
Aggregate Report AR94-1

Aggregate Resource Inventory in the Rural Municipality of La Broquerie

by G.L.D. Matile

Manitoba
Energy and Mines
Mines Branch



1994

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Winnipeg, 1994

Energy and Mines

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MAP

Map AR94-1: Aggregate Resources in the Rural Municipality of La Broquerie	(in pocket)
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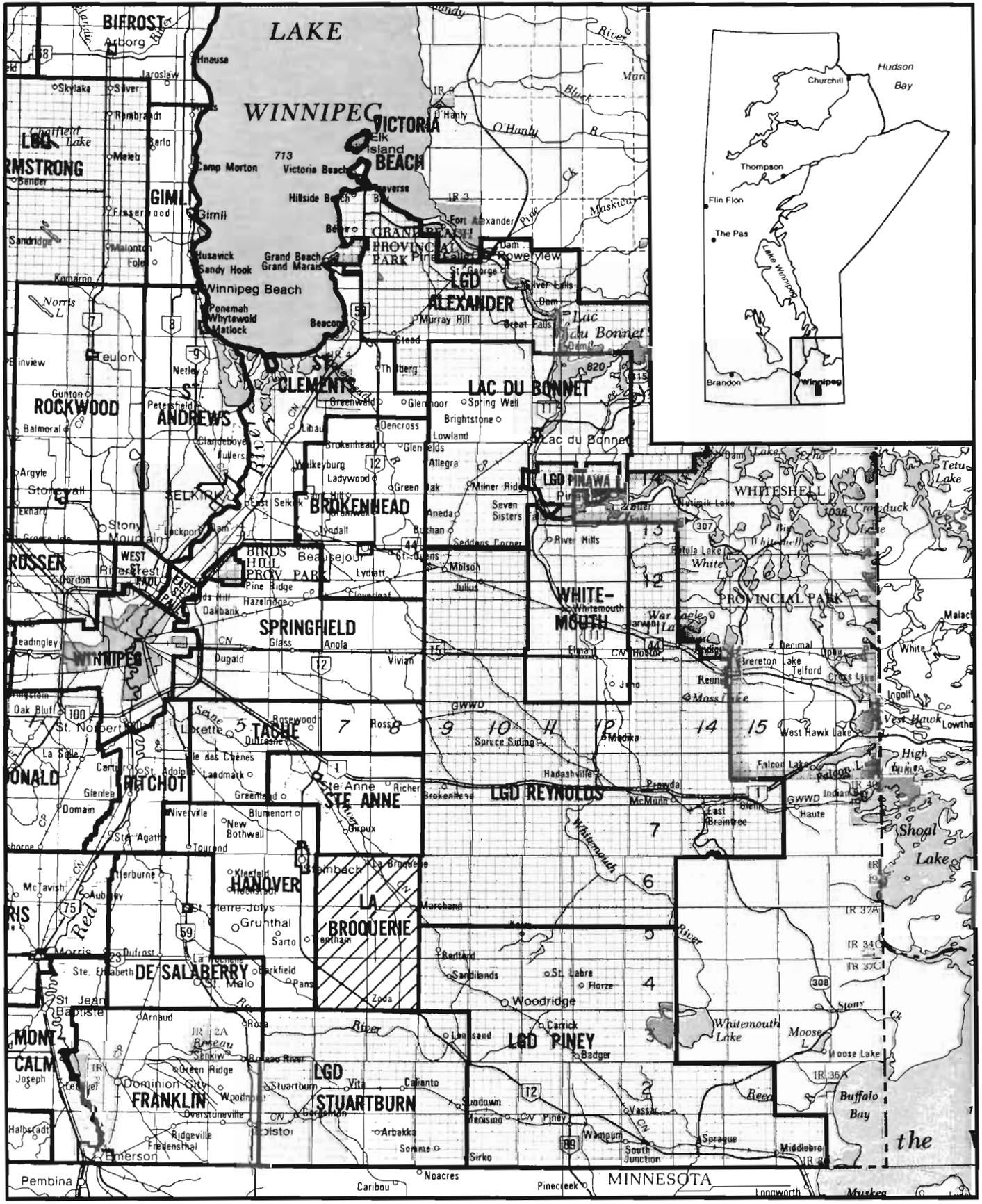


Figure 1: Location map.

INTRODUCTION

OBJECTIVES

An aggregate inventory was carried out in the Rural Municipality of La Broquerie during the summer of 1991. The objectives were to delineate sand and gravel deposits at a scale of 1:50 000 and to estimate the quantity and quality of material in each deposit. The aggregate inventory would then provide a database for land-use planners and potential resource users.

LOCATION AND ACCESS

The Rural Municipality of La Broquerie is located 50 km southeast of Winnipeg via P.T.H. 1, 12 and 52 (Fig. 1). It comprises six townships (560 km²), including townships 4-6, ranges 7-8E. The area is included in NTS areas 62H/7, 62H/8, 62H/9 and 62H/10.

A network of provincial trunk highways, provincial roads and section roads provide good access to all areas of the municipality. P.T.H. 52 and P.R. 210 provide good access between Steinbach, which is located west of the R.M. of La Broquerie in the R.M. of Ste. Anne, and the towns of La Broquerie and Marchand, which are the two main centres in the municipality. P.T.H. 12 provides an northwest-southeast transect through the southern portion of the area, near the town of Zhoda. P.R. 302 links the towns of La Broquerie and Zhoda. Section roads provide access to most of the municipality; however, many would require upgrading to accommodate truck traffic transporting aggregate.

PHYSIOGRAPHY

The R.M. of La Broquerie is located within the south-east lake terrace plain. This is an area of gently rolling topography with surface materials composed predominantly of glacial till and glacioluvial sand. The sand is commonly littered with boulders. Beach ridges from glacial Lake Agassiz, up to 6 m high, trend northeast across the area.

The depth to bedrock increases from approximately 30 m in the northwest corner of the municipality to more than 90 m in the southeast, where the municipality borders the Bedford Hills to the east (Teller *et al.*, 1976).

The area is predominantly within the Seine River watershed, which is part of the Red River drainage basin. The Seine River and its tributaries drain towards the northwest. The southern 25% of the area is within the Rat River watershed. Here, a system of drainage ditches carries spring runoff and storm water westward to Joubert Creek, a tributary of the Rat River.

METHODOLOGY

Potential aggregate deposits were delineated on 1:50 000 scale airphotos, incorporating the following data: interpretation of black and white aerial photographs at

scales of 1:50 000 and 1:15 840; pit inventory files from the Manitoba Department of Highways and Transportation; and soil maps (Ehrlich *et al.*, 1976).

Field investigation was conducted during the summer of 1991. All existing exposures, including gravel pits and road cuts, were visited and samples were collected from deposits considered to have economic value. Sites interpreted to have unproven aggregate potential were tested with a backhoe in the latter portion of the field season. In addition, several sites in the municipality were visited and sampled prior to 1991 to satisfy land-use planning requirements; these data are included in Appendix I.

Gravel samples were processed in two stages¹. In the first stage, which was conducted at the sampling sites, the material retained on 76 mm (3 inches), 38 mm (1 1/2 inches) and 19 mm (3/4 inches) screens was weighed and a representative sample (≈ 1 kg) of the material that passed the 19 mm screen was collected. In the second stage, the minus 19 mm material was screened through 11 sieves, each separately weighed (Fig. 2), and a percentage retained was calculated for each size fraction.

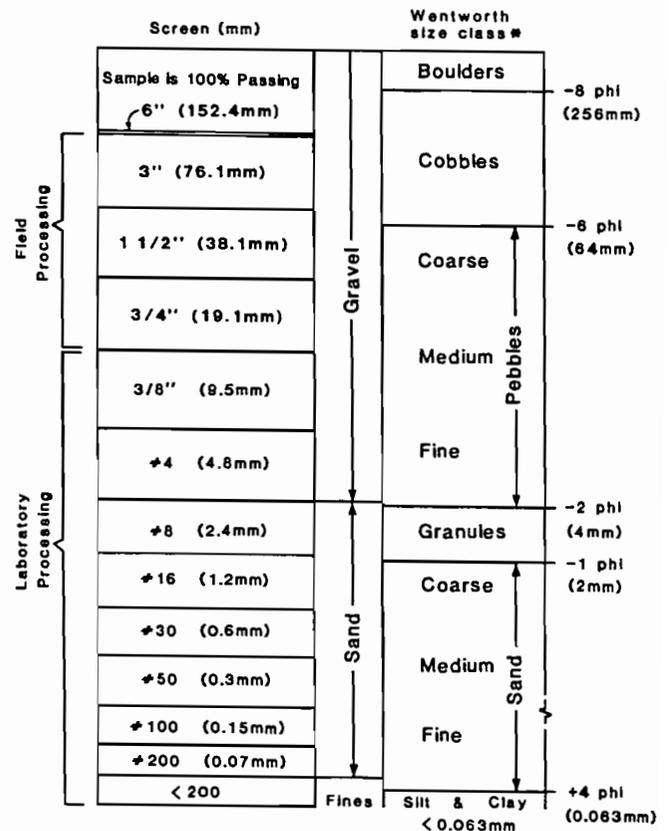


Figure 2: Grain size analysis and classification.

¹ The maximum grain size sampled was 152 mm (6 inches).

This two-stage procedure was developed to overcome sampling deficiencies in sediments with an abundance of material coarser than 19 mm, ensuring that there was sufficient material in the coarser size fractions to maintain the samples' statistical validity (American Society for Testing and Materials, 1987, see specification **ASTM D75-82**). This procedure made it feasible to take samples in excess of 150 kg where necessary.

During the field processing of the gravel sample, a petrographic analysis of the 19-38 mm pebble fraction was carried out to determine the materials' suitability for aggregate. The pebbles were divided into 25 rock types and four quality classifications, from which percentages of good, fair, poor and deleterious pebbles were determined. Shale, which is a deleterious constituent of many sand and gravel deposits in agro-Manitoba, was calculated as a weight percentage. A summary of these results is presented in Appendix I.

Field data and aggregate deposit boundaries were plotted on 1:50 000 scale airphotos, and these were used to produce the final map (Map AR94-1, *in pocket*).

PREVIOUS WORK

Much of the R.M. of La Broquerie had been mapped prior to this study and, where possible, this information has been integrated into this study. Ehrlich *et al.* (1976) mapped the surface deposits as part of a regional soil survey of the Winnipeg and Morris area. Many deposits and pits have been tested by the Materials and Research Branch of the Manitoba Department of Highways and Transportation. Preliminary studies by Ringrose *et al.* (1977a, 1977b) covered the entire municipality at a scale of 1:50 000. The R.M. of La Broquerie was included in an aggregate industry study that examined supply and demand of various qualities of aggregate within the Winnipeg market area (Underwood McLellan and Associates, 1976).

ACKNOWLEDGEMENTS

Ed Kostyniuk provided able field assistance. Genevieve Corbil drafted the map under the supervision of Ed Truman.

BEDROCK GEOLOGY

Ordovician rocks of the Red River Formation subcrop in all but the extreme southern portion of the R.M. of La Broquerie. The Ordovician Red River Formation is predominantly composed of mottled dolomitic limestone, commonly known as *Tyndall stone*.

In the extreme southern part of the area, rocks of Precambrian, Ordovician and Jurassic ages subcrop. Precambrian rocks are predominantly metavolcanic, and are part of the Wabigoon Domain, which is within the Superior Structural Province. The Ordovician Winnipeg Formation, composed predominantly of quartzose sandstone and shale, un-

conformably overlies the Precambrian basement and stratigraphically underlies the Ordovician Red River Formation. The Jurassic Amaranth Formation subcrops along the entire southern boundary of the municipality. This sedimentary sequence comprises an east-west trending outlier of Jurassic rocks known as the *Dominion City Channel*, which infills a channel cut into Ordovician rocks of the Winnipeg and Red River formations. The Amaranth Formation is composed of red argillaceous siltstone and sandstone overlain by evaporites (gypsum and anhydrite) (Manitoba Energy and Mines, 1990).

LATE WISCONSINAN HISTORY

Two major glacial ice lobes, the Rainy and Red River lobes, affected southeastern Manitoba during the Late Wisconsinan. These ice lobes deposited unsorted debris generally at the base of the ice (*till*) and sorted debris along meltwater channels within the ice or near the ice margin (*glaciofluvial sand and gravel*). The glaciofluvial sand and gravel is the major source of aggregate in southeastern Manitoba (see Map AR94-1).

The Rainy lobe advanced from the northeast to an unknown point in southern Manitoba and deposited the Senkiw till, in which the pebble size fraction is predominantly composed of Precambrian clasts, and its eastern equivalent, the

Whiteshell till. The Rainy lobe advanced at least as far as the town of Senkiw, where the Senkiw till is exposed in sections along the Roseau River (Teller and Fenton, 1980).

During its retreat the Rainy lobe stabilized in the vicinity of the Bedford Hills, where it was met by the advancing Red River lobe, which had advanced from the northwest and deposited carbonate-rich till. Between these two ice sheets the Bedford Hills interlobate moraine was built by glacial meltwater that flowed southward into a predecessor of glacial Lake Agassiz (Teller and Fenton, 1980). Multiple advances of the Red River lobe are recorded in the Roseau River sections as described by Fenton (1974).

About 13 000 years ago, during the retreat of these two ice lobes, numerous ice marginal lakes merged to form Lake Agassiz. In the deep water of the lake, clay was deposited, while along the shore, beach ridges composed of sand and gravel were being built. These beach ridges are also an important source of aggregate in southeastern Manitoba (see Map AR94-1).

The history of Lake Agassiz is complex due to ice advances into the lake and numerous inlets and outlets that controlled the lake level. Each lake level is recorded by a developed shoreline, commonly defined by beach ridges, al-

though many have been destroyed by subsequent events in the lake. Drumlinoid ridges, straight glacial ridges commonly composed of sand and gravel, attest to a late glacial advance of the Red River lobe into Lake Agassiz. The Bedford Hills moraine was almost entirely surrounded by glacial ice at that time, but not overridden (Matile, 1991). Shortly after the retreat of this ice, the Bedford Hills would have become an island within Lake Agassiz. Drainage of Lake Agassiz from southeastern Manitoba occurred around 8500 years BP.

AGGREGATE RESOURCES

Aggregate reserves have been calculated on a per-quarter-section basis, taking into account proven depths and the amount of depletion and sterilization. Sample and deposit quality were established using the guidelines shown in Figure 3.

Deposit reserves, exposure information, and gravel sample data, including grain size distribution and petrographic analysis, are found in Appendix I. This information correlates to the aggregate map by deposit number, exposure number, and legal description. The lithology of the gravel fraction of aggregate samples in the municipality is

approximately 70% carbonate (Paleozoic) clasts and 30% crystalline (Precambrian) clasts. Shale and other deleterious lithologies are rare.

Mining activity within the municipality is very limited, partially due to the lack of high quality reserves in the area and partially due to the large distance to major aggregate markets. Several small pits produce aggregate on an intermittent basis for local consumption. The Steinbach market is supplied predominantly by aggregate pits in the Rural Municipalities of Ste. Anne and Hanover to the north and west.

	Criteria	HIGH	MEDIUM	LOW
AGGREGATE QUALITY	Stone %	30	15-30	0-15
	Sand %	0-35	35-70	70
	Mud %	0-7	7-17	17
	Shale %	0-5	5-12	12
	Other Deleterious	low	medium	high
	Thickness	5 m	2-5 m	0-2 m
	Uniformity	high	medium	low
DEPOSIT DEVELOPMENT POTENTIAL	Aggregate Quality	high	medium	low
	Crushable	abundant	moderate	minor
	Overburden	2 m	2-4 m	4 m
	Binder	yes	minor	none
	Water Table	5 m	2-5 m	0-2 m
	Geological Potential	good	moderate	low
	Verification	proven	limited	untested
	Local Access	0-1 km	1-5 km	5 km
	Quarrying Status	active	intermittent	inactive
	Transportation Diff.	high	medium	low
	Planning Constraints	none	conditional	sterilized
	Speciality Material	yes		no
	Aggregate Substitute	none	marginal	proximal

Figure 3: Aggregate quality and development potential guidelines. **Note:** These guidelines are an attempt to classify deposits in a broad spectrum of areas throughout Manitoba. Importance of individual criteria varies greatly depending on availability of aggregate within each region.

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**APPENDIX I
DEPOSIT RESERVES AND EXPOSURE INFORMATION (INCLUDES GRAIN SIZE DISTRIBUTION AND
PETROGRAPHIC ANALYSIS OF GRAVEL SAMPLES)**

DEPOSIT # 001601 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001602

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-03-004-08E	20	178800	PRIVATE/PRIVATE	
NW-03-004-08E	60	18600	PRIVATE/PRIVATE	
SW-03-004-08E	70	51750	PRIVATE/PRIVATE	
DEPOSIT RESERVES		249150		

EXPOSURE INFORMATION

EXPOSURE #: GM368 (SW-03-004-08E) VISITED: 8008
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.0 M. ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS

EXPOSURE #: LM484 (SW-03-004-08E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM485 (SW-03-004-08E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM486 (NW-03-004-08E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: GARBAGE DUMP-UNAUTHORIZED,INACTIVE
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM487 (NE-03-004-08E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	(PLUS 6")
GM368 A (SW-03-004-08E)	100	100	97	87	67	50	42	32	21	2	1	SPARSE
LM485 A (SW-03-004-08E)	100	100	97	87	74	66	59	50	27	5	3	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM485 A	73	26	1	0	0	

DEPOSIT # 001603

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-03-004-08E	0	46500	PRIVATE/PRIVATE	
NE-10-004-08E	0	141000	PRIVATE/PRIVATE	
NW-10-004-08E	0	25500	PRIVATE/PRIVATE	
SW-10-004-08E	0	157500	PRIVATE/PRIVATE	
SE-15-004-08E	0	49500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		420000		

EXPOSURE INFORMATION

EXPOSURE #: GM369 (NE-03-004-08E) VISITED: 8008
 EXPOSURE TYPE: HAND DUG HOLE LAND USE: FOREST NATURAL
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL OCC. COBBLE
 SECTION HEIGHT: 0.8 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.8 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM560 (SE-15-004-08E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.8 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL VERY SANDY
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.3 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM369 A (NE-03-004-08E)	100	90	81	67	56	46	40	27	9	1	1	SPARSE
LM560 A (SE-15-004-08E)	100	98	95	88	81	73	66	58	30	3	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	%				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR	DELETERIOUS		
LM560 A	75	25	0	0	0	

DEPOSIT # 001604
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)

EXPOSURE INFORMATION

EXPOSURE #: GM034 (NE-23-004-07E) VISITED: 7808
 EXPOSURE TYPE: HAND DUG HOLE LAND USE: AGRICULTURE,HAYING
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COARSE PEBBLE GRAVEL
 SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: GRAVEL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM451 (SW-13-004-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: SAND WITH PEBBLE LAYERS
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM459 (NE-25-004-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: GARBAGE DUMP-UNAUTHORIZED,
 INACTIVE
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM461 (NE-23-004-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: GARBAGE DUMP-UNAUTHORIZED,
 INACTIVE
 ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
 SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: 3.5 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM034 A (NE-23-004-07E)	100	98	89	74	63	52	40	29	12	3	2	SPARSE	
LM459 A (SE-25-004-07E)	100	100	96	87	80	74	67	58	30	4	2	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	PERCENTAGE				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR	DELETERIOUS		
LM459 A	73	26	1	0	0	

DEPOSIT # 001605

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-16-004-07E	40	162900	PRIVATE/PRIVATE	
NE-21-004-07E	0	22500	PRIVATE/PRIVATE	
SE-21-004-07E	30	149100	PRIVATE/PRIVATE	
SW-21-004-07E	0	151500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		486000		

EXPOSURE INFORMATION

EXPOSURE #: GM035 (SE-21-004-07E) VISITED: 7808
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM450 (NW-16-004-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.1 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.8 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM035 A (SE-21-004-07E)	100	79	62	44	33	26	21	15	8	4	3	SPARSE
LM450 A (NW-16-004-07E)	100	99	87	66	49	32	17	11	6	1	1	SPARSE
LM450 B (NW-16-004-07E)	100	95	85	67	50	36	26	18	9	3	3	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% DELETERIOUS				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR			
LM450 A	42	57	1	0	0	
LM450 B	70	30	1	0	0	

DEPOSIT # 001606

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-16-004-07E	0	63000	PRIVATE/PRIVATE	
SE-20-004-07E	0	15000	PRIVATE/PRIVATE	
SW-21-004-07E	0	166500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		244500		

EXPOSURE INFORMATION

EXPOSURE #: LM561 (NW-16-004-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.8 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 2.0 M.
 HEIGHT SAMPLED: 1.8 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM563 (SW-21-004-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.2 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL W/SAND LAYERS
 SECTION HEIGHT: 2.4 M. DEPTH TO WATER TABLE: 1.4 M.
 HEIGHT SAMPLED: 2.2 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM561 A (NW-16-004-07E)	100	90	77	66	54	42	31	20	8	2	1	SPARSE
LM563 A (SW-21-004-07E)	100	100	95	83	65	50	37	33	23	4	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% DELETERIOUS				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR	% DELETERIOUS		
LM561 A	50	48	2	0	0	
LM563 A	92	6	3	0	0	HIGH PREC(CRS.SD.)

DEPOSIT # 001607 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-21-004-07E	0	33000	PRIVATE/PRIVATE	
SW-21-004-07E	0	88000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		121000		

DEPOSIT # 001608 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-22-004-07E	0	10000	PRIVATE/PRIVATE	
NW-22-004-07E	0	34000	PRIVATE/PRIVATE	
SE-22-004-07E	0	8000	PRIVATE/PRIVATE	
SW-22-004-07E	0	4000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		56000		

DEPOSIT # 001609 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-21-004-07E	0	94000	PRIVATE/PRIVATE	
SE-21-004-07E	0	4000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		98000		

DEPOSIT # 001610 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-21-004-07E	0	19000	PRIVATE/PRIVATE	
SE-28-004-07E	0	8000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		27000		

DEPOSIT # 001611 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-27-004-07E	0	6000	PRIVATE/PRIVATE	
SW-27-004-07E	0	33000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		39000		

DEPOSIT # 001612 (VERY COARSE RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-29-004-07E	30	92400	CROWN(PROVINCIAL)/CROWN	
NE-30-004-07E	80	11400	PRIVATE/PRIVATE	
DEPOSIT RESERVES		103800		

EXPOSURE INFORMATION

EXPOSURE # GM036 (NW-29-004-07E) VISITED: 7808
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COARSE PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM446 (NW-29-004-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COARSE PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.5 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: TILL
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM447 (NE-30-004-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLE PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: 1.5 M.
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: TILL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM036 A (NW-29-004-07E)	100	89	73	63	53	43	34	24	14	9	8	ABUNDANT
LM447 A (NE-30-004-07E)	82	62	51	42	34	28	22	16	8	2	2	MODERATE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM447 A	82	14	2	2	0	

DEPOSIT # 001613 (SAND; POTENTIAL SAND AND GRAVEL POCKETS)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001614 (SAND; POTENTIAL SAND AND GRAVEL POCKETS)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001615 (SAND; POTENTIAL SAND AND GRAVEL POCKETS)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001616 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

EXPOSURE INFORMATION

EXPOSURE #: LM503 (SW-03-005-08E)	VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE :
	SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 0.0 METRES	ESTIMATED STONE CONTENT: LOW
SECTION: A	MATERIAL DESCRIPTION: SAND PEBBLY
SECTION HEIGHT: 1.5 M.	DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 1.5 M.
MATERIAL AT BASE: SAND	
NO CHANNEL SAMPLE TAKEN	

EXPOSURE #: LM504 (SW-03-005-08E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: PASTURE, GRAZING
 ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: SAND PEBBLY
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.5 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

DEPOSIT # 001617

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-02-005-08E	0	57000	PRIVATE/PRIVATE	
SE-11-005-08E	0	84000	CROWN(PROVINCIAL)/CROWN	
	DEPOSIT RESERVES	141000		

EXPOSURE INFORMATION

EXPOSURE #: GM371 (NE-02-005-08E) VISITED: 8008
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COARSE PEBBLE GRAVEL
 SECTION HEIGHT: 0.3 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.3 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM570 (NE-02-005-08E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
 SURROUNDING LAND USE: AGRICULTURE, HAYING
 ECONOMIC THICKNESS: 1.8 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 3.7 M. DEPTH TO WATER TABLE: 2.5 M.
 HEIGHT SAMPLED: 1.8 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM371 A (NE-02-005-08E)	100	84	76	61	51	42	35	22	10	2	1	SPARSE	
LM570 A (NE-02-005-08E)	100	89	76	64	56	49	42	34	19	5	2	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM570 A	60	0	39	1	0	0

DEPOSIT # 001618

(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001619 (VERY SANDY TOWARDS SOUTH)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-11-005-08E	5	49400	CROWN(PROVINCIAL)/CROWN	
SE-11-005-08E	0	6000	CROWN(PROVINCIAL)/CROWN	
NW-12-005-08E	5	183350	PRIVATE/PRIVATE	
SE-13-005-08E	0	61000	PRIVATE/PRIVATE	
SW-13-005-08E	0	8000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		307750		

EXPOSURE INFORMATION

EXPOSURE #: LM568 (SW-13-005-08E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.2 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL OCC. COBBLE
 SECTION HEIGHT: 3.2 M. DEPTH TO WATER TABLE: 3.0 M.
 HEIGHT SAMPLED: 1.2 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM568 A (SW-13-005-08E)	97	87	77	68	60	53	47	39	20	3	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM568 A	57	43	0	0	0	

DEPOSIT # 001620

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-36-004-07E	0	13000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	13000		

DEPOSIT # 001621

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-36-004-07E	20	64800	PRIVATE/PRIVATE	
SE-01-005-07E	20	50400	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	115200		

EXPOSURE INFORMATION

EXPOSURE #: GM037 (SE-01-005-07E) VISITED: 7808
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM453 (NE-36-004-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL,
 SOME COBBLE
 SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: 3.8 M.
 HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM454 (SE-01-005-07E) VISITED: 9105
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
 ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.5 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM037 A (SE-01-005-07E)	100	83	64	50	40	32	25	19	12	5	3		
LM453 A (NE-36-004-07E)	100	95	88	78	65	51	36	19	5	1	1	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM453 A	65	32	3	0	0	

DEPOSIT # 001622 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SW-01-005-07E	0	19000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		19000		

DEPOSIT # 001623 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-01-005-07E	0	4000	PRIVATE/PRIVATE	
SE-01-005-07E	0	56000	PRIVATE/PRIVATE	
SW-01-005-07E	0	2000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		62000		

DEPOSIT # 001624 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-12-005-07E	0	38000	PRIVATE/PRIVATE	
SE-12-005-07E	0	31000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		69000		

DEPOSIT # 001625 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-07-005-07E	0	61000	PRIVATE/PRIVATE	
SE-07-005-07E	0	13000	PRIVATE/PRIVATE	
NE-08-005-07E	0	105000	PRIVATE/PRIVATE	
NW-08-005-07E	0	180000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		359000		

EXPOSURE INFORMATION

EXPOSURE #: GM047 (NW-08-005-07E)	VISITED: 7808
EXPOSURE TYPE: HAND DUG HOLE	LAND USE: FOREST NATURAL
	SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL W/SAND LAYERS
SECTION HEIGHT: 1.0 M.	DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 1.0 M.	OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL	
SEE SIEVE ANALYSIS	

SIEVE ANALYSIS

	PERCENT PASSING										
	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	OVERSIZE
GM047 A (NW-08-005-07E)	100	94	81	67	63	60	54	32	4	3	ABUNDANT
(NOTE: THIS SAMPLE IS 100% PASSING 3 INCHES)											

DEPOSIT # 001626 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT #001627 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001628 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

EXPOSURE INFORMATION

EXPOSURE #: LM498 (SE-25-005-08E)
 EXPOSURE TYPE: HAND DUG HOLE

 ECONOMIC THICKNESS: 0.0 METRES
 SECTION: A
 SECTION HEIGHT: 1.8 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

VISITED: 9107
 LAND USE: AGRICULTURE,HAYING
 SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
 ESTIMATED STONE CONTENT: LOW
 MATERIAL DESCRIPTION: PEBBLY SAND
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 1.8 M.

EXPOSURE #: LM499 (SE-25-005-08E)
 EXPOSURE TYPE: SAND AND GRAVEL PIT

 ECONOMIC THICKNESS: 1.0 METRES
 SECTION: A
 SECTION HEIGHT: 1.0 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

VISITED: 9107
 LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: LOW
 MATERIAL DESCRIPTION: PEBBLY SAND
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 1.0 M.

EXPOSURE #: LM566 (SW-24-005-08E)
 EXPOSURE TYPE: BACKHOE TEST PIT

 ECONOMIC THICKNESS: 0.5 METRES
 SECTION: A
 SECTION HEIGHT: 3.0 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

VISITED: 9108
 LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: MEDIUM
 MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 DEPTH TO WATER TABLE: 2.7 M.
 OVERBURDEN THICKNESS: 0.2 M.

DEPOSIT # 001629 (VERY SANDY)
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001630 (GENERALLY VERY SANDY)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-31-005-08E	0	130000	PRIVATE/PRIVATE	
NW-31-005-08E	0	23000	PRIVATE/PRIVATE	
SE-31-005-08E	0	11000	PRIVATE/PRIVATE	
SW-31-005-08E	0	176000	PRIVATE/PRIVATE	
NE-32-005-08E	0	195000	PRIVATE/PRIVATE	
NW-32-005-08E	0	119000	PRIVATE/PRIVATE	
NE-33-005-08E	0	103000	PRIVATE/PRIVATE	
NW-33-005-08E	5	218500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		975500		

EXPOSURE INFORMATION

EXPOSURE #: GM041 (SW-31-005-08E)
 EXPOSURE TYPE: HAND DUG HOLE

VISITED: 7808
 LAND USE :
 SURROUNDING LAND USE:
 ESTIMATED STONE CONTENT: MEDIUM
 MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 0.0 M.
 ECONOMIC THICKNESS: 3.0 METRES
 SECTION: A
 SECTION HEIGHT: 1.0 M.
 HEIGHT SAMPLED: 1.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM493 (NE-32-005-08E)
 EXPOSURE TYPE: DITCH OR ROAD CUT

VISITED: 9107
 LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: LOW
 MATERIAL DESCRIPTION: SAND
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 1.0 M.

ECONOMIC THICKNESS: 0.0 METRES
 SECTION: A
 SECTION HEIGHT: 1.0 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SECTION: B
 SECTION HEIGHT: 3.0 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN
 MATERIAL DESCRIPTION: SAND
 DEPTH TO WATER TABLE: 2.0 M.
 OVERBURDEN THICKNESS: 3.0 M.

EXPOSURE #: LM572 (NE-31-005-08E)
 EXPOSURE TYPE: BACKHOE TEST PIT

VISITED: 9108
 LAND USE: AGRICULTURE,HAYING
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: MEDIUM
 MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 0.2 M.

ECONOMIC THICKNESS: 1.2 METRES
 SECTION: A
 SECTION HEIGHT: 3.0 M.
 HEIGHT SAMPLED: 1.2 M.
 MATERIAL AT BASE: SAND

SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM041 A (SW-31-005-08E)	100	100	94	73	51	34	26	21	16	5	2	SPARSE
LM572 A (NE-31-005-08E)	100	98	93	84	72	59	45	30	12	3	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM572 A	59	41	0	0	0	

DEPOSIT # 001631 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-25-005-07E	0	27000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	27000		

DEPOSIT # 001632

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-25-005-07E	5	75050	PRIVATE/PRIVATE	
SW-25-005-07E	0	10000	PRIVATE/PRIVATE	
NE-26-005-07E	0	38000	PRIVATE/PRIVATE	
SE-26-005-07E	0	48000	PRIVATE/PRIVATE	
SW-26-005-07E	0	19000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	190050		

EXPOSURE INFORMATION

EXPOSURE #: LM467 (NW-25-005-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.4 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.4 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM467 A (NW-25-005-07E)	100	99	82	74	66	59	50	45	33	4	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM467 A	88	10	1	0	0	

DEPOSIT # 001633 (SHALLOW BUT VERY COARSE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-26-005-07E	0	34000	PRIVATE/PRIVATE	
SW-26-005-07E	0	11000	PRIVATE/PRIVATE	
NE-27-005-07E	0	8000	PRIVATE/PRIVATE	
SE-27-005-07E	0	2000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	55000		

EXPOSURE INFORMATION

EXPOSURE #: LM575 (NE-27-005-07E) VISITED: 9108
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: FOREST NATURAL
SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 1.2 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY BOULDERY PEBBLE GRAVEL
SECTION HEIGHT: 2.6 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN

**DEPOSIT # 001634 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)**

EXPOSURE INFORMATION

EXPOSURE #: GM376 (NE-27-005-07E) VISITED: 8008
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS

EXPOSURE #: LM456 (NE-27-005-07E) VISITED: 9106
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: 1.0 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM457 (NW-26-005-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM458 (NE-27-005-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM376 A (NE-27-005-07E)	100	96	87	71	61	53	47	35	19	7	1	ABUNDANT
LM458 A (NE-27-005-07E)	100	100	96	76	59	48	40	29	15	7	4	ABUNDANT

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% DELETERIOUS				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR	%		
LM458 A	77	22	1	0	0	

DEPOSIT # 001635 (DRUMLINOID RIDGE)
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)

EXPOSURE INFORMATION

EXPOSURE #: GM046 (NW-30-005-07E) VISITED: 7808
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: PEBBLY COBBLY SAND
 SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZE
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM046 A (NW-30-005-07E)	100	100	94	83	76	71	65	53	23	4	2	ABUNDANT

(NOTE: THIS SAMPLE IS 100% PASSING 3 INCHES)

DEPOSIT # 001636 (GENERALLY VERY COARSE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-06-006-08E	20	141600	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	141600		

EXPOSURE INFORMATION

EXPOSURE #: LM497 (SE-06-006-08E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY COARSE PEBBLE GRAVEL
 SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: 4.0 M.
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: TILL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM573 (SE-06-006-08E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: PEBBLY COBBLY SAND
 SECTION HEIGHT: 2.7 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM574 (SE-06-006-08E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: FOREST NATURAL
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 3.7 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COB. CRS. PEBBLE GRAVEL
 SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: 3.0 M.
 HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: CLAY
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM497 A (SE-06-006-08E)	97	82	67	48	31	20	12	7	3	2	2	MODERATE
LM574 A (SE-06-006-08E)	92	83	76	64	54	46	38	31	17	4	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM574 A	73	25	2	0	0	
LM497 A	43	56	1	0	0	

DEPOSIT # 001637 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-35-005-07E	0	5500	PRIVATE/PRIVATE	
SW-35-005-07E	0	23000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		28500		

DEPOSIT # 001638 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-34-005-07E	0	15500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		15500		

DEPOSIT # 001639 (VERY COARSE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-33-005-07E	5	115900	PRIVATE/PRIVATE	
NW-34-005-07E	0	12000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		127900		

EXPOSURE INFORMATION

EXPOSURE #: LM470 (NE-33-005-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: GARBAGE DUMP-UNAUTHORIZED,INACTIVE
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL COBBLES,
 BOULDERS
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE :
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM576 (NE-33-005-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 2.4 METRES ESTIMATED STONE CONTENT: HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY BOULDERY COBBLY PEBBLE
 GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 2.5 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: TILL
 NO CHANNEL SAMPLE TAKEN-SEE PETROGRAPHIC ANALYSIS

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM576 A	87	12	1	0	0	

DEPOSIT # 001640 (DRUMLINOID RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-32-005-07E	0	11000	PRIVATE/PRIVATE	
SE-05-006-07E	10	72000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		83000		

EXPOSURE INFORMATION

EXPOSURE #: GM374 (SE-05-006-07E) VISITED: 8008
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PASTURE,GRAZING
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS

EXPOSURE #: LM464 (SE-05-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM577 (SE-05-006-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: FOREST NATURAL
 ECONOMIC THICKNESS: 0.6 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: 2.5 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM374 A (SE-05-006-07E)	100	96	85	71	59	47	37	17	12	8	3	ABUNDANT
LM464 A (SE-05-006-07E)	95	88	79	69	59	47	33	18	12	9	5	ABUNDANT

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM464 A	75	22	4	0	0	

DEPOSIT # 001641

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-31-005-07E	5	101650	PRIVATE/PRIVATE	
SW-06-006-07E	0	46000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		147650		

EXPOSURE INFORMATION

EXPOSURE #: LM468 (NW-31-005-07E) VISITED: 9106
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.7 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM469 (NW-31-005-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM579 (NW-31-005-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: SAND W/SANDY PEBBLE GRAVEL
 LAYERS
 SECTION HEIGHT: 3.9 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
LM468 A (NW-31-005-07E)	100	97	87	75	66	57	47	35	13	3	2	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM468 A	72	27	1	0	0	

DEPOSIT # 001642

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-05-006-07E	20	116800	PRIVATE/PRIVATE	
NW-05-006-07E	30	225400	PRIVATE/PRIVATE	
NE-06-006-07E	0	84000	PRIVATE/PRIVATE	
SE-06-006-07E	40	160800	PRIVATE/PRIVATE	
SW-06-006-07E	10	300600	PRIVATE/PRIVATE	
DEPOSIT RESERVES		887600		

EXPOSURE INFORMATION

EXPOSURE #: GM375 (NE-06-006-07E) VISITED: 8008
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM506 (NW-05-006-07E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
 SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
 ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM507 (SE-06-006-07E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: .
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM508 (NE-05-006-07E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM375 A (NE-06-006-07E)	100	100	91	69	55	39	24	14	7	2	1	SPARSE
LM506 A (NW-05-006-07E)	100	94	87	81	72	59	46	30	13	3	1	SPARSE
LM507 A (SE-06-006-07E)	100	99	94	88	81	74	66	51	24	4	1	SPARSE
LM508 A (NE-05-006-07E)	100	100	95	82	67	53	41	31	13	3	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM508 A	84	15	1	0	0	
LM506 A	73	27	0	0	0	
LM507 A	88	12	0	0	0	

DEPOSIT # 001643 (BOULDER STREWN RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-05-006-07E	20	15600	PRIVATE/PRIVATE	
NE-06-006-07E	0	6000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		21600		

EXPOSURE INFORMATION

EXPOSURE #: LM580 (NE-06-006-07E) VISITED: 9108
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.3 M.
 MATERIAL AT BASE: TILL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6") MODERATE
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM580 A (NE-06-006-07E)	98	85	73	61	51	44	35	26	16	9	3	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM580 A	40	57	3	0	0	

DEPOSIT # 001644 (GLACIOFLUVIAL)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-05-006-07E	0	34500	PRIVATE/PRIVATE	
SW-08-006-07E	0	112500	PRIVATE/PRIVATE	
DEPOSIT RESERVES		147000		

EXPOSURE INFORMATION

EXPOSURE #: GM373 (SW-08-006-07E)	VISITED: 8008
EXPOSURE TYPE: DITCH OR ROAD CUT	LAND USE: HIGHWAY,ROADWAY,RAILWAY
	SURROUNDING LAND USE:
ECONOMIC THICKNESS: 2.0 METRES	ESTIMATED STONE CONTENT: MEDIUM HIGH
SECTION: A	MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
SECTION HEIGHT: 2.0 M.	DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 2.0 M.	OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: TILL	
SEE SIEVE ANALYSIS	

SIEVE ANALYSIS

	PERCENT PASSING										OVERSIZE ABUNDANT
	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM373 A (SW-08-006-07E)	75	63	51	42	33	27	17	9	4	1	

(NOTE: THIS SAMPLE IS 100% PASSING 3 INCHES)

DEPOSIT # 001645 (SOUTH END IS VERY SANDY)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-01-006-08E	80	2600	PRIVATE/PRIVATE	
NE-02-006-08E	0	6000	PRIVATE/PRIVATE	
SE-11-006-08E	0	19000	CROWN(PROVINCIAL)/CROWN	
NW-12-006-08E	0	111000	PRIVATE/PRIVATE	
SW-12-006-08E	40	117000	PRIVATE/PRIVATE	
NE-13-006-08E	0	25000	CROWN(PROVINCIAL)/CROWN	
SE-13-006-08E	0	61000	CROWN(PROVINCIAL)/CROWN	
SW-13-006-08E	0	31000	CROWN(PROVINCIAL)/CROWN	
DEPOSIT RESERVES		372600		

EXPOSURE INFORMATION

EXPOSURE #: LM490 (SW-12-006-08E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: RECREATION SITE
 ECONOMIC THICKNESS: 4.5 METRES ESTIMATED STONE CONTENT: LOW
 SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
 SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM491 (NW-12-006-08E) VISITED: 9107
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 1.6 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: 2.0 M.
 HEIGHT SAMPLED: 1.6 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM490 A (SW-12-006-08E)	100	100	98	94	91	88	85	74	48	17	2	SPARSE
LM491 A (NW-12-006-08E)	100	95	88	74	62	55	49	37	18	3	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM490 A	93	7	0	0	0	
LM491 A	72	25	3	0	0	

DEPOSIT # 001646 (GLACIOFLUVIAL RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-12-006-07E	70	25200	PRIVATE/PRIVATE	
SE-13-006-07E	50	26000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		51200		

EXPOSURE INFORMATION

EXPOSURE #: GM039 (NE-12-006-07E) VISITED: 7808
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PASTURE, GRAZING
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 2.0 M.
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS

EXPOSURE #: LM479 (NE-12-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE, HAYING
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: 2.0 M.
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: TILL
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZE
	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM039 A (NE-12-006-07E)	93	77	60	51	43	35	30	22	10	5	ABUNDANT	

(NOTE: THIS SAMPLE IS 100% PASSING 3 INCHES)

DEPOSIT # 001647 (GLACIOFLUVIAL RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-13-006-07E	0	44000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	44000		

DEPOSIT # 001648 (BOULDER STREWN RIDGE)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-11-006-07E	0	36500	CROWN(PROVINCIAL)/CROWN	
NW-11-006-07E	0	21000	CROWN(PROVINCIAL)/CROWN	
SE-11-006-07E	0	25000	CROWN(PROVINCIAL)/CROWN	
SW-12-006-07E	0	23000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	105500		

DEPOSIT # 001649 (SAND; POTENTIAL SAND AND GRAVEL POCKETS)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SE-10-006-07E	0	11000	PRIVATE/PRIVATE	
SW-11-006-07E	0	63000	CROWN(PROVINCIAL)/CROWN	
	DEPOSIT RESERVES	74000		

EXPOSURE INFORMATION

EXPOSURE #: GM377 (SW-11-006-07E)	VISITED: 8008
EXPOSURE TYPE: DITCH OR ROAD CUT	LAND USE: HIGHWAY,ROADWAY,RAILWAY
	SURROUNDING LAND USE:
ECONOMIC THICKNESS: 2.0 METRES	ESTIMATED STONE CONTENT: MEDIUM
SECTION: A	MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 0.5 M.	DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.5 M.	OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAME AS IN PIT WALL	
NO CHANNEL SAMPLE TAKEN	

EXPOSURE #: LM482 (SW-11-006-07E) VISITED: 9106
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: PASTURE,GRAZING
 ECONOMIC THICKNESS: 1.2 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.8 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM482 A (SW-11-006-07E)	100	99	92	79	68	61	53	44	36	22	4	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM482 A	66	33	1	0	0	

DEPOSIT # 001650

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-04-006-07E	0	15000	PRIVATE/PRIVATE	
SE-09-006-07E	0	111000	PRIVATE/PRIVATE	
NE-10-006-07E	80	4600	PRIVATE/PRIVATE	
NW-10-006-07E	40	64200	PRIVATE/PRIVATE	
SW-10-006-07E	60	3200	PRIVATE/PRIVATE	
DEPOSIT RESERVES		198000		

EXPOSURE INFORMATION

EXPOSURE #: GM043 (SE-09-006-07E) VISITED: 7808
 EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM483 (NW-10-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.3 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.8 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SECTION: B MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.3 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM043 A (SE-09-006-07E)	100	100	97	84	66	52	40	29	21	7	1	ABUNDANT	
LM483 A (NW-10-006-07E)	100	99	88	72	51	36	25	18	9	3	2	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM483 A	27	73	1	0	0	

DEPOSIT # 001651 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-08-006-07E	50	18000	PRIVATE/PRIVATE	
NE-16-006-07E	0	11000	PRIVATE/PRIVATE	
SE-16-006-07E	0	34000	PRIVATE/PRIVATE	
SW-16-006-07E	0	90000	PRIVATE/PRIVATE	
SE-17-006-07E	0	23000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		176000		

DEPOSIT # 001652 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-08-006-07E	0	15000	PRIVATE/PRIVATE	
NW-08-006-07E	0	8000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		23000		

DEPOSIT # 001653 (REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
SW-16-006-07E	0	10000	PRIVATE/PRIVATE	
SE-17-006-07E	30	83300	PRIVATE/PRIVATE	
SW-17-006-07E	80	2000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		95300		

**DEPOSIT # 001654 (BOULDER STREWN RIDGE)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)**

DEPOSIT # 001655

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-14-006-07E	0	69000	PRIVATE/PRIVATE	
NW-14-006-07E	0	3000	PRIVATE/PRIVATE	
SE-23-006-07E	0	69000	PRIVATE/PRIVATE	
SW-23-006-07E	0	34500	PRIVATE/PRIVATE	
SE-24-006-07E	20	140400	PRIVATE/PRIVATE	
SW-24-006-07E	0	186000	PRIVATE/PRIVATE	
NW-18-006-08E	80	4500	PRIVATE/PRIVATE	
SW-19-006-08E	70	60300	PRIVATE/PRIVATE	
DEPOSIT RESERVES		566700		

EXPOSURE INFORMATION

EXPOSURE #: GM040 (SW-19-006-08E) VISITED: 7808
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT: MEDIUM
SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS

EXPOSURE #: GM378 (SW-24-006-07E) VISITED: 8008
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAME AS IN PIT WALL
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM475 (NE-14-006-07E) VISITED: 9106
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: FOREST NATURAL
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 2.7 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM476 (SE-23-006-07E) VISITED: 9106
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.2 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM477 (SW-24-006-07E) VISITED: 9106
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT: LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 4.5 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 3.5 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM492 (SW-19-006-08E) VISITED: 9107
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: PASTURE,GRAZING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING												OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200		
GM040 A (SW-19-006-08E)	100	96	77	55	36	24	18	15	11	5	4	SPARSE	
LM475 A (NE-14-006-07E)	100	92	76	66	54	42	32	18	8	4	2	SPARSE	
LM477 A (SW-24-006-07E)	100	100	98	91	74	61	46	31	11	2	1	SPARSE	
LM492 A (SW-19-006-08E)	100	100	95	87	70	54	39	32	17	4	2	SPARSE	

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM475 A	73	27	0	0	0	
LM477 A	71	26	3	0	0	
LM492 A	70	30	0	0	0	

DEPOSIT # 001656 (REQUIRES TESTING-PROBABLY SAND)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NW-25-006-08E	0	69000	PRIVATE/PRIVATE	
SE-36-006-08E	0	15000	PRIVATE/PRIVATE	
SW-36-006-08E	0	98000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		182000		

**DEPOSIT # 001657 (VERY SANDY)
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)**

EXPOSURE INFORMATION

EXPOSURE #: LM581 (NW-36-006-08E)
EXPOSURE TYPE: BACKHOE TEST PIT

VISITED: 9108
LAND USE: FOREST NATURAL
SURROUNDING LAND USE: AGRICULTURE,HAYING
ESTIMATED STONE CONTENT: LOW
MATERIAL DESCRIPTION: SAND OCC. MINOR PEBBLE SEAM
DEPTH TO WATER TABLE: 2.4 M.
OVERBURDEN THICKNESS: 0.3 M.

ECONOMIC THICKNESS: 0.0 METRES
SECTION: A
SECTION HEIGHT: 2.7 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM582 (NW-36-006-08E)
EXPOSURE TYPE: BACKHOE TEST PIT

VISITED: 9108
LAND USE: FOREST NATURAL
SURROUNDING LAND USE: AGRICULTURE,HAYING
ESTIMATED STONE CONTENT: LOW
MATERIAL DESCRIPTION: SAND OCC. MINOR PEBBLE SEAMS
DEPTH TO WATER TABLE: 1.7 M.
OVERBURDEN THICKNESS: 0.3 M.

ECONOMIC THICKNESS: 0.0 METRES
SECTION: A
SECTION HEIGHT: 2.2 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

DEPOSIT # 001658 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001659 (VERY SANDY)
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001660
(NO ECONOMIC AGGREGATE RESERVES PROVEN)

EXPOSURE INFORMATION

EXPOSURE #: GM366 (SE-28-006-08E)
EXPOSURE TYPE: DITCH OR ROAD CUT

VISITED: 8008
LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE:
ESTIMATED STONE CONTENT: MEDIUM LOW
MATERIAL DESCRIPTION: PEBBLY SAND
DEPTH TO WATER TABLE:
OVERBURDEN THICKNESS: 0.0 M.

ECONOMIC THICKNESS: 0.0 METRES
SECTION: A
SECTION HEIGHT: 0.5 M.
HEIGHT SAMPLED: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING										OVERSIZE ABUNDANT
	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM366 A (SE-28-006-08E)	100	100	94	80	69	64	57	25	2	1	

(NOTE: THIS SAMPLE IS 100% PASSING 3 INCHES)

DEPOSIT # 001661 (REQUIRES TESTING)
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001662 (VERY SANDY-REQUIRES TESTING)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-36-006-07E	0	6500	PRIVATE/PRIVATE	
NW-36-006-07E	30	32200	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	38700		

DEPOSIT # 001663 (MOSTLY DEPLETED)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-34-006-07E	60	29200	PRIVATE/PRIVATE	
NW-34-006-07E	10	27900	PRIVATE/PRIVATE	
SE-34-006-07E	99	820	PRIVATE/PRIVATE	
SW-35-006-07E	60	10800	PRIVATE/PRIVATE	
	DEPOSIT RESERVES	68720		

EXPOSURE INFORMATION

EXPOSURE #: GM150 (SW-35-006-07E)
 EXPOSURE TYPE: SAND AND GRAVEL PIT
 ECONOMIC THICKNESS: 1.5 METRES
 SECTION: A
 SECTION HEIGHT: 1.5 M.
 HEIGHT SAMPLED: 1.5 M.
 MATERIAL AT BASE: TILL
 SEE SIEVE ANALYSIS

VISITED: 7811
 LAND USE: AGRICULTURE,HAYING
 SURROUNDING LAND USE:
 ESTIMATED STONE CONTENT: MEDIUM
 MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 0.0 M.

EXPOSURE #: LM474 (NW-34-006-07E)
 EXPOSURE TYPE: SAND AND GRAVEL PIT
 ECONOMIC THICKNESS: 2.0 METRES
 SECTION: A
 SECTION HEIGHT: 2.5 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 NO CHANNEL SAMPLE TAKEN

VISITED: 9106
 LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: FOREST NATURAL
 ESTIMATED STONE CONTENT: MEDIUM LOW
 MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 0.2 M.

EXPOSURE #:LM480 (SE-34-006-07E)VISITED:9106

EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: PASTURE,GRAZING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE :
 NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM481 (SW-35-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.3 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.5 M.
 HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM150 A (SW-35-006-07E)	100	95	81	66	52	42	33	20	10	6	5	ABUNDANT
LM481 A (SW-35-006-07E)	100	93	80	62	51	42	31	17	6	3	2	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM481 A	82	18	1	0	0	

DEPOSIT # 001664 (TOO MUCH SAND OVERBURDEN)
 (NO ECONOMIC AGGREGATE RESERVES PROVEN)

DEPOSIT # 001665 (MOSTLY DEPLETED)

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-29-006-07E	40	92400	PRIVATE/PRIVATE	
SE-29-006-07E	0	8000	PRIVATE/PRIVATE	
NE-32-006-07E	90	31000	PRIVATE/PRIVATE	
SE-32-006-07E	60	63200	PRIVATE/PRIVATE	
NW-33-006-07E	30	14000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		208600		

EXPOSURE INFORMATION

EXPOSURE #: GM075 (NE-29-006-07E) VISITED: 7810
 EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY FINE PEBBLE GRAVEL
 SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAME AS IN PIT WALL
 SEE SIEVE ANALYSIS

EXPOSURE #: GM076 (NE-32-006-07E) VISITED: 7810
 EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE:
 ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 3.0 M.
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS

EXPOSURE #: LM472 (NE-32-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
 ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

EXPOSURE #: LM473 (NE-32-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE:
 HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM075 A (NE-29-006-07E)	100	99	95	87	80	73	65	56	28	5	4	SPARSE
GM076 A (NE-32-006-07E)	100	98	88	78	54	30	20	14	9	3	3	SPARSE
LM472 A (NE-32-006-07E)	100	99	94	86	80	75	68	56	24	2	1	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM472 A	78	22	0	0	0	

DEPOSIT # 001666

LOCATION	PERCENT DEPLETED OR STERILIZED	REMAINING RESERVES (m ³)	OWNER (SURFACE/GRAVEL)	OWNER2 (SURFACE/GRAVEL)
NE-19-006-08E	0	27000	PRIVATE/PRIVATE	
NW-19-006-08E	15	102850	PRIVATE/PRIVATE	
SE-19-006-08E	0	2000	PRIVATE/PRIVATE	
SW-19-006-08E	0	23000	PRIVATE/PRIVATE	
DEPOSIT RESERVES		154850		

EXPOSURE INFORMATION

EXPOSURE #: LM478 (NW-19-006-07E) VISITED: 9106
 EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
 SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
 SECTION HEIGHT: 1.7 M. DEPTH TO WATER TABLE: 2.0 M.
 HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.2 M.
 MATERIAL AT BASE: SAND AND GRAVEL
 SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
LM478 A (NW-19-006-07E)	100	100	92	83	72	60	48	37	27	21	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	SHALE (BY WEIGHT)	COMMENTS
LM478 A	76	24	0	0	0	

EXPOSURE INFORMATION (FOR EXPOSURES NOT LOCATED IN A DEPOSIT)

EXPOSURE #: GM032 (NW-01-004-07E) VISITED: 7808
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: FOREST NATURAL
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND OVER SILT TILL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: 2.0 M.
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS

EXPOSURE #: GM042 (NW-33-005-07E) VISITED: 7808
EXPOSURE TYPE: BULLDOZER TEST PIT LAND USE: AGRICULTURE,HAYING
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS

EXPOSURE #: GM365 (NE-28-006-08E) VISITED: 8008
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT: MEDIUM
SECTION: X MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
OCC. BOULDER
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.7 M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAME AS IN PIT WALL
SEE SIEVE ANALYSIS

EXPOSURE #: GM370 (NE-03-005-08E) VISITED: 8008
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS

EXPOSURE #: GM372 (SE-29-005-08E) VISITED: 8008
EXPOSURE TYPE: HAND DUG HOLE LAND USE: AGRICULTURE,HAYING
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAME AS IN PIT WALL
SEE SIEVE ANALYSIS

EXPOSURE #: LM448 (NE-02-004-07E)	VISITED: 9105
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
	SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: MEDIUM
SECTION: A	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.4 M.	DEPTH TO WATER TABLE: 1.0 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL	
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM449 (NW-01-004-07E)	VISITED: 9105
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
	SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.2 M.	DEPTH TO WATER TABLE: 1.0 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL	
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM452 (SE-13-004-07E)	VISITED: 9105
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: ACTIVE PIT
	SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.3 METRES	ESTIMATED STONE CONTENT: LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M.	DEPTH TO WATER TABLE: 1.5 M.
HEIGHT SAMPLED: 1.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE :	
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS	
EXPOSURE #: LM455 (SE-07-005-07E)	VISITED: 9106
EXPOSURE TYPE: DITCH OR ROAD CUT	LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE:	AGRICULTURE,HAYING
ECONOMIC THICKNESS: 0.5 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL OVER SAND
SECTION HEIGHT: 2.5 M.	DEPTH TO WATER TABLE: 2.2 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND	
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM460 (SE-23-004-07E)	VISITED: 9106
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
	SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 2.0 METRES	ESTIMATED STONE CONTENT: LOW
SECTION: A	MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 2.0 M.	DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND	
NO CHANNEL SAMPLE TAKEN	

EXPOSURE #: LM462 (SE-25-004-07E)	VISITED: 9106
EXPOSURE TYPE: DUGOUT	LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 1.3 METRES	SURROUNDING LAND USE: FOREST NATURAL
SECTION: A	ESTIMATED STONE CONTENT: LOW
SECTION HEIGHT: 1.5 M.	MATERIAL DESCRIPTION: PEBBLY SAND
HEIGHT SAMPLED: 0.0 M.	DEPTH TO WATER TABLE: 1.5 M.
MATERIAL AT BASE: SAND	OVERBURDEN THICKNESS: 0.2 M.
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM463 (NE-14-005-07E)	VISITED: 9106
EXPOSURE TYPE: DUGOUT	LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 0.0 METRES	SURROUNDING LAND USE: PASTURE, GRAZING
SECTION: A	ESTIMATED STONE CONTENT: LOW
SECTION HEIGHT: 3.0 M.	MATERIAL DESCRIPTION: SAND TILL, SAND AND MINOR SAND AND GRAVEL SEAMS
HEIGHT SAMPLED: 0.0 M.	DEPTH TO WATER TABLE: 3.0 M.
MATERIAL AT BASE: SAND	OVERBURDEN THICKNESS: 3.0 M.
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM465 (NW-33-005-07E)	VISITED: 9106
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE (COMMONLY REVEGETATED)
ECONOMIC THICKNESS: 1.2 METRES	SURROUNDING LAND USE: PASTURE, GRAZING
SECTION: A	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION HEIGHT: 1.5 M.	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
HEIGHT SAMPLED: 0.0 M.	DEPTH TO WATER TABLE:
MATERIAL AT BASE: SAND	OVERBURDEN THICKNESS: 0.2 M.
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM466 (NW-33-005-07E)	VISITED: 9106
EXPOSURE TYPE: DITCH OR ROAD CUT	LAND USE: HIGHWAY, ROADWAY, RAILWAY
ECONOMIC THICKNESS: 1.2 METRES	SURROUNDING LAND USE: PASTURE, GRAZING
SECTION: A	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION HEIGHT: 1.5 M.	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL
HEIGHT SAMPLED: 1.2 M.	DEPTH TO WATER TABLE:
MATERIAL AT BASE: SAND	OVERBURDEN THICKNESS: 0.2 M.
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS	
EXPOSURE #: LM471 (SE-02-006-07E)	VISITED: 9106
EXPOSURE TYPE: BORROW PIT	LAND USE: HIGHWAY, ROADWAY, RAILWAY
ECONOMIC THICKNESS: 0.0 METRES	SURROUNDING LAND USE: FOREST NATURAL
SECTION: A	ESTIMATED STONE CONTENT: LOW
SECTION HEIGHT: 1.0 M.	MATERIAL DESCRIPTION: SILT TILL
HEIGHT SAMPLED: 0.0 M.	DEPTH TO WATER TABLE: 0.8 M.
MATERIAL AT BASE: TILL	OVERBURDEN THICKNESS: 1.0 M.
NO CHANNEL SAMPLE TAKEN	

EXPOSURE #: LM489 (NE-32-006-08E) VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM494 (NE-34-005-08E) VISITED: 9107
EXPOSURE TYPE: DUGOUT LAND USE: RECREATION SITE
SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT: LOW
SECTION: A MATERIAL DESCRIPTION: SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM495 (SE-02-006-08E) VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: PASTURE,GRAZING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT: LOW
SECTION: A MATERIAL DESCRIPTION: SAND
SECTION HEIGHT: 1.8 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.8 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM496 (SE-05-006-08E) VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE,HAYING
ECONOMIC THICKNESS: 0.8 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: 1.0 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM500 (NW-30-005-08E) VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: FOREST NATURAL
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE:
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

EXPOSURE #: LM501 (SW-18-004-08E)	VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
	SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M.	DEPTH TO WATER TABLE: 0.5 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND	
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM502 (SE-18-004-08E)	VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: ACTIVE PIT
	SURROUNDING LAND USE: HIGHWAY,ROADWAY,RAILWAY
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M.	DEPTH TO WATER TABLE: 0.5 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND	
NO CHANNEL SAMPLE TAKEN	
EXPOSURE #: LM505 (NE-03-005-08E)	VISITED: 9107
EXPOSURE TYPE: SAND AND GRAVEL PIT	LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
	SURROUNDING LAND USE: PASTURE,GRAZING
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: LOW
SECTION: A	MATERIAL DESCRIPTION: SAND PEBBLY
SECTION HEIGHT: 1.5 M.	DEPTH TO WATER TABLE: 1.5 M.
HEIGHT SAMPLED: 1.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND	
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS	
EXPOSURE #: LM558 (NE-10-004-08E)	VISITED: 9108
EXPOSURE TYPE: BACKHOE TEST PIT	LAND USE: HIGHWAY,ROADWAY,RAILWAY
	SURROUNDING LAND USE: FOREST NATURAL
ECONOMIC THICKNESS: 1.0 METRES	ESTIMATED STONE CONTENT: MEDIUM
SECTION: A	MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 2.4 M.	DEPTH TO WATER TABLE: 1.2 M.
HEIGHT SAMPLED: 2.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAME AS IN PIT WALL	
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS	
EXPOSURE #: LM559 (SE-15-004-08E)	VISITED: 9108
EXPOSURE TYPE: BACKHOE TEST PIT	LAND USE: HIGHWAY,ROADWAY,RAILWAY
	SURROUNDING LAND USE: FOREST NATURAL
ECONOMIC THICKNESS: 1.1 METRES	ESTIMATED STONE CONTENT: MEDIUM LOW
SECTION: A	MATERIAL DESCRIPTION: SANDY FINE PEBBLE GRAVEL WITH SAND LAYER
SECTION HEIGHT: 1.5 M.	DEPTH TO WATER TABLE: 1.3 M.
HEIGHT SAMPLED: 0.0 M.	OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAME AS IN PIT WALL	
NO CHANNEL SAMPLE TAKEN	

EXPOSURE #: LM562 (SE-20-004-07E)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 0.0 METRES
SECTION: A
SECTION HEIGHT: 2.3 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

VISITED: 9108
LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: AGRICULTURE,HAYING
ESTIMATED STONE CONTENT: LOW
MATERIAL DESCRIPTION: PEBBLY SAND
DEPTH TO WATER TABLE: 1.7 M.
OVERBURDEN THICKNESS: 2.3 M.

EXPOSURE #: LM564 (NW-20-004-07E)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 1.0 METRES
SECTION: A
SECTION HEIGHT: 2.7 M.
HEIGHT SAMPLED: 1.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

VISITED: 9108
LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: FOREST NATURAL
ESTIMATED STONE CONTENT: MEDIUM HIGH
MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
DEPTH TO WATER TABLE: 2.3 M.
OVERBURDEN THICKNESS: 0.2 M.

EXPOSURE #: LM565 (NW-06-005-07E)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 0.6 METRES
SECTION: A
SECTION HEIGHT: 1.5 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

VISITED: 9108
LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: FOREST NATURAL
ESTIMATED STONE CONTENT: MEDIUM
MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
DEPTH TO WATER TABLE:
OVERBURDEN THICKNESS: 0.3 M.

EXPOSURE #: LM567 (SW-13-005-08E)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 0.8 METRES
SECTION: A
SECTION HEIGHT: 3.2 M.
HEIGHT SAMPLED: 1.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

VISITED: 9108
LAND USE: HIGHWAY,ROADWAY,RAILWAY
SURROUNDING LAND USE: AGRICULTURE,HAYING
ESTIMATED STONE CONTENT: MEDIUM
MATERIAL DESCRIPTION: SANDY COBBLY PEBBLE GRAVEL
DEPTH TO WATER TABLE: 1.5 M.
OVERBURDEN THICKNESS: 0.2 M.

EXPOSURE #: LM569 (NW-12-005-08E)
EXPOSURE TYPE: SAND AND GRAVEL PIT

ECONOMIC THICKNESS: 1.0 METRES
SECTION: A
SECTION HEIGHT: 1.5 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN

VISITED: 9108
LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE,HAYING
ESTIMATED STONE CONTENT: MEDIUM
MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL OCC. COBBLE
DEPTH TO WATER TABLE: 1.5 M.
OVERBURDEN THICKNESS: 0.2 M.

EXPOSURE #: LM571 (NE-20-005-08E)
 EXPOSURE TYPE: BACKHOE TEST PIT
 ECONOMIC THICKNESS: 0.0 METRES
 SECTION: A
 SECTION HEIGHT: 3.3 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

VISITED: 9108
 LAND USE: HIGHWAY,ROADWAY,RAILWAY
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: LOW
 MATERIAL DESCRIPTION: PEBBLY SAND SPARSE COBBLES
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 3.3 M.

EXPOSURE #: LM578 (SW-32-005-07E)
 EXPOSURE TYPE: BACKHOE TEST PIT
 ECONOMIC THICKNESS: 0.4 METRES
 SECTION: A
 SECTION HEIGHT: 2.9 M.
 HEIGHT SAMPLED: 0.0 M.
 MATERIAL AT BASE: SAND
 NO CHANNEL SAMPLE TAKEN

VISITED: 9108
 LAND USE: FOREST NATURAL
 SURROUNDING LAND USE: AGRICULTURE,HAYING
 ESTIMATED STONE CONTENT: LOW
 MATERIAL DESCRIPTION: SAND WITH SANDY PEBBLE GRAVEL LAYERS
 DEPTH TO WATER TABLE:
 OVERBURDEN THICKNESS: 0.2 M.

SIEVE ANALYSIS

	PERCENT PASSING											OVERSIZED (PLUS 6")
	3.0	1.5	3/4	3/8	#4	#8	#16	#30	#50	#100	#200	
GM032 A (NW-01-004-07E)	100	98	89	85	77	65	58	48	35	16	8	SPARSE
GM042 A (NW-33-005-07E)	100	100	97	82	58	42	32	22	17	10	5	SPARSE
GM365 X (NE-28-006-08E)	100	100	86	78	67	52	37	24	15	9	5	SPARSE
GM370 A (NE-03-005-08E)	100	100	96	89	80	71	65	46	19	3	1	SPARSE
GM372 A (SE-29-005-08E)	100	99	87	67	56	47	39	25	13	3	1	ABUNDANT
LM452 A (SE-13-004-07E)	100	100	100	98	89	82	77	74	63	18	9	SPARSE
LM466 A (NW-33-005-07E)	100	99	95	86	68	52	36	21	17	15	5	SPARSE
LM505 A (NE-03-005-08E)	100	100	97	93	90	87	83	71	23	5	2	SPARSE
LM558 A (NE-10-004-08E)	100	95	80	66	55	46	36	26	16	6	1	SPARSE
LM564 A (NW-20-004-07E)	100	92	84	77	69	61	52	38	14	4	2	SPARSE
LM567 A (SW-13-005-08E)	100	92	79	64	55	45	35	27	22	13	4	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS

SAMPLE	% DELETERIOUS				SHALE (BY WEIGHT)	COMMENTS
	GOOD	FAIR	POOR	%		
LM452 A	92	8	0	0	0	
LM466 A	80	19	1	0	0	
LM505 A	87	11	1	0	0	
LM558 A	95	4	1	0	0	
LM564 A	91	8	1	0	0	
LM567 A	91	9	0	0	0	

