterpillar 215 Backhoe	Area #3	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⧄ LOST ⊠ AUGER ▤ BULK ▯▯ SPT ▮ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	■ LIQUID ■ 10 20 30 40 / ▲ PLASTIC ▲ 10 20 30 40 / PLASTIC M.C. LIQUID 10 20 30 40	● CLAY ● 20 40 60 80 / ▲ SILT ▲ 20 40 60 80 / ■ SAND ■ 20 40 60 80 / ◆ GRAVEL ◆ 20 40 60 80	USC	SOIL SYMBOL	DEPTH(m)
0.0			-area is covered by surface water (swamp & bog) and rock outcrops -testpit location unsuitable for excavation -sparse to medium dense vegetation -large cobbles to boulders on surface in outcrops -photo #20, Marsh area.					0.0
1.0								1.0
2.0								2.0
3.0								3.0
4.0								4.0
5.0								5.0
6.0								6.0
7.0								7.0
8.0								8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: *.*
REVIEWED BY: WCK	COMPLETE: 95/06/16
Fig. No: 33	Page 1 of 1

95/08/08 11:25AM

J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 108 Depth 0.8 - 1.0 m

Location: Area # 3
TP # 26

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No. 8002-234
Ck'd by: WCK Date: 1995/07/06

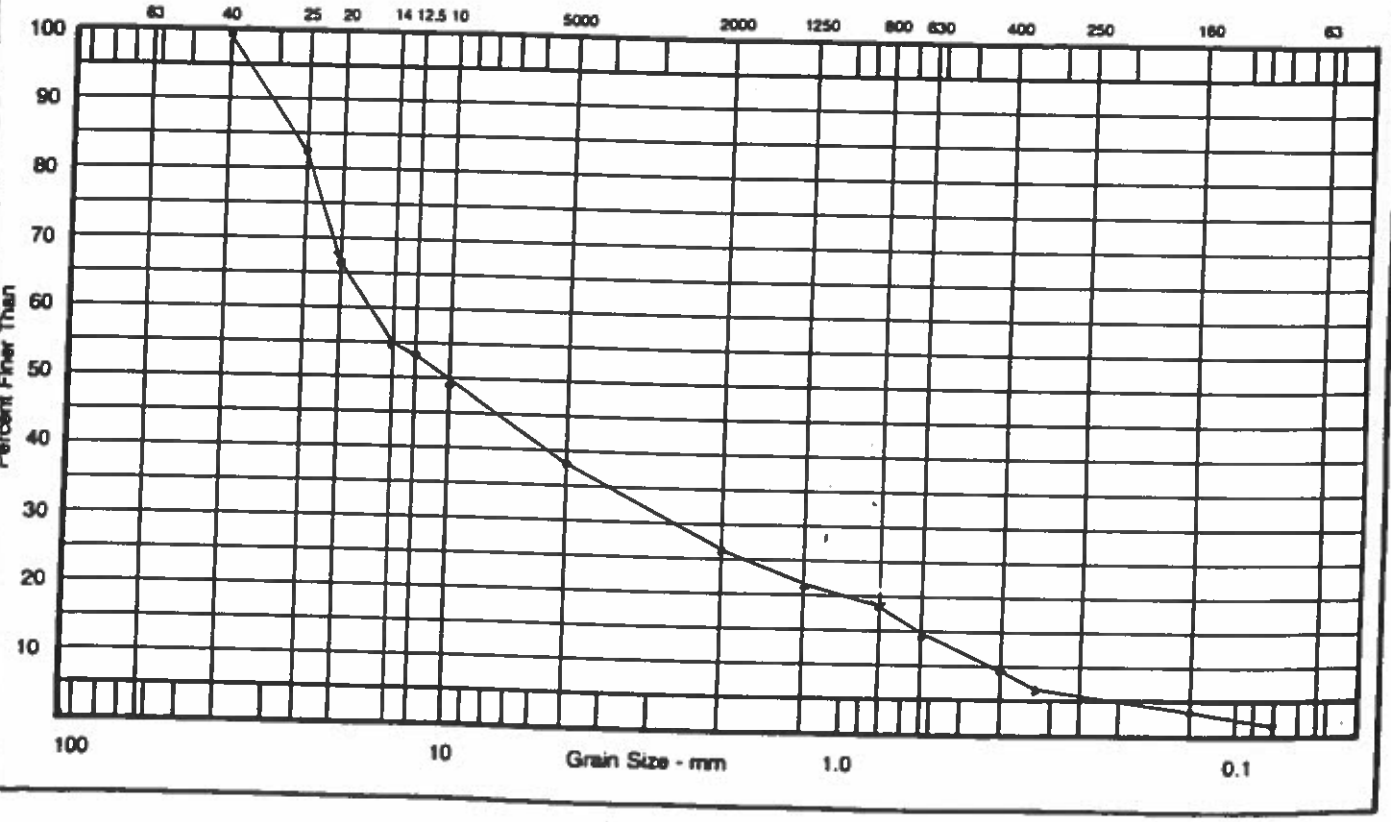
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					83.0
20000	20.0					66.6
14000	14.0					55.0
12500	12.5					53.0
10000	10.0					48.2
5000	5.0					37.6
2000	2.0					26.5
1250	1.250					21.5
800	0.800					17.1
630	0.630					14.8
400	0.400					11.8
315	0.315					9.8
160	0.160					7.3
80	0.080					3.5
						1.8

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 4.6 %
Gravel : 62.4 %
Sand : 35.8 %
Silt : 1.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 26A Depth: 0.10 - 2.00m
Location: Area # 3
TP # 26

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/30

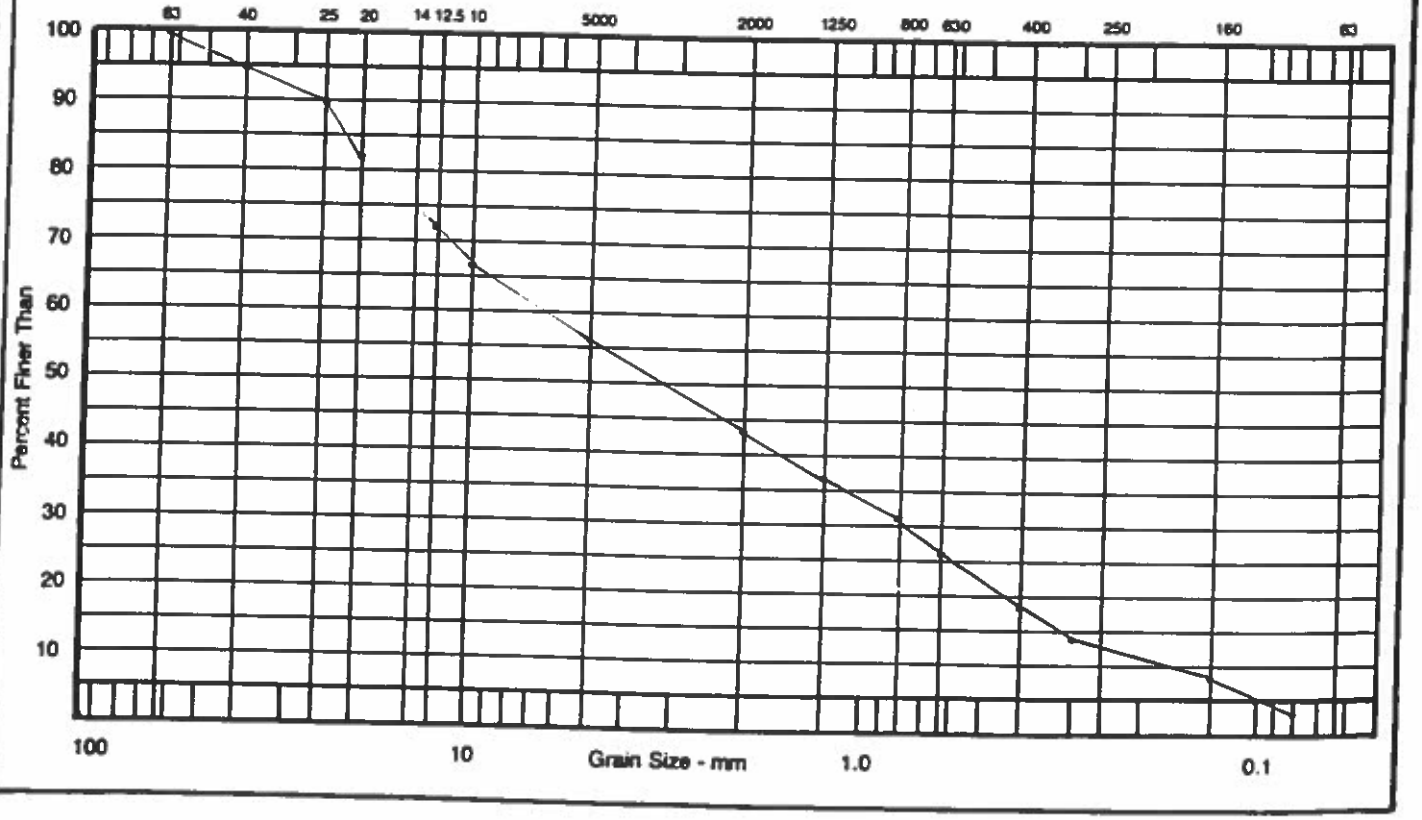
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					95.0
20000	20.0					90.0
14000	14.0					82.0
12500	12.5					74.6
10000	10.0					72.7
5000	5.0					66.8
2000	2.0					55.8
1250	1.250					43.5
800	0.800					36.4
630	0.630					30.6
400	0.400					26.5
315	0.315					18.6
160	0.160					14.6
80	0.080					7.6
						3.7

Description of Sample: Gravelly Sand, SW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 6.4 %
Gravel : 44.2 %
Sand : 52.1 %
Silt : 3.7 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 113 Depth: 1.5 - 1.8 m
Location: Area # 3
TP # 27

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No. 8002-234
Ck'd by: [illegible] Date: 1995/07/06

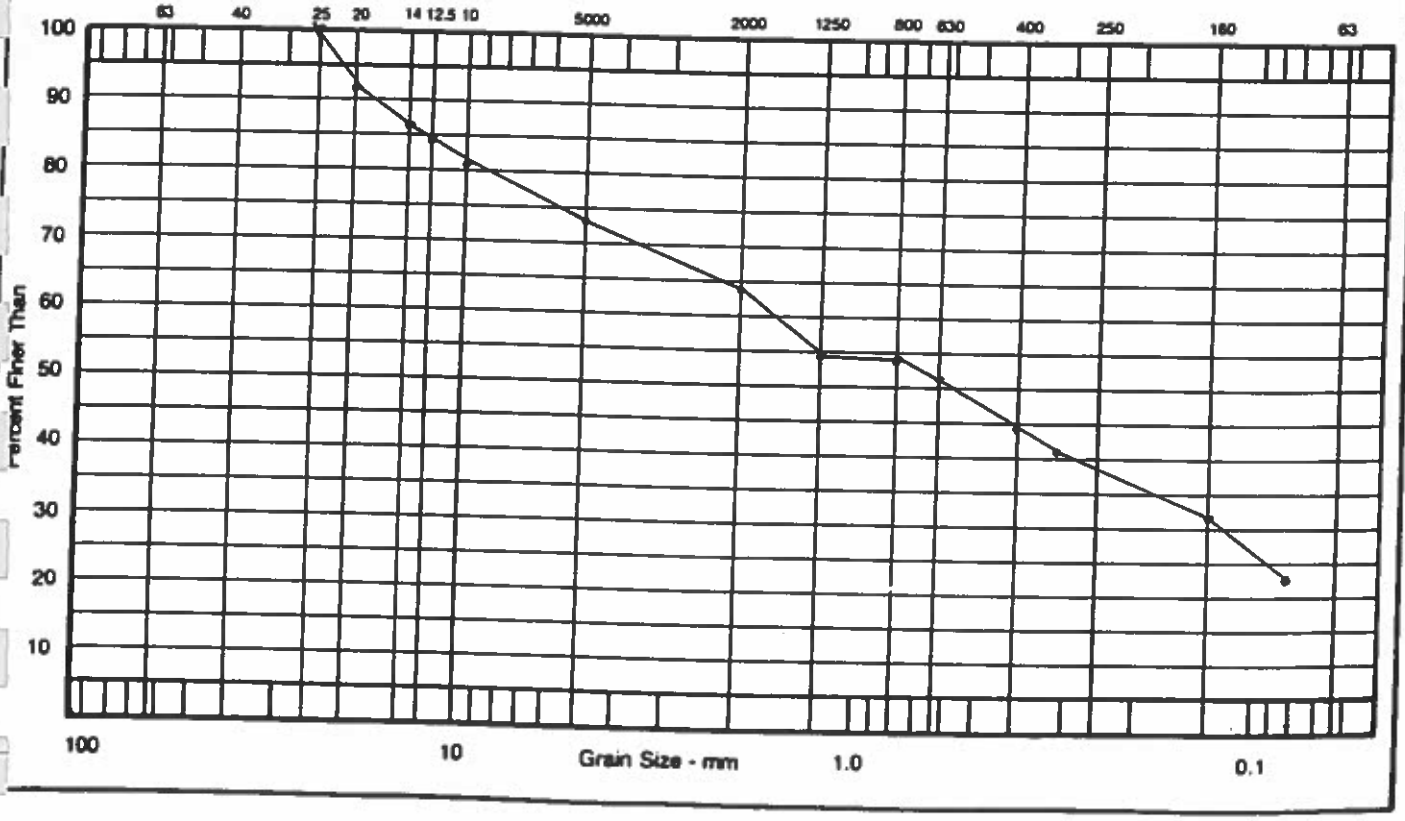
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					
25000	25.0					100
20000	20.0					92.0
14000	14.0					86.2
12500	12.5					84.8
10000	10.0					80.9
5000	5.0					73.4
2000	2.0					63.7
1250	1.250					59.0
800	0.800					54.1
630	0.630					51.5
400	0.400					44.9
315	0.315					41.0
160	0.160					31.4
80	0.080					22.6

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 7.3 %
Gravel : 26.6 %
Sand : 50.8 %
Silt : 22.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 117 Depth: 1.6 - 2.0 m
Location: Area # 3
TP # 28

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No: 8002-234
Ck'd by: WCC Date: 1995/07/06

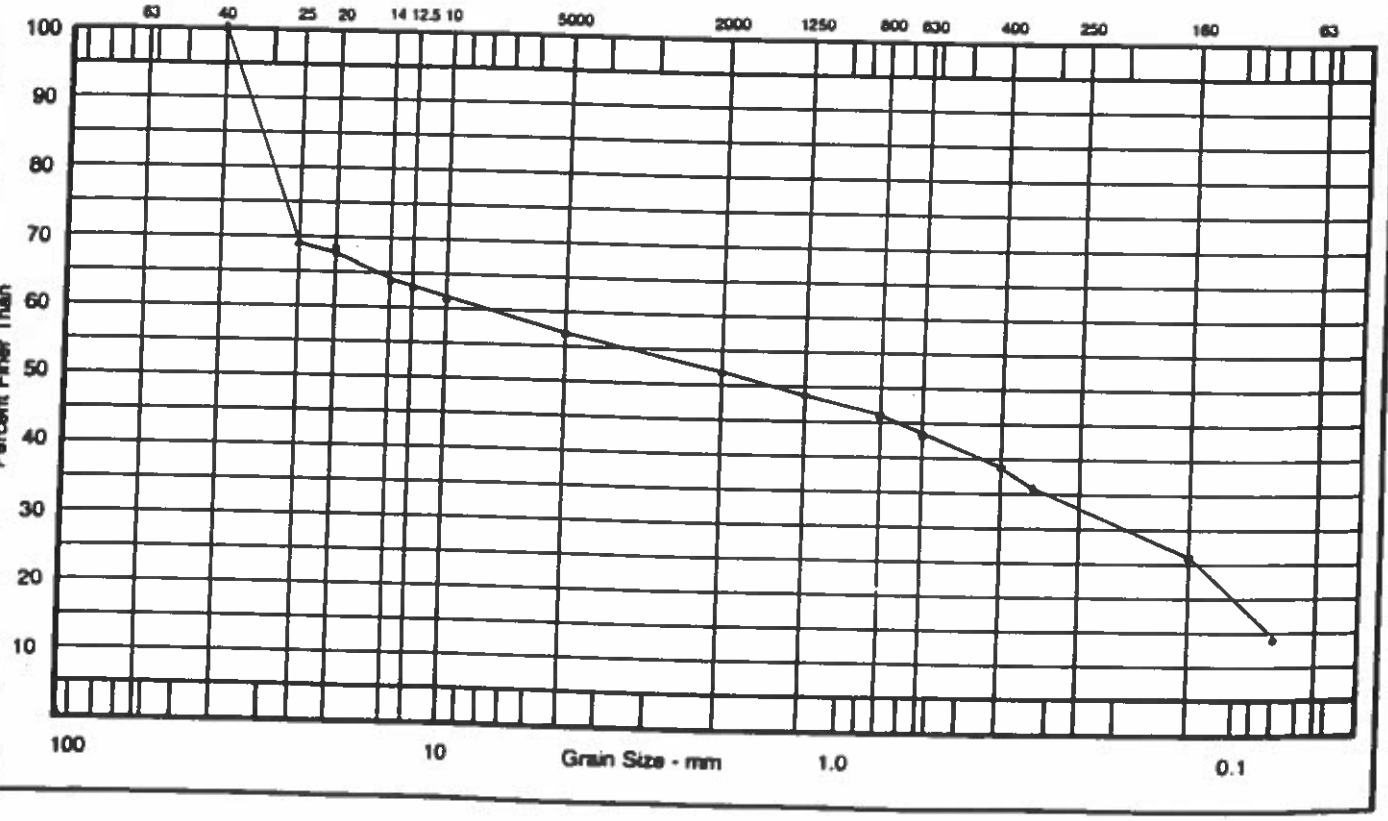
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Org Sample
40000	40.0					100
25000	25.0					68.4
20000	20.0					67.4
14000	14.0					63.9
12500	12.5					63.0
10000	10.0					61.1
5000	5.0					56.5
2000	2.0					51.9
1250	1.250					48.4
800	0.800					45.5
630	0.630					43.4
400	0.400					38.8
315	0.315					35.4
160	0.160					25.6
80	0.080					14.2

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 5.1 %
Gravel : 43.5 %
Sand : 37.3 %
Silt : 19.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 119 Depth: 3.9-4.0 m
Location: Area # 3
TP # 28

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No: 8002-234
Ck'd by: WCR Date: 1995/~~96~~ 07/15

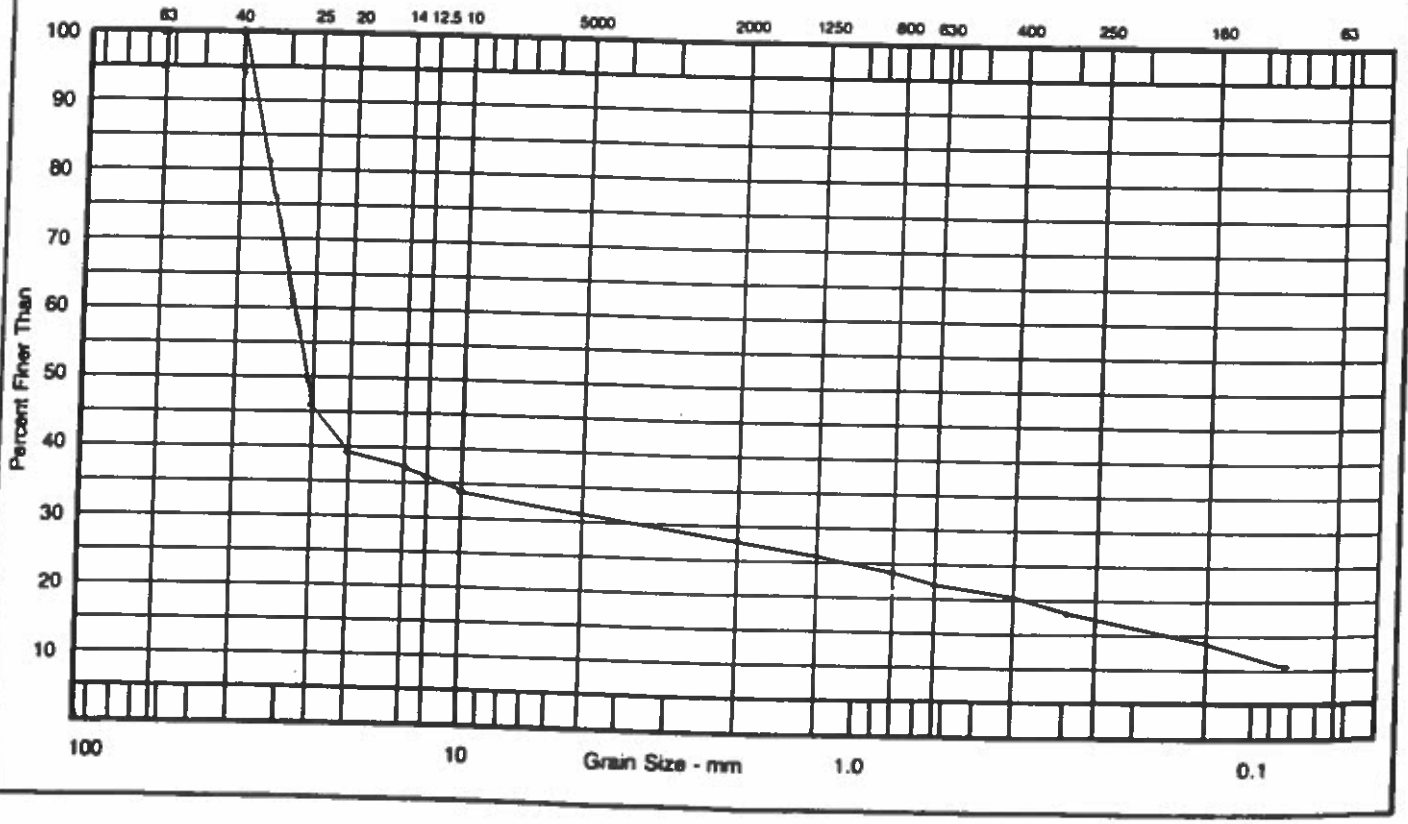
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					45.2
20000	20.0					39.8
14000	14.0					37.2
12500	12.5					36.5
10000	10.0					34.5
5000	5.0					30.6
2000	2.0					27.4
1250	1.250					25.5
800	0.800					23.9
630	0.630					22.6
400	0.400					20.0
315	0.315					18.4
160	0.160					14.4
80	0.080					10.2

Description of Sample: SANDY GRAVEL, SOME SILT, GW-GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 5.0%
Gravel : 69.4%
Sand : 20.4%
Silt : 10.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 28A Depth: 1.00 - 4.00m
Location: Area # 3
TP # 28

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: JCR Date: 1995/06/30

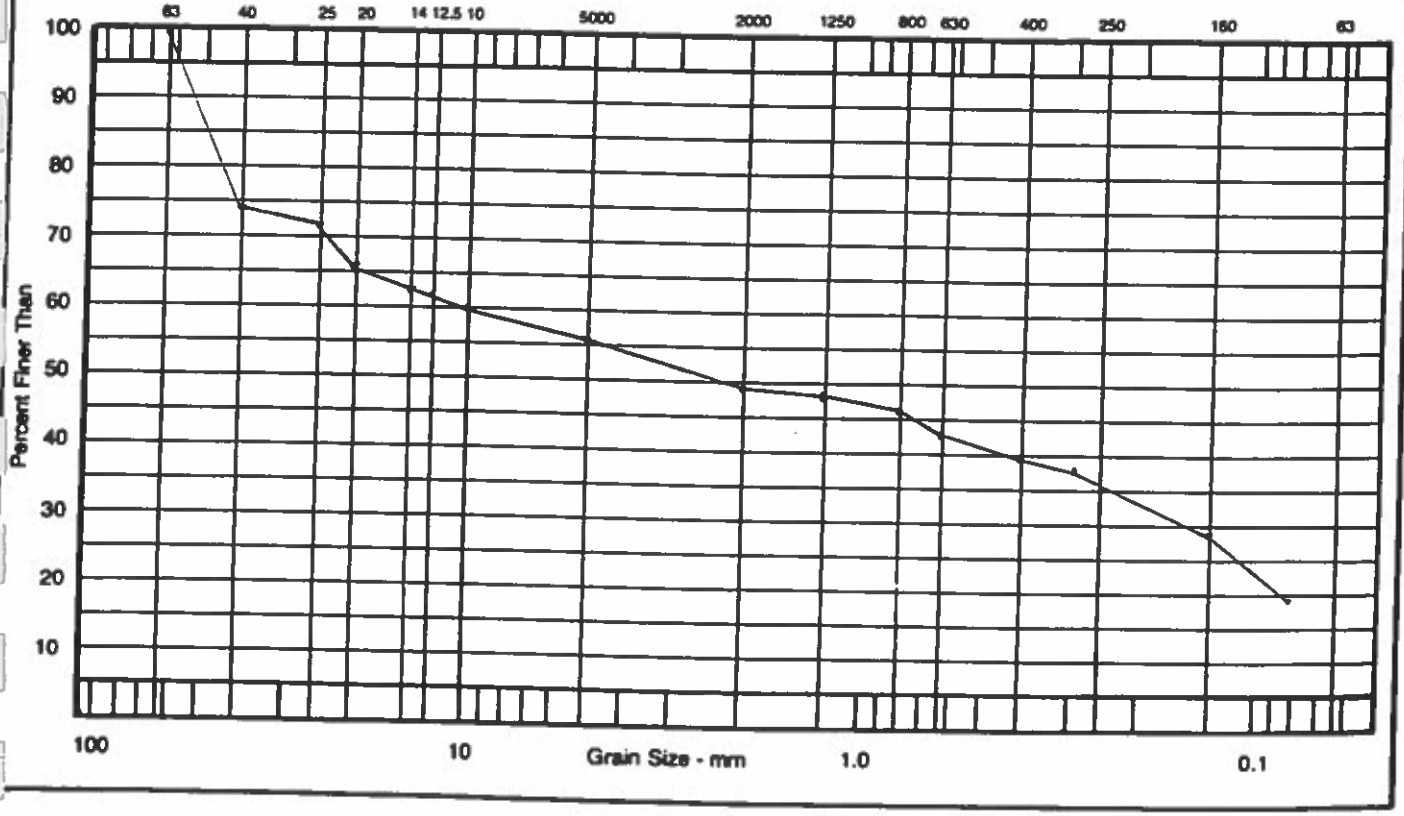
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					94.4
25000	25.0					71.8
20000	20.0					65.4
14000	14.0					63.2
12500	12.5					62.2
10000	10.0					60.0
5000	5.0					55.4
2000	2.0					49.9
1250	1.250					48.0
800	0.800					45.5
630	0.630					43.7
400	0.400					39.6
315	0.315					37.0
160	0.160					29.0
80	0.080					19.2

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 8.7 %
Gravel : 44.6 %
Sand : 36.2 %
Silt : 19.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 122 Depth: 1.6-2.0m
Location: Area # 3
TP # 29

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCR Date: 1995/~~96~~/07/15

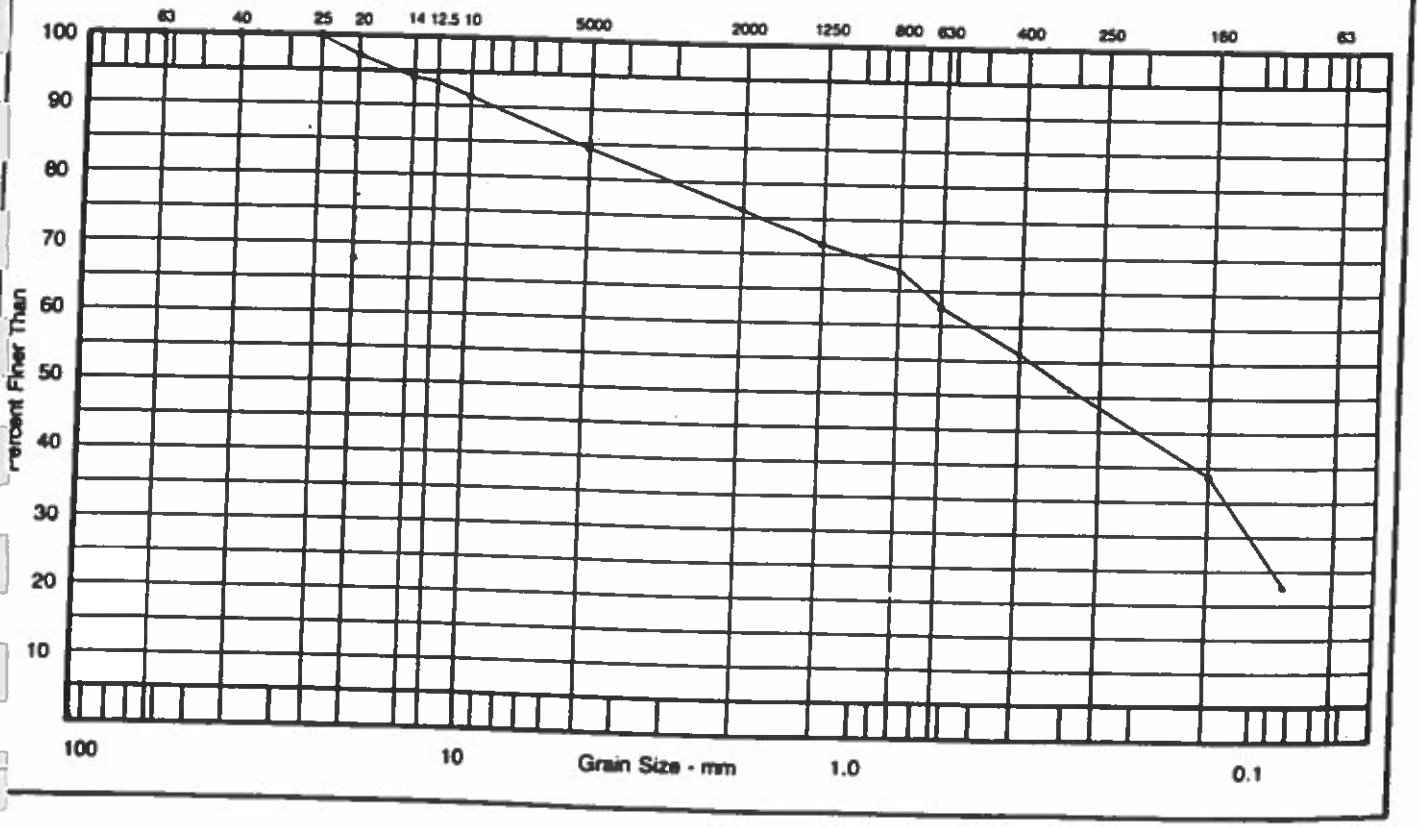
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					100
14000	14.0					97.2
12500	12.5					94.9
10000	10.0					94.0
5000	5.0					91.9
2000	2.0					84.9
1250	1.250					76.9
800	0.800					71.9
630	0.630					67.1
400	0.400					63.7
315	0.315					56.0
160	0.160					51.0
80	0.080					38.8
						27.0

Description of Sample: GRAVELLY SILTY SAND, SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture: 20.0 %
Gravel: 15.1 %
Sand: 57.9 %
Silt: 27.0 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 123 Depth 2.5 - 2.8 m
Location: Area # 3
TP # 29

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job No. 8002-234
Ck'd by WCR Date 1995/~~86~~/07/15

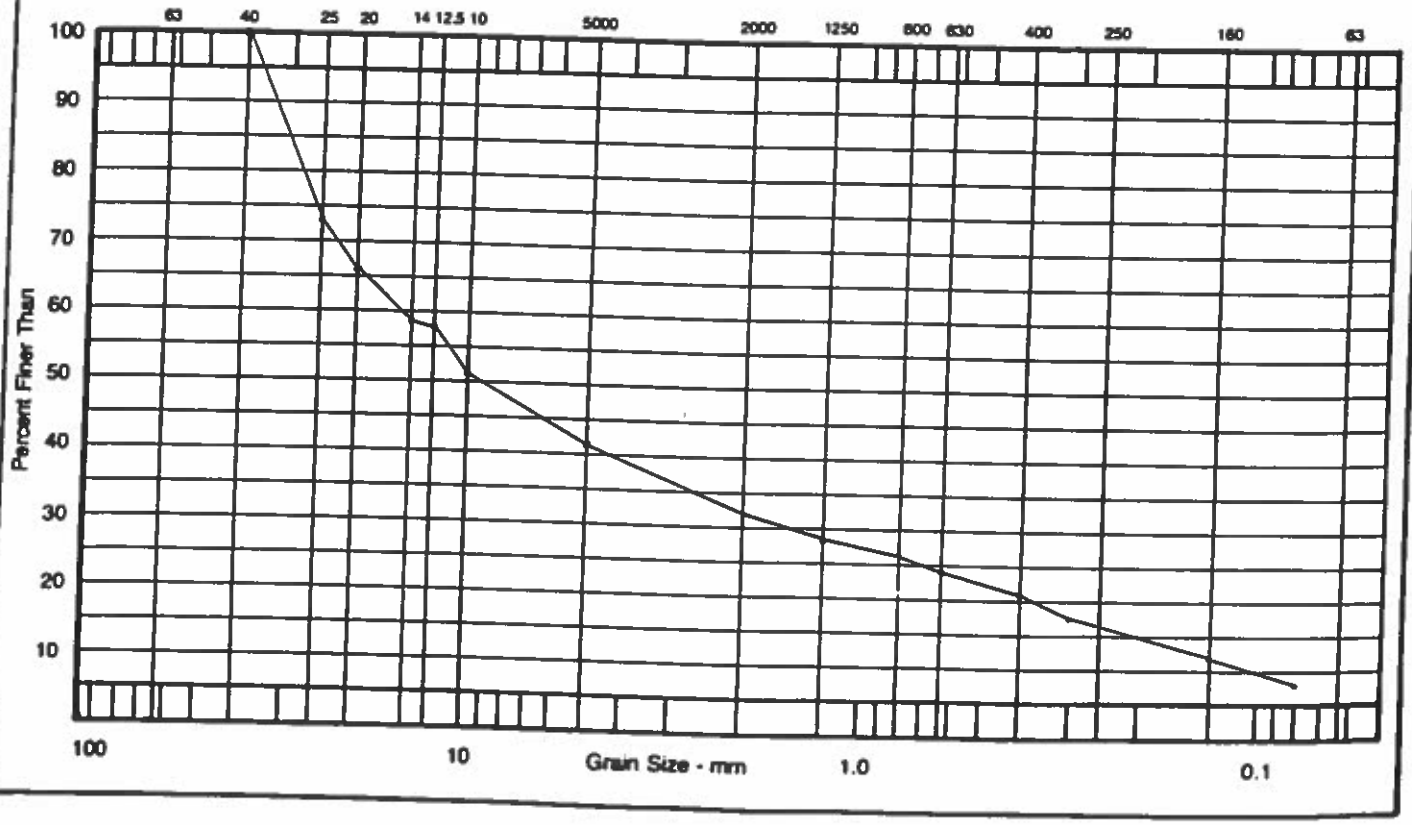
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					73.9
20000	20.0					65.8
14000	14.0					58.9
12500	12.5					57.0
10000	10.0					52.1
5000	5.0					41.5
2000	2.0					32.6
1250	1.250					27.9
800	0.800					25.7
630	0.630					24.0
400	0.400					20.2
315	0.315					17.9
160	0.160					12.3
80	0.080					7.6

Description of Sample: SANDY GRAVEL, TRACE OF SILT GW-GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks
Moisture : 6.7 %
Gravel : 58.5 %
Sand : 39.9 %
Silt : 7.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 29A Depth: 0.11 - 3.0m
Location: Area # 3
TP # 29

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: wdc Date: 1995/06/30

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						100.0
40000	40.0					88.5
25000	25.0					79.1
20000	20.0					72.3
14000	14.0					64.3
12500	12.5					63.1
10000	10.0					58.2
5000	5.0					48.5
2000	2.0					37.4
1250	1.250					33.7
800	0.800					30.0
630	0.630					27.6
400	0.400					22.8
315	0.315					20.2
160	0.160					14.5
80	0.080					10.0

Description of Sample: Sandy Gravel, some silt
bW - GM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 8.9 %
Gravel : 51.5 %
Sand : 38.5 %
Silt : 10.0 %

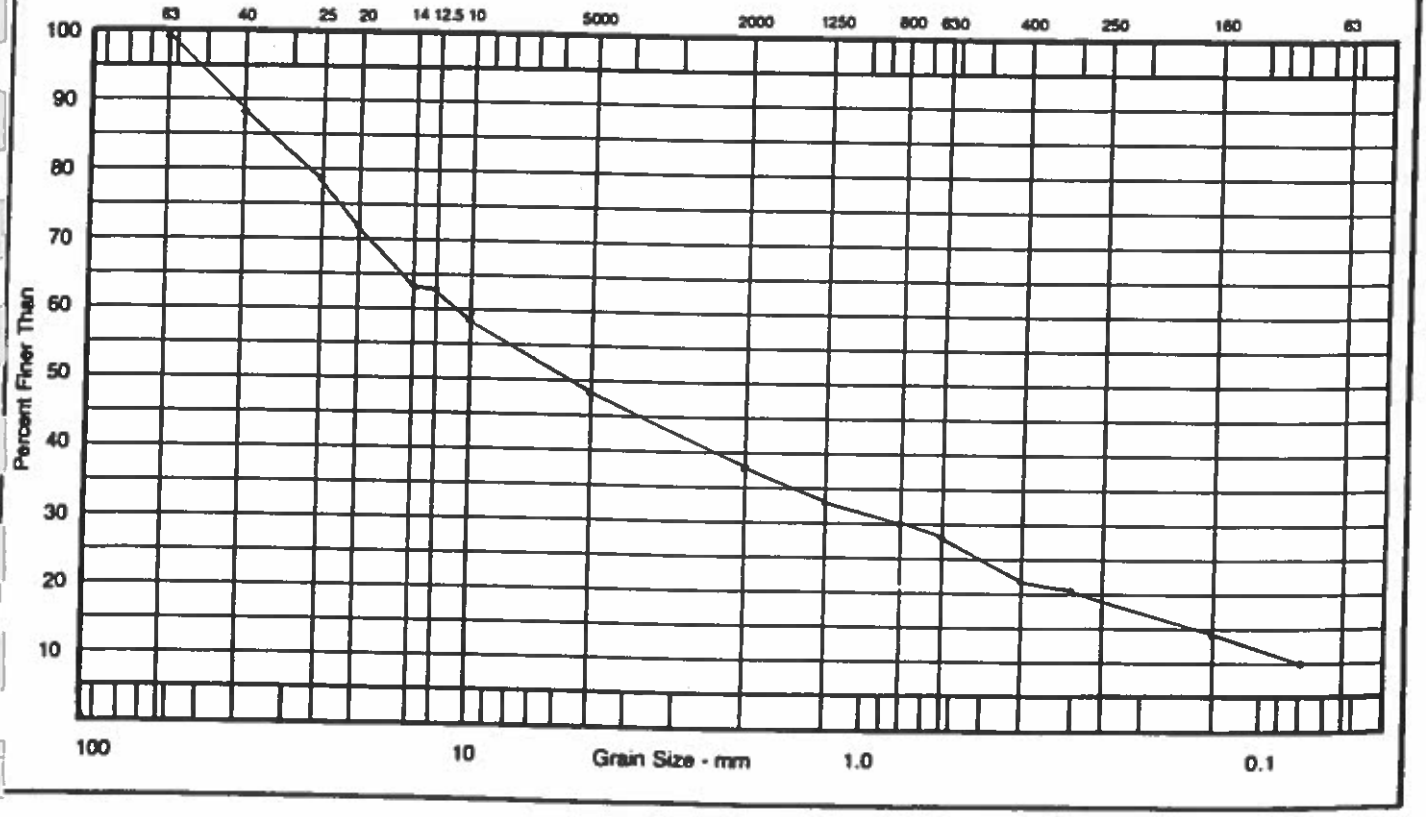


Photo # 17

Photo # 18

Photo # 19 TP# 30-95

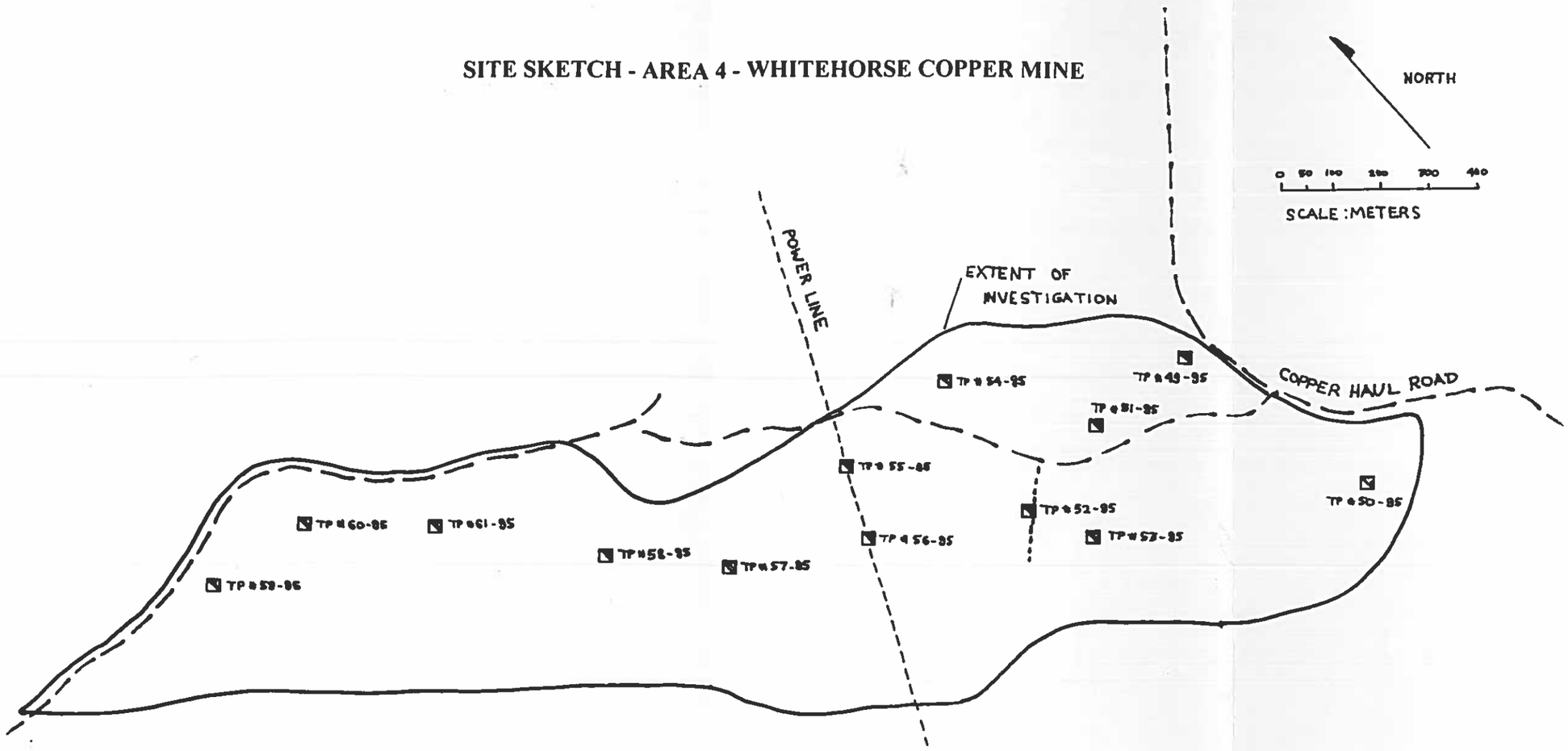
Photo # 20 Marsh Near TP# 33-95

HOGGAN ENGINEERING & TESTING (1980) LTD.

Area # 3 8002-234

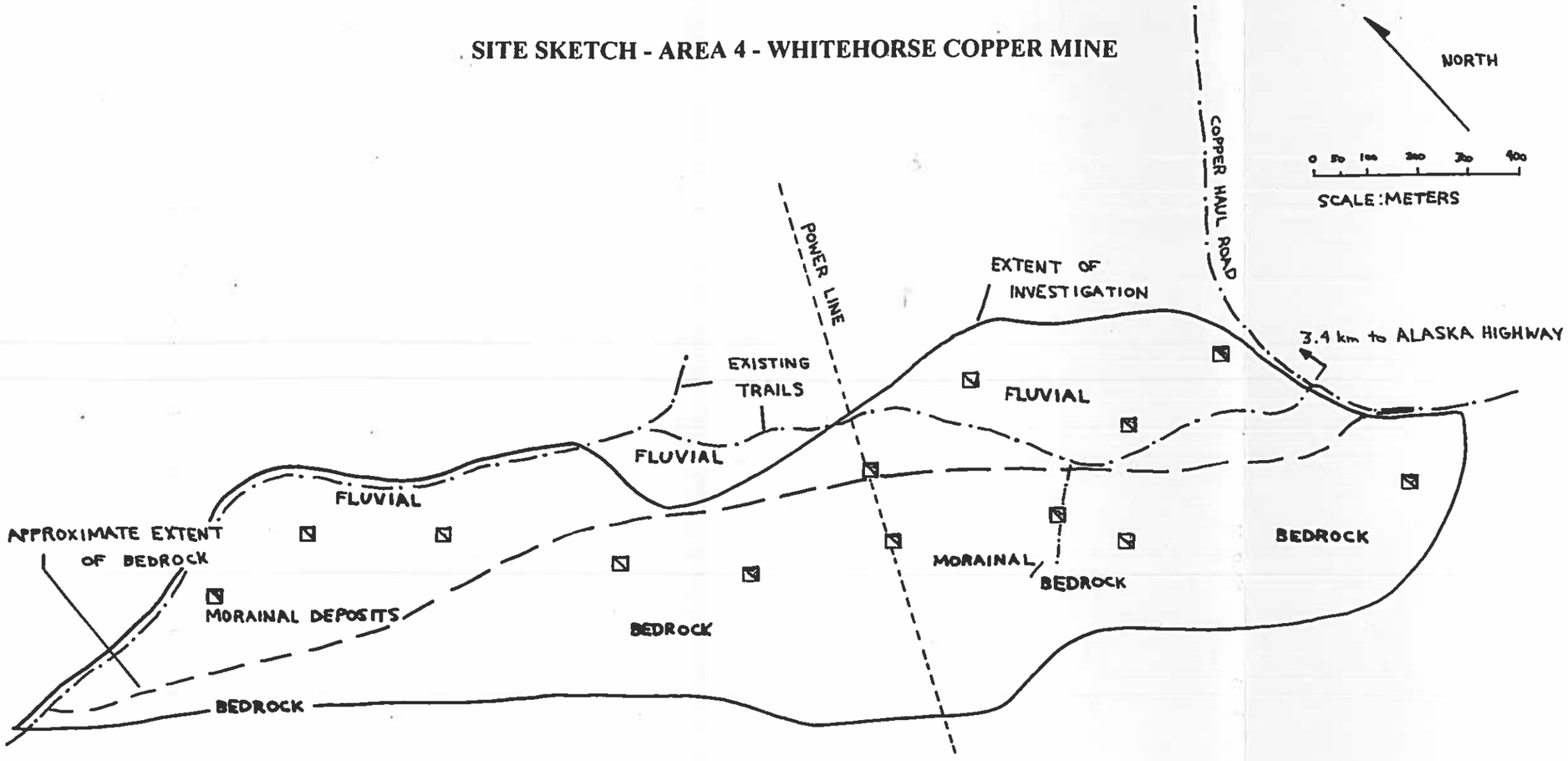
APPENDIX D
•Site 4

SITE SKETCH - AREA 4 - WHITEHORSE COPPER MINE



J. R. Paine & Associates Ltd.	
AREA 4 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 3-1

SITE SKETCH - AREA 4 - WHITEHORSE COPPER MINE



J. R. Paine & Associates Ltd.	
AREA 4 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 3-2

SITE AIRPHOTOGRAPH COPY - AREA 4 - WHITEHORSE COPPER MINE

0 50 100 200 300 400 500

SCALE : METERS

J. R. Paine & Associates Ltd

AREA 4 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 3-3

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#49-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, peat. rootlets and organics, soft dry. brown-black	PT		0.0
			0.10m			
			-silty sand & volcanic ash, soft, damp light-brown-white	SM		
			0.15m			
1.0		182	-sandy gravel, fine grained sand sizes, 20-25% cobbles in size to 200mm, 5% boulders in size to 400mm, loose, damp, brown			1.0
2.0		183	-sandy gravel, medium to coarse grained sand, 15% cobbles in size to 200mm, 10% boulders to 400mm in size, traces of oxidation, medium dense, damp, brown	GW		2.0
3.0		184	-sandy gravel, clean, well graded, 10-15% cobbles in size to 200mm, 10% boulders in size to 400mm, traces of oxidation, medium dense, damp, light-brown			3.0
4.0		185	-sandy gravel, clean, well graded, 10-15% cobbles in size to 200mm, 10% boulders in size to 400mm, traces of oxidation, medium dense, damp, light-brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0			Notes: Photo #27, spill piles			5.0
6.0			Vegetation: primarely old growth spruce with very little underbrush. Ground: relatively level -Trial Crush completed -Los Angeles Abrasion 14.5% Loss.			6.0
7.0			Bulk Sample #49A-95: 0.15-4.00m, GW % moisture - 3.1% % gravel - 65.5% % sand - 30.4% % silt - 4.1%			7.0
8.0						8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/06
Fig. No: 49	Page 1 of 1

95/08/08 01:48PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#50-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▮ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-moss, peat, rootlets and organics, soft dry, brown-black
			0.10m
			-silty sand & volcanic ash, soft, damp light-brown-white
			0.15m
1.0			-sandy gravel, trace of silt, fine grained sand sizes, 30% cobbles in size to 200mm, 5% boulders in size to 400mm, loose, damp, brown
			1.30m
2.0			Refusal @ 1.30m
3.0			
4.0			
5.0			
6.0			Note: Bedrock outcrops on the east and west side of the testpit area. -no samples retained Vegetation: primarely old growth spruce with very little underbrush.
7.0			
8.0			

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC: PT, SM, GW-GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 1.3 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 50	Page 1 of 1

95/08/08 01:49PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#51-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtbali Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	DEPTH(m)
0.0		186	PT ML		0.0
1.0		187	GP/GM		1.0
		188			2.0
2.0					
3.0		189	GP		3.0
		190			4.0
4.0					
5.0					5.0
6.0					6.0
7.0					7.0
8.0					8.0

-moss, peat. rootlets and organics, soft dry. brown-black

0.10m

-sandy gravelly silt & volcanic ash, soft, damp, light-brown-white

0.20m

-gravel, some sand, trace silt, clean, fine to medium sand sizes, 15-20% cobbles in size to 200mm, odd boulder in size to 400mm, traces of oxidation, medium dense, damp, brown

1.30m

-sandy gravel, well graded sand sizes, 15% cobbles in size to 200mm, odd boulder to 400mm in size, traces of oxidation, medium dense, damp, grey-brown

-sandy gravel, clean, well graded, 10-15% cobbles in size to 200mm, odd boulder in size to 400mm, traces of oxidation, medium dense, moist, grey-brown

2.80m

-sandy gravel, clean, well graded, 10-15% cobbles in size to 200mm, odd boulder in size to 400mm, traces of oxidation, medium dense, moist, grey-brown

4.00m

End of Testpit @ 4.00m

-Photo #28, spill piles

Vegetation: primarely spruce to 150mm in diametre, little underbrush.
Ground: relatively level
Note: Some cobbles volcanic in orgin, sand sizes coarser with depth.

Bulk Sample #51A-95: 0.10-4.00m, GM
% moisture - 5.3%
% gravel - 61.7%
% sand - 24.8%
% silt - 13.5%

J.R. Paine & Associates Ltd.	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
Whitehorse, Yukon	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 51	Page 1 of 1

95/08/08 01:50PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#52-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			
		191	-moss, peat. rootlets and organics, soft dry. brown-black
			0.10m
			-silty sand & volcanic ash, soft, damp light-brown-white
			0.15m
1.0		192	-sandy silty gravel, fine grained sand sizes, firm, dense, moist, beige-brown
			1.30m
			Refusal @ 1.30m
			Refusal due to bedrock noted @ 1.30m.
2.0			
3.0			
4.0			
5.0			
6.0			Vegetation: primarely old growth spruce with very little underbrush.
7.0			
8.0			

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

USC: PT, SM, GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 1.3 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 52	Page 1 of 1

95/08/08 01:50PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#53-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▯▯ SPT ▮▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, peat. rootlets and organics, soft dry. brown-black	PT		0.0
			0.10m			
			-silty sand & volcanic ash, soft, damp light-brown-white	SM		
			0.15m			
1.0	▮▮▮	193	-gravelly silty sand (till), fine grained sand sizes, trace of oxidation, medium dense, moist, beige-brown			1.0
			1.90m			
2.0			-sandy gravelly silt to sandy silty gravel(till), fine grained sand sizes, traces of oxidation, dense, moist, beige-brown (hard-pan)	SM		2.0
3.0			End of Hole @ 3.10m			3.0
4.0						4.0
5.0						5.0
6.0			Vegetation: primarely old growth spruce with the odd poplar, sparse to medium dense, underbrush. Ground sloping in a northeasterly direction.			6.0
7.0						7.0
8.0						8.0

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

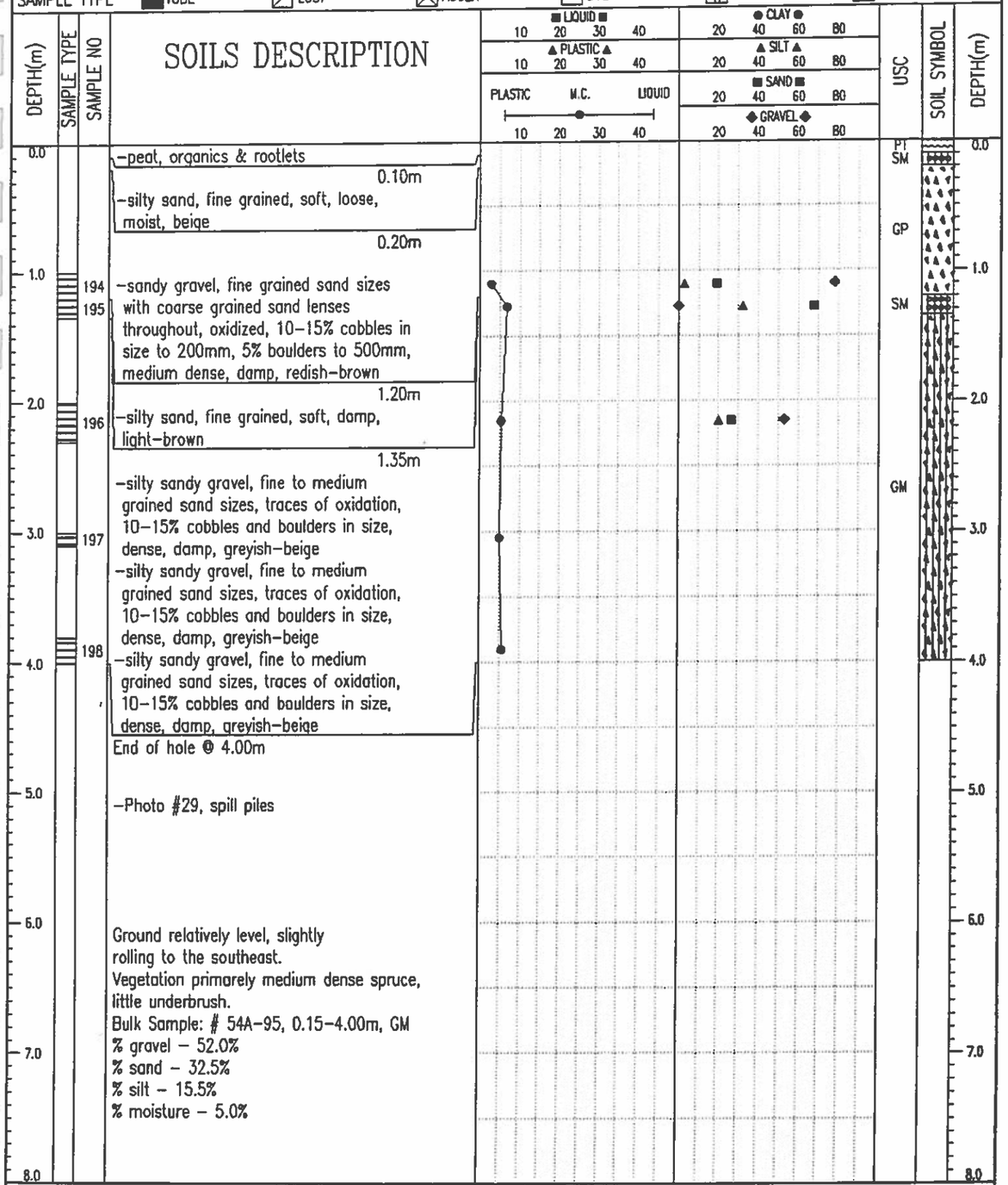
● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.1 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 53	Page 1 of 1

95/08/06 01:51PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#54-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE



J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 54	Page 1 of 1

05/08/08 01:52PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#55-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▥ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0		199	–moss, peat, rootlets and organics, soft dry, brown–black
			0.10m
1.0		200	–silty sand & volcanic ash, soft, damp light–brown–white
			0.30m
			–sandy gravel, trace of silt, fine grained sand sizes, 20–25% cobbles in size to 200mm, 5% boulders in size to 400mm,
2.0		201	loose, damp, brown
			1.80m
			–sandy gravel, medium to coarse grained sand, 10% cobbles in size to 200mm, traces of oxidation, medium dense, damp, brown
3.0		202	–sandy gravel, well graded, 10–15% cobbles in size to 200mm, odd boulder in size to 400mm, traces of oxidation, medium dense, damp, light–brown
			3.35m
4.0		203	–sandy gravel, clean, well graded, 10–15% cobbles in size to 200mm, 30% boulders in size to 800mm, traces of oxidation, medium dense, damp, light–brown
			4.00m
5.0			End of Testpit @ 4.00m
			Note: Photo #30, spill piles Photo #31, spill pile(boulder)
6.0			Vegetation: primarely old growth spruce with very little underbrush. Ground: sloping slightly in a northerly direction.
7.0			Trial Crush completed, L.A. Abrasion, 14.5% Loss. Bulk Sample #55A–95: 0.30–4.00m, GW % moisture – 2.0% % gravel – 68.7% % sand – 29.4% % silt – 1.9%
8.0			
9.0			

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40

PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

USC: PT, SM, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/06
Fig. No: 55	Page 1 of 1

95/08/09 09:05AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#56-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE, LOST, AUGER, BULK, SPT, CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, peat, rootlets and organics, soft dry, brown-black	PT		0.0
			0.15m			
		204	-topsoil, decomposed wood, silt, trace of fine grained sand, damp, loose, dark-brown	ML		
			0.30m			
1.0			-gravelly silty sand (till), fine grained sand sizes, firm, dense, moist, beige-brown	SM		1.0
			1.10m			
2.0			Refusal @ 1.10m Refusal due to bedrock noted @ 1.10m.			2.0
3.0						3.0
4.0						4.0
5.0						5.0
6.0			Vegetation: primarely old growth spruce with very little underbrush. Ground sloping in a northerly direction.			6.0
7.0						7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 1.1 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 56	Page 1 of 1

95/08/08 01:53PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#57-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▥ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, peat, rootlets and organics, soft dry, brown-black	PT		0.0
			0.10m			
			-sand, fine grained, some silt to silty, odd cobble in size to 200mm, odd boulder in size to 500mm, moist, loose, beige-brown	SM		
1.0			1.00m			1.0
			Refusal @ 1.00m Refusal due to bedrock noted @ 1.10m.			
2.0						2.0
3.0						3.0
4.0						4.0
5.0						5.0
6.0			Vegetation: primarely old growth spruce with very little underbrush. Ground sloping in a northerly direction.			6.0
7.0						7.0
8.0						8.0

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 1.1 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 57	Page 1 of 1

95/08/08 01:54PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#58-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ☒ AUGER ▤ BULK ▥ SPT ▥ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			–moss, peat, rootlets and organics, soft dry, brown–black	PT		0.0
			0.10m			
			–cobble layer to 200mm in size @ the interface of the gravels	GP		
			0.30m			
1.0		205	–sandy gravel, well graded sand sizes, 10–15% cobbles in size to 200mm, 5% boulders in size to 400mm, traces of oxidation, medium dense, damp, redish–brown	GP		1.0
			1.30m			
2.0			Refusal @ 1.30m			2.0
3.0						3.0
4.0						4.0
5.0						5.0
6.0			Vegetation: primarely old growth spruce with very little underbrush. Ground sloping in a northerly direction.			6.0
7.0						7.0
8.0						8.0

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 1.3 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 58	Page 1 of 1

95/08/08 01:34PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#59-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-peat, organics, rootlets and moss	PT		0.0
			0.10m			
			-cobbles and boulders to 500mm in size @ the interface with the organic layer			
			0.60m			
1.0		206	-sandy gravel, trace of silt, well graded, oxidized, trace of decomposed granite, 30-40% cobbles and boulders in size to 700mm, medium dense, damp, redish-brown	GW-GM		1.0
			1.50m			
2.0		207	-sandy gravel, some silt to silty(till), fine to medium sand sizes, traces of oxidation, 20-25% cobbles and boulders in size to 600mm, dense, damp, brown			2.0
			2.30m			
3.0		208	-silty sandy gravel(till), traces of oxidation, fine to medium grained sand sizes, 10-15% cobbles in size to 200mm, dense, moist, greyish-brown	GM		3.0
4.0		209	-silty sandy gravel(till), traces of oxidation, fine to medium grained sand sizes, 10-15% cobbles in size to 200mm, dense, moist, greyish-brown			4.0
			End of hole @ 4.00m			
5.0						5.0
6.0			Ground relatively level. Vegetation primarely a mix of young spruce and poplar, medium dense in population. No Bulk Sample Obtained.			6.0
7.0						7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC — M.C. — LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 59	Page 1 of 1

95/08/08 01:25PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#60-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, peat. rootlets and organics, soft dry. brown-black	PT		0.0
			0.10m			
			-silty sand & volcanic ash, soft, damp light-brown-white	SM		
			0.20m			
1.0		210	-sandy gravel, fine grained sand sizes, 20-35% cobbles in size to 200mm, 15% boulders in size to 500mm, medium dense, damp, brown	GW		1.0
2.0		211	-sandy gravel, well graded sand sizes, 25% cobbles in size to 200mm, 5-10% boulders in size to 600mm, trace of oxidation, medium dense, damp, brown			2.0
			2.60m			
3.0		212	-sandy gravel, trace of silt, medium to coarse grained sand sizes, 15-20% cobbles in size to 200mm, trace to some oxidation medium dense, damp, greyish-brown	GW-GM		3.0
4.0		213	-sandy gravel, trace of silt, medium to coarse grained sand sizes, 15-20% cobbles in size to 200mm, trace to some oxidation medium dense, damp, greyish-brown			4.0
			4.00m			
5.0			End of Testpit @ 4.00m			5.0
			Note: Photo #32, spill piles			
6.0			Vegetation: primarely consists of spruce and the odd poplar, medium dense in Ground: sloping slighty in a southerly population and middle aged. direction.			6.0
7.0			Bulk Sample #60A-95: 0.200-4.00m, GW-GM % moisture - 3.7% % gravel - 70.5% % sand - 24.4% % silt - 5.1%			7.0
8.0						8.0

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40
● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/06
	Fig. No: 60	Page 1 of 1

95/08/08 11:58PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#61-95
Caterpillar 215 Backhoe	Area #4	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0		214	-moss, peat, rootlets and organics, soft dry, brown-black	PT		0.0
			0.10m			
			-sandy gravelly silt & volcanic ash, soft, damp, light-brown-white	ML		
1.0		215	0.20m	GP		1.0
			-sandy gravel, fine grained sand sizes, 25-35% cobbles in size to 200mm, 5% boulders in size to 700mm, medium dense, damp, brown			
2.0		216	-sandy gravel, well graded sand sizes, 25% cobbles in size to 200mm, 15% in size to 700mm, traces of oxidation, medium dense, damp, brown			2.0
			1.80m			
3.0		217	-sandy gravel, trace of silt, medium to coarse grained sand sizes, 20-25% cobbles in size to 200mm, trace to some oxidation medium dense, damp, greyish-brown	GP-GM		3.0
4.0		218	-sandy gravel, trace of silt, medium to coarse grained sand sizes, 20-25% cobbles in size to 200mm, trace to some oxidation medium dense, damp, greyish-brown			4.0
			4.00m			
5.0			End of Testpit @ 4.00m			5.0
			Note: Photo #33, spill piles			
6.0			Vegetation: primarely consists of spruce and the odd poplar, medium dense in population and middle aged.			6.0
			Ground: sloping slighty in a southerly direction.			
7.0			-Trial Crush completed,			7.0
			-L.A. Abrasion 14.5% Loss.			
8.0			Bulk Sample #61A-95: 0.200-4.00m, GW-GM			8.0
			% moisture - 4.9%			
			% gravel - 63.1%			
			% sand - 29.9%			
9.0			% silt - 7.0%			9.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/06
Fig. No: 61	Page 1 of 1

95/08/09 08:03AM

J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 182 Depth: 1.0 - 1.2m.
Location: Area # 4
TP # 49

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCH Date: 1995/08/23

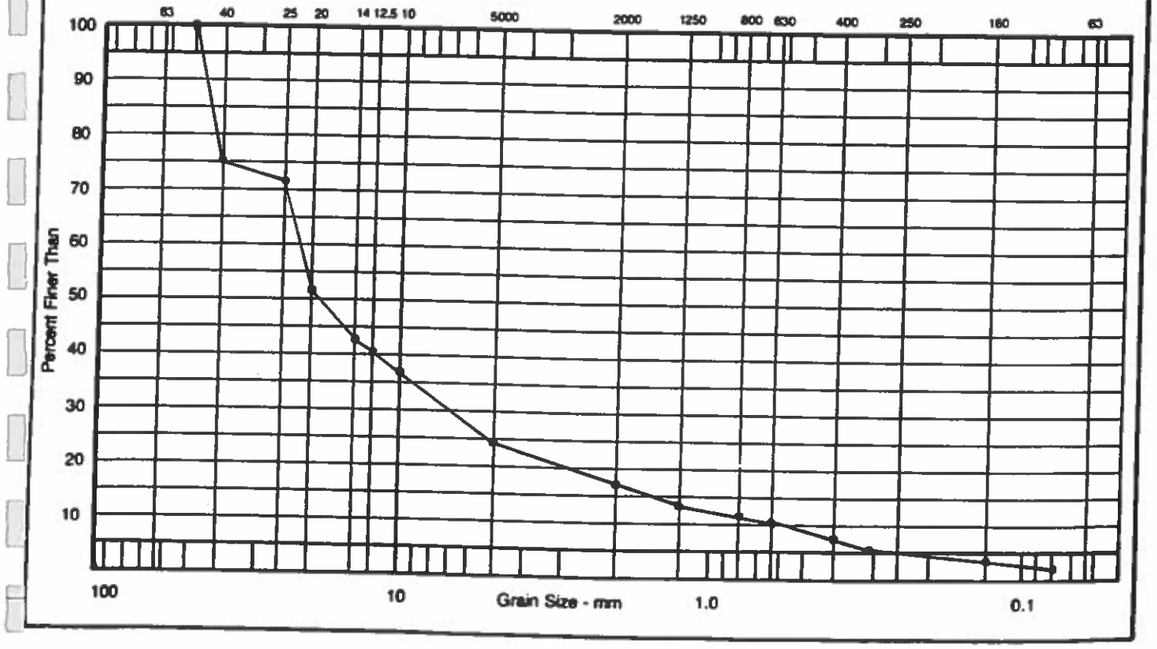
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
50000	50.0					100.0
40000	40.0					75.9
25000	25.0					71.5
20000	20.0					51.3
14000	14.0					42.8
12500	12.5					40.8
10000	10.0					36.7
5000	5.0					24.5
2000	2.0					17.0
1250	1.250					13.6
800	0.800					11.7
630	0.630					10.5
400	0.400					7.4
315	0.315					5.8
160	0.160					3.3
80	0.080					2.2

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.0%
Gravel : 75.5%
Sand : 22.3%
Silt : 2.2%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 184 Depth: 3.0 - 3.2 m
Location: Area # 4
TP # 49

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCR Date: 1995/06/07 07/16

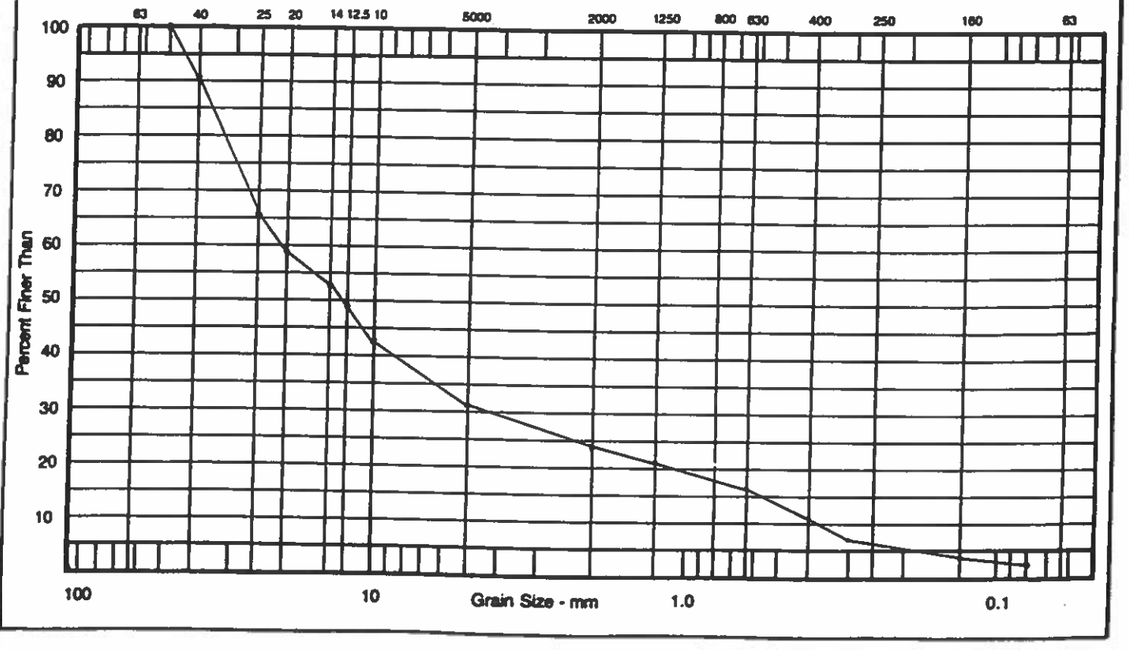
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					90.2
25000	25.0					66.2
20000	20.0					59.1
14000	14.0					53.6
12500	12.5					49.2
10000	10.0					43.1
5000	5.0					31.6
2000	2.0					24.2
1250	1.250					21.0
800	0.800					—
630	0.630					16.8
400	0.400					10.8
315	0.315					7.8
160	0.160					4.2
80	0.080					2.8

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 2.5 %
Gravel : 68.4 %
Sand : 28.8 %
Silt : 2.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 49A-95 Depth: 0.15-4.00m
Location: Area # 4
TP # 49

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLR Date: 1995/05/ 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					84.0
25000	25.0					70.6
20000	20.0					62.8
14000	14.0					59.5
12500	12.5					53.9
10000	10.0					48.8
5000	5.0					34.5
2000	2.0					24.7
1250	1.250					21.1
800	0.800					—
630	0.630					16.6
400	0.400					11.8
315	0.315					9.4
160	0.160					5.7
80	0.080					4.1

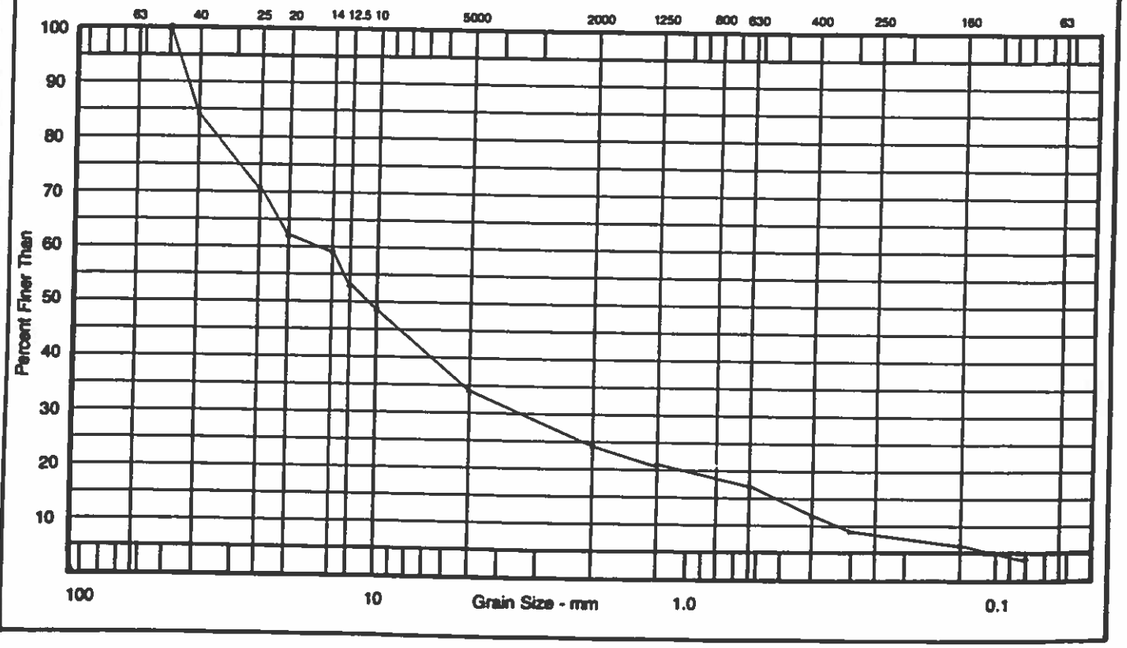
Description of Sample: SANDY GRAVEL, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.1 %
Gravel : 65.5 %
Sand : 30.4 %
Silt : 4.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 49A (Crushed) Depth: 0.15-4.00m
Location: Area # 4
TP # 49-95 B.1K

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: Date: 1995/06/

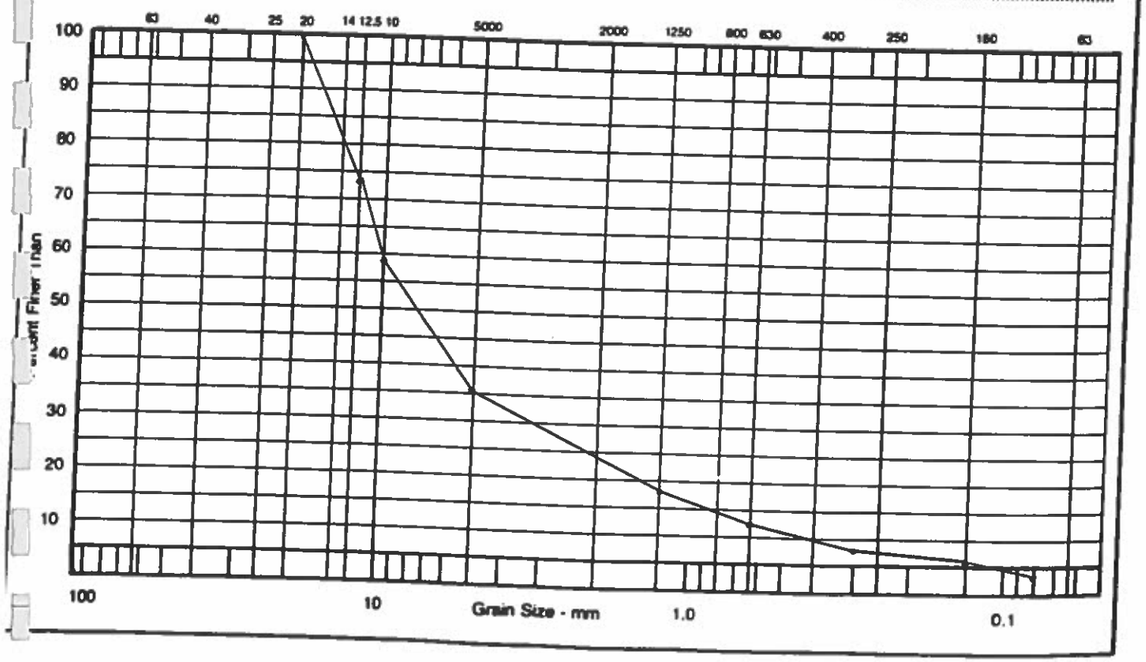
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					74.3
5000	5.0					59.0
2000	2.0					35.3
1250	1.250					/
800	0.800					17.9
630	0.630					/
400	0.400					13.6
315	0.315					/
160	0.160					8.4
80	0.080					5.2
						3.8

Description of Sample: Trial Crushed to 20mm Maximum Size

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 3.1%
Gravel : 64.7%
Sand : 31.5%
Silt : 3.8%
Crush Count 2 Faces: 65%
L.A. Abrasion : 14.5% Loss



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 186 Depth: 0.1 - 0.2 m
Location: Area # 4
TP # 51

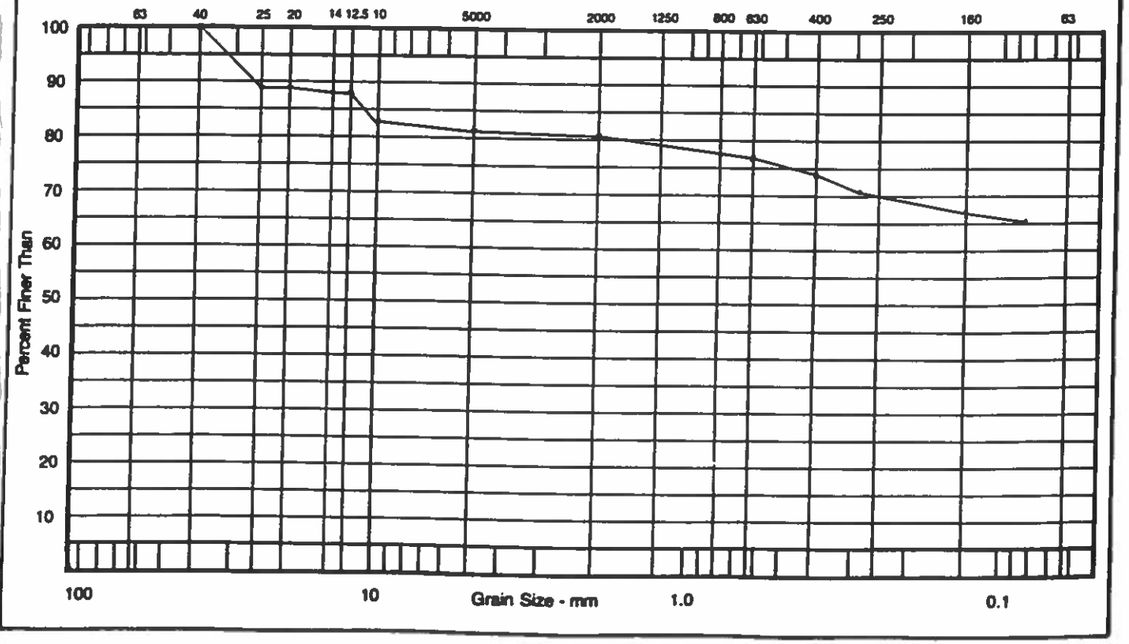
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/~~05~~ 07/15

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					89.1
20000	20.0					89.1
14000	14.0					88.1
12500	12.5					88.1
10000	10.0					83.5
5000	5.0					81.3
2000	2.0					80.5
1250	1.250					—
800	0.800					77.1
630	0.630					76.0
400	0.400					74.6
315	0.315					71.1
160	0.160					67.0
80	0.080					65.4

Description of Sample
SANDY GRAVELLY SILT, ML

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 4.5 %
Gravel : 18.7 %
Sand : 15.9 %
Silt : 65.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 187 Depth: 1.0-1.3m
Location: Area # 4 TP # 51
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/09/23

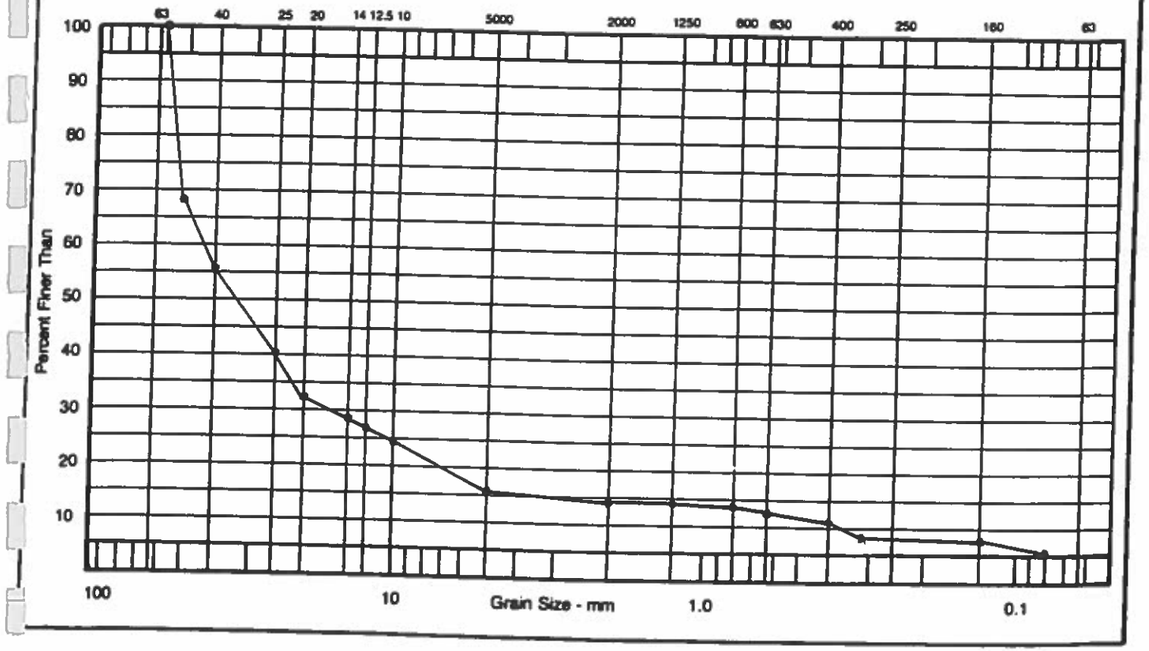
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
50000	50.0					68.6
40000	40.0					55.5
25000	25.0					40.4
20000	20.0					32.3
14000	14.0					28.8
12500	12.5					26.9
10000	10.0					19.2
5000	5.0					15.8
2000	2.0					14.7
1250	1.250					14.1
800	0.800					13.7
630	0.630					12.4
400	0.400					11.4
315	0.315					8.4
160	0.160					7.7
80	0.080					5.7

Description of Sample: Gravel, some sand, trace of silt, GP-GM

Time of Sieving: 15 Min.

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.4%
Gravel : 84.2%
Sand : 10.1%
Silt : 5.7%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 189 Depth: 3.0-3.3m
Location: Area # 4
TP # 51

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/09/23

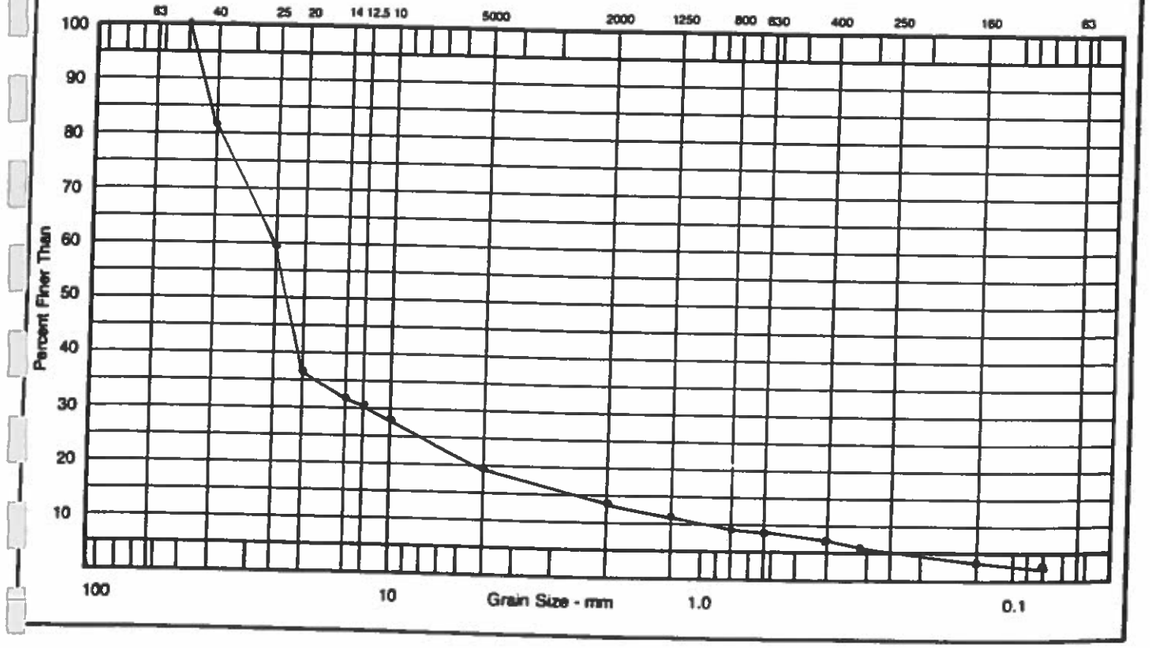
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					100.0
40000	40.0					81.4
25000	25.0					59.7
20000	20.0					36.0
14000	14.0					32.0
12500	12.5					30.8
10000	10.0					27.9
5000	5.0					19.8
2000	2.0					13.8
1250	1.250					11.2
800	0.800					9.6
630	0.630					8.8
400	0.400					7.0
315	0.315					5.8
160	0.160					3.7
80	0.080					2.8

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.1%
Gravel : 80.2 %
Sand : 17.0 %
Silt : 2.8 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 51A-95 Depth 0.10-4.00m
Location: Area # 4
TP # 51

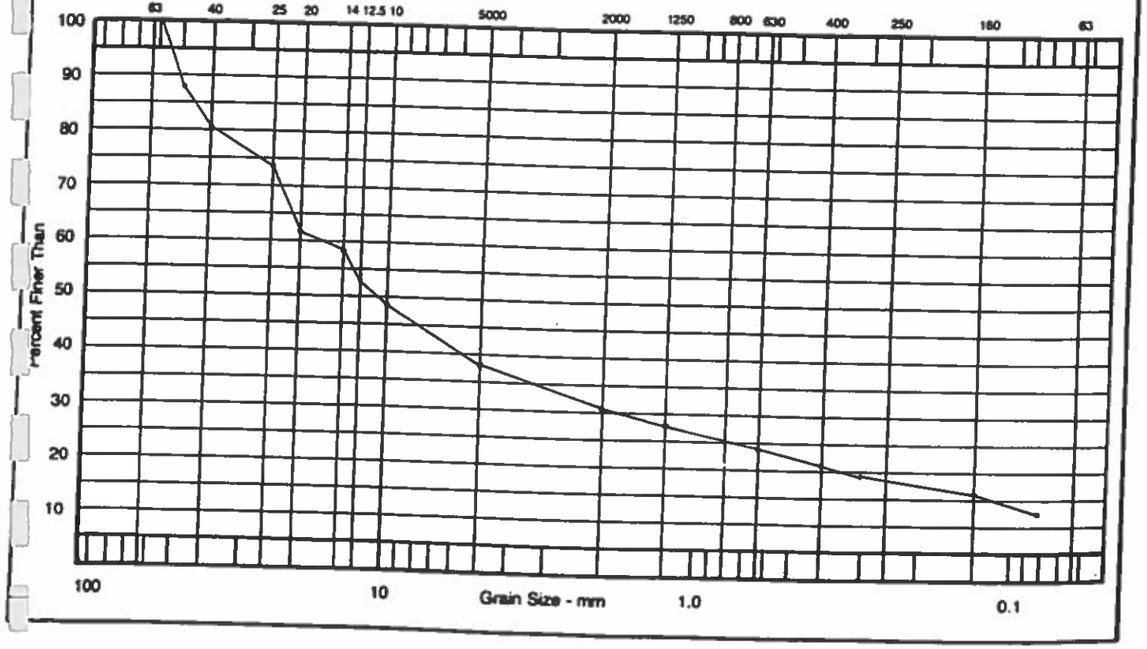
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job. No. 8002-234
Ck'd by [illegible] Date: 1995/~~06~~ 07/15

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
						87.3
40000	40.0					80.6
25000	25.0					74.7
20000	20.0					62.0
14000	14.0					58.3
12500	12.5					53.6
10000	10.0					48.5
5000	5.0					38.3
2000	2.0					30.4
1250	1.250					27.2
800	0.800					—
630	0.630					24.1
400	0.400					21.5
315	0.315					19.6
160	0.160					16.0
80	0.080					13.5

Description of Sample
SANDY GRAVEL, SOME SILT, GM

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 5.3 %
Gravel : 61.7 %
Sand : 24.8 %
Silt : 13.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 192 Depth: 0.25 - 0.40 m
Location: Area # 4
TP # 52

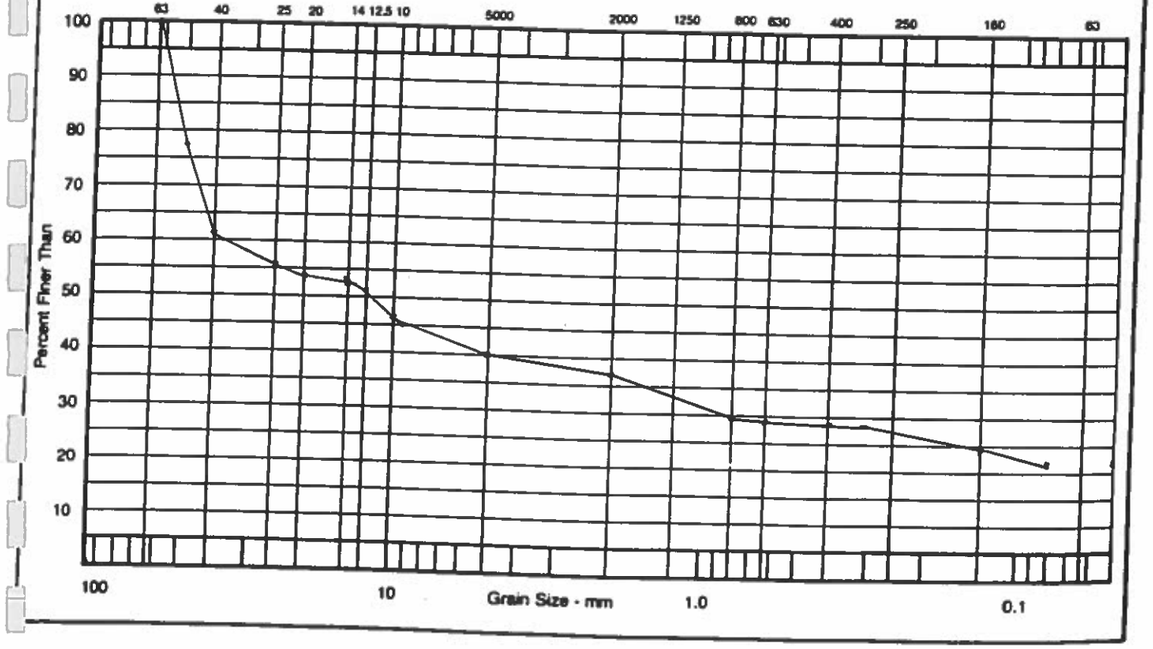
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WLL Date: 1995/06/15

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					77.5
40000	40.0					60.7
25000	25.0					55.2
20000	20.0					54.1
14000	14.0					52.7
12500	12.5					50.8
10000	10.0					45.7
5000	5.0					40.0
2000	2.0					37.1
1250	1.250					
800	0.800					29.8
630	0.630					29.4
400	0.400					28.4
315	0.315					28.1
160	0.160					24.9
80	0.080					22.1

Description of Sample: SANDY SILTY GRAVEL, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X
Remarks:
Moisture : 8.2%
Gravel : 60.0%
Sand : 17.9%
Silt : 22.1%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 193 Depth: 1.0-1.2 m
Location: Area # 4
TP # 53

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLL Date: 1995/09/23

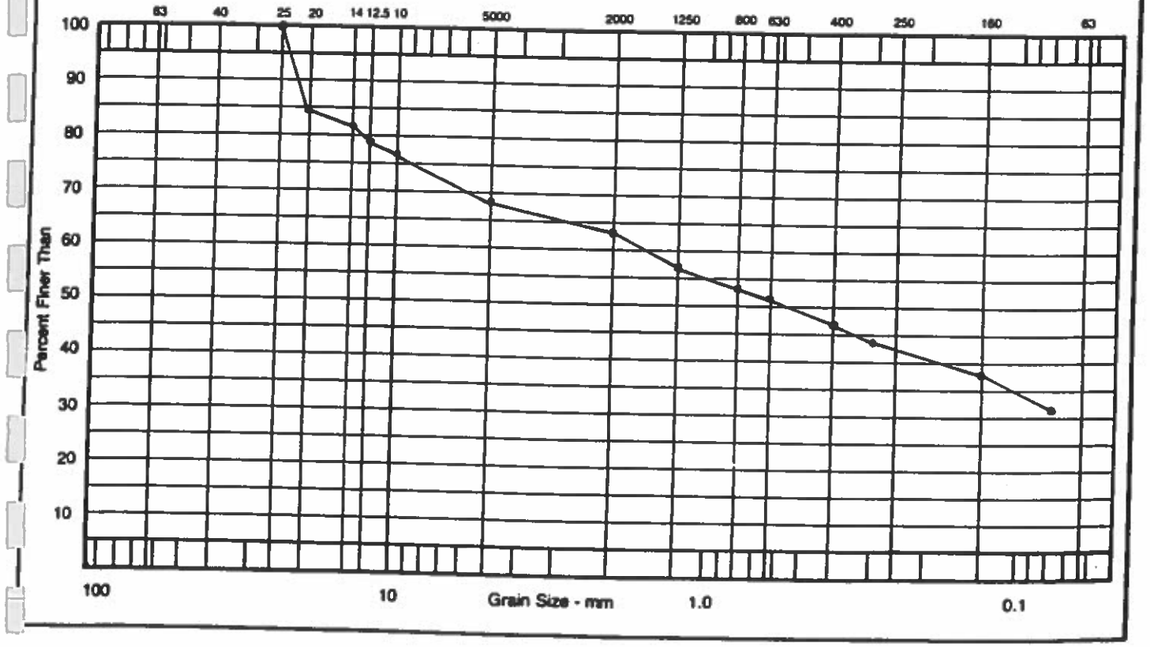
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong. Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					84.8
14000	14.0					81.3
12500	12.5					79.0
10000	10.0					76.4
5000	5.0					68.8
2000	2.0					63.4
1250	1.250					57.3
800	0.800					53.5
630	0.630					51.4
400	0.400					46.8
315	0.315					44.3
160	0.160					37.9
80	0.080					31.5

Description of Sample: Gravelly Silty Sand, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 9.0%
Gravel : 31.2%
Sand : 37.3%
Silt : 31.5%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 194 Depth: 1.0 - 1.2m Client: YTG, Transportation Engineering Branch

Location: Area # 4 Project: Greater Whitehorse Inventory of Sand & Gravel

TP # 54 Made by: RK & PR Job. No. 8002-234

Ck'd by: WCC Date: 1995/08/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					100.0
40000	40.0					78.1
25000	25.0					68.1
20000	20.0					56.3
14000	14.0					45.8
12500	12.5					43.3
10000	10.0					37.1
5000	5.0					22.0
2000	2.0					14.2
1250	1.250					9.7
800	0.800					7.5
630	0.630					6.6
400	0.400					5.1
315	0.315					4.5
160	0.160					3.4
80	0.080					2.8

Description of Sample: Sandy Gravel, GP

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

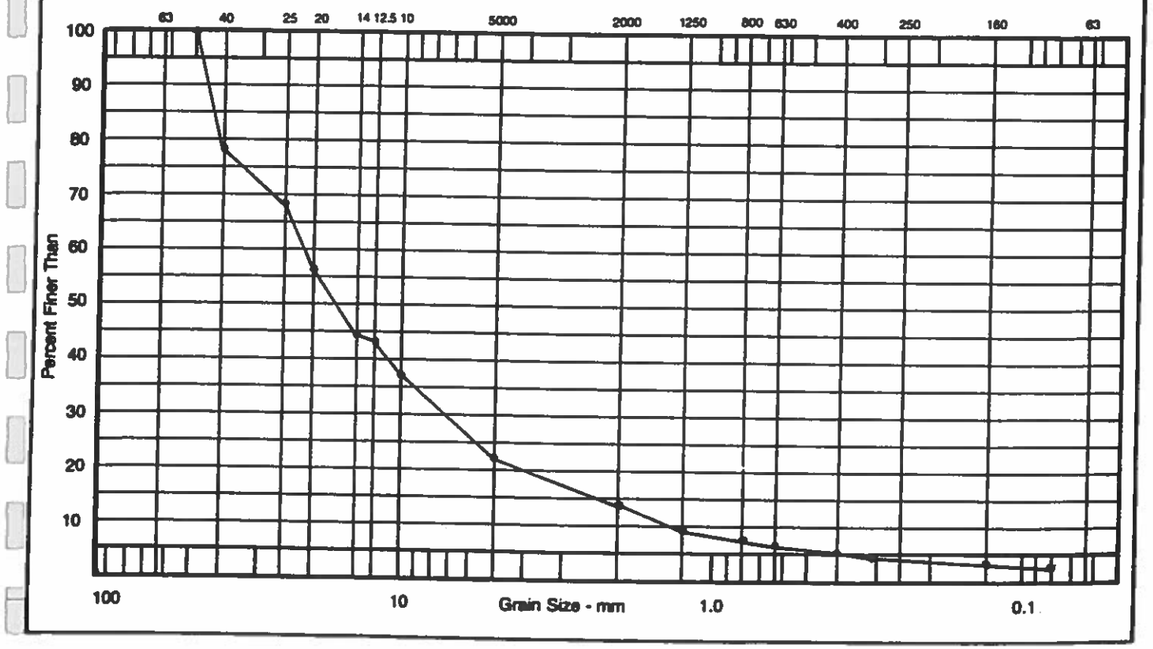
Remarks:

Moisture : 2.9%

Gravel : 78.0%

Sand : 19.2%

Silt : 2.8%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 195 Depth 1.2 - 1.35m

Location: Area # 4
TP # 54

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No. 8002-234

Ck'd by: Date: 1995/06/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					
12500	12.5					
10000	10.0					
5000	5.0					
2000	2.0					100.0
1250	1.250					99.9
800	0.800					99.9
630	0.630					-
400	0.400					99.9
315	0.315					99.8
160	0.160					99.8
80	0.080					96.8
						32.3

Description of Sample

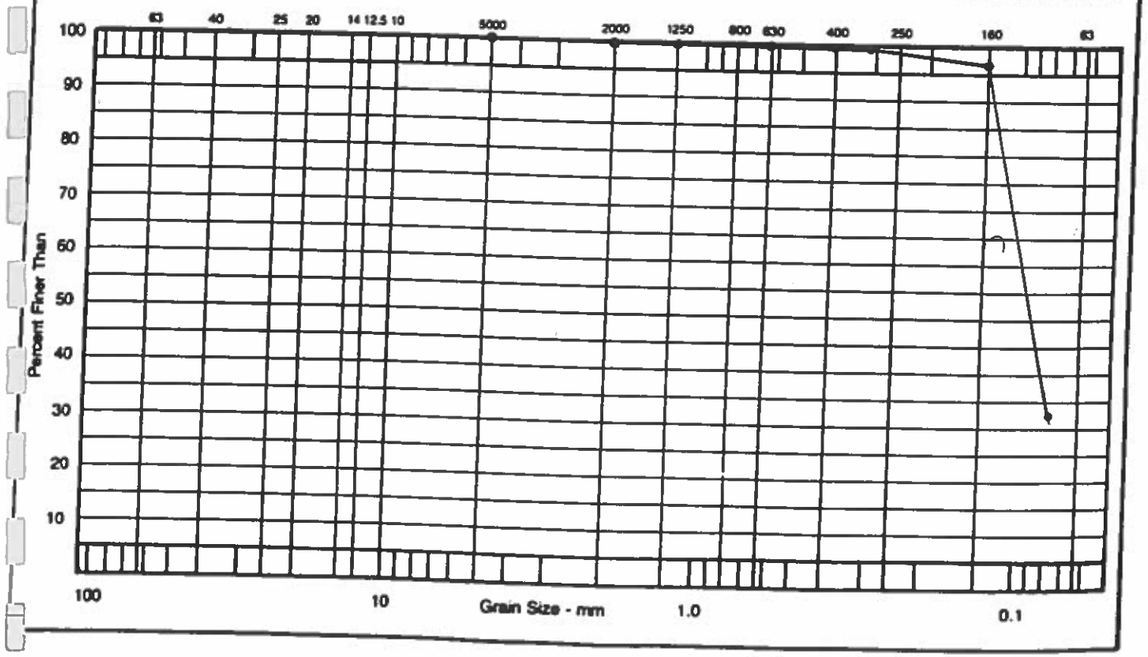
Silty Sand, SM

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks

Moisture : 6.8%
Gravel : 0.0%
Sand : 67.7%
Silt : 32.3%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 196 Depth: 2.0-2.3m
Location: Area # 4
TP # 54

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/08/23

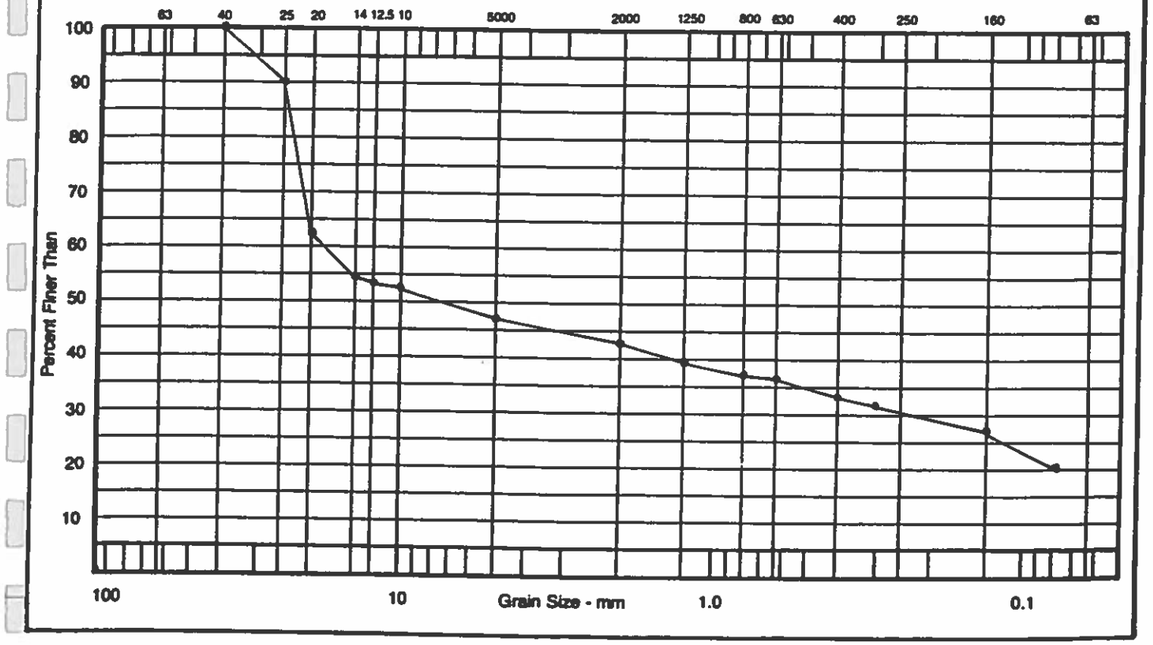
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					90.0
20000	20.0					62.5
14000	14.0					54.7
12500	12.5					53.8
10000	10.0					52.7
5000	5.0					46.9
2000	2.0					42.7
1250	1.250					39.4
800	0.800					37.3
630	0.630					36.1
400	0.400					33.3
315	0.315					31.7
160	0.160					27.3
80	0.080					20.2

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 5.4%
Gravel : 53.1%
Sand : 26.7%
Silt : 20.2%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 54A-95 Depth: 0.15 - 4.00 m
Location: Area # 4
TP # 54

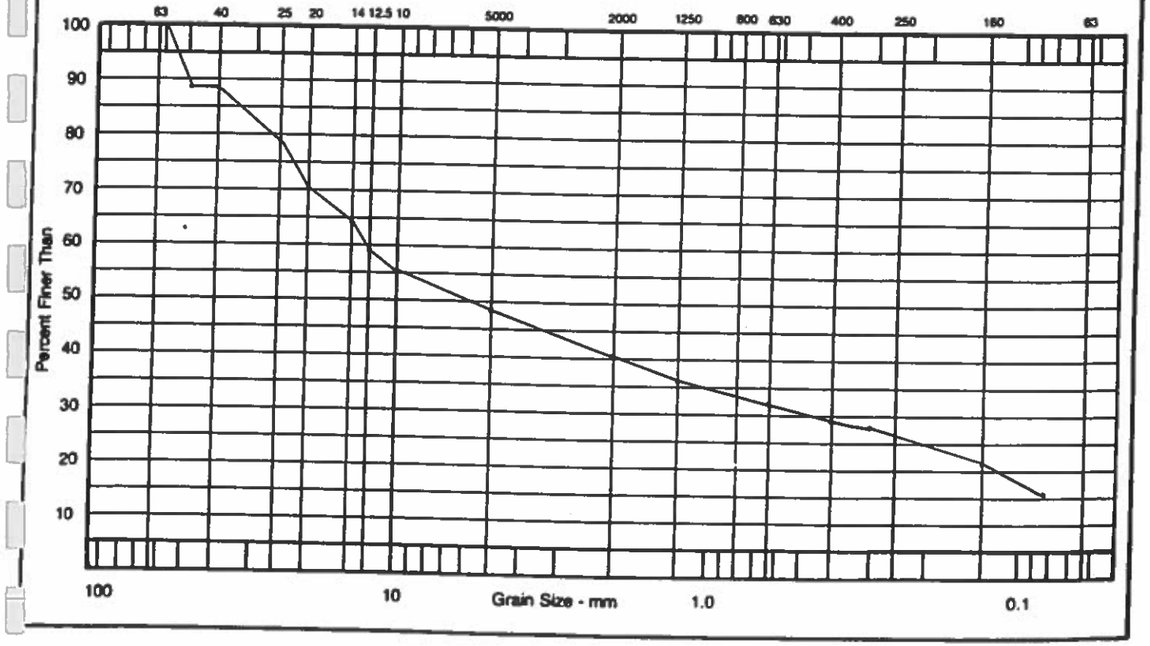
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/05/07 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong. Sample
						87.9
40000	40.0					87.9
25000	25.0					79.4
20000	20.0					70.5
14000	14.0					64.4
12500	12.5					59.0
10000	10.0					55.8
5000	5.0					48.0
2000	2.0					40.6
1250	1.250					36.6
800	0.800					—
630	0.630					32.3
400	0.400					29.2
315	0.315					27.2
160	0.160					21.7
80	0.080					15.5

Description of Sample
SILTY SANDY GRAVEL, GM

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 5.0 %
Gravel : 52.0 %
Sand : 32.5 %
Silt : 15.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 2SC Depth: 0.80 - 1.00m
Location: Area # 4
TP # 55

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/~~05~~ 07/16

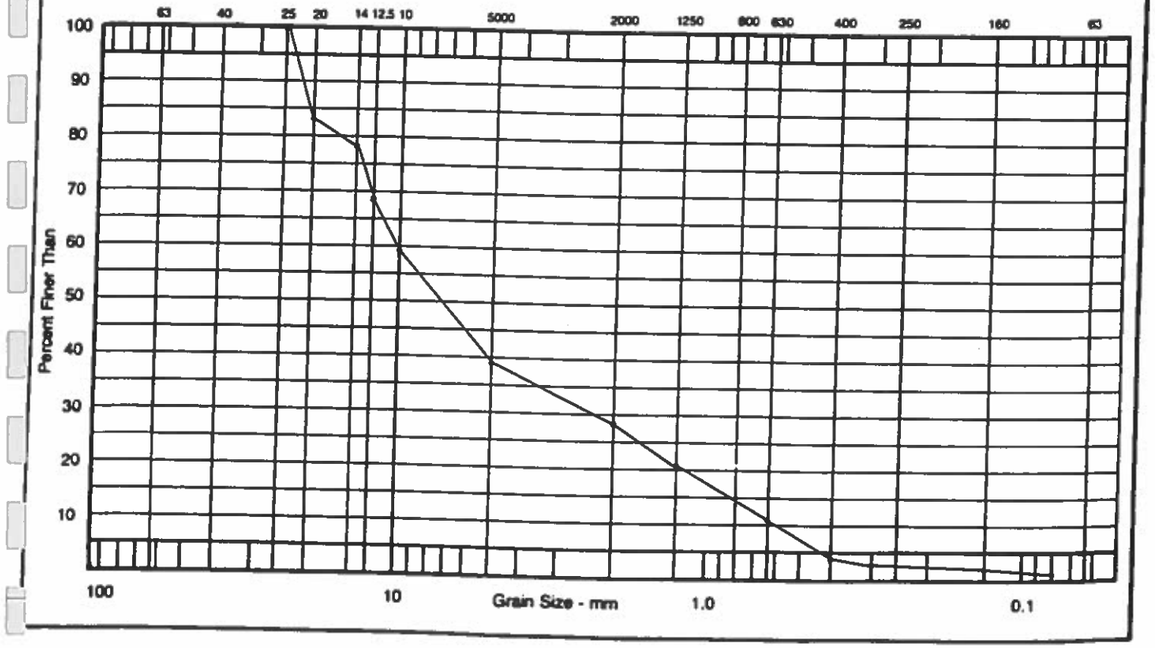
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					83.9
14000	14.0					78.1
12500	12.5					68.1
10000	10.0					59.8
5000	5.0					39.4
2000	2.0					27.4
1250	1.250					21.3
800	0.800					—
630	0.630					10.8
400	0.400					4.2
315	0.315					2.7
160	0.160					1.5
80	0.080					1.0

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.1 %
Gravel : 60.6 %
Sand : 38.4 %
Silt : 1.0 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 55A-95 Depth: 0.30 - 4.00m
Location: Area # 4
TP # 55

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/16

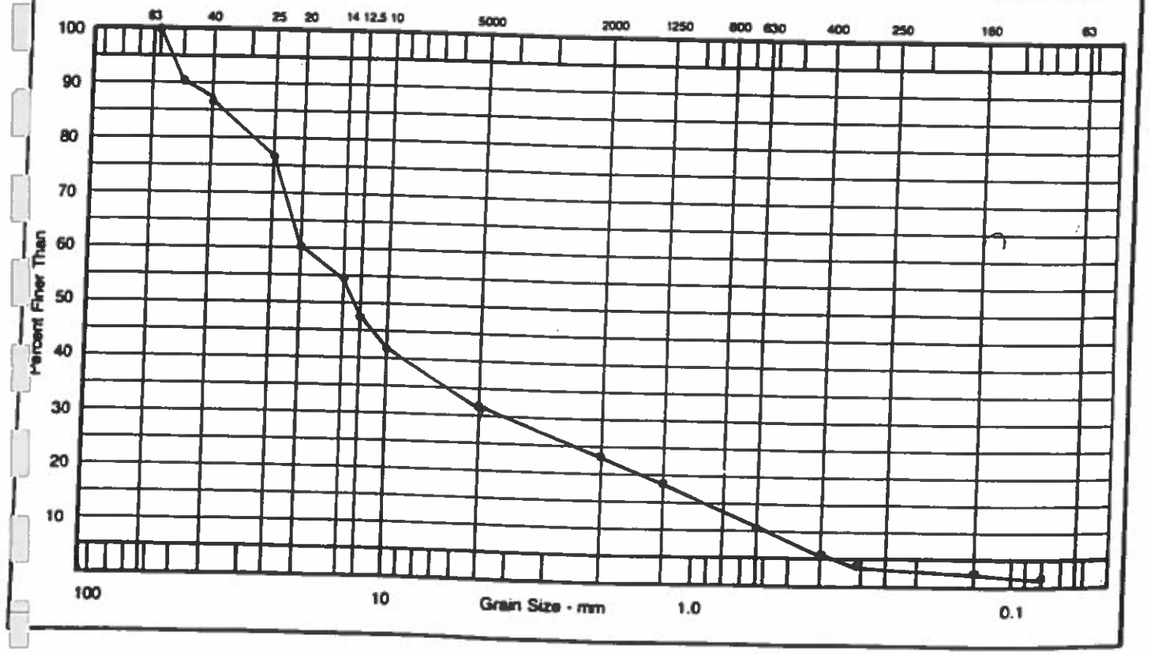
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
50000	50.0					90.6
40000	40.0					86.9
25000	25.0					76.4
20000	20.0					60.0
14000	14.0					54.7
12500	12.5					47.6
10000	10.0					41.6
5000	5.0					31.3
2000	2.0					23.3
1250	1.250					18.5
800	0.800					
630	0.630					10.8
400	0.400					5.5
315	0.315					4.0
160	0.160					2.5
80	0.080					1.9

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed: X

Remarks:
Moisture : 2.0%
Gravel : 68.7%
Sand : 29.4 %
Silt : 1.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 55A (Crushed) Depth 0.30 - 4.00m
Location: Area # 4
TP # 55-95 Bulk

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/

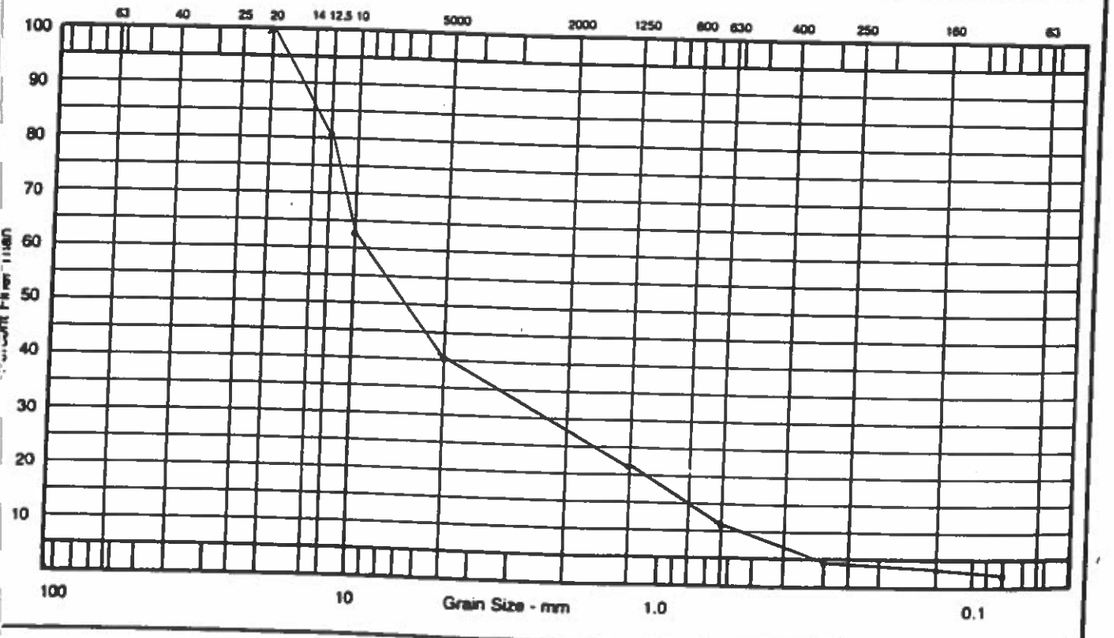
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					80.1
5000	5.0					63.9
2000	2.0					46.5
1250	1.250					/
800	0.800					21.1
630	0.630					/
400	0.400					12.0
315	0.315					/
160	0.160					4.8
80	0.080					2.9
						2.1

Description of Sample: Trial Crushed to 20mm Maximum Size

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.0% Crush (1 → 2 faces) 58.0%
Gravel : 59.5% L.A Abrasion 14.5% loss
Sand : 38.4%
Silt : 2.1%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 204 Depth: 0.5 - 0.8m
Location: Area # 4
TP # 56

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/08/23

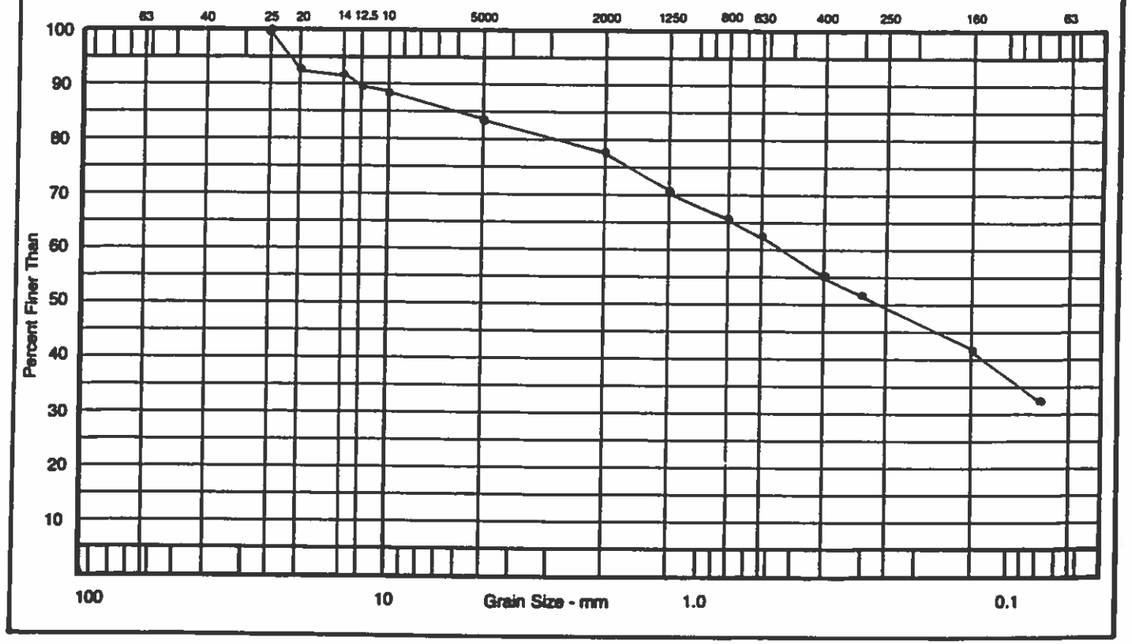
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					93.0
14000	14.0					91.2
12500	12.5					89.5
10000	10.0					88.5
5000	5.0					83.2
2000	2.0					77.7
1250	1.250					70.9
800	0.800					65.8
630	0.630					62.6
400	0.400					55.4
315	0.315					51.1
160	0.160					41.4
80	0.080					32.5

Description of Sample: Gravelly, Silty Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed X

Remarks:
Moisture : 11.1%
Gravel : 16.8%
Sand : 50.7%
Silt : 32.5%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 205 Depth: 1.0 - 1.2 m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 4 Made by: RK & PR Job. No. 8002-234
TP # 58 Ck'd by: W.C.S. Date: 1995/05/07 07/15

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						72.4
40000	40.0					54.7
25000	25.0					54.7
20000	20.0					41.0
14000	14.0					34.2
12500	12.5					30.1
10000	10.0					25.9
5000	5.0					18.5
2000	2.0					11.4
1250	1.250					—
800	0.800					5.0
630	0.630					4.2
400	0.400					3.9
315	0.315					3.3
160	0.160					2.9
80	0.080					2.7

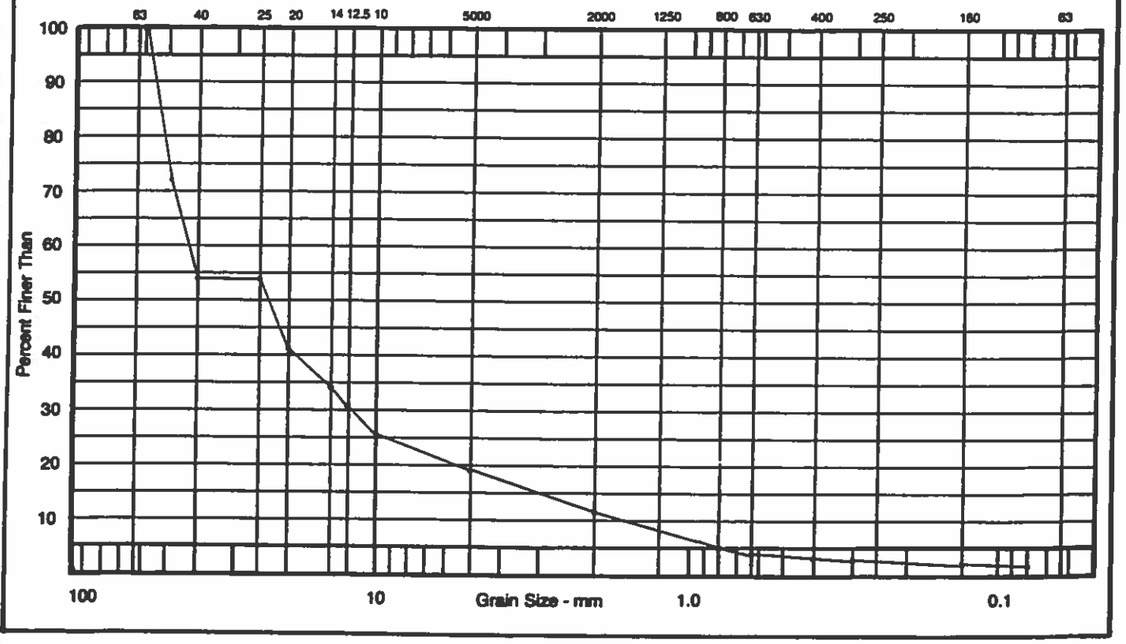
Description of Sample: SANDY GRAVEL, GP

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 2.5 %
Gravel : 81.5 %
Sand : 15.8 %
Silt : 2.7 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 206 Depth: 1.0-1.2m
Location: Area # 4, TP # 59
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCH Date: 1995/09/23

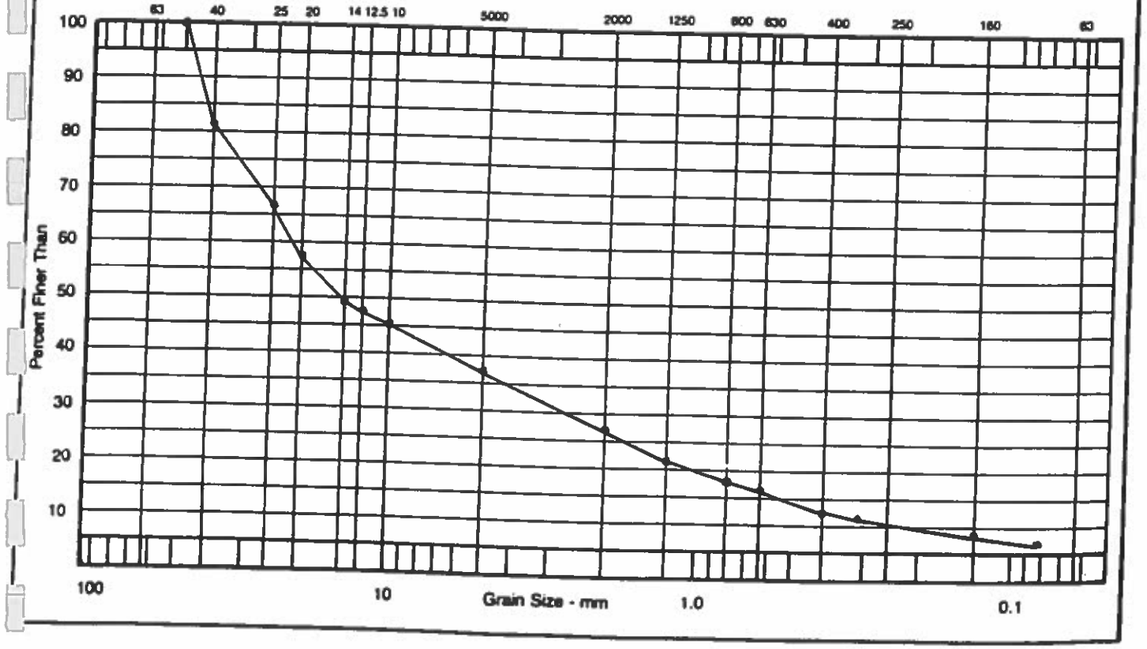
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					81.2
25000	25.0					66.4
20000	20.0					57.6
14000	14.0					49.4
12500	12.5					47.7
10000	10.0					45.3
5000	5.0					37.2
2000	2.0					27.2
1250	1.250					21.8
800	0.800					18.1
630	0.630					16.2
400	0.400					13.0
315	0.315					11.6
160	0.160					8.7
80	0.080					6.8

Description of Sample: Sandy Gravel, GW-GM
Trace Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 3.3%
Gravel : 62.8%
Sand : 30.4%
Silt : 6.8%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 210 Depth: 1.0 - 1.2 m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 4 Made by: RK & PR Job. No. 8002-234
TP # 60 Ck'd by: [illegible] Date: 1995/06/07 07/15

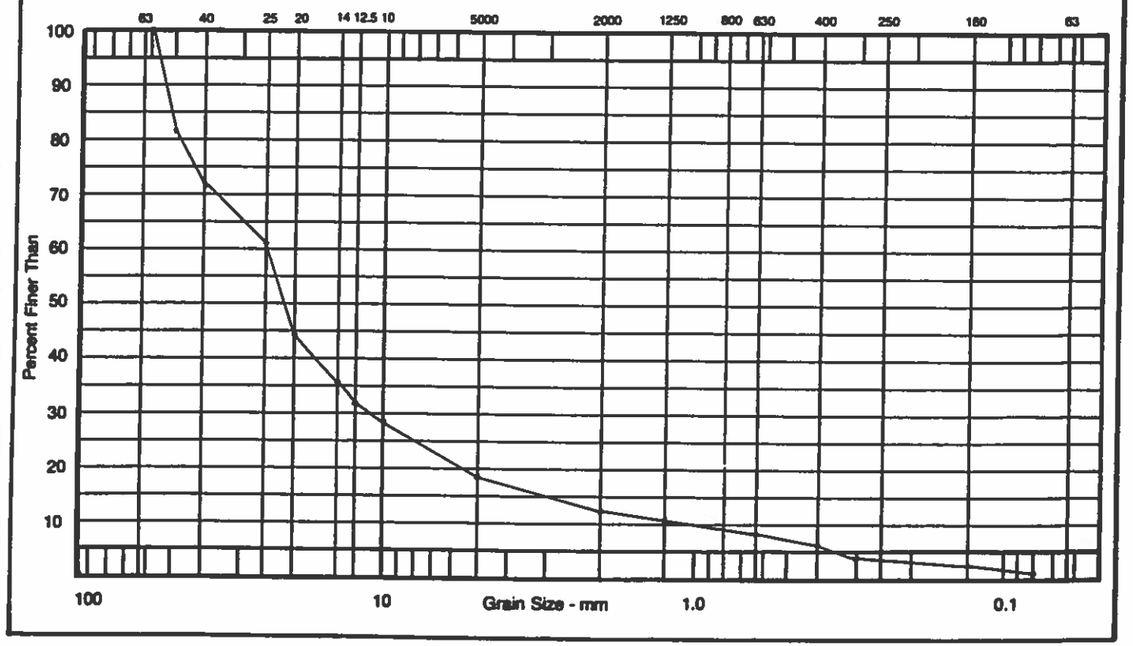
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						82.2
40000	40.0					72.8
25000	25.0					61.6
20000	20.0					44.2
14000	14.0					35.4
12500	12.5					31.9
10000	10.0					27.6
5000	5.0					18.3
2000	2.0					13.2
1250	1.250					10.7
800	0.800					—
630	0.630					8.4
400	0.400					6.0
315	0.315					4.5
160	0.160					2.8
80	0.080					2.2

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 1.1 %
Gravel : 81.7 %
Sand : 16.1 %
Silt : 2.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 212 Depth: 3.0-3.2 m
Location: Area # 4
TP # 60

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLC Date: 1995/05/07

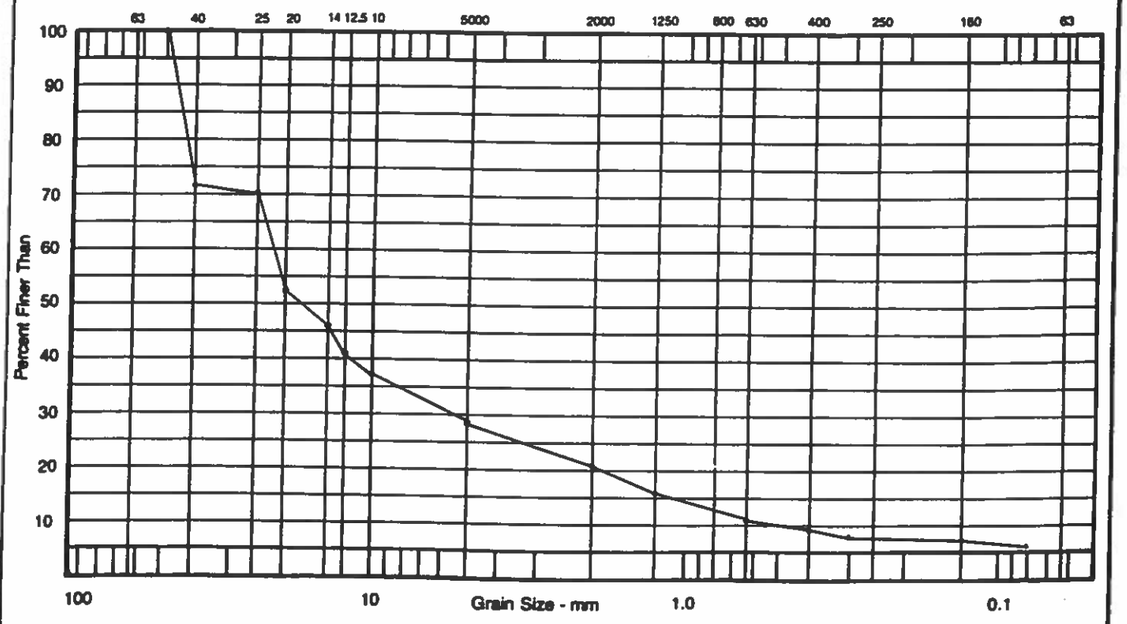
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
						100
40000	40.0					72.7
25000	25.0					70.1
20000	20.0					53.4
14000	14.0					46.2
12500	12.5					41.5
10000	10.0					37.2
5000	5.0					28.9
2000	2.0					21.2
1250	1.250					16.4
800	0.800					—
630	0.630					11.7
400	0.400					9.6
315	0.315					8.7
160	0.160					7.4
80	0.080					6.3

Description of Sample: SANDY GRAVEL, TRACE OF SILT, GW-GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 3.6 %
Gravel : 71.1 %
Sand : 22.6 %
Silt : 6.3 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 60A-95 Depth: 0.20-4.00m
Location: Area # 4
TP # 60

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No: 8002-234
Ck'd by: W.C.K. Date: 1995/06/16

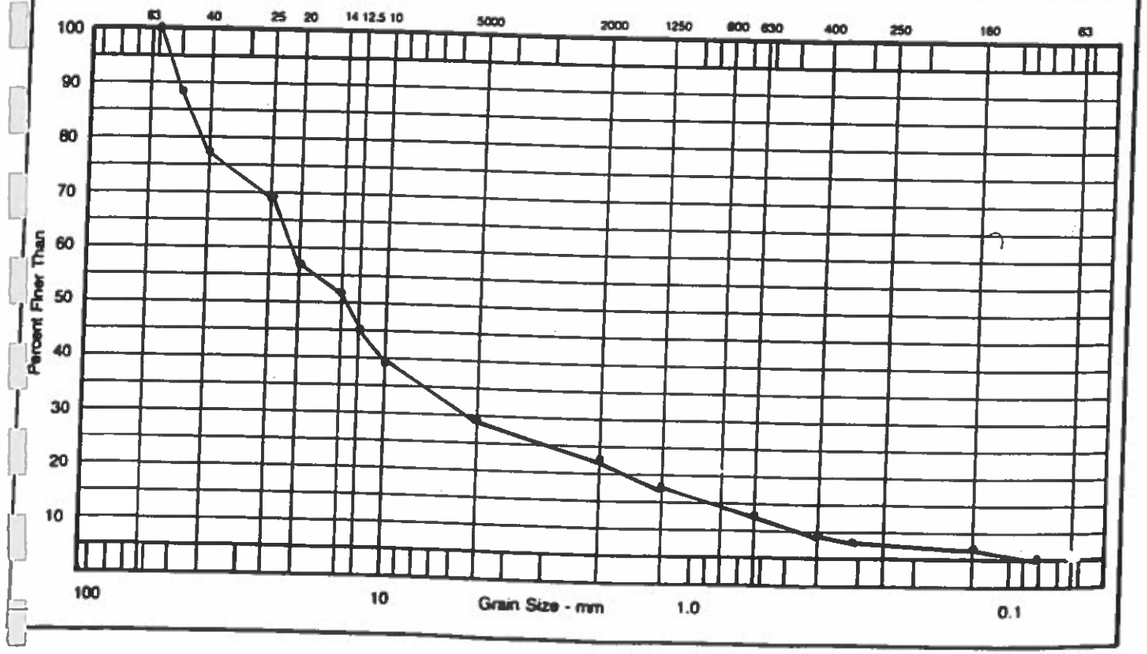
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
50000	50.0					88.0
40000	40.0					77.1
25000	25.0					69.4
20000	20.0					56.8
14000	14.0					51.5
12500	12.5					45.0
10000	10.0					39.4
5000	5.0					29.5
2000	2.0					22.4
1250	1.250					18.0
800	0.800					
630	0.630					12.9
400	0.400					9.7
315	0.315					8.1
160	0.160					6.1
80	0.080					5.1

Description of Sample: Sandy Gravel, GW-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture: 3.7%
Gravel: 70.5%
Sand: 24.4%
Silt: 5.1%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 214 Depth: 0.1 - 0.2m
Location: Area # 4, TP # 61
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No.: 8002-234
Ck'd by: WCC Date: 1995/08/23

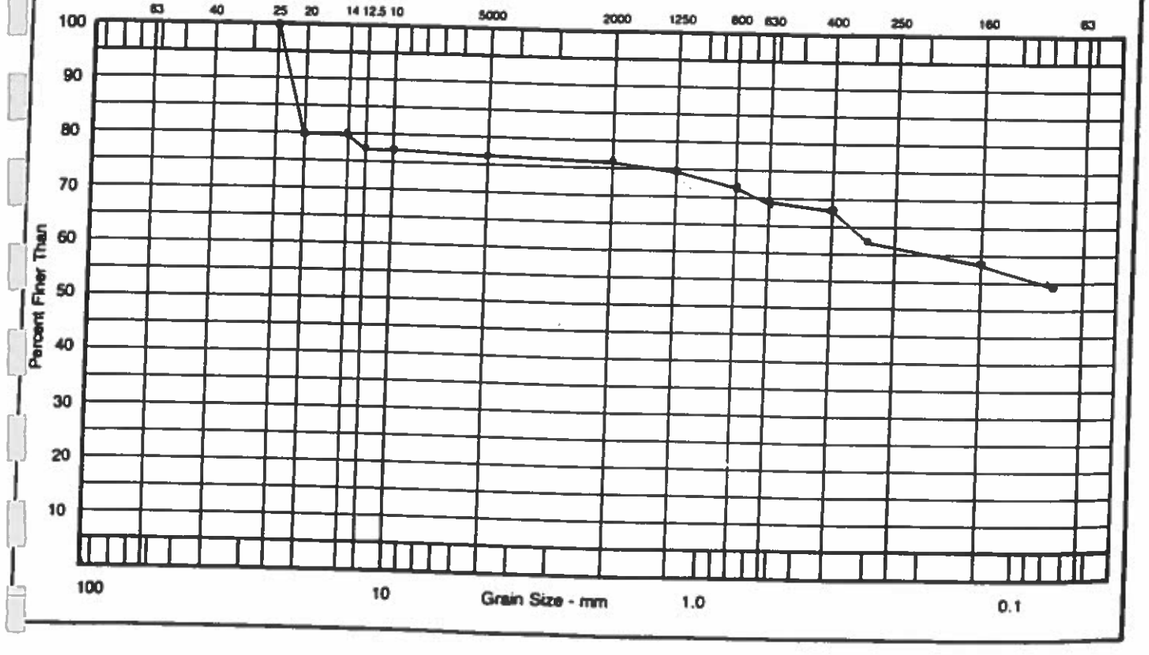
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					79.9
14000	14.0					79.9
12500	12.5					77.5
10000	10.0					77.5
5000	5.0					76.9
2000	2.0					76.7
1250	1.250					74.7
800	0.800					71.7
630	0.630					69.8
400	0.400					68.5
315	0.315					62.7
160	0.160					58.7
80	0.080					54.7

Description of Sample: Sandy Gravelly Silt, ML

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 15.7%
Gravel : 23.1%
Sand : 22.2 %
Silt : 54.7%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 215 Depth: 1.0 - 1.2 m. Client: YTG, Transportation Engineering Branch
Location: Area # 4 Project: Greater Whitehorse Inventory of Sand & Gravel
TP # 61 Made by: RK & PR Job No.: 8002-234
Ck'd by: WCK Date: 1995/08/23

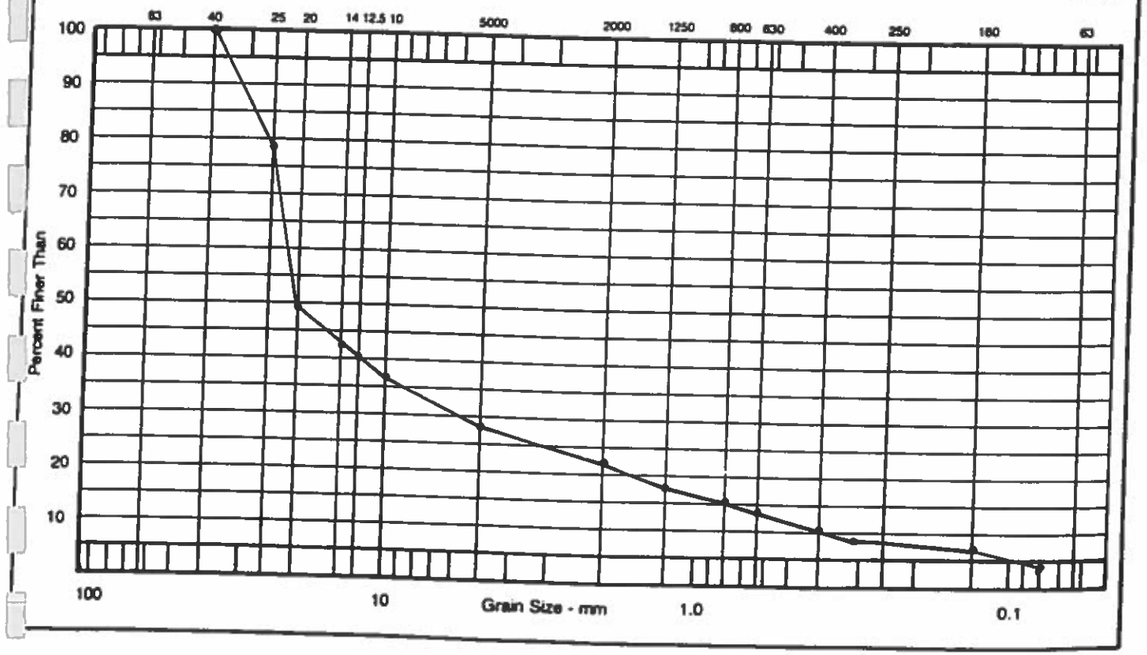
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100.0
25000	25.0					78.2
20000	20.0					49.1
14000	14.0					42.4
12500	12.5					40.1
10000	10.0					36.2
5000	5.0					28.3
2000	2.0					22.0
1250	1.250					17.7
800	0.800					15.2
630	0.630					13.7
400	0.400					10.5
315	0.315					8.9
160	0.160					6.1
80	0.080					4.6

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.9%
Gravel : 71.7%
Sand : 23.7%
Silt : 4.6%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 218 Depth: 3.8-4.0m
Location: Area # 4, TP # 61
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WLC Date: 1995/08/23

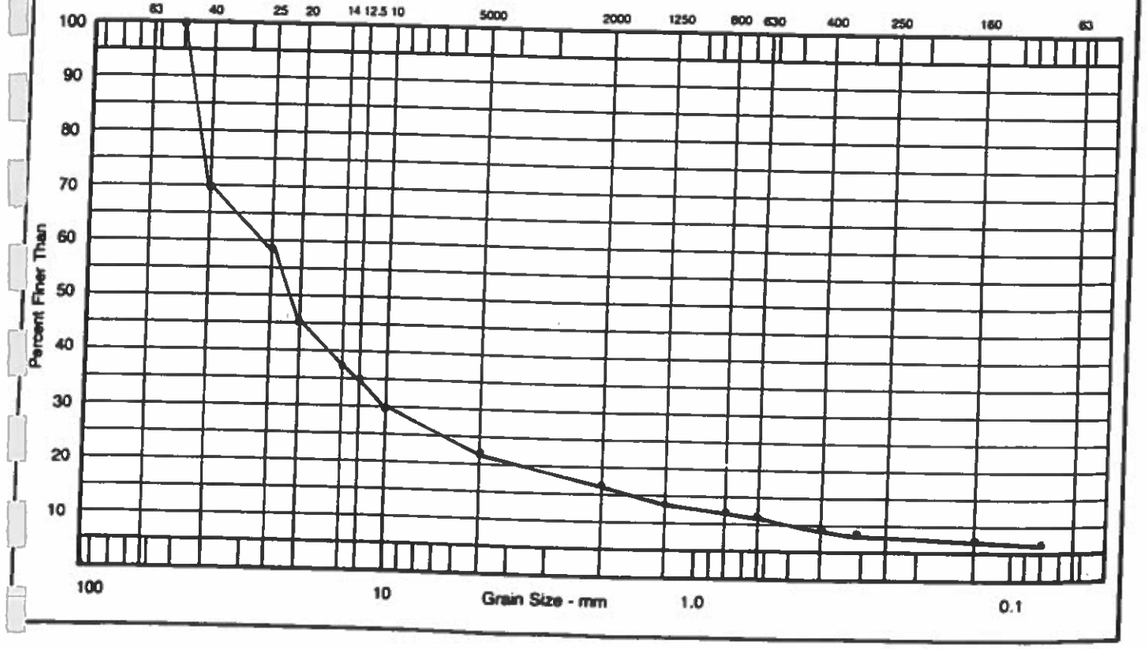
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					70.0
25000	25.0					58.7
20000	20.0					45.3
14000	14.0					37.0
12500	12.5					35.1
10000	10.0					29.9
5000	5.0					21.8
2000	2.0					16.4
1250	1.250					13.7
800	0.800					12.2
630	0.630					11.4
400	0.400					9.6
315	0.315					8.7
160	0.160					7.1
80	0.080					6.1

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.0%
Gravel : 78.2%
Sand : 15.7%
Silt : 6.1%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 61A-95 Depth: 0.20-4.00m
Location: Area # 4
TP # 61

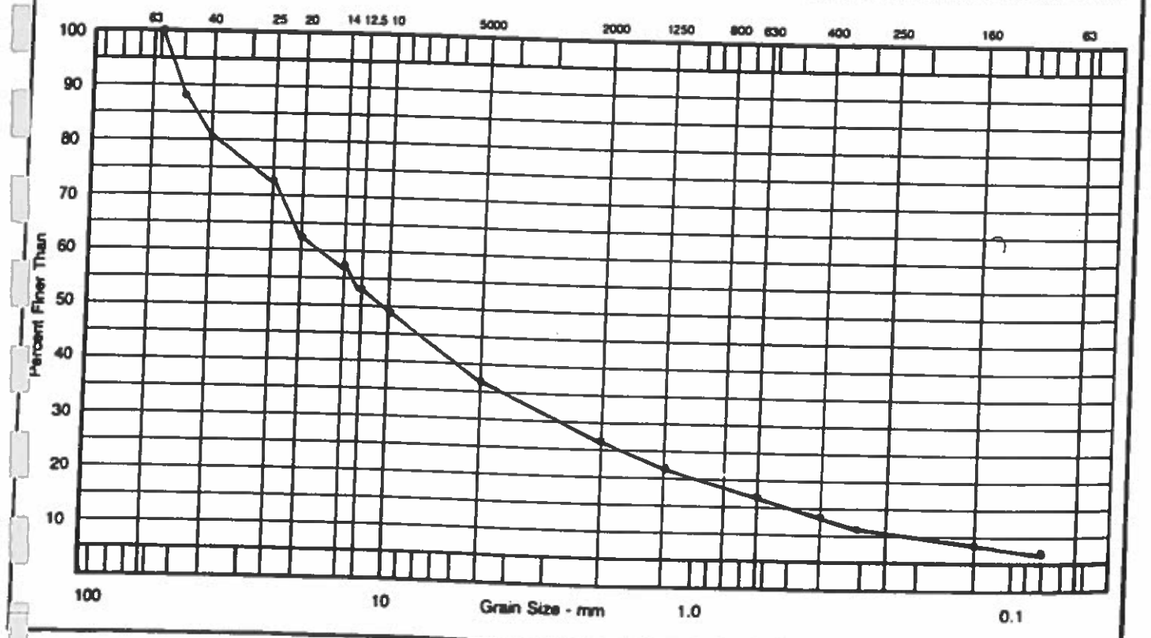
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCR Date: 1995/06/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					88.6
40000	40.0					80.6
25000	25.0					72.9
20000	20.0					62.6
14000	14.0					57.4
12500	12.5					53.7
10000	10.0					49.2
5000	5.0					36.9
2000	2.0					26.1
1250	1.250					21.2
800	0.800					
630	0.630					16.5
400	0.400					13.4
315	0.315					11.6
160	0.160					8.6
80	0.080					7.0

Description of Sample: Sandy Gravel, GW-GM
Trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X
Remarks:
Moisture : 4.9%
Gravel : 63.1%
Sand : 29.9%
Silt : 7.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 61A (Crushed) Depth 0.20 - 4.0m
Location: Area # 4
TP # 61-95 Bulk

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/

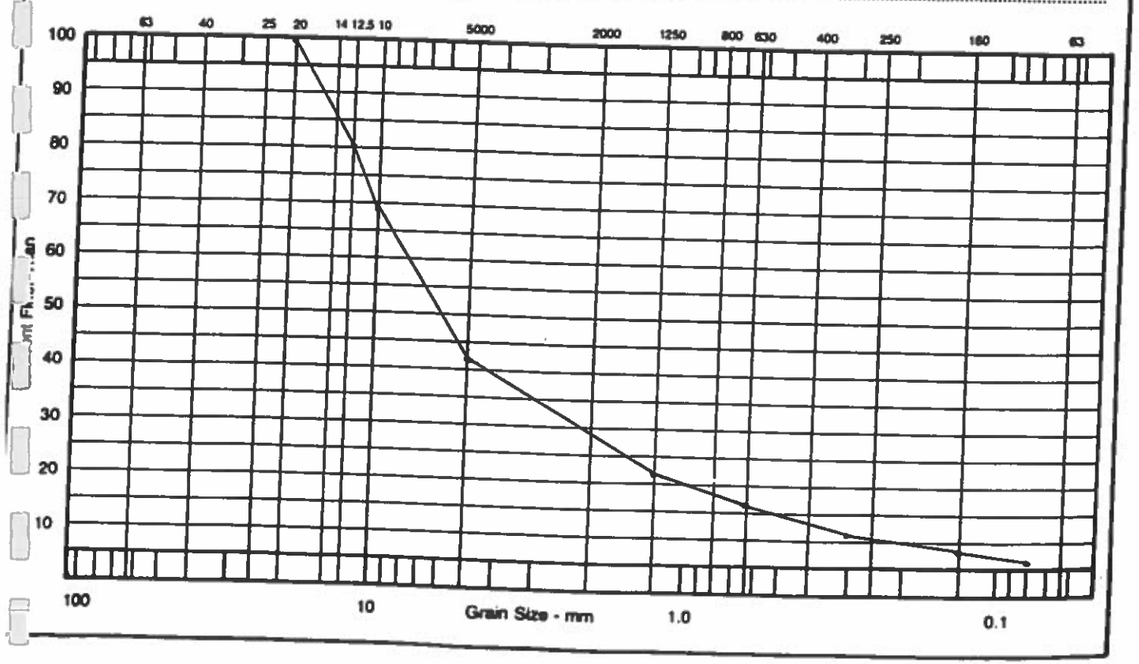
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					80.5
5000	5.0					69.5
2000	2.0					42.9
1250	1.250					/
800	0.800					21.3
630	0.630					/
400	0.400					16.4
315	0.315					/
160	0.160					11.9
80	0.080					8.8
						6.7

Description of Sample
Trial Crushed to 20mm Maximum Size

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks
Moisture : 4.9% Crush Count 2 Faces 69.0%
Gravel : 57.1 L.A. Abrasion 14.5% Loss
Sand : 36.2
Silt : 6.7%



Area # 4 8002-234

HOGGAN ENGINEERING & TESTING (1980) LTD.

Photo # 28

Photo # 30

Photo # 27

Photo # 29

HOGGAN ENGINEERING & TESTING (1980) LTD.

Area #4 8002-234

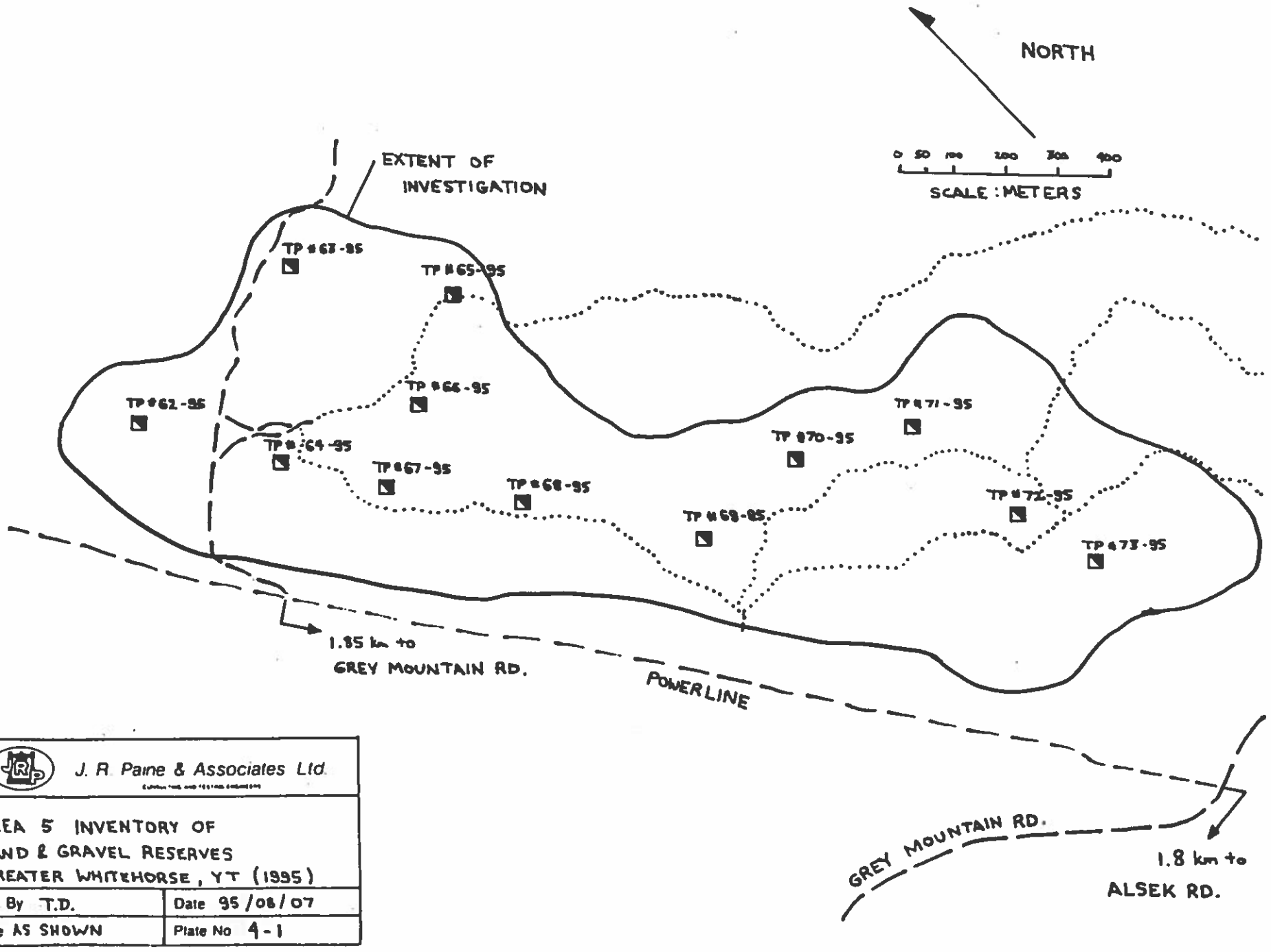
Photo #31

Photo #32

Photo # 33

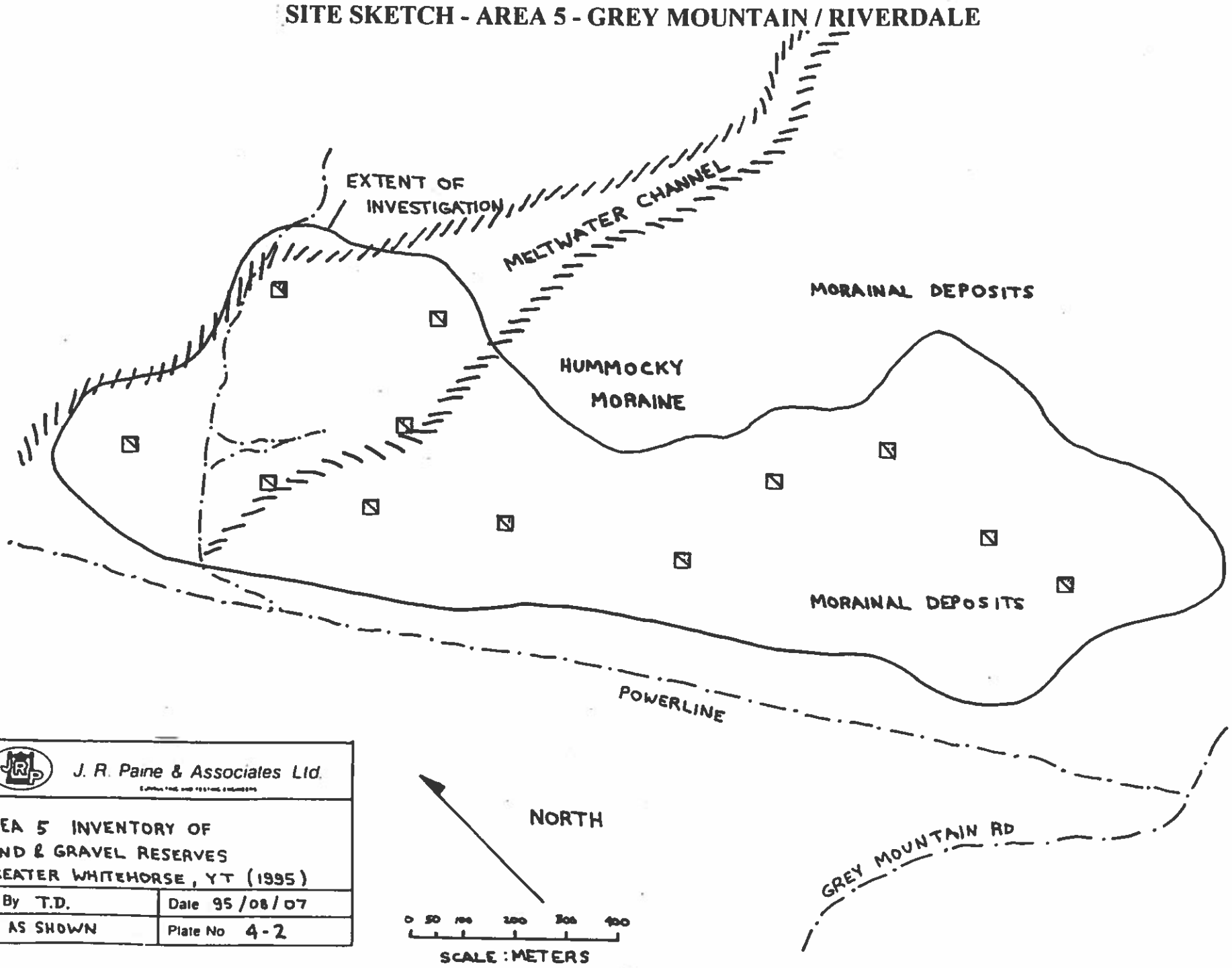
APPENDIX E
•Site 5

'SITE SKETCH - AREA 5 - GREY MOUNTAIN / RIVERDALE



J. R. Paine & Associates Ltd.	
AREA 5 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 4-1

SITE SKETCH - AREA 5 - GREY MOUNTAIN / RIVERDALE

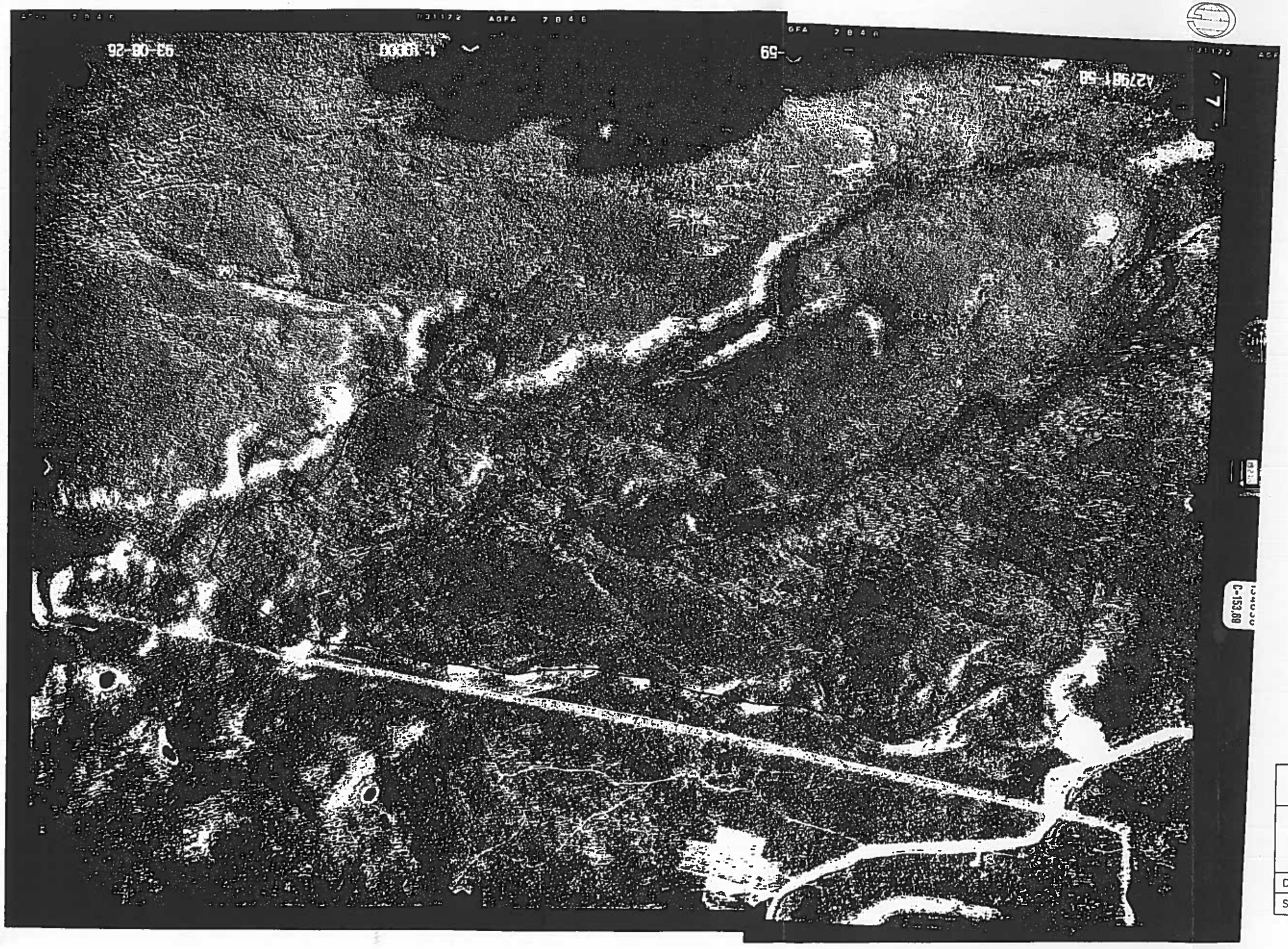


J. R. Paine & Associates Ltd.

AREA 5 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 4-2

SITE AIRPHOTOGRAPH COPY - AREA 5 - GREY MOUNTAIN / RIVERDALE



NORTH

0 50 100 200 300 400

SCALE : METERS

J. R. Paine & Associates Ltd

AREA 5 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 4-3

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#62-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL SYMBOL	DEPTH(m)
0.0		219	PT		0.0
			ML		
			–peat, organics, moss and rootlets (10mm of volcanic ash)		
0.1m					
			–silt, some sand, fine grained, soft, moist, light brown		
0.25m					
1.0		220	GW		1.0
			–sandy gravel, fine to medium grained sand sizes, 5–10% cobbles in size to 200mm, medium dense, damp, brown		
1.4m					
2.0		221	GW		2.0
			–sandy gravel, clean, well graded, 5–10% cobbles (estimated by volume) in size to 200mm, medium dense, damp, brown		
2.7m					
3.0		221a	GP–GM		3.0
			–sandy gravel, trace of silt, fine grained sand sizes, medium dense, damp, brown, 20% cobbles (estimated by volume) in size to 200 mm		
4.0		222			4.0
			–sandy gravel, trace of silt, fine grained sand sizes, medium dense, damp, brown, 10% cobbles (estimated by volume) in size to 200 mm		
4.0m					
5.0					5.0
6.0					6.0
7.0					7.0
8.0					8.0

END OF HOLE @ 4.0 m

NOTES:
- –ground sloping in all directions;
- –rolling area with small hills
- –vegetation primarily medium growth spruce and odd poplar, under brush medium dense to sparce in population
- –Photo #34, spill piles

Bulk Sample #62A–95, 0.25 – 4.00m, GW–GM
% moisture – 1.9%
% gravel – 63.5%
% sand – 29.2%
% silt – 7.3%

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
Fig. No: 61	Page 1 of 1

95/08/08 12:28PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#63-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

LIQUID 10 20 30 40 | CLAY 20 40 60 80
PLASTIC 10 20 30 40 | SILT 20 40 60 80
PLASTIC M.C. LIQUID 10 20 30 40 | SAND 20 40 60 80
GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-peat, organics, moss, rootlets, (10mm of volcanic ash)	PT		0.0
			0.1m -sand, fine grained, trace of silt, soft, moist, light brown	SP-SM		
			0.25m			
1.0		224	-sandy gravel, clean, well graded, 15-20% cobbles (estimated by volume), in size to 200mm, trace of oxidation, medium dense, damp, grey-brown	GP		1.0
			1.4m			
2.0		225	-sandy gravel, clean, medium to coarse grained sand sizes, 20-25% cobbles (estimate by volume) in size to 200mm, medium dense, damp, grey-brown, odd boulder in size to 500mm	GW		2.0
3.0		226	-sandy gravel, clean, coarse grained sand sizes, 20-30% cobbles (estimate by volume) in size to 200 mm, medium dense, damp, grey-brown, 5% boulders in size to 700 mm			3.0
4.0		227	-sandy gravel, clean, coarse grained sand, 20-30% cobbles in size to 200 mm, medium dense, damp, grey-brown, 5% boulders in size to 700mm			4.0
			4.0m			
5.0			END OF HOLE @ 4.0m			5.0
			NOTES: -ground sloping slightly, area relatively level, large hill, 60m to the north vegetation primarily medium growth spruce and the odd poplar, under brush medium dense to sparse in population			
6.0						6.0
7.0			Bulk Sample #63A-95, 0.20-4.00m, GW % moisture - 1.9% % gravel - 61.1% % sand - 34.9% % silt - 4.0%			7.0
8.0						8.0

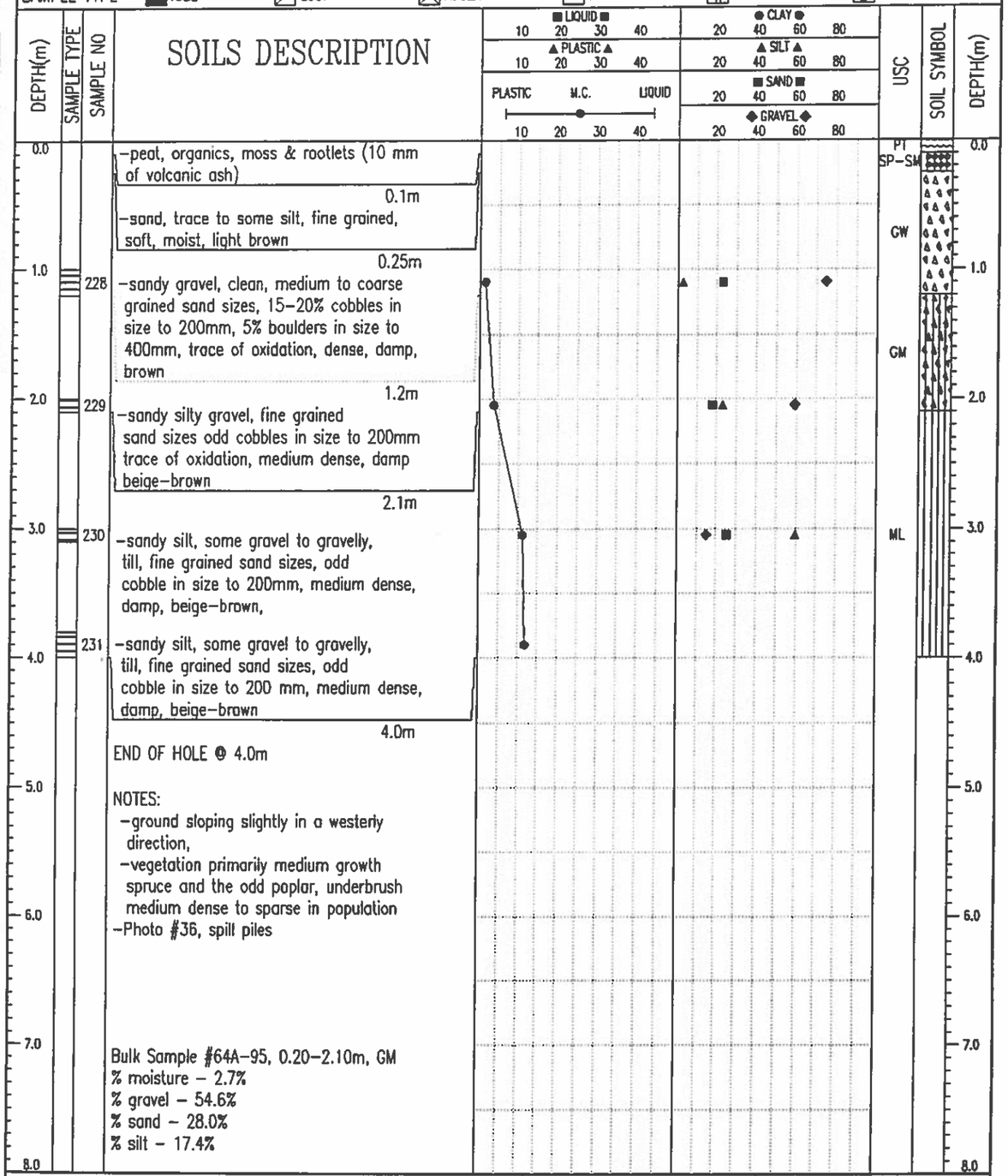
J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
Fig. No: 61	Page 1 of 1

95/08/09 12:50PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#64-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE



END OF HOLE @ 4.0m

NOTES:
- -ground sloping slightly in a westerly direction,
- -vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
- -Photo #36, spill piles

Bulk Sample #64A-95, 0.20-2.10m, GM
% moisture - 2.7%
% gravel - 54.6%
% sand - 28.0%
% silt - 17.4%

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 61	Page 1 of 1

95/08/08 02:29PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#65-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0		232	-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
			-gravelly sandy silt, fine grained sand, soft, moist, beige-brown
			0.25m
1.0		233	-sandy gravel, trace of silt, fine to medium grained, 10% cobbles in size to 200mm, medium dense, damp, brown
2.0		234	-sandy gravel, trace of silt, fine to medium grained with oxidized coarser grained lenses throughout, 15-20% cobbles in size to 200mm, 5% boulders in size to 600mm, medium dense, damp, brown
3.0		235	-sandy gravel, clean, fine to medium grained with oxidized coarser grained lenses throughout, 15-20% cobbles in size to 200mm, 5% boulders in size to 600mm medium dense, damp, brown
4.0		236	-sandy gravel, trace of silt, fine to medium grained with oxidized coarser grained lenses throughout, 15-20% cobbles in size to 200 mm, 5% boulders in size to 400mm medium dense, damp, brown
			4.0m
5.0			END OF HOLE @ 4.0 m
			NOTES:
			-ground sloping slightly in an easterly direction, large hill 30 m east of test pit location
			-vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
			-Photo #37, spill piles
7.0			Bulk Sample #65A-95, 200mm-4.0m, GP-GM
			% moisture - 2.0%
			% gravel - 54.9%
			% sand - 34.2%
			% silt - 10.9%
8.0			

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

USC: PT, ML, GP-GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
Fig. No: 61	Page 1 of 1

05/08/08 02:30PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#66-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)	PT		0.0
			0.1m			
			-sand, trace to some silt, fine grained, soft, moist, beige-brown	SP-SM		
			0.25m			
1.0		237	-sandy gravel, trace of silt, fine to medium grained, 10-15% cobbles in size to 200mm, medium dense, damp, brown	GW-GM		1.0
			1.50m			
2.0		238	-silty sandy gravel, fine to medium grained sand sizes, 5-10% cobbles in size 200mm, trace of oxidation, medium dense, damp, grey-brown			2.0
3.0		239	-silty sandy gravel, fine to medium grained sand sizes, some oxidation, 5-10% cobbles in size to 200mm, medium dense, damp, grey-brown	GM		3.0
4.0		240	-sandy gravel, some silt, fine to medium grained sand sizes, some oxidation, 5-10% cobbles in size to 200mm, medium dense, moist, grey-brown			4.0
			4.0m			
5.0			END OF HOLE @ 4.0 m			5.0
6.0			NOTES: -ground relatively level, large hill 15m south of testpit area. -vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population			6.0
7.0			Bulk Sample #66A-95, 200mm-4.0m, GM % moisture - 2.8% % gravel - 48.4% % sand - 32.2% % silt - 19.4%			7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 66	Page 1 of 1

95/08/09 12:51PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#67-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▨ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
			-sand, trace to some silt, fine grained, soft, moist, beige-brown
			0.25m
1.0		241	-sandy gravel, trace of silt, fine to medium grained, 5-10% cobbles in size to 200mm, medium dense, damp, redish-brown
			1.50m
2.0		242	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
3.0		243	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
4.0		244	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
			4.0m
5.0			END OF HOLE @ 4.0 m
6.0			NOTES:
7.0			-ground relatively level, 5 metres higher in elevation than TP#66-95
8.0			-vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC: PT, SP-SM, GP-GM, GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 67	Page 1 of 1

95/08/08 02:31PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#68-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
			-sand, trace to some silt, fine grained, soft, moist, beige-brown
			0.25m
1.0		245	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
2.0		246	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
3.0		247	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
4.0		248	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
			4.0m
			END OF HOLE @ 4.0 m
			NOTES:
			-ground relatively level.
			-vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
			-photo #38, spill piles

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SP-SM, GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 68	Page 1 of 1

95/08/08 12:12PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#69-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▥ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
			-silty sand to sandy silt, fine grained, soft, moist, beige-brown
			0.25m
1.0		249	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown
			1.40m
2.0		250	-silty sandy gravel (till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
3.0		251	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
4.0		252	-sandy gravel, some silt to silty(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
			4.0m
			END OF HOLE @ 4.0 m
			NOTES: -ground relatively level. -vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
5.0			
6.0			
7.0			
8.0			

■ LIQUID ■ 10 20 30 40 ▲ PLASTIC ▲ 10 20 30 40 PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80 ▲ SILT ▲ 20 40 60 80 ■ SAND ■ 20 40 60 80 ◆ GRAVEL ◆ 20 40 60 80

USC: PT; SM-ML; GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 69	Page 1 of 1

95/08/08 12:13PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#70-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	DEPTH(m)
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)	0.0
			0.1m	
			-silty sand to sandy silt, fine grained, soft, moist, beige-brown	
			0.25m	
1.0		253	-silty gravelly sand, (till, SP-SM) fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown	1.0
			1.40m	
2.0		254	-sandy gravelly silt(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown	2.0
3.0		255	-sandy gravelly silt(till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown	3.0
			3.50m	
4.0		256	-sandy gravel (till), some silt, fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown	4.0
			4.0m	
5.0			END OF HOLE @ 4.0 m	5.0
6.0			NOTES: -ground relatively level, boulders in size to 900mm noted on the surface. -vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population	6.0
7.0				7.0
8.0				8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SM-ML, SP-SM, GM-SM, GM

SOIL SYMBOL

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
Fig. No: 70	Page 1 of 1

95/08/08 12:35PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#71-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▥ CORE

DEPTH(m) | SAMPLE TYPE | SAMPLE NO | SOILS DESCRIPTION

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC | SOIL SYMBOL | DEPTH(m)

0.0 – peat, organics, moss & rootlets, volcanic ash (10mm) — PT
0.1m
– sand, trace to some silt, fine grained, soft, moist, beige-brown — SP-SM
0.25m
1.0 257 – sandy gravel, trace of silt, fine to medium grained sand sizes, 5-10% cobbles in size to 200mm, trace of oxidation, medium dense, damp, brown — GP
1.50m
2.0 258 – sandy gravel, trace to some silt, fine to medium grained sand sizes, 10-15% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown — GW
2.70m
3.0 259 – sandy gravel, some silt fine to medium grained sand sizes, 10-15% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown — GM
3.40m
4.0 260 – silty gravelly sand, fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, medium dense, damp, grey-brown — SM
4.0m

END OF HOLE @ 4.0 m

NOTES:
- ground sloping in a easterly direction.
- vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population

- Photo #39, spill piles

Bulk Sample# 71A-95; 200mm-3.40m, GW-GM
% moisture - 2.2%
% gravel - 54.9%
% sand - 36.1%
% silt - 9.0%

5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
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95/08/08 02:34PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#72-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0		261	-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
			-silty sandy gravel (till), fine grained, soft, moist, beige-brown
			0.25m
1.0		262	-silty gravelly sand (till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
2.0		263	-silty gravelly sand (till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
3.0		264	-silty gravelly sand (till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
4.0		265	-silty gravelly sand (till), fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
			4.0m
5.0			END OF HOLE @ 4.0 m
6.0			NOTES:
			-ground relatively level, boulders in size to 900mm noted on the surface.
			-vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
			-Photo #40, spill piles
7.0			
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, GM, SM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/07/10
Fig. No: 72	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#73-95
Caterpillar 225 Backhoe	Area #5	PROJECT NO: 8002-234
Arctic Backhoe Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▯ SPT ▮ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, organics, moss & rootlets, volcanic ash (10mm)
			0.1m
1.0	▤	266	-gravelly sand (till), some silt fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
2.0	▤	267	-gravelly sand (till), some silt fine to medium grained sand sizes, 5% cobbles in size to 200mm, trace of oxidation, dense, damp, grey-brown
			End of Hole @ 2.20m
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC: PI (0.0–1.0); SM (1.0–2.2)

SOIL SYMBOL / DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

NOTES:
- -ground sloping in a westerly direction @ a 45 degree angle.
- -vegetation primarily medium growth spruce and the odd poplar, underbrush medium dense to sparse in population
- -Photo #41: looking west from TP#73-95

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 2.2 m
	REVIEWED BY: WCK	COMPLETE: 95/07/10
	Fig. No: 73	Page 1 of 1

95/08/08 02:38PM

J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample 219 Depth 0.10 - 0.25 m
Location Area # 5
TP # 62

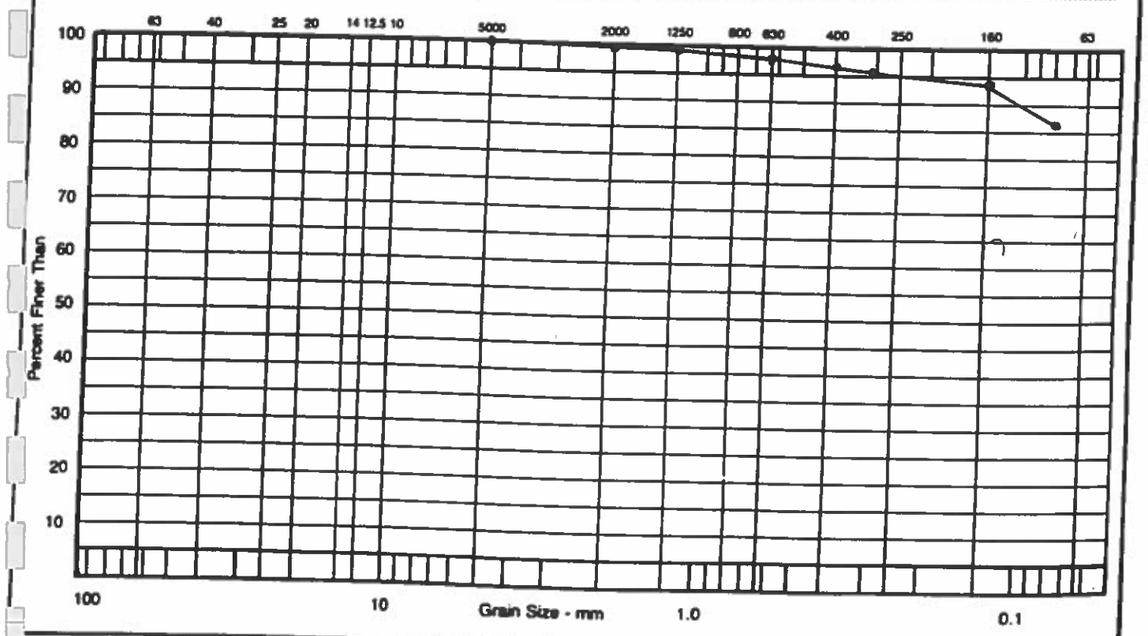
Client YTG, Transportation Engineering Branch
Project Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job. No. 8002-234
Ck'd by WLC Date 1995/06/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					
12500	12.5					
10000	10.0					
5000	5.0					
2000	2.0					100.0
1250	1.250					99.7
800	0.800					99.1
630	0.630					-
400	0.400					97.9
315	0.315					96.6
160	0.160					95.7
80	0.080					94.1
						86.6

Description of Sample
Silt, some sand, ML

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 9.7%
Gravel : 0.0 %
Sand : 13.4 %
Silt : 86.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 220 Depth: 10 - 12 m
Location: Area # 5
TP # 62

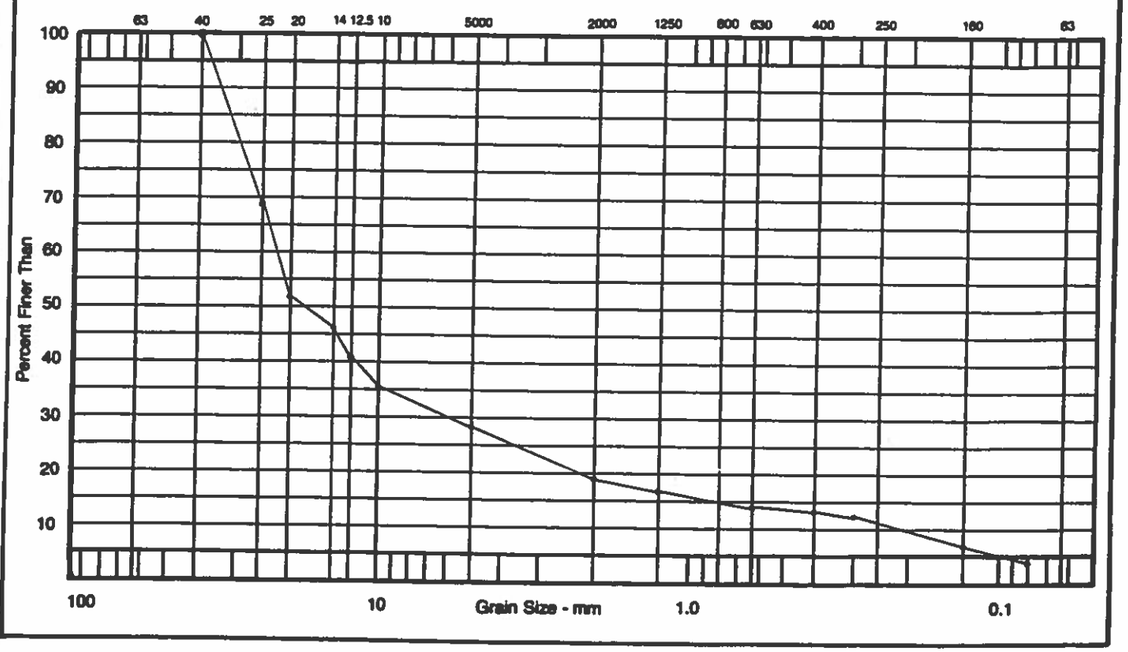
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: JCW Date: 1995/05/ 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					69.2
20000	20.0					52.2
14000	14.0					46.8
12500	12.5					40.6
10000	10.0					35.5
5000	5.0					28.4
2000	2.0					19.1
1250	1.250					17.5
800	0.800					—
630	0.630					14.4
400	0.400					13.5
315	0.315					12.3
160	0.160					6.8
80	0.080					4.8

Description of Sample
Sandy Gravel, GW

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 1.6 %
Gravel : 71.6 %
Sand : 23.6 %
Silt : 4.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample 221a Depth 3.0-3.2m
Location Area # 5
TP # 62

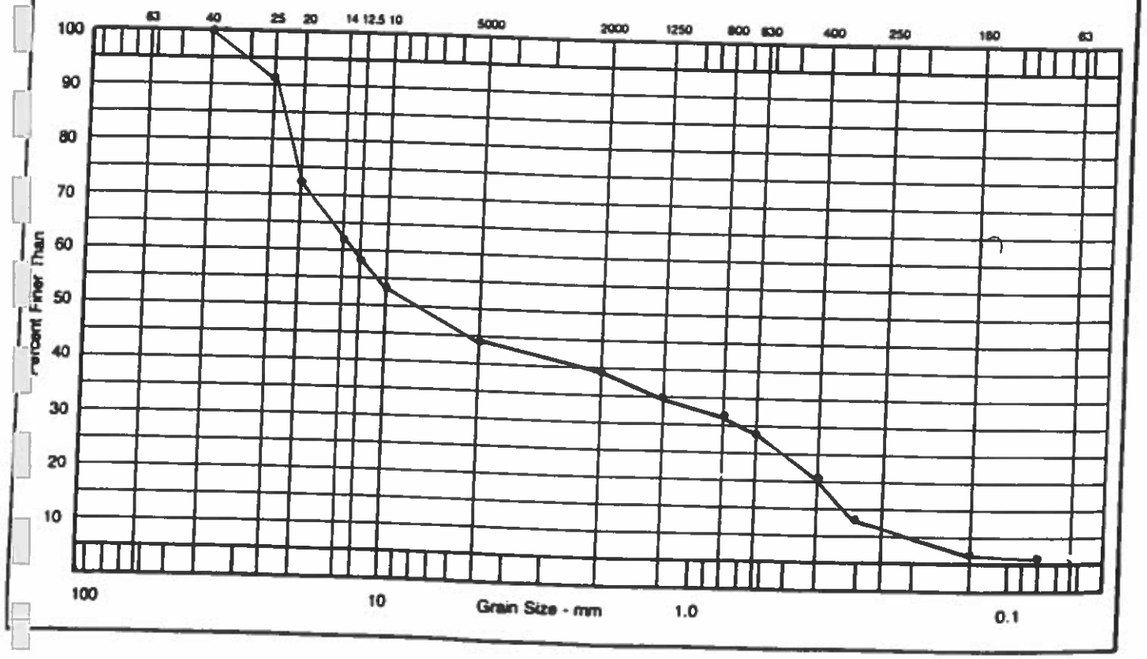
Client YTG, Transportation Engineering Branch
Project Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job. No. 8002-234
Ck'd by WCHC Date 1995/09/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100.0
25000	25.0					91.4
20000	20.0					72.6
14000	14.0					61.9
12500	12.5					58.4
10000	10.0					53.5
5000	5.0					44.4
2000	2.0					39.4
1250	1.250					35.0
800	0.800					31.3
630	0.630					28.8
400	0.400					20.8
315	0.315					13.9
160	0.160					6.4
80	0.080					6.1

Description of Sample
Sandy Gravel, GP-GM
trace silt

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 2.0%
Gravel : 55.6%
Sand : 38.3%
Silt : 6.1%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 62A-95 Depth: 0.25 - 4.00m

Location: Area # 5, TP # 62

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No.: 8002-234

Ck'd by: Date: 1995/06/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					91.2
25000	25.0					71.6
20000	20.0					62.9
14000	14.0					55.2
12500	12.5					50.4
10000	10.0					46.9
5000	5.0					36.5
2000	2.0					31.5
1250	1.250					28.7
800	0.800					
630	0.630					24.5
400	0.400					19.0
315	0.315					15.1
160	0.160					9.7
80	0.080					7.3

Description of Sample: Sandy Gravel, GW-GM, trace Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

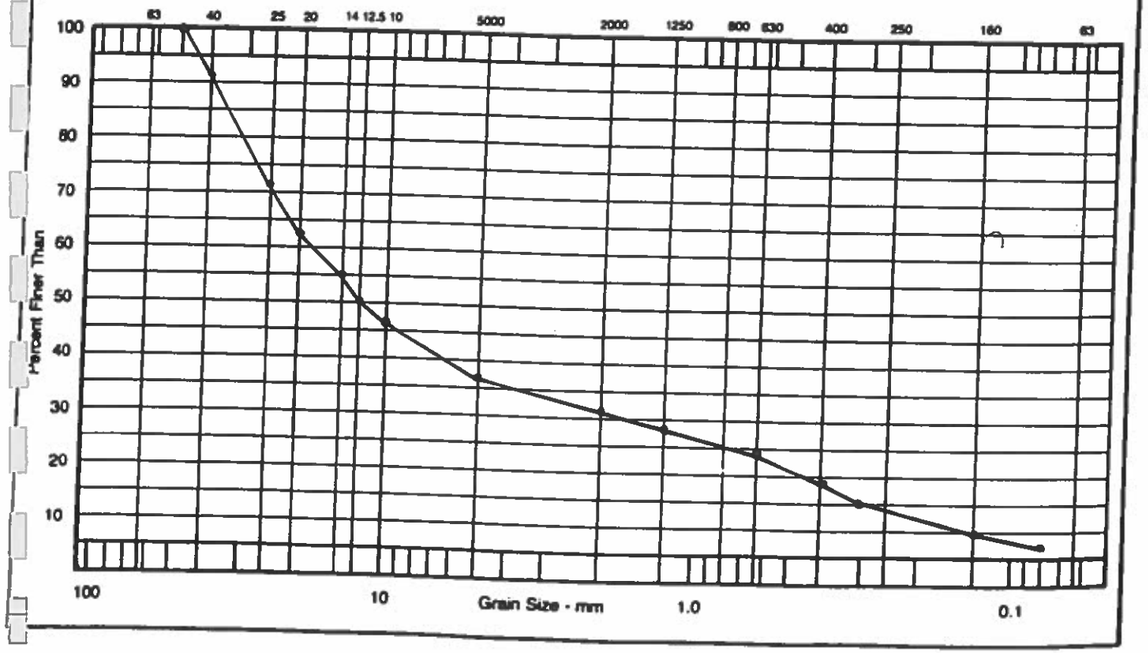
Remarks:

Moisture : 1.9%

Gravel : 63.5%

Sand : 29.2%

Silt : 7.3%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 224 Depth: 1.0-1.2m
Location: Area # 5, TP # 63

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCC Date: 1995/08/23

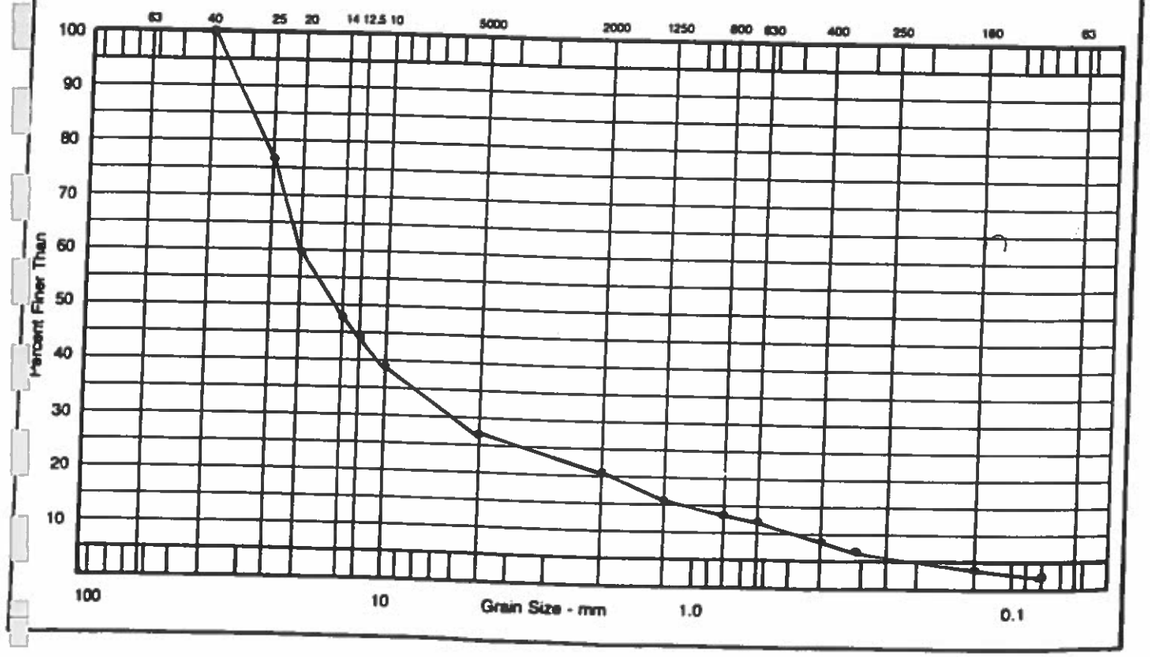
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100.0
25000	25.0					76.6
20000	20.0					59.7
14000	14.0					47.7
12500	12.5					44.4
10000	10.0					39.1
5000	5.0					26.3
2000	2.0					20.2
1250	1.250					15.9
800	0.800					13.5
630	0.630					12.1
400	0.400					8.9
315	0.315					7.0
160	0.160					3.7
80	0.080					2.3

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 1.7%
Gravel : 73.7%
Sand : 24.0%
Silt : 2.3%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 226 Depth: 3.0 - 3.2m
Location: Area # 5, TP # 63

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No: 8002-234
Ck'd by: W.C.C. Date: 1995/07/23

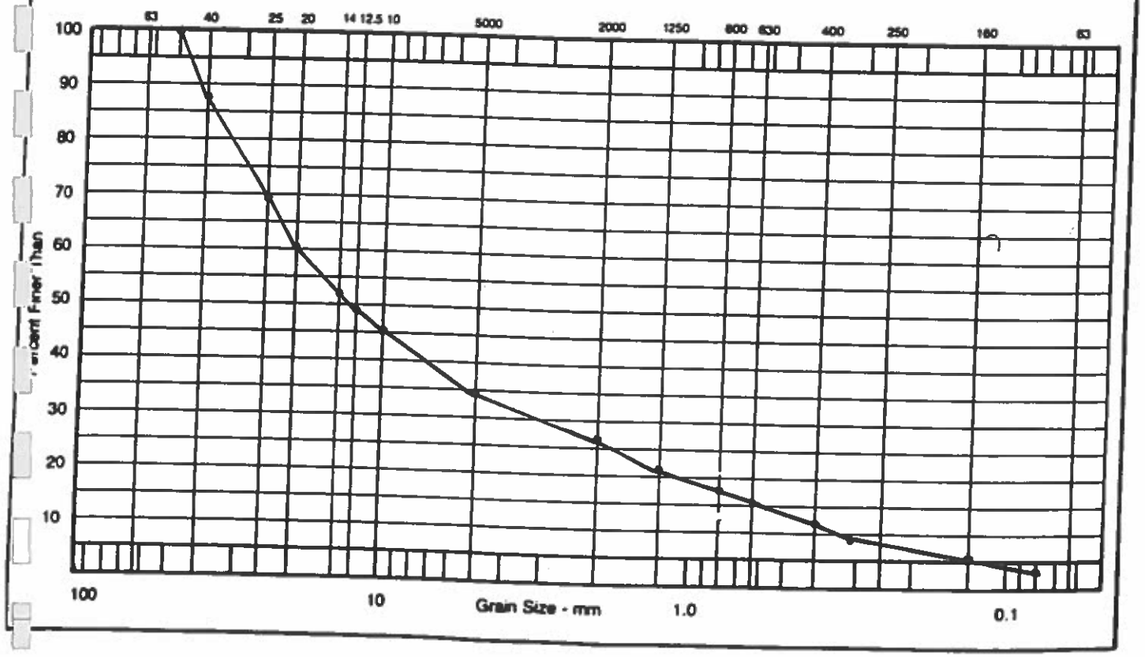
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
~~50000~~	50.0					100.0
40000	40.0					87.9
25000	25.0					69.4
20000	20.0					60.3
14000	14.0					51.9
12500	12.5					49.0
10000	10.0					45.4
5000	5.0					34.6
2000	2.0					26.5
1250	1.250					21.0
800	0.800					17.7
630	0.630					15.8
400	0.400					11.5
315	0.315					9.3
160	0.160					5.6
80	0.080					3.8

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 7.3%
Gravel : 65.4%
Sand : 30.8%
Silt : 3.8%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 63A-95 Depth: 0.25-4.00m
Location: Area # 5
TP # 63

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No.: 8002-234
Ck'd by: Date: 1995/06/15

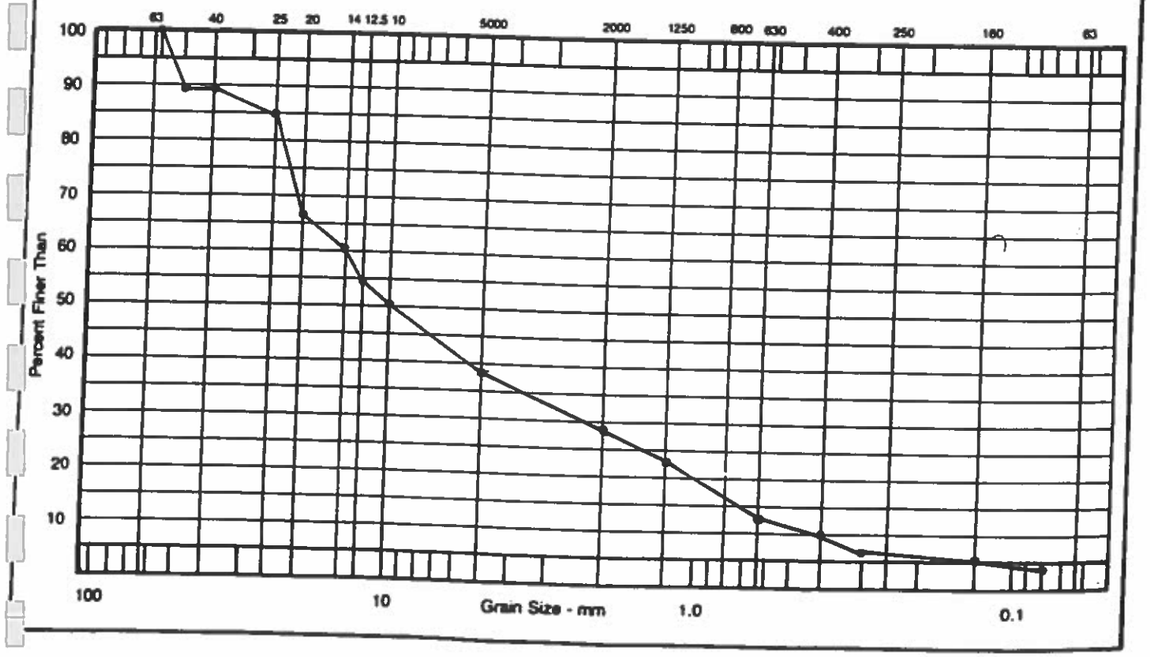
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					89.7
40000	40.0					89.7
25000	25.0					85.0
20000	20.0					66.5
14000	14.0					60.8
12500	12.5					54.6
10000	10.0					50.5
5000	5.0					38.9
2000	2.0					28.5
1250	1.250					22.8
800	0.800					
630	0.630					12.5
400	0.400					10.0
315	0.315					6.0
160	0.160					5.4
80	0.080					4.0

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 1.9%
Gravel : 61.1%
Sand : 34.9%
Silt : 4.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 226 Depth: 1.0 - 1.2 m
Location: Area # 5
TP # 64

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WC/C Date: 1995/08/07 07/16

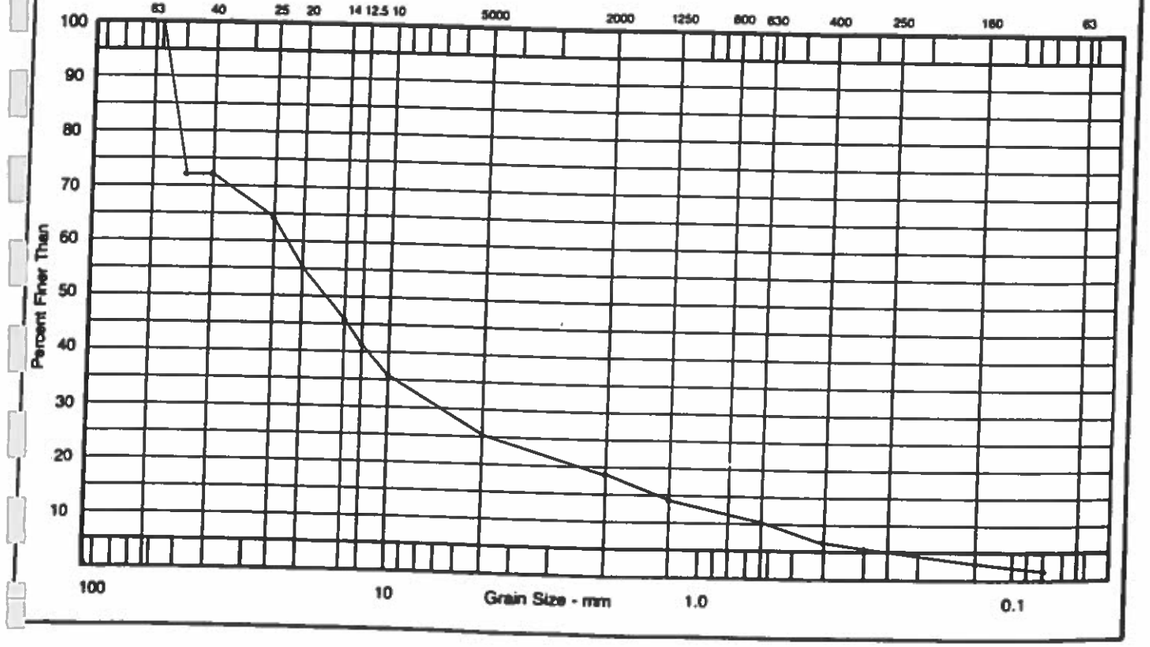
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						72.8
40000	40.0					72.8
25000	25.0					64.4
20000	20.0					55.1
14000	14.0					46.6
12500	12.5					41.5
10000	10.0					35.8
5000	5.0					25.4
2000	2.0					18.1
1250	1.250					14.4
800	0.800					
630	0.630					10.2
400	0.400					6.9
315	0.315					5.2
160	0.160					3.2
80	0.080					2.5

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 1.4 %
Gravel : 74.6 %
Sand : 22.9 %
Silt : 2.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 229 Depth: 2.0-2.1 m
Location: Area # 5
TP # 64

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/~~06~~ 07/16

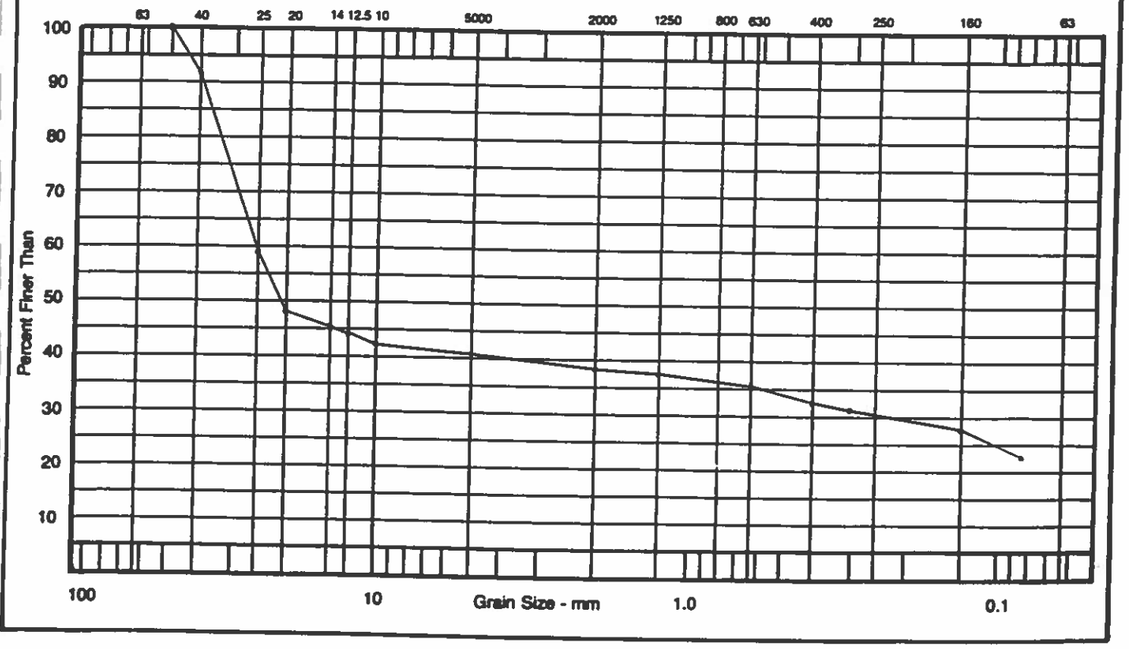
Sieve No.	Size of Opening MM		Weight Retained grms	Total Wt. Finer Than grms	Percent Finer Than	% Finer Than Basis Org.Sample
						100.0
40000	40.0					91.8
25000	25.0					59.5
20000	20.0					48.2
14000	14.0					45.3
12500	12.5					44.3
10000	10.0					43.2
5000	5.0					40.8
2000	2.0					38.8
1250	1.250					37.4
800	0.800					—
630	0.630					35.6
400	0.400					33.7
315	0.315					32.2
160	0.160					27.7
80	0.080					23.1

Description of Sample: SANDY SILTY GRAVEL, GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 3.7 %
Gravel : 59.2 %
Sand : 17.7 %
Silt : 23.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 230 Depth: 3.0-3.1 m
Location: Area # 5
TP # 64

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/867 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					95.8
14000	14.0					90.4
12500	12.5					90.0
10000	10.0					88.2
5000	5.0					84.8
2000	2.0					81.6
1250	1.250					76.7
800	0.800					
630	0.630					71.4
400	0.400					69.3
315	0.315					68.3
160	0.160					65.5
80	0.080					59.6

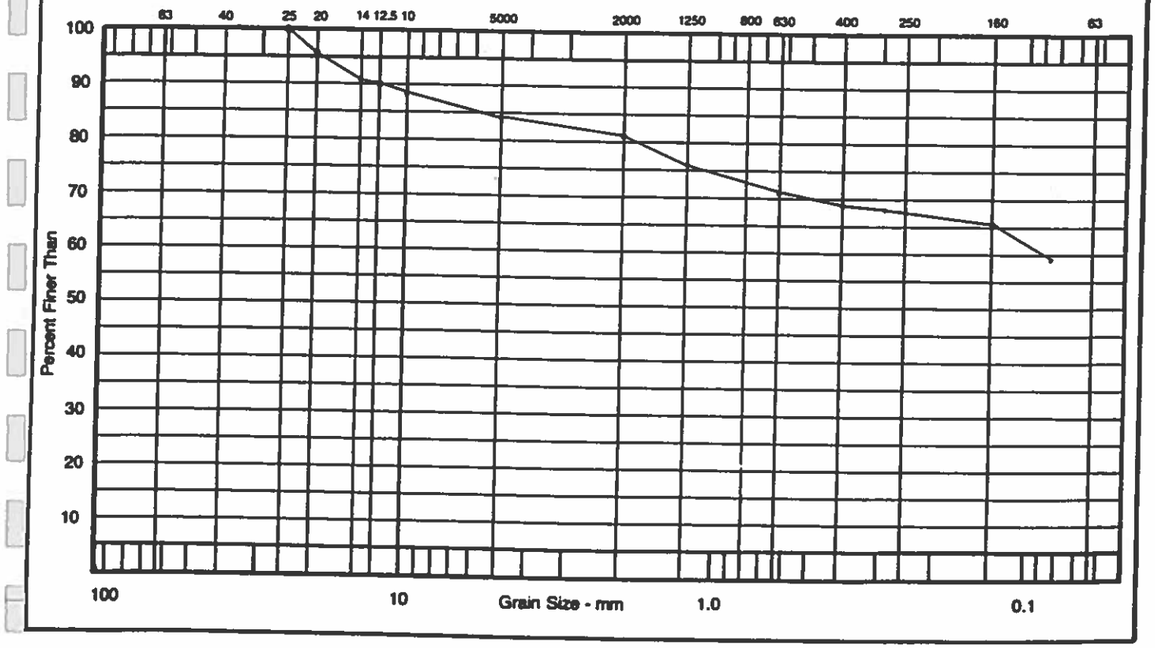
Description of Sample: GRAVELLY SANDY SILT, ML

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 11.2 %
Gravel : 15.2 %
Sand : 25.2 %
Silt : 59.6 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 64A-95 Depth: 0.20 - 2.10 m
Location: Area # 5
TP # 64

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No.: 8002-234
Ck'd by: WCM Date: 1995/06/15

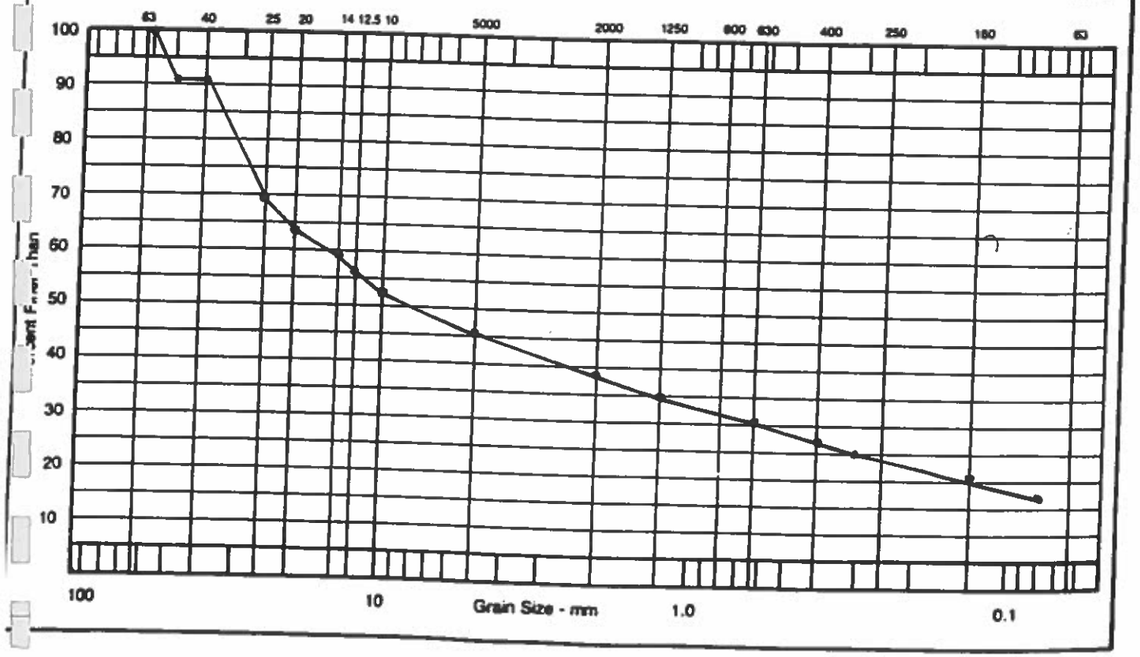
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					91.2
40000	40.0					91.2
25000	25.0					69.5
20000	20.0					64.2
14000	14.0					59.5
12500	12.5					56.1
10000	10.0					52.6
5000	5.0					45.4
2000	2.0					38.7
1250	1.250					34.9
800	0.800					
630	0.630					30.7
400	0.400					27.2
315	0.315					25.0
160	0.160					20.6
80	0.080					17.4

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 2.7%
Gravel : 54.6%
Sand : 28.0%
Silt : 17.4%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 232 Depth: 0.10 - 0.25 m
Location: Area # 5
TP # 65

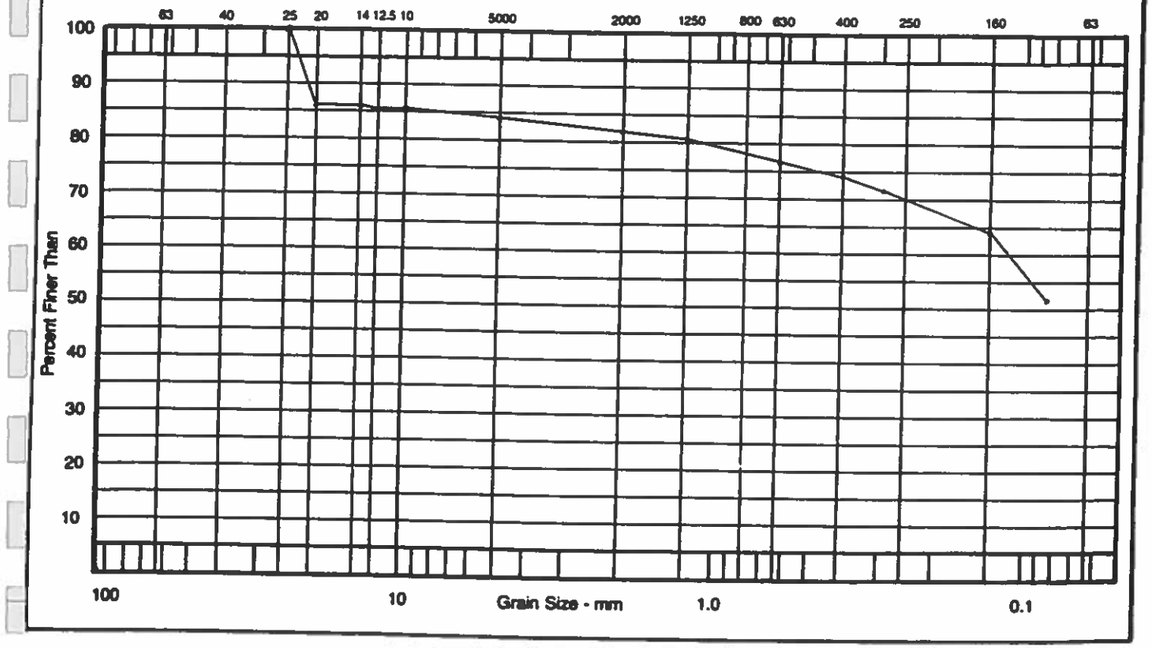
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/~~05~~ 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					86.4
14000	14.0					86.4
12500	12.5					86.0
10000	10.0					86.0
5000	5.0					84.4
2000	2.0					82.7
1250	1.250					80.4
800	0.800					
630	0.630					77.6
400	0.400					74.8
315	0.315					72.2
160	0.160					64.3
80	0.080					52.6

Description of Sample
GRAVELLY SANDY SILT, ML

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 6.9 %
Gravel : 15.6 %
Sand : 31.8 %
Silt : 52.6 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 234 Depth: 2.0-2.2m

Location: Area # 5, TP # 65

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No.: 8002-234

Ck'd by: WCIC Date: 1995/08/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
50000	50.0					100.0
40000	40.0					62.4
25000	25.0					52.8
20000	20.0					41.9
14000	14.0					36.6
12500	12.5					34.8
10000	10.0					32.4
5000	5.0					26.9
2000	2.0					23.2
1250	1.250					20.8
800	0.800					19.4
630	0.630					18.6
400	0.400					16.4
315	0.315					14.8
160	0.160					10.4
80	0.080					7.0

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

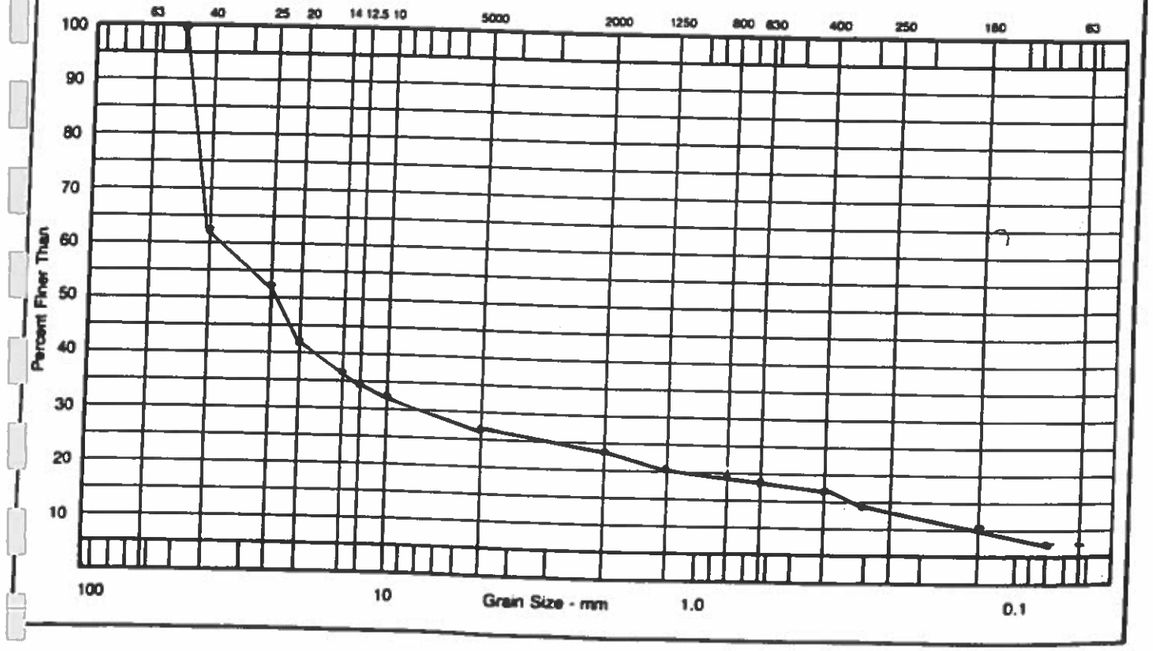
Remarks:

Moisture : 1.5%

Gravel : 73.1%

Sand : 19.9%

Silt : 7.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 235 Depth: 3.0-3.1m

Location: Area # 5, TP # 65

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No: 8002-234

Ck'd by: [illegible] Date: 1995/09/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100.0
25000	25.0					62.9
20000	20.0					50.3
14000	14.0					42.5
12500	12.5					39.8
10000	10.0					36.3
5000	5.0					28.0
2000	2.0					22.3
1250	1.250					18.1
800	0.800					15.5
630	0.630					14.0
400	0.400					11.0
315	0.315					9.3
160	0.160					5.8
80	0.080					3.6

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

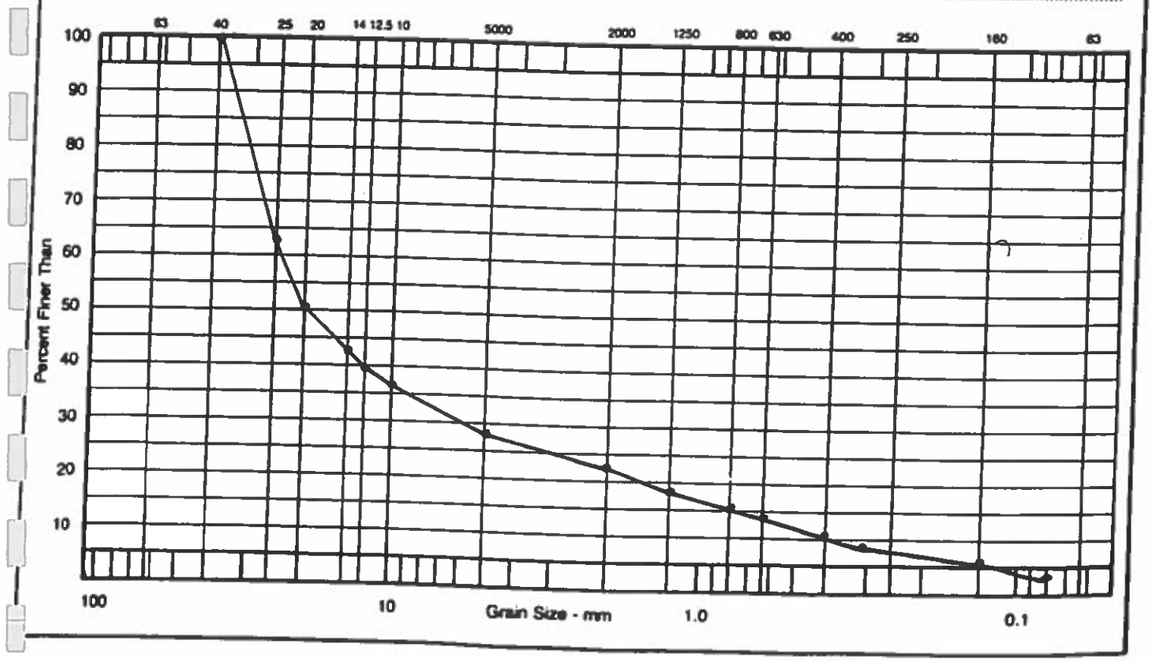
Remarks:

Moisture : 1.1%

Gravel : 72.0%

Sand : 24.4%

Silt : 3.6%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 65A-95 Depth: 0.20-4.00m
Location: Area # 5, TP # 65
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No: 8002-234
Ck'd by: [illegible] Date: 1995/06/16

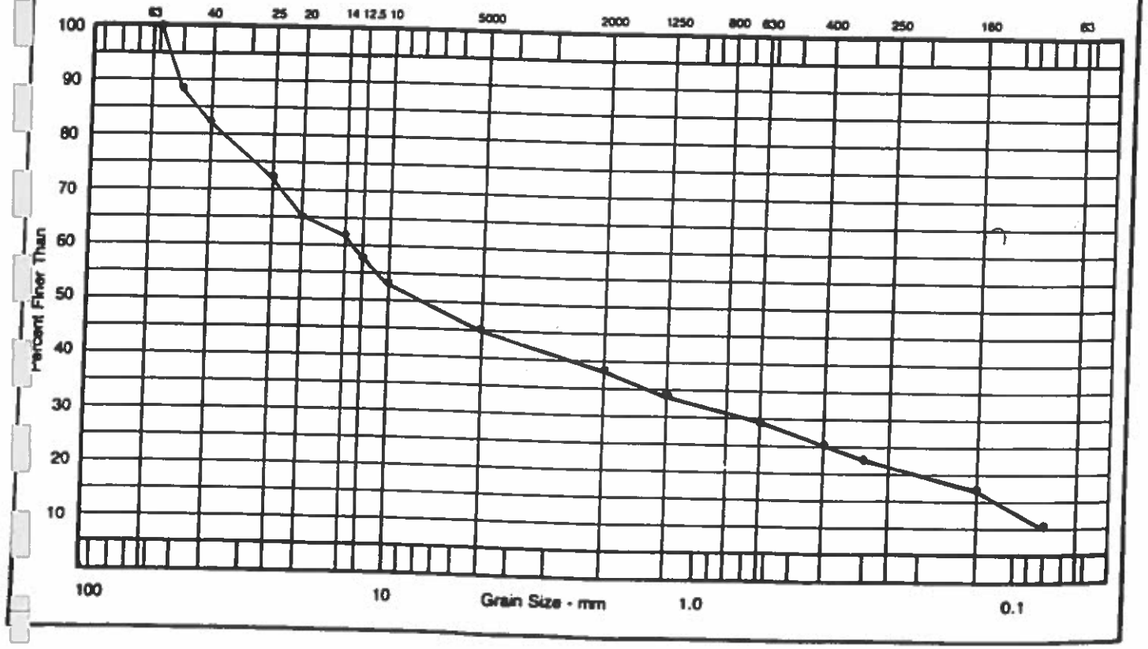
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
50000	50.0					88.6
40000	40.0					82.5
25000	25.0					72.5
20000	20.0					65.5
14000	14.0					61.9
12500	12.5					57.9
10000	10.0					53.4
5000	5.0					45.1
2000	2.0					38.2
1250	1.250					34.5
800	0.800					
630	0.630					29.8
400	0.400					25.8
315	0.315					23.0
160	0.160					16.6
80	0.080					10.9

Description of Sample: Sandy Gravel, some silt GP-GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.0%
Gravel : 54.9%
Sand : 34.2%
Silt : 10.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 237 Depth: 1.0-1.2 m
Location: Area # 5
TP # 66
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCR Date: 1995/05/07 07/16

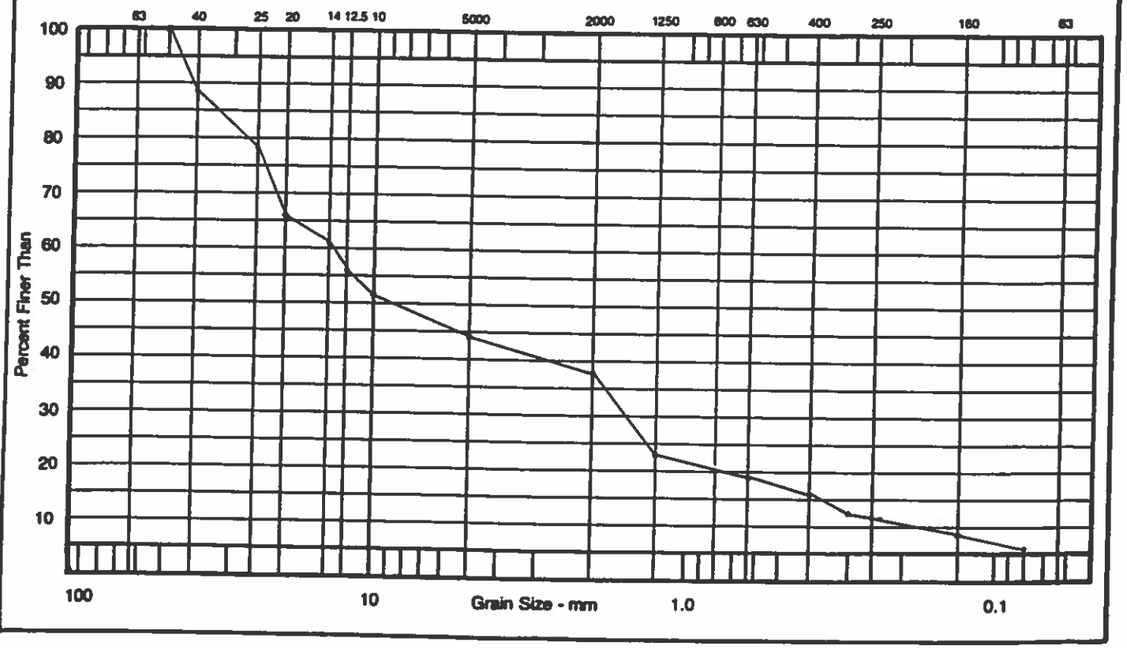
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					88.7
25000	25.0					77.4
20000	20.0					66.0
14000	14.0					60.9
12500	12.5					56.3
10000	10.0					52.9
5000	5.0					44.7
2000	2.0					37.2
1250	1.250					23.6
800	0.800					—
630	0.630					19.2
400	0.400					16.2
315	0.315					12.8
160	0.160					8.2
80	0.080					5.6

Description of Sample: SANDY GRAVEL, TRACE OF SILT, GW-GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 1.8 %
Gravel : 55.3 %
Sand : 39.1 %
Silt : 5.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 238 Depth: 2.0-2.8m
Location: Area # 5
TP # 66

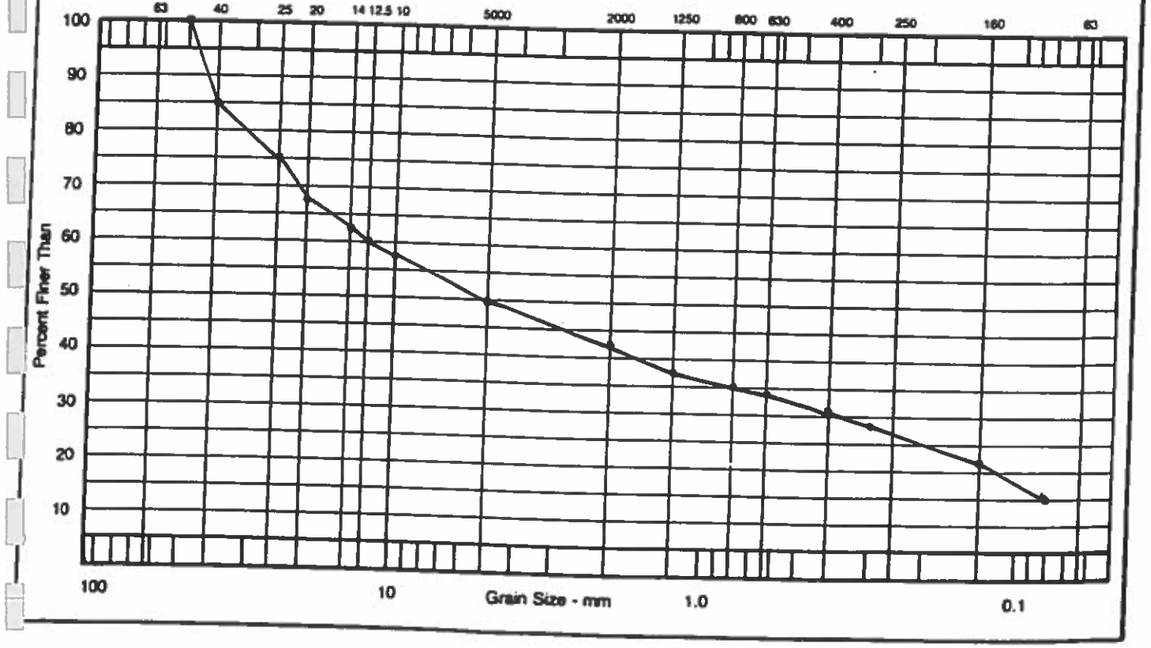
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCLC Date: 1995/06/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
50000	50.0					100.0
40000	40.0					84.5
25000	25.0					75.0
20000	20.0					67.4
14000	14.0					62.5
12500	12.5					60.5
10000	10.0					57.6
5000	5.0					49.0
2000	2.0					42.5
1250	1.250					37.9
800	0.800					35.6
630	0.630					34.3
400	0.400					31.1
315	0.315					28.9
160	0.160					21.8
80	0.080					15.5

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X
Remarks:
Moisture : 3.2 %
Gravel : 51.0 %
Sand : 33.5 %
Silt : 15.5 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 66A-95 Depth: 1.0 - 4.0 m
Location: Area # 5
TP # 66-95

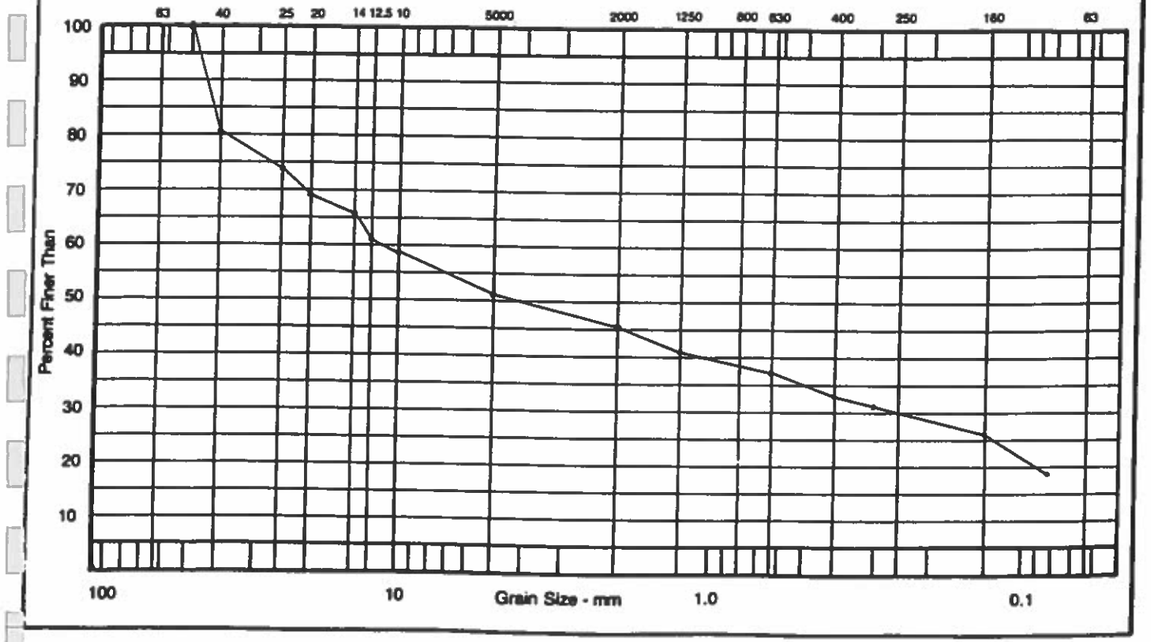
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/~~05~~ 07/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
						100.0
40000	40.0					80.3
25000	25.0					74.5
20000	20.0					69.0
14000	14.0					66.3
12500	12.5					61.4
10000	10.0					58.0
5000	5.0					51.6
2000	2.0					45.1
1250	1.250					41.8
800	0.800					—
630	0.630					37.5
400	0.400					33.9
315	0.315					31.7
160	0.160					26.2
80	0.080					19.4

Description of Sample
SILTY SANDY GRAVEL, GM

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 2.8 %
Gravel : 48.4 %
Sand : 32.2 %
Silt : 19.4 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 241 Depth: 1.0-1.2m
Location: Area # 5
TP # 67

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No: 8002-234
Ck'd by: WCIC Date: 1995/07/23

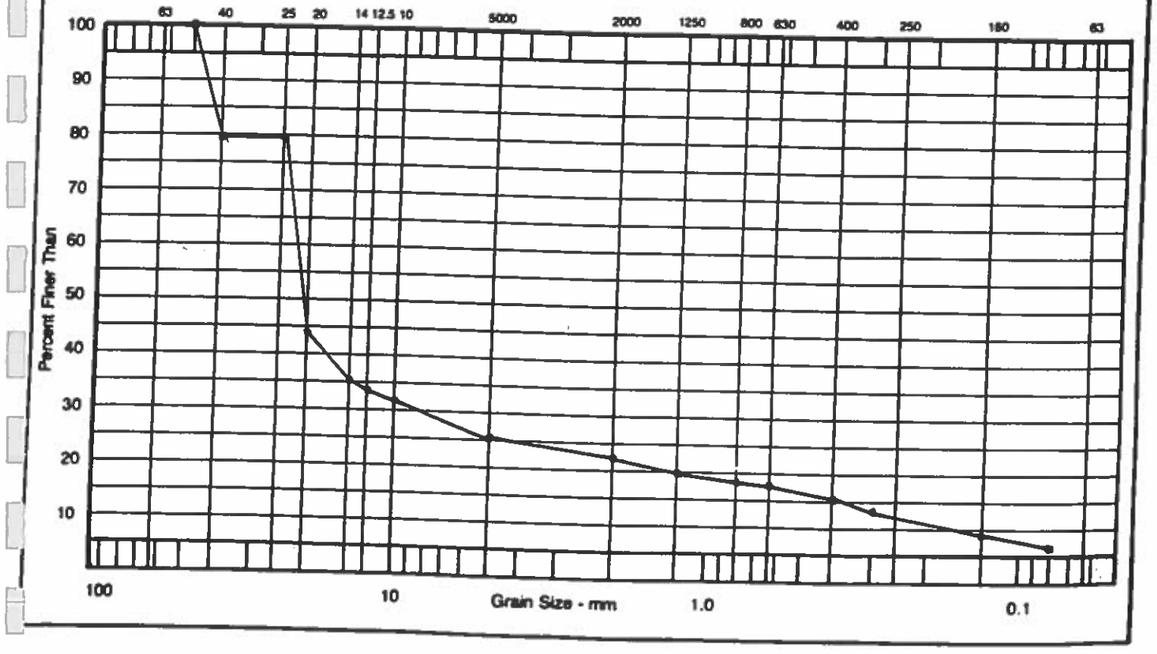
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
50000	50.0					100.0
40000	40.0					79.1
25000	25.0					79.1
20000	20.0					44.2
14000	14.0					35.4
12500	12.5					33.8
10000	10.0					31.6
5000	5.0					25.4
2000	2.0					22.0
1250	1.250					19.7
800	0.800					18.5
630	0.630					17.8
400	0.400					15.6
315	0.315					13.7
160	0.160					9.0
80	0.080					6.3

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.1%
Gravel : 74.6 %
Sand : 19.2 %
Silt : 6.3 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 243 Depth: 3.0 - 3.1 m. Client: YTG, Transportation Engineering Branch

Location: Area # 5 Project: Greater Whitehorse Inventory of Sand & Gravel

TP # 67 Made by RK & PR Job No. 8002-234

Ck'd by [illegible] - Date: 1995/06/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					64.4
25000	25.0					56.9
20000	20.0					54.3
14000	14.0					53.7
12500	12.5					51.3
10000	10.0					50.6
5000	5.0					47.6
2000	2.0					45.1
1250	1.250					43.1
800	0.800					41.8
630	0.630					40.9
400	0.400					38.0
315	0.315					35.6
160	0.160					28.0
80	0.080					20.4

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

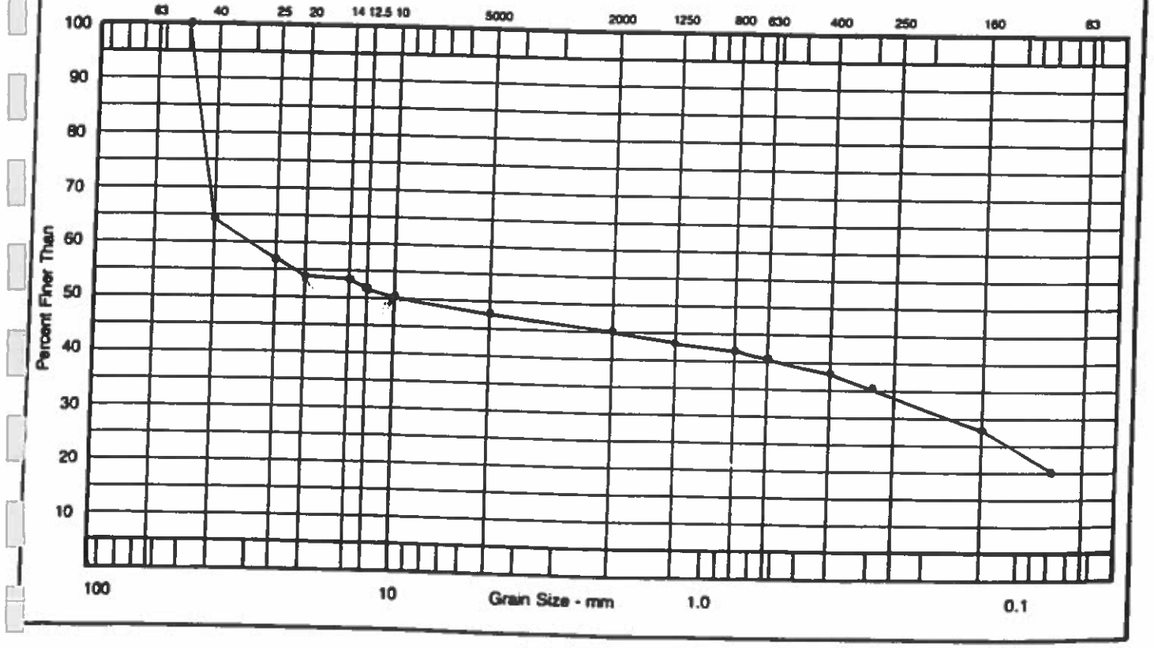
Remarks:

Moisture : 3.2%

Gravel : 52.4 %

Sand : 27.2 %

Silt : 20.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 246 Depth: 2.0-2.2m
Location: Area # 5
TP # 68

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job. No. 8002-234
Ck'd by [illegible] Date: 1995/07/23

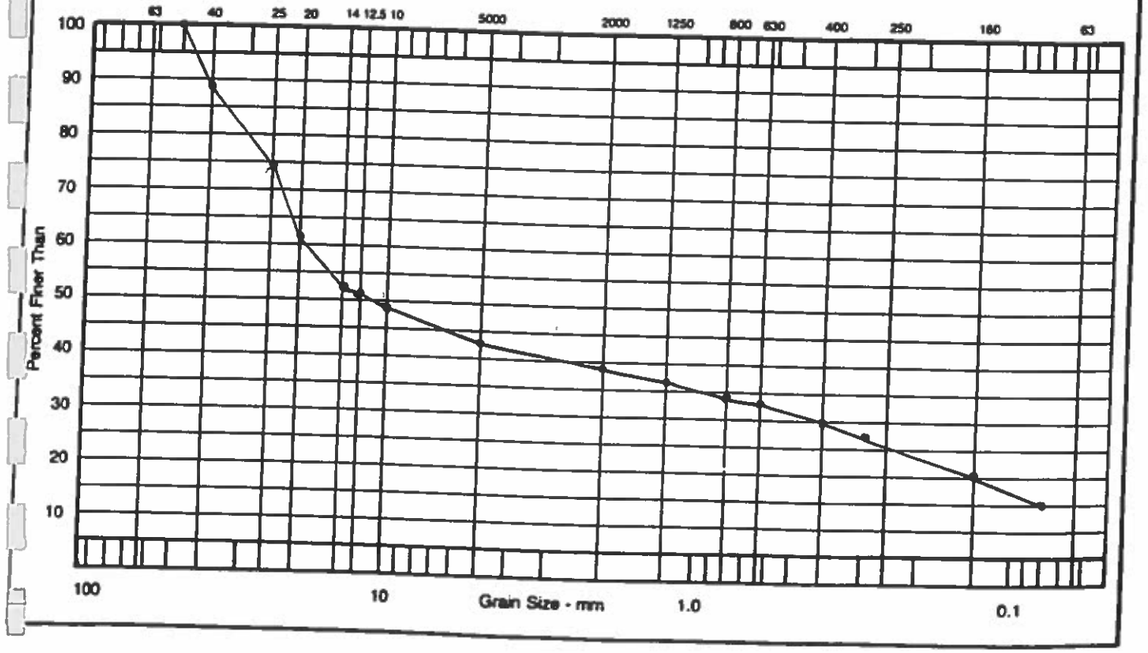
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					88.4
25000	25.0					74.6
20000	20.0					61.2
14000	14.0					52.5
12500	12.5					51.0
10000	10.0					48.8
5000	5.0					42.9
2000	2.0					39.0
1250	1.250					36.2
800	0.800					34.3
630	0.630					33.1
400	0.400					29.8
315	0.315					27.3
160	0.160					20.8
80	0.080					15.1

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.5%
Gravel : 57.1 %
Sand : 27.8 %
Silt : 15.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 250 Depth: 2.0-2.2m
Location: Area # 5 TP # 69
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No.: 8002-234
Ck'd by: WKL Date: 1995/08/23

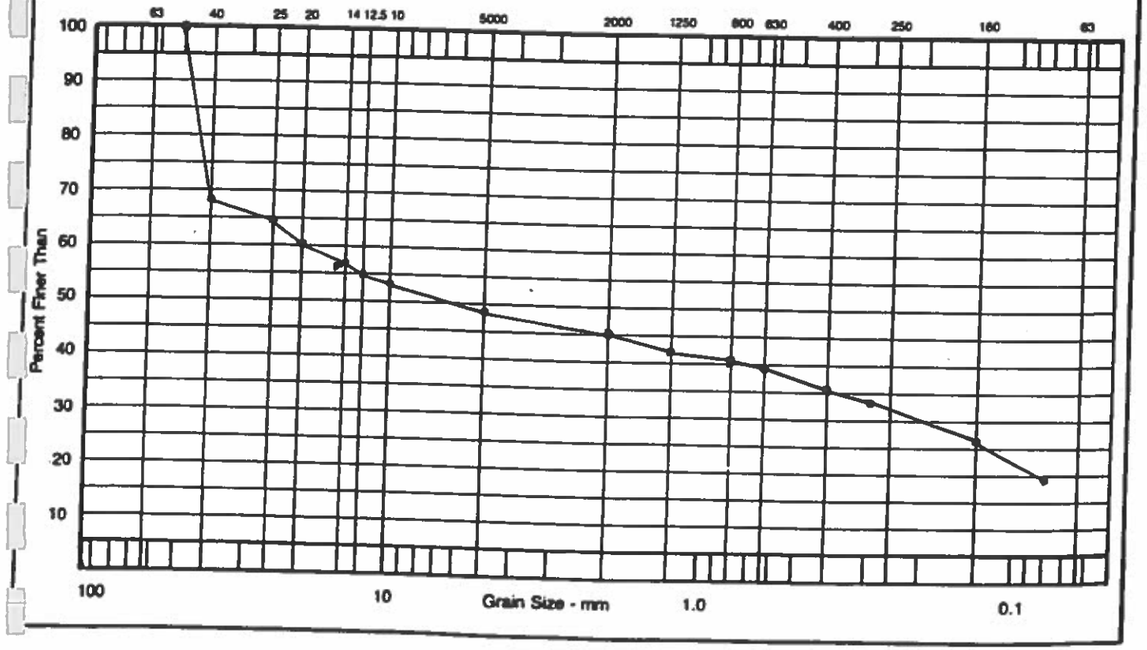
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					100.0
40000	40.0					68.0
25000	25.0					64.8
20000	20.0					60.7
14000	14.0					56.5
12500	12.5					55.2
10000	10.0					53.3
5000	5.0					48.5
2000	2.0					45.1
1250	1.250					42.1
800	0.800					40.2
630	0.630					39.0
400	0.400					35.6
315	0.315					33.2
160	0.160					26.1
80	0.080					19.5

Description of Sample: Silty, Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 7.3 %
Gravel : 51.5 %
Sand : 29.0 %
Silt : 19.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 253 Depth: 1.0-1.2 m
Location: Area # 5
TP # 70

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLK Date: 1995/05/15

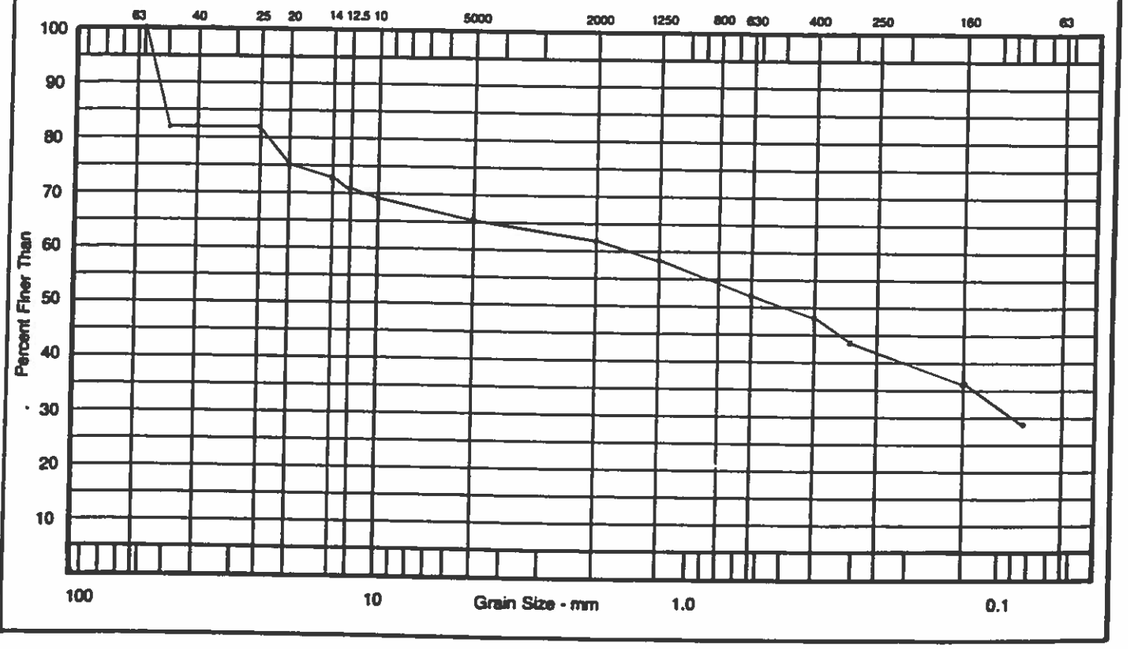
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						82.3
40000	40.0					82.3
25000	25.0					82.3
20000	20.0					75.1
14000	14.0					73.6
12500	12.5					71.7
10000	10.0					69.7
5000	5.0					65.6
2000	2.0					62.0
1250	1.250					58.5
800	0.800					
630	0.630					52.7
400	0.400					47.8
315	0.315					44.4
160	0.160					36.4
80	0.080					29.7

Description of Sample: Silty Gravelly Sand, SP-SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 6.2 %
Gravel : 34.4 %
Sand : 35.9 %
Silt : 29.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 256 Depth: 3.8-4.0m
Location: Area # 5
TP # 70

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WDK Date: 1995/08/23

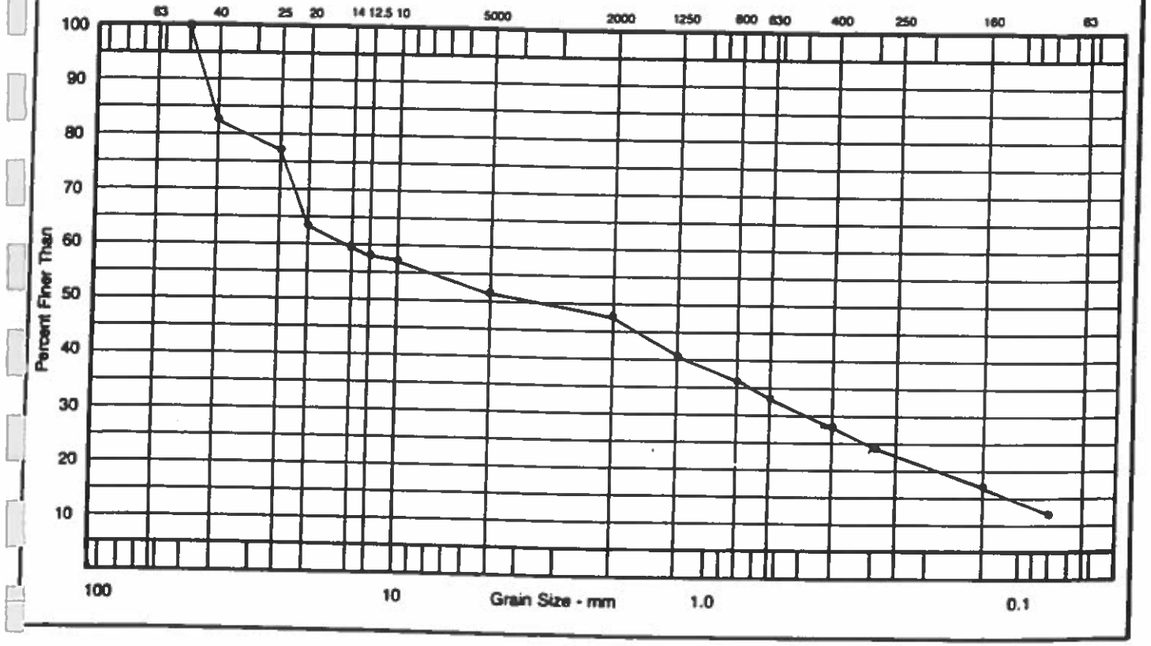
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
50000	50.0					100.0
40000	40.0					82.7
25000	25.0					77.5
20000	20.0					63.4
14000	14.0					59.8
12500	12.5					57.9
10000	10.0					56.8
5000	5.0					51.6
2000	2.0					47.6
1250	1.250					40.7
800	0.800					36.0
630	0.630					33.5
400	0.400					27.8
315	0.315					24.5
160	0.160					17.3
80	0.080					12.1

Description of Sample: Sandy Gravel, GM some silt

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 5.4%
Gravel : 48.4 %
Sand : 39.5 %
Silt : 12.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 257 Depth: 1.0-1.2m
Location: Area # 5
TP # 71

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/09/23

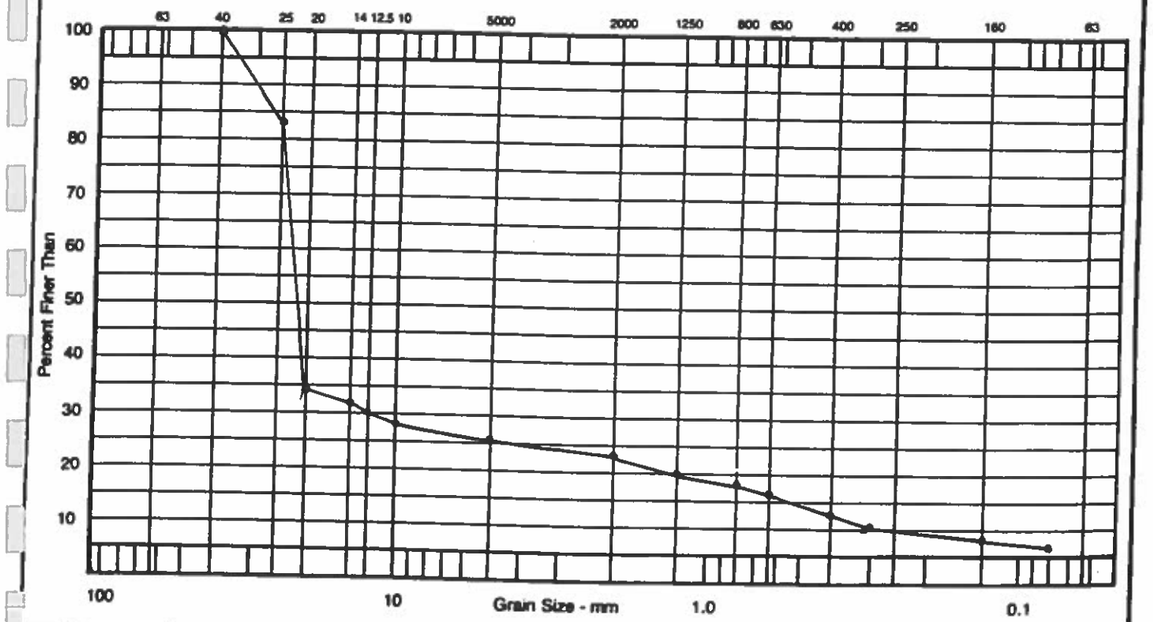
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
50000	50.0					
40000	40.0					100.0
25000	25.0					83.7
20000	20.0					34.3
14000	14.0					31.5
12500	12.5					30.1
10000	10.0					28.5
5000	5.0					25.5
2000	2.0					22.9
1250	1.250					20.0
800	0.800					17.8
630	0.630					16.4
400	0.400					12.8
315	0.315					10.8
160	0.160					7.7
80	0.080					6.3

Description of Sample: Sandy Gravel, GP trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.5%
Gravel : 74.5%
Sand : 19.1%
Silt : 6.3%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 259 Depth: 3.0-3.1m
Location: Area # 5
TP # 71

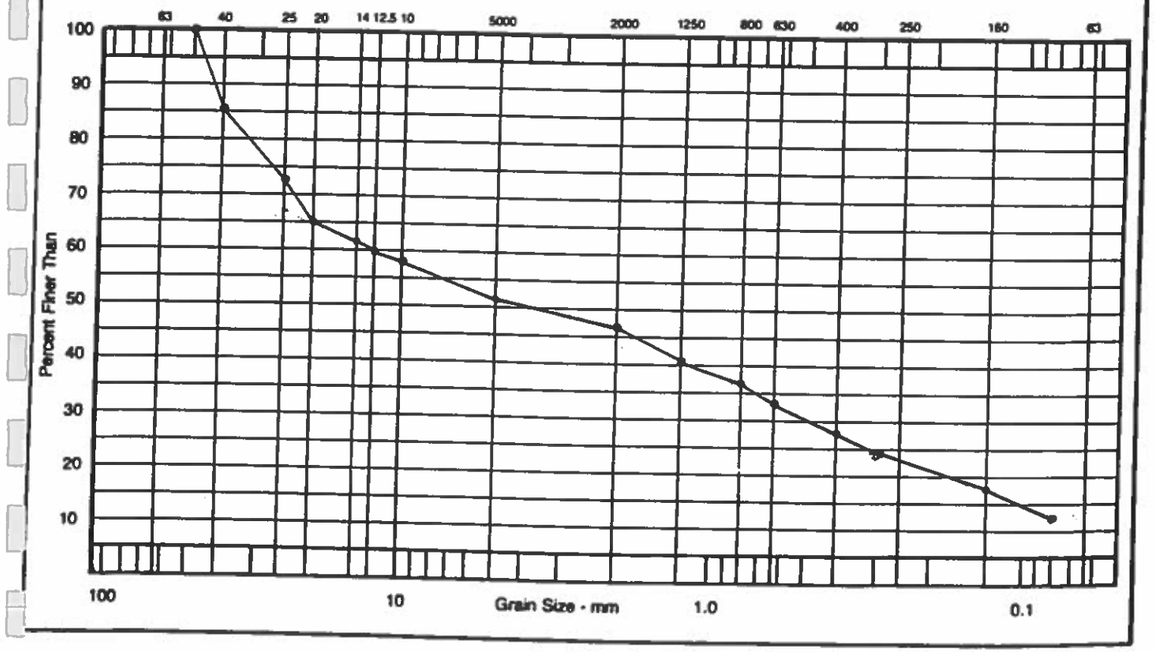
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLK Date: 1995/08/23

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
50000	50.0					100.0
40000	40.0					85.3
25000	25.0					72.8
20000	20.0					65.0
14000	14.0					61.5
12500	12.5					59.9
10000	10.0					57.9
5000	5.0					51.9
2000	2.0					46.6
1250	1.250					40.3
800	0.800					36.3
630	0.630					33.9
400	0.400					28.0
315	0.315					24.5
160	0.160					17.7
80	0.080					12.2

Description of Sample: Sandy Gravel, GM
Some Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X
Remarks:
Moisture : 3.0 %
Gravel : 48.1 %
Sand : 39.7 %
Silt : 12.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 260 Depth: 3.8-4.0m
Location: Area # 5
TP # 71

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLK Date: 1995/06/23

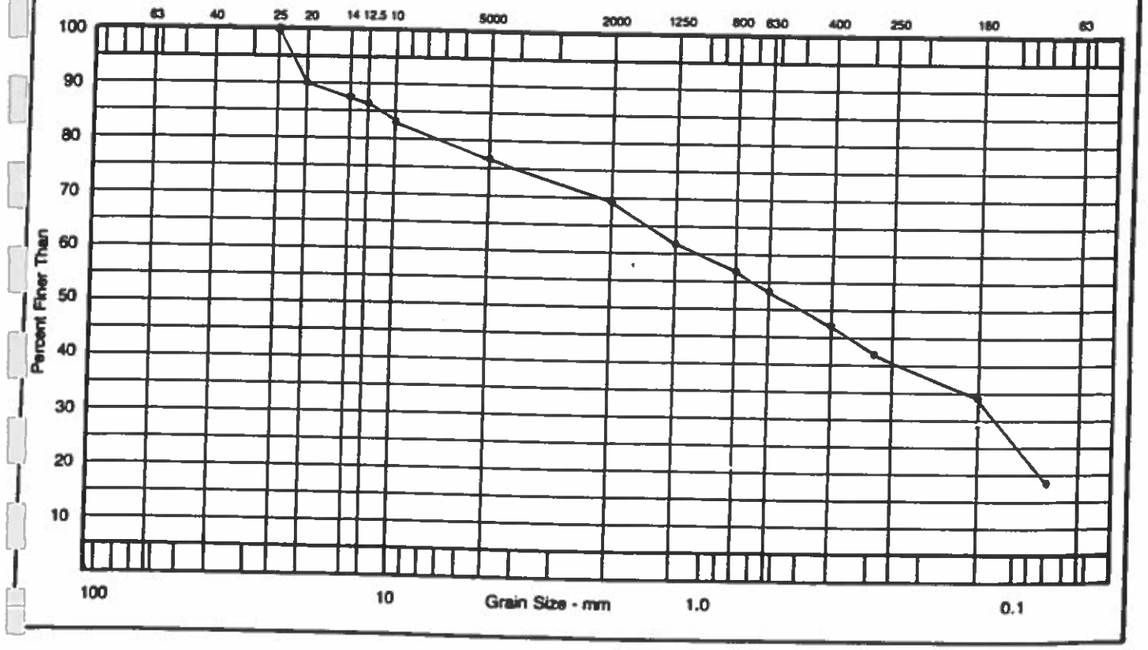
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					
40000	40.0					
25000	25.0					100.0
20000	20.0					90.1
14000	14.0					87.1
12500	12.5					86.5
10000	10.0					83.5
5000	5.0					76.9
2000	2.0					69.5
1250	1.250					61.2
800	0.800					56.2
630	0.630					53.2
400	0.400					46.4
315	0.315					42.1
160	0.160					29.5
80	0.080					19.2

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed X

Remarks:
Moisture : 4.0 %
Gravel : 23.1 %
Sand : 57.7 %
Silt : 19.2 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 71A-95 Depth: 0.20 - 3.40m
Location: Area # 5
TP # 71

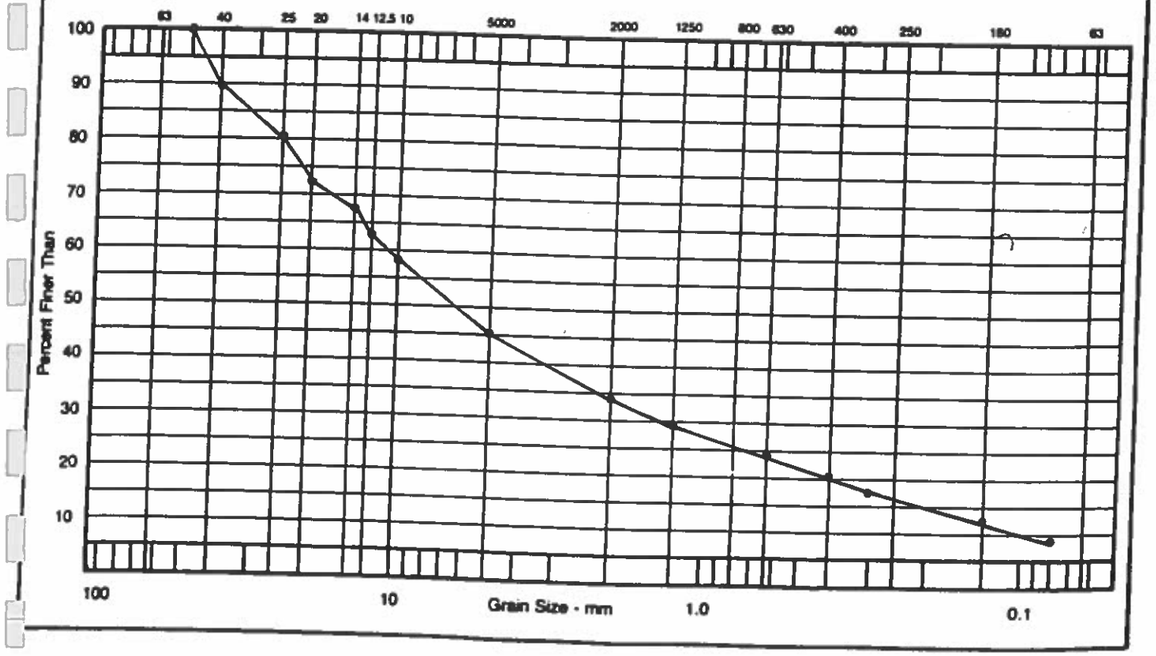
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No.: 8002-234
Ck'd by: WLL Date: 1995/06/16

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50000	50.0					100.0
40000	40.0					89.5
25000	25.0					80.7
20000	20.0					72.1
14000	14.0					67.6
12500	12.5					63.2
10000	10.0					58.3
5000	5.0					45.1
2000	2.0					34.4
1250	1.250					29.5
800	0.800					
630	0.630					24.4
400	0.400					20.3
315	0.315					17.8
160	0.160					12.9
80	0.080					9.0

Description of Sample: Sandy Gravel, GW-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X
Remarks:
Moisture : 2.2 %
Gravel : 54.9 %
Sand : 36.1 %
Silt : 9.0 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 261 Depth: 0.10 - 0.25m

Location: Area # 5
TP # 72

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLK Date: 1995/08/23

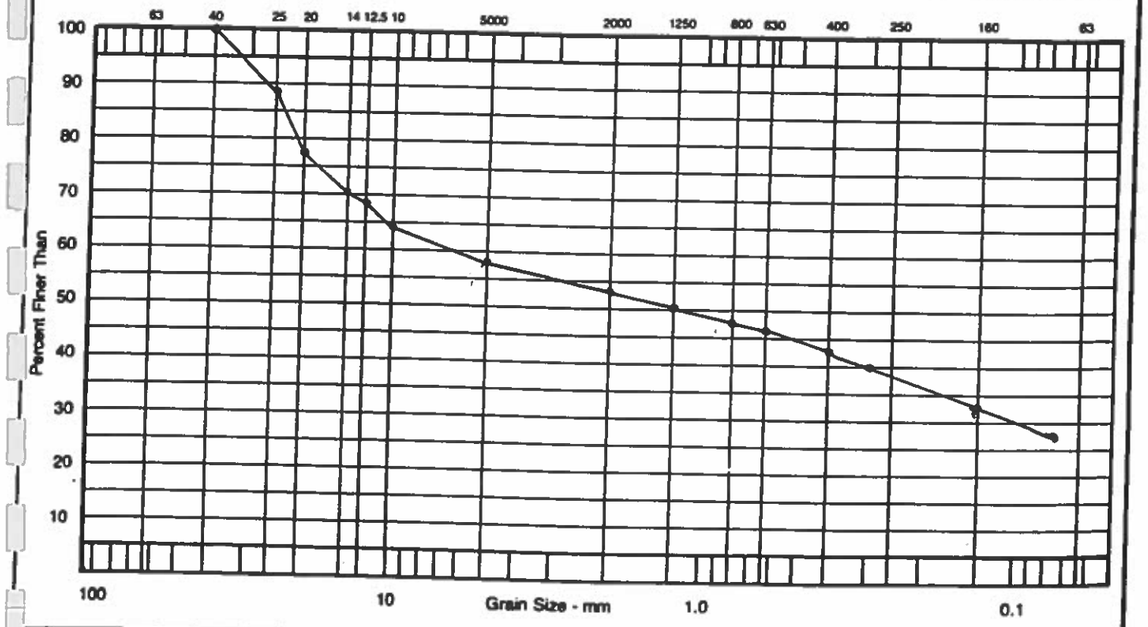
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50 000	50.0					
40000	40.0					100.0
25000	25.0					88.5
20000	20.0					77.2
14000	14.0					70.4
12500	12.5					68.9
10000	10.0					64.6
5000	5.0					58.0
2000	2.0					53.7
1250	1.250					50.1
800	0.800					47.8
630	0.630					46.3
400	0.400					42.7
315	0.315					40.0
160	0.160					33.9
80	0.080					27.6

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed X

Remarks:
Moisture : 4.2 %
Gravel : 42.0 %
Sand : 30.4 %
Silt : 27.6 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 263 Depth: 2.0-2.2m
Location: Area # 5
TP # 72

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/08/23

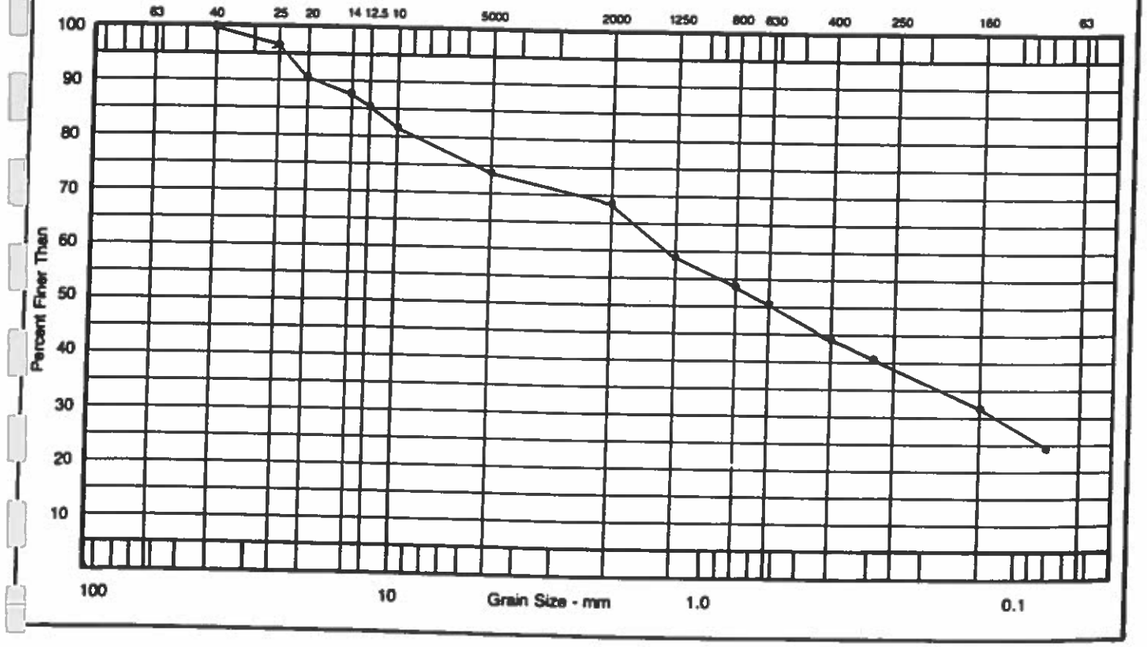
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					
40000	40.0					100.0
25000	25.0					96.3
20000	20.0					90.9
14000	14.0					87.7
12500	12.5					85.7
10000	10.0					81.7
5000	5.0					74.0
2000	2.0					68.4
1250	1.250					59.2
800	0.800					53.8
630	0.630					50.8
400	0.400					44.4
315	0.315					40.6
160	0.160					31.4
80	0.080					24.4

Description of Sample: Silty Gravelly Sand, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 5.0 %
Gravel : 26.0 %
Sand : 49.6 %
Silt : 24.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 266 Depth: 1.0-1.2m
Location: Area # 5
TP # 73

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLC Date: 1995/08/23

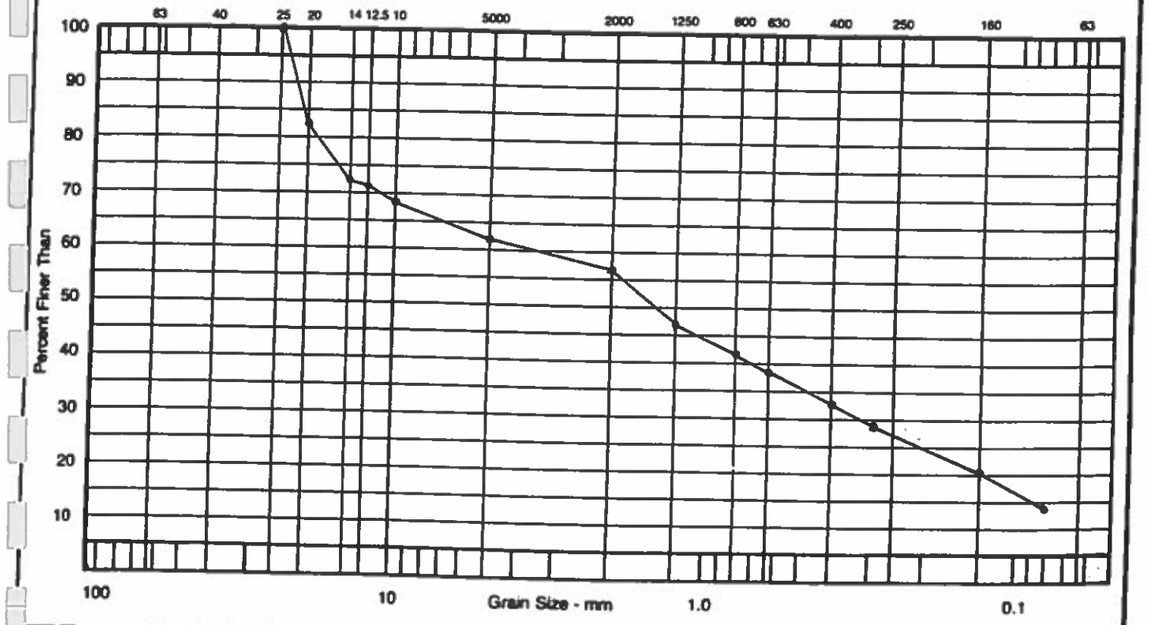
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
50000	50.0					
40000	40.0					
25000	25.0					100.0
20000	20.0					82.6
14000	14.0					72.3
12500	12.5					71.7
10000	10.0					68.7
5000	5.0					61.7
2000	2.0					56.9
1250	1.250					46.5
800	0.800					41.3
630	0.630					38.6
400	0.400					32.6
315	0.315					29.0
160	0.160					20.7
80	0.080					14.3

Description of Sample: Gravelly Sand, SM some silt

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed X

Remarks:
Moisture : 4.2%
Gravel : 38.3%
Sand : 47.4%
Silt : 14.3%



Area # 5 8002-234

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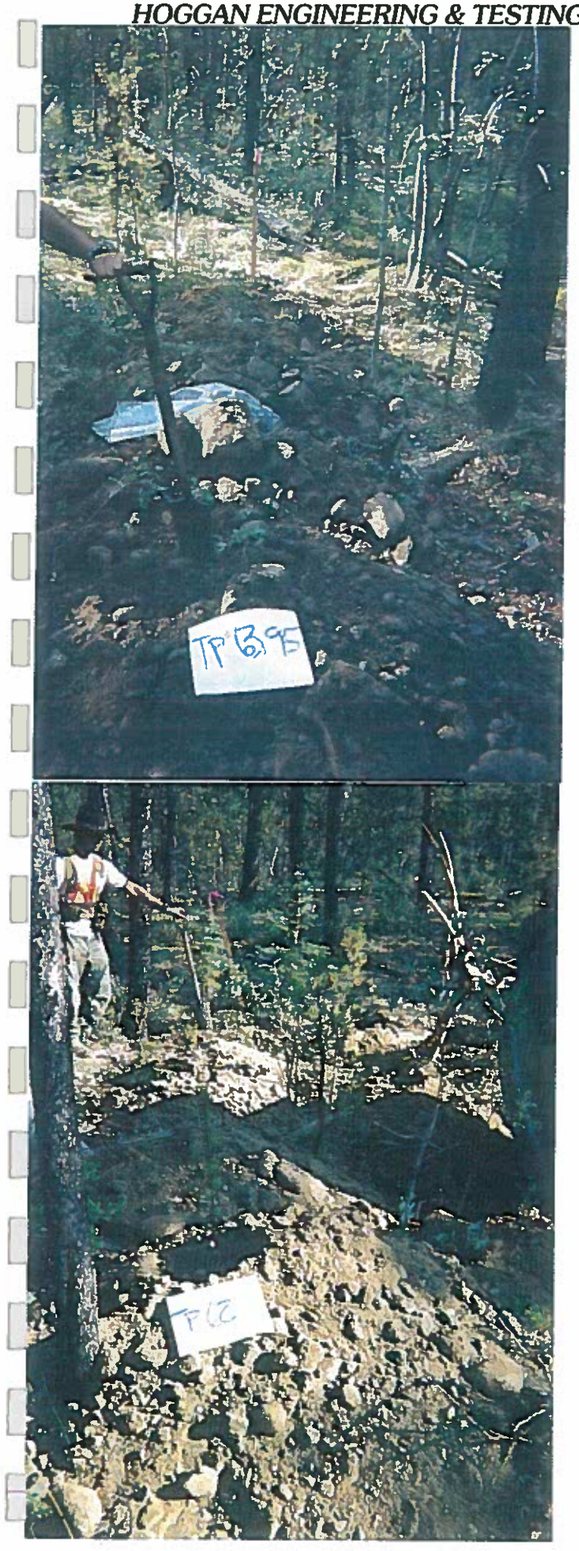


Photo # 35

Photo # 34

Photo # 37

Photo # 36

HOGGAN ENGINEERING & TESTING (1980) LTD.

Area # 5 8002-234

Photo # 39

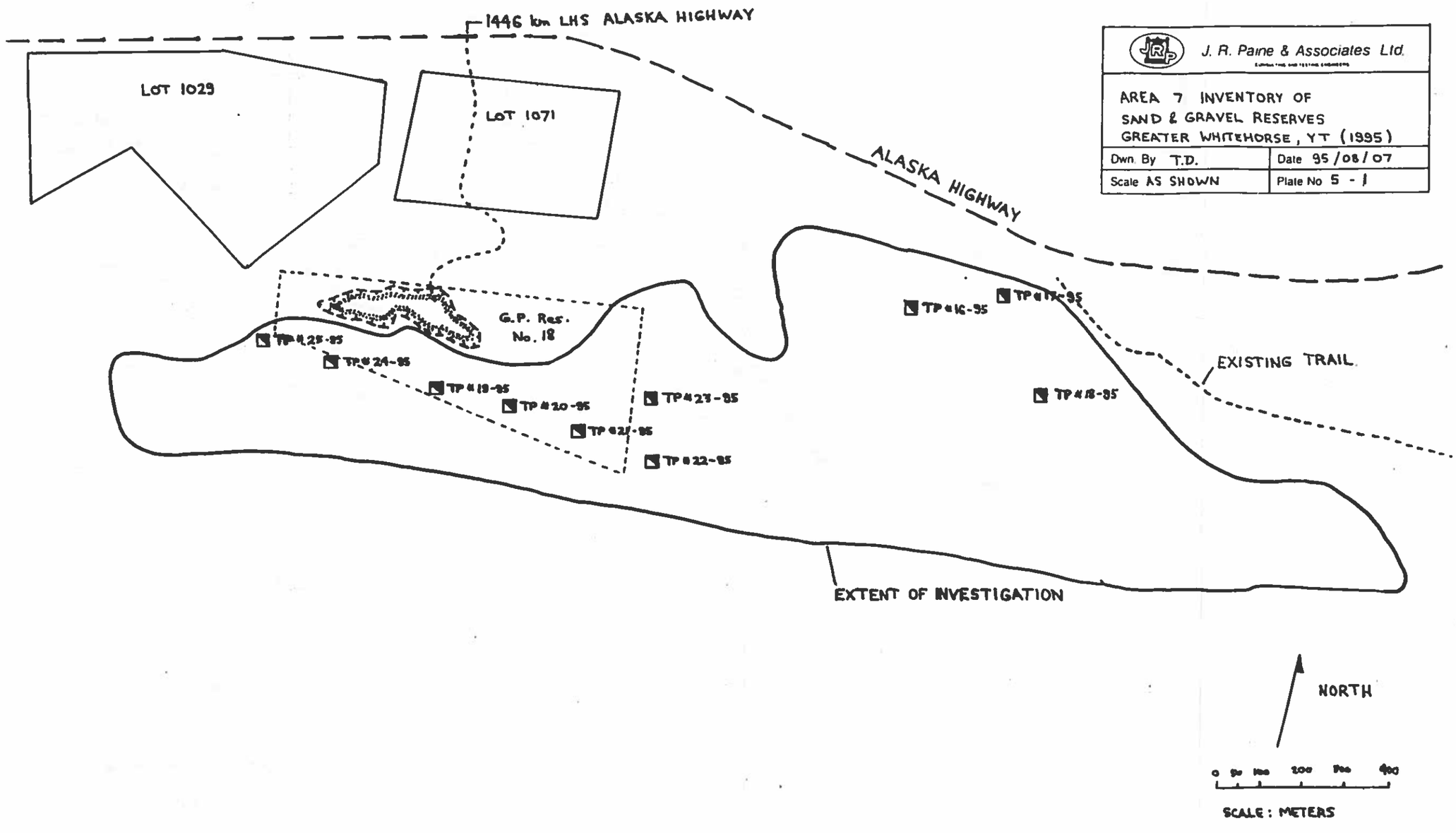
Photo # 41 TP# 93-95

Photo # 38

Photo #40

APPENDIX F
•Site 7

SITE SKETCH - AREA 7 - KILOMETER 1444-1447 ALASKA HIGHWAY

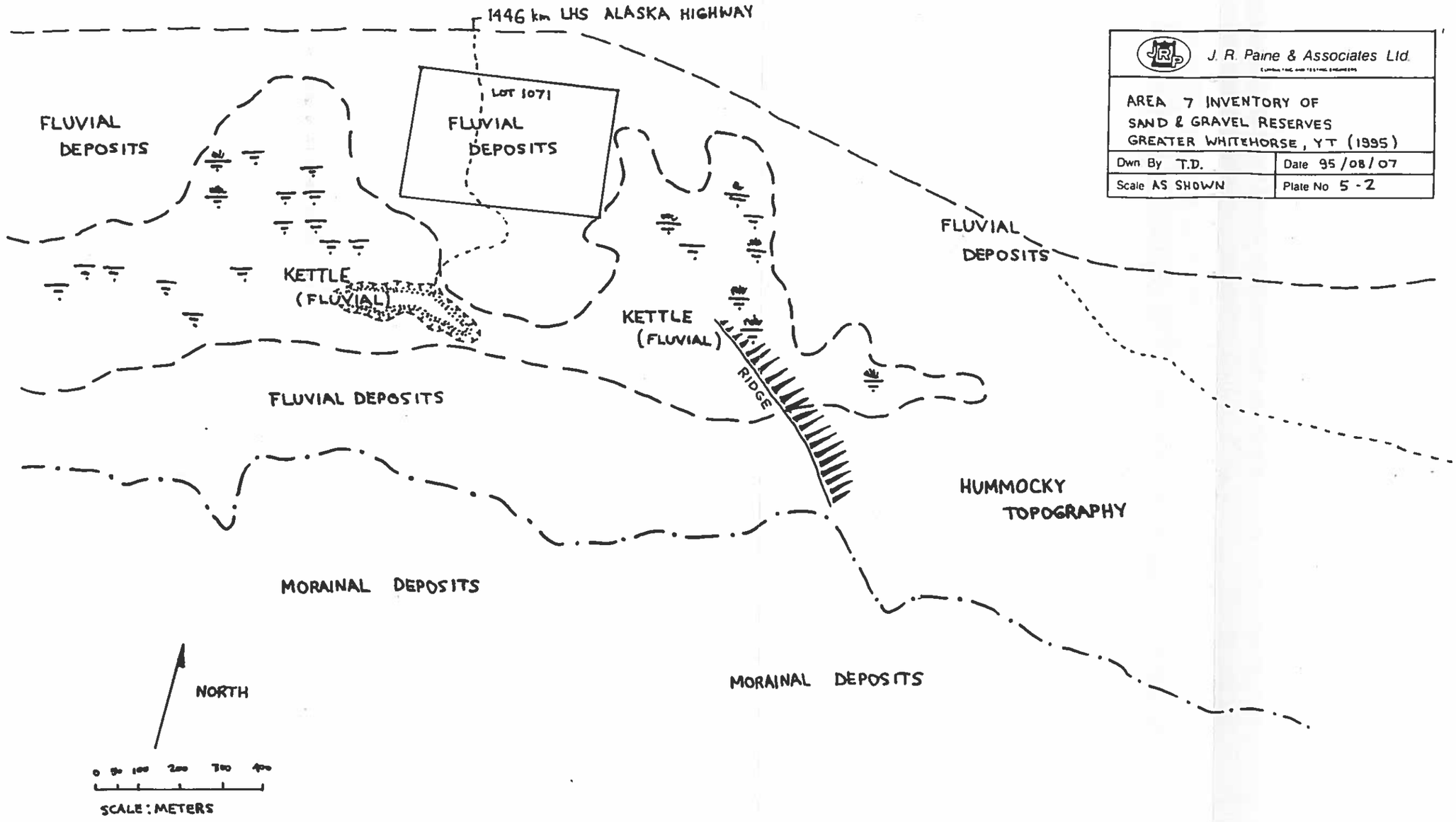


J. R. Paine & Associates Ltd.

AREA 7 INVENTORY OF
SAND & GRAVEL RESERVES
GREATER WHITEHORSE, YT (1995)

Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 5 - 1

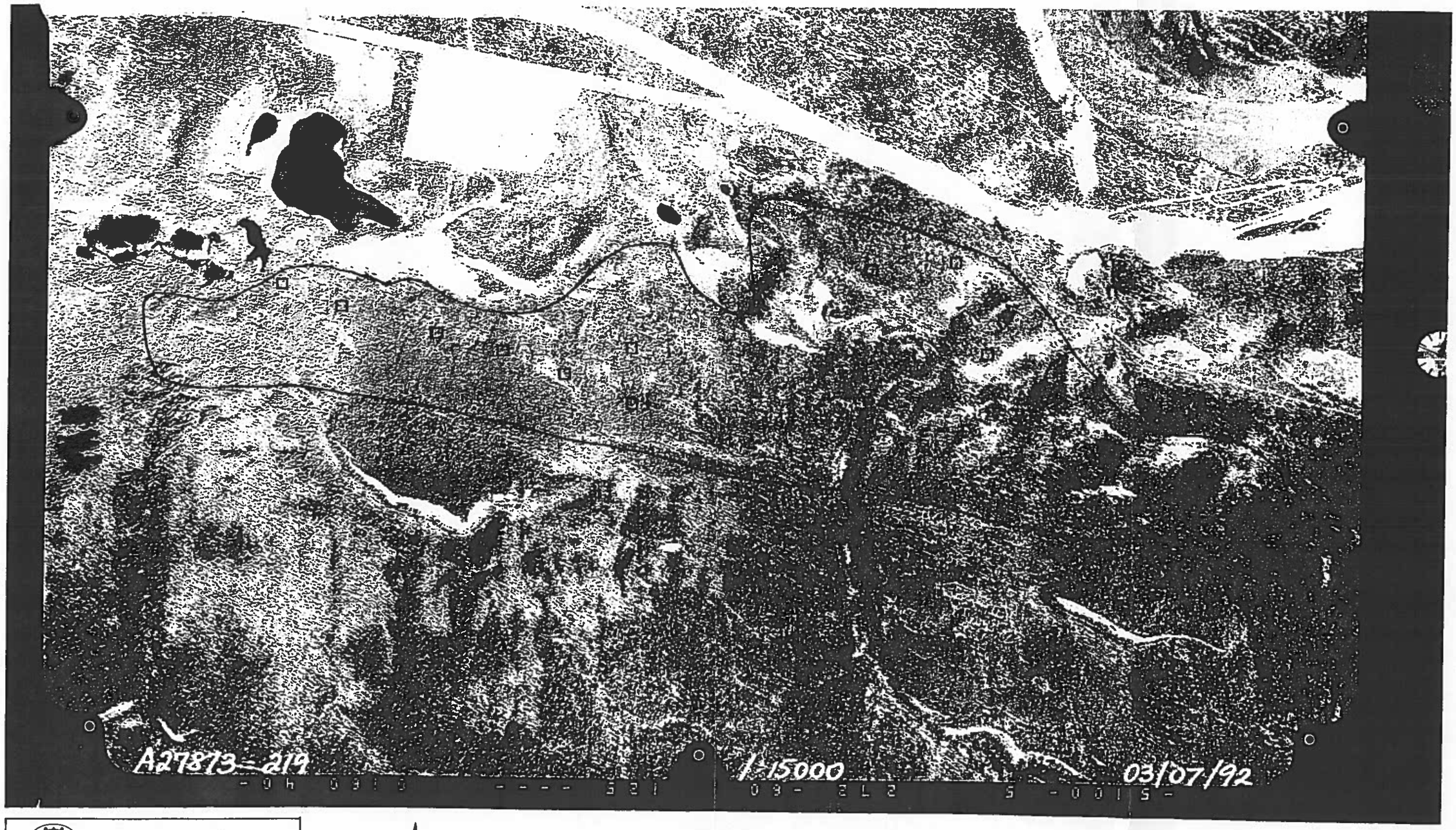
SITE SKETCH - AREA 7 - KILOMETER 1444-1447 ALASKA HIGHWAY



J. R. Paine & Associates Ltd.

AREA 7 INVENTORY OF
SAND & GRAVEL RESERVES
GREATER WHITEHORSE, YT (1995)

Dwn By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 5-2



J. R. Paine & Associates Ltd.	
AREA 7 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 5-3

NORTH

SCALE : METERS

SITE AIRPHOTOGRAPH COPY - AREA 7
KILOMETER 1444-1447 ALASKA HIGHWAY

GEOGRAPHIC AIR SURVEY LTD.

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#16-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-grass, moss, peat, rootlets, organics	PT		0.0
		65	0.30m -fine grained sand, some silt, damp, medium dense, no intrusions, rootlets, brown	SM		
1.0			0.50m			1.0
		66	-silt, clay particles, grey, soft, damp, low plasticity			
2.0				ML		2.0
		67	-silt, clay particles, grey, soft, no intrusions, damp, low plasticity			
3.0						3.0
		68	-silt, clay particles, grey, soft, damp, low plasticity			
4.0			4.00m End of Hole @ 4.0m			4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0

Note: -no change in material from 0.5m to 4.0m
-no change in moisture, damp all the way to 4.0m
-testpit located 10m from N-S trending ridge
-photo #9, spill piles
Vegetation: medium dense, mature poplar & spruce
Ground Level: level

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

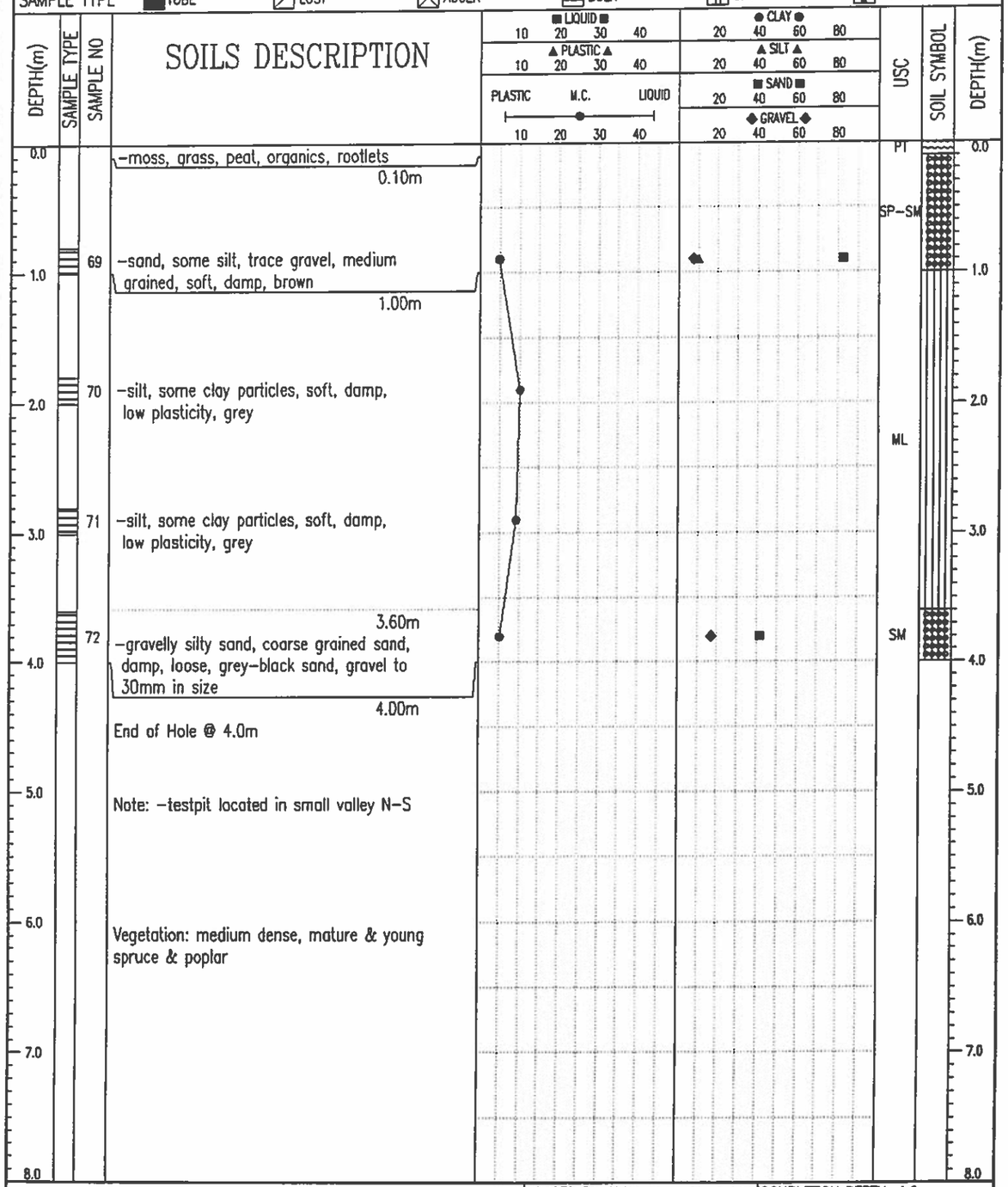
J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/13
Fig. No: 16	Page 1 of 1

95/08/08 10:22AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#17-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ◧ CORE

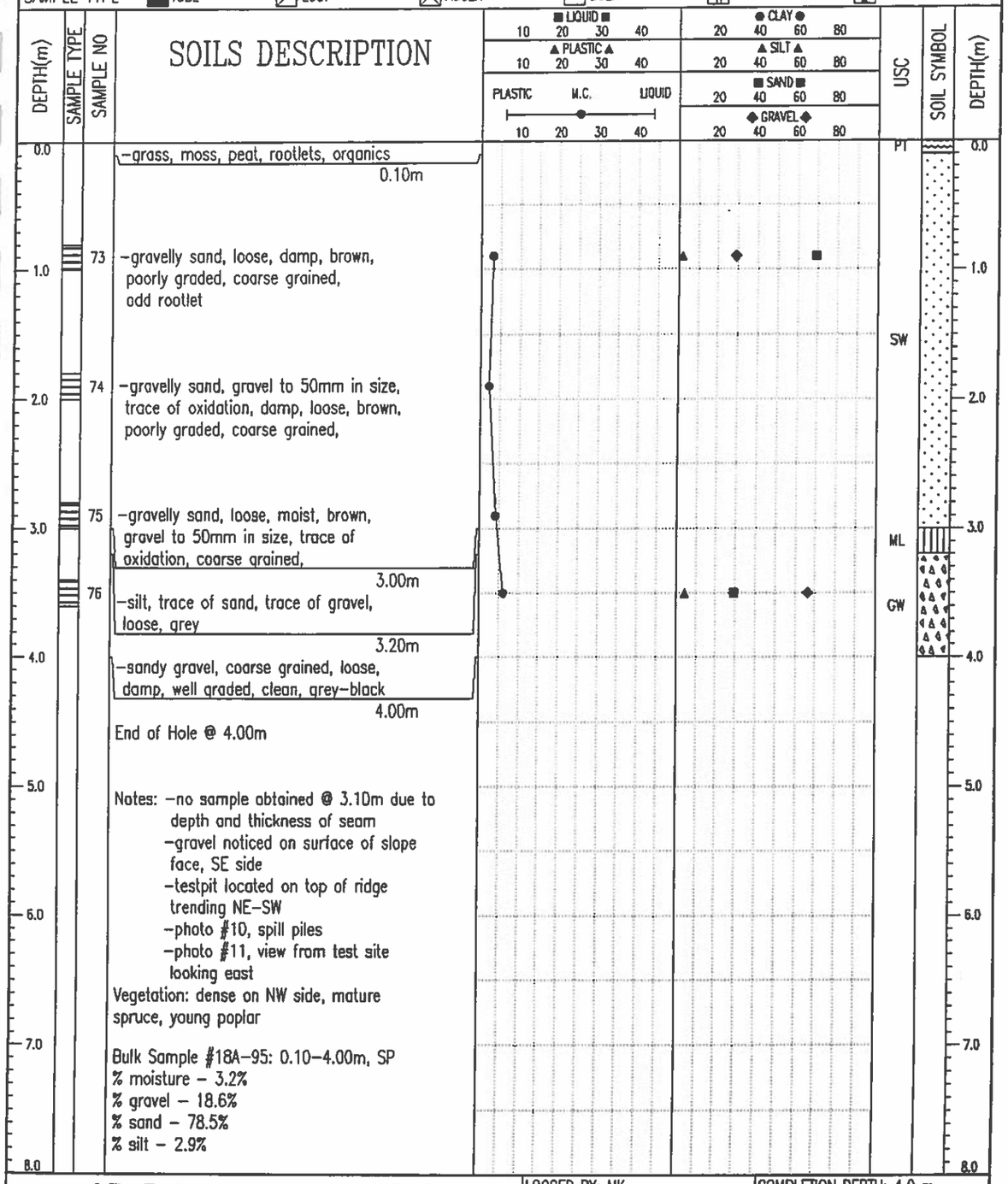


J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 17	Page 1 of 1

95/08/08 10:56AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#18-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▨ CORE



Notes: -no sample obtained @ 3.10m due to depth and thickness of seam
-gravel noticed on surface of slope face, SE side
-testpit located on top of ridge trending NE-SW
-photo #10, spill piles
-photo #11, view from test site looking east

Vegetation: dense on NW side, mature spruce, young poplar

Bulk Sample #18A-95: 0.10-4.00m, SP
% moisture - 3.2%
% gravel - 18.6%
% sand - 78.5%
% silt - 2.9%

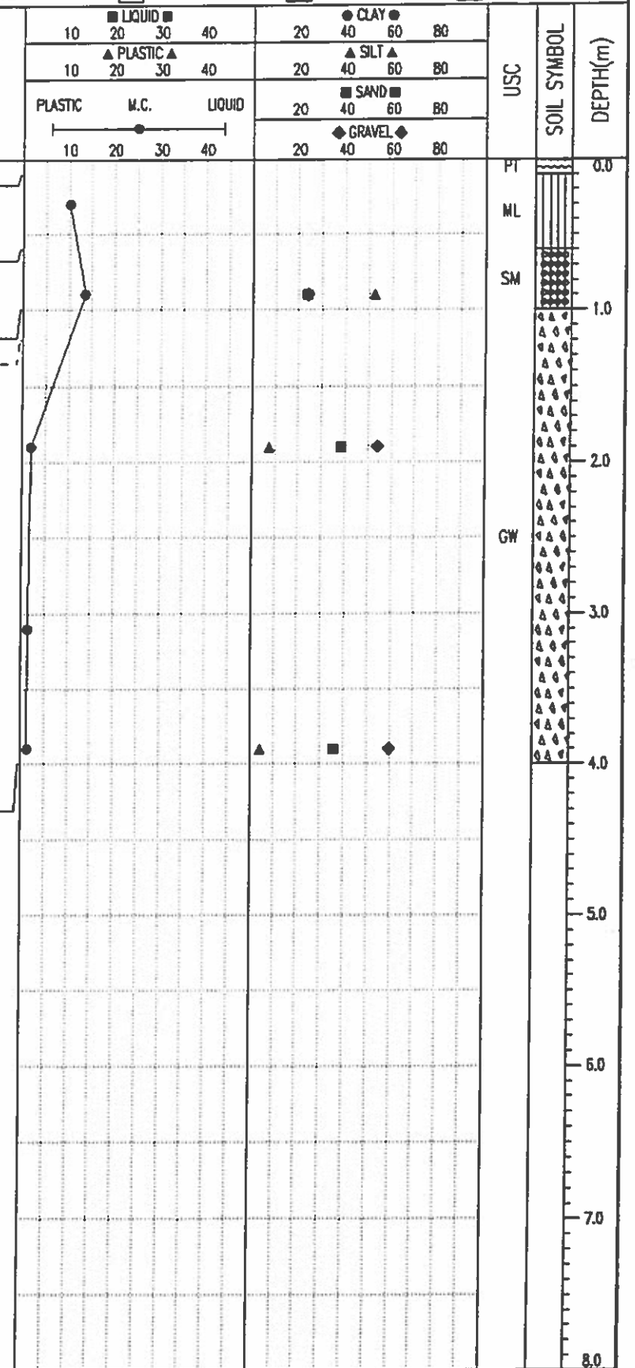
J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 18	Page 1 of 1

95/08/08 10:57AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#19-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-moss, grass, peat, organics
			0.10m
		77	-sandy silt, firm, red-brown, rootlets, non frozen
			0.60m
1.0		78	-sandy gravelly silt, fine grained sand sizes, moist, frozen, brown-beige
			1.00m
			*Seasonal Frost to 1.2m 1.20m
2.0		79	-sandy gravel, well-graded, trace of silt, cobbles in size to 150mm, light-brown, trace of oxidation, medium dense, damp, brown
3.0		80	-sandy gravel, well graded, clean, 10% cobbles to 150mm, light-brown, damp, trace of oxidation
4.0		81	-sandy gravel, well graded, clean, 20%-30% cobbles to 150mm, light-brown, damp, trace of oxidation
			4.00m
			End of Hole @ 4.00m
5.0			Notes: -testpit located on level ground on terrace, north side of ridge trending E-W -photo #12, spill piles
6.0			Vegetation: medium dense, mature spruce & poplar Ground: level
7.0			Bulk sample #19A-95: 1.00-4.00m, GW % moisture - 1.3% % gravel - 70.4% % sand - 26.6% % silt - 3.0%
8.0			



USC	SOIL SYMBOL	DEPTH(m)
PT		0.0
ML		
SM		1.0
GW		2.0
		3.0
		4.0
		5.0
		6.0
		7.0
		8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/14
Fig. No: 19	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#20-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	DEPTH(m)
0.0			-moss, grass, peat, organics 0.10m	PT	0.0
1.0		82	-sandy gravel, well graded, clean, 10% cobbles to 150mm, trace of oxidation, rootlets, damp, grey-brown		1.0
2.0		83	-sandy gravel, well graded, clean, 30-40% cobbles to 150mm in size, trace of oxidation, rootlets, damp, grey-brown	GW	2.0
3.0		84	-sandy gravel, well graded, clean, 40-50% cobbles to 150mm in size, trace of oxidation, medium dense, damp, brown		3.0
4.0		85	-sandy gravel, well graded, clean, 40-50% cobbles to 150mm in size, trace of oxidation, medium dense, damp, brown 4.00m		4.0
			End of Hole @ 4.00m		
5.0			Notes: -testpit located on small esker trending E-W -exposed boulders on surface of ridge		5.0
6.0			Vegetation: dense, mature spruce, odd poplar -Trial Crush completed, -Los Angeles Abrasion 14.6% Loss.		6.0
7.0			Bulk Sample #20A-95: 0.10-4.00m, GW % moisture - 1.9% % gravel - 53.0% % sand - 43.1% % silt - 3.9%		7.0
8.0					8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/14
	Fig. No: 20	Page 1 of 1

95/08/08 10:58AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#21-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, grass, peat, organics	PT		0.0
			0.10m			
		86	-silt, frozen, some sand, organics, trace gravel, red-brown to light brown	ML		
			0.50m			
1.0		87	-sandy gravel, well graded, clean, coarse sand particles, damp-moist, brown, 10-15% cobbles to 150mm in size, trace of oxidation, odd boulder to 300mm in size	GW		1.0
2.0		88	-sandy gravel, well graded, clean, coarse sand particles, damp-moist, brown, 20-30% cobbles to 150mm in size, trace of oxidation, odd boulder to 300mm in size			2.0
			2.70m			
3.0		89	-sandy gravel, well graded, trace silt, coarse sand particles, damp-moist, brown, 30-40% cobbles to 200mm in size, trace of oxidation, odd boulder to 300mm in size	GW/GM		3.0
4.0		90	-sandy gravel, well graded, trace silt, coarse sand particles, damp-moist, brown, 30-40% cobbles to 200mm in size, trace of oxidation, odd boulder to 300mm in size			4.0
			4.00m			
5.0			End of Hole @ 4.00m			5.0
			Notes: -testpit located on slope trending S-N -50m east of clearing			
6.0			Vegetation: dense, mature spruce			6.0
7.0			Bulk Sample #21A-95: 0.5 - 4.0m, GP % moisture - 3.8% % gravel - 57.6% % sand - 39.5% % silt - 2.9%			7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/14
	Fig. No: 21	Page 1 of 1

95/08/08 03:25PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#22-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, grass, peat, organics	PT		0.0
			0.10m			
1.0		91	-gravelly sand, well graded, trace silt, damp, loose, brown, odd boulder to 500mm	SW-SM		1.0
2.0		92	-gravelly sand, well graded, clean, damp, loose, brown, odd boulder to 500mm			2.0
3.0		93	3.00m -gravel, some sand, 30-40% cobbles, some silt, damp, loose, well graded, trace of oxidation, grey	GM		3.0
			3.60m			
4.0		94	-sandy gravel, well graded, some silt, loose, damp, 20-30% cobbles to 200mm in size, trace of oxidation, grey			4.0
			4.00m			
5.0			End of Hole @ 4.00m			5.0
6.0						6.0
7.0						7.0
8.0						8.0

Notes: -testpit located on small ridge @ top of steep hill trending N-S
Photo #13, spill piles

Vegetation: dense, mature spruce
-Trial Crush completed,
-Los Angeles Abrasion 14.6% Loss.

Bulk Sample #22A-95: 3.0-4.0m, GM
% moisture - 3.9%
% gravel - 45.3%
% sand - 37.2%
% silt - 17.5%

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/14
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95/08/08 11:20AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#23-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC — M.C. — LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			–moss, peat, rootlets, organics	PT		0.0
		95	0.05m –silt, trace sand, loose, light brown, wet, rootlets	ML		
1.0		96	0.40m –till like, sandy gravel, trace to some silt, 20% cobbles in size to 150mm, trace of oxidation, loose, damp, grey,			1.0
2.0		97	–till like, sandy gravel, trace to some silt, 20% cobbles in size to 150mm, trace of oxiadtion, loose, damp, grey	GP-GM		2.0
3.0		98	–till like, sandy gravel, trace to some silt, 25–40% cobbles in size to 200mm, trace of oxidation, poorly graded, damp, grey			3.0
4.0		99	–till like, sandy gravel, trace to some silt, 25–40% cobbles in size to 200mm, trace of oxidation, poorly graded damp, grey			4.0
			4.00m End of Hole @ 4.00m			
5.0			Notes: –testpit located in valley Photo #14, spill piles			5.0
6.0			Vegetation: dense, mature spruce			6.0
7.0			Bulk Sample #23A–95: 0.40–4.00m, GP–GM % moisture – 2.5% % gravel – 74.5% % sand – 17.8% % silt – 7.7%			7.0
8.0						8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/14
Fig. No: 23	Page 1 of 1

95/08/08 11:30AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#24-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-grass, moss, peat	PT		0.0
			0.05m			
		100	-sandy gravel, poorly graded, clean, loose, damp, 10% cobbles to 150mm in size, trace of oxidation			
1.0						1.0
		101	-sandy gravel, poorly graded, clean, loose, damp-moist, 10% cobbles to 150mm in size, odd boulder to 300mm, trace of oxidation	GW		
2.0			1.60m			2.0
		102	-change in moisture content -sandy gravel, poorly graded, clean, loose, damp-moist, 20% cobbles to 200mm in size, 5% boulders to 300mm in size, trace of oxidation			
3.0			3.00m			3.0
			End of Hole @ 3.00m			
4.0						4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

Notes: -no sample taken below 3.0m due to large boulders, refusal
-testpit located on small terrace, slope trending N-S
-photo #15, spill piles

Vegetation: dense, mature spruce
-Trial Crush completed,
-L.A. Abrasion 14.6% Loss.

Bulk Sample #24A-95: 0.05-3.00m, GP
% moisture - 2.5%
% gravel - 62.5%
% sand - 35.4%
% silt - 2.1%

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 3.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/15
	Fig. No: 24	Page 1 of 1

95/08/08 11:01AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#25-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-grass, moss, peat	PT		0.0
		103	0.05m -silt, wet (active layer), firm, medium-high plasticy, red-brown			
		104	0.30m -silt, wet, firm, medium-high plasticity, frozen, light-brown			
1.0				ML		1.0
		105	-silt, damp, firm, medium-high plasticity, thawed, light-brown			
2.0						2.0
		106	2.50m -sandy gravel, some silt, 10-15% cobbles to 150mm in size, odd boulder to 250mm in size, damp, light brown	GP-GM		
3.0						3.0
		107	-sandy gravel, some silt, 20-25% cobbles to 200mm in size, 5% boulders to 300mm in size, damp, light brown			
4.0			4.00m End of Hole @ 4.00m			4.0
5.0			Notes: -testpit located at base of ridge trending E-W photo #16, spill piles			5.0
6.0			Vegetation: sparse to medium dense, mature spruce, odd young spruce			6.0
7.0			Bulk Sample #25A-95: 2.50-4.00m, GP-GM % moisture - 2.3% % gravel - 73.1% % sand - 17.5% % silt - 9.4%			7.0
8.0						8.0

LIQUID / PLASTIC / PLASTIC M.C. LIQUID: 10 20 30 40

CLAY / SILT / SAND / GRAVEL: 20 40 60 80

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/15
Fig. No: 25	Page 1 of 1

95/08/08 11:22AM

J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 66 Depth: 0.5 - 0.8m
Location: Area # 7
TP # 16-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/29

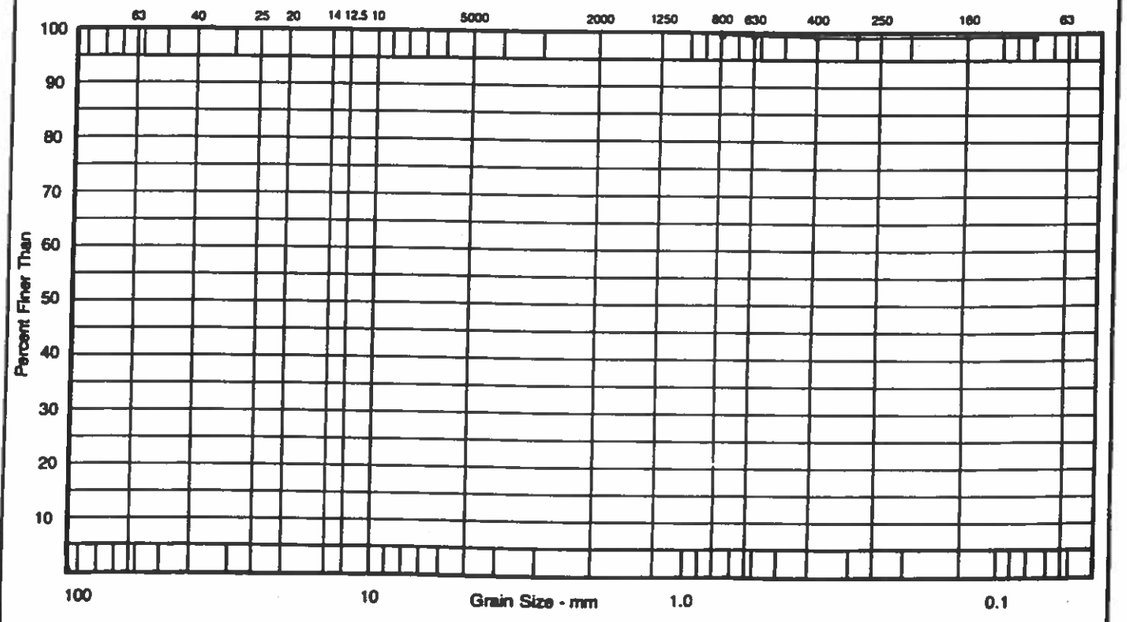
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					
12500	12.5					
10000	10.0					
5000	5.0					
2000	2.0					
1250	1.250					
800	0.800					100.0
630	0.630					99.9
400	0.400					99.8
315	0.315					99.7
160	0.160					99.4
80	0.080					99.0

Description of Sample: Silt, ML

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 10.1 %
Gravel : 0.0 %
Sand : 1.0 %
Silt : 99.0 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 69 Depth: 0.8 - 1.0m
Location: Area # 7
TP # 17-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/29

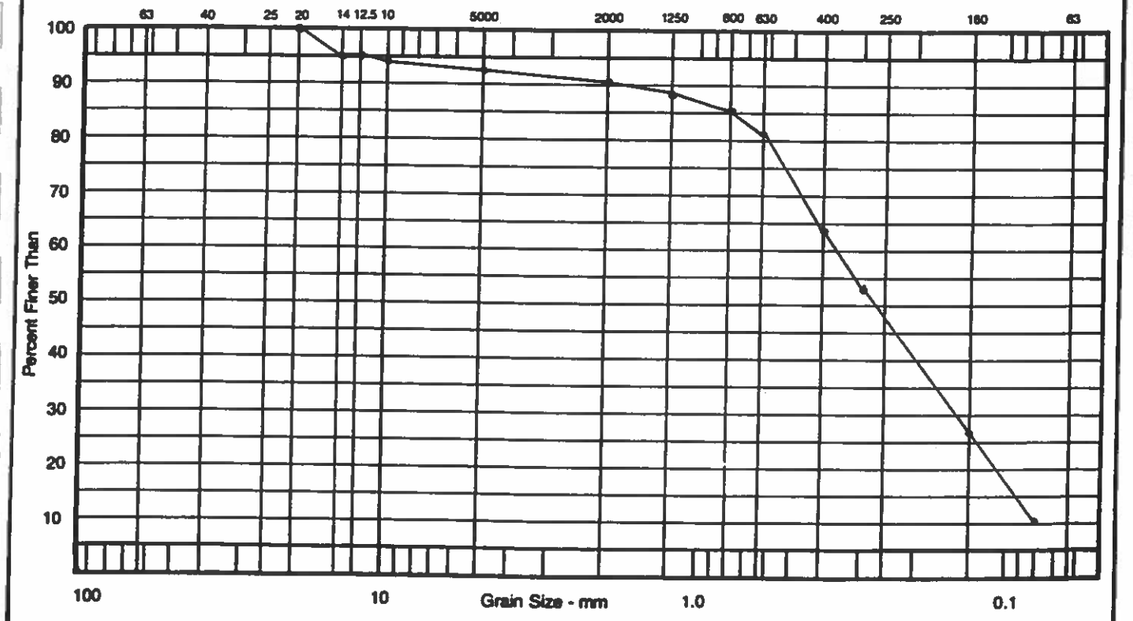
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					95.0
12500	12.5					95.0
10000	10.0					94.3
5000	5.0					92.6
2000	2.0					90.6
1250	1.250					88.7
800	0.800					85.7
630	0.630					81.3
400	0.400					64.2
315	0.315					52.7
160	0.160					26.7
80	0.080					10.1

Description of Sample: Sand, SP-SM
Some silt
trace gravel

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 49 %
Gravel : 7.4 %
Sand : 82.5 %
Silt : 10.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 72 Depth: 3.6-4.0m
Location: Area # 7
TP # 17-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/29

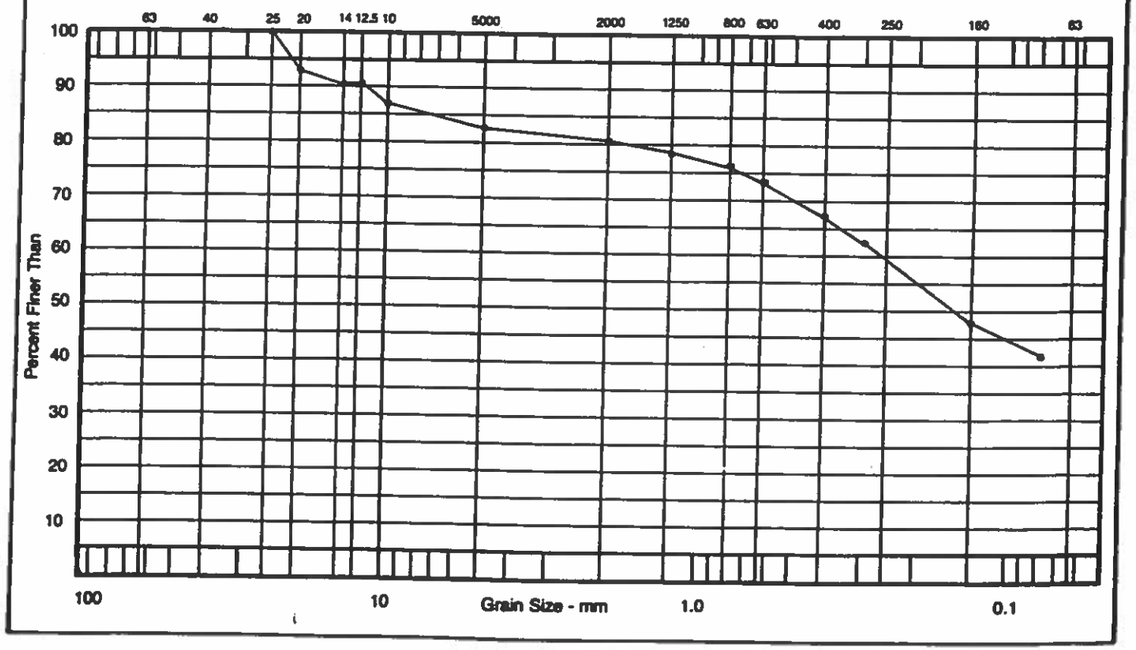
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					93.1
14000	14.0					90.1
12500	12.5					90.1
10000	10.0					86.5
5000	5.0					82.9
2000	2.0					80.2
1250	1.250					78.4
800	0.800					76.3
630	0.630					73.9
400	0.400					67.1
315	0.315					62.5
160	0.160					47.9
80	0.080					41.4

Description of Sample: Gravelly Silty Sand, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 5.3%
Gravel : 17.1 %
Sand : 41.5 %
Silt : 41.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 73 Depth: 0.8-1.0m
Location: Area # 7
TP # 18-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIG Date: 1995/06/29

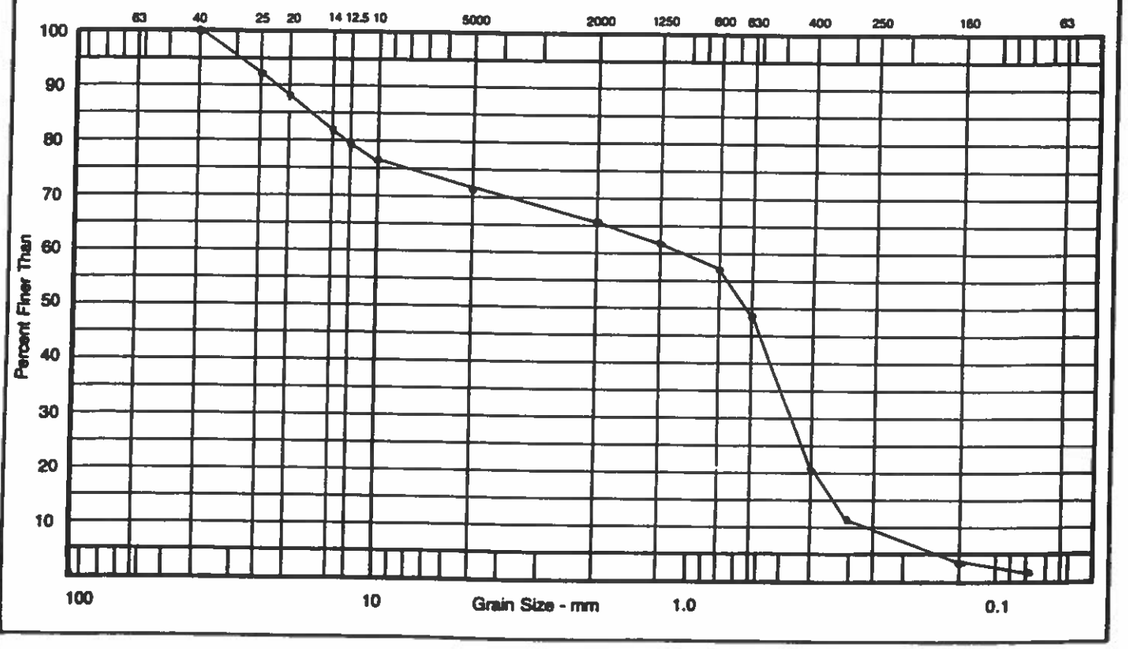
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					92.3
20000	20.0					86.6
14000	14.0					81.8
12500	12.5					79.8
10000	10.0					76.9
5000	5.0					71.0
2000	2.0					65.5
1250	1.250					61.8
800	0.800					56.8
630	0.630					48.9
400	0.400					20.2
315	0.315					11.3
160	0.160					3.2
80	0.080					1.9

Description of Sample: Gravelly Sand, SW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture: 3.0 %
Gravel: 29.0 %
Sand: 69.1 %
Silt: 1.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 76 Depth: 3.4-3.6m
Location: Area # 7
TP # 18-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

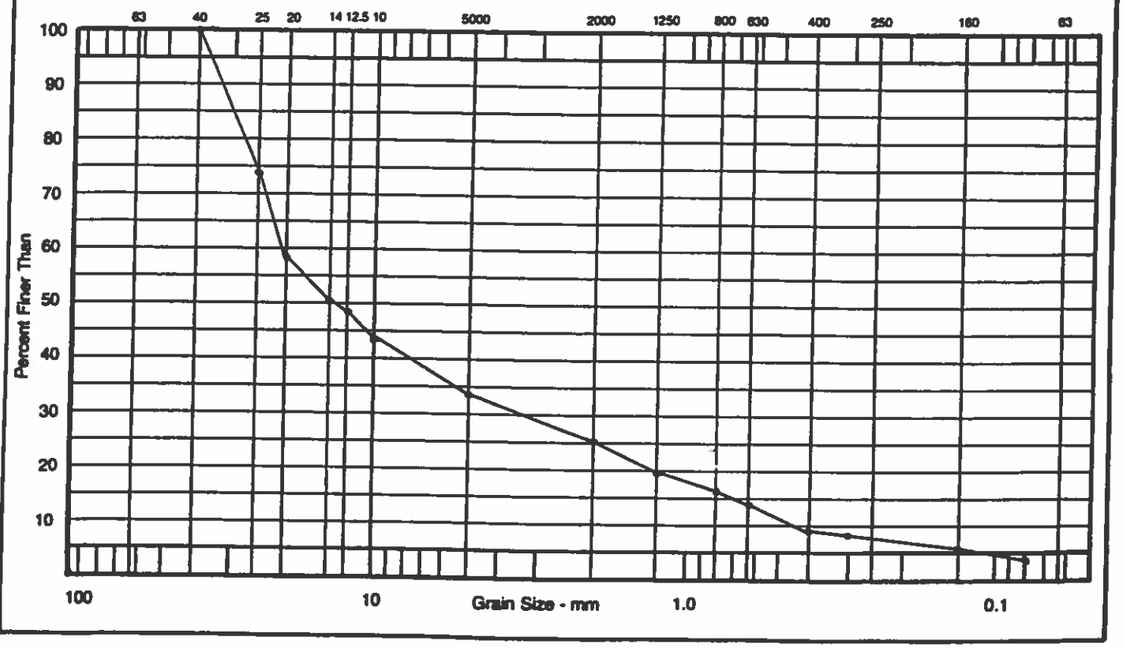
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					74.0
20000	20.0					58.2
14000	14.0					50.1
12500	12.5					48.4
10000	10.0					43.1
5000	5.0					33.5
2000	2.0					25.2
1250	1.250					19.9
800	0.800					16.1
630	0.630					13.8
400	0.400					9.7
315	0.315					7.9
160	0.160					5.7
80	0.080					4.3

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 6.2 %
Gravel : 66.5 %
Sand : 29.2 %
Silt : 4.3 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 18A-95 Depth: 0.10-4.00m
Location: Area # 7
TP # 18-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: D.C.L. Date: 1995/06/29

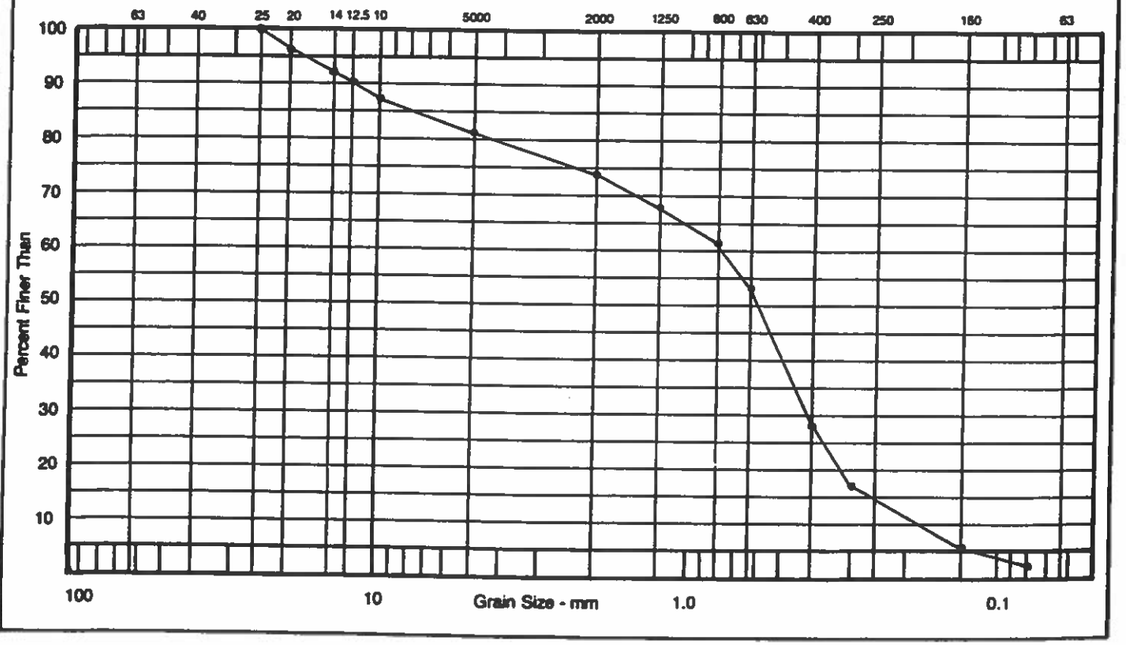
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					96.2
14000	14.0					92.4
12500	12.5					90.3
10000	10.0					87.4
5000	5.0					81.4
2000	2.0					74.1
1250	1.250					68.5
800	0.800					61.0
630	0.630					53.0
400	0.400					28.4
315	0.315					16.9
160	0.160					5.5
80	0.080					2.9

Description of Sample
Gravelly Sand, SP

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 3.2%
Gravel : 18.6%
Sand : 78.5%
Silt : 2.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 78 Depth: 0.8-1.0m
Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/29

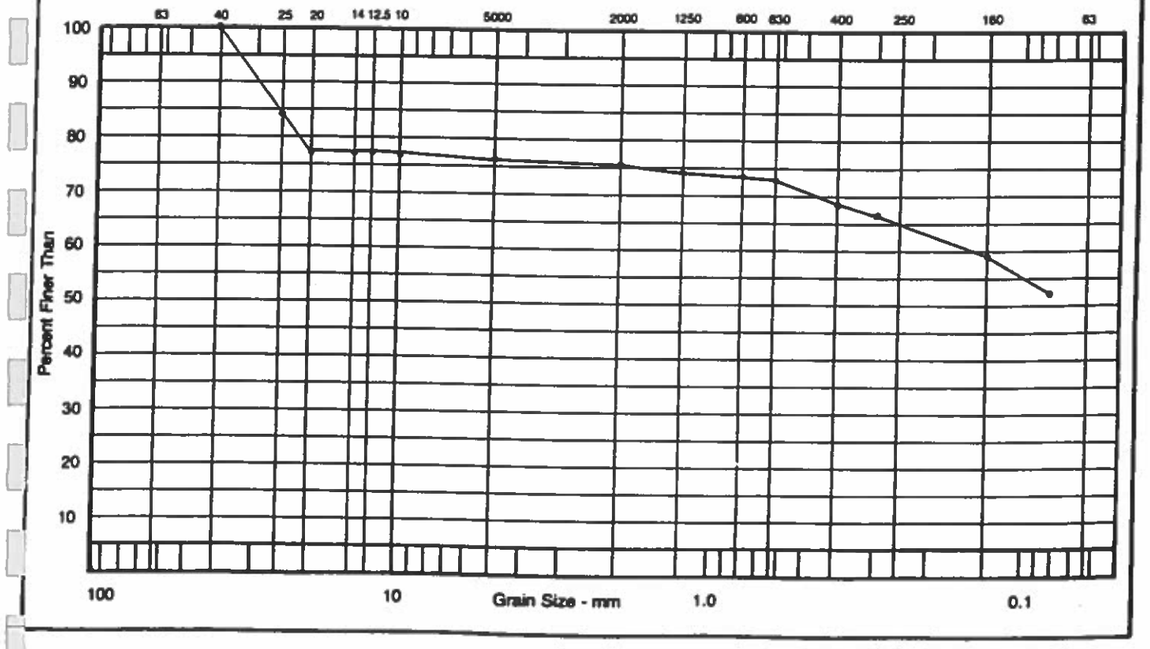
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					84.8
20000	20.0					77.1
14000	14.0					77.1
12500	12.5					77.1
10000	10.0					76.7
5000	5.0					76.2
2000	2.0					75.6
1250	1.250					74.9
800	0.800					73.9
630	0.630					72.7
400	0.400					68.8
315	0.315					66.0
160	0.160					59.3
80	0.080					52.5

Description of Sample: Sandy Gravelly Silt, SM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 13.5 %
Gravel : 23.8 %
Sand : 23.7 %
Silt : 52.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Sample: 79 Depth: 1.8-2.0m
Location: Area # 7
TP # 19-95
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

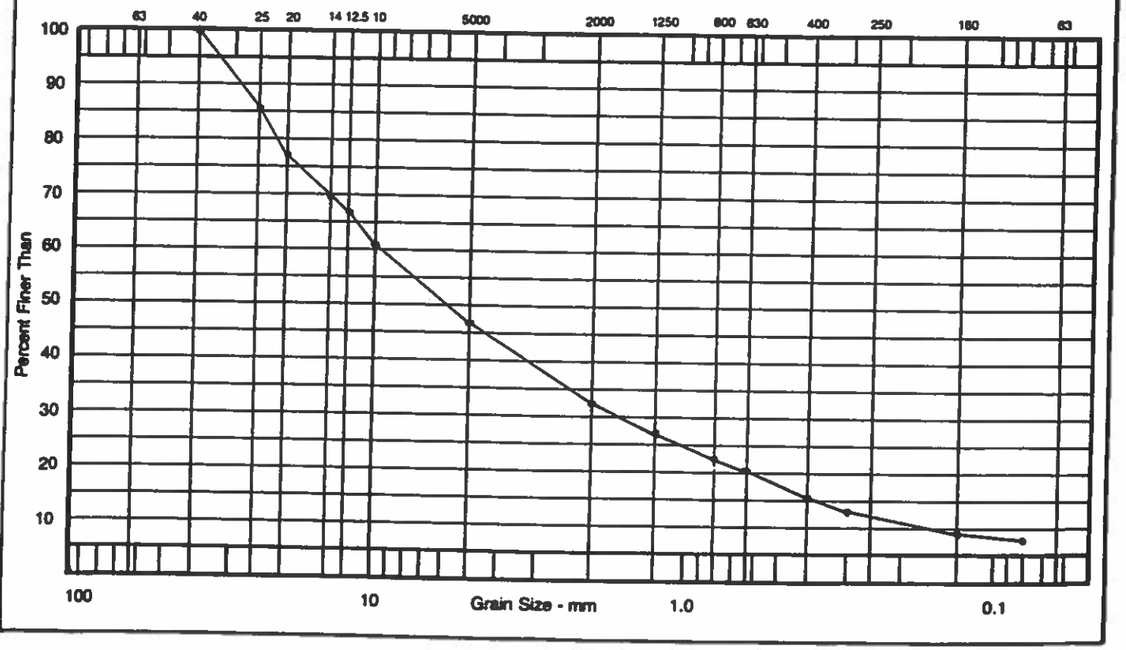
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					85.6
20000	20.0					76.9
14000	14.0					69.3
12500	12.5					66.7
10000	10.0					60.4
5000	5.0					46.1
2000	2.0					32.4
1250	1.250					26.6
800	0.800					22.6
630	0.630					20.2
400	0.400					15.6
315	0.315					13.3
160	0.160					9.6
80	0.080					7.7

Description of Sample: Sandy Gravel, GW-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.0 %
Gravel : 53.9 %
Sand : 38.4 %
Silt : 7.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 81 Depth: 3.8 - 4.0m
Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

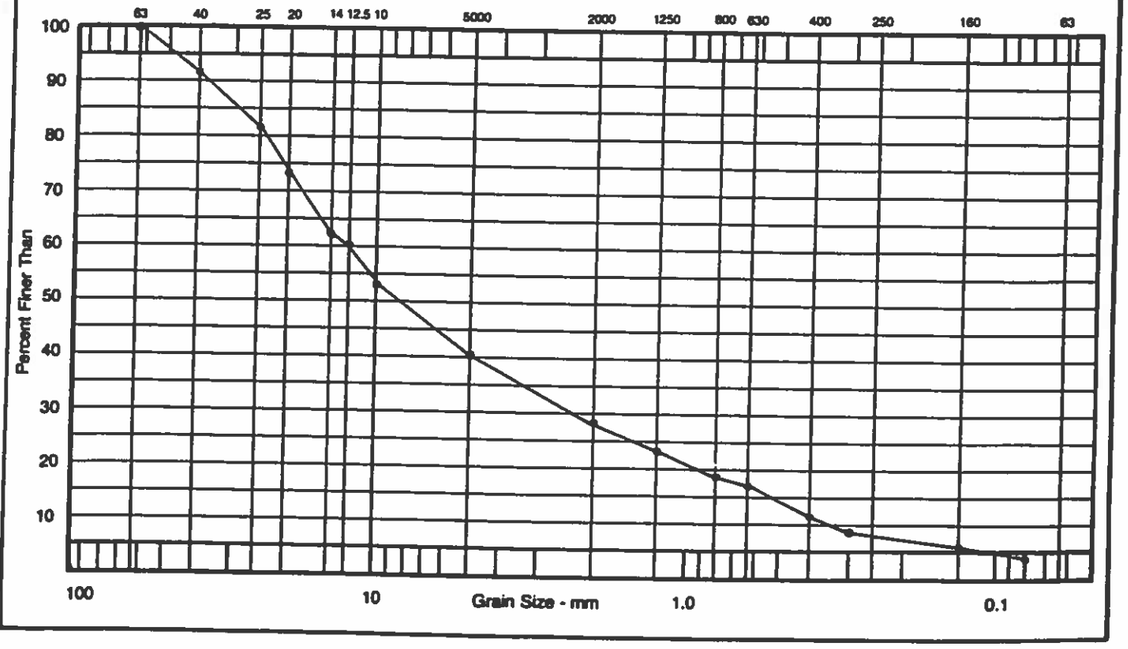
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					91.9
25000	25.0					81.9
20000	20.0					73.1
14000	14.0					62.5
12500	12.5					60.5
10000	10.0					53.9
5000	5.0					40.2
2000	2.0					28.7
1250	1.250					23.1
800	0.800					19.1
630	0.630					16.7
400	0.400					11.7
315	0.315					9.3
160	0.160					5.8
80	0.080					4.3

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 1.5 %
Gravel : 59.8 %
Sand : 35.9 %
Silt : 4.3 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 19A-95 Depth: 1.00 - 4.00m
Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C/K. Date: 1995/06/29

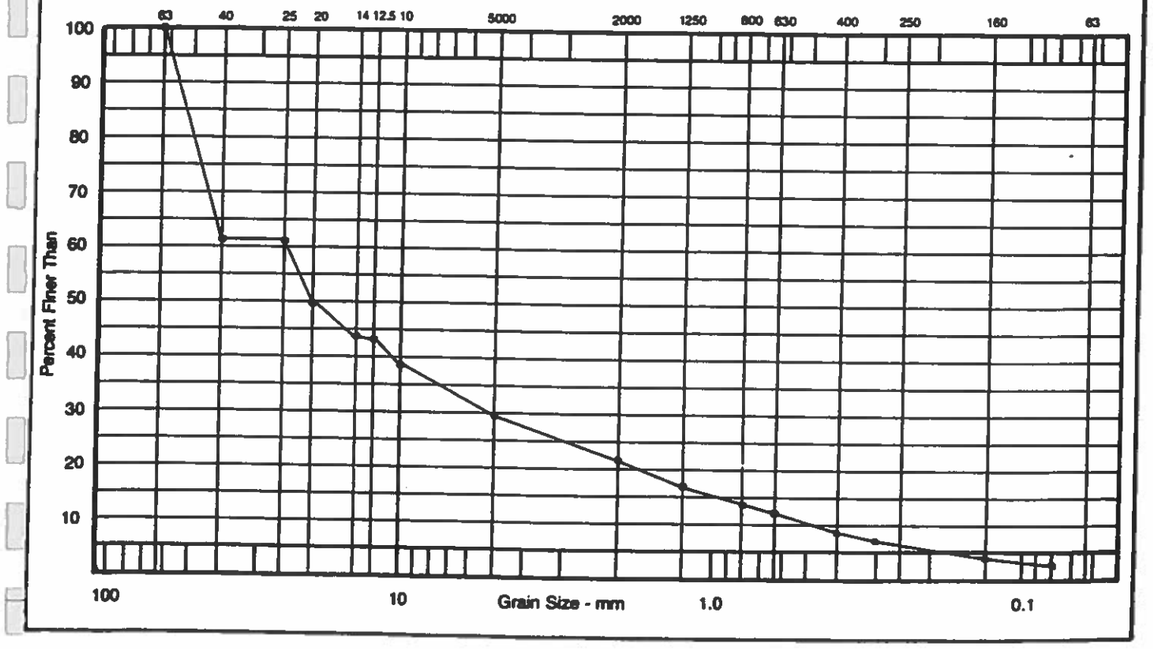
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					61.1
25000	25.0					61.1
20000	20.0					49.9
14000	14.0					43.9
12500	12.5					43.1
10000	10.0					38.8
5000	5.0					29.6
2000	2.0					21.3
1250	1.250					17.1
800	0.800					14.2
630	0.630					12.3
400	0.400					8.8
315	0.315					7.0
160	0.160					4.2
80	0.080					3.0

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 1.3%
Gravel : 70.4%
Sand : 26.6%
Silt : 3.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 83 Depth: 1.8 - 2.2m
Location: Area # 7
TP # 20-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

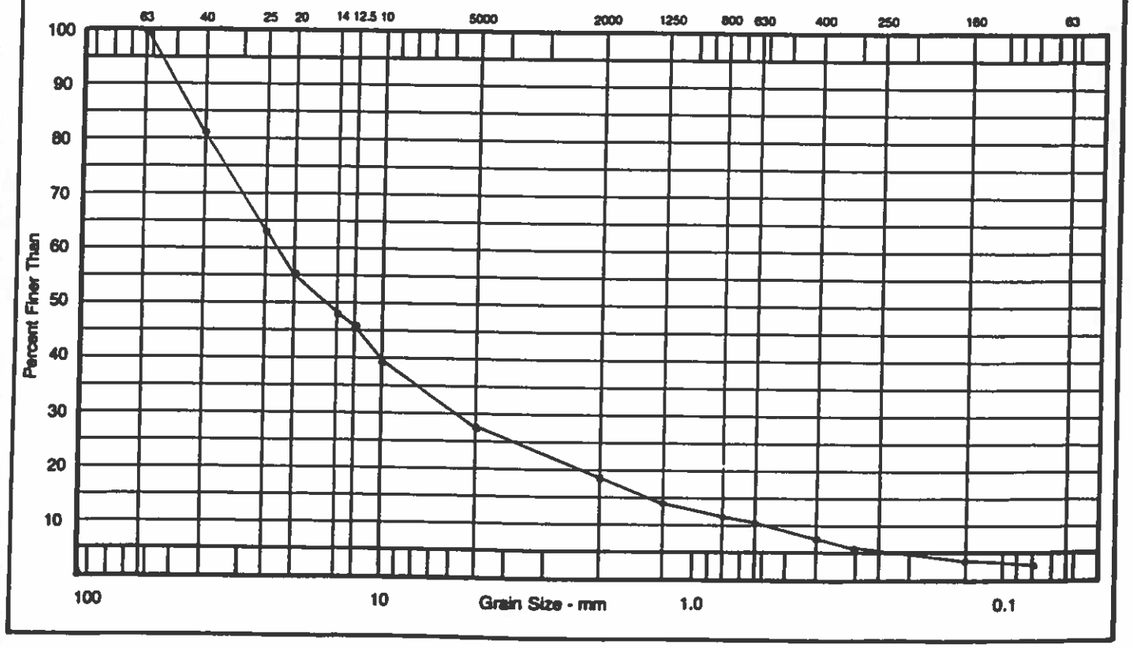
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					81.0
25000	25.0					62.8
20000	20.0					55.0
14000	14.0					47.8
12500	12.5					45.3
10000	10.0					39.1
5000	5.0					27.5
2000	2.0					18.5
1250	1.250					14.1
800	0.800					11.5
630	0.630					10.1
400	0.400					7.2
315	0.315					5.7
160	0.160					3.8
80	0.080					2.8

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 1.4 %
Gravel : 72.5 %
Sand : 24.7 %
Silt : 2.8 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 20A-95 Depth: 0.10 - 4.00m
Location: Area # 7
TP # 20-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: ..... Date: 1995/06/29

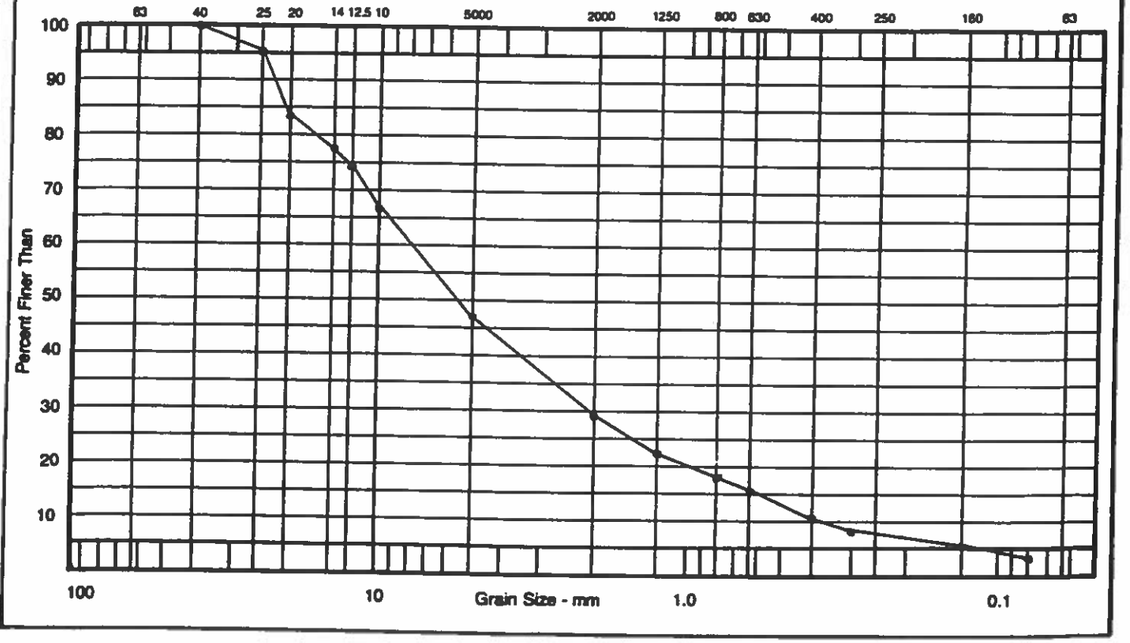
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					95.2
20000	20.0					83.9
14000	14.0					77.7
12500	12.5					74.6
10000	10.0					66.5
5000	5.0					47.0
2000	2.0					29.6
1250	1.250					22.5
800	0.800					18.2
630	0.630					15.6
400	0.400					10.9
315	0.315					8.6
160	0.160					5.4
80	0.080					3.9

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks: Moisture : 1.9 %, Trial Cloth Completed
Gravel : 53.0 %
Sand : 43.1 %
Silt : 3.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 20A (crushed) Depth 0.10-4.00m
Location Area # 7
TP # 20-95 Bulk Sample

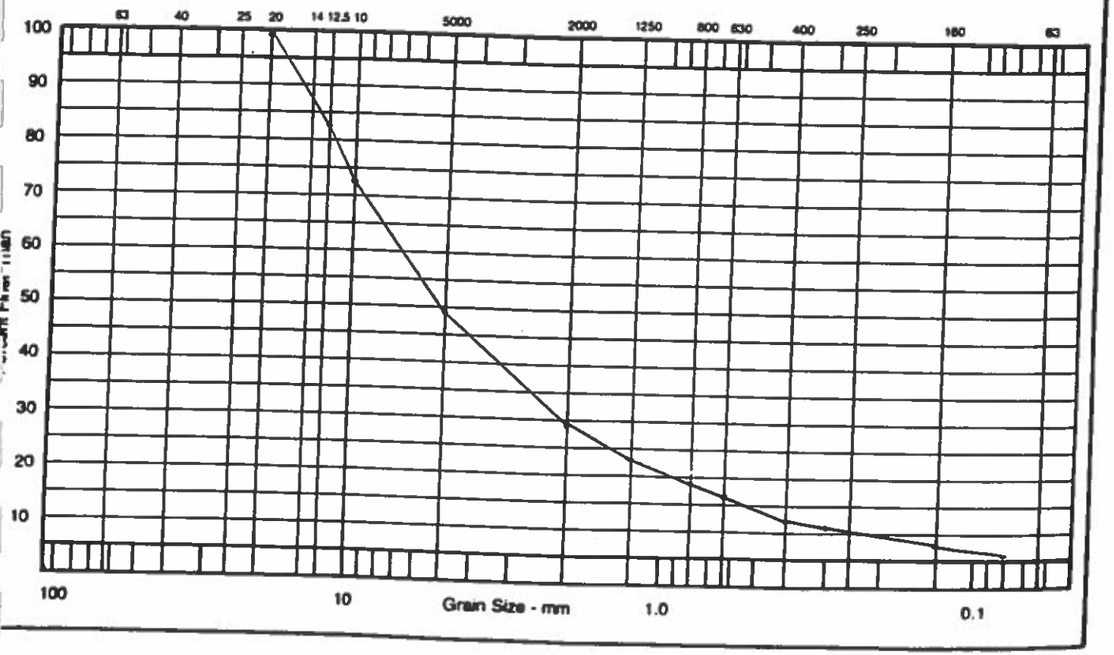
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No: 8002-234
Ck'd by: Date: 1995/06/30

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					83.5
5000	5.0					73.1
2000	2.0					49.5
1250	1.250					29.8
800	0.800					23.6
630	0.630					19.1
400	0.400					16.6
315	0.315					12.5
160	0.160					10.6
80	0.080					7.0
						5.4

Description of Sample
Trial Crushed to 20mm Maximum Size

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 3.9% Crush Count 2 pcs : 56.0%
Gravel : 50.5% LA Abrasion : 14.6% Loss
Sand : 44.1%
Silt : 5.4%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 86 Depth: 0.20-0.50m
Location: Area # 7
TP # 21-95

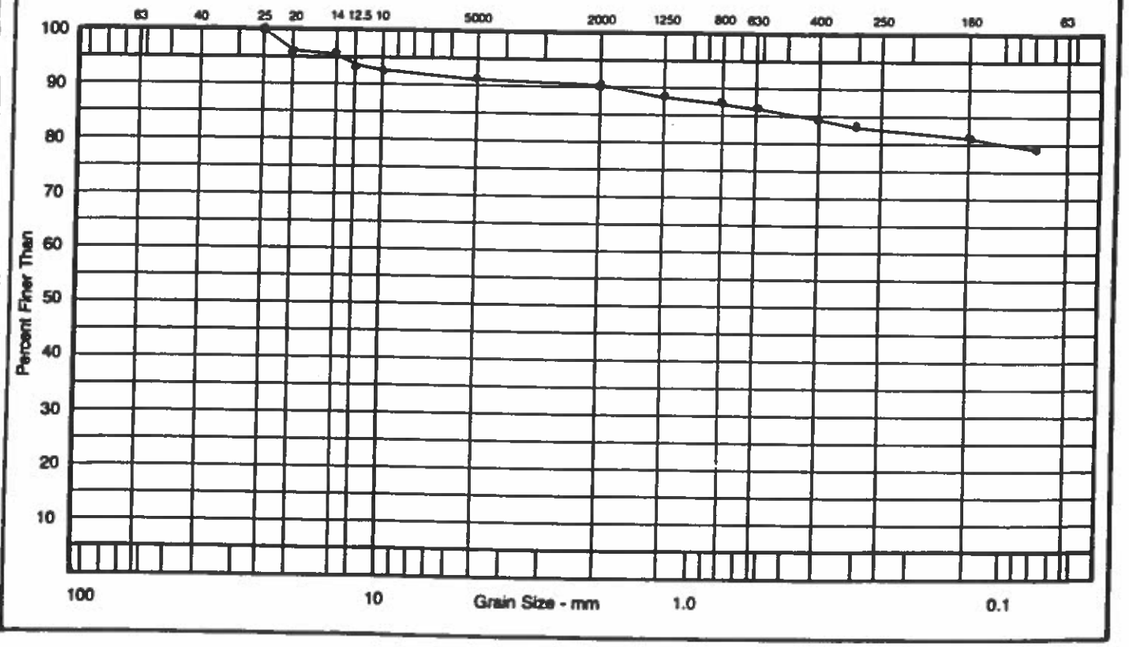
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					95.8
14000	14.0					95.8
12500	12.5					93.9
10000	10.0					93.3
5000	5.0					91.7
2000	2.0					90.1
1250	1.250					88.7
800	0.800					87.4
630	0.630					86.5
400	0.400					84.9
315	0.315					83.7
160	0.160					81.9
80	0.080					79.2

Description of Sample
Silt, ML
Some sand
trace gravel

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 33.8 %
Gravel : 8.3 %
Sand : 12.5 %
Silt : 79.2 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 88 Depth: 1.8-2.0m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/29

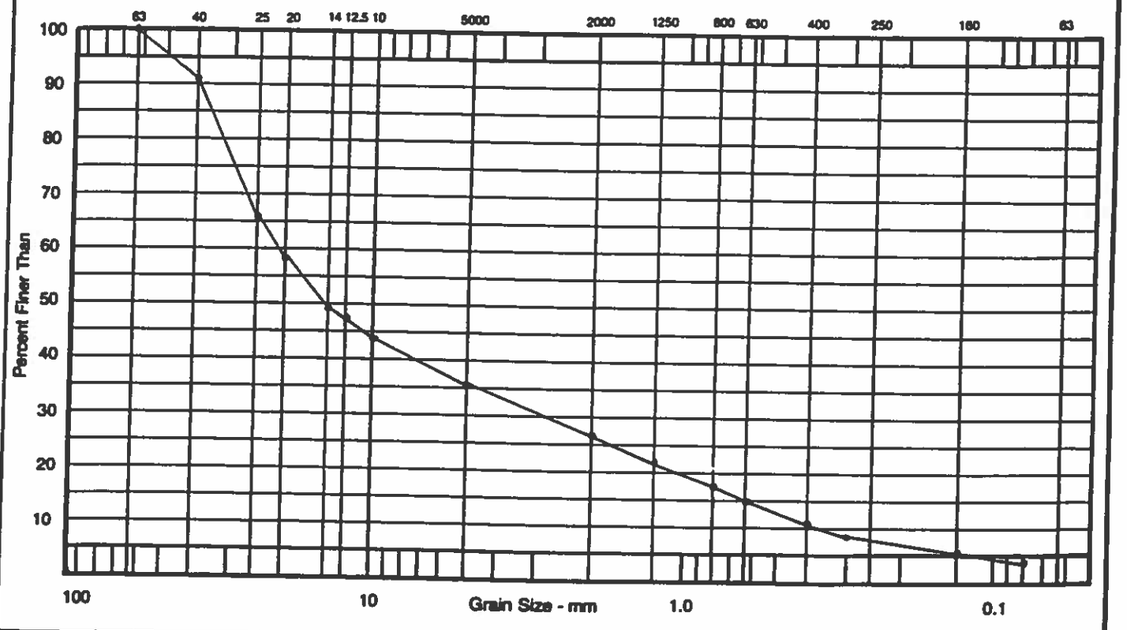
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					90.7
25000	25.0					65.9
20000	20.0					58.8
14000	14.0					49.2
12500	12.5					47.4
10000	10.0					44.0
5000	5.0					35.1
2000	2.0					26.7
1250	1.250					21.4
800	0.800					17.5
630	0.630					15.0
400	0.400					10.7
315	0.315					8.7
160	0.160					5.5
80	0.080					4.1

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 4.6 %
Gravel : 64.9 %
Sand : 31.0 %
Silt : 4.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 90 Depth: 3.8-4.0m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/29

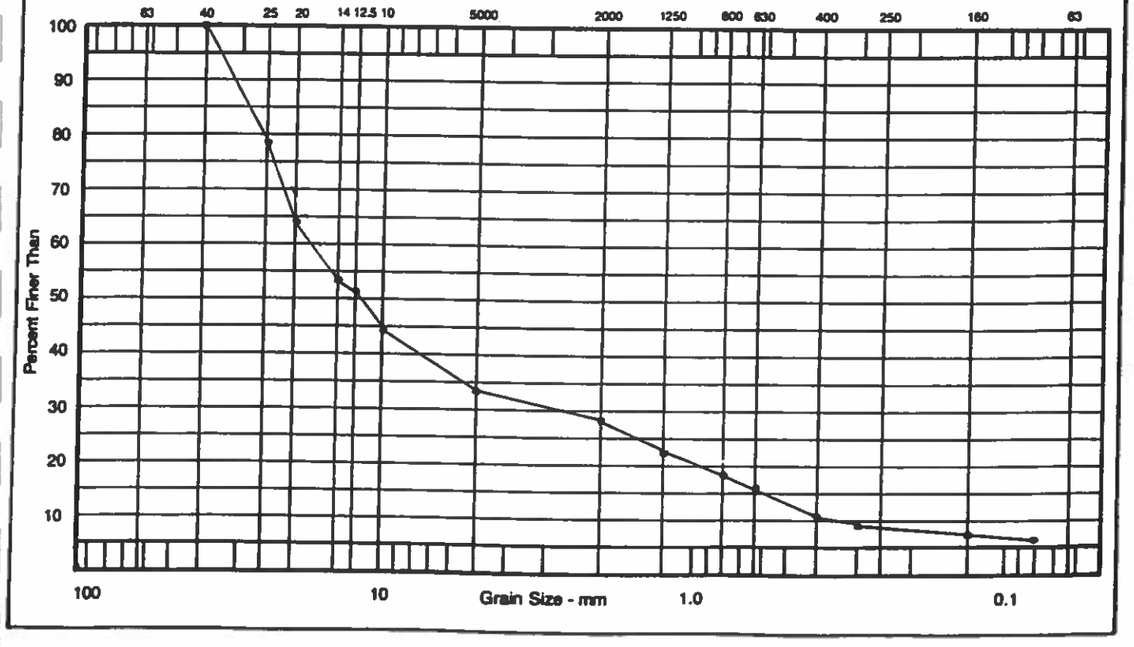
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					78.4
20000	20.0					64.6
14000	14.0					53.6
12500	12.5					51.7
10000	10.0					44.6
5000	5.0					33.2
2000	2.0					28.4
1250	1.250					22.5
800	0.800					18.0
630	0.630					15.3
400	0.400					11.0
315	0.315					9.3
160	0.160					7.0
80	0.080					6.0

Description of Sample: Sandy Gravel, GW-GM trace Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ... Washed X

Remarks:
Moisture : 3.0 %
Gravel : 66.8 %
Sand : 27.2 %
Silt : 6.0 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 21A-95 Depth: 0.50-4.00m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

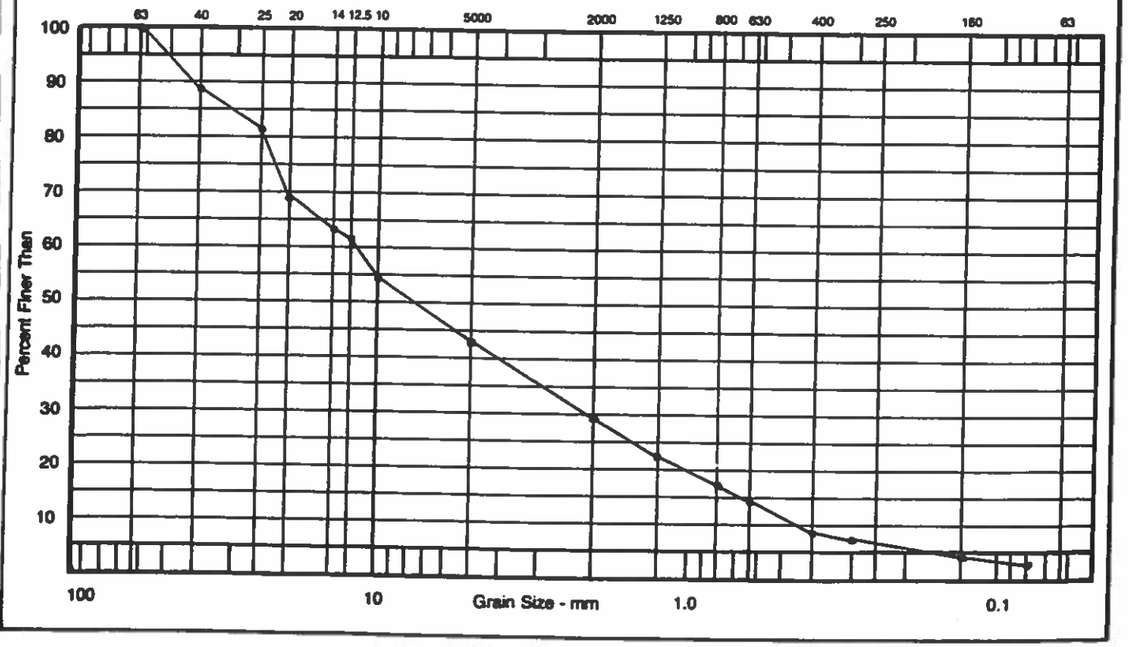
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					88.8
25000	25.0					81.1
20000	20.0					69.1
14000	14.0					63.3
12500	12.5					61.4
10000	10.0					54.8
5000	5.0					42.4
2000	2.0					29.7
1250	1.250					22.4
800	0.800					17.2
630	0.630					14.4
400	0.400					9.2
315	0.315					7.1
160	0.160					4.1
80	0.080					2.9

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.8 %
Gravel : 57.6 %
Sand : 39.5 %
Silt : 2.9 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 91 Depth: 1.0 - 1.2 m
Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/29

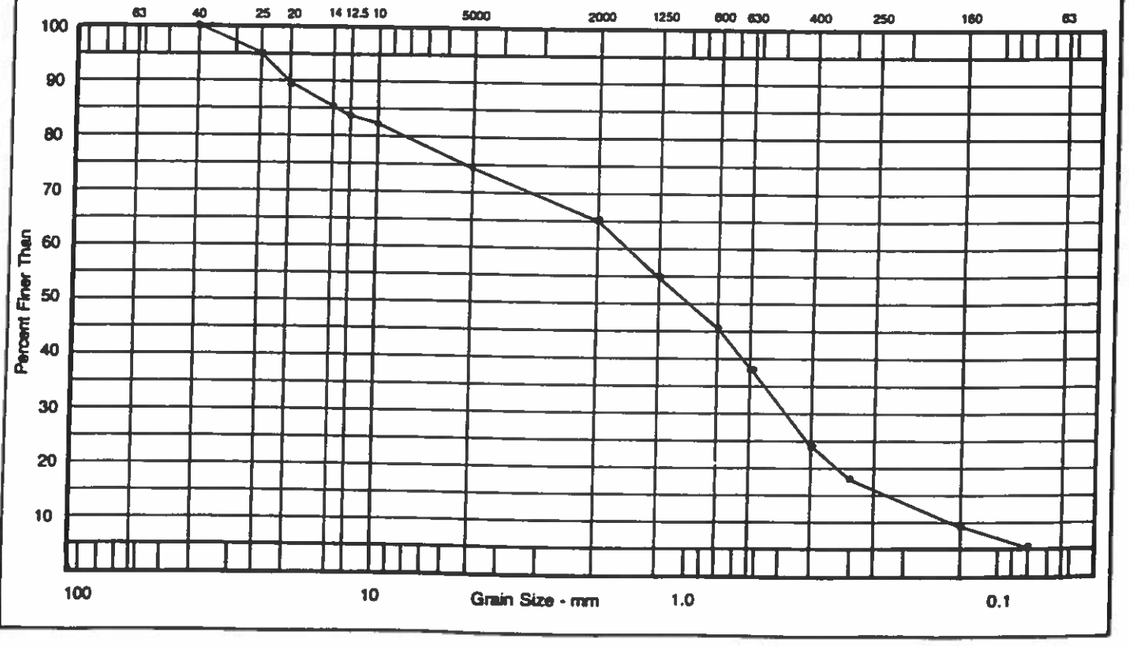
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					95.0
20000	20.0					89.7
14000	14.0					85.1
12500	12.5					84.0
10000	10.0					82.3
5000	5.0					74.6
2000	2.0					65.0
1250	1.250					55.0
800	0.800					45.1
630	0.630					37.7
400	0.400					24.1
315	0.315					18.2
160	0.160					9.3
80	0.080					5.4

Description of Sample: Gravelly Sand, SW-SM, trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 1.3 %
Gravel : 25.4 %
Sand : 69.2 %
Silt : 5.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: -93 Depth: 3.0-3.2m

Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

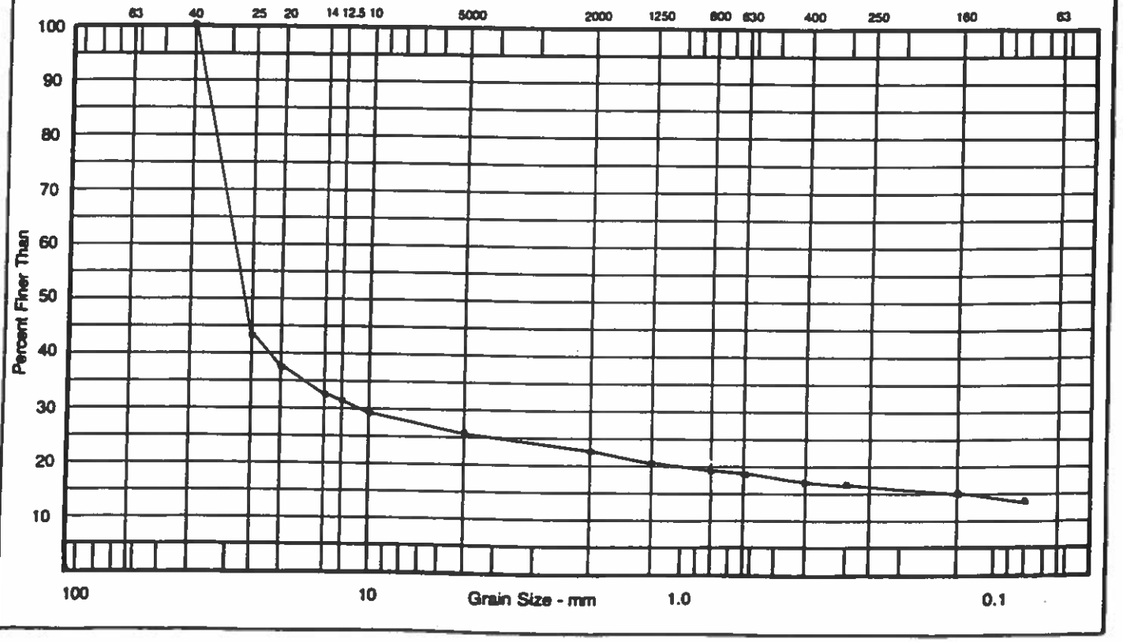
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					43.0
20000	20.0					37.0
14000	14.0					32.1
12500	12.5					31.5
10000	10.0					29.3
5000	5.0					25.8
2000	2.0					22.7
1250	1.250					20.9
800	0.800					19.7
630	0.630					18.8
400	0.400					17.2
315	0.315					16.3
160	0.160					15.0
80	0.080					14.1

Description of Sample: Gravel, GM
Some Silt
Some Sand

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 4.4 %
Gravel : 74.2 %
Sand : 11.7 %
Silt : 14.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 94 Depth: 3.8-4.0m
Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C.R. Date: 1995/06/29

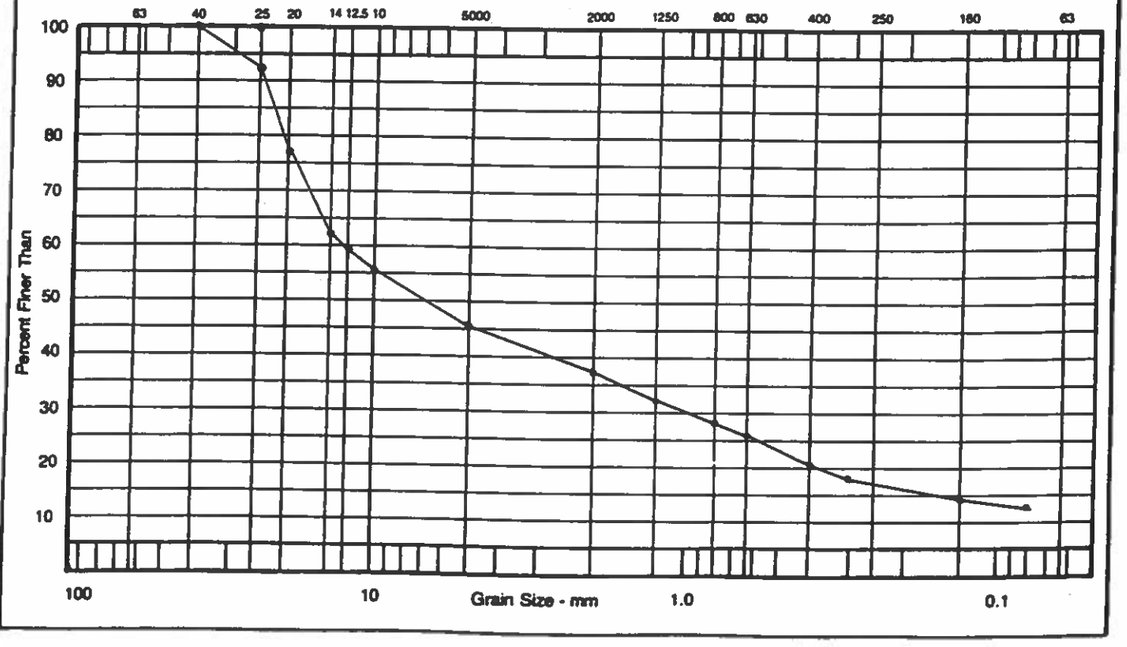
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					92.2
20000	20.0					76.8
14000	14.0					61.9
12500	12.5					59.8
10000	10.0					55.6
5000	5.0					45.1
2000	2.0					37.4
1250	1.250					32.3
800	0.800					28.5
630	0.630					25.8
400	0.400					20.7
315	0.315					18.3
160	0.160					14.5
80	0.080					12.7

Description of Sample: Sandy Gravel, GM
Some Silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.0 %
Gravel : 54.9 %
Sand : 32.4 %
Silt : 12.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 224-95 Depth: 3.00-4.00m
Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

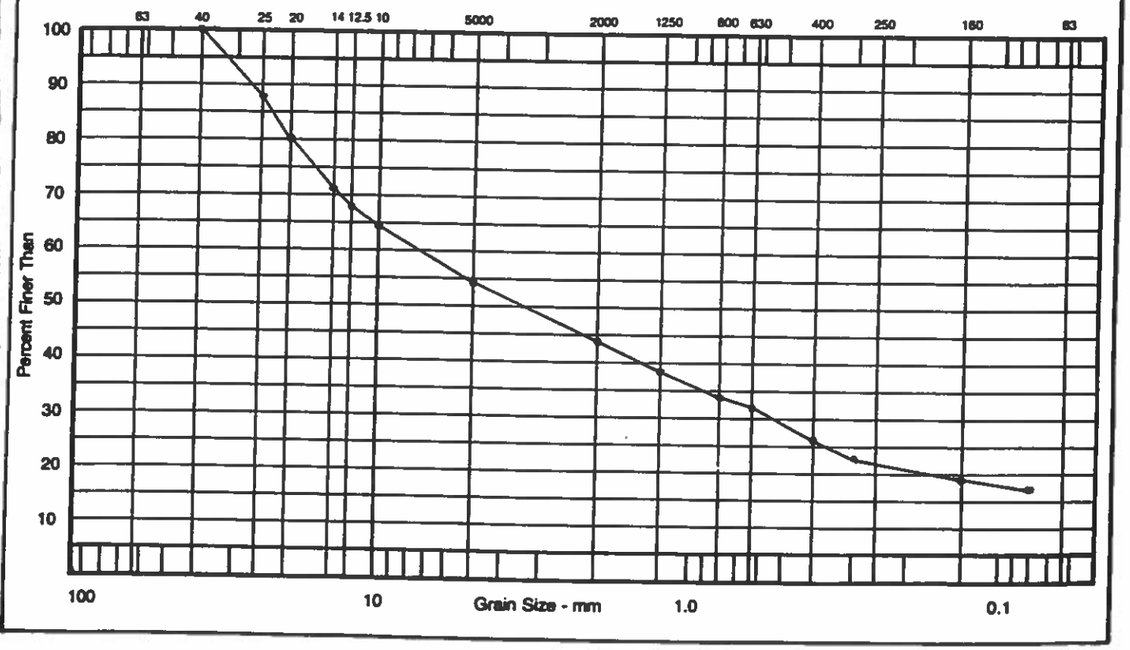
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					88.0
20000	20.0					80.0
14000	14.0					71.0
12500	12.5					68.3
10000	10.0					64.7
5000	5.0					54.7
2000	2.0					44.2
1250	1.250					38.5
800	0.800					34.1
630	0.630					31.3
400	0.400					25.8
315	0.315					23.3
160	0.160					19.5
80	0.080					17.5

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 39 %
Gravel : 45.3 %
Sand : 37.2 %
Silt : 17.5 %
Trial Grain Completed



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 22A (Crushed) Depth: 3.0 - 4.0 m
Location: Area # 7
TP # 22-95 Bulk Sample

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: Date: 1995/06/30

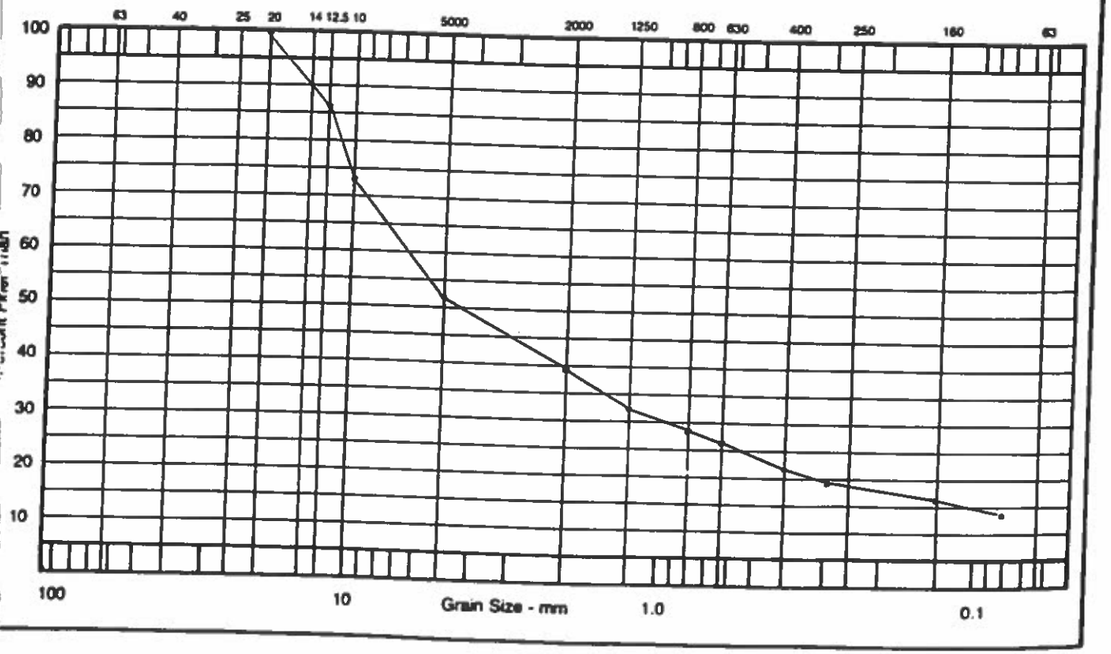
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					86.3
5000	5.0					73.0
2000	2.0					51.1
1250	1.250					39.9
800	0.800					32.8
630	0.630					28.4
400	0.400					25.7
315	0.315					21.4
160	0.160					19.5
80	0.080					15.8
						14.0

Description of Sample: Trial Crushed to 20mm Maximum Size

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed: X

Remarks:
Moisture : 4.8% Crush Count 2 Faces : 79.0%
Gravel : 48.9% LA Abrasion 14.6% Loss
Sand : 37.1%
Silt : 14.0%



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SCREEN ANALYSIS

Sample: 95 Depth: 0.20-0.40m
Location: Area # 7
TP # 23-95

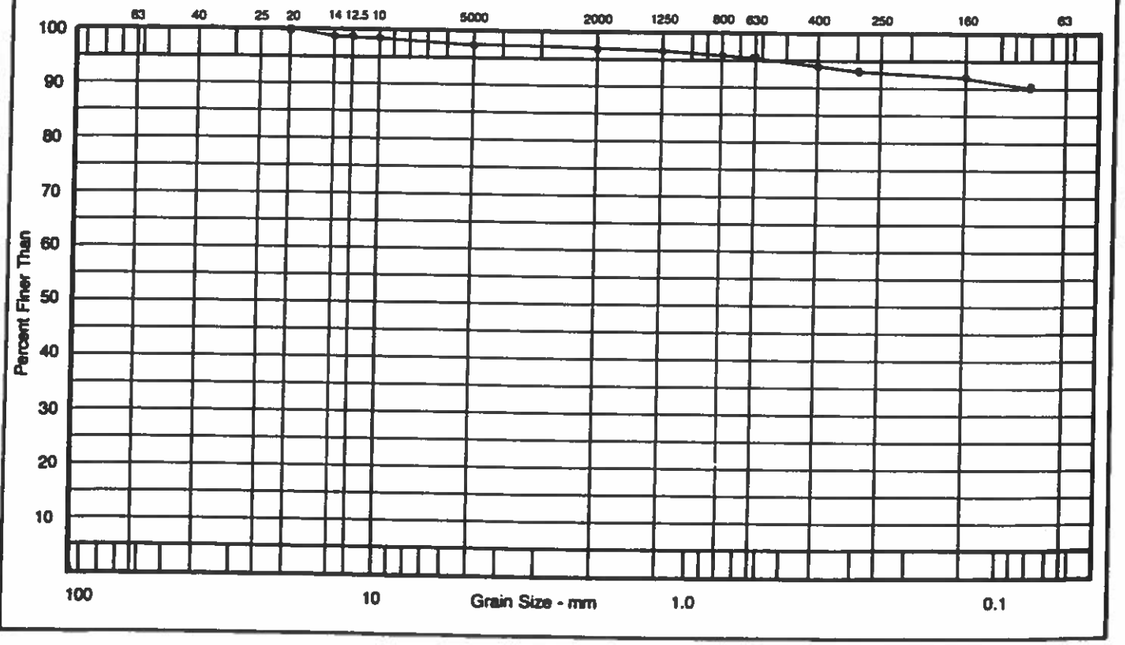
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WC/C Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					98.3
12500	12.5					98.3
10000	10.0					98.1
5000	5.0					97.5
2000	2.0					96.8
1250	1.250					96.2
800	0.800					95.7
630	0.630					95.3
400	0.400					94.2
315	0.315					93.6
160	0.160					92.4
80	0.080					90.2

Description of Sample
Silt, ML
Trace Sand

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 13.2%
Gravel : 2.5%
Sand : 7.3%
Silt : 90.2%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 96 Depth: 0.40 - 4.00m
Location: Area # 7
TP # 23-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

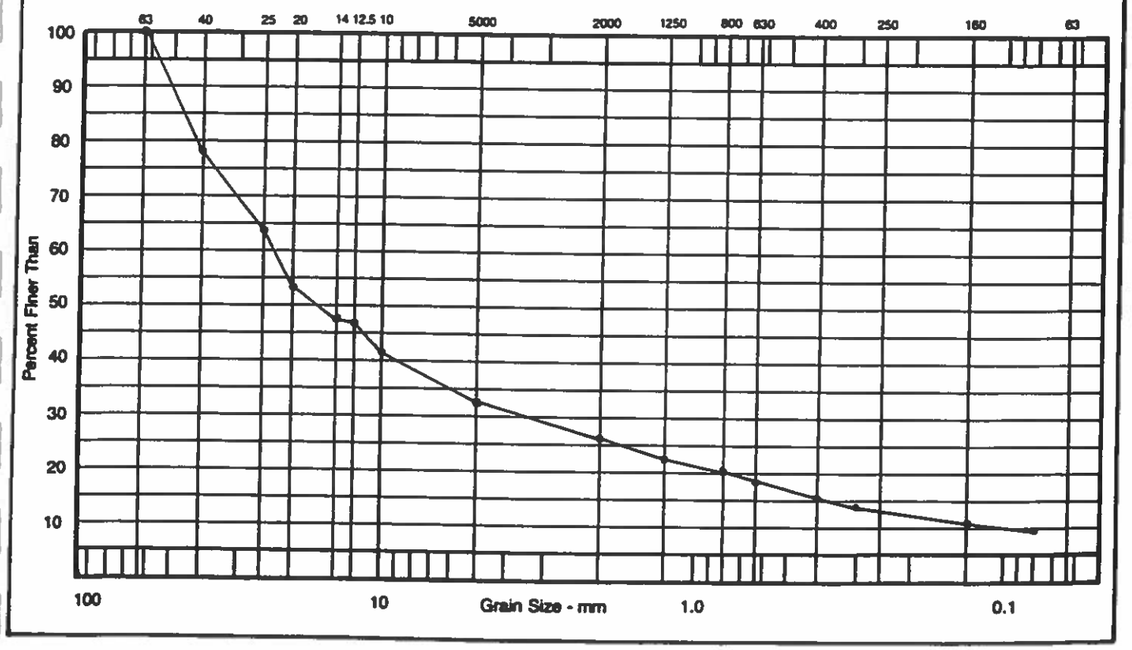
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					78.1
25000	25.0					64.1
20000	20.0					52.9
14000	14.0					47.5
12500	12.5					46.1
10000	10.0					41.5
5000	5.0					32.9
2000	2.0					26.0
1250	1.250					22.7
800	0.800					20.3
630	0.630					18.7
400	0.400					15.6
315	0.315					14.1
160	0.160					11.5
80	0.080					9.9

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 2.3%
Gravel : 67.1%
Sand : 23.0%
Silt : 9.9%



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SCREEN ANALYSIS

Sample: 23A-95 Depth: 0.40 - 4.00m
Location: Area # 7
TP # 23-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WSCR Date: 1995/06/ 29

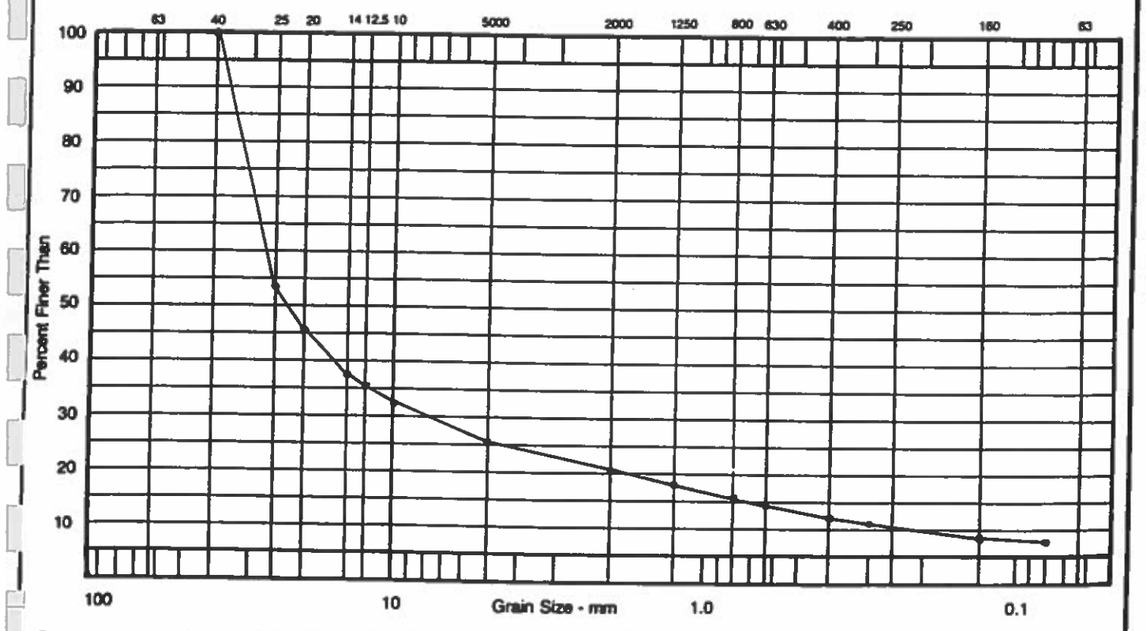
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					53.9
20000	20.0					45.1
14000	14.0					37.2
12500	12.5					35.6
10000	10.0					32.2
5000	5.0					25.5
2000	2.0					20.5
1250	1.250					17.9
800	0.800					16.0
630	0.630					14.7
400	0.400					12.2
315	0.315					11.0
160	0.160					8.9
80	0.080					7.7

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.5 %
Gravel : 74.5 %
Sand : 17.8 %
Silt : 7.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample 102 Depth 2.5 - 3.0m
Location Area # 7
TP # 24

Client YTG, Transportation Engineering Branch
Project Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job No. 8002-234
Ck'd by WC/C Date 1995/07/06

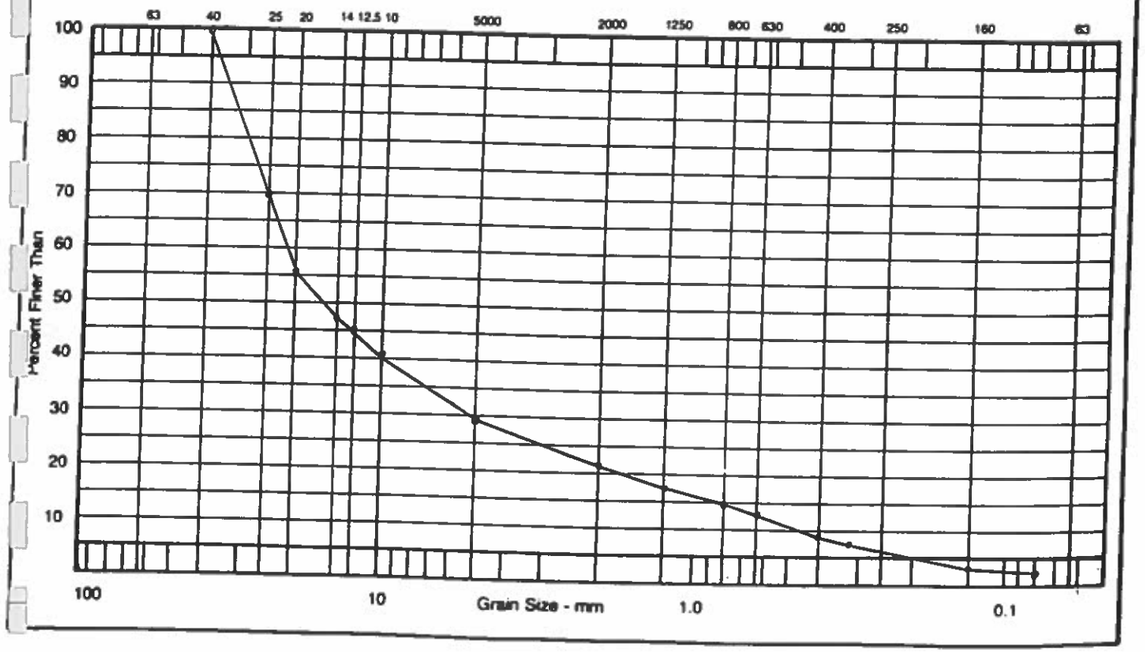
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					69.5
20000	20.0					55.3
14000	14.0					47.2
12500	12.5					45.1
10000	10.0					40.2
5000	5.0					29.3
2000	2.0					21.1
1250	1.250					17.8
800	0.800					14.8
630	0.630					13.1
400	0.400					9.4
315	0.315					7.4
160	0.160					3.6
80	0.080					2.1

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.0 %
Gravel : 70.7 %
Sand : 27.2 %
Silt : 2.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 24A-95 Depth: 0.05 - 3.00m
Location: Area # 7
TP # 24-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/29

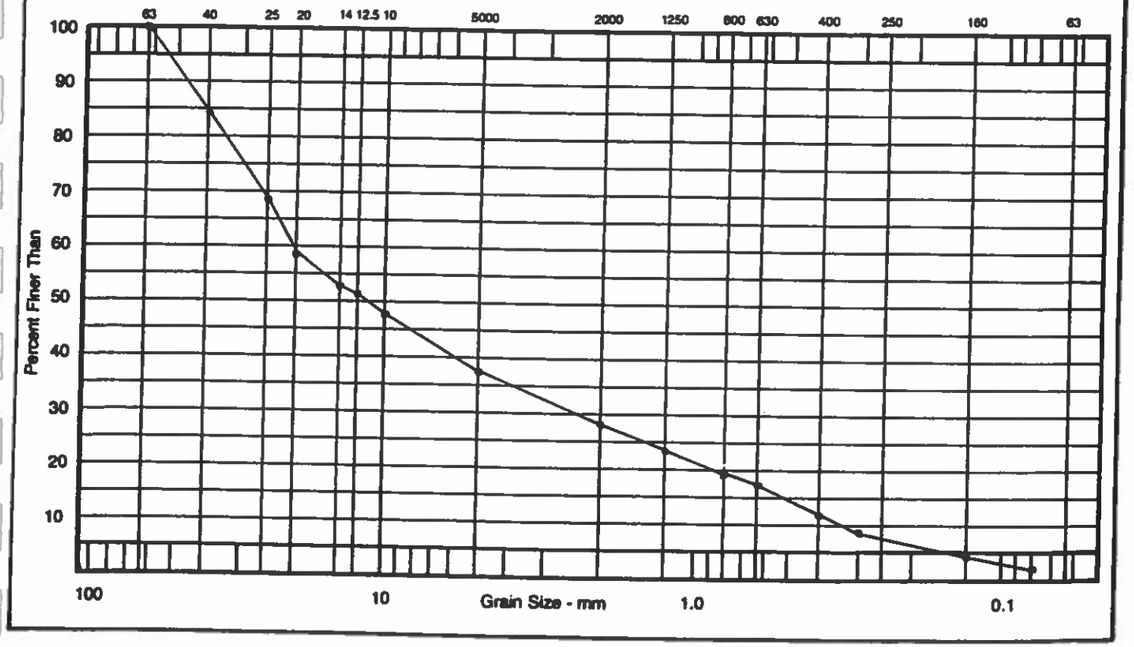
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
						100.0
40000	40.0					84.4
25000	25.0					68.8
20000	20.0					58.8
14000	14.0					52.6
12500	12.5					51.0
10000	10.0					47.5
5000	5.0					37.5
2000	2.0					28.0
1250	1.250					23.2
800	0.800					19.5
630	0.630					17.0
400	0.400					11.9
315	0.315					9.3
160	0.160					4.4
80	0.080					2.1

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 2.5 %
Gravel : 62.5 %
Sand : 35.4 %
Silt : 2.1 %
Trial Crush Completed



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CONSULTING AND TESTING ENGINEERS

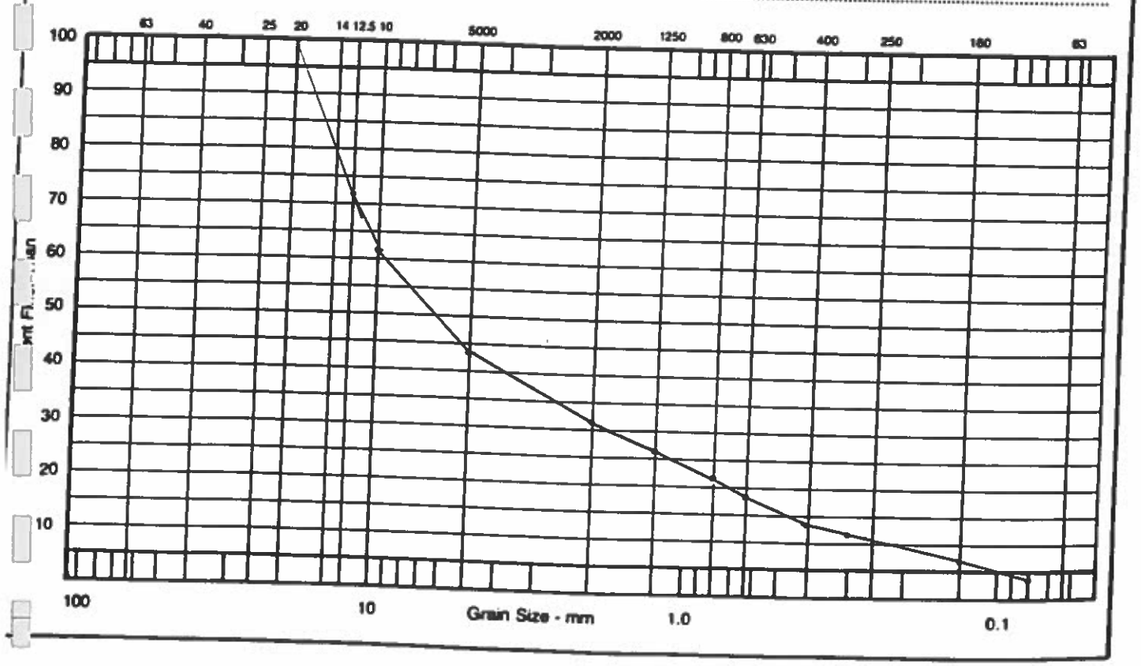
SCREEN ANALYSIS

Sample: 24A (Crushed) Depth 0.05 - 3.0m Client: YTG, Transportation Engineering Branch
Location: Area # 7 Project Greater Whitehorse Inventory of Sand & Gravel
TP # 24-95 Blk Made by RK & PR Job. No. 8002-234
Ck'd by Date 1995/06/30

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					71.7
5000	5.0					61.4
2000	2.0					44.0
1250	1.250					31.5
800	0.800					25.9
630	0.630					21.5
400	0.400					19.3
315	0.315					14.3
160	0.160					12.0
80	0.080					6.6
						4.2

Description of Sample: Trial Crushed to 20mm Maximum Size
Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X
Remarks:
Moisture : 3.4%
Gravel : 56.0%
Sand : 39.8 %
Silt : 4.2 %
Crush Count 2 Faces: 80.0%
LA Abrasion: 14.6% loss



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 106 Depth: 2.5 - 2.8 m
Location: Area # 7
TP # 25

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: WCK Date: 1995/07/06

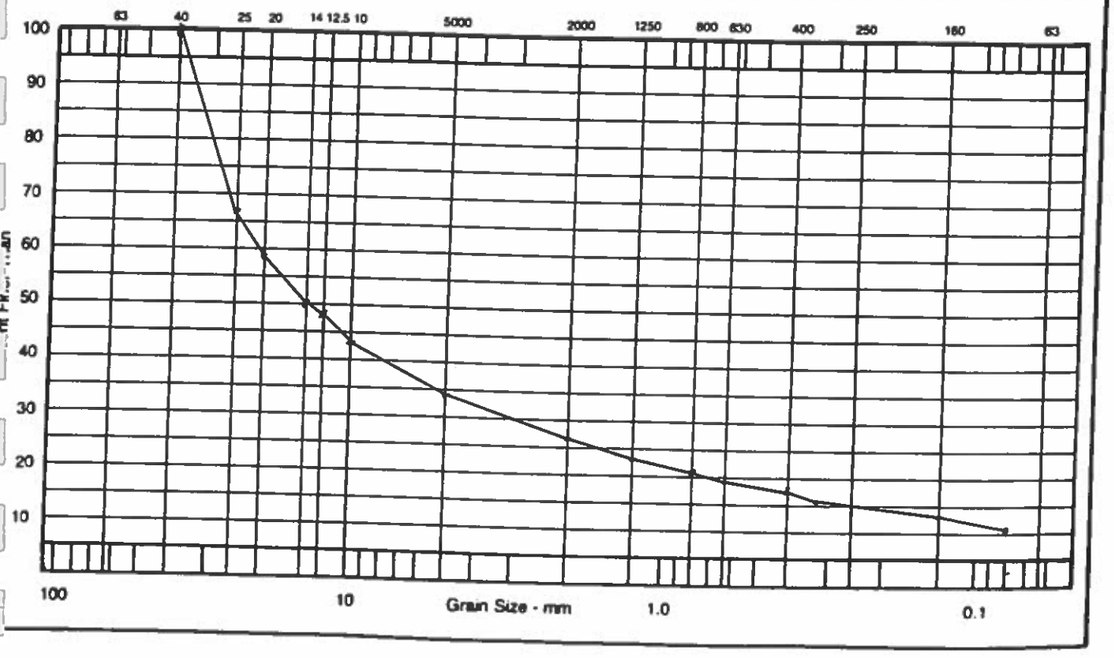
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100
25000	25.0					66.2
20000	20.0					58.6
14000	14.0					50.0
12500	12.5					48.2
10000	10.0					43.2
5000	5.0					34.0
2000	2.0					26.1
1250	1.250					23.0
800	0.800					20.4
630	0.630					19.2
400	0.400					17.0
315	0.315					15.8
160	0.160					13.0
80	0.080					10.4

Description of Sample: Sandy Gravel, Some Silt, GP-GM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 3.1 %
Gravel : 66.0 %
Sand : 23.6 %
Silt : 10.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 25A-95 Depth: 2.50-4.00m
Location: Area # 7 / TP # 25-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					69.8
25000	25.0					55.2
20000	20.0					46.4
14000	14.0					38.9
12500	12.5					38.1
10000	10.0					34.7
5000	5.0					26.9
2000	2.0					21.6
1250	1.250					19.3
800	0.800					17.7
630	0.630					16.8
400	0.400					15.1
315	0.315					14.1
160	0.160					11.4
80	0.080					9.4

Description of Sample: Sandy Gravel, GP-GM, trace silt

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture: 2.3%
Gravel: 73.1%
Sand: 17.5%
Silt: 9.4%

Time of Sieving: Min. 15

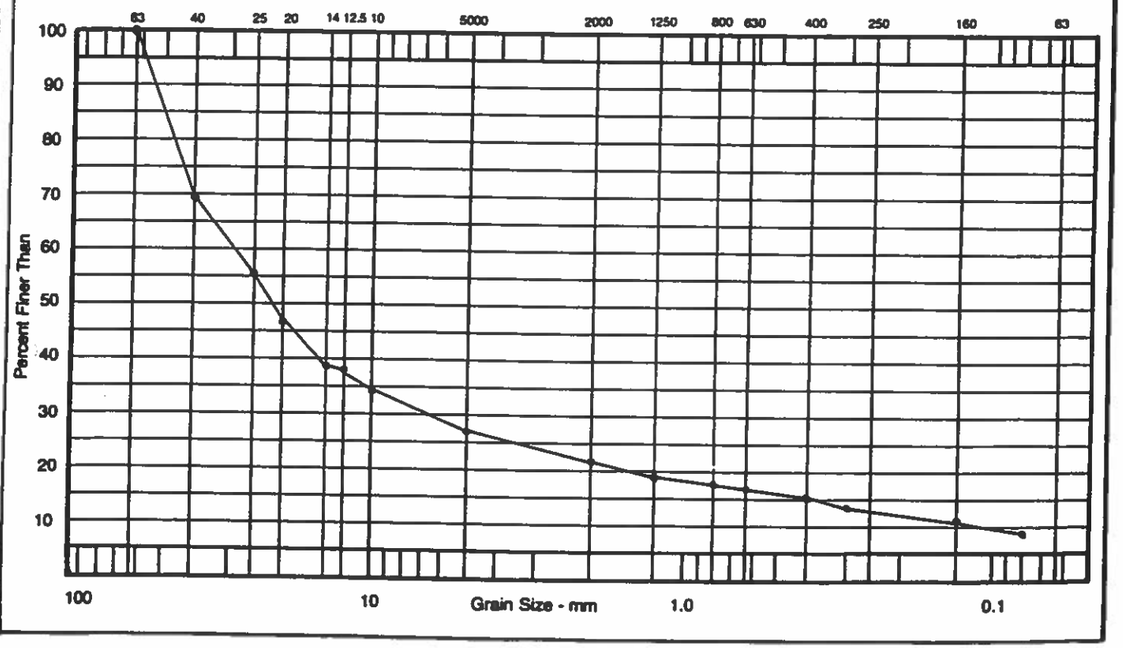


Photo # 9

Photo # 10

Photo # 11 (From TP# 18-95 Looking East)

Photo # 12

HOGGAN ENGINEERING & TESTING (1980) LTD.

Area #7
Alaska Hwy

802-234

HOGGAN ENGINEERING & TESTING (1980) LTD.

Area # 7

Alaska Hwy

8002-234

Photo # 13

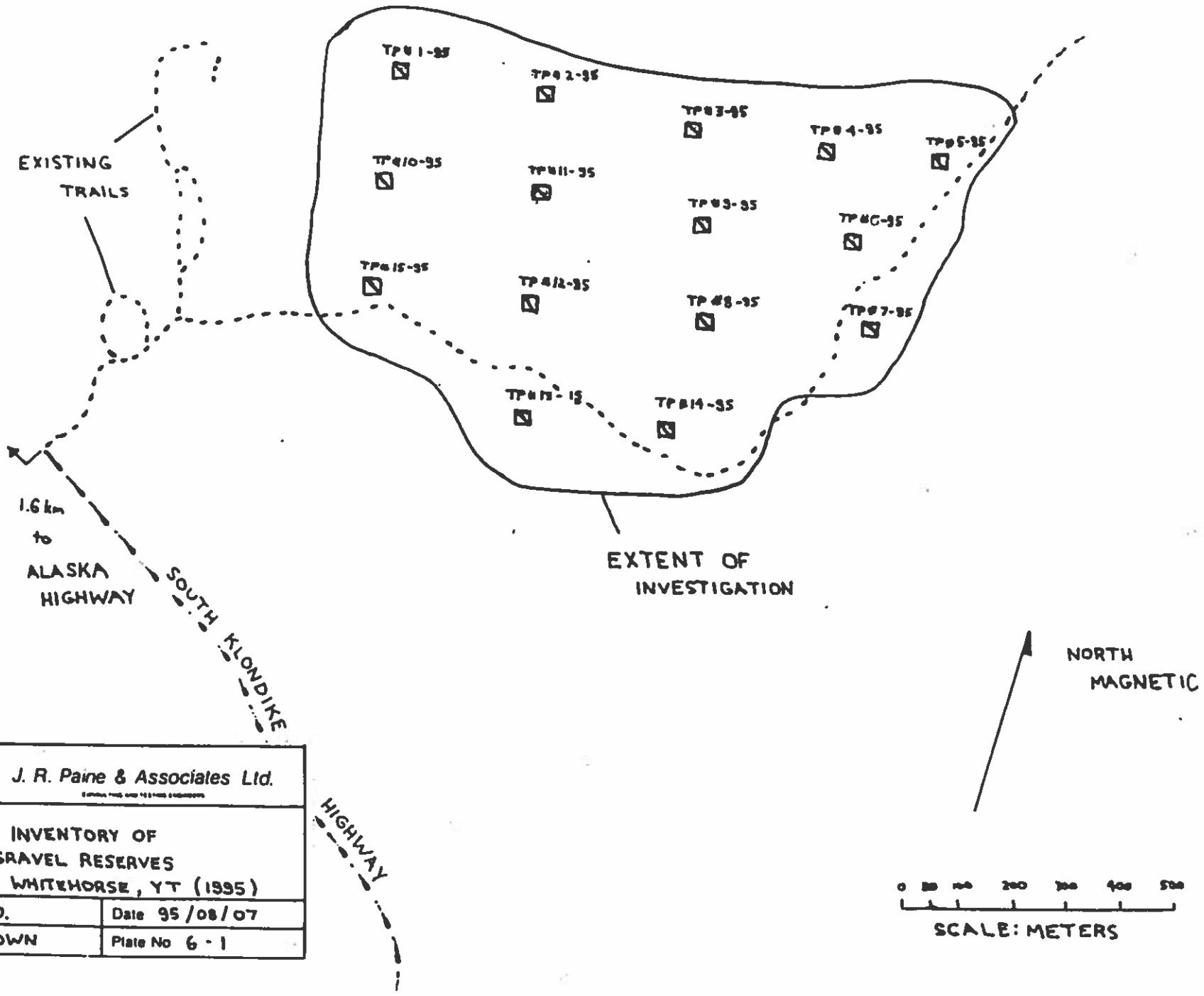
Photo # 14

Photo # 15

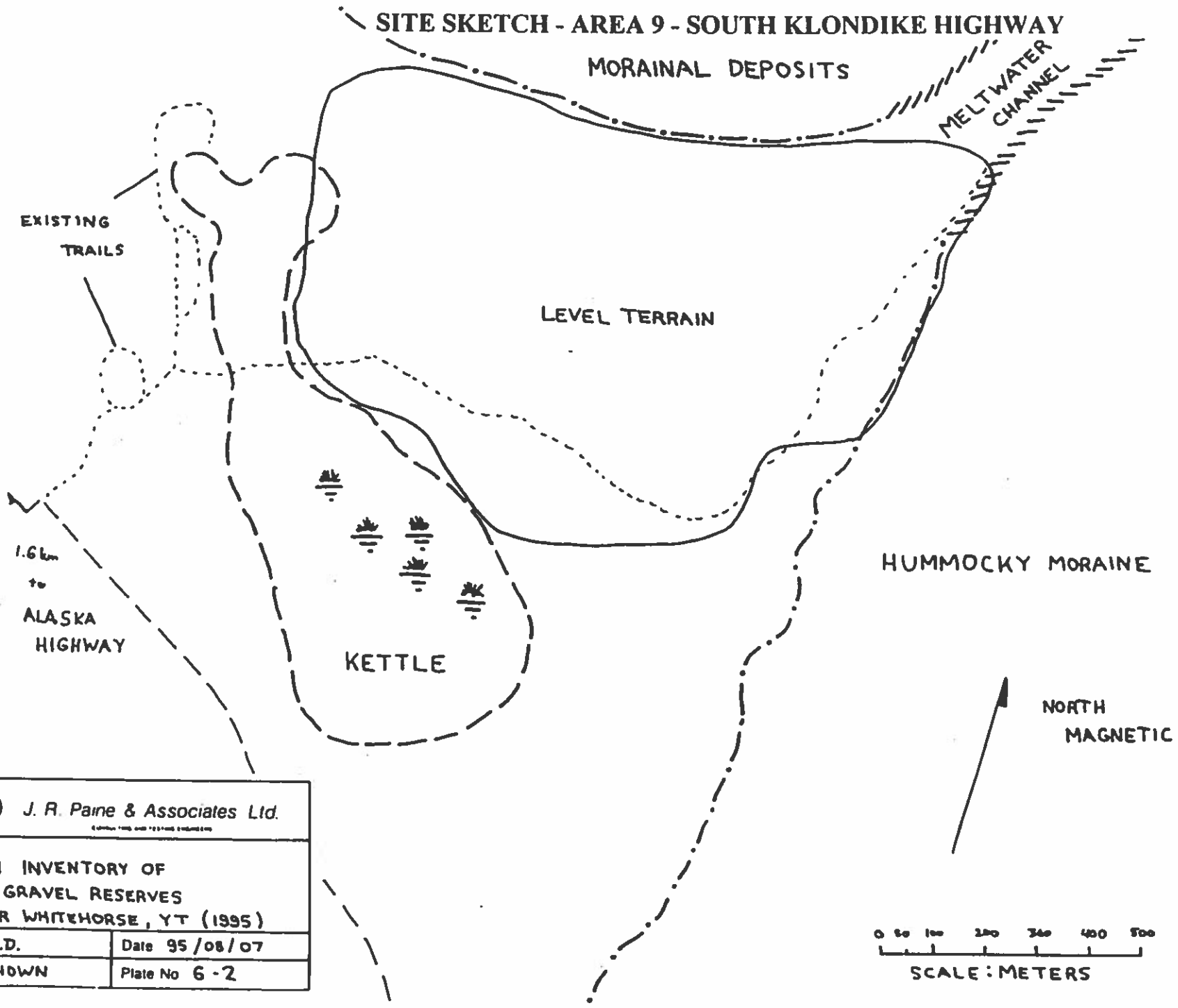
Photo # 16

APPENDIX G
•Site 9

SITE SKETCH - AREA 9 - SOUTH KLONDIKE HIGHWAY



J. R. Paine & Associates Ltd.	
AREA 9 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 6 - 1



J. R. Paine & Associates Ltd.

AREA 9 INVENTORY OF
SAND & GRAVEL RESERVES
GREATER WHITEHORSE, YT (1995)

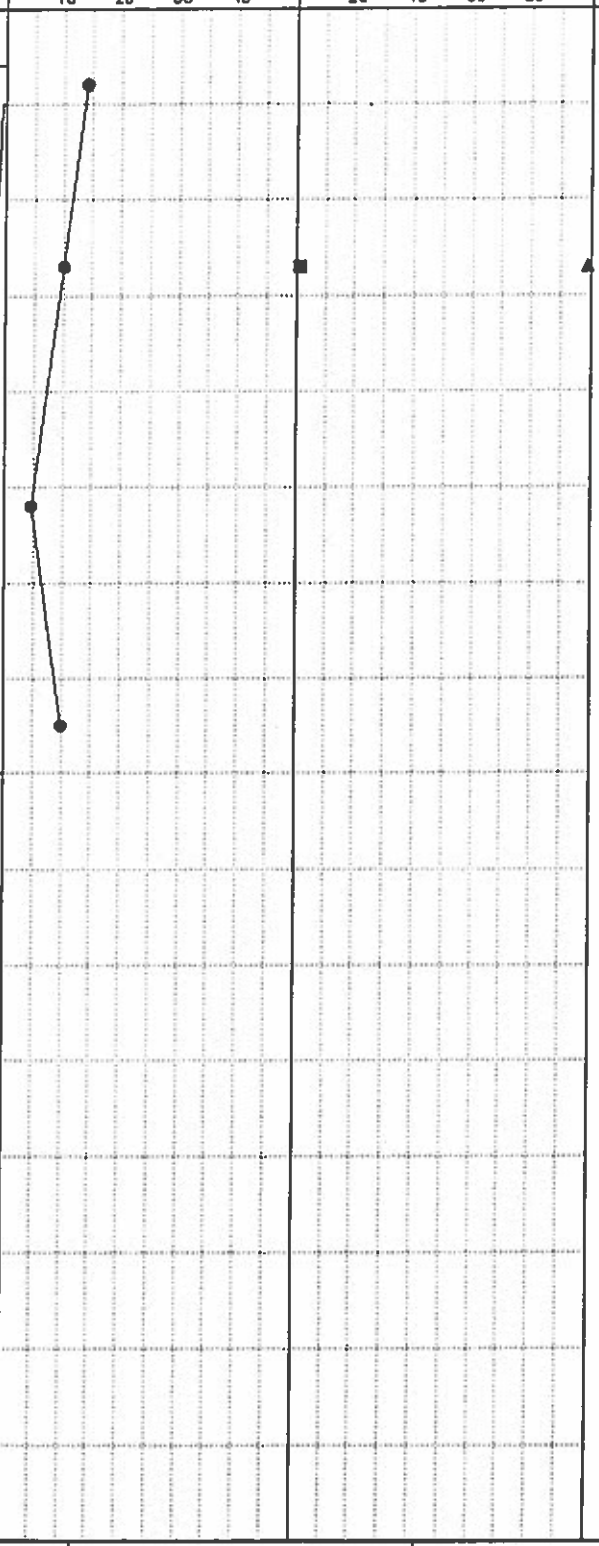
Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 6-2

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#16-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-grass, moss, peat, rootlets, organics
		65	0.30m -fine grained sand, some silt, damp, medium dense, no intrusions, rootlets, brown
1.0			0.50m
		66	-silt, clay particles, grey, soft, damp, low plasticity
2.0			
		67	-silt, clay particles, grey, soft, no intrusions, damp, low plasticity
3.0			
		68	-silt, clay particles, grey, soft, damp, low plasticity
4.0			4.00m End of Hole @ 4.0m
5.0			Note: -no change in material from 0.5m to 4.0m -no change in moisture, damp all the way to 4.0m -testpit located 10m from N-S trending ridge -photo #9, spill piles Vegetation: medium dense, mature poplar & spruce Ground Level: level
6.0			
7.0			
8.0			



USC	SOIL SYMBOL	DEPTH(m)
PT		0.0
SM		1.0
		2.0
ML		3.0
		4.0
		5.0
		6.0
		7.0
		8.0

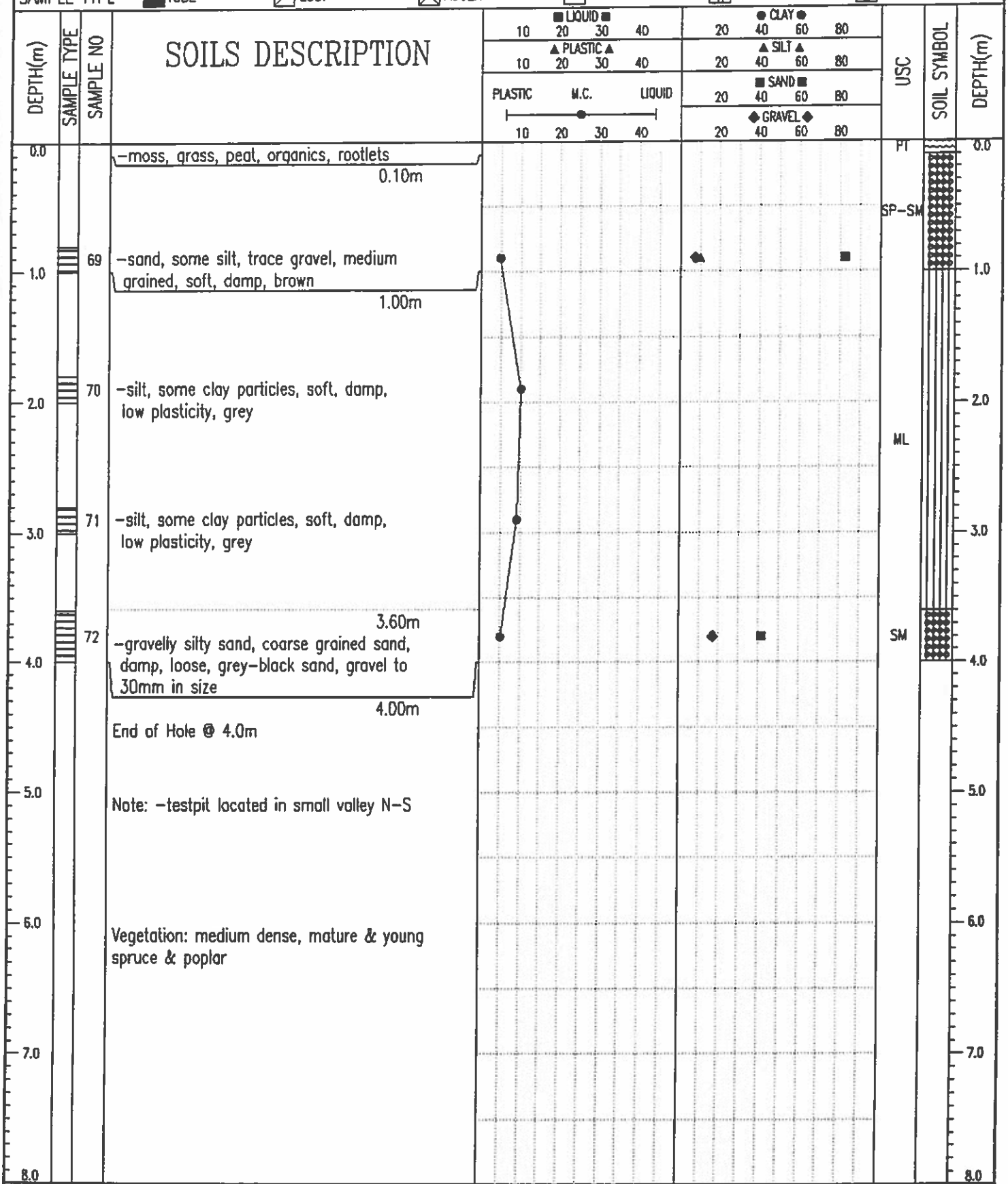
J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/13
Fig. No: 16	Page 1 of 1

95/08/08 10:55AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#17-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE



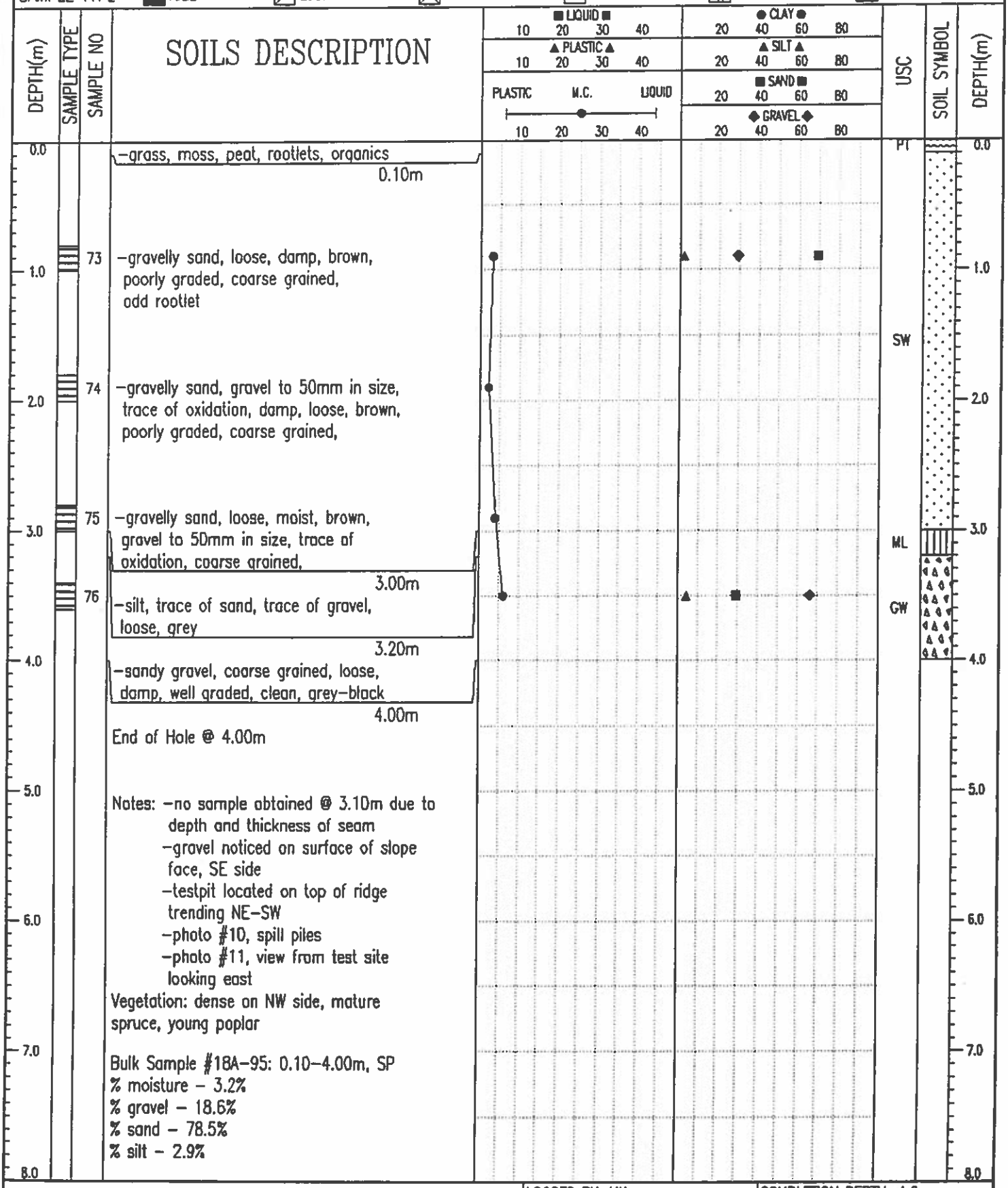
J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 17	Page 1 of 1

95/08/08 10:56AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#18-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION



-grass, moss, peat, rootlets, organics

0.10m

73 -gravelly sand, loose, damp, brown, poorly graded, coarse grained, odd rootlet

74 -gravelly sand, gravel to 50mm in size, trace of oxidation, damp, loose, brown, poorly graded, coarse grained,

75 -gravelly sand, loose, moist, brown, gravel to 50mm in size, trace of oxidation, coarse grained,

3.00m

76 -silt, trace of sand, trace of gravel, loose, grey

3.20m

-sandy gravel, coarse grained, loose, damp, well graded, clean, grey-black

4.00m

End of Hole @ 4.00m

Notes: -no sample obtained @ 3.10m due to depth and thickness of seam
-gravel noticed on surface of slope face, SE side
-testpit located on top of ridge trending NE-SW
-photo #10, spill piles
-photo #11, view from test site looking east

Vegetation: dense on NW side, mature spruce, young poplar

Bulk Sample #18A-95: 0.10-4.00m, SP
% moisture - 3.2%
% gravel - 18.6%
% sand - 78.5%
% silt - 2.9%

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 18	Page 1 of 1

95/06/08 10:57AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#19-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-moss, grass, peat, organics
			0.10m
		77	-sandy silt, firm, red-brown, rootlets, non frozen
			0.60m
1.0		78	-sandy gravelly silt, fine grained sand sizes, moist, frozen, brown-beige
			1.00m
			*Seasonal Frost to 1.2m 1.20m
2.0		79	-sandy gravel, well-graded, trace of silt, cobbles in size to 150mm, light-brown, trace of oxidation, medium dense, damp, brown
3.0		80	-sandy gravel, well graded, clean, 10% cobbles to 150mm, light-brown, damp, trace of oxidation
4.0		81	-sandy gravel, well graded, clean, 20%-30% cobbles to 150mm, light-brown, damp, trace of oxidation
			4.00m
			End of Hole @ 4.00m
5.0			Notes: -testpit located on level ground on terrace, north side of ridge trending E-W -photo #12, spill piles
6.0			Vegetation: medium dense, mature spruce & poplar Ground: level
7.0			Bulk sample #19A-95: 1.00-4.00m, GW % moisture - 1.3% % gravel - 70.4% % sand - 26.6% % silt - 3.0%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, ML, SM, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/14
	Fig. No: 19	Page 1 of 1

95/06/08 10:58AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#20-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-moss, grass, peat, organics	PT		0.0
			0.10m			
1.0		82	-sandy gravel, well graded, clean, 10% cobbles to 150mm, trace of oxidation, rootlets, damp, grey-brown			1.0
2.0		83	-sandy gravel, well graded, clean, 30-40% cobbles to 150mm in size, trace of oxidation, rootlets, damp, grey-brown	GW		2.0
3.0		84	-sandy gravel, well graded, clean, 40-50% cobbles to 150mm in size, trace of oxidation, medium dense, damp, brown			3.0
4.0		85	-sandy gravel, well graded, clean, 40-50% cobbles to 150mm in size, trace of oxidation, medium dense, damp, brown			4.0
			4.00m			
			End of Hole @ 4.00m			
5.0			Notes: -testpit located on small esker trending E-W -exposed boulders on surface of ridge			5.0
6.0			Vegetation: dense, mature spruce, odd poplar -Trial Crush completed, -Los Angeles Abrasion 14.6% Loss.			6.0
7.0			Bulk Sample #20A-95: 0.10-4.00m, GW % moisture - 1.9% % gravel - 53.0% % sand - 43.1% % silt - 3.9%			7.0
8.0						8.0

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK REVIEWED BY: WCK Fig. No: 20	COMPLETION DEPTH: 4.0 m COMPLETE: 95/06/14 Page 1 of 1

95/08/08 10:58AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#21-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL
0.0			-moss, grass, peat, organics	PT	
		86	0.10m -silt, frozen, some sand, organics, trace gravel, red-brown to light brown	ML	
1.0		87	0.50m -sandy gravel, well graded, clean, coarse sand particles, damp-moist, brown, 10-15% cobbles to 150mm in size, trace of oxidation, odd boulder to 300mm in size	GW	
2.0		88	-sandy gravel, well graded, clean, coarse sand particles, damp-moist, brown, 20-30% cobbles to 150mm in size, trace of oxidation, odd boulder to 300mm in size		
			2.70m		
3.0		89	-sandy gravel, well graded, trace silt, coarse sand particles, damp-moist, brown, 30-40% cobbles to 200mm in size, trace of oxidation, odd boulder to 300mm in size	GW/GM	
4.0		90	-sandy gravel, well graded, trace silt, coarse sand particles, damp-moist, brown, 30-40% cobbles to 200mm in size, trace of oxidation, odd boulder to 300mm in size		
			4.00m		
			End of Hole @ 4.00m		
5.0			Notes: -testpit located on slope trending S-N -50m east of clearing		
6.0			Vegetation: dense, mature spruce		
7.0			Bulk Sample #21A-95: 0.5 - 4.0m, GP % moisture - 3.8% % gravel - 57.6% % sand - 39.5% % silt - 2.9%		
8.0					

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m): 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

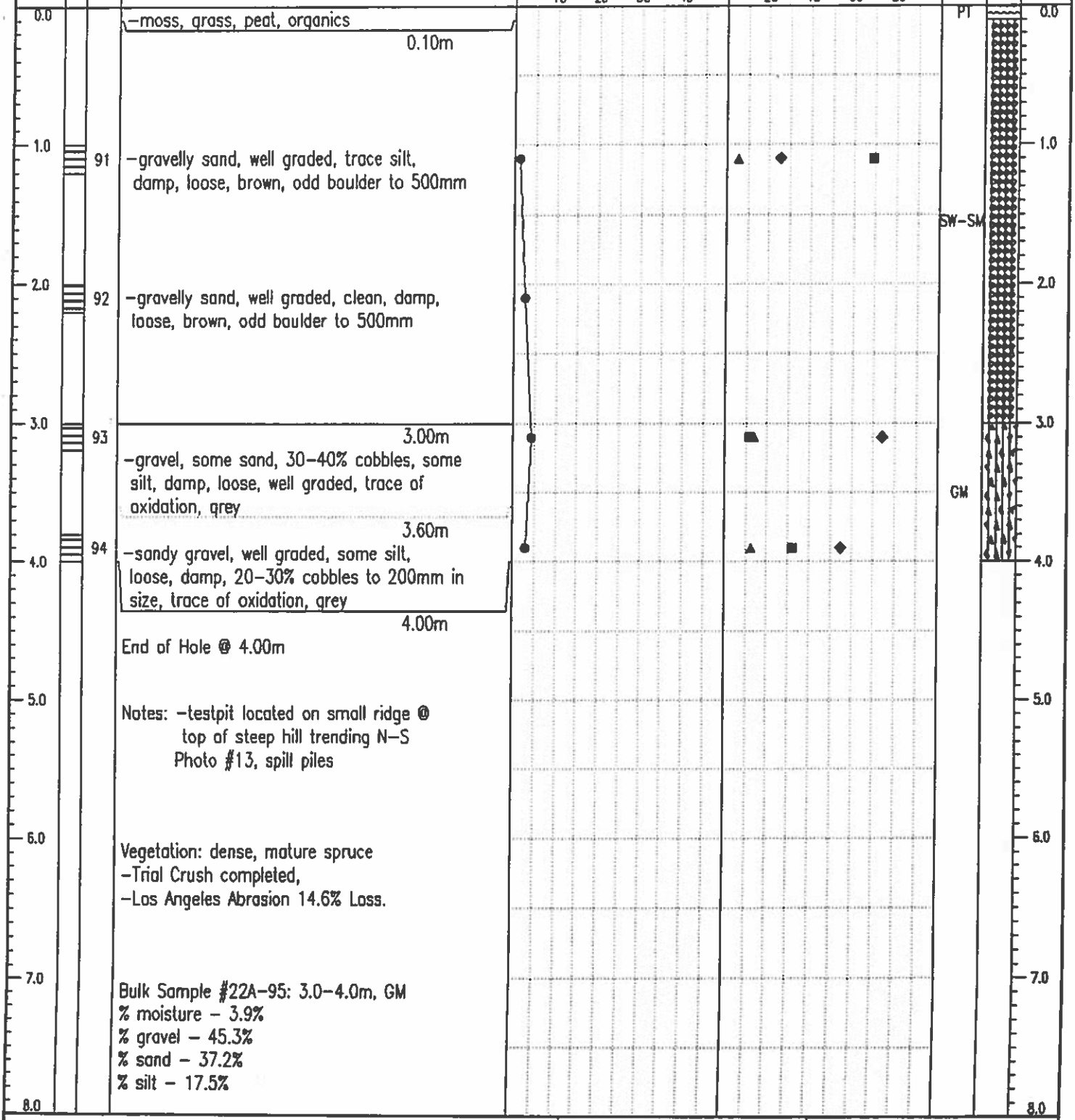
LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/14
Fig. No: 21	Page 1 of 1

95/08/08 03:25PM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#22-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION



-moss, grass, peat, organics

0.10m

91 -gravelly sand, well graded, trace silt, damp, loose, brown, odd boulder to 500mm

92 -gravelly sand, well graded, clean, damp, loose, brown, odd boulder to 500mm

3.00m

93 -gravel, some sand, 30-40% cobbles, some silt, damp, loose, well graded, trace of oxidation, grey

3.60m

94 -sandy gravel, well graded, some silt, loose, damp, 20-30% cobbles to 200mm in size, trace of oxidation, grey

4.00m

End of Hole @ 4.00m

Notes: -testpit located on small ridge @ top of steep hill trending N-S
Photo #13, spill piles

Vegetation: dense, mature spruce
-Trial Crush completed,
-Los Angeles Abrasion 14.6% Loss.

Bulk Sample #22A-95: 3.0-4.0m, GM
% moisture - 3.9%
% gravel - 45.3%
% sand - 37.2%
% silt - 17.5%

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/14
	Fig. No: 22	Page 1 of 1

95/08/08 11:00AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#23-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-moss, peat, rootlets, organics
		95	0.05m -silt, trace sand, loose, light brown, wet, rootlets
			0.40m
1.0		96	-till like, sandy gravel, trace to some silt, 20% cobbles in size to 150mm, trace of oxidation, loose, damp, grey,
2.0		97	-till like, sandy gravel, trace to some silt, 20% cobbles in size to 150mm, trace of oxiadtion, loose, damp, grey
3.0		98	-till like, sandy gravel, trace to some silt, 25-40% cobbles in size to 200mm, trace of oxidation, poorly graded, damp, grey
4.0		99	-till like, sandy gravel, trace to some silt, 25-40% cobbles in size to 200mm, trace of oxidation, poorly graded damp, grey
			4.00m
			End of Hole @ 4.00m
5.0			Notes: -testpit located in valley Photo #14, spill piles
6.0			Vegetation: dense, mature spruce
7.0			Bulk Sample #23A-95: 0.40-4.00m, GP-GM % moisture - 2.5% % gravel - 74.5% % sand - 17.8% % silt - 7.7%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, ML, GP-GM

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK REVIEWED BY: WCK Fig. No: 23	COMPLETION DEPTH: 4.0 m COMPLETE: 95/06/14 Page 1 of 1

95/08/08 11:00AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#24-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▮ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-grass, moss, peat
			0.05m
		100	-sandy gravel, poorly graded, clean, loose, damp, 10% cobbles to 150mm in size, trace of oxidation
1.0			
		101	-sandy gravel, poorly graded, clean, loose, damp-moist, 10% cobbles to 150mm in size, odd boulder to 300mm, trace of oxidation
2.0			1.60m
			-change in moisture content
		102	-sandy gravel, poorly graded, clean, loose, damp-moist, 20% cobbles to 200mm in size, 5% boulders to 300mm in size, trace of oxidation
3.0			3.00m
			End of Hole @ 3.00m
4.0			Notes: -no sample taken below 3.0m due to large boulders, refusal -testpit located on small terrace, slope trending N-S -photo #15, spill piles
5.0			Vegetation: dense, mature spruce -Trial Crush completed, -L.A. Abrasion 14.6% Loss.
6.0			Bulk Sample #24A-95: 0.05-3.00m, GP % moisture - 2.5% % gravel - 62.5% % sand - 35.4% % silt - 2.1%
7.0			
8.0			

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

USC: PT, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK REVIEWED BY: WCK Fig. No: 24	COMPLETION DEPTH: 3.0 m COMPLETE: 95/06/15 Page 1 of 1

95/08/08 11:31AM

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#25-95
Caterpillar 215 Backhoe	Area #7	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m) | SAMPLE TYPE | SAMPLE NO

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC | SOIL SYMBOL | DEPTH(m)

0.0 – grass, moss, peat

0.05m

103 – silt, wet (active layer), firm, medium-high plasticy, red-brown

104

0.30m

– silt, wet, firm, medium-high plasticity, frozen, light-brown

– silt, damp, firm, medium-high plasticity, thawed, light-brown

105

2.50m

106 – sandy gravel, some silt, 10-15% cobbles to 150mm in size, odd boulder to 250mm in size, damp, light brown

– sandy gravel, some silt, 20-25% cobbles

107 to 200mm in size, 5% boulders to 300mm in size, damp, light brown

4.00m

End of Hole @ 4.00m

Notes: -testpit located at base of ridge trending E-W
photo #16, spill piles

Vegetation: sparse to medium dense, mature spruce, odd young spruce

Bulk Sample #25A-95: 2.50-4.00m, GP-GM
% moisture - 2.3%
% gravel - 73.1%
% sand - 17.5%
% silt - 9.4%

USC: PT | ML | GP-GM

0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/15
	Fig. No: 25	Page 1 of 1

95/08/08 11:02AM

J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 66 Depth: 0.5 - 0.8 m
Location: Area # 7
TP # 16-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/29

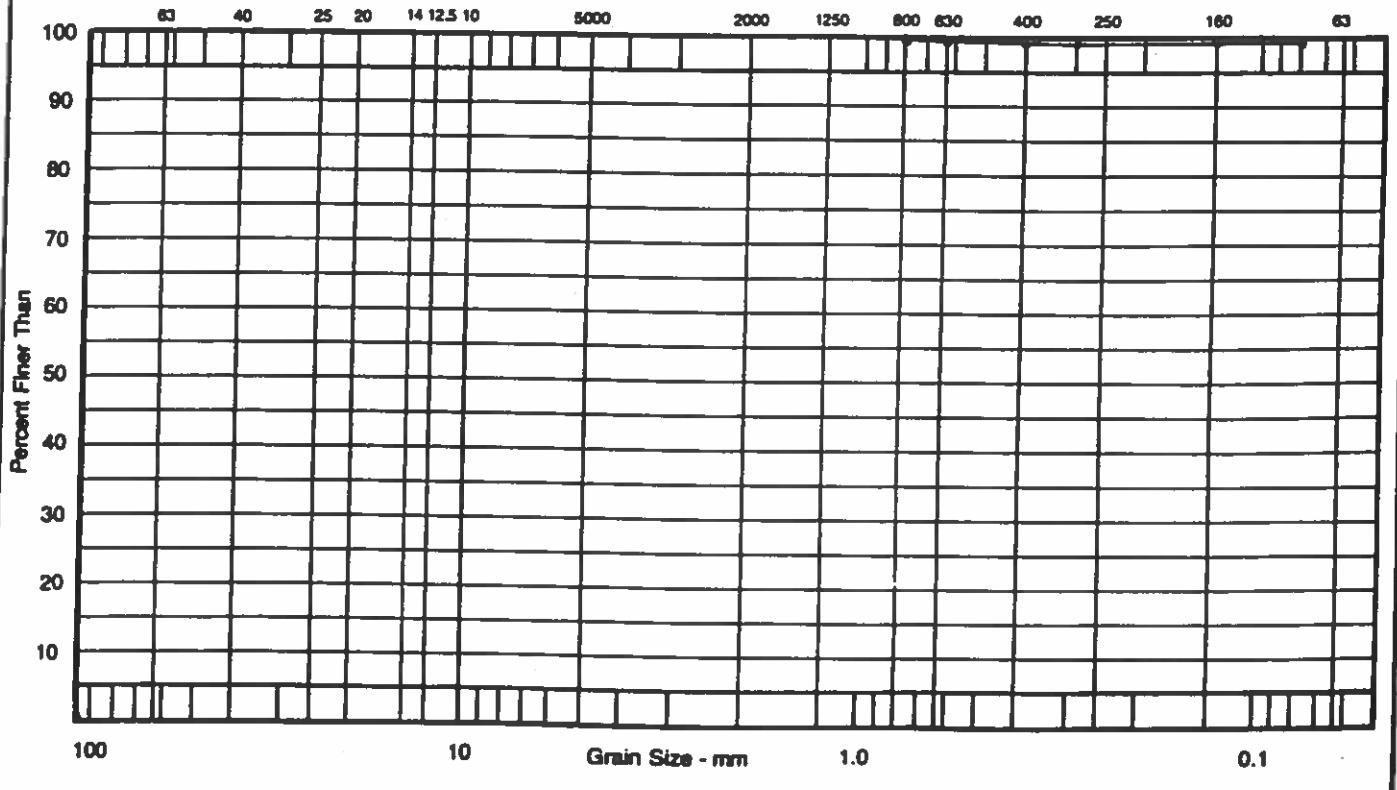
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					
12500	12.5					
10000	10.0					
5000	5.0					
2000	2.0					
1250	1.250					
800	0.800					100.0
630	0.630					99.9
400	0.400					99.8
315	0.315					99.7
160	0.160					99.4
80	0.080					99.0

Description of Sample: Silt, ML

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 10.1 %
Gravel : 0.0 %
Sand : 1.0 %
Silt : 99.0 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 69 Depth: 0.8 - 1.0m
Location: Area # 7
TP # 17-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLK Date: 1995/06/29

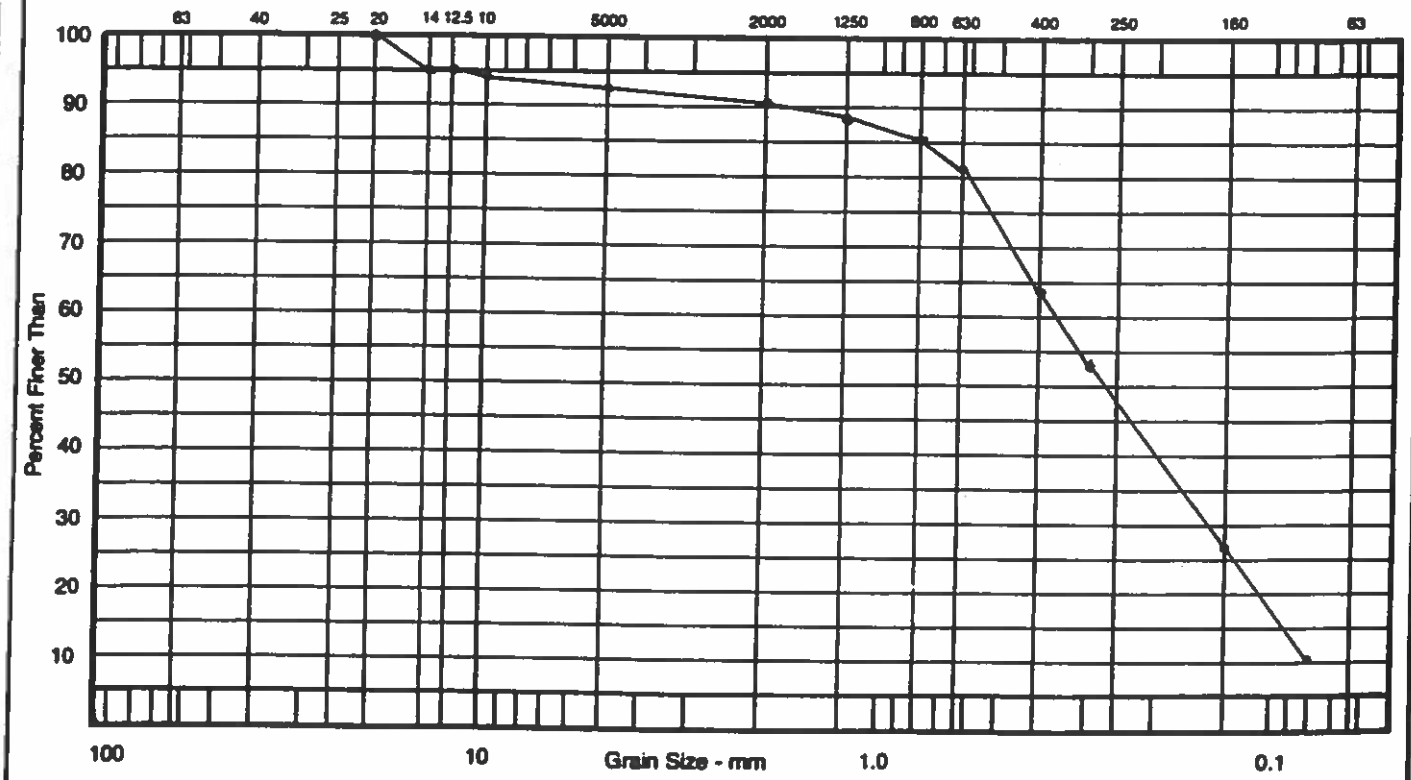
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					95.0
12500	12.5					95.0
10000	10.0					94.3
5000	5.0					92.6
2000	2.0					90.6
1250	1.250					88.7
800	0.800					85.7
630	0.630					81.3
400	0.400					64.2
315	0.315					52.7
160	0.160					26.7
80	0.080					10.1

Description of Sample
Sand, SP-SM
Some silt
trace gravel

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 4.9 %
Gravel : 7.4 %
Sand : 82.5 %
Silt : 10.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 72 Depth: 3.6-4.0m
Location: Area # 7
TP # 17-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WJC/S Date: 1995/06/29

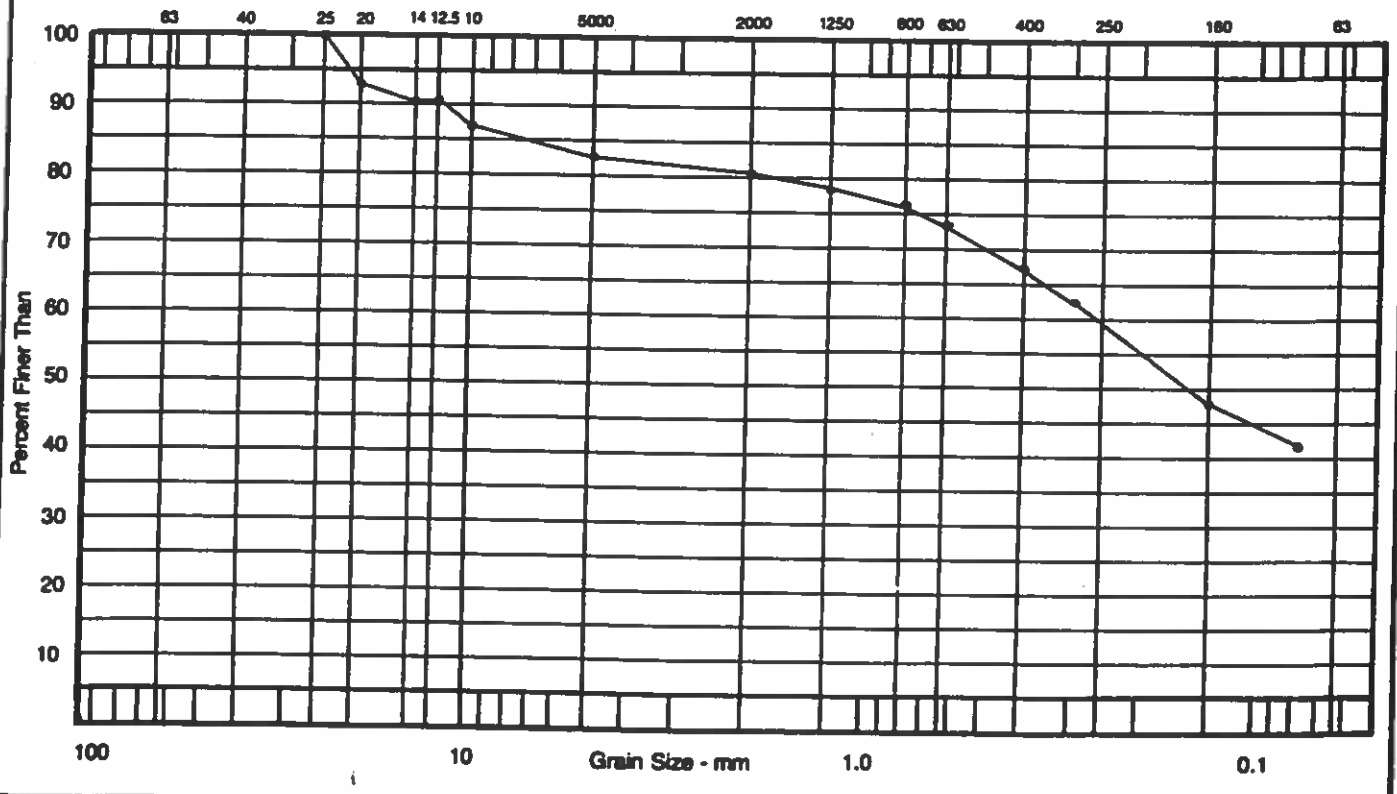
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					93.1
14000	14.0					90.1
12500	12.5					90.1
10000	10.0					86.5
5000	5.0					82.9
2000	2.0					80.2
1250	1.250					78.4
800	0.800					76.3
630	0.630					73.9
400	0.400					67.1
315	0.315					62.5
160	0.160					47.9
80	0.080					41.4

Description of Sample: Gravelly Silty Sand, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 5.3%
Gravel : 17.1 %
Sand : 41.5 %
Silt : 41.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 73 Depth: 0.8-1.0m
Location: Area # 7
TP # 18-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCH Date: 1995/06/29

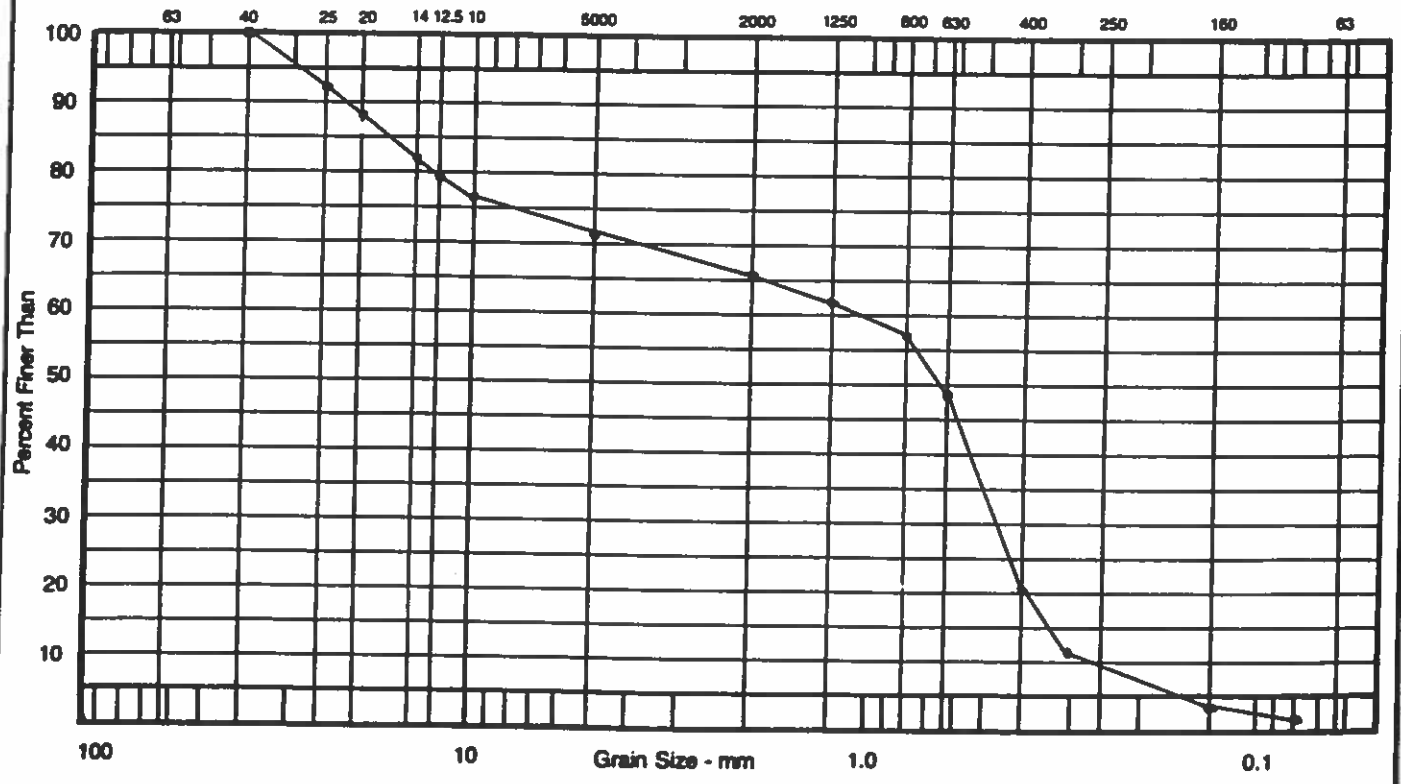
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					92.3
20000	20.0					86.6
14000	14.0					81.8
12500	12.5					79.8
10000	10.0					76.9
5000	5.0					71.0
2000	2.0					65.5
1250	1.250					61.8
800	0.800					56.8
630	0.630					48.9
400	0.400					20.2
315	0.315					11.3
160	0.160					3.2
80	0.080					1.9

Description of Sample: Gravelly Sand, SW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 3.0 %
Gravel : 29.0 %
Sand : 69.1 %
Silt : 1.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 76 Depth: 3.4-3.6m
Location: Area # 7
TP # 18-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

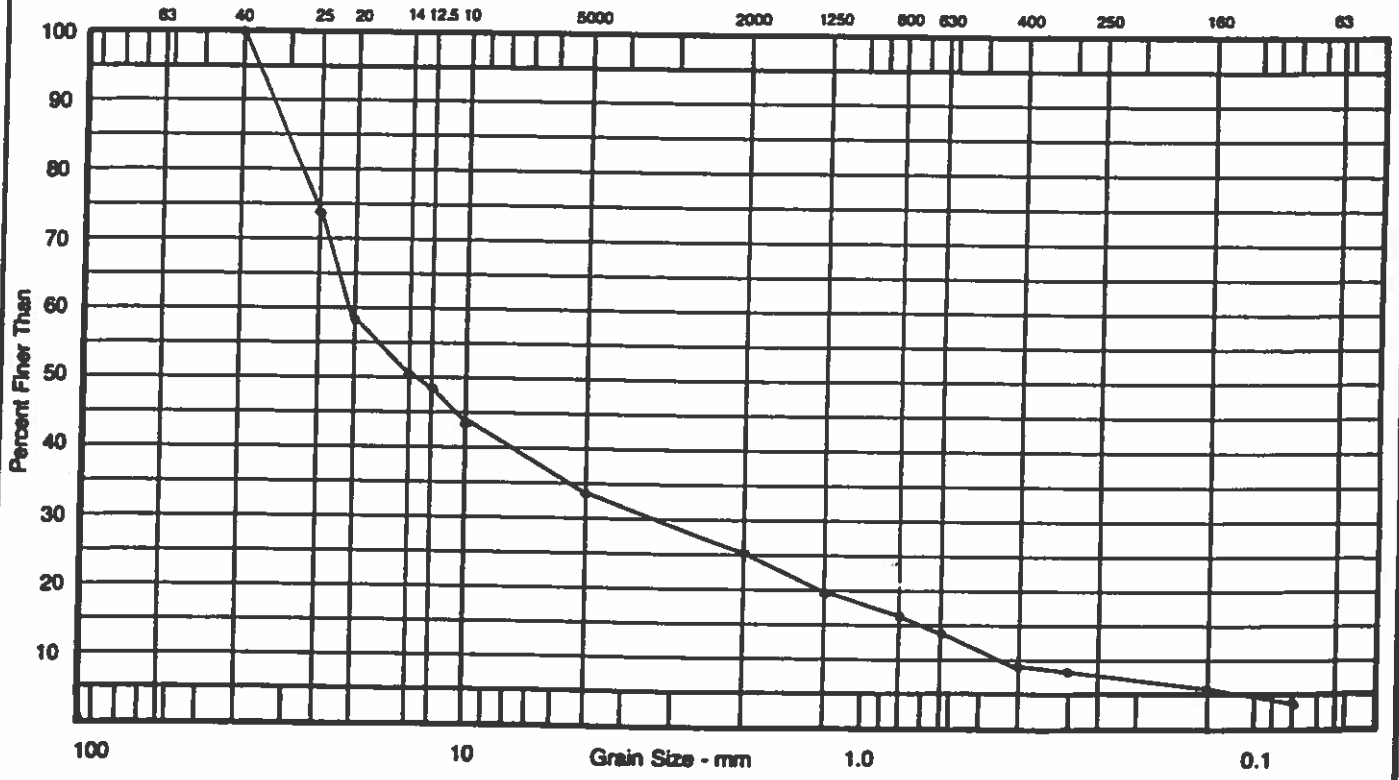
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					74.0
20000	20.0					58.2
14000	14.0					50.1
12500	12.5					48.4
10000	10.0					43.1
5000	5.0					33.5
2000	2.0					25.2
1250	1.250					19.9
800	0.800					16.1
630	0.630					13.8
400	0.400					9.7
315	0.315					7.9
160	0.160					5.7
80	0.080					4.3

Description of Sample
Sandy Gravel, GW

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 6.2 %
Gravel : 66.5 %
Sand : 29.2 %
Silt : 4.3 %



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SCREEN ANALYSIS

Sample: 18A-95 Depth: 0.10-4.00m

Location: Area # 7 TP # 18-95

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No. 8002-234

Ck'd by: D.C.C. Date: 1995/06/29

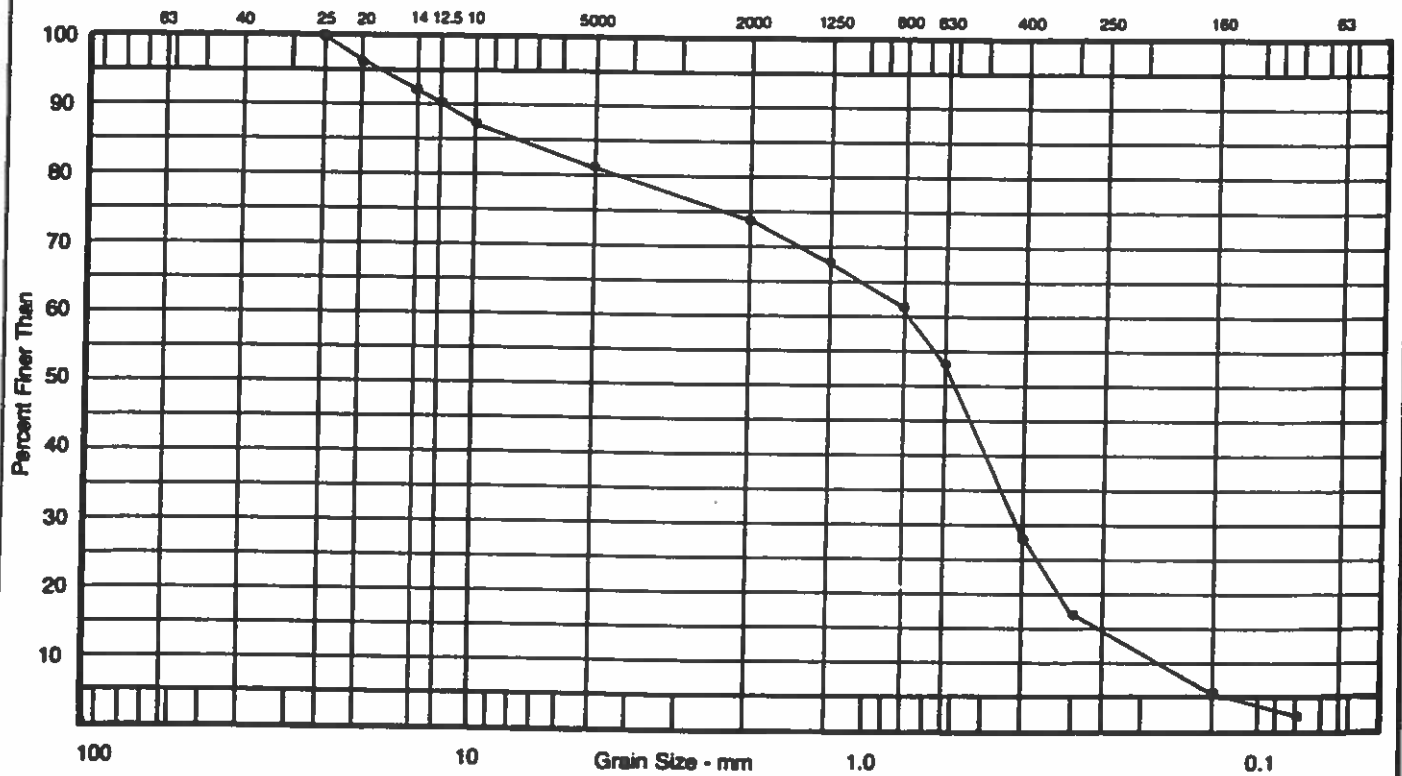
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					96.2
14000	14.0					92.4
12500	12.5					90.3
10000	10.0					87.4
5000	5.0					81.4
2000	2.0					74.1
1250	1.250					68.5
800	0.800					61.0
630	0.630					53.0
400	0.400					28.4
315	0.315					16.9
160	0.160					5.5
80	0.080					2.9

Description of Sample: Gravelly Sand, SP

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.2%
Gravel : 18.6%
Sand : 78.5%
Silt : 2.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 78 Depth: 0.8-1.0 m
Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/29

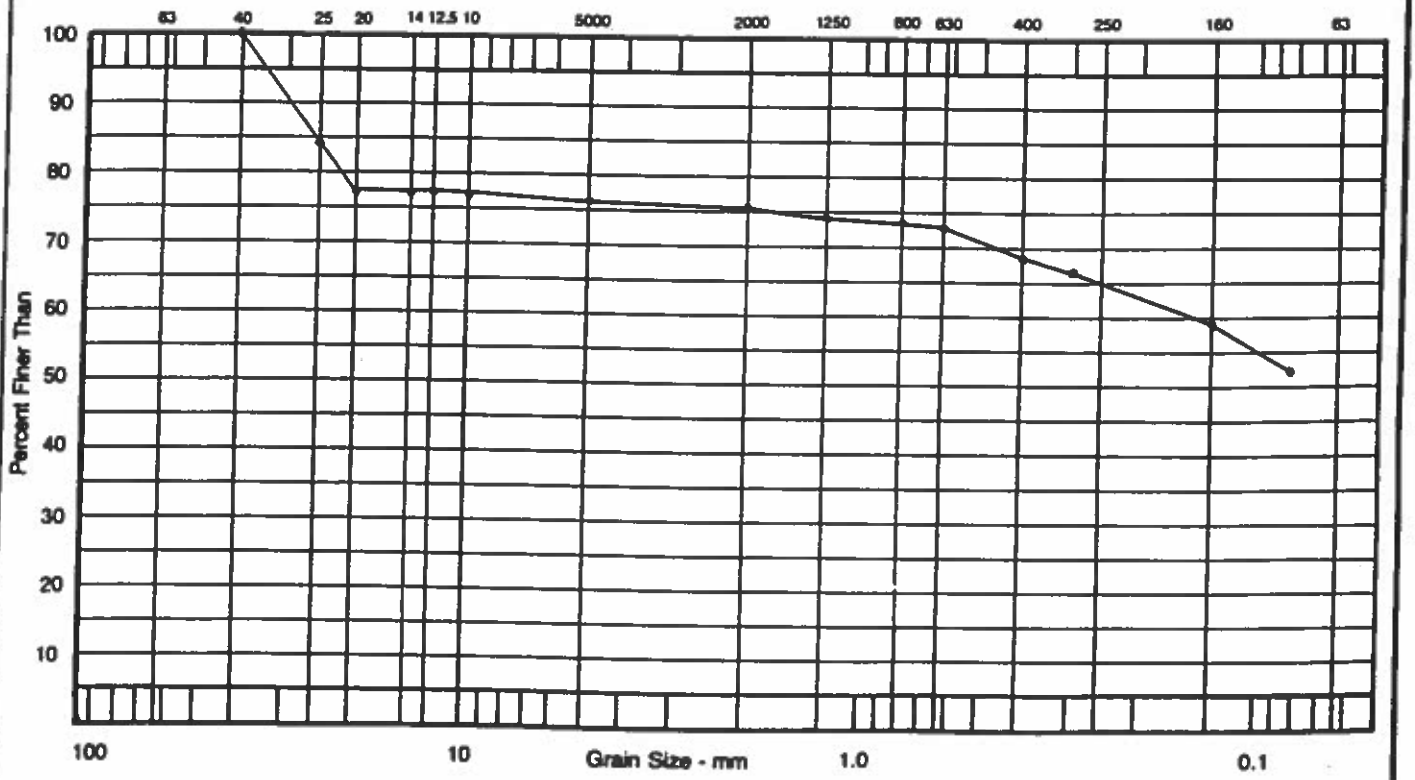
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100.0
25000	25.0					84.8
20000	20.0					77.1
14000	14.0					77.1
12500	12.5					77.1
10000	10.0					76.7
5000	5.0					76.2
2000	2.0					75.6
1250	1.250					74.9
800	0.800					73.9
630	0.630					72.7
400	0.400					68.8
315	0.315					66.0
160	0.160					59.3
80	0.080					52.5

Description of Sample: Sandy Gravelly Silt, SM

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 13.5 %
Gravel : 23.8 %
Sand : 23.7 %
Silt : 52.5 %



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SCREEN ANALYSIS

Sample: 79 Depth: 1.8-2.0m
Location: Area # 7
TP # 19-95

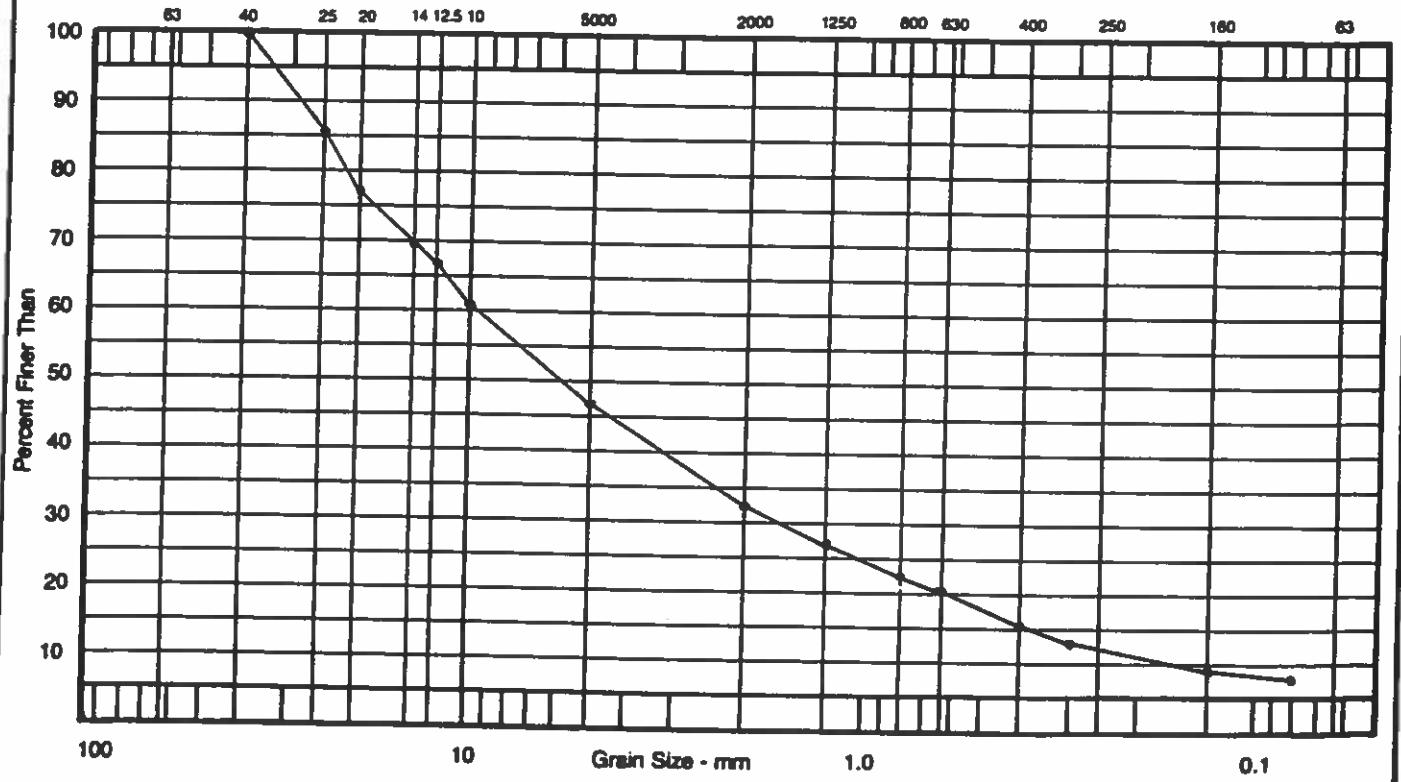
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WC/C Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					85.6
20000	20.0					76.9
14000	14.0					69.3
12500	12.5					66.7
10000	10.0					60.4
5000	5.0					46.1
2000	2.0					32.4
1250	1.250					26.6
800	0.800					22.6
630	0.630					20.2
400	0.400					15.6
315	0.315					13.3
160	0.160					9.6
80	0.080					7.7

Description of Sample
Sandy Gravel, GW-GM
trace silt

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 2.0 %
Gravel : 53.9 %
Sand : 38.4 %
Silt : 7.7 %



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SCREEN ANALYSIS

Sample: 81 Depth: 3.8 - 4.0m
Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

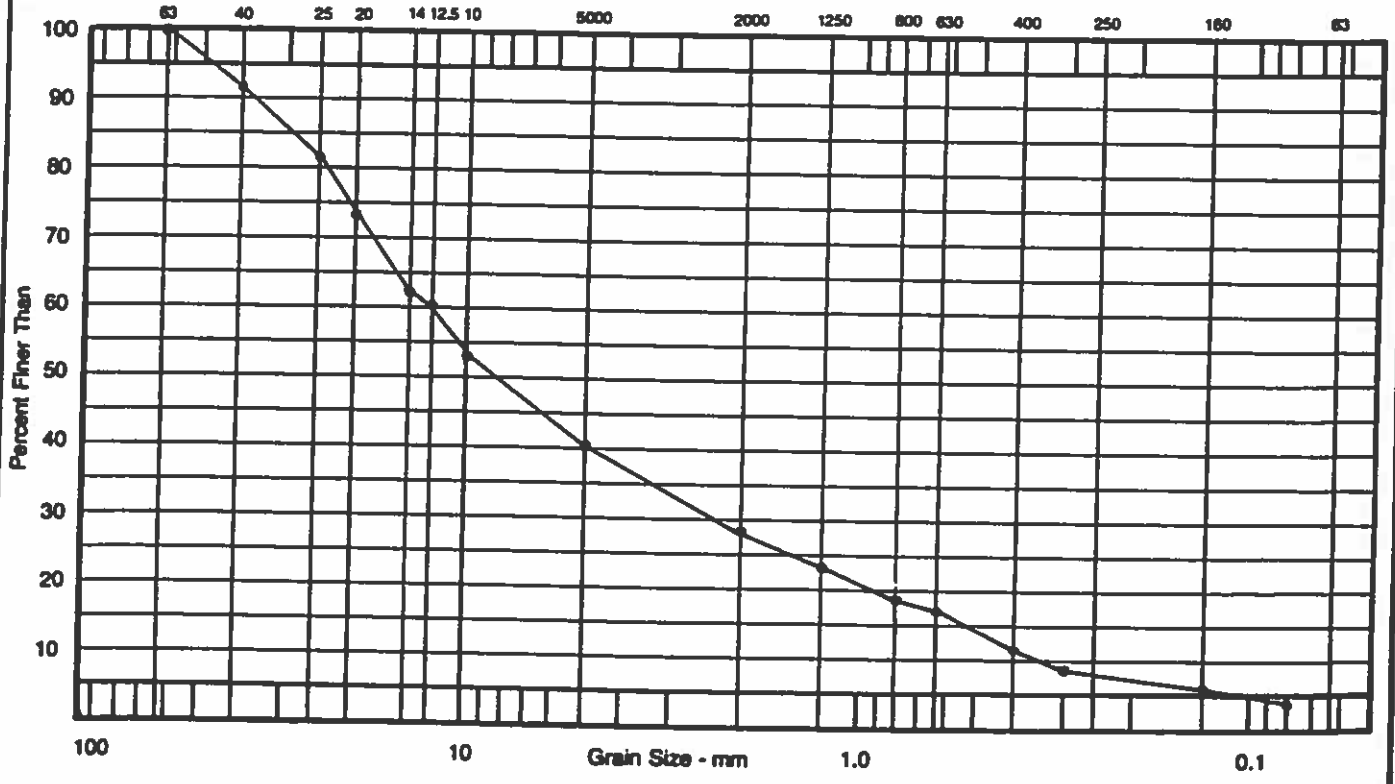
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					91.9
25000	25.0					81.9
20000	20.0					73.1
14000	14.0					62.5
12500	12.5					60.5
10000	10.0					53.9
5000	5.0					40.2
2000	2.0					28.7
1250	1.250					23.1
800	0.800					19.1
630	0.630					16.7
400	0.400					11.7
315	0.315					9.3
160	0.160					5.8
80	0.080					4.3

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

Remarks:
Moisture : 1.5 %
Gravel : 59.8 %
Sand : 35.9 %
Silt : 4.3 %



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SCREEN ANALYSIS

Sample: PA-95 Depth: 1.00 - 4.00m

Location: Area # 7
TP # 19-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: HK & PR Job. No. 8002-234
Ck'd by: WC/C Date: 1995/06/29

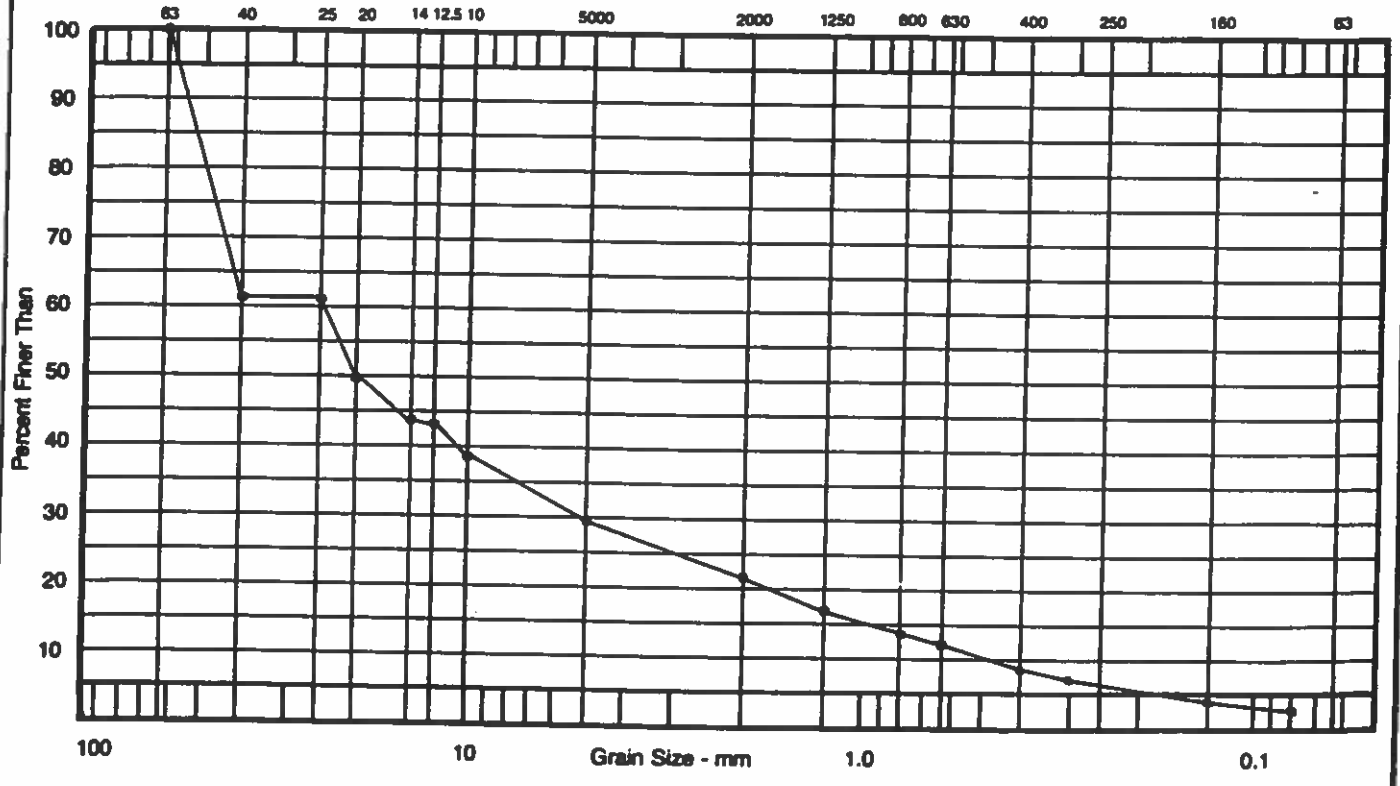
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					61.1
25000	25.0					61.1
20000	20.0					49.9
14000	14.0					43.9
12500	12.5					43.1
10000	10.0					38.8
5000	5.0					29.6
2000	2.0					21.3
1250	1.250					17.1
800	0.800					14.2
630	0.630					12.3
400	0.400					8.8
315	0.315					7.0
160	0.160					4.2
80	0.080					3.0

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 1.3%
Gravel : 70.4%
Sand : 26.6%
Silt : 3.0%



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SCREEN ANALYSIS

Sample: 83 Depth: 1.8 - 2.2 m
Location: Area # 7
TP # 20-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCH Date: 1995/06/29

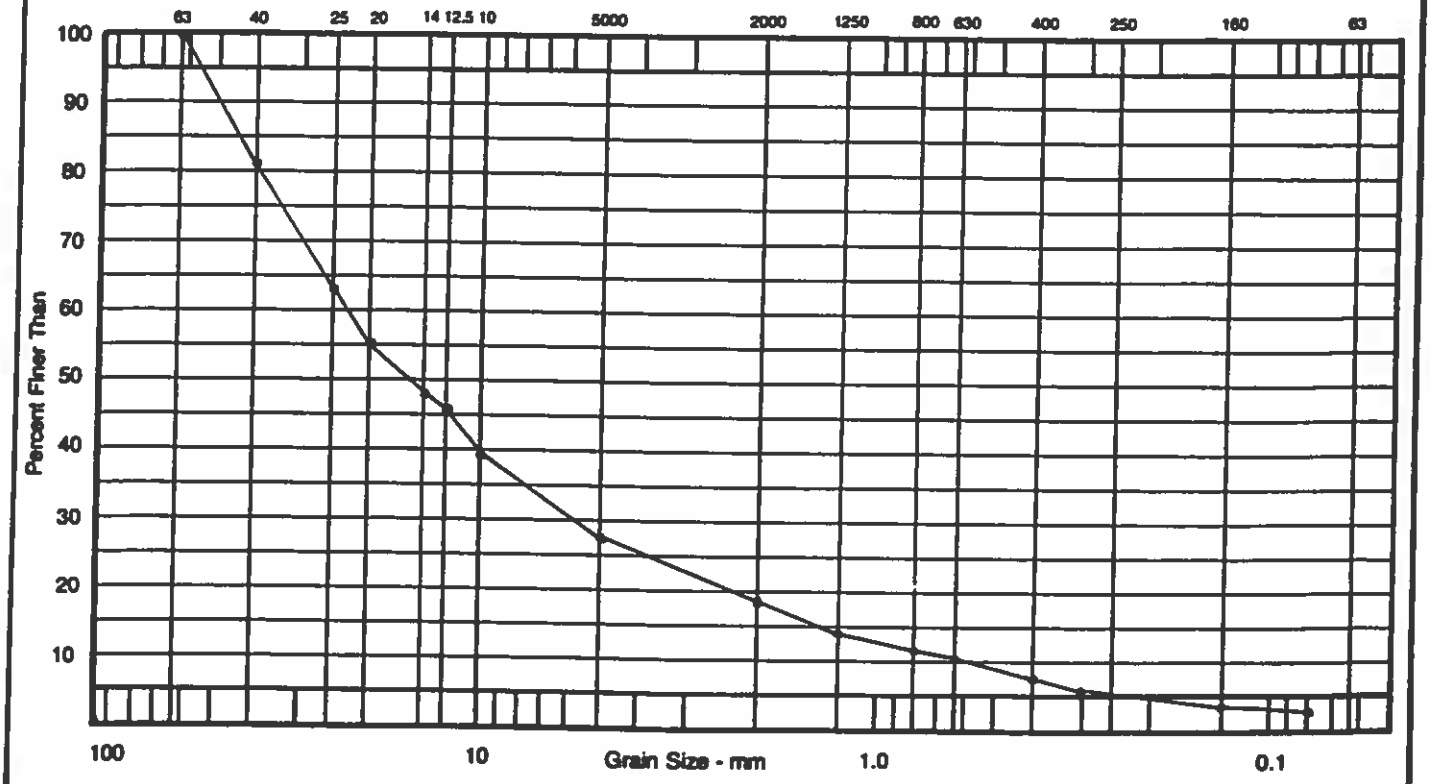
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						100.0
40000	40.0					81.0
25000	25.0					62.8
20000	20.0					55.0
14000	14.0					47.8
12500	12.5					45.3
10000	10.0					39.1
5000	5.0					27.5
2000	2.0					18.5
1250	1.250					14.1
800	0.800					11.5
630	0.630					10.1
400	0.400					7.2
315	0.315					5.7
160	0.160					3.8
80	0.080					2.8

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 1.4 %
Gravel : 72.5 %
Sand : 24.7 %
Silt : 2.8 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 20A-95 Depth: 0.10 - 4.00m
Location: Area # 7
TP # 20-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/29

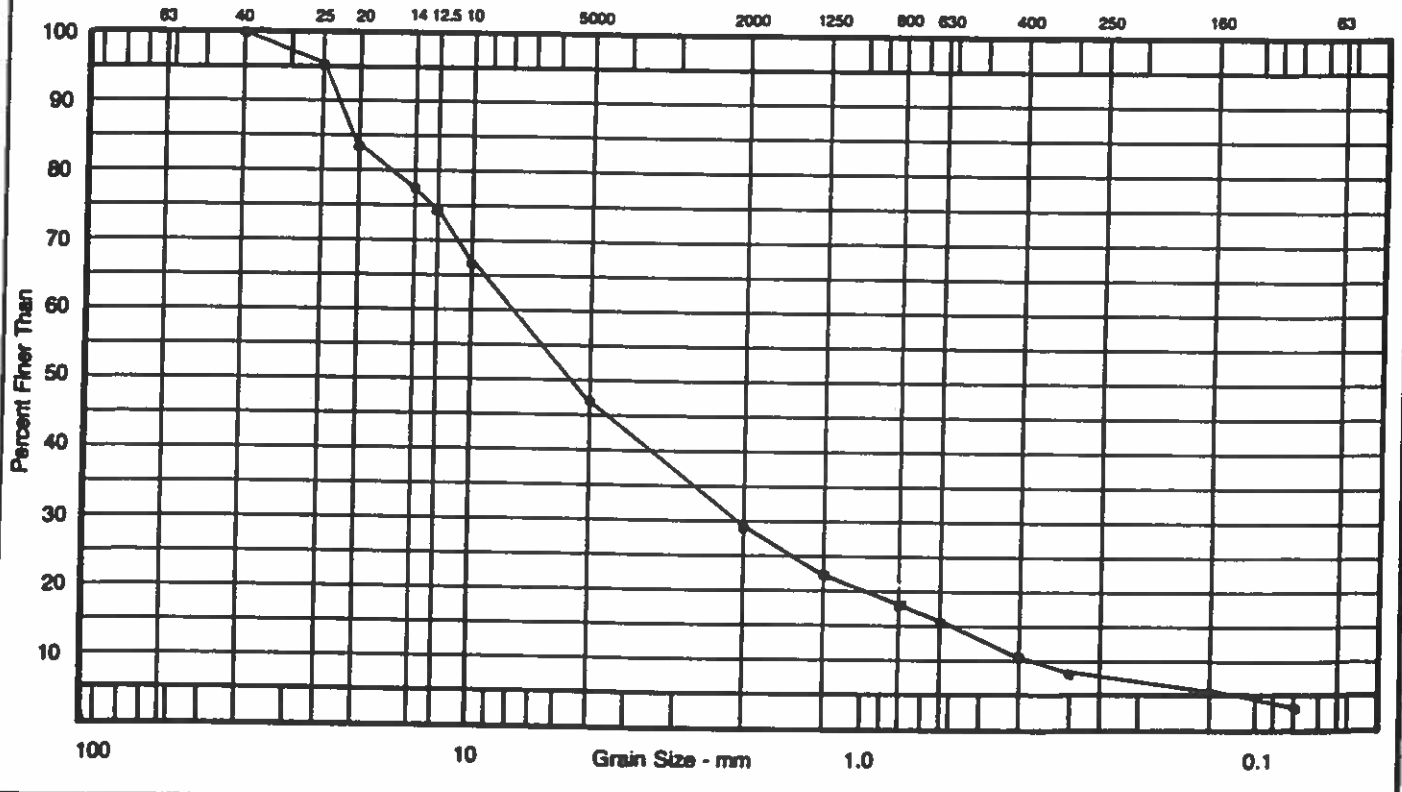
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100.0
25000	25.0					95.2
20000	20.0					83.9
14000	14.0					77.7
12500	12.5					74.6
10000	10.0					66.5
5000	5.0					47.0
2000	2.0					29.6
1250	1.250					22.5
800	0.800					18.2
630	0.630					15.6
400	0.400					10.9
315	0.315					8.6
160	0.160					5.4
80	0.080					3.9

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks: Moisture : 1.9 % Trial Cloth Completed
Gravel : 53.0 %
Sand : 43.1 %
Silt : 3.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 20A (Crushed) Depth 0.10-4.00m
Location Area # 7
TP # 20-95 Bulk Sample

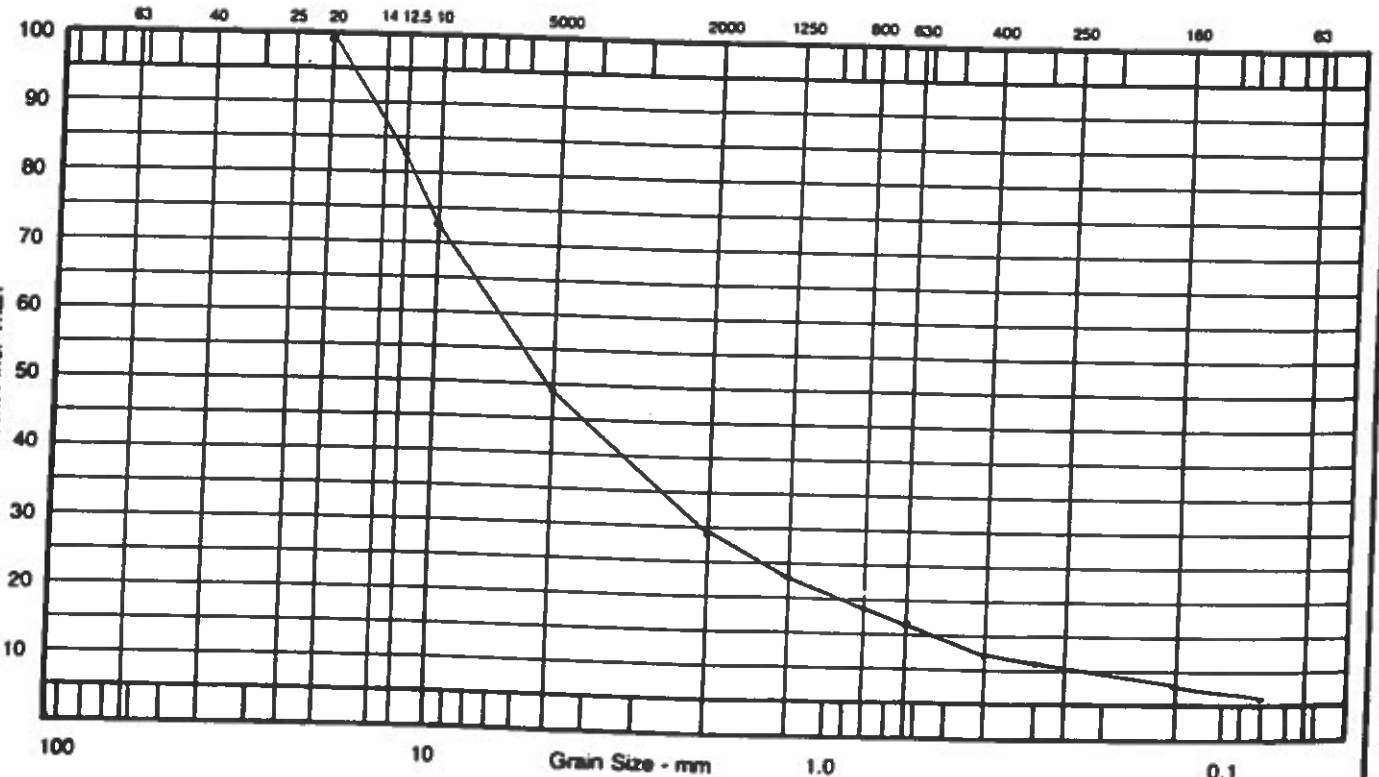
Client: YTG, Transportation Engineering Branch
Project Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job No 8002-234
Ck'd by Date 1995/06/30

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					83.5
5000	5.0					73.1
2000	2.0					49.5
1250	1.250					29.8
800	0.800					23.6
630	0.630					19.1
400	0.400					16.6
315	0.315					12.5
160	0.160					10.6
80	0.080					7.0
						5.4

Description of Sample
Trial Crushed to 20mm Maximum Size

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 3.9% Crush Count 2 pcs 56.0%
Gravel : 50.5% LA Abrasion : 14.6% Loss
Sand : 44.1%
Silt : 5.4%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 86 Depth: 0.20-0.50m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCK Date: 1995/06/29

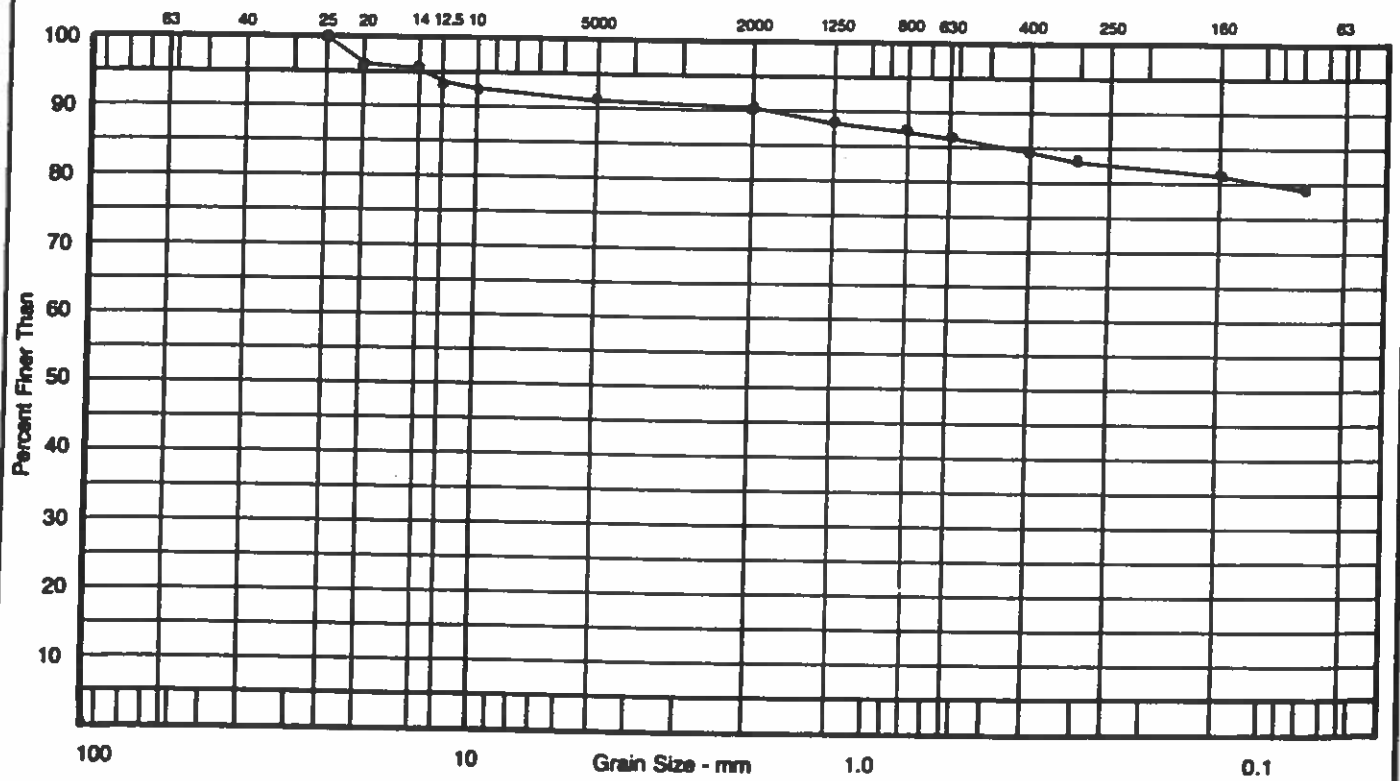
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					95.8
14000	14.0					95.8
12500	12.5					93.9
10000	10.0					93.3
5000	5.0					91.7
2000	2.0					90.1
1250	1.250					88.7
800	0.800					87.4
630	0.630					86.5
400	0.400					84.9
315	0.315					83.7
160	0.160					81.9
80	0.080					79.2

Description of Sample
Silt, ML
Some Sand
trace gravel

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 33.8 %
Gravel : 8.3 %
Sand : 12.5 %
Silt : 79.2 %



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SCREEN ANALYSIS

Sample: 88 Depth: 1.8-2.0m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WC/C Date: 1995/06/29

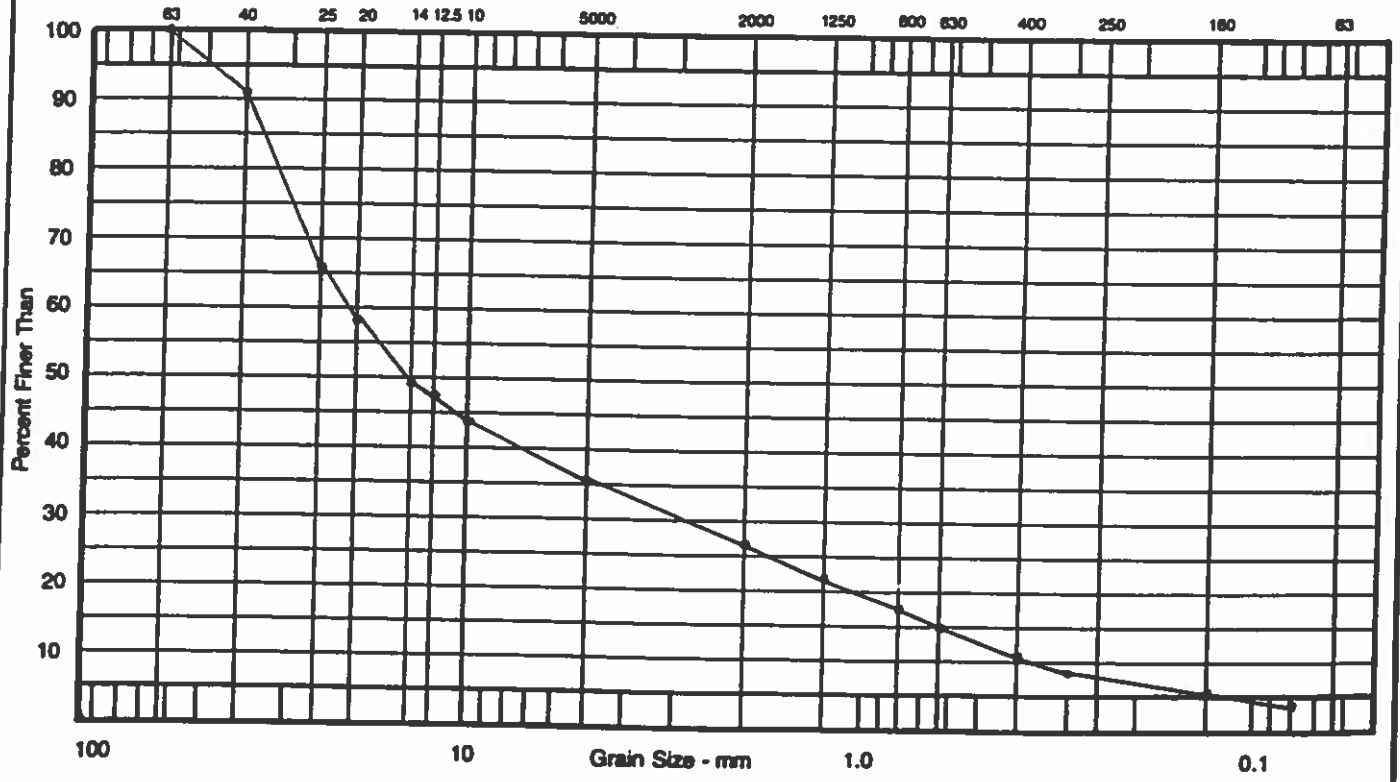
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						100.0
40000	40.0					90.7
25000	25.0					65.9
20000	20.0					58.8
14000	14.0					49.2
12500	12.5					47.4
10000	10.0					44.0
5000	5.0					35.1
2000	2.0					26.7
1250	1.250					21.4
800	0.800					17.5
630	0.630					15.0
400	0.400					10.7
315	0.315					8.7
160	0.160					5.5
80	0.080					4.1

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 4.6 %
Gravel : 64.9 %
Sand : 31.0 %
Silt : 4.1 %



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SCREEN ANALYSIS

Sample: 90 Depth: 3.8-4.0m

Location: Area # 7

TP # 21-95

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No. 8002-234

Ck'd by: WCL Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					78.4
20000	20.0					64.6
14000	14.0					53.6
12500	12.5					51.7
10000	10.0					44.6
5000	5.0					33.2
2000	2.0					28.4
1250	1.250					22.5
800	0.800					18.0
630	0.630					15.3
400	0.400					11.0
315	0.315					9.3
160	0.160					7.0
80	0.080					6.0

Description of Sample: Sandy Gravel, GW-GM trace Silt

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

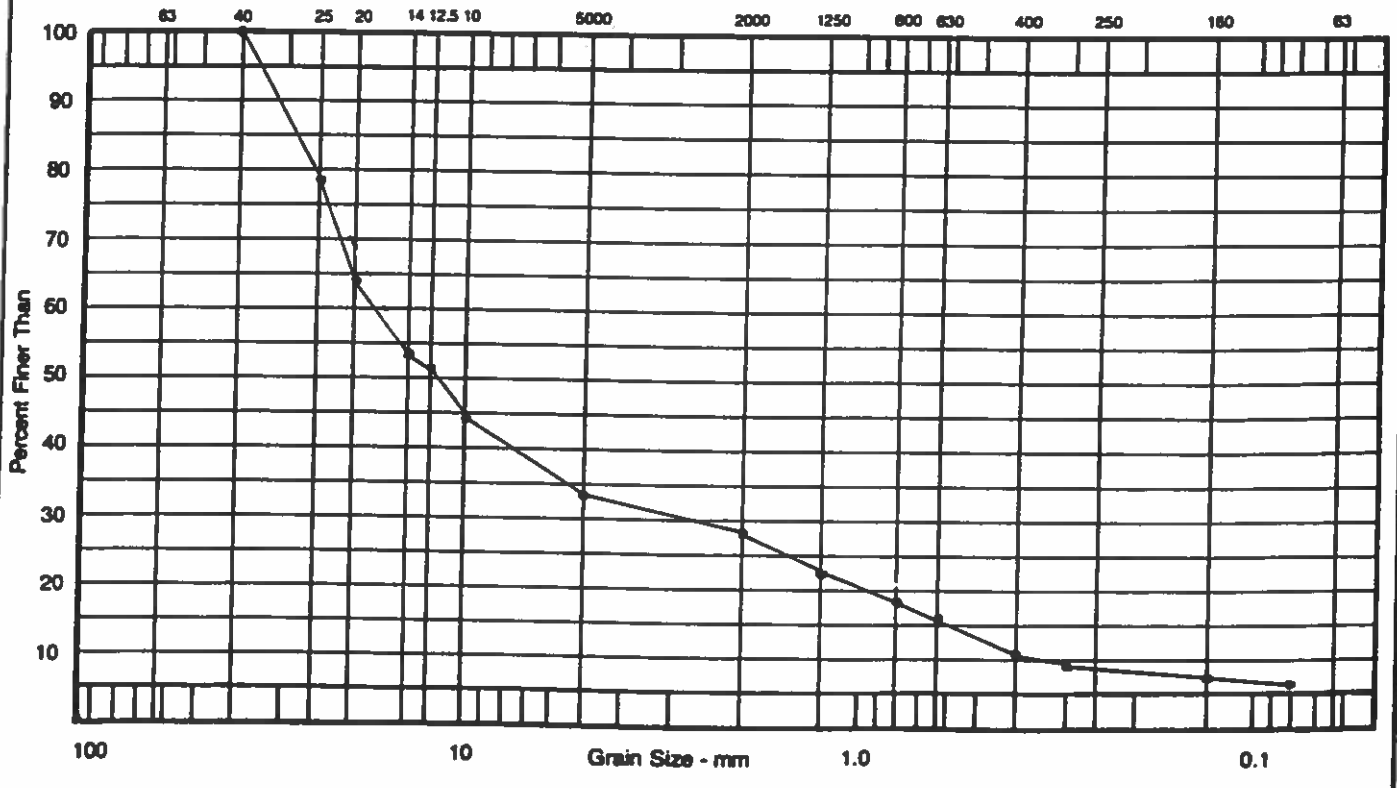
Remarks

Moisture : 3.0 %

Gravel : 66.8 %

Sand : 27.2 %

Silt : 6.0 %



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SCREEN ANALYSIS

Sample: 21A-95 Depth: 0.50-4.00m
Location: Area # 7
TP # 21-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

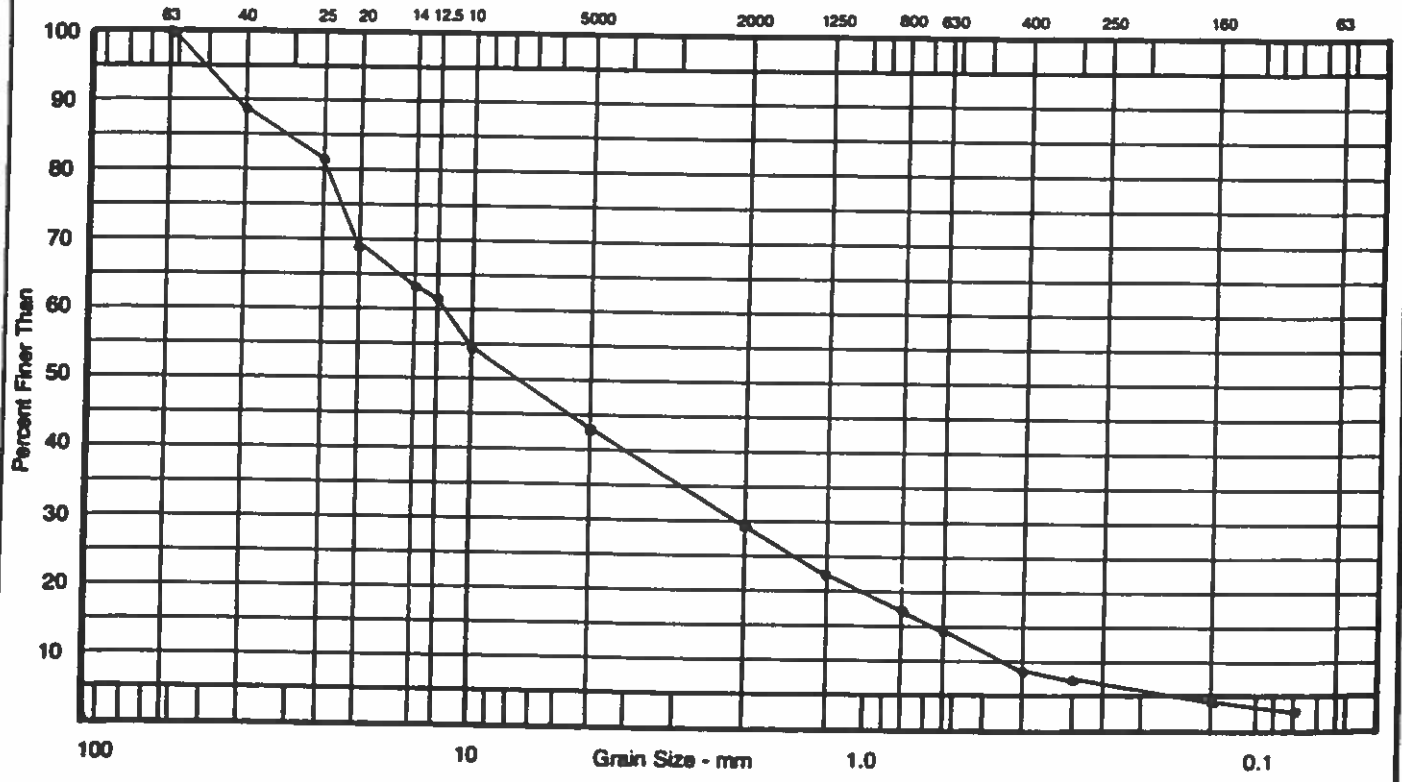
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					88.8
25000	25.0					81.1
20000	20.0					69.1
14000	14.0					63.3
12500	12.5					61.4
10000	10.0					54.8
5000	5.0					42.4
2000	2.0					29.7
1250	1.250					22.4
800	0.800					17.2
630	0.630					14.4
400	0.400					9.2
315	0.315					7.1
160	0.160					4.1
80	0.080					2.9

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

Remarks:
Moisture : 3.8 %
Gravel : 57.6 %
Sand : 39.5 %
Silt : 2.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 91 Depth: 1.0 - 1.2 m

Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

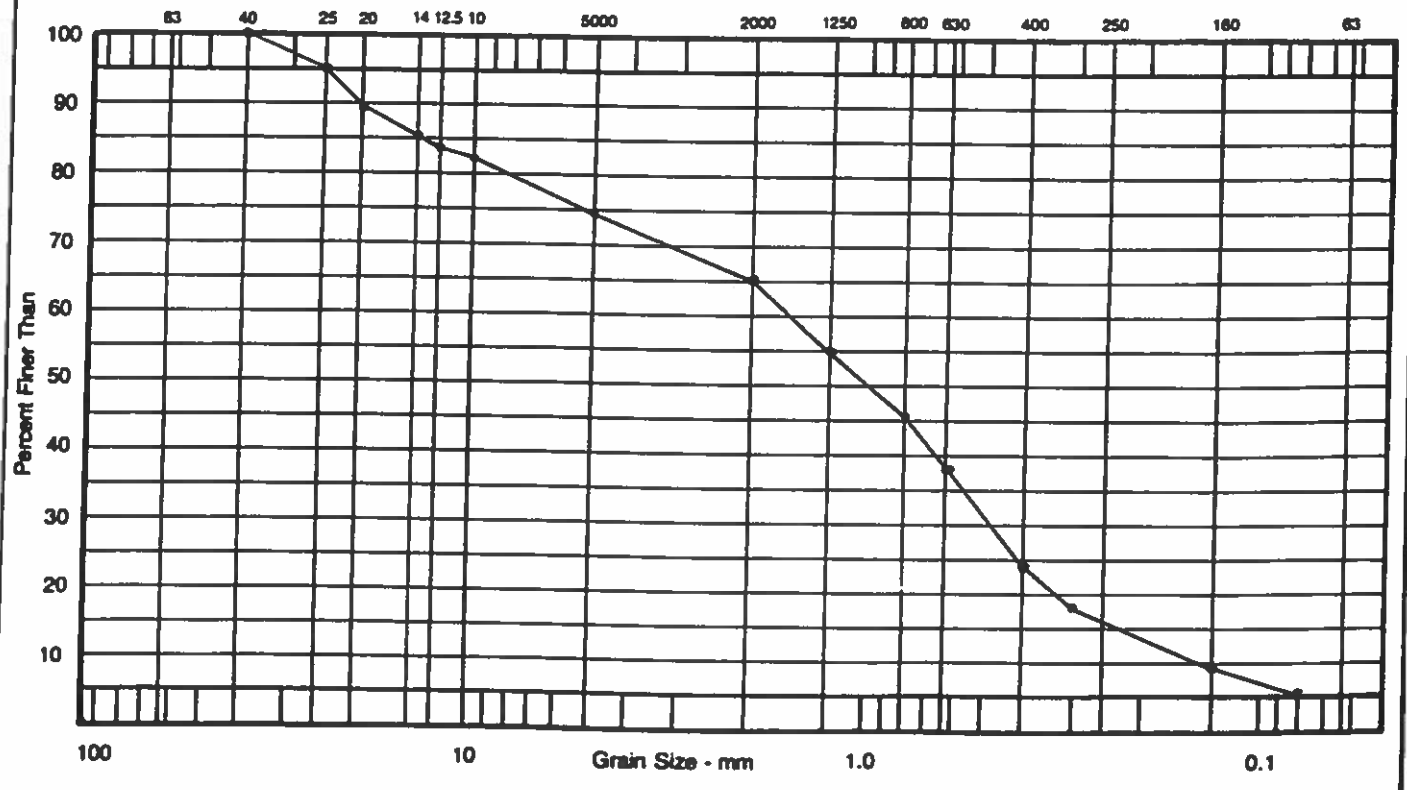
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					95.0
20000	20.0					89.7
14000	14.0					85.1
12500	12.5					84.0
10000	10.0					82.3
5000	5.0					74.6
2000	2.0					65.0
1250	1.250					55.0
800	0.800					45.1
630	0.630					37.7
400	0.400					24.1
315	0.315					18.2
160	0.160					9.3
80	0.080					5.4

Description of Sample: Gravelly Sand, SW-SM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 1.3 %
Gravel : 25.4 %
Sand : 69.2 %
Silt : 5.4 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 93 Depth: 3.0 - 3.2m

Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by WCC Date: 1995/06/29

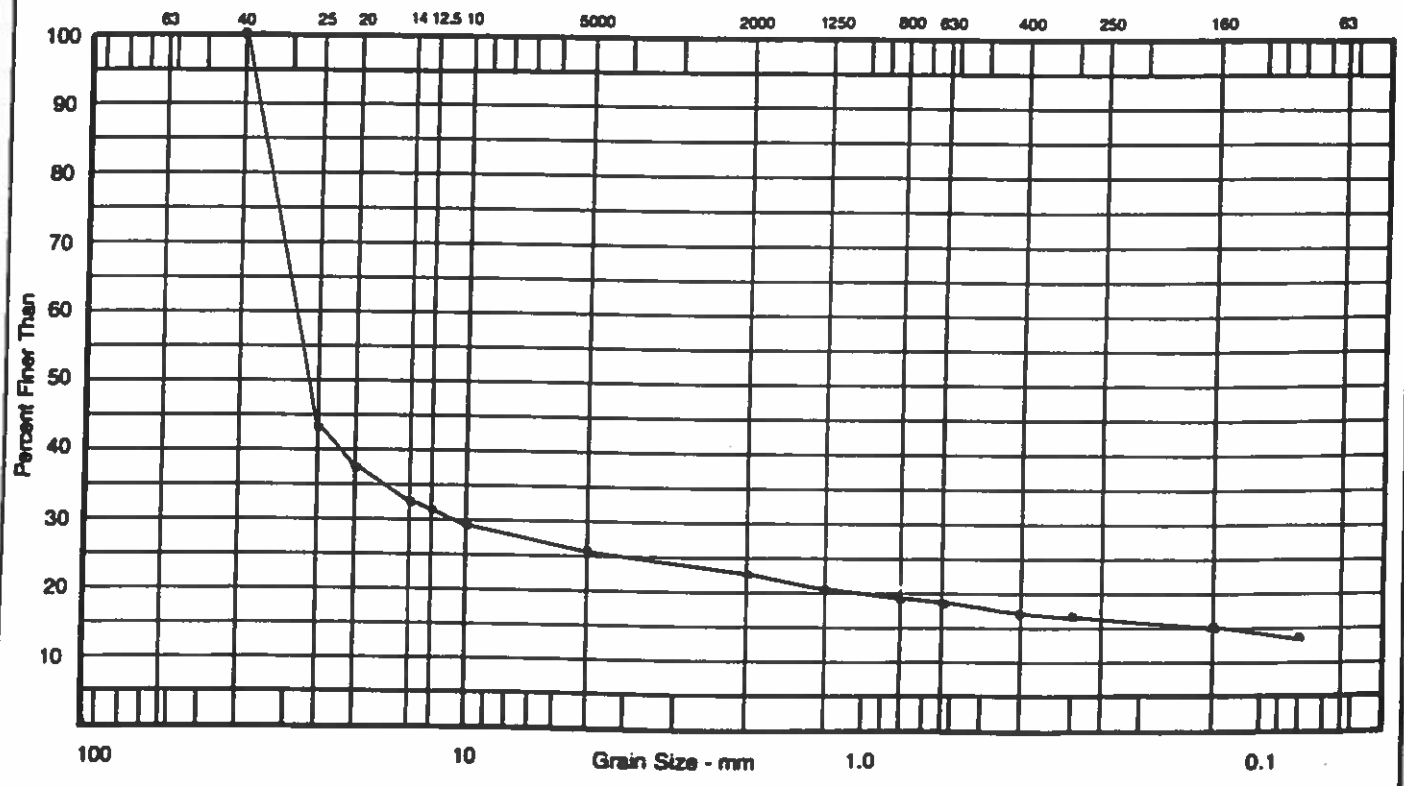
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					43.0
20000	20.0					37.0
14000	14.0					32.1
12500	12.5					31.5
10000	10.0					29.3
5000	5.0					25.8
2000	2.0					22.7
1250	1.250					20.9
800	0.800					19.7
630	0.630					18.8
400	0.400					17.2
315	0.315					16.3
160	0.160					15.0
80	0.080					14.1

Description of Sample: Gravel, GM
Some silt
Some Sand

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks
Moisture : 4.4 %
Gravel : 74.2 %
Sand : 11.7 %
Silt : 14.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 94 Depth: 3.8-4.0m
Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C.I.S. Date: 1995/06/29

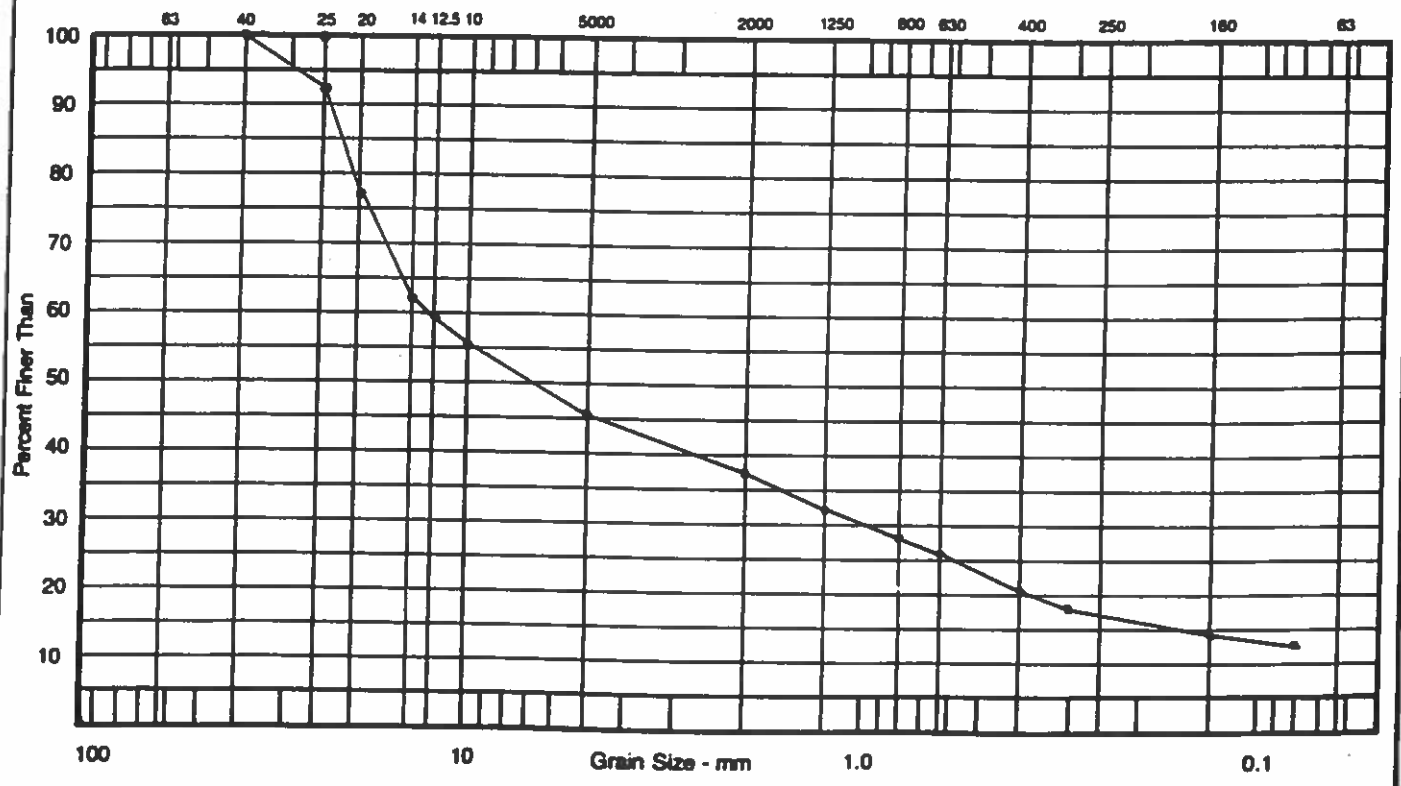
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100.0
25000	25.0					92.2
20000	20.0					76.8
14000	14.0					61.9
12500	12.5					59.8
10000	10.0					55.6
5000	5.0					45.1
2000	2.0					37.4
1250	1.250					32.3
800	0.800					28.5
630	0.630					25.8
400	0.400					20.7
315	0.315					18.3
160	0.160					14.5
80	0.080					12.7

Description of Sample: Sandy Gravel, GM some silt

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.0 %
Gravel : 54.9 %
Sand : 32.4 %
Silt : 12.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 22A-95 Depth: 3.00-4.00m
Location: Area # 7
TP # 22-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

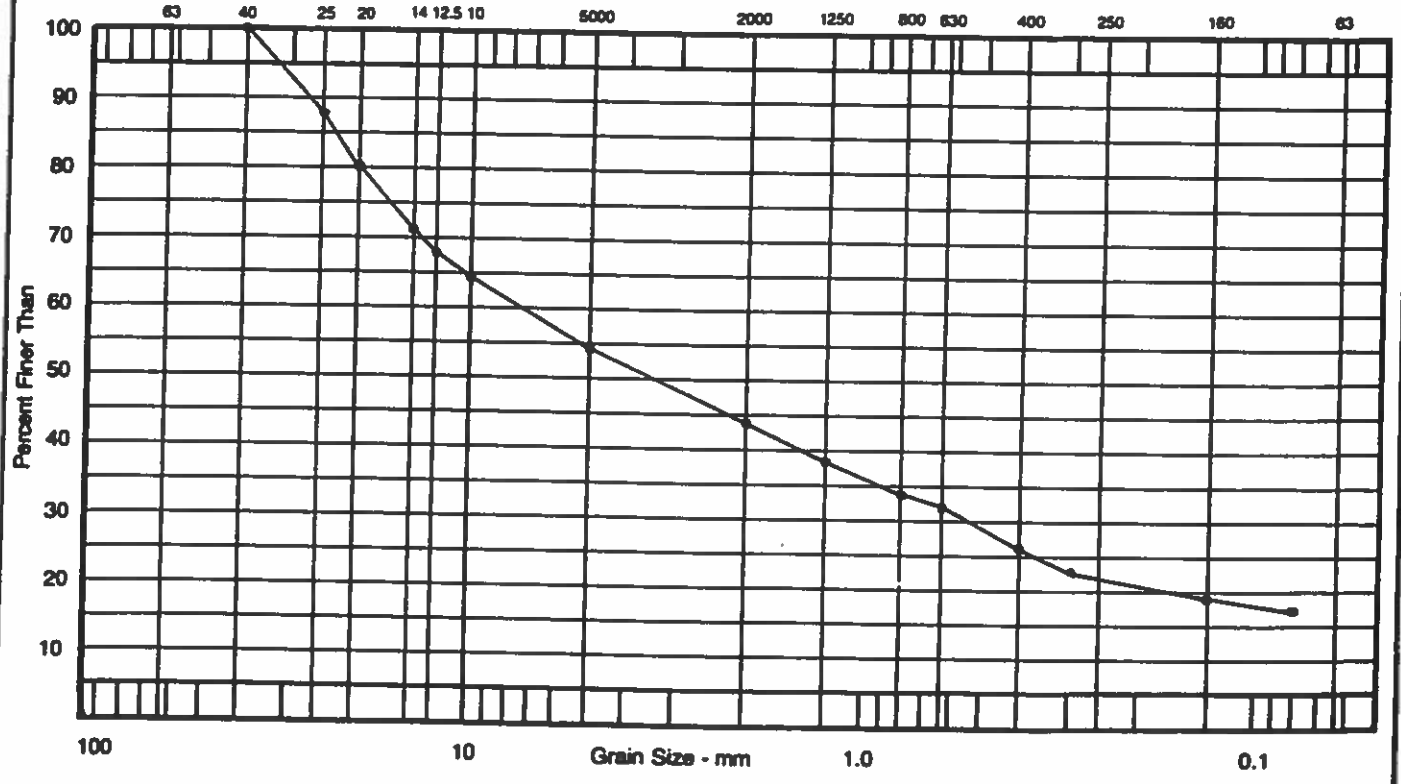
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100.0
25000	25.0					88.0
20000	20.0					80.0
14000	14.0					71.0
12500	12.5					68.3
10000	10.0					64.7
5000	5.0					54.7
2000	2.0					44.2
1250	1.250					38.5
800	0.800					34.1
630	0.630					31.3
400	0.400					25.8
315	0.315					23.3
160	0.160					19.5
80	0.080					17.5

Description of Sample: Silty Sandy Gravel, GM

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

Remarks:
Moisture: 39 %
Gravel: 45.3 %
Sand: 37.2 %
Silt: 17.5 %
Trial Grain Completed



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 22A (Crushed) Depth: 3.0 - 4.0 m
Location: Area # 7
TP # 22-95 Bulk Sample

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No.: 8002-234
Ck'd by: Date: 1995/06/30

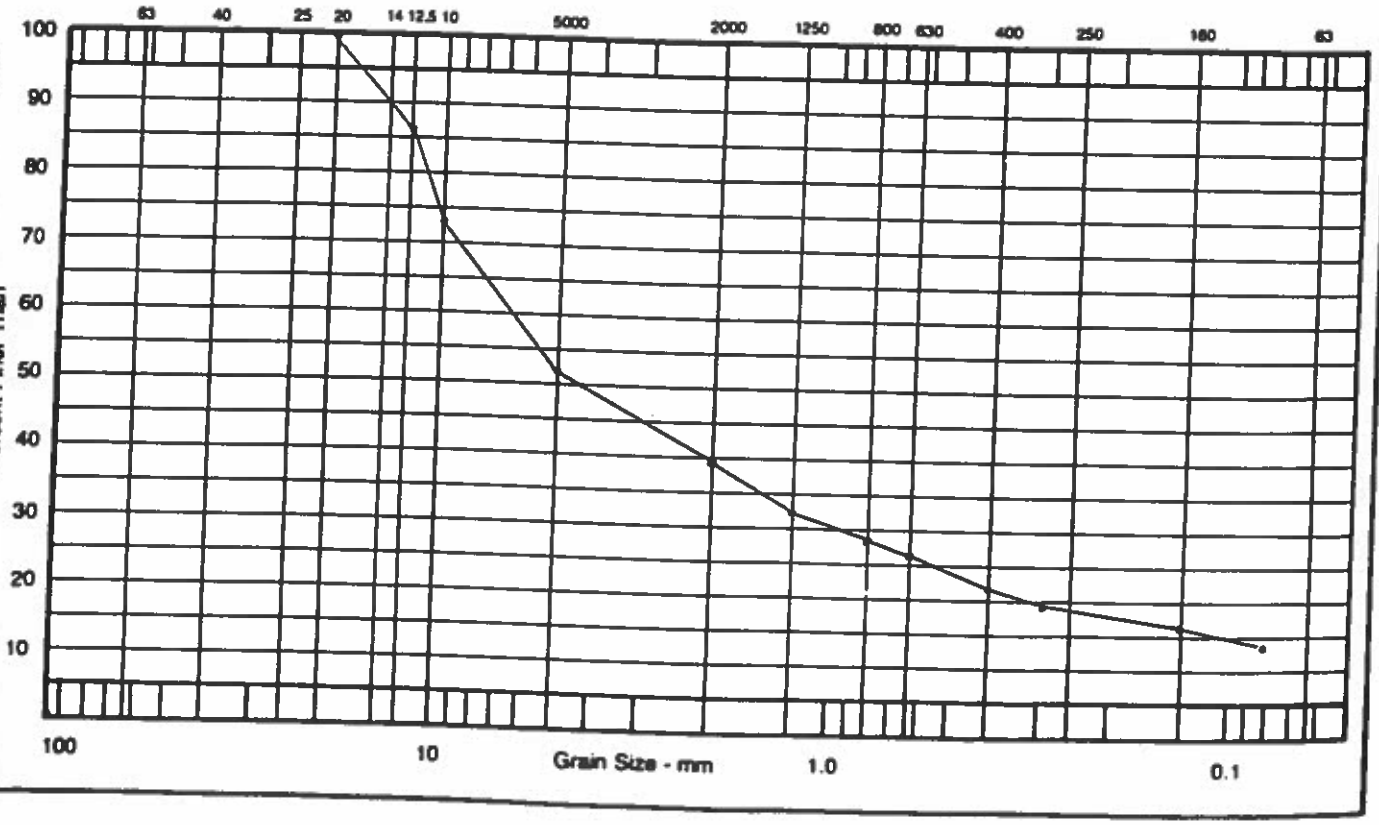
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					86.3
5000	5.0					73.0
2000	2.0					51.1
1250	1.250					39.9
800	0.800					32.8
630	0.630					28.4
400	0.400					25.7
315	0.315					21.4
160	0.160					19.5
80	0.080					15.8
						14.0

Description of Sample: Trial Crushed to 20mm Maximum Size

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 4.8%
Gravel : 48.9%
Sand : 37.1%
Silt : 14.0%
Crush Count 2 Faces : 78.0%
L.A. Abrasion 14.6% Loss



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 95 Depth: 0.20-0.40m
Location: Area # 7
TP # 23-95

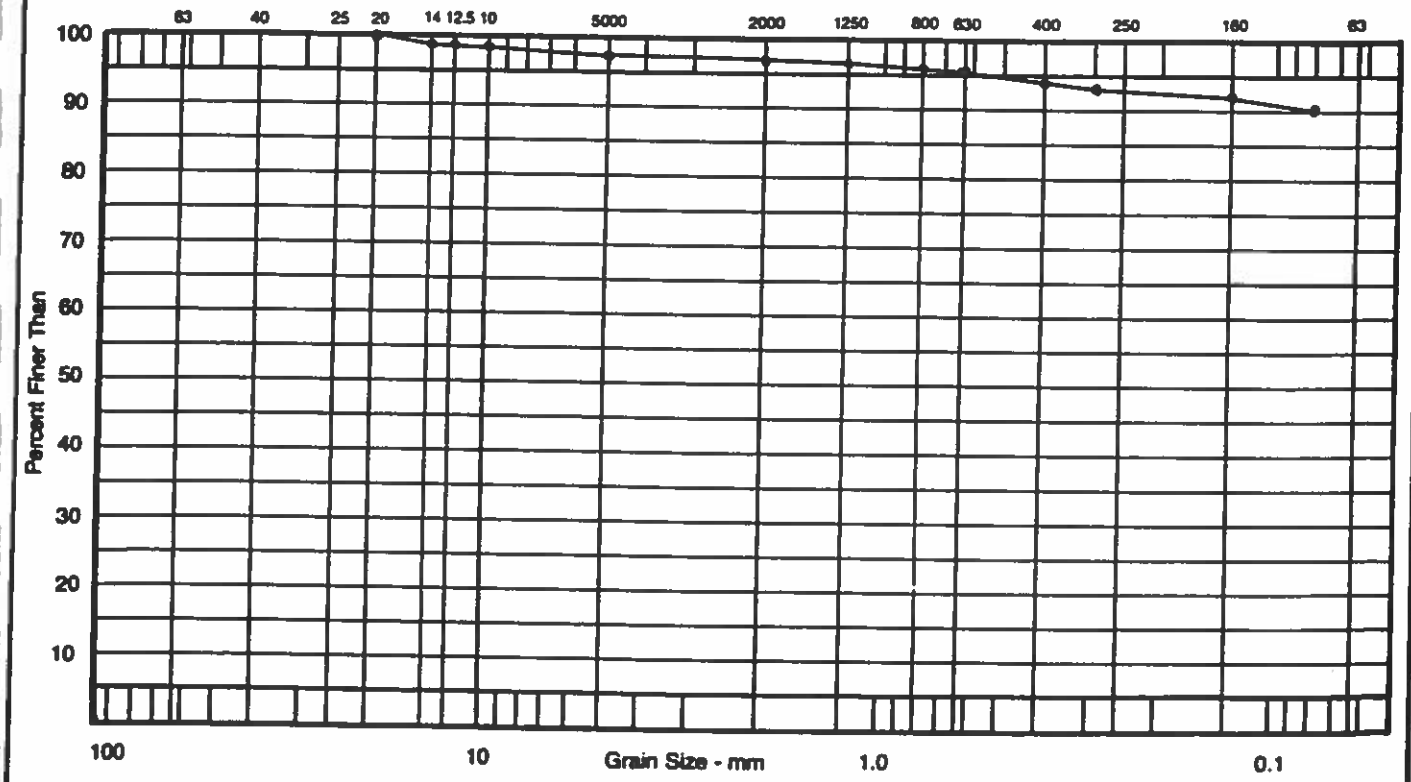
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					98.3
12500	12.5					98.3
10000	10.0					98.1
5000	5.0					97.5
2000	2.0					96.8
1250	1.250					96.2
800	0.800					95.7
630	0.630					95.3
400	0.400					94.2
315	0.315					93.6
160	0.160					92.4
80	0.080					90.2

Description of Sample
Silt, ML
Trace Sand

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 13.2%
Gravel : 2.5%
Sand : 7.3%
Silt : 90.2%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 96 Depth: 0.40 - 4.00m
Location: Area # 7
TP # 23-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCIC Date: 1995/06/29

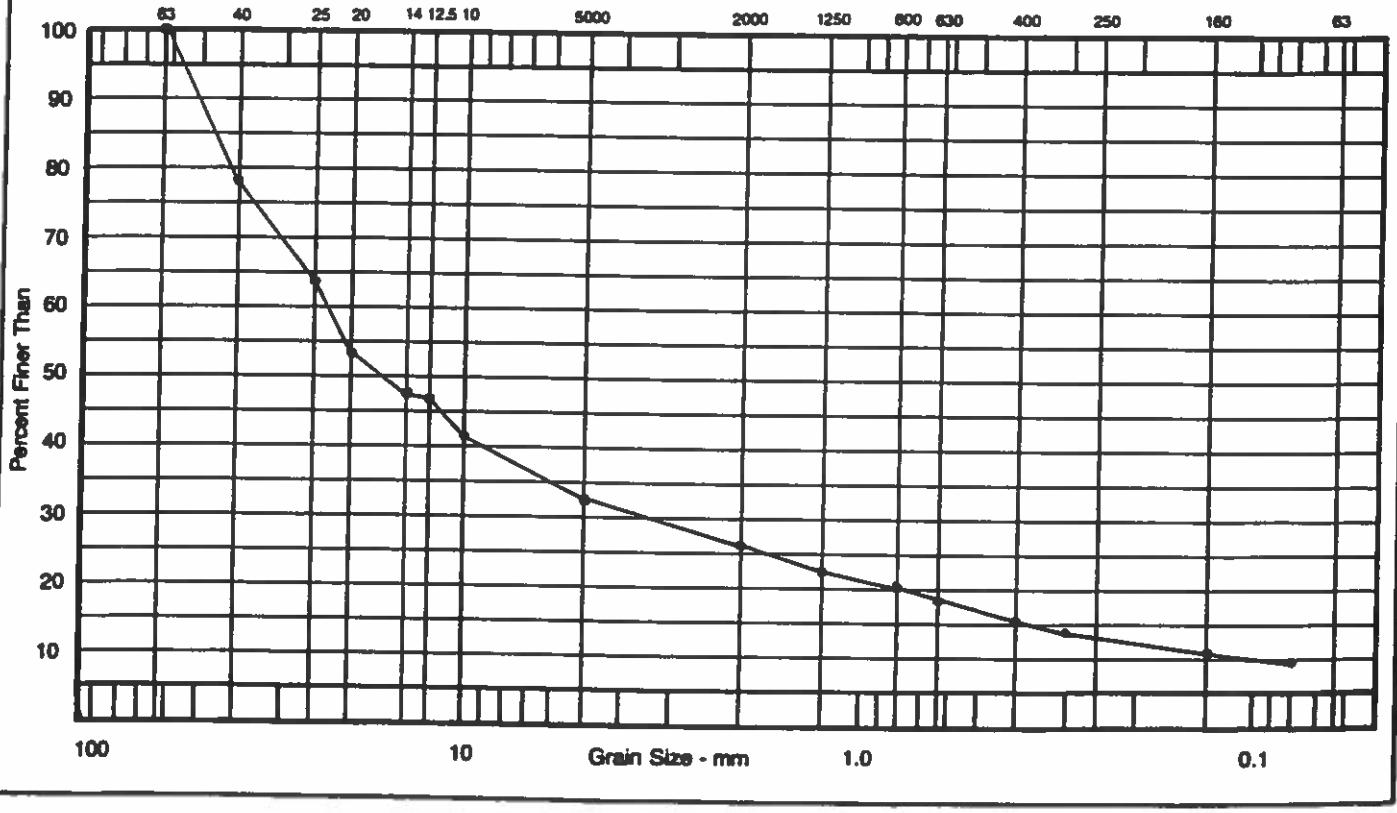
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						100.0
40000	40.0					78.1
25000	25.0					64.1
20000	20.0					52.9
14000	14.0					47.5
12500	12.5					46.1
10000	10.0					41.5
5000	5.0					32.9
2000	2.0					26.0
1250	1.250					22.7
800	0.800					20.3
630	0.630					18.7
400	0.400					15.6
315	0.315					14.1
160	0.160					11.5
80	0.080					9.9

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks
Moisture : 2.3%
Gravel : 67.1%
Sand : 23.0%
Silt : 9.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 23A-95 Depth: 0.40 - 4.00m
Location: Area # 7
TP # 23-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/ 29

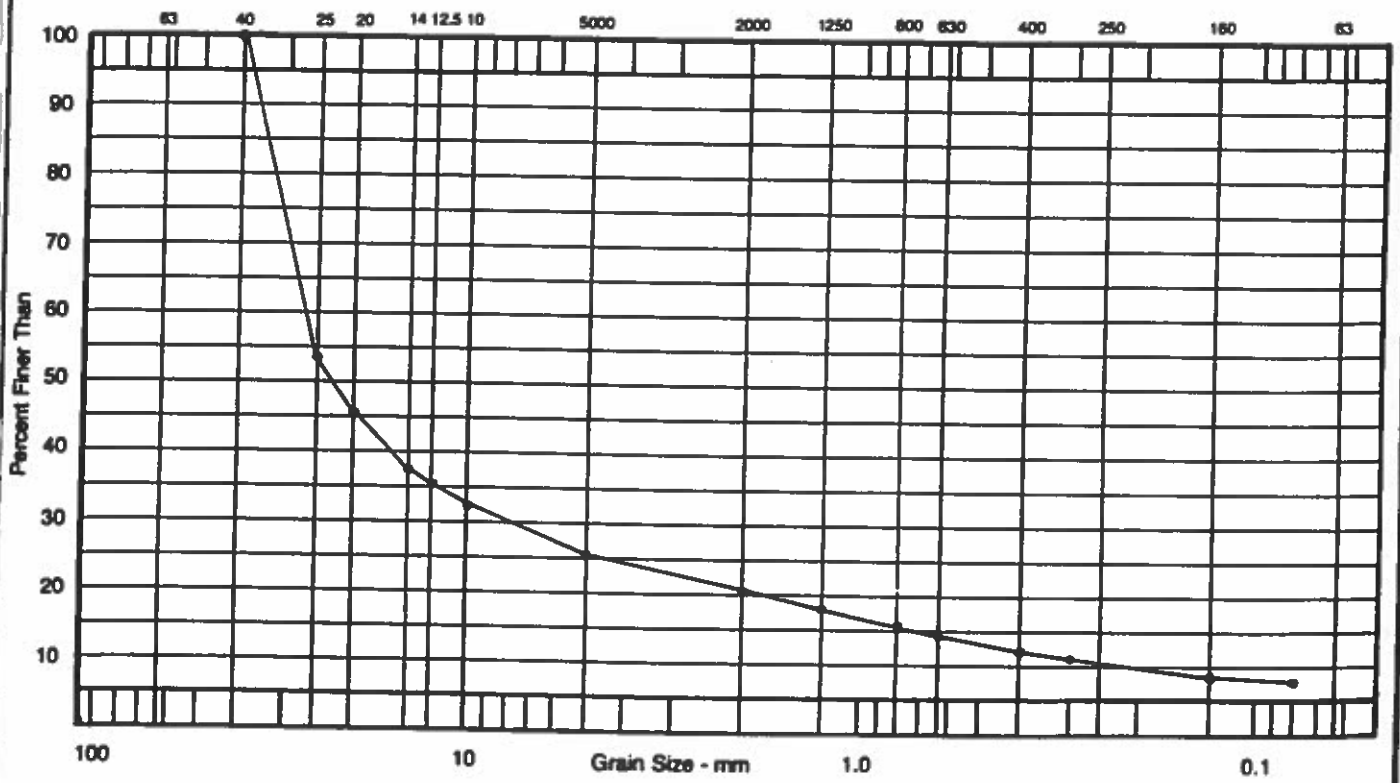
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					53.9
20000	20.0					45.1
14000	14.0					37.2
12500	12.5					35.6
10000	10.0					32.2
5000	5.0					25.5
2000	2.0					20.5
1250	1.250					17.9
800	0.800					16.0
630	0.630					14.7
400	0.400					12.2
315	0.315					11.0
160	0.160					8.9
80	0.080					7.7

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving: Min. 15

Method of Preparation: Dry ..... Washed X

Remarks:
Moisture : 2.5 %
Gravel : 74.5 %
Sand : 17.8 %
Silt : 7.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 102 Depth: 2.5 - 3.0 m

Location: Area # 7, TP # 24

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No: 8002-234

Ck'd by: WC/C Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					100
25000	25.0					69.5
20000	20.0					55.3
14000	14.0					47.2
12500	12.5					45.1
10000	10.0					40.2
5000	5.0					29.3
2000	2.0					21.1
1250	1.250					17.8
800	0.800					14.8
630	0.630					13.1
400	0.400					9.4
315	0.315					7.4
160	0.160					3.6
80	0.080					2.1

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

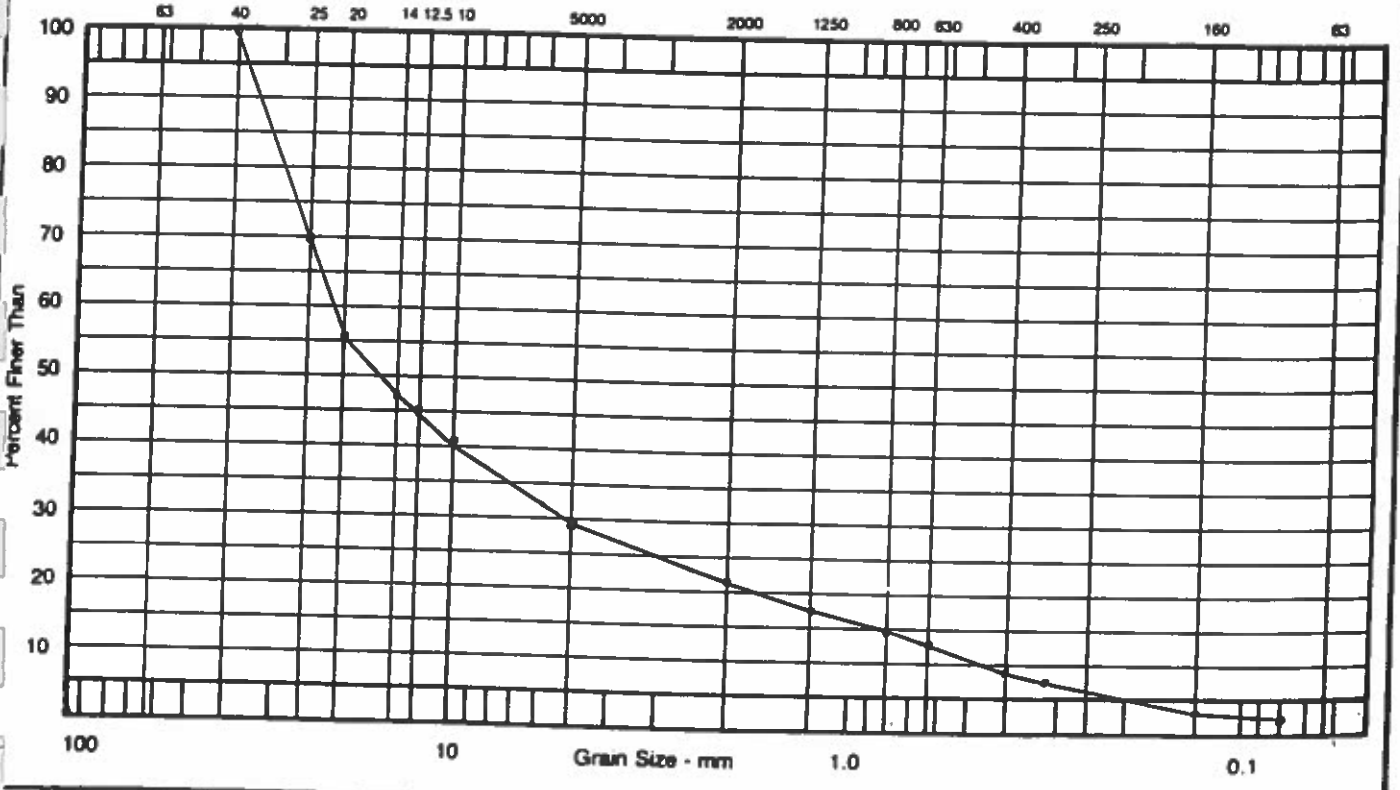
Remarks:

Moisture : 3.0 %

Gravel : 70.7 %

Sand : 27.2 %

Silt : 2.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 24A-95 Depth: 0.05-3.00m
Location: Area # 7
TP # 24-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCL Date: 1995/06/29

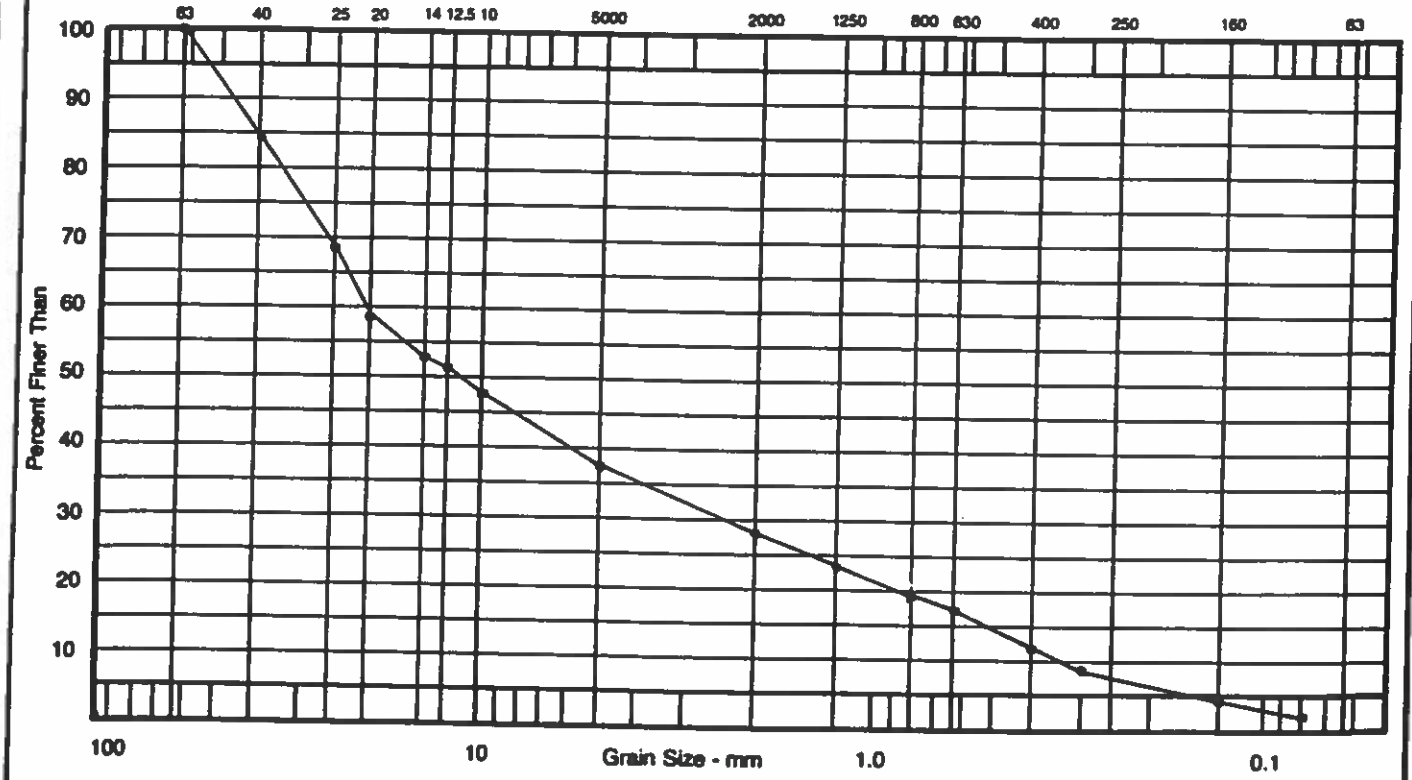
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
						100.0
40000	40.0					84.4
25000	25.0					68.8
20000	20.0					58.8
14000	14.0					52.6
12500	12.5					51.0
10000	10.0					47.5
5000	5.0					37.5
2000	2.0					28.0
1250	1.250					23.2
800	0.800					19.5
630	0.630					17.0
400	0.400					11.9
315	0.315					9.3
160	0.160					4.4
80	0.080					2.1

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

Remarks:
Moisture : 2.5 %
Gravel : 62.5 %
Sand : 35.4 %
Silt : 2.1 %
Trial Wash Completed



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 24A (Crushed) Depth 0.05 - 3.0m
Location: Area # 9
TP # 24-95 Blk

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/30

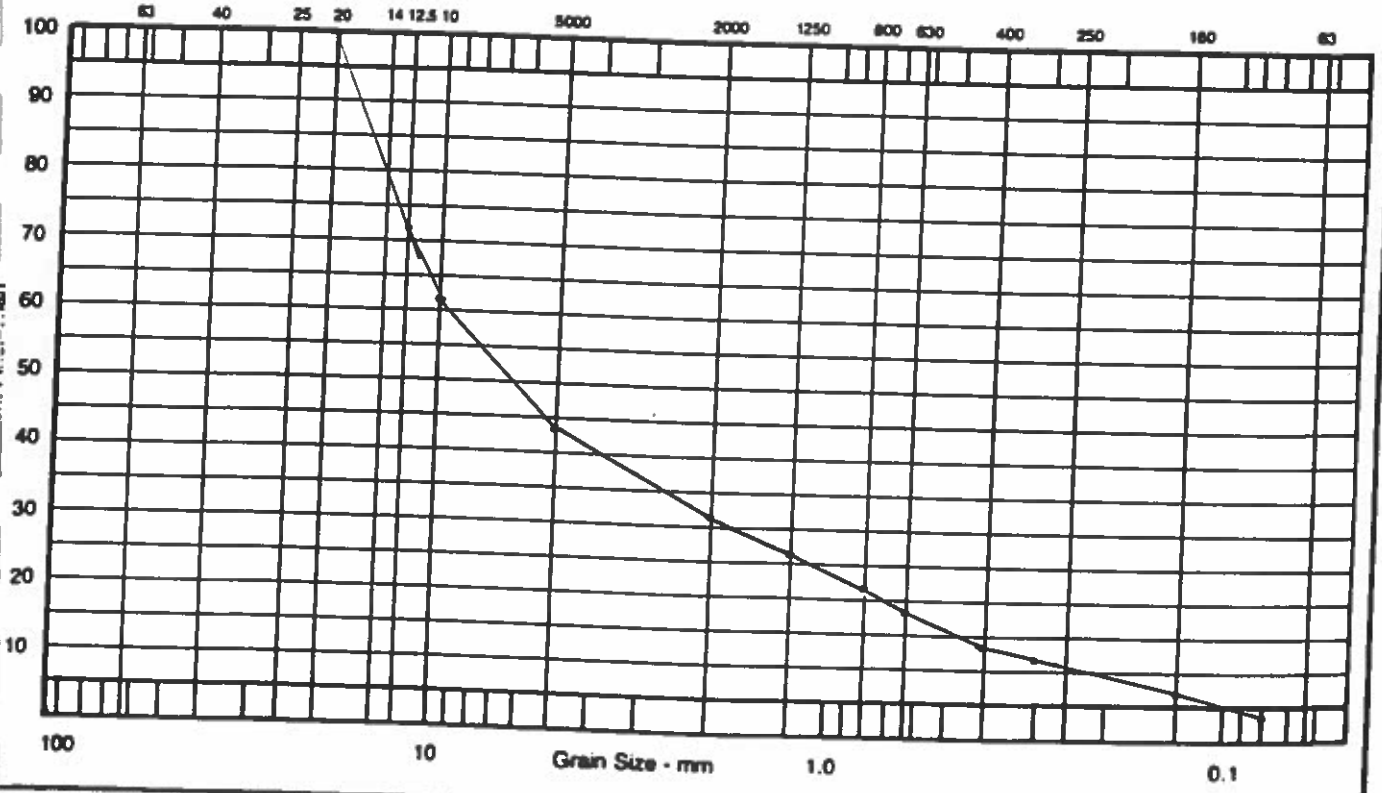
Sieve No	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					71.7
5000	5.0					61.4
2000	2.0					44.0
1250	1.250					31.5
800	0.800					25.9
630	0.630					21.5
400	0.400					19.3
315	0.315					14.3
160	0.160					12.0
80	0.080					6.6
						4.2

Description of Sample: Trial Crushed to 20mm Maximum Size

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 3.4% Crush Count 2 Faces: 80.0%
Gravel : 56.0% LA Abrasion: 14.6% Loss
Sand : 39.8 %
Silt : 4.2 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 106 Depth 2.5 - 2.8 m

Location: Area # 7
TP # 25

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job No. 8002-234

Ck'd by: W C K. Date: 1995/07/06

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0					100
25000	25.0					66.2
20000	20.0					58.6
14000	14.0					50.0
12500	12.5					48.2
10000	10.0					43.2
5000	5.0					34.0
2000	2.0					26.1
1250	1.250					23.0
800	0.800					20.4
630	0.630					19.2
400	0.400					17.0
315	0.315					15.8
160	0.160					13.0
80	0.080					10.4

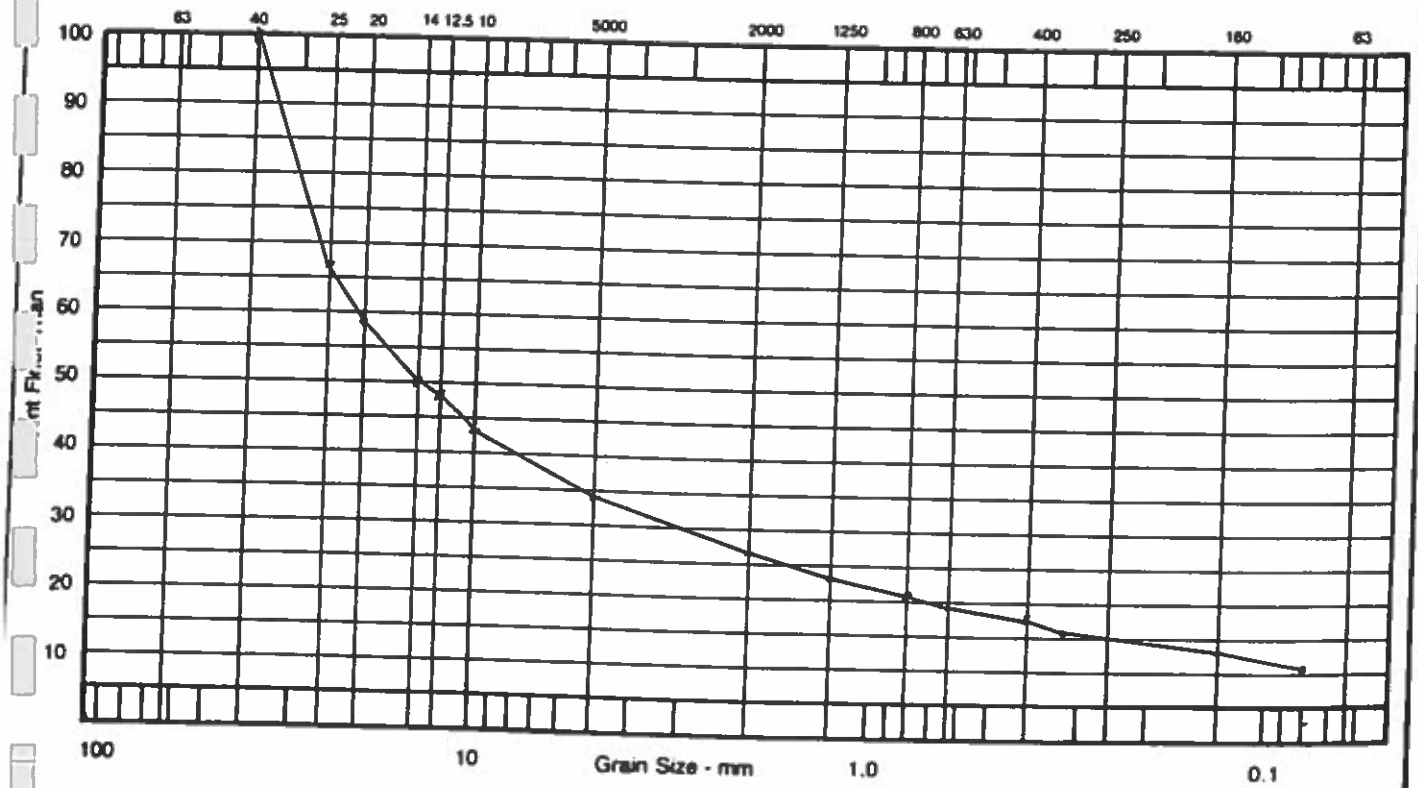
Description of Sample: Sandy Gravel, Some Silt, GP-GM

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:

Moisture : 3.1 %
Gravel : 66.0 %
Sand : 23.6 %
Silt : 10.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 25A-95 Depth: 2.50-4.00m

Location: Area # 7
TP # 25-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: Date: 1995/06/29

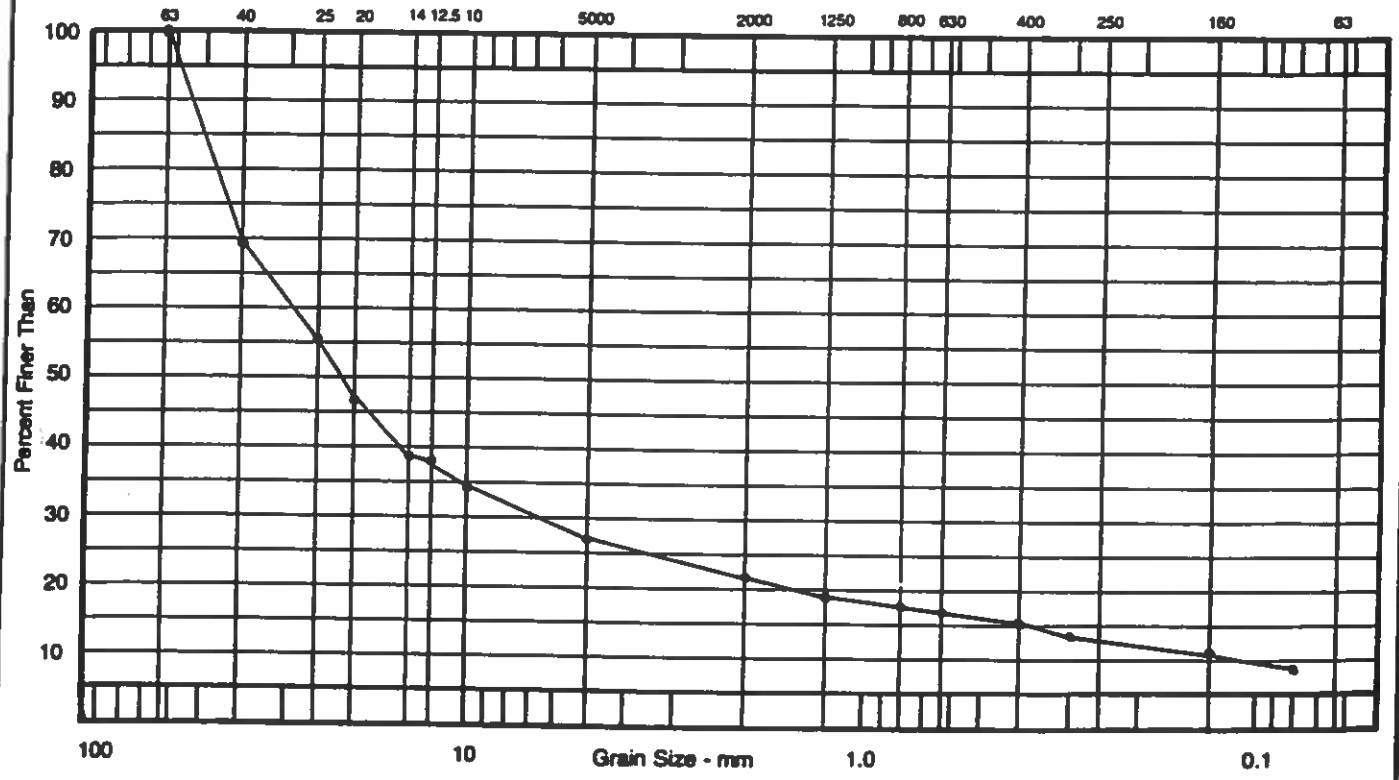
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
						100.0
40000	40.0					69.8
25000	25.0					55.2
20000	20.0					46.4
14000	14.0					38.9
12500	12.5					38.1
10000	10.0					34.7
5000	5.0					26.9
2000	2.0					21.6
1250	1.250					19.3
800	0.800					17.7
630	0.630					16.8
400	0.400					15.1
315	0.315					14.1
160	0.160					11.4
80	0.080					9.4

Description of Sample: Sandy Gravel, GP-GM trace silt

Time of Sieving Min. 15

Method of Preparation Dry Washed X

Remarks:
Moisture: 2.3%
Gravel: 73.1%
Sand: 17.5%
Silt: 9.4%



HOGGAN ENGINEERING & TESTING (1980) LTD.

Area #7
Alaska Hwy

8002-234

Photo # 9

Photo # 10

Photo # 11 (From TP# 18-95 Looking East)

Photo # 12

Area #7 8002-234

HOGGAN ENGINEERING & TESTING (1980) LTD. Alaska Hwy

Photo # 14

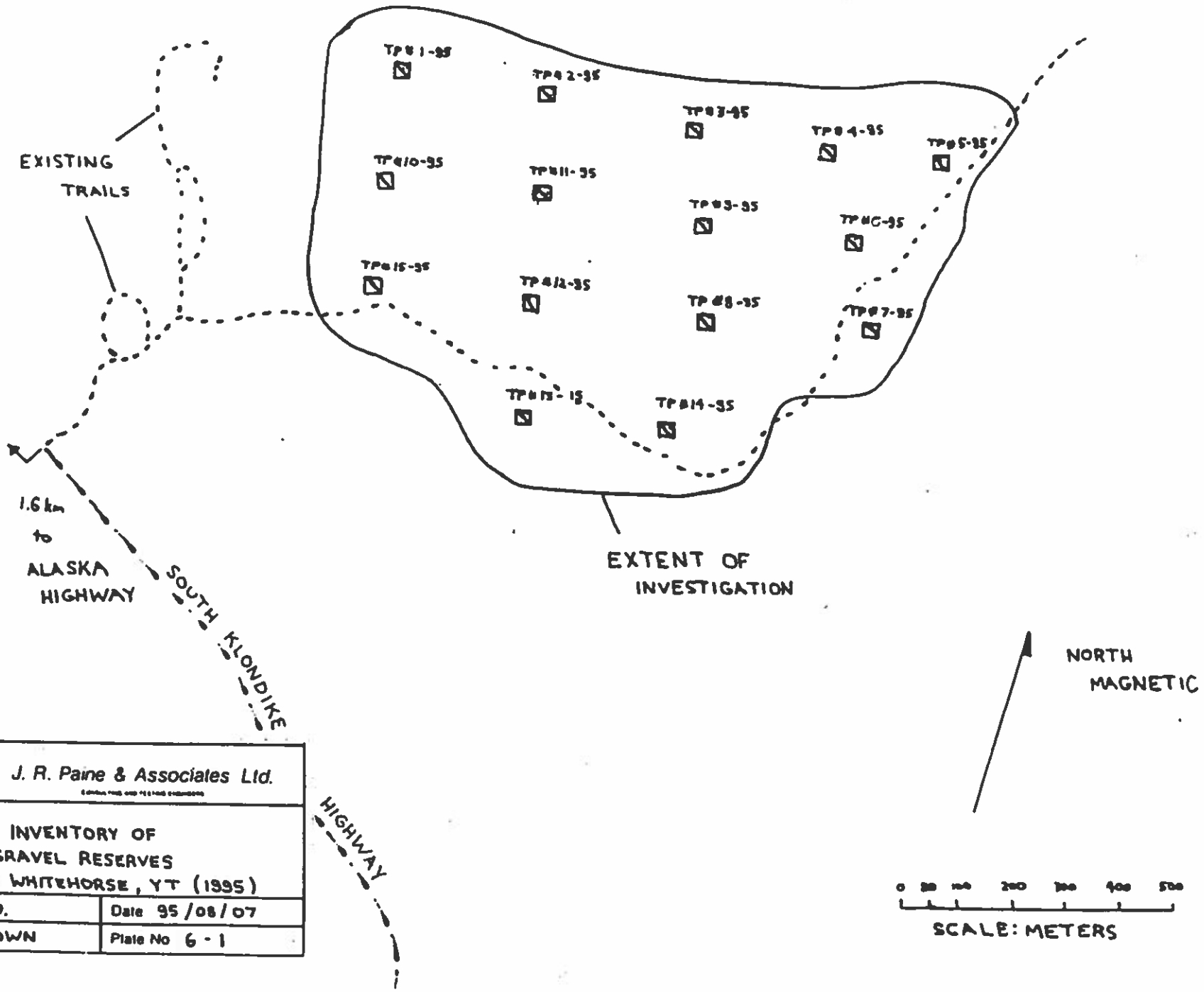
Photo # 16

Photo # 13

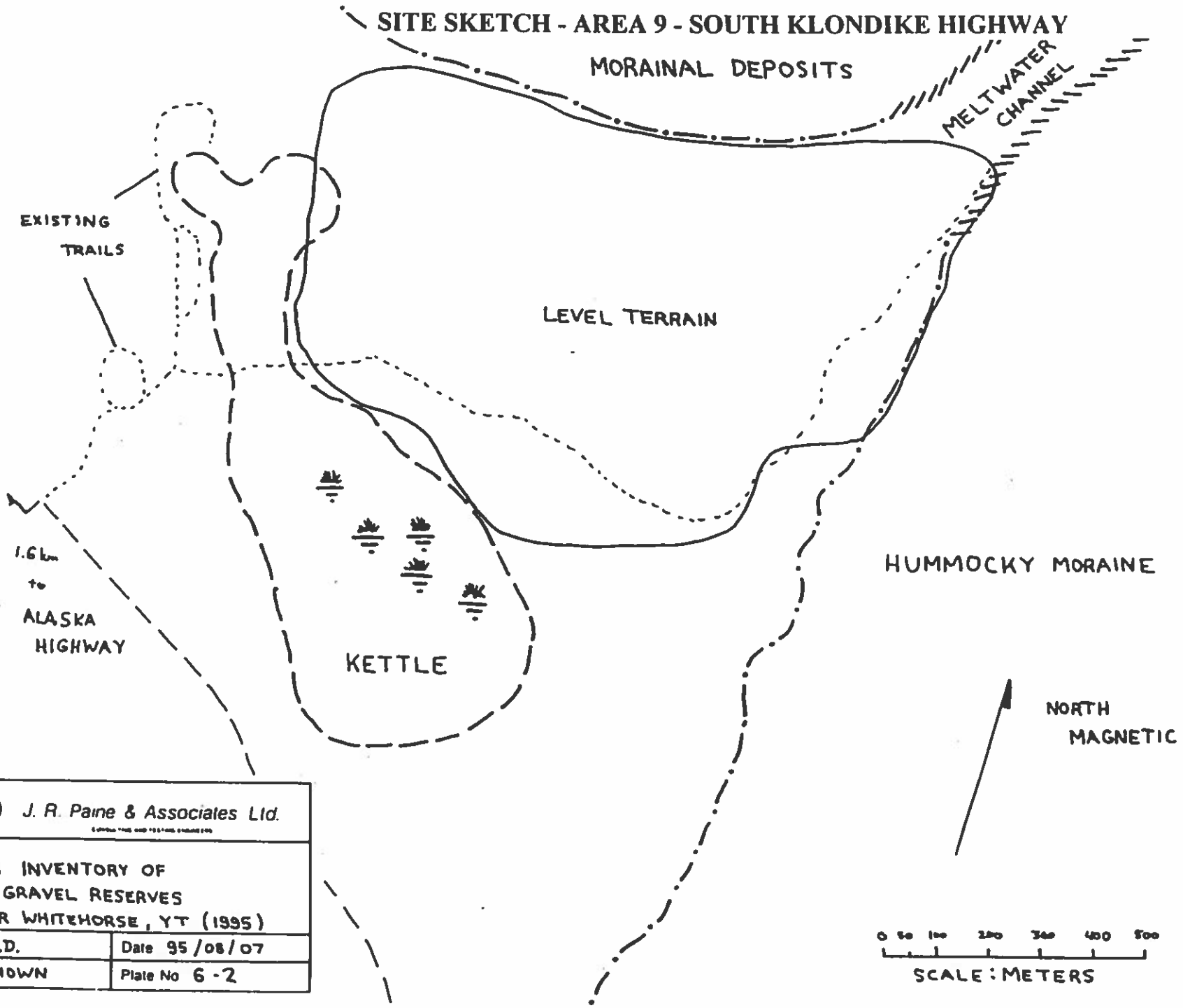
Photo # 15

APPENDIX G
•Site 9

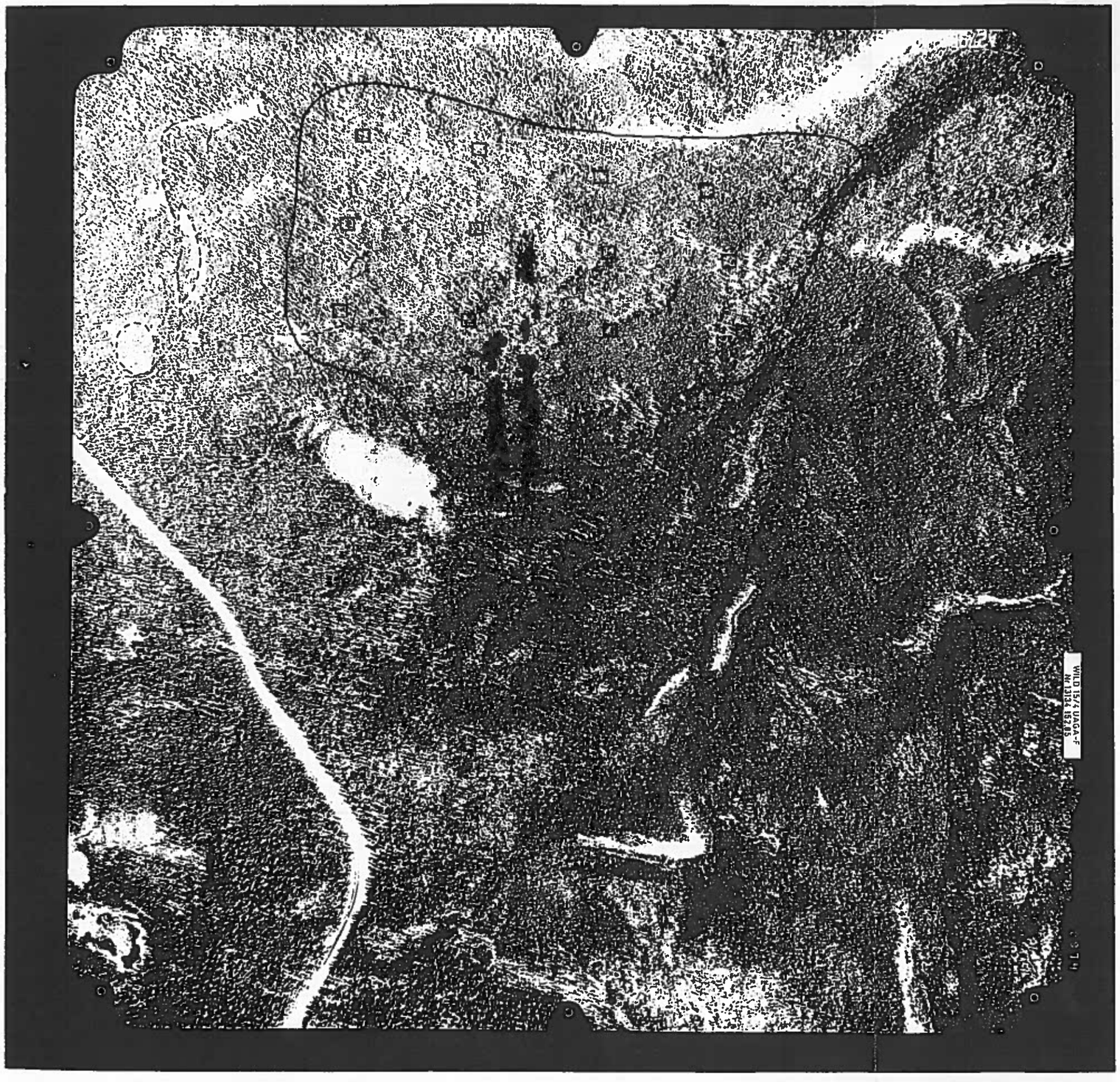
SITE SKETCH - AREA 9 - SOUTH KLONDIKE HIGHWAY



J. R. Paine & Associates Ltd.	
AREA 9 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)	
Dwn. By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 6 - 1


SITE SKETCH - AREA 9 - SOUTH KLONDIKE HIGHWAY
MORAINAL DEPOSITS
MELTWATER CHANNEL
EXISTING TRAILS
LEVEL TERRAIN
1.6 km to ALASKA HIGHWAY
KETTLE
HUMMOCKY MORAINE
NORTH MAGNETIC
0 50 100 200 300 400 500
SCALE : METERS
J. R. Paine & Associates Ltd.
AREA 9 INVENTORY OF SAND & GRAVEL RESERVES GREATER WHITEHORSE, YT (1995)
Dwn. By T.D.
Date 95/08/07
Scale AS SHOWN
Plate No 6-2

SITE AIRPHOTOGRAPH COPY - AREA 9 SOUTH KLONDIKE HIGHWAY



NORTH

0 50 100 200 300 400

SCALE : METERS

J. R. Paine & Associates Ltd.

AREA 9 INVENTORY OF
SAND & GRAVEL RESERVES
GREATER WHITEHORSE, YT (1995)

Own By T.D.	Date 95/08/07
Scale AS SHOWN	Plate No 6-3

YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#1-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, organics, rootlets
			0.05m
			-sandy silt, fine grained, loose, soft, some rootlets, moist, light brown
			0.15m
1.0		1	-sandy gravel, trace of silt, well graded sand sizes, 20-35% cobbles in size to 200mm, traces of oxidation, loose, damp, brown
2.0		2	-sandy gravel, medium to coarse grained sand, 20% cobbles in size to 200mm, 10% boulders to 300mm in size, traces of coal coal noted, clean, loose, damp, brown
3.0		3	-sandy gravel, clean, well graded, loose, damp, brown
			3.10m
4.0		4	-sandy gravel, clean, well graded, loose, moist, brown
			4.00m
			End of Testpit @ 4.00m
5.0			Note: -odd boulder in size to 400mm -photo #1, spill piles
6.0			Vegetation: medium dense to dense old growth spruce mixed with poplar Ground: relatively level
7.0			Trial Crush Completed: L.A. Abrasion: 13.2% Loss Bulk Sample #1A-95: 0.15-4.00m, GW % moisture - 4.6% % gravel - 71.8%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, ML, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/09
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#2-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⧄ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-organics, rootlets, peat	PT		0.0
			0.05m			
			-sandy silt, fine grained, loose, soft, moist, light brown	SM		
			0.10m			
1.0		5	-sandy gravel, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown			1.0
2.0		6	-sandy gravel, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown	GW		2.0
3.0		7	-sandy gravel, medium to coase grained sand, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown			3.0
4.0		8	-sandy gravel, medium to coarse grained sand, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0			Note: -traces of coal intrusions between 1.5-4.0m			5.0
6.0			Vegetation: sparse to medium dense, little underbrush, old growth spruce, young poplar Ground: relatively level			6.0
7.0			Bulk Sample #2A-95: 0.15-4.00m, GW % moisture - 6.3% % gravel - 64.2% % sand - 35.0% % silt - 0.8%			7.0
8.0						8.0

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

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Whitehorse, Yukon

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#3-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0		9	-peat, organics, rootlets	PT		0.0
			0.08m			
			-sandy silt, fine grained, some rootlets, loose, soft, moist, light brown	ML		
			0.15m			
1.0		10	-sandy gravel, clean, well graded, 30-40% cobbles in size to 200mm, some oxidation, loose, damp, brown			1.0
2.0		11	-sandy gravel, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown	GW		2.0
3.0		12	-sandy gravel, medium to coase grained sand, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, damp, brown			3.0
			3.00m			
4.0		13	-sandy gravel, medium to coarse grained sand, clean, well graded, 20-30% cobbles in size to 200mm, some oxidation, loose, moist, brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0						5.0
6.0			Vegetation: medium dense to dense young poplar and spruce Ground: relatively level			6.0
7.0			Bulk Sample #3A-95: 0.15-4.00m, GW % moisture - 6.0% % gravel - 56.9% % sand - 42.1% % silt - 1.0%			7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#4-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL
0.0		13.5	-organics & rootlets	PT	
			0.05m		
			-sandy silt, fine grained, some rootlets, loose, soft, moist, light brown	ML	
			0.15m		
1.0		14	-sandy gravel, clean, well graded, 20-30% cobbles in size to 200mm, trace of oxidation, roots, loose, damp, brown		
2.0		15	-sandy gravel, clean, well graded, 30-40% cobbles in size to 200mm, medium to oxidation, loose, damp to moist, brown coarse grained sand particles, trace of	GW	
			2.50m		
3.0		16	-sandy gravel, clean, well graded, 30-40% cobbles in size to 200mm, 10% boulders in size to 400mm, medium to coarse grained sand particles, trace of oxidation, loose, damp to moist, brown		
4.0		17	-sandy gravel, clean, well graded, 30-40% cobbles in size to 200mm, 10% boulders in size to 400mm, medium to coarse grained sand particles, trace of oxidation, loose, damp to moist, brown		
			4.00m		
5.0			End of Testpit @ 4.00m Note: -photo #2, spill piles		
6.0			Vegetation: dense vegetation, mature to Ground: relatively level young spruce, odd poplar		
7.0			Bulk Sample #4A-95: 0.15-4.00M, GW % moisture - 5.4% % gravel - 63.8% % sand - 35.5% % silt - 0.7%		
8.0					

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

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Fig. No: 4

COMPLETION DEPTH: 4.0 m
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#5-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtbolt Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ☒ AUGER ▤ BULK ▥ SPT ▮ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL
0.0			-organics, peat, rootlets	PT	
			0.05m		
			-sandy silt, fine grained, some rootlets, loose, soft, moist, light brown	SM	
			0.15m		
1.0		18	-sandy gravel, well graded, 30% cobbles to 150-200mm in size, coarse grained sand, trace of oxidation, loose, damp, clean brown		
2.0		19	-sandy gravel, well graded, 30% cobbles to 150-200mm in size, coarse grained sand, trace of oxidation, loose, damp, trace to some silt, brown	GW	
3.0		20	-sandy gravel, well graded, 20% cobbles to 200mm in size, 10% boulders to 300mm in size, coarse grained sand, trace of oxidation, loose, moist, clean, brown		
			3.20m		
4.0		21	-sandy gravel, well graded, 20% cobbles to 200mm in size, 10% boulders to 300mm in size, coarse grained sand, trace of oxidation, loose, moist, clean, brown		
			4.00m		
			End of Testpit @ 4.00m		
5.0			Note: test hole located 50m from existing 4x4 path		
6.0			Vegetation: sparse to medium dense, mature spruce & poplar Ground: relatively level		
7.0			Bulk Sample #5A-95: 0.15-4.00m, GW % moisture - 5.6% % gravel - 66.3% % sand - 30.7% % silt - 3.0%		
8.0					

LIQUID ■ 10 20 30 40 | PLASTIC ▲ 10 20 30 40 | PLASTIC — M.C. — LIQUID 10 20 30 40

CLAY ● 20 40 60 80 | SILT ▲ 20 40 60 80 | SAND ■ 20 40 60 80 | GRAVEL ◆ 20 40 60 80

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#6-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40
● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			–peat, organics, rootlets	PT		0.0
			0.08m			
			–sandy silt, fine grained, some rootlets, loose, soft, moist, light brown	ML		
			0.30m			
1.0						1.0
		22	–sandy gravel, well graded, 20–30% cobbles in size to 200mm, loose, trace of oxidation, damp, clean, brown			
2.0				GW		2.0
		23	–sandy gravel, well graded, 20–30% cobbles in size to 200mm, loose, trace of oxidation, damp, clean, brown			
			2.50m			
3.0		24	–sandy gravel, well graded, 20–30% cobbles in size to 200mm, loose, trace of oxidation, moist, clean, brown			3.0
4.0		25	–sandy gravel, well graded, 20–30% cobbles in size to 200mm, loose, trace of oxidation, moist, clean, brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0			Note: –photo #3			5.0
6.0			Vegetation: sparse to medium dense, mature spruce & poplar, many dead trees Ground: relatively level			6.0
7.0			Trial Crush Completed: L.A. Abrasion: 13.2% Loss Bulk Sample #6A-95: 0.30–4.00m, GW % moisture – 5.3% % gravel – 66.3%			7.0
8.0						8.0

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#7-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ⊘ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-grass, rootlets, peat	PT		0.0
			0.05m			
			-sandy silt, fine grained, loose, soft, some rootlets, moist, light brown	ML		
			0.15m			
1.0		26	-sandy gravel, well graded, 10-20% cobbles to 200mm in size, loose, damp, clean, trace of oxidation, odd boulders, brown			1.0
2.0		27	-sandy gravel, well graded, 15-20% cobbles to 200mm in size, odd boulder, loose, trace of oxidation, damp to moist, clean, brown	GW		2.0
3.0		28	-sandy gravel, well graded, 20-30% cobbles to 200mm in size, few more boulders, trace of oxidation, moist, clean, loose, brown			3.0
			3.00m			
4.0		29	-sandy gravel, well graded, 20-30% cobbles to 100mm in size, few more boulders, trace of oxidation, moist, clean, loose, brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0			Note: -pictures #4, spill piles			5.0
6.0			Vegetation: sparse to medium dense, mature spruce Ground: relatively level			6.0
7.0			Bulk Sample #7A-95: 0.15-4.00m, GW % moisture - 4.3% % gravel - 71.9% % sand - 25.2% % silt - 2.9%			7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#8-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0		30	-peat, organics, rootlets
			0.05m
			-silty sand, trace of gravel, soft, some rootlets, moist, light, brown
			0.20m
1.0		31	-sandy gravel, well graded, 20-30% cobbles to 200mm in size, loose, damp, clean, trace of oxidation, rootlets, brown
2.0		32	-sandy gravel, well graded, 20-30% cobbles to 200mm in size, loose, damp to moist, trace of oxidation, clean, brown
3.0		33	-sandy gravel, well graded, 20-30% cobbles to 200mm in size, loose, damp, clean trace of oxidation, brown
			3.00m
4.0		34	-sandy gravel, well graded, 30-40% cobbles to 200mm in size, 5% boulders in size to 500mm, trace of oxidation, clean, loose, damp, grey-brown
			4.00m
			End of Testpit @ 4.00m
5.0			Note: -photo #5, spill piles
6.0			Vegetation: medium dense, mature spruce, odd young poplar Ground: relatively level
7.0			Bulk Sample #8A-95: 0.20-4.00m, GW % moisture - 3.3% % gravel - 58.4% % sand - 38.1% % silt - 3.5%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SM, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
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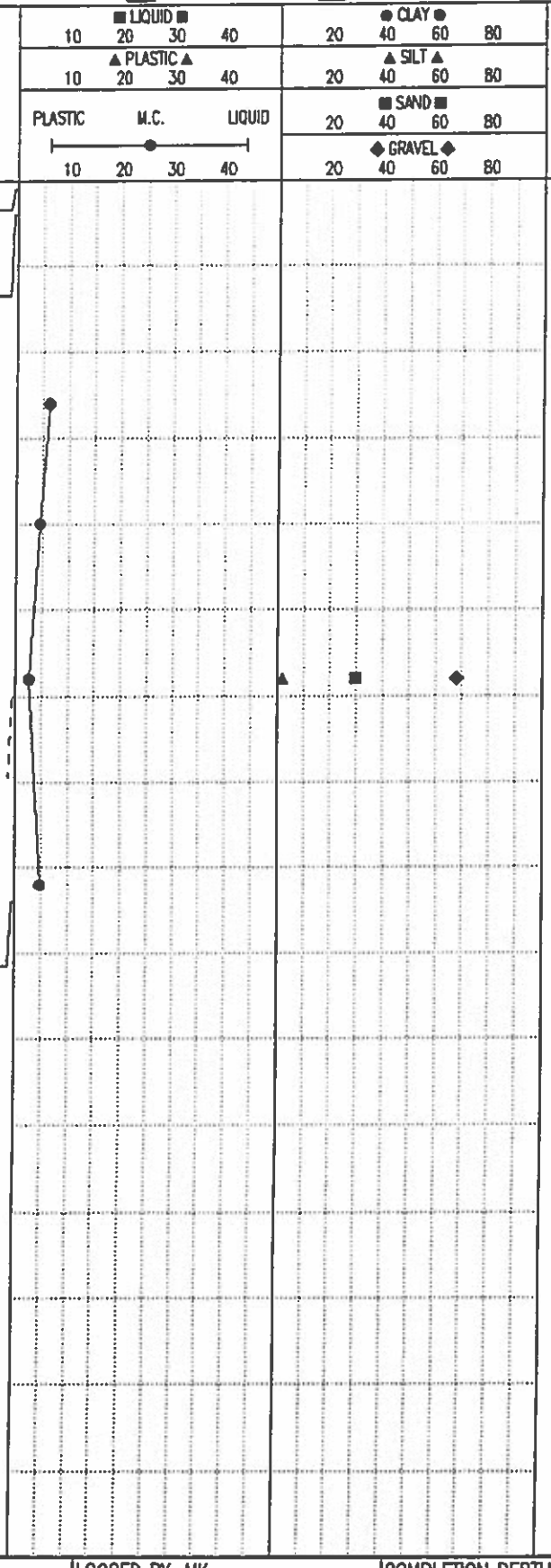
YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#9-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			-peat, rootlets, organics	PT		0.0
			0.05m			
			-silty sand, trace of gravel, soft, some rootlets, moist, light brown	SM		
			0.20m			
1.0		35	-sandy gravel, well graded, 30-40% cobbles to 200mm in size, loose, damp, clean, trace of oxidation, roots, odd boulders, brown			1.0
2.0		36	-sandy gravel, well graded, 30-40% cobbles to 200mm in size, loose, damp to moist, trace of oxidation, roots, clean, odd boulders, brown	GW		2.0
3.0		37	-sandy gravel, well graded, 30-40% cobbles to 200mm in size, loose, moist, clean trace of oxidation, roots, odd boulder, brown			3.0
			3.00m			
4.0		38	-sandy gravel, well graded, 30-40% cobbles to 200mm in size, coarse sand grains, loose, moist, clean, trace of oxidation, brown			4.0
			4.20m			
			End of Testpit @ 4.20m			
5.0						5.0
6.0			Vegetation: dense, mature & young spruce and poplar Ground: relatively level			6.0
7.0			Bulk Sample #9A-95: 0.20-4.00m, GW % moisture - 5.4% % gravel - 62.7% % sand - 34.2% % silt - 3.1%			7.0
8.0						8.0



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REVIEWED BY: WCK	COMPLETE: 95/06/12
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#10-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0			–organics, peat, rootlets,	PT		0.0
			0.10m			
			–silty sand to sandy silt, fine grained, soft, some rootlets, moist, light brown	SM		
			0.30m			
1.0		39	–sandy gravel, well graded, 10–20% cobbles to 400mm in size, loose, damp, clean, trace of oxidation, roots, odd boulder, brown			1.0
2.0		40	–sandy gravel, well graded, 15% cobbles to 200mm in size, 15% boulders to 400mm in size, loose, damp, trace of oxidation, roots, clean, brown	GW		2.0
3.0		41	–sandy gravel, well graded, 30% cobbles to 200mm in size, 10% boulders to 400mm in size, loose, damp to moist, trace of oxidation, roots, clean, brown			3.0
4.0		42	–sandy gravel, well graded, 30% cobbles to 200mm in size, 10% boulders to 400mm in size, damp to moist, loose, clean, trace of oxidation, roots, brown			4.0
			4.20m			
			End of Testpit @ 4.20m			
5.0			Note: –pictures #6, spill piles –test hole located in valley N–S –no major moisture change			5.0
6.0			Vegetation: medium dense, young poplar and mature spruce Ground: slightly inclined			6.0
7.0			Bulk Sample #10A–95: 0.30–4.00m, GW % moisture – 4.0% % gravel – 75.7% % sand – 21.7% % silt – 2.6%			7.0
8.0						8.0

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40 | CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK | COMPLETION DEPTH: 4.2 m
REVIEWED BY: WCK | COMPLETE: 95/06/13
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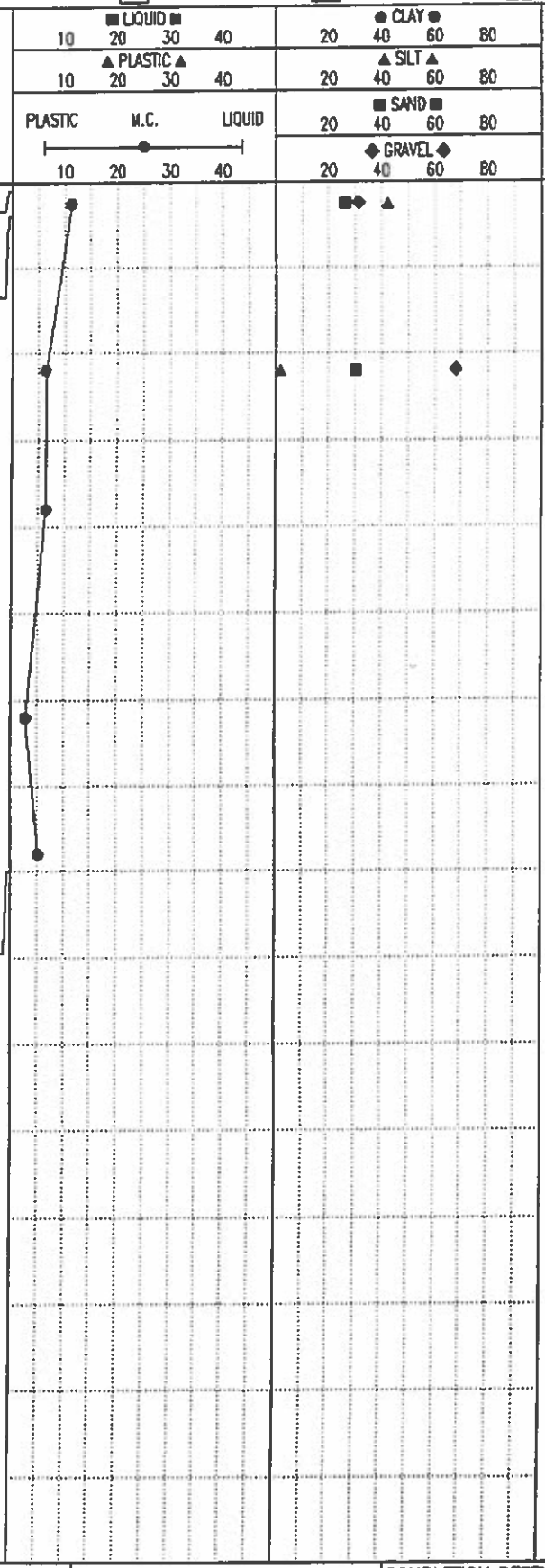
YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#11-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL	DEPTH(m)
0.0		43	-grass, peat, rootlets, organics	PT		0.0
			0.05m			
			-sandy gravelly silt, loose, fine grained, moist, brown	SM		
			0.20m			
1.0		44	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, rootlets, trace of oxidation, brown			1.0
2.0		45	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, odd boulder to 300mm in size, rootlets, trace of oxidation, brown	GW		2.0
3.0		46	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, odd boulder to 300mm in size, rootlets, trace of oxidation, brown			3.0
4.0		47	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, odd boulder to 300mm in size, rootlets, trace of oxidation, brown			4.0
			4.00m			
			End of Testpit @ 4.00m			
5.0						5.0
6.0			Vegetation: medium dense, mature & young poplar, odd mature & young spruce Ground: slight slope N-S			6.0
7.0			Bulk Sample #11A-95: 0.20-4.00mm, GW % moisture - 4.2% % gravel - 73.5% % sand - 23.8% % silt - 2.7%			7.0
8.0						8.0



J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK REVIEWED BY: WCK Fig. No: 11	COMPLETION DEPTH: 4.0 m COMPLETE: 95/06/13 Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#12-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-peat, rootlets, organics
			0.05m
			-silty sand to sandy silt, fine grained, some rootlets, soft, moist, light brown
			0.30m
1.0		48	-sandy gravel, well graded, clean, loose, damp, 20-30% cobbles to 100mm in size, rootlets, trace of oxidation, brown
2.0		49	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, rootlets, trace of oxidation, brown
3.0		50	-sandy gravel, well graded, clean, loose, damp, 30-40% cobbles to 100mm in size, rootlets, trace of oxidation, brown
			3.90m
4.0		51	-sandy gravel, well graded, clean, loose, damp to moist, 30-40% cobbles to 100mm in size, rootlets, trace of oxidation, brown
			4.20m
			End of Testpit @ 4.20m
5.0			Note: -photo #7, spill piles
6.0			Vegetation: medium dense, mature spruce, odd young spruce Ground: slight slope N-S Trial Crush Completed: L.A. Abrasion: 13.2% Loss
7.0			Bulk Sample #12A-95: 0.30-4.00m, GW % moisture - 5.3% % gravel - 63.9% % sand - 33.6% % silt - 2.5%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SM, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.2 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#13-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE ■ TUBE ▨ LOST ⊠ AUGER ▤ BULK ▥ SPT ▯ CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			–rootlets, peat, organics
			0.05m
			–sandy silt, soft, some rootlets, fine grained, moist, light brown
			0.20m
1.0		52	–sandy gravel, well graded, clean, loose, damp, 10–20% cobbles to 100mm in size, rootlets, trace of oxidation, brown
2.0		53	–sandy gravel, well graded, clean, loose, damp to moist, 10–20% cobbles to 100mm in size, rootlets, trace of oxidation, brown
3.0		54	–sandy gravel, well graded, clean, loose, moist, 20–30% cobbles to 100mm in size, rootlets, trace of oxidation, brown
			3.00m
4.0		55	–sandy gravel, well graded, clean, 30–40% cobbles to 100mm in size, odd boulder in size to 500mm, trace of oxidation, damp, loose, brown
			4.00m
			End of Testpit @ 4.00m
5.0			Note: –photo # 8, spill piles
6.0			Vegetation: medium dense, mature spruce, odd young poplar
			Ground: level ground E–W
7.0			Bulk Sample #13A–95: 0.20–4.00m, GW % moisture – 3.0% % gravel – 72.4% % sand – 25.5% % silt – 2.1%
8.0			

■ LIQUID ■ 10 20 30 40
▲ PLASTIC ▲ 10 20 30 40
PLASTIC M.C. LIQUID 10 20 30 40

● CLAY ● 20 40 60 80
▲ SILT ▲ 20 40 60 80
■ SAND ■ 20 40 60 80
◆ GRAVEL ◆ 20 40 60 80

USC: PT, ML, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 13	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#14-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION	USC	SOIL SYMBOL
0.0			-moss, rootlets, organics, volcanic ash	PT	
		56	0.05m -fine silty sand, soft, trace of rootlets	SM	
			0.30m		
1.0		57	-sandy gravel, well graded, trace silt, damp, 20-30% cobbles to 100mm in size, rootlets, trace of oxidation, loose, brown	GW/GM	
			1.60m		
2.0		58	sandy gravel, well graded, clean, loose, damp, 20-30% cobbles to 100mm in size, rootlets, trace of oxidation, brown		
		59	-sandy gravel, well graded, clean, loose, damp, 20-30% cobbles to 100mm in size, rootlets, trace of oxidation, brown	GW	
3.0					
		60	-sandy gravel, well graded, clean, loose, moist, 20-30% cobbles to 100mm in size, rootlets, trace of oxidation, brown		
4.0			4.00m		
			End of Testpit @ 4.00m		
5.0			Note: test pit 80m east of old 4x4 trail		
6.0			Vegetation: medium dense to dense, mature spruce Ground: level area		
7.0			Bulk Sample #14A-95: 0.30-4.00m, GW % moisture - 4.2% % gravel - 71.3% % sand - 26.5% % silt - 2.2%		
8.0					

LIQUID / PLASTIC / PLASTIC M.C. LIQUID: 10 20 30 40

CLAY / SILT / SAND / GRAVEL: 20 40 60 80

DEPTH(m): 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

J.R. Paine & Associates Ltd. Whitehorse, Yukon	LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
	REVIEWED BY: WCK	COMPLETE: 95/06/13
	Fig. No: 14	Page 1 of 1

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YTG Transportation Engineering Branch	Granular Investigation, Whitehorse Area	TEST PIT NO: TP#15-95
Caterpillar 215 Backhoe	Area #9	PROJECT NO: 8002-234
Dirtball Contracting Ltd.	see site sketch	ELEVATION:

SAMPLE TYPE: TUBE | LOST | AUGER | BULK | SPT | CORE

SOILS DESCRIPTION

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SOILS DESCRIPTION
0.0			-moss, rootlets, peat, organics
0.50m			-silty sand, fine grained, some rootlets, soft, moist, light brown
0.20m			
1.0		61	-sandy gravel, well graded, clean, loose, damp, 10-15% cobbles to 150mm in size, rootlets, trace of oxidation, brown
2.0		62	-sandy gravel, well graded, clean, loose, damp, 10-15% cobbles to 150mm in size, rootlets, trace of oxidation, brown
3.0		63	-sandy gravel, well graded, clean, loose, moist, 10-15% cobbles to 150mm in size, rootlets, trace of oxidation, coarse grained sand particles, brown
3.00m			
4.0		64	-sandy gravel, well graded, clean, loose, moist, 10-15% cobbles to 150mm in size, rootlets, trace of oxidation, odd boulders to 300mm in size, coarse grained sand particles, brown
4.00m			
5.0			End of Testpit @ 4.00m Note: -picture #26, #25, #24
6.0			Vegetation: medium dense, mature spruce, Ground: level ground, slight slope young poplar
7.0			Bulk Sample #15A-95: 0.20-4.00m, GW % moisture - 3.0% % gravel - 77.4% % sand - 20.7% % silt - 1.9%
8.0			

LIQUID 10 20 30 40 | PLASTIC 10 20 30 40 | PLASTIC M.C. LIQUID 10 20 30 40

CLAY 20 40 60 80 | SILT 20 40 60 80 | SAND 20 40 60 80 | GRAVEL 20 40 60 80

USC: PT, SM, GW

SOIL SYMBOL

DEPTH(m): 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

J.R. Paine & Associates Ltd.
Whitehorse, Yukon

LOGGED BY: MK	COMPLETION DEPTH: 4.0 m
REVIEWED BY: WCK	COMPLETE: 95/06/13
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J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 1A Depth 0.15-4.6m

Location: Area # 9

TP # 1 Bulk Sample

Client YTG, Transportation Engineering Branch

Project Greater Whitehorse Inventory of Sand & Gravel

Made by RK & PR Job No. 8002-234

Ck'd by Date 1995/06/17

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
50000	50.0					79.3
40000	40.0					76.7
25000	25.0					69.1
20000	20.0					56.6
14000	14.0					/
12500	12.5					44.3
10000	10.0					39.6
5000	5.0					28.2
2000	2.0					/
1250	1.250					13.8
800	0.800					/
630	0.630					9.1
400	0.400					/
315	0.315					5.1
160	0.160					3.3
80	0.080					2.3

Description of Sample

Sandy Gravel, bw

Trial Crush Completed

Time of Sieving Min. 15

Method of Preparation Dry Washed X

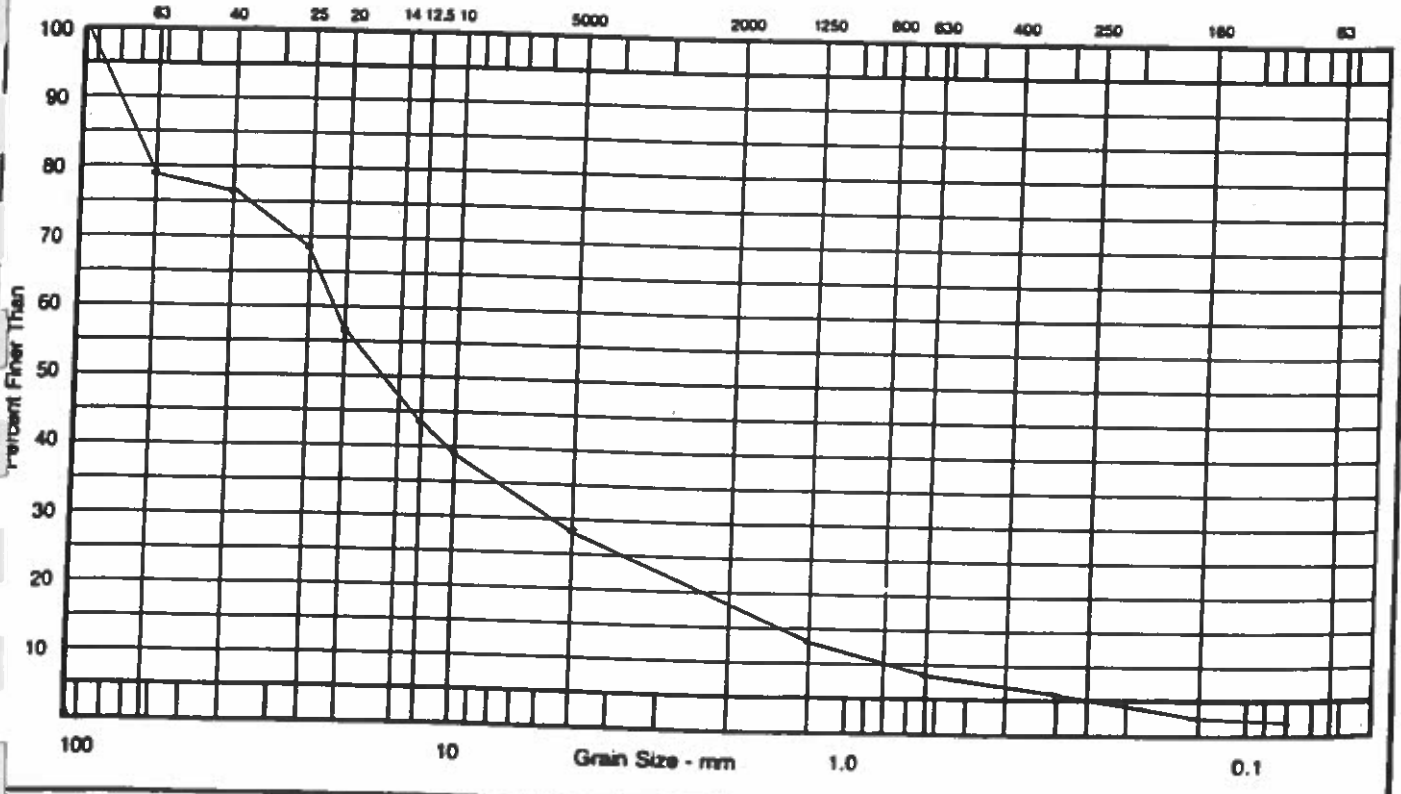
Remarks

Moisture : 4.6 %

Gravel : 71.8 %

Sand : 25.9 %

Silt : 2.3 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 1A (Crush) Depth: 0.15-4.00m
Location: Area # 9
TP # 1-95 Bulk Sample

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job No: 8002-234
Ck'd by: Date: 1995/06/30

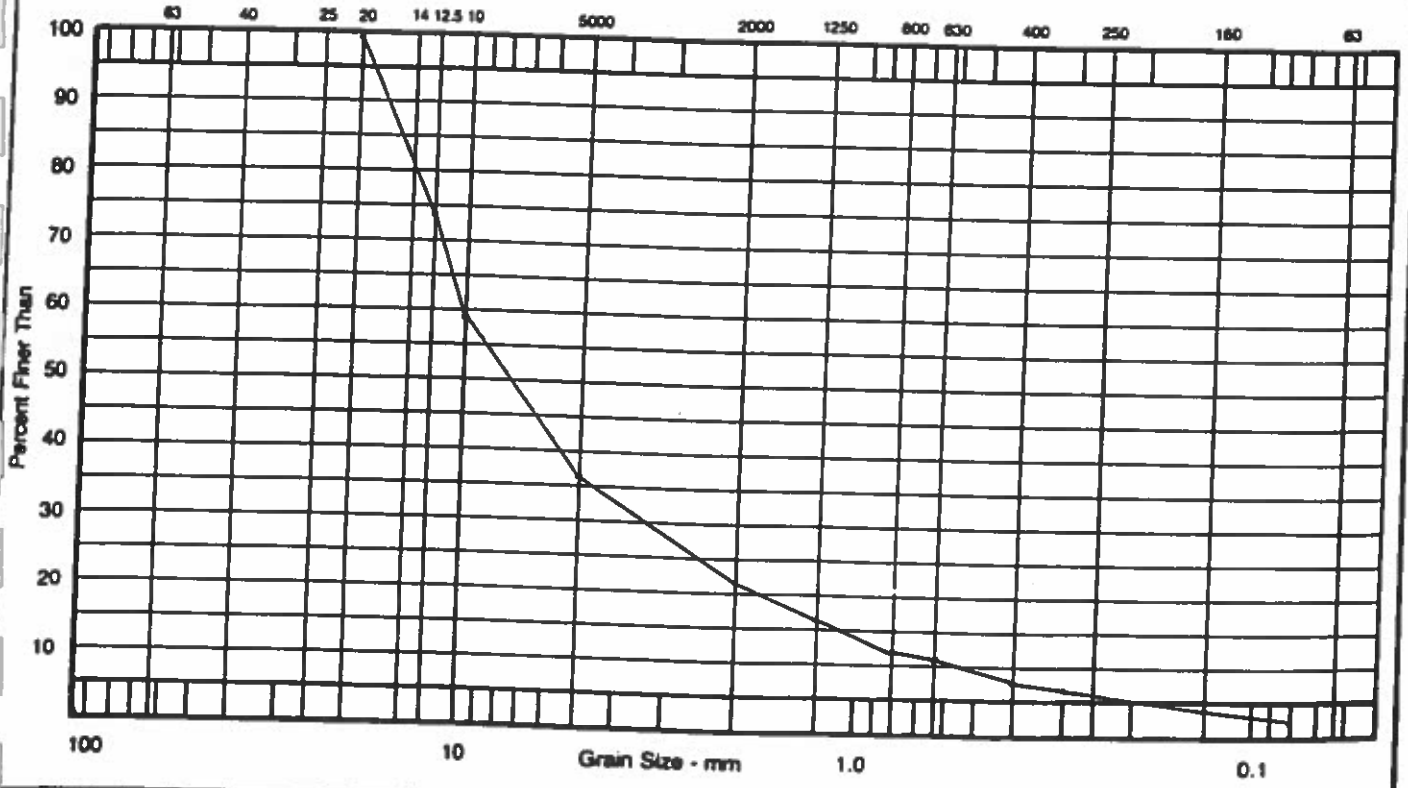
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					
10000	10.0					74.0
5000	5.0					59.6
2000	2.0					36.5
1250	1.250					21.5
800	0.800					16.0
630	0.630					12.3
400	0.400					10.7
315	0.315					7.4
160	0.160					6.8
80	0.080					4.6
						2.5

Description of Sample: Trial Crush to 20mm maximum size.

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture: 4.6%
Gravel: 63.5%
Sand: 33.0%
Silt: 3.5%
Crush Count 2 faces: 61.0%
L.A. Abrasion: 13.2%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 2 Depth: 1.7-2.0m
Location: Area # 9
TP # 1-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W C/C Date: 1995/06/21

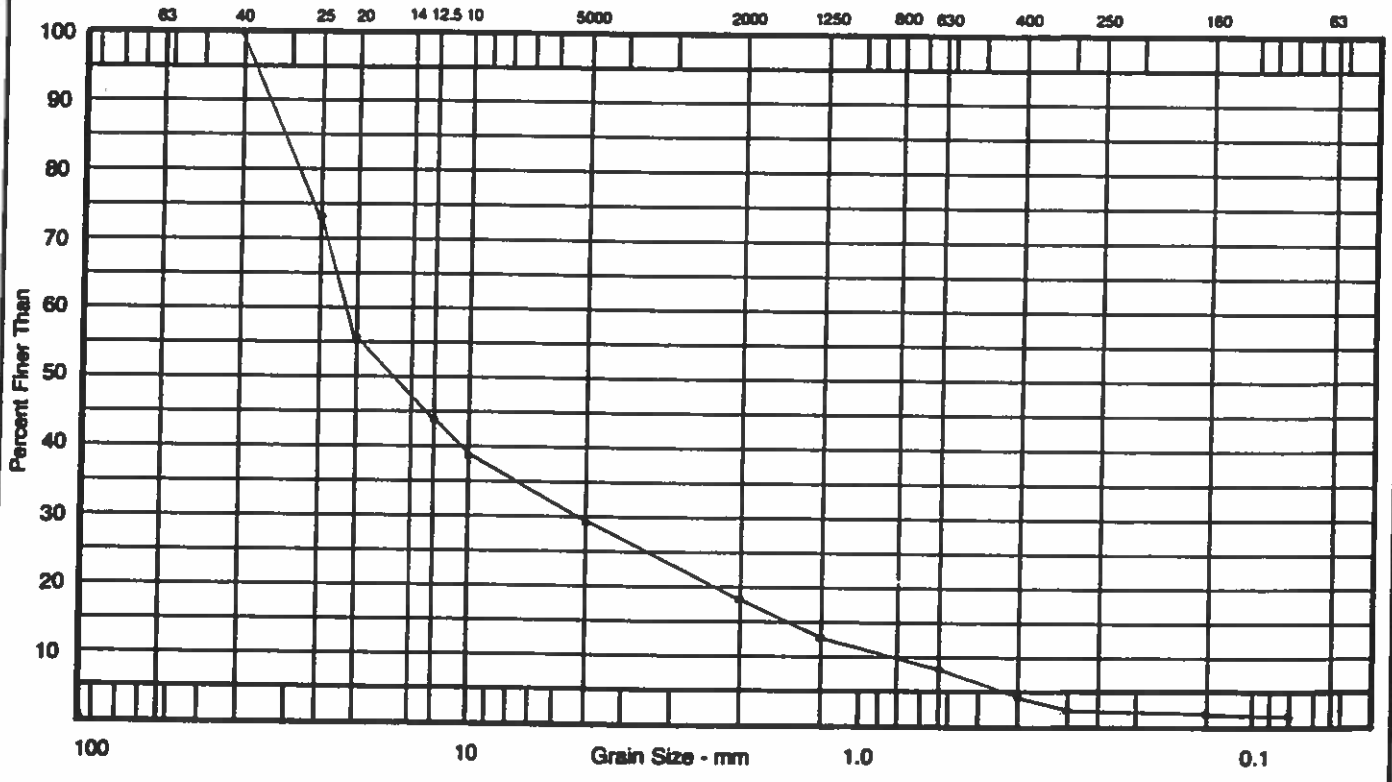
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					73.8
20000	20.0					55.3
14000	14.0					/
12500	12.5					44.6
10000	10.0					38.9
5000	5.0					29.7
2000	2.0					19.2
1250	1.250					13.6
800	0.800					/
630	0.630					7.7
400	0.400					4.6
315	0.315					2.8
160	0.160					1.9
80	0.080					1.1

Description of Sample: Sandy, Gravel, trW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 4.0 %
Gravel : 70.3 %
Sand : 28.6 %
Silt : 1.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. Transportation Engineering Branch
Sample: 4 Depth: 38-40m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 1-95 Ck'd by: WSC Date: 1995/06/21

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					77.7
20000	20.0					59.7
14000	14.0					—
12500	12.5					47.4
10000	10.0					39.2
5000	5.0					20.4
2000	2.0					11.3
1250	1.250					6.8
800	0.800					—
630	0.630					4.8
400	0.400					3.5
315	0.315					2.4
160	0.160					1.6
80	0.080					1.0

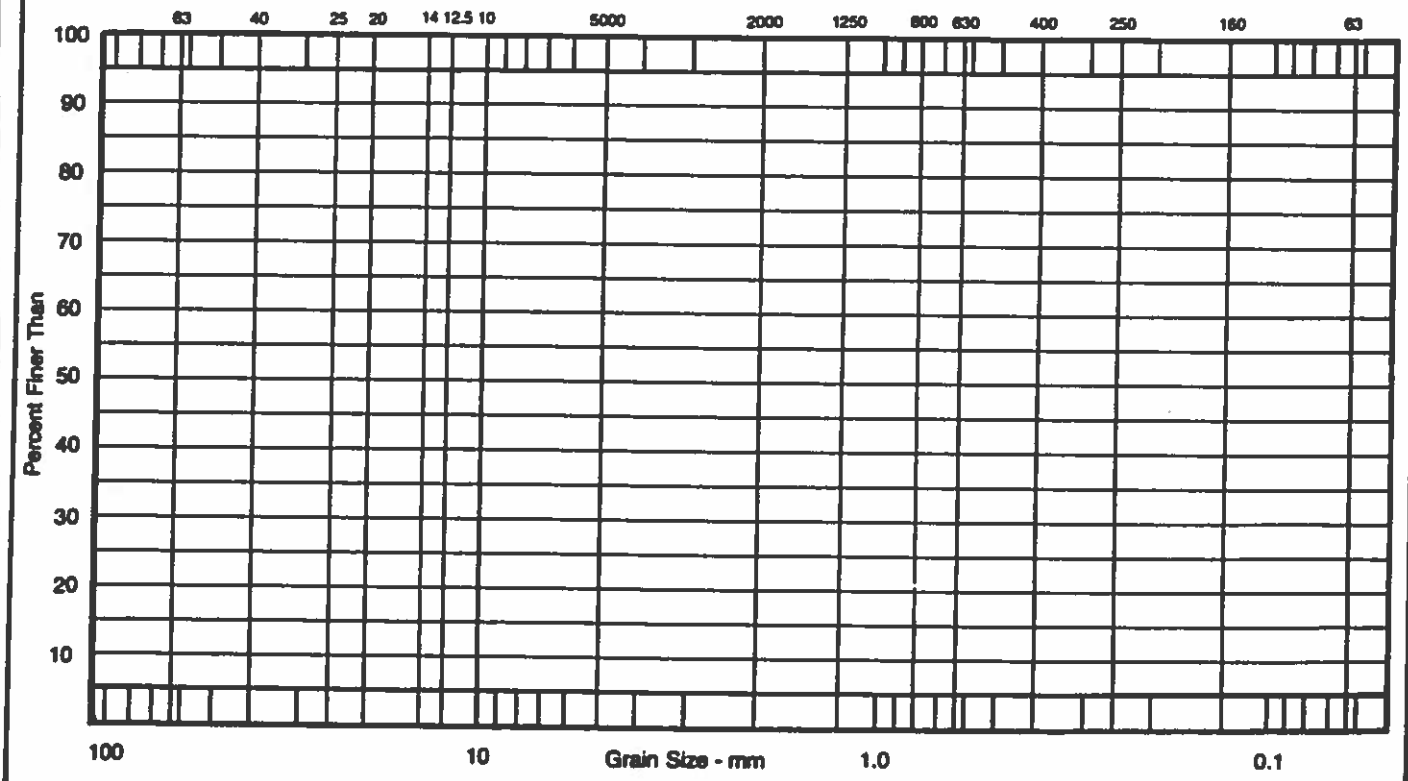
Description of Sample: Sand, Gravel, trW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.8%
Gravel : 79.6 %
Sand : 19.4 %
Silt : 1.0 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 8 Depth: 3.8 - 4.0m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 2-95 Ck'd by: WCIL Date: 1995/06/ 21

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					67.1
20000	20.0					57.2
14000	14.0					/
12500	12.5					43.4
10000	10.0					41.4
5000	5.0					31.7
2000	2.0					23.3
1250	1.250					16.0
800	0.800					/
630	0.630					10.4
400	0.400					6.9
315	0.315					4.2
160	0.160					2.9
80	0.080					2.8

Description of Sample: Sandy Gravel, (sw)

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

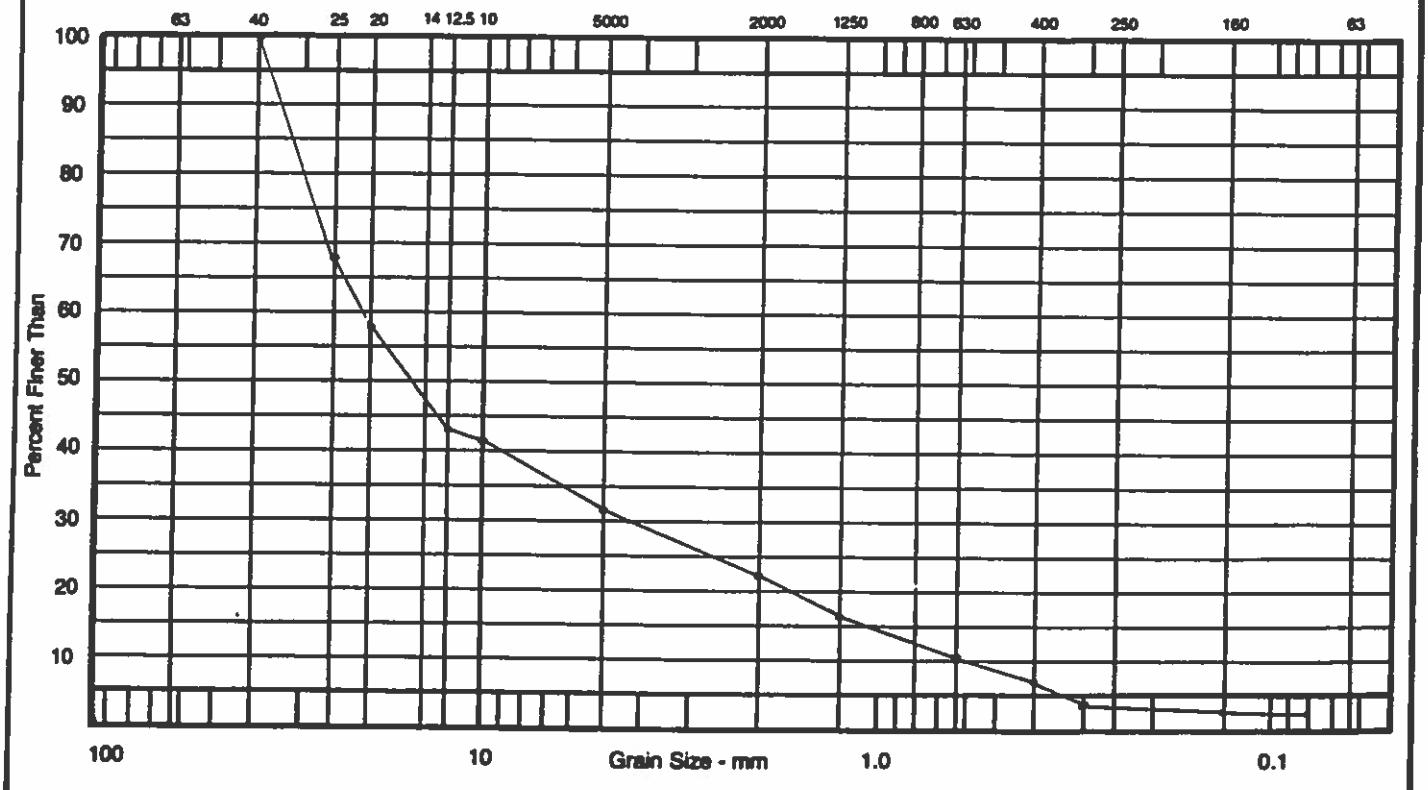
Remarks

Moisture : 5.1 %

Gravel : 68.3 %

Sand : 28.9 %

Silt : 2.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 2A Depth: 0.15-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 2 BULK SAMPLE Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					87.0
40000	40.0					82.1
25000	25.0					74.7
20000	20.0					66.4
14000	14.0					—
12500	12.5					54.9
10000	10.0					49.6
5000	5.0					35.8
2000	2.0					—
1250	1.250					17.5
800	0.800					—
630	0.630					12.5
400	0.400					—
315	0.315					6.5
160	0.160					2.7
80	0.080					0.8

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

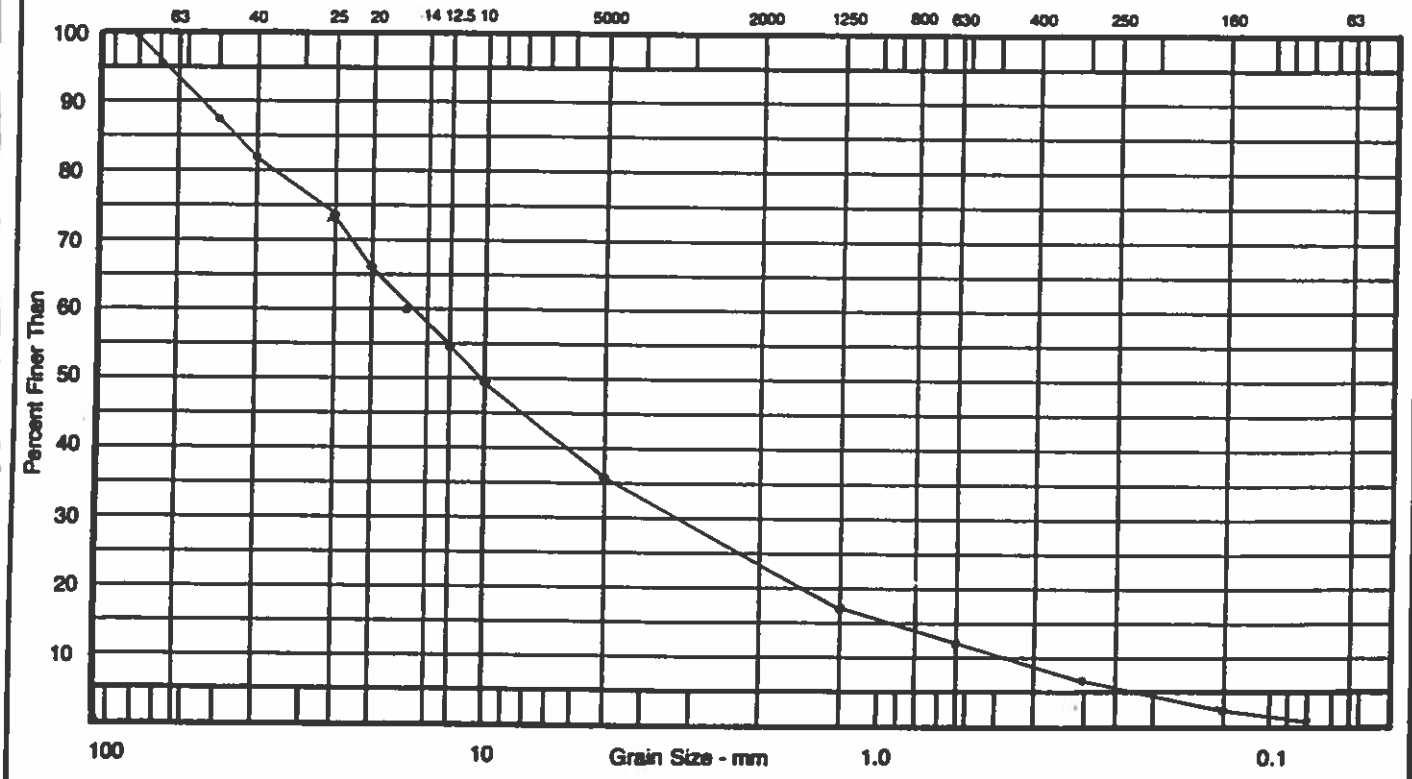
Remarks:

Moisture : 6.3 %

Gravel : 64.2 %

Sand : 35.0 %

Silt : 0.8%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 9 Depth: 0.08-0.15m

Location: Area # 9
TP # 3-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLC Date: 1995/06/09

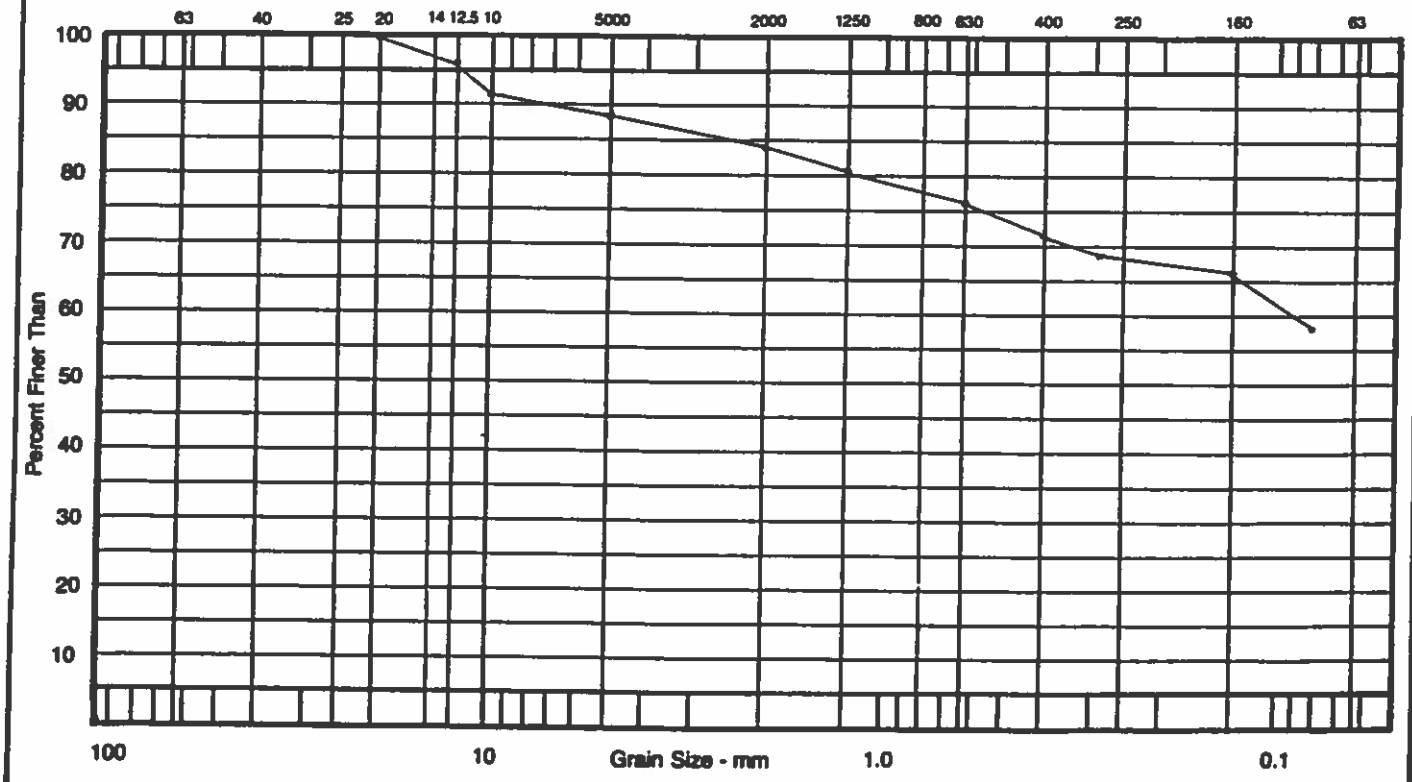
Sieve No.	Size of Opening MM		Weight Retained grms	Total Wt. Finer Than grms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					/
12500	12.5					95.7
10000	10.0					92.4
5000	5.0					88.5
2000	2.0					84.8
1250	1.250					80.2
800	0.800					/
630	0.630					75.3
400	0.400					71.9
315	0.315					68.6
160	0.160					66.1
80	0.080					58.2

Description of Sample: Sandy Silt, some gravel ML

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 25.9 %
Gravel : 11.5 %
Sand : 30.2 %
Silt : 58.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 10 Depth: 0.8 - 1.0m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 3-95 Ck'd by: WLC Date: 1995/06/09

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					100.0
25000	25.0					80.3
20000	20.0					66.4
14000	14.0					/
12500	12.5					54.3
10000	10.0					50.0
5000	5.0					37.8
2000	2.0					28.5
1250	1.250					21.9
800	0.800					/
630	0.630					16.0
400	0.400					10.8
315	0.315					6.5
160	0.160					4.2
80	0.080					2.7

Description of Sample: Sandy Gravel, low

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

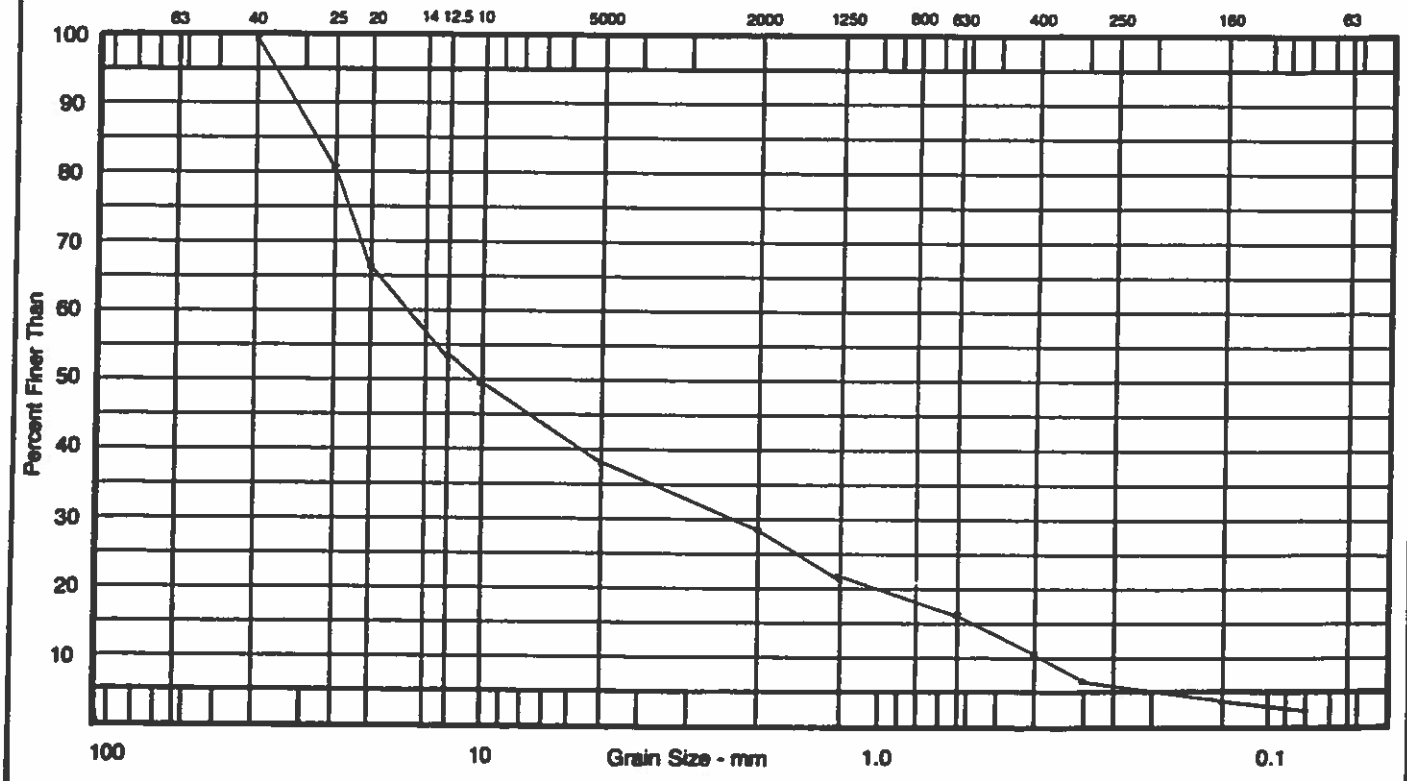
Remarks:

Moisture : 5.7 %

Gravel : 62.2 %

Sand : 35.1 %

Silt : 2.7 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. Transportation Engineering Branch

Sample: 10A Depth: 0.30 - 4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 10 BULK SAMPLE Ck'd by: WCH Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					92.0
40000	40.0					76.4
25000	25.0					56.7
20000	20.0					49.8
14000	14.0					—
12500	12.5					38.8
10000	10.0					33.7
5000	5.0					24.3
2000	2.0					—
1250	1.250					12.7
800	0.800					—
630	0.630					8.7
400	0.400					—
315	0.315					5.2
160	0.160					3.6
80	0.080					2.6

Description of Sample: Sandy Gravel, (GW)

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

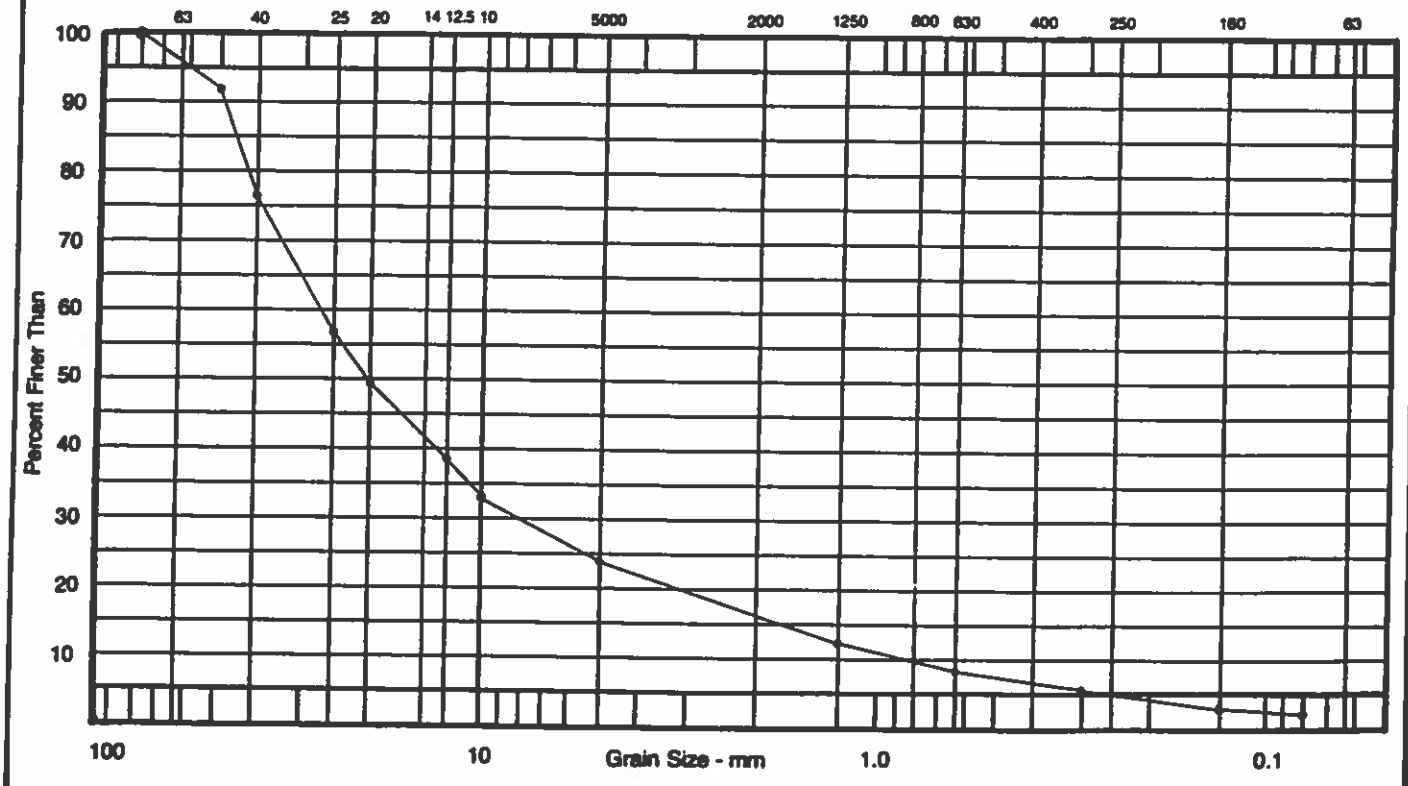
Remarks

Moisture : 4.0 %

Gravel : 75.7 %

Sand : 21.7 %

Silt : 2.6 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 13 Depth: 2.8 - 3.0m

Location: Area # 9
TP # 3-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WLC Date: 1995/06/09

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					100.0
20000	20.0					65.3
14000	14.0					60.5
12500	12.5					47.6
10000	10.0					43.4
5000	5.0					35.1
2000	2.0					16.6
1250	1.250					9.0
800	0.800					/
630	0.630					5.6
400	0.400					3.8
315	0.315					2.7
160	0.160					1.8
80	0.080					1.4

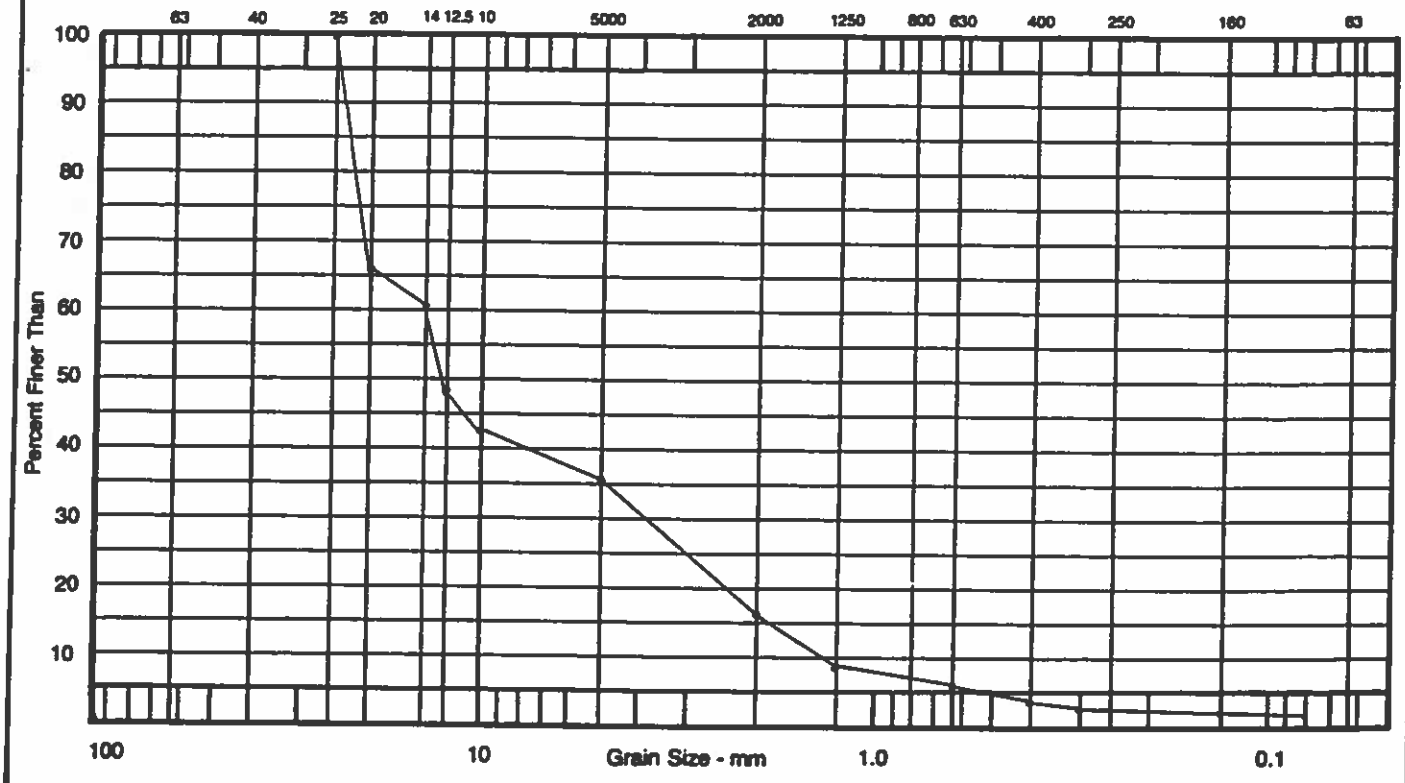
Description of Sample: Sandy Gravel, GP

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 4.8%
Gravel : 64.9%
Sand : 33.7%
Silt : 1.4%



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 3A Depth: 0.15-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 3 BULK SAMPLE Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
	50.0					100.0
40000	40.0					95.0
25000	25.0					78.9
20000	20.0					70.6
14000	14.0					—
12500	12.5					61.9
10000	10.0					57.4
5000	5.0					43.1
2000	2.0					—
1250	1.250					22.1
800	0.800					—
630	0.630					14.5
400	0.400					—
315	0.315					6.5
160	0.160					2.9
80	0.080					1.0

Description of Sample: SANDY GRAVEL, GW

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

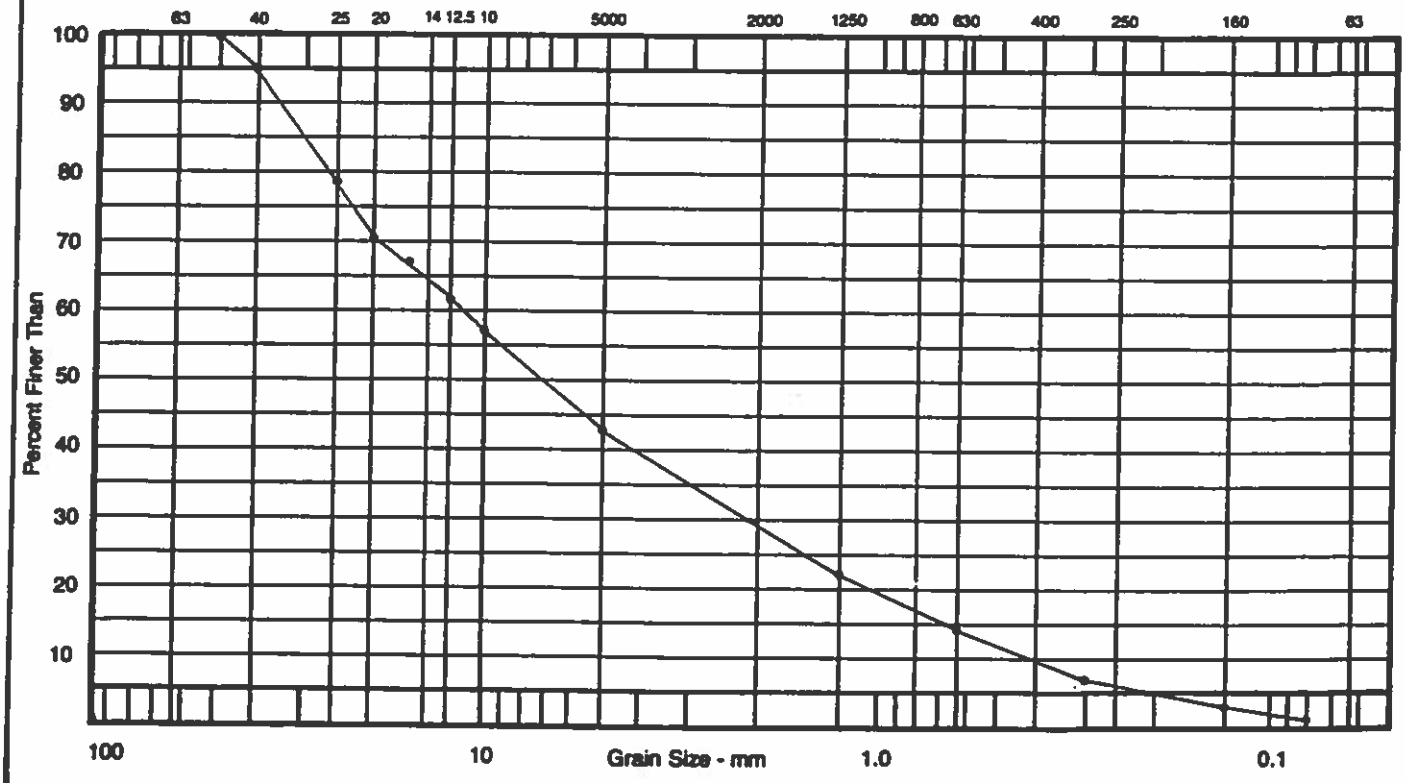
Remarks:

Moisture : 6.0%

Gravel : 56.9%

Sand : 42.1%

Silt : 1.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 135 Depth: 0.05-0.15m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 4-95 Ck'd by: WCK Date: 1995/06/09

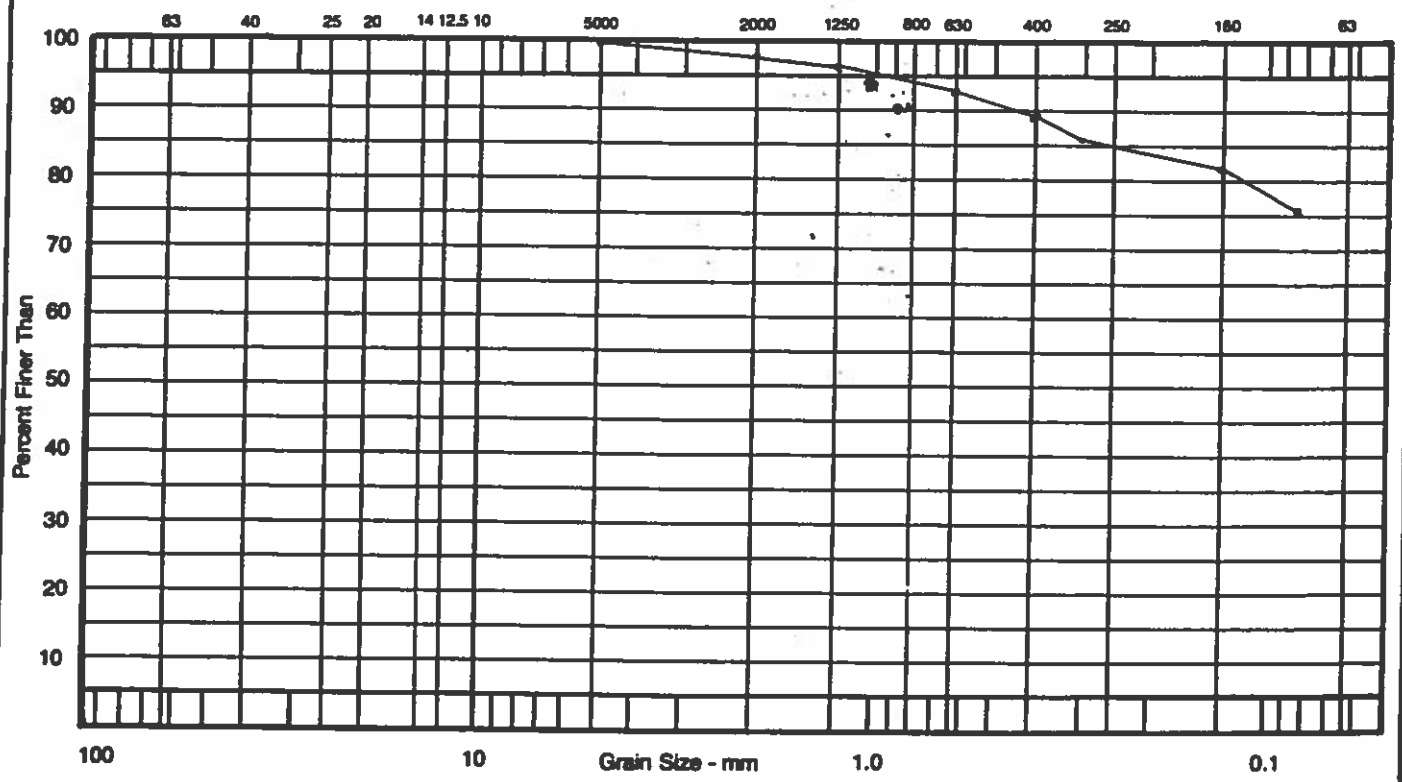
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					
12500	12.5					
10000	10.0					
5000	5.0					100.0
2000	2.0					97.8
1250	1.250					96.1
800	0.800					/
630	0.630					93.2
400	0.400					89.6
315	0.315					85.5
160	0.160					82.5
80	0.080					75.2

Description of Sample: Sandy Silt ML

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:
Moisture : 35.8 %
Gravel : 0.0 %
Sand : 24.8 %
Silt : 35.2 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 16 Depth: 2.8 - 3.2m
Location: Area # 9
TP # 4-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/09

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					61.1
20000	20.0					52.1
14000	14.0					/
12500	12.5					43.0
10000	10.0					38.7
5000	5.0					27.3
2000	2.0					19.7
1250	1.250					13.9
800	0.800					/
630	0.630					10.2
400	0.400					7.7
315	0.315					5.2
160	0.160					3.7
80	0.080					2.4

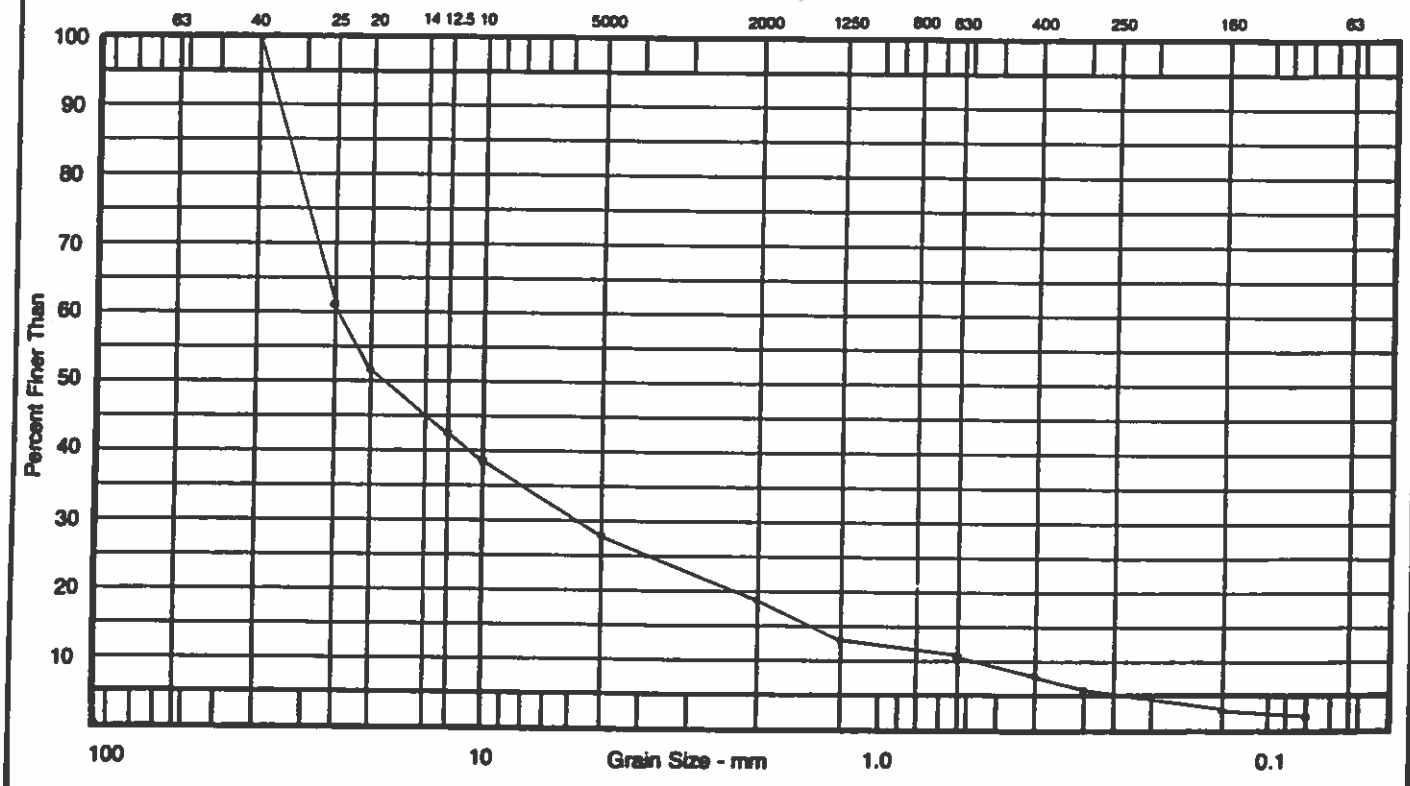
Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 33 %
Gravel : 72.7 %
Sand : 24.9 %
Silt : 2.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 4A Depth: 0.15 - 4.00m
Location: Area # 9
TP # 4 - BULK SAMPLE

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					88.9
40000	40.0					85.9
25000	25.0					75.5
20000	20.0					67.0
14000	14.0					—
12500	12.5					54.2
10000	10.0					49.5
5000	5.0					36.2
2000	2.0					—
1250	1.250					18.2
800	0.800					—
630	0.630					11.1
400	0.400					—
315	0.315					4.6
160	0.160					1.8
80	0.080					0.6

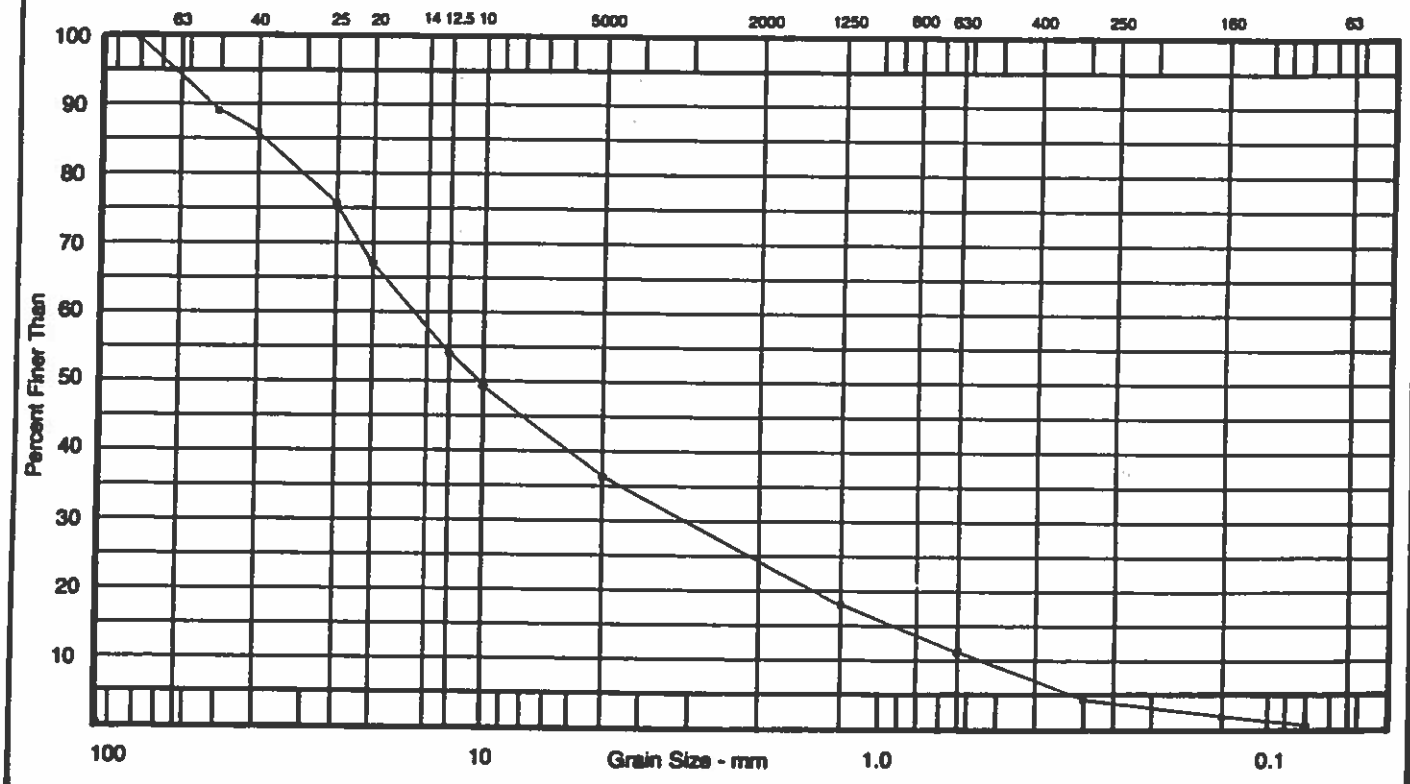
Description of Sample: SANDY GRAVEL, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 5.4%
Gravel : 63.8%
Sand : 35.5%
Silt : 0.7%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 19 Depth: 2.0-2.2m
Location: Area # 9
TP # 5-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C.C. Date: 1995/06/09

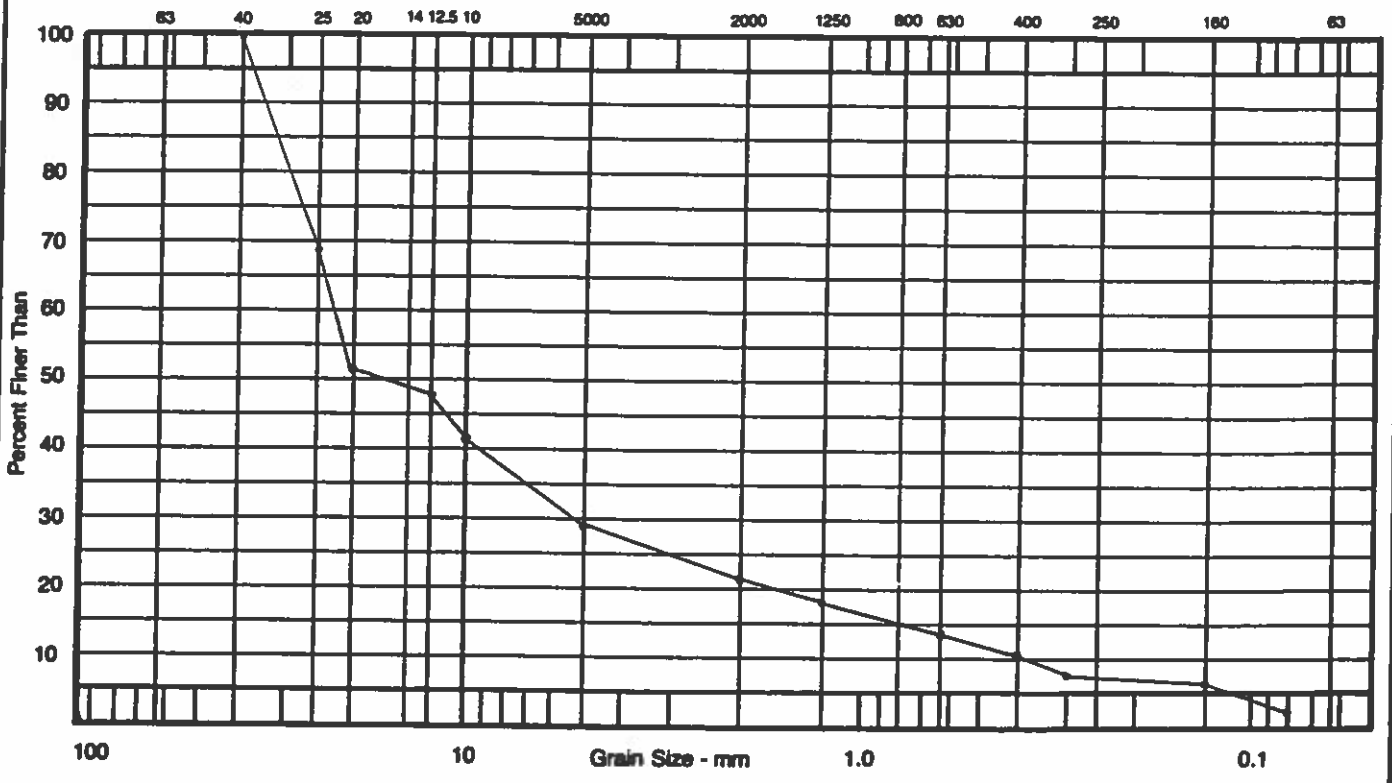
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					69.7
20000	20.0					51.3
14000	14.0					/
12500	12.5					47.5
10000	10.0					42.1
5000	5.0					29.8
2000	2.0					21.3
1250	1.250					17.5
800	0.800					/
630	0.630					14.2
400	0.400					10.3
315	0.315					7.1
160	0.160					5.7
80	0.080					2.9

Description of Sample: Sandy Gravel, bW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 4.3%
Gravel : 70.2 %
Sand : 26.9 %
Silt : 2.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Sample: 21 Depth: 38 - 42m
Location: Area # 9
TP # 5-95
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCC Date: 1995/06/09

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					62.1
20000	20.0					54.1
14000	14.0					/
12500	12.5					45.6
10000	10.0					40.7
5000	5.0					31.6
2000	2.0					22.9
1250	1.250					18.3
800	0.800					/
630	0.630					12.5
400	0.400					9.1
315	0.315					6.5
160	0.160					5.0
80	0.080					3.5

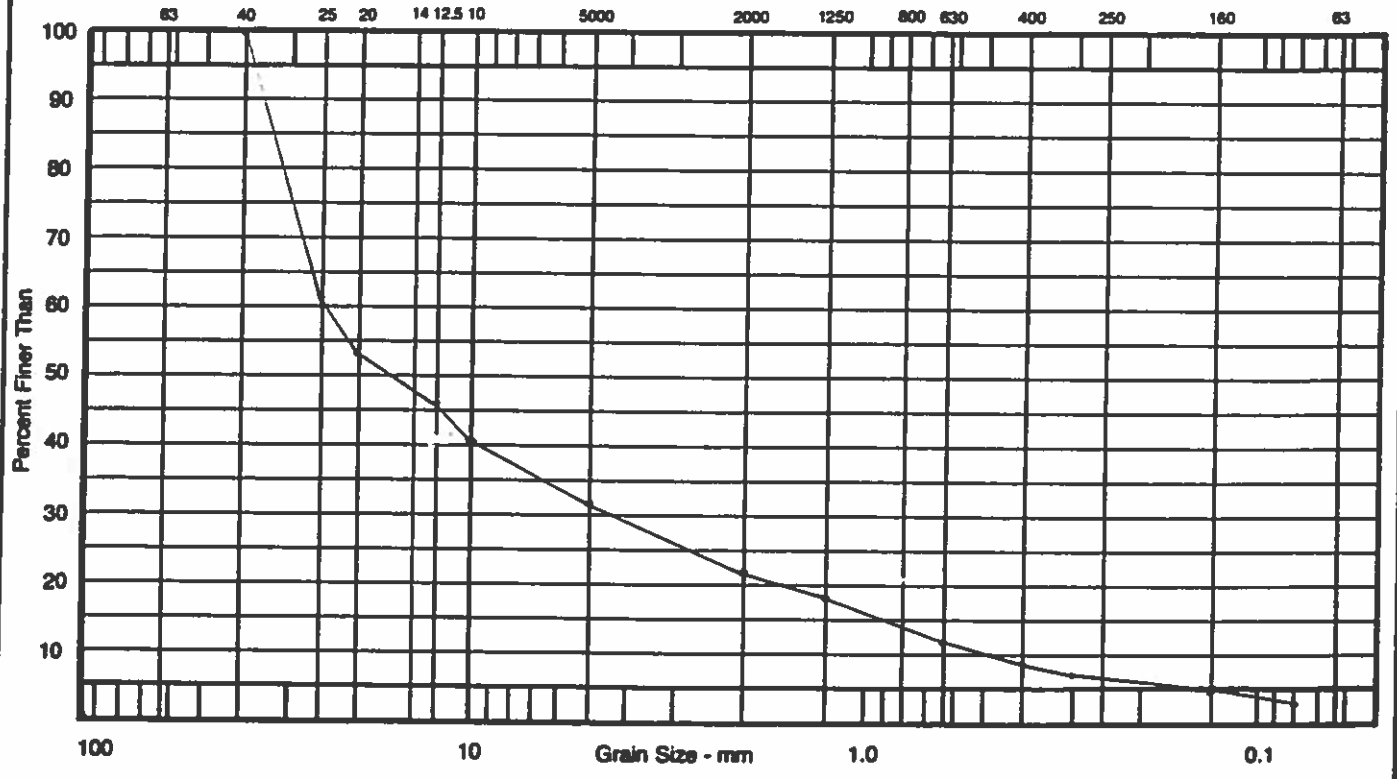
Description of Sample: Sandy gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.7%
Gravel : 68.4%
Sand : 28.1%
Silt : 3.5%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: SA Depth: 0.15 - 4.00m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 5-95 Ck'd by: Date: 1995/06/13

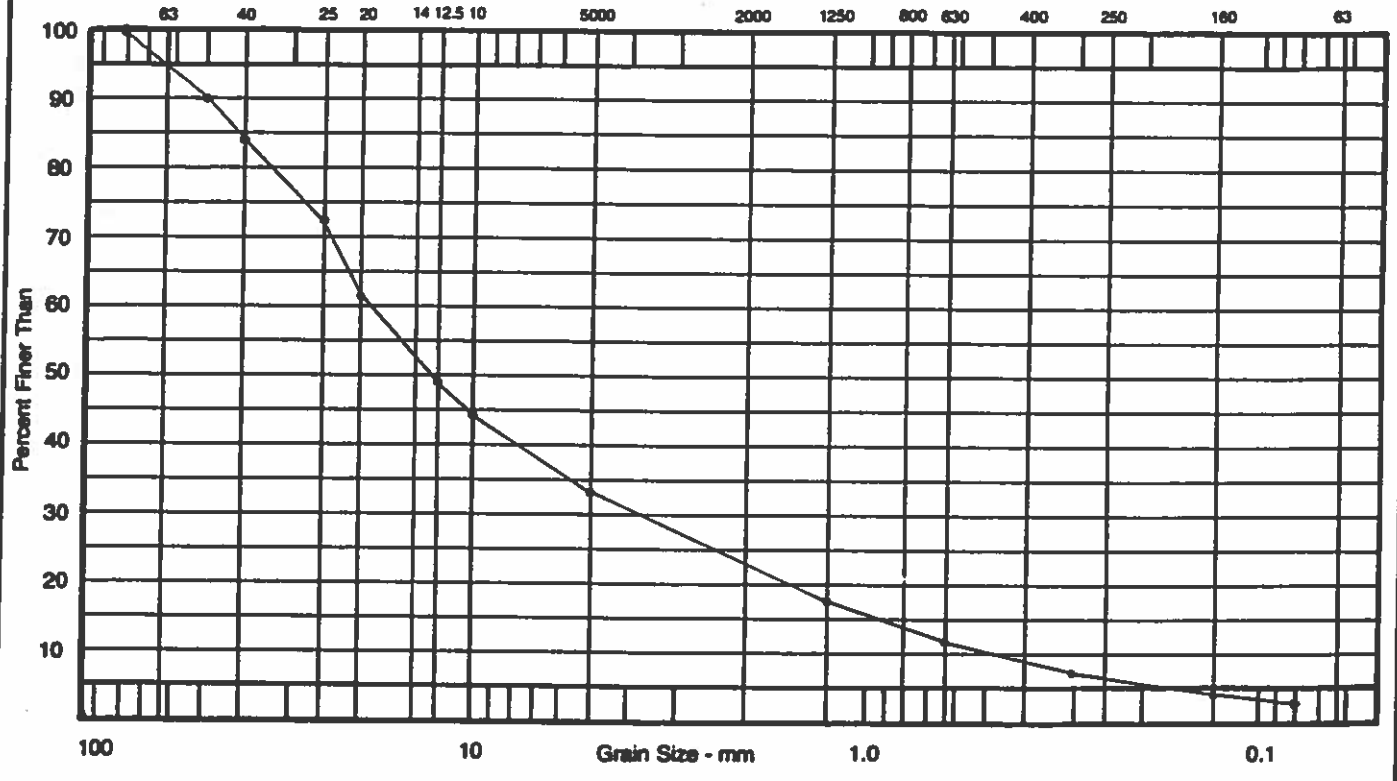
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Ong.Sample
	50.0					89.8
40000	40.0					84.5
25000	25.0					72.3
20000	20.0					61.5
14000	14.0					—
12500	12.5					49.3
10000	10.0					44.7
5000	5.0					33.7
2000	2.0					—
1250	1.250					17.3
800	0.800					—
630	0.630					11.9
400	0.400					—
315	0.315					7.1
160	0.160					4.3
80	0.080					3.0

Description of Sample: Sandy, Gravel, (SW)

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 5.6%
Gravel : 66.3%
Sand : 30.7%
Silt : 3.0%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 24 Depth: 3.0 - 3.2m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 6-95 Ck'd by: [illegible] Date: 1995/06/12

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					70.0
20000	20.0					61.1
14000	14.0					/
12500	12.5					53.4
10000	10.0					48.4
5000	5.0					36.6
2000	2.0					27.6
1250	1.250					20.3
800	0.800					/
630	0.630					14.6
400	0.400					11.0
315	0.315					8.3
160	0.160					6.6
80	0.080					4.9

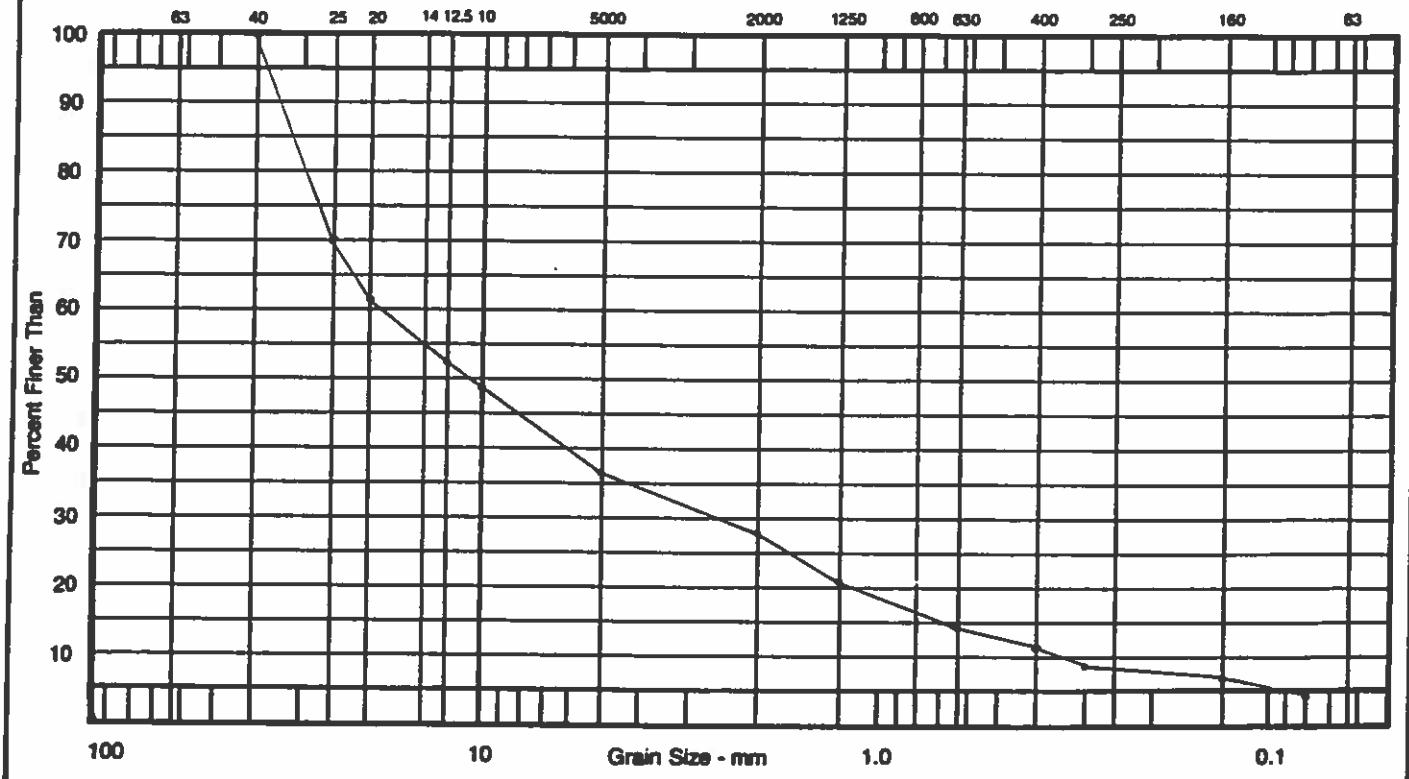
Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 4.9 %
Gravel : 63.5 %
Sand : 31.6 %
Silt : 4.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 6A Depth: 0.30-4.00m
Location: Area # 9
TP # 6 BULK SAMPLE

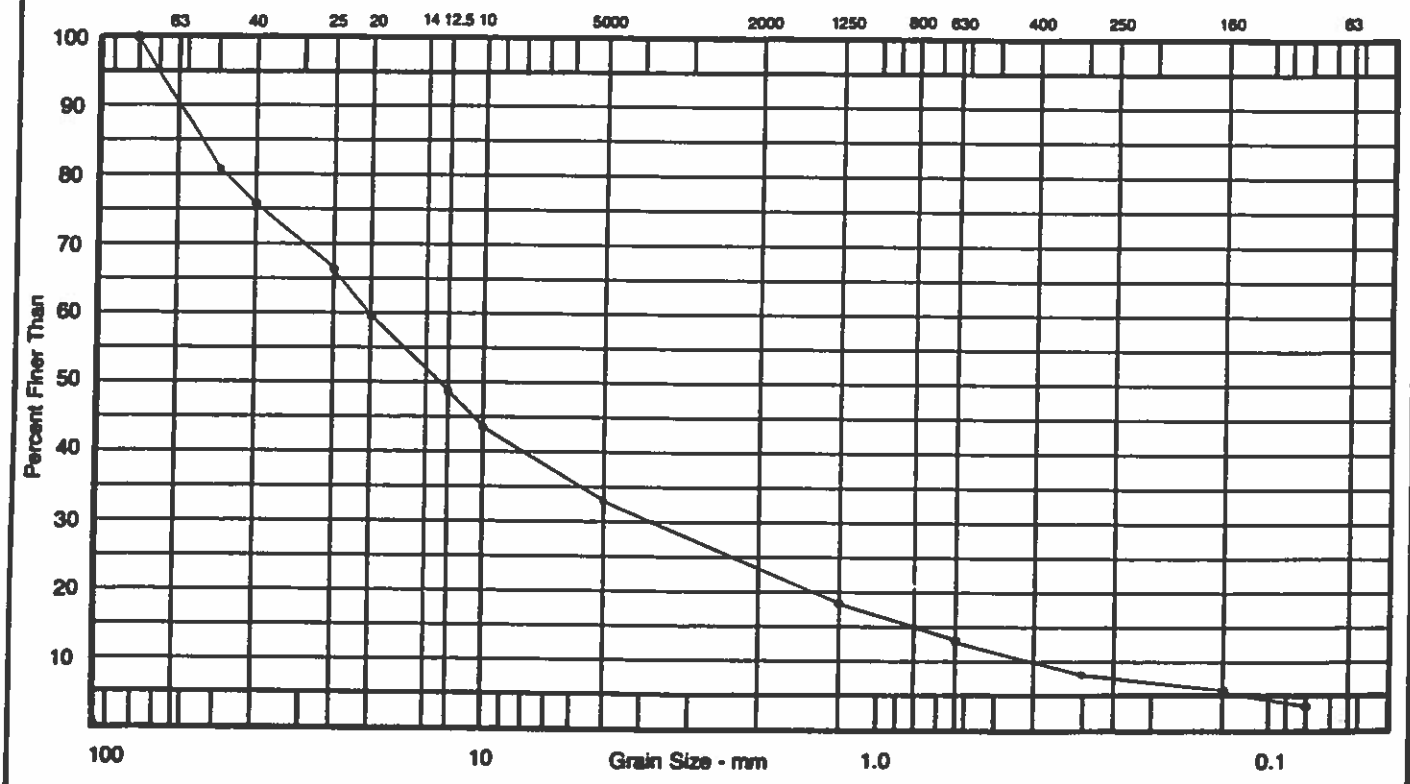
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C.V. Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					80.6
40000	40.0					75.7
25000	25.0					66.3
20000	20.0					59.8
14000	14.0					—
12500	12.5					48.4
10000	10.0					43.8
5000	5.0					33.7
2000	2.0					—
1250	1.250					18.7
800	0.800					—
630	0.630					13.0
400	0.400					—
315	0.315					8.0
160	0.160					5.5
80	0.080					4.1

Description of Sample
Sandy Gravel, trW
Trial Wash Completed

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 5.3 %
Gravel : 66.3 %
Sand : 29.6 %
Silt : 4.1 %
Trial Wash Completed



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 6A (Crush) Depth 0.30 - 4.00m
Location: Area # 9
TP # 6 Bulk Sample

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job No. 8002-234
Ck'd by Date 1995/06/30

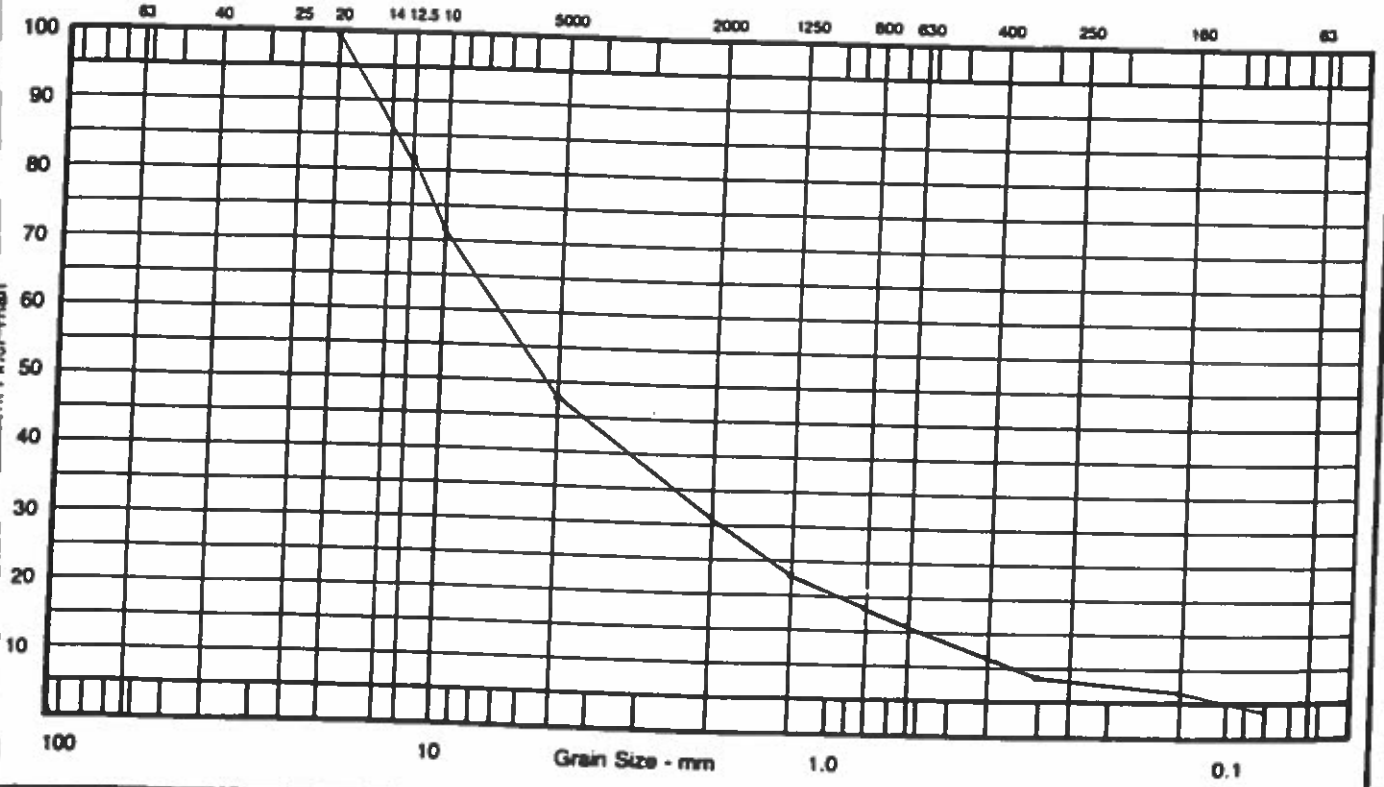
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					
10000	10.0					82.4
5000	5.0					71.4
2000	2.0					49.4
1250	1.250					30.9
800	0.800					23.6
630	0.630					18.1
400	0.400					15.6
315	0.315					11.1
160	0.160					9.6
80	0.080					6.4
						4.8

Description of Sample: Trial Crush to 20mm maximum size

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks:
Moisture : 5.3%
Gravel : 52.6%
Sand : 42.6%
Silt : 4.8%
Crush Count 2 faces: 57%
LA Abrasion = 13.2%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 26 Depth: 0.8 - 1.2m
Location: Area # 9
TP # 7-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W C C Date: 1995/06/12

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					69.8
20000	20.0					60.1
14000	14.0					/
12500	12.5					52.7
10000	10.0					48.0
5000	5.0					35.6
2000	2.0					22.6
1250	1.250					17.1
800	0.800					/
630	0.630					11.2
400	0.400					7.0
315	0.315					4.5
160	0.160					3.5
80	0.080					2.6

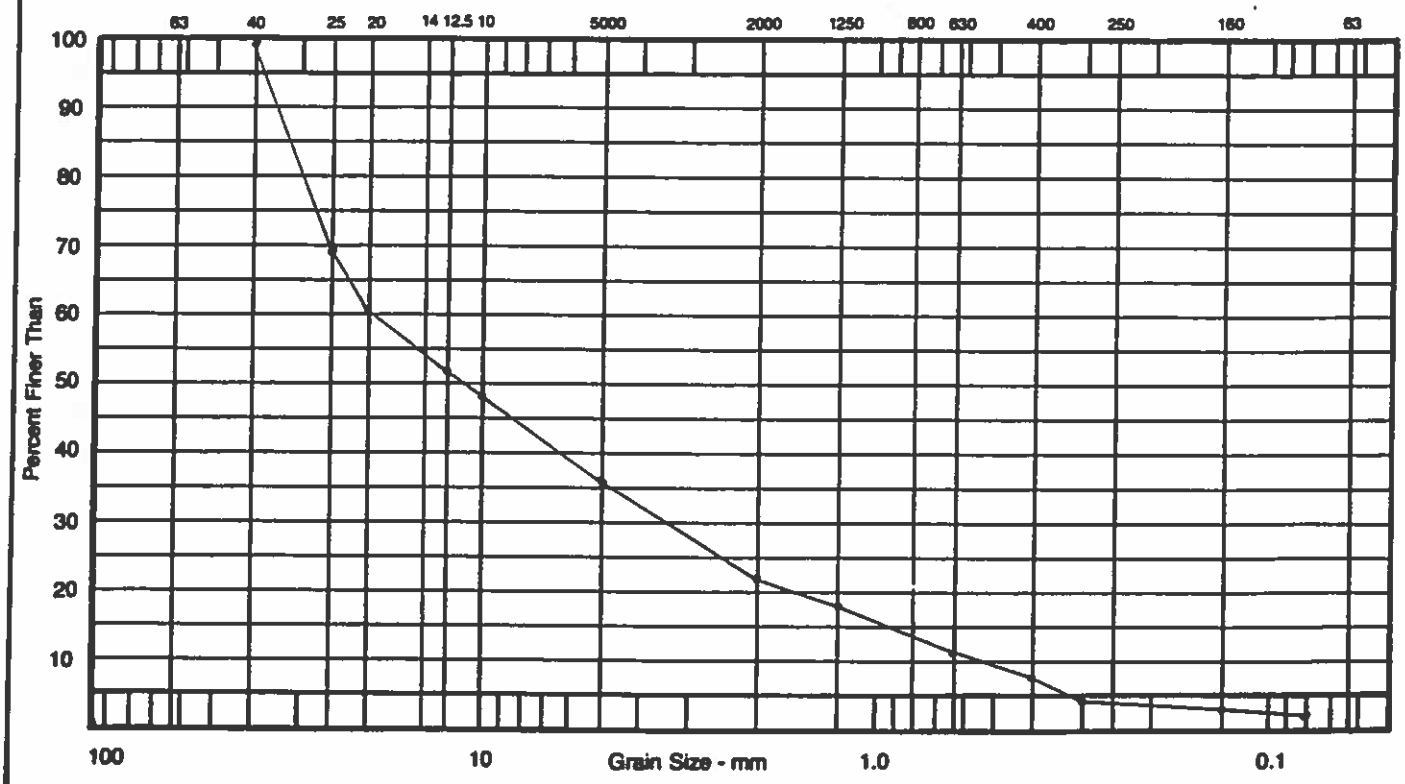
Description of Sample: Sandy Gravel, bW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.4 %
Gravel : 64.4 %
Sand : 33.0 %
Silt : 2.6 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 28 Depth: 2.8-3.0m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 7-95 Ck'd by: [illegible] Date: 1995/06/12

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					59.0
20000	20.0					48.1
14000	14.0					/
12500	12.5					41.2
10000	10.0					37.7
5000	5.0					29.6
2000	2.0					23.0
1250	1.250					19.3
800	0.800					/
630	0.630					14.5
400	0.400					10.8
315	0.315					7.7
160	0.160					5.9
80	0.080					4.2

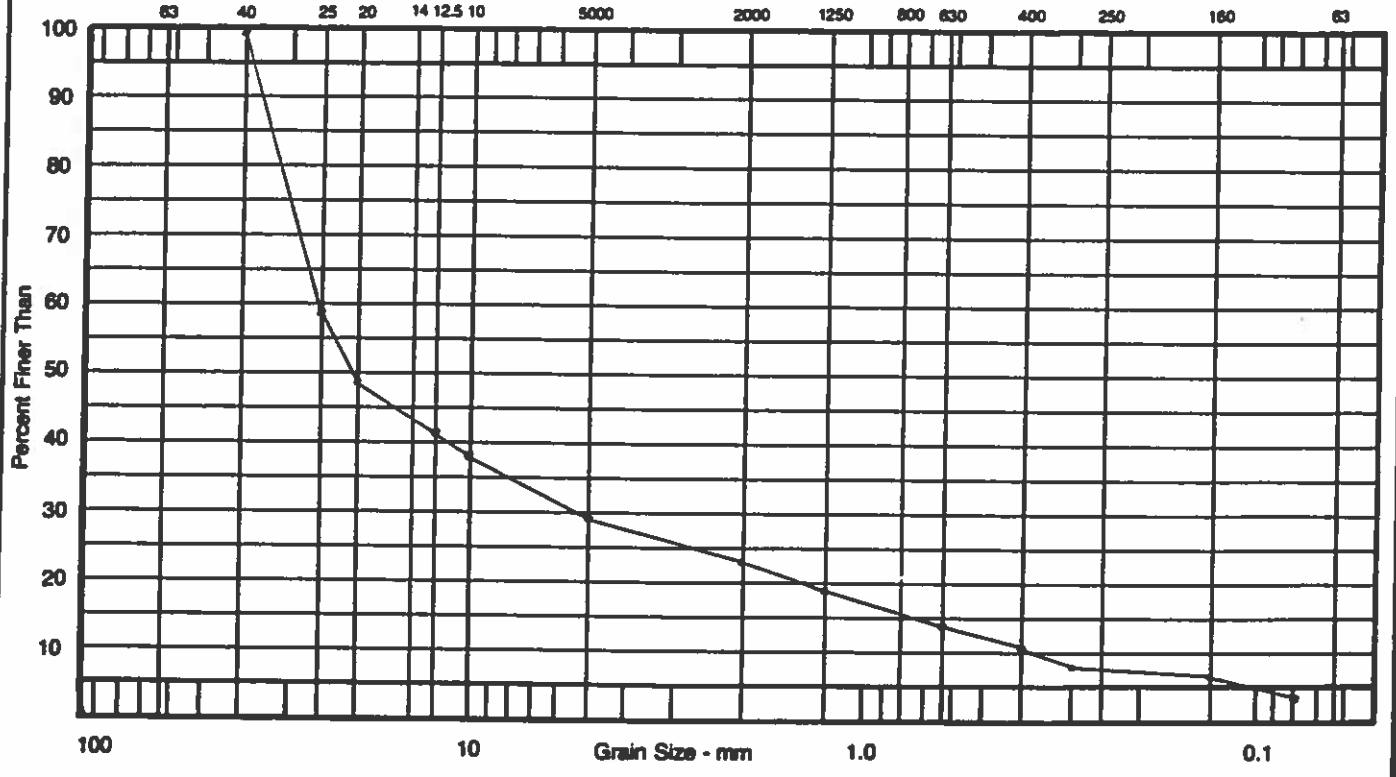
Description of Sample: Sandy gravel, bW

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

Remarks:

Moisture : 8.7%
Gravel : 70.4%
Sand : 25.4%
Silt : 4.2%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 7A Depth: 0.15-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 7 BULK SAMPLE Ck'd by: WCC Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					86.4
40000	40.0					64.9
25000	25.0					55.3
20000	20.0					50.2
14000	14.0					—
12500	12.5					41.7
10000	10.0					37.8
5000	5.0					28.1
2000	2.0					—
1250	1.250					16.2
800	0.800					—
630	0.630					11.3
400	0.400					—
315	0.315					6.0
160	0.160					3.8
80	0.080					2.9

Description of Sample: Sandy, Gravel, LSW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

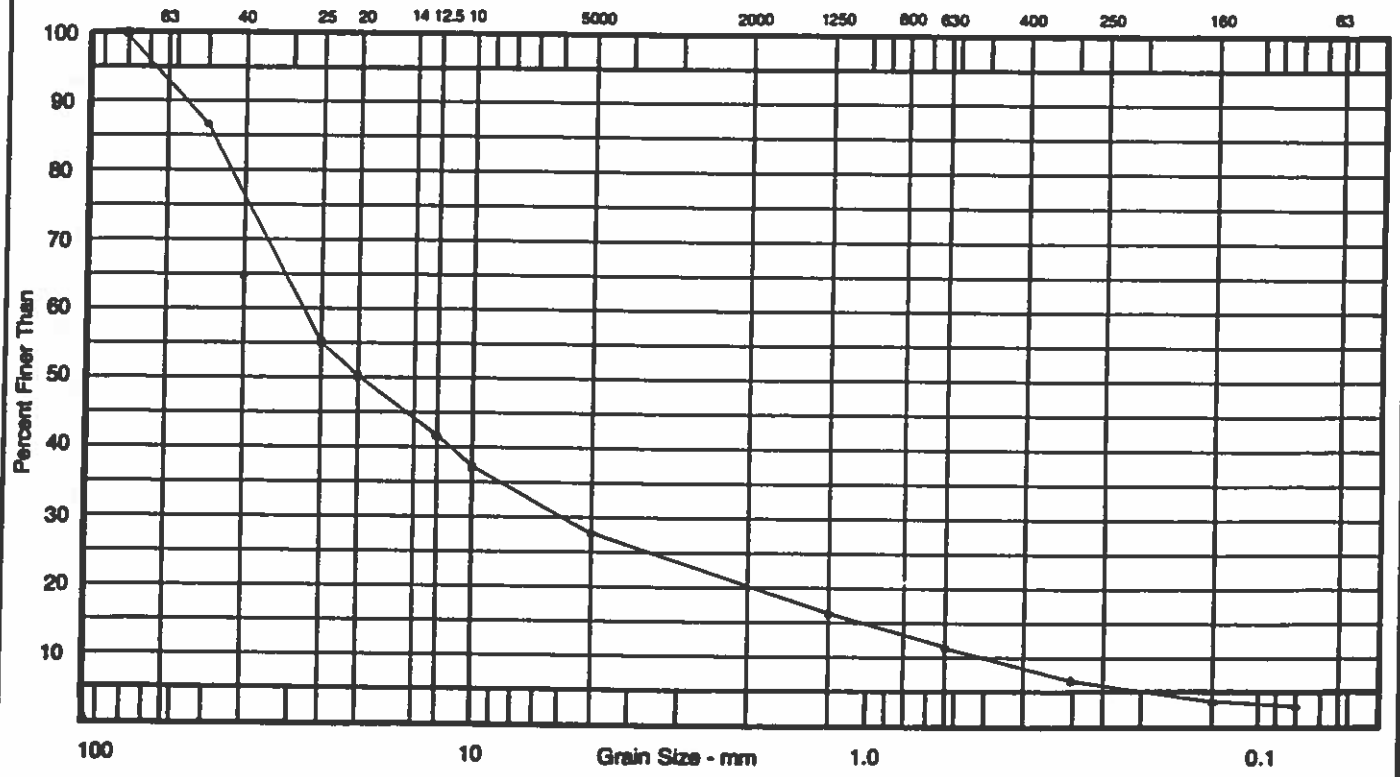
Remarks

Moisture : 4.3%

Gravel : 71.9 %

Sand : 25.2 %

Silt : 2.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 30 Depth: 0.0 - 0.2m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 8-95 Ck'd by: W.C.C. Date: 1995/06/12

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					
25000	25.0					
20000	20.0					100.0
14000	14.0					/
12500	12.5					95.1
10000	10.0					94.3
5000	5.0					92.3
2000	2.0					89.2
1250	1.250					83.1
800	0.800					/
630	0.630					72.7
400	0.400					60.1
315	0.315					46.3
160	0.160					40.7
80	0.080					37.7

Description of Sample: Silty Sand, trace of gravel SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

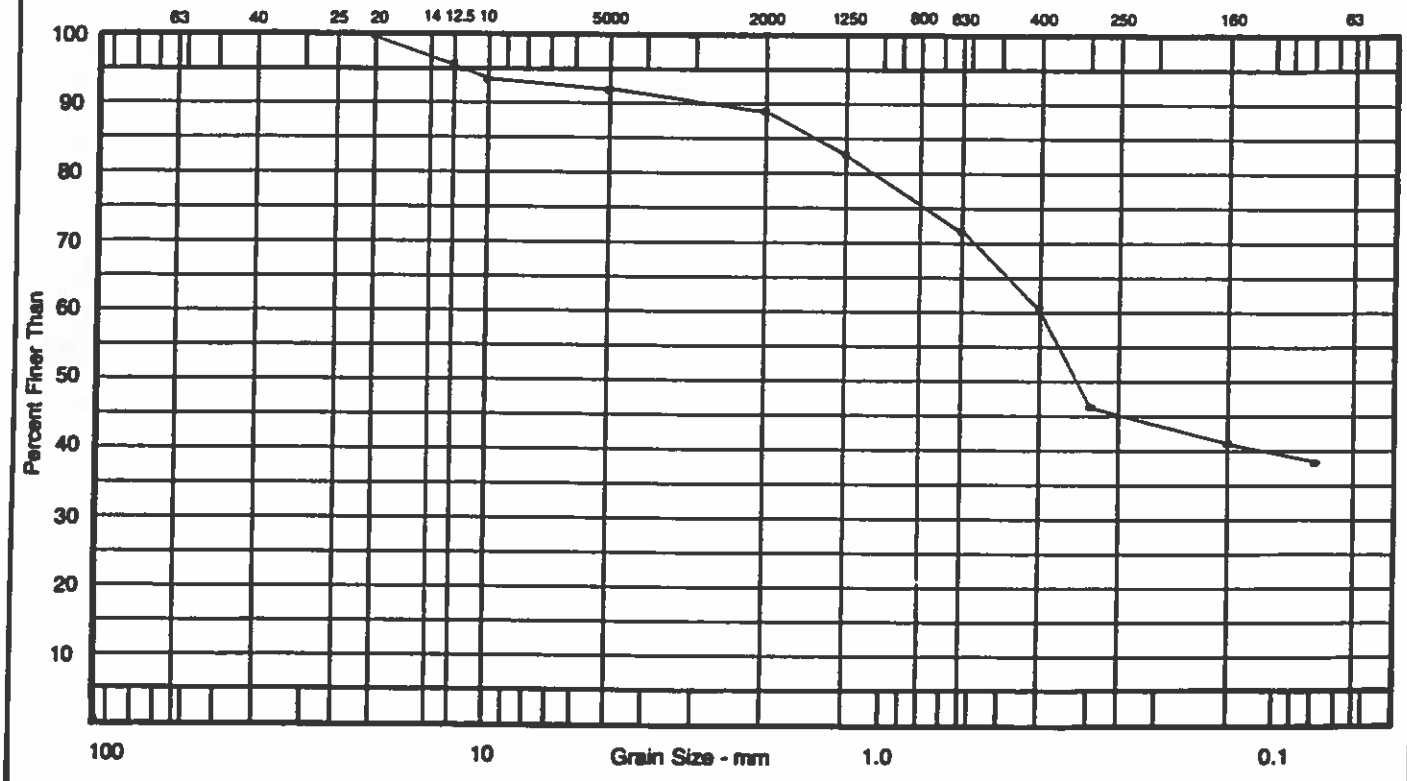
Remarks

Moisture : 10.6 %

Gravel : 7.7 %

Sand : 54.6 %

Silt : 37.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 31 Depth: 1.0-1.2m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 8-95 Ck'd by: WDC-C Date: 1995/06/12

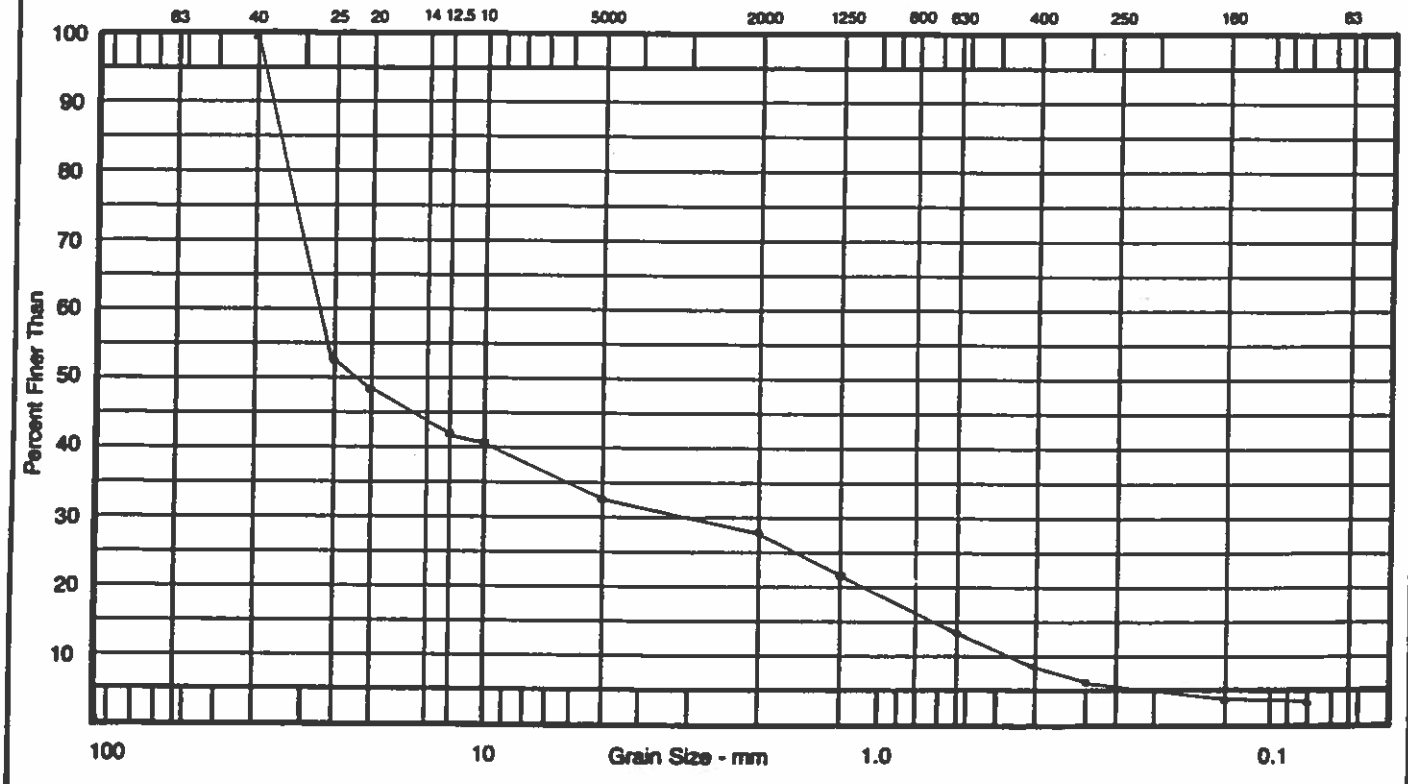
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					53.3
20000	20.0					47.7
14000	14.0					/
12500	12.5					42.7
10000	10.0					40.1
5000	5.0					33.5
2000	2.0					27.0
1250	1.250					22.3
800	0.800					/
630	0.630					14.3
400	0.400					9.3
315	0.315					5.7
160	0.160					4.1
80	0.080					3.1

Description of Sample: Sandy Gravel, GP

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

Remarks:
Moisture : 2.6%
Gravel : 66.5%
Sand : 30.4%
Silt : 3.1%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 8A Depth: 0.20-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & FR Job. No. 8002-234
TP # 8 BULK SAMPLE Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					100
40000	40.0					85.1
25000	25.0					74.2
20000	20.0					67.3
14000	14.0					—
12500	12.5					58.8
10000	10.0					54.2
5000	5.0					41.6
2000	2.0					—
1250	1.250					24.2
800	0.800					—
630	0.630					16.2
400	0.400					—
315	0.315					8.0
160	0.160					4.7
80	0.080					3.5

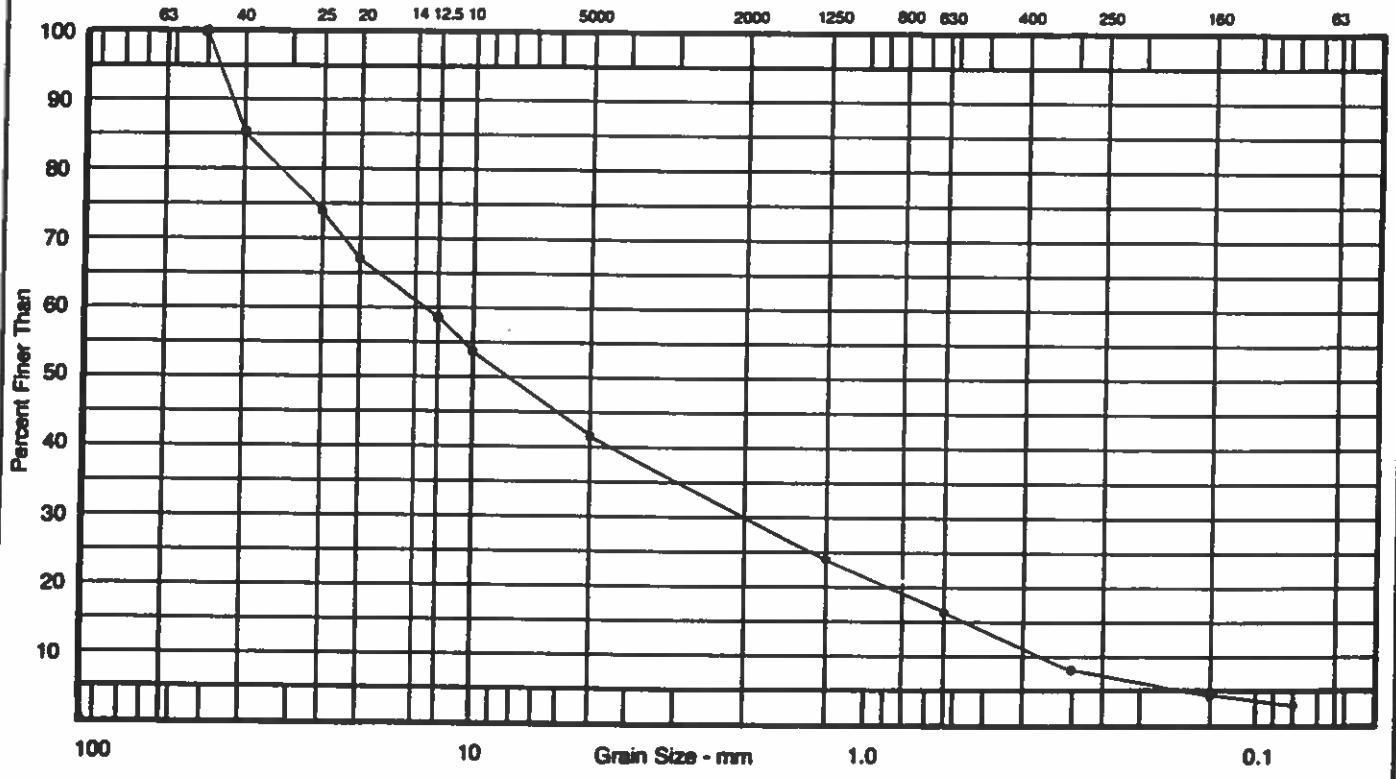
Description of Sample: Sandy (gravel, (GW)

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.3%
Gravel : 58.4%
Sand : 38.1%
Silt : 3.5%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 37 Depth: 2.8-3.0m Client: YTG, Transportation Engineering Branch

Location: Area # 9 Project: Greater Whitehorse Inventory of Sand & Gravel

TP # 9-95 Made by: RK & PR Job. No. 8002-234

Ck'd by: WCIC Date: 1995/06/12

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					68.0
20000	20.0					57.4
14000	14.0					/
12500	12.5					47.3
10000	10.0					41.9
5000	5.0					31.8
2000	2.0					25.6
1250	1.250					19.3
800	0.800					/
630	0.630					13.1
400	0.400					8.2
315	0.315					4.5
160	0.160					2.9
80	0.080					1.9

Description of Sample: Sandy, Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

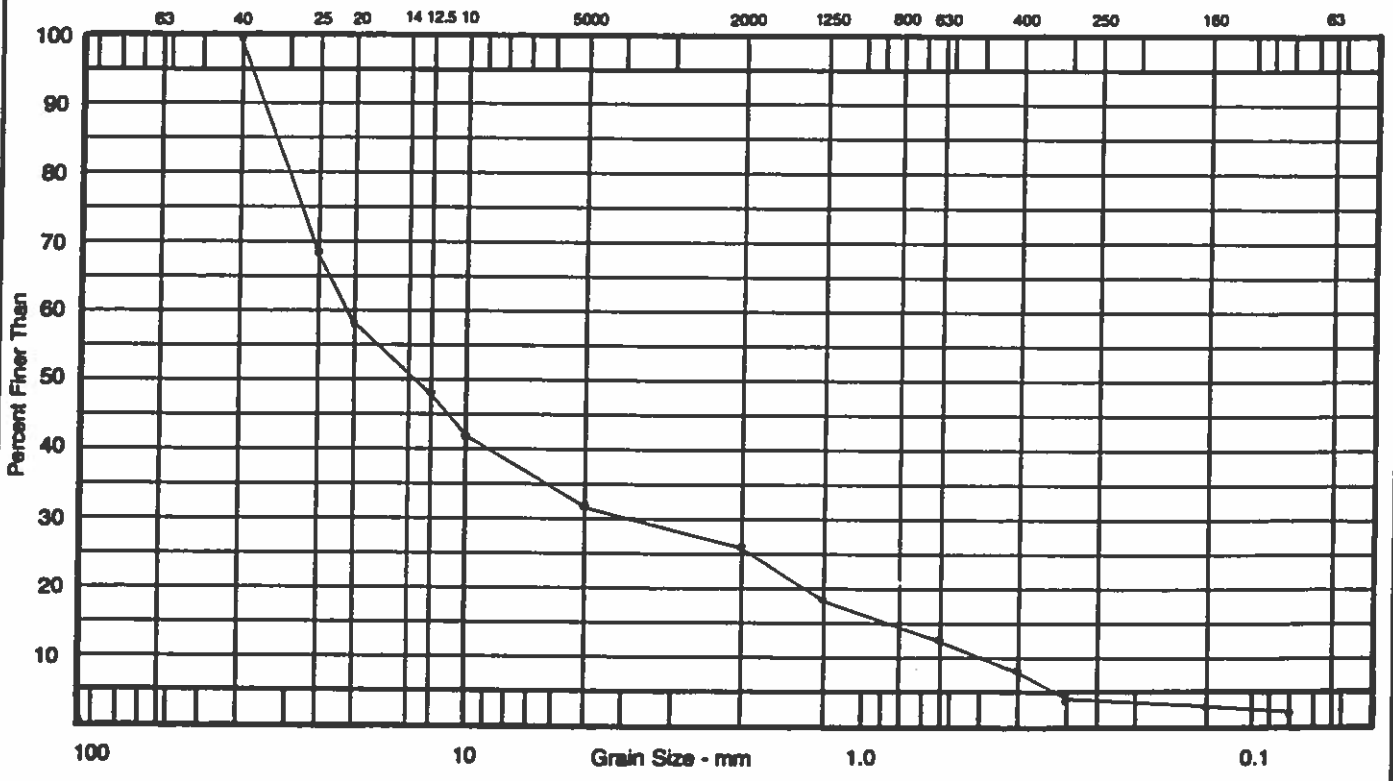
Remarks

Moisture : 2.7 %

Gravel : 68.2 %

Sand : 29.9 %

Silt : 1.9 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 9A Depth: 0.20 - 4.00 m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 9 BULK SAMPLE Ck'd by: WLC Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					100
40000	40.0					80.8
25000	25.0					69.8
20000	20.0					64.0
14000	14.0					—
12500	12.5					54.3
10000	10.0					49.3
5000	5.0					37.3
2000	2.0					—
1250	1.250					20.8
800	0.800					—
630	0.630					14.1
400	0.400					—
315	0.315					7.5
160	0.160					4.4
80	0.080					3.1

Description of Sample: Sandy Gravel, bw

Time of Sieving: Min. 15

Method of Preparation: Dry: Washed: X

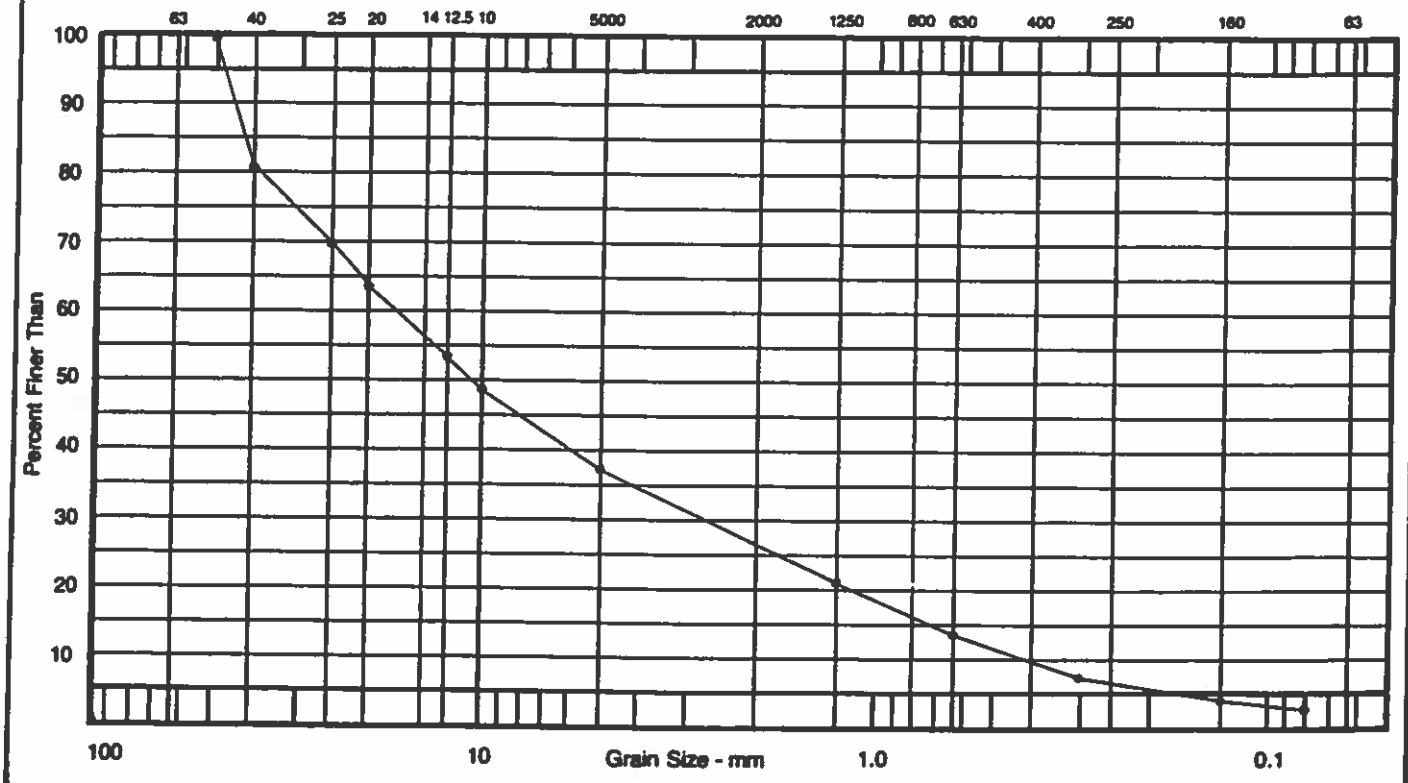
Remarks:

Moisture : 5.4 %

Gravel : 62.7 %

Sand : 34.2 %

Silt : 3.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 41 Depth: 3.20 - 3.35m
Location: Area # 9
TP # 10-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: WCR Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					63.7
20000	20.0					57.0
14000	14.0					/
12500	12.5					46.5
10000	10.0					42.0
5000	5.0					31.0
2000	2.0					23.4
1250	1.250					17.0
800	0.800					/
630	0.630					11.7
400	0.400					8.6
315	0.315					6.6
160	0.160					5.3
80	0.080					3.9

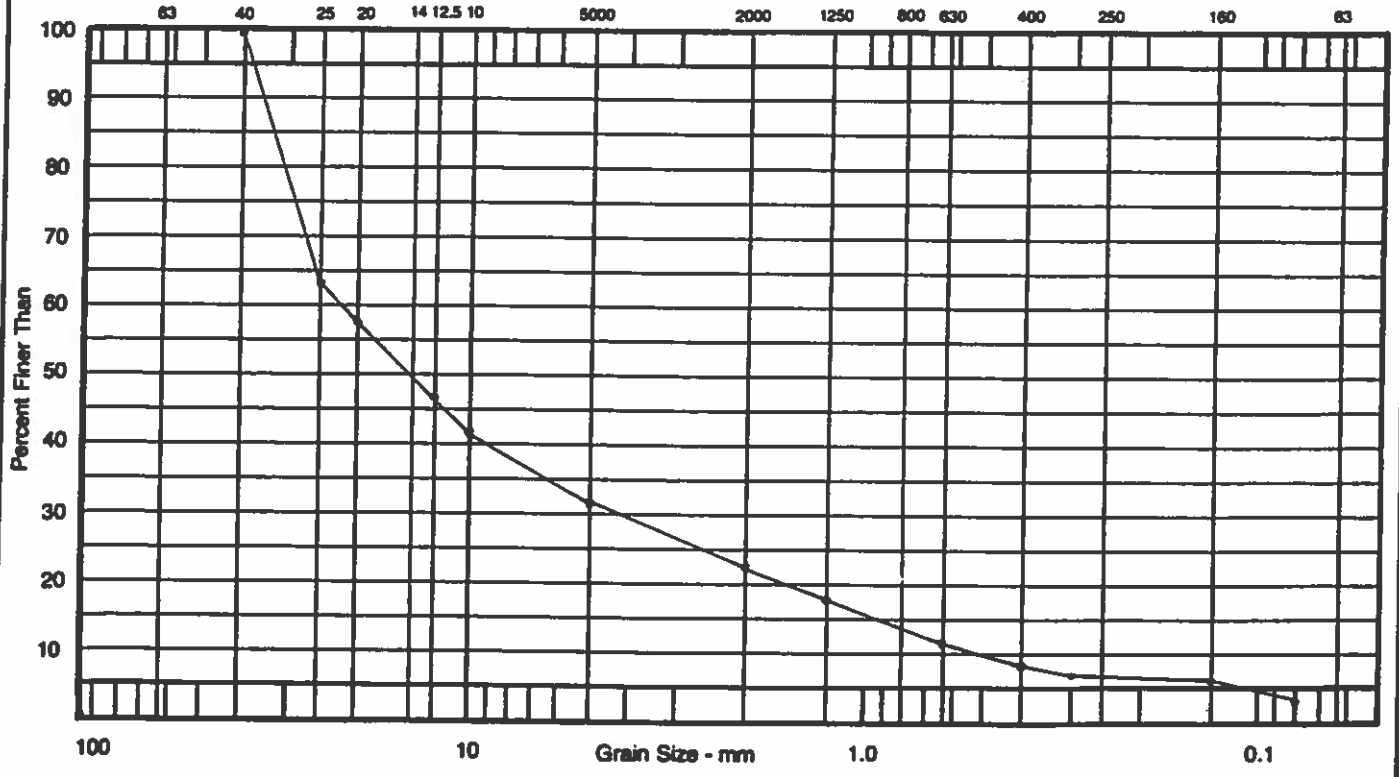
Description of Sample: Sandy, Gravel, bld

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 4.5%
Gravel : 69.0%
Sand : 27.1%
Silt : 3.9%



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 43 Depth: 0.05-0.20m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 11-95 Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					97.8
20000	20.0					90.6
14000	14.0					/
12500	12.5					74.2
10000	10.0					73.1
5000	5.0					68.6
2000	2.0					65.7
1250	1.250					62.6
800	0.800					/
630	0.630					59.3
400	0.400					56.5
315	0.315					53.7
160	0.160					51.3
80	0.080					42.4

Description of Sample: Sandy Gravelly Silt, SM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

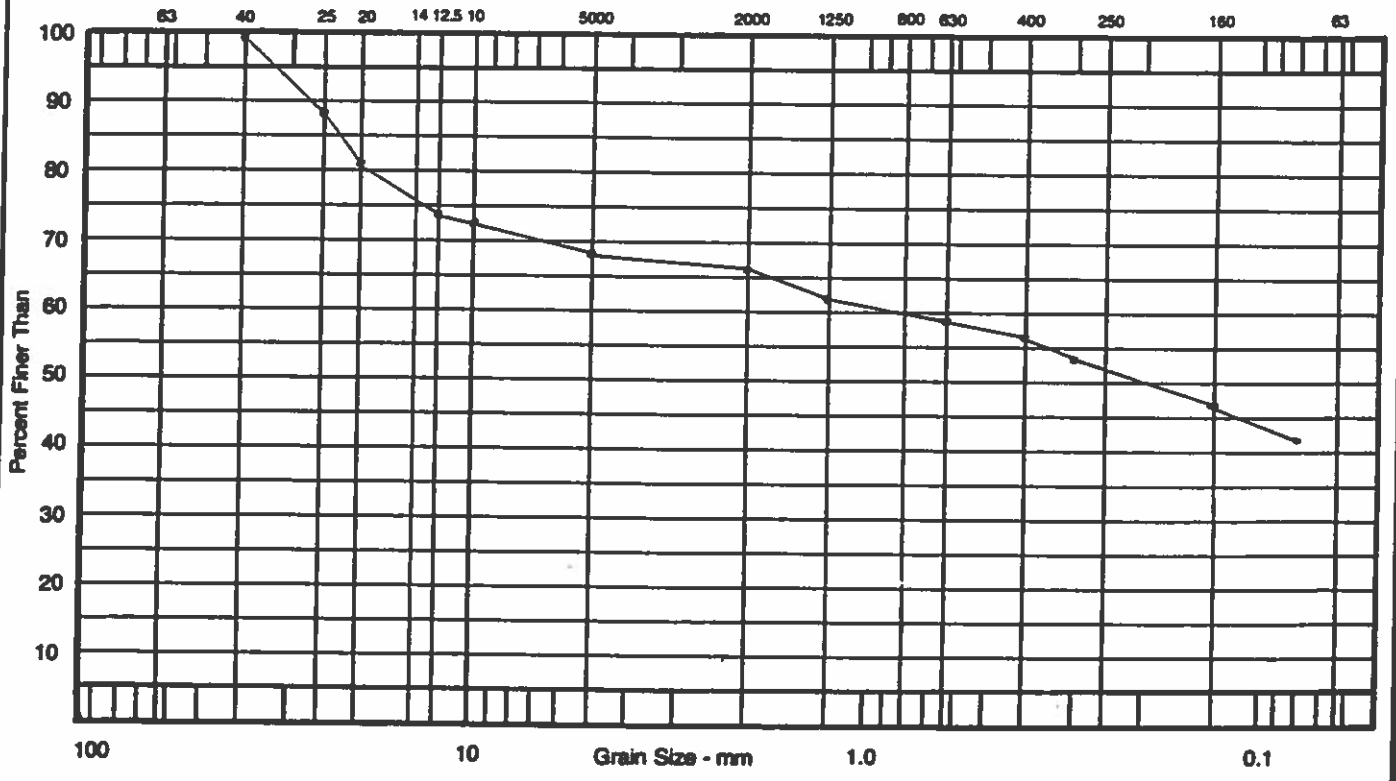
Remarks

Moisture : 11.3 %

Gravel : 31.4 %

Sand : 26.2 %

Silt : 42.4 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 44 Depth: 1.0-1.2m
Location: Area # 9
TP # 11-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/13

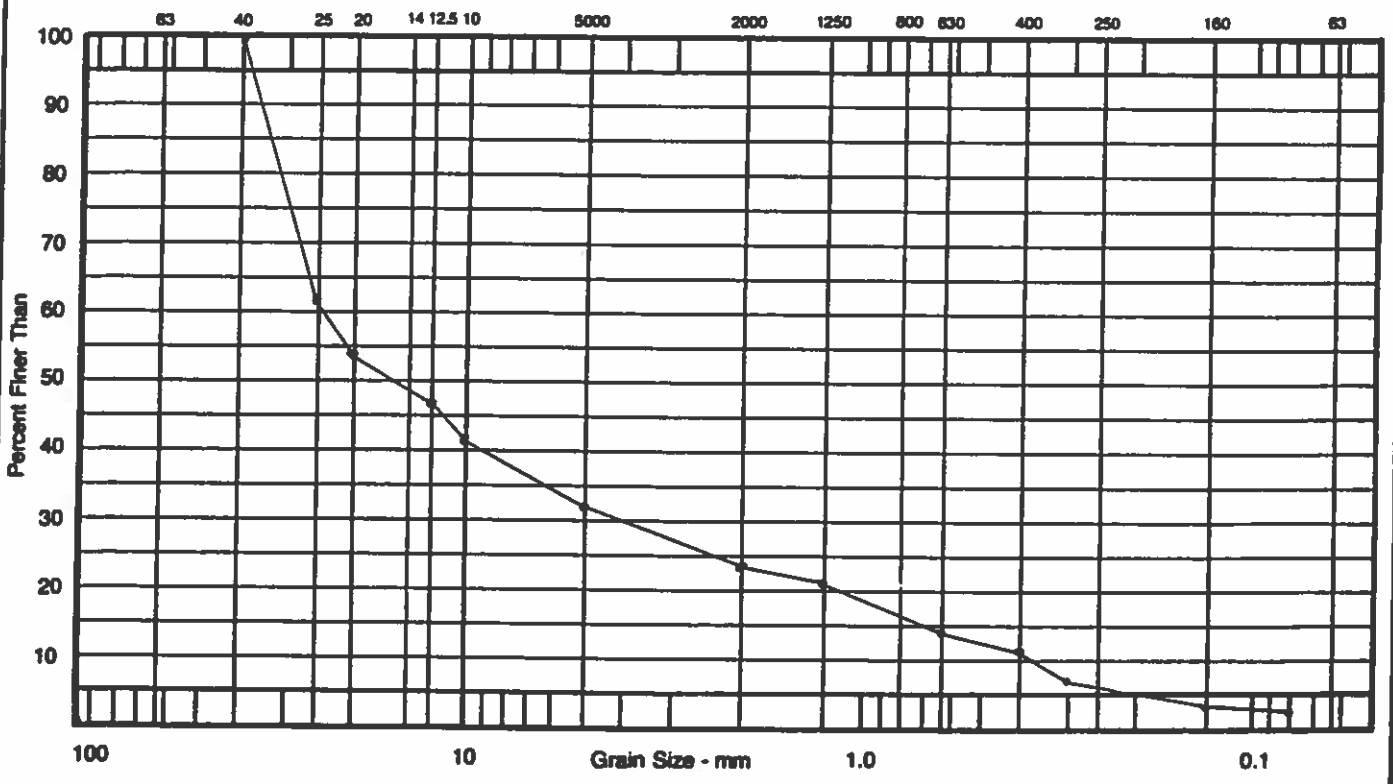
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					62.1
20000	20.0					54.6
14000	14.0					/
12500	12.5					46.0
10000	10.0					41.2
5000	5.0					32.1
2000	2.0					24.4
1250	1.250					20.2
800	0.800					/
630	0.630					14.5
400	0.400					10.4
315	0.315					6.3
160	0.160					3.6
80	0.080					1.8

Description of Sample: Sandy Gravel, GW

Time of Sieving: Min. 15

Method of Preparation: Dry Washed X

Remarks:
Moisture : 6.5 %
Gravel : 67.9 %
Sand : 30.3 %
Silt : 1.8 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 11A Depth: 0.20 - 4.00m

Location: Area # 9

TP # 11 BULK SAMPLE

Client: YTG, Transportation Engineering Branch

Project: Greater Whitehorse Inventory of Sand & Gravel

Made by: RK & PR Job. No. 8002-234

Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					69.9
40000	40.0					59.8
25000	25.0					53.7
20000	20.0					47.8
14000	14.0					—
12500	12.5					39.7
10000	10.0					35.4
5000	5.0					26.5
2000	2.0					—
1250	1.250					15.7
800	0.800					—
630	0.630					11.4
400	0.400					—
315	0.315					6.4
160	0.160					3.8
80	0.080					2.7

Description of Sample: Sandy gravel, low

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

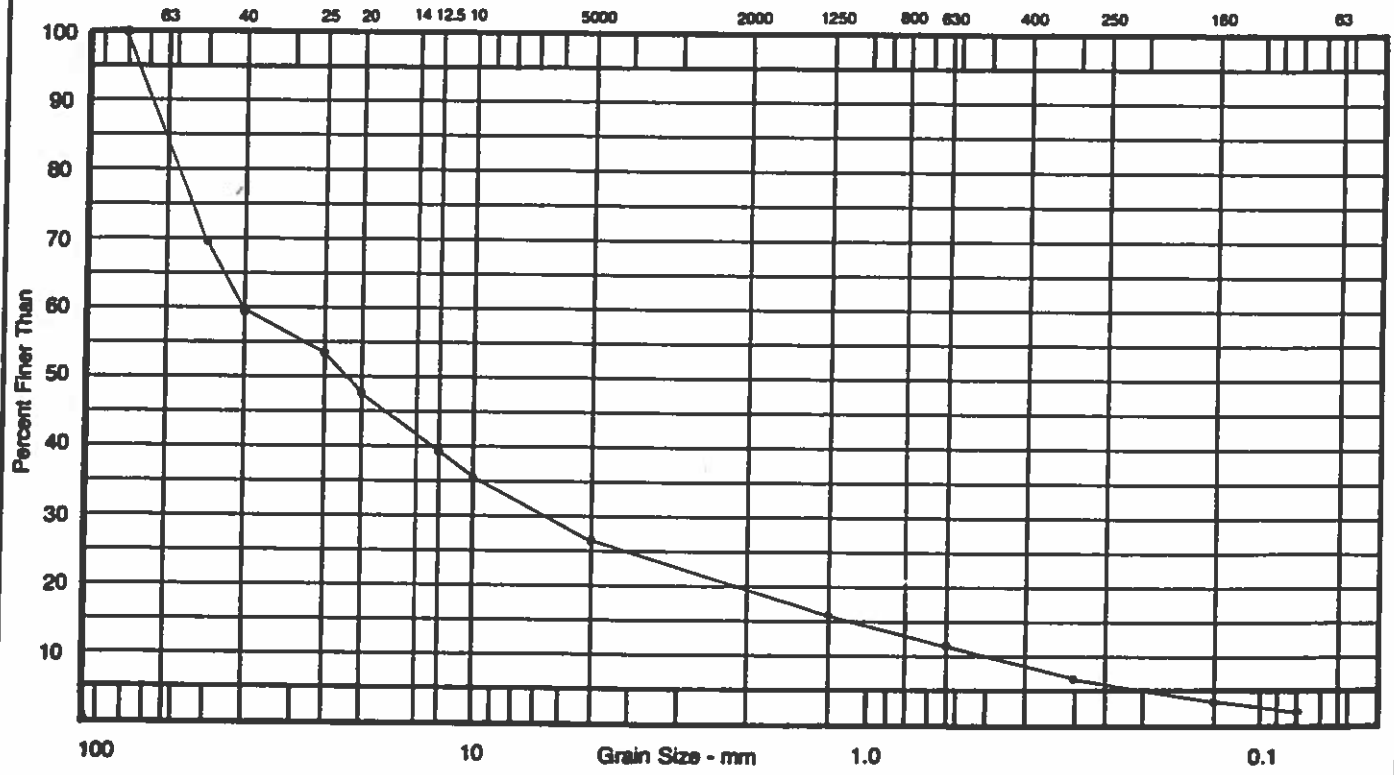
Remarks

Moisture : 4.2 %

Gravel : 73.5 %

Sand : 23.8 %

Silt : 2.7 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 49 Depth: 2.1 - 2.3m
Location: Area # 9
TP # 12-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: [illegible] Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					78.6
20000	20.0					69.6
14000	14.0					/
12500	12.5					61.3
10000	10.0					55.2
5000	5.0					43.9
2000	2.0					34.3
1250	1.250					25.5
800	0.800					/
630	0.630					15.9
400	0.400					8.8
315	0.315					4.8
160	0.160					3.2
80	0.080					2.3

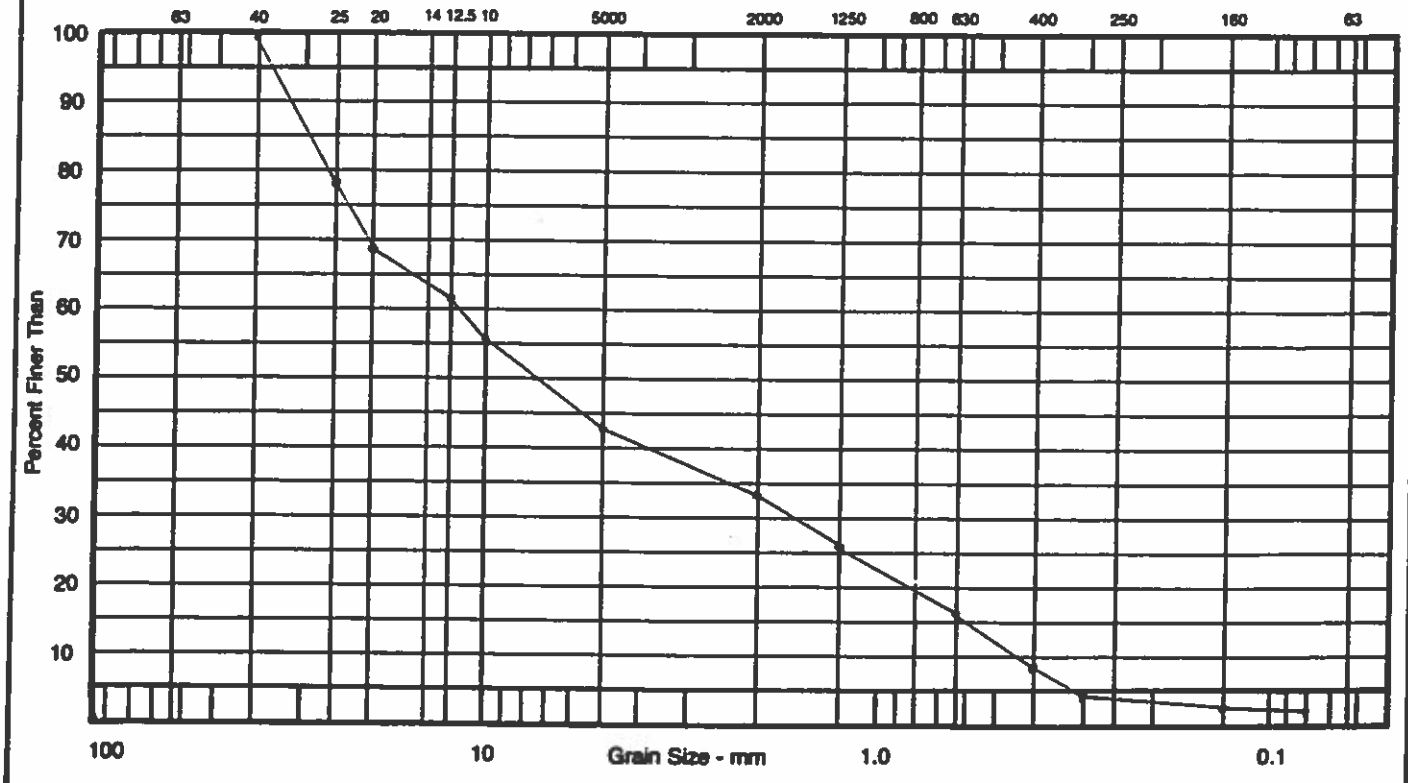
Description of Sample: Sandy, Gravel, bw

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 6.6 %
Gravel : 56.1 %
Sand : 41.6 %
Silt : 2.3 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 12A Depth: 0.30 - 4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 12 BULK SAMPLE Ck'd by: WCH Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
	50.0					67.2
40000	40.0					67.2
25000	25.0					63.7
20000	20.0					58.9
14000	14.0					—
12500	12.5					51.5
10000	10.0					47.1
5000	5.0					36.1
2000	2.0					—
1250	1.250					20.3
800	0.800					—
630	0.630					13.5
400	0.400					—
315	0.315					6.4
160	0.160					3.6
80	0.080					2.5

Description of Sample: Sandy Gravel (GW) Trial Crush Completed

Time of Sieving: Min. 15

Method of Preparation: Dry ____ Washed X

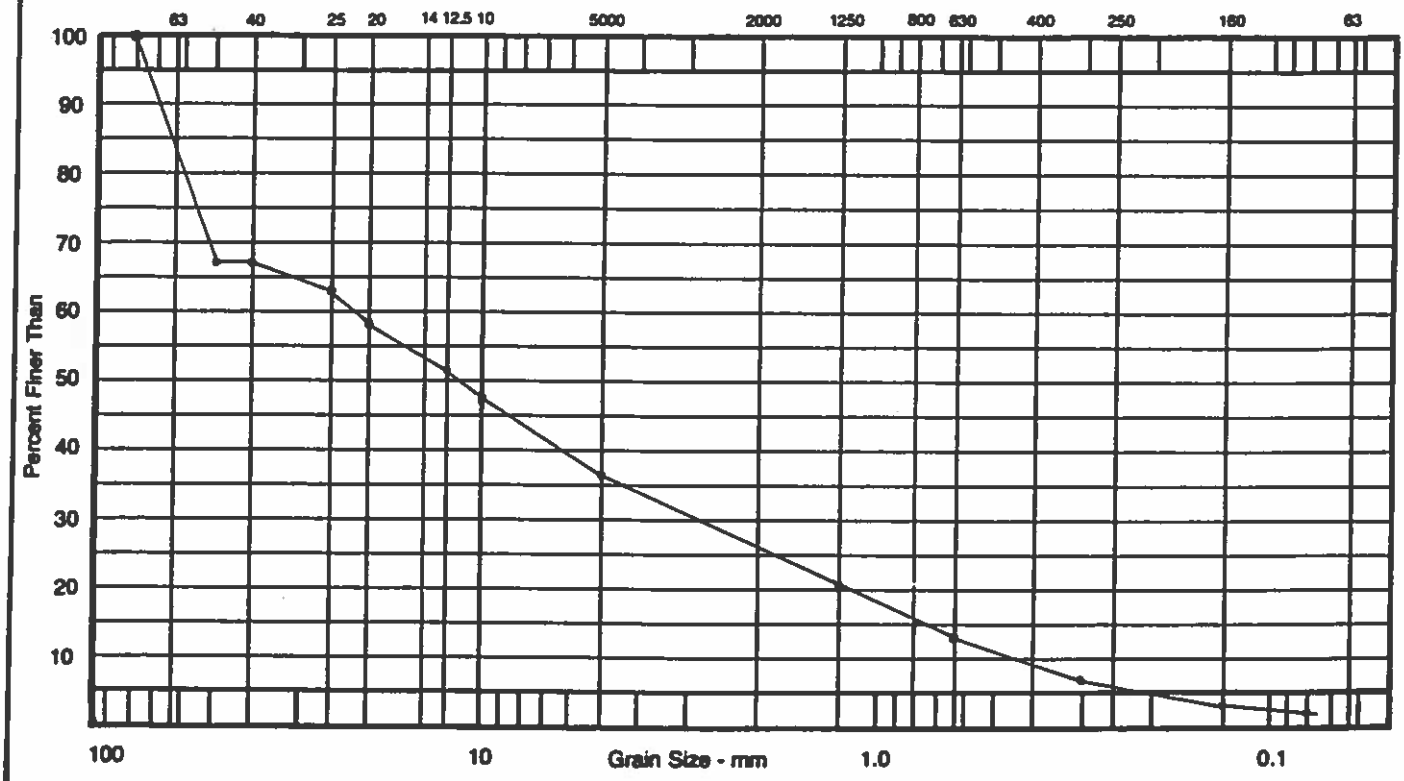
Remarks:

Moisture : 5.3 %

Gravel : 63.9 % Trial Crush

Sand : 33.6 % Completed

Silt : 2.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 12A (Crush) Depth 0.30 - 4.00m
Location: Area # 9
TP # 12-95 Bulk Sample

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by RK & PR Job No 8002-234
Ck'd by Date 1995/06/30

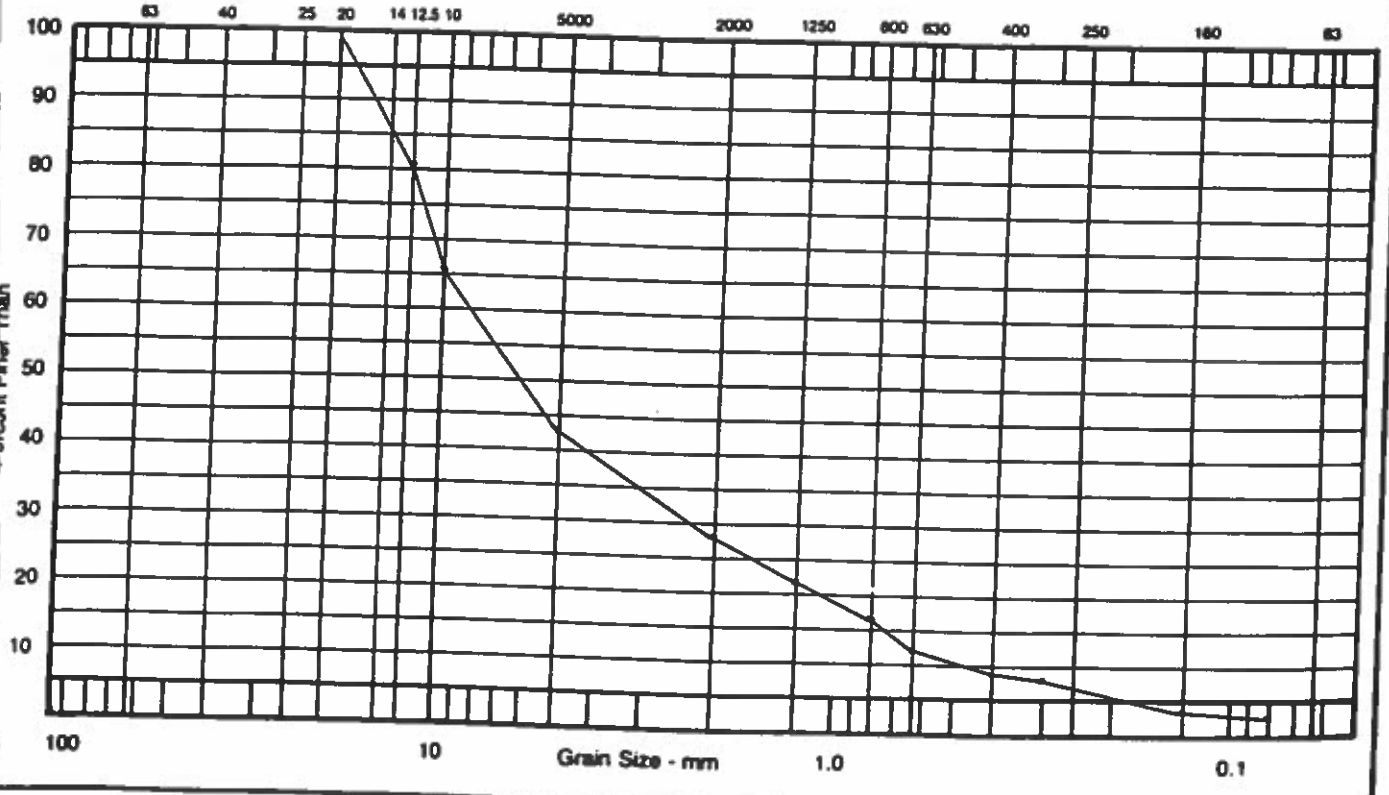
Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0					
25000	25.0					
20000	20.0					
14000	14.0					100.0
12500	12.5					/
10000	10.0					80.3
5000	5.0					65.3
2000	2.0					43.9
1250	1.250					29.9
800	0.800					21.8
630	0.630					16.8
400	0.400					13.8
315	0.315					9.1
160	0.160					7.3
80	0.080					4.2
						2.9

Description of Sample: Trial Crush to 20mm maximum size.

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks: Moisture : 4.6% Crush Cont 2 faces : 75.0%
Gravel : LA Abrasion : 13.2%
Sand :
Silt :



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 54 Depth: 2.8-3.0m
Location: Area # 9
TP # 13-95

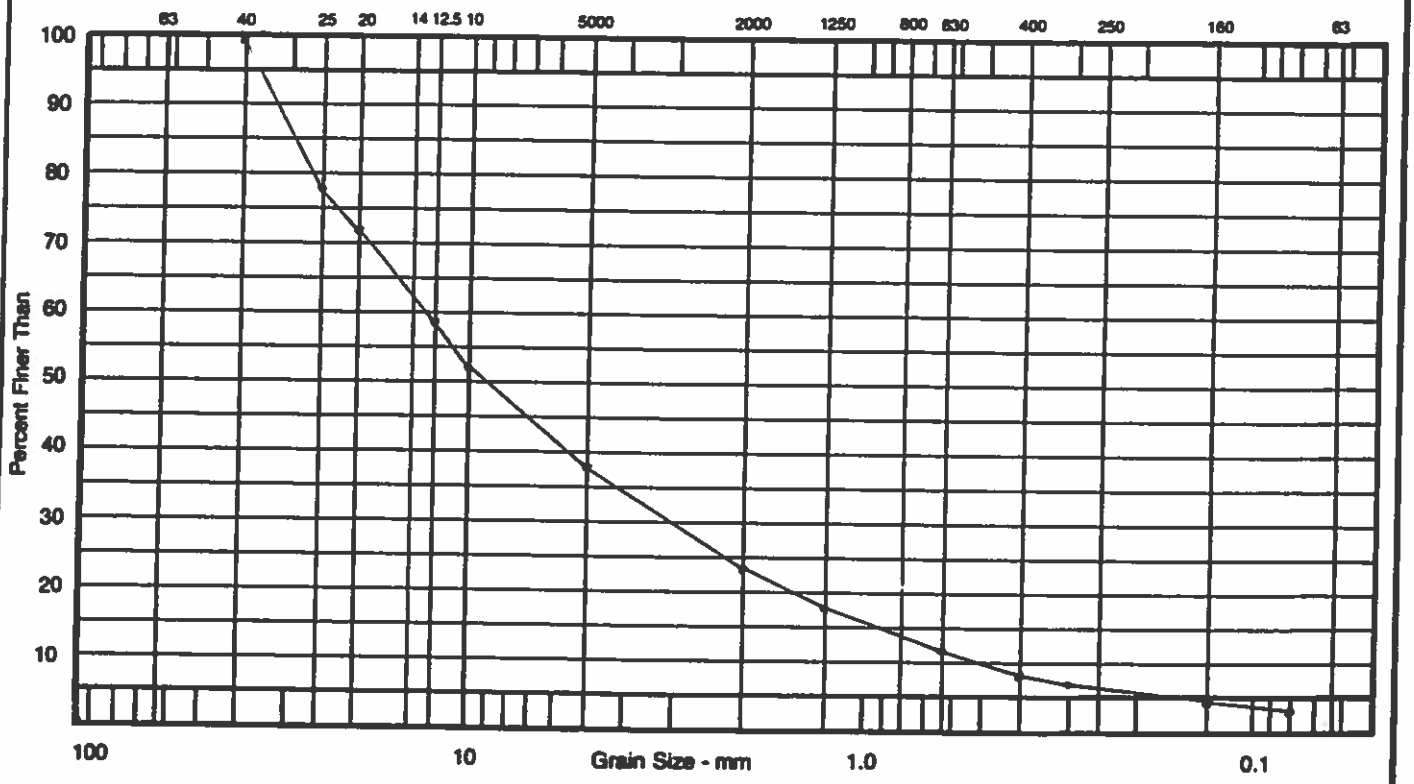
Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: W.C.K Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					77.3
20000	20.0					72.2
14000	14.0					/
12500	12.5					59.1
10000	10.0					52.6
5000	5.0					37.7
2000	2.0					24.2
1250	1.250					17.6
800	0.800					/
630	0.630					11.4
400	0.400					8.4
315	0.315					6.1
160	0.160					4.7
80	0.080					3.5

Description of Sample
Sandy, Gravel, (SW)

Time of Sieving Min. 15

Method of Preparation Dry Washed X
Remarks
Moisture : 3.9 %
Gravel : 62.3 %
Sand : 34.2 %
Silt : 3.5 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 13A Depth: 0.20 - 4.0 m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 13 BULK SAMPLE Ck'd by: W.C.C Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					85.0
40000	40.0					69.3
25000	25.0					54.2
20000	20.0					47.9
14000	14.0					—
12500	12.5					38.8
10000	10.0					35.6
5000	5.0					27.6
2000	2.0					—
1250	1.250					13.8
800	0.800					—
630	0.630					9.0
400	0.400					—
315	0.315					5.0
160	0.160					3.0
80	0.080					2.1

Description of Sample: Sandy, Gravelly, (SW)

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

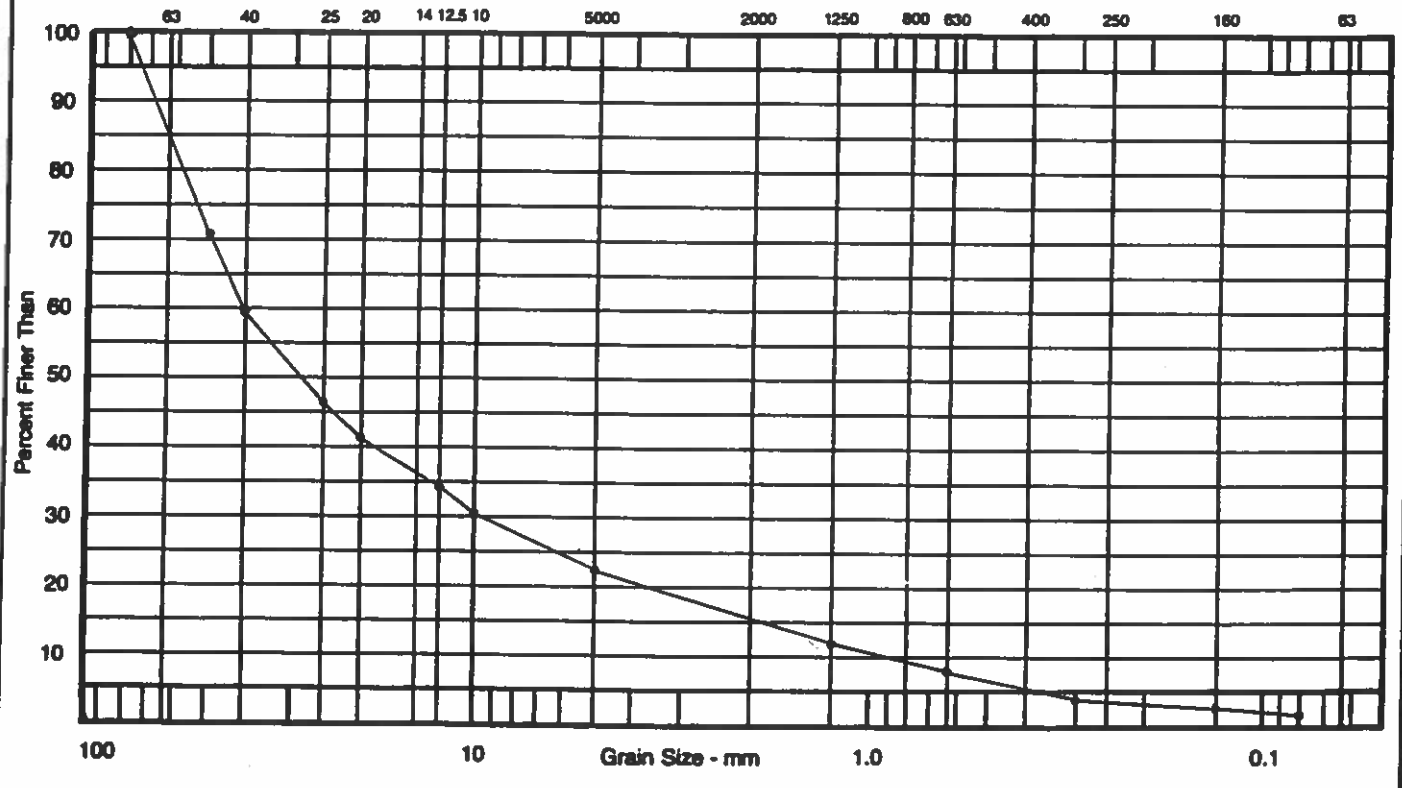
Remarks

Moisture : 3.0 %

Gravel : 72.4 %

Sand : 25.5 %

Silt : 2.1 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 57 Depth: 1.10 - 1.2 m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area #9 Made by: RK & PR Job. No. 8002-234

TP # 14-95 Ck'd by: W.C.C. Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					72.7
20000	20.0					60.4
14000	14.0					/
12500	12.5					49.5
10000	10.0					45.1
5000	5.0					35.7
2000	2.0					27.8
1250	1.250					19.8
800	0.800					/
630	0.630					13.4
400	0.400					10.1
315	0.315					7.7
160	0.160					6.3
80	0.080					5.3

Description of Sample: Sandy Gravel, trace of silt GW-GM

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

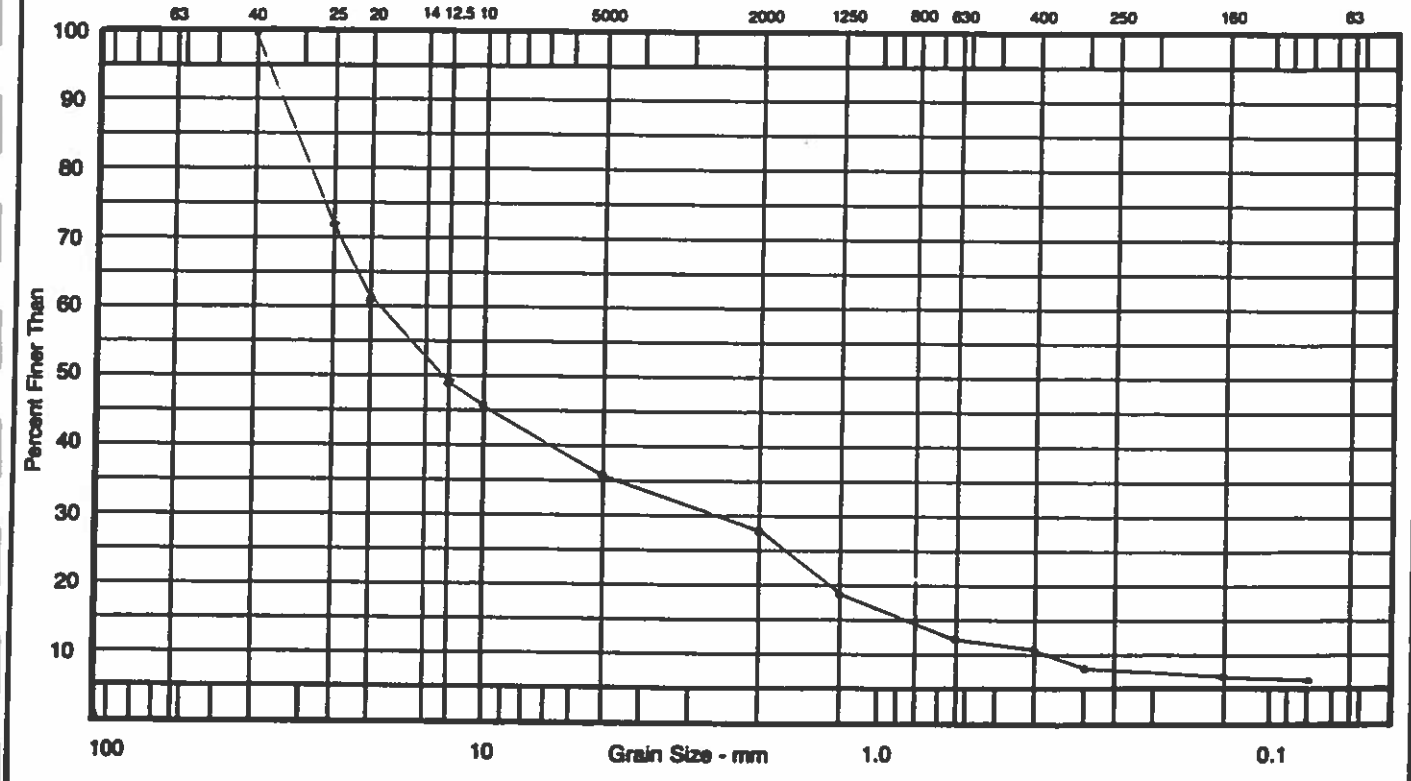
Remarks

Moisture : 3.8 %

Gravel : 64.3 %

Sand : 30.4 %

Silt : 5.3 %



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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Sample: 60 Depth: 3.5 - 4.0m
Location: Area # 9
TP # 14-95

Client: YTG, Transportation Engineering Branch
Project: Greater Whitehorse Inventory of Sand & Gravel
Made by: RK & PR Job. No. 8002-234
Ck'd by: DCL Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Org.Sample
40000	40.0					100.0
25000	25.0					66.6
20000	20.0					60.6
14000	14.0					/
12500	12.5					51.2
10000	10.0					46.5
5000	5.0					32.5
2000	2.0					18.9
1250	1.250					13.4
800	0.800					/
630	0.630					9.3
400	0.400					6.8
315	0.315					4.9
160	0.160					4.0
80	0.080					3.1

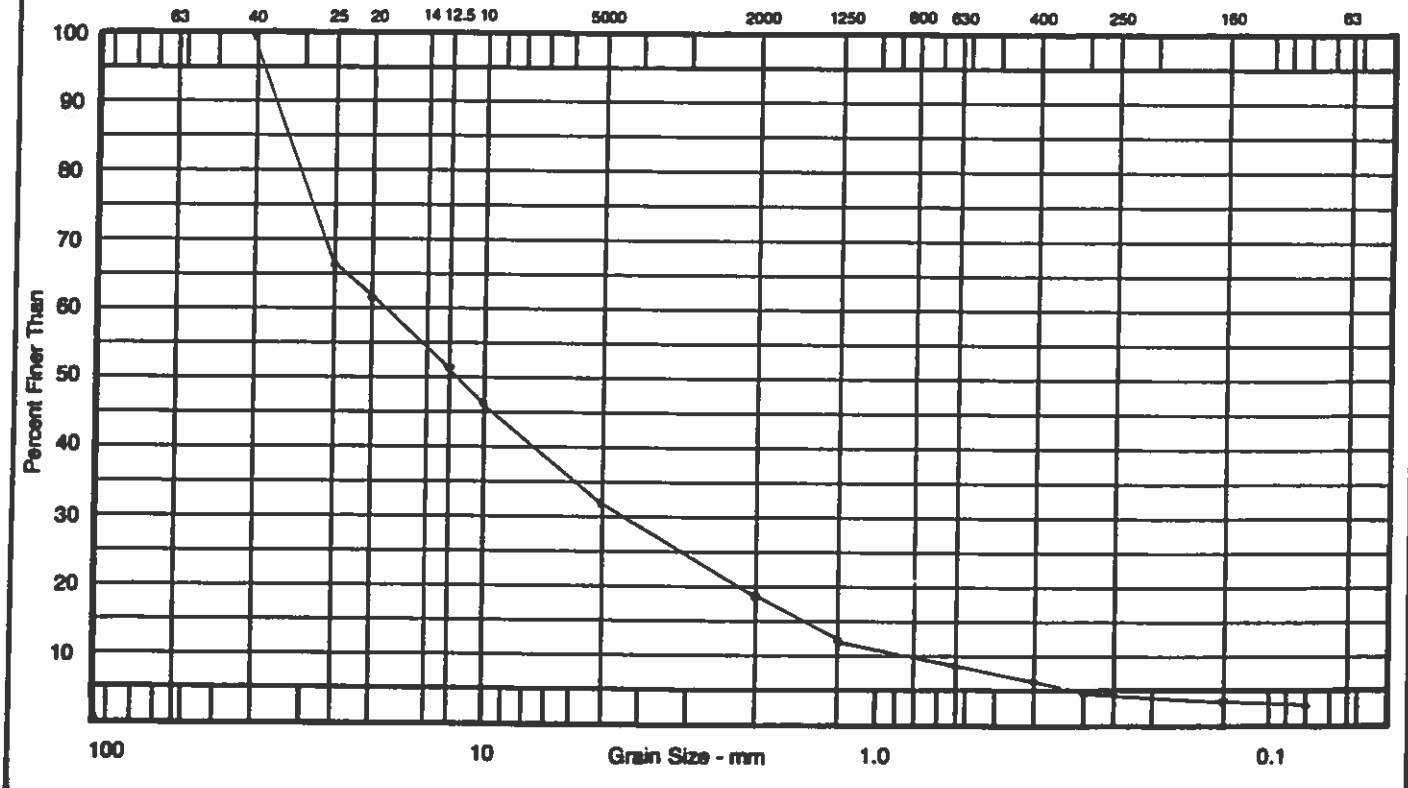
Description of Sample: Sandy, Gravel, bW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 2.3 %
Gravel : 67.5 %
Sand : 29.4 %
Silt : 3.1 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 14A Depth: 0.30-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 14 BULK SAMPLE Ck'd by: Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	80.0					80.4
40000	40.0					76.4
25000	25.0					58.1
20000	20.0					50.3
14000	14.0					—
12500	12.5					42.3
10000	10.0					38.3
5000	5.0					28.7
2000	2.0					—
1250	1.250					15.6
800	0.800					—
630	0.630					10.8
400	0.400					—
315	0.315					5.7
160	0.160					3.3
80	0.080					2.2

Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

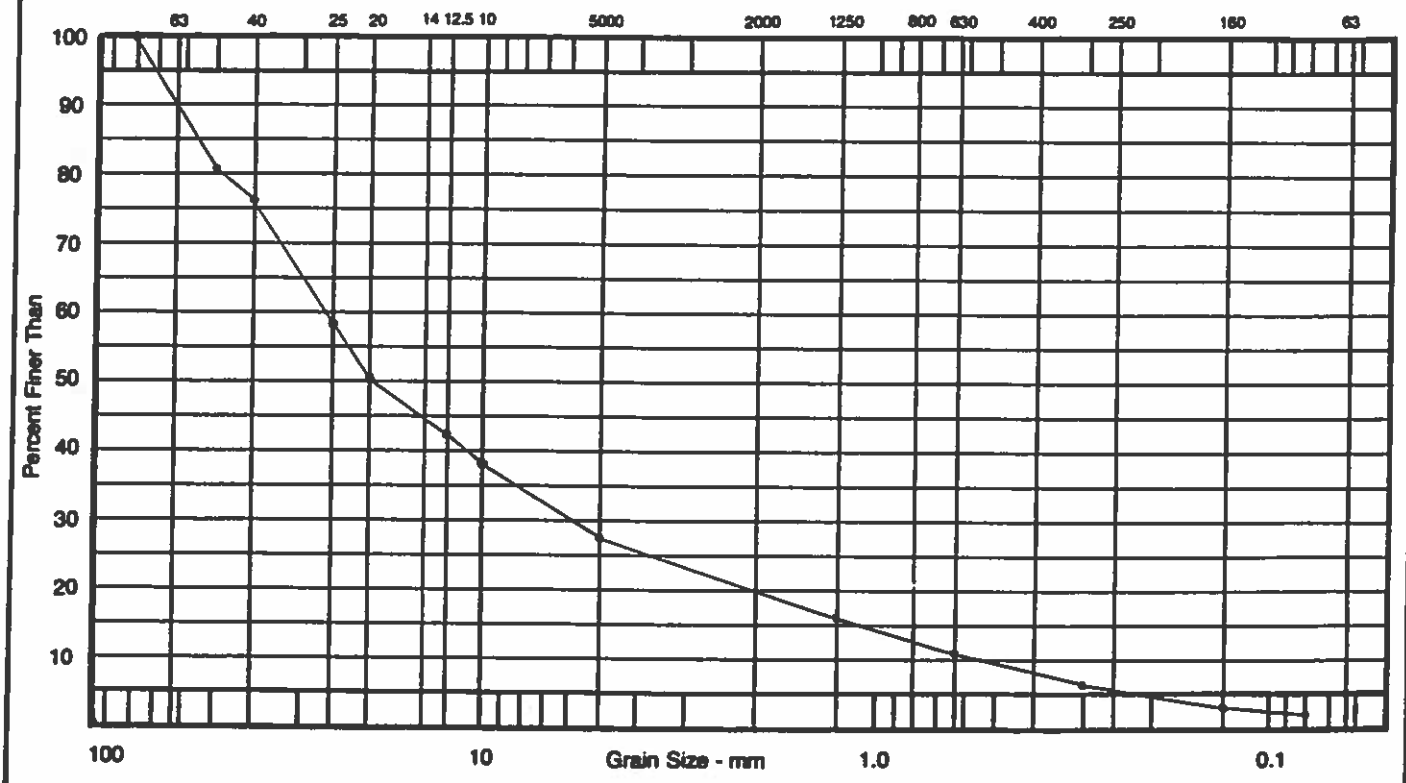
Remarks

Moisture : 4.2 %

Gravel : 71.3 %

Sand : 26.5 %

Silt : 2.2 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch
Sample: 64 Depth: 3.8 - 4.0m Project: Greater Whitehorse Inventory of Sand & Gravel
Location: Area # 9 Made by: RK & PR Job. No. 8002-234
TP # 15-95 Ck'd by: WCK Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
40000	40.0					100.0
25000	25.0					64.7
20000	20.0					58.8
14000	14.0					/
12500	12.5					50.3
10000	10.0					43.9
5000	5.0					33.4
2000	2.0					23.8
1250	1.250					18.3
800	0.800					/
630	0.630					11.5
400	0.400					7.7
315	0.315					5.3
160	0.160					4.1
80	0.080					2.8

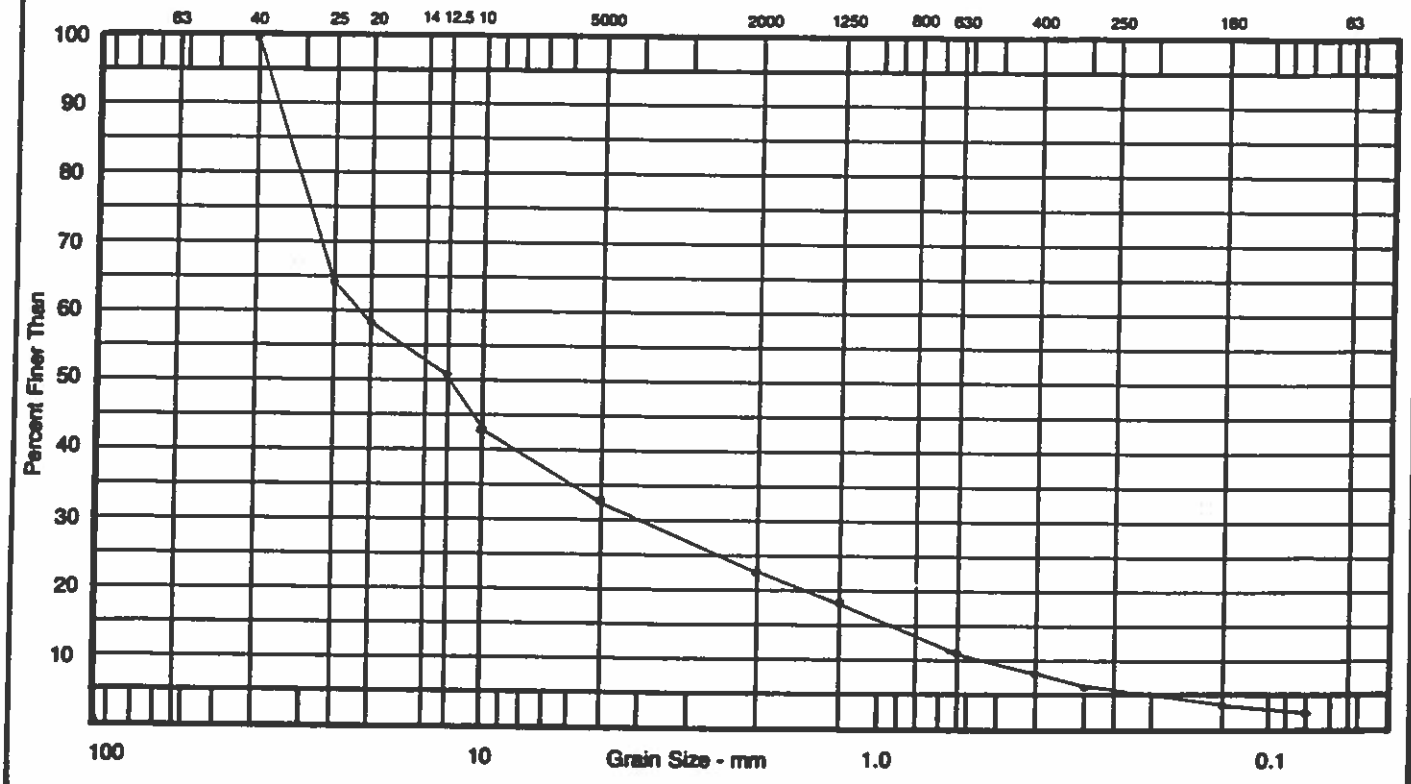
Description of Sample: Sandy Gravel, GW

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

Remarks

Moisture : 3.6 %
Gravel : 66.6 %
Sand : 30.6 %
Silt : 2.8 %



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG, Transportation Engineering Branch

Sample: 15A Depth: 0.20-4.00m Project: Greater Whitehorse Inventory of Sand & Gravel

Location: Area # 9 Made by: RK & PR Job. No. 8002-234

TP # 15 BULK SAMPLE Ck'd by: WCR Date: 1995/06/13

Sieve No.	Size of Opening MM		Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig.Sample
	50.0					70.6
40000	40.0					59.9
25000	25.0					46.2
20000	20.0					41.0
14000	14.0					—
12500	12.5					34.4
10000	10.0					30.2
5000	5.0					22.6
2000	2.0					—
1250	1.250					12.1
800	0.800					—
630	0.630					8.0
400	0.400					—
315	0.315					4.4
160	0.160					2.8
80	0.080					1.9

Description of Sample: Sandy Gravel, (SW)

Time of Sieving ..... Min. 15

Method of Preparation ..... Dry ..... Washed X

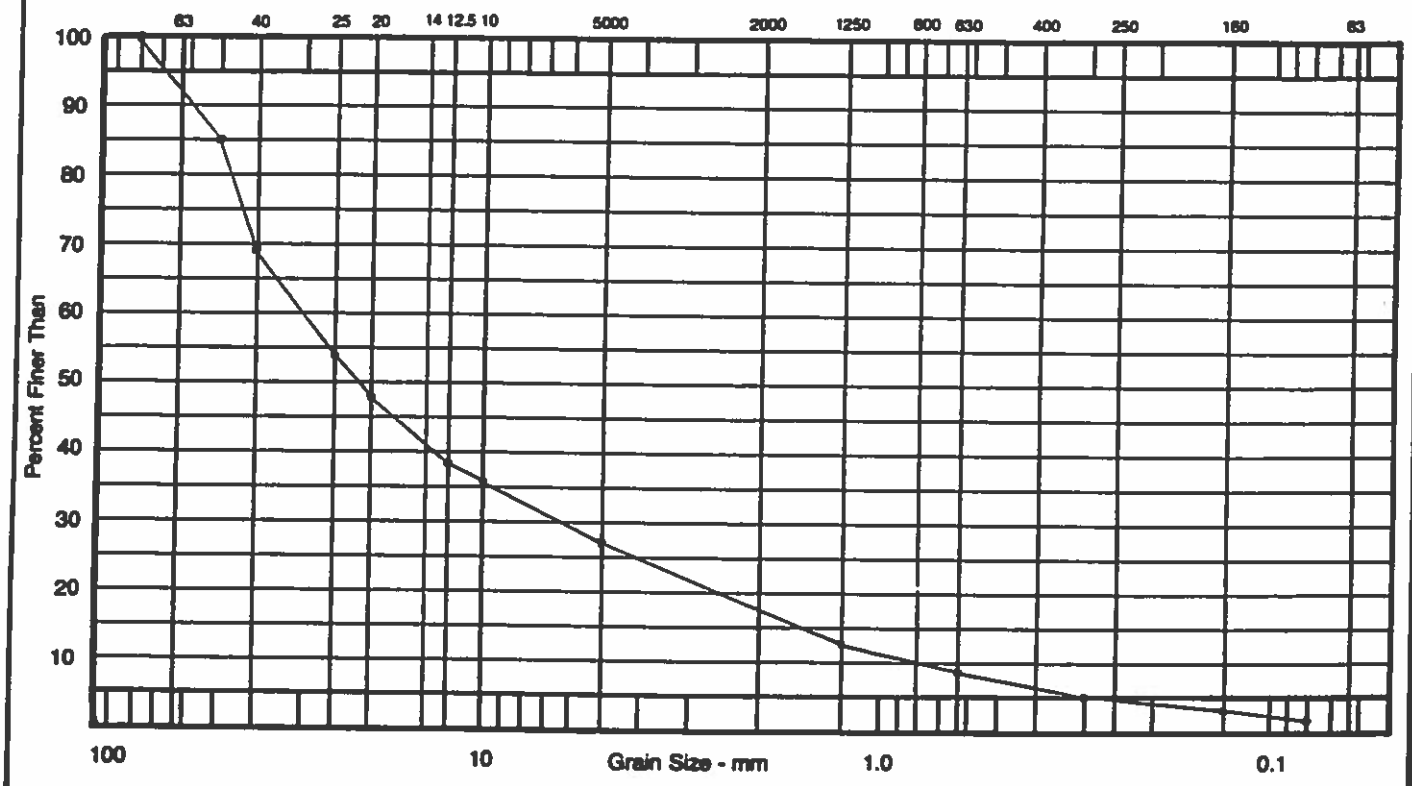
Remarks

Moisture : 3.0%

Gravel : 77.4 %

Sand : 20.7 %

Silt : 1.9 %



Area # 9 8002-234

HOGGAN ENGINEERING & TESTING (1980) LTD.

Photo # 2

Photo # 4

Photo # 1

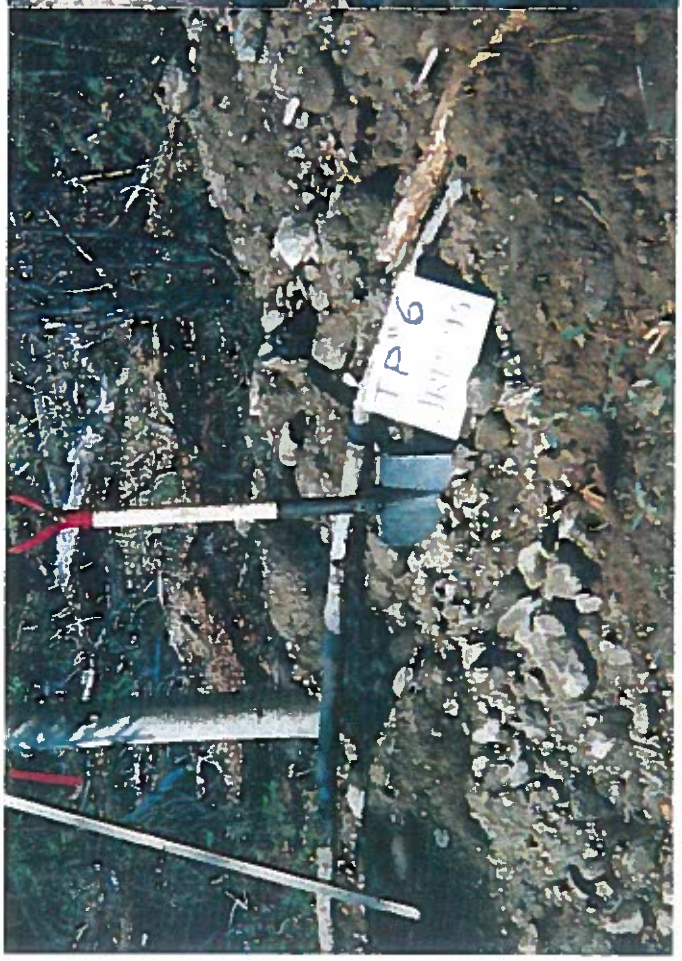


Photo # 3

Area # 9 8002-234

HOGGAN ENGINEERING & TESTING (1980) LTD.

Photo #6

Photo # 8

Photo #5

Photo #7

APPENDIX H
•Test Pit Logs On
Computer Diskette