INTERIM REPORT - PHASE III

WINTER DRILLING PROGRAM

DEPOSIT 155

COMMUNITY GRANULAR MANAGEMENT PLAN

TUKTOYAKTUK, N.W.T.

PROJECT NO. 86-9128A

Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

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TUKTOYAKTUK, N.W.T.
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Prepared For:

GOVERNMENT OF THE NORTHWEST TERRITORIES

DEPARTMENT OF PUBLIC WORKS, HIGHWAYS DIVISION

Yellowknife, N.W.T.

Prepared By:

Hardy BBT Limited

Calgary, Alberta

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1.0 INTRODUCTION

The following interim report provides details of the third phase of investigations to develop a community granular management plan for Tuktoyaktuk. The first two phases were completed in July and November 1986 respectively, and for which interim reports have already been submitted. This work has been performed in accordance with the terms of Contract No. 86.32.1D41 (259).

1.1 SCOPE OF WORK

The terms of reference for Phase III are as follows:

- Carry out a detailed field drilling and/or test pitting program as recommended at the completion of Phase II.

- Survey the location and elevation of the test holes and relate them to features readily identified on the air-photos.

- Run gradation tests, petrographic analyses and other tests on selected representative samples to confirm the quality of the material and its suitability for various community uses.

- Prepare ten copies of a brief report for each area investigated, summarizing the results of the field studies and laboratory testing, recommending uses for the material, giving proven quantities and indicating possible additional quantities yet to be proven.

- In a separate report, set out options regarding the twenty year supply of embankment material and surfacing material. All options must provide a minimum reserve of 400,000 m^3 of embankment material and 100,00 m^3 of surfacing material. Options for the supply of surfacing material may include the continued use of the Ya Ya Lakes deposit, or various methods of processing pit run material.

This report presents the results of the Phase III field drilling in Deposit 155. During the field program additional funds were made available from DIAND/DSS to conduct additional drilling (beyond the original scope) in order to prove out a greater volume of granular material and provide additional information on the nature of the deposit.

A report which discusses the various options for the community granular supply is presented under separate cover, and is entitled: "Phase III - Final Comparison of Potential Sources, Community Granular Plan, Tuktoyaktuk, N.W.T".

2.0 FIELD PROGRAM

2.1 LOCATION

Deposit 155 is located approximately 35 km to the southwest of Tuktoyaktuk (See Figure 1 - note all figures are presented at the end of the text). The deposit is situated about 10-15 km to the south and southeast of the abandoned settlement named Kittigazuit, which is on the mainland coast about 30 km west of Tuktoyaktuk.

The winter drilling program was concentrated on investigating two principal areas of Deposit 155, namely 155 North and 155 South. The relative locations of these areas are shown on Figure 2. Area 155 South is approximately four kilometers to the southeast of area 155 North.

2.2 EQUIPMENT AND METHODOLOGY

The winter drilling program was conducted in the period March 14-26, 1987, under the supervision of Hardy BBT Limited geologist, Mr. N. Mosley, P.Geol. The drilling sub-contractor was Midnight Sun Drilling Ltd., of Whitehorse, Y.T. who mobilized all necessary equipment, including a sled mounted "cat" camp, out of Inuvik on March 14. The mobile camp was in final position on March 15, approximately 2 km from the closest area to be investigated, and remained at this location until demobilization. Drilling commenced on March 16 using a CME 750 drill rig mounted on an all terrain vehicle. A 24 hour per day drilling operation was carried out in two 12 hour shifts, with a two man drill crew plus a geologist or senior technologist employed on each shift. Boreholes were drilled with 150-200 mm diameter solid stem augers and a 150 mm diameter CRREL core barrel. Auger cuttings and core runs were visually logged and representative samples retained and bagged for shipping to the Hardy BBT Calgary laboratory.

In addition to the two shifts of drill crew and geologist/technologist the project field team comprised a bulldozer operator, a Nodwell operator, a cook, a camp maintainance man, and a scout/bear monitor.

A total of 70 boreholes were drilled in the two principal areas of Deposit 155, i.e. 48 boreholes and 22 boreholes in the 155 North and 155 South areas, respectively. The borehole depths ranged from 1.8 m to 6.1 m, the completion depth being a function of: the absence/presence of potentially useful granular material; the thickness of overburden; the nature of the soils underlying useful granular material. The borehole logs are presented in Appendix "B". The locations and relative elevations of boreholes were surveyed only at the 155 North area, due to time constraints.

2.3 LABORATORY TESTING

A large number of samples were obtained during the drilling program and were sealed in plastic bags. The samples were shipped in insulated boxes to our Calgary laboratory where an extensive testing program was conducted, comprising: moisture content determinations, mechanical sieve analyses, salinity determinations, petrographic analyses, L.A. abrasion tests, and determinations of organic impurities. The laboratory test results are presented on the borehole logs (Appendix "B") or in Appendix "C."

3.0 GEOTECHNICAL EVALUATION OF DEPOSIT 155

3.1 GEOLOGIC SETTING

Both areas 155 North and 155 South occur adjacent to and west of Kittigazuit Creek which occupies a well defined, major glacial meltwater channel in the region. The 155 North area is very flat and has the appearance of a glaciofluvial terrace or outwash plain. Localised mounds or kames of granular

material occur adjacent to the terrace/plain, generally at higher elevations.

The 155 South area comprises a number of broad, often flat topped, ridges which occur either side of a drowned meltwater channel, aligned northwest-southeast (sub-parallel to Kittigazuit Creek). Their location suggests these granular deposits represent either glaciofluvial terraces associated with the meltwater channel, or kame terraces (ice contact) deposited from melting glacial ice bordering the meltwater channel.

3.2 EVALUATION OF GRANULAR MATERIAL QUALITY

The quality of granular materials encountered during the field program have been evaluated primarily according to their gradation. Each sample subjected to a mechanical sieve analysis has been categorized according to the modified Unified Soil Classification scheme. This has then been related to a classification scheme developed by DIAND for regional granular resource evaluations. The DIAND scheme has been adapted to reflect general requirements of the AASHTO specifications for soils and soil-aggregate mixtures for highway construction purposes i.e. embankments, subgrades, sub-bases, base and surface courses. A summary of the adapted classification scheme used in this study is presented in Table 1. In addition to the gradation of the granular materials, attention has also been given to other factors, such as: moisture (ice) content and petrography.

TABLE 1

TUKTOYAKTUK GRANULAR MANAGEMENT PLAN
CLASSIFICATION OF GRANULAR MATERIALS

Source Quality Description	General Description of Material	Minimum Technical Identification Parameters	Suggested Uses of Materials
(1) Excellent	Well graded gravels and sands suitable for use as aggregates with a minimum of processing. <5% fines	Petrographic Number - 160 max. Los Angeles Abrasion Loss - 35% max. Soundness Loss (Magnesium Sulphate) - 12% max. and meeting other requirements of CSA A23.1 - 1973	Portland Cement Concrete, Asphaltic Concrete, Masonry Sand, Concrete Block, Surface Treatment and Roofing Aggregate.
(2) Good	Graded sands and gravels with varying quantities of silt. <10% fines	Petrographic Number - 200 max. Los Angeles Abrasion Loss - 60% max. Fines greater than 10% passing the 200 sieve can be removed with minimum of processing	Granular base and subbase. Winter sand backfill for trenches and slabs. Pads for structures.
(3) Fair	Poorly graded sands and gravels with or without substantial silt content. <20% fines	Petrographic Number - 250 max. Can be processed to meet local frost susceptibility criteria	Granular subbase. General backfill material, pads for equipment.
(4) Poor	Poorly graded granular soils of high silt content, possibly containing very weak particles and deleterious materials. >20% fines	Nil	General non-structural fill.

NOTE: Based on classification developed by DIAND

Moisture content ideally <10%; if moisture content 10-20%, requires drying before use.

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Four classes of granular material are defined for this study; the following comments on each are applicable to the objectives of the study:

Class 1 Granular Material:

Class 1 material is well graded with a low fines content, and comprises hard and durable particles. Consequently it is suitable for use as aggregate (concrete/asphalt) after some (minimal) processing. Such material is considered to be of too high a quality (and too scarce in the Tuktoyaktuk region) for use in highway construction, and should be reserved as a source of aggregate.

Class 2 Granular Material:

Class 2 material is similar to Class 1 but is of lower quality due to somewhat poor grading, less durable particles and a higher fines content. With processing it may be upgraded to aggregate quality. Class 2 material may be used in highway construction as granular base and sub-base material, but may be more prudently reserved as a source of lower quality aggregate or structural fill.

Class 3 Granular Material:

Class 3 material generally comprises poorly graded sands and gravels with low to high fines content, but less than 20% fines. It can be processed to reduce frost susceptibility to an acceptable level where the fines content is high. The presence of moderate amounts of fines makes it ideal as a surface course material which requires the presence of a

binding component in the gradation. In addition this material may be used as general fill for embankment construction.

Class 4 Granular Material:

Class 4 material comprises poorly graded granular soils with substantial (greater than 20%) fines content. This material is generally acceptable only for use as a non-structural fill.

3.3 DEPOSIT 155 NORTH

Investigation of this deposit was undertaken in four distinct areas which are separated from each other by drainage ways and small lakes/ponds. The four areas have been designated A, B, C and D as illustrated on Figure 3, which shows the locations of boreholes and geologic sections. A total of 48 boreholes were drilled in Deposit 155 North with the following distribution:

Area A - 32 boreholes

Area B - 8 boreholes

Area C - 5 boreholes

Area D - 3 boreholes

The relative elevations of boreholes in Areas A and B were surveyed relative to BH 155N-10 which is taken as elevation 100.00 m. BH 155N-10 is approximately 8 m above the surface of the adjacent small triangular lake (see Figure 3).

Granular material of variable quality was found to underlie most of Areas A and B. However, Areas C and D apparently

contain only thin patches of granular material of limited extent. Hence in terms of potential granular borrow material Areas C and D have been eliminated from further consideration. It is not felt that any other significant deposits of granular material occur adjacent to 155 North, based upon airphoto interpretation.

Three geologic sections A-A', B-B' and C-C' have been prepared through areas A and B to illustrate the stratigraphic variation. These sections are presented as Figures 4, 5 and 6 respectively.

It may be appreciated from the geologic sections that a relatively simple, three layer stratigraphy is present in areas A and B. The upper unit (or overburden) generally comprises peat and silt. The middle unit comprises sands and gravels with variable fines content; this is the layer of potential borrow material. The lower unit comprises uniform fine sand which occasionally contains bodies of massive ice; this fine sand is not considered as part of the potential borrow material.

The following sections discuss the nature of the materials in each of the three broad units as identified above.

3.3.1 Overburden

The overburden in Areas A and B comprises peat, silt and fine sand; the latter materials generally being interlayered with or underlying the peat. The thickness of overburden varies across the two areas from just a few centimetres of organic mat to about 1.5 m (the maximum encountered at any borehole

location). Figure 7 presents overburden isopachs for Areas A and B which have been generated from the borehole data. In Area A the overburden thickness increases from north to south across the area. Overburden is generally less than 0.5 m in the northern portion of Area A and increases to about 1.5 m in the south. In Area B the overburden is generally quite thin (less than 0.5 m) except for an area in the northwest part which is up to 0.9 m thick.

Excess ice is present in the overburden materials. The peat deposits typically contain random ice veins and layers with 30-70% excess ice. This is reflected in the moisture contents which range from 70% to about 180%. The silt and fine sand materials are usually hard bonded and occur with non-visible excess ice and stratified lenses of ice with some random ice veins (i.e. 10-50% excess ice). The moisture contents of these soils range from about 15% to 75%.

3.3.2 Granular Material (Potential Borrow)

The middle unit of granular material is quite variable both vertically and laterally, as can be seen on the geologic sections (Figures 4, 5 and 6). However, some distinction can be made between predominantly sandy layers/lenses on one hand, and predominantly gravelly or sand-and gravel (roughly equal amounts) layers on the other hand. Hence, some correlation between boreholes is possible, which gives an indication of the internal structure of the granular units.

The thickness of the granular unit varies from a minimum of 0.6 m up to a maximum of 2.9 m, as encountered at borehole locations. Figure 8 presents granular material isopachs for

Areas A and B, which have been generated from the borehole data.

In Area A the granular unit is thickest in the south part, approximately coincident with the thickest overburden. However, there are areas of relatively thick (i.e. greater than 2.0 m) granular material along the north edge where the overburden is minimal (i.e. up to 0.3 m thick). In Area B the granular material thickness is quite consistent (1.4-1.8 m) except for an area in the northwest part where it is up to 2.2 m thick. This thicker area is again partly coincident with the area of thicker overburden. The average thickness of granular materials in Areas A and B are 1.6 m and 1.8 m respectively.

The granular materials range from well graded gravels and sands through poorly graded silty sands and gravels to silty and clayey sands. The gravel content varies from as low as 14% up to about 85-90%; however, this high value may not be representative due to the possible segregation of dry friable sand during augering, and a value of 60-65% may be more realistic. The gravel is sub-angular to rounded with a typical maximum size of 50-75 mm, however occasional cobble sizes (75-200 mm) were encountered in some boreholes.

Petrographic analyses of a number of samples indicate that 60-80% of the gravel is composed of quartzite, sandstone or siltstone, which are strong and durable. This is confirmed by the L.A. Abrasion test results in which only 21-22% loss of mass was experienced.

The fines content is highly variable ranging from 5% to 28%; the average fines content is about 15%. Grain size curves of the granular material encountered in the majority of boreholes in Areas A and B, are included in Appendix "C".

Preliminary determinations of pore water salinity for several samples indicate consistently low results (see Appendix "C"). The measured salinity will probably have no impact upon the intended use of these materials for road embankment and surfacing.

The majority of granular material encountered in the boreholes falls into the Class 3 category, however, a number of boreholes (1, 5, 11, 18, 20 and 30) encountered Class 2 material. Class 4 material occurs in nine boreholes where the proportion of fines exceeds 20%. The fines content in the Class 4 material ranges from 20-28%, with an average of 22%. Hence the Class 4 material is infact very close to the Class 3 category. Figure 9 shows the distribution of various granular material classes within Areas A and B. This map was generated on the basis of the predominant granular material class encountered at each borehole.

Preliminary estimates of the volumes of various granular material classes in Areas A and B have been prepared by assuming an average material thickness over each area. These volume estimates are summarized in Table 2.

Some excess ice is present in the granular unit. Its occurrence is related to overburden thickness, material gradation and depth. Typically in the coarser materials with relatively low fines content, an upper friable zone overlies

TABLE 2: DEPOSIT 155 NORTH - SUMMARY OF GRANULAR MATERIAL VOLUMES

Area	Average Material Thickness (m)	Granular Material Class	Estimated Volume m^3
A	0.9 - 2.8	2	32,000
A	1.6	3	240,000
A	1.2	4	19,000
B	2.2	2	15,000
B	1.7	3	72,000
B	1.5	4	10,000

Class 2 Total	47,000 (12%)
Class 3 Total	312,000 (80%)
Class 4 Total	29,000 (8%)
Total 155 North	388,000 m^3

frozen bonded material with no visible ice or some ice coatings and ice crystals, amounting to 5-10% excess ice. The friable zone probably represents the active layer which has seasonally thawed and drained. The average friable zone thickness is about 0.5 m (±0.5 m). There is some general correlation with overburden thickness as follows:

Overburden Thickness (m)	Friable Zone Thickness (m)
0 - 0.2	0.3 - 1.8
0.2 - 0.5	0.3 - 0
> 0.5	0.1 - 0

* easiest

However, there are a number of exceptions to this relationship.

Occasionally, there are "icy" zones in the coarser material with visible ice crystals and ice veins, which contain an estimated excess ice content of 10-20%. Typical moisture contents for the coarser material range from 3% to 18% (average 11%), the lower values corresponding with low fines content.

The finer, sandy materials are very similar to the coarse material, with a friable zone often overlying a frozen bonded zone with a visible excess ice crystals/coatings content of 5-10%. Typical moisture contents for the sandy materials range from 7% to 20%, with an average of 11%.

3.3.3 Underlying Sand

The majority of boreholes in Areas A and B penetrated the granular unit and encountered underlying uniform fine sand which is frozen and hard bonded. The contact between these two units is generally very sharp and is considered to be an erosional boundary i.e. part of the uniform fine sand unit was eroded during or prior to deposition of the granular unit. The fine sand was generally proven to a depth of 1.5-2.0 m below the contact.

The sand is very consistent in gradation and typically comprises 91-93% fine sand (with a trace of medium grained sand), the remaining 7-9% being silt. A number of grain size curves are included in Appendix "C". Occasional laminations of grey silt occur within the sand which indicate a gentle depositional dip (stratification). The sands are interpreted to be pre-glacial Mackenzie delta deposits, on this basis.

Some excess ice is present in the sand. The sand is hard bonded, often with no visible ice or ice coatings on the particles. Occasional zones have stratified ice lenses, random ice veins, and ice crystals. The excess ice content is estimated to be about 10-15%. The sand moisture content is very constant, ranging from 23-27%.

Some massive ice was encountered within the fine sand unit and directly underlying the granular unit. It occurs as thin layers within the sand to thick ice bodies which contain lenses and patches of sand. Potentially thick massive ice was encountered only in four boreholes in Areas A and B. The total thickness of ice at these locations was not proved,

however ice is at least 2.9 m thick at one location (BH 155N-20).

3.4 DEPOSIT 155 SOUTH

Five separate areas, designated E, F, G, H and I were investigated in this deposit. These ridge features surround a drowned meltwater channel feature as illustrated on Figure 10, which also shows the locations of boreholes and geologic sections. A total of 22 boreholes were drilled in the deposit with the following distribution:

Area	Number of Boreholes
E	4
F	5
G	7
H	2
I	4

Granular material of variable quality was found to underlie parts of all these areas, hence they are all potential sources of granular borrow. Based on airphoto interpretation it is felt that further extensive areas of granular material are located southeast of Area H (see Figure 2). Additional volumes of granular material (up to 50-60% of that proven in 155 South) are estimated to be available here. Due to time constraints these areas could not be drilled during this program.

Four schematic geologic sections (A-A' to D-D') have been prepared to illustrate the interpreted stratigraphy within the

ridge features. These sections are presented as Figures 11, 12, 13 and 14 respectively, and it should be noted that they are schematic only as there is no topographic or vertical control on the borehole locations.

It may be appreciated from the schematic geologic sections that the stratigraphy is similar to that in Deposit 155 North, but slightly more complex. Generally, there is a three layer situation comprised of overburden, granular unit and underlying sand or massive ice. The following sections discuss the nature and distribution of materials in each of these three units.

3.4.1 Overburden

The overburden materials encountered in Deposit 155 South comprise peat, silt, clay and fine sand. Peat generally forms the surface material and is underlain by the other soils. The overburden thickness is quite variable across Deposit 155 South and tends to be thickest at the north end i.e. Areas E and I. In Areas F, G and H the overburden is generally minimal, being a thin (0.1-0.2 m) organic mat or layer of peat directly overlying granular material.

In Areas E and I the overburden varies from 0.15-2.1 m in thickness. The thicker areas include silt, clay and fine sand, whereas in thinner areas the overburden is just peat. Excess ice in the peat occurs as random ice veins and ice crystals, with excess ice contents between 20-70%. Excess ice in the silt, clay and fine sand generally occurs as stratified ice lenses with some random ice veins; the excess ice content ranges between 20-60%.

3.4.2 Granular Material (Potential Borrow)

The unit of granular material is quite variable both vertically and laterally, particularly in the northern part of Deposit 155 South. In the south part the stratigraphy is more consistent. Distinction can be made between predominantly sandy layers and predominantly gravelly layers as illustrated on the geologic sections (Figures 11-14).

The thickness of the granular unit varies from a minimum of 1.4 m up to a maximum of greater than 3.9 m, as encountered at borehole locations. The thickness of the granular unit at each borehole location is included on Figure 15.

The granular materials encountered in Deposit 155 South range from well graded and poorly graded gravels and sands to silty sands with some gravel. The gravel content varies from as low as 7% (one sample only) up to about 88%. The gravel is sub-angular to rounded with a typical maximum size of 50-75 mm. Occasional cobbles were encountered at some locations. Petrographic analyses of a number of samples indicate that about 80% of the gravel is composed of quartzite, sandstone and siltstone (plus some crystalline rocks) which are strong and durable. This is confirmed by the L.A. Abrasion test results in which only 19% loss of mass was experienced.

The fines content is variable, ranging from 4% to 28%, with an average of about 10%. Grain size curves of the granular materials encountered in Deposit 155 South are included in Appendix "C".

Salinity determinations of pore water for several samples indicate generally low results with one exception (see Appendix "C"). The higher result is thought to be due to the relatively high fines content (25%) in this sample. The measured salinity will probably have no impact upon the use of these materials for embankment fill. However, further analysis may be required for use as aggregate.

The majority of granular material in Deposit 155 South falls into the Class 2 category, which makes up the majority of Areas F, G and H. Figure 15 illustrates the distribution of granular material classes within the deposit. Relatively small volumes of Class 3 material make up the remainder of F, G and H. Areas E and I are comprised mainly of Class 3 and 4 material, although the southern end of Area I is predominantly Class 2 material. In terms of exploiting the granular materials, Areas E and I are less favourable due to the overburden thickness.

Preliminary estimates of the volumes of various granular material classes in each area have been prepared by assuming an average material thickness over each area. These volume estimates are summarized in Table 3.

Excess ice is present in the granular materials. Similar to Deposit 155 North, excess ice occurrence is related to overburden thickness, material gradation and depth. However, in this case the topographic relief plays a role as it encourages drainage of the thawed active layer. Consequently, the coarser materials typically have a relatively thick upper friable zone which often overlies a frozen, partially bonded zone with no visible ice or some ice coatings and ice

TABLE 3: DEPOSIT 155 SOUTH - SUMMARY OF GRANULAR MATERIAL VOLUMES

Area	Average Material Thickness (m)	Granular Material Class	Estimated Volume m^3
E	3.0	3	134,000
E	1.5	4	13,000
F	2.0	2	80,000
F	2.5	3	20,000
G	1.5 - 2.5	2	132,000
G	1.5	3	11,000
H	2.0	2	56,000
I	1.0	2	15,000
I	2.0	3	54,000

Class 2 Total	283,000	(55%)
Class 3 Total	219,000	(43%)
Class 4 Total	13,000	(2%)
Total 155 South	515,000 m^3	

crystals. The average thickness of the friable zone is 1.1 m (±0.3 m). A similar general correlation with overburden thickness (as for 155 North) is noted as follows:

Overburden Thickness (m)	Friable Zone Thickness (m)
0 - 0.2	0.3 - 1.6
0.2 - 0.5	0.3 - 0
>0.5	0

There are fewer exceptions to this relationship than in the similar relationship for 155 North.

The excess ice content in these materials is estimated to be about 5-10%. Typical moisture contents for these coarser materials with low fines content range from 4-10%.

The finer, sandy materials are very similar to the coarse materials, particularly where the overburden is thin i.e. the sands are friable to bonded. Where the sand is bonded there may be no visible ice or visible ice coatings/crystals i.e. excess ice content about 5-10%. The fines content of these materials is typically in the range 8-16%, and typical moisture contents range from 8-17%. Where the overburden is thicker (eg. Area I) the sandy materials often contain excess ice in the form of visible stratified ice lenses and random ice veins. The excess ice content in these is estimated to be in the range 10-30% and typical moisture contents range from 12% to 22%.

3.4.3 Underlying Sand

The majority of boreholes which penetrated the granular unit in Deposit 155 South encountered underlying uniform fine sand, which is frozen and hard bonded. However, in many cases massive ice was encountered within the fine sand unit or directly beneath the granular unit. The fine sand or massive ice was proved to a depth of 0.7-3.7 m below the contact with the overlying granular unit.

The sand is very similar to that encountered at Deposit 155 North, with a gradation which comprises 84-94% fine sand (trace of medium sand) and 6-16% silt. A number of grain size curves are included in Appendix "C". Excess ice present in the sand occurs as ice coatings, stratified ice lenses and random ice veins. Generally the excess ice content is about 10-15%, but in some ice-rich zones it can be about 20-50%.

Potentially thick massive ice was encountered in ten of the boreholes such that substantial massive ice is suspected to underlie all areas. Only in Area H was there no massive ice encountered. It is apparent that most of the ridge features comprising Deposit 155 South, contain a core of massive ice. The total thickness of massive ice was not proved at any location, however, the ice is at least 3.7 m thick at BH 155S-8.

4.0 SUMMARY AND CONCLUSIONS

The two principal deposits of Source 155 i.e. 155 North and 155 South have been investigated in detail and proven to contain substantial quantities of Class 2 and Class 3 granular

material. A total volume of about 860,000 m^3 of fair to good quality material is estimated to be contained in this source. In addition, another 200,000 to 300,000 m^3 of granular material probably occurs adjacent to 155 South.

Deposit 155 North is the closest to Tuktoyaktuk, involving some 40 km of ice road and about 5 km overland. Due to the level topography thawing and drainage has not been so extensive as at 155 South. This is reflected in the thinner friable zone at 155 North. Hence, effective drainage during exploitation will be an important aspect to developing 155 North. In addition, excavation at 155 North will likely be more difficult, due to the greater difficulty to thaw and drain the material.

Access to Deposit 155 South involves another 3 km of overland travel beyond 155 North, but it contains granular material of better overall quality. In addition, there are expected to be significant quantities of similar granular material adjacent to those areas already investigated. The presence of potentially large bodies of massive ice in 155 South will require some consideration with respect to its successful exploitation. It may be difficult to extract all the granular material, as some may become submerged in thaw ponds. The formation of thaw ponds is assumed to be environmentally acceptable provided development is managed such that siltation of existing water bodies is kept to an absolute minimum.

Deposit 155 South is considered to be generally of superior quality for embankment material, and therefore probably should not be developed as a source for Tuktoyaktuk. However,

Deposit 155 North constitutes granular material which is suitable for embankment and surfacing material; and therefore should be seriously considered as a source for Tuktoyaktuk.

PERMIT TO PRACTICE
HARDY BBT LIMITED
Signature _____
Date _____
PERMIT NUMBER: P 4546
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Respectfully submitted

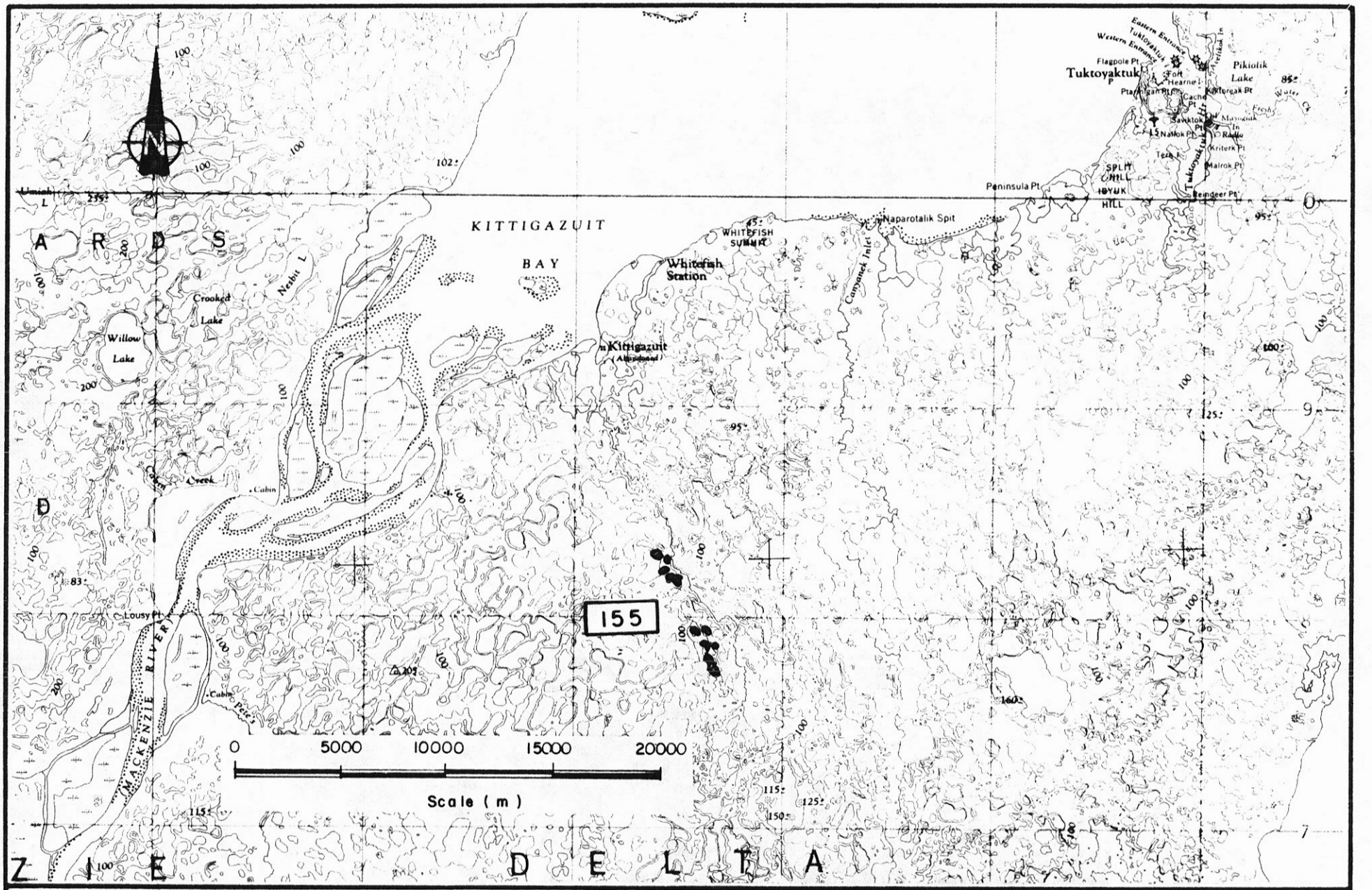
Hardy BBT Limited

Per:

N.G. Mosley, M.Sc., P.Geol.

Reviewed by:

A.J. Hanna, M.A.Sc., P.Eng.



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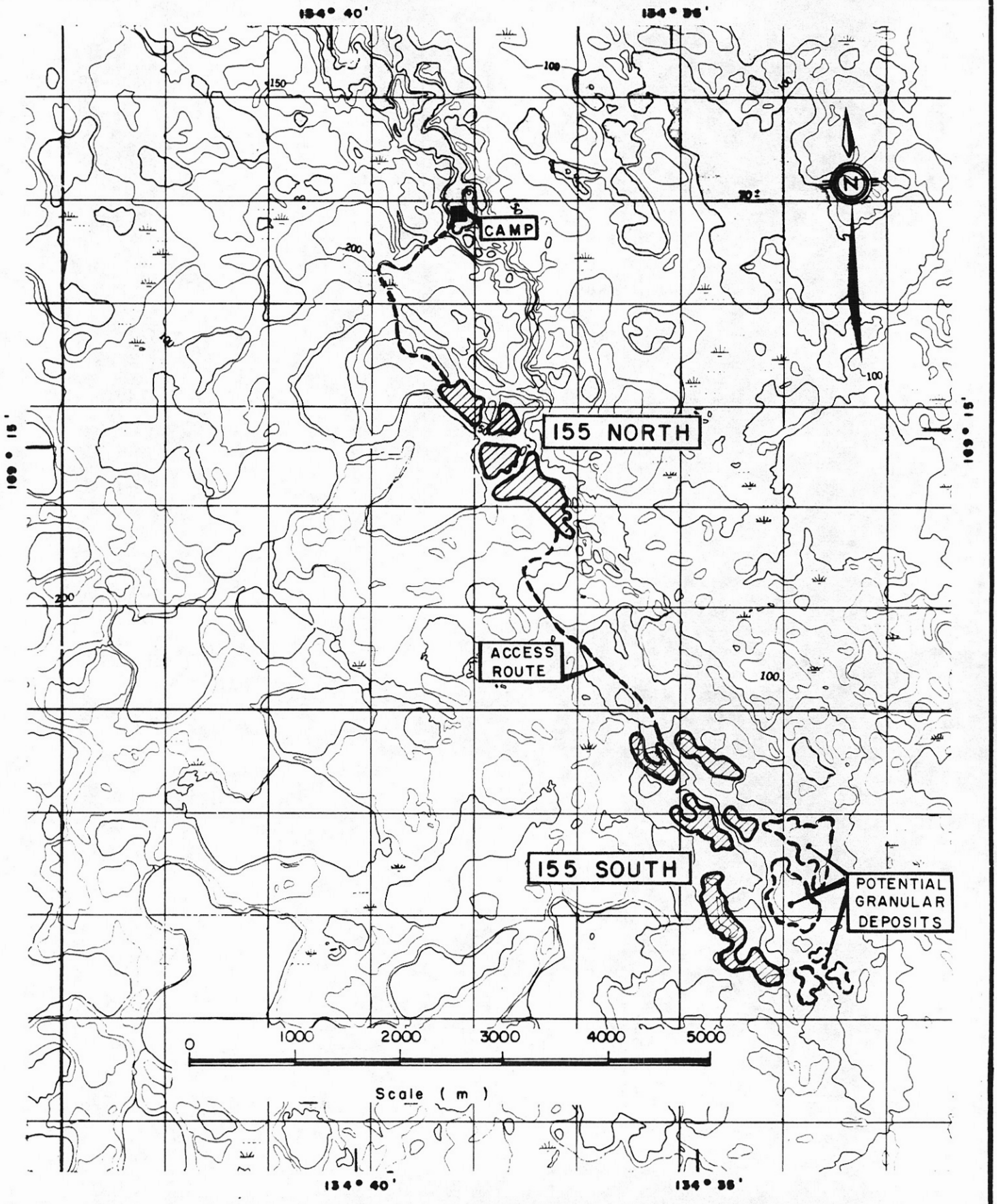
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

KEY LOCATION PLAN
DEPOSIT 155

CG 14096

FIGURE 1

HT84-82/03



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COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

LOCATION OF DEPOSITS
155 NORTH AND 155 SOUTH

CG14096 FIGURE 2

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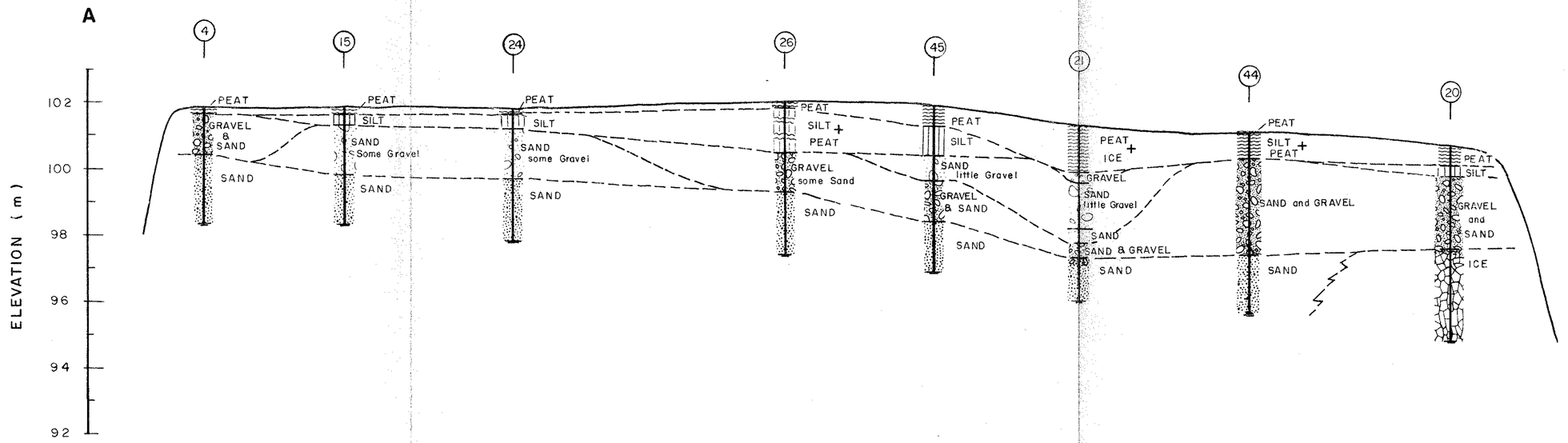
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT 155 NORTH
LOCATION OF BOREHOLES AND
GEOLOGIC SECTIONS

CG14096 FIGURE 3



SECTION A - A'

Scales: Horiz. 1 : 1500 (Exagg. 15x)

Vert. 1 : 100

0 50 100

NOTE: Data concerning the various strata have been obtained at the borehole locations only. The soil stratigraphy between boreholes has been inferred from geological evidence and so may vary from that shown.

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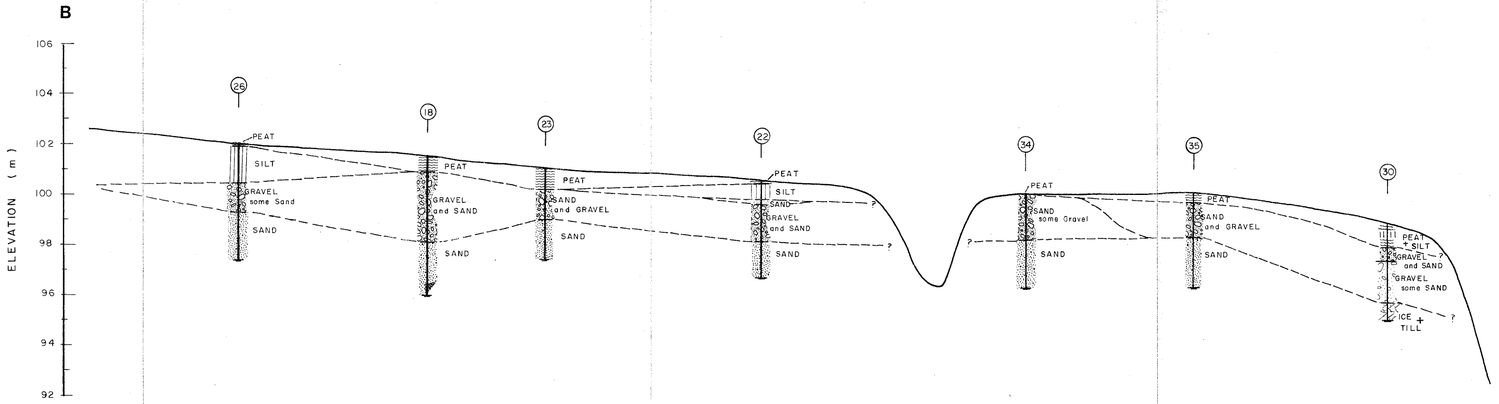
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT 155 NORTH
GEOLOGIC SECTION A - A'

CG14096 FIGURE 4



SECTION B - B'

Scale : Horiz. 1 : 1500

Vert. 1 : 100 (Exagg 15 x)

0 50 100

Scale (m)

NOTE: Data concerning the various strata have been obtained at the borehole locations only. The soil stratigraphy between boreholes has been inferred from geological evidence and so may vary from that shown.

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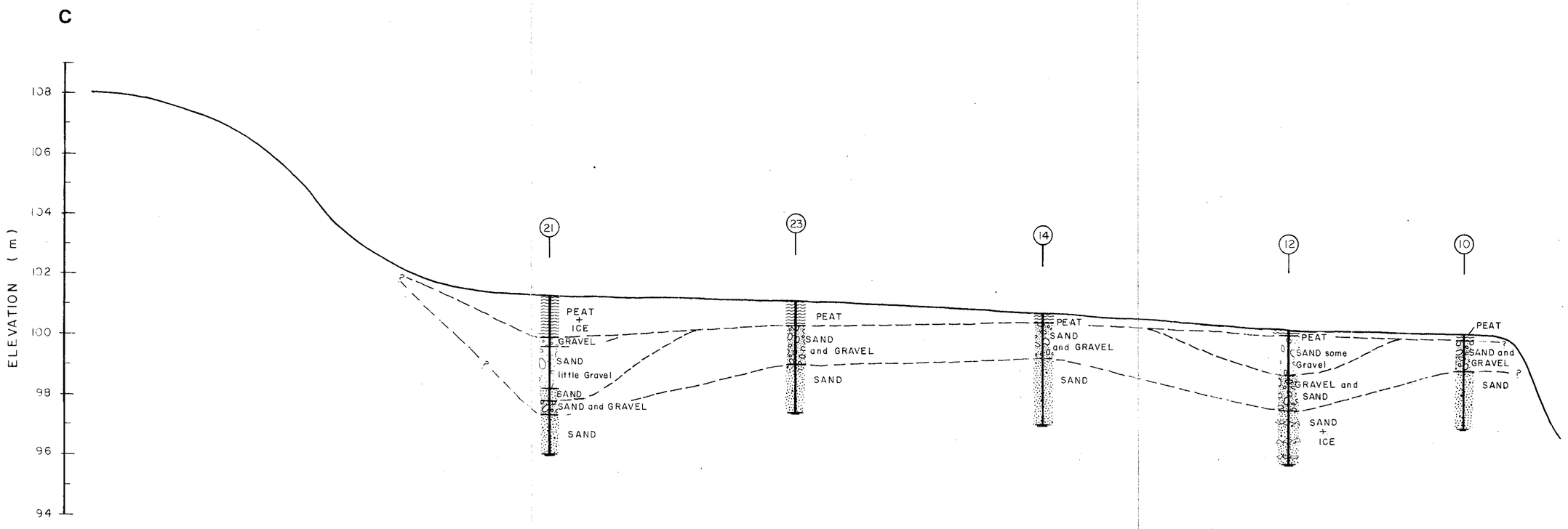
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

DEPOSIT 155 NORTH
GEOLOGIC SECTION B - B'

CG14096

FIGURE 5



SECTION C - C'

Scales : Horiz. 1 : 1500
(Exagg 15 x)
Vert : 1 : 100

0 50 100
Scale (m)

NOTE: Data concerning the various strata have been obtained at the borehole locations only. The soil stratigraphy between boreholes has been inferred from geological evidence and so may vary from that shown.

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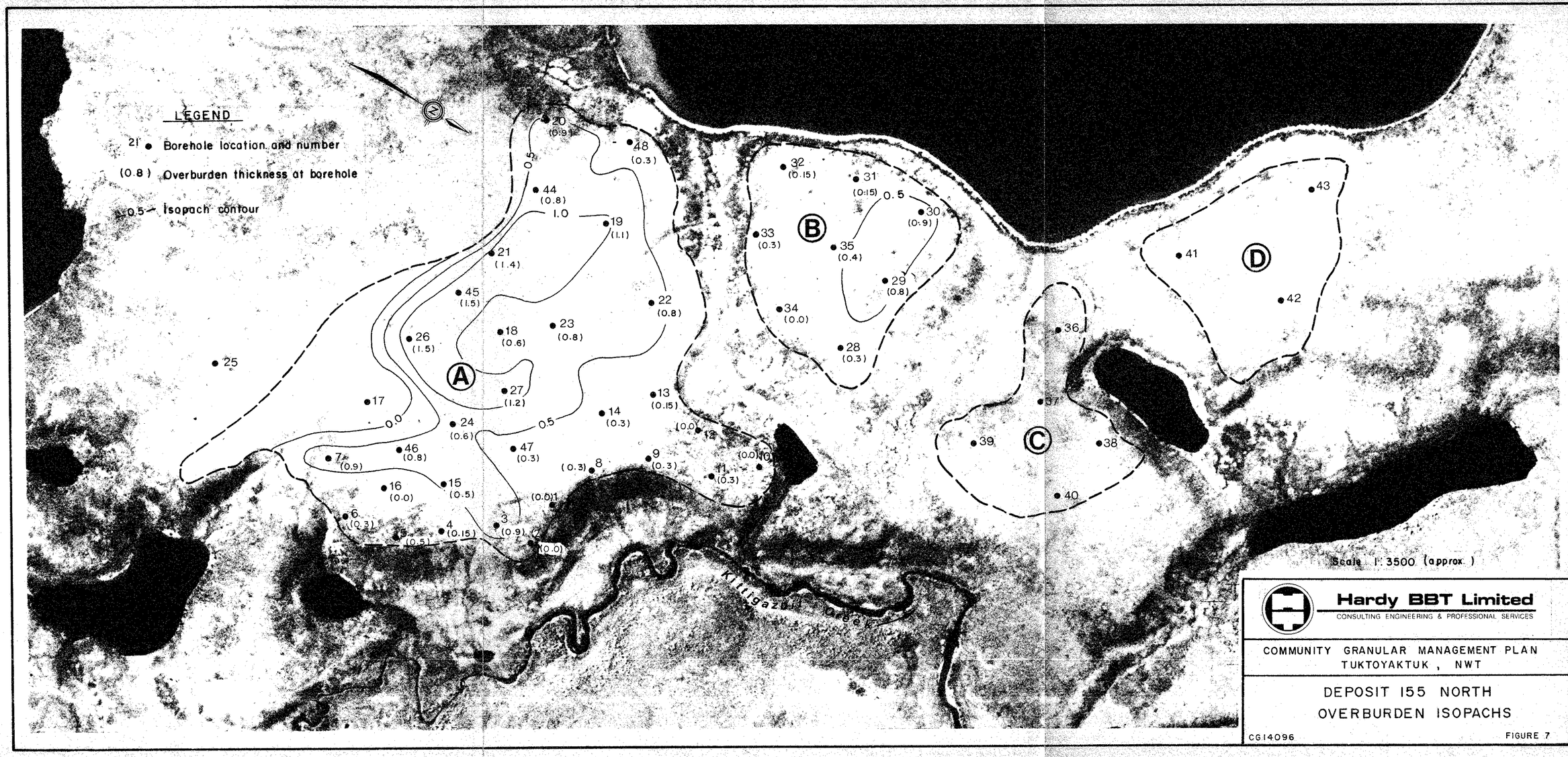
DEPOSIT 155 NORTH
GEOLOGIC SECTION C - C'

CG 14096 FIGURE 6



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COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT 155 NORTH
OVERBURDEN ISOPACHS

CG14096

FIGURE 7


LEGEND
21 Borehole location and number
(1.8) Thickness of granular material (Potential borrow)
1.5 Isopach contour
A
B
C
D
25,000m³
Kittigazuit Creek
Scale 1 : 3500 (approx.)
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COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT
DEPOSIT 155 NORTH
GRANULAR MATERIAL ISOPACHS
(POTENTIAL BORROW)
CG 14096
FIGURE 8

LEGEND

- 2 CLASS 2 GRANULAR MATERIAL
- 3 CLASS 3 GRANULAR MATERIAL
- 4 CLASS 4 GRANULAR MATERIAL

NOTE: This map is generalized to illustrate the distribution of material classes based on the predominant material encountered at each borehole location.

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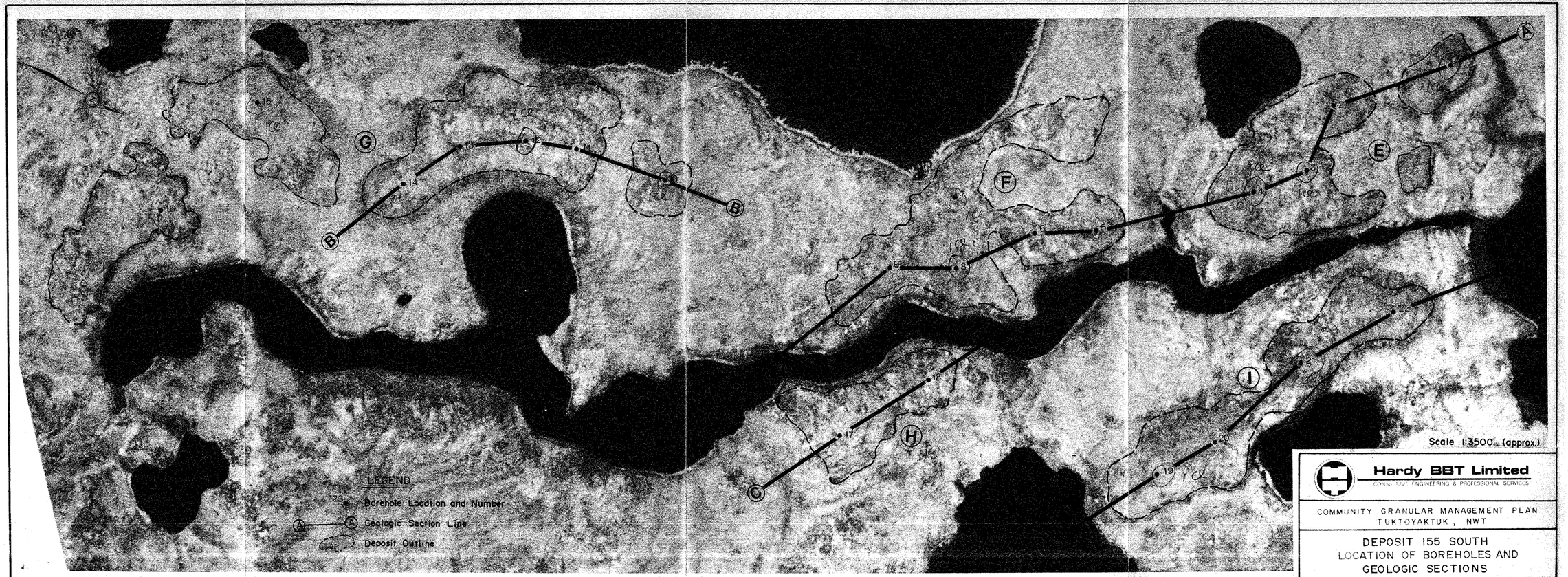
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT I55 NORTH
DISTRIBUTION OF
GRANULAR MATERIAL CLASSES

CG14096 FIGURE 9



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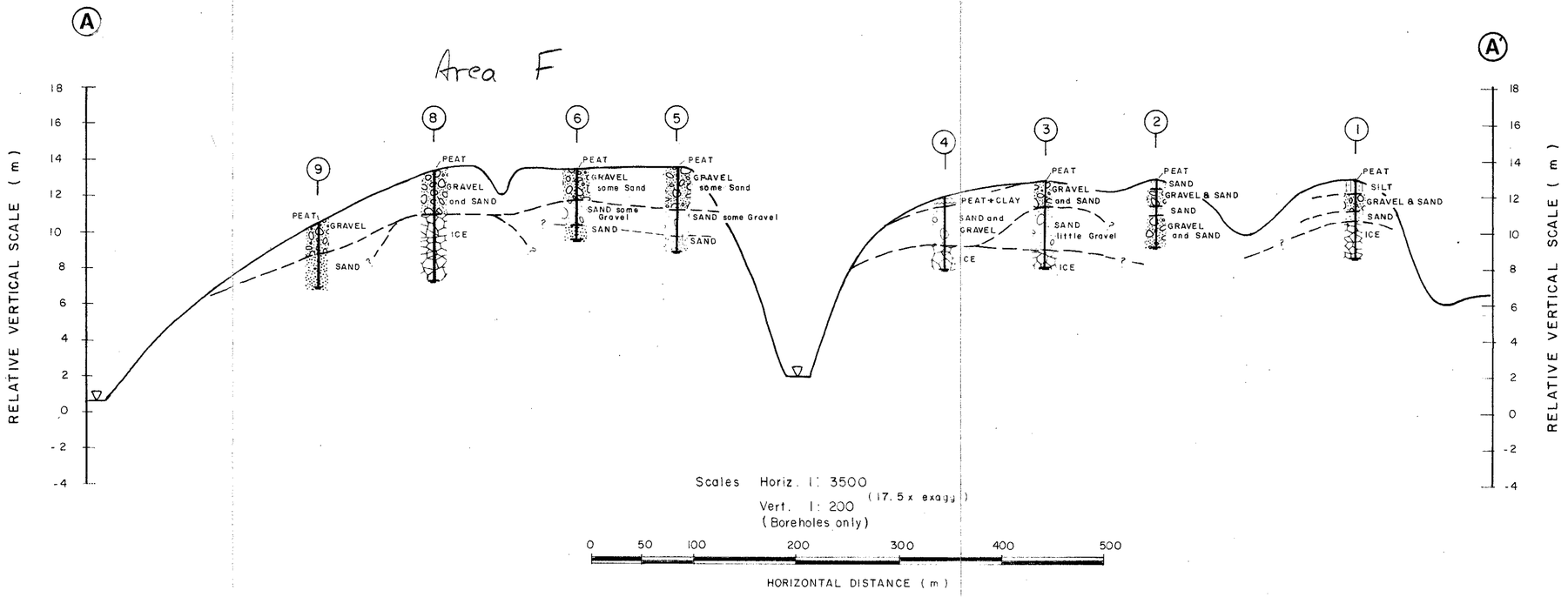
COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT 155 SOUTH
LOCATION OF BOREHOLES AND
GEOLOGIC SECTIONS

CG 1409-6

FIGURE 10



Note: Vertical profile is schematic only. Topography and relative elevations of boreholes are unknown

NOTE: Data concerning the various strata have been obtained at the borehole locations only. The soil stratigraphy between boreholes has been inferred from geological evidence and so may vary from that shown.

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

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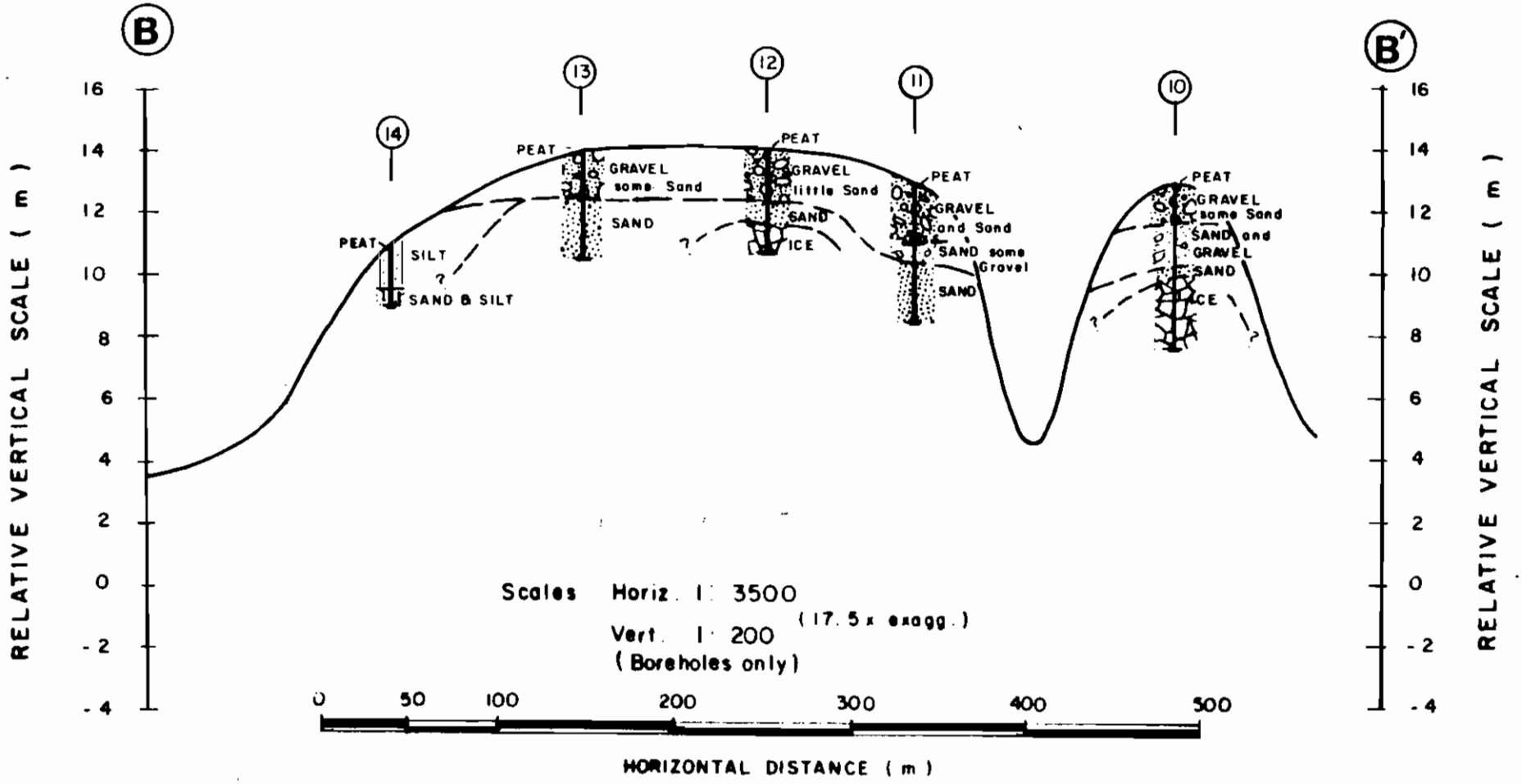
DEPOSIT 155 SOUTH
SCHEMATIC GEOLOGIC SECTION A - A'

CG 14096 FIGURE 11



Note: Vertical profile is schematic only. Topography and relative elevations of boreholes are unknown

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

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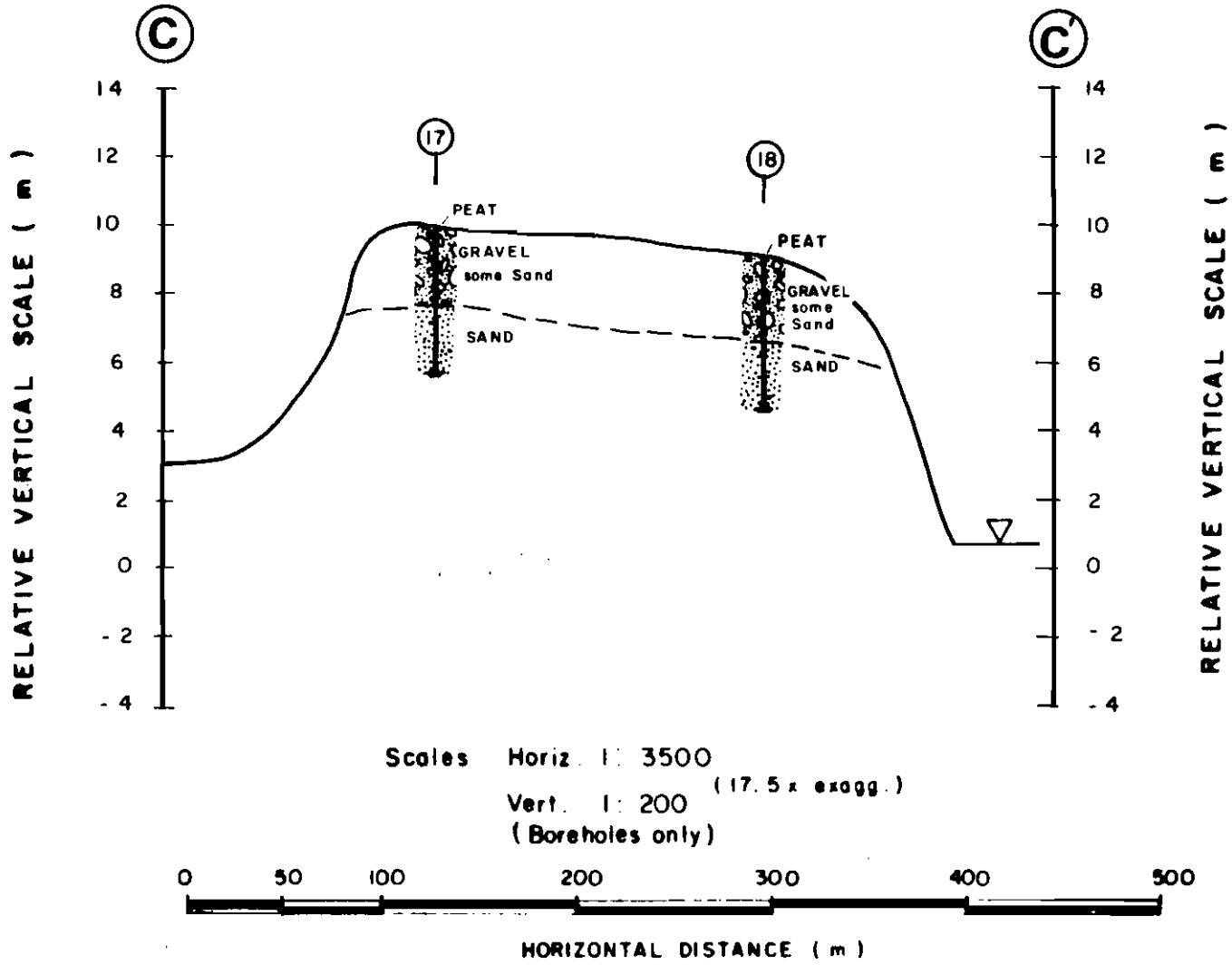
DEPOSIT 155 SOUTH
SCHEMATIC GEOLOGIC SECTION B - B'

CG 14096

FIGURE 12

HT84-82/03



Note: Vertical profile is schematic only.
Topography and relative elevations of boreholes are unknown

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

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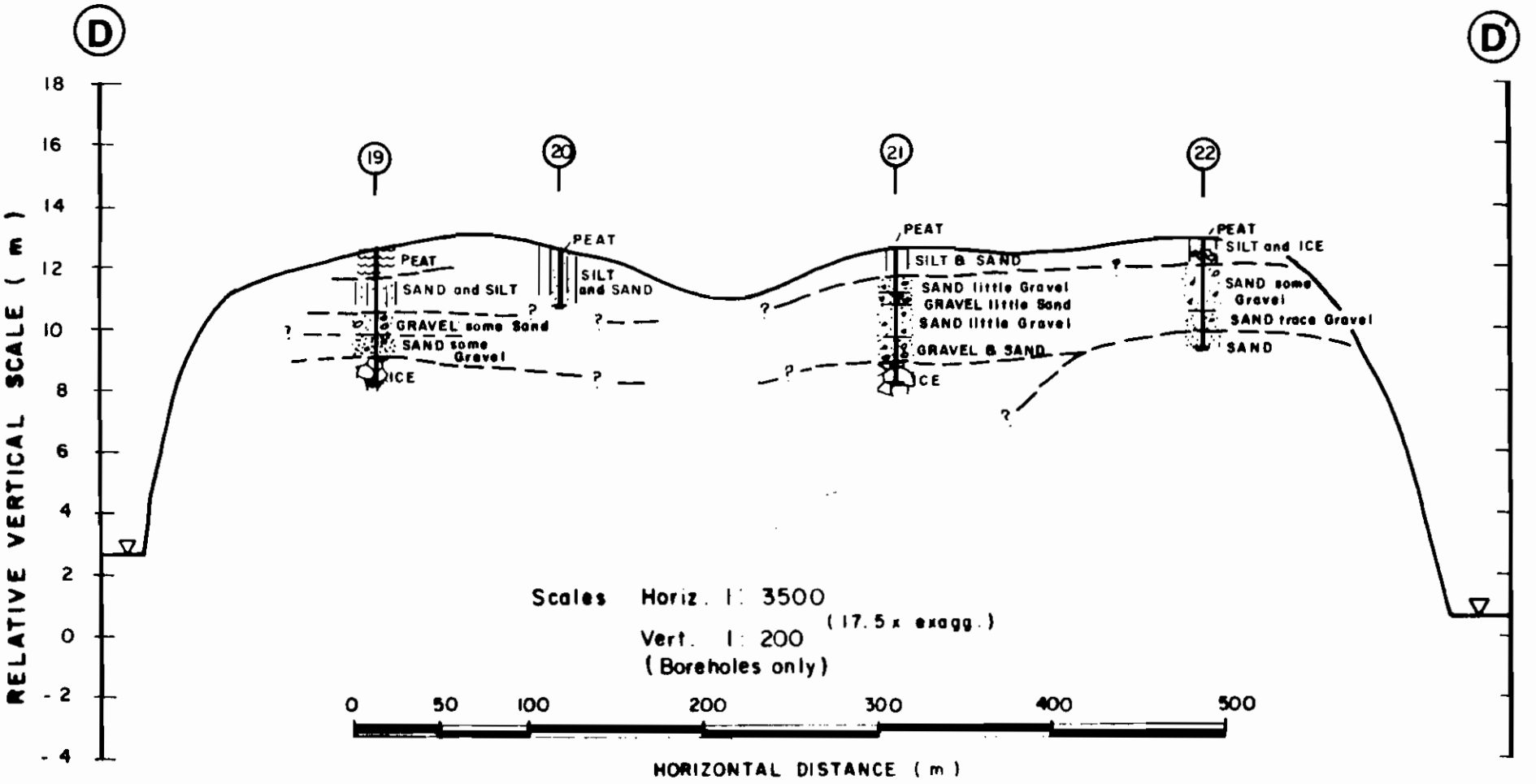
DEPOSIT 155 SOUTH
SCHEMATIC GEOLOGIC SECTION C - C'

CG 14096

FIGURE: 13

HT84-82/03



Note: Vertical profile is schematic only.
Topography and relative elevations of boreholes are unknown

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

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DEPOSIT 155 SOUTH
SCHEMATIC GEOLOGIC SECTION D - D'

CG14096

FIGURE 14

HT84-82/03

LEGEND

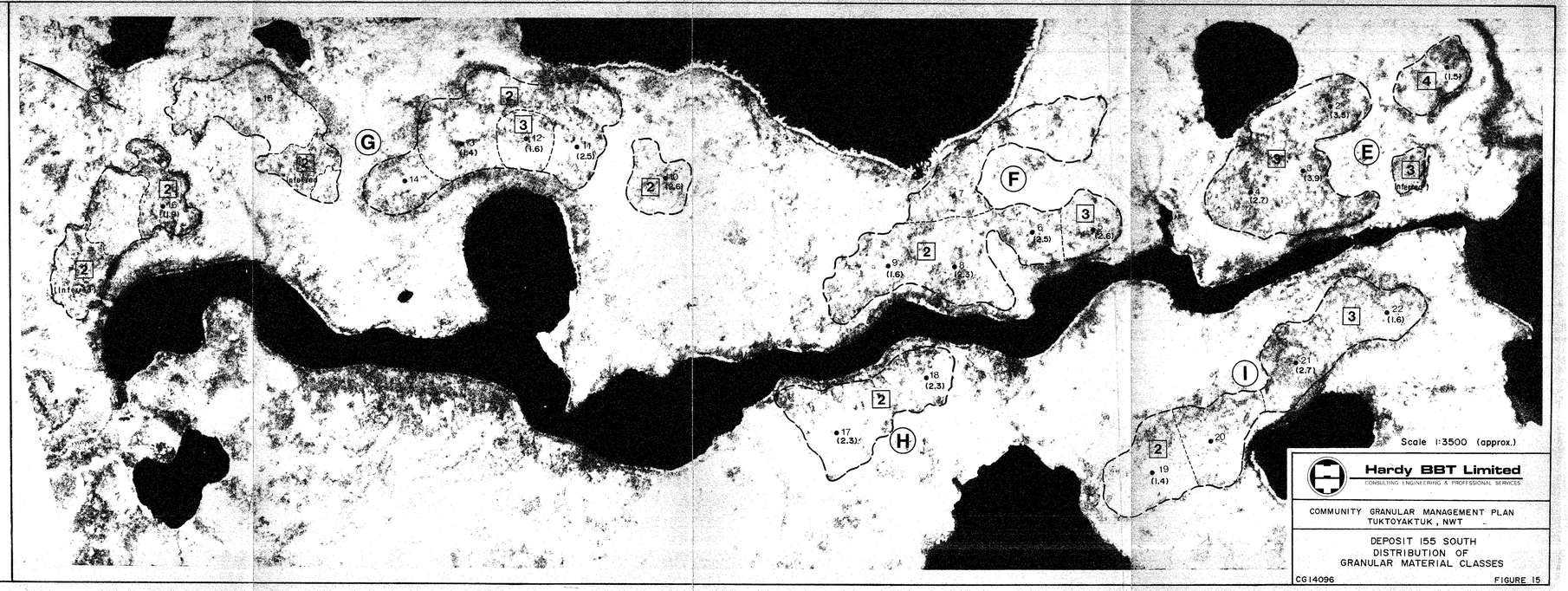
2 CLASS 2 GRANULAR MATERIAL

3 CLASS 3 GRANULAR MATERIAL

4 CLASS 4 GRANULAR MATERIAL

(1.5) THICKNESS OF POTENTIAL BORROW AT BOREHOLE LOCATION

NOTE: This map is generalized to illustrate the distribution of material classes based on the predominant material encountered at each borehole location.



Scale 1:3500 (approx.)

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COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

DEPOSIT 155 SOUTH
DISTRIBUTION OF
GRANULAR MATERIAL CLASSES

CG14096 FIGURE 15

APPENDIX "A"

Explanation Sheets

EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of field investigation and subsequent laboratory testing are described in the following pages.

It should be noted that materials, boundaries, and conditions have been established only at the borehole locations, and are not necessarily representative of subsurface conditions elsewhere across the site.

TEST DATA

Data obtained from laboratory and field testing are shown on the grid at the appropriate depth interval.

The natural moisture (water) content of the soil at the time of drilling is plotted against depth, together with the plastic and liquid limits where determined.

Abbreviations, graphic symbols, and relevant test method designations are as follows:

⊙	w	natural moisture content (ASTM D 2216)
⊡	w_P	plastic limit (ASTM D 424)
△	w_L	liquid limit (ASTM D 423)
	NP	non plastic soil
——→		seepage
——▼		observed water level

Other abbreviations and symbols are as shown on the borehole log sheet.

DEPTH

The depth of borehole below existing ground surface is shown. Corresponding elevations sometimes are shown with respect to the datum given.

SOIL CLASSIFICATION AND DESCRIPTION

Soils are classified and described according to their engineering properties and behaviour.

The soil of each stratum is described using the Unified Soil Classification System[1] modified slightly so that an inorganic clay of "medium plasticity" is recognized.

The use of modifying adjectives may be employed to define the actual or estimated percentage range by weight of minor components. This is similar to a system developed by D.M. Burmister.[2]

The soil classification system is shown in greater detail on page 3.

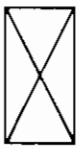
1. "Unified Soil Classification System", Technical Memorandum 3-357 prepared for Office, Chief of Engineering, by Waterways Experiment Station, Vicksburg, Mississippi, Corps. of Engineers, U.S. Army, Vol. 1, March 1953.

2. American Society for Testing and Materials Procedures for Testing Soils, "Suggested Methods of Testing for Identification of Soils", 4th Ed; pp 221-233, Dec. 1964

SOIL SAMPLES

CONDITION — This column graphically indicates the depth and condition of the sample:

 undisturbed

 disturbed

 not recovered

TYPE — The type of sample is indicated in this column as follows:

A auger sample
B block sample
C rock core, or frozen soil core
D drive sample
P Pitcher tube sample
U tube sample (usually thin-walled)
W wash or air return sample
O other (see report text)

PENETRATION RESISTANCE — Unless otherwise noted this column refers to the number of blows (N) of a 140 pound (63.5 kg) hammer freely dropping 30 inches (0.76 m) required to drive a 2 inch (50.8 mm) O.D. open-end sampler 0.5 feet (0.15 m) to 1.5 feet (0.45 m) into the soil, or until 100 blows have been applied, in which case, the penetration is stated. This is the standard penetration test referred to in ASTM D 1586.

OTHER TESTS

In this column are tabulated results of other laboratory tests as indicated by the following symbols:

*C	Consolidation test
Fines	Percentage by weight smaller than #200 sieve
D_R	Relative density (formerly specific gravity)
k	Permeability coefficient
*MA	Mechanical grain size analysis and hydrometer test (if appropriate)
pp	Pocket penetrometer strength
*q	Triaxial compression test
q_u	Unconfined compressive strength
*SB	Shearbox test
SO_4	Concentration of water-soluble sulphate
*ST	Swelling test
TV	Torvane shear strength
VS	Vane shear strength (undisturbed-remolded)
ε_f	Unit strain at failure
γ	Unit weight of soil or rock
γ_d	Dry unit weight of soil or rock
ρ	Density of soil or rock
ρ_d	Dry density of soil or rock

* The results of these tests usually are reported separately.

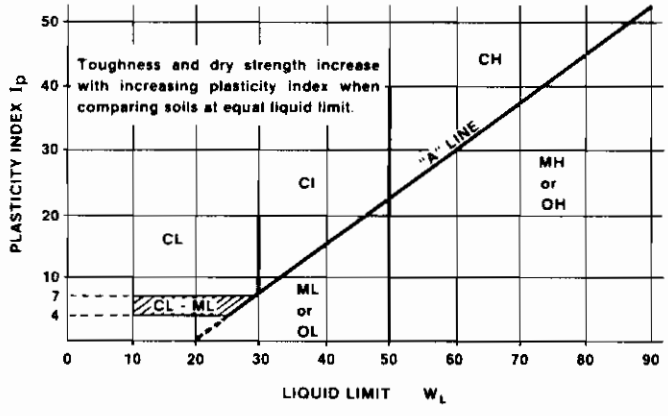
SOIL CLASSIFICATION SYSTEM (MODIFIED U.S.C.)

MAJOR DIVISION			GROUP SYMBOL	GRAPHIC SYMBOL	COLOR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
HIGHLY ORGANIC SOILS			Pt		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE	
COARSE-GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS MORE THAN HALF COARSE FRACTION LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS	GW		RED	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, < 5% FINES	$C_U = \frac{D_{60}}{D_{10}} > 4 \quad C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
			GP		RED	POORLY-GRADED GRAVELS, AND GRAVEL-SAND MIXTURES, < 5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS	
		DIRTY GRAVELS	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES > 12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_p < 4$	
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES > 12% FINES	ATTERBERG LIMITS ABOVE "A" LINE, $I_p > 7$	
	SANDS MORE THAN HALF COARSE FRACTION SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS	SW		RED	WELL-GRADED SANDS, GRAVELLY SANDS, < 5% FINES	$C_U = \frac{D_{60}}{D_{10}} > 6 \quad C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
			SP		RED	POORLY-GRADED SANDS, OR GRAVELLY SANDS, < 5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS	
		DIRTY SANDS	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES > 12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_p < 4$	
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES > 12% FINES	ATTERBERG LIMITS ABOVE "A" LINE OR $I_p > 7$	
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES NO. 200 SIEVE SIZE)	SILTS BELOW "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$	SEE CHART BELOW
			MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$	
			CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY SILTY CLAYS	$W_L > 30, < 50$	
			CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$	
	ORGANIC SILTS & ORGANIC CLAYS BELOW "A" LINE ON PLASTICITY CHART		OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$	
			OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$	

1. All sieve sizes mentioned on this chart are U.S. Standard, ASTM E11.
2. Boundary classifications possessing characteristics of two groups are given combined group symbols eg GW-GC is a well-graded gravel-sand mixture with clay binder between 5% and 12%.
3. Soil fractions and limiting textural boundaries are in accordance with the Unified Soil Classification System, except that an inorganic clay of medium plasticity (CI) is recognized.
4. The following adjectives may be employed to define percentage ranges by weight of minor components:

and	50 - 36%
some	35 - 21%
little	20 - 11%
trace	10 - 1%

PLASTICITY CHART



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GROUND ICE CLASSIFICATIONS

CATEGORY	GROUP SYMBOL	SUBGROUP SYMBOL	DESCRIPTION
		F	UNDIFFERENTIATED
NON-VISIBLE ICE	N	Nf	POORLY BONDED OR FRIABLE FROZEN SOIL
		Nbn	WELL BONDED FROZEN SOIL WITH NO EXCESS ICE
		Nbe	WELL BONDED FROZEN SOIL WITH EXCESS ICE. FREE WATER PRESENT WHEN SAMPLE THAWED.
VISIBLE ICE LESS THAN 25mm THICK	V	Vx	INDIVIDUAL ICE CRYSTALS OR INCLUSIONS
		Vc	ICE COATINGS ON PARTICLES
		Vr	RANDOM OR IRREGULARLY ORIENTED ICE FORMATIONS
		Vs	STRATIFIED OR DISTINCTLY ORIENTED ICE FORMATIONS
VISIBLE ICE GREATER THAN 25mm THICK	ICE	ICE+ Soil Type	ICE GREATER THAN 25mm THICK WITH SOIL INCLUSIONS
		ICE	ICE GREATER THAN 25mm THICK WITHOUT SOIL INCLUSIONS

NOTE: 1. UF signifies unfrozen ground.

2. F? or UF? indicates likely thermal condition not obvious during drilling.

ADAPTED FROM NRC 7576

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APPENDIX "B"

Borehole Logs

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-1

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/16/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 100.9m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	GW-GP		GRAVEL AND SAND - trace of silt, compact, rusty-brown, rounded, maximum size to 75mm, trace of cobbles (to 100mm)	Nf		A_1			MA (Plate C1)
1			--occasional ice crystals		1.2				Hard drilling
				Nf/Vx 5%					
			--subrounded to subangular, maximum size to 50mm			A_2			MA (Plate C2)
2				Vx 5%	2.1	C_1			
					2.3	C_2			
	SP		SAND - fine grained uniform, trace of silt, brown to grey-brown occasional laminations of grey silt, frozen, hard bonded			C_3		NS	
3				Vs 10-15%		C_4			
						C_5			
4			--grey silt laminae						
						C_6		NS	
5									
						C_7			
6			End of Borehole at 6.1m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-2

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/16/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.3m	OFFSET:

W_p-□ W_L-△
W - ○
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	GP		GRAVEL AND SAND - trace of silt, compact, brown, rounded, maximum size to 75mm, trace of cobbles (to 100mm)	Nf		A_1			MA (Plate C3) Salinity
1	SM-SC		SAND - some silt/clay and a little gravel, compact to dense, brown, gravel sizes 25 - 50mm maximum	Vc/Vx 2-5%	1.8	A_2			MA (Plate C4)
2					2.1	C_1			
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded			C_2			MA (Plate C5)
3			---occasional silt lenses and random ice veins (Vr)	Nbe/Vc 10-15%		C_3		NS	
4						C_4			
						C_5		NS	
5			End of Borehole at 4.6m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-3

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/16/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.6m	OFFSET:

W_p-⊡ W_L-△ W-⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous to amorphous, ice veins and layers to 25 - 50mm	Vr/Vs 20-30%	0.45	C_1			
	ML		SILT - some clay, brown, ice lenses	Vs/Vr 40-50%		C_2			
1	SM-SC		SAND - some silt/clay, a little gravel, compact to dense, brown; subrounded gravel sizes to 25mm	Nbe 5%	0.80	A_1			Hard drilling ↓ MA (Plate C6)
			SAND - fine grained, uniform, trace of silt, brown frozen, hard bonded	Nbe/Vc 10-15%	1.5	C_3			
2						C_4		NS	
						C_5		NS	
3			---occasional radom ice veins (Vr)						
			---layer of clear ice (35mm)						
						C_6			
4									
						C_7		NR	
5									
6			End of Borehole at 5.2m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-4

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/16/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.8m	OFFSET:

W_p-⊡ W_L-△
W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - fibrous, brown						
	GM		GRAVEL and SAND - little silt, compact, brown; gravel subrounded to subangular occasional cobbles	Nf/Vx 5%		A_1			MA (Plate C7)
1					1.4				Hard drilling
	SP		SAND - fine to medium grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%		C_1			
2			---silty fine sand			C_2			
3						C_3			
			End of Borehole at 3.5m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-5

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.8m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - fibrous, brown	Vx 40%	.15				
	ML		SILT - little clay, brown	Nbe 10-15%	.45				
1	GW-GP		GRAVEL and SAND - little silt, compact to dense, brown; gravel subrounded to subangular, maximum sizes 50mm, occasional cobbles	Nf		A_1			Hard drilling MA (Plate C8)
			---sandier						
			---cobble		1.8				
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 5-10%		C_1			
						C_2			
3			---occasional random ice vein			C_3			
						C_4			
4			End of Borehole at 4.0m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-6

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.9m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Nbe/Vx 30-40%	0.15				
	ML		SILT - clayey, light-brown, peaty	Nbe 5%	0.25				
1	GW-GP		GRAVEL - sandy, trace of silt, dense, brown; gravel sizes to 75mm, occasional cobbles	Nf		A_1 A_2			-Hard drilling ↓ MA (Plate C9)
					1.2				
2	SP		SAND - fine grained uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 5-10%		C_1 C_2 C_3			
3									
			End of Borehole at 3.4m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-7

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/17/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 101.7m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown to dark-brown, fibrous, to amorphous	Vr 50%		C_1			
			sandy layer some pebbles	Vr/Vx 60%	.75 .90	C_2			
1	SM-SC		SAND - some silt/clay and a little gravel, subangular to angular, sizes to 25 - 50mm	Nf/Vx 5%		A_1			MA (Plate C10)
				Vx 10-15%	1.8	C_3			
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%	2.1	C_4			
			--occasional random ice veins	Vc/Vs +Vr 10-15%	2.7	C_5			
3									
4			End of Borehole at 4.0m			C_6			
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-8

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.5m	OFFSET:

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous, silty	Vx/Vr 30%	.30				
1	SP-SM		SAND - some gravel, a little silt, compact, brown, gravel: rounded to angular, maximum size 25-50mm, occasional cobbles	Nf	.90	A_1			MA (Plate C11)
			--- cobble	Nbe/Vx 5%		A_2			Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded		1.7	C_1			
			--occasional silt lenses and random ice veins	Nbe/Vc 10-15%		C_2			
3						C_3		N/R	
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-9

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.5m	OFFSET:

W_p-⊡ W_L-△ W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous, silty	Vr 30-50%	.30				
1	SP-SM		SAND - some gravel, a little silt, compact, brown; gravel subrounded to angular, sizes up to 25-50mm	Nf		A_1			MA (Plate C12)
				Vx 5-10%	1.1	A_2			
2	SP		SAND - fine grained, uniform, trace of silt, frozen, hard bonded, occasional silt layers ---random ice veins	Nbe/Vc 10-15%	1.4	C_1 C_2			
3						C_3			
			End of Borehole at 3.1m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-10

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.0m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Nbe/Vx 30%	.15				
	SP-SM		SAND and GRAVEL - little silt, compact, brown; gravel rounded to angular, sizes up to 25-50mm	Nf/Vx 5%		A_1			MA (Plate C13)
1					1.2				
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc -Vx 10-15%		C_1			MA (Plate C14)
2						C_2			
						C_3			
3						C_4			
			End of Borehole at 3.1m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-11

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 99.9m	OFFSET:

w_p-⊡ w_L-△ w-⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous	Vr50%	.10				
	ML		SILT - trace of fine sand, brown	Nbe 10%	.30				
1	SW-SP		SAND and GRAVEL - trace of silt, compact to dense, brown; gravel sizes up to 75mm, occasional cobbles	Nf/Nbe 5%		A_1	⊠		MA (Plate C15)
			---sandier						Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10%	1.5	C_1			
						C_2			
3						C_3			
						C_4			
			End of Borehole at 3.4m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-12

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/17/87
RIG: CME 750	METHOD: AUGER / CRREL	START:	FINISH:
PROJECT No. CG 14096	LOCATION: DEPOSIT 155	ELEVATION : 100.1m	OFFSET:

W_p - □ W_L - △
W - ○
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No.	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous	Vr50%	.10				
	SP-SM		SAND - some gravel and silt, trace of clay, brown; gravel sizes up to 50mm	Nf/Nbe 5-10%		A_1			MA (Plate C16)
1			---becoming gravelly/cobbly						Hard drilling
	GP-GM		GRAVEL and SAND - little silt, compact to dense, brown; gravel sizes up to 25-50mm	Nbe 10%	1.2	A_2			MA (Plate C17)
2									
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%	2.6 2.75	C_1			
3			ICE - clear to white, crystalline, with inclusions of fine sand			C_2			
			---layers of fine sand	ICE+ 80-90%		C_3			
4									
			End of Borehole at 4.4m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-13

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.1m	OFFSET:

W_p-⊡ W_L-△ W-⊙ BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vr 20%	.15				
1	GW-GP		GRAVEL - sandy, trace of silt, compact, brown; gravel rounded to subangular, sizes up to 75mm, occasional cobbles	Nf		A_1			MA (Plate C18)
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%	1.5	C_1 C_2			MA (Plate C19)
3			End of Borehole at 2.3m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-14

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.7m	OFFSET:

W_p-□ W_L-△
W-○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous to amorphous	Nbe/Vx 20%	0.3				
1	SP-SM		SAND and GRAVEL - little silt, compact, brown; gravel sizes up to 25-50mm	Nf		A_1			MA (Plate C20)
					1.5	C_1			
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc -Vs 10%		C_2		NS	
						C_3		NS	
3						C_4		NS	
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-15

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.8m	OFFSET:

w_p-□ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous, sandy	Vr20%	.15				
	ML		SILT - trace fine sand, brown, frozen, hard bonded	Nbe 10-15%	.45	C_1			
1	SP-SM		SAND - some gravel, little silt/clay, compact to dense, brown; gravel sizes to 35mm ---clayey layer --coarse gravel or cobbles	Nf/Nbe 5-10%		A_1			MA (Plate C21) Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10%	2.0	C_2			
3						C_3		NS	
						C_4		NS	
4			End of Borehole at 3.5m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-16

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/18/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 101.5m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
1	SP-SM		SAND and GRAVEL - little silt, compact to dense, brown; gravel rounded to angular, sizes to 50-75mm, occasional cobbles	Nf/Vx 5%	1.5	A_1			MA (Plate C22) Salinity Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded ---silt layer 25mm occasional random ice veins	Nbe/Vc 10-15%		C_1 C2 C_3		NS	
3			End of Borehole at 3.4m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-17

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 102.0m	OFFSET:

w_p-□ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - dark-brown, fibrous to amorphous, icy, interlayered with clay, silt and fine sand (grey)	Vr/Vx 30-40%	1.2	C_1			
						C_2		NS	
						C_3		NS	
	SM		SAND - fine grained, silty, trace of clay, grey; becoming interlayered silt and fine sand with vertical rootlets.	Vs 30-40%		C_4			
						C_5			
						C_6		NS	
			End of Borehole at 2.3m						

177 ⊙ ⊙ ⊙

1 2 3 4 5 6

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-18

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.5m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous icy	Vr 30-40%	.60				
1	GW-GP		GRAVEL and SAND - trace of silt, compact to dense, brown; gravel rounded to angular, sizes to 50-75mm occasional cobbles	Nf/Vx 5%		A_1			MA (Plate C23) Salinity
2			---coarse gravel or cobbles, some ice crystals mixed in with cuttings below 2.1m	Nbe/Vx 5-10%	2.1	A_2			Hard drilling MA (Plate C24)
3					3.5	A_3			
4	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded			C_1 C_2			
5			---some ice lenses and random ice veins	Nbe/Vc 10-15% some Vr		C_3 C_4			
6			End of Borehole at 5.5m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-19

LOGGED BY:	DRAWN BY: YK	CHECKED : NM	DATE : 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION : 100.3m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - brown, fibrous						
	ML		SILT - some clay and fine sand, occasional fine pebbles, grey-brown icy	Vs 20-30%		C_1			--Hard drilling
1					1.1				
	GW-GP		GRAVEL and SAND -trace of silt, compact to dense, brown; gravel rounded to subangular, sizes to 50mm occasional cobbles	Nf/Nbe 5%		A_1			MA (Plate C25) Salinity
2			--coal fragments, and icy	Vr/Vc 10-15%	2.3	C_2			
					2.9				
3	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded, occasional silt laminae, occasional fine ice lenses	Nbe/Vc 10-15%		C_3			
						C_4		NS	
4									
						C_5		NS	
5			End of Borehole at 4.6m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-20

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/18/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 100.7m	OFFSET :

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt+ ICE		PEAT and ICE - with inclusions of silt	Vr 50-70%	.60	C_1		NS	
	ML		SILT - little fine sand, trace of clay, grey-brown, icy	Vs 20%	.90	C_2			
1	GW-GP		GRAVEL and SAND - trace of silt, compact to dense, brown; gravel rounded to angular, sizes up to 75mm, occasional cobbles			C_3			Hard drilling
2				Nbe/Vx 5-8%		A_1			MA (Plate C26)
3	ICE +		ICE - crystalline, clear and white, with inclusions of grey silt and fine sand	ICE + 80-90%	3.0	C_4		NS	
4						C_5		NS	
5						C_6		NS	
						C_7		NS	
6			End of Borehole at 5.9m			C_8		NS	

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-21

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/18/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.3m	OFFSET:

W_p-⊡ W_L-△ W-⊙ BULK DENSITY (kg/m^3) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - dark-brown, fibrous to amorphous, icy	Vx/Vr 30-60%	1.4	C_1		NS	
						C_2			
						C_3			
						C_4			
1	GC		GRAVEL - clayey, little silt and sand, brown; gravel sizes to 50mm	Vr 25%	1.7				Hard drilling
2	SP-SM		SAND - with a little gravel and silt, trace of clay, compact to dense, brown; gravel sub-angular, sizes to 50mm	Nf/Nbe 5-10%		A_1			MA (Plate C27)
3	SP		SAND - fine grained, uniform, trace of silt and coal fragments, hard bonded	Vs 10%	3.1	C_5			
	SP-SM		SAND and GRAVEL - little silt, brown; gravel sub-angular, sizes to 50mm	Nf/Nbe 5-10%	3.5	A_2			MA (Plate C28)
4	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vs 10-15%	4.0	C_6			
						C_7		NS	
5						C_8		NS	
			End of Borehole at 5.3m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-22

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/19/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION : 100.6m	OFFSET :

w_p-⊡ w_L-△ w-○ BULK DENSITY (kg/m³) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Nbe 20%	.15				
	ML		SILT - trace fine sand, grey-brown, interlayered with peat	Vs 40-50%		C_1			
	SP		SAND - fine grained uniform, trace silt, brown	Vs 10-15%	.75 .90	A_1			MA (Plate C29)
1	GP-GM		GRAVEL and SAND - little silt, compact to dense, brown; gravel subrounded to subangular, sizes to 50mm	Nf		A_2			
2					2.4				
3	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vs 10-15%		C_2			MA (Plate C30)
						C_3		NS	
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-23

LOGGED BY: CA/NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/19/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 101.1m	OFFSET :

W_p-□ W_L-△ W-○ BULK DENSITY (kg/m³) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown/dark-brown, fibrous to amorphous, sandy	Vs/Vr 40-50%	.65				
1	SP-SM		SAND and GRAVEL - little silt/clay, dense, brown; gravel sizes to 25-50mm occasional cobbles			A_1	X		MA (Plate C31)
			---coarse gravel or cobbles	Nbe/Vx 5-15%		A_2	X		MA (Plate C32)
2					2.1				
	SP		SAND - fine grained, uniform, trace of silt, frozen, hard bonded	Vc/Vr 10-15%		C_1	■		
3						C_2	■		
						C_3	■		
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-24

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/19/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.8m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	ML		SILT - trace clay and fine sand and fine pebbles, brown, icy	Vs 30%	.60				MA (Plate C33)
1	SP-SM		SAND - some gravel and silt/clay, compact to dense, brown; gravel sizes to 75mm	Nf/Nbe 5-10%		A_1			Hard drilling
2						A_2			MA (Plate C34)
	SP		SAND - fine grained, uniform trace of silt, frozen, hard bonded		2.10	C_1			MA (Plate C35)
3			-- occasional lenses of grey silt	Nbe/Vc 10-15%		C_2			
						C_3			
4			End of Borehole at 4.0m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-25

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/22/87
RIG : CME 750	METHOD : AUGER / CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 105.8m	OFFSET :

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - brown, fibrous						
	ML		SILT - sandy, trace of clay, brown to grey-brown, icy	Vs/Vr 10-15%					
1					1.4				
	SP		SAND - fine grained, uniform trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%					
2									
			End of Borehole at 2.3m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-26

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/22/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 102.0	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
1	ML		SILT - some fine sand, trace of clay, brown to rusty-brown, icy. Peaty (organic) layers and a few fine pebbles	Vs/Vr 30-50%	1.5	C_1		NS	
						C_2		NS	
						C_3		NS	
2	GM		GRAVEL - some sand, a little silt, compact to dense, brown; gravel rounded to subangular, sizes up to 50mm	Vx 15-20%	2.1	A_1			MA (Plate C36)
				Nbe/Vx 10%	2.7				
3	SP		SAND - fine to medium grained, trace of silt, brown, frozen, hard bonded	Vs/Vx 20-30%	3.65				
4				Vc/Vs 10-15%					
5			End of Borehole at 4.6m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-27

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/22/87
RIG : CME 750	METHOD : AUGER / CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 101.5	OFFSET :

w_p-⊡ w_L-△ w-⊙ BULK DENSITY (kg/m^3) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	ML		SILT - trace fine sand, brown						
1	SM		SAND - fine grained, silty, brown, a few pebbles, icy	Vs/Vr 10-20%					
	SP-SM		SAND -some gravel, a little silt, brown; gravel subrounded to angular sizes up to 50mm	Nbe/Vx 5-10%	1.20	A_1			MA (Plate C37)
2									
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded, occasional fine ice lenses	Nbe/Vc 10-15%	2.10	C_1			MA (Plate C38)
3									
4						C_2			
			End of Borehole at 4.0m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-28

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/22/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.4	OFFSET:

w_p-⊡ w_L-△
w-⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous	Nbe/Vs 5-10%					
	ML		SILT - little fine sand, trace of clay, brown		0.3				MA (Plate C39)
	SP-SM		SAND - some gravel, little silt/clay, compact to dense, brown; gravel rounded to subrounded, sizes up to 75mm, occasional cobbles	Nbe 5%	0.8	A_1			Hard Drilling
1				Nbe/Vx 10%					
2									
	SP		SAND - fine grained, uniform, trace of silt, frozen, hard bonded, occasional laminae of grey silt		2.0	C_1		NS	
						C_2		NS	
3				Nbe/Vc 10-15%					
4			End of Borehole at 4.0m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-29

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.1	OFFSET:

W_p-⊡ W_L-△
W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
			PEAT - dark-brown/black, fibrous to amorphous, icy	Nbe 20%	0.2				
	Pt			Vr 50%		C_1		NS	
						C_2		NS	
1	CL		CLAY - silty, sandy(fine), brown, with a few fine pebbles	Vr 10-15%	.80				
	SP-SM		SAND and GRAVEL - little silt/clay, compact, rusty-brown to brown; gravel sizes to 50mm; more fines with depth	Nf/Nbe 5-10%	1.1	A_1			MA (Plate C40)
2					2.4				
	SM		SAND - fine grained, silty, brown, frozen, hard bonded	Vs 15-20%		C_3		NS	
3	ICE +		ICE - crystalline, clear and white, some inclusions of silt and fine sand	ICE+ 100%	2.8	C_4		NS	
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-30

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/22/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 98.9m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown to black, fibrous to amorphous, pockets of grey-brown. silt, ice lens up to 25mm thick	Vs/Vr 50-60%		C1		NS	
					.90	C2		NS	
1	GP-GM		GRAVEL and SAND - little silt/clay, dense brown; gravel sizes to 50mm	Vx/Vr 20%		C3			MA (Plate C41)
									Hard drilling
					1.5				
2	GW-GP		GRAVEL - some sand, trace of silt, dense, grey-brown; gravel sizes up to 50mm	Nf/Nbe 5%		C4			MA (Plate C42)
3					3.1				
	CL		CLAY (till) - silty, grey, some rounded pebbles	Vr 15-20%		C5		NS	
	ICE +		ICE - crystalline, clear/white with inclusions of clay and silt	ICE 70%	3.5	C6		NS	
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-31

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/22/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 99.1m	OFFSET:

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown to black, fibrous	Vx20%	.15				
	GM		GRAVEL - some sand, a little silt/clay, dark-brown; gravel subangular, sizes up to 50mm	Nf		A_1			MA (Plate C43)
1					.75				Hard drilling
	SP-SM		SAND - some gravel, a little silt/clay, dense, brown; gravel sizes up to 50mm	Nf/Nbe 10%		A_2			MA (Plate C44)
2					2.1				
	SP		SAND - fine grained, uniform, trace of silt brown, frozen, hard bonded	Vs/Vr 15-20%		C_1		NS	
3						C_2		NS	
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-32

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/23/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 99.0m	OFFSET :

w_p-□ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous, icy	Vr 30-40%	.15				
1	SP-SM		SAND - some silt/clay and a little gravel, dense, brown; gravel sub-rounded sizes up to 50mm	Nbe/Vx 10-15%		A_1			Hard drilling MA (Plate C45)
					1.7				
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%					
3									
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-33

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/23/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 100.1m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITON	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, frozen	Vr/Vx 30-40%	.15				
	SM		SAND - fine silty, brown, a few pebbles	Vx/Vs 10%	.30				
1	SP-SM		SAND - some gravel, little silt/clay, compact to dense, dark-brown; gravel rounded to sub-angular, sizes up to 38-50mm, occasional cobbles	Nbe/Vx 5-10%		A_1			MA (Plate C46) Hard drilling
2					2.10				
3	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vs 10-15%					
4									
			End of Borehole at 4.1m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-34

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/23/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.0m	OFFSET:

w_p-⊡ w_L-△
w - ○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	SP-SM		SAND - some gravel, little silt/clay, compact to dense, brown; gravel rounded to subangular, sizes up to 50mm	Nf	.75	A_1			MA (Plate C47) Hard drilling
				Nf/Vx 5-10%	1.80				
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vs 10-15%					
			End of Borehole at 3.7m						

1 2 3 4 5 6

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-35

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/23/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 100.1m	OFFSET:

W_p-⊡ W_L-△ W-⊙ BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous to amorphous, a few pebbles, icy	Vx/Vr 40-50%	.45				
1	SP-SM		SAND and GRAVEL - with a little silt/clay, compact to dense, dark-brown; gravel rounded to sub-angular, sizes to 50-75mm	Nbe/Vx 5-10%		A_1			MA (Plate C48) Salinity
			--becoming more silty		1.80				--Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vs 10-15%					
3									
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-36

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/23/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vs 30-40%					
	ML		SILT - some fine sand, brown, icy		.30				
	SM		SAND - fine grained, silty, brown, icy	Vs 20-30%					
1					1.1				
	SP-SM/SC		SAND - silty/clayey, some gravel, compact to dense, brown; gravel rounded to sub-angular, sizes up to 50mm	Nf/Nbe 10%	1.4	A_1			Hard drilling ↓ MA (Plate C49)
2				Nbe/Vx 15%					
					2.10				
	CL		CLAY (till) - silty, some sand and gravel, dark-grey, icy	Vx/Vr 20-30%					
3									
4			End of Borehole at 4.1m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-37

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/23/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-□ W_L-△
W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown to black, fibrous, icy	Vr/Vx 30%					
	CL		CLAY - silty, sandy, brown, few pebbles	Vr 15-20%	.60 .80				
1	SM-SC		SAND - silty/clayey, trace of gravel, brown, frozen, hard bonded	Vc/Vs 10-15%					
					1.5	A_1	☒		MA (Plate C50)
2	CL-CI		CLAY (till) - silty, some sand and a trace of fine gravel (up to 10mm) grey to dark-grey						
			---gravelly	Vx/Vr 10-20%					
3			End of Borehole at 3.1m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-38

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/24/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-□ W_L-△
W - ○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown to black, fibrous	Vr 50%	.30				
	ICE		ICE - crystalline	ICE 100%	.90				
1	ICE +		ICE - with layers of grey silty clay	ICE+ 50-60%	1.5				
	CL		CLAY (till) - silty, some gravel and a little sand, light brown	Vx/Vs 40-50%		C_1		NS	
2			End of Borehole at 2.0m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-39

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/24/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT -dark-brown, fibrous	Vx 30%	.20				
	CL-CI		CLAY (till) - silty, sandy with little to some gravel, dark brown; gravel sizes 20-50mm	Nf/Vx 10-15%		A_1			MA (Plate C51)
1									
			---hard bonded		1.5	C_1		NS	
				Vx/Vs 15-20%		C_2		NS	
2									
	ICE +		ICE - with inclusions of clay	ICE+ 70-80%	2.3	C_3		NS	
			End of Borehole at 2.4m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-40

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/24/87
RIG : CME 750	METHOD : AUGER / CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-□ W_L-△
W - ○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - black, fibrous	Vx15%	.10				
	CL		CLAY (till) - sandy, some silt and gravel, grey-brown to brown ---ice crystals	Nbe 10-15% Vx 20-30%	.60				
1	ML		SILT - interlayered with fine sand, brown, thin ice lenses, hard bonded	Vs 20-30% Vs/Vr 15-20%	.90 1.2	C_1 C_2 C_3		NS NS NS	
2			---ice layer 15cm						
			End of Borehole at 2.1m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-41

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/24/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous	Vx/Vs					
	ML		SILT - sandy, little clay, rusty-brown, hard bonded	15-20%	.30				No Samples
1	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vs 10-15%					
2			End of Borehole at 2.3m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-42

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/24/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous, icy	Vx/Vr 40%	.30				
	GP		GRAVEL - sandy, little silt and cobbles/ boulders, maximum size 150mm	Nf	.60				
1	SM		SAND - silty, trace clay and gravel, grey; gravel rounded, sizes to 25mm						No Samples
2	CL		CLAY (till) - silty, some sand, and a little gravel, grey to dark-grey, icy	Vx/Vr 30-40%					
3			---very icy	Vx/Vr 40-50%	3.0				
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-43

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/24/87
RIG: CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W -⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous, interlayered with silt and fine sand, brown to grey, icy	Vx/Vs 20-30%	.60				
1	ML		SILT - clayey, little fine sand, trace of gravel, grey, icy	Vs/Vr 30-40%		C_1		NS	
						C_2		NS	
2			End of Borehole at 1.8m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-44

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/24/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.1m	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous		.15				
	ML		SILT - little clay and fine sand, few pebbles, icy	Vs 30%	.30				
	Pt		PEAT - dark-brown, fibrous to amorphous, silt patches, icy	Vx/Vr 30-40%	.80				
1	SP-SM		SAND and GRAVEL - a little silt/clay, compact to dense, rusty-brown; gravel rounded to subangular, sizes up to 50-75mm, occasional cobbles	Nbe/Vx 5-10%		A_1			MA (Plate C52)
2					2.10	A_2			Hard drilling MA (Plate C53)
3				Vx 10%					
4	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded, occasional silt laminae	Vc/Vr 10-15%	3.65	C_1			MA (Plate C54)
5						C_2		NS	
						C_3		NS	
6			End of Borehole at 5.5m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-45

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/24/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.9m	OFFSET:

W_p-⊡ W_L-△ W-⊙ BULK DENSITY (kg/m³) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous to amorphous, icy	Vx/Vr 40-50%	.60				
1	ML		SILT - some fine sand, trace of clay, grey-brown, icy	Vs/Vr 20-30%	1.50				
2	SP-SM		SAND - some silt/clay, little gravel, compact, brown, icy	Vx/Vr 15-20%	2.3	A_1			MA (Plate C55)
3	GP-GM		GRAVEL and SAND - little silt/clay, dense, brown; gravel rounded, sizes up to 50mm, occasional cobbles	Nbe/Vx 10-15%	3.5	A_2			Hard drilling MA (Plate C56)
4	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vx some Vr 10-15%					
5			End of Borehole at 5.0m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-46

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/24/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 101.7m	OFFSET :

w_p-□ w_L-△
w - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous						
	ICE		ICE - crystalline, clear and white, with inclusions of silt	ICE +90%					
			---layer of grey-brown silt, 15cm	ICE+ 40%	.60 .80				
1	ML		SILT (till) - sandy, some gravel, dense, brown	Vx/Vr 20%					
⊙			SAND - some gravel, little silt/clay, compact to dense, brown	Nf/Nbe 5-10%	1.2	A_1	☒		Hard drilling MA (Plate C57)
2	SP-SM		---becoming hard bonded	Nbe/Vc 10%	1.8				
			SAND - fine grained, uniform, silty, brown, frozen, hard bonded		2.3				
3	SP			Vc/Vs 10-15%					
			---thin ice lenses/layers	Vs 30-40%	3.7				
4			End of Borehole at 4.0m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-N-47

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/24/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION: 101.6m	OFFSET:

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vx60%	.20				
	GM		GRAVEL - some sand, trace to little silt, dark brown; gravel sizes to 25-37mm	Nf	.80				
1	SM		SAND - some silt, trace of gravel, brown, hard bonded	Vs 10-15%	1.1	A_1	☒		MA (Plate C58)
	SP-SM		SAND - some gravel and silt, dense, hard bonded, brown; gravel sizes 25-37mm	Vc/Vr 10%		A_2	☒		Hard drilling ↓ MA (Plate C59)
2					2.1				
	SP		SAND - fine grained, uniform silty, grey-brown, frozen, hard bonded	Vc/Vs 10-15%					
3			End of Borehole at 3.1m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-N-48

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/25/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION : 100.4m	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous, sandy patches	Vx 20-30%	.30				
⊙	SM-SC		SAND - silty/clay, little gravel, compact, dark-brown; gravel sizes up to 50mm	Nf/Nbe 5-10%		A_1	☒		MA (Plate C60)
1					1.1				Hard drilling
⊙	SP		SAND - some gravel, little silt/clay, dense brown; gravel sizes up to 37mm	Vc/Vs 10-15%		A_2	☒		MA (Plate C61)
2									
			End of Borehole at 2.4m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-1

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/19/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous						
	ML		SILT - clayey, little fine sand and pebbles, grey-brown, icy	Vs/Vr 50%	.80				⌐-Hard drilling ↓
1	GM-GC		GRAVEL and SAND - silty/clayey, dense, hard bonded, brown; gravel sizes up to 50-75mm	Vx 10-20%		A_1			MA (Plate C62)
						A_2			
	SP		SAND - fine grained, little silt, stratified, brown, little coarse sand and fine gravel, frozen, hard bonded	Vc/Vs 10-15%	1.8	C_1			MA (Plate C63)
2					2.3				
	ICE +		ICE - massive crystalline, clear and white, some inclusions of silt and fine sand	ICE 95-100%		C_2			
3						C_3			
						C_4			
4						C_5			
			End of Borehole at 4.4m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-2

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/19/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

w_p-□ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	SP		SAND - fine grained, silty, little gravel to 50mm, loose, dry	Nf/Nbe 2-5%					
1	GP-GM		GRAVEL and SAND - trace of silt, dense, brown; gravel rounded to sub-angular, sizes up to 75mm, occasional cobbles			A_1			
	SP		SAND - fine to medium grained, trace of silt, brown, frozen, hard bonded	Nbe/Vc 10-15%	1.5	C_1			
2					2.0	C_2			
	GP-GM		GRAVEL and SAND - little silt/clay, dense, brown; gravel rounded to angular, sizes up to 50-75mm	Vc/Vx 5-10%		A_2			MA (Plate C64)
3									
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-3

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/19/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	GP-GM		GRAVEL - sandy, trace of silt, compact, brown,; gravel sizes up to 60mm	Nf/Nbe 5-10%		A_1			
1	SP		SAND - trace of gravel and silt, brown			A_2			
	GW-GP		GRAVEL - sandy, trace of silt, brown						
	SP-SM		SAND - little gravel and trace to little silt, compact to dense, brown; gravel sizes up to 25mm			A_3			MA (Plate C65)
2									
						A_4			MA (Plate C66)
3									
				Vc/Vs 10%		C_1			
4	ICE +		ICE - crystalline, clear and white, with inclusions of sand	ICE+ 80%		C_2		NS	
						C_3		NS	
5			End of Borehole at 4.9m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-4

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/19/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

w_p-⊡ w_L-△ w-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	CL		CLAY - silty, some fine sand, brown	Nbe 15%	.15				
1			SAND and GRAVEL - trace to little silt, compact to dense, brown; gravel sub-angular, sizes up to 25-50mm	Nf/Nbe 5-10%	.45	A_1			MA (Plate C67)
2	SP-SM		---layer of fine to medium sand (20cm)	Vs 10-15%	1.60 1.80	C_1			Hard drilling
				Nf/Nbe 5-10%		A_2			MA (Plate C68)
3	ICE +		ICE - crystalline, clear and white, with inclusions of sand	ICE+ 80-90%	2.70	C_2		NS	
						C_3		NS	
4						C_4		NS	
5			End of Borehole at 4.0m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-5

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△
W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, brown; gravel sub-angular, sizes up to 25-37mm	Nf/Nbe 5%		A_1			MA (Plate C69)
					2.4				
	SP-SM		SAND - some gravel, trace of silt, brown gravel sizes 25-37mm	Nf/Nbe 5-10%		A_2			MA (Plate C70)
					2.75				
	SP		SAND - medium grained, uniform, brown, frozen, hard bonded	Vc/Vs 10-15%		C_1			
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen hard bonded			C_2			MA (Plate C71)
						C_3		NS	
			End of Borehole at 4.6m						

1 2 3 4 5 6

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-6

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-□ W_L-△
W-○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - brown, fibrous						
	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, brown; gravel sizes up to 50mm	Nf/Nbe 5-10%		A_1			MA (Plate C72)
1			---becoming sandier						
2	SP-SM		SAND - some gravel, little silt, compact to dense, brown			A_2			MA (Plate C73)
					2.6	C_1			MA (Plate C74)
3	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vs/Vr 10-15%		C_2		NS	
						C_3		NS	
4			End of Borehole at 3.8m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-7

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ○
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous, icy ---interlayered with silt and ice	Vx 70%	0.6	C_1			
1	ML		SILT - sandy, little to some gravel ---becoming very gravelly	Vc/Vr 20-30%	1.2				
2	ICE +		ICE - crystalline, clear and white with inclusions of sand	ICE+ 80-90%					
3									
4									
5			End of Borehole at 4.6m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-8

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG : CME 750	METHOD : AUGER / CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

w_p-⊡ w_L-△
w - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
			GRAVEL and SAND - trace of silt, compact to dense, brown; gravel rounded to sub-angular, sizes up to 50-75mm	Nf		A_1			MA (Plate C75) Salinity
1			---layer of fine-medium sand (15cm)						Hard drilling
	GW-GP				1.2				
				Nbe/Vx 5%		A_2			MA (Plate C76)
2									
					2.4				
3			ICE - crystalline, clear and white, occasional inclusions of sand						
4	ICE +			ICE + 95%					
5									
6			End of Borehole at 6.1m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-9

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous, icy	Vr/Vx 30-40%	.15				
1	GW-GP		GRAVEL and SAND - trace of silt, compact to dense, brown; gravel rounded and angular, sizes up to 50-75mm	Nf/Nbe 5%	1.8	A_1			MA (Plate C77) Hard drilling
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded, occasional silt laminae ---becoming ice rich (lenses and veins)	Vc/Vr 10-15% Vc/Vr 30-40%	2.4	C_1 C_2 C_3		NS	
3			End of Borehole at 3.4m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-10

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
1	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, rusty-brown; gravel rounded to subrounded, sizes up to 75mm, occasional cobbles	Nf	1.4	A_1			MA (Plate C78)
2	SW-SP		SAND and GRAVEL - trace of silt, compact to dense, brown; gravel sizes up to 50-75mm	Nf/Nbe 5%		A_2			MA (Plate C79)
3	SP		SAND - fine grained, uniform, trace of silt, brown, icy	Vs 40-50%	2.75	C_1			
	ICE +		ICE - crystalline, clear and white, with pockets and inclusions of sand	ICE+ 80-90%	3.0				
4									
5									
			End of Borehole at 5.3m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-11

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-□ W_L-△
W -⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
1	GW-GP		GRAVEL and SAND - trace of silt, compact to dense, rusty-brown; gravel rounded to sub-angular, sizes up to 75mm	Nf	.90	A_1			MA (Plate C80) Salinity
2	SW-SP		SAND - some gravel, trace of silt, compact to dense, brown; gravel sizes up to 50mm	Nf/Vx 5%	2.6	A_2			MA (Plate C81)
3	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vr 15-20%		C_1			MA (Plate C82)
4									
5			End of Borehole at 4.6m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-12

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous						
1	GP		GRAVEL - trace to little sand and silt, compact to dense, brown; gravel sub-rounded to sub-angular, sizes up to 75mm, occasional cobbles	Nf		A_1			MA (Plate C83)
					1.7				
2	SP		SAND - fine grained, uniform, trace of silt, occasional fine pebbles, brown, frozen, hard bonded	Vs 10-15%		C_1		NS	
						C_2		NS	
					2.4				
3	ICE +		ICE - crystalline, clear and white, with inclusions of sand	ICE+ 80-90%		C_3		NS	
			End of Borehole at 3.2m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-13

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - brown, fibrous, icy	Vx70%	.10				
1	GW-GP		GRAVEL -some sand, trace of silt, compact to dense, brown; gravel sub-angular, sizes up to 50mm	Nf/Nbe 5%		A_1			MA (Plate C84)
					1.5				
2	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vs/Vr 10-15%		C_1		NS	
						C_2		NS	
			---layer of ice (10cm)			C_3		NS	
3						C_4		NS	
			End of Borehole 3.4m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-14

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/20/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

w_p-□ w_L-△
w-○
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous		.10				
	ML		SILT - trace of fine sand, brown, hard bonded, icy with depth	Nb 15%					
				Vs 20-30%	.60				
1					.80	C_1		NS	
				Vs/Vr 20-30%		C_2		NS	
	SM		SAND - fine and SILT interlayered brown, hard bonded, icy		1.7	C_3			
2				Vs/Vr 15-20%		C_4		NS	
			End of Borehole at 2.0m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-15

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△
W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous to amorphous, becoming interlayered with silt	Vs/Vr 40-50%	.50	C_1		NS	
1	ICE +		ICE - with inclusions of laminated silt and fine sand	ICE+ 80%	1.50	C_2		NS	
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vs/Vr 10-15%	2.0	C_3		NS	
2	ICE +		ICE - with inclusions of fine sand and silt	ICE+ 60%					
3			End of Borehole at 2.6m						
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-16

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/21/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-□ W_L-△
W -⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vr50%	.10				
1	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, brown; gravel sizes up to 50mm	Nf/Nbe 5-10%		A_1			MA (Plate C85)
						A_2			
2	SP		SAND - medium to coarse grained, little gravel, trace of silt, brown	Nf 5-10%	2.0	C_1			
	SP		SAND - fine grained, uniform, trace of silt, brown, hard bonded	Vs/Vr 15-30%	2.4	C_2		NS	
3			---some layers of ice, 25-50mm thick		3.0				
				Vs/Vr 20-50%		C_3		NS	
4			End of Borehole at 3.7m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-17

LOGGED BY: NM	DRAWN BY: YK	CHECKED: NM	DATE: 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

w_p-⊡ w_L-△
w-⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - brown, fibrous						
	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, rusty-brown; gravel rounded to sub-angular, sizes up to 75mm, occasional cobbles	Nf					
1					1.05	A_1			Hard drilling Salinity MA (Plate C86)
				Nbe 5%					
2					2.45				
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vr 15-25%		C_1			
3									
						C_2			
4						C_3			
			End of Borehole at 4.3m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-18

LOGGED BY: NM	DRAWN BY: YK	CHECKED : NM	DATE : 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION :	OFFSET :

W_p-□ W_L-△
W - ⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - brown, fibrous						
	GW-GP		GRAVEL - some sand, trace of silt, compact to dense, rusty-brown; gravel rounded to sub-angular, sizes up to 50-75mm, occasional cobbles	Nf	1.20	A_1			MA (Plate C87) Hard drilling
				Nbe/Vx 5%					
	SP		SAND - fine grained, uniform, trace of silt, brown, frozen, hard bonded	Vc/Vr 15-20%	2.45	C_1			
			---numerous ice lenses and random veins up to 25mm thick	Vs/Vr 20-30%	3.2	C_2			
						C_3			
4.3			End of Borehole at 4.3m						

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-19

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/21/87
RIG : CME 750	METHOD : AUGER/CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-□ W_L-△ W-○ BULK DENSITY (kg/m³) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
0	Pt		PEAT - dark-brown, fibrous, becoming amorphous below 0.2m, occasional pebbles	Vx 20%		C_1		NS	
1	SM		SAND fine and SILT, interlayered, brown, frozen, hard bonded; layers 5-15cm thick	Vs 20-30%	1.0	C_2		NS	
2	GW-GP		GRAVEL - some sand, trace of silt, dense, brown; gravel sizes up to 25-50mm	Nf/Nbe 5-10%	2.1	C_3		NS	
3	SP		SAND - little to some gravel, trace of silt, dense, brown	Vx/Vr 10%	3.20	A_1			MA (Plate C88)
4	ICE		ICE - crystalline, clear and white	ICE 100%	3.50	C_4		NS	
						C_5		NS	
5			End of Borehole at 4.3m						
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-20

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△ W-⊙ BULK DENSITY (kg/m³) ● 1200 1400 1600 1800 MOISTURE CONTENT % 20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vx50%	.15				
	ML		SILT - brown, interlayered with black peat, hard bonded, icy	Vx/Vr 40-60%		C_1		NS	
1	SM		SAND - fine and SILT interlayered, brown, hard bonded		.80	C_2		NS	
	SP		SAND - fine grained uniform, trace of silt, brown, hard bonded	Vs 20-30%		C_3		NS	
						C_4		NS	
2			End of Borehole at 2.0m						
3									
4									
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK , NWT

BOREHOLE No. 155-S-21

LOGGED BY: CA	DRAWN BY: YK	CHECKED : NM	DATE : 03/21/87
RIG: CME 750	METHOD : AUGER / CRREL	START :	FINISH :
PROJECT No. CG14096	LOCATION : DEPOSIT 155	ELEVATION :	OFFSET :

W_p-⊡ W_L-△ W-⊙
BULK DENSITY (kg/m³) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vx 60-70%	.20				
	ML		SILT -trace of fine sand, laminated, brown, hard bonded						
	SP		SAND - fine grained, uniform, trace of silt, brown, hard bonded	Vs 20-30%		C_1		NS	
1	SP-SM		SAND - little gravel and silt, brown, hard bonded			C_2			MA (Plate C89)
	GW-GP		GRAVEL - little sand, trace of silt, brown, gravel sizes up to 50mm.		1.4	A_1			MA (Plate C90)
2	SP-SM		SAND - some gravel, silty/clayey, grey brown; gravel sizes up to 25mm	Nf/Nbe 5-10%		A_2			MA (Plate C91)
3	GW-GP		GRAVEL and SAND - trace of silt, dense, brown, gravel sizes up to 25-50mm			A_3			MA (Plate C92)
	ICE		ICE, crystalline, clear and white	ICE 100%	3.7				
4			End of Borehole at 4.4m						
5									
6									

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BOREHOLE LOG

COMMUNITY GRANULAR MANAGEMENT PLAN
TUKTOYAKTUK, NWT

BOREHOLE No. 155-S-22

LOGGED BY: CA	DRAWN BY: YK	CHECKED: NM	DATE: 03/21/87
RIG: CME 750	METHOD: AUGER/CRREL	START:	FINISH:
PROJECT No. CG14096	LOCATION: DEPOSIT 155	ELEVATION:	OFFSET:

W_p-⊡ W_L-△
W-⊙
BULK DENSITY (kg/m^3) ●
1200 1400 1600 1800
MOISTURE CONTENT %
20 40 60 80

DEPTH (metres)	SOIL GROUP SYMBOL	GRAPHIC LOG	DESCRIPTION	NRC ICE TYPE VISUAL ICE	DEPTH (metres)	SAMPLE TYPE & No	SAMPLE CONDITION	SAMPLE RETAINED	OTHER INFORMATION
	Pt		PEAT - dark-brown, fibrous	Vx60%	.15				
	ML		SILT and ICE - trace of fine sand, laminated, inclusions of peat	Vx/Vr 40-60%		C_1		NS	
1	SP-SM		SAND - some gravel, trace of silt, brown, hard bonded; gravel sizes up to 50mm		.80	C_2		NS	
						C_3			MA (Plate C93)
2				Vs/Vr 10-15%		A_1			
	SP		SAND - trace of gravel and silt, brown, hard bonded, occasional ice layers 10-35mm thick			C_4			MA (Plate C94)
3						C_5		NS	
	SP		SAND - fine grained, uniform, trace of silt, hard bonded			C_6		NS	
4			End of Borehole at 3.5m						
5									
6									

APPENDIX "C"

Laboratory Test Results

HARDY ASSOCIATES (1978) LTD.
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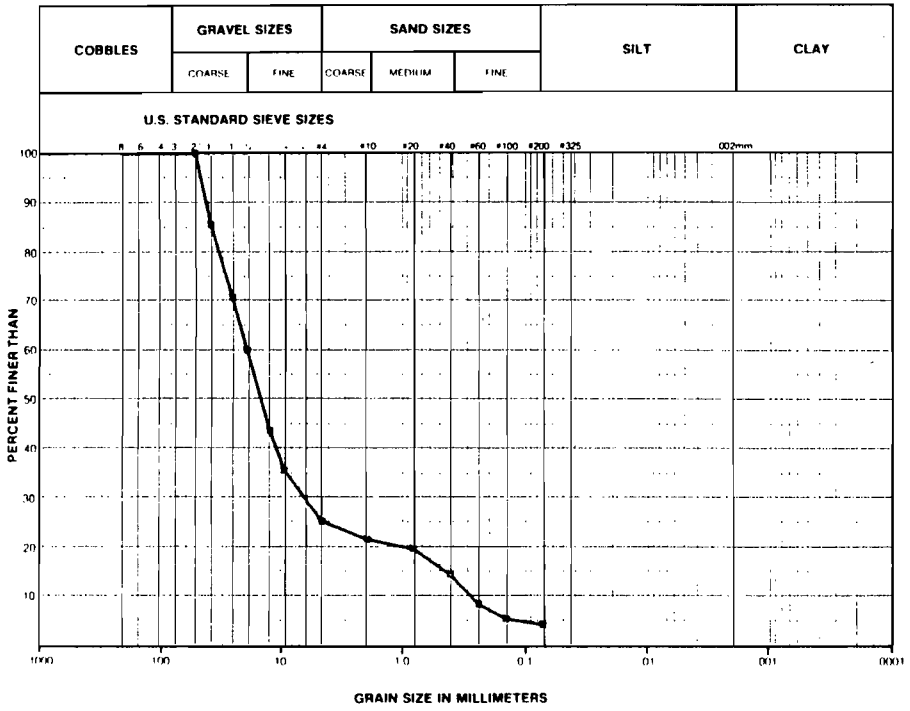
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 1 SAMPLE: A1
DEPTH: 0 - 0.9 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GP
M/C = 5%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	74	%
$D_{..}$	mm	SAND	21	%
$D_{..}$	mm	SILT + CLAY	5	%
$C_{..}$	mm			
$C_{..}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
(1) Any oral presentation made or opinion given by Hardy Associates (1978) Ltd. or any of its officers, agents, servants or employees with respect to the interpretation of these test results is or was given without responsibility for the accuracy of any such presentations or opinions, regardless of whether such representations or opinions were negligently formed or given.
(2) The liability of Hardy Associates (1978) Ltd. for the use of these test results shall in any and all events be limited to the fees received by it for providing the said test results.

Plate C1

HARDY ASSOCIATES (1978) LTD.
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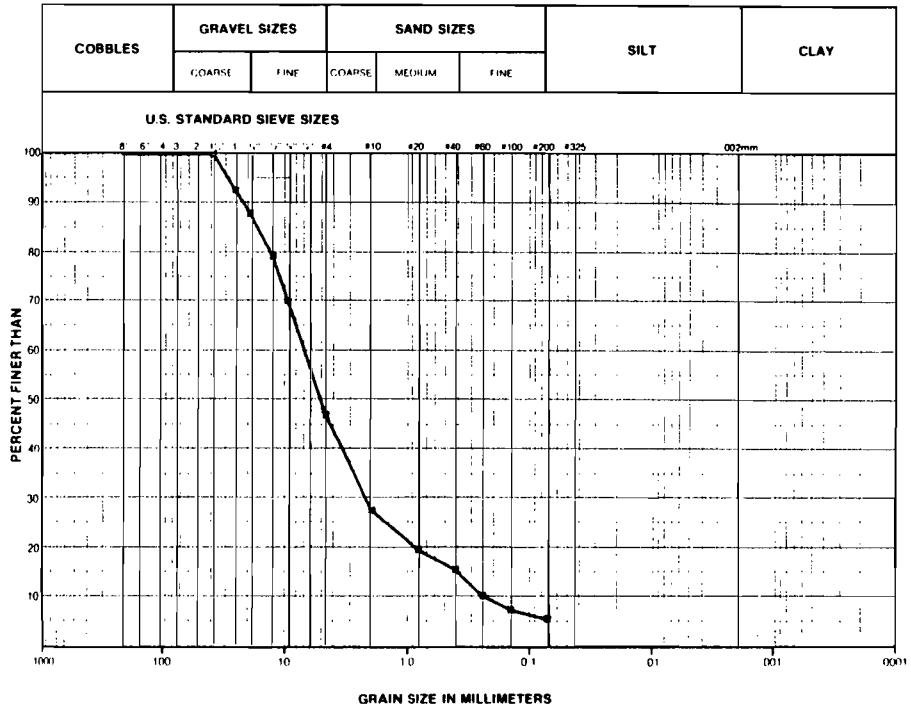
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 1 SAMPLE: A2
DEPTH: 1.8 - 2.4 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GW-GP
M/C = 5%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	53	%
$D_{..}$	mm	SAND	41	%
$D_{..}$	mm	SILT		%
$C_{..}$	mm	+ CLAY	6	%
$C_{..}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
(1) Any oral presentation made or opinion given by Hardy Associates (1978) Ltd. or any of its officers, agents, servants or employees with respect to the interpretation of these test results is or was given without responsibility for the accuracy of any such presentations or opinions, regardless of whether such representations or opinions were negligently formed or given.
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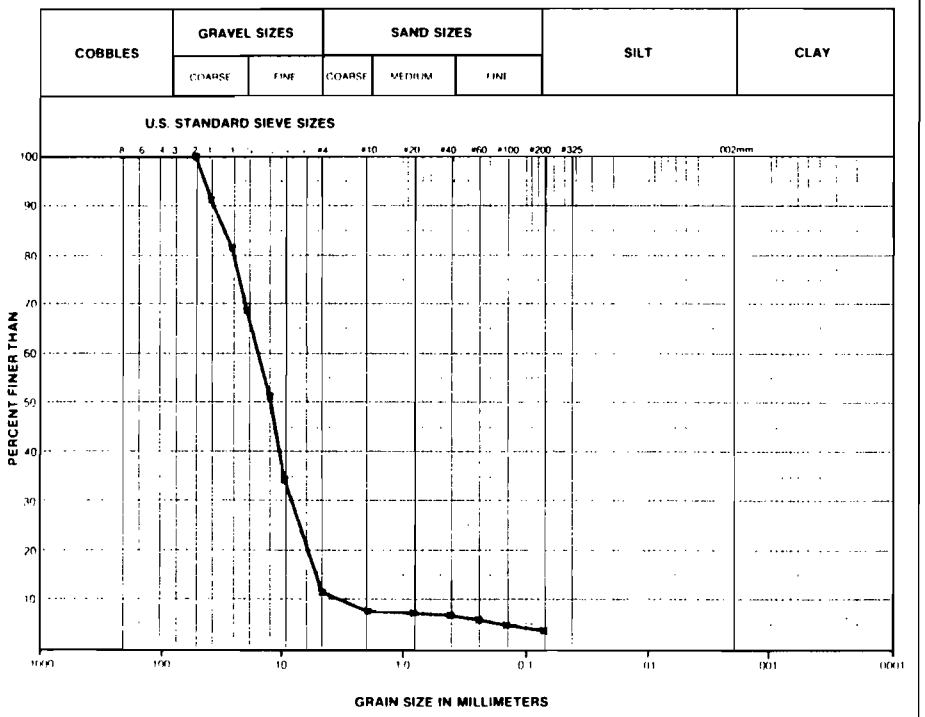
Plate C2

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 2 SAMPLE: A1
DEPTH: 0.9 - 1.5 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GP
M/C = 3%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	88	%
$D_{...}$	mm	SAND	7	%
$D_{...}$	mm	SILT + CLAY	5	%
C_U	mm			
C_C	mm			

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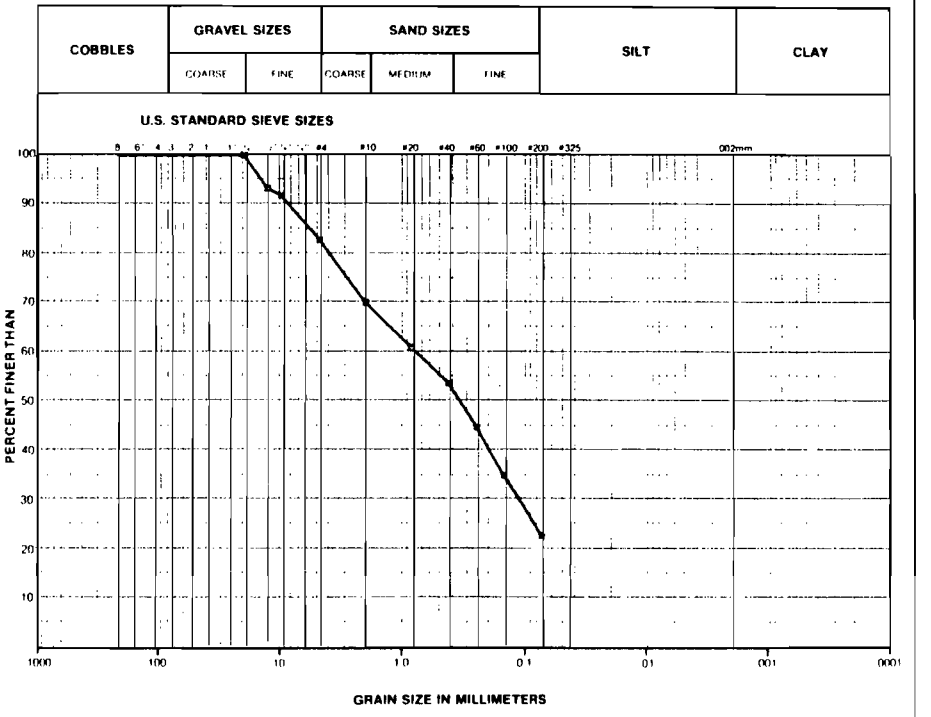
(2) The liability of Hardy Associates (1978) Ltd. for the use of these test results shall in any and all events be limited to the fees received by it for providing the said test results.

Plate C3

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 2 SAMPLE: A2
DEPTH: 1.5 - 2.1 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SM-SC
M/C = 12%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	17	%
$D_{...}$	mm	SAND	60	%
$D_{...}$	mm	SILT + CLAY	23	%
C_U	mm			
C_C	mm			

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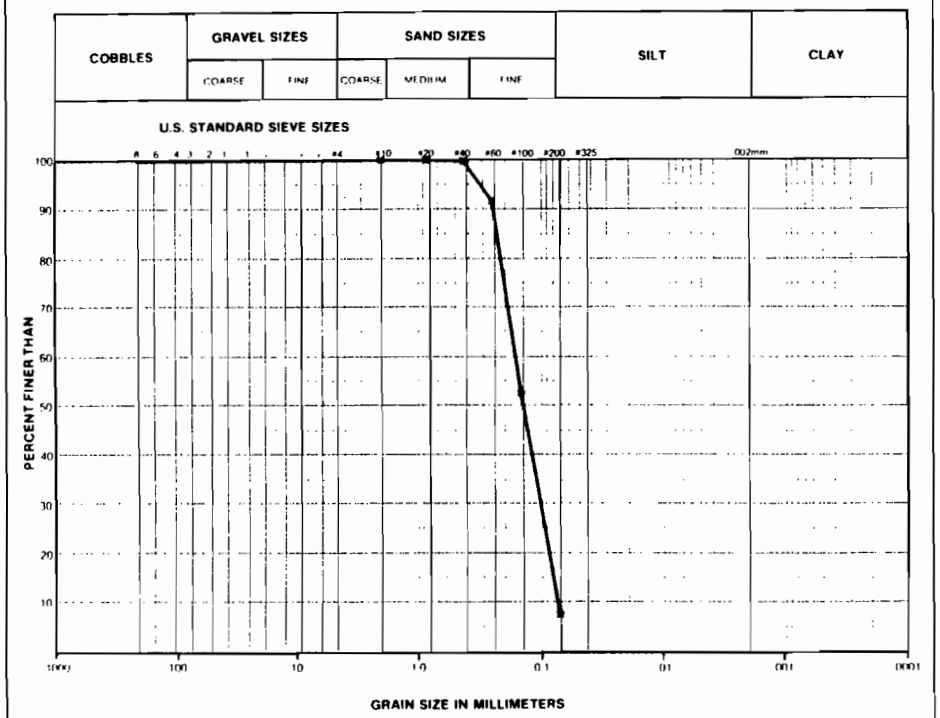
Plate C4

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB. NUMBER	
LOCATION	155 - N
HOLE	2
SAMPLE	C2
DEPTH	2.1 - 2.4 m
TECHNICIAN	L.R.
DATE	87:04:21



REMARKS: SP
M/C = 23%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

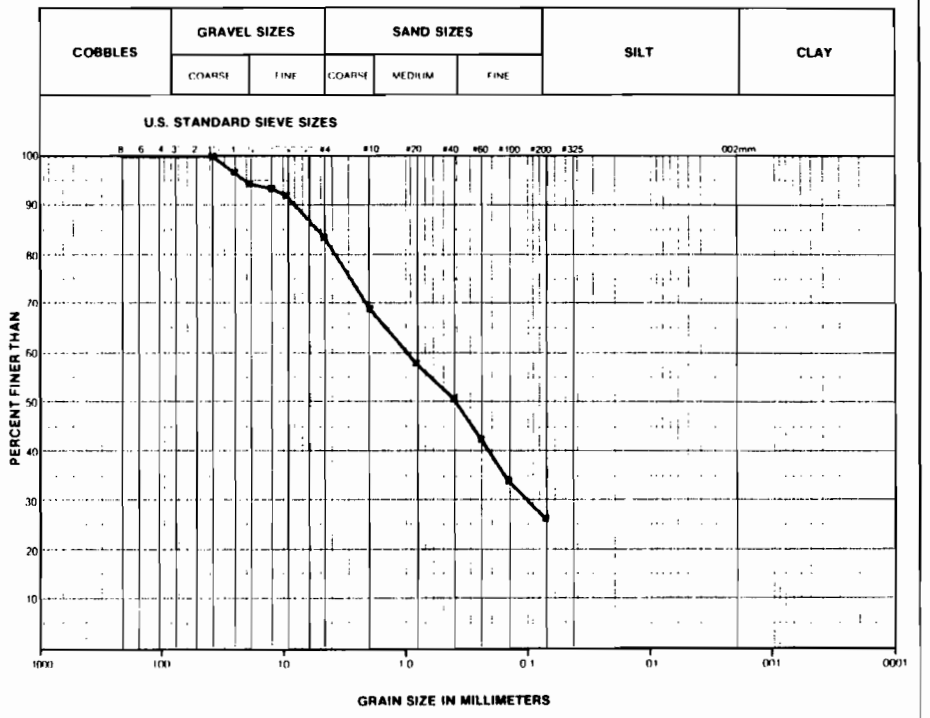
D_{60}	mm	GRAVEL	0 %
D_{30}	mm	SAND	92 %
D_{10}	mm	SILT + CLAY	8 %
C_u	mm		
C_c	mm		

Plate C5

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB. NUMBER	
LOCATION	155 - N
HOLE	3
SAMPLE	A1
DEPTH	0.9 - 1.7 m
TECHNICIAN	L.R.
DATE	87:04:21



REMARKS: SM-SC
M/C = 11%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

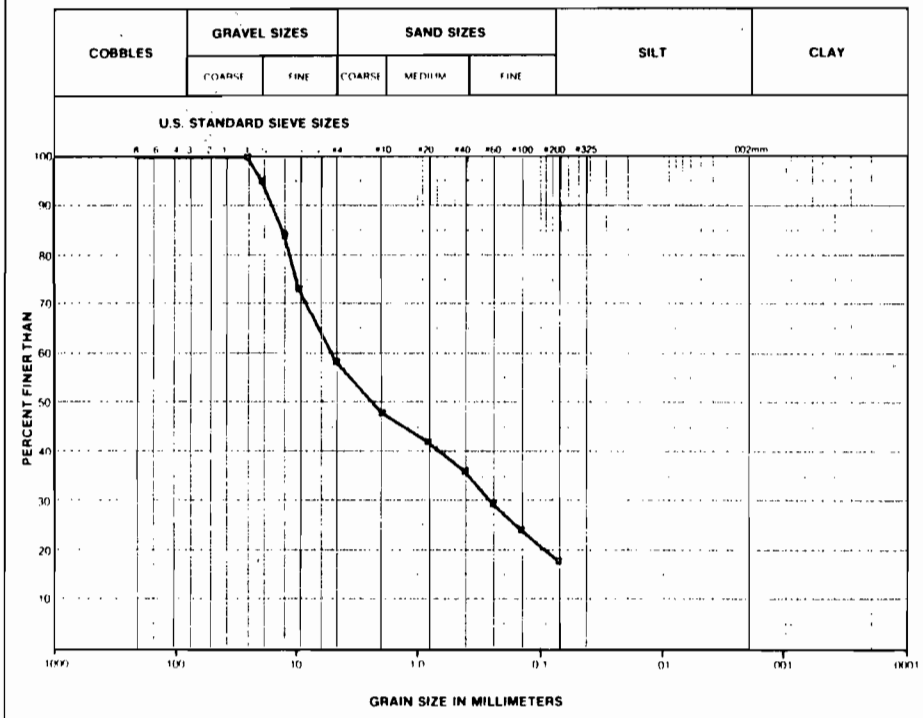
D_{60}	mm	GRAVEL	16 %
D_{30}	mm	SAND	57 %
D_{10}	mm	SILT	%
C_u	mm	+ CLAY	27 %
C_c	mm		

Plate C6

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 4 SAMPLE: A1
DEPTH: 0.2 - 0.9 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: GM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

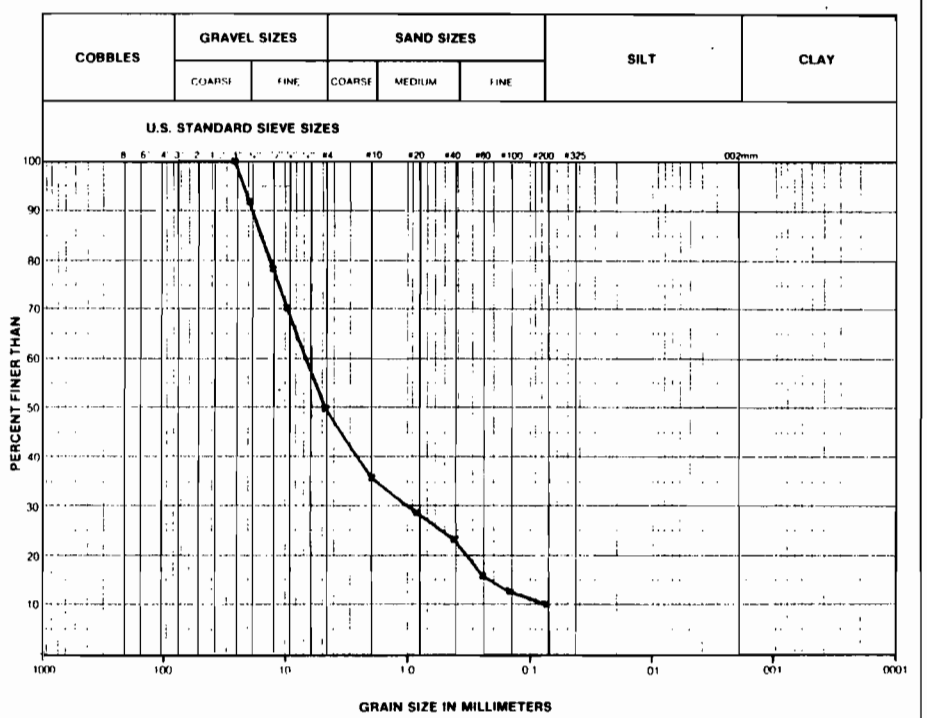
D_{60}	mm	GRAVEL	41 %
D_{30}	mm	SAND	40 %
D_{10}	mm	SILT + CLAY	19 %
C_U	mm		
C_C	mm		

Plate C7

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 5 SAMPLE: A1
DEPTH: 0.9 - 1.2 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GW-GP
M/C = 3%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

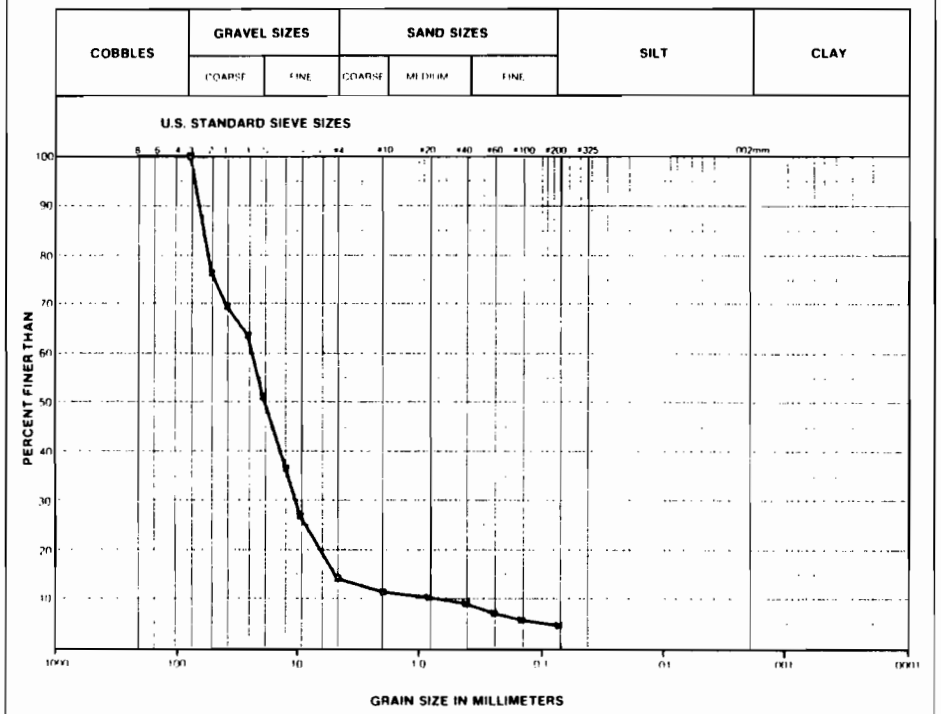
D_{60}	mm	GRAVEL	50 %
D_{30}	mm	SAND	39 %
D_{10}	mm	SILT + CLAY	11 %
C_U	mm		
C_C	mm		

Plate C8

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 6 SAMPLE: A2
DEPTH: 0.6 - 0.9 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: GP
M/C = 4%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

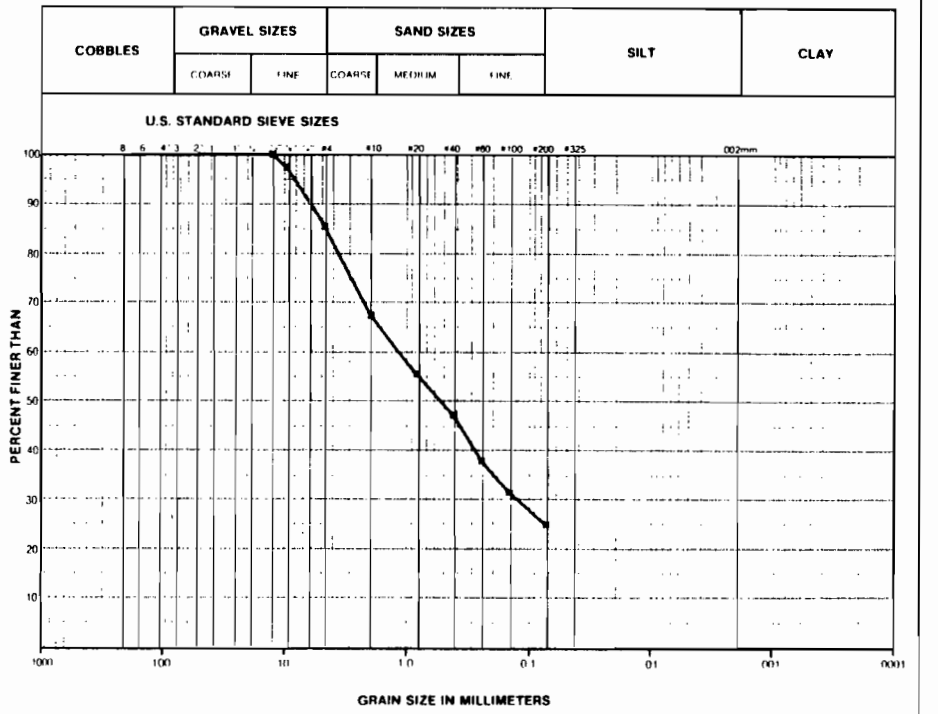
D_{60}	mm	GRAVEL	85	%
D_{30}	mm	SAND	9	%
D_{10}	mm	SILT + CLAY	6	%
C_u	mm			
C_c	mm			

Plate C9

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT.PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER
LOCATION: 155-N
HOLE: 7 SAMPLE: A1
DEPTH: 1.1 - 1.5 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: SM-SC
M/C = 11%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

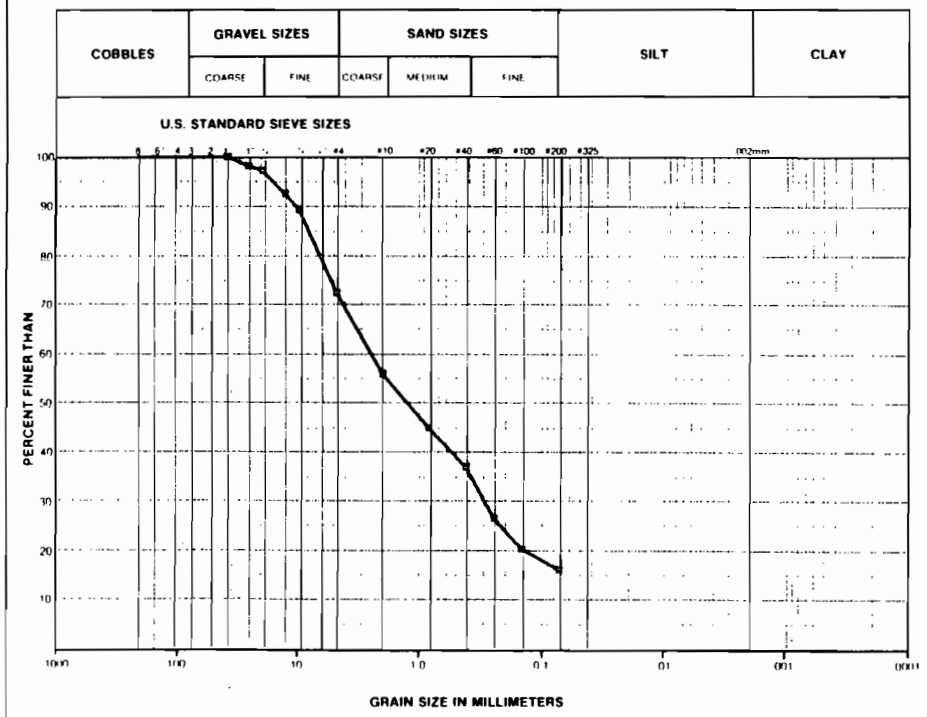
D_{60}	mm	GRAVEL	14	%
D_{30}	mm	SAND	60	%
D_{10}	mm	SILT + CLAY	26	%
C_u	mm			
C_c	mm			

Plate C10

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 8 SAMPLE: A1 & A2
DEPTH: 0.3 - 1.7 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 9%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

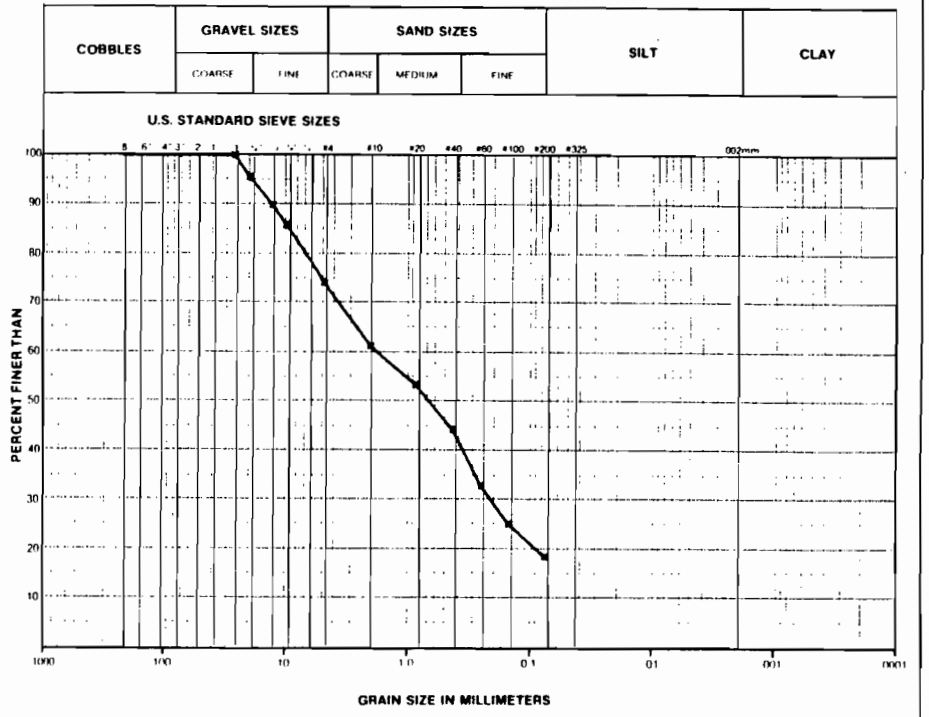
$D_{..}$	mm	GRAVEL	27 %
$D_{..}$	mm	SAND	56 %
$D_{..}$	mm	SILT + CLAY	17 %
$C_{..}$	mm		
$C_{..}$	mm		

Plate C11

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 9 SAMPLE: A1
DEPTH: 0.3 - 1.4 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 9%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

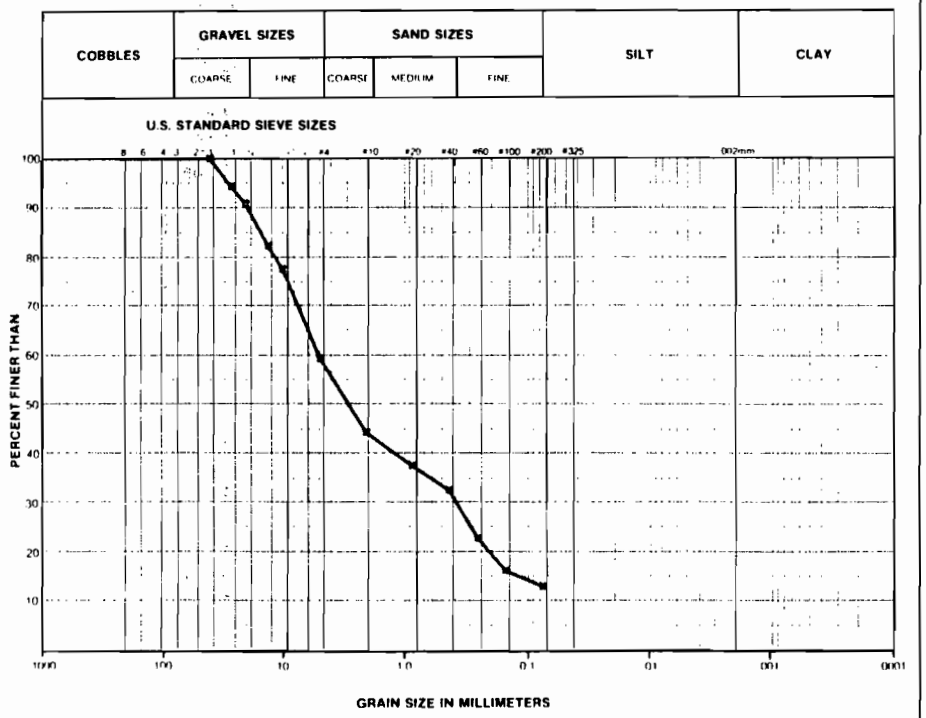
$D_{..}$	mm	GRAVEL	25 %
$D_{..}$	mm	SAND	55 %
$D_{..}$	mm	SILT + CLAY	20 %
$C_{..}$	mm		
$C_{..}$	mm		

Plate C12

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 10 SAMPLE: A1
DEPTH: 0.2 - 1.2 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 7%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

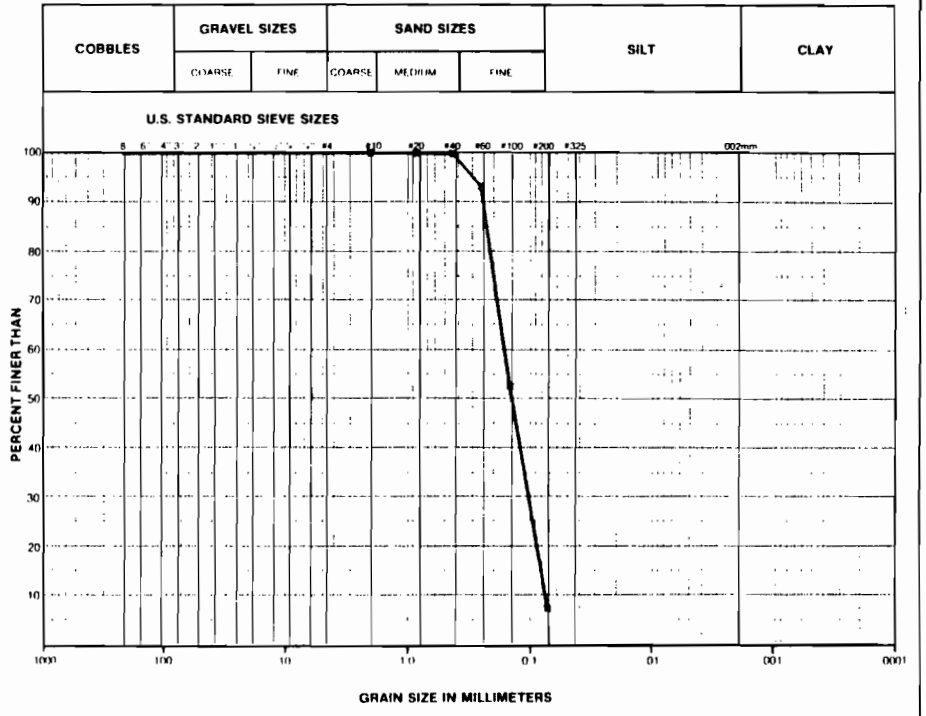
D_{60}	mm	GRAVEL	40 %
D_{30}	mm	SAND	46 %
D_{10}	mm	SILT + CLAY	14 %
C_U	mm		
C_C	mm		

Plate C13

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 10 SAMPLE: C1
DEPTH: 1.2 - 1.8 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP
M/C = 25%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

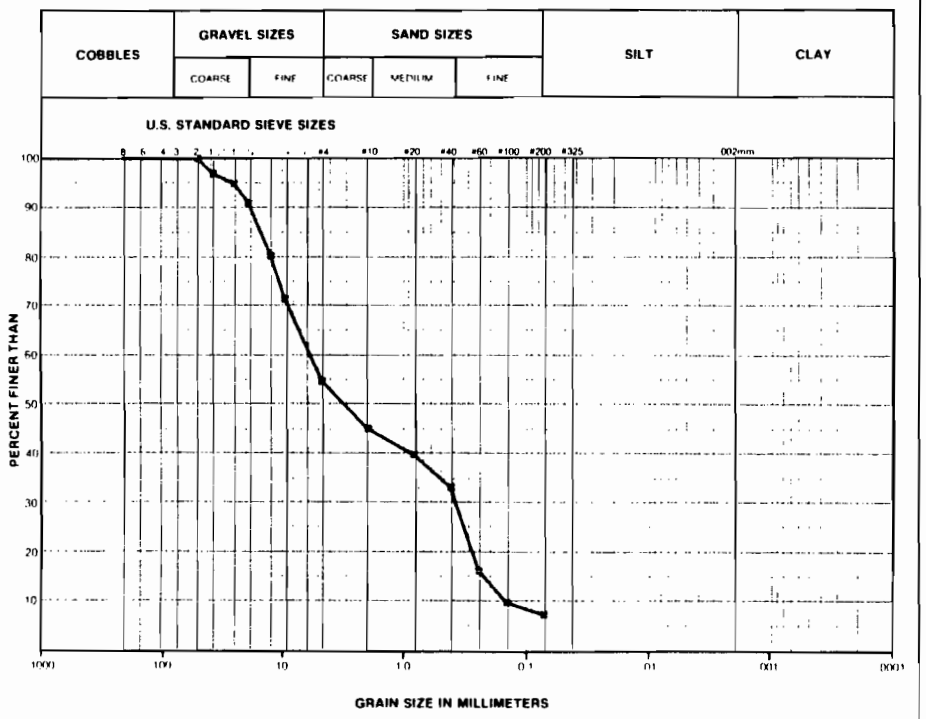
D_{60}	mm	GRAVEL	0 %
D_{30}	mm	SAND	92 %
D_{10}	mm	SILT	%
C_U	mm	+ CLAY	8 %
C_C	mm		

Plate C14

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 11 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SW-SP
M/C = 5%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

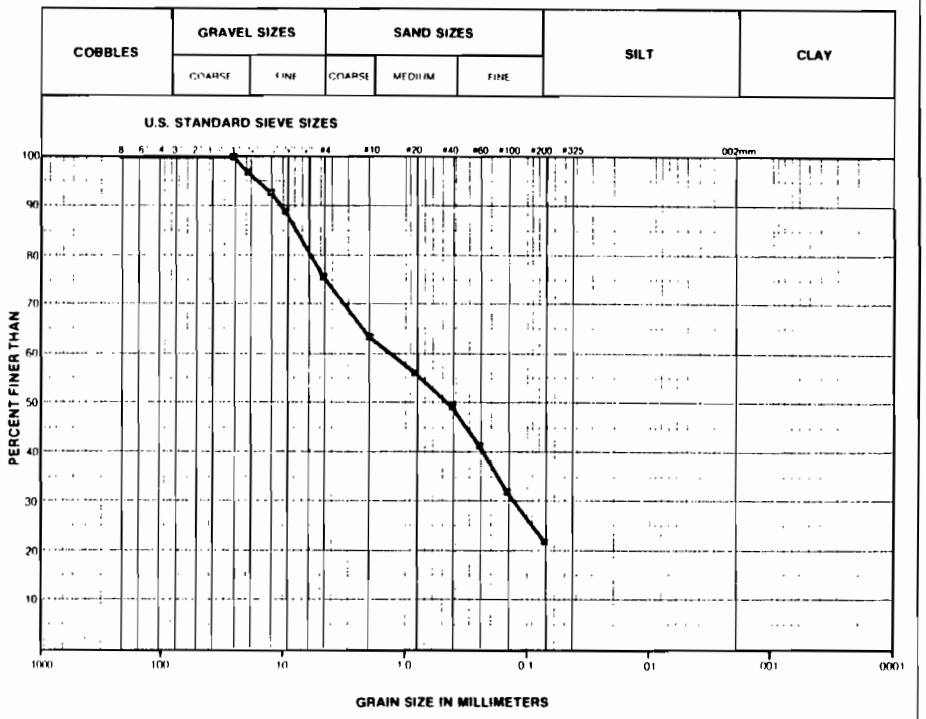
SUMMARY			
D_{60}	mm	GRAVEL	45 %
D_{30}	mm	SAND	47 %
D_{10}	mm	SILT + CLAY	8 %
C_U	mm		
C_C	mm		

Plate C15

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 12 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 8%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

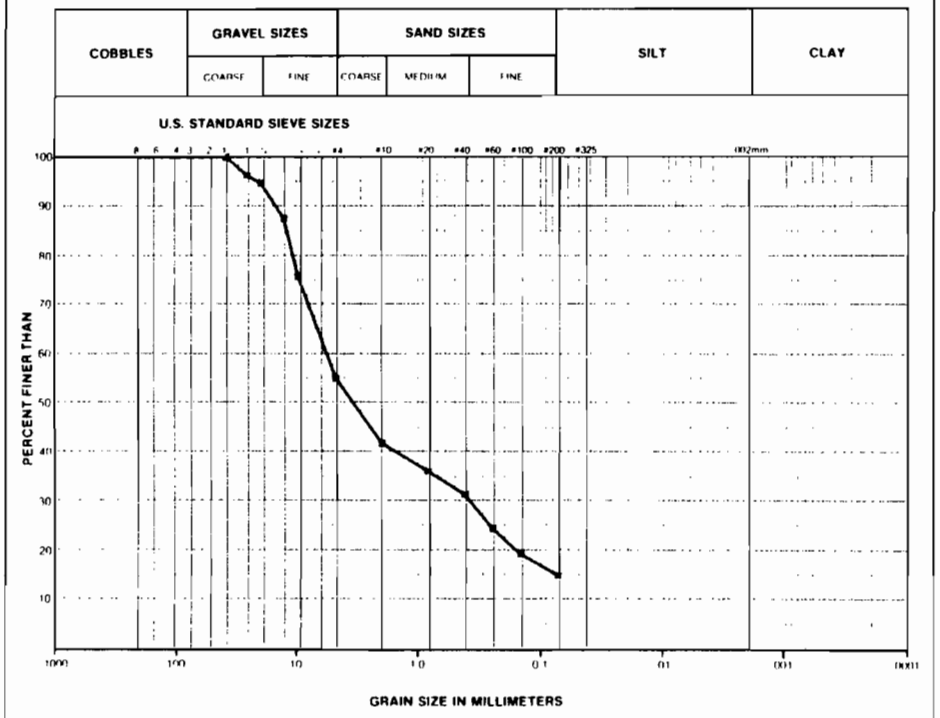
SUMMARY			
D_{60}	mm	GRAVEL	24 %
D_{30}	mm	SAND	53 %
D_{10}	mm	SILT + CLAY	23 %
C_U	mm		
C_C	mm		

Plate C16

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 12 SAMPLE: A2
DEPTH: 1.2 - 2.5 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GP-GM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

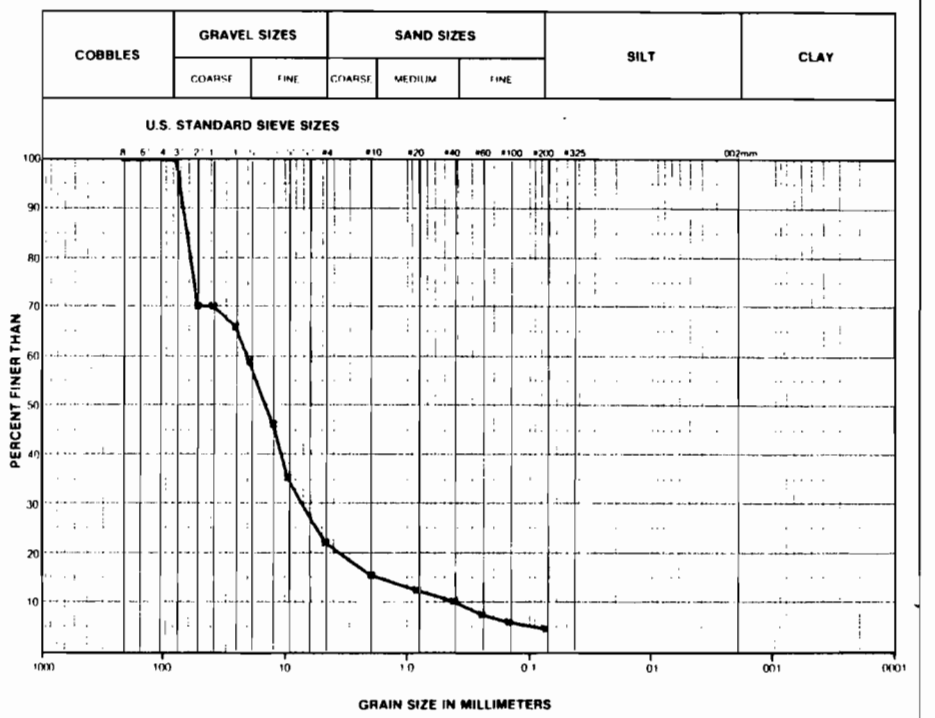
$D_{...}$	mm	GRAVEL	45	%
$D_{...}$	mm	SAND	40	%
$D_{...}$	mm	SILT + CLAY	15	%
$C_{...}$	mm			
$C_{...}$	mm			

Plate C17

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155 - N
HOLE: 13 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: GW-GP
M/C = 4%
Calass 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

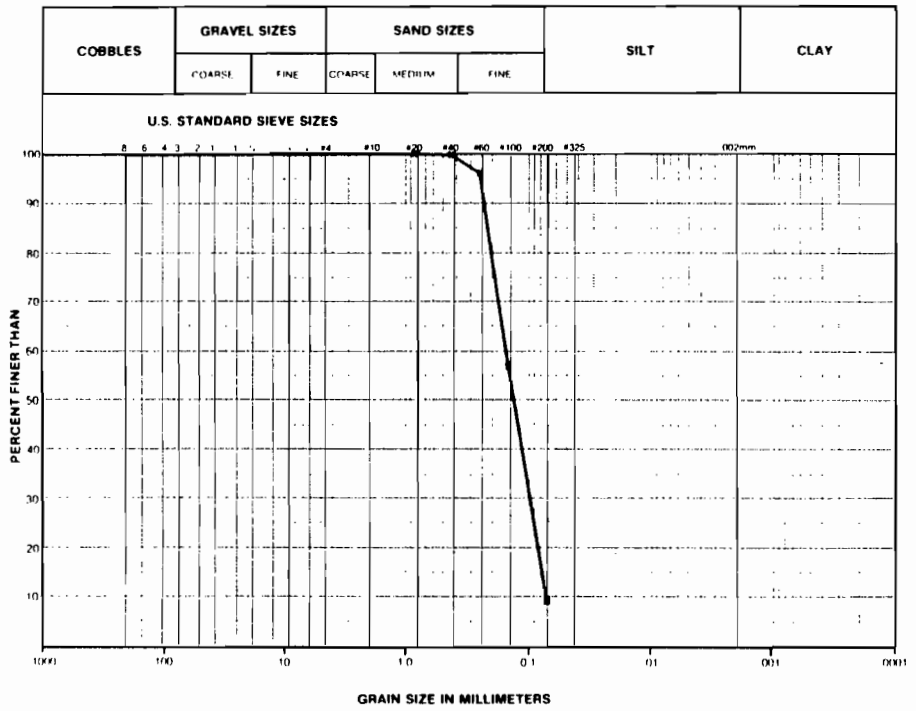
$D_{...}$	mm	GRAVEL	77	%
$D_{...}$	mm	SAND	17	%
$D_{...}$	mm	SILT + CLAY	6	%
$C_{...}$	mm			
$C_{...}$	mm			

Plate C18

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 13 SAMPLE: C1
DEPTH: 1.5 - 1.8 m
TECHNICIAN: LR DATE: 98:04:23



REMARKS: SP
M/C = 25%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{60}	mm	GRAVEL	0 %
D_{30}	mm	SAND	91 %
D_{10}	mm	SILT + CLAY	9 %
C_U	mm		
C_c	mm		

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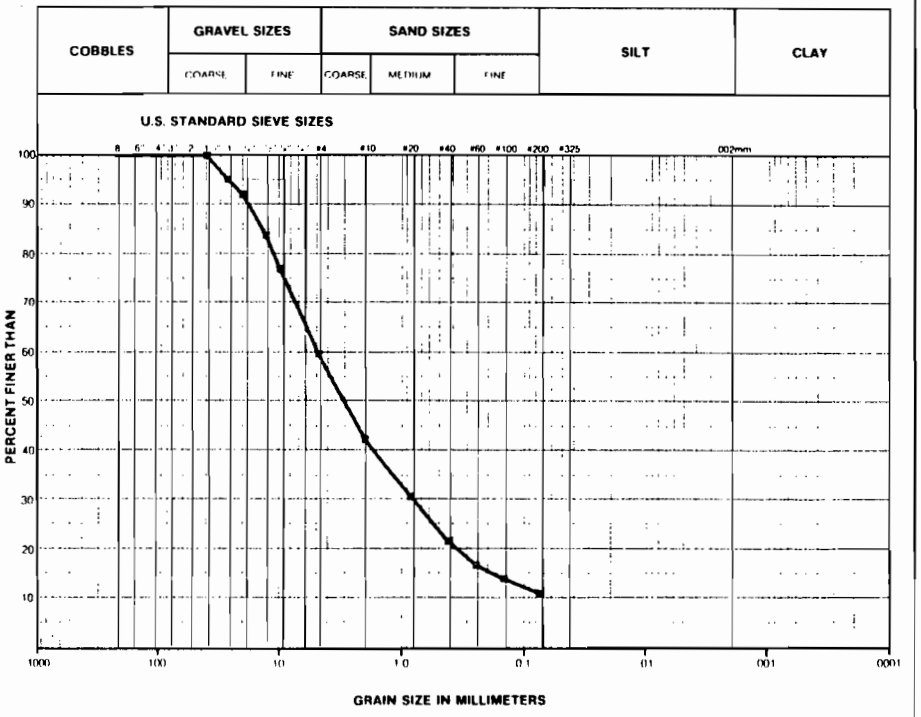
Plate C19

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 14 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM.
M/C = 13%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{60}	mm	GRAVEL	40 %
D_{30}	mm	SAND	48 %
D_{10}	mm	SILT + CLAY	12 %
C_U	mm		
C_c	mm		

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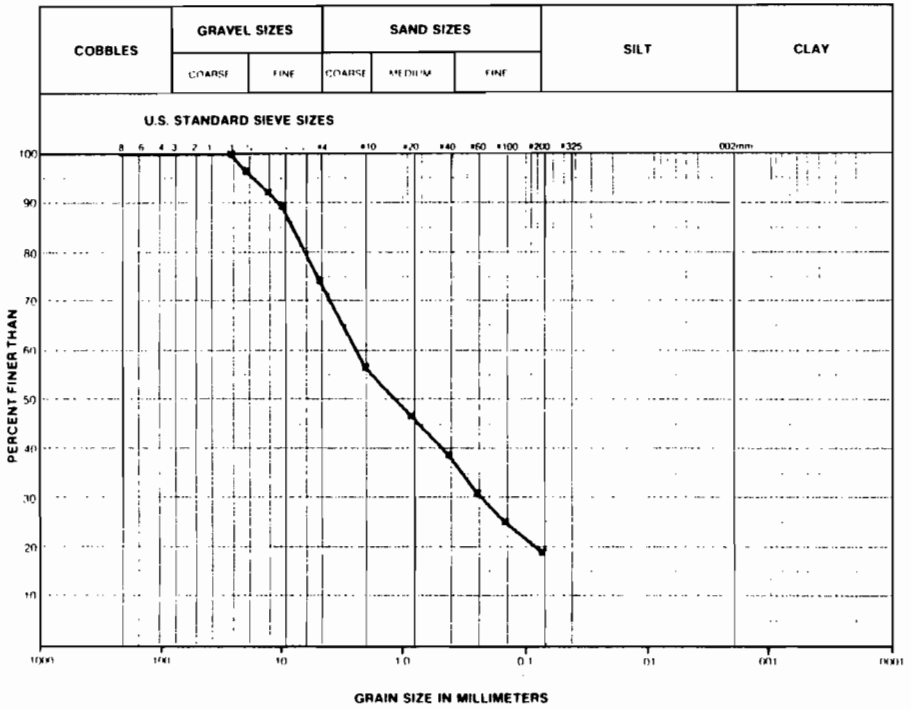
Plate C20

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 15 SAMPLE: A1
DEPTH: 0.4 - 1.2 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SP-SM
M/C = 12%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

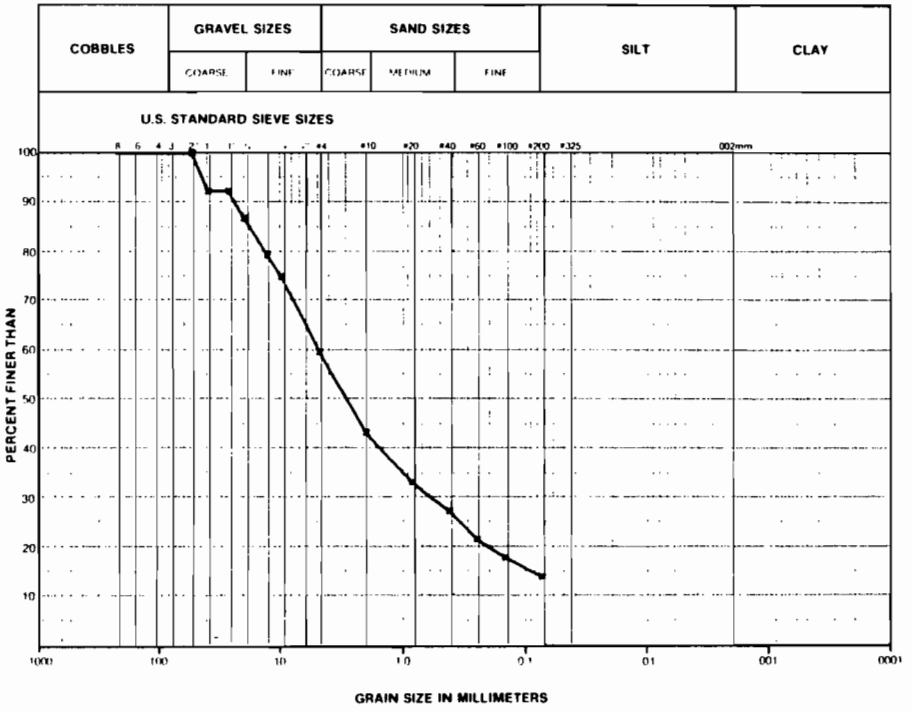
SUMMARY			
$D_{..}$	mm	GRAVEL	25 %
$D_{..}$	mm	SAND	55 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY }	20 %
$C_{..}$	mm		

Plate C21

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 16 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: SP-SM
M/C = 7%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

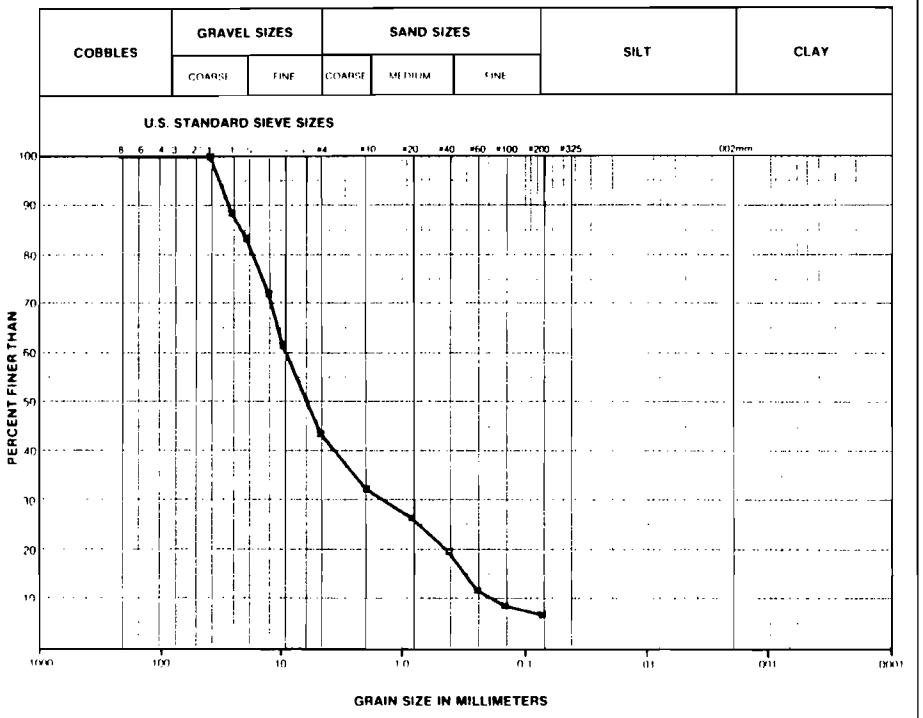
SUMMARY			
$D_{..}$	mm	GRAVEL	40 %
$D_{..}$	mm	SAND	45 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY }	15 %
$C_{..}$	mm		

Plate C22

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB NUMBER	
LOCATION	155-N
HOLE	18
SAMPLE	A1
DEPTH	0.6 - 1.8 m
TECHNICIAN	LR
DATE	87:04:21



REMARKS: GW-GP
M/C = 11%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

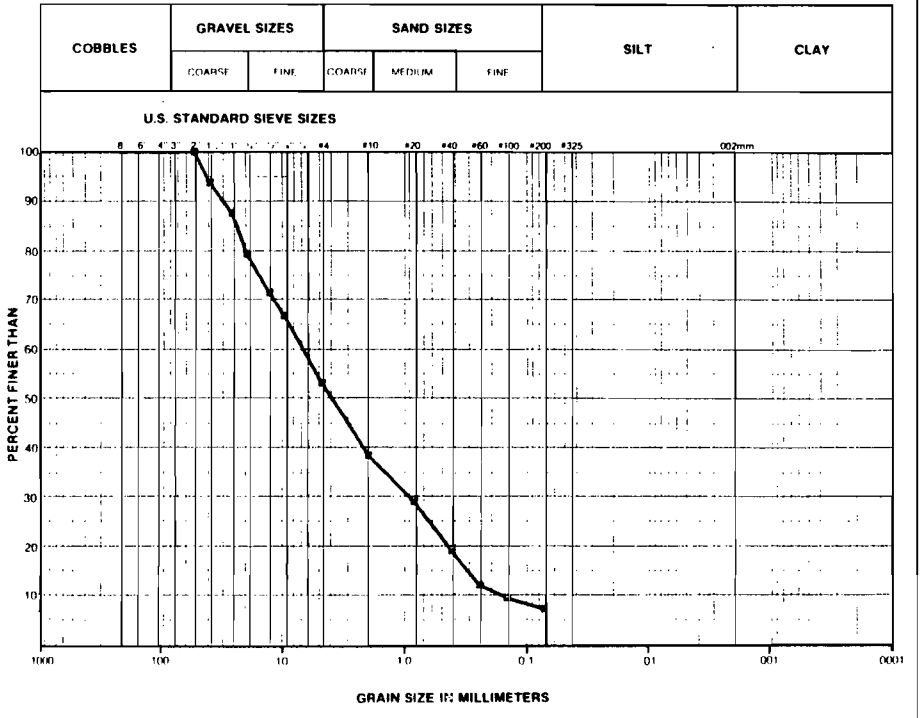
SUMMARY			
$D_{..}$	mm	GRAVEL	56 %
$D_{..}$	mm	SAND	36 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY	8 %
$C_{..}$	mm		

Plate C23

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB NUMBER	
LOCATION	155 - N
HOLE	18
SAMPLE	A2
DEPTH	2.1 - 3.0 m
TECHNICIAN	L.R.
DATE	87:04:18



REMARKS: GW-GP
M/C = 9%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

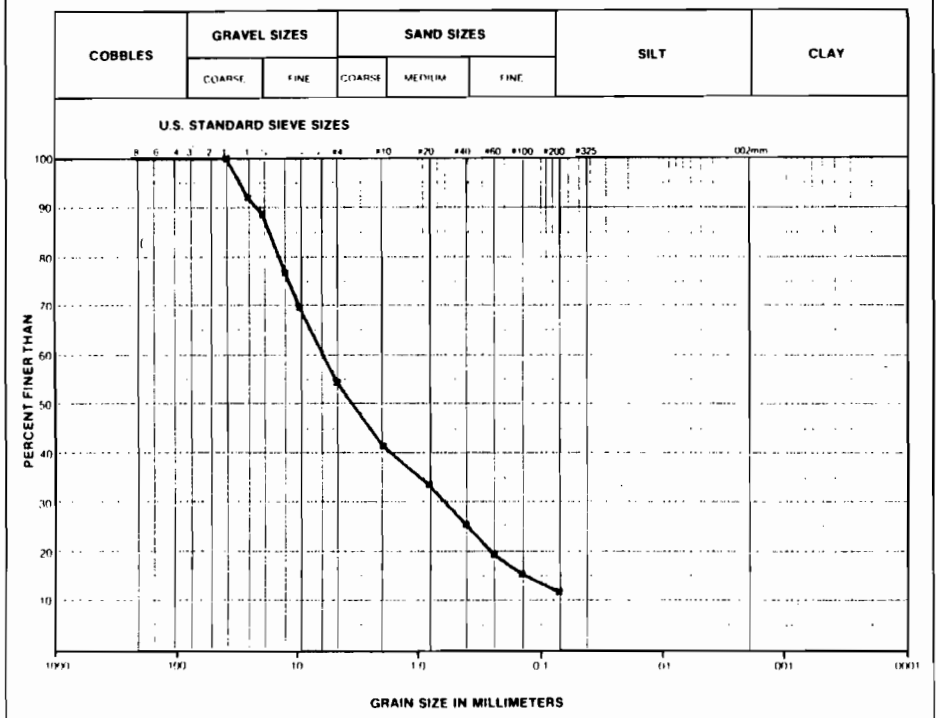
SUMMARY			
$D_{..}$	mm	GRAVEL	47 %
$D_{..}$	mm	SAND	45 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY	8 %
$C_{..}$	mm		

Plate C24

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 19 SAMPLE: A1
DEPTH: 1.2 - 2.1 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: GW-GP
M/C = 12%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

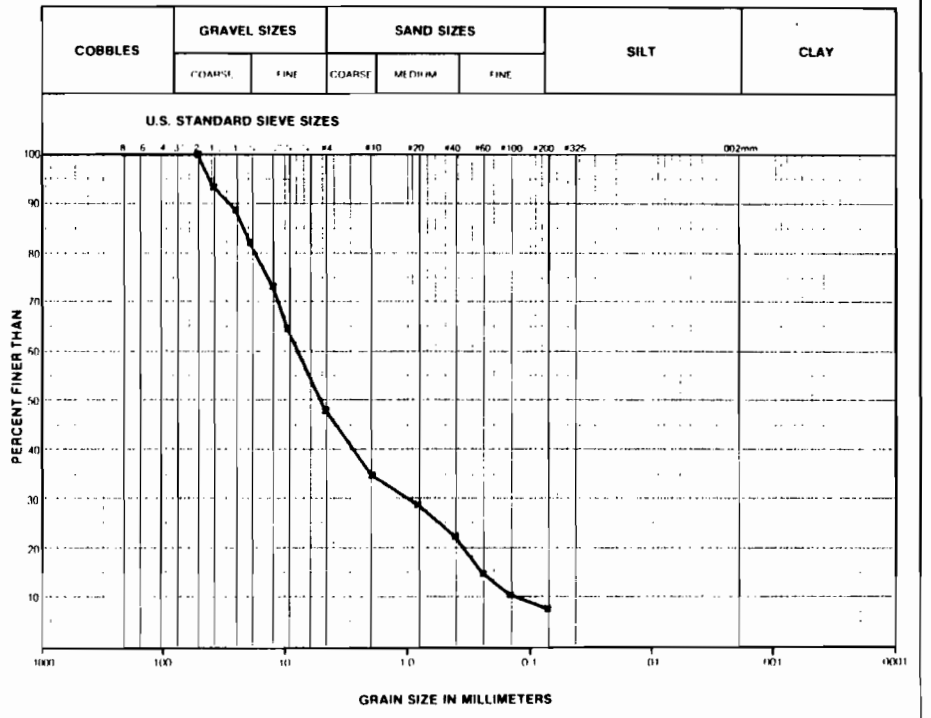
SUMMARY

D_{60}	mm	GRAVEL	45	%
D_{30}	mm	SAND	42	%
D_{10}	mm	SILT + CLAY	13	%
C_u	mm			
C_c	mm			

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 20 SAMPLE: A1
DEPTH: 1.5 - 3.0 m
TECHNICIAN: LR DATE: 87:04:15



REMARKS: GW-GP
M/C = 10%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

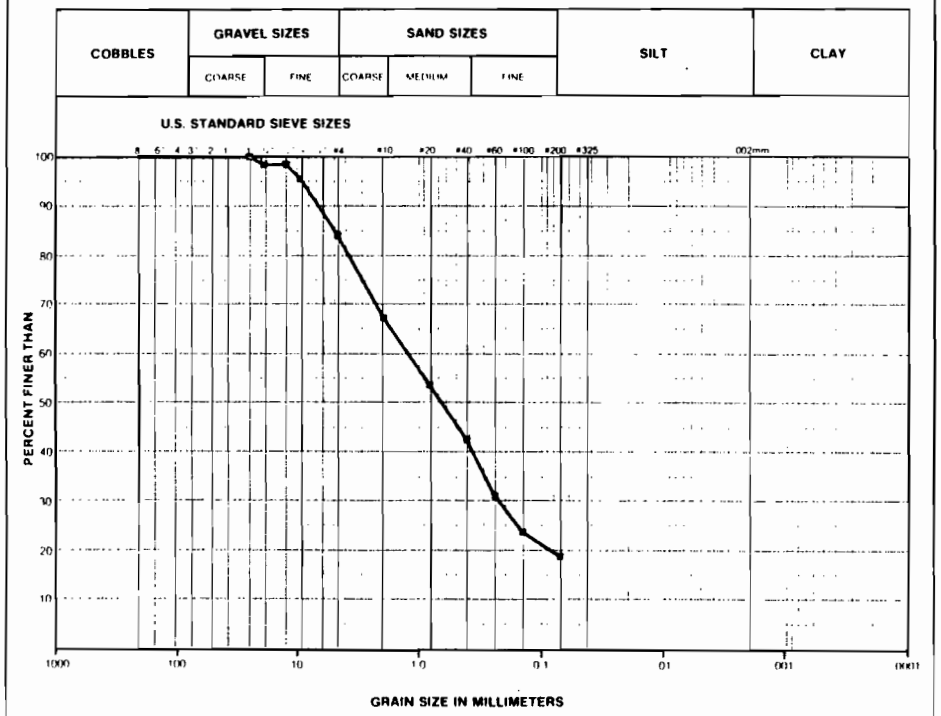
SUMMARY

D_{60}	mm	GRAVEL	52	%
D_{30}	mm	SAND	40	%
D_{10}	mm	SILT + CLAY	8	%
C_u	mm			
C_c	mm			

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 21 SAMPLE: A1
DEPTH: 2.1 - 2.4 m
TECHNICIAN: GW DATE: 87:04:15



REMARKS: SP-SM
M/C = 20%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

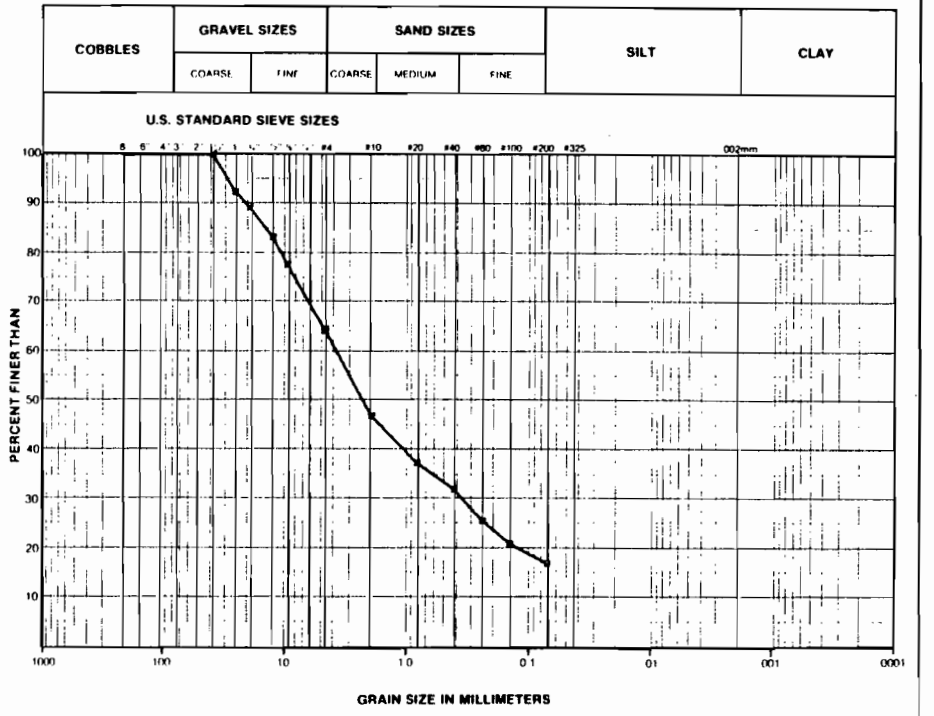
D_{10}	mm	GRAVEL	16	%
D_{30}	mm	SAND	65	%
D_{60}	mm	SILT + CLAY	19	%
C_U	mm			
C_C	mm			

Plate C27

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 21 SAMPLE: A2
DEPTH: 3.7 - 4.0 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: SP-SM
M/C = 15%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

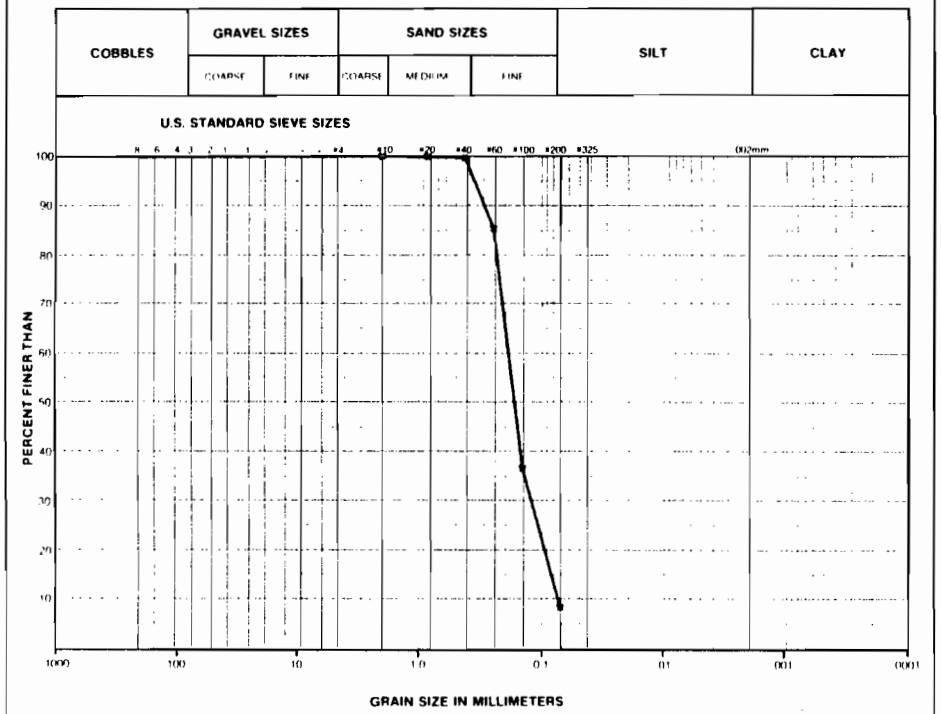
D_{10}	mm	GRAVEL	35	%
D_{30}	mm	SAND	47	%
D_{60}	mm	SILT + CLAY	18	%
C_U	mm			
C_C	mm			

Plate C28

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 22 SAMPLE: C2
DEPTH: 2.9 - 3.0 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP
M/C = 25%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D..	mm	GRAVEL	0 %
D..	mm	SAND	91 %
D..	mm	SILT	%
C..	mm	+ CLAY	9 %
C..	mm		

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions:
(1) Any oral presentation made or opinion given by Hardy Associates (1978) Ltd. or any of its officers, agents, servants or employees, with respect to the interpretation of these test results is or was given without responsibility for the accuracy of any such representations or opinions, regardless of whether such representations or opinions were negligently formed or given.
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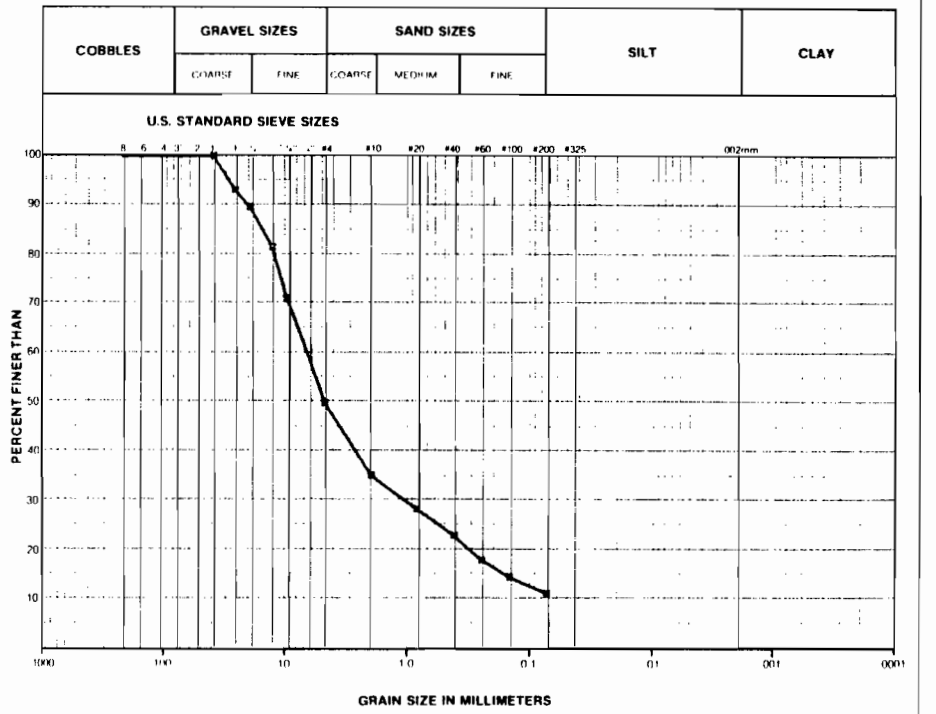
Plate C30

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 22 SAMPLE: A1 & A2
DEPTH: 1.2 - 1.8 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: GP-GM
M/C = 9%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D..	mm	GRAVEL	50 %
D..	mm	SAND	38 %
D..	mm	SILT	%
C..	mm	+ CLAY	12 %
C..	mm		

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions:
(1) Any oral presentation made or opinion given by Hardy Associates (1978) Ltd. or any of its officers, agents, servants or employees, with respect to the interpretation of these test results is or was given without responsibility for the accuracy of any such representations or opinions, regardless of whether such representations or opinions were negligently formed or given.
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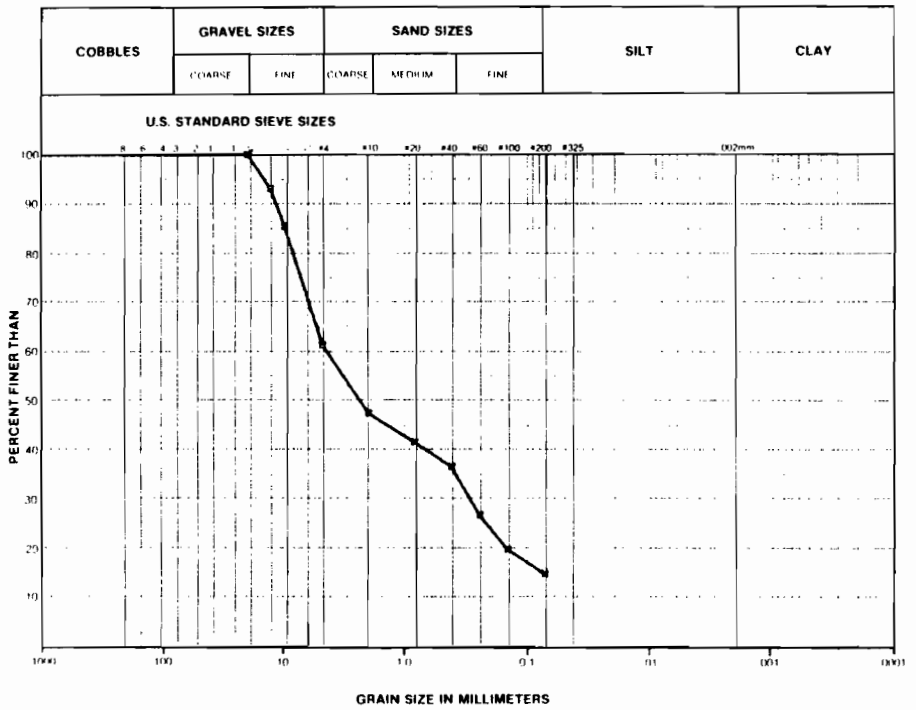
Plate C29

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 23 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 20%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

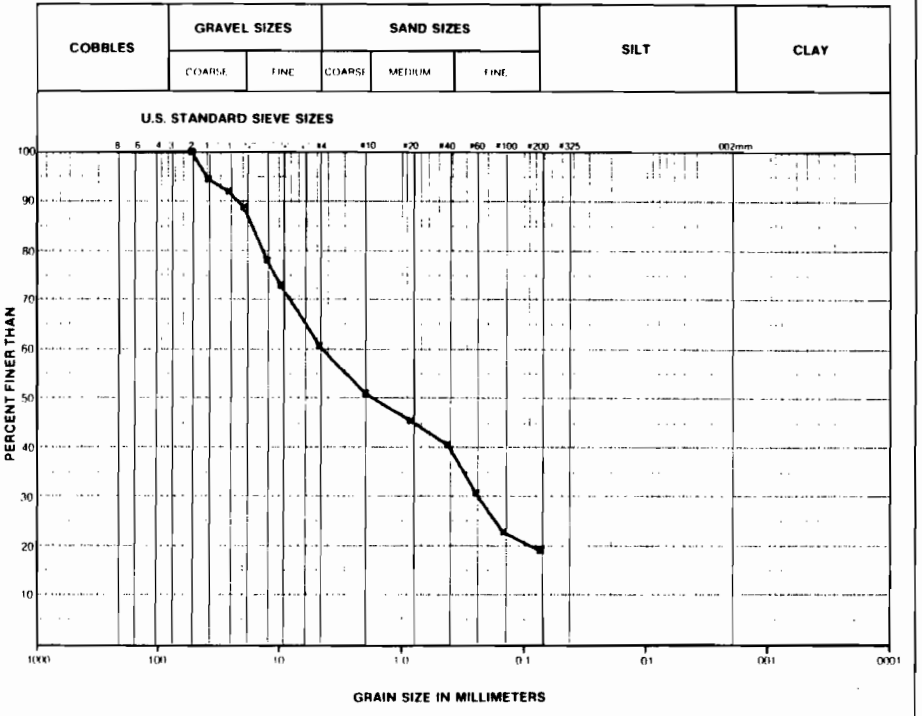
SUMMARY			
D_{60}	mm	GRAVEL	38 %
D_{30}	mm	SAND	46 %
D_{10}	mm	SILT + CLAY	16 %
C_u	mm		
C_c	mm		

Plate C31

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 23 SAMPLE: A2
DEPTH: 1.2 - 1.8 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 18%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

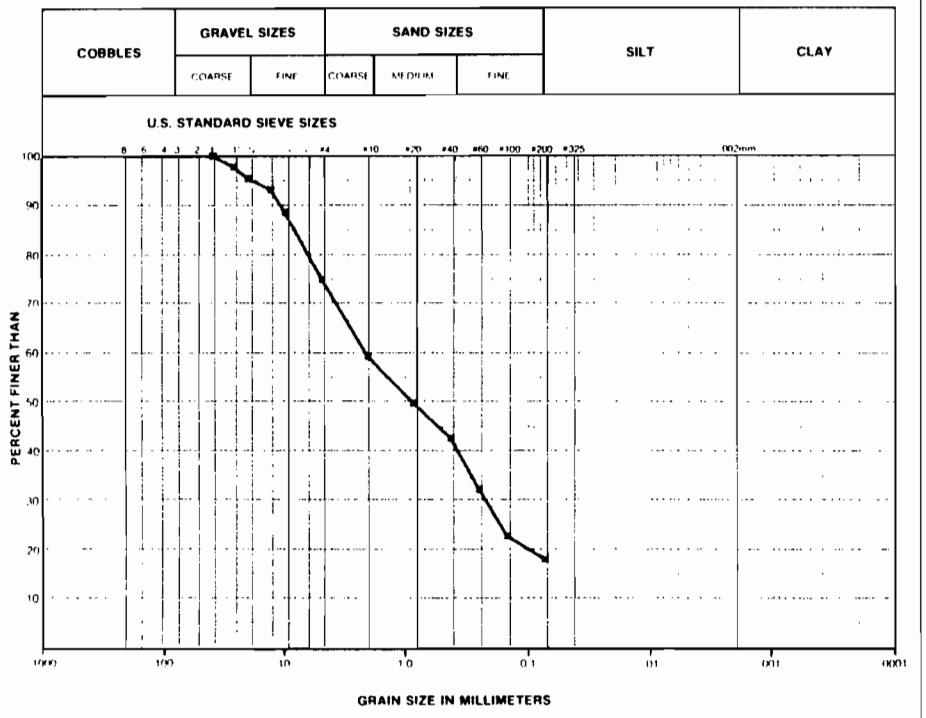
SUMMARY			
D_{60}	mm	GRAVEL	39 %
D_{30}	mm	SAND	41 %
D_{10}	mm	SILT + CLAY	20 %
C_u	mm		
C_c	mm		

Plate C32

HARDY ASSOCIATES (1978) LTD.
CONSULTING GEOTECHNICAL & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 24 SAMPLE: A1
DEPTH: 0.6 - 1.5 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 13%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY				
D_{60}	mm	GRAVEL	25	%
D_{30}	mm	SAND	56	%
D_{10}	mm	SILT + CLAY	19	%
C_U	mm			
C_C	mm			

HARDY ASSOCIATES (1978) LTD.
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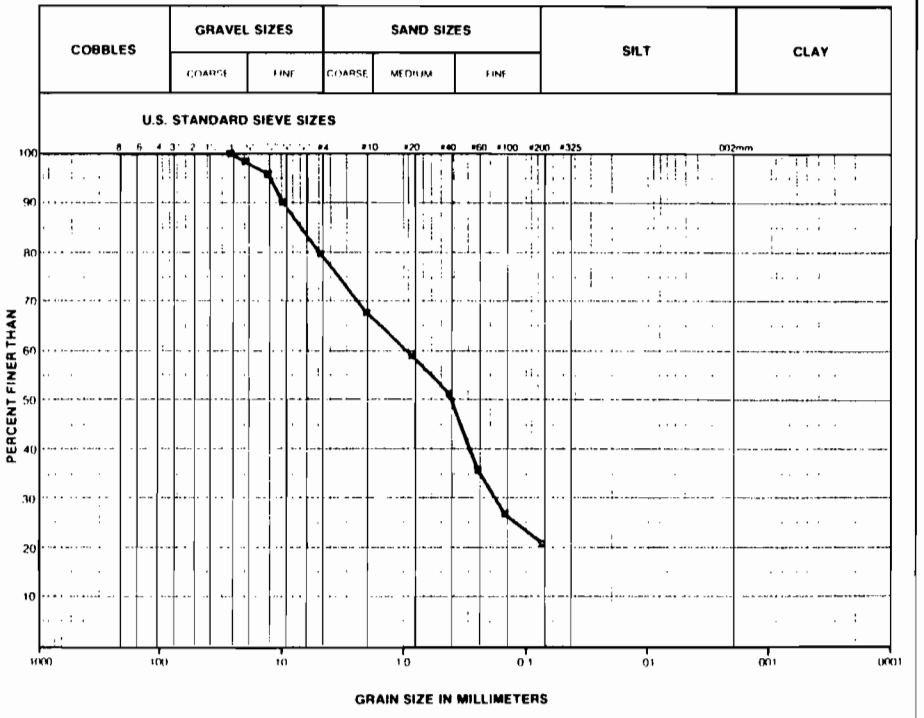
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-N
HOLE: 24 SAMPLE: A2
DEPTH: 1.2 - 2.1 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SP-SM
M/C = 19%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY				
D_{60}	mm	GRAVEL	20	%
D_{30}	mm	SAND	58	%
D_{10}	mm	SILT + CLAY	22	%
C_U	mm			
C_C	mm			

HARDY ASSOCIATES (1978) LTD.
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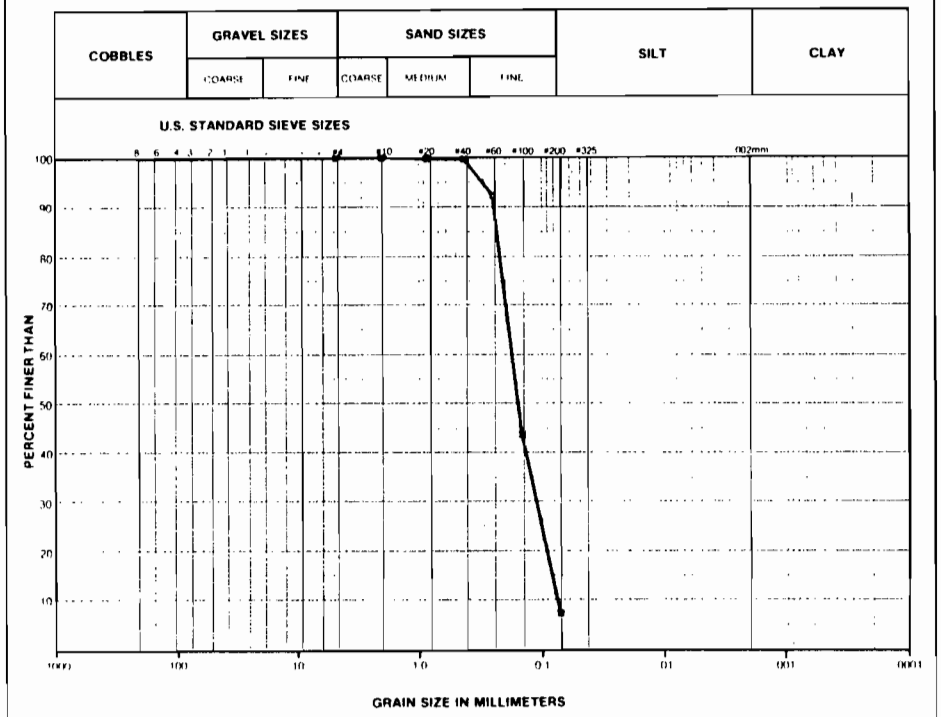
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 24 SAMPLE: C1
DEPTH: 2.1 - 2.7 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP
M/C = 24%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

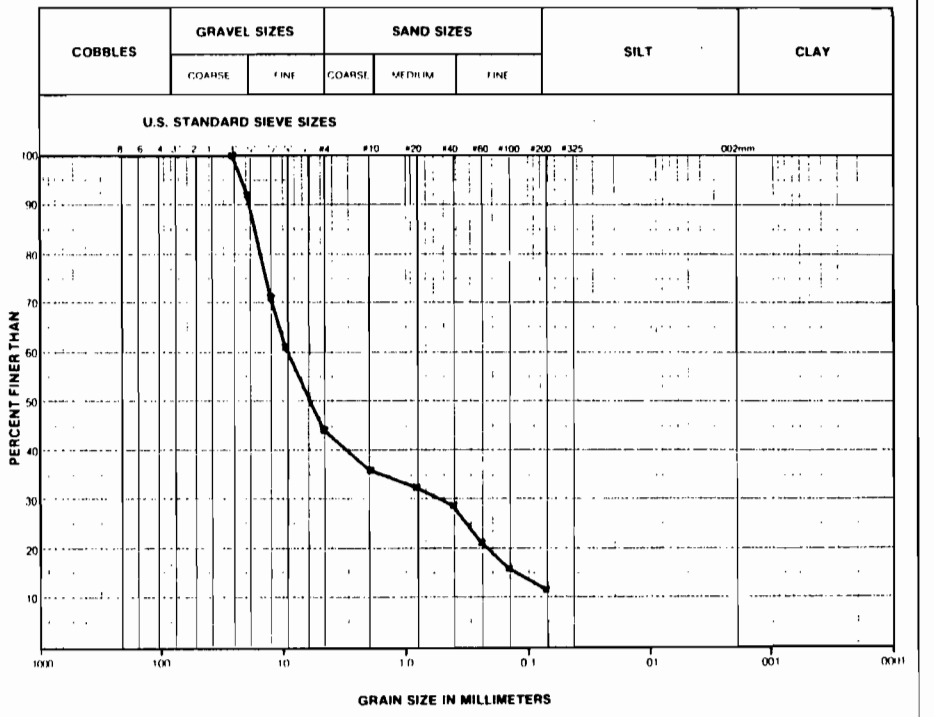
SUMMARY			
$D_{..}$	mm	GRAVEL	0 %
$D_{..}$	mm	SAND	92 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY	8 %
$C_{..}$	mm		

Plate C35

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 26 SAMPLE: A1
DEPTH: 1.5 - 2.1 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: GM
M/C = 18%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{..}$	mm	GRAVEL	55 %
$D_{..}$	mm	SAND	32 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	+ CLAY	13 %
$C_{..}$	mm		

Plate C36

HARDY ASSOCIATES (1978) LTD.
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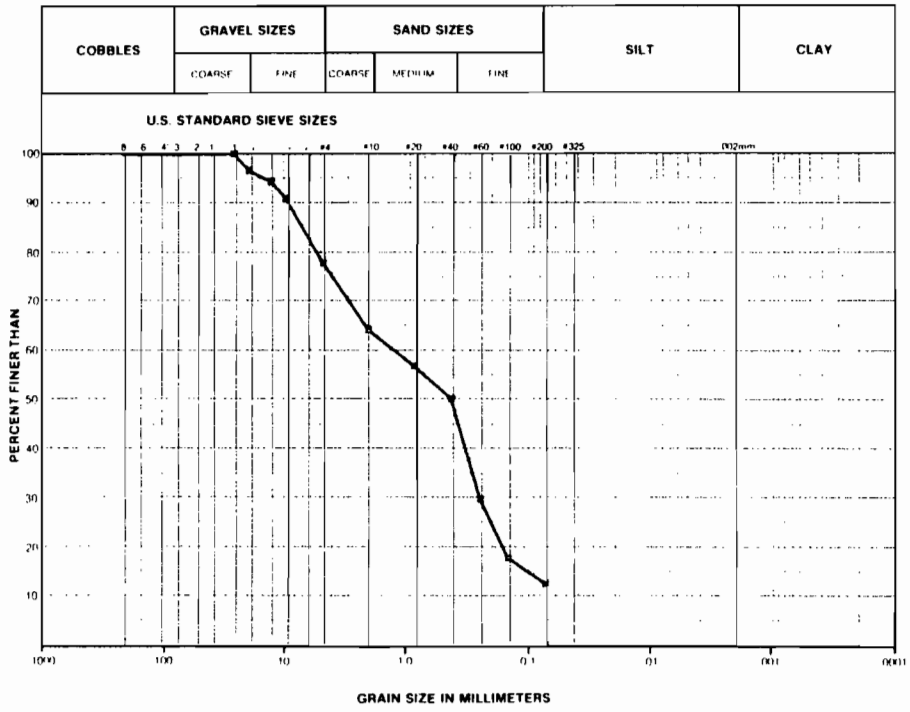
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 27 SAMPLE: A1
DEPTH: 1.2 - 2.1 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 12%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

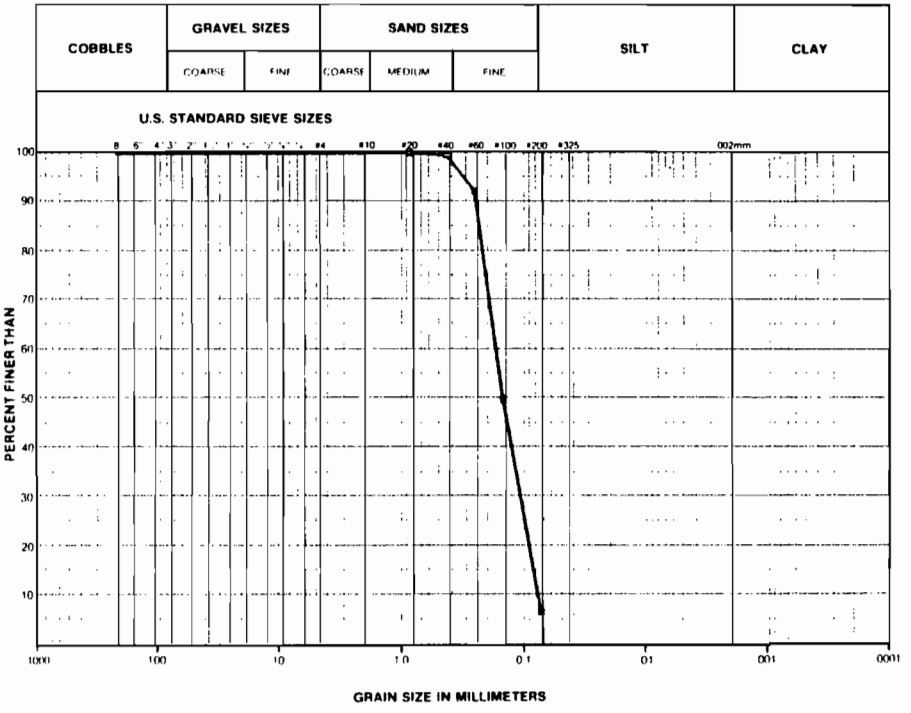
D_{60}	mm	GRAVEL	22	%
D_{30}	mm	SAND	65	%
D_{10}	mm	SILT + CLAY	13	%
C_U	mm			
C_C	mm			

Plate C37

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 27 SAMPLE: C1
DEPTH: 2.4 - 3.2 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP
M/C = 24%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

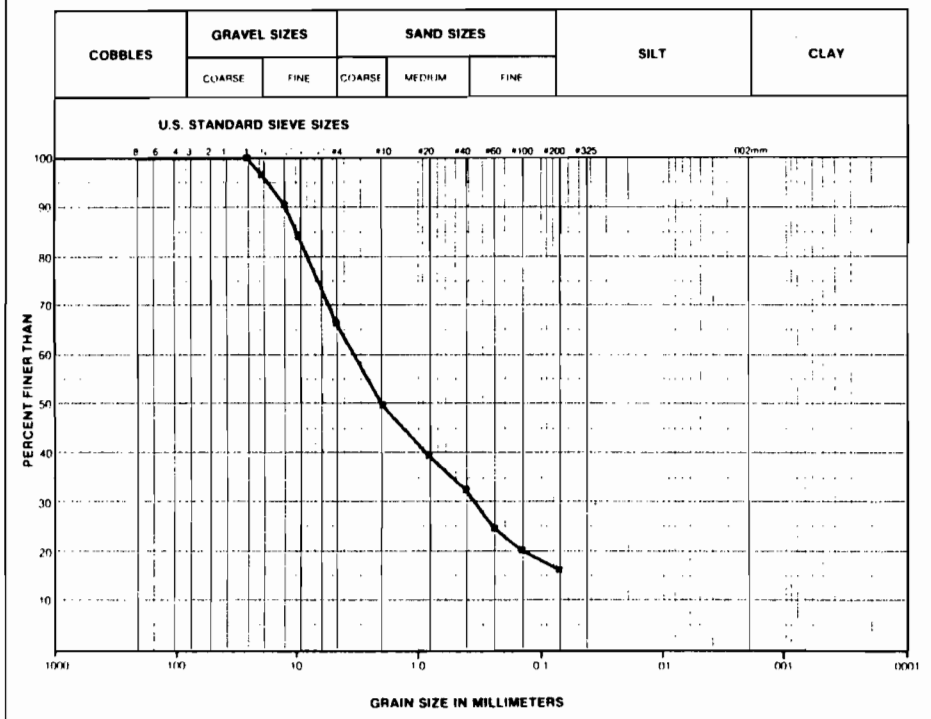
D_{60}	mm	GRAVEL	0	%
D_{30}	mm	SAND	93	%
D_{10}	mm	SILT + CLAY	7	%
C_U	mm			
C_C	mm			

Plate C38

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 28 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: SP-SM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

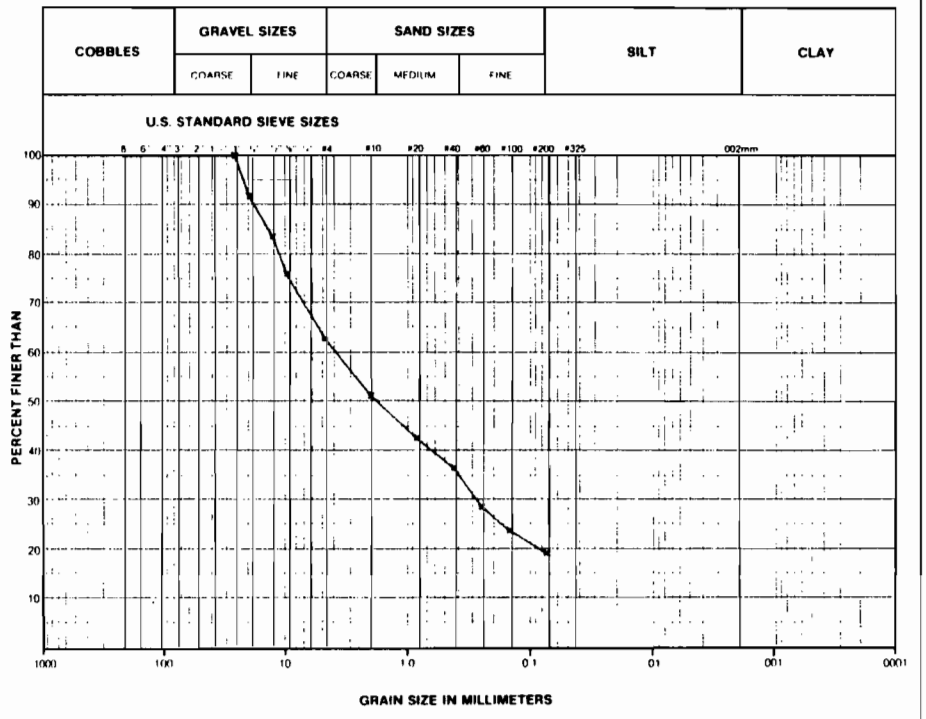
D_{60}	mm	GRAVEL	33 %
D_{30}	mm	SAND	50 %
D_{10}	mm	SILT + CLAY	17 %
C_U	mm		
C_C	mm		

Plate C39

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 29 SAMPLE: A1
DEPTH: 1.1 - 1.7 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: SP-SM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

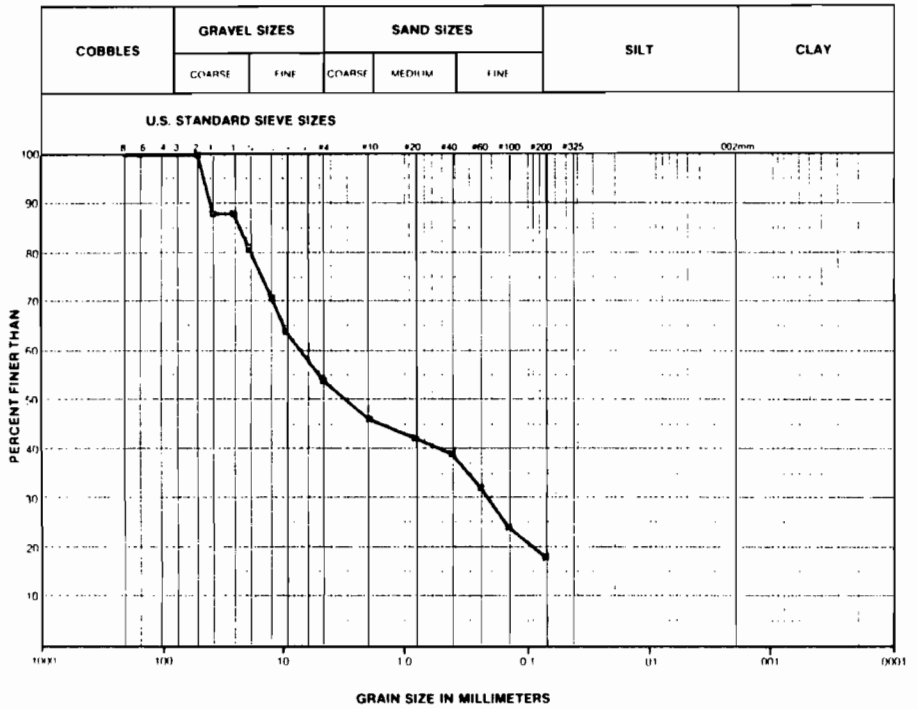
D_{60}	mm	GRAVEL	37 %
D_{30}	mm	SAND	43 %
D_{10}	mm	SILT	%
C_U	mm	+ CLAY	20 %
C_C	mm		

Plate C40

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN -TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 30 SAMPLE: C3
DEPTH: 1.1 - 1.4 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: GP-GM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

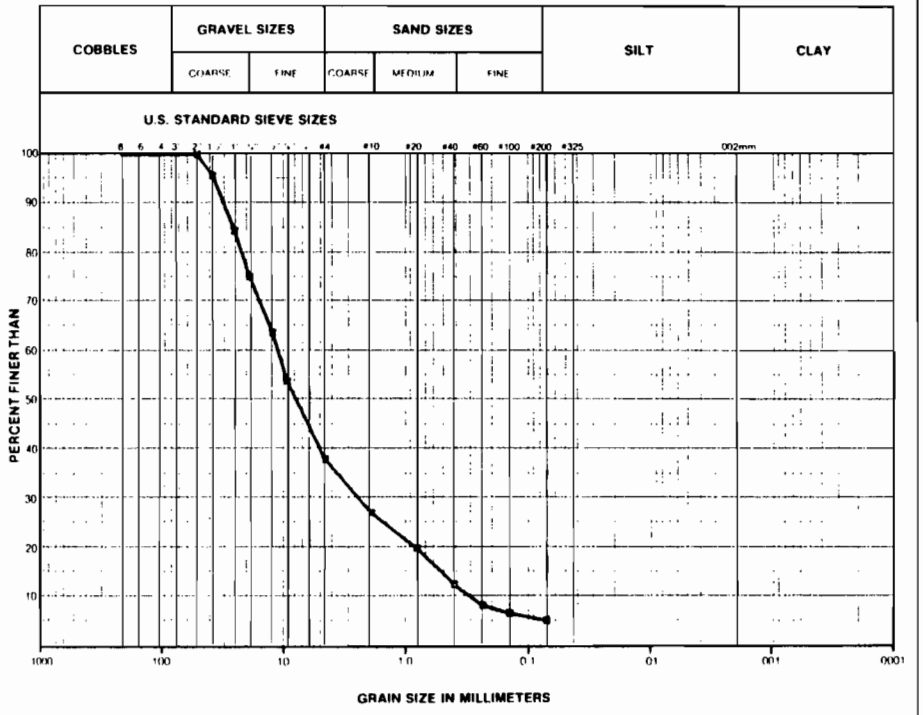
D_{60}	mm	GRAVEL	46	%
D_{30}	mm	SAND	35	%
D_{10}	mm	SILT + CLAY	19	%
C_u	mm			
C_c	mm			

Plate C41

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN -TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 30 SAMPLE: C4
DEPTH: 1.5 - 2.4 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: GW-GP
M/C = 6%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

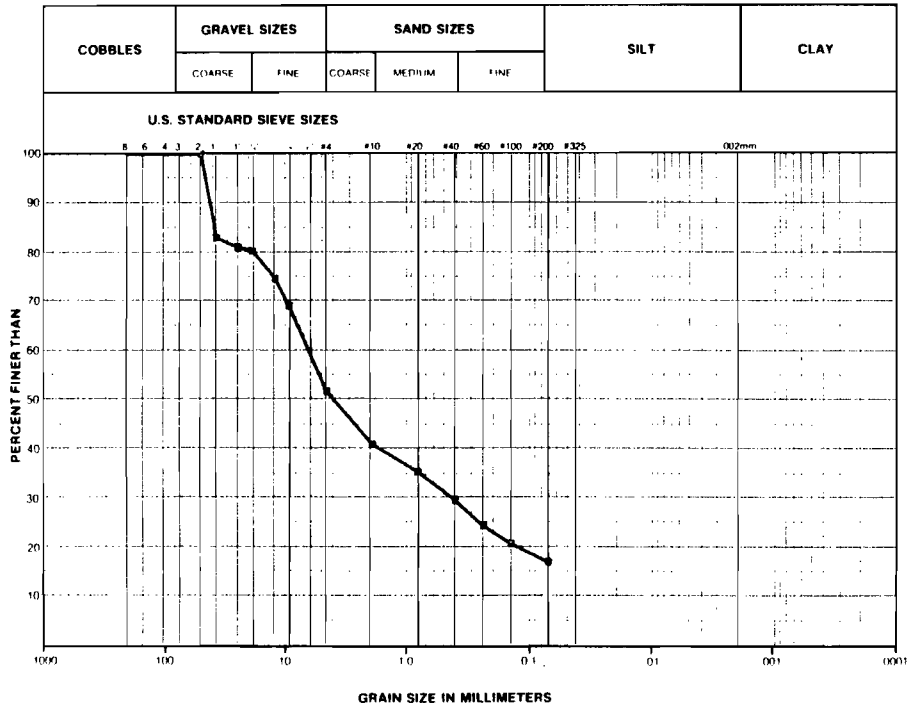
D_{60}	mm	GRAVEL	62	%
D_{30}	mm	SAND	32	%
D_{10}	mm	SILT + CLAY	6	%
C_u	mm			
C_c	mm			

Plate C42

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 31 SAMPLE: A1
DEPTH: 0.2 - 0.6
TECHNICIAN: LR DATE: 87:04:23



REMARKS: GM
M/C = 14%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

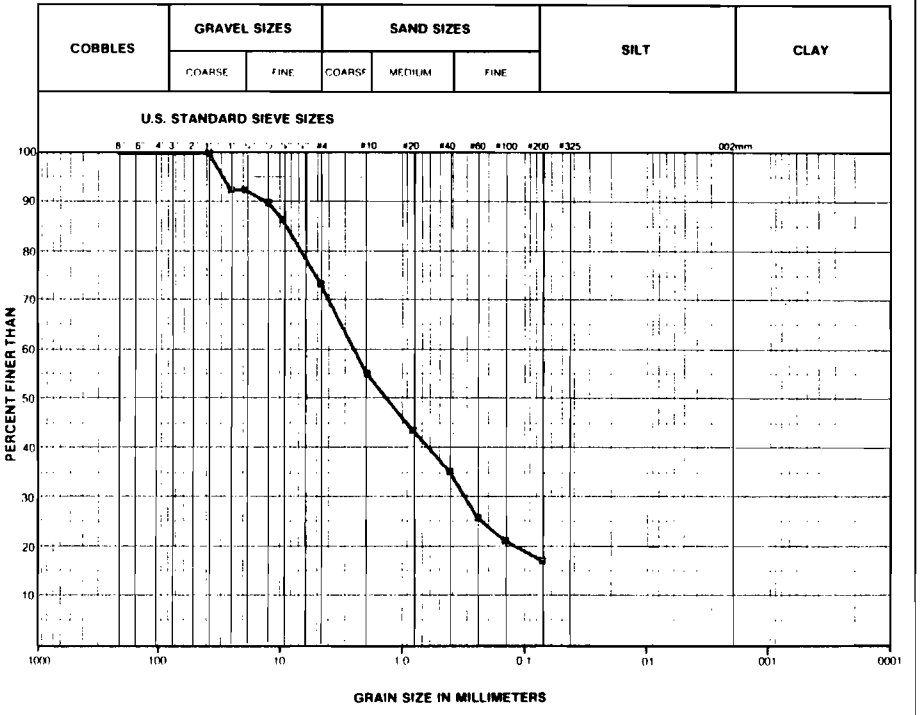
D_{60}	mm	GRAVEL	48	%
D_{30}	mm	SAND	34	%
D_{10}	mm	SILT + CLAY	18	%
C_U	mm			
C_c	mm			

Plate C43

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG014096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 31 SAMPLE: A2
DEPTH: 0.8 - 1.3 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: SP-SM
M/C = 7%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

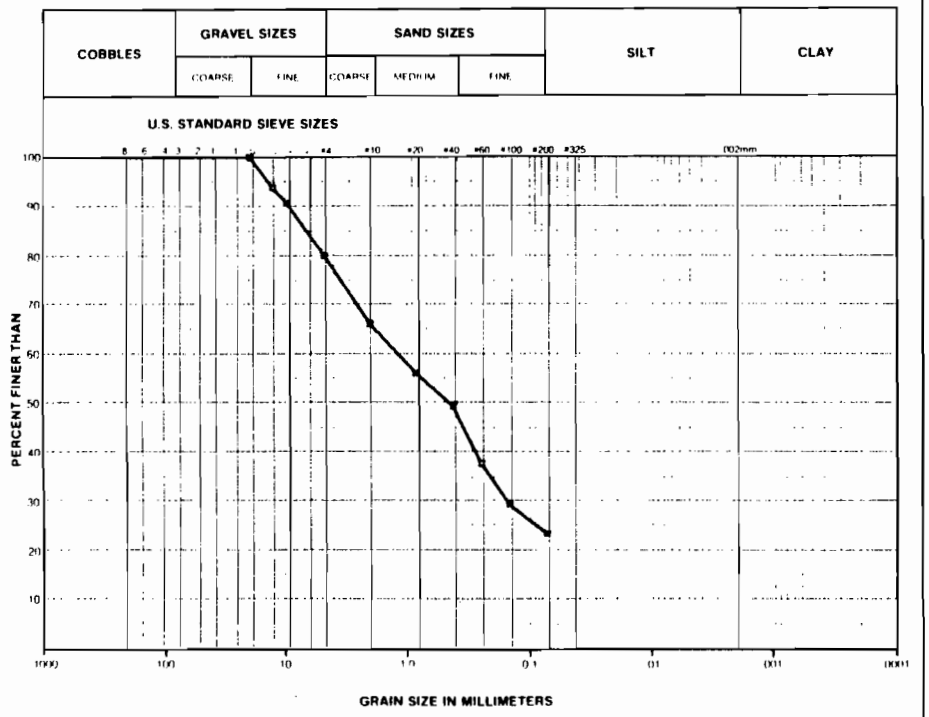
D_{60}	mm	GRAVEL	26	%
D_{30}	mm	SAND	56	%
D_{10}	mm	SILT + CLAY	18	%
C_U	mm			
C_c	mm			

Plate C44

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 32 SAMPLE: A1
DEPTH: 0.6 - 1.5 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SP-SM
M/C = 11%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{...}$	mm	GRAVEL	20 %
$D_{...}$	mm	SAND	56 %
$D_{...}$	mm	SILT + CLAY	24 %
$C_{...}$	mm		
$C_{...}$	mm		

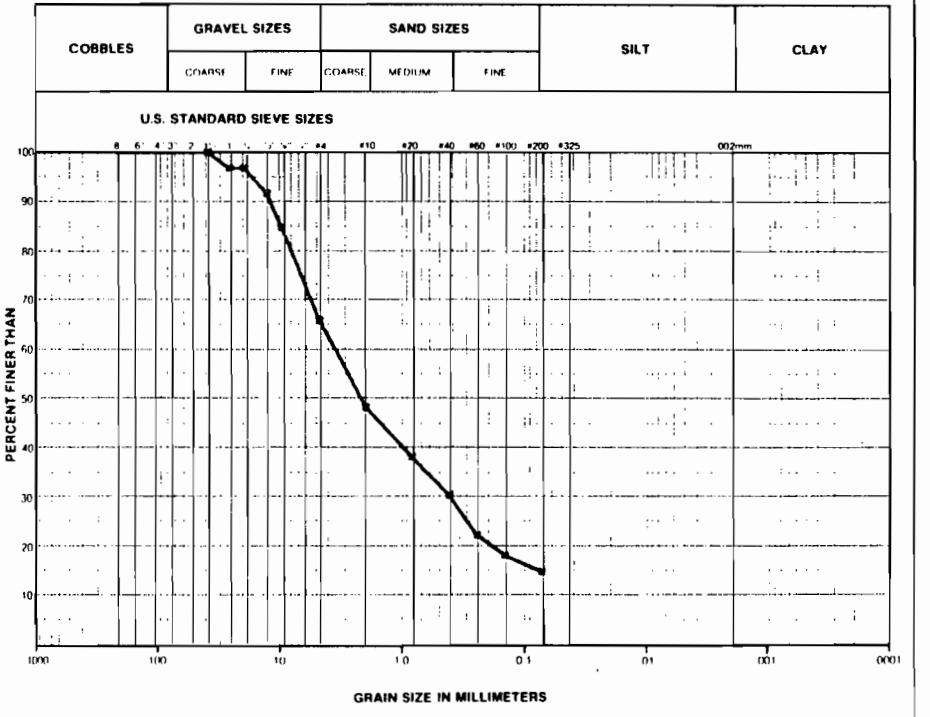
NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
(1) Any oral presentation made or opinion given by Hardy Associates (1978) Ltd. or any of its officers, agents, servants or employees with respect to the interpretation of these test results or as was given without responsibility for the accuracy of any such presentations or opinions, regardless of whether such representations or opinions were negligently formed or given.
(2) The liability of Hardy Associates (1978) Ltd. for the use of these test results shall in any and all events be limited to the fees received by it for providing the said test results.

Plate C45

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 33 SAMPLE: A1
DEPTH: 0.6 - 1.8 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{...}$	mm	GRAVEL	34 %
$D_{...}$	mm	SAND	51 %
$D_{...}$	mm	SILT + CLAY	15 %
$C_{...}$	mm		
$C_{...}$	mm		

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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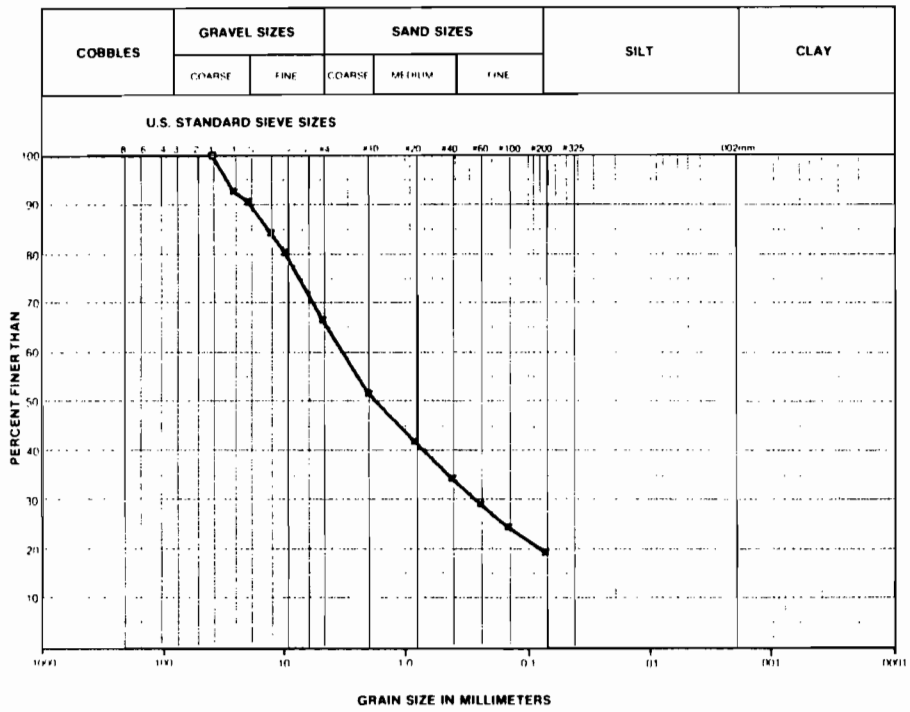
Plate C46

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 34 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 9%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{60}	mm	GRAVEL	33 %
D_{30}	mm	SAND	47 %
D_{10}	mm	SILT + CLAY	20 %
C_U	mm		
C_C	mm		

HARDY ASSOCIATES (1978) LTD.
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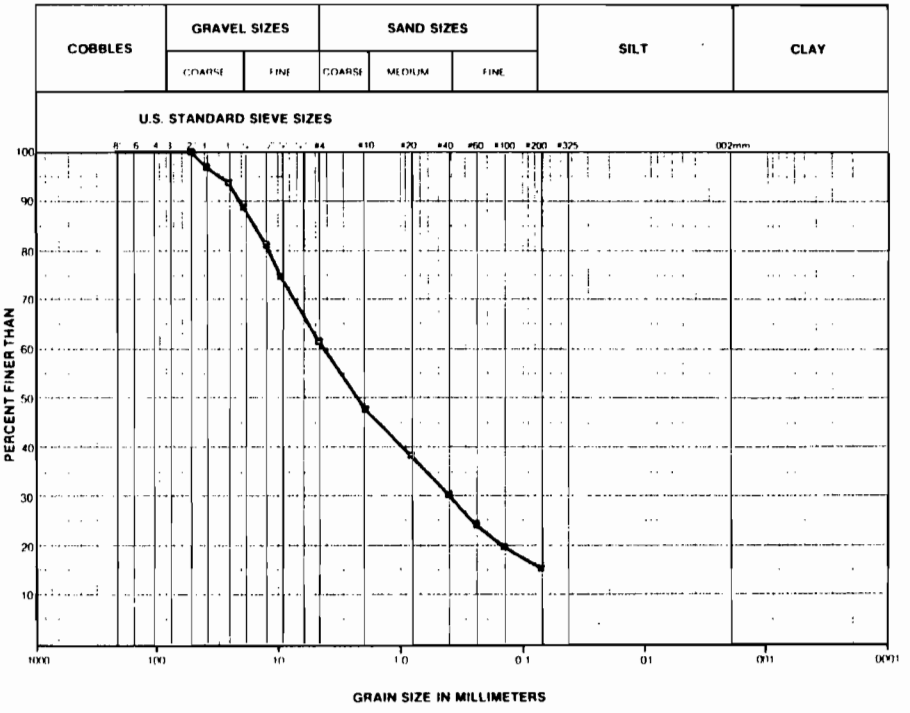
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 35 SAMPLE: A1
DEPTH: 0.6 - 1.8 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 11%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{60}	mm	GRAVEL	38 %
D_{30}	mm	SAND	46 %
D_{10}	mm	SILT + CLAY	16 %
C_U	mm		
C_C	mm		

HARDY ASSOCIATES (1978) LTD.
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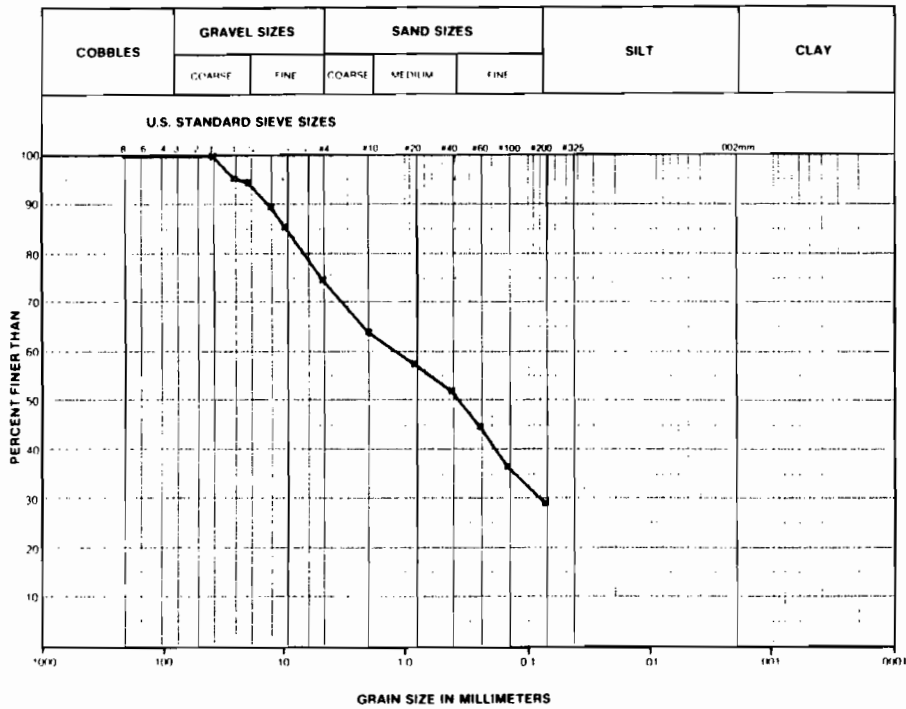
GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 36 SAMPLE: A1
DEPTH: 1.4 - 2.1 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP/SM-SC
M/C = 17%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

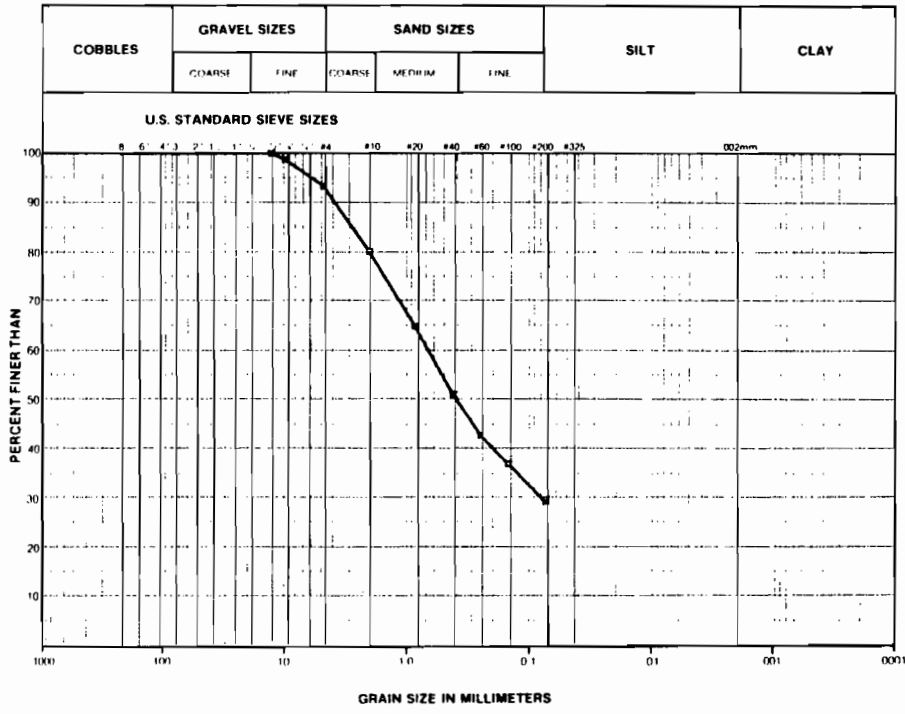
SUMMARY			
D_{60}	mm	GRAVEL	25 %
D_{30}	mm	SAND	45 %
D_{10}	mm	SILT + CLAY	30 %
C_U	mm		
C_C	mm		

Plate C49

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 37 SAMPLE: A1
DEPTH: 1.2 - 1.5 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SM-SC
M/C = 18%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

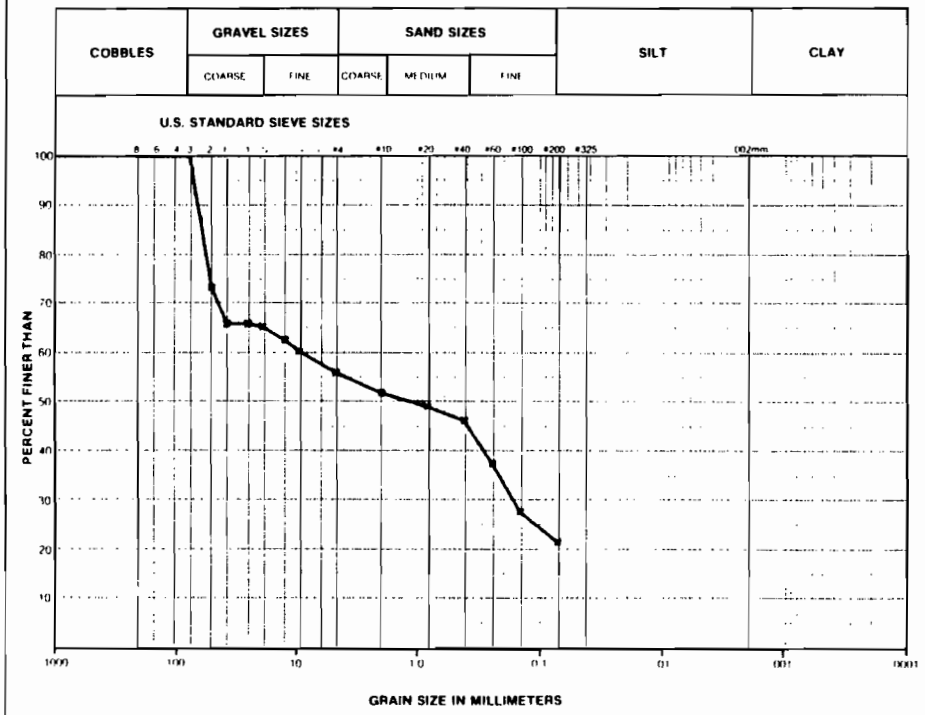
SUMMARY			
D_{60}	mm	GRAVEL	6 %
D_{30}	mm	SAND	64 %
D_{10}	mm	SILT + CLAY	30 %
C_U	mm		
C_C	mm		

Plate C50

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 39 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GM-GC
M/C = 11%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{10}	mm	GRAVEL	44	%
D_{30}	mm	SAND	34	%
D_{60}	mm	SILT		%
C_U	mm	+ CLAY	22	%
C_C	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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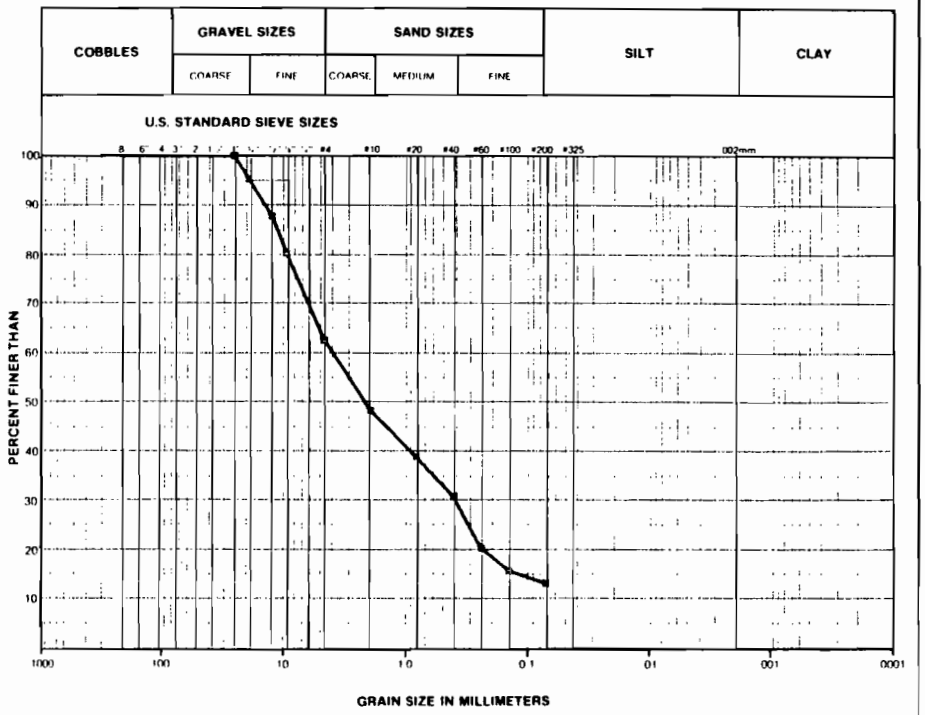
Plate C51

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 44 SAMPLE: A1
DEPTH: 0.3 - 2.1 m
TECHNICIAN: GW DATE: 87:04:15



REMARKS: SP-SM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

D_{10}	mm	GRAVEL	37	%
D_{30}	mm	SAND	49	%
D_{60}	mm	SILT		%
C_U	mm	+ CLAY	14	%
C_C	mm			

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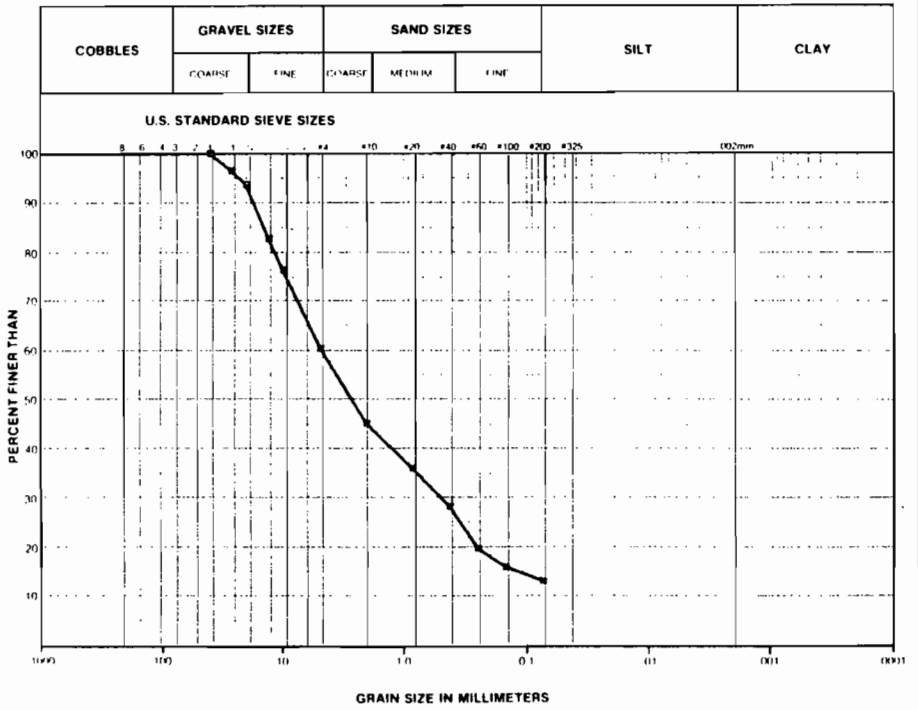
Plate C52

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB. NUMBER	
LOCATION	155-N
HOLE	44
SAMPLE	A2
DEPTH	2.1 - 3.0 m
TECHNICIAN	LR
DATE	87:04:13



REMARKS: SP-SM
M/C = 9%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

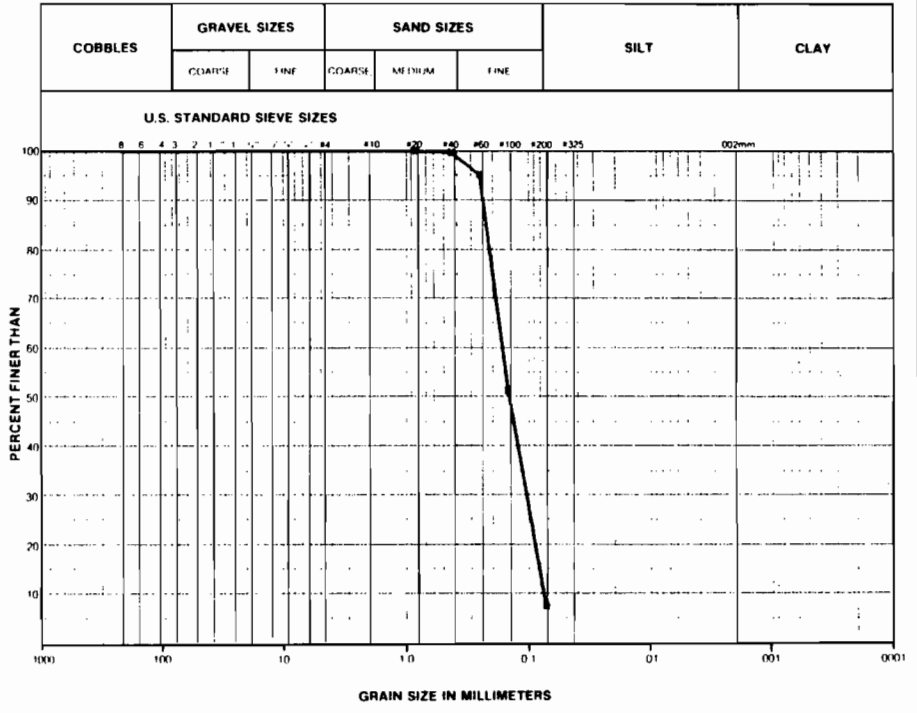
SUMMARY			
D_{60}	mm	GRAVEL	39 %
D_{30}	mm	SAND	47 %
D_{10}	mm	SILT + CLAY	14 %
C_U	mm		
C_C	mm		

Plate C53

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT:	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER:	CG14096
LAB. NUMBER:	
LOCATION:	155 - N
HOLE:	44
SAMPLE:	C1
DEPTH:	3.7 - 4.3 m
TECHNICIAN	L.R.
DATE	87:04:18



REMARKS: SM
M/C = 27%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

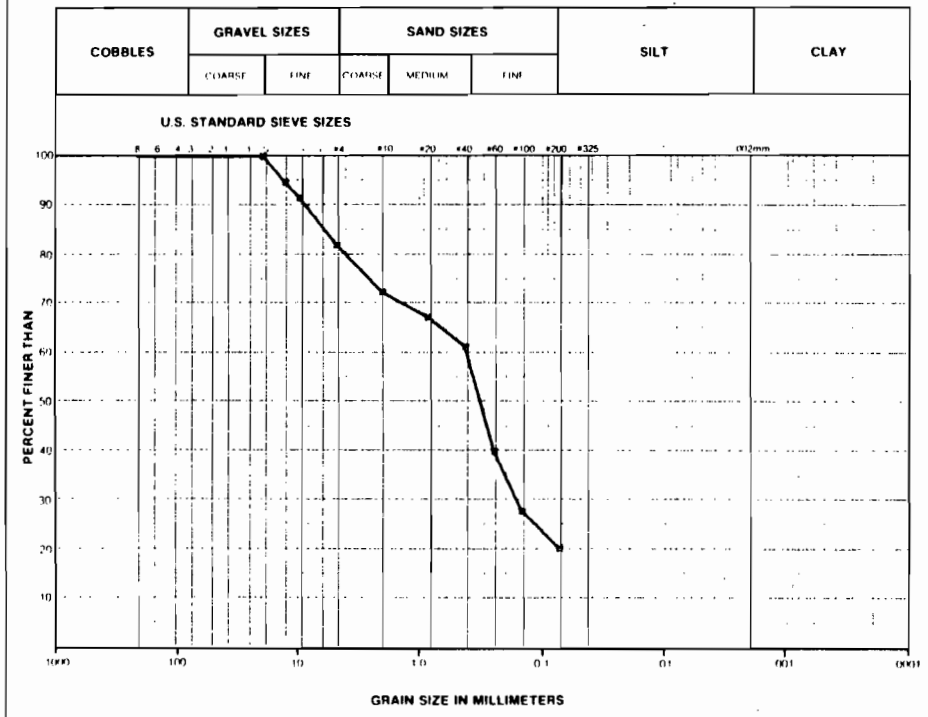
SUMMARY			
D_{60}	mm	GRAVEL	0 %
D_{30}	mm	SAND	92 %
D_{10}	mm	SILT	%
C_U	mm	+ CLAY	8 %
C_C	mm		

Plate C54

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 45 SAMPLE: A1
DEPTH: 1.5 - 2.1 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 16%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	18 %
$D_{..}$	mm	SAND	61 %
$D_{..}$	mm	SILT + CLAY	21 %
$C_{..}$	mm		
$C_{..}$	mm		

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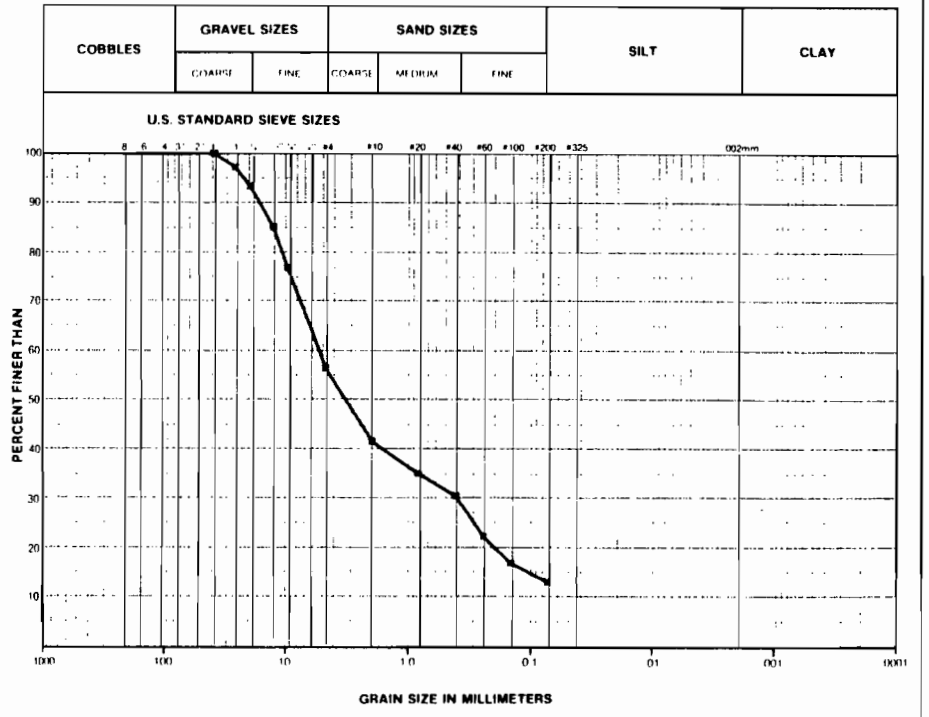
Plate C55

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 45 SAMPLE: A2
DEPTH: 2.3 - 3.5 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GP-GM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	43 %
$D_{..}$	mm	SAND	43 %
$D_{..}$	mm	SILT + CLAY	14 %
$C_{..}$	mm		
$C_{..}$	mm		

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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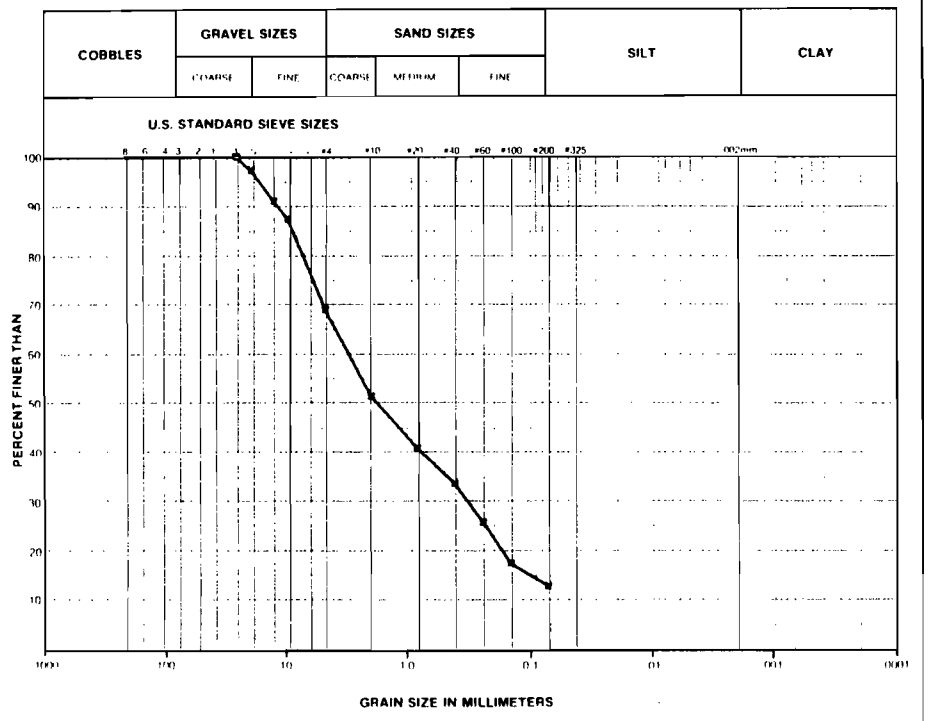
Plate C56

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 46 SAMPLE: A1
DEPTH: 1.2 - 1.4 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP-SM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	31	%
$D_{...}$	mm	SAND	56	%
$D_{...}$	mm	SILT + CLAY	13	%
$C_{...}$	mm			
$C_{...}$	mm			

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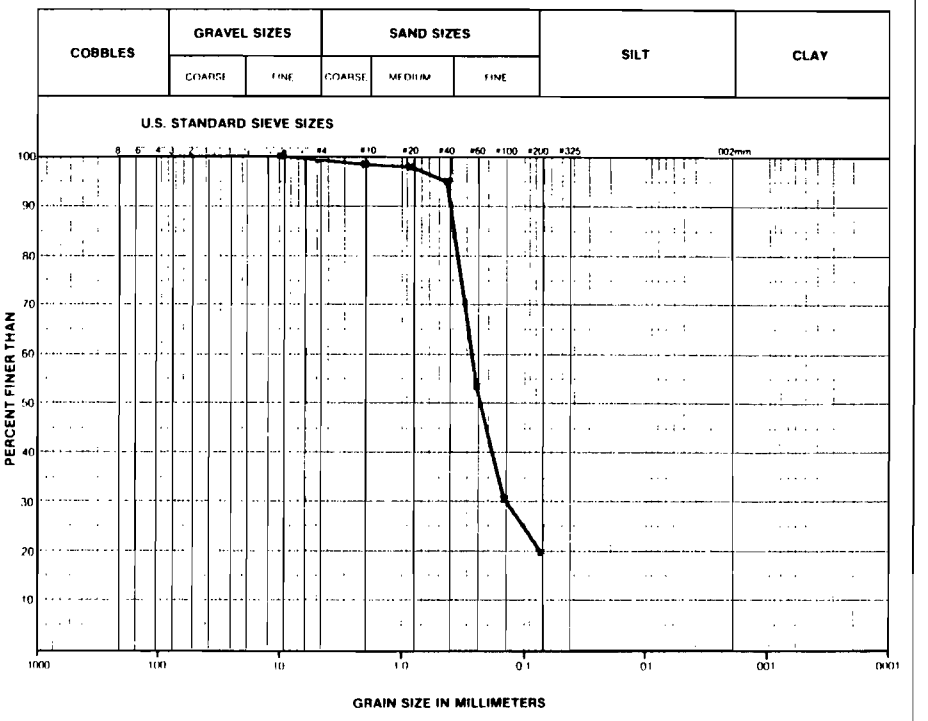
Plate C57

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 47 SAMPLE: A1
DEPTH: 0.9 - 1.1 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SM
M/C = 23%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	0	%
$D_{...}$	mm	SAND	79	%
$D_{...}$	mm	SILT + CLAY	21	%
$C_{...}$	mm			
$C_{...}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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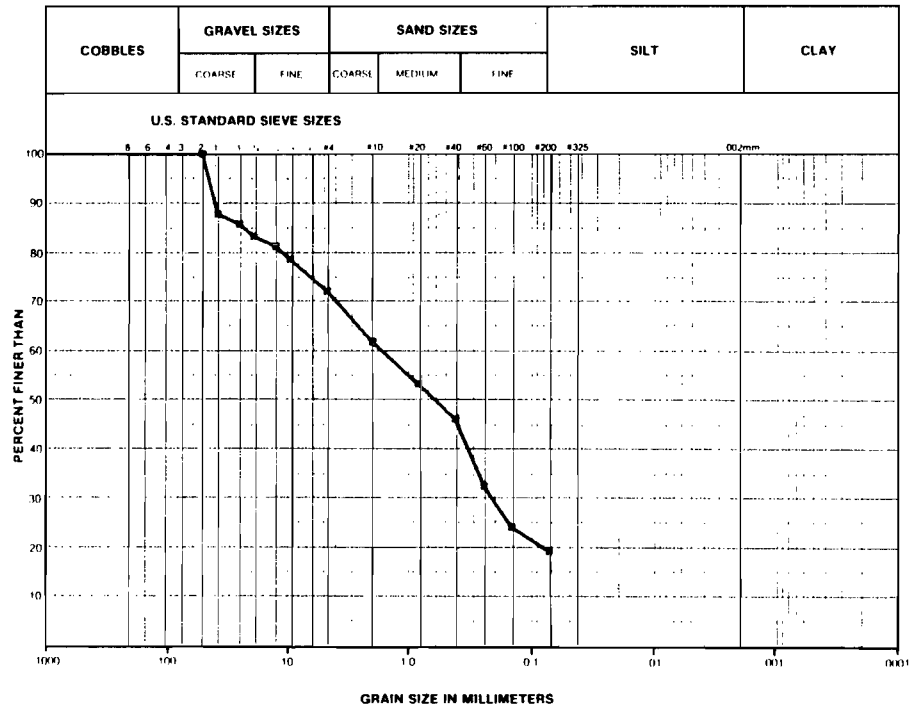
Plate C58

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - N
HOLE: 47 SAMPLE: A2
DEPTH: 1.2 - 1.5 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 13%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

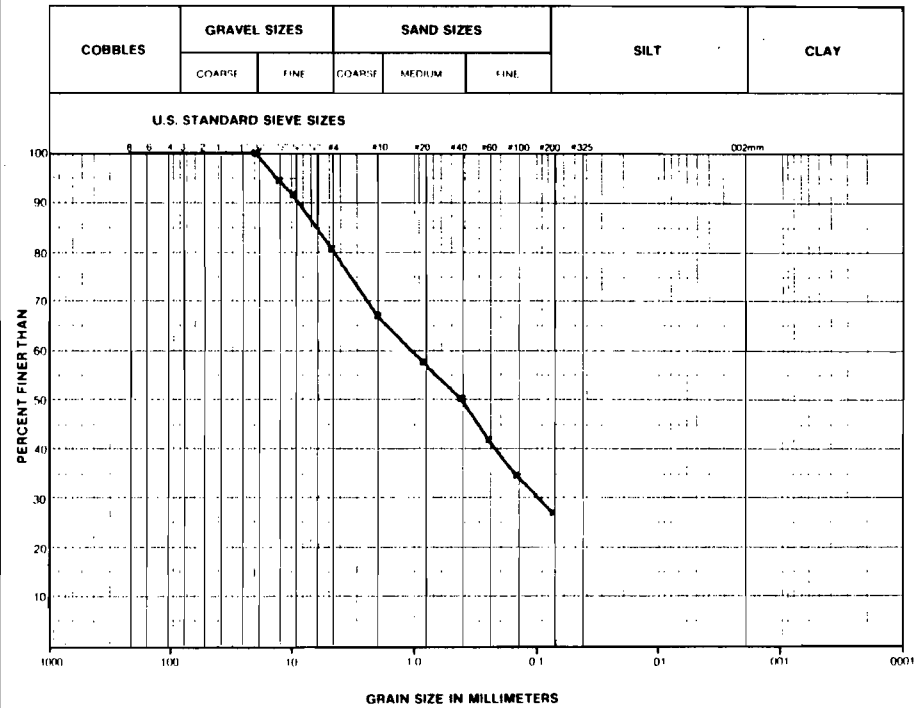
SUMMARY			
D_{60}	mm	GRAVEL	27 %
D_{30}	mm	SAND	52 %
D_{10}	mm	SILT + CLAY	21 %
C_u	mm		
C_c	mm		

Plate C59

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-N
HOLE: 48 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SM-SC
M/C = 18%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

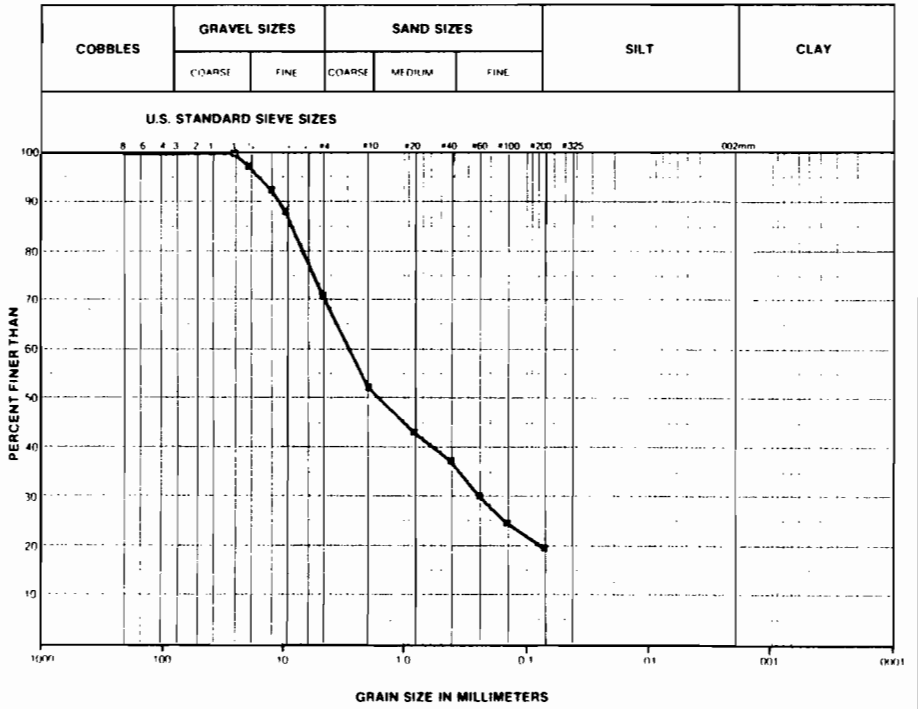
SUMMARY			
D_{60}	mm	GRAVEL	19 %
D_{30}	mm	SAND	53 %
D_{10}	mm	SILT	%
C_u	mm	+ CLAY	28 %
C_c	mm		

Plate C60

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155 - N
HOLE: 48 SAMPLE: A2
DEPTH: 1.2 - 1.5 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 8%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

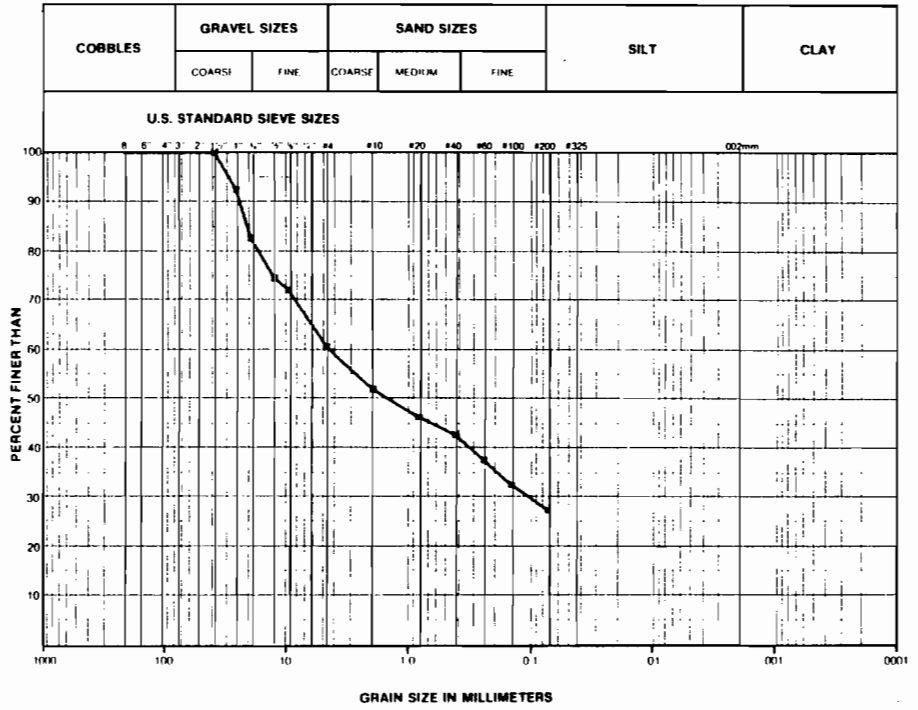
SUMMARY			
D_{60}	mm	GRAVEL	29 %
D_{30}	mm	SAND	51 %
D_{10}	mm	SILT + CLAY	20 %
C_u	mm		
C_c	mm		

Plate C61

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-S
HOLE: 1 SAMPLE: A1
DEPTH: 0.7 - 1.5 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GM-GC
M/C = 22%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

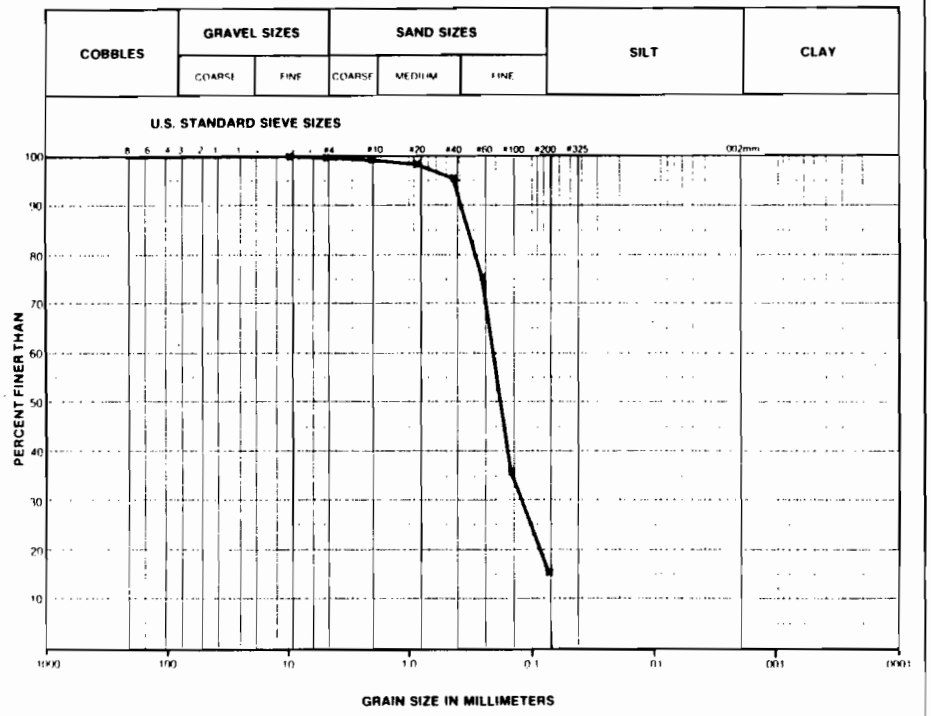
SUMMARY			
D_{60} =	mm	GRAVEL	39 %
D_{30} =	mm	SAND	33 %
D_{10}	mm	SILT	%
C_u	mm	+ CLAY	28 %
C_c	mm		

Plate C62

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 1 SAMPLE: C1
DEPTH: 1.8 - 2.3 m
TECHNICIAN: LR DATE: 87:04:15



REMARKS: SM
M/C = 24%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

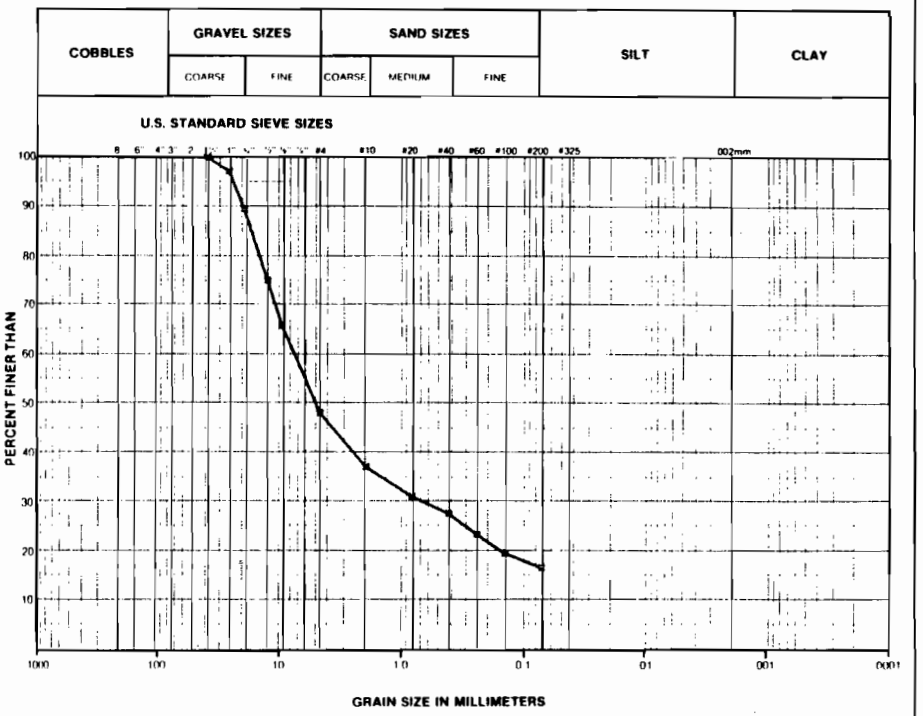
$D_{\quad}$	mm	GRAVEL	0 %
D_{60}	mm	SAND	84 %
D_{10}	mm	SILT + CLAY	16 %
C_U	mm		
C_Z	mm		

Plate C63

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 2 SAMPLE: A2
DEPTH: 2.4 - 3.7 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GP-GM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

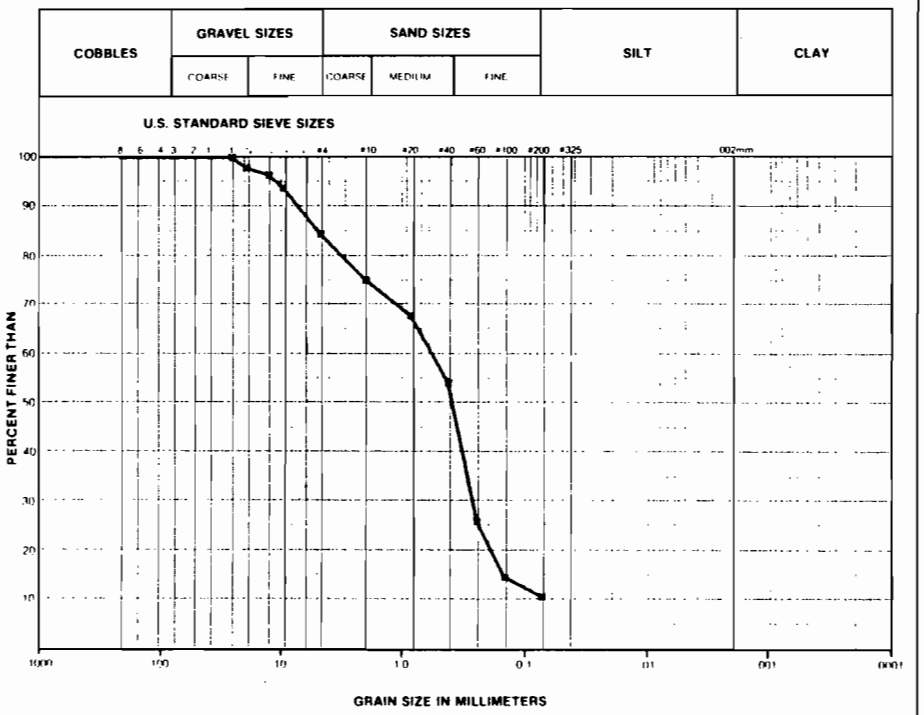
$D_{\quad}$	mm	GRAVEL	52 %
D_{60}	mm	SAND	31 %
D_{10}	mm	SILT + CLAY	17 %
C_U	mm		
C_Z	mm		

Plate C64

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 3 SAMPLE: A3
DEPTH: 1.5 - 1.8 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SP-SM
M/C = 17%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

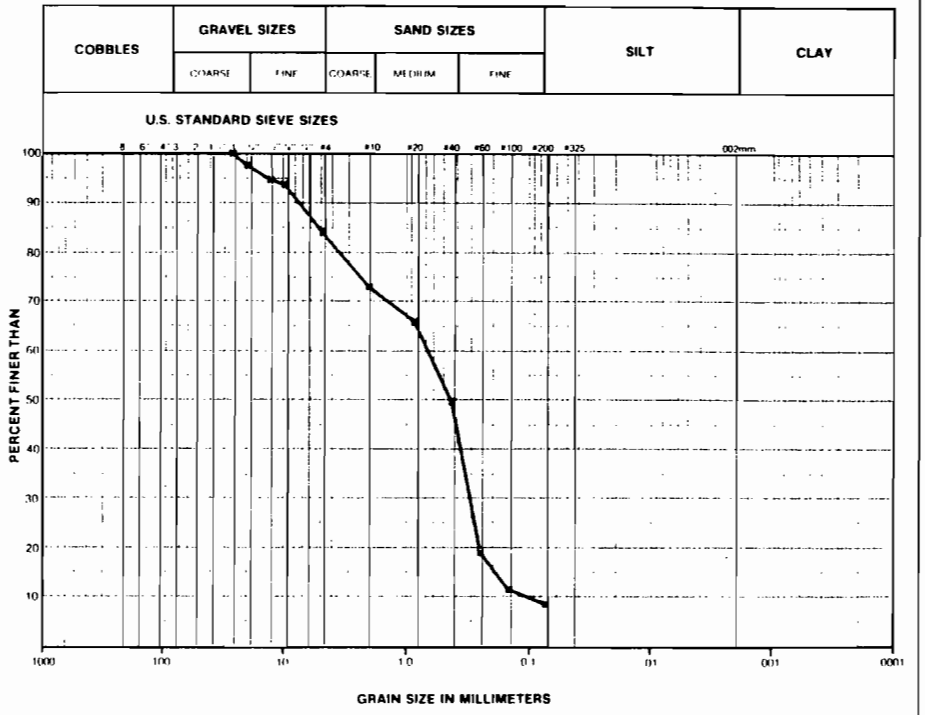
SUMMARY			
$D_{..}$	mm	GRAVEL	15 %
$D_{..}$	mm	SAND	73 %
$D_{..}$	mm	SILT + CLAY	12 %
C_u	mm		
C_c	mm		

Plate C65

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 3 SAMPLE: A4
DEPTH: 2.4 - 2.7 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP
M/C = 16%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

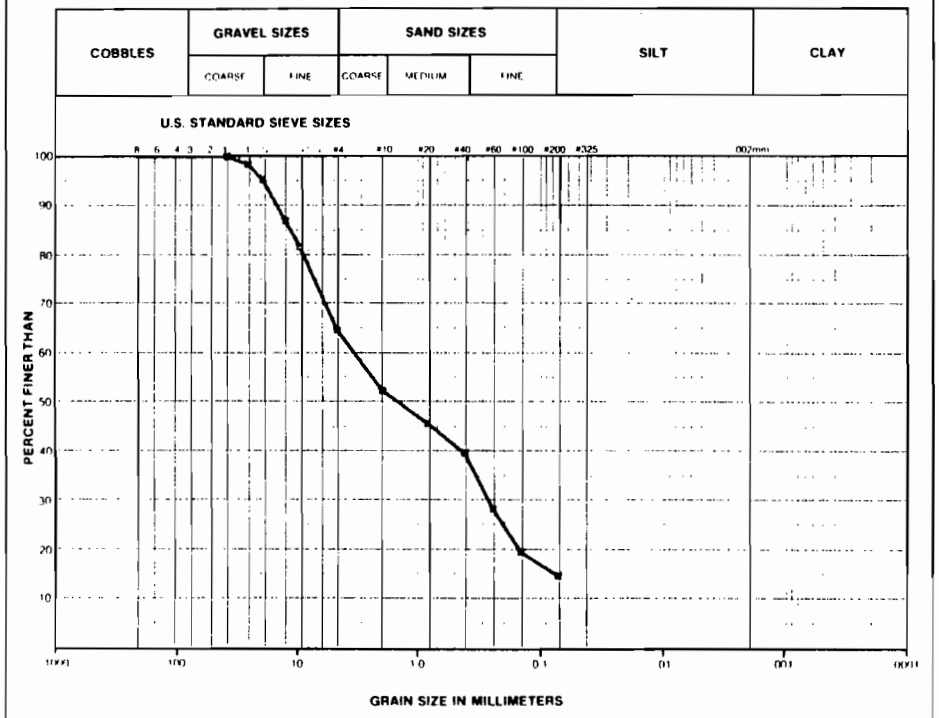
SUMMARY			
$D_{..}$	mm	GRAVEL	16 %
$D_{..}$	mm	SAND	75 %
$D_{..}$	mm	SILT + CLAY	9 %
C_u	mm		
C_c	mm		

Plate C66

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 4 SAMPLE: A1
DEPTH: 0.9 - 1.2 m
TECHNICIAN: LR DATE: 87:04:15



REMARKS: SP-SM
M/C = 10%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	35	%
$D_{..}$	mm	SAND	49	%
$D_{..}$	mm	SILT + CLAY	16	%
$C_{..}$	mm			
$C_{..}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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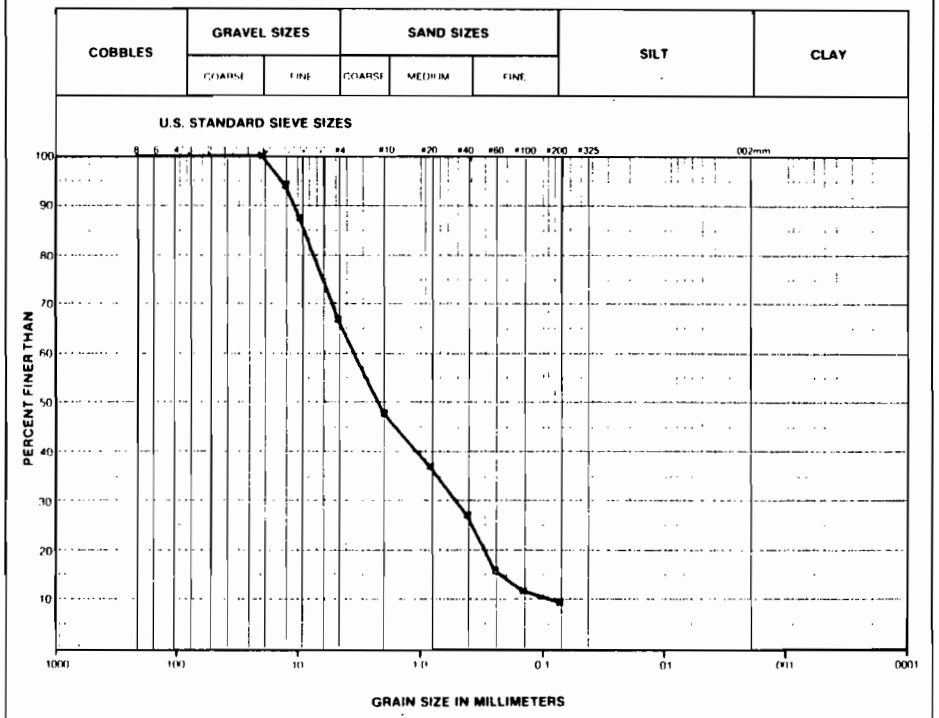
(2) The liability of Hardy Associates (1978) Ltd. for the use of these test results shall in any and all events be limited to the fees received by it for providing the said test results.

Plate C67

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 4 SAMPLE: A2
DEPTH: 2.1 - 2.4 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SP
M/C = 12%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{..}$	mm	GRAVEL	33	%
$D_{..}$	mm	SAND	57	%
$D_{..}$	mm	SILT + CLAY	10	%
$C_{..}$	mm			
$C_{..}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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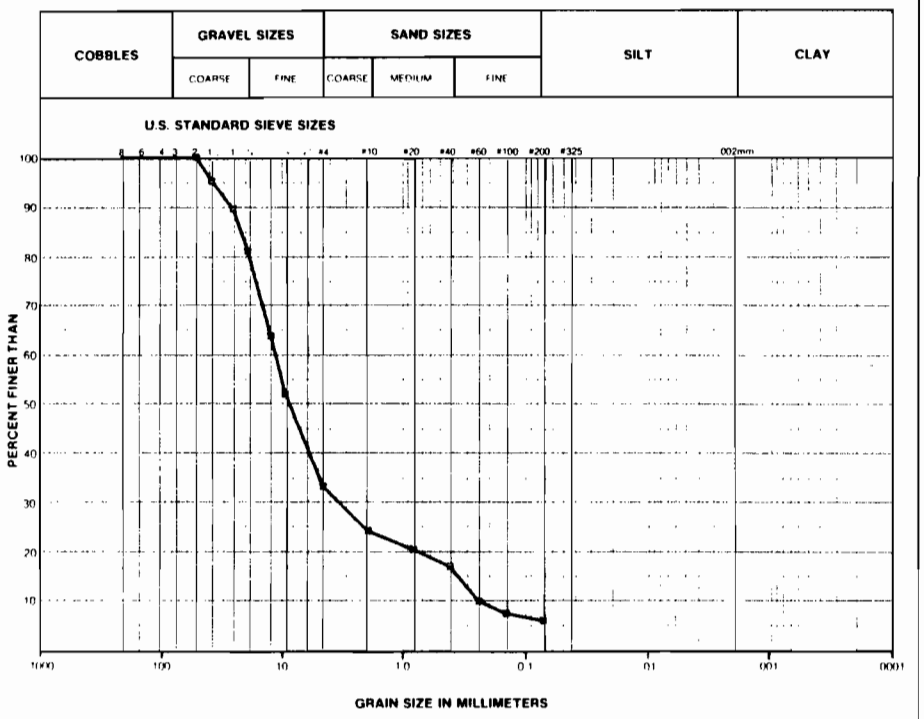
Plate C68

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 5 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: LR DATE: 87:04:23



REMARKS: GW-GP
M/C = 4%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

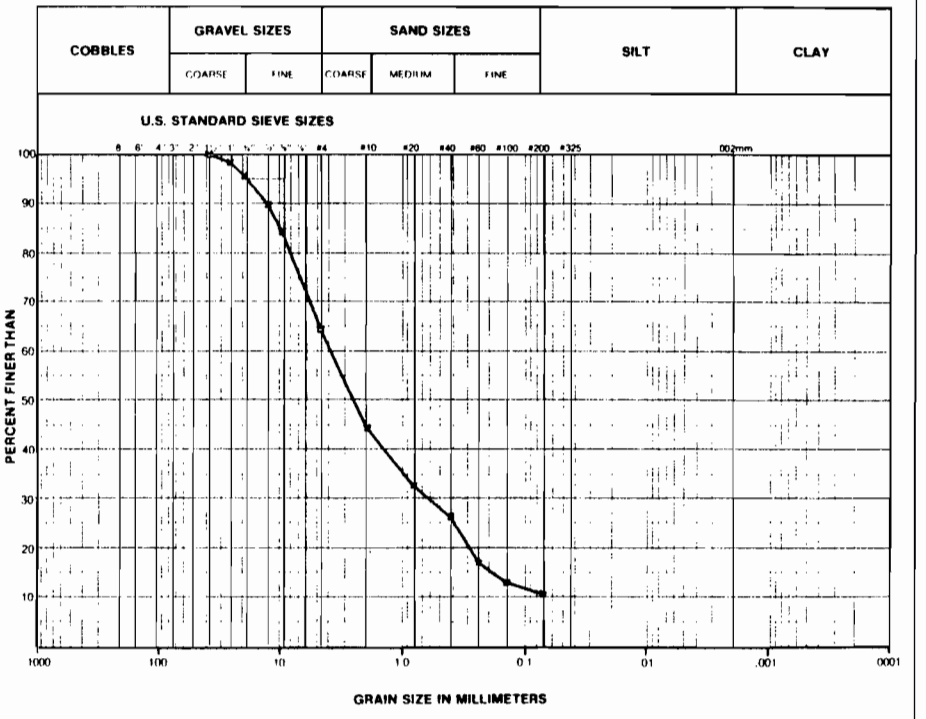
SUMMARY			
D_{60}	mm	GRAVEL	66 %
D_{30}	mm	SAND	27 %
D_{10}	mm	SILT + CLAY	7 %
C_U	mm		
C_C	mm		

Plate C69

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 5 SAMPLE: A2
DEPTH: 2.4 - 2.7 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: SP-SM
M/C = 8%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

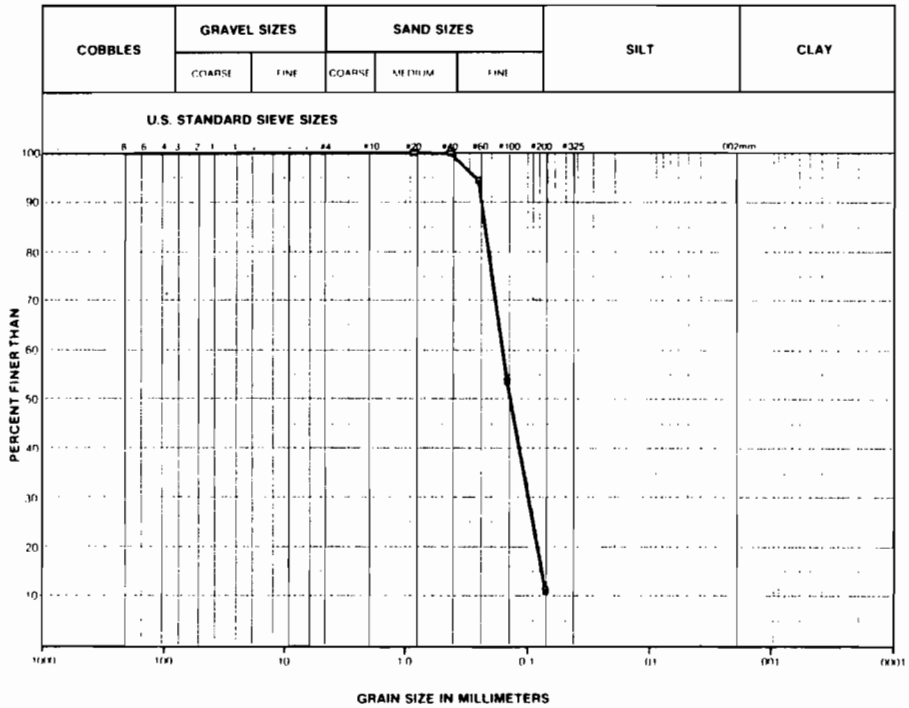
SUMMARY			
D_{60}	mm	GRAVEL	35 %
D_{30}	mm	SAND	53 %
D_{10}	mm	SILT + CLAY	12 %
C_U	mm		
C_C	mm		

Plate C70

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - 5
HOLE: 5 SAMPLE: C2
DEPTH: 3.5 - 4.0 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SM
M/C = 23%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

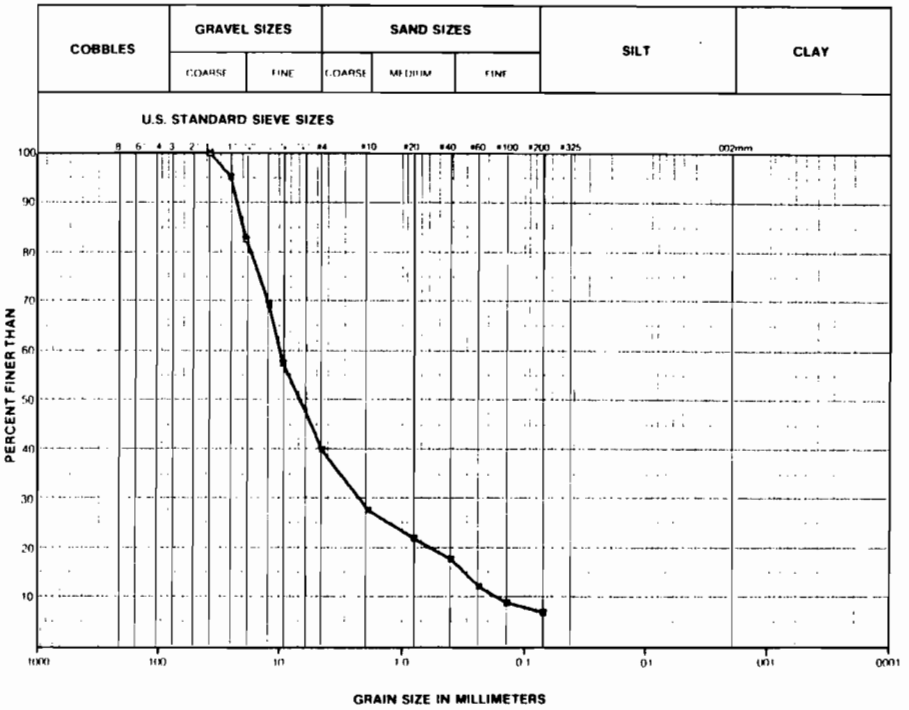
$D_{...}$	mm	GRAVEL	0 %
$D_{...}$	mm	SAND	88 %
$D_{...}$	mm	SILT + CLAY	12 %
$C_{...}$	mm		
$C_{...}$	mm		

Plate C71

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 6 SAMPLE: A1
DEPTH: 1.2 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: GW-GP
M/C = 4%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

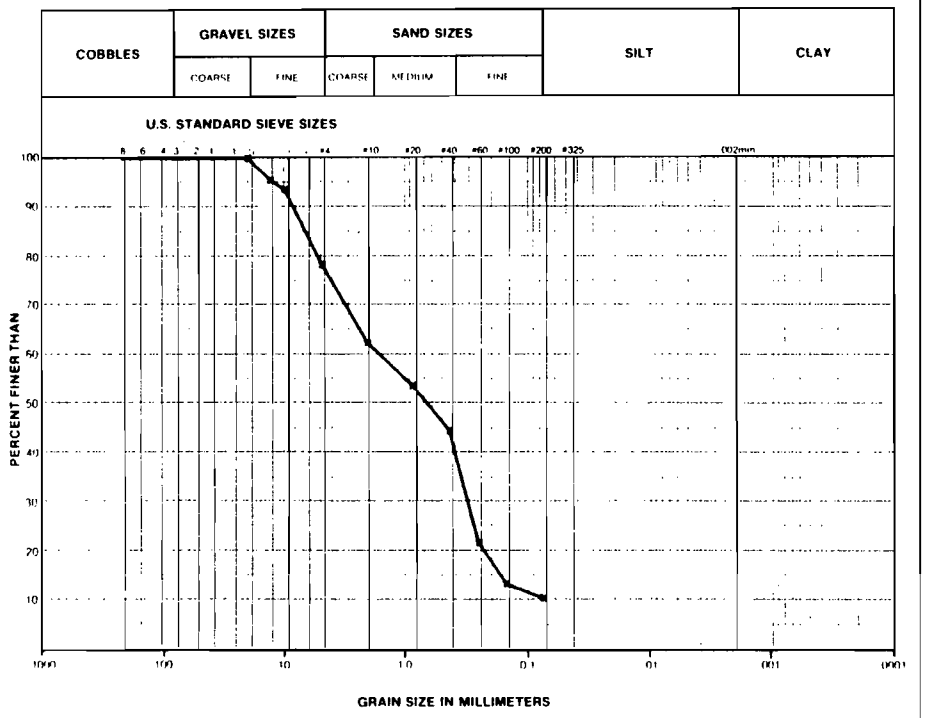
$D_{...}$	mm	GRAVEL	60 %
$D_{...}$	mm	SAND	33 %
$D_{...}$	mm	SILT	%
$C_{...}$	mm	+ CLAY	7 %
$C_{...}$	mm		

Plate C72

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-S
HOLE: 6 SAMPLE: A2
DEPTH: 2.1 - 2.3 m
TECHNICIAN: GW DATE: 87:04:15



REMARKS: SP-SM
M/C = 12%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

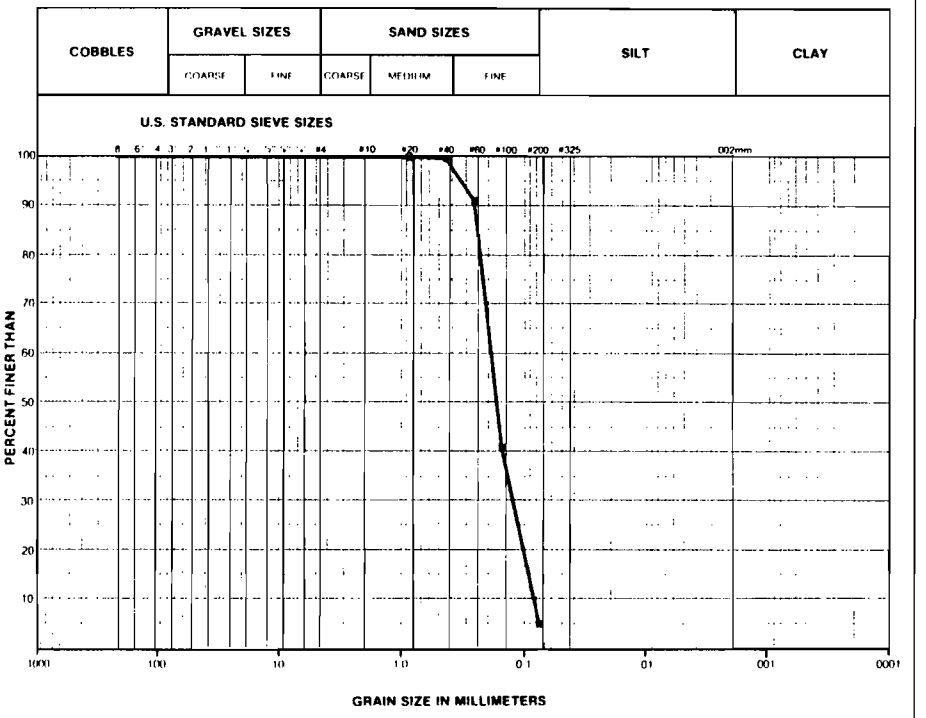
SUMMARY			
$D_{..}$	mm	GRAVEL	21 %
$D_{..}$	mm	SAND	67 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	CLAY	12 %
$C_{..}$	mm		

Plate C73

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN-TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-S
HOLE: 6 SAMPLE: C1
DEPTH: 2.6 - 2.7 m
TECHNICIAN: L.R. DATE: 87:04:16



REMARKS: SP
M/C = 27%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

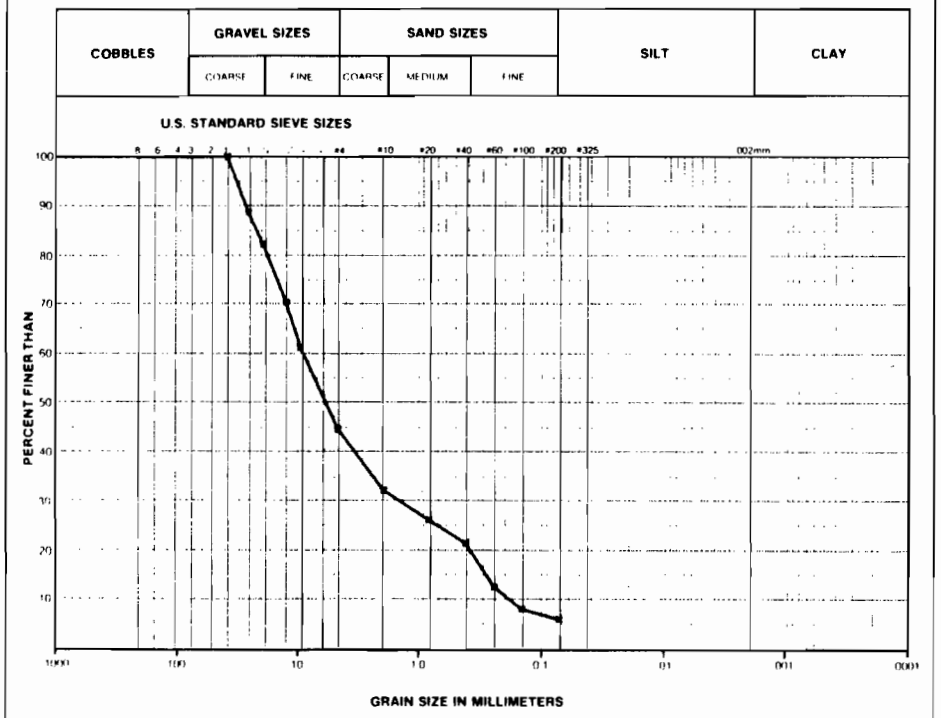
SUMMARY			
$D_{..}$	mm	GRAVEL	0 %
$D_{..}$	mm	SAND	94 %
$D_{..}$	mm	SILT	%
$C_{..}$	mm	CLAY	6 %
$C_{..}$	mm		

Plate C74

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - 5
HOLE: 8 SAMPLE: A1
DEPTH: 0.2 - 1.1 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GW-GP
M/C = 5%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

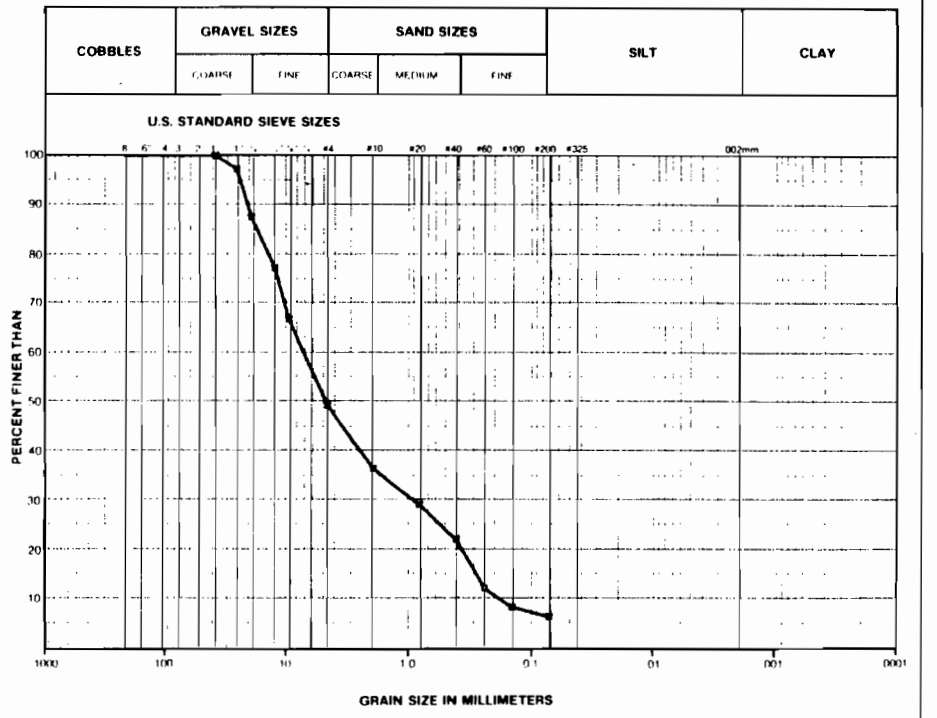
SUMMARY			
D_{60}	mm	GRAVEL	55 %
D_{30}	mm	SAND	38 %
D_{10}	mm	SILT + CLAY	7 %
C_U	mm		
C_C	mm		

Plate C75

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 8 SAMPLE: A2
DEPTH: 1.2 - 2.3 m
TECHNICIAN: LR DATE: 87:04:15



REMARKS: GW-GP
M/C = 8%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

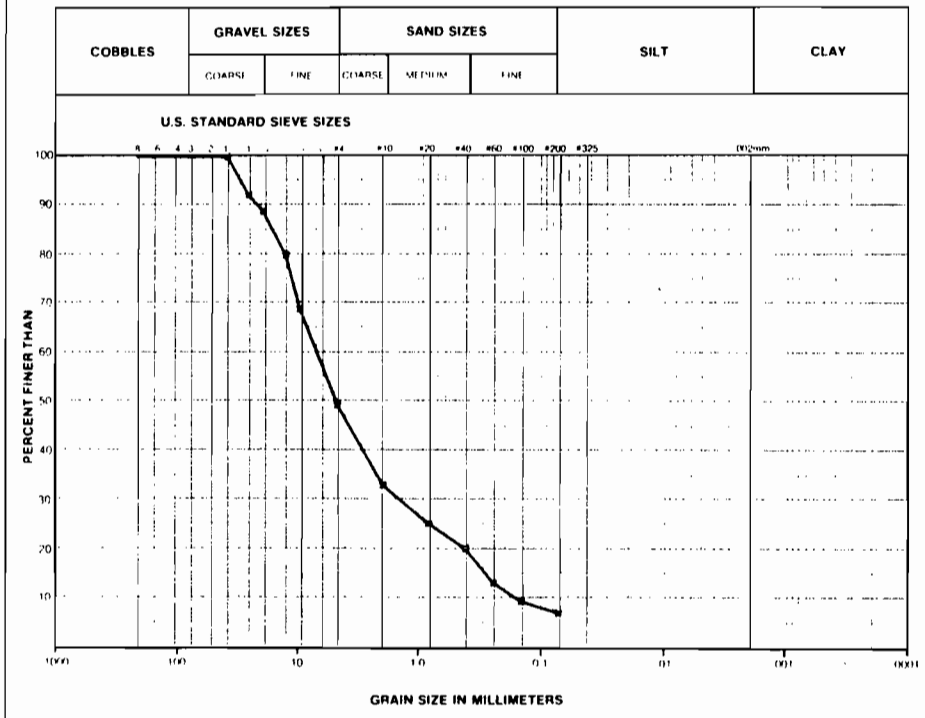
SUMMARY			
D_{60}	mm	GRAVEL	50 %
D_{30}	mm	SAND	42 %
D_{10}	mm	SILT + CLAY	8 %
C_U	mm		
C_C	mm		

Plate C76

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 9 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GW-GP
M/C = 7%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

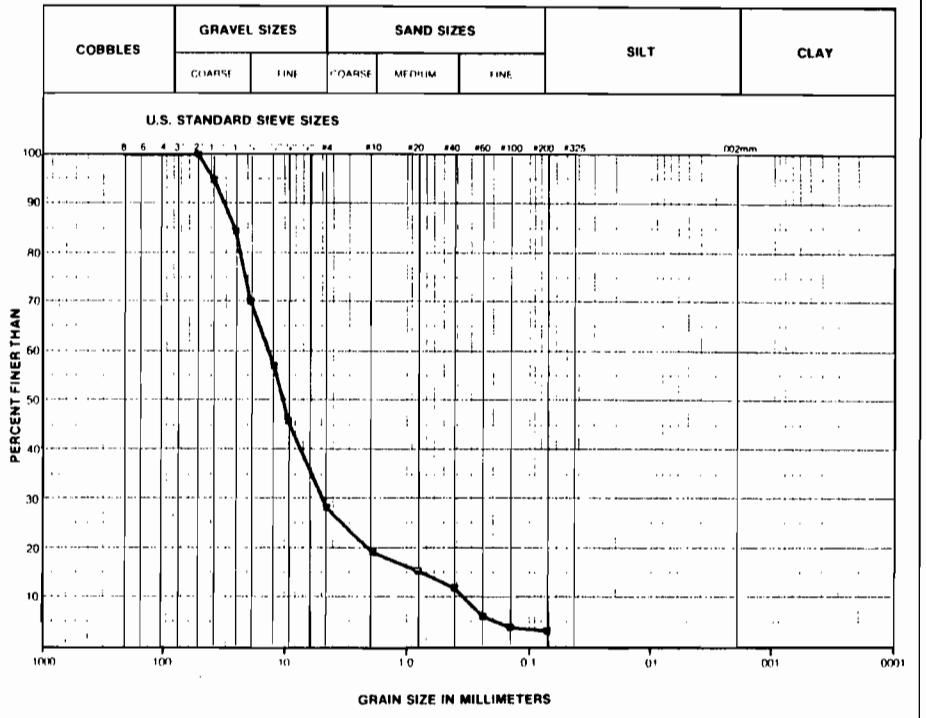
SUMMARY			
$D_{..}$	mm	GRAVEL	50 %
$D_{..}$	mm	SAND	42 %
$D_{..}$	mm	SILT	%
C_{u}	mm	CLAY }	8 %
$C_{..}$	mm		

Plate C77

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 10 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: GW DATE: 87:04:15



REMARKS: GW-GP
M/C = 5%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

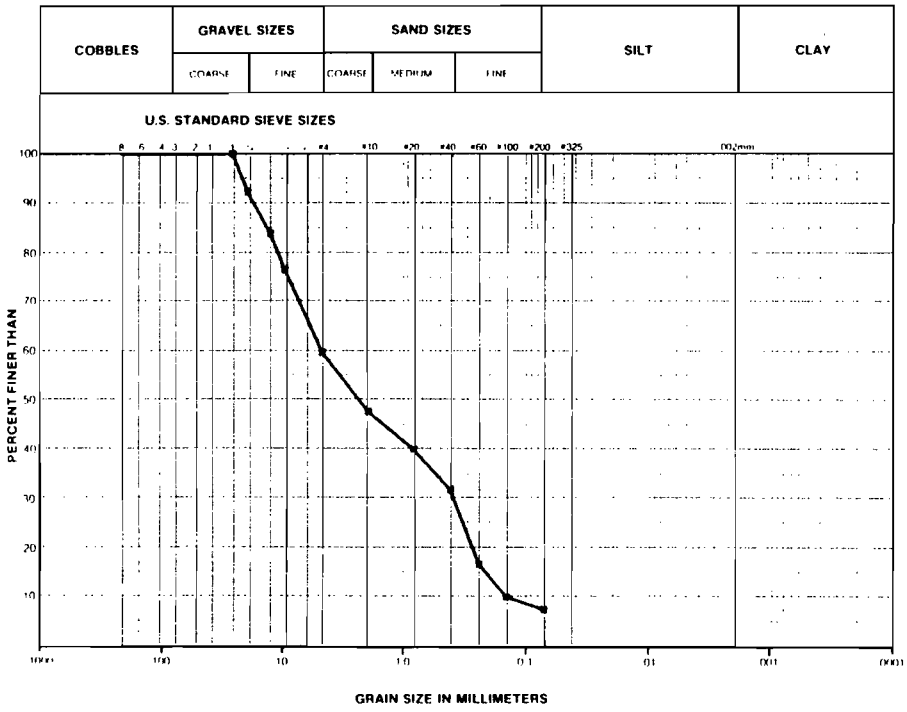
SUMMARY			
$D_{..}$	mm	GRAVEL	71 %
$D_{..}$	mm	SAND	25 %
$D_{..}$	mm	SILT	%
C_{u}	mm	CLAY }	4 %
$C_{..}$	mm		

Plate C78

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155 - 5
HOLE: 10 SAMPLE: A2
DEPTH: 1.5 - 2.8 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SW-SP
M/C = 9%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

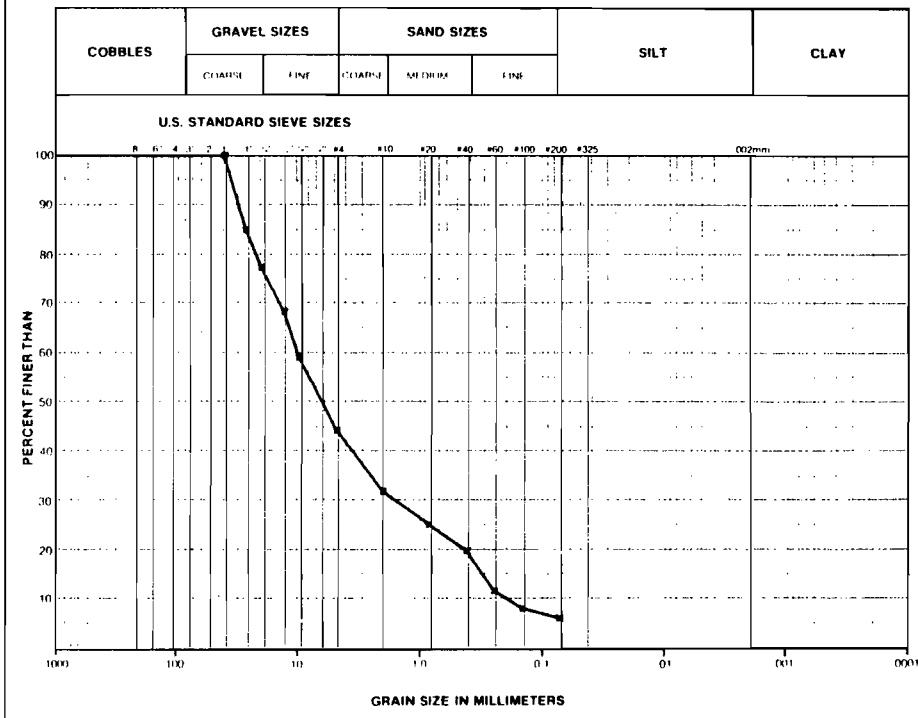
D_{60}	mm	GRAVEL	40	%
D_{30}	mm	SAND	52	%
D_{10}	mm	SILT + CLAY	8	%
C_u	mm			
C_c	mm			

Plate C79

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 11 SAMPLE: A1
DEPTH: 0.3 - 1.5 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GW-GP
M/C = 7%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

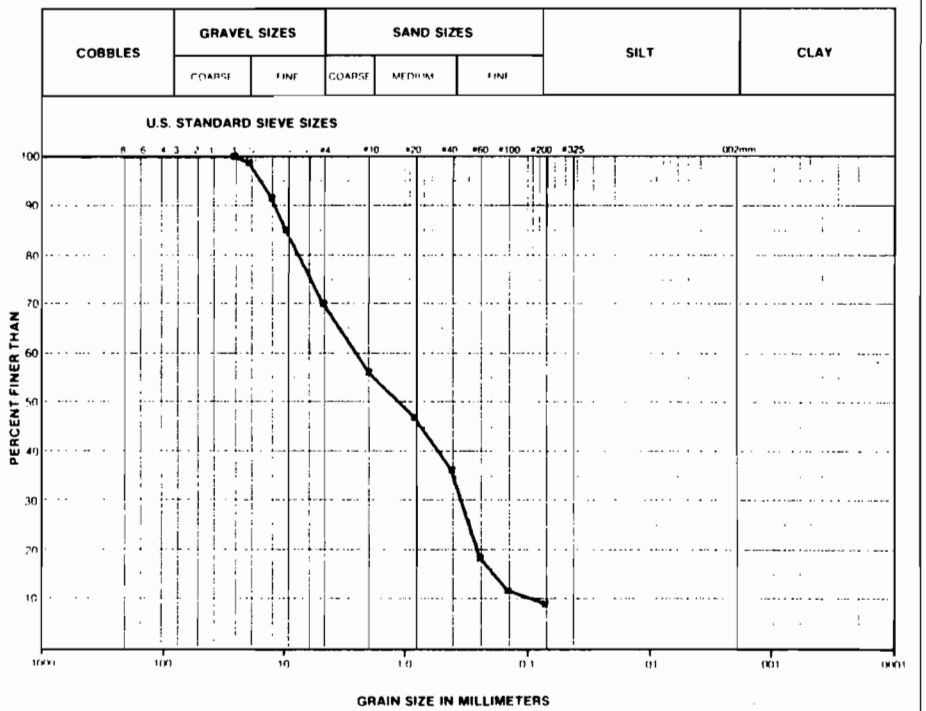
D_{60}	mm	GRAVEL	55	%
D_{30}	mm	SAND	38	%
D_{10}	mm	SILT + CLAY	7	%
C_u	mm			
C_c	mm			

Plate C80

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 11 SAMPLE: A2
DEPTH: 2.1 - 2.6 m
TECHNICIAN: LR DATE: 87:04:13



REMARKS: SW-SP
M/C = 11%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

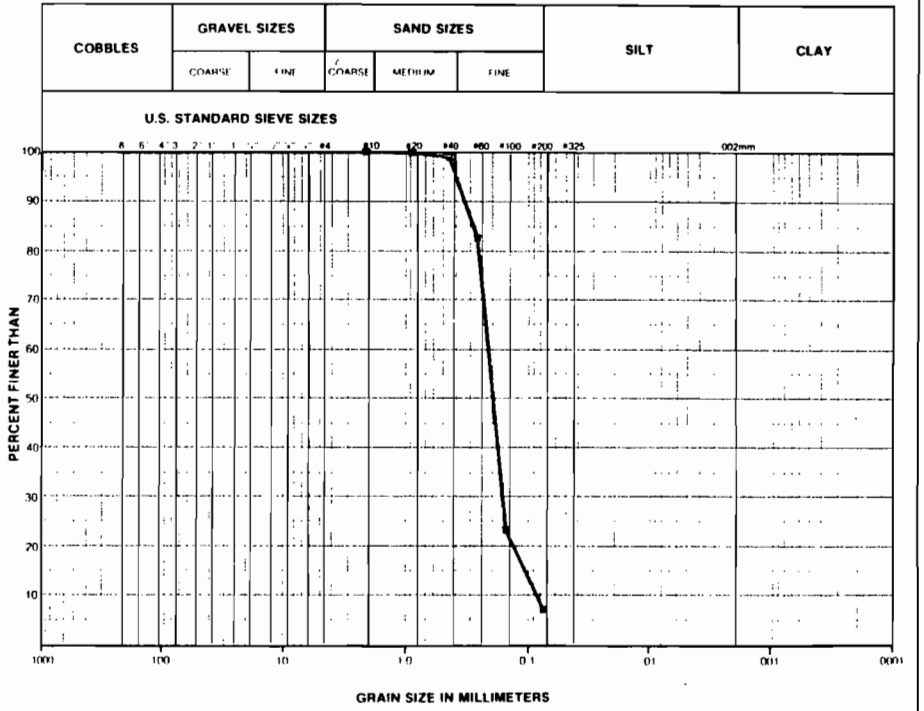
$D_{..}$	mm	GRAVEL	29	%
$D_{..}$	mm	SAND	61	%
$D_{..}$	mm	SILT + CLAY	10	%
$C_{..}$	mm			
$C_{..}$	mm			

Plate C81

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - 5
HOLE: 11 SAMPLE: C1
DEPTH: 2.6 - 3.0 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP- SM
M/C = 31%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

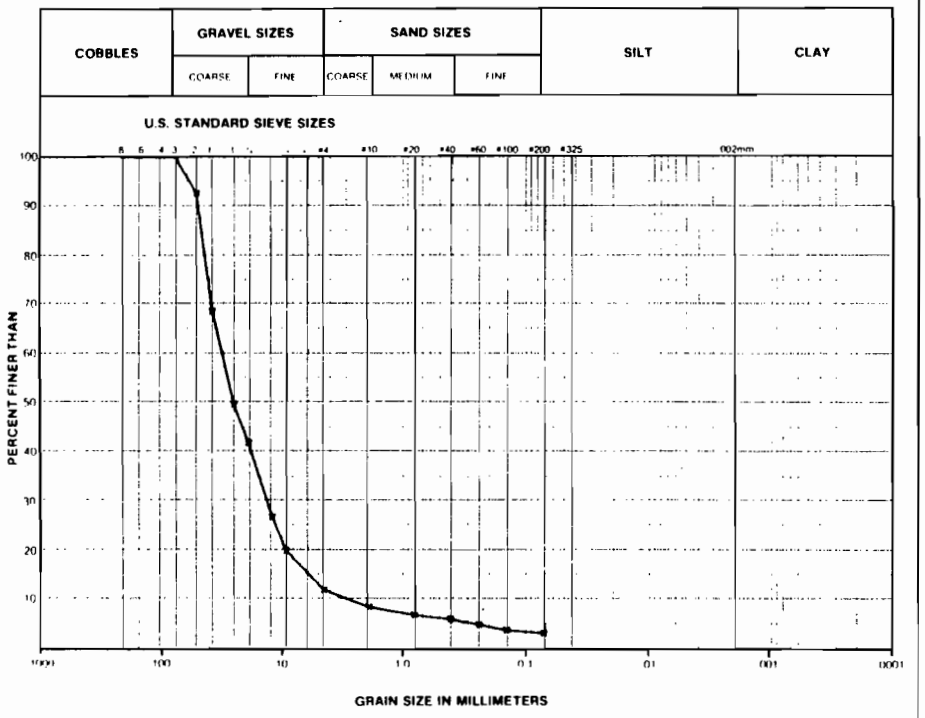
$D_{..}$	mm	GRAVEL	0	%
$D_{..}$	mm	SAND	92	%
$D_{..}$	mm	SILT + CLAY	8	%
$C_{..}$	mm			
$C_{..}$	mm			

Plate C82

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155 - 5
HOLE: 12 SAMPLE: A1
DEPTH: 0.6 - 0.9 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: GP
M/C = 3%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

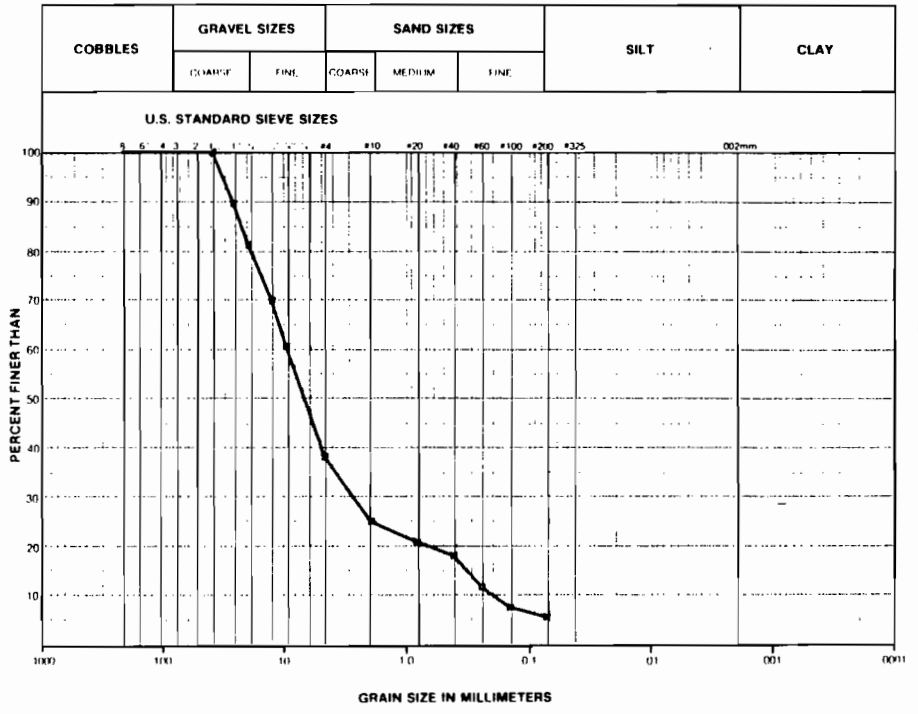
D_{60}	mm	GRAVEL	88	%
D_{30}	mm	SAND	8	%
D_{10}	mm	SILT + CLAY	4	%
C_u	mm			
C_z	mm			

Plate C83

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 13 SAMPLE: A1
DEPTH: 0.9 - 1.2 m
TECHNICIAN: LR DATE: 87:04:15



REMARKS: GW-GP
M/C = 4%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

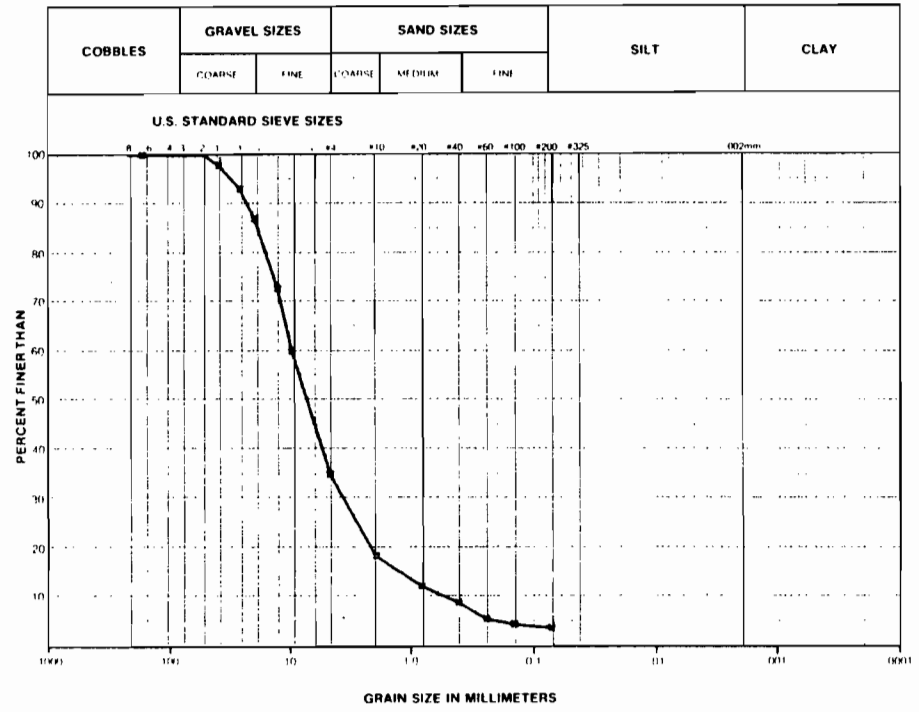
D_{60}	mm	GRAVEL	62	%
D_{30}	mm	SAND	32	%
D_{10}	mm	SILT + CLAY	6	%
C_u	mm			
C_z	mm			

Plate C84

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-S
HOLE: 16 SAMPLE: A1 & A2
DEPTH: 0.5 - 0.8 /1.2 - 1.5 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GW-GP
M/C = 3%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{..}$	mm	GRAVEL	65 %
$D_{..}$	mm	SAND	31 %
$D_{..}$	mm	SILT + CLAY	4 %
$C_{..}$	mm		
$C_{..}$	mm		

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions.
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Plate C85

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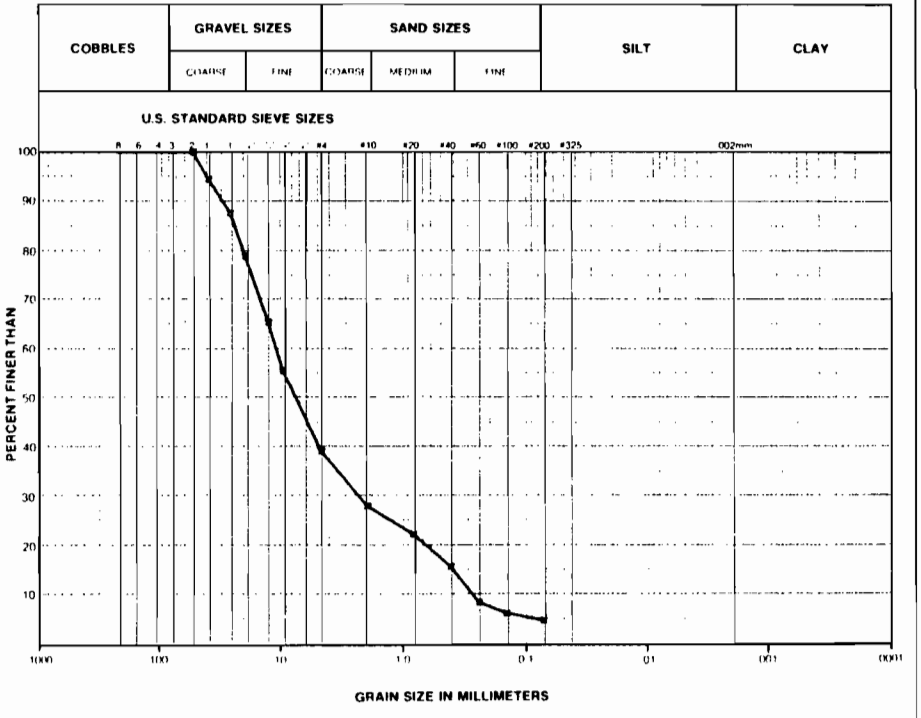
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-S
HOLE: 17 SAMPLE: A1
DEPTH: 0.6 - 2.1 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GW-GP
M/C = 4%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{..}$	mm	GRAVEL	61 %
$D_{..}$	mm	SAND	34 %
$D_{..}$	mm	SILT + CLAY	5 %
$C_{..}$	mm		
$C_{..}$	mm		

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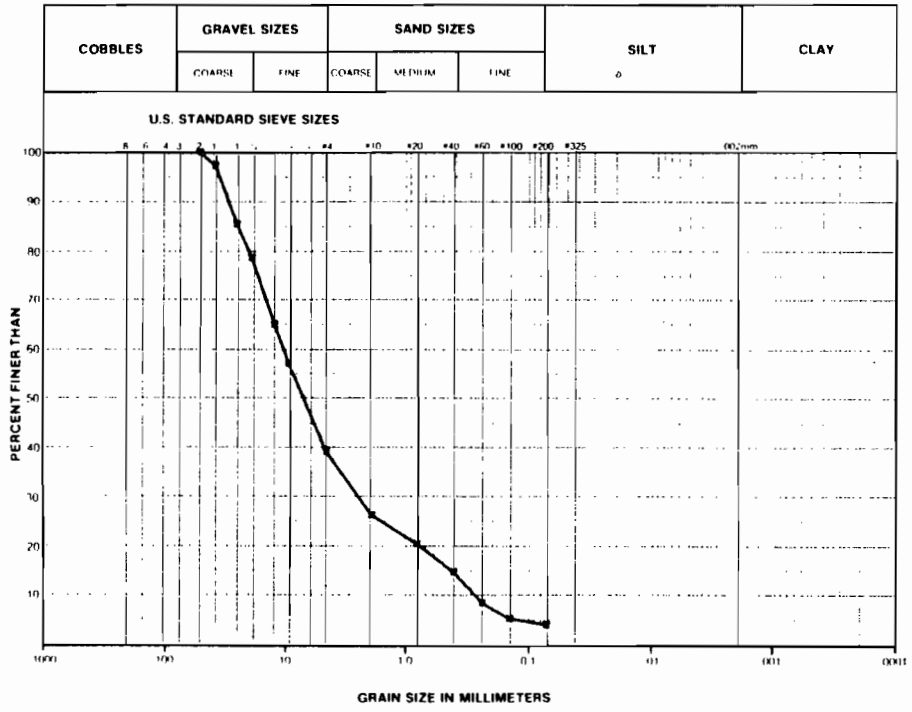
Plate C86

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 18 SAMPLE: A1
DEPTH: 0.3 - 2.1 m
TECHNICIAN: LR DATE: 87:04:07



REMARKS: GW-GP
M/C = 4%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

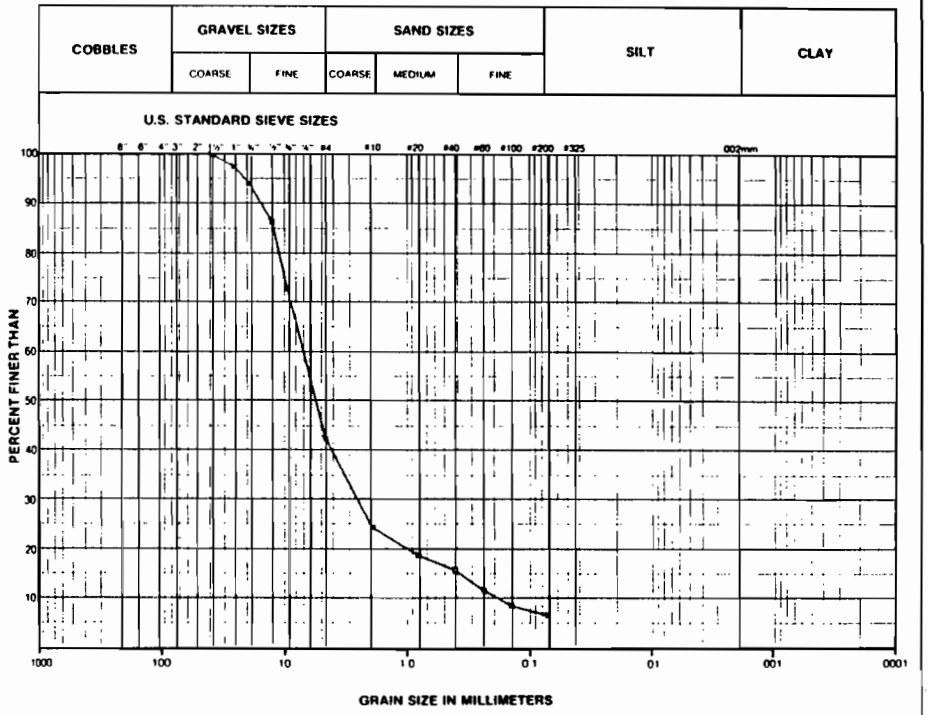
SUMMARY				
$D_{..}$	mm	GRAVEL	60	%
$D_{..}$	mm	SAND	35	%
$D_{..}$	mm	SILT + CLAY	5	%
$C_{..}$	mm			
$C_{..}$	mm			

Plate C87

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 19 SAMPLE: A1
DEPTH: 2.1-2.3 m
TECHNICIAN: LR DATE: 87:04:08



REMARKS: GW-GP
M/C = 6%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY				
$D_{..}$ =	mm	GRAVEL	57	%
$D_{..}$ =	mm	SAND	35	%
$D_{..}$ =	mm	SILT		%
C_U =	mm	+ CLAY	8	%
C_C =	mm			

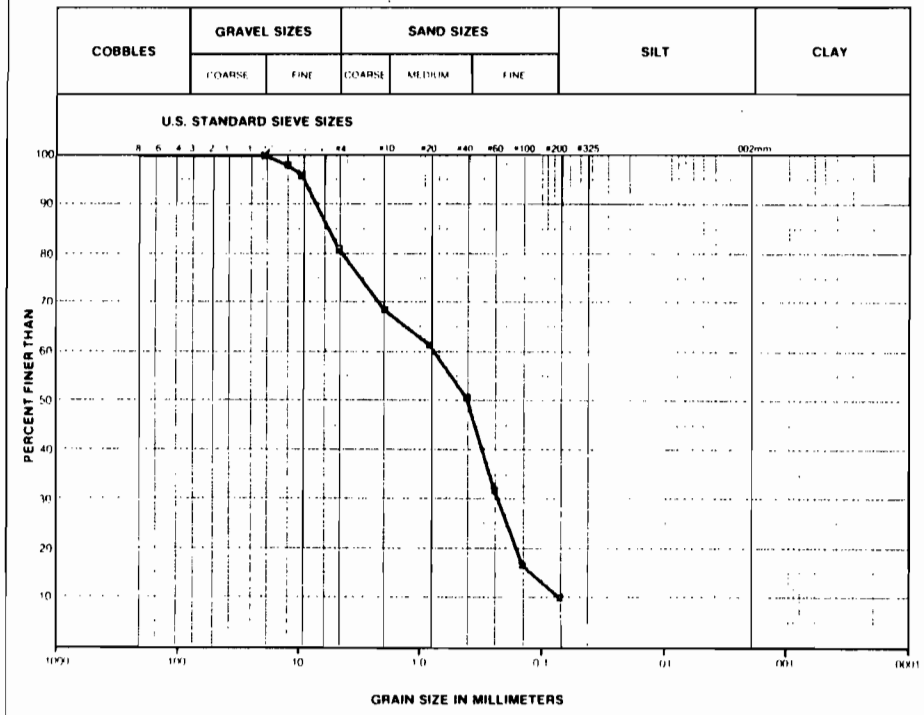
HT85-87-09

Plate C88

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 21 SAMPLE: C2
DEPTH: 0.9 - 1.4 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: SP-SM
M/C = 12%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	19	%
$D_{...}$	mm	SAND	70	%
$D_{...}$	mm	SILT + CLAY	11	%
$C_{...}$	mm			
$C_{...}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions:
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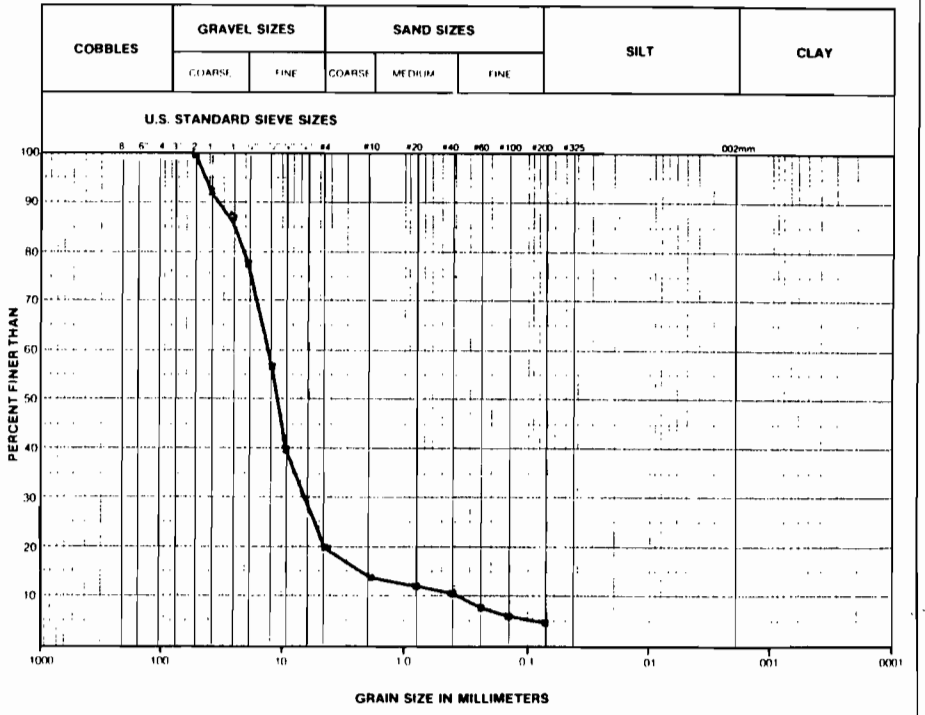
Plate C89

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB. NUMBER:
LOCATION: 155-5
HOLE: 21 SAMPLE: A1
DEPTH: 1.5 - 1.7 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GP
M/C = 6%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

$D_{...}$	mm	GRAVEL	79	%
$D_{...}$	mm	SAND	15	%
$D_{...}$	mm	SILT		%
$C_{...}$	mm	+ CLAY	6	%
$C_{...}$	mm			

NOTICE: Hardy Associates (1978) Ltd. has not interpreted or analysed the test results reported above. Use of these results is therefore subject to the following terms and conditions:
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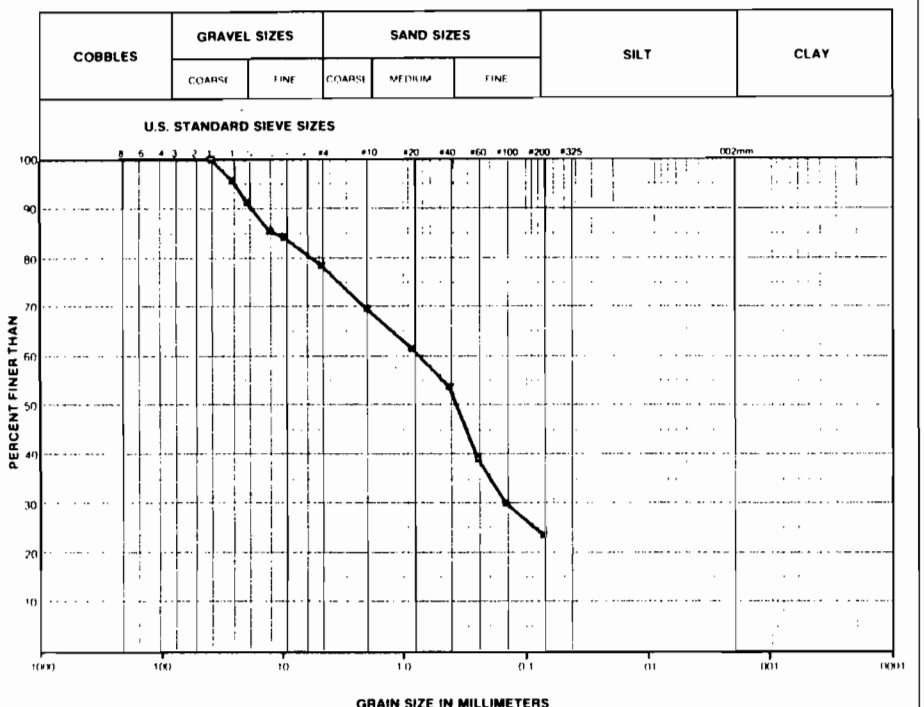
Plate C90

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155 - 5
HOLE: 21 SAMPLE: A2
DEPTH: 2.1 - 2.4 m
TECHNICIAN: L.R. DATE: 87:04:18



REMARKS: SP-SM
M/C = 18%
Class 4 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

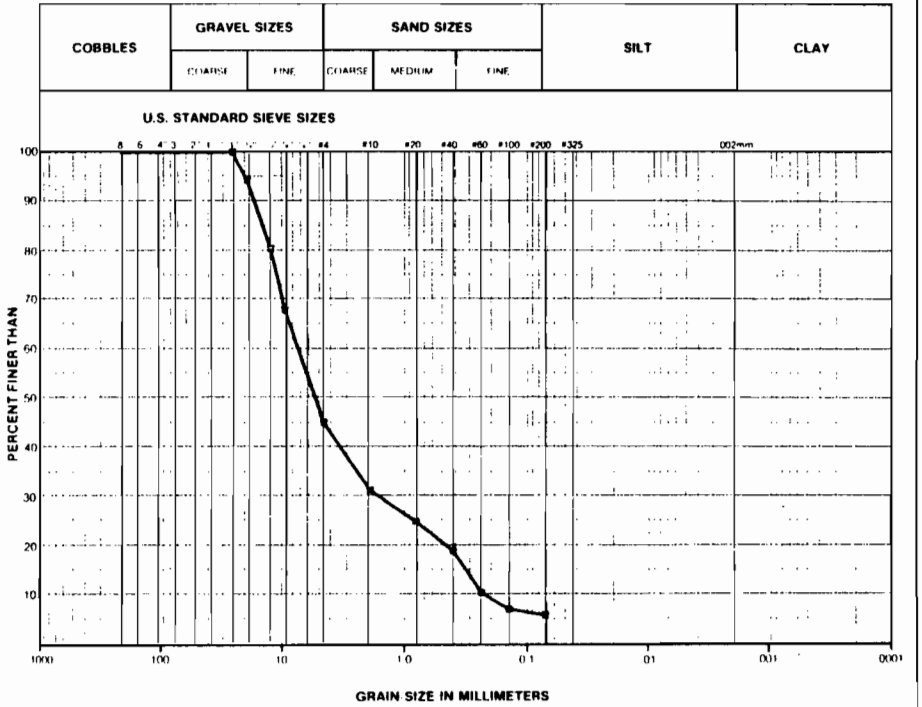
D_{60}	mm	GRAVEL	21	%
D_{30}	mm	SAND	54	%
D_{10}	mm	SILT + CLAY	25	%
C_U	mm			
C_C	mm			

Plate C91

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT: GRAN. MGT. PLAN - TUK.
PROJECT NUMBER: CG14096
LAB NUMBER:
LOCATION: 155-5
HOLE: 21 SAMPLE: A3
DEPTH: 3.0 - 3.4 m
TECHNICIAN: LR DATE: 87:04:21



REMARKS: GW-GP
M/C = 8%
Class 2 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY

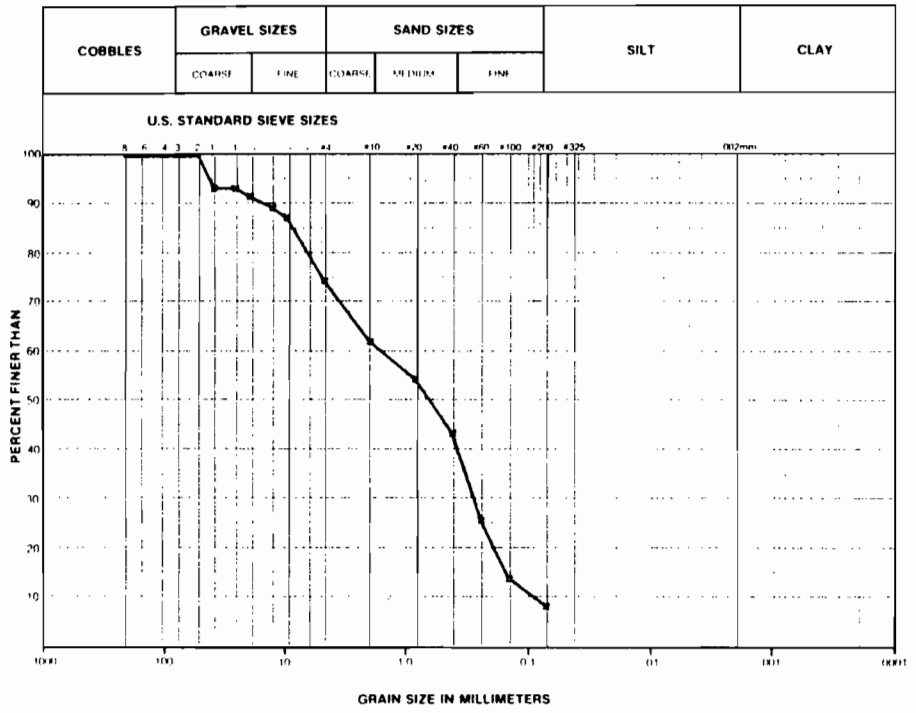
D_{60}	mm	GRAVEL	54	%
D_{30}	mm	SAND	39	%
D_{10}	mm	SILT + CLAY	7	%
C_U	mm			
C_C	mm			

Plate C92

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT. PLAN - TUK.
PROJECT NUMBER	CG14096
LAB. NUMBER	
LOCATION	155-5
HOLE	22
SAMPLE	A1 & C3
DEPTH	1.1 - 1.4/1.8 - 2.4 m
TECHNICIAN	R
DATE	87:04:07



REMARKS: SP-SM
M/C = 13%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

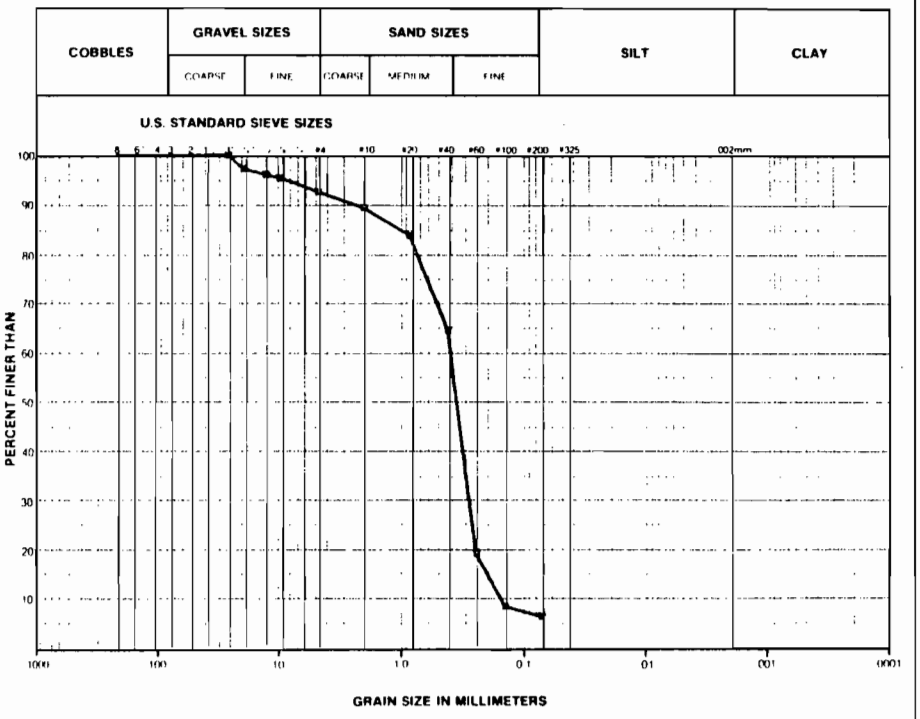
SUMMARY			
$D_{...}$	mm	GRAVEL	25 %
$D_{...}$	mm	SAND	66 %
$D_{...}$	mm	SILT	%
$C_{...}$	mm	+ CLAY }	9 %
$C_{...}$	mm		

Plate C93

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERS & PROFESSIONAL SERVICES

GRAIN SIZE CURVE

CLIENT	GRAN. MGT.PLAN - TUK.
PROJECT NUMBER	CG14096
LAB. NUMBER	
LOCATION	155-5
HOLE	22
SAMPLE	C4
DEPTH	2.4 - 2.6 m
TECHNICIAN	LR
DATE	87:04:23



REMARKS: SP
M/C = 22%
Class 3 Granular Material

NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM

SUMMARY			
$D_{...}$	mm	GRAVEL	7 %
$D_{...}$	mm	SAND	86 %
$D_{...}$	mm	SILT	%
$C_{...}$	mm	+ CLAY }	7 %
$C_{...}$	mm		

Plate C94

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #1:	LOCATION: 155N	COMPOSITE SAMPLE	
		BOREHOLE	SAMPLE
	PN = 205	10	A1
		11	A1
		12	A2

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	7.1
Gneiss-Schist		3.6
Volcanic		6.6
Quartzite		22.0
Sandstone		17.4
Shale/Siltstone		20.7
Crystalline	Fair	0.8
Gneiss-Schist		0.5
Quartzite		1.2
Sandstone		2.7
Shale/Siltstone		3.2
Carbonate		1.3
Crystalline	Poor	0.8
Quartzite		0.2
Sandstone		3.4
Shale/Siltstone		3.2
Chert	Deleterious	5.3
		100%

COMMENTS: Unsuitable for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #2:	LOCATION: 155N	COMPOSITE SAMPLE BOREHOLE	SAMPLE
		18	A1
	PN = 208	18	A2
		26	A1

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	4.6
Gneiss-Schist		6.1
Volcanics		4.7
Quartzite		21.0
Sandstone		21.4
Siltstone/Shale		16.5
Crystalline	Fair	0.1
Volcanic		0.9
Quartzite		4.8
Sandstone		2.8
Siltstone/Shale		2.0
Carbonate		4.1
Volcanic	Poor	0.1
Sandstone		1.9
Siltstone/Shale		3.1
Chert	Deleterious	3.8
Hematite		2.1
		100%

COMMENTS: Good quality for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #3:	LOCATION: 155N	COMPOSITE SAMPLE BOREHOLE	SAMPLE
	PN = 130	20	A1
		44	A1
		44	A2

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	7.3
Gneiss-Schist		2.6
Volcanics		1.7
Quartzite/Sandstone		50.7
Siltstone/Shale		31.6
Carbonate		0.1
Quartzite/Sandstone	Fair	1.6
Siltstone/Shale		1.0
Quartzite/Sandstone	Poor	0.7
Siltstone/Shale		0.7
Chert	Deleterious	2.0
		100%

COMMENT: Good quality for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #4:	LOCATION: 155N	COMPOSITE SAMPLE	
		BOREHOLE	SAMPLE
	PN = 224	30	C3
		30	C4
		31	A1

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	6.1
Gneiss-Schist		4.4
Volcanic		4.2
Quartzite		22.7
Sandstone		13.7
Siltstone/Shale		26.9
Carbonate		0.7
Sandstone	Fair	2.0
Siltstone/Shale		0.8
Carbonate		3.0
Quartzite	Poor	0.8
Sandstone		3.3
Siltstone/Shale		2.6
Chert	Deleterious	8.8
		100%

COMMENT: Unsuitable for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #5:	LOCATION: 155S	BOREHOLE	COMPOSITE SAMPLE SAMPLE
		2	A2
	PN = 158	4	A1
		4	A2

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	7.3
Volcanics		2.7
Quartzite/Sandstone		42.4
Siltstone/Shale		34.8
Carbonates		0.6
Volcanics	Fair	0.2
Quartzite/Sandstone		1.3
Siltstone/Shale		2.8
Carbonate		0.6
Volcanics	Poor	0.2
Quartzite/Sandstone		2.6
Siltstone/Shale		1.5
Chert	Deleterious	3.0
		100%

COMMENTS: Fair quality for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #6: LOCATION: 155S

PN = 144

COMPOSITE SAMPLE

BOREHOLE	SAMPLE
5	A1
6	A1
8	A1
8	A2
9	A1

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	4.0
Gneiss-Schist		6.6
Volcanic		1.2
Quartzite		54.0
Sandstone		9.3
Siltstone/Shale		15.2
Crystalline	Fair	0.1
Quartzite		0.2
Sandstone		2.5
Siltstone/Shale		0.7
Carbonate		1.4
Crystalline	Poor	0.2
Gneiss-Schist		0.1
Volcanic		0.1
Quartzite		0.1
Sandstone		0.5
Siltstone/Shale		1.3
Chert	Deleterious	2.5
		100%

COMMENTS: Good quality for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #7:	LOCATION: 155S	COMPOSITE SAMPLE BOREHOLE	SAMPLE
		11	A1
	PN = 147	12	A1
		13	A1

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	3.6
Gneiss-Schist		4.1
Volcanic		2.8
Quartzite		55.4
Sandstone		12.6
Siltstone/Shale		12.2
Carbonate		0.5
Crystalline	Fair	0.1
Sandstone		0.5
Siltstone/Shale		1.2
Carbonate		1.0
Crystalline	Poor	0.1
Volcanic		0.1
Quartzite		0.1
Sandstone		0.9
Siltstone/Shale		1.9
Chert	Deleterious	2.9
		100%

COMMENTS: Good quality for use in concrete aggregate.

PETROGRAPHIC ANALYSIS

(Coarse Aggregate)

SAMPLE #8:	LOCATION: 155S	COMPOSITE SAMPLE BOREHOLE	SAMPLE
		17	A1
	PN = 154	18	A1

Rock Type	Classification	Total Weighted Composition %
Crystalline	Good	12.9
Gneiss-Schist		3.6
Volcanics		17.6
Quartzite		21.0
Sandstone		15.4
Siltstone/Shale		17.2
Crystalline	Fair	0.2
Volcanics		0.2
Sandstone		1.6
Siltstone/Shale		1.6
Carbonate		2.2
Sandstone	Poor	1.1
Siltstone/Shale		3.0
Chert	Deleterious	2.4
		100%

COMMENTS: Fair quality for use in concrete aggregate.

APPENDIX "C"

AGGREGATE TESTS

PHYSICAL PROPERTIES

The following aggregate tests (Los Angeles Abrasion, Organic Impurities) have been conducted on composite samples combined from a number of borehole locations. The test results presented here were performed on composite samples as follows:

Source	Composite Sample	
	Borehole	Sample
155 North "A"	155N-10	A1
	155N-11	A1
	155N-12	A2
	155N-29	C3 + C4
	155N-30	A1
155 North "B"	155N-18	A1 + A2
	155N-20	A1
	155N-26	A1
	155N-44	A1 + A2
155 South "A"	155S-2	A2
	155S-4	A1 + A2
	155S-5	A1
	155S-6	A1
	155S-8	A1 + A2
	155S-9	A1
155 South "B"	155S-11	A1
	155S-12	A1
	155S-13	A1
	155S-17	A1
	155S-18	A1

NOTE: The organic impurities determination is conducted upon the fine aggregate (sand) fraction.

Source 155 North "A" was a little short on material for the 1" and 3/4" screen sizes for a standard Los Angeles Abrasion test. Hence, this result is non-standard.

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

LOS ANGELES ABRASION TEST REPORT

TO: Department of Public Works & Highways
Government of the North-West Territories

OFFICE: Calgary
PROJECT NO.: CG-14096
DATE: May 8, 1987
CC:

PROJECT Community Granular Management Plan - Tuktoyaktuk

SOURCE 155 North "A" | TYPE OF SAMPLE Coarse Crushed Aggregate | SAMPLED BY Client

DATE SAMPLED - | DATE RECEIVED May 5, 1987 | DATE TESTED May 7, 1987

MATERIAL GRADING: "A"

ACTUAL SIEVE SIZES	AMOUNT
1 1/2" (37.5mm) + 1" (25.0mm)	802.7 g
1" (25.0mm) + 3/4" (19.0mm)	880.3 g
3/4" (19.0mm) + 1/2" (12.5mm)	1249.5 g
1/2" (12.5mm) + 3/8" (9.5mm)	1251.2 g
	TOTAL SAMPLE 4183.7 g
NO. OF REVOLUTIONS 500	
NO. OF SPHERES 12	TOTAL SAMPLE 4183.7 g
WT. OF SPHERES 4989.4 g	+ # 12 MATERIAL AFTER 3280.7 g
	- # 12 MATERIAL AFTER 903.0 g

LOSS = $\frac{4183.7 - \#12}{\text{TOTAL SAMPLE}} \times 100 = \frac{903.0}{4183.7} \times 100 =$ 21.6 %

COMMENTS:

1) Organic Impurities (color test) = #4.
Tests performed in accordance with C.S.A. CAN3-A23.2-16A. (ASTM C131).
Note: Short material on the 1" & 3/4" screen sizes for L.A. Abrasion Test (Non-Standard).

TECHNICIAN RLD

REPORT CERTIFIED

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

LOS ANGELES ABRASION TEST REPORT

TO: Department of Public Works and Highways
Government of the North-West Territories

OFFICE: Calgary
PROJECT NO.: CG-14096
DATE: May 8, 1987
CC:

PROJECT Community Granular Management Plan - Tuktoyaktuk

SOURCE 155 North "B" | TYPE OF SAMPLE Coarse Crushed Aggregate | SAMPLED BY Client
DATE SAMPLED - | DATE RECEIVED May 5, 1987 | DATE TESTED May 6, 1987

MATERIAL GRADING: "A"

ACTUAL SIEVE SIZES	AMOUNT
— 1 1/2" (37.5mm) + 1" (25.0mm)	1251.7 g
— 1" (25.0mm) + 3/4" (19.0mm)	1250.7 g
— 3/4" (19.0mm) + 1/2" (12.5mm)	1249.1 g
— 1/2" (12.5mm) + 3/8" (9.5mm)	1250.3 g
	TOTAL SAMPLE 5001.8 g
NO. OF REVOLUTIONS 500	
NO. OF SPHERES 12	TOTAL SAMPLE 5001.8 g
WT. OF SPHERES 4989.4 g	+ # 12 MATERIAL AFTER 3950.4 g
	- # 12 MATERIAL AFTER 1051.4 g

$$\text{LOSS} = \frac{5001.8 - \#12}{\text{TOTAL SAMPLE}} \times 100 = \frac{1051.4}{5001.8} \times 100 = 21.0\ \%$$

COMMENTS: 1) Organic Impurities (color test) = #5
Tests performed in accordance with C.S.A. CAN3-A23.2-16A (ASTM C131).

TECHNICIAN RLD

REPORT CERTIFIED

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

LOS ANGELES ABRASION TEST REPORT

TO: Department of Public Works and Highways
Government of the North-West Territories

OFFICE: Calgary
PROJECT NO.: CG-14096
DATE: May 8, 1987
CC:

PROJECT Community Granular Management Plan - Tuktoyaktuk

SOURCE 155 South "A" | TYPE OF SAMPLE Coarse Crushed Aggregate | SAMPLED BY Client

DATE SAMPLED - | DATE RECEIVED May 5, 1987 | DATE TESTED May 5, 1987

MATERIAL GRADING: "A"

ACTUAL SIEVE SIZES	AMOUNT
— 1 1/2" (37.5mm) + 1" (25.0mm)	1250.7 g
— 1" (25.0mm) + 3/4" (19.0mm)	1249.8 g
— 3/4" (19.0mm) + 1/2" (12.5mm)	1250.6 g
— 1/2" (12.5mm) + 3/8" (9.5mm)	1249.1 g
	TOTAL SAMPLE 5000.2 g
NO. OF REVOLUTIONS	
NO. OF SPHERES 500	TOTAL SAMPLE 5000.2 g
WT. OF SPHERES 12 g	+ # 12 MATERIAL AFTER 4049.2 g
	- # 12 MATERIAL AFTER 951.2 g

$$\text{LOSS} = \frac{5000.2 - \#12}{\text{TOTAL SAMPLE}} \times 100 = \frac{951.0}{5000.2} \times 100 = 19.0\ \%$$

COMMENTS:

1) Organic Impurities (color test) = #5
Test performed in accordance with C.S.A. CAN3-A23.2-16A (ASTM C131).

TECHNICIAN RLD

REPORT CERTIFIED

HARDY ASSOCIATES (1978) LTD.
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

LOS ANGELES ABRASION TEST REPORT

TO: Department of Public Works and Highways
Government of the North-West Territories

OFFICE: Calgary
PROJECT NO.: CG-14096
DATE: May 8, 1987
CC:

PROJECT Community Granular Management Plan - Tuktoyaktuk

SOURCE 155 South "B" TYPE OF SAMPLE Coarse Crushed Aggregate SAMPLED BY Client

DATE SAMPLED - DATE RECEIVED May 5, 1987 DATE TESTED May 7, 1987

MATERIAL GRADING: "A"

ACTUAL SIEVE SIZES	AMOUNT
1 1/2" (37.5mm) + 1" (25.0mm)	1250.2 g
1" (25.0mm) + 3/4" (19.0mm)	1250.2 g
3/4" (19.0mm) + 1/2" (12.5mm)	1248.8 g
1/2" (12.5mm) + 3/8" (9.5mm)	1250.1 g
	TOTAL SAMPLE 4999.3 g
NO. OF REVOLUTIONS 500	
NO. OF SPHERES 12	TOTAL SAMPLE 4999.3 g
WT. OF SPHERES 4989.4 g	+ # 12 MATERIAL AFTER 4033.7 g
	- # 12 MATERIAL AFTER 965.6 g

LOSS = $\frac{4999.3 - \#12}{\text{TOTAL SAMPLE}} \times 100 = \frac{965.6}{4999.3} \times 100 = 19.3$ %

COMMENTS: 1) Organic Impurities (color test) = #4.5
Tests performed in accordance with C.S.A. CAN3-A23.2-16A (ASTM C131).

TECHNICIAN RLD REPORT CERTIFIED R.W. Dillingham C.E.T.

APPENDIX "C"

SOIL SALINITY
DETERMINATIONS

Borehole	Sample	Depth (m)	Salinity (ppt.)
155N- 2	A1	0.9-1.5	2.3
155N-16	A1	0.3-1.5	1.3
155N-18	A1	0.6-1.8	1.1
155N-19	A1	1.2-2.1	1.6
155N-35	A1	0.6-1.8	1.5
155S- 8	A1	0.2-1.1	2.3
155S-11	A1	0.3-1.5	1.7
155S-17	A1	0.6-2.1	2.6
155S-21	A2	2.1-2.4	9.1