

GRANULAR RESOURCE INVENTORY  
MACKENZIE

Martin House 106K

Produced for Indian & Northern Affairs  
by Dept. of Energy, Mines & Resources



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GRANULAR RESOURCE INVENTORY - MACKENZIE

MARTIN HOUSE NTS 106 K

Scale 1:125,000

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DIVISION

MAR 1973

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For: Department of Indian  
and Northern Affairs

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## SUMMARY

The Martin House map area does not have an abundance of unconsolidated granular material. Sand and gravel occur in deposits of glaciofluvial and fluvial origin but the glaciofluvial deposits are small in number and size and widely separated, and the fluvial sand and gravel deposits are thin; some deposits contain up to 50% silt and clay.

Bedrock consists of flat lying shale and sandstone of Devonian and Cretaceous age. Both rock types are fissile, thin bedded and weather easily. They can be ripped for use as subgrade material where they occur near the surface.

## INTRODUCTION

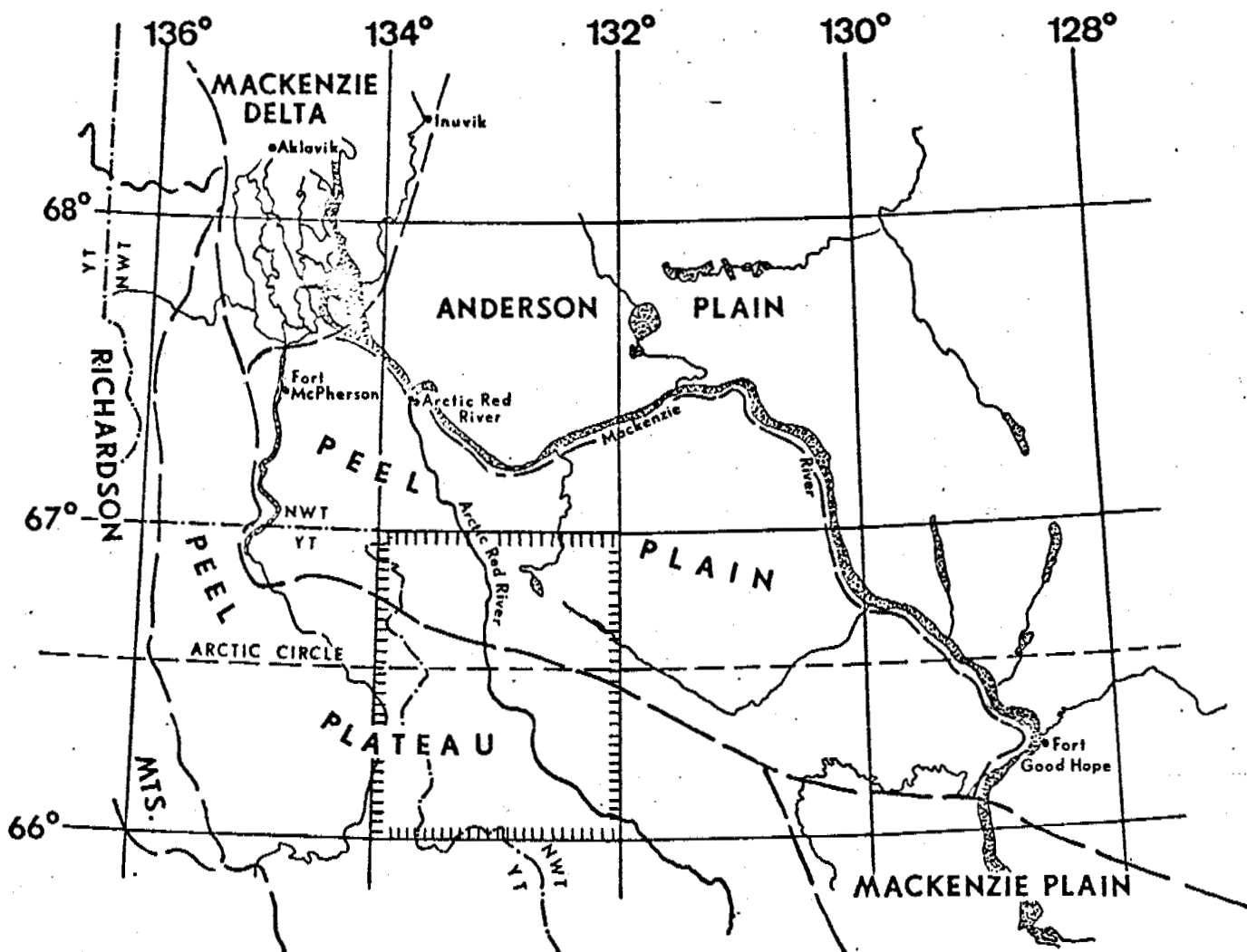
This report presents preliminary qualitative information on the distribution of unconsolidated granular materials and bedrock available for construction purposes within the Martin House map area.

The information in this report has been compiled from published and unpublished information of the Geological Survey and from personal communication with officers of the Geological Survey of Canada. No quantitative assessment of construction material has been made because only minimal information on deposit thickness, texture of material and quantity of ground ice is available.

The basic document used in this report is a surficial geology map of Martin House at a scale of 1:125,000 (Hughes, 1972). It is indexed as G.S.C. Open File 108 and may be viewed at Geological Survey of Canada offices in Ottawa, Calgary and Vancouver. Ozalid copies may be obtained commercially at nominal cost. Unconsolidated granular deposits have been highlighted on this map.

The map area is underlain entirely by Devonian and Cretaceous undifferentiated shale and sandstone thus no bedrock geology overlay accompanies this report.

Geographic areas of granular deposits have not been outlined as was done in previous reports because the deposits are few, small and widely separated.



## MARTIN HOUSE

PHYSIOGRAPHIC REGIONS

0 M.I. 80

after BOSTOCK 1967

## GENERAL GEOLOGY AND PHYSIOGRAPHY

Two physiographic regions are represented in the Martin House map area: the Peel Plateau occurs in the southern two-thirds of the map area and the Peel Plain in the northern third. Few granular deposits occur in the map area; these are small and widely separated. Bedrock is flat lying and weathers easily and therefore outcrops only in the river valleys.

### Unconsolidated Deposits

Glaciofluvial deposits, G, sand and gravel

Sand and gravel of glaciofluvial origin occur as outwash and channel deposits, eskers and kames. Deposits are relatively small and widely separated. The only area where glaciofluvial deposits are abundant is in the northeast corner of the map area. Deposits are 5' to 10' thick and approximately 75% is available as construction material.

Alluvial deposits, A, sand and gravel

Sand and gravel occurs along portions of the Arctic Red, Peel and Sainville Rivers. The active portion of the alluvial plains comprises sand and gravel while the older flood plains comprise 50% sand and gravel and 50% silt. Maximum thickness of the deposits are 15' and it is estimated that 25%-50% of the material is available for construction purposes.

Moraine deposits, M, till

Most of the Martin House map area is covered by morainal till; an unsorted mixture of sand, gravel, silt and clay. Very little of this material can be used for construction purposes as it is predominantly silt and clay. The ground ice content is probably high.

### Bedrock geology

Cretaceous shale and sandstone underlie all of the Martin House map area except for the northern portion which is underlain by Devonian shale and sandstone of the Imperial, Canol and Hare Indian Formations. Rocks of both geological ages are flat lying, thinly bedded, fissile and weather easily, hence bedrock outcrops

only in the river and stream valleys. Where bedrock occurs close to the surface it could be ripped and used for subgrade material.



## MATERIALS

Sand and gravel of glaciofluvial origin is not abundant in the Martin House map area. The deposits are small and widely separated except in the northeast of the map area. Unconsolidated granular material of alluvial origin is more plentiful but the deposits are thin and in some areas the sand and gravel is mixed with silt and clay.

Bedrock consists of shale and sandstone. Both these rock types are thinly bedded, fissile and weather easily. Where the bedrock occurs close to the surface it can be ripped and used as ice-free subgrade material.

# SOURCES OF INFORMATION

Bostock, H.S.

- 1948: Physiography of the Canada Cordillera, with special reference to the area north of fifty-fifth parallel; Geol. Surv. Can., Mem. 247.

Bostock, H.S.

- 1967: Physiographic Regions of Canada; Geol. Surv. Can., map 1254A.

Hughes, O.L.

- 1969: Surficial Geology of Northern Yukon Territory and Northwestern District of Mackenzie, N.W.T.; Geol. Surv. Can. Paper 69-36.

Hughes, O.L.

- 1972: Surficial Geology and Geomorphology of Martin House 106K; Geol. Surv. Can. Open File 108.

Norris, D.K., Price, R.A., Mountjoy, E.W.

- 1963: Northern Yukon Territory and Northwestern District of Mackenzie; Geol. Surv. Can., Map 10-1963.

Prest, V.K., Grant, D.R., and Rampton, V.N.

- 1967: Glacial Map of Canada; Geol. Surv. Can., map 1253A.

## APPENDIX I, Part I

## Unconsolidated Granular Materials

Each map sheet has a surficial geology legend (see appendix).

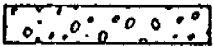
This legend, differentiated by means of patterns, only indicates granular material classified by genetic characteristics. In some cases only part of a map unit has been patterned, indicating that only that portion is considered a suitable source for granular material.

Legend

## GLACIOFLUVIAL



coarse grained granular material: cobbles, pebbles, gravel; may be mixed with some coarse sand

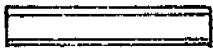


mixed or interbedded sand and gravel

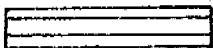


predominantly sand or sand with some fine material

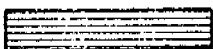
## GLACIOLACUSTRINE



coarse grained granular material: cobbles, pebbles, gravel; may be mixed with some coarse sand.



mixed or interbedded sand and gravel



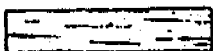
predominantly sand or sand with some fine material

## FLUVIAL



only sand and gravel deposits are patterned

## MORAINAL

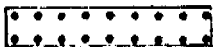


predominantly till; unsorted matrix of silt, clay, and sand imbedded with pebbles, cobbles and boulders

## MARINE



coarse grained granular material: cobbles, pebbles, gravel; may be mixed with coarse sand



mixed or interbedded sand and gravel



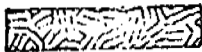
predominantly sand or sand with some fine material

EOLIAN



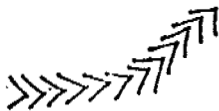
fine and medium sandy material

COLLUVIUM

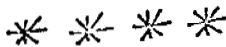


only the patterned area is coarse grained

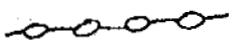
Symbols



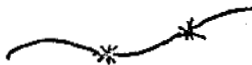
eskers



gravel mounds



morainal ridge found within moraine



limit of glaciation

## APPENDIX I, Part (II)

## SURFICIAL GEOLOGY AND LANDFORMS

TEXTURE	GENESIS	MORPHOLOGY	SLOPE (superscript)
f fen	O organic	v veneer	1 moderate
p peat	M morainic	p plain	( $<5^{\circ}$ )
c clay	G glaciofluvial	d drumlin	2 steep
si silt	L lacustrine	s fluted, striated	$5^{\circ}$ - $15^{\circ}$ )
s sand	A alluvial	t terrace	
g gravel	fluvial	h hummocky	$<15^{\circ}$ normally
b boulder	C colluvial	r ridged	in Cx unit
t till	E eolian	e eroded	
	U upland, rolling bedrock	f fan	
	controlled	m rolling	
	R rock outcrop	c channelled	
		k kettled	
		thermokarst	
		x complex	

## Complex Units:

e.g. in: Mp-f0, f0 constitutes 25% to 49% of area  
 : Mp/f0, f0 = 5% - 24% of area

using all four elements of the legend, a smooth ground moraine surface with moderate slope would be tMp<sup>1</sup>; hummocky and ridged glaciofluvial gravel would be gGhr. Note that there are inconsistencies in the use of Mp and Mv mainly because of the difficulty in estimating till thickness.