

Sand and Gravel Resources of the Rocky  
Mountain House (West Three Quarters of 83B)  
and  
Calgary (North-Central of 820 Map Areas, AB.

Open File Report 1987 - 3

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## ABSTRACT

The aggregate materials present in the Rocky Mountain House (83B) and Calgary (820) map areas were studied in 1986 to provide information on the distribution and characteristics of the resource. The study area is 12,890 km<sup>2</sup> in size and was investigated at a reconnaissance level. The program consisted of compiling existing information, air photo interpretation, plus some site and laboratory analyses. Sand and gravel materials are distributed unevenly and are of variable quality.

The major deposits of sand and gravel are concentrated along the North Saskatchewan, Red Deer and Clearwater Rivers. These deposits are of glaciofluvial valley train (higher terraces) and Recent alluvial (valley floor) origin and contain the highest quality resources. At elevations higher than the major break in slope above the valley floor, sand and gravel deposits are scattered. Ice contact material is dispersed throughout the study area. A major kame complex is located south of Ancona and further investigation is recommended. Outwash and meltwater channel deposits also are disseminated widely throughout the study area. Small deposits of low quality material are present in low terraces and flood plains along the James, Baptiste, Nordegg and Brazeau Rivers. Eolian sand is widespread in the northwest part of the map area but has little economic value.

## INTRODUCTION

This study is part of a program initiated in 1976 by the Alberta Research Council and Alberta Energy and Natural Resources to provide information on the aggregate resources of the Province of Alberta. The area of study (Fig. 1), level of detail and materials to be investigated were determined by the Resources Evaluation and Planning Division (REAP) of Alberta Energy and Natural Resources. The actual investigations were conducted by the Geological Survey Department of the Alberta Research Council.

The study was completed at the enhanced reconnaissance level (Category 4 in Table 1). This type of mapping is designed to provide a minimum data level for local and regional planning and management of aggregate resources in the province and to form a base from which further exploration can proceed.

The Rocky Mountain House - Calgary Study area is bound by longitudes  $114^{\circ}30'$  and  $116^{\circ}00'$  West and latitudes  $51^{\circ}30'$  and  $53^{\circ}00'$  North. Total area is approximately  $12,890 \text{ km}^2$ . The largest towns within the map area are Rocky Mountain House and Sundre with populations of approximately 5100 and 3500 respectively.

## ACKNOWLEDGMENTS

Thanks are due to Julian Fox of Alberta Research Council for suggestions. Capable field assistance was provided by Chuck Ray. Campbell Kidson and Max Baaske performed the laboratory analyses and Monica Price assisted with the office preparations and final report.

Funds for the project were provided by Resource Evaluation and Planning Division of Alberta Energy and Natural Resources.

Helicopter time was provided by Alberta Forest Service, Alberta Energy and Natural Resources. Special acknowledgment also is given to the Alberta Forest Service employees in Rocky Mountain House and Sundre for their assistance.

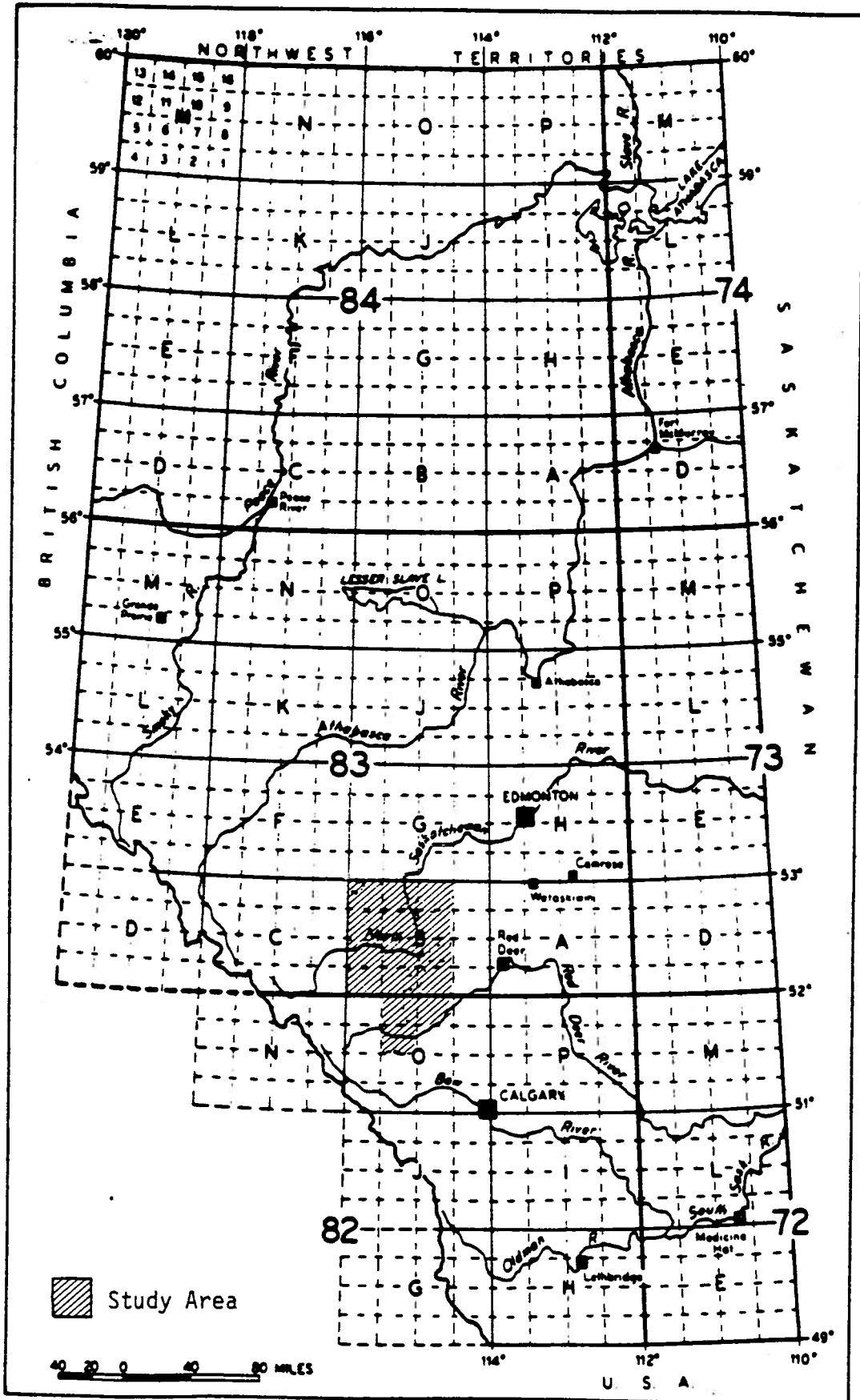


Figure 1. Location Map

Table 1. AGGREGATE INVENTORY MAPPING LEVELS

Format	Reconnaissance Study 5	Enhanced Reconnaissance Study 4	Regional Mapping 3	Detailed Mapping 2	Deposit Evaluation 1
Scale (Common)	1:250,000 (approx. 11x14 townships)	1:250,000 (approx. 11x14 townships)	1:50,000 (approx. 3x3 townships)	1:10,000	1:10,000 or larger
Mapping Methodology	Derived from existing surficial geology information. Aerial photograph interpretation.	Derived from existing surficial geology information. Aerial photograph interpretation. Some field traverses and site examination.	Aerial photograph interpretation Field traverses. Site examinations. Selected deposit testing. Laboratory testing.	Sedimentological studies. Site examination. Deposit testing. Laboratory testing.	Test pitting on an established grid. Hole logging. Materials analysis.
Uses	Broad scale planning. Preliminary aggregate exploration.	Broad scale planning. Preliminary aggregate exploration. Preliminary resource assessment.	Land use planning. Resource management. Resource estimates.	Land management. Reserve estimates. Deposit management.	Deposit evaluation. Development plan preparation.
Comments	Only potential areas suitable for finding deposits shown.  Fairly quick and in- expensive to produce.	Potential areas suitable for finding deposits are shown. Some deposits are examined.  A map will take 6 months to a year to produce.	Estimates deposit boundaries and gives quality and quantity estimations.  A map may take 8 months to a year to produce.	Establishes deposit boundaries. Refines quantity/quality information.  Fairly expensive survey.	Precise quality and quantity estimates. Deposit variations identified.  Very expensive survey.
Output	2 map sheets per prof-year.	1 map sheet per prof-year.	2 to 3 map sheets per prof-year.	Special projects only.	Special projects only.

## METHODS

The study was initiated with the review and compilation of existing information such as water well logs from Alberta Environment Department and data provided by the Alberta Transportation Department. A surficial geology map was compiled by P.C. Sham and M. Price of the Alberta Research Council prior to field investigation. Additional air photo interpretation of the area was performed by the principal investigators. A number of sites were identified within the map areas as possible locations for sampling or for site descriptions during the field component of the study.

Field work was conducted from July to October, 1986, using truck, three wheeled motorcycles and helicopter. Access is limited in the eastern slope of the Foothills region but all of the most important geological features were located and sampled. Whenever possible, samples were taken for later laboratory analyses. A limited number of geophysical traverses using a Geonics EM31 were made to detect buried granular material.

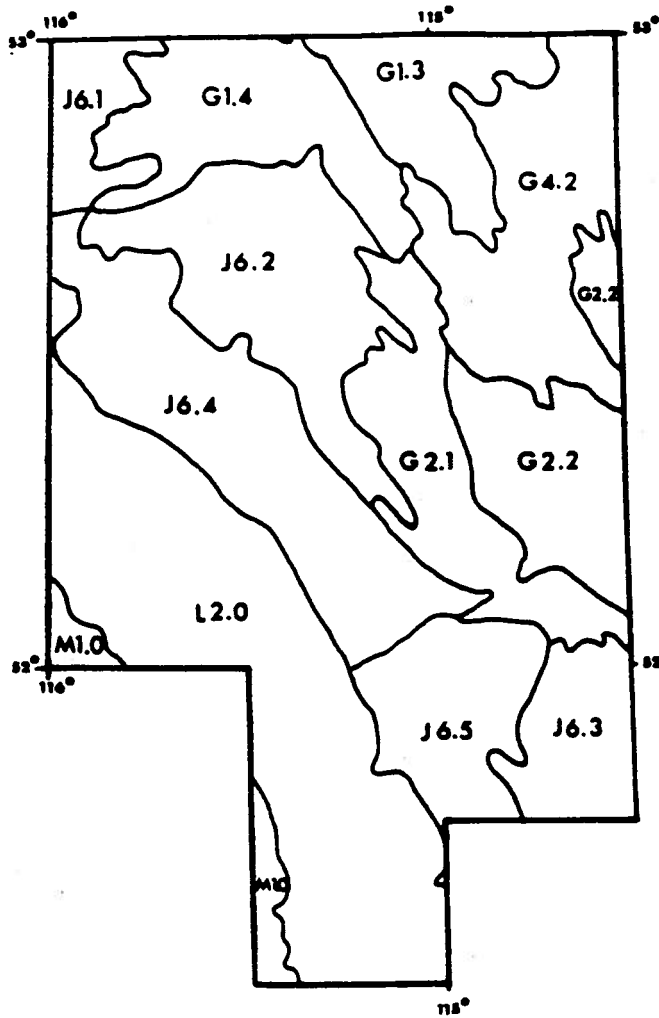
This report is based mainly on surface geological observation, air photo interpretation, quite extensive field checking and laboratory data.

## GEOLOGY

### PHYSIOGRAPHY AND BEDROCK

Major physiographic features (Pettapiece, 1984) within the study area (Fig. 2) are the Central Foothills and Shunda Benchland in the southwest, the O'Chiese Benchland and Brazeau Plain in the northwest, the Crimson Lake Plain and Medicine River Plain in the southeast and the Buck Lake Upland in the northeast.

All prominent topographic features along the Central Foothills regions are related to the structure and lithology of the underlying bedrock and their differential resistance to erosion. East of these regions, topography appears to have resulted from extensive erosion of soft Upper



LEGEND

G1 Drayton Plain (750-1050)	G1.3 Drayton Valley Plain
G2 Olds Plain (850-1050)	G1.4 Brazeau Plain
G4 Lodgepole Uplands (850-1050)	G2.1 Crimson Lake Plain
	G2.2 Medicine River Plain
J6 Western Benchlands (1000-1450)	G4.2 Buck Lake Upland
	J6.1 Wolf Lake Benchland
	J6.2 O'Chiese Benchland
	J6.3 Crossfield Benchland
	J6.4 Shunda Benchland
	J6.5 Nosehill Benchland
L2 Central Foothills (1200-1800)	L2.0 Central Foothills
M1 Front Ranges (1200-3300)	M1.0 Front Ranges

Figure 2. Physiographic Map (after Pettapiece, 1984)



Cretaceous and Paleocene rocks, modified later by glaciation and post glacial activity.

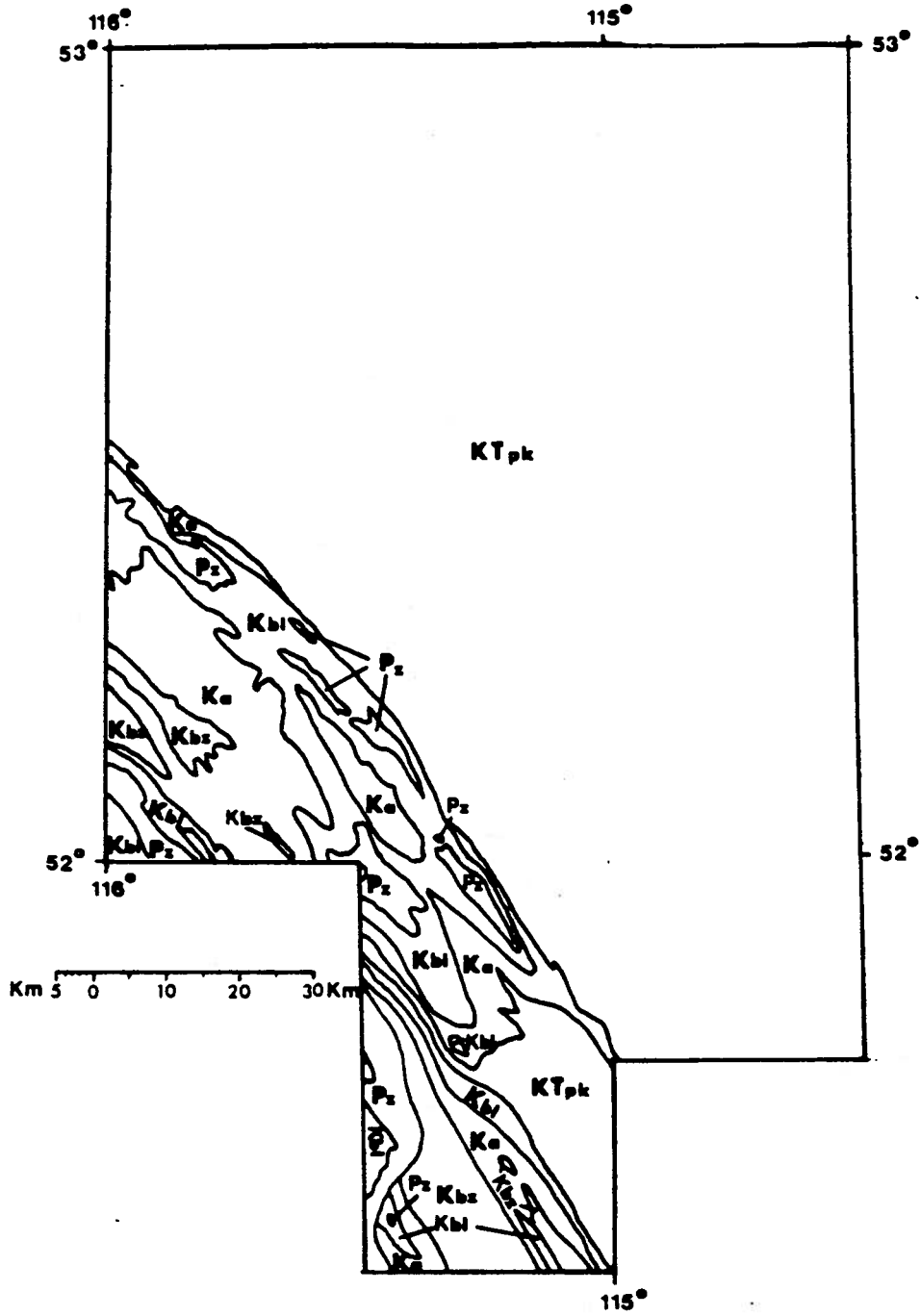
The altitude in the northeastern part of the study area is about 800 m and increases gradually to about 2000 m in the Central Foothills region.

The bedrock of the Rocky Mountain House-Calgary study area (Fig. 3) in the southwest is of Cambrian to Cretaceous age: Paleozoic carbonate rocks form the main mountain ranges, with less resistant Mesozoic sandstone and shale strata forming the intervening valleys. The Foothills are entirely of sedimentary origin. The formations, mainly of Cretaceous age, consist of nonmarine, thick-bedded, chloritic and feldspathic sandstones and blocky gray mudstones. In the Plains region only one bedrock unit, the Paleocene Paskapoo Formation, is present at the surface. This consists of a succession of grayish, calcareous sandstones, siltstones and mudstones (Boydell, 1970).

#### GLACIAL HISTORY

The Rocky Mountain House-Calgary study area was affected by at least four Pleistocene ice sheets which originated either in the Rocky Mountains or on the Canadian Shield (Boydell, 1970). Glaciation appears to have served primarily to widen, presumably, former V-shaped valleys into U-shaped valleys, and to produce a variety of other glacial landforms.

Post-glacial erosion, transportation and deposition also have influenced the landscape of the study area. In the valleys where new courses have been established, the streams are incised into glaciolacustrine and morainal plains and terraces have developed. Fluvial materials, eolian and organic deposits and their associated landforms are the result of postglacial activities in the area.



LEGEND

- KTp** Paskapoo Formation: sandstone, siltstone, shale; coal near base
- Kbz** Brazeau Formation: sandstone, siltstone, shale, minor coal
- Ka** Alberta Group: mainly shale, some hard sandstone
- Kbl** Blairmore Formation and older Mesozoic formations: sandstone, shale
- Pz** Paleozoic: limestone, dolomite, argillaceous limestone, calcareous shale

Figure 3. Bedrock Geology (after Green, 1972)

## SAND AND GRAVEL RESOURCES

Gravel and sand deposits in the area are variable. Their composition and origin vary widely and they are distributed unevenly. Some deposits are very extensive, others are only scattered, small bodies of gravel, and some are just a thin sheet of sand.

Deposit, pit, site and/or sample locations are shown in figure 4 (in pocket). Evaluations of the aggregate resources in the study area are given in figures 5 and 6 (in pocket). Deposit and site/pit descriptions are in Appendix 1. Deposits with potential require further investigation and this is noted in the descriptions in Appendix 1.

The gravel and sand-bearing deposits are classified on the basis of origin into the six major types listed below:

- (1) Preglacial Alluvial Deposits
- (2) Glaciofluvial Deposits
  - a) Valley Trains
  - b) Outwash
  - c) Meltwater Channel
- (3) Glaciolacustrine Deposits
- (4) Ice contact
  - a) Kame
  - b) Esker
- (5) Eolian
- (6) Recent Deposits
  - a) Alluvium
  - b) Colluvium

### (1) PREGLACIAL ALLUVIAL DEPOSITS

No Preglacial material was found within this study area. Carlson (1971) suggested that some present-day rivers developed as a consequence of glacially induced river diversions during Pleistocene time. A number of the preglacial valleys are now buried with heavy glacial overburden.

Extensive drilling might help to locate this resource, especially downstream of the North Saskatchewan River near Rocky Mountain House.

## (2) GLACIOFLUVIAL DEPOSITS

### a) Valley Trains

Many sand and gravel deposits are present along the major rivers, the North Saskatchewan, Clearwater and Red Deer Rivers, in the study area. The river valleys were infilled with glacial sand and gravel material and subsequently a number of terraces (Pl. 1) were cut. These valley train terraces have different compositions in the upstream and downstream sections of the rivers in the study area. For details of these differences see the site/pit descriptions in Appendix 1.

Southwest of Rocky Mountain House some high terraces are covered with eolian, fine-grained sand. Clasts in the terraces are composed primarily of quartzite, limestone and igneous rocks from the Canadian Shield.

Valley train type deposits in the area are deposits 16, 18, 20, 21 and 23 on North Saskatchewan River deposit 31 on Baptiste River, deposits 48, 49 and 51 on Clearwater River, deposit 55 on Ram River and deposits 61 and 62 on Red Deer River.

### b) Outwash

Outwash is a glaciofluvial deposit formed in front of the margin of glacier ice. The outwash occurs as a sheet or nearly level surface composed largely of sand and gravel or sand only. In the study area the outwash deposits range from gravelly sand to sandy gravel. Outwash sand is not common. Outwash deposits are 1, 2, 4, 26, 29, 30, 39, 40, 41, 44, 58 and 59 on the Rocky Mountain House (83B) map sheet and deposits 66, 72 and 88 on the Calgary (820) map sheet.



Plate 1. The topographic expression of Recent alluvial flood plain and terrace deposits of gravel present in the upper reaches of the Red Deer River valley (Deposit 81) southwest of Sundre is similar to that downstream in this and the other major rivers in the study area and can be used as a field aid during exploration for gravel. Above the highest break in slope (arrow) gravel deposits are absent in the upstream portions of the rivers and are widely scattered downstream.

c) Meltwater Channel

A meltwater channel is a watercourse or abandoned watercourse used by water derived from melting glacier ice that commonly contains accumulations of gravel and sand derived from the ice. Three meltwater channel deposits in the study area are deposit 3 near Medicine Lake, deposit 19 northeast of Norburg and deposit 65 3 km southeast of Sundre.

(3) GLACIOLACUSTRINE DEPOSITS

Glaciolacustrine sediments were deposited in the proglacial lakes formed by blocking drainage of glacial meltwater by the retreating glacier. The main deposits are present in the North Saskatchewan, Clearwater and Nordegg Rivers adjacent to Brazeau and Crimson Lake Plains.

The glaciolacustrine deposits vary in texture, depending on locality, and range from sandy silt to heavy clay with minor clasts. No beaches were found in association with the former lakes.

(4) ICE CONTACT

a) Kame Deposits

Gravel and sand deposits of this origin are scattered throughout the central and southern regions of the study area, especially within the Foothills belt. The gravel and sand form mounds, or irregular hills, that stand isolated or in groups. Generally, deposits consist of poorly sorted and poorly stratified sand and gravel. Material in these deposits is derived predominantly from mountain glaciers. The thickness of overburden and thickness of deposits vary from place to place. The deposits which belong to this type are deposits 27, 37, 43, 45 and 53 on the Rocky Mountain map sheet (83B) and deposits 63, 67, 68, 69 and 87 on the Calgary Map Sheet (820).

b) Esker Deposits

Esker deposits form long narrow ridges as much as 4 km long that trend mainly in a southwesterly direction. Their composition varies from ridge to ridge ranging from cobbles or coarse gravel, to gravel with pockets of sand (Pl. 2), to sand only. The esker deposits include deposits 5, 11, 54 and 56 on the Rocky Mountain Map Sheet (83B); 73, 76, 77, 78, 80 and 85 on the Calgary Map Sheet (820).

(5) EOLIAN DEPOSITS

Only one deposit number (9) is given to summarize numerous sand dune fields present throughout the study area. Most dunes are of the U-shaped type and consist of fine-grained material, especially near the Brazeau River and south of Cow Lake. No active dunes now exist, due to stabilization by vegetation. In many places the interdune areas are filled with muskeg.

(6) RECENT DEPOSITS

a) Alluvium

Recent alluvial deposits are present along most of the streams in the map area. Larger and medium-sized rivers such as the North Saskatchewan, Clearwater, Red Deer, James, Baptiste, Brazeau, Nordegg and Ram Rivers carry gravel. Gravel bars, flood plain and alluvial terraces (Pl. 3) are present along these river systems.

The courses of most of these major rivers are confined to Proterozoic and Paleozoic rocks which are composed predominantly of limestone and quartzite. Quartzite, however, is much more persistent than limestone in downstream samples as a direct result of the greater resistance to wear of quartzite compared to



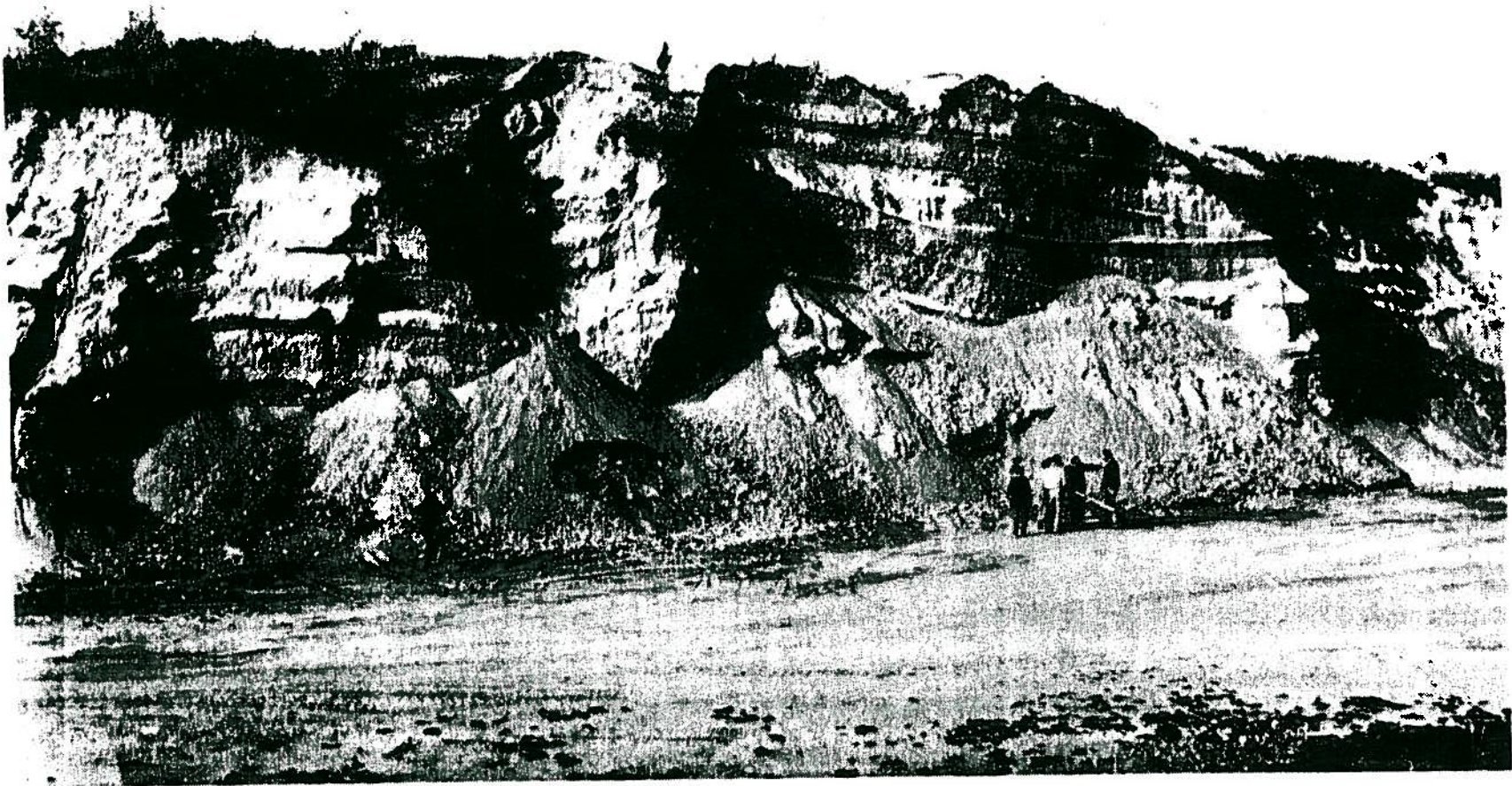


Plate 2. North of Leslieville, approximately 10 m of sand and gravel is exposed in an esker in Deposit 5.





Plate 3. Approximately 12.5 m of gravel is exposed in a terrace in the Clearwater River valley (Deposit 47) near the bridge west of Seven Mile Flat. Most clasts are limestone.

limestone. Also, there is an increasing proportion of friable sandstone clasts derived from local bedrock near the Foothills region.

Recent alluvial deposits are the major sources of sand and gravel in the study area but high water table (Pl. 4) and environmental restrictions may prevent further sand and gravel development. Deposits of alluvial origin in the study area are deposits 12, 13, 15, 17, 22, 24 and 25 in the North Saskatchewan River, deposits 47 and 52 in the Clearwater River, deposits 60, 64, 79 and 81 in the Red Deer River, deposits 70, 71, 74 and 75 in the James River, deposits 32 and 33 in the Baptiste River, deposits 10, 35 and 36 in the Brazeau River, deposit 34 in the Nordegg River and deposits 28 and 57 in the North Ram and Ram Rivers.

Other alluvial deposits also may be located on small streams and rivers.

b) Colluvium

This is surface material derived from the immediately underlying bedrock sandstone and limestone. It covers a very extensive area in the Foothills region. Clasts are mainly angular and there is a lack of sand matrix. This material might be used as road base material.





Plate 4. Gravel in bars, islands and banks of the Brazeau River (Deposit 35) varies from 0.5 to 2 m thick above river level beneath 0 to 1 m of silt and sand overburden. This material may be the major potential source of gravel in a large area with few deposits.

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**APPENDIX I**  
**DEPOSIT AND SITE DESCRIPTION**

DEPOSIT NO. 1

LOCATION: Sec 19,20,29,30 Tp46 R4 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

See site description.

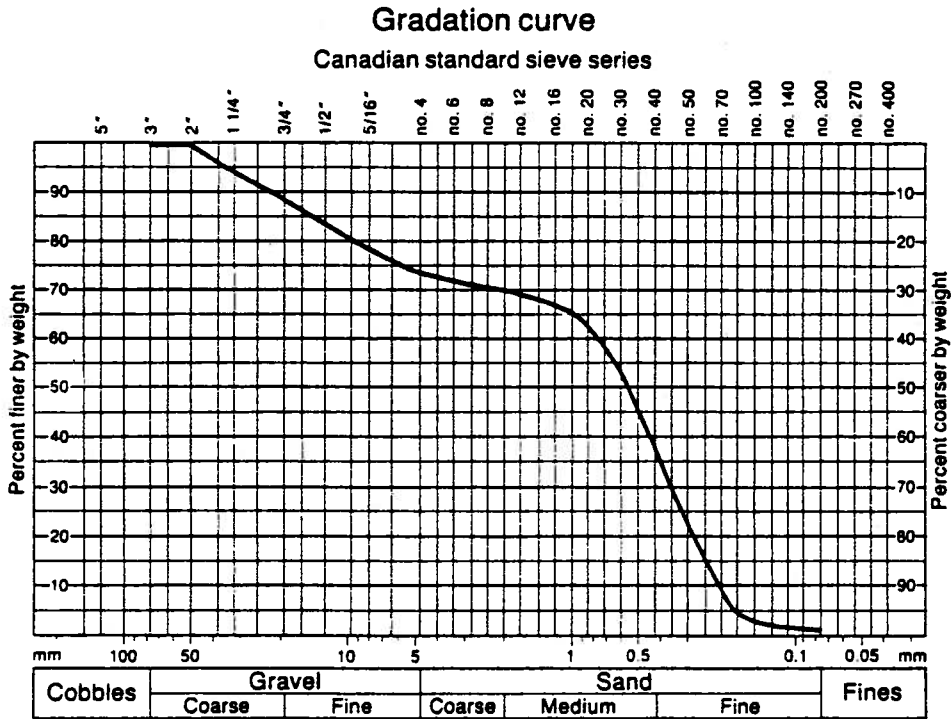
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Site Location: Sec SW29 Tp46 R4 W5M

Site Description:

Medium to coarse sand with about 5% clasts to 10 cm size but most clasts are to 5 cm. Clasts are angular and mostly igneous rock from the Canadian Shield. Hummocky area covered by scrub bush with some cleared areas used mostly for grazing.

Gradation: 0% cobbles 26.0% gravel  
72.6% sand 1.4% fines



\* \* \* \* \*

**DEPOSIT NO. 2**

LOCATION: Sec 31 Tp44 R5 W5M  
Sec 3,6,9 Tp45 R5 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

See site description.

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**Site Location:** Sec E9 Tp45 R5 W5M

**Site Description:**

Coarse gravel or sand could not be found in the area. Some ridges with pines but the sand is quite dirty with no clasts. No sample taken.

\* \* \* \* \*

**DEPOSIT NO. 3**

LOCATION: Sec 1,2,11,12 Tp44 R6 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

See pit description.

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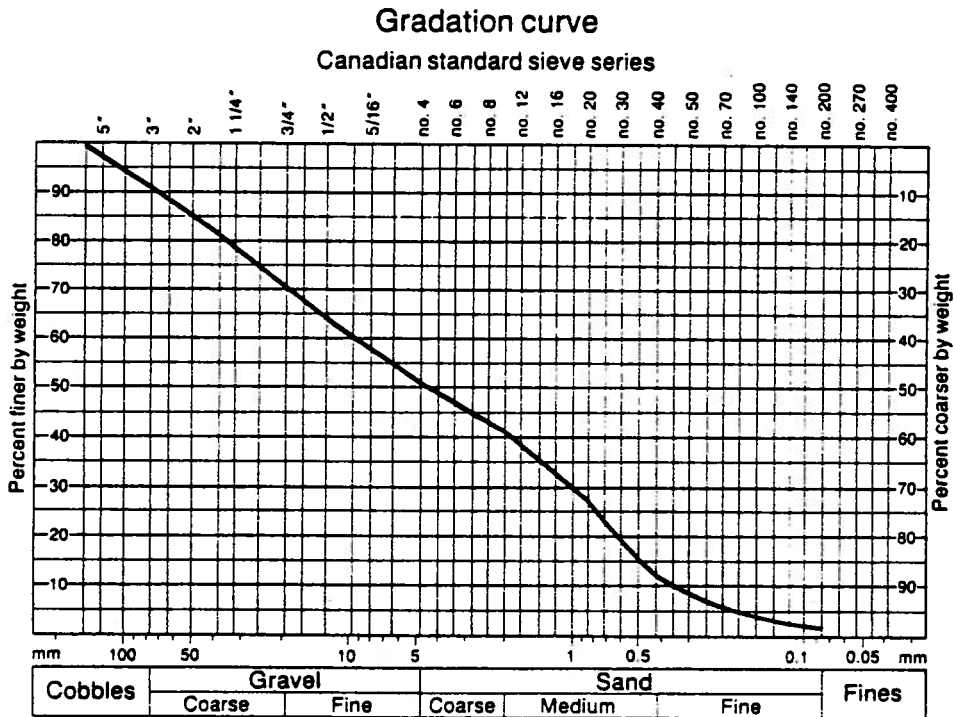


Pit Location: Sec NE2 Tp44 R6 W5M

Pit Description:

Pit in gravelly sand of 3.6m maximum thickness. Some stringers of fine or coarse sand up to 5m long and 25cm thick are present. Clasts are to 25cm size, most are less than 15cm. Main rock types are subangular clasts of igneous rocks from the Canadian Shield and subrounded quartzite clasts. Some friable clasts of local sandstone are present. Coaly fragments are especially noticeable in coarse sand lenses. Pit run probably would be alright for pad material. Best use of material if crushed. Pit appears to be periodically active. No suggestion from air photo interpretation that this is a likely area for gravel.

Gradation: 9.7% cobbles 39.3% gravel  
48.6% sand 2.4% fines



\* \* \* \* \*

DEPOSIT NO. 4

LOCATION: Sec 31,33 Tp41 R5 W5M  
Sec 25,26,27,34,35,36 Tp41 R6 W5M  
Sec 4-10,14-19, 22,23 Tp42 R5 W5M  
Sec 1-4,23-26,33 Tp42 R6 W5M  
Sec 7,17,18 Tp 43 R5 W5M  
Sec 3,4 Tp43 R6 W5M

No. of associated pits/sites: 4 pits

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

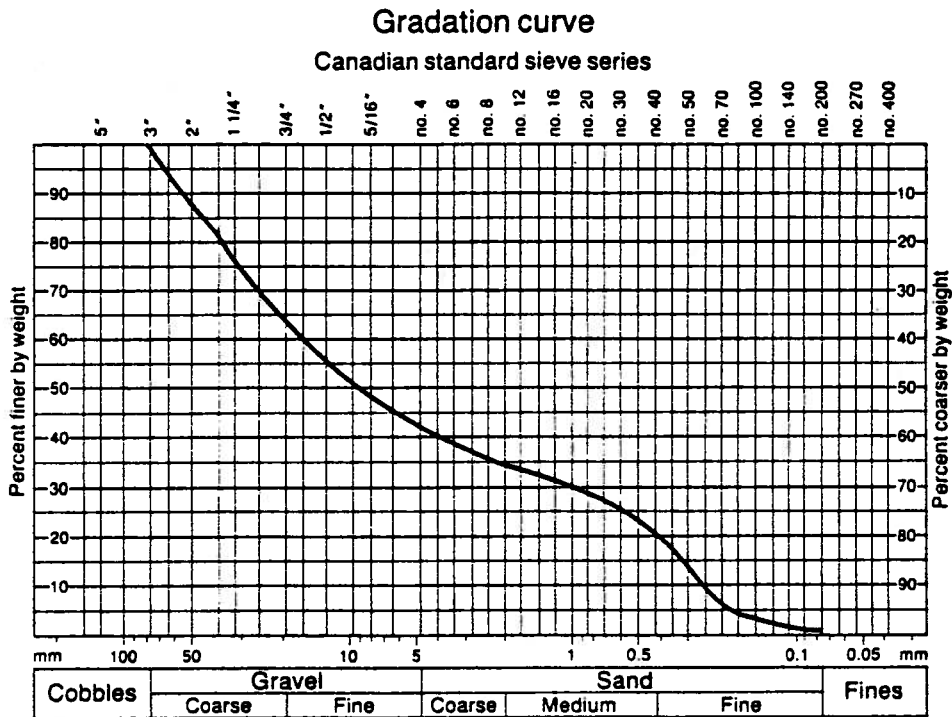
Glaciofluvial material, gravelly sand to sandy gravel. Greater than 99% mainly of clasts are smaller than 15cm. The most common clasts are sandstone and igneous rock from the Canadian Shield, plus a few quartzite clasts. Material is graded and sorted. Coal fragments are present in some sand layers.

Pit Location: Sec SW4 Tp42 R5 W5M

Pit Description:

Disused gravelly sand/sandy gravel pit that may be revitalized in future. A number of holes have been drilled and a road has been opened past it. The area was reseeded and poplar are encroaching. Greater than 99% of clasts are less than 15cm across and consist of sandstone, igneous rock from the Canadian Shield and a few quartzite clasts. Material is graded and probably sorted in different areas of the pit.

Gradation: 0% cobbles 57.9% gravel  
40.3% sand 1.8% fines

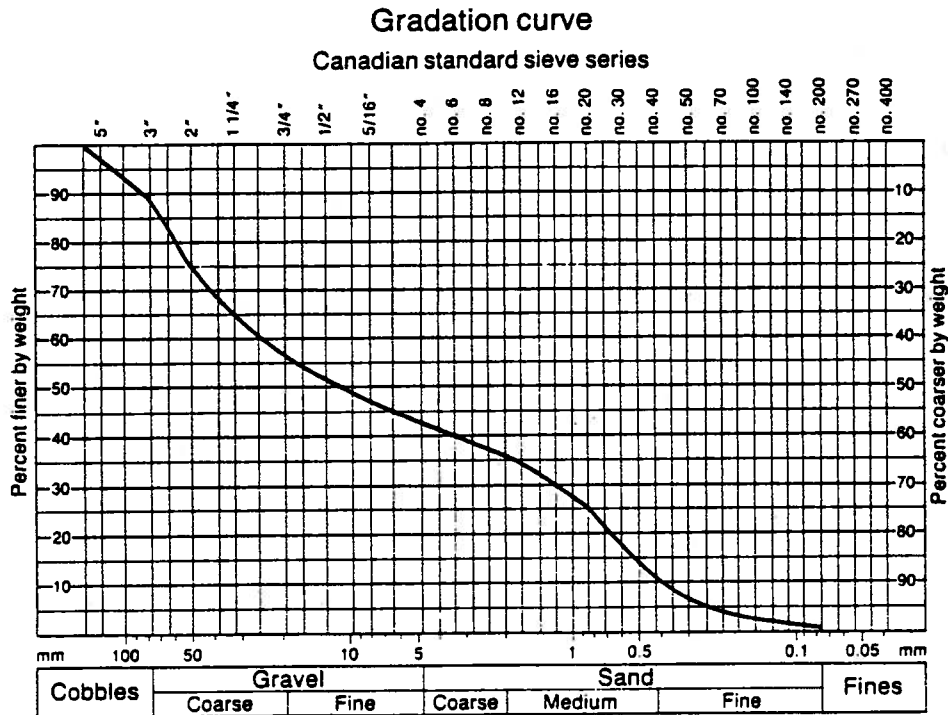


Pit Location: Sec SE4 Tp42 R5 W5M

**Pit Description:**

New gravel pit. Material is similar to that at previous site. Graded and sorted. Coal is present in coarse sand layers.

Gradation: 11.2% cobbles 46.0% gravel  
41.6% sand 1.2% fines



Pit Location: Sec NE8 Tp42 R5 W5M

**Pit Description:**

Apparently disused/infrequently used gravelly sand pit. Clasts are to 30cm. Over 99% are less than 15cm. Clasts are sandstone, igneous rock from the Canadian Shield and quartzite. Sand is fine to coarse grained. Material is graded and there is some sorting. Deposit is along a creek bed and probably is not too extensive. Not worthwhile exploiting for gravel. In this area gravel probably will be found only in the valley bottoms and may be overlain with silt or fine sand to various depths in hummocks.

Pit Location: Sec NE5 Tp 42 R5 W5M

**Pit Description:**

Disused gravelly sand pit with material similar to above. Aggregate is patchy and lenses of silt are not uncommon. The finer material also changes within short horizontal and vertical distances from fine to coarse within the aggregate interstices. An intermittently active sand pit is present at the south end. Highwall is about 12m high with about 2.5m of horizontally bedded silt at the base and coarse bedded fine sand and sand with minor gravel above. Beyond this highwall is another highwall less than 2m high, with higher clast content. Some of the knolls like this one may have a sand/silt core with a gravelly sand veneer. It is unlikely that any material in this area has a consistently high clast content.

\* \* \* \* \*

**DEPOSIT NO. 5**

LOCATION: Sec 25,34-36 Tp39 R5 W5M  
Sec 2,3 Tp40 R5 W5M

No. of associated pits/sites: 2 pits, 1 site

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Ice contact. A sinuous gravelly sand to sand ridge structure greater than 10m thick in some regions. Clay and silt pockets are common in some areas.

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**Site Location:** Sec NE34 Tp39 R5 W5M

**Site Description:**

Conical hill of fine sand and clay with minor clasts.

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**Pit Location:** Sec N35 Tp39 R5 W5M

**Site Description:**

Pit at northwest end of sinuous ridge structure described above. There is aggregate in the core and sand on the outside. The aggregate is cross-bedded and stringers of fine material similar to those present in the pit at the southeast end are absent. The pit appears to be intermittently active and a stockpile of crushed material is present. The face is approximately 10m high.

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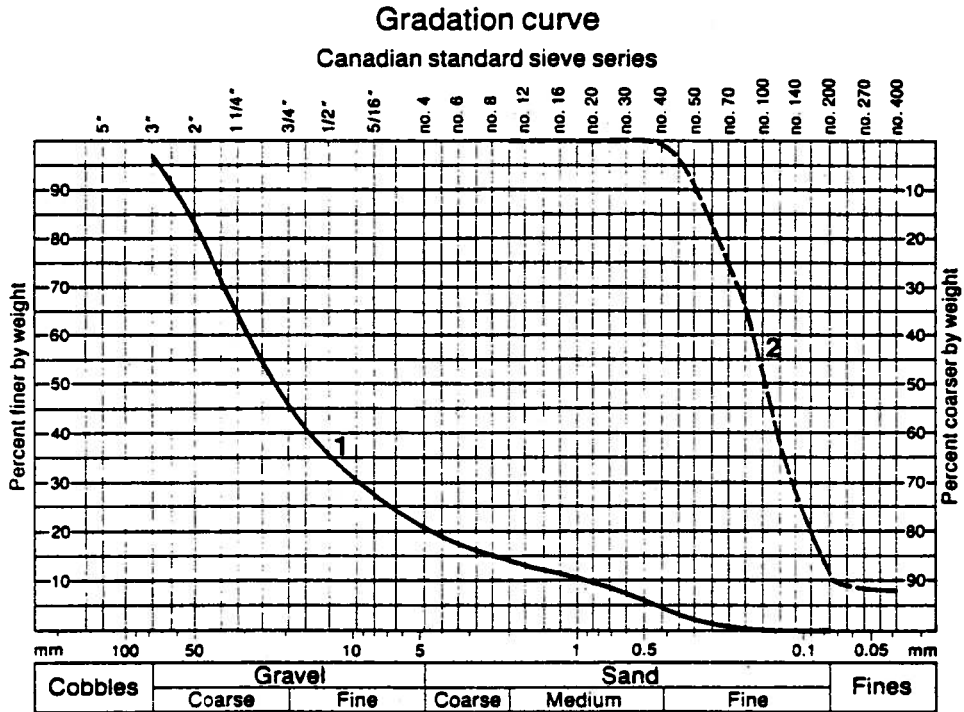
Pit Location: Sec NE35 Tp39 R5 W5M

Pit Description:

A gravel pit that is 0.65Km long in a sinuous ridge structure is active in the southeastern end. Best aggregate concentration is in the axial portion of the structure. Sand or clay and silt are more common on sides.

Gradation: 3.0% cobbles 76.2% gravel)  
20.5% sand 0.3% fines ) 1

0% cobbles 0% gravel)  
89.5% sand 10.5% fines ) 2 (sand sample)



\* \* \* \* \*

DEPOSIT NO. 6

LOCATION: Sec 13-15,21-23 Tp39 R5 W5M  
Sec 17-21,28-30 Tp39 R4 W5M

No. of associated pits/sites: 3 pits

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

Glaciofluvial outwash composed of gravelly sand to sandy gravel with large boulders to 2.0m which probably are derived from local till material. Granite and other igneous clasts are dominant. Friable sandstone clasts derived from local bedrock are common.

Pit Location: Sec SE19 Tp39 R4 W5M

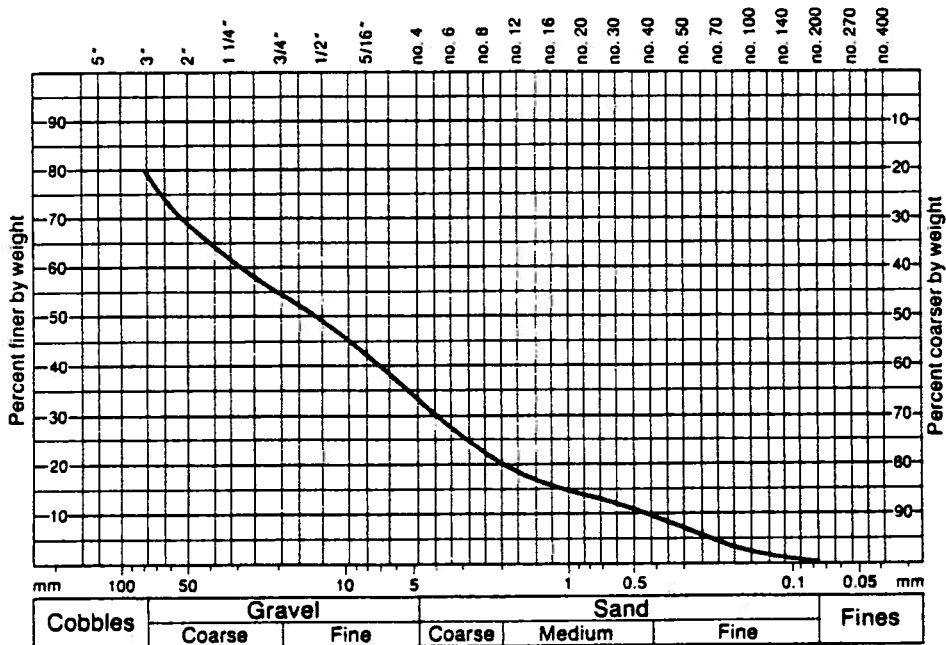
Pit Description:

Disused gravel pit exposing approximately 4m of very coarse material. Clasts to 0.5m are present in the face. The reject pile contains boulders 1.5-2m in size. Granite and other igneous rocks are dominant. Friable sandstone clasts are common. Sand is coarse. Clay fines are minor, but till is present in the rear wall of the pit. The deposit may be a lateral moraine. In the sample taken, clasts larger than 15cm were not included.

Gradation: 20.3% cobbles 46.8% gravel  
32.2% sand 0.7% fines

Gradation curve

Canadian standard sieve series





**Pit Location:** Sec NW21 Tp39 R4 W5M

**Pit Description:**

Disused pit exposes gravelly sand. Maximum clast size is 20cm and about 25% are between 5 and 15cm. This shallow pit probably contains 2m maximum of material. Abundant large boulders, 0.5-2m, are present at the surface but are not present in the face. The boulders commonly are angular sandstone. Some granites and a few quartzites of 0.5-1m size are in the reject pile. Material has been crushed for use and two small stockpiles remain. Spruce is reclaiming much of the pit.

---

**Pit Location:** Sec NW13 Tp39 R5 W5M

**Pit Description:**

Sand pit with less than 10% aggregate. Clasts are up to 15 cm size but most are less than 3cm. Finer material varies from fine silt to medium or coarse sand. Pockets of bedded silt, sand or fine gravel are present. One wedge of aggregate is up to 50cm thick but aggregate beds are uncommon. The pit is about 70m x 30m and is in an elongated hill that may contain similar material along its extent. Pit walls are approximately 4m high. Pit floor probably is not at base of material.

\* \* \* \* \*

DEPOSIT NO. 7

LOCATION: Sec 20,21,28-32 Tp36 R4 W5M  
Sec 35,36 Tp36 R5 W5M  
Sec 1-3,8-11,16-18 Tp37 R5 W5M

No. of associated pits/sites: 3 pits, 2 sites

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

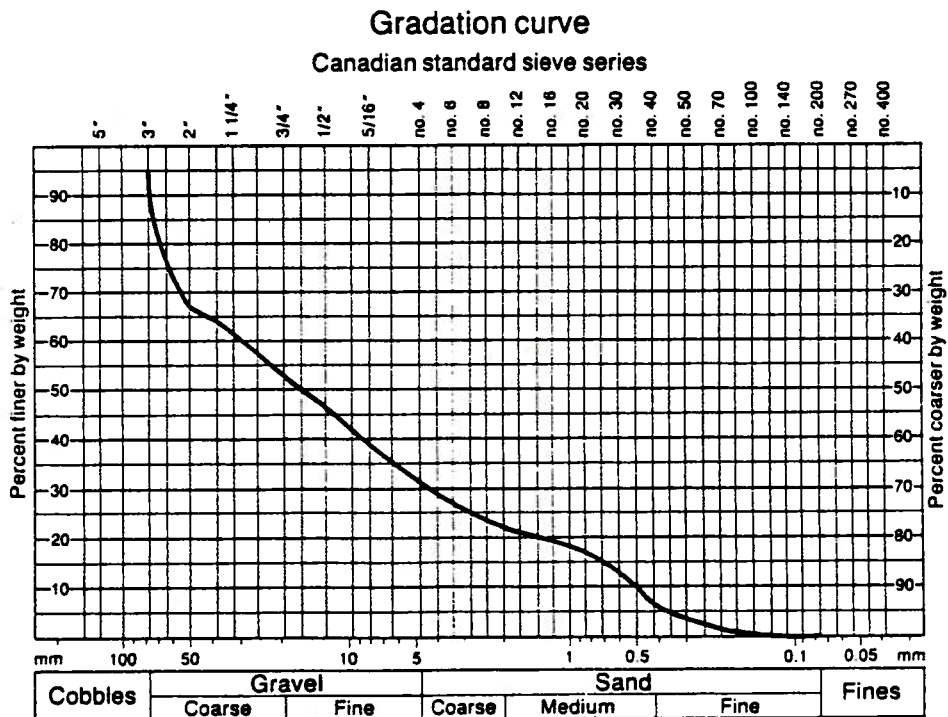
Recent alluvium forms small river bars and low terraces along Stauffer Creek. Material varies from dirty sandy gravel to gravelly sand. Igneous rocks from the Canadian Shield and quartzite clasts are common. Few clasts are larger than 15cm in diameter.

Pit Location: Sec NE20 Tp36 R4 W5M

Pit Description:

Infrequently used gravel pit. About 5.0m gravel lies below 0.5-1m overburden. Cobbles are to 15cm. Igneous rocks from the Canadian Shield and quartzite material are present.

Gradation: 6.2% cobbles 62.5% gravel  
27.8% sand 3.5% fines



Site Location: Sec SW29 Tp36 R4 W5M

**Site Description:**

Dirty gravelly sand veneer, perhaps 1-2m thick, in ditch wall. A few clasts are up to 20cm size; probably would pack well for road base. Some clasts of igneous rocks from the Canadian Shield are present. A few loads have been removed, probably during road construction.

---

Pit Location: Sec NE30 Tp36 R4 W5M

**Pit Description:**

Small (15m x 15m) abandoned pit in coarse sandy gravel, 1-1.5m thick. Pit floor is clay. This pit may be at a slightly higher elevation than the material at the site described above, but the material is very similar.

---

Pit Location: Sec NW2 Tp37 R5 W5M

**Pit Description:**

Private property. Owner sells material to neighbours periodically but not interested in selling to anyone else. Says the material from the former pit on public lands is depleted.

---

Site Location: Sec SE16 Tp36 R4 W5M

**Site Description:**

About 2m gravelly sand with 25% clasts. Cobbles to 10cm size compose approximately 1% of the material. Ridge appears to follow west bank of North Raven River. No sample.

\* \* \* \* \*

**DEPOSIT NO. 8**

LOCATION: Sec 19,20,30 Tp36 R4 W5M  
          Sec 25,26,27,33-36 Tp36 R5 W5M  
          Sec 2-5,8-10 Tp37 R5 W5M

No. of associated pits/sites: 1 site

No. of samples analysed:       None

**DEPOSIT DESCRIPTION:**

See site description

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**Site Location:** Sec NE35 Tp36 R5 W5M

**Site Description:**

Roadcut, about 8m exposure. Primarily clean medium sand on west side of road grading southward into gravelly till. Clasts to 15 cm are igneous rocks from the Canadian Shield and quartzite. Too much clay in till to be good for aggregate but probably would be good for constructing road or oil well bases.

\* \* \* \* \*

DEPOSIT NO. 9

LOCATION: Sec 33,34,35 Tp36 R7 W5M  
Sec 3-9,14,15,17-23,26-34 Tp37 R7 W5M  
Sec 13,24-26,35,36 Tp37 R8 W5M  
Sec 4-8,17 Tp38 R7 W5M  
Sec 1,2,9-12,15,16,21 Tp38 R8 W5M  
Sec 9,16,17,20,21,28,29,33 Tp40 R7 W5M  
Sec 31-33, Tp40 R8 W5M  
Sec 5,6,26-28,31-35 Tp41 R8 W5M  
Sec 7,8,17,18,29-32 Tp41 R9 W5M  
Sec 13,24,36 Tp41 R10 W5M  
Sec 19,30 Tp42 R7 W5M  
Sec 3-6,8-10,15-22,24-26,28,29,33,34 Tp42 R8 W5M  
Sec 5,6,13,14,22-29,32-34 Tp42 R9 W5M  
Sec 1,2,11,12 Tp42 R10 W5M  
Sec 1,2,6,7 Tp43 R8 W5M  
Sec 1,11-15,22,23,26 Tp43 R9 W5M  
Sec 29,32 Tp44 R8 W5M  
Sec 29-32,27,28,33-35 Tp44 R12 W5M  
Sec 15-23,26-36 Tp44 R12 W5M  
Sec 13,14,22-28,33-36 Tp44 R13 W5M  
Sec 5,6,8,9,16,17 Tp45 R8 W5M  
Sec 14,15,22-27,29-32,34-36 Tp45 R9 W5M  
Sec 23-27,34-36 Tp45 R10 W5M  
Sec 1-4,6,7,9,10,18,19 Tp45 R11 W5M  
Sec 1-6,8-17,19,20,22-29,33-36 Tp45 R12 W5M  
Sec 29-32 Tp45 R13 W5M  
Sec 5 Tp46 R9 W5M  
Sec 1-4,8,9,15-19,30 Tp46 R10 W5M  
Sec 14-16,19-30 Tp46 R11 W5M  
Sec 1-4,10,14-16,20-30 Tp46 R12 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Very extensive eolian sand, mainly in the northwest portion of the map area, with a few deposits scattered south of Cow Lake. Maximum thickness is 3m. No potential value.

Pit Location: Sec SE16 Tp38 R8 W5M

Pit Description:

Inactive eolian sand pit.

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Site Location: Sec NW28 SE33 Tp42 R8 W5M

Site Description:

Eolian sand area. Fine sand, small sandy ridges. Less than 3m high. May be wind-blown sand.

\* \* \* \* \*

DEPOSIT NO. 10

LOCATION: Sec 26,27,33,34 Tp45 R10 W5M  
Sec 4-8 Tp46 R10 W5M  
Sec 1,2,9-12,15-18 Tp46 R11 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: None

DEPOSIT DESCRIPTION:

See pit/site descriptions.

Site Location: Sec NW27 Tp45 R10 W5M

Site Description:

Gravel bar along Brazeau River. Very high water table. Flood plain cover of 0.5-1 in greyish, silty material on top of gravel. No sample taken as no good section for sampling present. Rock types on gravel bar are mainly quartzite and limestone up to 20cm size.

Pit Location: Sec SW15 Tp46 R11 W5M

Pit Description:

Very active pit. Material used to reinforce the dyke along this area. Excavated gravel on abandoned gravel bars along Brazeau River. In constructing the Brazeau dam, 37km of river were rechannelled. The abandoned channel between the dam and the power plant is a good potential source of gravel. Over 98% gravel, maximum size 7.5cm. Mainly subrounded quartzite and limestone. Water table 1.0m below gravel bar surface. Crushing is necessary but pit run is acceptable as dyke reinforcement material.

Busy gravel truck traffic made it impossible to collect a suitable sample.

\* \* \* \* \*

DEPOSIT NO. 11

LOCATION: Sec 4,5,8,9,16,17,21 Tp41 R8 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

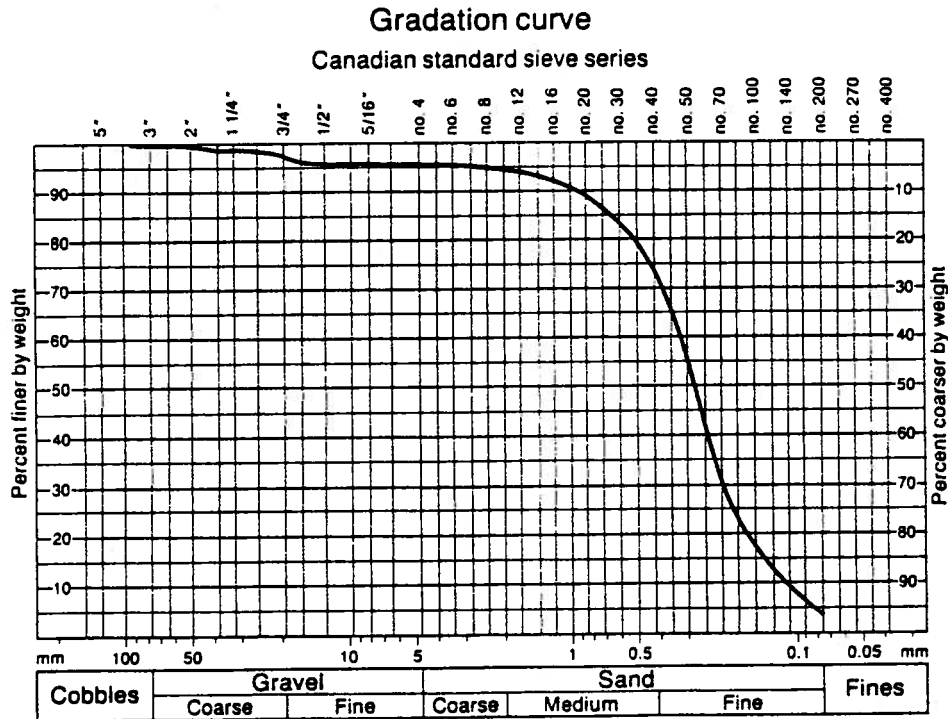
Ice contact, esker. Complex of small ridges exposing sandy gravel to sand. Overburden minor. Good access.

Site Location: Sec E8 Tp41 R8 W5M

Site Description:

Clean, fine, oxidized sand with few clasts. Sand mainly exposed along sinuous ridges at 2.5m maximum height. Ice contact sand.

Gradation: 0% cobbles 4.7% gravel  
90.6% sand 4.7% fines



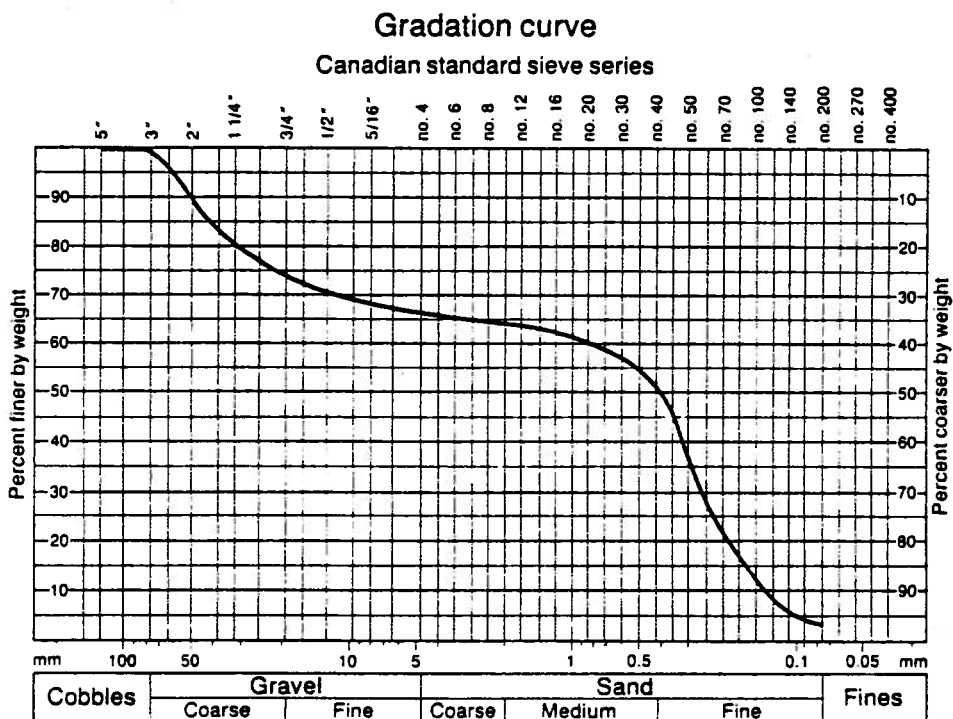


Site Location: Sec NW16 Tp41 R8 W5M

Site Description:

Ice contact complex of small ridges about 1-2m high, approximately 30m apart along both sides of roadcut. Dirty, fine, oxidized, gravelly sand. Quite stoney - stones mainly quartzite. Some granitic rock, rounded to subangular. No overburden. Water table appears to be high. Material is variable with more than 70-80% gravel in places, less than 50% gravel and fine sand with pebbles in other places. Further testing is recommended along ice contact area.

Gradation: 0% cobbles 33.0% gravel  
63.8% sand 3.2% fines



Pit Location: Sec SE17 Tp41 R8 W5M

Pit Description:

Inactive pit (depleted gravel ridge) in esker. Ridged topography. No overburden. Material varies with section. Some sections show medium-fine sand, some show fine-coarse sand (interbedded), others show very stoney and gravelly material. Within this ice contact complex it is difficult to determine gravel ridges from sand ridges except where exposed along a road cut or pit section. Rock types include quartzite, hard sandstone, some clay clasts, till and shale clasts and many granitic rocks. Maximum clast size is 15cm. Sample is very similar to that taken from NW16-41-8-W5, therefore not analysed.

\* \* \* \* \*

DEPOSIT NO. 12

LOCATION: Sec 15,22,27,28,32,33 Tp43 R8 W5M  
Sec 5,6,7,18,29-32 Tp44 R8 W5M  
Sec 12,13,24,25 Tp44 R9 W5M  
Sec 5,6,7,18 Tp45 R8 W5M  
Sec 12-15,22-27,34 Tp45 R9 W5M  
Sec 2,3,10,11,14,22,23,26,27 Tp46 R9 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: None

DEPOSIT DESCRIPTION:

See site description.

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Site Location: Sec NW15 Tp43 R8 W5M

Site Description:

Steep banks, probably till over bedrock. Small flood plain/gravel bars (0.5m above N. Saskatchewan River level). May not be a good potential gravel source due to high water table and distance from Hwy. 756.

\* \* \* \* \*

**DEPOSIT NO. 13**

LOCATION: Sec 23,26,27,34,35 Tp42 R8 W5M  
Sec 2,3,10,11,14,15,22 Tp43 R8 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Recent alluvium terrace and flood plain gravels. Excellent gravel source but may require crushing due to presence of hard sandstone and igneous rocks from the Canadian Shield. Maximum clast size is 70cm with most clasts 10 to 20cm in size. Some pea gravel and fine sand lenses are present.

Overburden varies from 0.3 to 1.5m. Good access.

---

**Site Location:** Sec NW34 Tp42 R8 W5M

**Site Description:**

Construction site of new Baptiste Bridge. Flood plain consists of 1-1.5m overbank silty material on top of gravel (at least 1.5m below river), on south side of the river bank. Over 80% gravel, mainly hard sandstone to 20cm diameter with a few clasts to 60cm. Clasts are subrounded to subangular. Some gray shale and sandstone, local bedrock clasts and angular igneous clasts from the Canadian Shield are present. Quite dirty due to construction work. No sample taken.

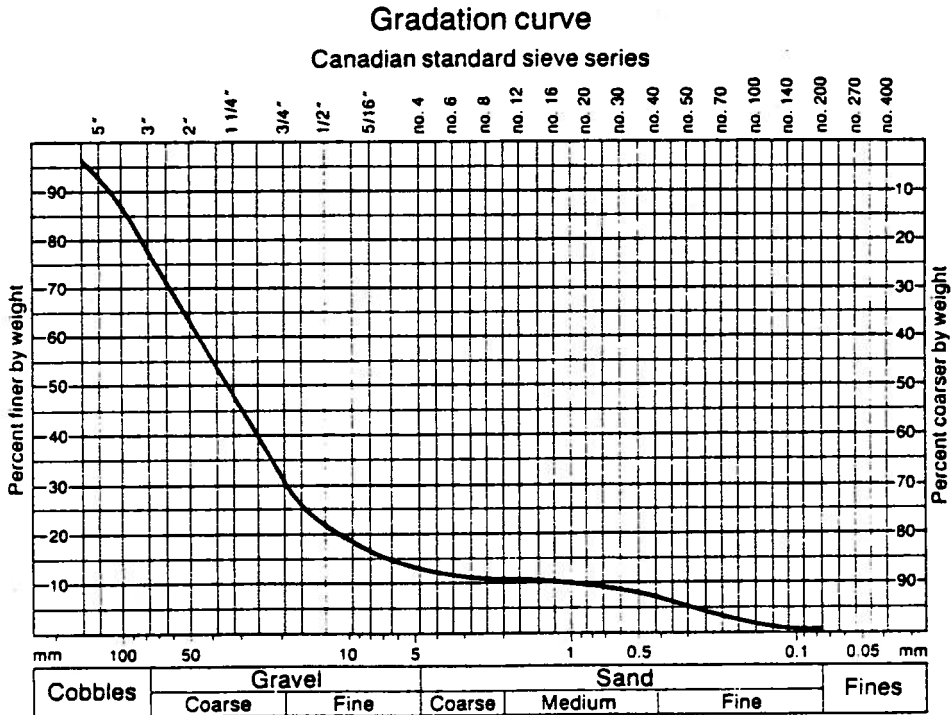
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Pit Location: Sec SE2 Tp43 R8 W5M

Pit Description:

Inactive pit in high terrace. Half of pit has been reclaimed. Flat topography, overburden is less than 30cm. Water table level is 6-7.5m below surface. Excellent gravel source, but may need crushing due to the presence of hard sandstones and igneous rocks from the Canadian Shield. Maximum clast size is 70cm with most clasts 10-20cm size. Pea gravel lenses and fine sand lenses are interbedded with the gravel bed. Sand is fine to medium grained. Other rock types include ironstone, local bedrock and coal. Fresh stock pile, good access.

Gradation: 22.8% cobbles 64.1% gravel  
12.1% sand 1.0% fines



\* \* \* \* \*

**DEPOSIT NO. 14**

LOCATION: Sec 18,19 Tp42 R7 W5M  
Sec 13,24 Tp42 R8 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: None

**DEPOSIT DESCRIPTION:**

See site description.

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**Site Location:** Sec SW24 Tp42 R8 W5M

**Site Description:**

Glaciofluvial outwash. Clean fine sand. No pebbles.

\* \* \* \* \*

### DEPOSIT NO. 15

LOCATION: Sec 18,19 Tp41 R7 W5M  
Sec 24,25,35,36 Tp41 R8 W5M  
Sec 2,3,10,11,14,15,22,23,26,27 Tp42 R8 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: 1

#### Deposit Description:

Recent alluvium flood plain and gravel bar deposit of the North Saskatchewan River with dirty sandy gravel consisting mainly of hard sandstone and limestone. The hard sandstone clasts are to 15cm diameter. The water table is from 0.5 to 2m below the surface.

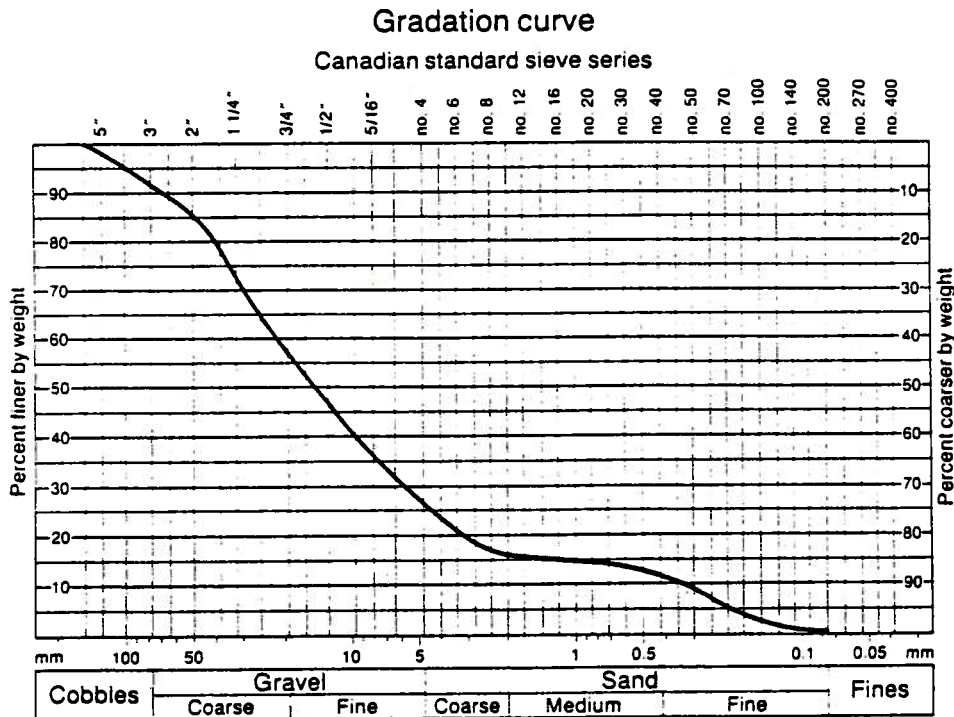
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Site Location: Sec NE14 Tp42 R8 W5M

#### Site Description:

Recent flood plain of North Saskatchewan River, about 1.5 to 2.0m above present water level. Hard sandstones and limestones are most common.

Gradation: 8.5% cobbles 65.5% gravel  
25.1% sand 0.9% fines



Site Location: Sec SE3 Tp42 R8 W5M

Site Description:

Dugout shows gravel beneath silty overburden. Water table level in this flood plain area is about 0.5m below surface.

---

Pit Location: Sec SE15 Tp42 R8 W5M

Pit Description:

Inactive pit. Very stoney, very high water table (about 0.6m below surface). Overburden is 0.5-1m. Hard sandstone clasts are to 15cm diameter. Quite dirty. Gravel probably was extracted from beneath water table level. Material is very similar to flood plain pits along the North Saskatchewan River near Rocky Mountain House. No section for description. No sample taken.

\* \* \* \* \*



DEPOSIT NO. 16

LOCATION: Sec 17,19,20,28-33 Tp40 R7 W5M  
Sec 4,5,8,19 Tp41 R7 W5M  
Sec 24 Tp41 R8 W5M

No. of associated pits/sites: 5 pits

No. of samples analysed: 3

DEPOSIT DESCRIPTION:

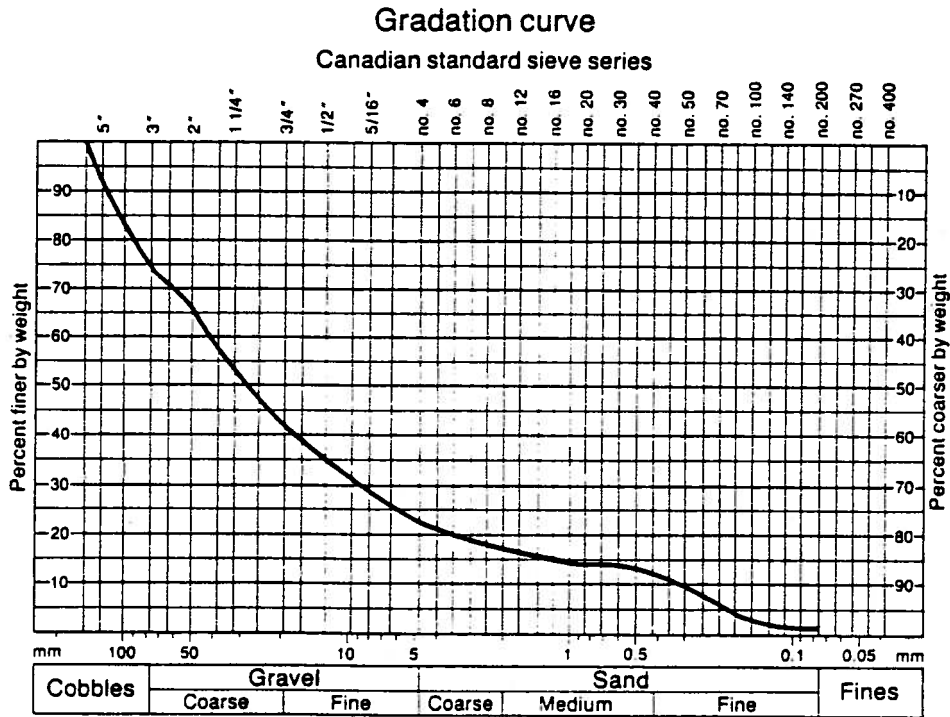
Glaciofluvial valley train deposit consisting of terraces and extensive flood plains of sandy gravel. Maximum clast size is 60cm but most clasts are smaller than 15cm and consist mainly of quartzite, limestone and a few igneous rocks from the Canadian Shield. Interbeds of fine sand or pea gravel are common in the high terrace. The flood plain is extensive and gravel may be as thick as 14m in places. The material may require crushing. The overburden is less than 0.5m in most areas but may be as thick as 2.5m in some places. The water table is quite high.

Pit Location: Sec SE32 Tp40 R7 W5M

**Pit Description:**

Gravel pit in river terrace, on highest flood plain level. Overburden of about 1.0m of river silt. Gravel is exposed about 1.5m above water level. Water depth is unknown. Clasts are to 30cm size. Most clasts are less than 20cm with about 15% of clasts in the 15-20cm size range. Quartzite, limestone and sandstone are most common. The material is well graded and there is no sorting. Crushing is necessary for best use of this resource.

Gradation: 27.1% cobbles 49.5% gravel  
22.0% sand 1.4% fines

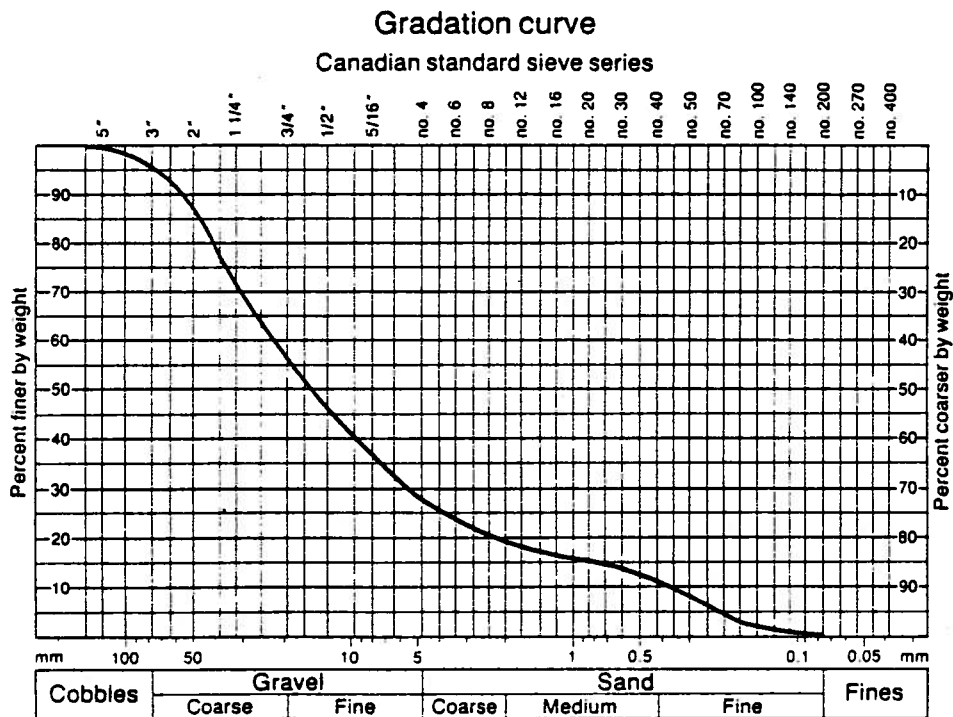


Pit Location: Sec NE32 Tp40 R7 W5M

Pit Description:

Abandoned pit, high water table level. High percent quartzite and limestone present, some sandstone. Less than 0.5m overburden in most areas, but 1.5-2.5m in some places. Flood plain is very extensive and there could be abundant gravel in this area. According to the landowner, the gravel is 14m thick and appears to run in ridges and patches especially west of the flood plain. Gravel is mainly under water and consists of mainly quartzite, limestone and a few igneous rocks from the Canadian Shield. Material is used for road construction by the Municipality.

Gradation: 3.1% cobbles 69.1% gravel  
27.0% sand 0.8% fines

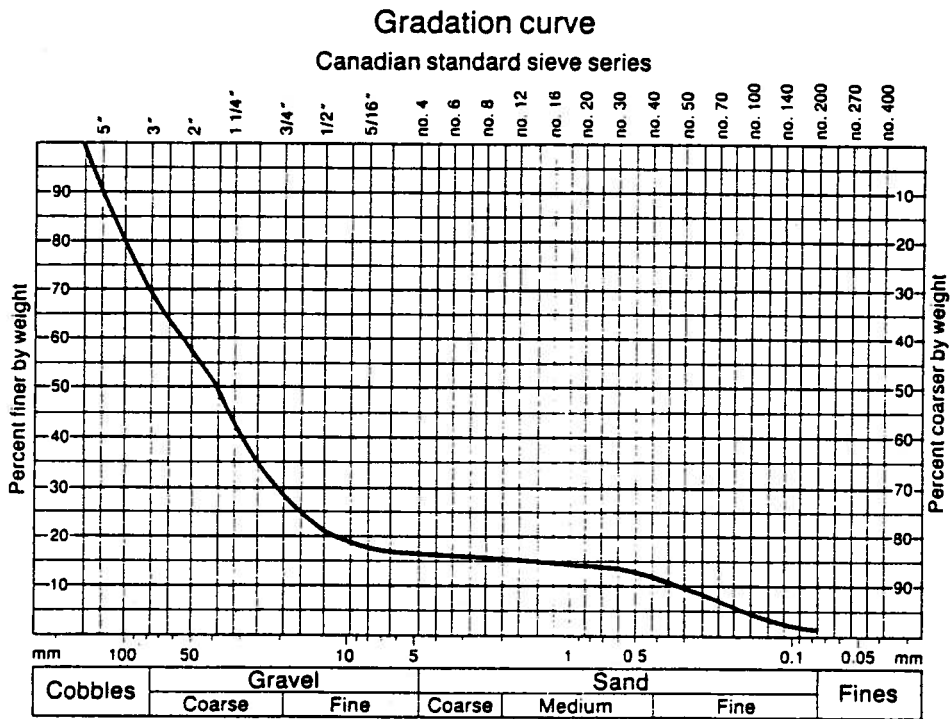


Pit Location: Sec SW19 Tp41 R7 W5M

**Pit Description:**

High terrace pit, almost depleted, but more gravel is present east of the highway. Lower terrace levels also contain gravel. Clasts are mainly hard sandstone. Maximum clast size is 60cm but most clasts are smaller than 15cm. Limestone clasts are more abundant as smaller sizes. Interbeds of fine sand or pea gravel are common. Water table height is variable.

Gradation: 31.3% cobbles 52.0% gravel  
15.5% sand 1.2% fines



**Pit Location:** Sec NE5 Tp41 R7 W5M

**Pit Description:**

Abandoned, shallow gravel pit. Water table 1-1.5m below gravel.  
Stockpile of crushed material used by owner. No sample.

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**Pit Location:** Sec SE25 Tp41 R8 W5M

**Pit Description:**

New pit in same terrace as pit at location SW19-4-7-W5. Tree  
cleaning in progress. Surface material is very similar to  
above-mentioned pit. Very stoney area, no overburden.

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DEPOSIT NO. 17

LOCATION: Sec 16,17,33 Tp39 R7 W5M  
Sec 15,19,20,29,30 Tp39 R8 W5M  
Sec 25,26,31,32,34,35 Tp39 R9 W5M  
Sec 20,21,26-29,33-35 Tp39 R10 W5M  
Sec 4,8,18-20,29 Tp40 R7 W5M  
Sec 4,5 Tp40 R9 W5M

No. of associated pits/sites: 2 pits, 4 sites

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

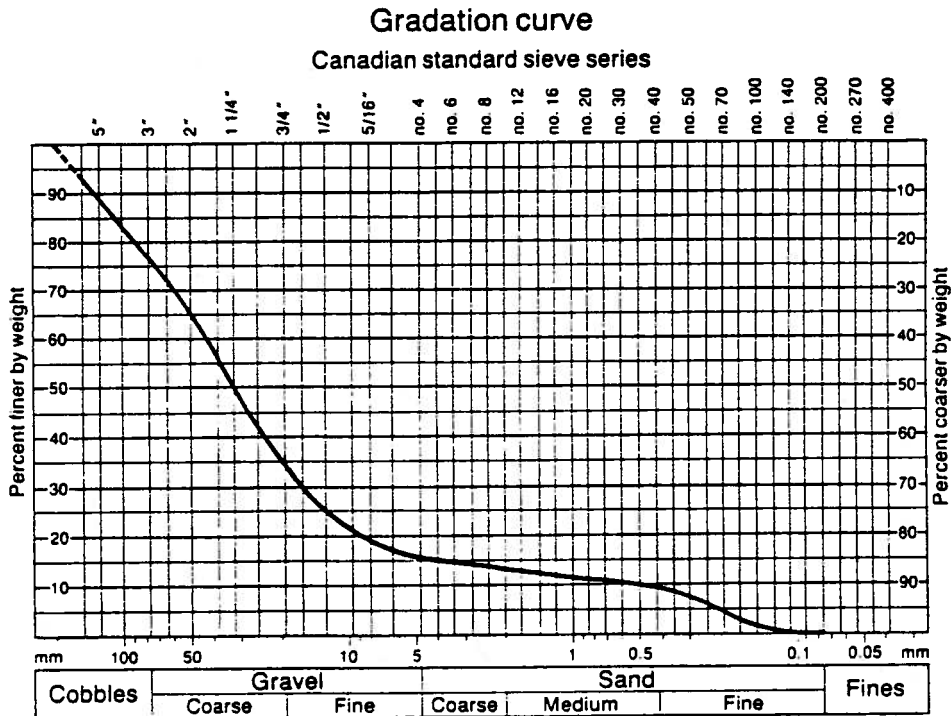
Recent alluvium flood plain and terrace gravel deposit 1.5-2m thick on the flood plain of the North Saskatchewan River, with silty overburden 0.3 to 1m thick. The gravel in a high terrace has almost no overburden and consists mainly of quartzite and limestone clasts plus clasts of local sandstone, siltstone and shale bedrock. There is abundant usable gravel if the largest clasts are removed and intermediate size clasts are crushed. Sand is primarily fine and slightly dirty. The sand content increases with depth.

Pit Location: Sec SW5 Tp40 R9 W5M

Pit Description:

Inactive pit 4.5-6m deep in a high terrace with almost no overburden. Water table level is low. Rocks are mainly quartzite and limestone. Clasts of local sandstone, siltstone and shale bedrock also are common. Maximum clast size is 1.3m. Abundant useable gravel is present if largest clasts are removed and intermediate size clasts are crushed. Sand size primarily is fine and slightly dirty. Sand content increases with depth. Massive, no clear bedding.

Gradation: 23.3% cobbles 60.6% gravel  
15.4% sand 0.7% fines



**Site Location:** Sec SE8 Tp40 R7 W5M

**Site Description:**

Stoney flood plain gravel below 30cm of organic material and the water table less than 50cm below the surface.

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**Site Location:** Sec SW4 Tp40 R7 W5M

**Site Description:**

Flood plain deposit of 1m of silty material over 1.5-2m of gravel. Probably greyish shale bedrock under gravel.

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**Pit Location:** Sec NW4 Tp40 R7 W5M

**Pit Description:**

Extensive, revegetated, depleted gravel pit with standing water in some areas.

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**Site Location:** Sec SE33 Tp39 R10 W5M

**Site Description:**

Thin gravel over bedrock.

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**Site Location:** Sec SE4 Tp40 R7 W5M

**Site Description:**

Gravel, 1.5-2m thick, over bedrock on flood plain of the North Saskatchewan River.

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DEPOSIT NO. 18

LOCATION: Sec 16-21,28-30,32,33 Tp39 R7 W5M  
Sec 4,5 Tp40 R7 W5M  
Sec 10-17,19-22,29,30 Tp39 R8 W5M  
Sec 25-27,32-34 Tp39 R9 W5M  
Sec 4,5 Tp40 R9 W5M

No. of associated pits/sites: 2 pits, 6 sites

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

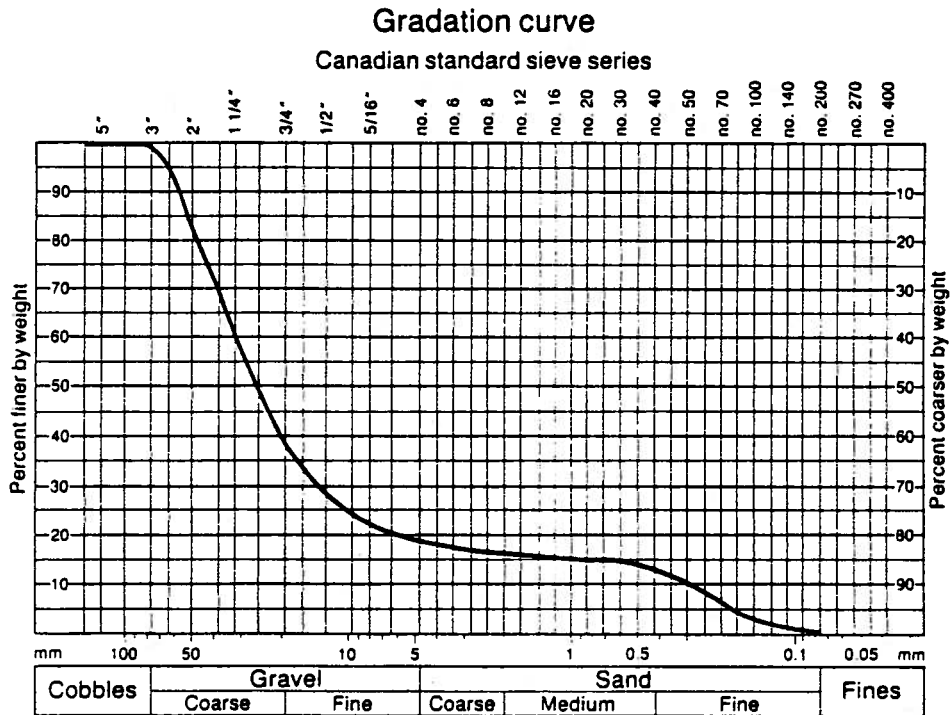
Glaciofluvial valley train deposit consisting of low terrace gravels ranging in depth from 2.5 to 8m. Clasts are mainly rounded quartzite and limestone with maximum clast size to 15cm but most are smaller than 5cm. In some areas eolian sand overlies the terrace gravels and thin fine to medium sand lenses may be present in the gravel. The water table is high.

Pit Location: Sec NW28 Tp39 R7 W5M

Pit Description:

Semi-active pit in the low terrace. Gravel is 2.5m thick below 0.5-1m overburden. Clasts are mainly rounded quartzite and limestone. Maximum clast size is 15cm but most clasts are smaller than 5cm. Thin, fine to medium sand lenses are present in some areas. Good gravel potential.

Gradation: 0% cobbles 80.7% gravel  
18.7% sand 0.6% fines

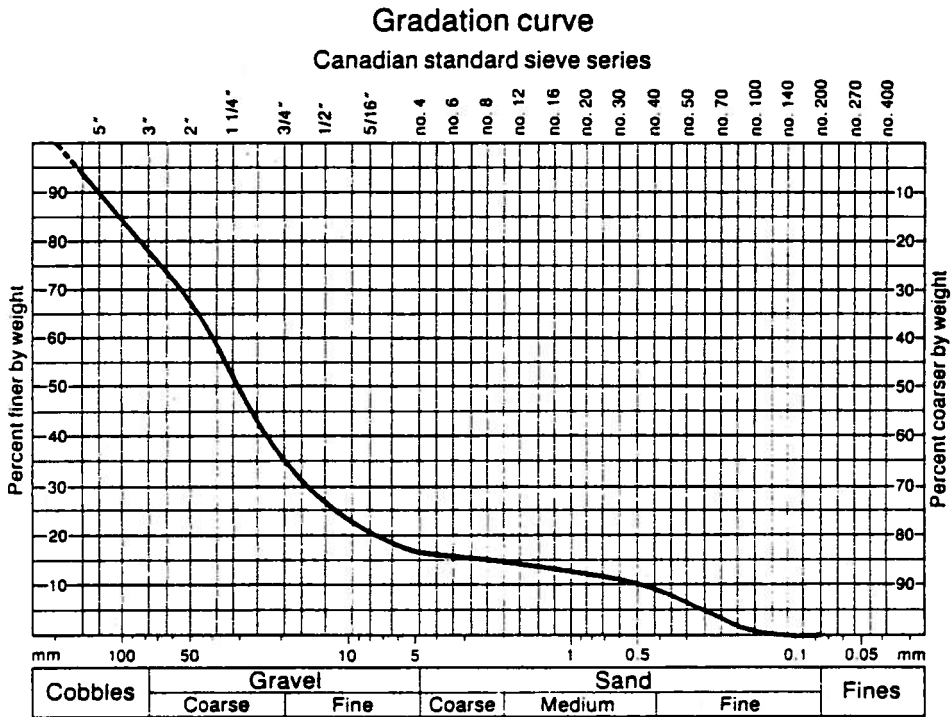


Pit Location: Sec NE13 Tp39 R8 W5M

Pit Description:

Eolian sand over river terrace gravel. Very active pit in 6m of gravel. Some fairly large size clasts.

Gradation: 21.6% cobbles 60.9% gravel  
17.2% sand 0.3% fines



**Pit Location:** Sec SE28 Tp39 R7 W5M

**Pit Description:**

Reclaimed river terrace.

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**Pit Location:** Sec SW28 Tp39 R7 W5M

**Pit Description:**

Old gravel dugout with 1m of gravel above water table.

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**Pit Location:** Sec SE19 Tp39 R7 W5M

**Pit Description:**

Garbage dump in sand dune area.

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**Pit Location:** Sec NE18 Tp39 R7 W5M

**Pit Description:**

Privately owned land on low terrace. According to owner previous tests have shown more than 8m of gravel. Rock sizes increase with depth. Bedrock sandstone is present below the gravel. No good section for description. Water table is very high (0.6m below surface).

---

**Pit Location:** Sec NW18 Tp39 R7 W5M

**Pit Description:**

Old excavated area, partly reclaimed. Stockpiles left. Alberta Government property.

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**Site Location:** Sec SE13 Tp39 R8 W5M

**Site Description:**

Low terrace. Approximately 1m of gravel. Very high water table.

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**DEPOSIT NO. 19**

LOCATION: Sec 34,35 Tp39 R9 W5M  
          Sec 2-5,7-9,17,18 Tp40 R9 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

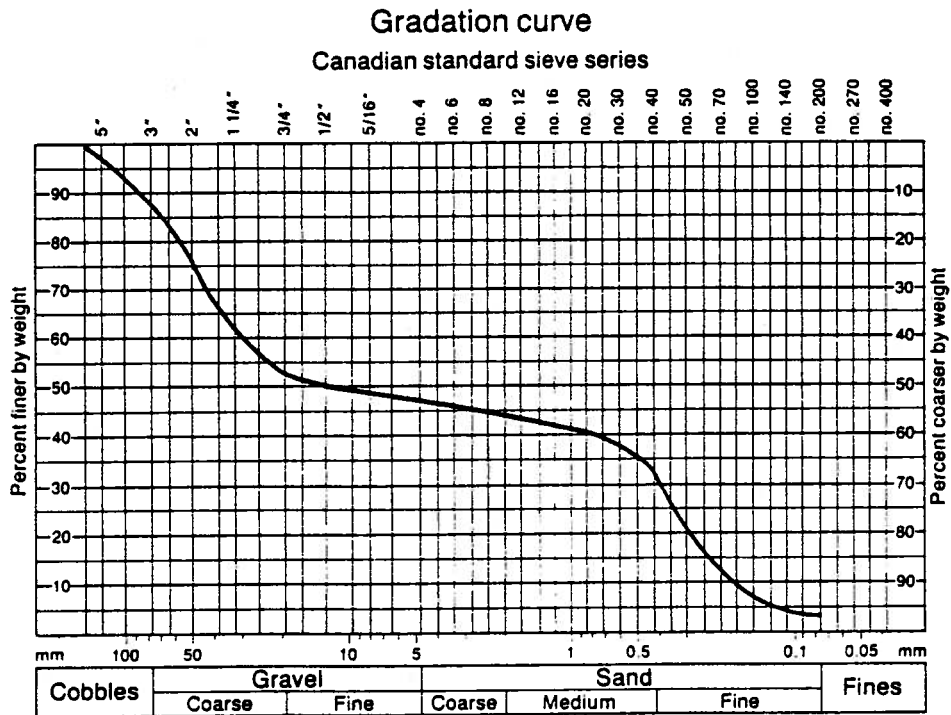
Glaciofluvial meltwater channel deposit of gravelly sand to sand.

Pit Location: Sec SW9 Tp40 R9 W5M

**Pit Description:**

Abandoned, reclaimed pit. Probably part of meltwater system in this area. Very stoney surface on sand for a distance of 0.4km. Hilly topography with 4.5-5.5m relief.

Gradation: 12.5% cobbles 39.9% gravel  
44.1% sand 3.5% fines



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Site Location: Sec NE35 Tp39 R9 W5M

**Site Description:**

Glaciofluvial sand.

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DEPOSIT NO. 20

LOCATION: Sec 31 Tp39 R9 W5M  
Sec 34-36 Tp39 R10 W5M  
Sec 5,6 Tp40 R9 W5M  
Sec 1 Tp40 R10 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Glaciofluvial valley train deposit. See site description.

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Site Location: Sec S35 Tp39 R10 W5M

Site Description:

Roadcut in high terrace. Overburden less than 0.5m. Very stoney area of dirty gravel. Mainly quartzite and limestone clasts and fine sand. Maximum clast size is 30cm.

\* \* \* \* \*

DEPOSIT NO. 21

Location: Sec 19-21 Tp39 R10 W5M  
Sec 25,26,35,36 Tp39 R11 W5M  
Sec 2,11 Tp40 R11 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

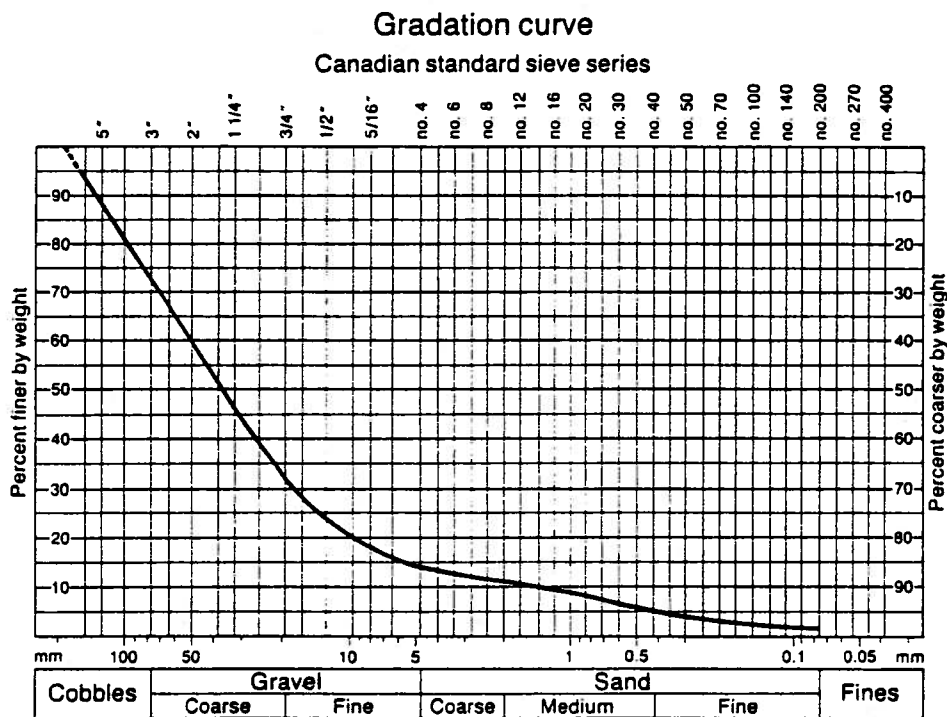
Glaciofluvial valley train deposit. See pit description.

Pit Location: Sec NE19 Tp39 R10 W5M

Pit Description:

Inactive pit in glaciofluvial high terrace. Excavated area 150m x 800m. Greater than 7.5m of unbedded gravel over bedrock sandstone. Maximum clast size is 50cm. Major rock types are hard sandstone and limestone. Minor rock types are ironstone, local bedrock, volcanics and conglomerate. White carbonate encrustation is common on clasts. Sand is fine grained. Water table probably is low. Overburden is less than 15cm.

Gradation: 26.0% cobbles 59.8% gravel  
12.4% sand 1.8% fines



Site Location: Sec SW34 Tp39 R10 W5M

Site Description:

Gravel exposure on road. Glaciofluvial valley train. Rock types consist of limestone, quartzite, local bedrock, ironstone, breccia and conglomerate. Material is very similar to that of pit described above.

\* \* \* \* \*



**DEPOSIT NO. 22**

Location: Sec 25,26,35 Tp39 R11 W5M  
          Sec 2,9-11,15-20 Tp40 R11 W5M  
          Sec 13,14 Tp40 R12 W5M

No of associated pits/sites: none

No. of samples analysed:     none

**DEPOSIT DESCRIPTION:**

Recent alluvium flood plain and gravel bars. No sites visited.

\* \* \* \* \*

**DEPOSIT NO. 23**

Location: Sec 14-16,19-24 Tp40 R12 W5M  
          Sec 14,23,24 Tp40 R13 W5M

No. of associated pits/sites: 2 pits

No. of samples analysed:     1

**DEPOSIT DESCRIPTION:**

Glaciofluvial valley train deposit of clean sandy gravel. See pit description.



**DEPOSIT NO. 24**

**Location: Sec 16-19 Tp40 R12 W5M  
          Sec 22,23 Tp40 R13 W5M**

**No. of associated pits/sites: 1 site**

**No. of samples analysed:       None**

**DEPOSIT DESCRIPTION:**

**Recent alluvium, gravel bar.**

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**Site Location: Sec SE23 Tp40 R13 W5M**

**Site Description:**

**Bedrock and gravel bar.**

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

DEPOSIT NO. 25

Location: Sec 22,27-29,31,32 Tp40 R13 W5M  
Sec 36 Tp40 R14 W5M  
Sec 1-6,8-11 Tp41' R14 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Recent alluvium. See site description.

---

Site Location: Sec SE31 Tp40 R13 W5M

Site Description:

Very dirty gravel or stoney till above creek on creek valley slopes. Beyond valley slopes is a discontinuous, thin veneer of sand over "stoney till". Coarse gravel lies under 0.5-1m of silt overburden on flood plain. Very small amount extracted from a small terrace on the east side of the road, about 30m from the creek. Mostly hard sandstone and limestone, fairly rounded clasts. Some minor soft sandstone. Boulders are up to 1m size. Most clasts are 5-10cm in size.

\* \* \* \* \*

DEPOSIT NO. 26

LOCATION: Sec 25,26,34-36 Tp39 R13 W5M  
Sec 7,18 Tp40 R12 W5M  
Sec 1,11-13 Tp40 R13 W5M

No. of associated pits/sites: none

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Glaciofluvial outwash deposit.

\* \* \* \* \*

DEPOSIT NO. 27

LOCATION: Sec 29-33 Tp38 R11 W5M  
Sec 36 Tp38 R12 W5M  
Sec 3-6 Tp39 R11 W5M  
Sec 2-4,9-12,14-17,20-23,34,35 Tp39 R7 W5M  
Sec 4-9 Tp40 R11 W5M  
Sec 1-3,11,12 Tp40 R12 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

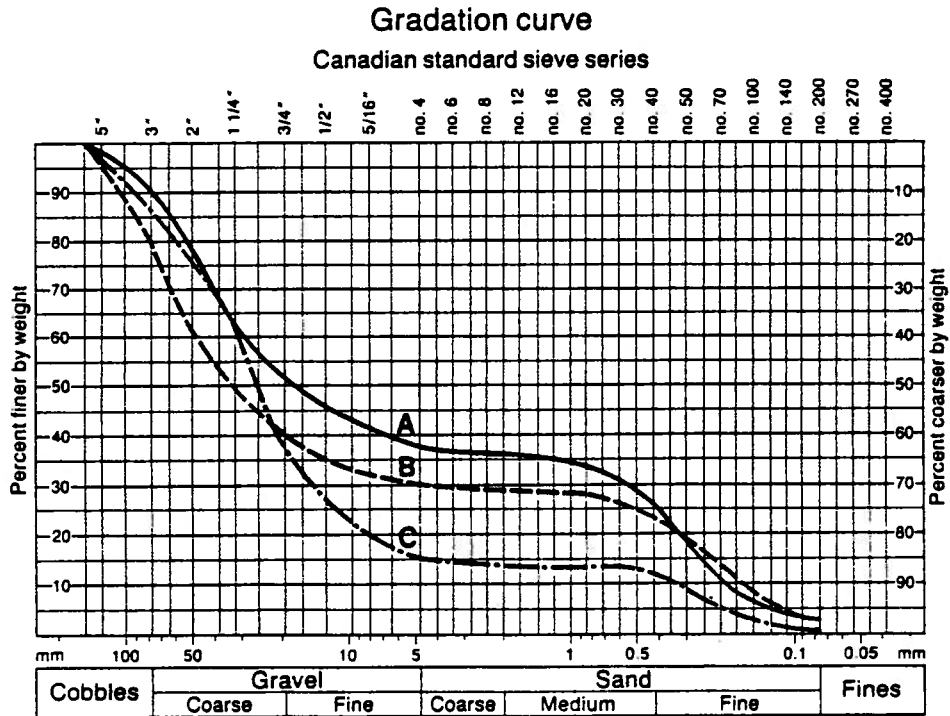
Ice contact kame complex that is hilly and heavily treed. Good potential gravel area. Further investigation by helicopter is recommended as area is poorly accessible.

Pit Location: Sec NE3 Tp39 R12 W5M

Pit Description:

Inactive kame deposit 5-7.5m thick with sand below gravel.  
 Extracted area 150m x 250m. Water table depth is unknown. Clasts are mainly hard sandstone and limestone with carbonate coating. Minor ironstone, conglomerate and local bedrock shale clasts are present. Sand content increases with depth. Thin vegetation. Surficial map indicates ice contact material in this area for a radius of 8km. Further investigation by helicopter is recommended as area is inaccessible. Good potential gravel area.

Gradation:	9.0 % cobbles	53.2 % gravel	A (SE section, fine sand with clasts)
	35.0 % sand	2.8 % fines	
	20.2 % cobbles	49.3 % gravel	B (south section, gravel)
	27.8 % sand	2.7 % fines	
	16.0 % cobbles	68.7 % gravel	C (south section, sand and gravel)
	13.8 % sand	1.5 % fines	



Site Location: Sec SE9 Tp39 R12 W5M

Site Description:

Eastern edge of 0.5km<sup>2</sup> gravel deposit

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Site Location: Sec SW10 Tp39 R12 W5M

Site Description:

Eight metre exposure of dirty gravel.

\* \* \* \* \*

**DEPOSIT NO. 28**

LOCATION: Sec 18-20,27-29,34 Tp38 R11 W5M  
Sec 2,3,7-11 Tp38 R12 W5M  
Sec 7,8,11,12,14-18,22 Tp38 R13 W5M  
Sec 2,11-16,18-22,30 Tp38 R14 W5M  
Sec 18,19 Tp39 R10 W5M  
Sec 1,2,13 Tp39 R11 W5M

No. of associated pits/sites: 1 pit, 3 sites

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Recent alluvium deposit of dirty sandy gravel. Flood plain is quite extensive and had been excavated to a depth of 2m at one pit. Clasts are mainly sandstone, limestone and shale to 50cm in diameter. Overburden is minor.

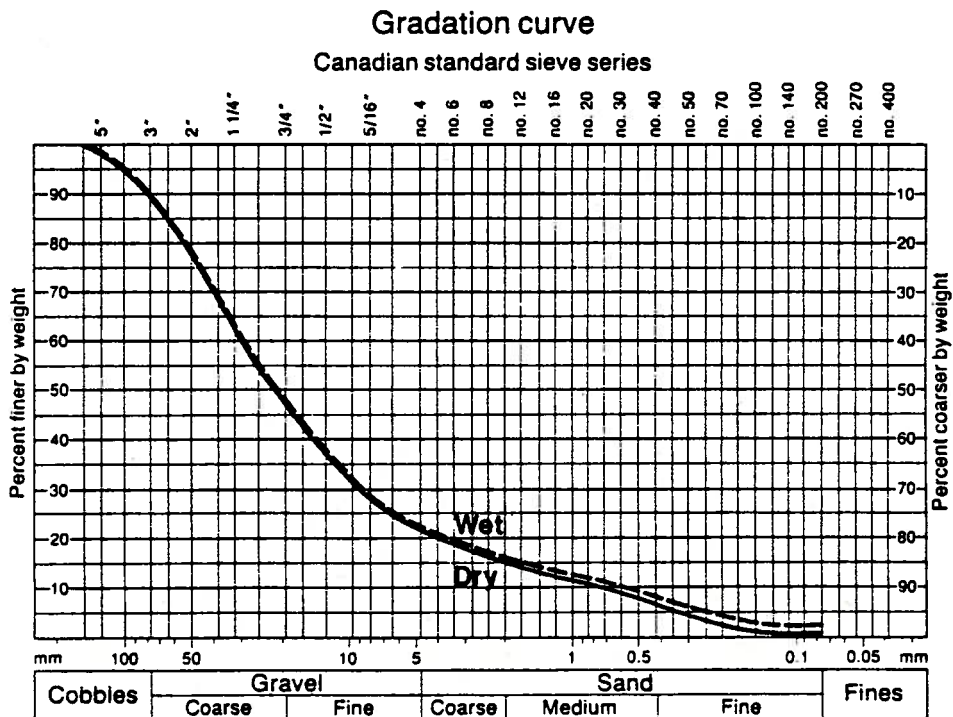


Pit Location: Sec NE19 Tp38 R14 W5M

**Pit Description:**

Small abandoned pit in an extensive flood plain deposit. Dirty gravel excavated to 2.0m with maximum clast size 50cm. Most clasts are subrounded to subangular and are less than 7.5cm. Rock types are limestone, hard and soft sandstone. Sand is medium to fine grained and very dirty. Some iron staining is present. Overburden is minor and the depth of the water table is unknown.

Gradation:                    10.8% cobbles    67.4% gravel) Wet Sieve  
                                  20.2% sand        1.6% fines )  
  
                                  10.8% cobbles    67.7% gravel) Dry Sieve  
                                  20.9% sand        0.6% fines )



**Site Location:** Sec N15 Tp38 R14 W5M

**Site Description:**

Gravel bars and flood plain exposed near road. Material is similar to that of pit at NE19-38-14-W5M

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**Site Location:** Sec NE17 Tp38 R13 W5M

**Site Description:**

Gravel bar contains very angular sandstone, shale and some limestone clasts derived from bedrock in this area.

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**Site Location:** Sec SE19 Tp39 R10 W5M

**Site Description:**

Ram River high terrace gravels and gravel bars. Round to angular clasts are mainly derived from local bedrock. Material is very different from that of pit just north of it.

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DEPOSIT NO. 29

LOCATION: Sec 13-16 Tp42 R14 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

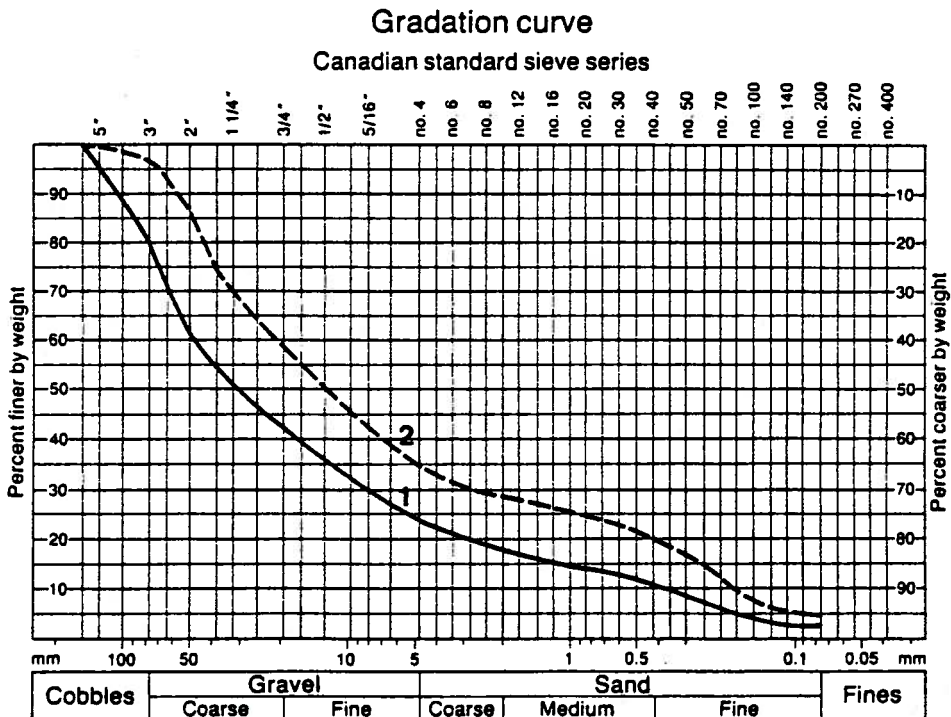
Outwash deposit. See site description.

Site Location: Sec SE16 Tp42 R14 W5M

Site Description:

Roadcut. About 18m of gravel (mapped as outwash) with clasts to 40cm. Over 99% of clasts are less than 20cm and 98% are less than 15cm. Large clasts mainly are sandstone and quartzite. Smaller clasts primarily are limestone and sandstone. Clay and fines content is quite high. Sandstone and shale is exposed at the base of the outcrop and the fines material in the exposure has the greenish color of the local bedrocks. The material is graded.

Gradation: 19.0% cobbles	57.3% gravel	Sample 1
21.4% sand	2.3% fines	
3.3% cobbles	62.5% gravel	Sample 2
30.2% sand	4.0% fines	



**DEPOSIT NO. 30**

LOCATION: Sec 17-19 Tp41 R10 W5M  
Sec 7,13,27,28,30,33,34 Tp41 R11 W5M  
Sec 12,22,23,25,31-34 Tp41 R12 W5M  
Sec 6,7 Tp42 R11 W5M  
Sec 4,5,12,13,24 Tp42 R12 W5M

No. of associated pits/sites: 2 pits

No. of samples analysed: 2

**DEPOSIT DESCRIPTION:**

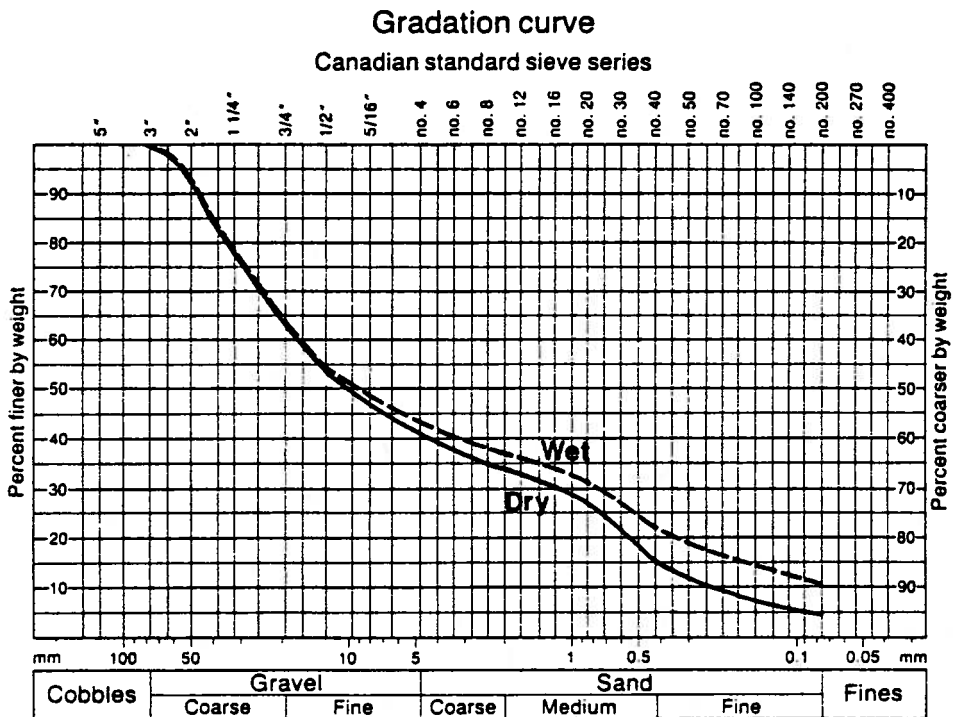
Glaciofluvial outwash deposit of dirty gravel to sandy gravel with high clay and deleterious material content. Maximum clast size is 15cm. The material may be good for road base use.

Pit Location: Sec SW7 Tp41 R11 W5M

Pit Description:

Abandoned small pit, revegetated. Excavated area (100m x 150m) on both sides of road. Thin pocket of gravel with no good section exposed in the small outwash terraces. Dirty gravel mainly is located along the slopes of this terrace but some areas are stoney till. Clasts are subangular to subrounded with maximum size of 10cm. High clay content, good for road base. Water table depth is unknown. Silty overburden is 0-15cm thick.

Gradation:	0% cobbles	56.4% gravel	)	Wet Sieve
	33.3% sand	10.3% fines	)	
	0% cobbles	58.1% gravel	)	Dry Sieve
	36.6% sand	5.3% fines	)	



Pit Location: Sec NW30 Tp41 R11 W5M

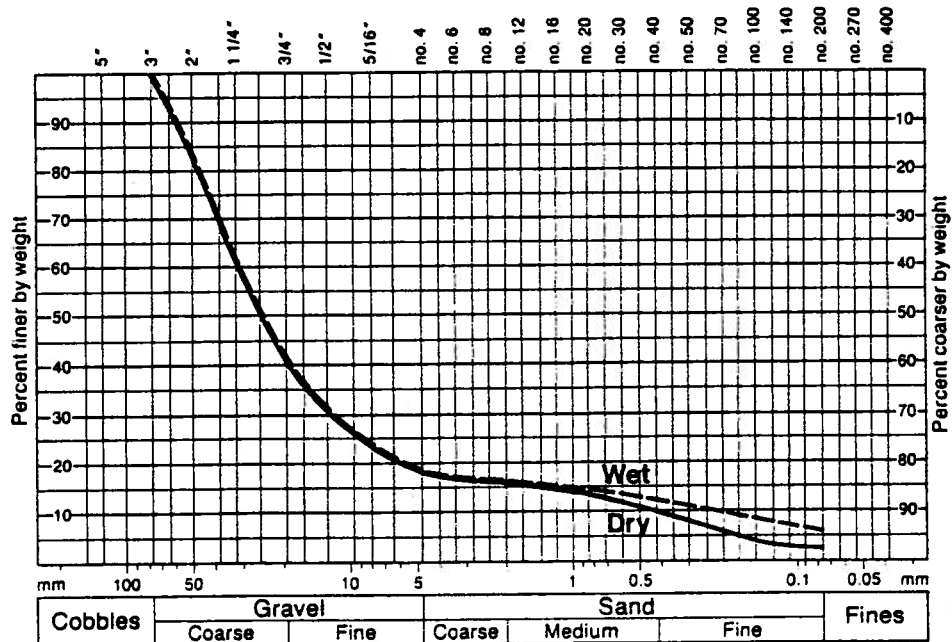
Pit Description:

Inactive pit in outwash excavated area 200m x 600m. There is a high percentage of quartzite clasts with white carbonate coating. Maximum clast size is 15cm. Limestone clasts common in sizes less than 6cm. Deleterious materials include ironstone, claystone, local weathered bedrock and coal. High silty clay content. Not a high quality material, but it would be good for road base. Washing might be necessary to use material for other purposes. Water table depth is unknown. Medium-coarse sand is absent.

Gradation:           0% cobbles 82.3% gravel) wet sieve  
                           11.3% sand     6.4% fines )  
                           0% cobbles 82.3% gravel)  
                           15.5% sand     2.2% fines ) dry sieve

Gradation curve

Canadian standard sieve series



\* \* \* \* \*

DEPOSIT NO. 31

LOCATION: Sec 16-21 Tp42 R10 W5M  
Sec 1-3,9-12,16 Tp42 R11 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

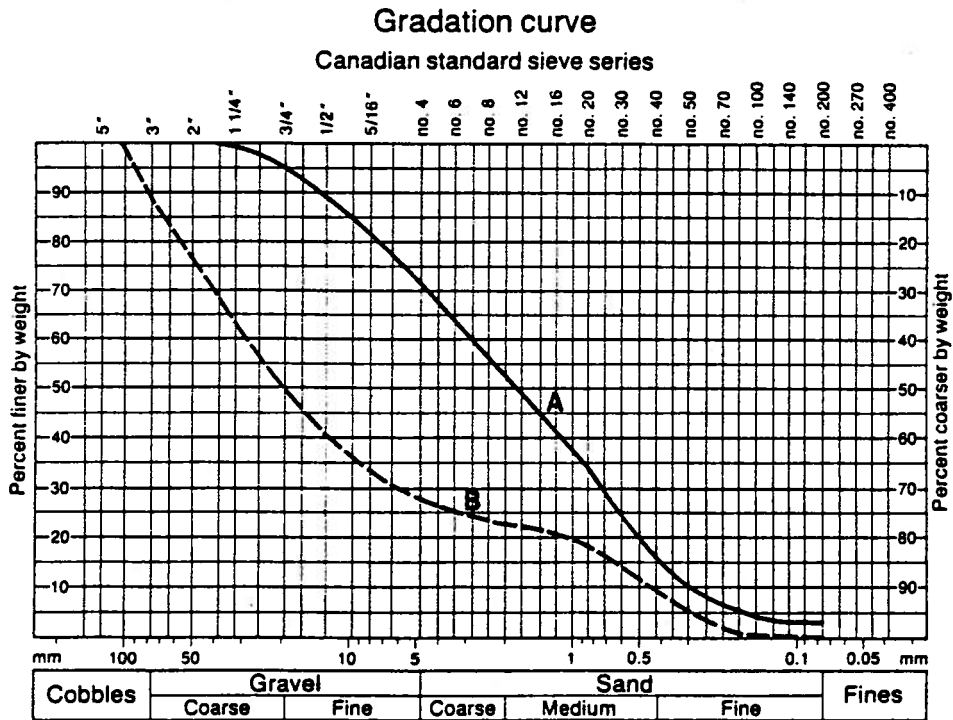
Glaciofluvial valley train deposit. See pit description.

Pit Location: Sec NW16 Tp42 R10 W5M

Pit Description:

Inactive pit in a high terrace of fluvial material. Gravel overlies thick sand, very good bedding structures. Over 60% of the larger size clasts are quartzite, 30% of the smaller size clasts are limestone. Coal, shale, clay and ironstone clasts are common. Washing may be necessary. Maximum clast size is 10cm. Crushing is not necessary. Clasts are subangular to subrounded. Water table depth is unknown.

Gradation:	0% cobbles	28.9% gravel	) Sample A -
	68.2% sand	2.9% fines	) Course-medium sand
	12.4% cobbles	59.5% gravel	) Sample B -
	27.5% sand	0.6 % fines	) Gravel Section



DEPOSIT NO. 32

LOCATION: Sec 31-33 Tp42 R8 W5M  
Sec 33,34,36 Tp42 R9 W5M  
Sec 3,10,15,16,21,28,33 Tp42 R10 W5M  
Sec 3-5,7 Tp43 R9 W5M  
Sec 3,10-12 Tp43 R10 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Recent alluvium forms bars, low terraces and flood plain gravel.

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Site Location: Sec SW4 Tp43 R9 W5M

Site Description:

Small gravel bar at Baptiste Bridge

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Site Location: Sec NE3 Tp43 R10 W5M

Site Description:

Gravel bar along Baptiste River near Sunchild Indian Reserve.  
Greyish limestone clasts.

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Pit Location: Sec SE21 Tp42 R10 W5M

Site Description:

Pit in low river terrace, on Sunchild Indian Reserve. More than  
5-7m of oxidized gravel. More gravelly in top 3m, sandier with  
depth.

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**DEPOSIT NO. 33**

LOCATION: Sec 7,8,16-18,21,22,27,34 Tp41 R10 W5M  
Sec 13,23,24,26-30 Tp41 R11 W5M  
Sec 13,14,24-27 Tp41 R12 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

Recent alluvium.

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**Site Location:** Sec NW13 Tp41 R12 W5M

**Site Description:**

Lawrence Creek Bridge. Silty cut bank with gravel bars.

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**DEPOSIT NO. 34**

LOCATION: Sec 30-32 Tp44 R10 W5M  
Sec 19,21,26-28,35,36 Tp44 R11 W5M  
Sec 14,15,23-25 Tp44 R12 W5M  
Sec 4,5,9-13,23,24 Tp45 R10 W5M

No. of Associated pits/sites: 1 pit, 1 site

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Recent alluvium forms low terraces and gravel bars. See pit description.

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**Site Location:** Sec SE27 Tp 44 R11 W5M

**Site Description:**

Nordegg River gravel bar.

No sample.

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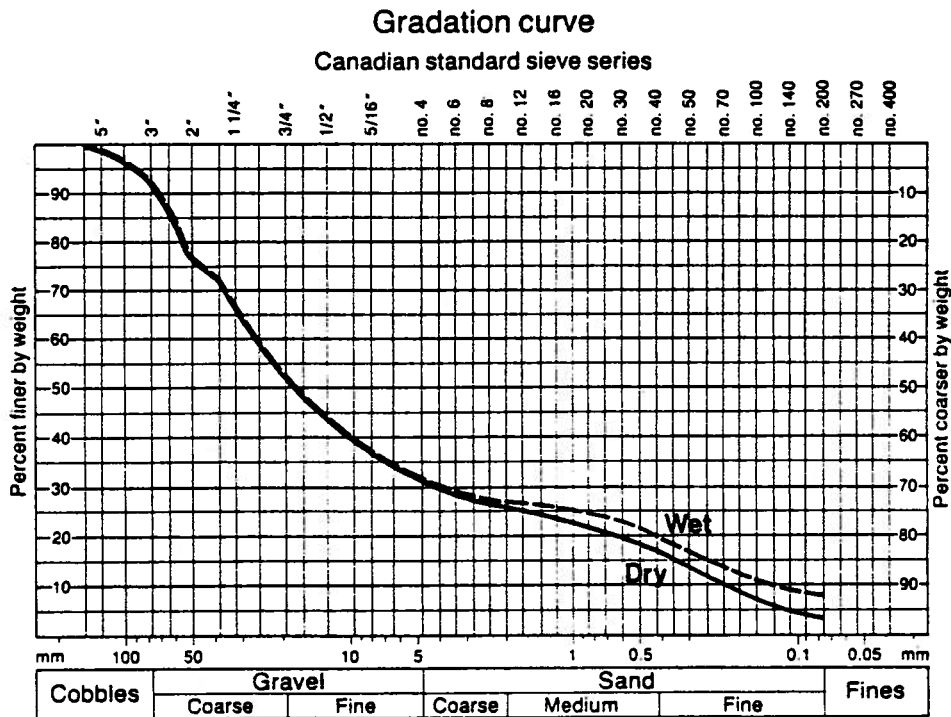
Pit Location: Sec NW19, SW30 Tp44 R11 W5M

Pit Description:

River terrace consisting of very dirty material. Water table depth is 1-1.5m below surface. No good section is exposed. Maximum clast size is 15cm. Most clasts are 1-7.5cm, sand is fine. Overburden depth is unknown. The material probably is good only for road base.

Gradation: 7.2% cobbles 61.5% gravel ) Wet Sieve  
23.1% sand 8.2% fines )

7.2% cobbles 61.7% gravel )  
27.2% sand 3.9% fines ) Dry Sieve



\* \* \* \* \*

DEPOSIT NO. 35

LOCATION: Sec 26,27,35,36 Tp44 R13 W5M  
Sec 7,16-18,20,21 Tp45 R12 W5M  
Sec 1,2 Tp45 R13 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

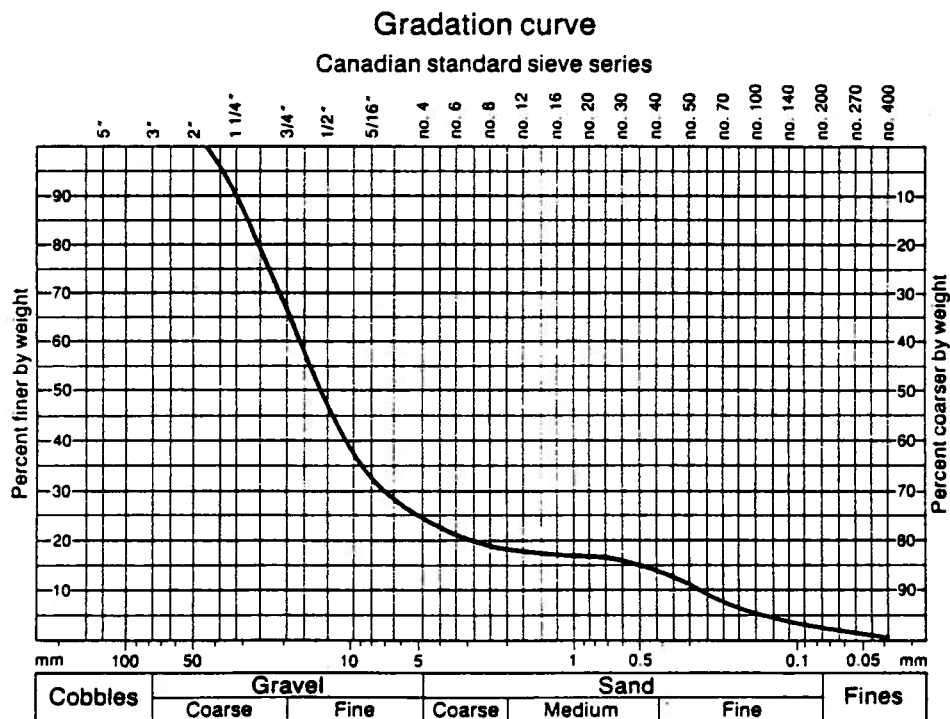
Recent alluvium deposit. See site description.

SITE LOCATION: SEC NW16 Tp45 R12 W5M

Site Description:

Riverbank, 3m high, made up of about 1m overburden of silt and sand over approximately 2m of gravel. Some cross-bedding. Some beds contain only minor sand but most are sandy gravel. Iron staining on lower 0.5m is evident. Lower material contains clasts 99% finer than 20cm whereas the upper 1.5m contains clasts 99% finer than 10cm. Gravel is in the river valley bottom.

Gradation: 0% cobbles 76.0% gravel  
21.5% sand 2.5% fines



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DEPOSIT NO. 36

LOCATION: Sec 19-21 Tp44 R13 W5M  
Sec 20-24,28,29 Tp44 R14 W5M

No. of associated pits/sites: None

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Recent alluvium deposit.

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DEPOSIT NO. 37

LOCATION: Sec 29 Tp38 R10 W5M

No. of associated pits/sites: None

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Kame. Stoney area, with high clay content. Material probably is suitable only for road base material.

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**DEPOSIT NO. 38**

LOCATION: Sec 33-35 Tp36 R11 W5M  
Sec 7 Tp37 R10 W5M  
Sec 1,2,12 Tp37 R11 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Recent alluvium deposit of sand and gravel. Most clasts are tabular, angular limestone to 20cm in size. There are a few 50cm boulders in the pit face. The material would probably make good road gravel after minor crushing.

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**Site Location:** Sec SE2 Tp37 R11 W5M

**Site Description:**

Similar material to that of pit described above.

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**Site Location:** Sec NE35 Tp 36 R11 W5M

**Site Description:**

Similar material to above.

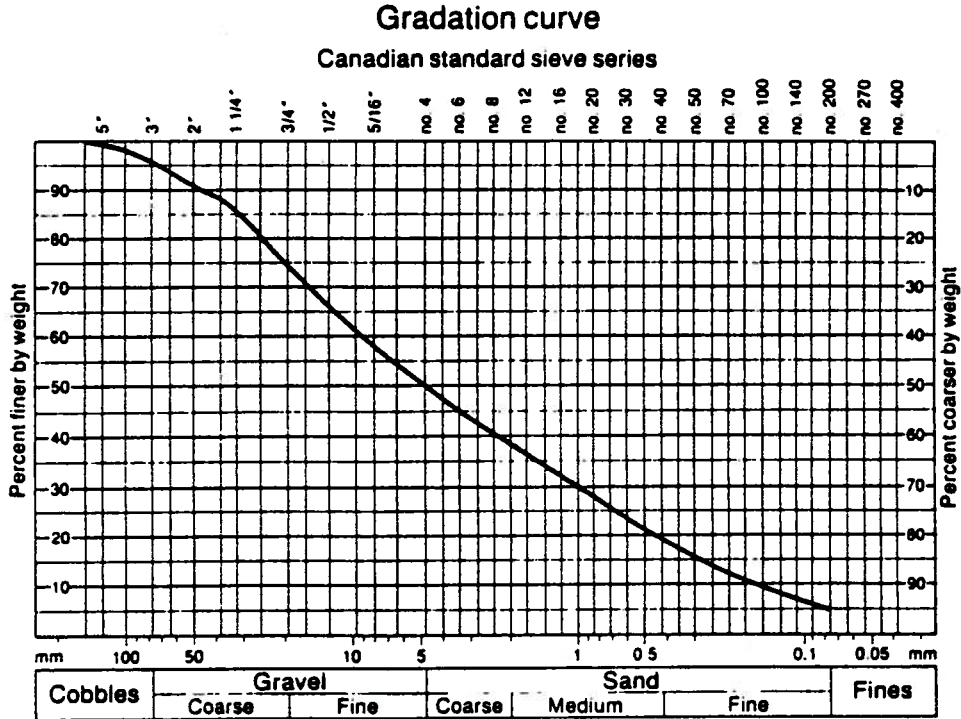
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Pit Location: Sec SE2 Tp37 R11 W5M

Pit Description:

Pit face measuring 9m x 30m. The material from this deposit was probably used for the building of the road and could extend for some distance into the trees. Most clasts are tabular, angular and composed of limestone, up to 20cm in size. A few boulders in the pit face are 50cm in diameter. The material would probably make good road gravel after minor crushing. Bedrock is at creek level.

Gradation: 3.8% cobbles 46.0% gravel  
45.0% sand 5.2% fines



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**DEPOSIT NO. 39**

LOCATION: Sec 7,8,16-18,21,22,27,28 Tp37 R9 W5M  
Sec 1,2,12 Tp37 R10 W5M

No. of associated pits/sites: 4 sites

No. of samples analysed: 3

**DEPOSIT DESCRIPTION:**

Glaciofluvial outwash deposit of sandy gravel that varies from 2.5m to 4m thick. The clasts consist mainly of subrounded quartzite, sandstone and limestone. Maximum clast size is 30cm but 98% are smaller than 15cm. Sand is mostly fine and clean. Crushing of the larger clasts and removal of fine sand would make this a good road gravel.

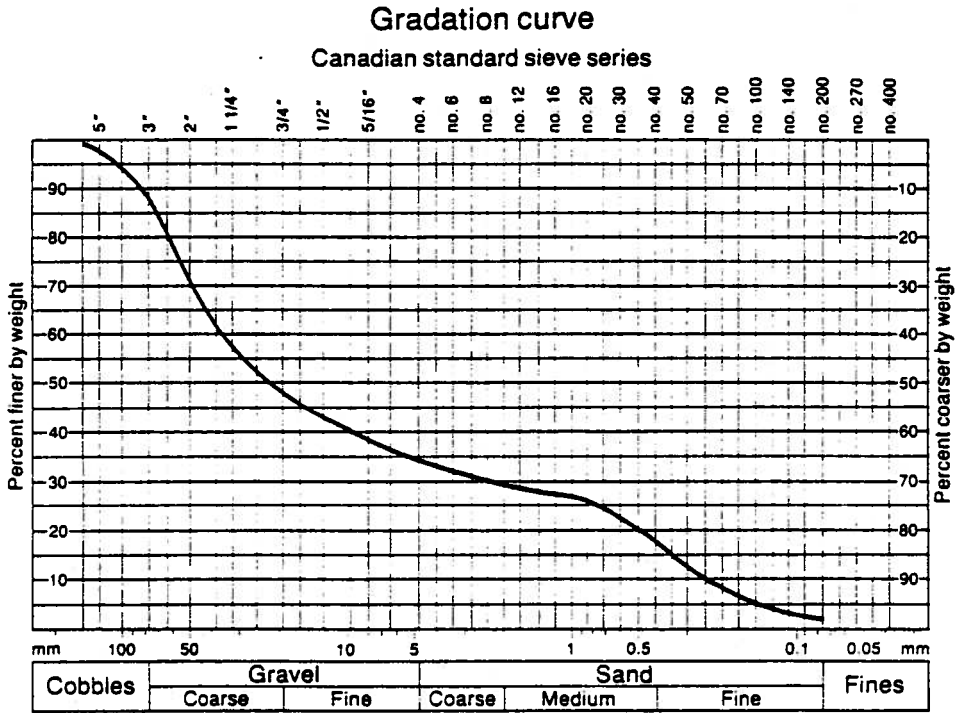


Site Location: Sec NE2 Tp37 R10 W5M

Site Description:

Cut of 3.5m of sandy gravel along a pipeline route. Clasts are to 30cm with 95% less than 15cm. Clasts are mainly subrounded quartzite and limestone. Sand is mostly clean, fine, poorly graded and sorted. The cut is on the top edge of the plateau and the lateral extent of the material is unknown.

Gradation: 11.2% cobbles 55.1% gravel  
31.2% sand 2.5% fines

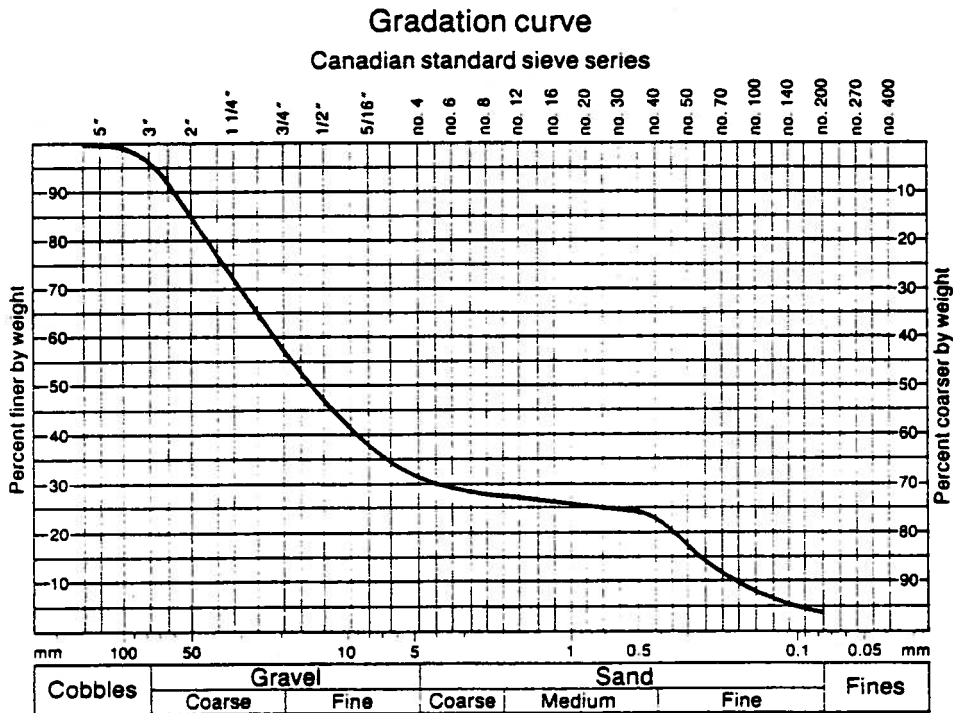


Site Location: Sec SW12 Tp37 R10 W5M

Site Description:

Roadcut. Approximately 2.5m of sandy gravel are exposed but the crest of the hill rises behind the outcrop under pine cover. Clasts are to 20cm but 98% of the clasts are less than 10cm diameter. Quartzite, sandstone and limestone clasts are most common. The material is poorly graded. Crushing of large clasts and removal of fine sand would make this a good road gravel.

Gradation: 3.3% cobbles 65.4% gravel  
27.2% sand 4.1% fines

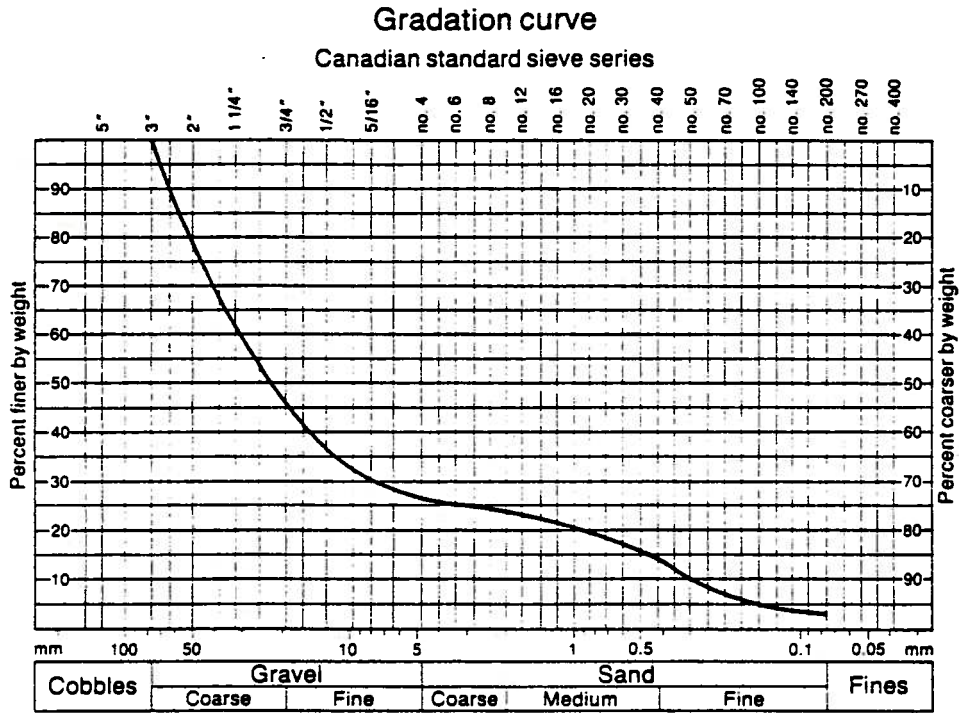


Site Location: Sec SW17 Tp37 R9 W5M

Site Description:

Cut at well site exposes approximately 4m of sandy gravel below approximately 1m of till. Clasts are to 30cm but about 98% are smaller than 15cm. Subrounded quartzite and sandstone clasts are most common among the large clasts. Limestone is abundant in the less than 10cm clast size. Tabular clasts are common. Sand is mostly fine and seems to be poorly graded.

Gradation: 0% cobbles 73.4% gravel  
23.9% sand 2.7% fines



Site Location: Sec SW17 Tp37 R9 W5M

Site Description:

Roadcut. Approximately 4m of gravelly sand present about 1m below plateau level.

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**DEPOSIT NO. 40**

LOCATION: Sec 14,15,22,23,27,28,33 Tp38 R9 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 2

**DEPOSIT DESCRIPTION:**

Glaciofluvial meltwater channel deposit ranging from dirty sandy gravel to sandy gravel interbedded with clean, medium to coarse grained sand. The thickness of the deposit is 2 to 3m and the deposit is fairly extensive below 0 to 15cm overburden.

Site Location: Sec SE33 Tp38 R9 W5M

Site Description:

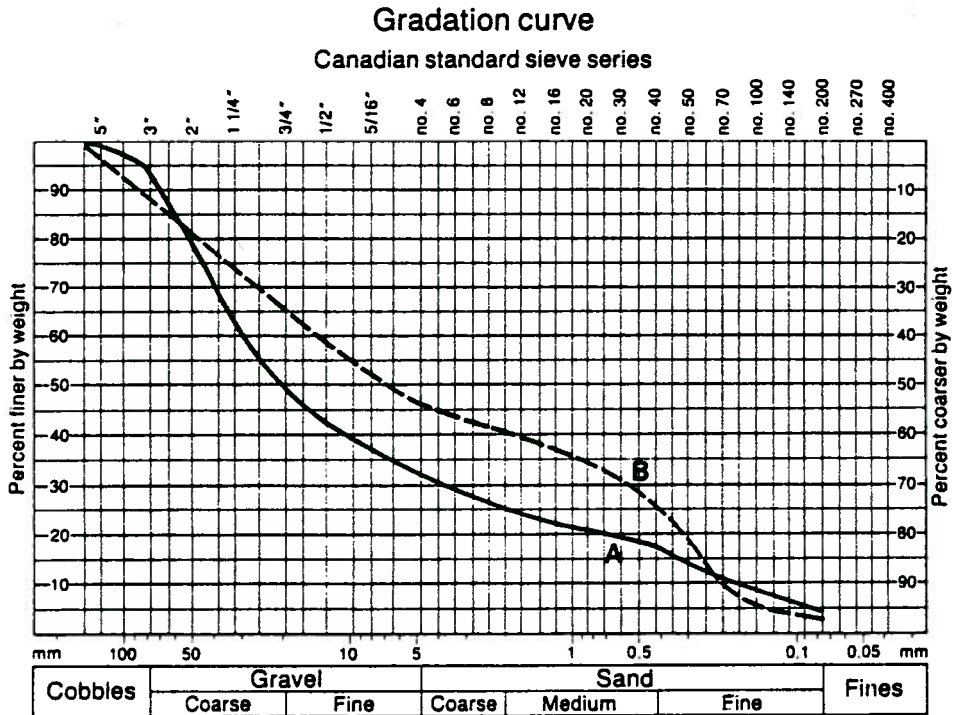
Roadcut exposure in high terrace of a meltwater channel. Quite dirty in some areas. Some other areas have layers of coarse-medium clean sand interbedded with dirty gravel. Thickness varies from 2-3m. Deposit probably is fairly extensive under overburden less than 15cm thick.

Sample A: Dirty sandy gravel

Sample B: Sandy gravel with clean, medium-coarse sand

Clasts are mainly rounded hard sandstone with some limestone, ironstone, conglomerate and local sandstone and shale bedrock. Carbonate coating on clasts is common. Water table depth is unknown.

Gradation: 5.8% cobbles	62.7% gravel	Sample A
27.2% sand	4.3% fines	
11.9% cobble	42.0% gravel	Sample B
42.8% sand	3.3% fines	

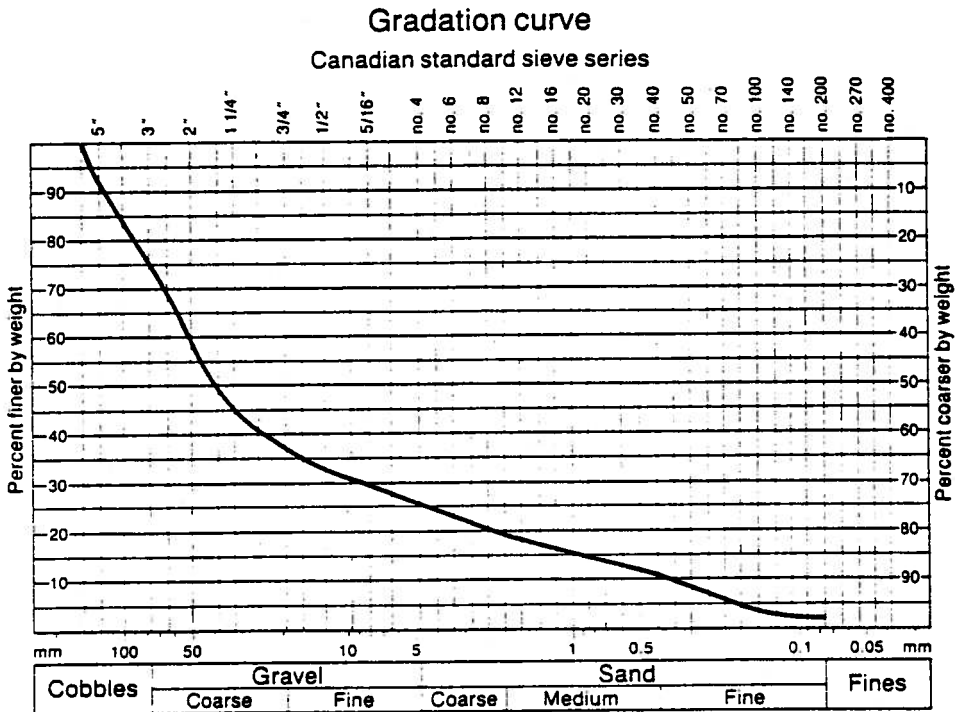


Site Location: Sec SW27 Tp38 R9 W5M

Site Description:

Very stoney exposure along cut line on mid-channel island of the meltwater channel system. Gravel seems to be quite dirty, similar to last site. Lack of overburden in most areas. Water table is unknown. Further testing is recommended.

Gradation: 24.7% cobbles 50.1% gravel  
23.0% sand 2.2% fines



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**DEPOSIT NO. 41**

LOCATION: Sec 31 Tp37 R8 W5M  
Sec 6,7,18 Tp38 R8 W5M  
Sec 12,13 Tp38 R9 W5M

No. of associated pits/sites: 3 pits

No. of samples analysed: None

**DEPOSIT DESCRIPTION:**

Glaciofluvial outwash terrace containing over 80% gravel and fine sand. Clasts are predominantly quartzite and limestone to 20cm in diameter. There are some interbedded pea gravel lenses in the flood plain. The deposit thickness is not more than 3m.

Gravel seems to be extensive along the high terrace and there is probably abundant material left in the flood plain. There is very good access along the main highway.

Pit Location: Sec NE7 Tp38 R8 W5M

**Pit Description:**

Small pit in high terrace. Very dirty gravel exposed along roadcut. Over 80% gravel. Sand mainly fine. Subangular to subrounded clasts are predominantly quartzite and limestone to 20cm diameter.

Deposit thickness is not more than 3m. No overburden. Water table is low. Gravel seems to be extensive along the high terrace. No sample taken because of high clay content.

Pit Location: Sec NE6 Tp38 R8 W5M

**Pit Description:**

Inactive pit in low terrace deposit. Clast size to 25cm diameter but most clasts are 0.5-7.5cm size. Interbedded pea gravel lenses. Thickness is 0.5m. Water table is depth unknown. Good gravel area.

Pit Location: Sec NE12 Tp38 R9 W5M

**Pit Description:**

Inactive, partly revegetated pit in low terrace deposit. Thickness of deposit is 2.5-3m. No good section for description. Material appears to be similar to that of neighbouring pits and there probably is abundant material left. Very good access along main highway.

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DEPOSIT NO. 42

LOCATION: Sec 27-29,32,33 Tp37 R8 W5M  
Sec 5,8 Tp38 R8 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

Recent alluvium forming low terrace and flood plain deposits of sand and gravel. See site description.

Site Location: Sec NE32 Tp37 R8 W5M

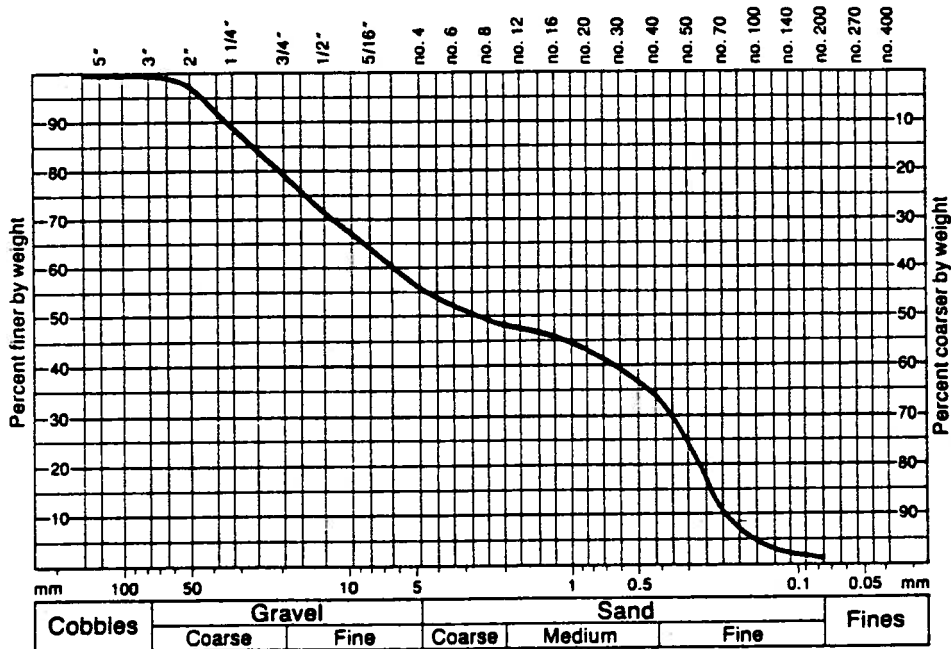
Site Description:

Pit. Dirty gravelly sand. Approximately 1% of clasts are greater than 30cm, most are less than 15cm. Water table depth unknown. Section thickness is 1.5-3.5m in rolling landscape.

Gradation: 0% cobbles 43.5% gravel  
54.9% sand 1.6% fines

Gradation curve

Canadian standard sieve series



\* \* \* \* \*

DEPOSIT NO. 43

LOCATION: Sec 28,33,34 Tp37 R7 W5M  
Sec 3,4 Tp38 R7 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Ice contact kame deposit. See site description.

Site Location: Sec NW34 Tp37 R7 W5M

Site Description:

Roadcut. Stoney till with clasts to 20cm diameter but contains too much clay and fine sand for good aggregate. Might be suitable for base material for roads or buildings.

\* \* \* \* \*

DEPOSIT NO. 44

LOCATION: Sec 4-9,15-18,21,28 Tp36 R8 W5M  
Sec 12-15,21-24,26-28,33-35 Tp36 R9 W5M

No. of associated pits/sites: 3 pits, 6 sites

No. of samples analysed: 6

DEPOSIT DESCRIPTION:

Glaciofluvial outwash deposit consisting mainly of dirty sandy gravel ranging in depth from 1.8m to 8m. Maximum clast size is 30cm. Most clasts are smaller than 20cm and clasts smaller than 10cm are dominant. Larger clasts are primarily quartzite, smaller clasts are mainly limestone and sandstone. At one site the larger clasts, uncharacteristically, are mainly limestone and sandstone.

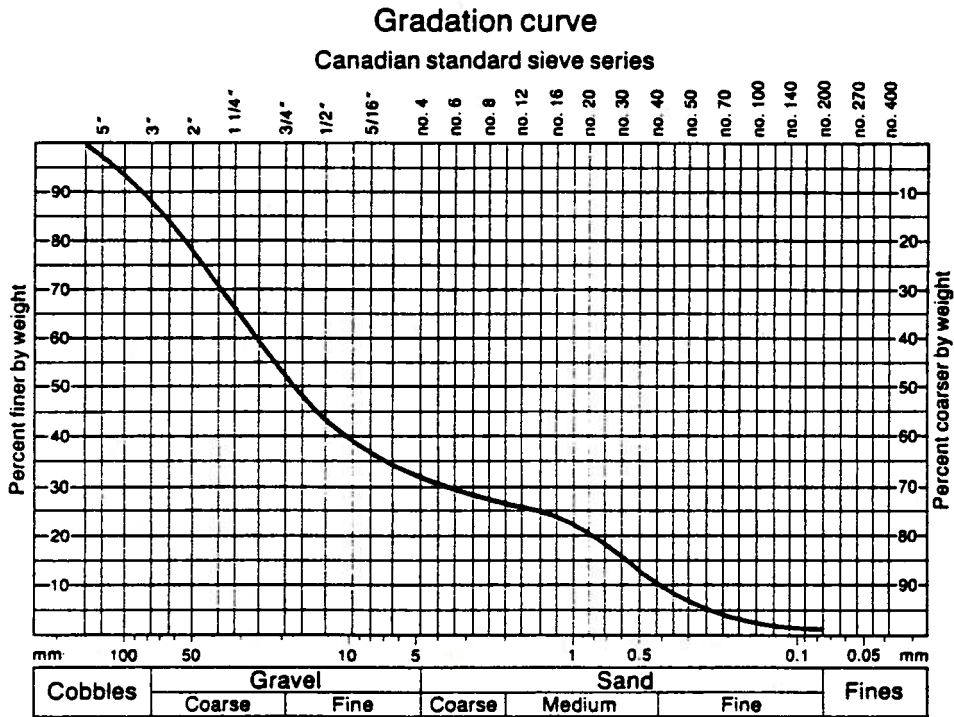
Sand is mainly fine grained and clay content is high. The material would probably be suitable for road gravel if screened to remove the fines.

Site Location: Sec SE8 Tp36 R8 W5M

Site Description:

Roadcut exposing 1.8m of coarse sand and gravel. Fine sand with fewer clasts is present in the top 20cm. Below the top 20cm maximum clast size is 15cm but most clasts are less than 10cm. Little medium and fine sand. Clasts are mainly quartzite, sandstone and limestone. Large clasts are subrounded. Tabular clasts are common in the smaller sizes.

Gradation: 11.7% cobbles 56.2% gravel  
30.6% sand 1.5% fines

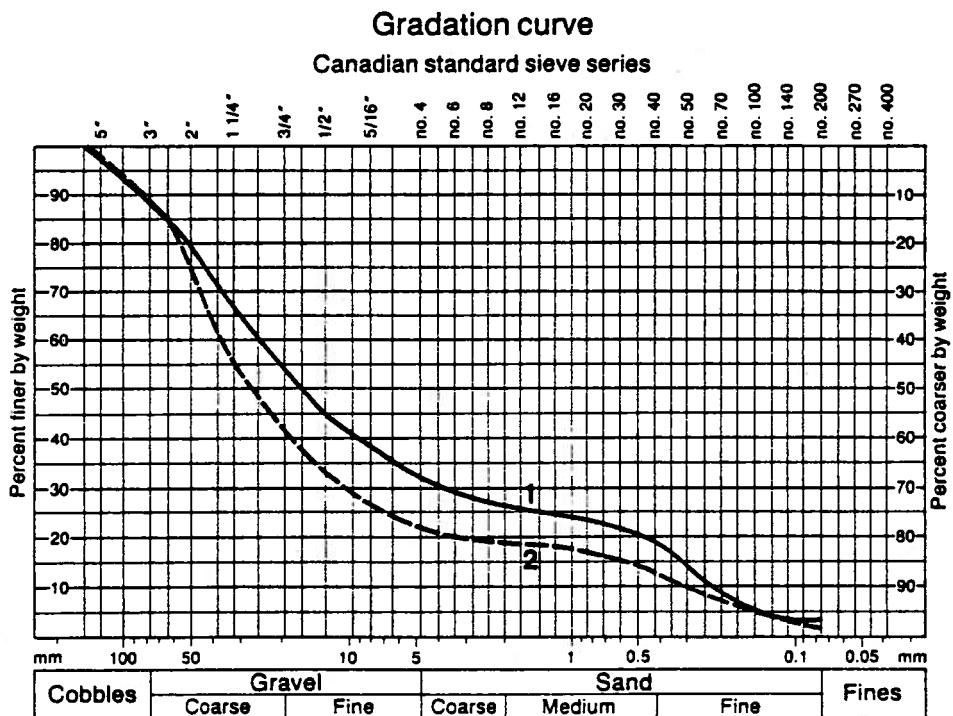


Pit Location: Sec NW7 Tp36 R8 W5M

Pit Description:

Gravel pit, activity unknown. Some high walls are partly vegetated. Approximately 7m of gravel are exposed. No water in pit. Overburden is approximately 20cm. Clasts are to 30cm but most clasts are smaller than 20cm. Clasts are dominantly subrounded quartzite. Limestone clasts tend to be tabular and less than 10cm. Gross horizontal bedding is present.

Gradation:	11.5% cobbles	56.0% gravel	Upper	1
	28.9% sand	3.6% fines		
	10.1% cobbles	67.9% gravel	Lower	2
	19.6% sand	2.4 % fines		

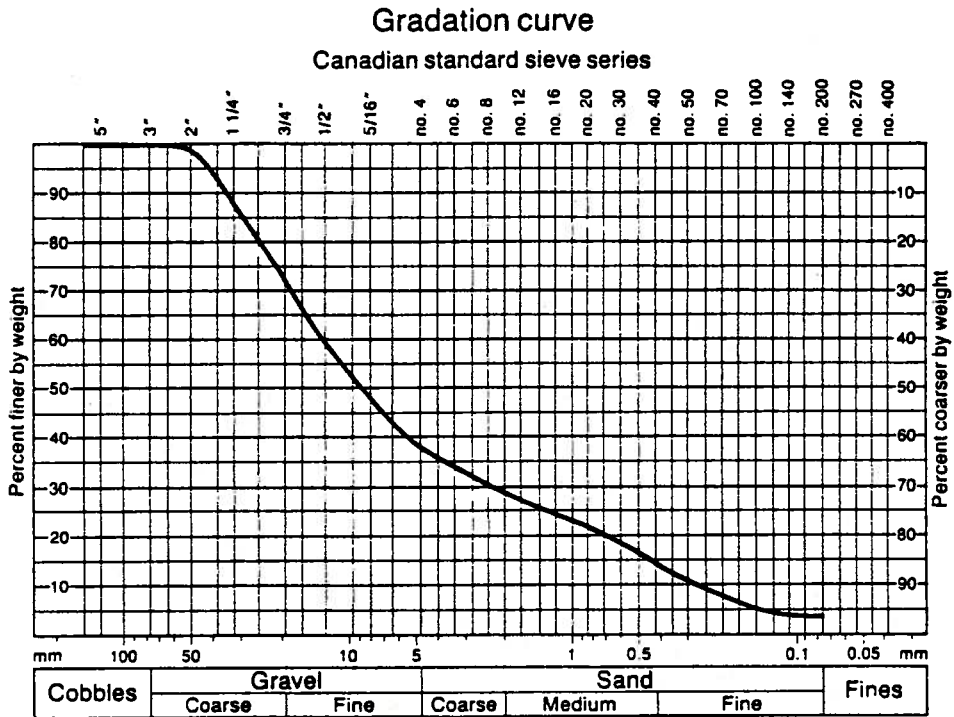


Pit Location: Sec SW7 Tp36 R8 W5M

Pit Description:

Disused gravel pit that appears to be in a terrace. Material appears to be dirtier than material in the higher terrace described above in NW7-36-8-W5. Maximum clast size is 30cm but most are less than 20cm and less than 10cm size is dominant. Largest clasts are primarily quartzite. Smaller clasts are limestone, quartzite and sandstone.

Gradation: 0% cobbles 61.4% gravel  
34.0% sand 4.6% fines

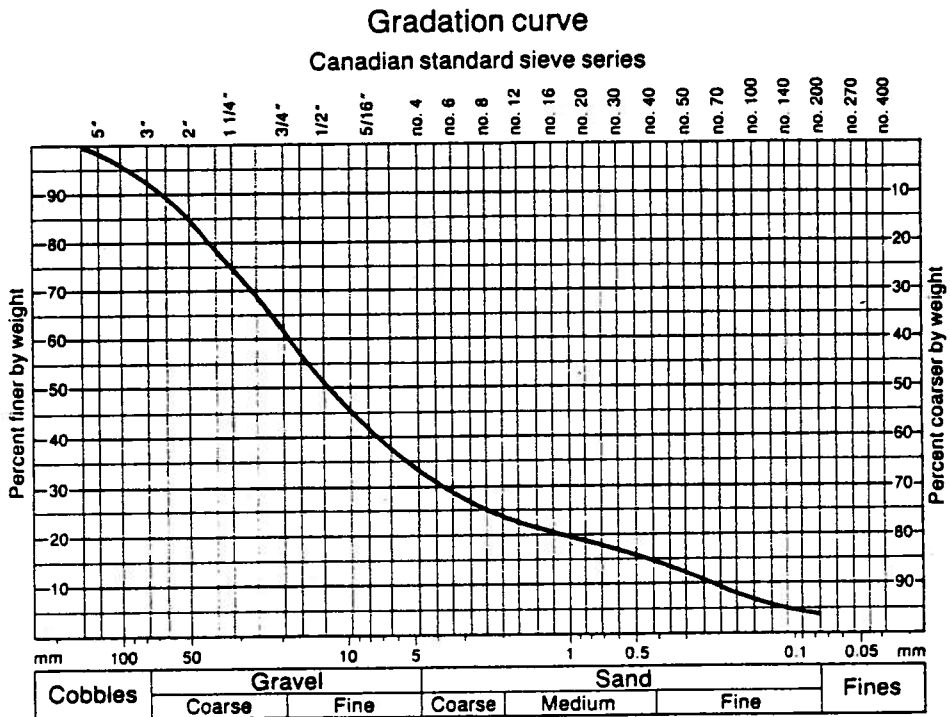


Site Location: Sec NE22 Tp36 R9 W5M

Site Description:

Roadcut. About 8m of dirty gravel. Maximum clast size is 20cm but most are less than 10cm in size. Large clasts are mainly limestone and sandstone. Quartzite, uncommonly, is minor. No structure is obvious in the sloped cut.

Gradation: 7.7% cobbles 58.7% gravel  
29.6% sand 4.0% fines

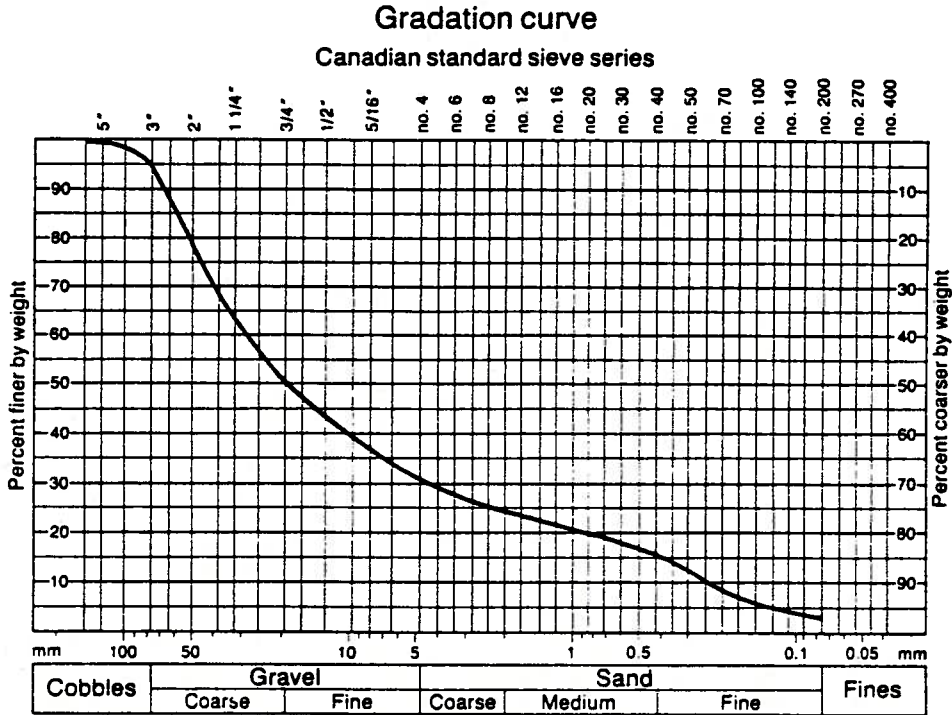


Site Location: Sec NW34 Tp36 R9 W5M

Site Description:

Roadcut. About 4m of dirty gravel. Maximum clast size is 30cm but about 98% are smaller than 15cm. Large clasts are mainly quartzite and sandstone. Limestone is common among the smaller than 10cm size clasts. Fine sand and clay are common. Little medium or coarse sand. Probably can be used for road gravel if screened to remove fines.

Gradation: 4.6% cobbles 63.8% gravel  
28.0% sand 3.6% fines

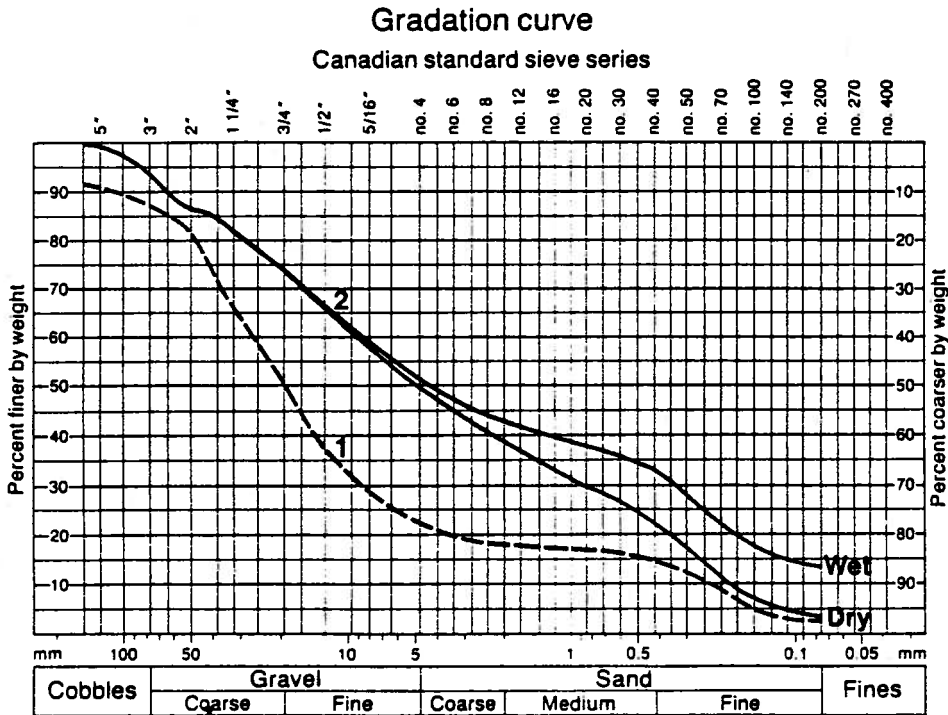


Pit Location: Sec SW34 Tp36 R9 W5M

Pit Description:

Gravel pit exposing 4.5-5m of sandy gravel. Some sand lenses to 25cm thick and 3m long. Material is dirtier in south wall, especially in upper 1m. Clasts are to 30cm but 99% are less than 20cm, and 98% are less than 15cm. These are mostly quartzite or sandstone in the large size clasts. Limestone is common in the less than 10cm size. Fairly well graded although fine sand may dominate. Some sorting.

Gradation: 13.0% cobbles	65.2% gravel	Sample 1 (clean)
18.2% sand	3.6% fines	
6.6% cobbles	42.3% gravel	wet
37.8% sand	13.3% fines	
6.6% cobbles	43.6% gravel	Sample 2 (dirty)
46.0% sand	3.8% fines	dry





Site Location: Sec NW4 Tp36 R8 W5M

Site Description:

Roadcut in stoney till with clasts to 15cm diameter. Abundant clasts smaller than 3cm. Sand content seems low and clay very high. Probably would make good road base.

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Site Location: Sec NE6 Tp36 R8 W5M

Site Description:

Slope on north side of well site exposes approximately 2m of gravelly till. High clay content and clasts to 10cm size. Similar to site above.

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Site Location: Sec SW7 Tp36 R8 W5M

Site Description:

Roadcut on the south side of a creek valley exposes sandy gravel that appears to cover the slopes on both sides of the valley down to near the valley bottom. Material in the pits described above in NW 7, SW 7-36-8-W5 is the northern equivalent to material present in this roadcut.

\* \* \* \* \*

DEPOSIT NO. 45

LOCATION: Sec 31-34 Tp35 R8 W5M  
Sec 3-6,9,10 Tp36 R8 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: None

DEPOSIT DESCRIPTION:

Ice contact deposit. See pit description.

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Pit Location: Sec NE33 Tp35 R8 W5M

Pit Description:

Sand pits. A few clasts to 2cm size in scattered units.

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DEPOSIT NO. 46

LOCATION: Sec 20,28,29,33,34 Tp36 R6 W5M  
Sec 2-4,9-12 Tp36 R7 W5M  
Sec 2,3,10,11,23,26,27,32,33 Tp37 R6 W5M  
Sec 4,5 Tp38 R6 W5M

No. of associated pits/sites: 4 pits, 4 sites

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

Glaciofluvial valley train deposit consisting of 2 to 5m of sandy gravel. The maximum clast size is 30cm. Most clasts are smaller than 15cm and the bulk of the clasts are smaller than 10cm in diameter. Subangular limestone, igneous and quartzite clasts are most common.

Sand is medium to fine grained, minor silt and clay are present and the overburden is 0 to 50cm.

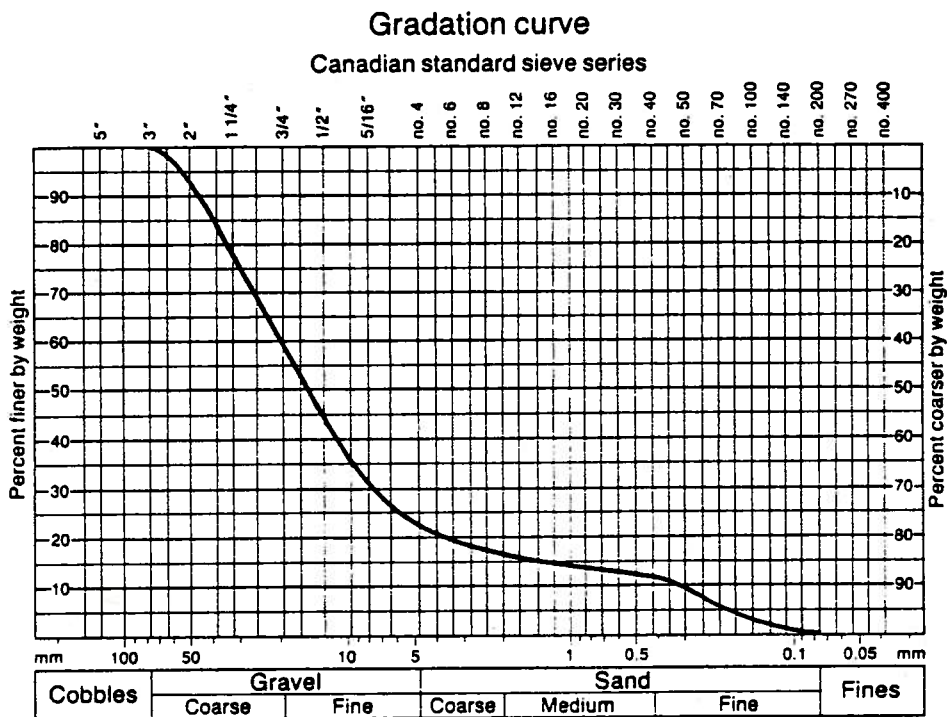
The flood plain of the Clearwater River appears to be an excellent source of good clean gravel.

Pit Location: Sec SW11 Tp37 R6 W5M

Pit Description:

Disused pit. Approximately 2m of clean, sandy gravel. Few clasts are larger than 15cm, most are less than 10cm. Subangular limestone, igneous and quartzite clasts are most common. Material may need crushing. Water in pit bottom is clear. Good gravel potential is indicated to the northwest beyond the present pit boundary by geophysical testing. Overburden thickness is approximately 25cm.

Gradation: 0% cobbles 77.3% gravel  
21.6% sand 1.1% fines

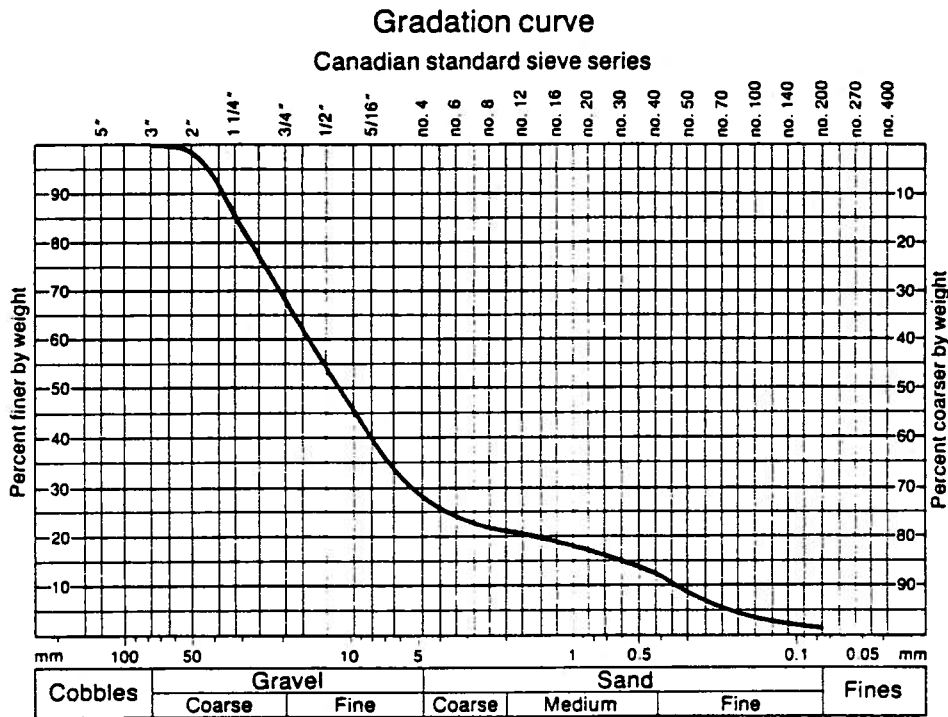


Site Location: Sec NW28 Tp36 R6 W5M

Site Description:

Gravel pile pushed up on the flood plain. Maximum clast size is 30cm but most are smaller than 15cm and the bulk of the clasts are smaller than 10cm. Clasts are subangular to subrounded, and flattened clasts are common. Limestone and quartzite clasts are most common. Minor silt and clay are present. Sand is medium grained. The flood plains of Clearwater River appear to be in excellent source of good clean gravel.

Gradation: 0% cobbles 72.5% gravel  
26.0% sand 1.5% fines



Pit Location: Sec SE11 Tp37 R6 W5M

Pit Description:

Small abandoned pit exposing approximately 4m of gravel below 30-50cm of overburden. Geophysical testing indicates that the deposit is depleted.

Site Location: Sec NW2 Tp37 R6 W5M

Site Description:

Dugouts. Material is similar to that in the pit described above at SW11-37-6-W5.

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Site Location: Sec SE3 Tp37 R6 W5M

Site Description:

Shallow ditch. Similar to above.

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Site Location: Sec NW34 Tp36 R6 W5M

Site Description:

Dugout. Gravel, as above, at base of the till ridge to south. Ridge is capped by sand.

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Pit Location: Sec SE28 Tp36 R6 W5M

Pit Description:

Inactive gravel pit exposing approximately 5m of gravel in a ridge rising to the south. This glacial flood plain gravel has similar characteristics to contemporary deposits. There appears to be plenty of material left in a southwesterly direction.

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Pit Location: Sec NW23 Tp37 R6 W5M

Pit Description:

Clearwater River floodplain. Gravel is immediately below the surface. A small disused pit is present on the south side of the road, but probably is disused because the area has been declared a natural area.

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DEPOSIT NO. 47

LOCATION: Tp34 R9,10,11                      Tp35 R8,9,10  
          Tp36 R6,7,8                        Tp37 R6  
          Tp38 R6,7                         Tp39 R7

No. of associated pits/sites: 7 sites

No. of samples analysed: 4

DEPOSIT DESCRIPTION:

Recent alluvium, low terrace, bars and flood plain deposit. Exposures indicate up to 12.5m of aggregate in places, ranging from silty, sandy gravel to gravel. The maximum clast size is 35cm but 99% are less than 10cm in diameter. Limestone is dominant and quartzite and igneous rocks are common. Clasts are subangular to angular and tabular clasts are common. Medium and coarse sand content is probably low.

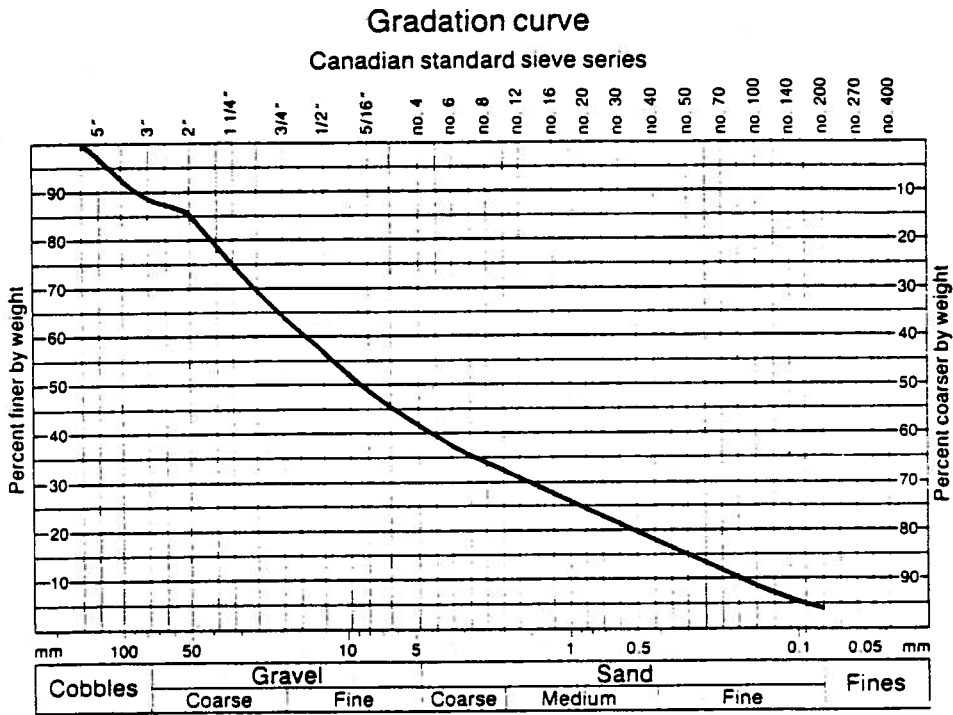
There is up to 1.5m overburden on the flood plain. The gravel thickness on the flood plain is undetermined but is at least 1-2m above the water table.

Site Location: Sec NW11 Tp35 R10 W5M

Site Description:

Roadcut in upper Clearwater River terrace (last terrace before major break in slope) exposes about 4m of silty gravel. Clasts are up to 35cm in size, more than 99% are less than 15cm and 99% are less than 10cm. Limestone is dominant in all sizes. The material is poorly graded and unsorted. Medium and coarse sand content is probably low. Tabular clasts are common.

Gradation: 11.9% cobbles 46.9% gravel  
36.5% sand 4.7% fines



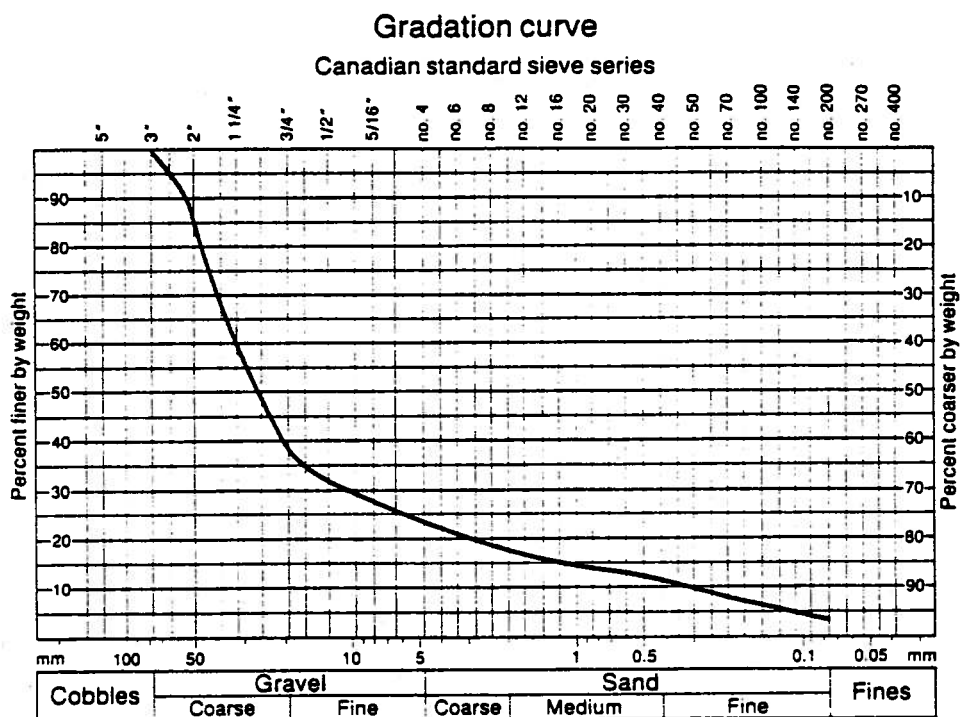


Site Location: Sec NE12 Tp35 R11 W5M

Site Description:

Cut bank reveals about 12.5m gravel. More than 99% of the clasts are smaller than 20cm. Limestone is dominant. Material is subangular to subrounded.

Gradation: 0% cobbles 76.8% gravel  
19.8% sand 3.4% fines

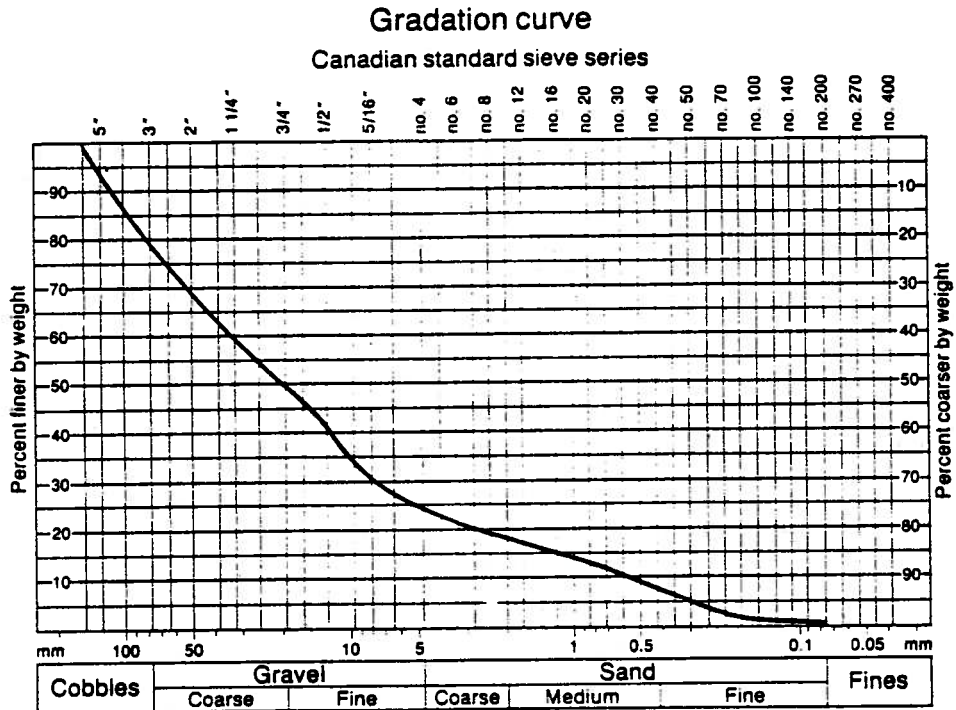


Site Location: Sec NE22 Tp34 R14 R5M

Site Description:

Flood plain deposit of stoney, very dirty angular material. The water table is high and overburden is 0-1.5m. The material is of poor quality and is not an important source.

Gradation: 21.7% cobbles 53.8% gravel  
23.7% sand 0.8% fines

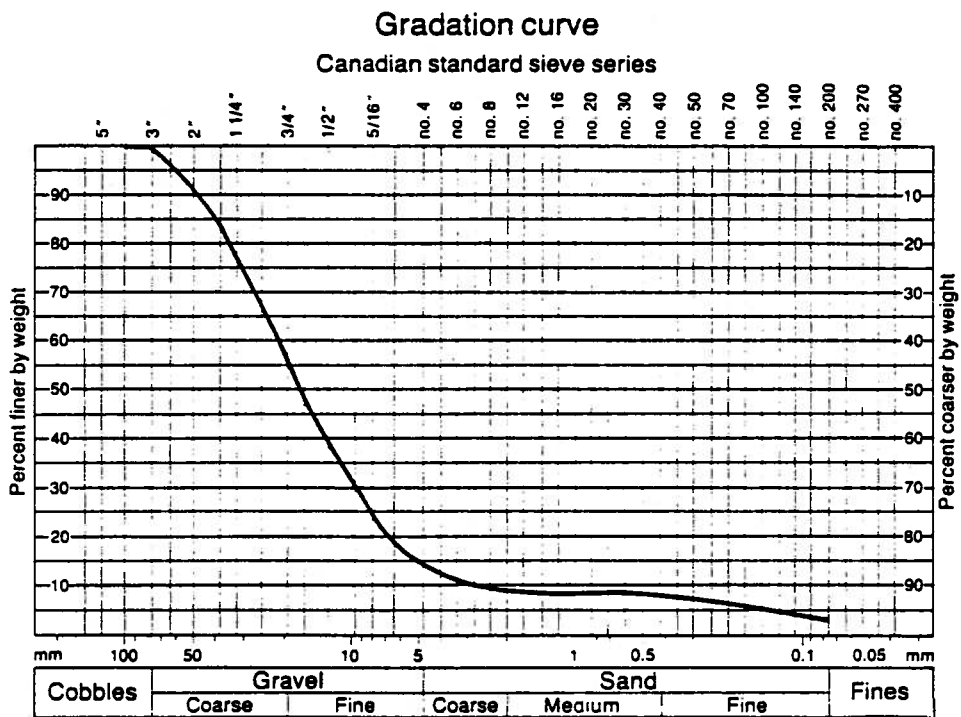


Site Location: SecSW4 Tp35 R9 W5M

Site Description:

Extensive gully flood plain with overburden of 0-1m. The gravel thickness is undetermined but is at least 1-2m above the water table. Clasts consist mainly of limestone and quartzite plus other bedrock material.

Gradation: 0% cobbles 85.5% gravel  
11.6% sand 2.9% fines



Site Location: Sec SW33 Tp36 R6 W5M

Site Description:

Gravel in stream and bank with clast size up to 25cm. Most clasts are less than 10cm and the material appears to be free of clay and silt, with the smallest size being fine rounded sand. Clasts are subangular and limestone, quartzite and igneous rocks are most common.

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Site Location: Sec SE4 Tp37 R6 W5M

Site Description:

Clearwater River flood plain. Gravel is immediately below the surface of the fields.

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Site Location: Sec NE27 Tp34 R11 W5M

Site Description:

Colluvium (angular bedrock) over bedrock shale.

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DEPOSIT NO. 48

DEPOSIT LOCATION: Sec 34 Tp35 R8 W5M  
Sec 19,29,30,32,33 Tp36 R6 W5M  
Sec 7-18,24 Tp36 R7 W5M  
Sec 1-3,10-14 Tp36 R8 W5M  
Sec 3,4,9,10 Tp37 R6 W5M

No. of associated pits/sites: 3 pits

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

Glaciofluvial valley train with exposures of 2 to 5.5m of sandy gravel grading from coarser material to finer material with depth. The maximum clast size is about 30cm but most clasts are smaller than 10cm and the bulk of the clasts are smaller than 5cm. The largest clasts are primarily subrounded quartzite. There are abundant tabular limestone clasts in the smaller clast size.

The material is fairly clean with most sizes larger than fine sand and well graded.

The overburden is 15 to 20cm thick and the water table appears to be high.

Pit Location: Sec NW13 Tp36 R7 W5M

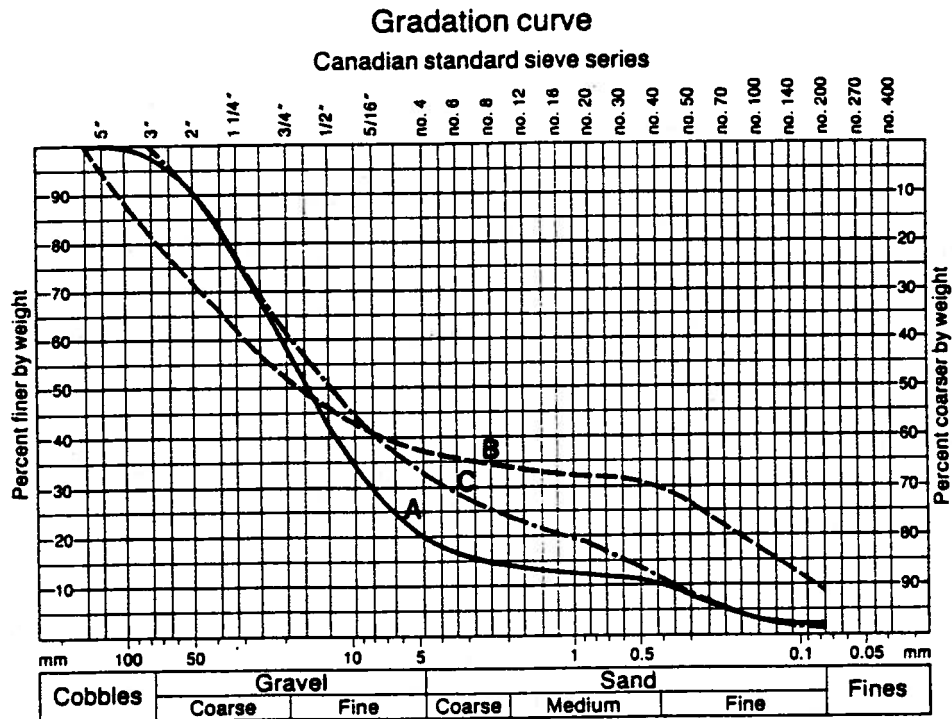
Pit Description:

Gravel pit used intermittently. High wall about 5.5m high consists of 3 units. The upper unit, approximately 1.8m thick, contains coarser clasts. The centre unit, 1m thick, has fewer clasts and more fines. The lower unit, approximately 2.6m thick, is slightly dirtier. Maximum clast size is approximately 30cm but most clasts are smaller than 15cm. Most large clasts are quartzite. Limestone clasts are commonly smaller than 5cm. The upper unit is quite clean, better sorted and most sizes are larger than fine sand.

Gradation: 3.0% cobbles 78.0% gravel Upper Unit A  
16.8% sand 2.2% fines

19.2% cobbles 43.4% gravel Middle Unit B  
28.8% sand 8.6% fines

0% cobbles 67.2% gravel Lower Unit C  
31.4% sand 1.4% fines

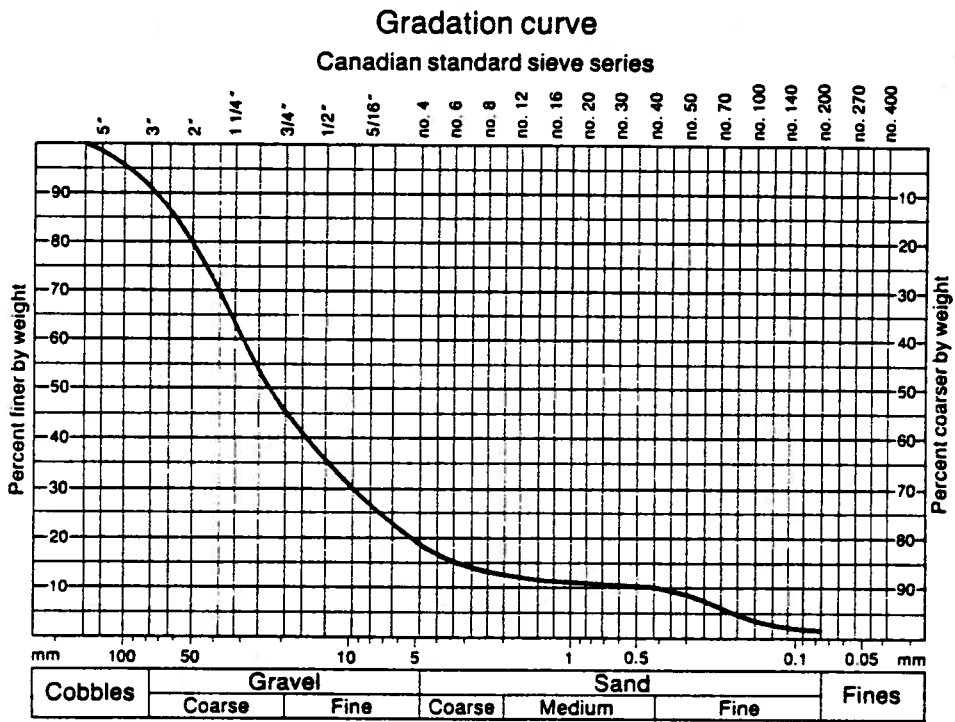


Pit Location: Sec SE10 Tp36 R8 W5M

Pit Description:

Inactive gravel pit exposing 2m of gravel above water level. Pit floor is approximately 30-50cm under water. Overburden is approximately 15-20cm. Maximum clast size is 20cm but most are smaller than 10cm. Material is fairly clean with most sizes larger than fine sand and well graded. Some sorting is present in lenses within the gross horizontal bedding. Largest clasts are primarily subrounded quartzite. Abundant tabular limestone is present in smaller clast size.

Gradation: 8.5% cobbles 72.5% gravel  
16.9% sand 2.1% fines



Pit Location: Sec NW14 Tp36 R7 W5M

Pit Description:

Infrequently used pit. Highwalls eroded.

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DEPOSIT NO. 49

PIT LOCATION: Sec 18-21,27-30,32-35 Tp35 R8 W5M  
Sec 2-5,8-16,22-25 Tp35 R9 W5M

No. of associated pits/sites: 2 pits

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

Glaciofluvial valley train deposit. The material ranges from dirty, sandy gravel in the middle terrace to clean gravel or gravelly sand in the upper terrace. Thickness of the deposit varies from 3 to 10.5m. The water table is low and overburden thickness is less than 25cm.

Clasts to 45cm in diameter are present but most are less than 15cm. The clasts are angular to subrounded, quartzite is dominant and limestone is secondary.



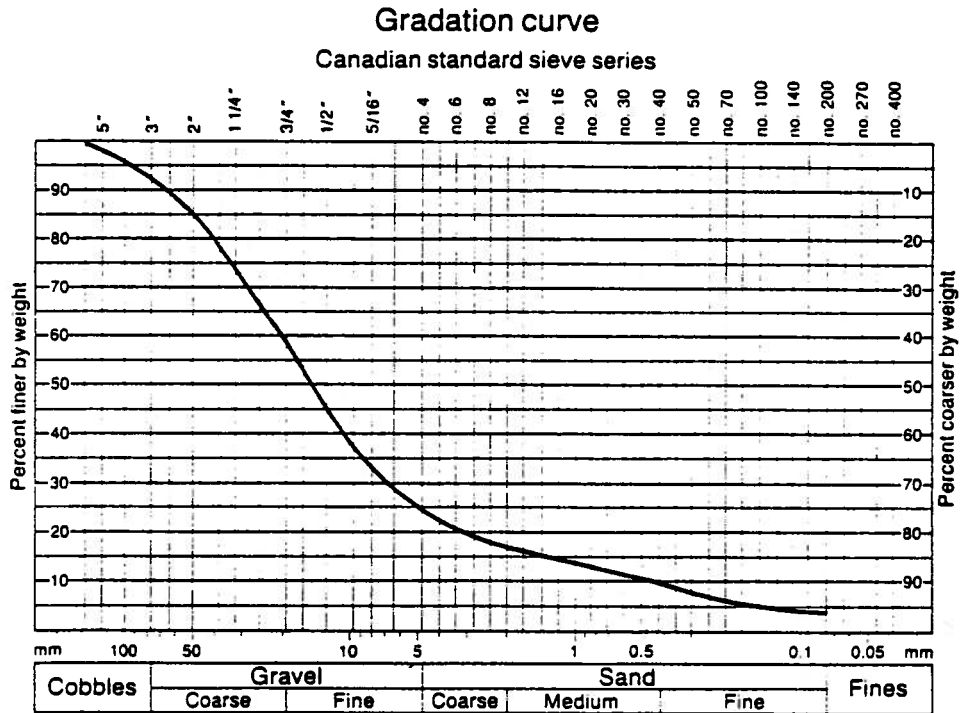
Pit Location: Sec E5 Tp35 R9 W5M

**Pit Description:**

A reclaimed pit in a fluvial middle terrace. The material is quite dirty and thickness varies from 3m to 10.5m. Water table is low and overburden is less than 15cm thick.

Quartzite is dominant with angular to subrounded clasts. The maximum clast size is 23cm (less than 1%). Most of the clasts are smaller than 15cm.

Gradation: 8.2% cobbles 67.1% gravel  
20.5% sand 4.2% fines



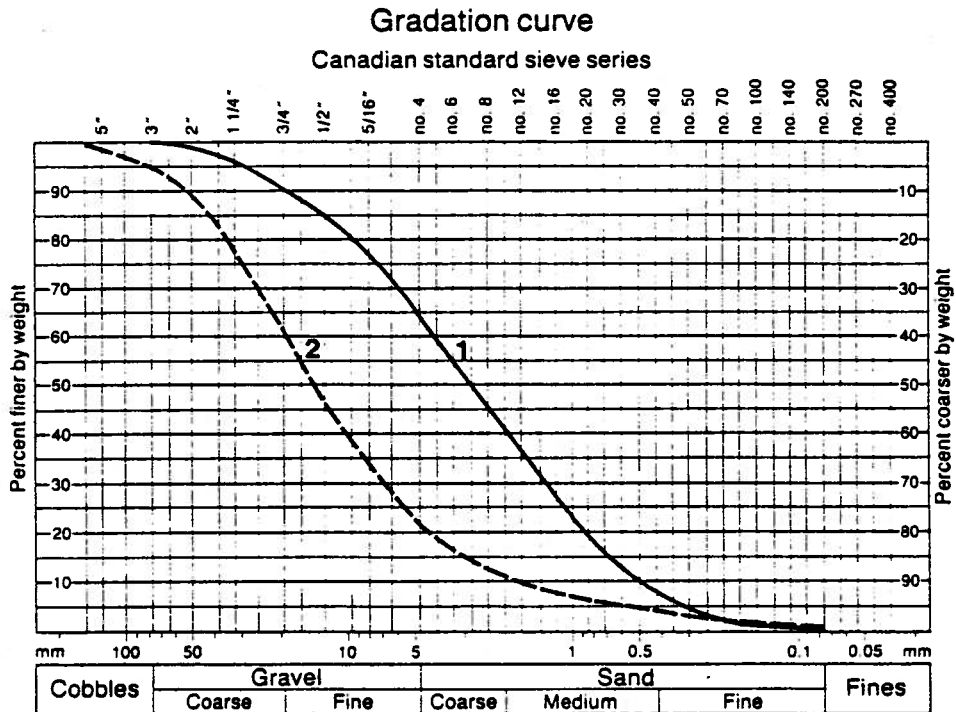
Pit Location: Sec SE8 Tp35 R9 W5M

Pit Description:

Disused gravel pit in a fluvial high terrace, with about 7m gravel and gravelly sand. A minor number of clasts are up to 45cm in diameter. Over 99% are less than 30cm, 98% are less than 15cm and most clasts (of all sizes) are limestone or quartzite. Only a few limestone clasts are present. The clasts commonly are tabular and subrounded. The overburden is about 25cm of fine sandy material.

Sample 1, from near the west end of the pit, is mostly coarse sand to fine gravel with a few clasts to 5cm size. The material is clean and sorted. Sample 2, from near the east end of the pit, has abundant fines, is graded, unsorted and is probably more typical of the deposit.

Gradation:      0% cobbles    36.1% gravel  
                   63.3% sand        0.6% fines    ) 1  
                   6.5% cobbles    71.8% gravel )  
                   20.3% sand        1.4% fines    ) 2



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DEPOSIT NO. 50

LOCATION: Sec 14-22, 29-31 Tp35 R10 W5M  
Sec 25,35,36 Tp35 R11 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

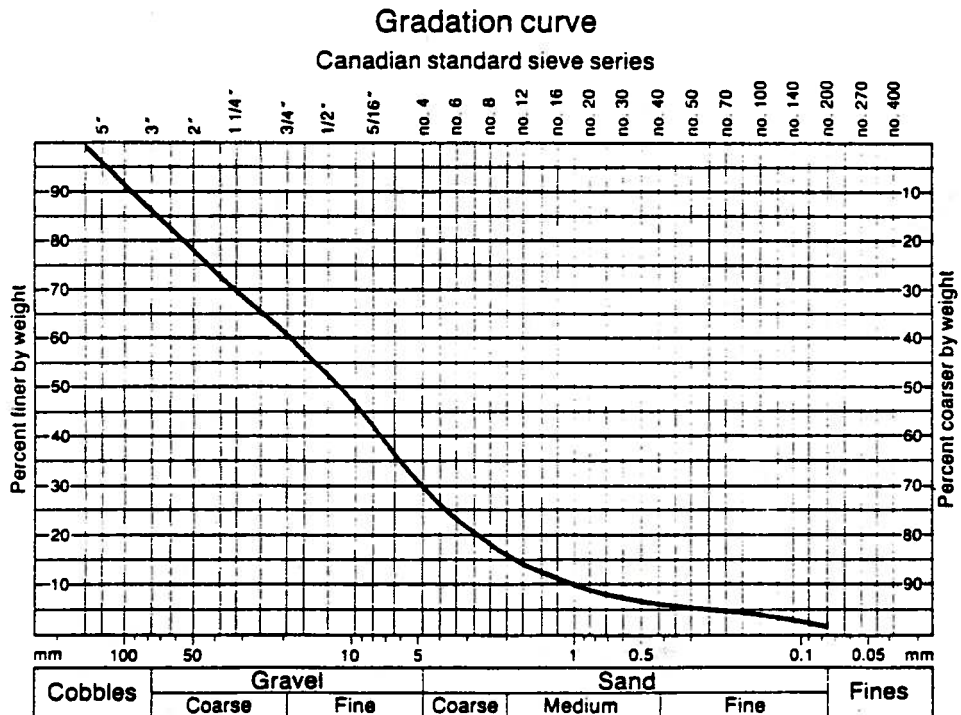
Recent alluvium deposit of low terrace, flood plain and gravel bars. See pit description.

Pit Location: Sec NW16 Tp35 R10 W5M

Pit Description:

Gravel hummocks, about 50m x 10m, and 5.5m high. No similar hummocks are observable in the area. A few clasts are 20cm in size but most are less than 15cm with the most common size being coarse sand to pea gravel. Quartzite and limestone are the most common rock types and the clasts are angular to subangular. Some clay is present.

Gradation: 13.6% cobbles 56.3% gravel  
28.0% sand 2.1% fines



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DEPOSIT NO. 51

LOCATION: Sec 33-36 Tp35 R12 W5M  
Sec 2,3 Tp36 R12 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

Glaciofluvial valley train deposit of sandy gravel. Maximum clast size is 35cm but 99% are smaller than 15cm. The clasts are mainly limestone and sandstone, commonly are tabular and subangular to subrounded. A few quartzite clasts are present.

Pit Location: Sec NW35 Tp35 R12 W5M

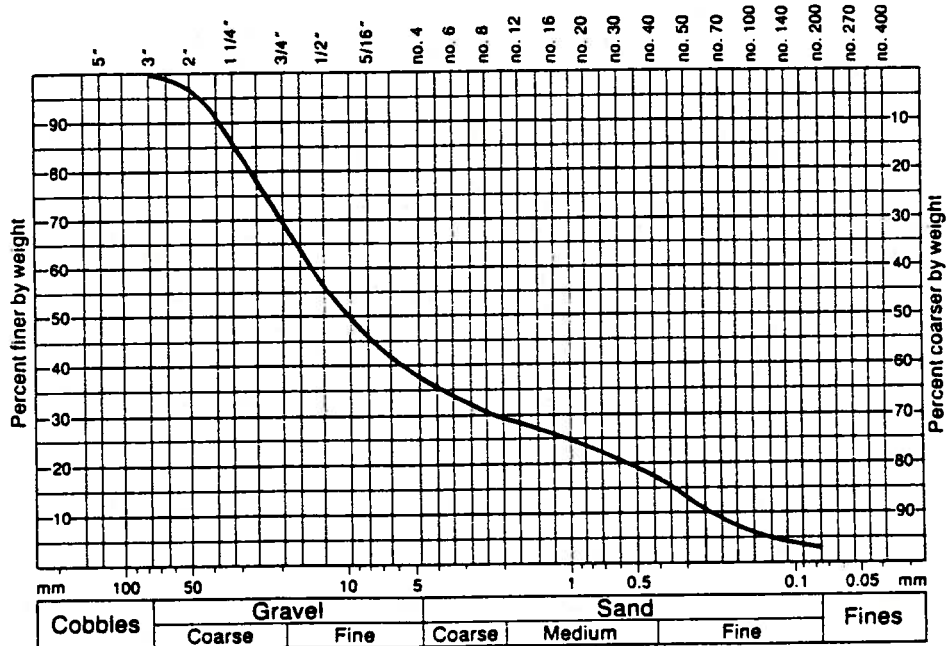
Pit Description:

Borrow pit approximately 10 x 3m exposes dirty sandy gravel. Clasts to 35cm but more than 99% are smaller than 15cm. Mainly limestone with some sandstone clasts. Poorly graded. Observations of the Clearwater River and of exposures along the road suggest that any gravel that is going to be cleaner than what is sampled here will be found very close to the present course of the river.

Gradation: 0% cobbles 62.2% gravel  
34.4% sand 3.4% fines

Gradation curve

Canadian standard sieve series



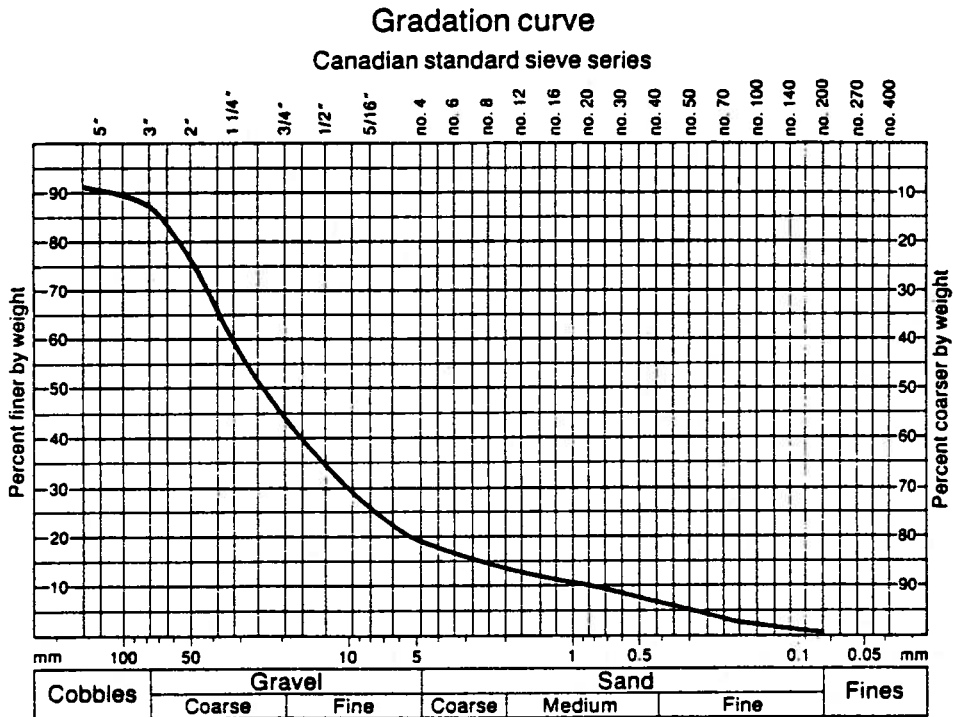
Site Location: Sec NW34 Tp35 R12 W5M

Site Description:

Creek bank exposing 1m of sandy gravel at the junction of Elk Creek and Clearwater River. In this flood plain deposit maximum clast size is 20cm but more than 99% are smaller than 15cm.

Mainly limestone and sandstone clasts, commonly tabular, and subangular to subrounded. A few quartzite clasts.

Gradation: 12.7% cobbles 67.9% gravel  
18.6% sand 0.8% fines



DEPOSIT NO. 52

LOCATION: Sec 14,15,21,22,28-31 Tp35 R11 W5M  
Sec 18-21,28,29,33-36 Tp35 R12 W5M

No. of associated pits/sites: none

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Recent alluvium low terraces and bars.

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DEPOSIT NO. 53

LOCATION: Sec 18,19 Tp36 R13 W5M  
Sec 13-15,22-26 Tp36 R14 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

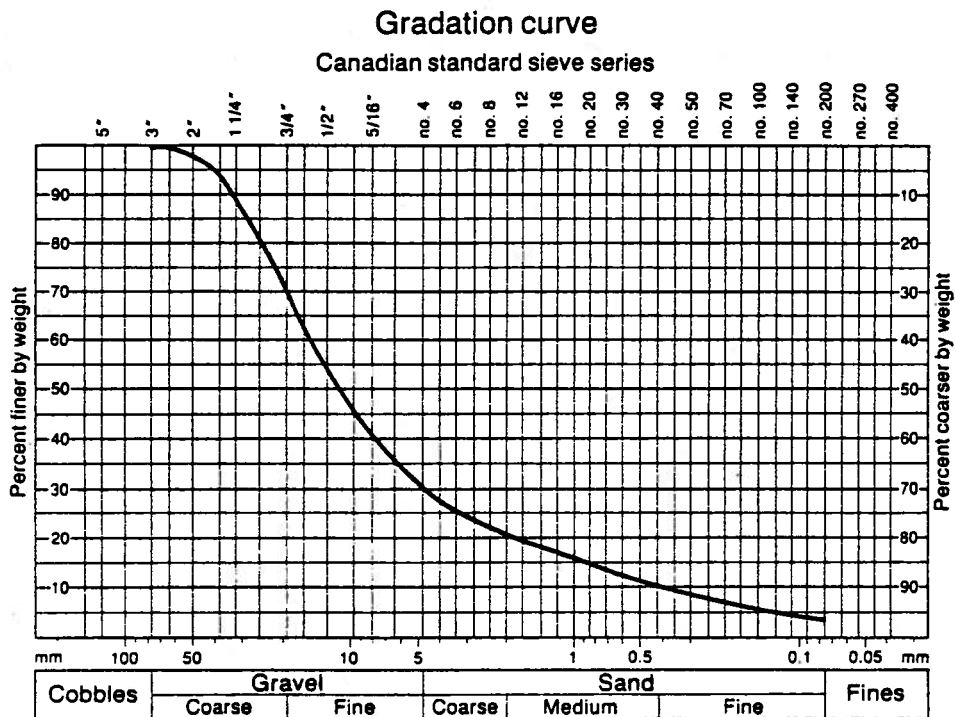
Ice contact kame complex. See pit description.

Pit Location: Sec NE23 Tp36 R14 W5M

Pit Description:

Gravel pit, used intermittently. Highwall about 1.2cm at highest part. Mainly limestone, sandstone and quartzite clasts are present, up to 1.5m size with 99% smaller than 30cm. There is a high content of fines and deleterious material such as black or dark gray shale and clayey siltstone). Good stable clasts like limestone or sandstone comprise about 40% of the material.

Gradation: 0% cobbles 69.4% gravel  
26.7% sand 3.9% fines



Site Location: Sec S26 Tp36 R14 W5M

Site Description:

Outcrop of "dirty" gravel similar to that sampled at pit at NE23-36-14W5 described above.

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DEPOSIT NO. 54

LOCATION: Sec 30-33 Tp35 R12 W5M  
Sec 25,36 Tp35 R13 W5M  
Sec 4,5 Tp36 R12 W5M  
Sec 4,5,7,8 Tp36 R13 W5M  
Sec 1,2 Tp36 R14 W5M

No. of associated pits/sites: 1 pit, 2 sites

No. of samples analysed: 3

DEPOSIT DESCRIPTION:

Ice contact esker ridges containing sandy gravel. The majority of the clasts are smaller than 10cm in diameter and are mainly limestone with some sandstone. The larger limestone clasts are subangular and the smaller ones are subrounded. The sand ranges from coarse grained to fine grained.

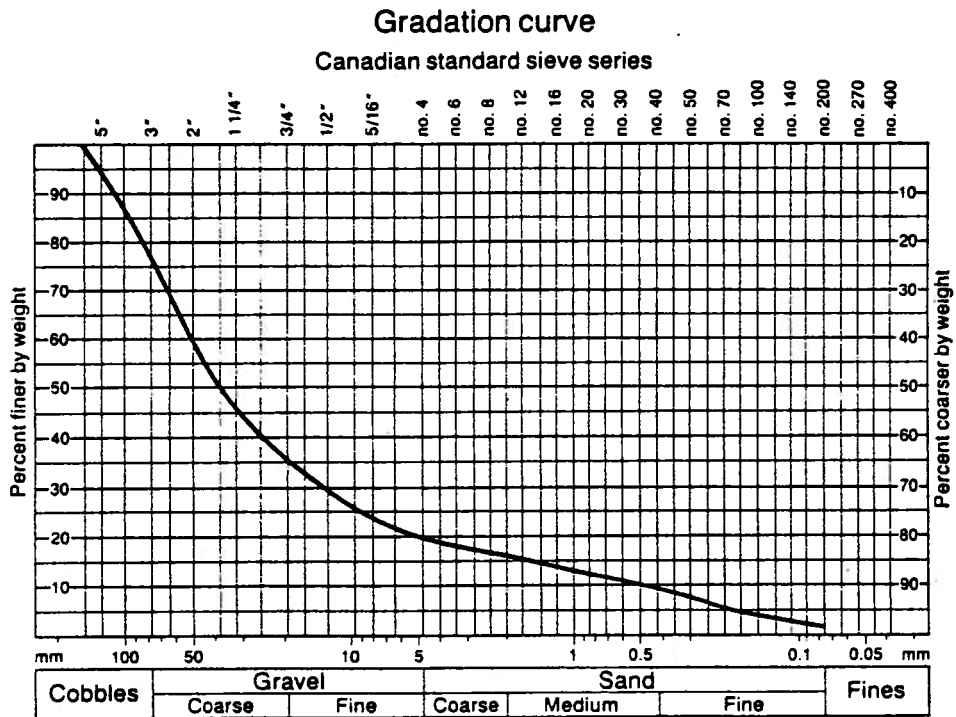


Site Location: Sec NW32 Tp35 R12 W5M

Site Description:

Roadcut exposes sandy gravel. Approximately 15% of clasts are larger than 15cm. Approximately 60% of clasts are greater than 1cm. Sand size is mostly fine to medium. Clasts are primarily limestone and sandstone. Fines are not particularly noticeable to the touch but the weathered surface of the outcrop has a "dirty" appearance. The highwall collapses easily during digging. The "dirt" may be coming over the surface from the soil at the very top of the outcrop. This outcrop is probably near the top elevation of the fluvial material in this area.

Gradation: 22.4% cobbles 57.9% gravel  
17.8% sand 1.9% fines

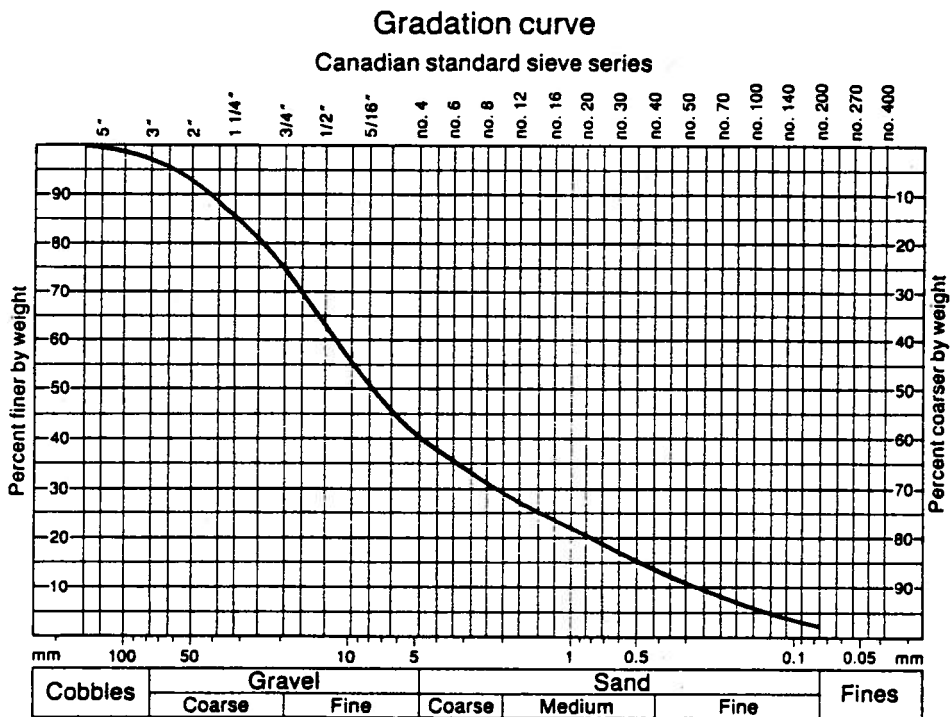


Site Location: Sec NW32 Tp35 R12 W5M

Site Description:

Roadcut exposes sandy gravel. Clasts are to 35cm, but more than 98% are smaller than 10cm. Medium to coarse sand is abundant. Mostly limestone clasts with some sandstone. Appears quite clean.

Gradation: 2.6% cobbles 57.9% gravel  
37.2% sand 2.3% fines

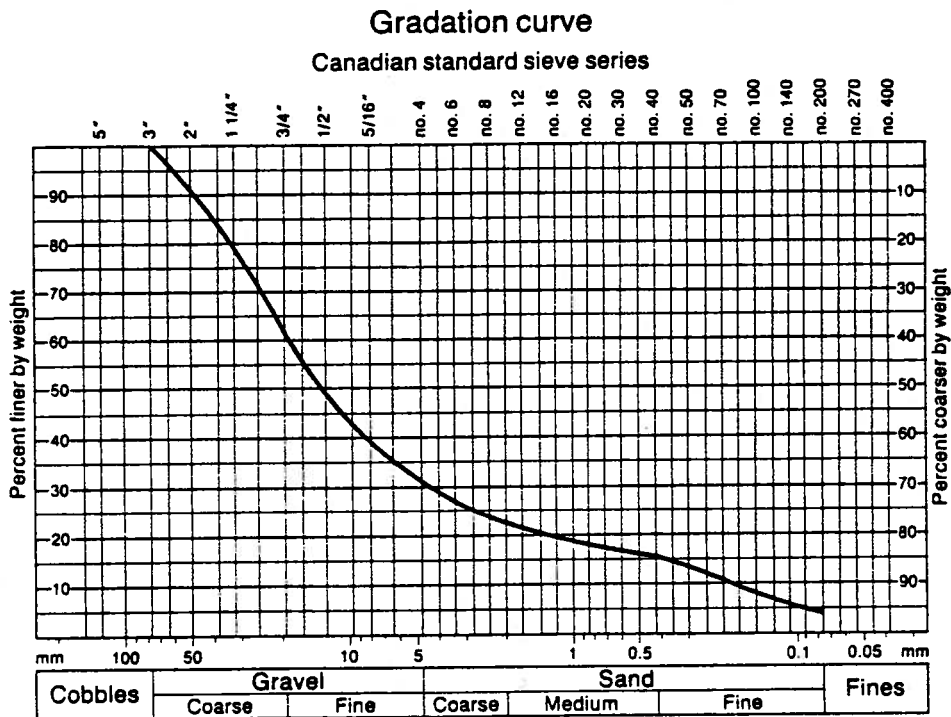


Pit Location: Sec SE5 Tp36 R12 W5M

Pit Description:

Gravel pit exposing dirty sandy gravel. Clasts are to 50cm with 99% smaller than 15cm and 98% smaller than 10cm. Larger limestone clasts are subangular and smaller ones are subrounded. Tabular clasts are common. Sand is primarily medium to fine grained. Sample is taken from lowest point in pit.

Gradation: 0% cobbles 69.8% gravel  
25.9% sand 4.3% fines



\* \* \* \* \*

DEPOSIT NO. 55

LOCATION: Sec 30,31 Tp36 R12 W5M  
Sec 16-28 Tp36 R13 W5M  
Sec 7-11,13-16 Tp36 R14 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

Glaciofluvial valley train with sandy gravel terraces. The maximum clast size is 60cm but more than 99% are smaller than 15cm in diameter. The clasts are primarily limestone and sandstone. Sand is fine to coarse grained. Crushing is necessary for best use of the resource.

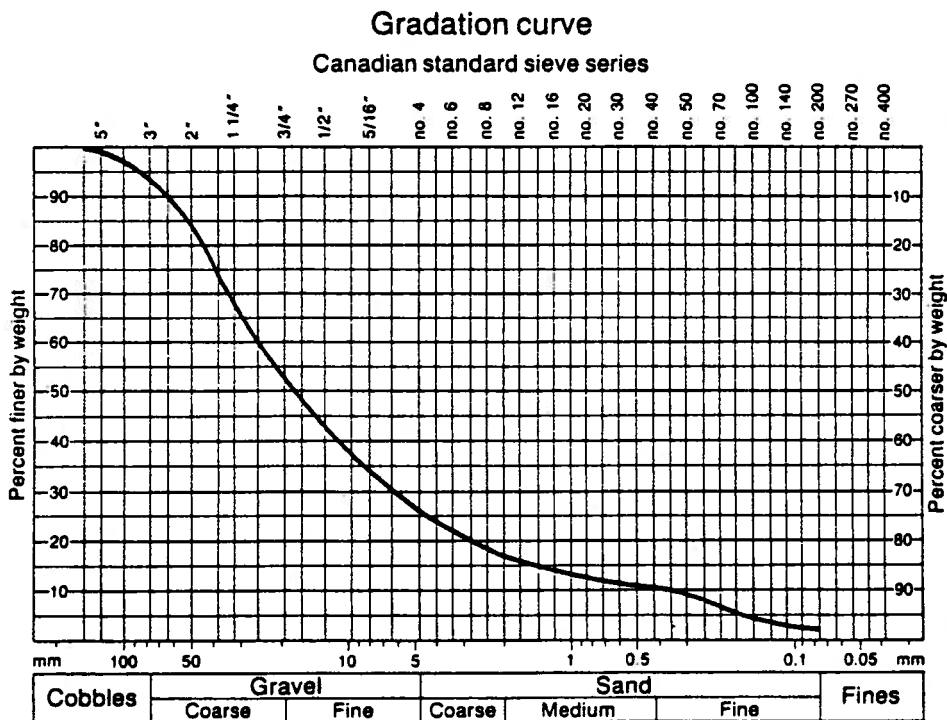
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Site Location: Sec NW7 Tp36 R14 W5M

Pit Description:

Terrace. Maximum clast size is 50cm and more than 99% are less than 15cm diameter. Clasts are mostly limestone or sandstone. Sand is fine to coarse. Material is graded and unsorted. Crushing is necessary for best use of resource.

Gradation: 7.5% cobbles 66.8% gravel  
23.6% sand 2.1% fines

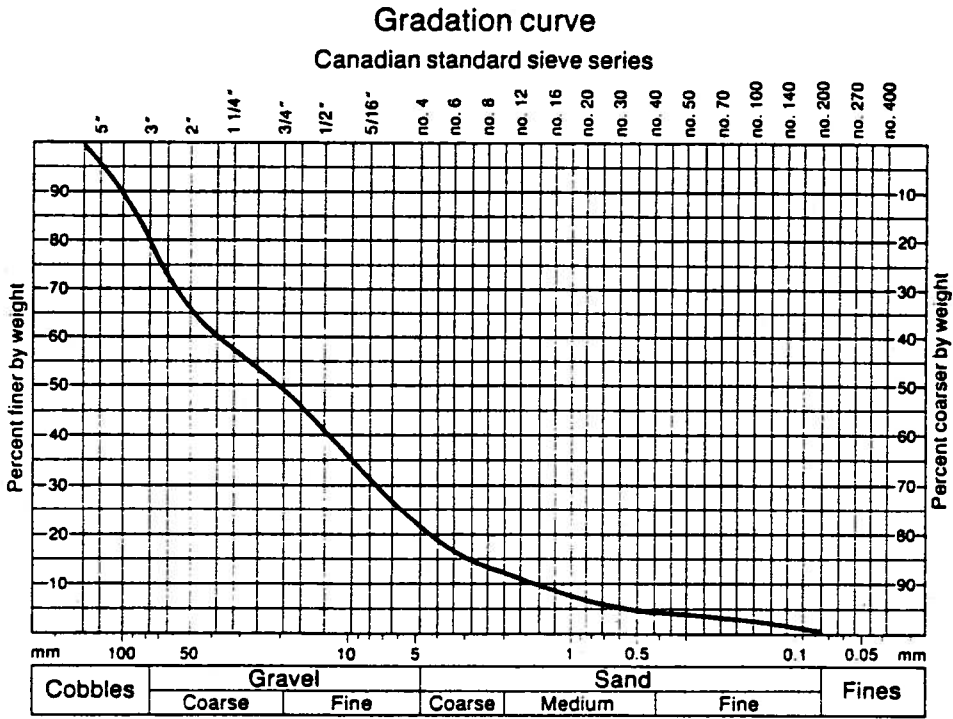


Pit Location: Sec SW15 Tp36 R14 W5M

Pit Description:

Gravel highwall as road descends from top of upper terrace (plateau). Appears that material is used from this face periodically. Clasts to 60cm size but about 99% are smaller than 15cm. Clasts primarily are limestone and sandstone. Sand is fine to coarse and clay is not evident. Graded with some sorting in short cross beds.

Gradation: 18.5% cobbles 60.3% gravel  
20.2% sand 1.0% fines



\* \* \* \* \*



**DEPOSIT NO. 57**

LOCATION: Sec 19,20,29,30 Tp40 R9 W5M  
Sec 35,36 Tp40 R10 W5M  
Sec 2 Tp41 R10 W5M  
Sec 15-17,21,22,28,33 Tp35 R14 W5M  
Sec 4,7-11 Tp36 R14 W5M

No. of associated pits/sites: none

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

Recent alluvium, bars and low terraces.

\* \* \* \* \*

**DEPOSIT NO. 58**

LOCATION: Sec 8,17 Tp38 R8 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Glaciofluvial flood plain deposit. See pit description.

Pit Location: Sec SW17 Tp38 R8 W5M

**PIT DESCRIPTION:**

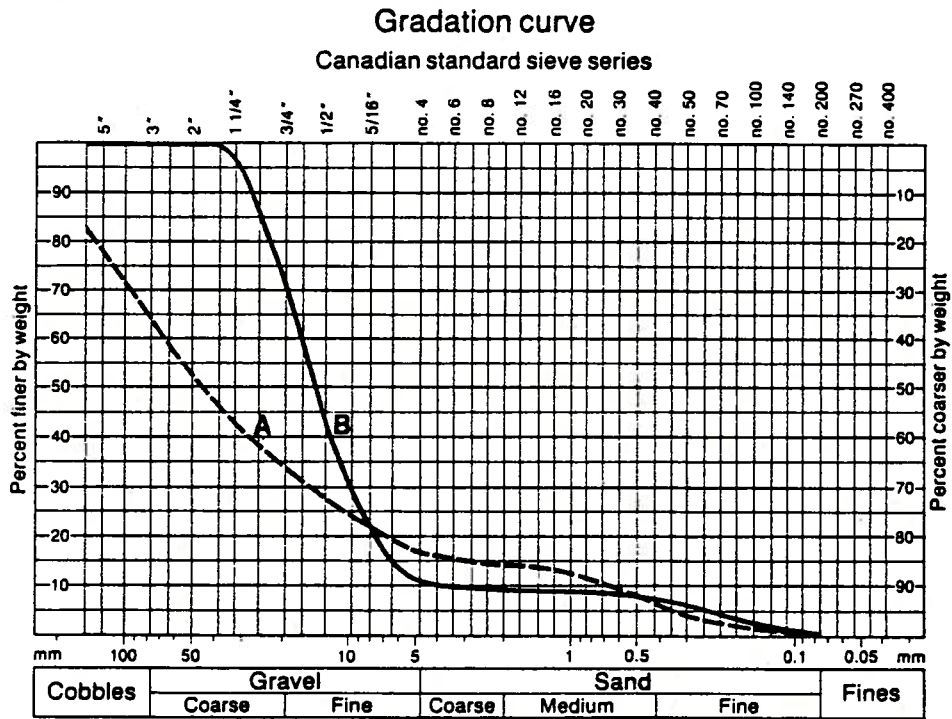
Flood plain deposit with good gravel potential. Maximum clast size is 15cm but most clasts are between 0.5cm and 7.5cm. Pea gravel is common near the top of the deposit.

Section (A): 3m-3.5m thick, coarse gravel, sand medium, clean.  
 (bottom) Hard sandstone and limestone clasts common with some chert, local bedrock and coal. Maximum clast size is 15cm but most clasts are smaller than 7.5cm.

(B): Pea gravel, very clean, well sorted. Mainly quartzite, hard sandstone and limestone dclasts of almost 98% pea gravel size. Thickness 0.5-1m.

(top) (C): Less than 1m silty sand (overbank) material. Water table very low.

Gradation:	35.5% cobbles	47.8% gravel	(A)
	16.3% sand	0.4% fines	
	0% cobbles	89.7% gravel	(B)
	9.2% sand	1.1% fines	



\* \* \* \* \*



**DEPOSIT NO. 59**

LOCATION: Sec 19,20,29,30,31 Tp37 R7 W5M  
Sec 25,35,36 Tp37 R8 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Glaciofluvial outwash deposit. See pit description.

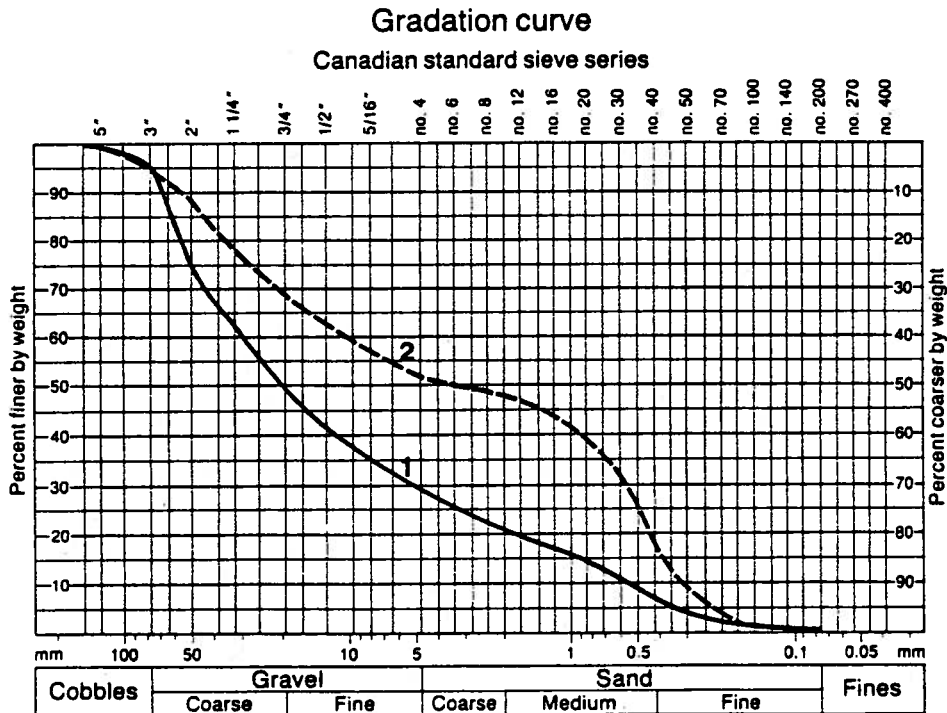
Pit Location: Sec SE30 Tp37 R7 W5M

**Pit Description:**

Infrequently used pit of sandy gravel outwash. Maximum thickness exposed is approximately 14m. No standing water is present so pit could be deepened. Clasts are to 30cm but most are less than 15cm and are composed mainly of quartzite and limestone. Igneous rocks from the Canadian Shield commonly are less than 5cm size. There is some sorting. Approximately 1m of till or silt overburden lies at the highest point in the deposit. Overburden decreases away from this crest. Coarse sand seems to be the dominant grain size. Sample 1 is from the first "gravel" at the upper contact and Sample 2 is from half way down the section.

Gradation 4.7% cobbles 66.5% gravel Sample 1  
28.3% sand 0.5% fines

5.0% cobbles 42.7% gravel Sample 2  
52.0% sand 0.3% fines



\* \* \* \* \*

DEPOSIT NO. 60

LOCATION: Sec 33,34 Tp32 R5 W5M  
Sec 3,10,11,14,15,22,23,26,27,34,35 Tp33 R5 W5M  
Sec 7,8,16-18,21 Tp34 R4 W5M  
Sec 1,2,12 Tp34 R5 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

Recent alluvium flood plain deposit. See site descriptions.

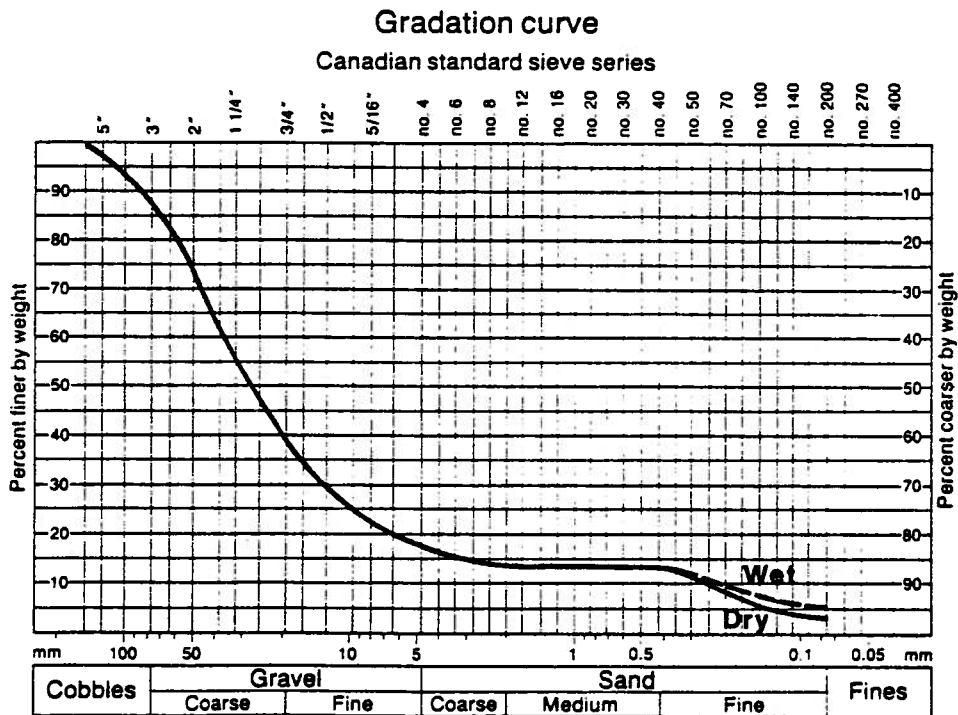
Site Location: Sec NE22 Tp33 R5 W5M

Site Description:

Flood plain gravel, very high water table.

Gradation: 12.3% cobbles 70.4% gravel wet sieve  
12.0% sand 5.3% fines

12.3% cobbles 70.4% gravel dry sieve  
13.6% sand 3.7% fines



Site Location: SEC SE2 Tp34 R5 W5M

Site Description:

Gravel bar in the Red Deer River flood plain. The bar contains very stoney gravel. The cut bank extends only 1 m above the river level and has at least 30 cm of silty overburden. The clasts are mainly limestone and quartzite with minor hard sandstone. Some clasts are quite flat. Some larger limestone boulders probably were transported from outside the area for dyke construction.

\* \* \* \* \*

DEPOSIT NO. 61

LOCATION: Sec 33,34 Tp 32 R5 W5M  
Sec 2,3,10,11,14,23,25,26,35,36 Tp34 R5 W5M  
Sec 6-8 Tp34 R4 W5M  
Sec 1 Tp34 R5 W5M

No. of associated pits/sites: none

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Glaciofluvial valley train deposit

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DEPOSIT NO. 62

LOCATION: Sec 19-21, 28-33 Tp32 R5 W5M  
Sec 20-29, 33-36 Tp32 R6 W5M  
Sec 4-6 Tp33 R5 W5M  
Sec 1,2 Tp33 R6 W6M

No. of associated pits/sites: 4 pits, 3 sites

No. of samples analysed: 4

DEPOSIT DESCRIPTION:

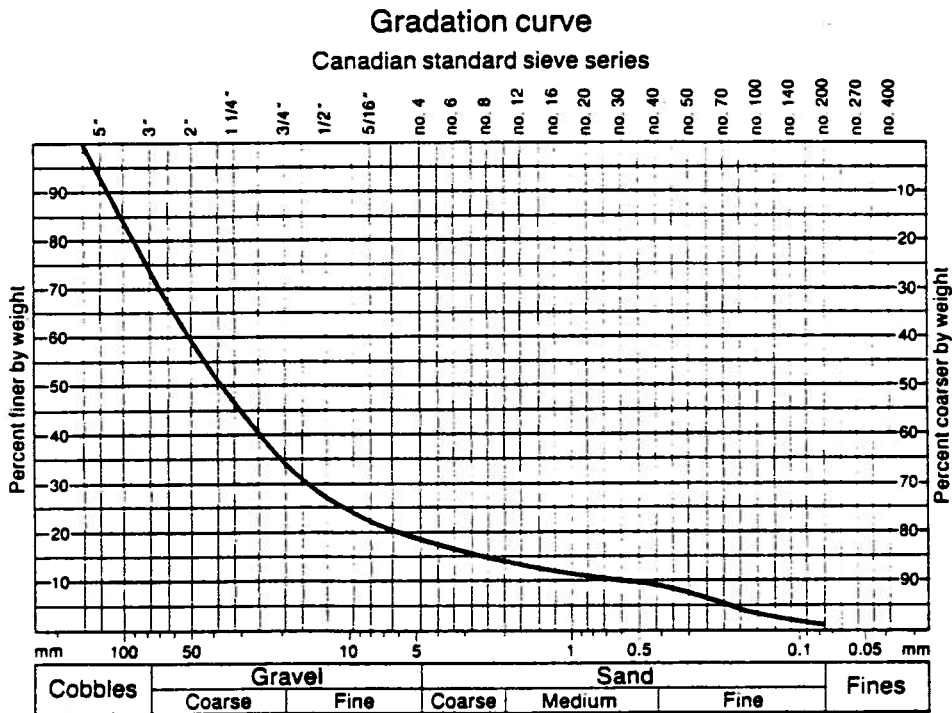
Glaciofluvial valley train. Excellent gravel area with 2 active pits in the deposit. Exposures indicate the gravel thickness to be 2 to 4.5 m but a thickness of 21 m has been reported. The water table is 3 to 4.5 m from the surface. The major rock types are quartzite, limestone and sandstone. A few clasts are 50 cm in diameter but most are less than 15 cm. Clasts are rounded to subangular. Sandstone clasts are either equant or tabular and quartzite clasts are equant. Sand is predominantly fine to medium grained and clay is not apparent. The material is being used for oil roads and for concrete after washing and crushing.

Pit Location: Sec SE32 Tp32 R5 W5M

**Pit Description:**

Excellent gravel area with a very active, privately-owned pit. The material is being used for oil roads and for concrete after washing and crushing. According to the owner the gravel is 21 m thick and the water table is 3 to 4.5 m from the surface. Material has been extracted below water table level. A section in the south end of the pit shows 0.6 m overburden and 3 m of massive gravel. The major rock types are quartzite, limestone and sandstone and minor rock types are weathered sandstone, conglomerate and ironstone. Clasts are rounded to subangular. Maximum clast size is 30 cm (less than 1%), most are less than 15 cm. The sand is medium grained with minor coarse and fine sized material.

Gradation: 26.3% cobbles 55.3% gravel  
16.8% sand 1.6% fines

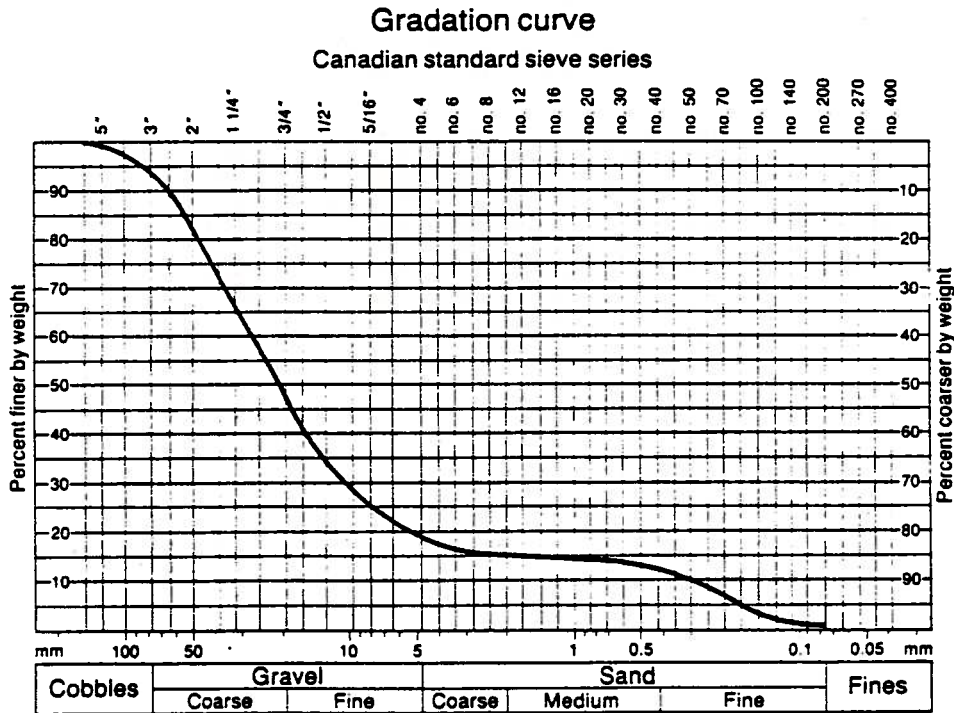


Pit Location: Sec SE35 Tp32 R6 W5M

**Pit Description:**

Active gravel pit with 2 to 2.5 m of gravel exposed above the water table. The overburden is 15 to 20 cm silty soil. Clasts are to 50 cm in size with 99% smaller than 15 cm. They consist mainly of sandstone, limestone and quartzite. The limestone tends to be tabular. Sandstone clasts are either equant or tabular, and quartzite clasts are equant. The material is graded and shows gross horizontal bedding and minor sorting. Sand is fine to medium grained and clay is not apparent. Crushing may be necessary for best utilization of the deposit.

Gradation: 5.3% cobbles 75.5% gravel  
17.6% sand 1.6% fines

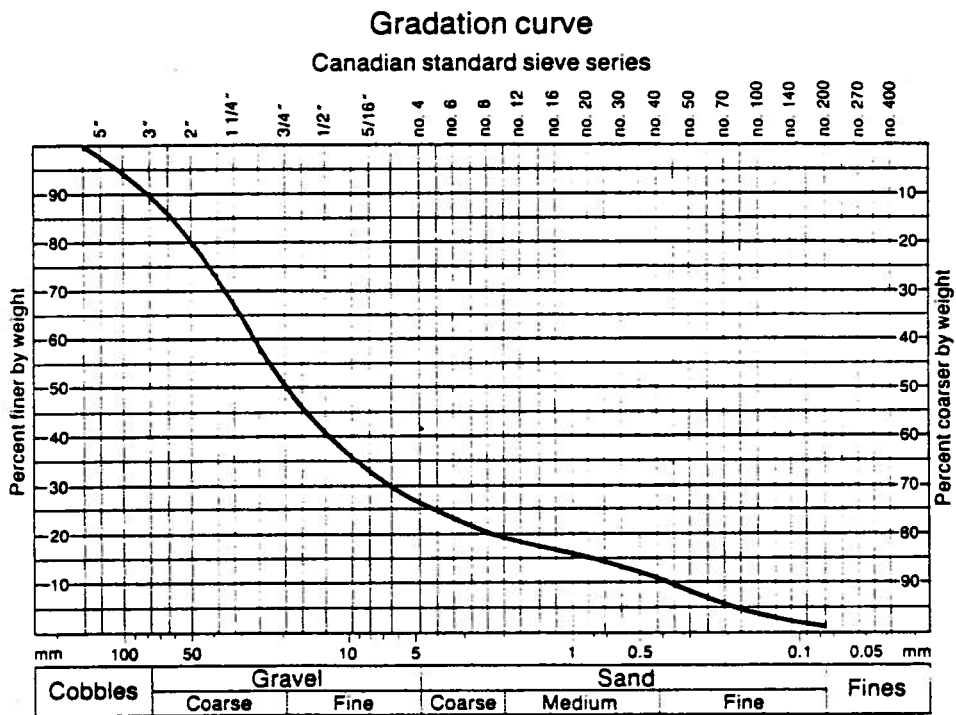


Site Location: Sec NE21 Tp32 R6 W5M

Site Description:

River bank with 1 m gravel exposed above water level. Clasts are to 30 cm diameter but 99% are less than 15 cm diameter. Rock types are mainly sandstone and limestone. Clasts are commonly tabular. Quartzitic sandstones commonly are more equant. The material is graded and there is some sorting. Clay is not apparent.

Gradation: 9.7% cobbles 64.3% gravel  
24.5% sand 1.5% fines



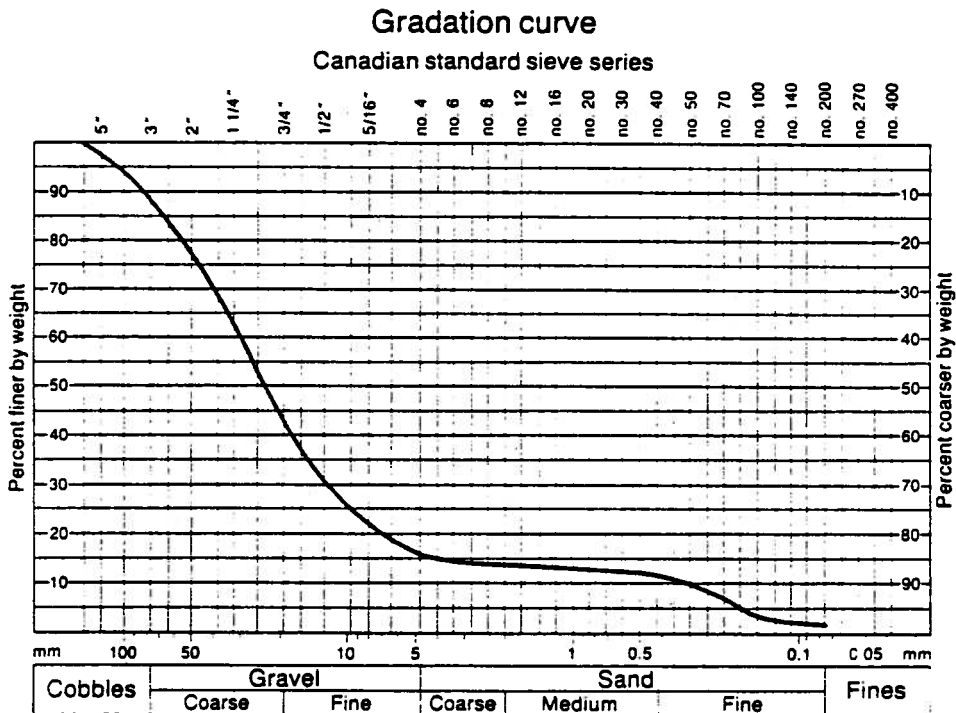


Pit Location: Sec NW35 Tp32 R6 W5M

**Pit Description:**

Inactive gravel pit which may be depleted. Roadcut shows up to 4.5 m gravel. The thickness of gravel in the pit appears to have been less than 4.5 m. Clasts are to 30 cm in size with over 99% being less than 15 cm. They consist of sandstone, friable sandstone, siltstone, limestone, ironstone and a few granite. Calcite encrustation is common on highwall surfaces. Horizontal bedding is evident, the material is graded and there is some sorting. Sand is fine to medium grained and clay is present. The gravel thins over till lenses or hummocks at some spots.

Gradation: 11.6% cobbles 71.8% gravel  
14.6% sand 2.0% fines



Site Location: Sec SW6 Tp33 R5 W5M

Site Description:

Gravel dugout. Material similar to that of pit at SE32-32-5-W5M

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Pit Location: Sec E36 Tp32 R6 W5M

Pit Description:

Inactive pit. Property of County of Mountainview. Material similar to that of pit at SE32-32-5-W5M.

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Site Location: Sec NE30 Tp32 R5 W5M

Site Description:

Material similar to above.

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DEPOSIT NO. 63

LOCATION: Sec 11,12 Tp33 R5 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

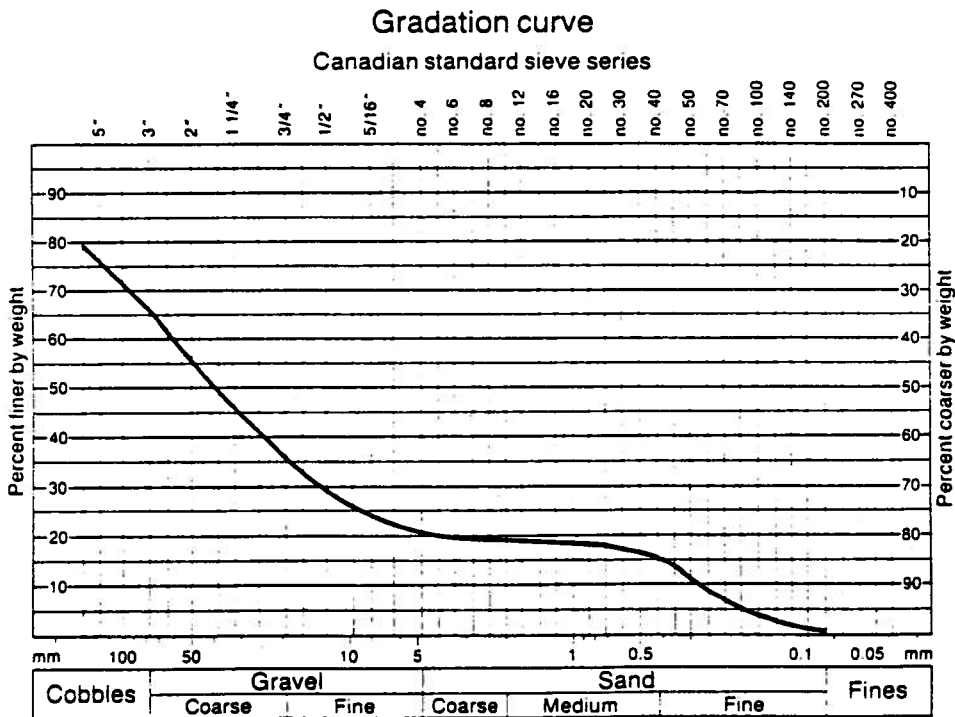
Ice contact kame deposit. See site description.

Site Location: Sec SW12 Tp33 R5 W5M

Site Description:

Ice contact kame structure along roadcut. The topography is hummocky. The material consists of over 80% gravel under less than 15 cm of soil. The sand is mainly fine. There are a few boulders to 60 cm size consisting mainly of bedrock sandstone and granitic rocks. The majority of the clasts are 20 cm in diameter and consist mainly of quartzite and hard sandstone. There are some deleterious rocks such as clay clasts and coal fragments. Clasts are mainly angular to subrounded.

Gradation: 33.8% cobbles 44.5% gravel  
20.2% sand 1.5% fines



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**DEPOSIT NO. 64**

LOCATION: Sec 21,28,33 Tp32 R5 W5M  
Sec 3,10 Tp33 R5 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

Recent alluvium deposit of gravel bars along the Red Deer River.

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**Site Location:** Sec SE28 Tp32 R5 W5M

**Site Description:**

Gravel bars along Red Deer River.

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DEPOSIT NO. 65

LOCATION: Sec 23,26,27 Tp32 R5 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

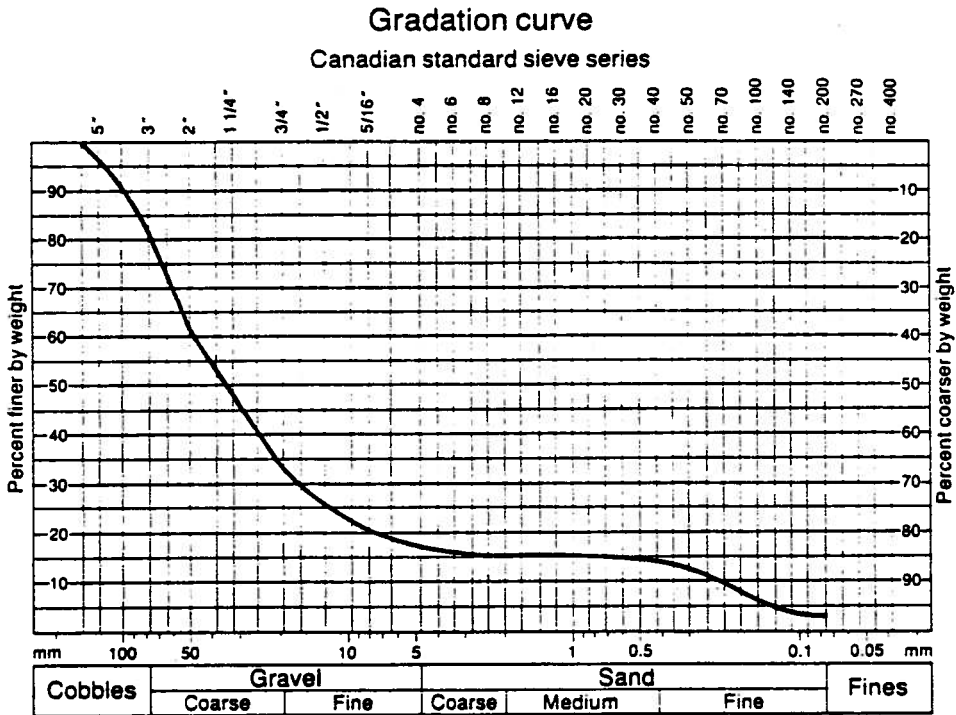
Glaciofluvial meltwater channel deposit. See pit description.

Pit Location: Sec SW26 Tp32 R5 W5M

Pit Description:

Glaciofluvial material in a meltwater channel. Inactive pit with over 85% clean gravel, 5.5 to 7.5 m thick. The overburden is 60 cm thick and the water table is low. Rock types consist mainly of quartzite and limestone. Ironstone is very common and weathered bedrock is present. Clasts are rounded to angular and crushing may be necessary for most uses. Sand is medium grained and clean.

Gradation: 17.8% cobbles 65.0% gravel  
14.6% sand 2.6% fines



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DEPOSIT NO. 66

LOCATION: Sec 21,22,27,28,30,32,33 Tp33 R5 W5M  
Sec 24,25 Tp33 R6 W5M

No. of associated pits/sites: 2 pits, 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

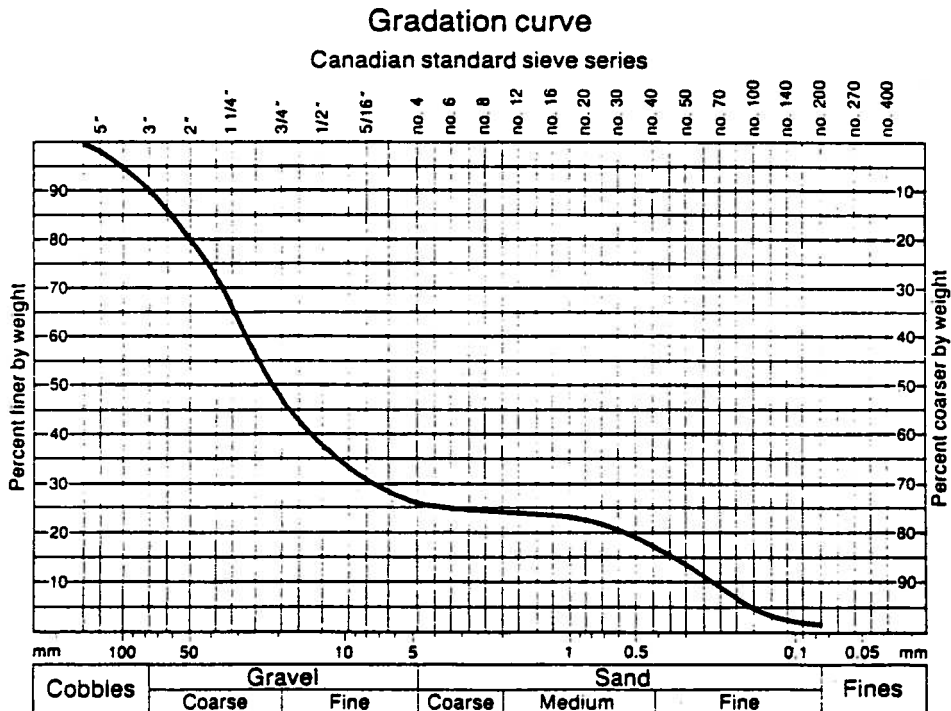
Glaciofluvial sandy gravel outwash in a high terrace. Clasts are less than 10 cm in diameter and most are less than 6 cm. Pea gravel is common. There is up to 1 m of overburden. Further investigation is required to define the thickness and extent of this deposit. Access is good.

Pit Location: Sec SW30 Tp33 R5 W5M

Pit Description:

Small inactive pit in the high terrace of a meltwater channel. Clasts are less than 10 cm in diameter and most are less than 6.5 cm. Pea gravel is common. Some clasts are very flat, especially in the smaller clast sizes. Further investigation is required to define the thickness and extent of this deposit.

Gradation: 10.0% cobbles 64.1% gravel  
24.0% sand 1.9% fines



**Site Location:** Sec NW33 Tp33 R5 W5M

**Site Description:**

Previous tests indicate gravel is present below 1 m of overburden in this meltwater channel terrace but no evidence of gravel exists in roadcuts in the area. Good access.

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**Pit Location:** Sec SW27 Tp33 R5 W5M

**Pit Description:**

High terrace of glaciofluvial material very similar to that in the pit at SW30-33-5-W5M. There is 60 cm of till overburden. The water table is 2.5 to 3 m below surface. Pea gravel and clasts smaller than 5 cm are common. The pit is inactive.

\* \* \* \* \*

DEPOSIT NO. 67

LOCATION: Sec 7,8,17,18 Tp33 R5 W5M  
Sec 11-14 Tp33 R6 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Ice contact kame deposit. See site description.

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Site Location: Sec NE12 Tp33 R6 W5M

Site Description:

Kame terrace showing a small pocket of dirty gravel within till. The topography is hilly. There was formerly a small pit here and there may still be pockets of gravel within this ice contact deposit. There is a high percentage of quartzite and limestone clasts to a maximum size of 15 cm. Bedrock sandstone is common and some pinkish, coarse sandstone also is present.

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DEPOSIT NO. 68

LOCATION: Sec 30,31 Tp33 R6 W5M  
Sec 23-27,36 Tp33 R7 W5M

No. of associated pits/sites: 3 pits

No. of samples analysed: 3

DEPOSIT DESCRIPTION:

Ice contact kame deposit. The western part of the deposit contains gravelly till with up to 25% clasts. Maximum clast size is 40 cm and the dominant rock types are quartzite, sandstone and igneous rocks from the Canadian Shield. Fines content is high. Silt lenses, 50 cm thick and many metres long, are present. Deleterious materials, including coaly fragments, are present. The eastern part of the deposit contains slightly dirty gravel with iron staining. Clasts are to 30 cm in diameter, 99% are smaller than 15 cm, 98% are smaller than 10 cm and consist of sandstone quartzite, red conglomerate and chert. The material is graded and there is some sorting to beds with minor sand. Sand is fine to medium grained and sand beds are 0.5 to 1 m thick. Beds of clean gravel are to 3.5 m thick.

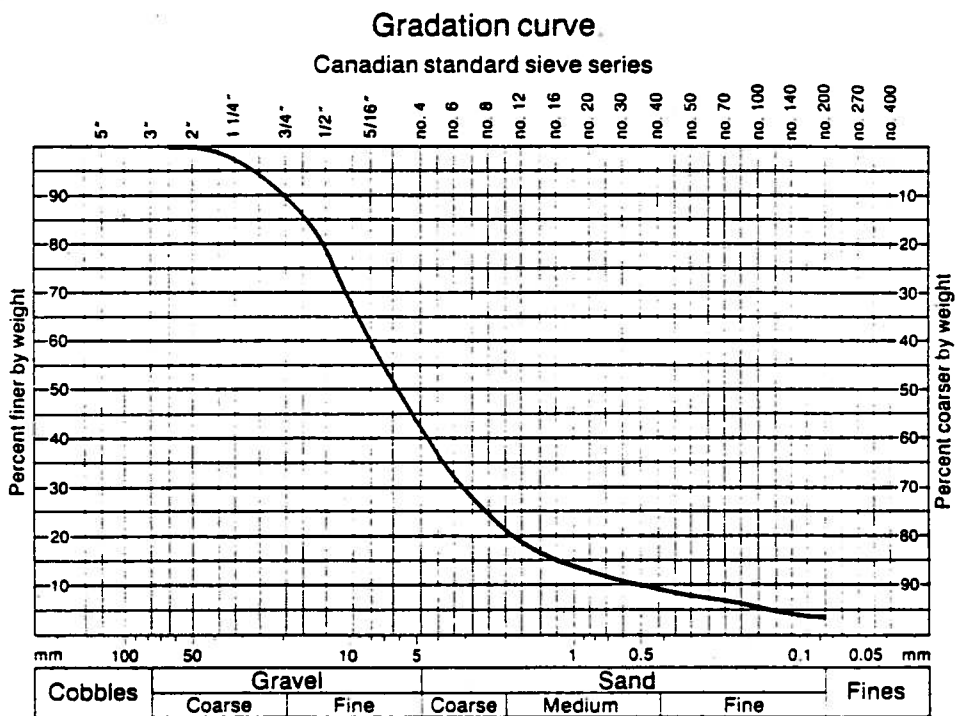


Pit Location: Sec NW23 Tp33 R7 W5M

**Pit Description:**

Small pit of gravelly till. The pit has not been used for quite a while. Clasts in the "best" areas probably do not exceed 20 to 25%. Clasts are to 40 cm in diameter, and consist of quartzite, sandstone and igneous rocks from the Canadian Shield. Limestone is more common in the less than 10 cm size. Silt and clay are dominant. The sample was taken from the "best" material present in any highwall.

Gradation:      0% cobbles    56.8% gravel  
                   39.4% sand        3.8% fines

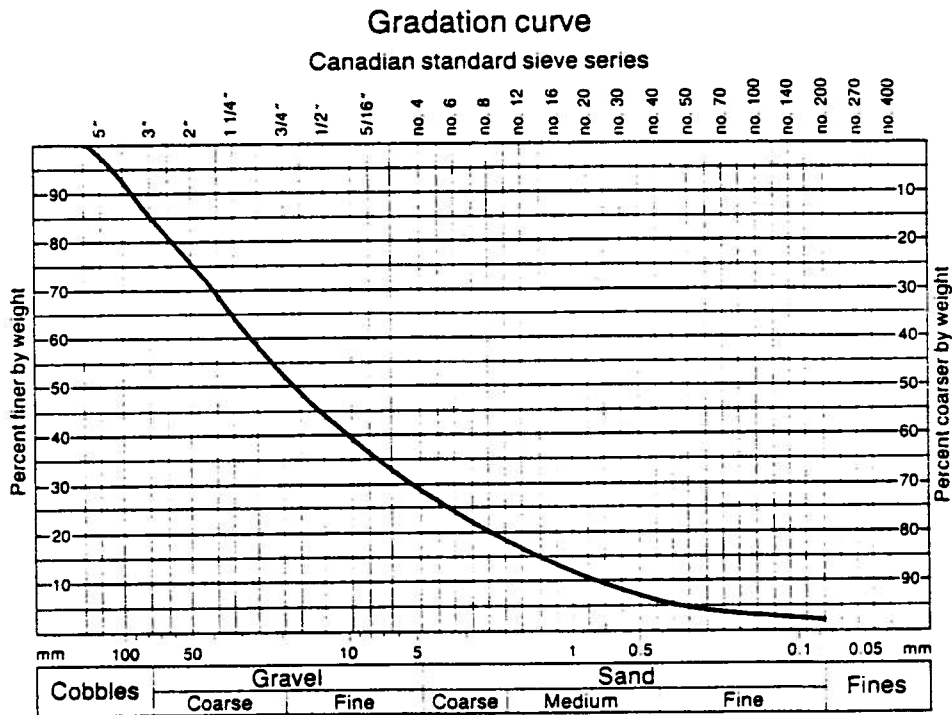


Pit Location: Sec SW26 Tp33 R7 W5M

**Pit Description:**

Intermittently active pit operated by the County of Mountainview. The material is gravelly till with fines dominant and up to 25% clasts. Silt lenses to 50 cm thick and many metres long are present. Many clasts of the local friable siltstone and sandstone plus shale are present in the deposit. Some coaly fragments also are present.

Gradation: 14.5% cobbles 53.3% gravel  
27.0% sand 2.2% fines

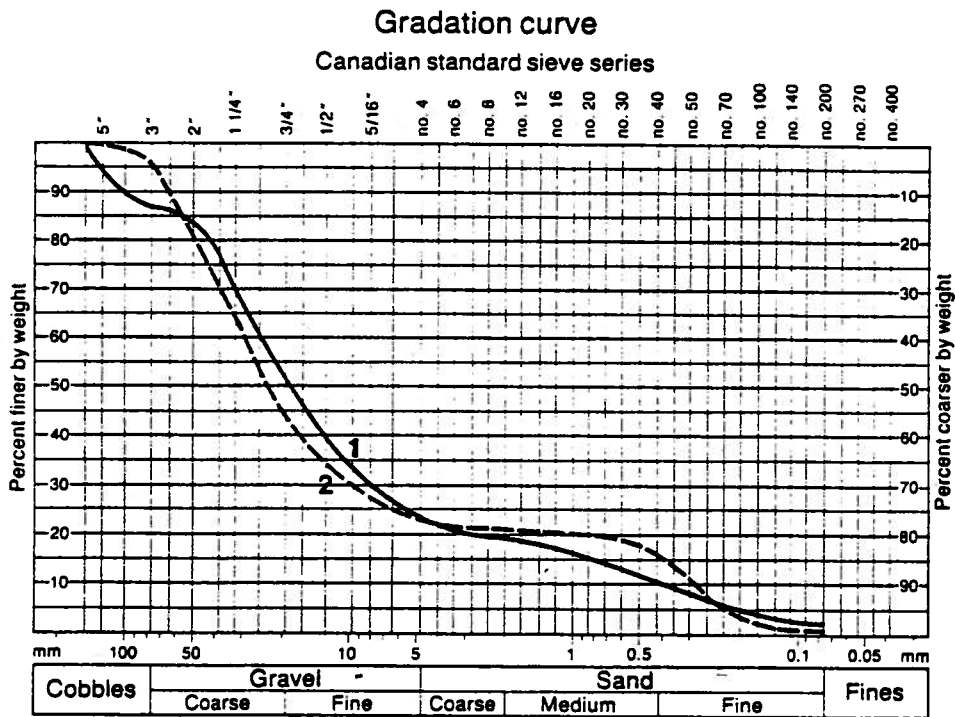


Pit Location: Sec NW30 Tp33 R6 W5M  
 Sec NE25 Tp33 R7 W5M

**Pit Description:**

Frequently active pit with a highwall at the east end of about 2 m high and overburden of about 1.5 m. The material is slightly dirty gravel with iron staining. It is graded and there is some sorting to beds with minor sand. The sand is fine to medium grained with some silt. Clasts are to 30 cm in diameter with 99% less than 15 cm, 98% less than 10 cm and consist of sandstone, quartzite, red conglomerate and chert. Tabular clasts are common. Sample 1 is from this end of the pit. The west end of the pit contains about 1 m of iron stained, slightly dirty gravel similar to that present in the east end. There is 0.5 to 1 m of cross-bedded silt or fine to medium clean sand and about 3.5 m of clean gravel with gross horizontal bedding. Tabular clasts are common. The clasts are to 30 cm in size with over 99% less than 10 cm and consist of sandstone, quartzite, limestone and chert. Sample 2 is from the west end of the pit.

Gradation:	13.5% cobbles	63.6% gravel	Sample 1
	20.4% sand	2.5% fines	
	3.5% cobbles	73.3% gravel	Sample 2
	22.1% sand	1.1% fines	



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**DEPOSIT NO. 69**

**LOCATION:** Sec 10-15 Tp34 R7 W5M

**No. of associated pits/sites:** 1 pit, 2 sites

**No. of samples analysed:** 1

**DEPOSIT DESCRIPTION:**

Ice contact kame deposit. The deposit encompasses a series of NW-SE trending ridges. Exposures reveal 8 to 13 m of sandy gravel, but the actual thickness of the deposit may be greater. See pit description.

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**Site Location:** Sec NE11 Tp34 R7 W5M

**Site Description:**

Ditch exposure of gravel sampled at pit at SW14-34-7 W5M. Exposure of this material continues for about 300 m south.

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**Site Location:** Sec NE12 Tp34 R7 W5M

**Site Description:**

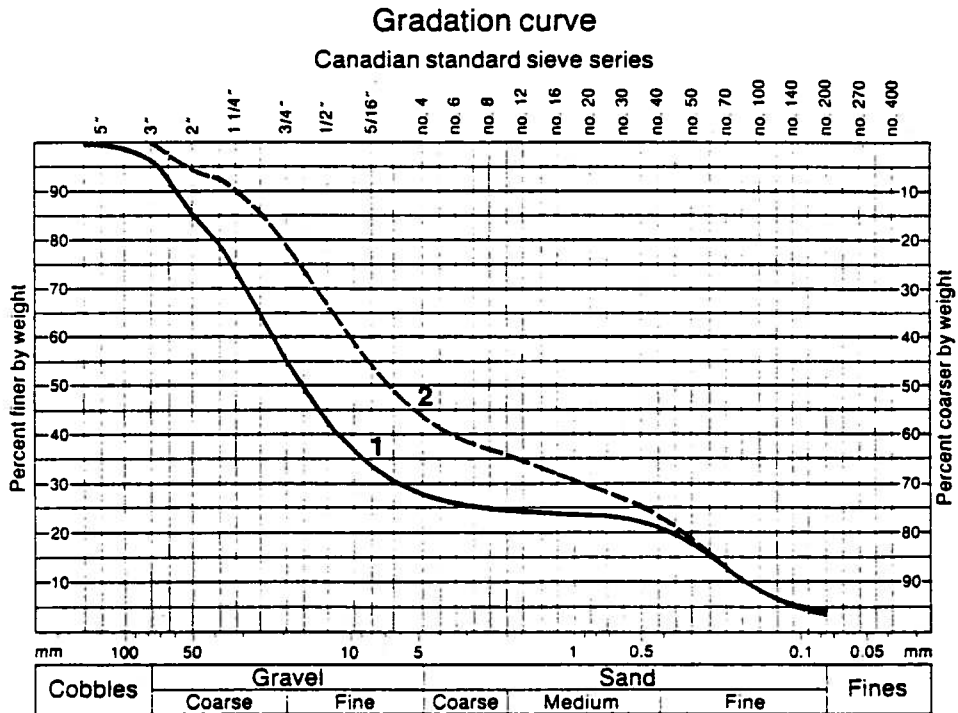
Same gravel as exposed at site above. The gravel disappears eastward of a grassy "lake". On the west side of the lake about 13 m of gravel are exposed in a roadcut. Actual thickness of the deposit may be greater.

Pit Location: Sec SW14 Tp34 R7 W5M

Pit Description:

Gravel pit with sloped highwalls, partly reseeded and probably infrequently active. There are about 8 m of sandy gravel exposed. The material is relatively clean although a thin veneer of clay is present at the bottom of the pit around a puddle with suspended clay. Clasts are to 20 cm in size with over 99% less than 15 cm and about 99% less than 10 cm. The majority of clasts are tabular and are commonly sandstone or limestone. The material is graded and sorting is not apparent. Sand is fine to medium grained. The material in the upper 1+ m contains much higher concentrations of fine sand and clay. This pit is in a series of NW-SE trending ridges. Sample 1 is from the base of the pit, Sample 2 from near the top.

Gradation:	3.3% cobbles	69.1% gravel	Sample 1
	23.7% sand	3.9% fines	
	5.9% cobbles	51.3% gravel	Sample 2
	38.4% sand	4.4% fines	



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DEPOSIT NO. 70

LOCATION: Sec 18SW Tp34 R4 W5M  
Sec 11-21 Tp34 R5 W5M  
Sec 7-9,14-16,22-24 Tp34 R6 W5M  
Sec 1-5,8-12 Tp34 R7 W5M

No. of associated pits/sites: 4 sites

No. of samples analysed: 4

DEPOSIT DESCRIPTION:

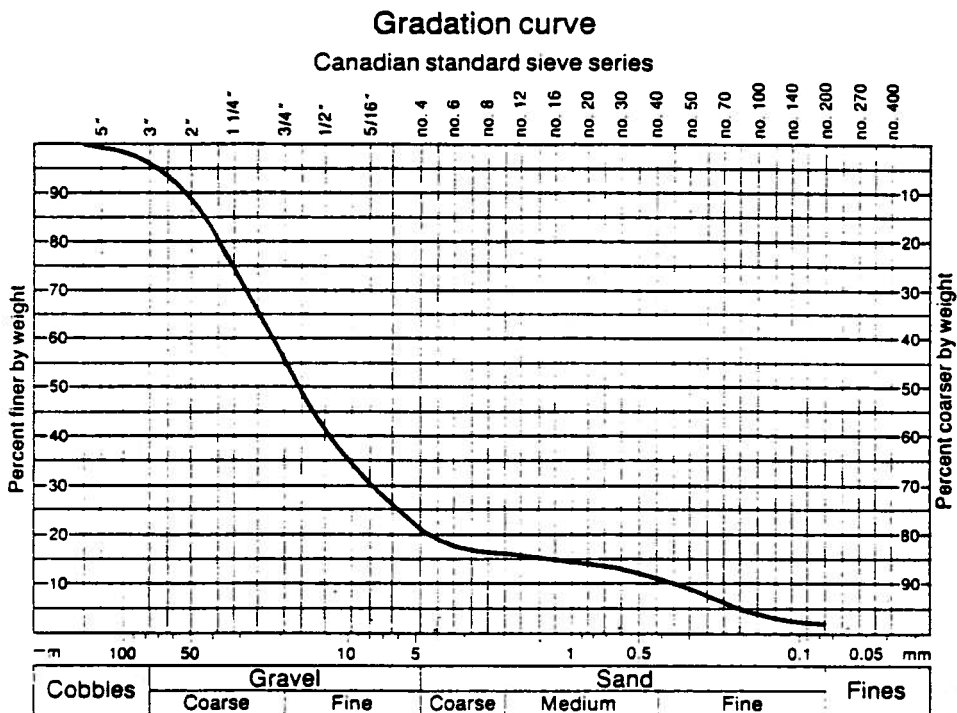
Recent alluvium deposit. Low terraces along the James River are a good gravel source with over 80% of the gravel consisting mainly of quartzite and limestone. The gravel is quite dirty and sand is minor, especially medium to coarse grained sand. The maximum clast size at one site is 40 cm but at other sites the maximum size is 15 cm. Clasts smaller than 2.5 cm are common. The overburden is 30 to 50 cm and the water table is 1 to 1.5 m below the surface. The area is extensive but the deposit may not be thicker than 1.5 m. Crushing and washing may be necessary for most uses.

Site Location: Sec NW2 Tp34 R7 W5M

Site Description:

Riverbank exposure of about 1.5 m gravel below 50 cm silt. Clasts are to 40 cm in size with over 99% less than 15 cm. Clasts smaller than 2.5 cm are common. Sandstone and limestone are the dominant rock types and the clasts are commonly tabular. The material is graded and there is some sorting. Sand is fine to medium grained and horizontal bedding is apparent.

Gradation: 4.1% cobbles 75.8% gravel  
18.4% sand 1.7% fines

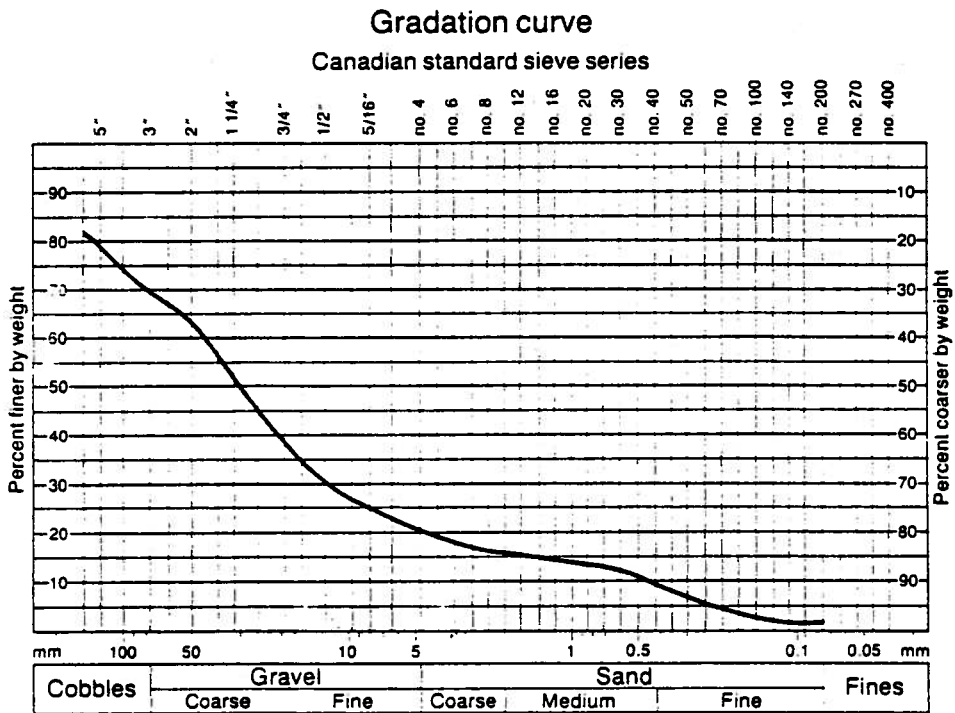


Site Location: Sec NE19/NW20 Tp34 R5 W5M

Site Description:

Roadcut through a river terrace of very dirty gravel. The material is of poor quality and the water table depth is unknown.

Gradation: 30.1% cobbles 49.9% gravel  
18.3% sand 1.7% fines



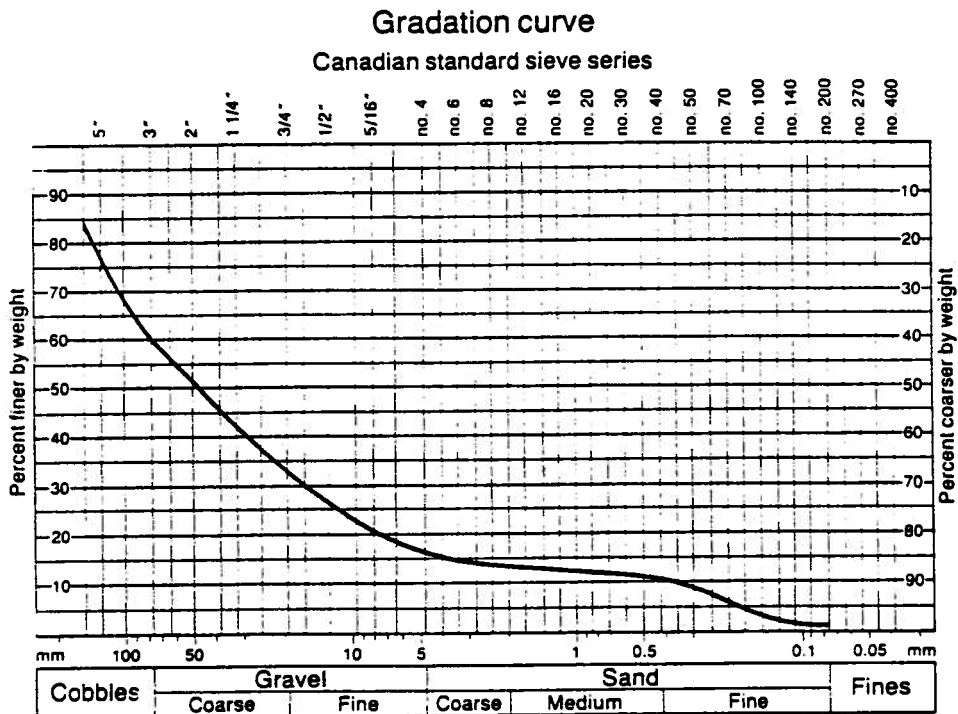


Site Location: Sec SE20 Tp34 R5 W5M

Site Description:

Low terrace system of recent alluvium, along James River. This is a good gravel source. Gravel is exposed below 30 cm of top soil. The water table depth is unknown. There is over 80% gravel consisting mainly of quartzite and limestone. Maximum clast size is 13 cm and clasts are rounded or disc-like to subangular. Some angular local bedrock clasts are present. There is also some oxidized iron coloration. The sand is mainly medium grained with a high clay content. The area is extensive but the deposit may not be very thick.

Gradation: 40.6% cobbles 42.8% gravel  
 15.2% sand 1.4% fines

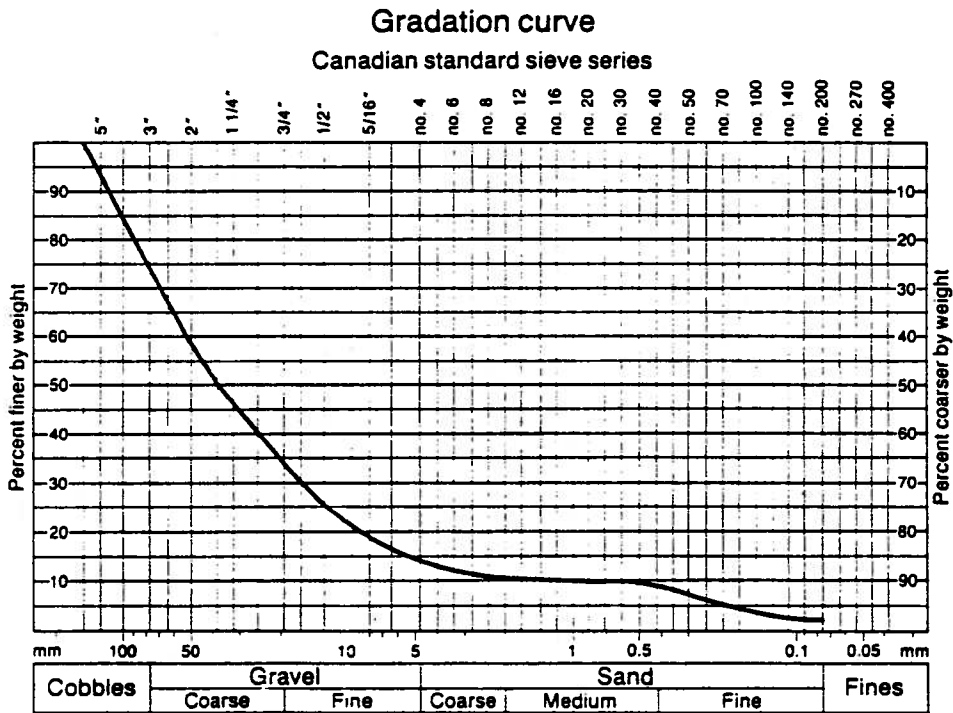


Site Location: Sec SW20 Tp34 R5 W5M

Site Description:

Low terrace along James River, with 50 cm silty overburden and 1 to 1.5 m cutbanks. The gravel is quite dirty and sand is minor especially medium to coarse grained sand. The water table is 1 to 1.5 m below the surface. There is a high percentage of quartzite and limestone clasts with maximum clast size to 15 cm, but a gravel bar on the opposite side of the river shows larger clasts on the surface. Clasts are subrounded to angular and some are disc-like. Crushing and washing may be necessary for most uses.

Gradation: 25.0% cobbles 61.0% gravel  
11.9% sand 2.1% fines



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DEPOSIT NO. 71

LOCATION: Sec 6-9,16-20,29,32,33 Tp33 R8 W5M  
Sec 10-14,24 Tp33 R9 W5M  
Sec 6,7 Tp34 R7 W5M  
Sec 1-4 Tp34 R8 W5M

No. of associated pits/sites: 1 pit, 1 site

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

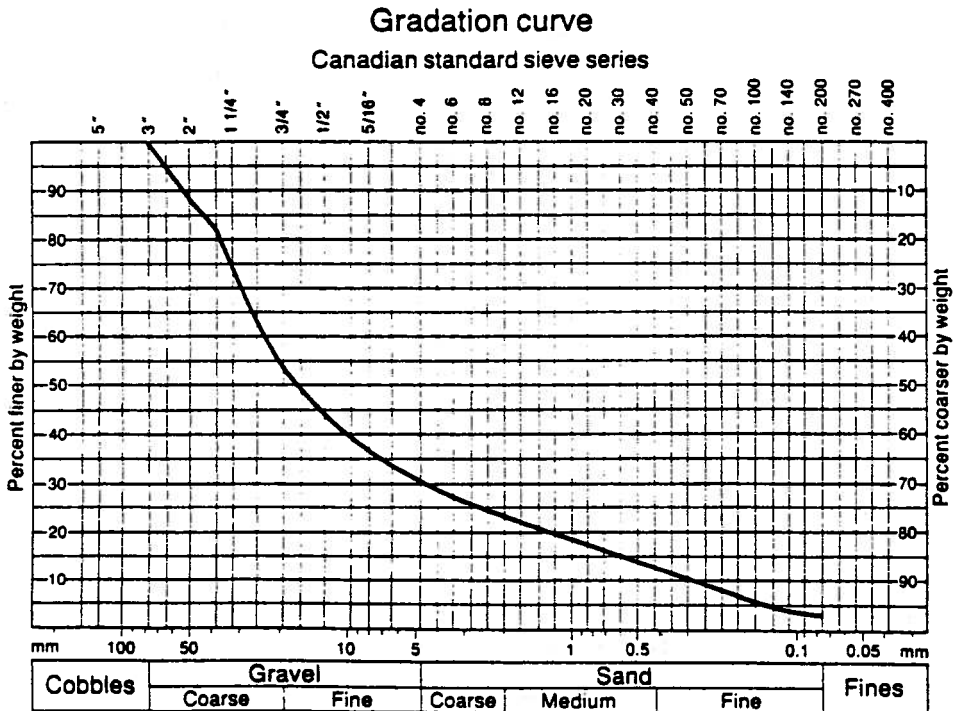
Recent alluvium flood plain deposit consisting of dirty gravel, 3 to 7.5 m thick, under 15 cm of overburden. Fewer than 1% of clasts are to 30 cm in diameter. Most clasts are smaller than 15 cm. Sand is fine grained and contains clay. Access is good.

Pit Location: Sec NE1 Tp34 R8 W5M

Pit Description:

Exposure of dirty gravel on James River flood plain. Excavated area is about 3 m deep and the water table is 3 m below the surface. Clast sizes are mostly less than 8 cm. Sand is fine grained with clay present. Access is good.

Gradation: 0% cobbles 69.3% gravel  
27.4% sand 3.3% fines



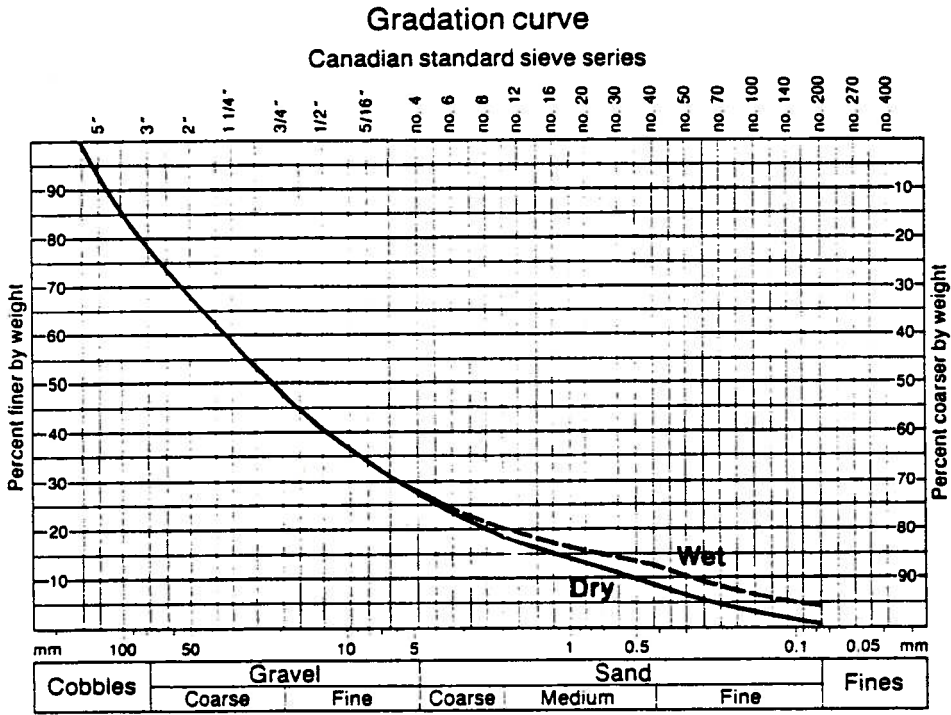
Site Location: Sec NE32 Tp33 R8 W5M

Site Description:

Roadcut exposure of dirty fluvial gravel, 7.5 m high, under 15 cm of overburden. Less than 1% of the clasts are to 30 cm in diameter. Most clasts are smaller than 15 cm and are angular.

Gradation: 22.5% cobbles 50.1% gravel wet sieve  
22.5% sand 4.9% fines

22.5% cobbles 50.3% gravel dry sieve  
25.9% sand 1.3% fines



\* \* \* \* \*

**DEPOSIT NO. 72**

LOCATION: Sec 19,20,29,30 Tp33 R8 W5M  
Sec 10,11,13-15,23-25 Tp33 R8 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 2

**DEPOSIT DESCRIPTION:**

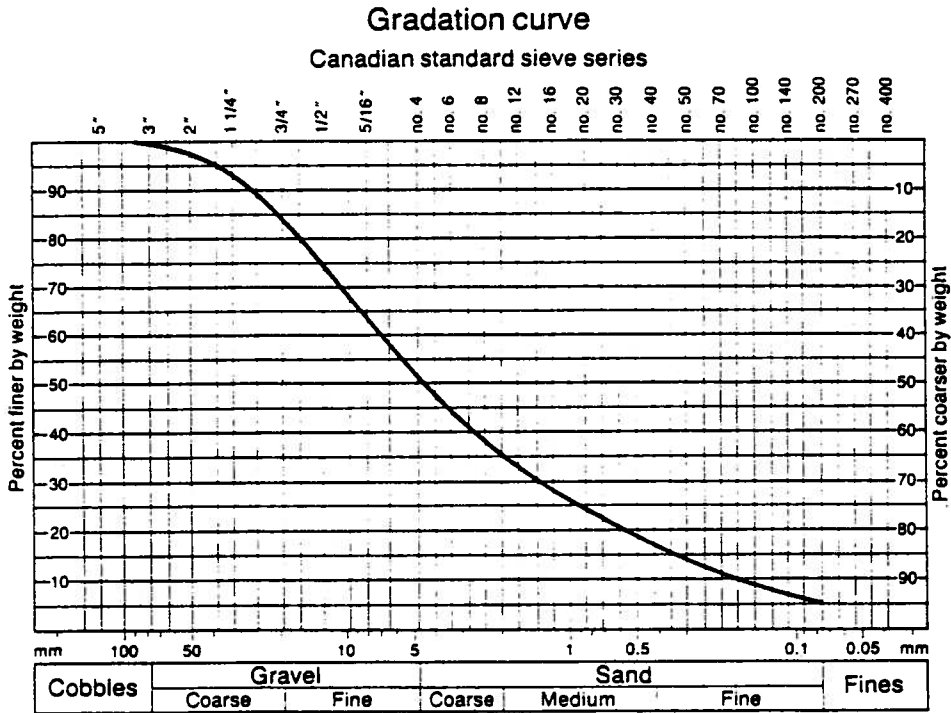
Glaciofluvial outwash of sandy gravel, sand and gravel. The percentage of clasts and fines varies from outcrop to outcrop and within outcrops in some places. Clasts are to 30 cm diameter but about 98% are smaller than 10 cm. The rock types are mainly sandstone and limestone. Clasts are angular to subangular and bedrock is not far below. There is some fine sand but most sand seems to be medium to coarse grained. The material shows some grading but no sorting.

Site Location: Sec NE19 Tp33 R8 W5M

Site Description:

Roadcut on Forestry Trunk Road 940. From the intersection with 584 travelling southwest there is an almost continuous exposure of 1 to 2 m of sand and gravel. The percentage of clasts and fines varies from outcrop to outcrop and within outcrops in some places. At the intersection shale bedrock is present beneath about 1 m of clayey, gravelly sand. Elsewhere, bedrock is not observed but angular clasts in the material suggests that bedrock is not far below. Clasts are to 20 cm in diameter but over 99% are smaller than 10 cm. Clasts comprise 10 to 15% of the material which is poorly graded and shows no sorting. Limestone and sandstone are the dominant rock types.

Gradation: 0% cobbles 48.2% gravel  
46.0% sand 5.8% fines

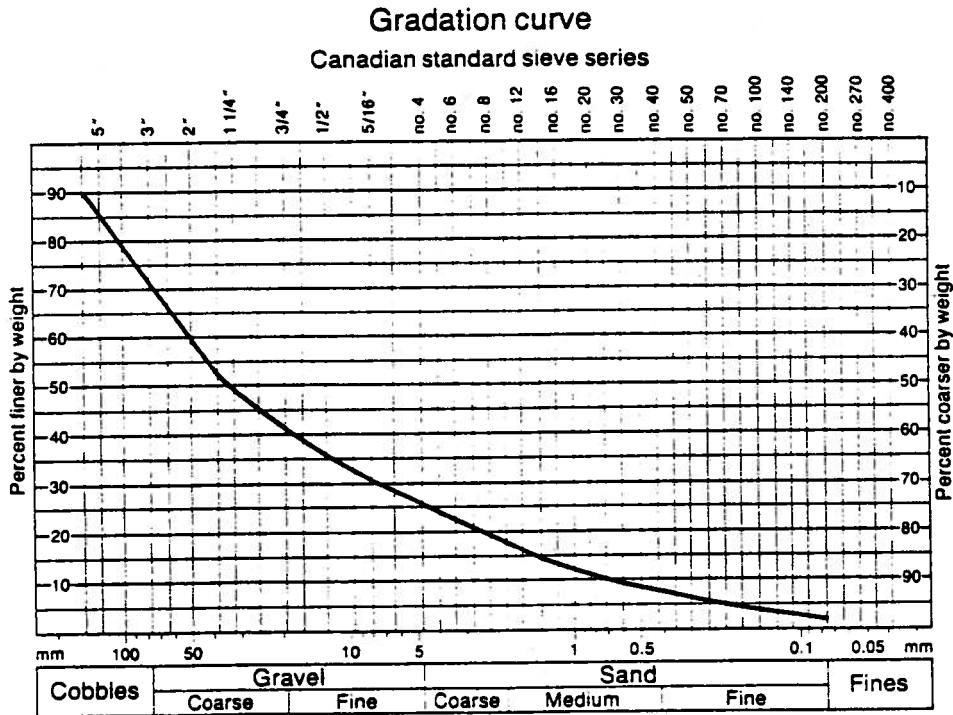


Site Location: Sec NE10 Tp33 R9 W5M

Site Description:

Roadcut exposure of dirty, sandy gravel about 2 m above bedrock. Clasts are to 30 cm diameter, about 99% are smaller than 20 cm and about 98% are smaller than 10 cm. The rock type is primarily local sandstone with some limestone. The clasts are angular to subangular. There is some fine sand but most sand seems to be medium to coarse grained. Some shale clasts present may not stand up well on a road. The material seems to be graded with no sorting apparent.

Gradation: 29.9% cobbles 44.9% gravel  
23.3% sand 1.9% fines



\* \* \* \* \*

**DEPOSIT NO. 73**

**LOCATION:** Sec 7,17-20,29,30,32,33 Tp34 R8 W5M  
Sec 12,13 Tp34 R9 W5M

**No. of associated pits/sites:** 1 pit, 1 site

**No. of samples analysed:** 1

**DEPOSIT DESCRIPTION:**

Ice contact esker deposit in hummocky terrain contains over 80% gravel. Main rock types are quartzite, hard sandstone and limestone. Maximum clast size is 20 cm but most clasts are smaller than 10 to 12 cm. Sand is fine grained. Water table level is unknown.

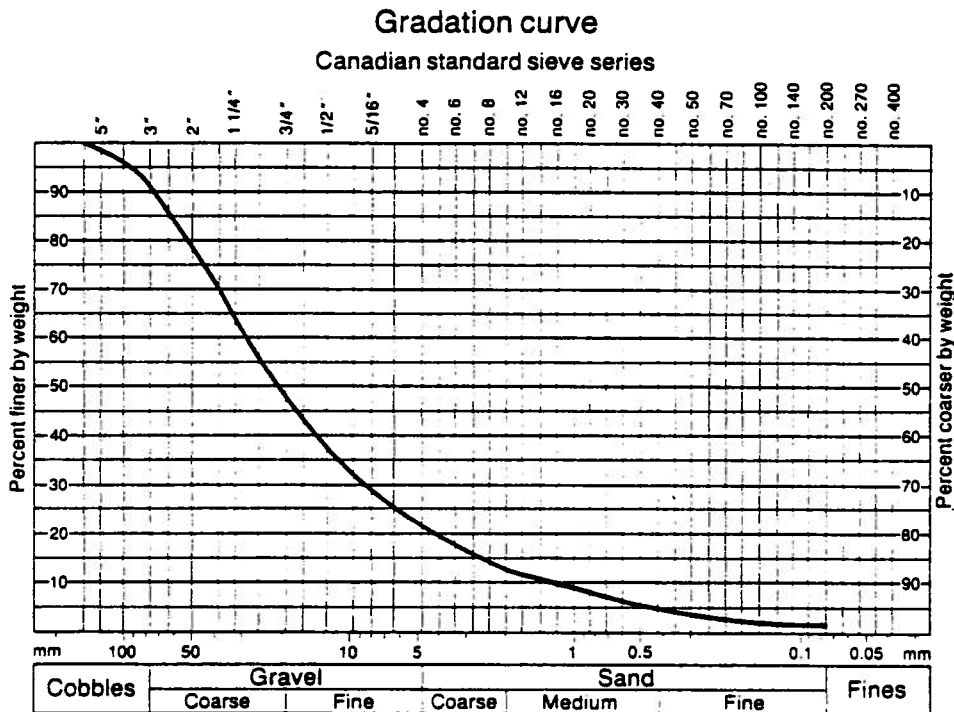


Pit Location: Sec NW17 Tp34 R8 W5M

Pit Description:

Very stoney, hummocky ridge in an ice contact complex. The rock types are mainly quartzite, hard sandstone and limestone with some ironstone, conglomerate and dirty sandstone. The clasts are quite angular. Maximum clast size is 20 cm (less than 1%) with most clasts smaller than 10 to 12 cm. Sand is fine grained. Water table depth is unknown.

Gradation: 7.9% cobbles 70.9% gravel  
19.7% sand 1.5% fines



Site Location: Sec NW20 Tp34 R8 W5M

Site Description:

Ice contact complex in hummocky terrain. Gravel is exposed in a roadcut face measuring 1.5 to 3 m high and 46 m long. There appears to be over 80% gravel and the material is similar to that of the pit at NW17-34-8-W5M. Sand is fine grained. Water table depth is unknown.

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**DEPOSIT NO. 74**

LOCATION: Sec 28,29,33,34 Tp32 R9 W5M  
Sec 3,4,7-10,15-18 Tp33 R9 W5M  
Sec 8-12,14-16,18-21 Tp33 R10 W5M  
Sec 13,24 Tp33 R11 W5M

No. of associated pits/sites: 2 pits, 1 site

No. of samples analysed: 2

**DEPOSIT DESCRIPTION:**

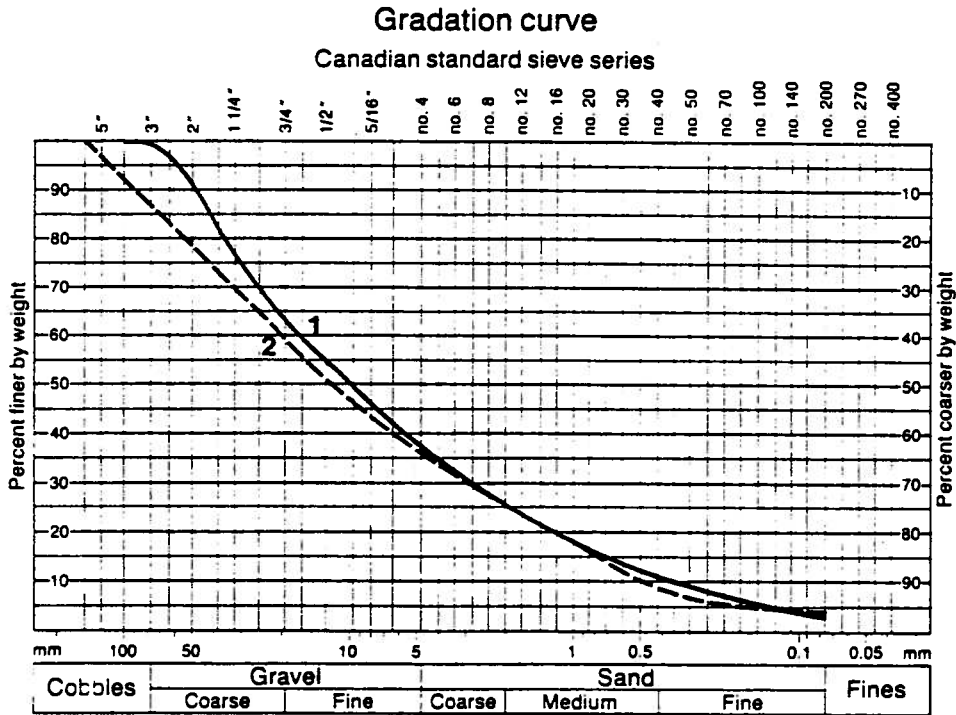
Recent alluvium deposit with exposures of up to 3.5 m of sandy gravel. Clasts to 2 m diameter are present locally. The largest clasts commonly are concentrated at the top of a deposit. Elsewhere, maximum size is 30 cm but clasts mainly are smaller than 15 cm. The most common rock types are sandstone and limestone. This is not a very extensive flood plain, but it may still have gravel potential especially along Wilson Creek.

Pit Location: Sec SW10 Tp33 R9 W5M

Pit Description:

Active gravel pit. About 3.5 m of material are above water in the pit floor. Water level is variable during the year, as shown by strand lines on the highwall. Material may be "cleaner" with depth but the upper 0.5 to 1 m has abundant finer material and may be similar to material at NE19-33-8-W5M. Clasts are to 2 m size and the largest clasts are commonly concentrated at the top of the deposit. About 98% of the clasts are less than 30 cm in size. About 97% are less than 10 cm. Clasts are mainly sandstone, siltstone, friable sandstone and limestone. Shale or friable clayey siltstone also is present. Material is graded with some sorting. Sample 1 is from 2 to 3 m below the surface in "cleaner" material. Sample 2 is from the upper 1 m of coarser "dirtier" material. Clast size changes within short vertical and horizontal distances.

Gradation:	0% cobbles	62.9% gravel	Sample 1
	34.2% sand	2.9% fines	
	13.1% cobbles	50.7% gravel	Sample 2
	31.9% sand	4.3% fines	

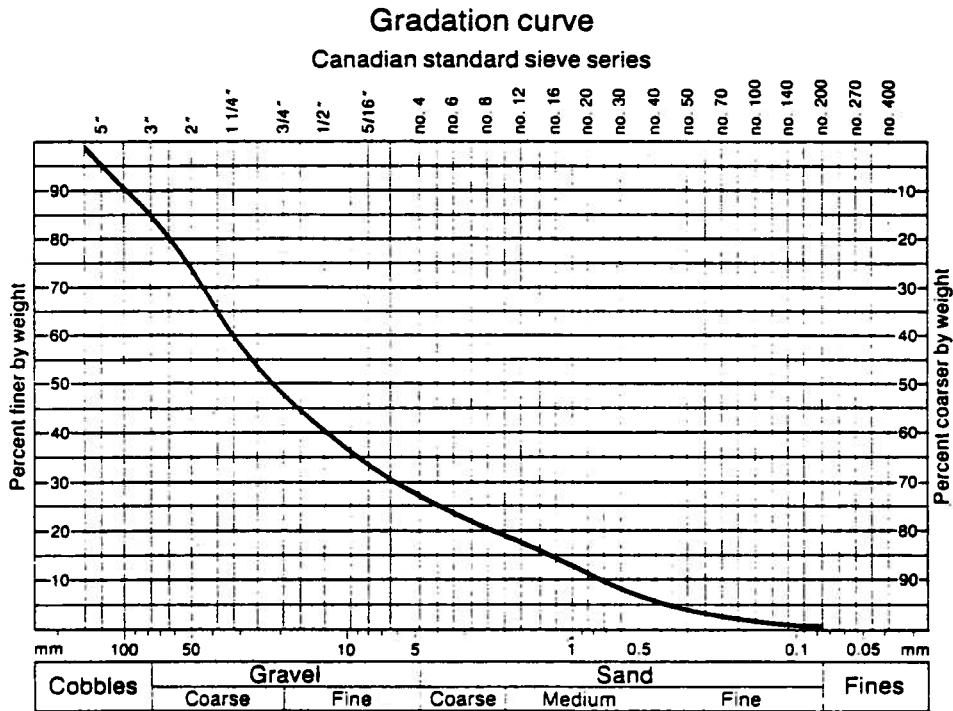


Pit Location: Sec NW11 Tp33 R10 W5M

Pit Description:

Inactive, small, reclaimed pit along Wilson Creek. Cut banks expose 1.5 to 1.8 m of gravel. There are some clasts to 30 cm in diameter (less than 1%), but clasts are mainly smaller than 15 cm in size. The larger clasts are angular and flat and the smaller clasts are subangular to subrounded. The main rock types are limestone, bedrock sandstone and some quartzite or hard sandstone. Minor rock types are conglomerate, ironstone and sandstone. Sand is mainly coarse to medium grained and quite clean. Crushing is necessary for most uses. There is no overburden and the water table is more than 2 m below surface. This is not a very extensive flood plain, but it may still have gravel potential especially along Wilson Creek.

Gradation: 15.3% cobbles 58.5% gravel  
25.5% sand 0.7% fines



Site Location: Sec SE16 Tp33 R10 W5M

Site Description:

Wilson Creek, small gravel bar.

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DEPOSIT NO. 75

LOCATION: Sec 30 Tp32 R9 W5M  
Sec 15,16,21-23,25,26 Tp32 R10 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

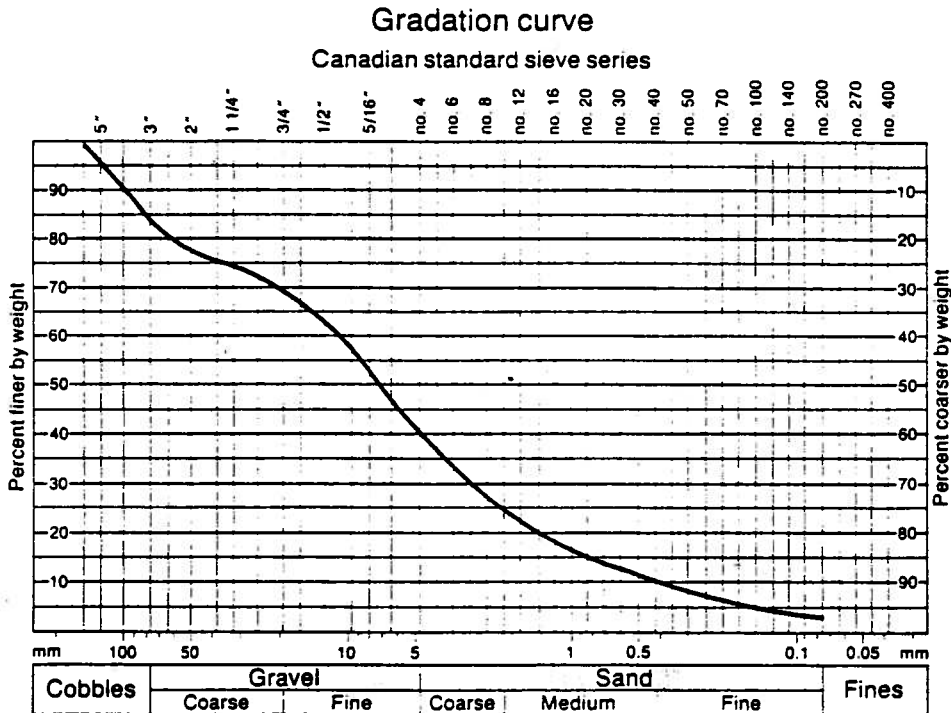
Recent alluvium deposit. See site description

Site Location: Sec NE26 Tp32 R10 W5M

Site Description:

Material is primarily sandy gravel with variable clay content. Clast content probably does not exceed 25%. Clasts are to 50 cm in diameter with 99% smaller than 10 cm and consisting of angular to subangular competent sandstone, friable sandstone, siltstone and limestone. In the fine gravel and smaller sizes, tabular shale pieces are common. These shale pieces may not stand up well to mechanical abrasion. Sandstone and shale bedrock may be near the base of many of the outcrops.

Gradation: 16.8% cobbles 42.7% gravel  
37.1% sand 3.4% fines



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DEPOSIT NO. 76

LOCATION: Sec 2,12,13 Tp33 R10 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 2

DEPOSIT DESCRIPTION:

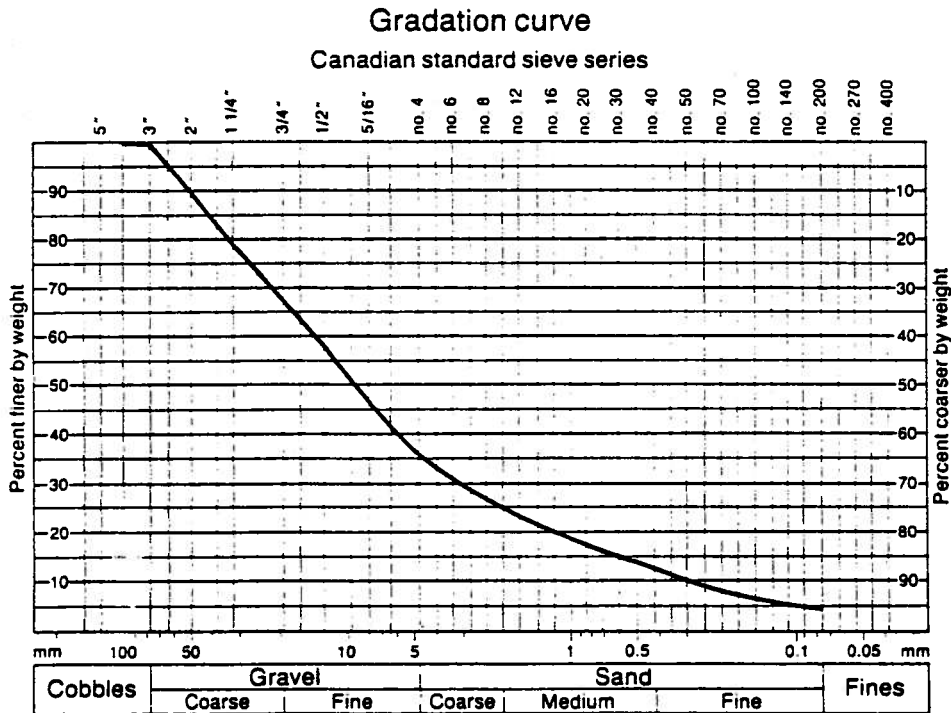
Ice contact esker deposit containing dirty to very dirty sandy gravel.

Site Location: Sec NE12 Tp33 R10 W5M

Site Description:

Glaciofluvial/ice contact gravel exposed along a roadcut. The clasts are angular to subrounded with maximum size to 20 cm but mainly smaller than 12.5 cm diameter. Clasts in this roadcut are less angular than the bedrock material common in this area. Common rock types are hard sandstone, limestone and shale. Minor rock types are ironstone, dirty sandstone and conglomerate. The water table is low and the till overburden is less than 30 cm thick.

Gradation: 0% cobbles 64.8% gravel  
30.8% sand 4.4% fines

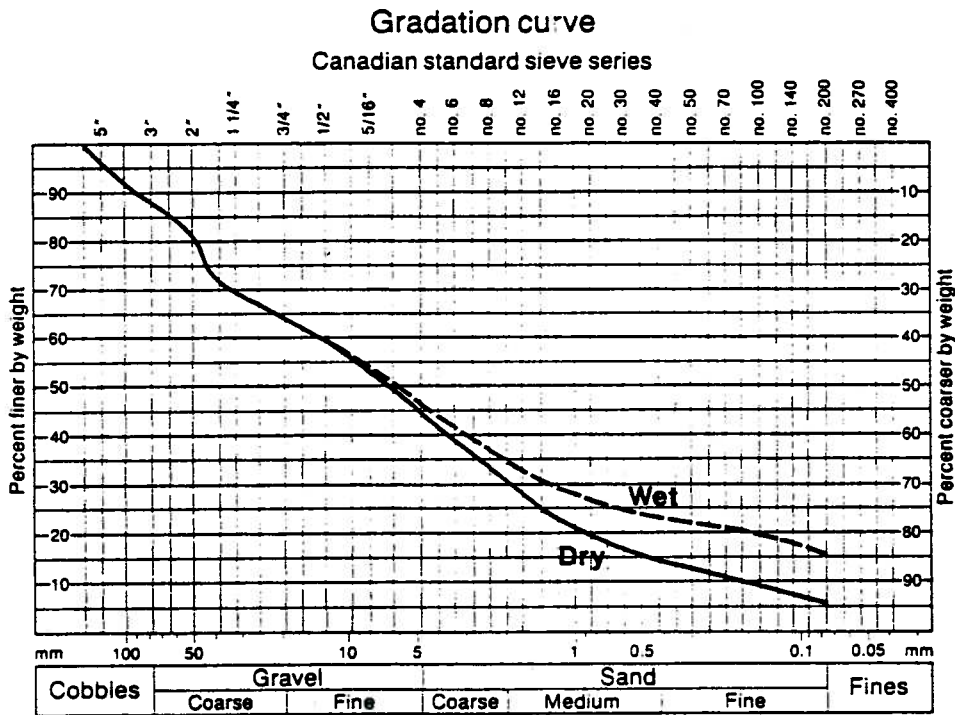


Site Location: Sec SE2 Tp33 R10 W5M

Site Description:

Very dirty ice contact gravel exposed along a road cut. The gravel has a very high clay/shale content. The material is of poor quality and is not extensive.

Gradation:	12.7% cobbles	41.2% gravel	wet sieve
	30.7% sand	15.4% fines	
	12.7% cobbles	42.5% gravel	dry sieve
	38.7% sand	6.1% fines	



\* \* \* \* \*

DEPOSIT NO. 77

LOCATION: Sec 1,2 Tp33 R11 W5M

No. of associated pits/sites: none

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Ice contact esker deposit.

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DEPOSIT NO. 78

LOCATION: Sec 32 Tp34 R10 W5M  
Sec 4 Tp35 R10 W5M

No. of associated pits/sites: none

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Ice contact esker deposit.

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DEPOSIT NO. 79

LOCATION: Sec 16-19 Tp31 R10 W5M  
Sec 13,23-26,34,35 Tp31 R11 W5M  
Sec 3,4,9,10 Tp32 R11 W5M

No. of associated pits/sites: 3 sites

No. of samples analysed: 3

DEPOSIT DESCRIPTION:

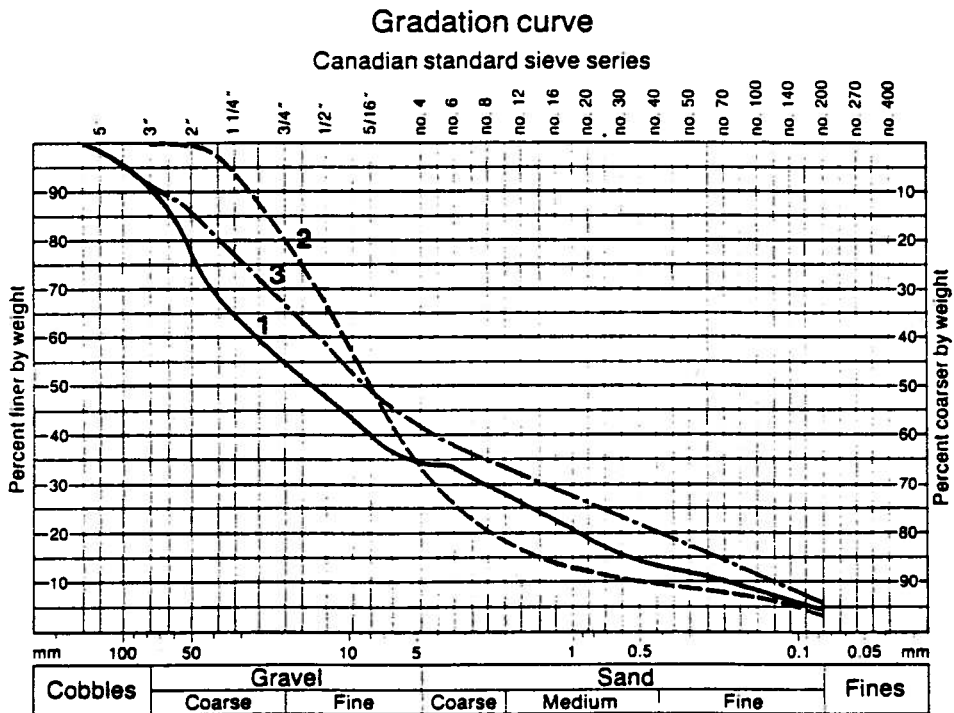
Recent alluvium terrace deposit consisting of 2 to 22 m of sandy gravel. Maximum clast size is 1 m but over 99% are smaller than 15 cm. Clasts are primarily limestone with a few sandstone and are angular to subrounded. Sand is mainly medium to coarse grained.

Site Location: Sec SW16 Tp31 R10 W5M

Site Description:

Roadcut exposes about 22 m of sandy gravel. The top of the cut is level with the top of a similar plateau across the Red Deer River and this would be the upper terrace. This upper terrace seems to be more sandy than the lower terrace. No structure is evident because no highwall is available. Clasts on the slope surface seem to indicate a relatively uniform distribution up the face. Maximum clast size is 50 cm but over 99% are smaller than 10 cm. Limestone and sandstone clasts are dominant with a few ironstone clasts present. Sand is fine to medium grained with silt.

Gradation:	8.8% cobbles	56.8% gravel	Sample 1 (Base)
	30.7% sand	3.7% fines	
	0% cobbles	66.7% gravel	Sample 2 (10m)
	30.6% sand	2.7% fines	
	9.2% cobbles	49.1% gravel	Sample 3 (top)
	36.1% sand	5.6% fines	

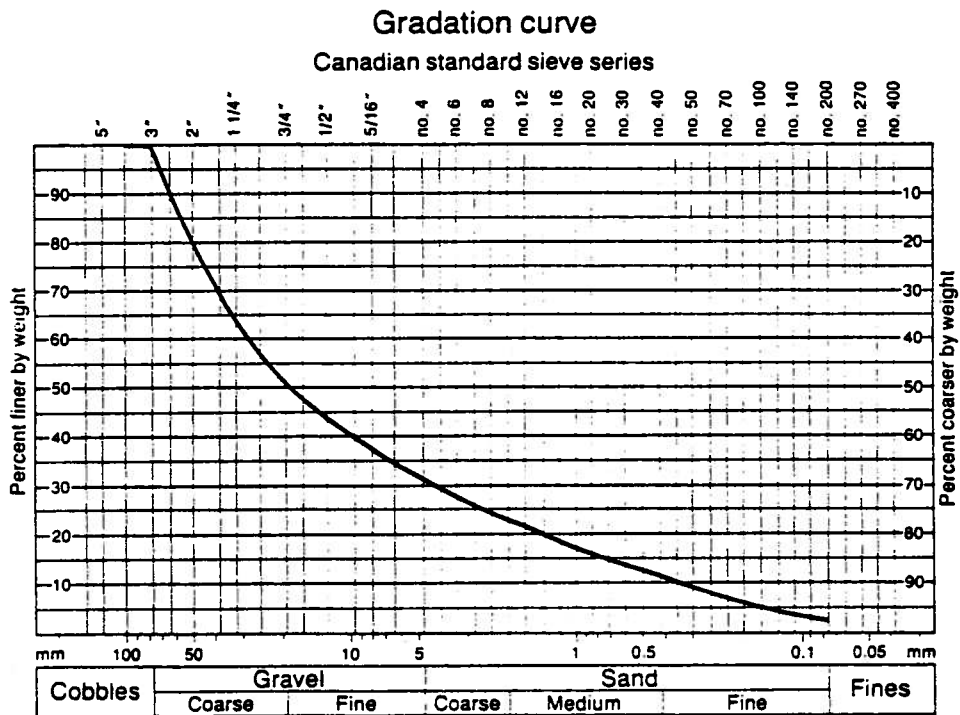


Site Location: Sec SE35 Tp31 R11 W5M

Site Description:

Creek bank exposure of 4 to 6 m of sandy gravel. Clasts are to 2 m in diameter, 99% are less than 50 cm, 98% are less than 30 cm and 97% are less than 15 cm. Clasts are primarily limestone with a few sandstone and are angular to subrounded. Sand is medium to coarse grained with gross flat bedding parallel to the gradient of the stream or hill slope. The material is graded with some sorting. Some beds have sand in the interstices of the clasts, other beds are quite devoid of sand. Crushing would be necessary for the best use of the material.

Gradation:        0% cobbles    69.4% gravel  
                      28.2% sand        2.4% fines

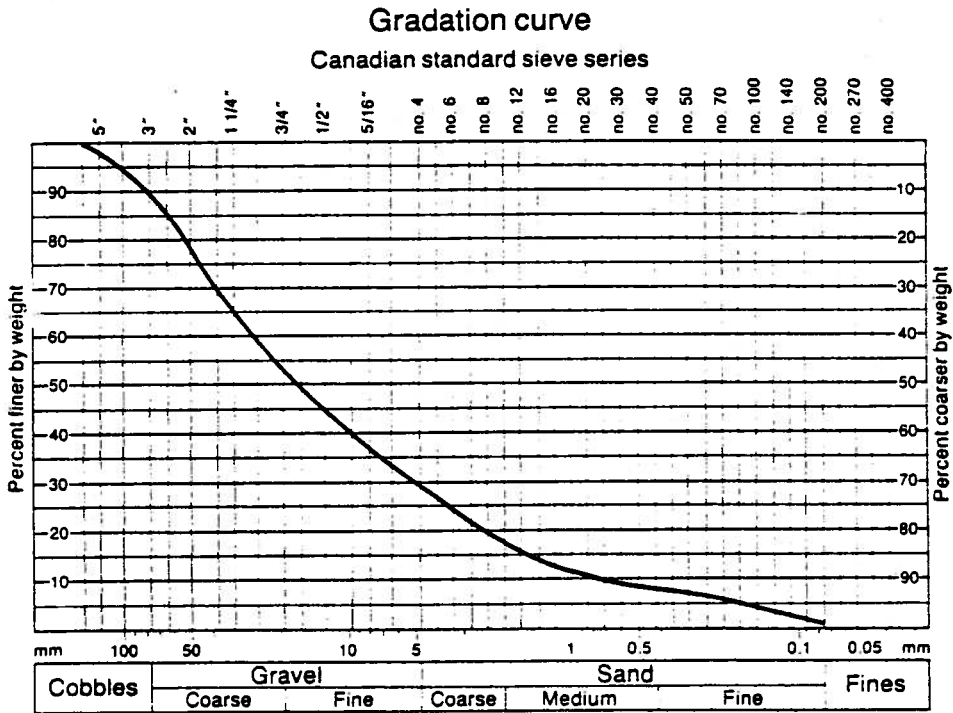


Site Location: Sec NW3 Tp32 R11 W5M

Site Description:

Creek bank exposure of about 2 m of sandy gravel. The material exhibits gross horizontal bedding, is graded and sorting is not apparent. Clasts are to 1 m, 99% are less than 20 cm and 98% are less than 15 cm in size. The clasts are primarily limestone with a few competent sandstone. Tabular clasts are common and most are angular to subangular. Sand is medium to coarse grained. It is difficult to tell at most roadcuts how far behind the face there is bedrock.

Gradation: 11.1% cobbles 59.5% gravel  
28.2% sand 1.3% fines



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DEPOSIT NO. 80

LOCATION: Sec 32-34 Tp30 R10 W5M  
Sec 3-6 Tp31 R10 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

DEPOSIT DESCRIPTION:

Ice contact esker deposit. See site description.

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Site Location: Sec SW3 Tp31 R10 W5M

Site Description:

Esker/kame complex around Klein Lake. The gravel content appears to be about 75% with few clasts larger than 4 cm. A few loose clasts in the sampling vicinity are to 25 cm in size but these are less than 0.05% of the total. Clasts in the 4 to 8 cm size range make up 2 to 5% of the total. Most of the gravel is in the 1 to 4 cm range. The gravel is very dirty and 99% of the clasts have a heavy, creamy deposit on the underside that may be carbonate coating.

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**DEPOSIT NO. 81**

LOCATION: Sec 11,14,23,25,26,35,36 Tp30 R9 W5M  
Sec 31,32 Tp30 R10 W5M  
Sec 25,26,33-36 Tp30 R11 W5M  
Sec 2-14,17,18 Tp31 R8 W5M  
Sec 1,7-18 Tp31 R9 W5M  
Sec 2-5,10-15 Tp31 R10 W5M

No. of associated pits/sites: 1 pit, 14 sites

No. of samples analysed: 10

**DEPOSIT DESCRIPTION:**

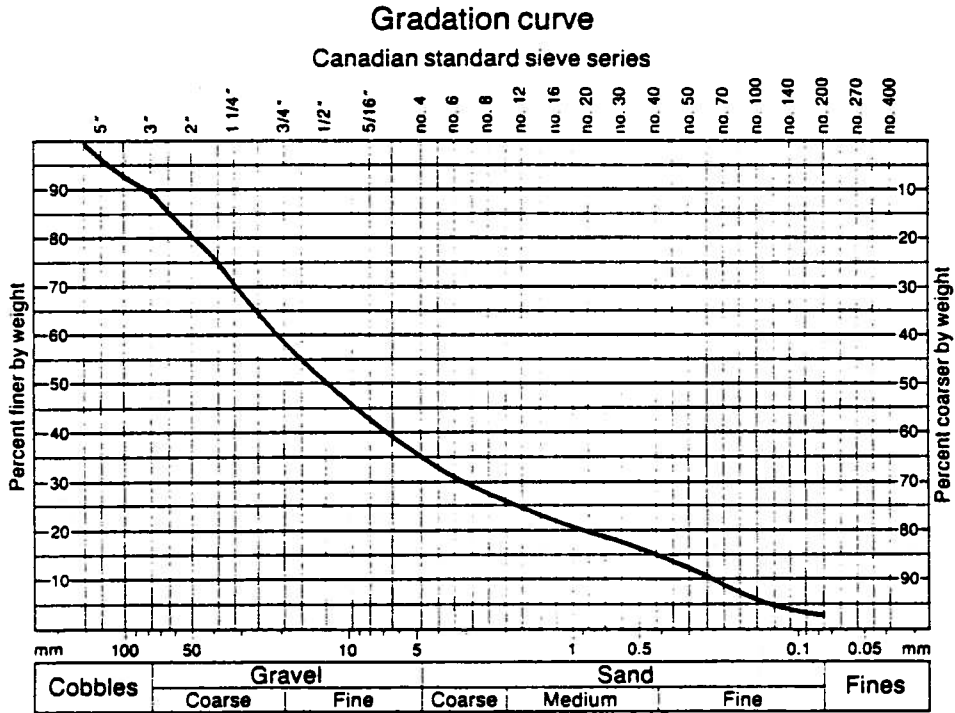
Recent alluvium deposit consisting of terrace and flood plain sandy gravel varying in thickness from 2.5 m to 6.5 m. The material is coarser in the upper terraces than in the lower ones. Maximum clast size is 80 cm locally but 30 to 40 cm is more common. Generally, 98% of the clasts are less than 10 cm in diameter. Larger clasts are usually quartzite, smaller ones are predominantly subangular to subrounded limestone and sandstone. Sand is medium to coarse grained. The material is graded and there is some sorting.

Site Location: Sec SW9 Tp31 R8 W5M

Site Description:

Roadcut exposure of slightly dirty sandy gravel above bedrock. There are about 6 m of material which becomes "dirtier" closer to bedrock. Clasts are to 30 cm in size with over 99% less than 10 cm. Larger clasts consist of quartzite, competent sandstone and limestone. Smaller clasts consist of limestone, competent sandstone and siltstone. Tabular clasts are common in the smaller sizes. Clasts are subangular to subrounded. The material seems fairly well graded and sorting is not apparent.

Gradation: 10.3% cobbles 55.4% gravel  
31.4% sand 2.9% fines

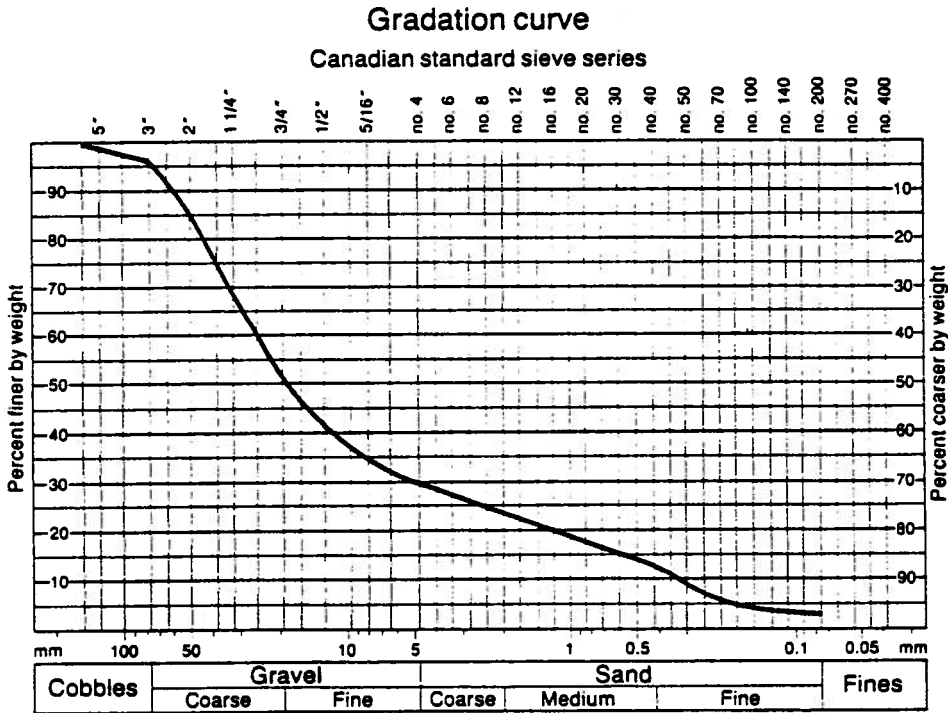


Site Location: Sec SW18 Tp31 R8 W5M

Site Description:

Roadcut exposure of about 3.5 m of sandy gravel that continues to an unknown depth. The current river level is at least 5 m below this level and it is likely that this material extends to that depth. About 2 m of finer sand with fewer clasts overlies the material in this roadcut. The clasts are to 35 cm with over 99% less than 15 cm in diameter. The clasts consist of limestone and competent sandstone. Tabular clasts are common and are subangular to subrounded. The material is graded, no bedding or sorting is apparent.

Gradation: 3.8% cobbles 66.8% gravel  
26.8% sand 2.6% fines



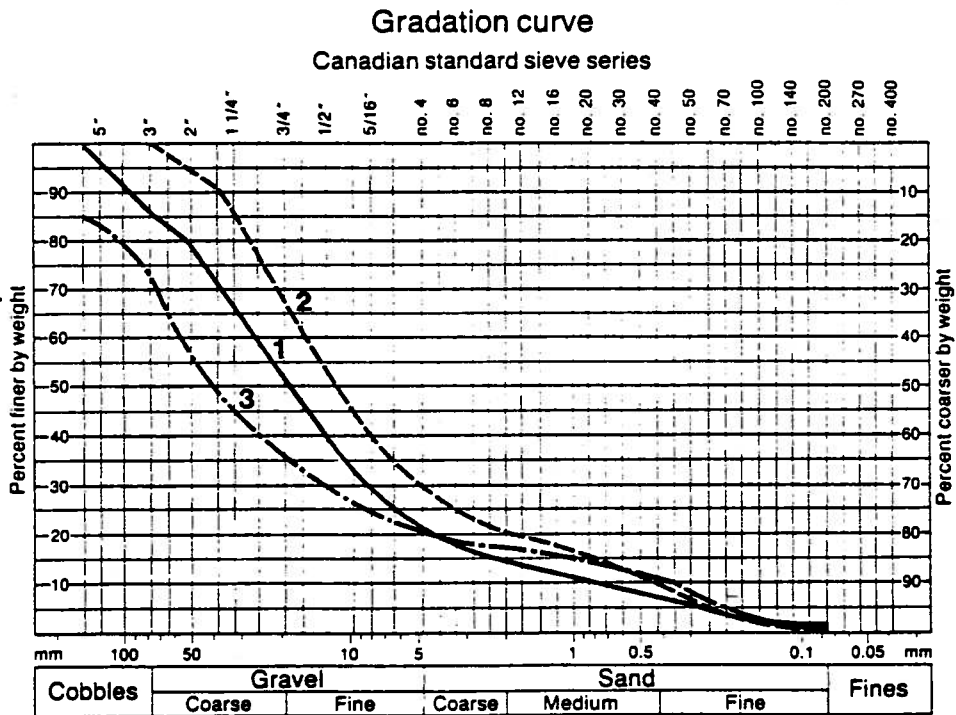


Site Location: Sec NW10 Tp31 R9 W5M

Site Description:

First major terrace above the Red Deer River, about 2.5 m high. There is a channel at its base that appears to be flooded periodically. The terrace consists of sandy gravel with clasts to 15 cm but over 99% are less than 3 cm in diameter. The clasts are subangular to subrounded and consist of competent sandstone and limestone. The sand is medium to coarse grained with few fines. The material is graded and there is some sorting. The second major terrace is about 4 m high and clasts are to 40 cm in size, with over 99% less than 10 cm. The material is sandy gravel, medium to coarse sand which is graded and with some sorting. The third major terrace is about 5.5 m high and consists of sandy gravel. The material is coarser than that in the lower two terraces. Clasts are to 50 cm in size with over 98% less than 15 cm and about 97% less than 10 cm. Clasts consist of competent sandstone and limestone. Sand is medium to coarse grained. The material is poorly graded and sorting is not apparent.

Gradation:	14.9% cobbles	63.8% gravel	Sample 1
	20.1% sand	1.2% fines	(lower terrace)
	0% cobbles	70.5% gravel	Sample 2
	28.7% sand	0.8% fines	(middle terrace)
	26.8% cobbles	53.0% gravel	Sample 3
	18.9% sand	1.3% fines	(upper terrace)

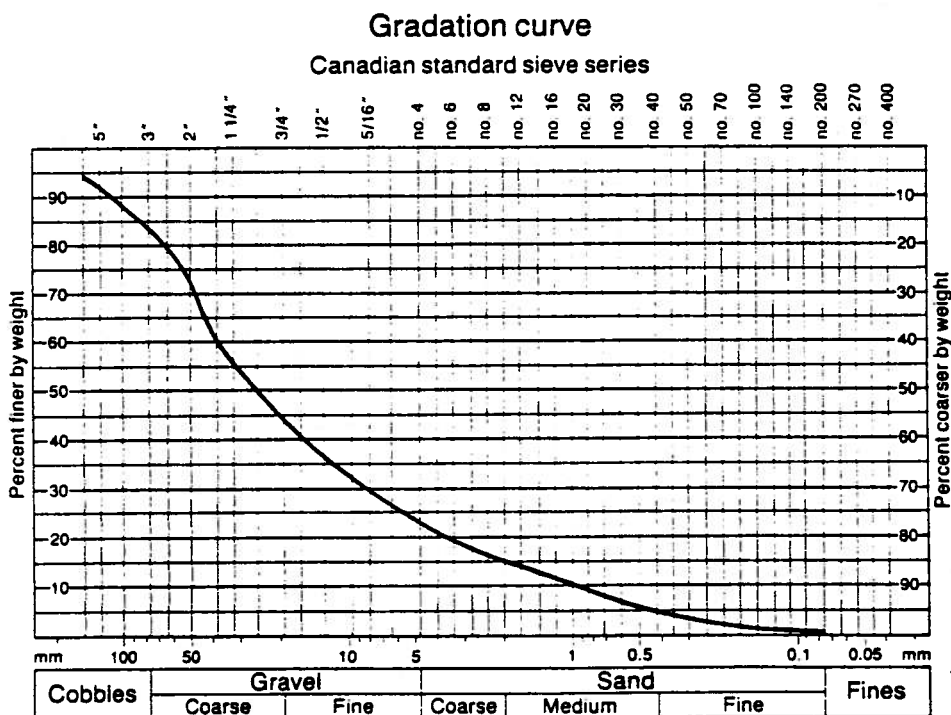


Pit Location: Sec NE3 Tp31 R10 W5M

Pit Description:

Gravel pit in the valley bottom of the Panther River, showing gross horizontal bedding. Clasts are to 70 cm in diameter, 99% are less than 30 cm, 98% less than 20 cm and 97% less than 15 cm. They are primarily limestone and competent sandstone. Sand is mostly medium to coarse grained. The material is graded with minor sorting. One short (1 m), thin (15 cm maximum) sand lens was noted. There are minor lenses of pebbles devoid of sand. Generally the sand is evenly distributed in the interstices. In certain areas there is some imbrication of clasts. The material is quite clean but may need crushing for most uses. The material is quite loose in the highwall which is about 4 m high. Two very large stockpiles of 3/4" crush are present.

Gradation: 16.7% cobbles 60.7% gravel  
22.4% sand 0.2% fines

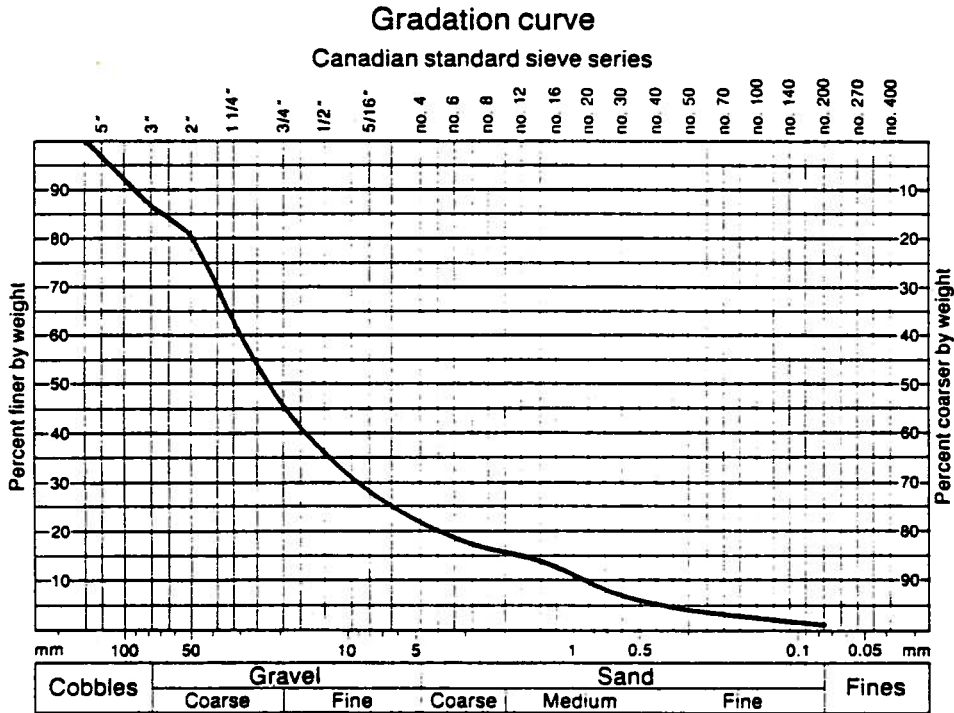


Site Location: Sec SW17 Tp31 R9 W5M

Site Description:

Roadcut exposure of about 6.5 m of sandy gravel in what appears to be the highest terrace of gravel above the Red Deer River. Clasts are up to 80 cm in diameter with more than 99% less than 15 cm in size. The largest clasts are quartzite, the smaller ones consist of limestone or competent sandstone. A few iron carbonate clasts were noted. The clasts are subangular to subrounded and tabular clasts are common. Quartzite clasts are more equant. Sand is mainly medium to coarse grained. The material is graded and sorting and bedding are not apparent.

Gradation: 13.8% cobbles 64.7% gravel  
20.2% sand 1.3% fines

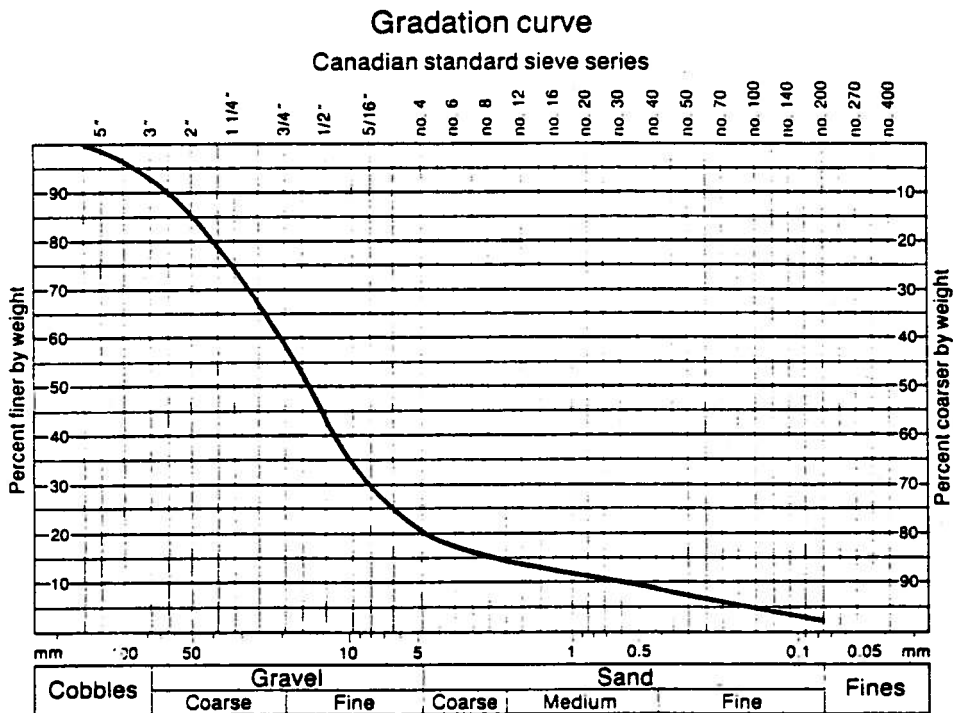


Site Location: Sec NW5 Tp31 R8 W5M

Site Description:

Roadcut exposure of about 6.5 m of gravelly sand to sandy gravel. The structure is actually about 12.5 m high. This is the nose of a structure that appears to be an outwash terrace on the air photo. Clasts are to 30 cm diameter with over 99% less than 10 cm in size. The largest clasts are commonly quartzite. The medium to smaller clasts are competent sandstone, limestone and green incompetent sandstone. Small clasts of friable sandstone also are common. Sand is fine to coarse grained with some sorting. There are a few pockets of pebbles with little or no sand and other areas are very sandy. Gross horizontal bedding is evident. The sample is from near the top of the exposure where the material is known to be in place. A few clasts are carbonate coated.

Gradation: 6.7% cobbles 73.3% gravel  
17.3% sand 2.7% fines

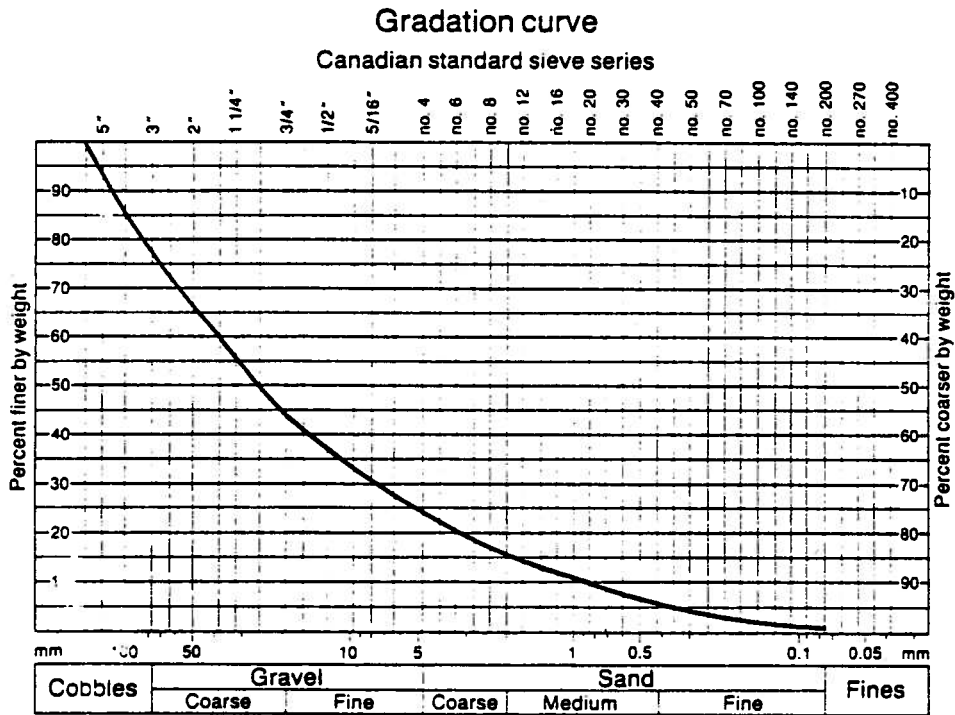


Site Location: Sec SW3 Tp31 R8 W5M

Site Description:

Roadcut in Red Deer River valley bottom. Most of the river bottom gravel is likely to be on the south side of the river in this area. The clasts are to 40 cm diameter. Over 99% are less than 20 cm and over 98% are less than 10 cm in size. The largest clasts are quartzite and competent sandstone. The medium to smaller clasts are competent sandstone and limestone. The clasts are commonly equant, subangular or subrounded. Sand is primarily medium to coarse grained.

Gradation: 23.3% cobbles 52.9% gravel  
22.8% sand 1.0% fines

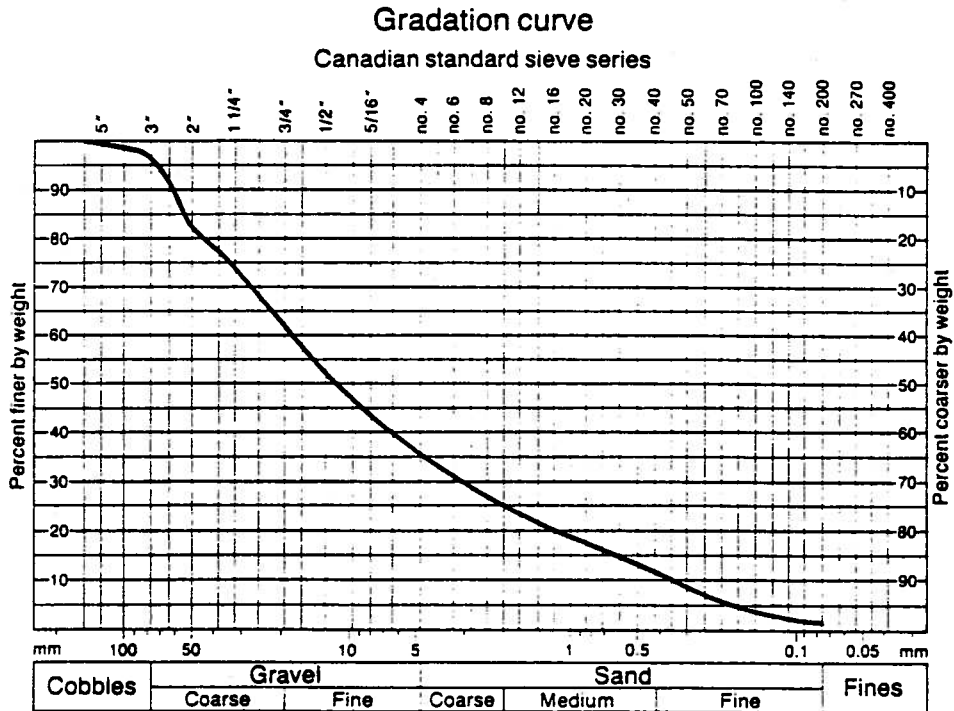


Site Location: Sec SW16 Tp31 R10 W5M

Site Description:

Highwall of "pit" in about 8.5 m terrace of sandy gravel, along road at Wildhorse Creek. There is good horizontal bedding, grading and sorting into thin beds of sand, pea gravel, large pebbles and unsorted beds (most beds). Clasts are to 40 cm in diameter with over 99% less than 10 cm in size. They consist of limestone, competent sandstone, a few ironstone and a few friable sandstone. Clasts are subangular to subrounded, mostly equant. Sand is fine to coarse grained with some silt.

Gradation: 3.8% cobbles 61.4% gravel  
33.1% sand 1.7% fines

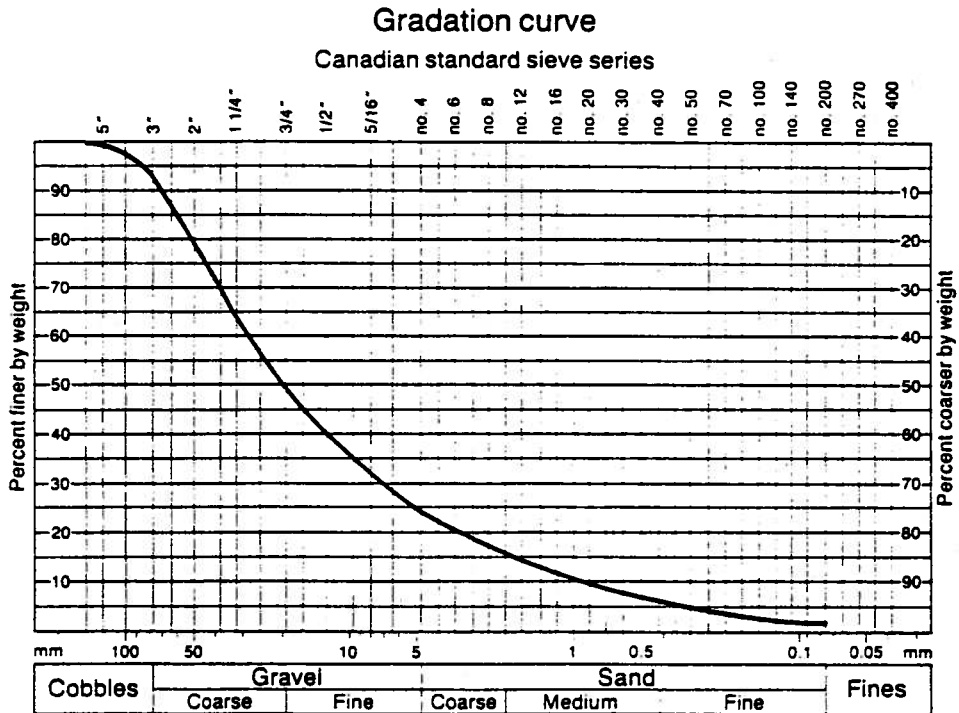


Site Location: Sec NW23 Tp30 R9 W5M

Site Description:

Terrace outwash gravels, probably overlying bedrock and overlain by till. The material appears massive from a distance with thin beds (less than 15 cm) of sandy gravel. Larger clasts measuring 7.5 to 15 cm are enclosed in a matrix of medium to coarse sand and gravel. These clasts comprise about 15% of the material. Clasts range to 30 cm in size. Most are subangular to subrounded, some are flat. Many show fractures and are carbonate coated. The rock types consist mainly of medium-hard sandstone and some hard sandstone, soft sandstone and limestone. Sandstone comprises the bulk of the larger clasts and limestone probably makes up the bulk of the pebbly material. Some shale is evident.

Gradation: 7.8% cobbles 68.4% gravel  
22.5% sand 1.3% fines

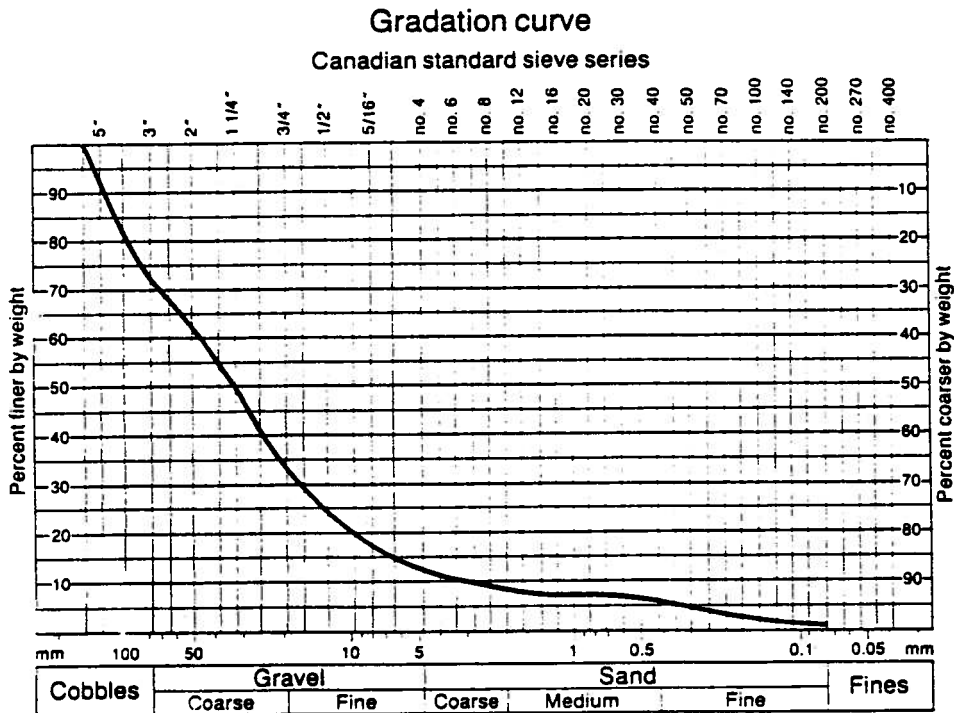


Site Location: Sec SE18 Tp31 R9 W5M

Site Description:

Extensive flood plain deposit downstream of Red Deer River Crossing by Mountain-Aire Lodge. A 3 to 4 m high section above the present water level shows 0.25 to 1 m of flood plain silt-sand-fine pebbles overlying 1 to 2 m of gravel which overlies about 1 m of bedrock shale. The rock types consist mostly of hard sandstone, some soft sandstone and limestone mainly in the pebbly size range. Clasts are to 10 cm in size, sand is fine grained and silt is present. A gravel bar adjacent to the flood plain face consists mainly of limestone. Hard sandstone is very common and incompetent shale is present. Coarse sand is dominant at the surface (between clasts). There is some mining of the aggregate bar.

Gradation: 28.2% cobbles 59.3% gravel  
11.3% sand 1.2% fines





Site Location: Sec NW13 Tp31 R9 W5M

Site Description:

Roadcut exposure of about 3 m of gravel above bedrock. The material is similar to that of SW18-31-8-W5M. Sorting is apparent, resulting in beds with abundant coarse clasts, beds with few coarse clasts and beds with more or less sand.

---

Site Location: Sec SE13 Tp31 R9 W5M

Site Description:

Red Deer River, bedrock outcrop at river level. The maximum depth of gravel that could be obtained appears to be about 9 m on the valley floor.

---

Site Location: Sec SE15 Tp31 R9 W5M

Site Description:

Roadcut exposure providing an excellent example of the contact between fluvial materials of the valley floor and the overlying till. The valley floor is narrow and the availability of aggregate is moderate. There probably is sufficient to satisfy long term needs but more extensive work would be necessary to locate the best site for a pit.

---

Site Location: Sec NE31 Tp30 R10 W5M

Site Description:

Sand on clay.

---

Site Location: Sec SE5 Tp31 R10 W5M

Site Description:

Possible gravel under till overburden, at top of terrace.

\* \* \* \* \*

**DEPOSIT NO. 82**

LOCATION: Sec 18,19 Tp30 R10 W5M  
Sec 3,4,10,11,13,14,24 Tp30 R11 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

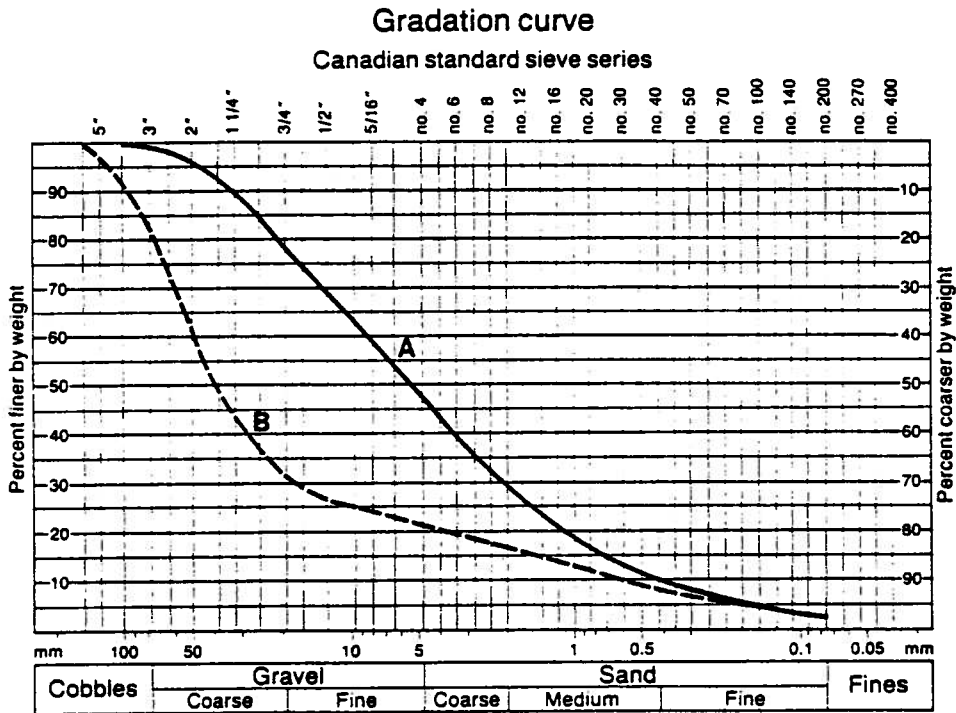
Recent alluvium deposit consisting of remnant terrace or outwash dirty sand and gravel. Maximum clast size is 30 cm. Clasts consist of limestone, sandstone and some shale. Carbonate coating is common. Sand is medium to coarse grained.

Site Location: Sec SW19 Tp30 R10 W5M

Site Description:

Remnant terrace or outwash gravels with indistinct, pebbly, parallel bedding enclosing zones of massive structure. The pebbly bedding is comprised of medium to coarse sand and clasts to 2 cm in size. The larger clasts are in the massive zones which generally are composed of medium sand with clasts 2.5 to 10 cm in size. Maximum clast size is 30 cm. The clasts consist of limestone, sandstone and some shale. Carbonate coating is common and some iron spotting is present.

Gradation:	0% cobbles	52.7% gravel	A - pebbly bedding
	45.4% sand	1.9% fines	
	17.9% cobbles	61.4% gravel	B - massive
	18.6% sand	2.1% fines	



Site Location: Sec NW18 Tp30 R10 W5M

Site Description:

Material is similar to that at SW19-30-10-W5M. It consists of dirty sand and gravel. The sand is medium to coarse grained.

\* \* \* \* \*

**DEPOSIT NO. 83**

LOCATION: Sec 9,10 Tp30 R9 W5M

No. of associated pits/sites: 1 site

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

Glaciofluvial high terraces. Further testing is recommended.

---

**Site Location:** Sec SE9 Tp30 R9 W5M

**Site Description:**

Terrace outwash gravel on North Burnt Timber Creek. A small gravel exposure on a 12 m high terrace is overlain by till, 1 to 2 m thick. The gravel is similar to that at NW23-30-9-W5M. The terrace is large and this could be an extensive deposit.

\* \* \* \* \*

**DEPOSIT NO. 84**

LOCATION: Sec 27-29,33,34 Tp29 R9 W5M  
Sec 3,4,9,10 Tp30 R9 W5M

No. of associated pits/sites: 2 sites

No. of samples analysed: none

**DEPOSIT DESCRIPTION:**

Recent alluvium flood plain deposit. The deposit is 3 m thick, is not extensive and has minor to no overburden. Clasts are to 45 cm diameter and there is no medium or coarse sand.

---

**Site Location:** Sec SE3 Tp30 R9 W5M

**Site Description:**

Burnt Timber Creek exposes about 1.5 m of gravel similar to that at NW23-30-9 W5M except this material appears to be very dirty and contains more competent clasts. There is a minimum of 1 m of overburden and the water table is unknown.

---

**Site Location:** Sec NE4 Tp30 R9 W5M

**Site Description:**

Flood plain and alluvial gravels from the present level of North Burnt Timber Creek. The deposit has a maximum thickness of 3 m, is not extensive and has minor to no overburden. Clasts are to 45 cm in diameter and there is no medium to coarse sand. Some of the gravel has been used for bridge approaches.

\* \* \* \* \*

DEPOSIT NO. 85

LOCATION: Sec 32,33 Tp34 R9 W5M  
Sec 3,4 Tp35 R9 W5M

No. of associated pits/sites: 1 pit

No. of samples analysed: 1

DEPOSIT DESCRIPTION:

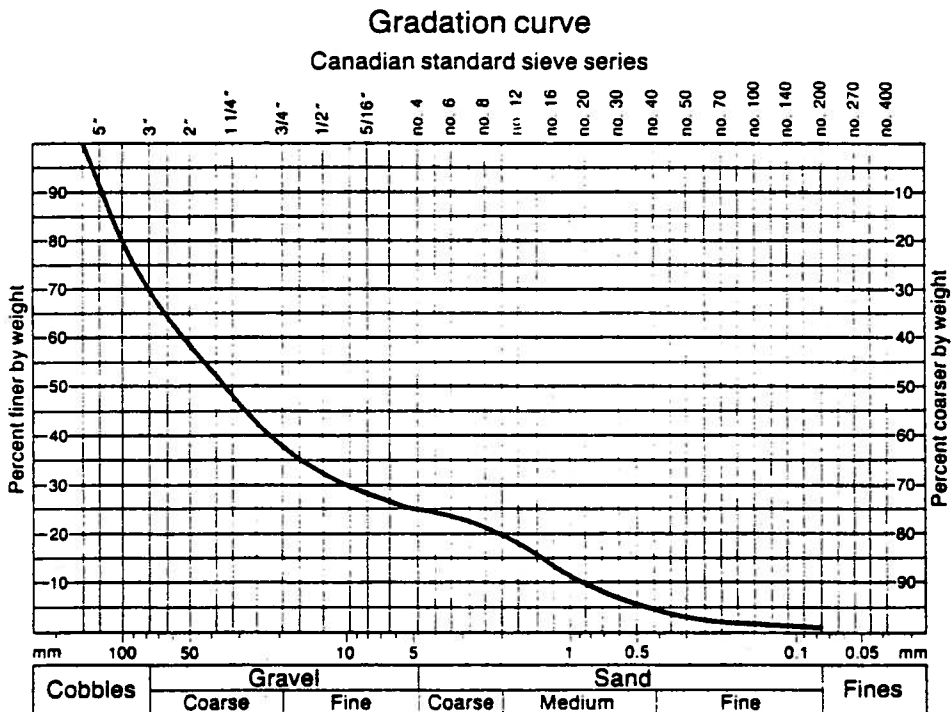
Ice contact esker deposit. See pit description.

Pit Location: Sec NW33 Tp34 R9 W5M

Pit Description:

Inactive pit in ice contact/esker complex. There are over 10.5 m of gravel consisting mainly of quartzite and limestone clasts less than 7 cm in size. Other clasts consist of granite, red sandstone, ironstone, claystone and dirty hard sandstone. Sand is medium to coarse grained. The gravel is of good quality but may require crushing for most uses. Overburden is less than 30 cm thick and the water table is at least 10.5 m below the surface.

Gradation: 31.9% cobbles 43.1% gravel  
24.0% sand 1.0% fines



\* \* \* \* \*

**DEPOSIT NO. 86**

**LOCATION:** Sec 21,28,33 Tp32 R4 W5M  
Sec 4 Tp33 R4 W5M

**No. of associated pits/sites:** 1 site

**No. of samples analysed:** none

**DEPOSIT DESCRIPTION:**

Recent alluvium deposit. See site description.

---

**Site Location:** Sec NE33 Tp32 R4 W5M

**Site Description:**

Approximately 1.5 m of silty material covers very dirty gravel along cut bank of the Little Red Deer River. Only 30 cm of material is exposed above river level. Not important.

\* \* \* \* \*

**DEPOSIT NO. 87**

LOCATION: Sec 29-32 Tp33 R4 W5M  
Sec 25,36 Tp33 R5 W5M  
Sec 5,6 Tp34 R4 W5M

No. of associated pits/sites: 2 pits

No. of samples analysed: 1

**DEPOSIT DESCRIPTION:**

Ice contact kame deposit with 5 to 7.5 m of clean, sandy gravel and 0.3 to 1.5 m overburden. The water table is at least 7.5 to 9 m below the surface. Common rock types are quartzite and limestone. Carbonate coating is very common. Sand is medium grained, clean and in massive beds.

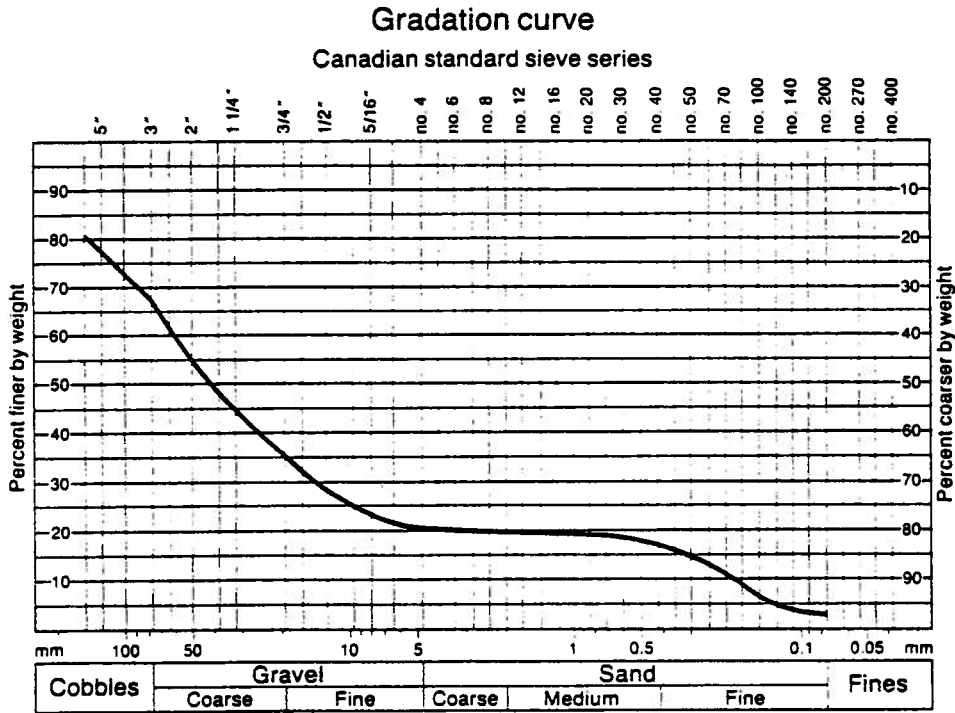


Pit Location: Sec SE5 Tp34 R4 W5M

Pit Description:

Inactive pit with 5 to 6 m of clean, sandy gravel and less than 30 cm overburden. Water table level is unknown. The common rock types are quartzite and limestone with a few clasts of red sandstone and ironstone. Carbonate coating is very common. Clasts are rounded to subangular and some are flat. The sand is medium grained, clean and massive bedded.

Gradation: 32.9% cobbles 46.4% gravel  
17.9% sand 2.8% fines



Pit Location: Sec SW 32 Tp33 R4 W5M

Pit Description:

County of Mountainview pit. The clean, sandy gravel is similar to that in the pit at SE5-34-4 W5M. The section is 7.5 m high and shows both parallel and cross-bedding. The water table is at least 7.5 to 9 m below the surface. Overburden is 0.3 to 1.5 m thick.

\* \* \* \* \*

**DEPOSIT NO. 88**

LOCATION: Sec 17-20,28-33 Tp34 R4 W5M  
Sec 24-26,34-36 Tp34 R5 W5M  
Sec 5,6 Tp35 R4 W5M  
Sec 1-3,10,11 Tp35 R5 W5M

No. of associated pits/sites: 3 pits, 7 sites

No. of samples analysed: 4

**DEPOSIT DESCRIPTION:**

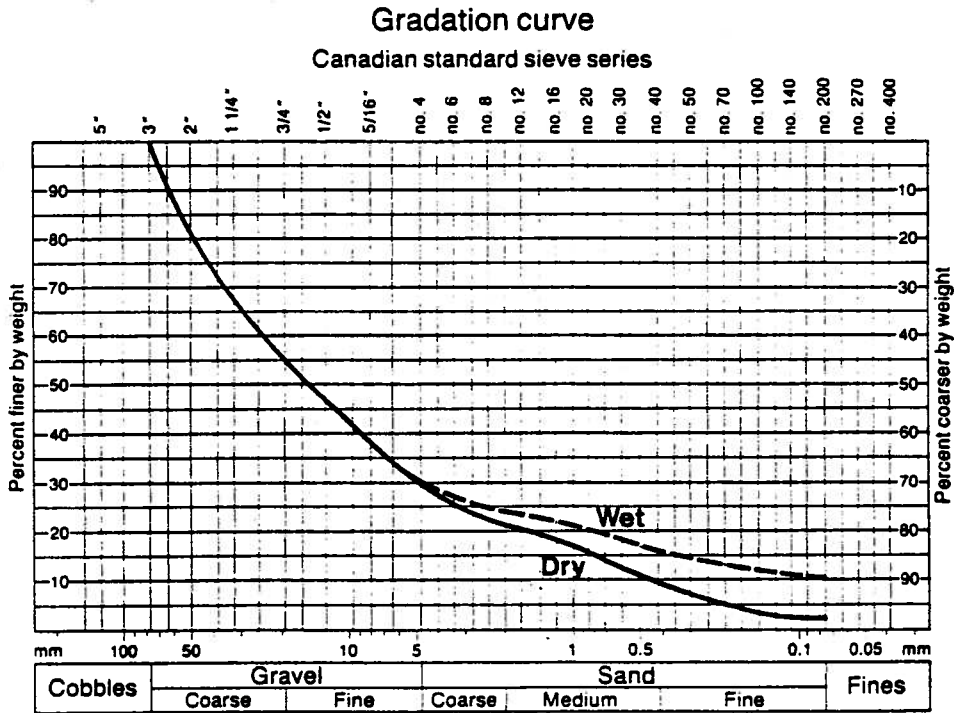
Glaciofluvial outwash deposit consisting mainly of poor quality dirty gravel 1.5 to 6 m thick. Overburden is 0 to 60 cm of stoney clay. Maximum clast size is 20 cm and the main rock types are quartzite, limestone and sandstone. Pockets of pea gravel and medium grained sand are present in places. Carbonate coating and deleterious materials are common.

Site Location: Sec NW28 Tp34 R4 W5M

Site Description:

Meltwater channel terrace exposed along a roadcut. The material is stoney and dirty. Due to the high clay content, it is not a good potential gravel area. The material may be used for road base. There is good access and topography is flat. The depth is unknown, with only less than 1.5 m exposed along the roadcut. The overburden varies from 0 to 60 cm of stoney clay. Maximum clast size is 10 cm in diameter and the main rock types are quartzite and limestone with some local sandstone bedrock. Clasts are subrounded to angular.

Gradation: 0% cobbles 70.3% gravel  
19.5% sand 10.2% fines

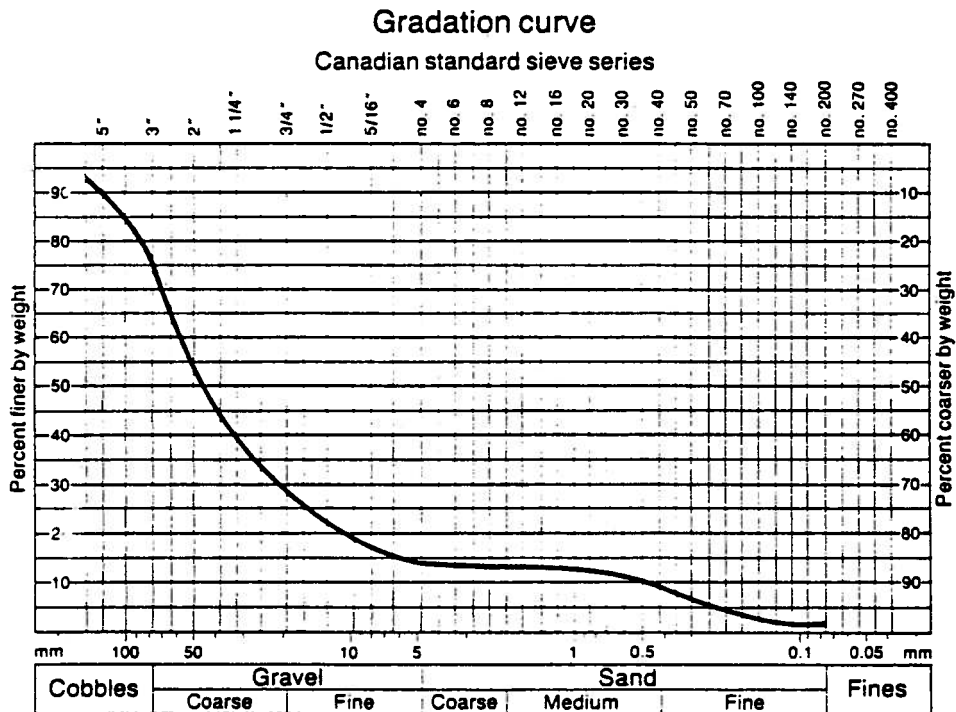


Pit Location: Sec SW5 Tp35 R4 W5M

**Pit Description:**

Small inactive pit in hummocky, glaciofluvial area. The material is cleaner than that at NW28-34-4-W5M, but is still not of good quality. The deposit is 5 to 6 m thick with no overburden. Water table depth is unknown. Most of the larger clasts are quartzite and hard sandstone. The smaller clasts consist of limestone, friable sandstone and highly oxidized siltstone. Some granite and coal clasts are present. Maximum clast size is 20 cm. The material is interbedded with pockets of medium sand and pea gravel. Carbonate coating is common. Although the quality is not very good at this location, the area probably warrants further investigation.

Gradation: 23.7% cobbles 62.0% gravel  
12.8% sand 1.5% fines

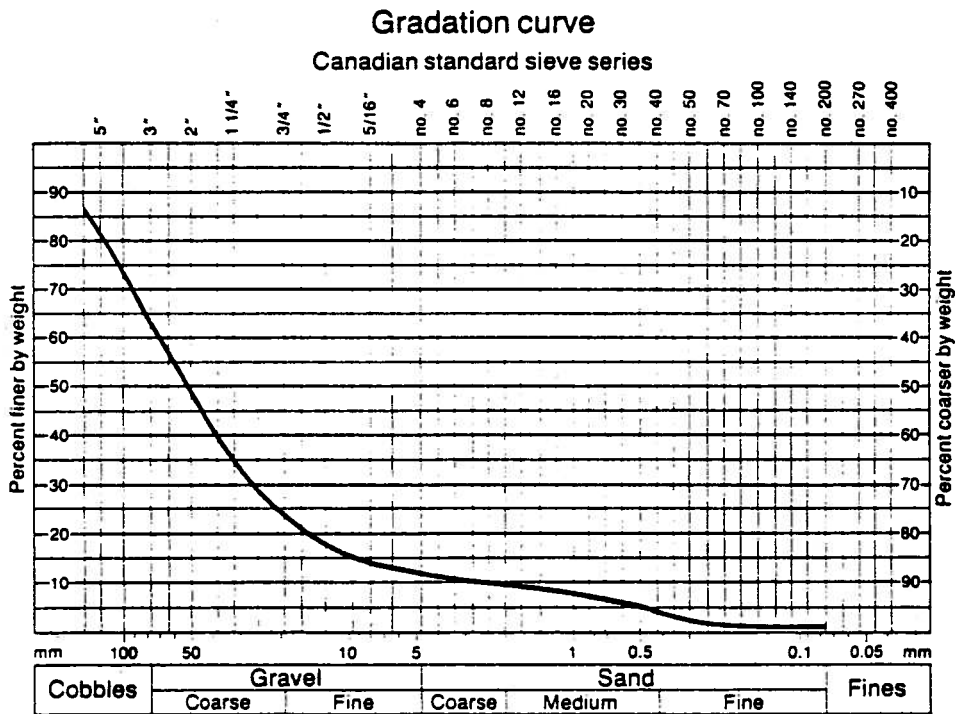


Site Location: Sec SE1 Tp35 R5 W5M

Site Description:

Mid-channel island in a meltwater channel. Fairly good quality gravel, 3 to 4.5 m thick, is exposed along roadcuts. Crushing may be necessary for most uses. Major clasts are quartzite and hard sandstone. Smaller clasts are mostly limestone. Deleterious material, such as coal fragments, ironstone and weathered bedrock may need to be washed out. Water table depth is unknown. Pockets of medium-grained sand are found in some roadcuts.

Gradation: 36.5% cobbles 51.7% gravel  
10.8% sand 1.0% fines

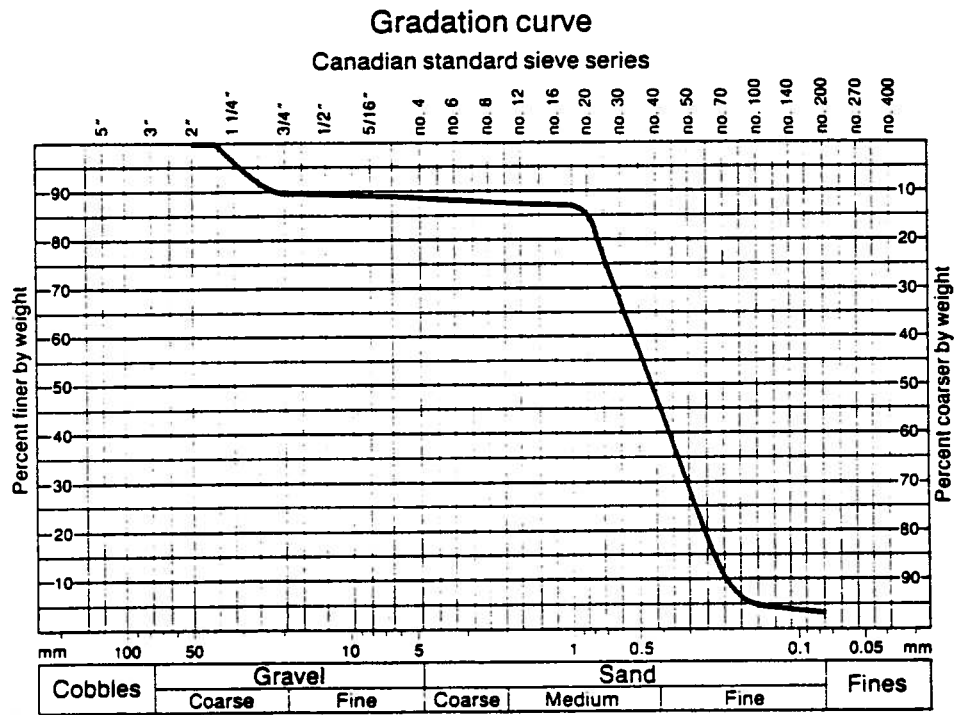


Site Location: Sec SE3 Tp35 R5 W5M

Site Description:

Roadcut through an area of clean, medium grained sand with few pebbles.

Gradation: 0% cobbles 11.4% gravel  
85.9% sand 2.7% fines



Site Location: Sec SE5 Tp35 R4 W5M

Site Description:

Very dirty glaciofluvial gravel exposed along a roadcut. Thickness is about 5 m. White carbonate coating is common on clasts. Maximum clast size is 15 cm.

---

Site Location: Sec NW31 Tp34 R4 W5M

Site Description:

Very hummocky area exposing approximately 4 m of very dirty glaciofluvial gravel.

---

Site Location: Sec SW31 Tp34 R4 W5M

Site Description:

Outwash sand with few clasts exposed along a roadcut. Sand is medium grained and oxidized.

---

Site Location: Sec SE25 Tp34 R5 W5M

Site Description:

Exposure of oxidized gravelly sand exposed in a dugout. Sand is medium grained and clean. Some clasts, less than 8 cm in size, are present. Overburden is thin. Water table is only 1 to 1.5 m below the surface. Topography is open and flat to gently rolling.

---

Pit Location: Sec SW1 Tp35 R5 W5M

Pit Description:

Inactive, small pit in meltwater channel.

---

Pit Location: Sec NW35 Tp34 R5 W5M

Pit Description:

Reclaimed pit with stockpiles of crushed material. Reclaimed slopes expose no highwall for description. Slope height is 5 to 6.5 m and the water table is below 6.5 m.

\* \* \* \* \*

**APPENDIX II**  
**SITES/PITS OUTSIDE DEPOSIT BOUNDARIES**

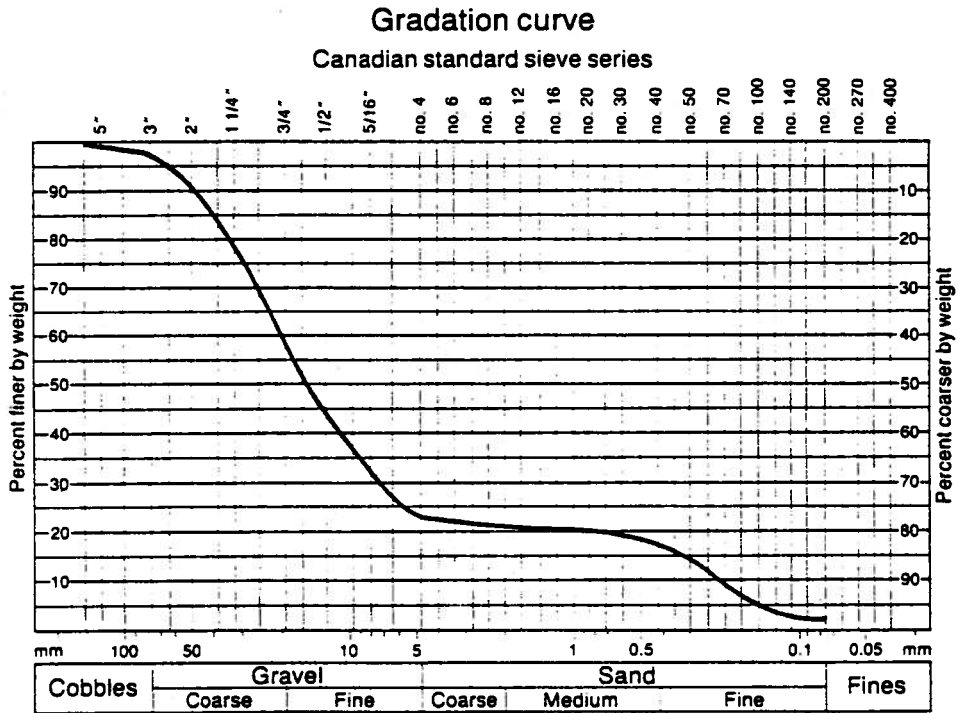


Site Location: Sec SE27 Tp34 R7 W5M

Site Description:

Roadcut exposure, approximately 10m long by 1.5m high, of sandy gravel. Clasts are to 20cm diameter with over 99% less than 15cm. Sandstone and limestone are the dominant rock types and there are some red quartzite clasts. The clasts are commonly tabular and subangular to subround. Sand is fine to medium grained.

Gradation: 2.5% cobbles 75.0% gravel  
20.2% sand 2.3% fines



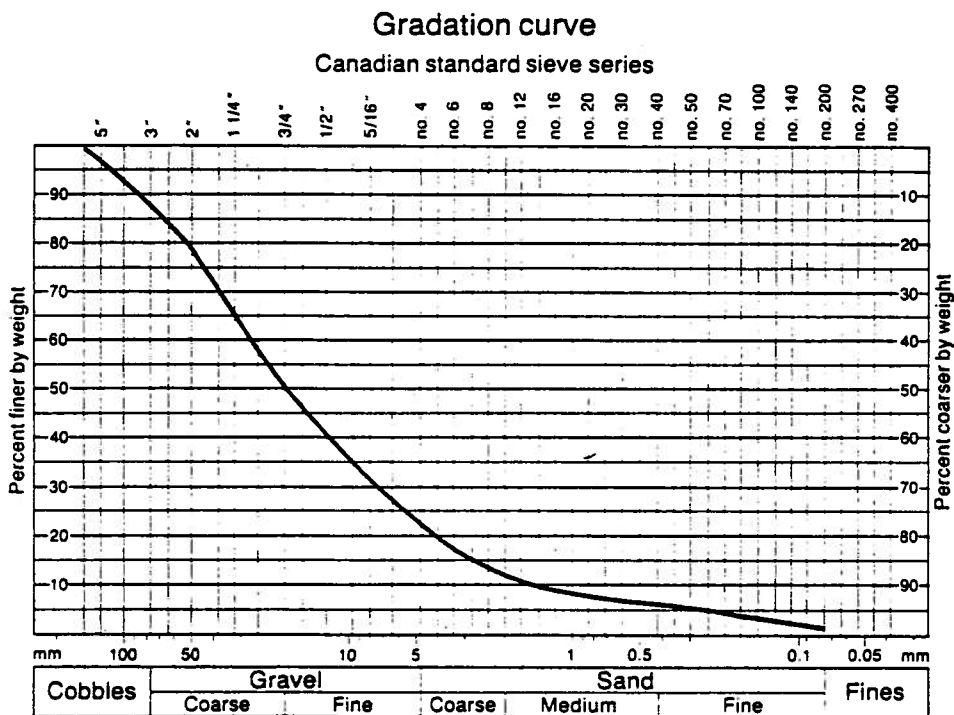


Site Location: Sec SE 12 Tp31 R9 W5M

Site Description:

Roadcut exposure of dirty, sandy gravel in a 6.5m high terrace. Over 99% of clasts are less than 15cm in size. Large clasts of quartzite are common, smaller clasts are limestone and competent sandstone. They are subangular to subrounded and most commonly equant. Sand is mainly fine to medium grained. No structure or sorting is apparent and the material is poorly graded.

Gradation: 13.8% cobbles 63.9% gravel  
20.8% sand 1.5% fines



**Site Location:** Sec SW27 Tp35 R4 W5M

**Site Description:**

About 2m of gravelly sand under 1-2m of overburden. Maximum clast size is 25cm but clasts compose less than 5% of material volume. Approximately 15% fine sand is present in the material. No samples.

---

**Site Location:** Sec SE30 Tp35 R4 W5M

**Site Description:**

About 2m exposure in ditch bank. Material consists of approximately 50% clasts ranging in size from 1cm to 20cm. Clasts are composed of igneous rocks from the Canadian Shield plus quartzite in a matrix of fine sand.

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**Pit Site:** Sec NE31 Tp35 R6 W5M

**Pit Description:**

Depleted pit. Small pocket of gravel along road cut. Not important.

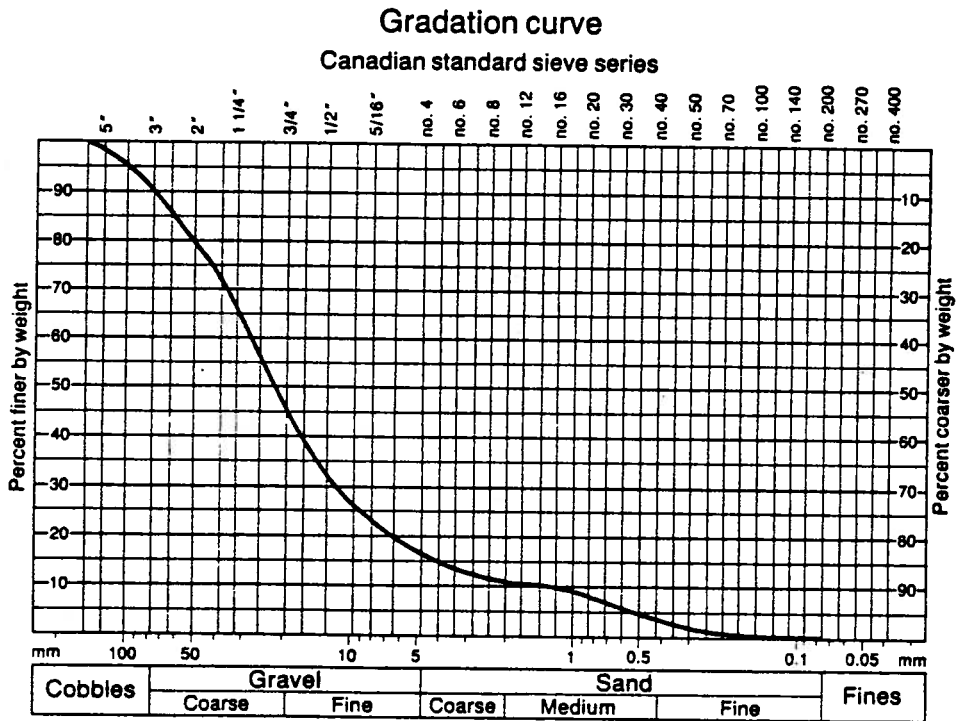
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Pit Location: Sec NW16 Tp35 R5 W5M

**Pit Description:**

Active pit in about 4m of well graded, poorly sorted gravel. A few clasts to 30cm but most are smaller than 15cm. Larger clasts are subangular. Clasts are composed of igneous rocks from the Canadian Shield, limestone, quartzite, minor coal and local friable sandstone. Overburden is 25-30cm thick. The top 1m contains more fines than the material below.

Gradation: 8.9% cobbles 75.2% gravel  
15.7% sand 0.2% fines

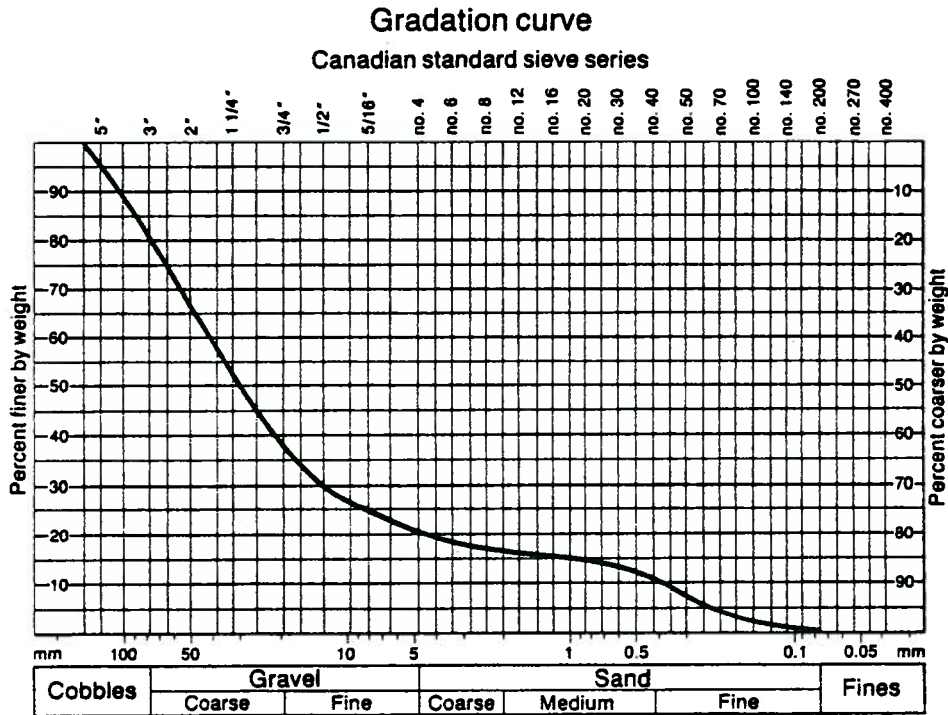


Pit Location: Sec NW20 Tp35 R5 W5M

Pit Description:

Inactive pit exposing up to 6m of dirty gravel. Many clasts are to 30cm size. Quartzite is the dominant large clast. Igneous rocks from the Canadian Shield are present in lesser amounts. No bedding is apparent. The pit was last used about 5 years ago and some walls still are standing vertical because of the abundant fines present. Some good crushed gravel could be obtained from this part if the fines were screened out prior to crushing. Overburden consists of 25cm of silt at the top of the gravel below 0.5-2m of till.

Gradation: 17.9% cobbles 61.9% gravel  
19.3% sand 0.9% fines



Pit Location: Sec SE6 Tp36 R4 W5M

**Pit Description:**

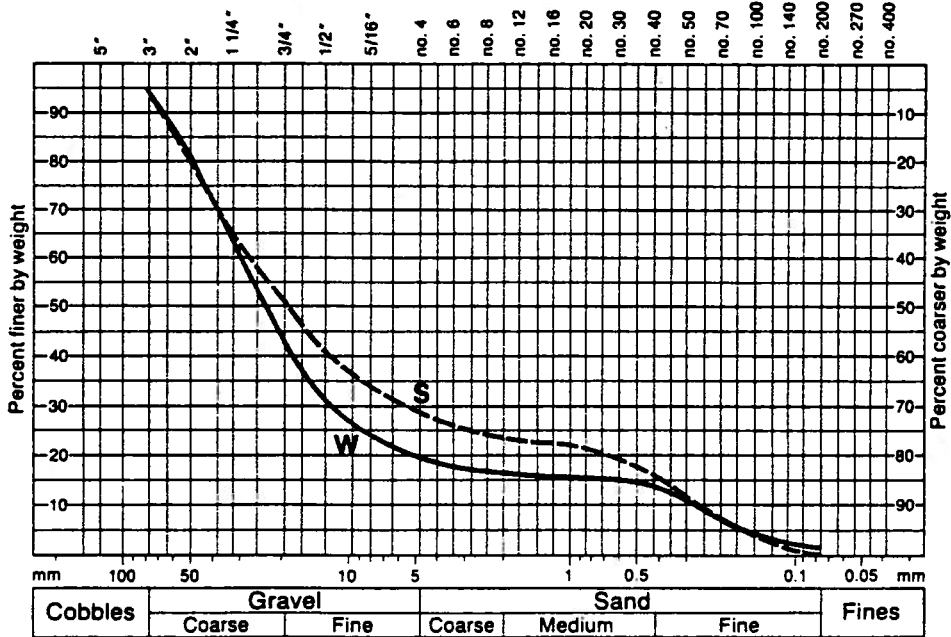
Gravel, 3-3.5m thick is present above the pit floor which is at the water table level. The water table probably could be lowered approximately 1.5m with minor ditching. The operator says clasts are substantially coarser at the water table and will need crushing. Overburden is 25cm thick but thickens to the south. According to the operator the deposit continues northwest and southeast along the bank of the swamp. Large clasts are mostly rounded quartzite and sandstone. Material larger than 3cm is crushed in a jaw crusher.

Gradation: 5.0% cobbles 75.5% gravel) West wall  
 17.7% sand 1.8% fines )

5.6% cobbles 66.3% gravel) South wall  
 26.7% sand 1.4% fines )

**Gradation curve**

Canadian standard sieve series

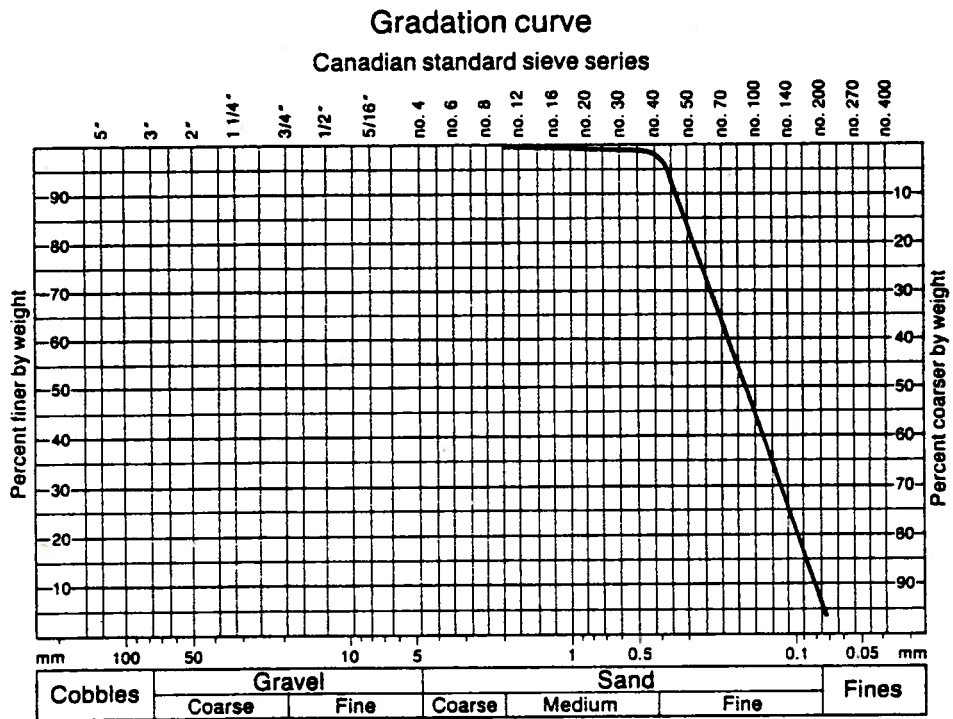


Pit Location: Sec NW32 Tp36 R4 W5M

Pit Description:

Periodically active sand pit. Medium-fine sand is bedded; maximum height is 8m above floor. Sand depth is unknown below the floor. Overburden is less than 10cm thick. Minor clay is present as a thin mudcrack veneer, as seen in dried puddles.

Gradation: 0% cobbles 0% gravel  
95.9% sand 4.1% fines



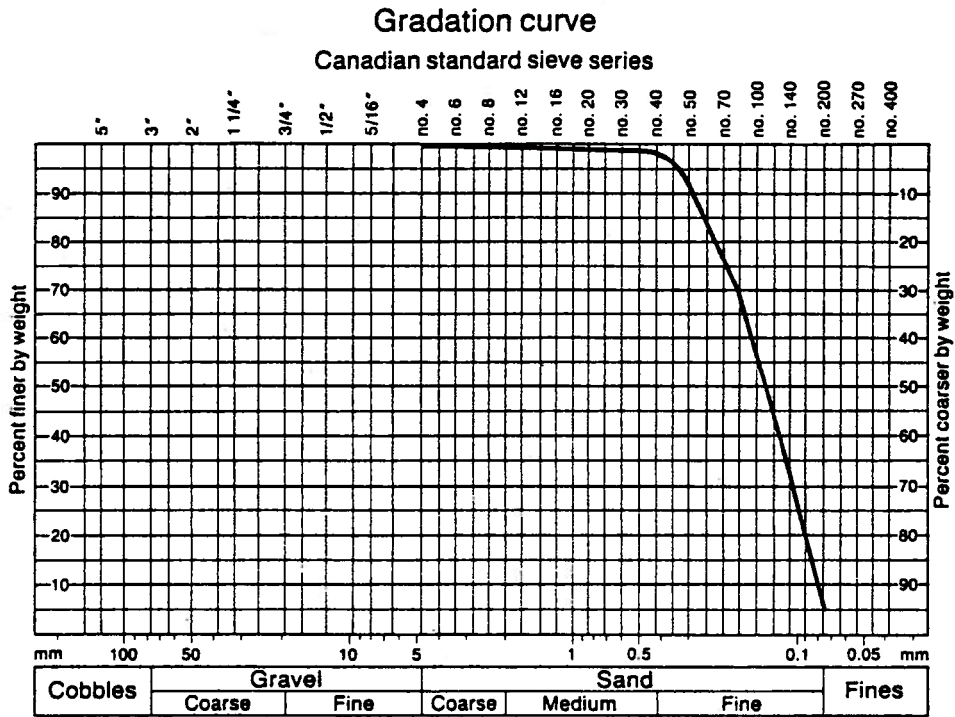


Pit Location: Sec NE24 Tp36 R7 W5M

Pit Description:

Dune, about 9m high, above gravel. The fine sand of this dune is mined periodically for unknown use. Pit floor is the top of the gravel.

Gradation: 0% cobbles 0% gravel  
94.2% sand 5.8% fines



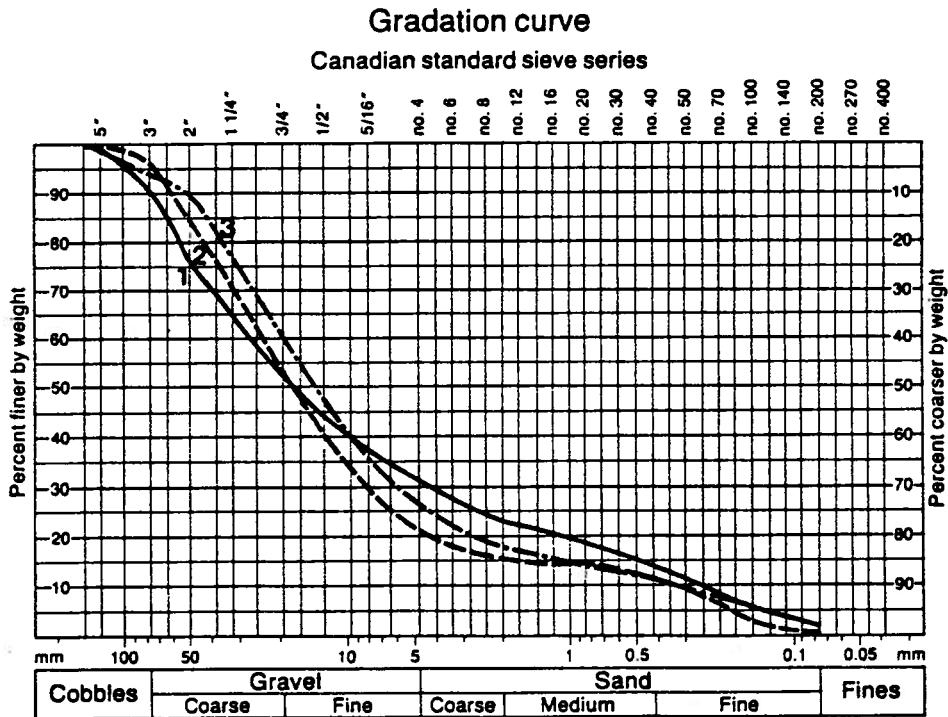
Pit Location: Sec NE24 Tp36 R7 W5M

Pit Description:

Gravel pit, probably active yearly.

Pit currently measures 225 x 200m with approximately 13m of gravel above water level. Maximum clast size is 30cm and these large clasts are most commonly concentrated in the upper 1m of the deposit. Till overburden is approximately 25cm thick. Large clasts most commonly are subangular to subrounded quartzite with some sandstone and limestone. Below the upper 1m, maximum clast size is 15cm. The material is well graded and poorly sorted with gross horizontal lamination. Fine sand is commonly the smallest size fraction but fines are more abundant in some local areas.

Gradation:	7.8% cobbles	61.2% gravel	) Sample 1
	29.1% sand	1.9% fines	) from upper 1m.
	3.5% cobbles	75.3% gravel	) Sample 2
	20.0% sand	1.2% fines	) from 1-2.5m.
	7.0% cobbles	66.9% gravel	) Sample 3
	24.3% sand	1.8% fines	) immediately above
			) current water
			) level in pit.

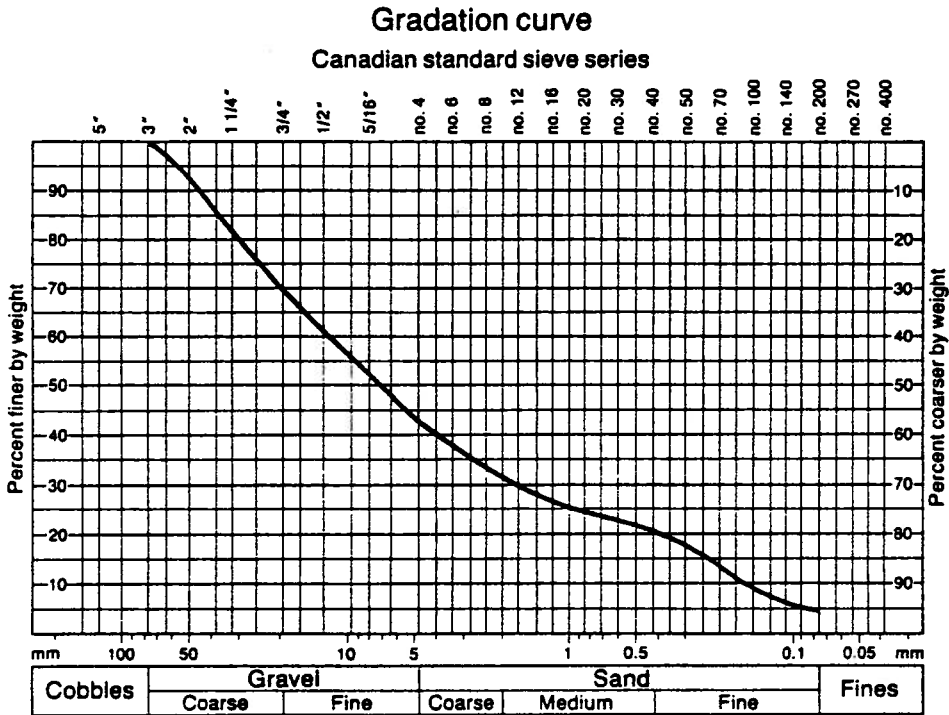


Site Location: Sec NE26 Tp36 R10 W5M

Site Description:

Roadcut exposing 3.5-7m of dirty sandy gravel and fine sand. Most clasts are smaller than 10cm., tabular, and angular to subangular. Limestone and sandstone clasts are common. Quartzite clasts are rare. Probably would make good road gravel with screening of fines and minor crushing.

Gradation: 0% cobbles 57.4% gravel  
37.7% sand 4.9% fines

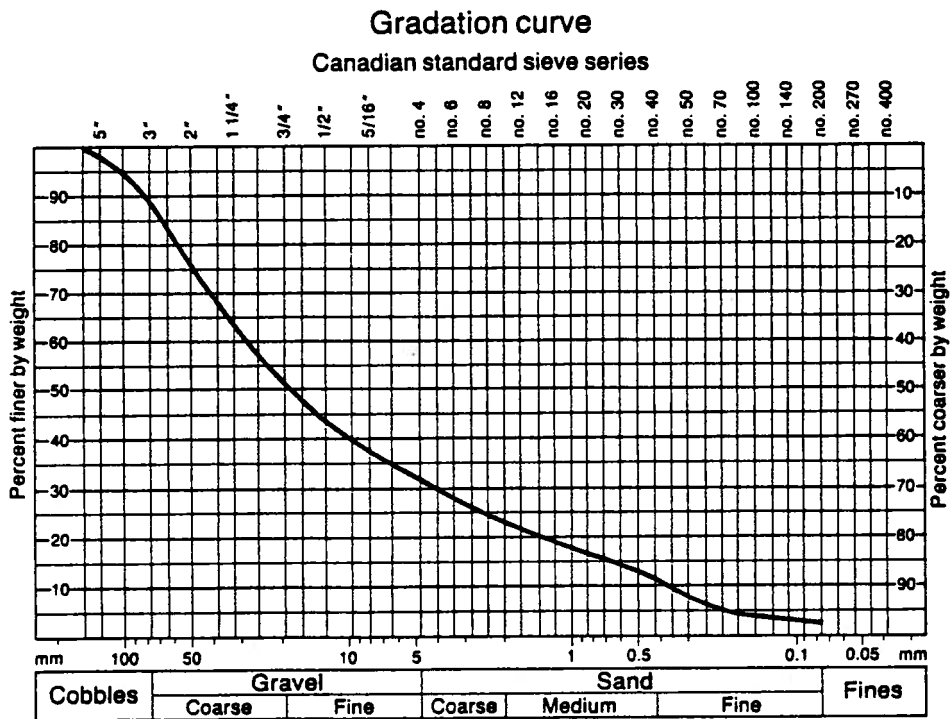


Site Location: Sec NW1 Tp36 R13 W5M

Site Description:

Roadcut. Sandy gravel with clasts to 30cm but 99% are smaller than 10cm and are composed primarily of limestone and sandstone. Sand is fine to medium.

Gradation: 11.3% cobbles 57.2% gravel  
29.0% sand 2.5% fines

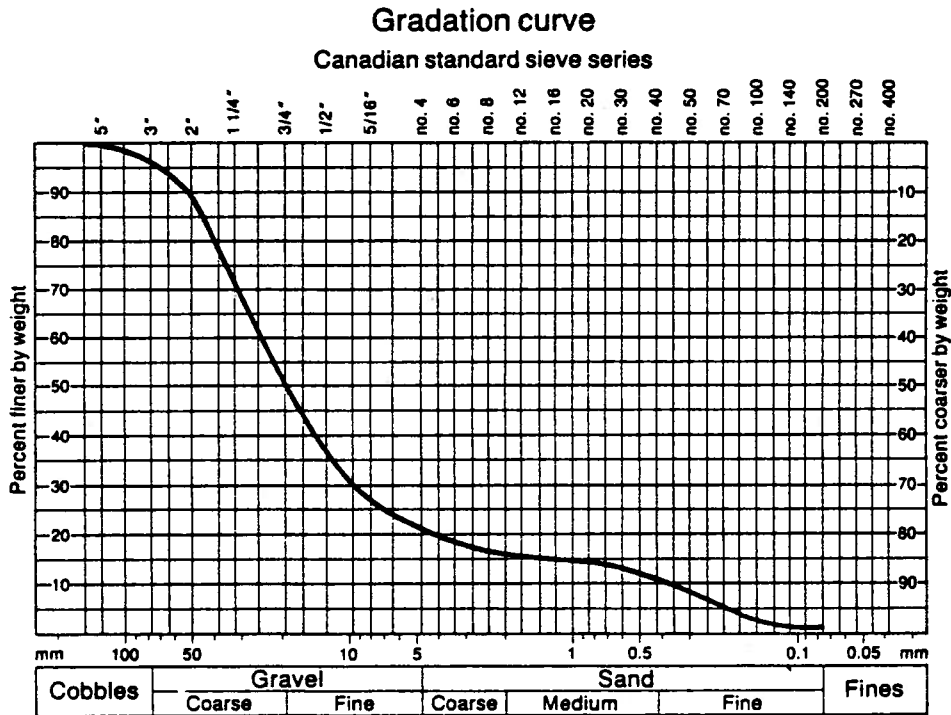


Site Location: Sec NE7 Tp36 R13 W5M

Site Description:

Gravel cap 3-3.5m thick above bedrock on Ram River Falls plateau. Clasts are to 20cm but more than 99% of the clasts are smaller than 15cm in size and more than 98% are smaller than 10cm. Clasts are subangular to subrounded and sandstone and limestone are the most common composition with a few subangular quartzite clasts also present. Sandstone and limestone clasts commonly are tabular. The material is graded but no sorting or bedding is present. Overburden is 15-20cm thick.

Gradation: 4.4% cobbles 74.8% gravel  
19.7% sand 1.1% fines

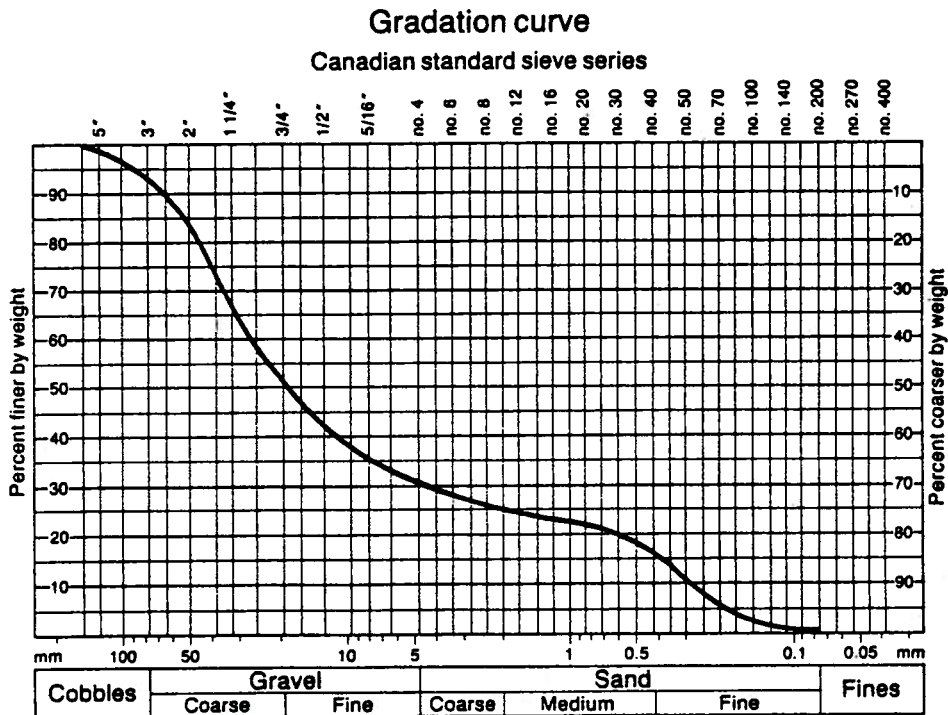


Pit Location: Sec NW7 Tp37 R6 W5M

Pit Description:

Dirty gravel pushed out of the holes to form the water and mud pits of an oil well site. It was impossible to get a sample in the wall of either pit because of the high water level. Maximum clast size is 30cm. About 95% of the clasts are smaller than 15cm, are well graded and poorly sorted. Limestone quartzite and sandstone clasts are dominant. Shale clasts are minor. Clasts are mostly subangular to subrounded. Brownish overall colour to the pile.

Gradation: 6.9% cobbles 62.9% gravel  
29.6% sand 0.9% fines

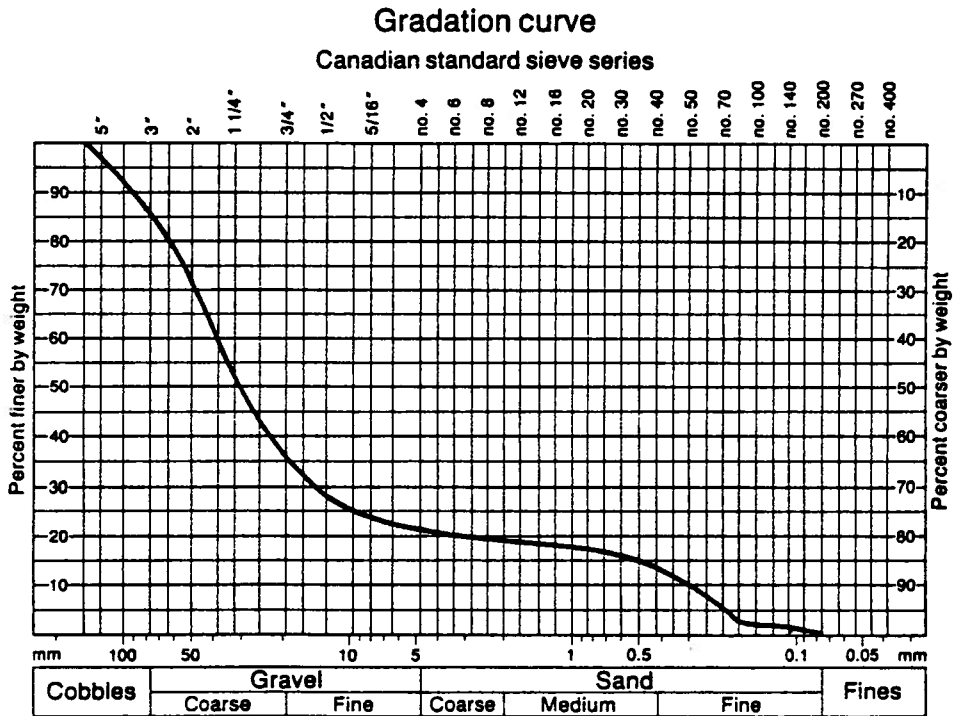


Pit Location: Sec NW19 Tp39 R7 W5M

**Pit Description:**

Inactive pit in flood plain of North Saskatchewan River exposing clean sandy gravel. Maximum clast size is 30cm. Most clasts range between 1cm and 7cm and are mainly quartzite and limestone. Less than 2% of clasts are granite. Chert is quite common and some local bedrock clasts are present. Carbonate coating is common on clasts. Thin sand lenses interbedded with gravel layers are mainly composed of fine to medium clean sand with some coal fragments. Generally thin eolian sand overburden increases in thickness to the north. Thickness of gravel is 3-5m above the water table.

Gradation: 13.8% cobbles    64.4% gravel  
                  21.3% sand        0.5% fines



**Site Location:** Sec SE21 Tp38 R10 W5M

**Site Description:**

Old dugout, reclaimed and revegetated. This stoney till with high clay content may be suitable for road base use.

---

**Site Location:** Sec NE27 Tp38 R11 W5M

**Site Description:**

Glaciolacustrine sediments exposed on both sides of Ram River Creek valley. There may be a gravel bar along this river system.

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**Pit Location:** Sec SE24 Tp39 R8 W5M

**Pit Description:**

Abandoned pit with a stockpile of material remaining. Approximately 1-1.5m of gravel still is in place just above the water table. Overlain by 0.6m eolian sand.

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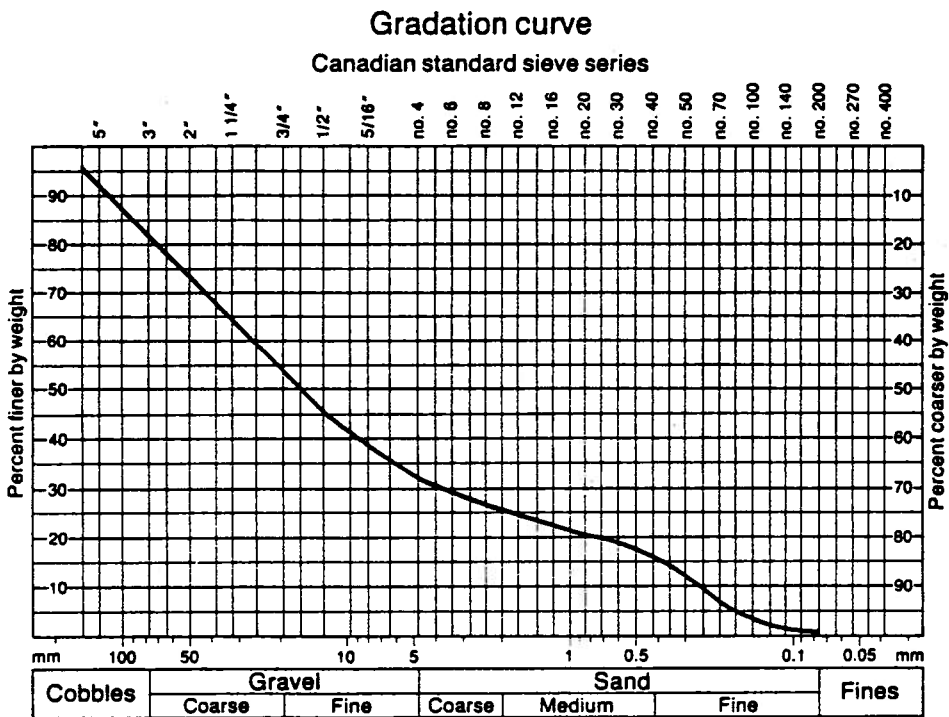


Site Location: Sec SW34 Tp39 R10 W5M

Site Description:

High terrace roadcut exposure of gravel over sandstone bedrock. Dirty gravel is very extensive along roads in this area. Thickness and overburden is variable. Water table is low. Many quartzite and limestone clasts are present. Maximum clast size is 30cm and clasts of this size are abundant. Sand is fine grained.

Gradation: 18.5% cobbles 49.8% gravel  
30.2% sand 1.5% fines

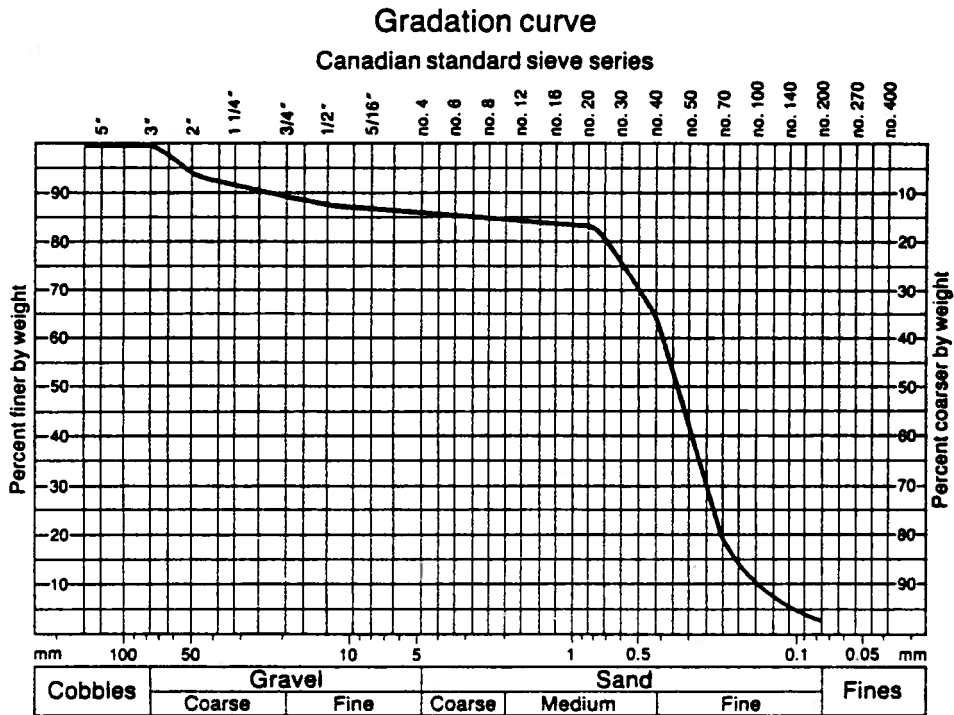


Site Location: Sec N33 Tp39 R10 W5M

Site Description:

Roadcut of glaciofluvial fine sand with a few pebbles smaller than 1.5cm. Oxidized colour. Thick sand deposit.

Gradation: 0% cobbles 14.5% gravel  
83.4% sand 2.1% fines



**Pit Location:** Sec NE13 Tp39 R10 W5M

**Pit Description:**

Depleted pit in kame terrace. Probably dirty gravel.

---

**Site Location:** Sec SW4 Tp39 R12 W5M

**Site Description:**

Rough Creek, bank and bed. Angular to subrounded clasts with some pockets of gravel in the creek banks.

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**Site Location:** Sec NE12 Tp39 R12 W5M

**Pit Description:**

Gravel bars in Rough Creek.

---

**Site Location:** Sec NE9 Tp40 R4 W5M

**Site Description:**

Roadcut. Coarse to fine sand with 1-3% clasts smaller than 3cm.

---

**Pit Location:** Sec E24 Tp40 R8 W5M

**Pit Description:**

Reclaimed small pit near Crimson Lake Park. Probably a pocket of gravel. Not important.

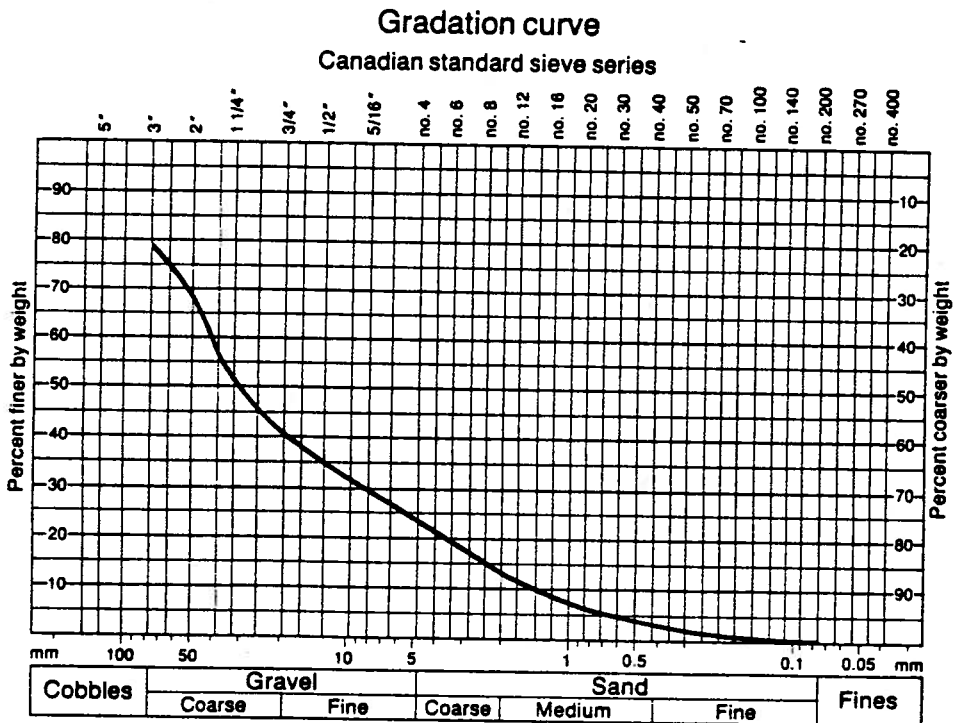
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Pit Location: Sec SE14 Tp40 R6 W5M

Pit Description:

Gravel pit. The maximum face exposed above the water table is about 4m. The loader operator says there are approximately 10m of gravel below the water table (from dragline tests when the pit was opened in the 1940's). About 27,000m<sup>3</sup>/yr are removed. Material needs crushing. Enough fines are present to hold the material well on a road. Most of the material is used for oilfield pads and roads. Subangular boulders as large as 2m are present but rare. The most common maximum clast size is 50cm. No sand stringers are apparent in the face. Off the ridge axis near the ridge base a sand/silt layer 25-50cm thick may be present. Overburden is 10-15cm thick.

Gradation: 22.0% cobbles 54.5% gravel  
23.0% sand 0.5% fines

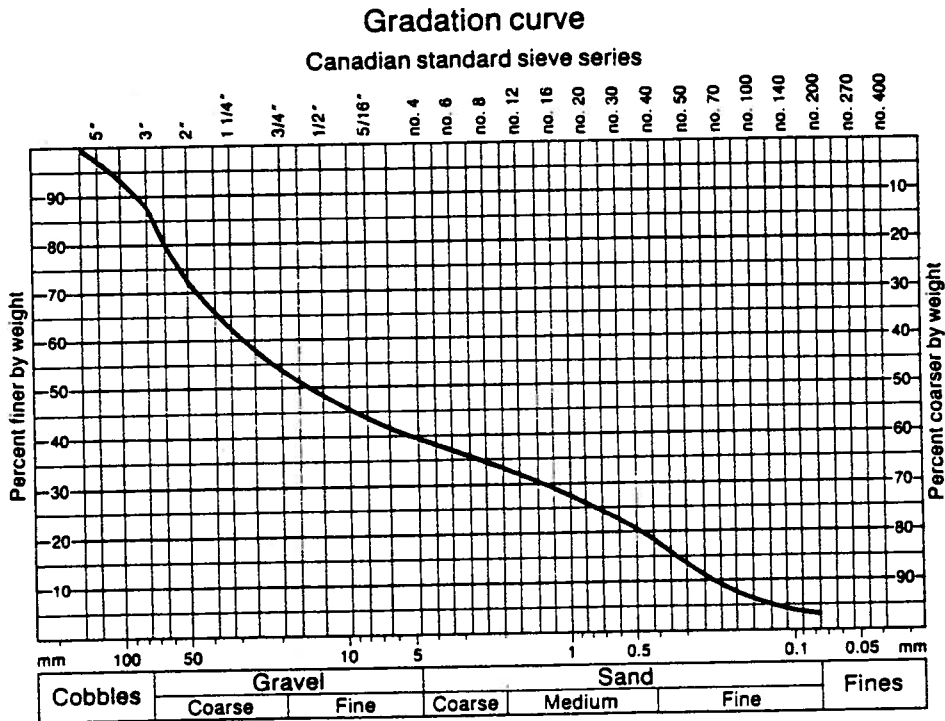


Pit Location: Sec SE9 Tp41 R6 W5M

Pit Description:

Gravelly sand pit exposing a face approximately 3m high. Maximum clast size is 50cm but 99% are smaller than 30cm and 98% smaller than 15cm. Most of the largest clasts are in the upper 0.5-1m and the concentration of large clasts in this interval varies at different points within the pit. Large clasts are mainly sandstone and igneous rocks from the Canadian Shield. The material is graded with some sorting in local areas. Sand varies from fine to coarse grained. Overburden of soil and silt is 30cm thick.

Gradation: 12.4% cobbles    48.3% gravel  
                  35.8% sand        3.5% fines

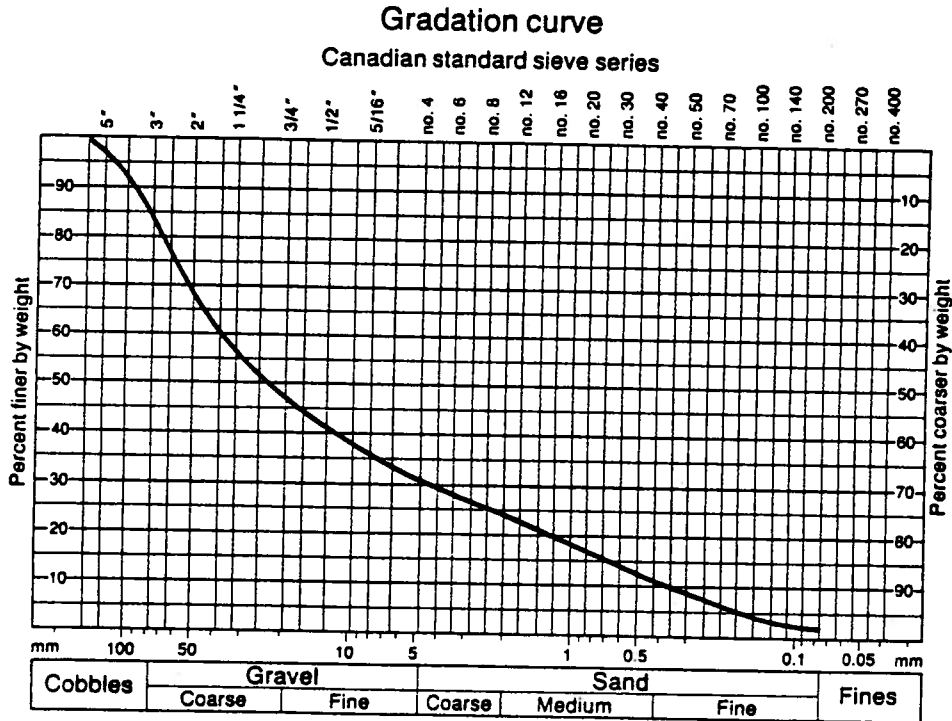


Site Location: Sec NW27 Tp41 R14 W5M

Site Description:

Roadcut, about 4.5m at highest point of exposure. Many clasts are present on the weathered surface, but digging shows a high clay content. Material has been mapped as till and could be a stoney till or dirty gravel that could make good road base. Maximum clast size is 45cm but more than 99% are smaller than 15cm and 98% are smaller than 10cm. Subangular to subrounded limestone, sandstone, and quartzite are the most common clasts. Material consists of about 30-40% clasts at this location. If this is the only "gravel" in the area it could be improved a great deal by sieving.

Gradation: 15.1% cobbles 53.9% gravel  
28.7% sand 2.3% fines



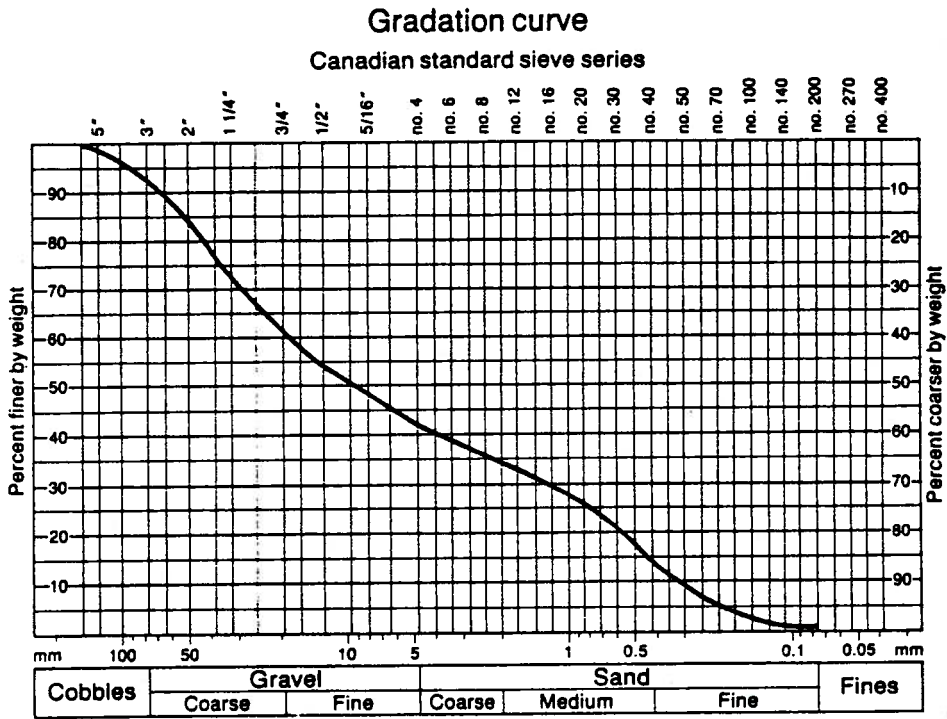
Pit Location: Sec NW33 Tp45 R6 W5M

**Pit Description:**

Ditchcut exposes about 40cm of dirty sandy gravel with the sand mostly fine to medium grained. Maximum clast size is 30cm but most are smaller than 15cm and composed dominantly of subangular igneous rocks from the Canadian Shield. Some sand lenses are present.

Just south of this access road to an oil well is a worked out pit that the farmer says once had up to 4m gravel that was used for local roads. Other gravel pockets may be present in the area.

Gradation: 7.4% cobbles 50.6% gravel  
40.8% sand 1.2% fines



**Site Location:** Sec SW10 Tp42 R10 W5M

**Site Description:**

Silty sand over sandstone bedrock.

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**Pit Location:** Sec SE36 Tp45 R7 W5M

**Pit Description:**

Reclaimed pit that may have been only a borrow pit for use in the realignment of Hwy 22. No indication of any aggregate. There is a small pile of fine sand and slabs of sandstone bedrock present.

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**Site Location:** Sec SW30 Tp45 R7 W5M

**Site Description:**

Southwest of Alder Flats is a small tributary stream with minor gravel bars and silty banks. Accessible by winter road only.

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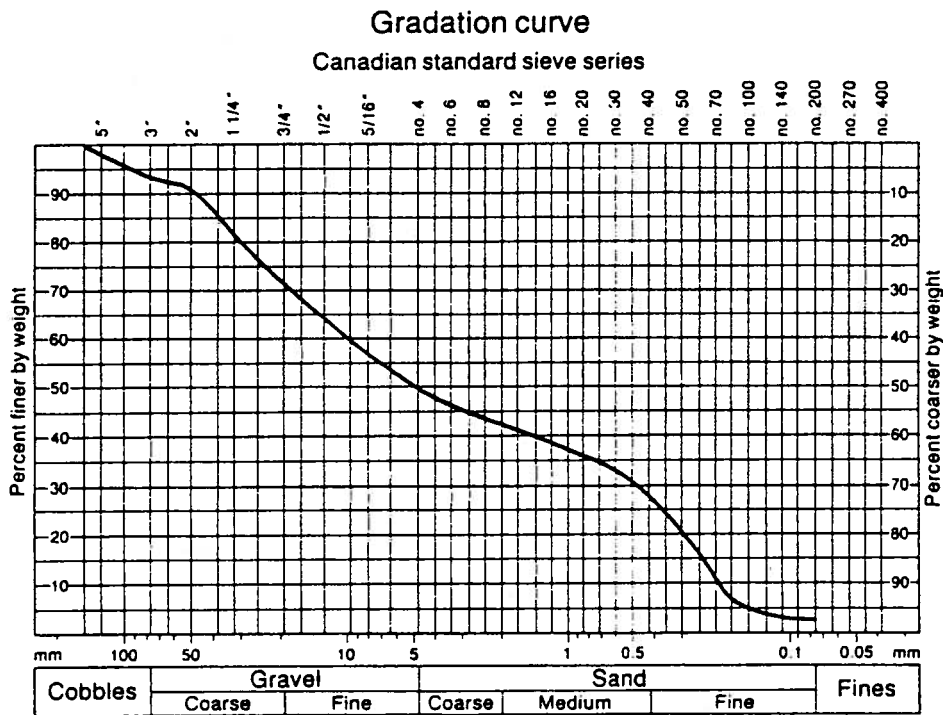


Site Location: Sec NE14 Tp46 R14 W5M

Site Description:

Roadcut exposing about 10m of gravelly sand. This kame-like mound appears to be an isolated structure. Maximum clast size is 15cm but over 99% are smaller than 7.5cm. Sandstone and limestone are the most common clasts and are subangular to subrounded. Clasts make up 25-30% of the material.

Gradation: 6.6% cobbles 43.9% gravel  
46.9% sand 2.6% fines

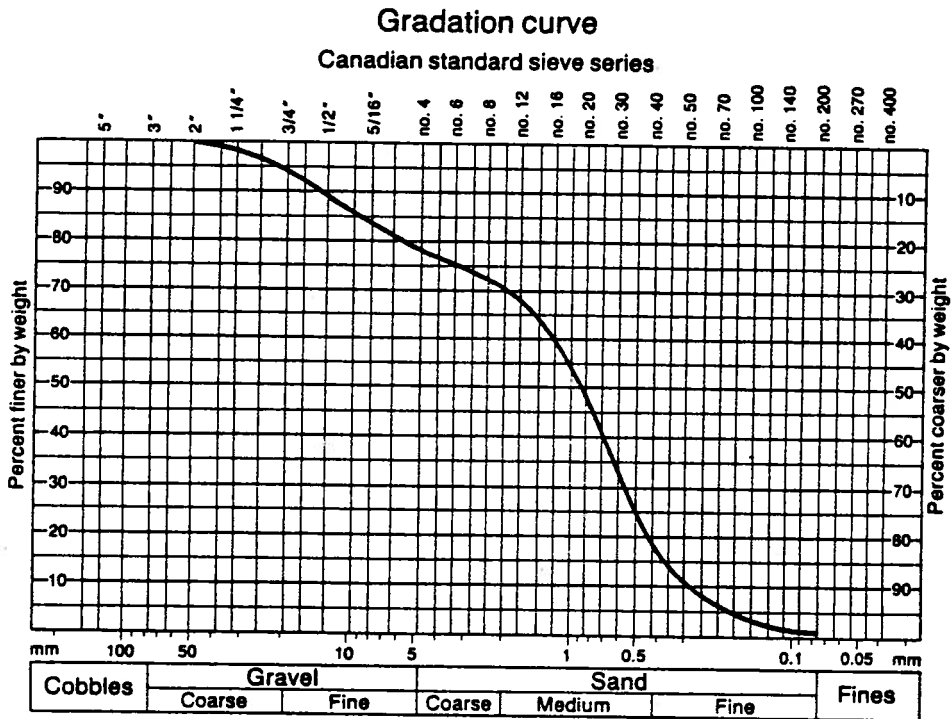


Site Location: Sec SE16 Tp46 R14 W5M

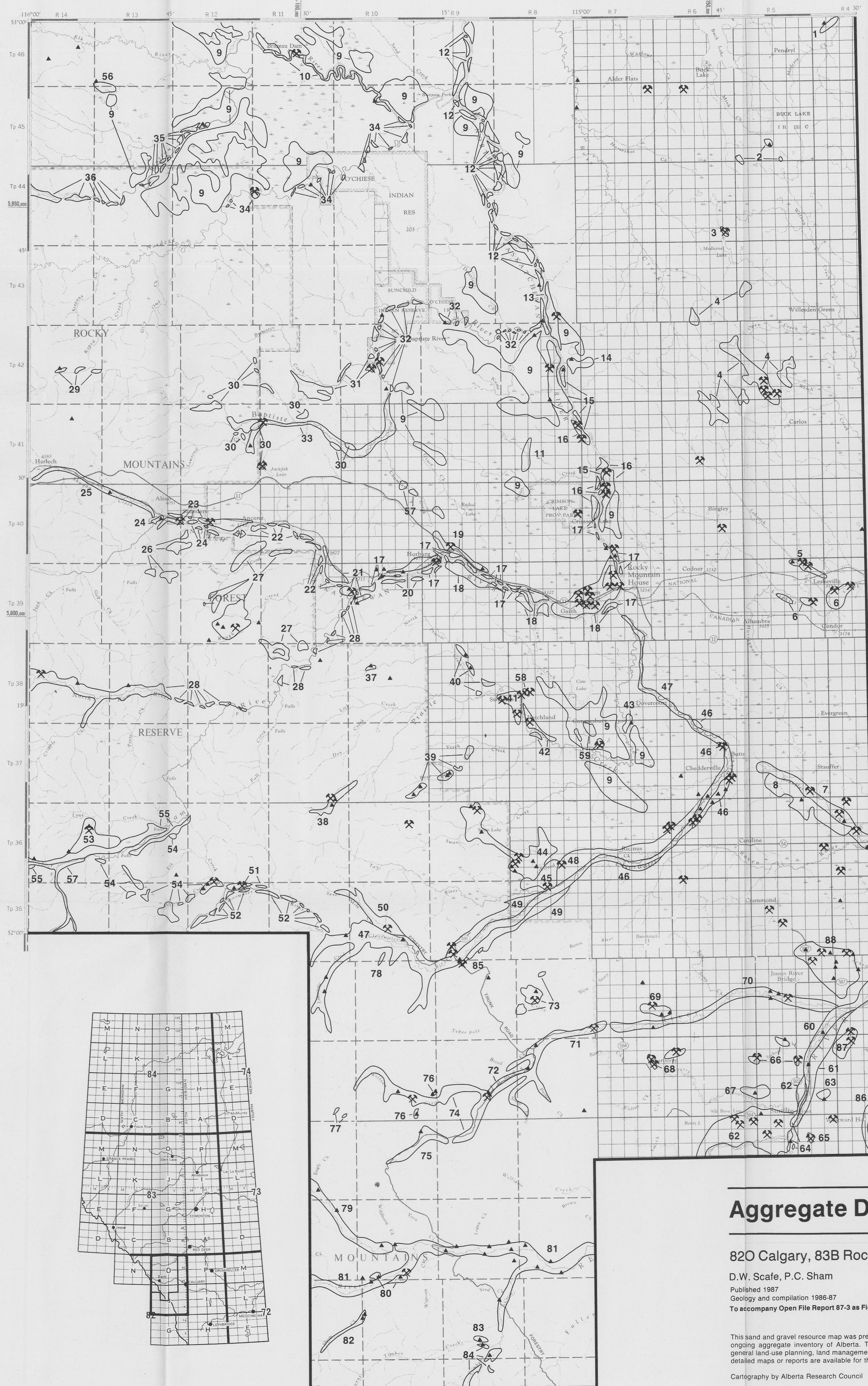
Site Description:

Roadcut exposing about 9m of clean, gravelly sand. Maximum clast size is 15cm but over 99% of the clasts are smaller than 7.5cm. Sandstone and limestone clasts are dominant. Clasts make up only about 10% of material. Sand is fine to coarse grained and more clasts are present with coarser sand. Bedding is thin and horizontal. Coaly material is prominent in some beds.

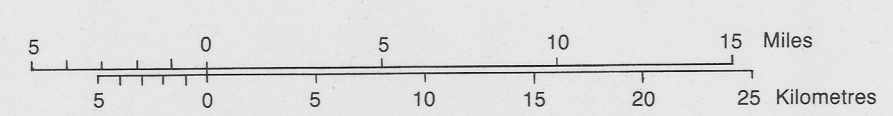
Gradation: 0% cobbles 22.4% gravel  
75.7% sand 1.9% fines







- Deposit outline and number
- ▲ Sample and/or description site
- ⊗ Pit, active or inactive



## Aggregate Deposit Locations

820 Calgary, 83B Rocky Mountain House

D.W. Scafe, P.C. Sham

Published 1987  
Geology and compilation 1986-87

To accompany Open File Report 87-3 as Figure 4

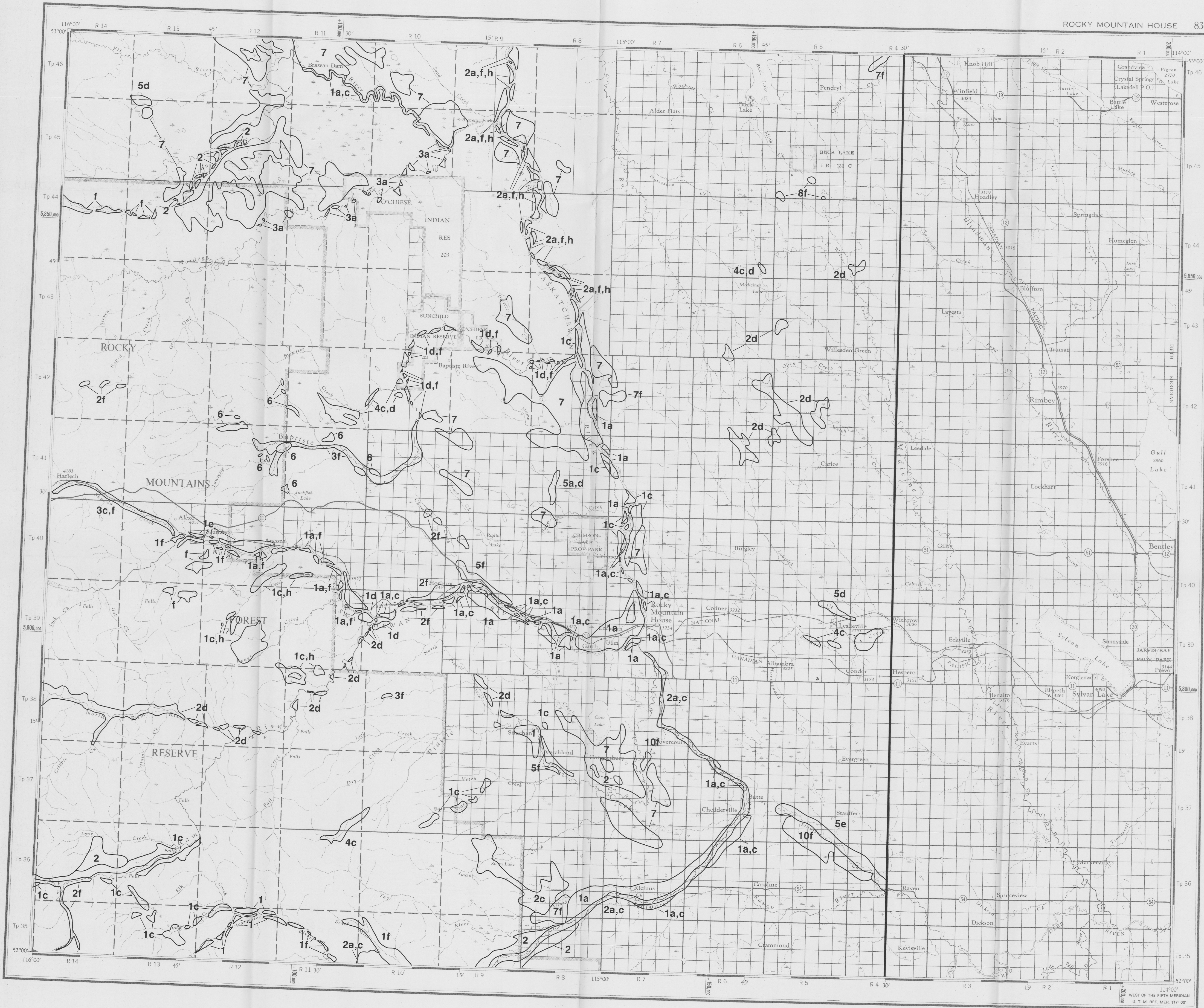
This sand and gravel resource map was prepared by the Alberta Geological Survey as part of an ongoing aggregate inventory of Alberta. This information shown on this map is intended for general land-use planning, land management and aggregate exploration until such time as more detailed maps or reports are available for the area.

Cartography by Alberta Research Council

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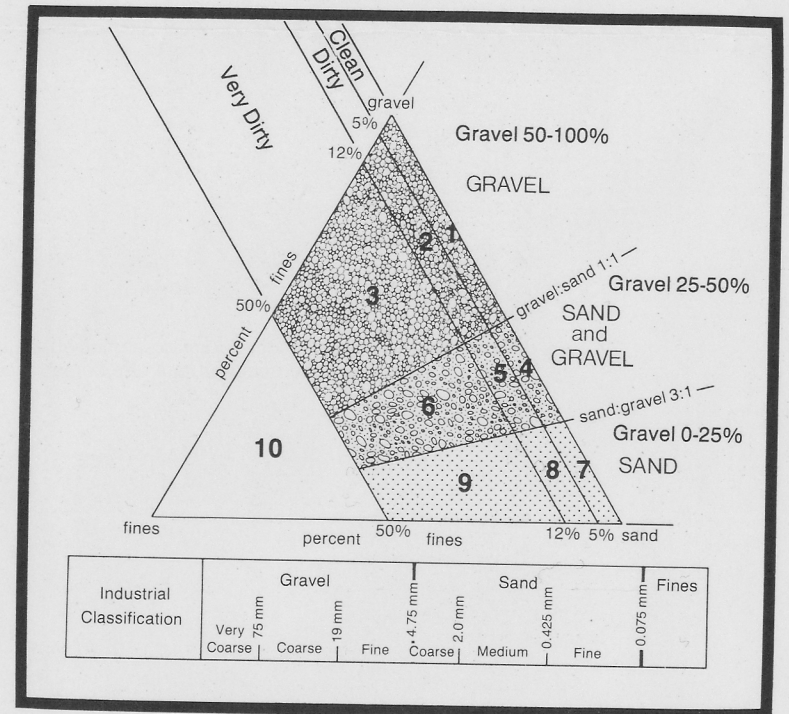




This reconnaissance-level, aggregate potential map is derived from published information, aerial photograph interpretation and limited field checking. As such, deposit outlines are assumed and material descriptions are either assumed or approximate. The sources of information used to produce this map are listed below and terms used in the legend are defined in the ternary diagram.

- 1 Gravel, clean
- 2 Gravel, dirty
- 3 Gravel, very dirty
- 4 Sand and gravel, clean
- 5 Sand and gravel, dirty
- 6 Sand and gravel, very dirty
- 7 Sand, clean
- 8 Sand, dirty
- 9 Sand, very dirty
- 10 Fine grained materials

- a High water table
- b Overburden thickness greater than resource thickness
- c Crushing may be necessary
- d Deleterious factors present:  
eg. iron stain, oil stain, carbonate coatings,  
ironstone, soft shale, soft sandstone,  
coaly fragments, etc.
- e Thin and/or discontinuous
- f Limited data
- g Deposit depleted or nearly depleted
- h Poor access



Published sources of information

Boydell, A.N. (1970, 1971), Bayrock, L.A. (1970), and Reimchen, T.H.F. (1969): Surficial geology of the Rocky Mountain House area NTS 83B, Alberta, Alberta Research Council map, scale 1:250 000.

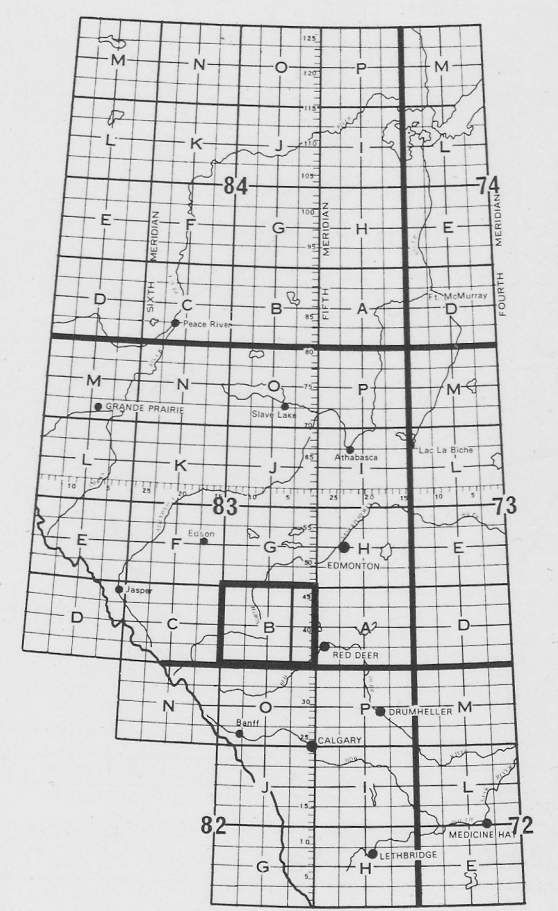
Boydell, A.N. (1972): Multiple glaciation in the Foothills, Rocky Mountain House area, Alberta; unpublished Ph.D. thesis, University of Calgary, 128 pages.

Carlson, V.A. (1971): Bedrock topography of the Rocky Mountain House area NTS 83B, Alberta; Alberta Research Council map, scale 1:250 000.

Green, R. (1972): Geological map of Alberta; Alberta Research Council map, 1:1 267 000.

Sham, P.C. (in preparation): Aggregate resource map; scale 1:250 000; Rocky Mountain House 83B, Alberta; Alberta Research Council.

Tokarsky, O. (1971): Hydrogeology of the Rocky Mountain House area, Alberta; Alberta Research Council Open File Report 71-3.



## Aggregate Resources

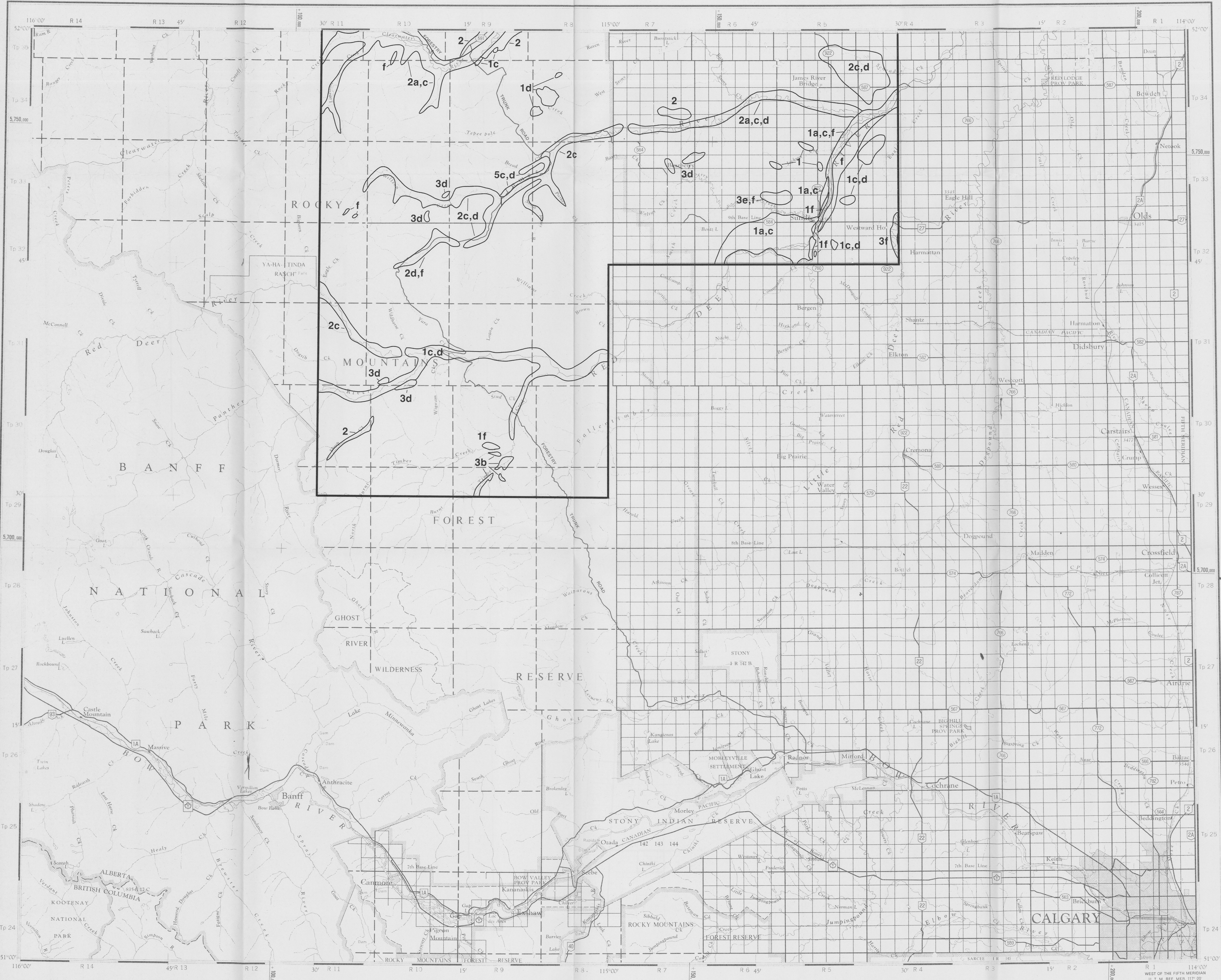
83B Rocky Mountain House 1:250,000

D.W. Scafe, P.C. Sham  
Published 1987  
Geology and compilation 1986-87  
To accompany Open File Report 87-3 as Figure 5

This sand and gravel resource map was prepared by the Alberta Geological Survey as part of an ongoing aggregate inventory of Alberta. This information shown on this map is intended for general land-use planning, land management and aggregate exploration until such time as more detailed maps or reports are available for the area.  
Cartography by Alberta Research Council

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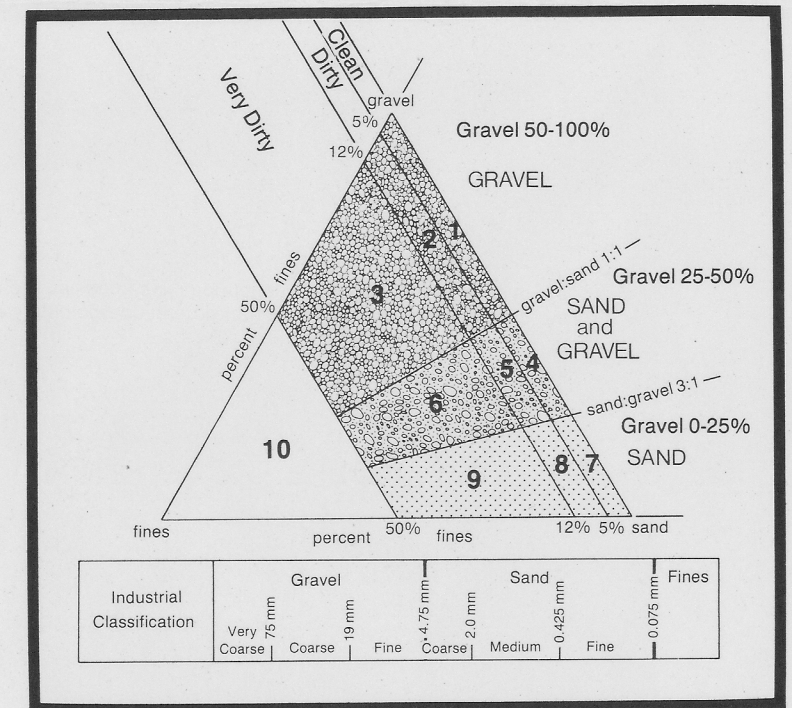




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- a High water table
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- g Deposit depleted or nearly depleted
- h Poor access



Published sources of information

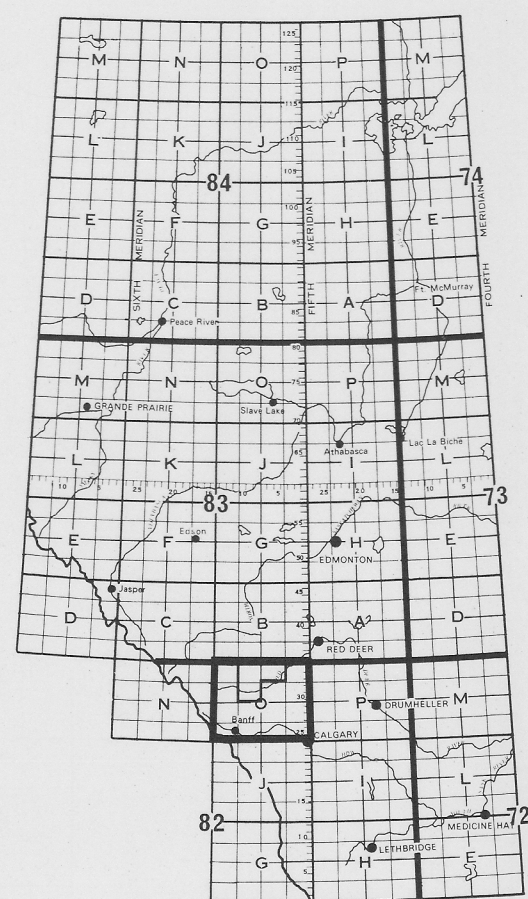
Boydell, A.N. (1970): Relationship of Late-Wisconsin Rocky Mountain and Laurentide ice in the vicinity of Sundre, Alberta; unpublished Master's thesis, University of Calgary, 130 pages.

Boydell, A.N. (1972): Multiple glaciation in the Foothills, Rocky Mountain House area, Alberta; unpublished Ph.D. thesis, University of Calgary, 128 pages.

Green, R. (1972): Geological map of Alberta; Alberta Research Council map, 1:1 267 000.

Ozoray, G.F. and Barnes, R. (1977): Hydrogeology of the Calgary-Golden area, Alberta; Alberta Research Council, Open File Report 77-2.

Shetsen, I. (in preparation): Surficial geology of the Calgary area NTS 82O, Alberta; Alberta Research Council map, scale 1:250 000.



## Aggregate Resources

82O Calgary 1:250,000

D.W. Scafe, P.C. Sham  
Published 1987  
Geology and compilation 1986/87  
To accompany Open File Report 87-3 as Figure 8

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