

COPY

M.D. Rowswell

W.M. Sirola

GRUM JOINT VENTURE : GRAVEL DEPOSITS FOR BACKFILL

18th August 1976

cc: J.K. Carrington

Tats Takeda's study of the surficial deposits in the vicinity of the Grum deposit indicates that adequate quantities of gravel for backfill purposes exist at the south east end of the Grum deposit.

Tats' calculations, using a thickness of only 10 metres, indicate the presence of 6,000,000 cubic yards of gravel in one deposit, plus another, 1,800,000 cubic yards in three satellite deposits.

This gravel has the following approximate composition.

4-5cm gravel	80%
Boulders, 50cm	5%
Clay, silt & tiny pebbles	15%

If cement was to be mixed with the fill, some additional studies would be needed to determine if the gravel could be used in its present form.

W.M. Sirola

WMS:1mp

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13th August 1976

TO: W.M. SIROLA  
FROM: TATS TAKEDA  
SUBJECT: YARDAGE ESTIMATE OF GRAVEL DEPOSIT

LOCATION: In the vicinity of the Grum deposit ( $62^{\circ}15'N$   $133^{\circ}20'W$ ), Y.T.  
(National Topographic Series - Sheet 105K)

Maps to accompany: (i) Distribution of gravel deposits (scale 1:50,000)  
(ii) Surficial geology (scale 1: 2,500)

## Purpose of Field Work:

To search for gravel deposits suitable for the back-fill material in the underground stopes.

## Period of Field Work:

July 15, 1976 - in the vicinity of the Vangorda Creek.  
July 17-20 - in the vicinity of the Grum deposit.

## 1. CONCLUSIONS AND RECOMMENDATIONS

- (i) Blocks of gravel deposits (B to O, S and T) which are outlined by Montreal Engineering Co. in the vicinity of Vangorda Creek, are handicapped costwise due to remoteness from the Grum deposit (2.5 km or more) and smaller volume.
- (ii) Six million cubic yards of back-fill material may be recovered without difficulty in the easily accessible area near the Grum deposit.
- (iii) Detailed information obtained during current field work was compiled in the map of surficial geology (scale 1:2,500) to constitute an overlay for the underground geologic plans projected on the 1,250m and 1,200m level respectively.

## 2. FIELD WORK

- (i) L, M and N blocks of gravel deposit, outlined by means of airphoto interpretation by Montreal Engineering Co. was examined along two picket lines cut by Cyprus Anvil Corp.

These blocks represent a sort of esker along Vangorda Creek and mainly consist of flattened, sub-angular phyllitic chips 2 to 3cm long. Erratic occurrence of medium-grained leucocratic biotite granite up to 1.5m across and rounded gravels of more or less 4cm in size are seen as the result of bad sorting. Proportion of these components is visually estimated as 65% of phyllitic chips, 25% of mixed boulders and gravel and 10% of clayey silt in volume. Humus layer on the surface is 5cm thick and covered with moss layers and sparse shrubs, and then underlain by white volcanic ash 15-30cm thick.

Other blocks outlined by Montreal Engineering Co. were not examined because of the unfavourable location; distant from and far below the Grum deposit zone.

- (ii) A cursory program of surficial mapping was carried out along the bulldozer roads with a good control of existing grid lines over the Grum deposit zone. --

As shown in the attached distribution map of gravel deposits (scale 1:50,000) and the surficial geology map (scale 1:2,500), a sizeable gravel deposit occurs over the south eastern part of the Grum deposit from L76W halfway towards Vangorda Creek. Roughly, a line connecting Peanut Lake and the Grum camp bounds the bedrock area on the west, overlain by a shallow sand and clayey silt with pebbles from the gravel bearing area on the east.

There are three levels of gravel deposit exposed on the surface from the main Vangorda-Swim Lake road to the south of Doal Lake; namely #1 block as the top horizon (El. 1310m to El. 1285m), #2 block (El. 1280m to 1257m), and #3 and #4 blocks (El. 1258m to El. 1210m)

- (iii) Largest gravel deposits of #1 block include several small gravel pits for road maintenance.

Occasionally, rounded boulders ranging from 1m to 40cm in size are piled up in the streams on the steeper slopes across the abovementioned blocks of gravel deposit. Stereoscopic viewing of airphotos suggests these gravel and subordinate boulder deposits were formed as outwash by the thawing water in the spring.

Generally speaking, gravel is fairly well sorted to 4-5cm in size, mixed with sporadic boulders 50cm across, on average. Proportion of constituents is visually estimated as 80% of gravel, 5% boulder and 15% tiny pebbles bearing sandy to clayey silt as filler, all in volume percentage.

- (iv) #3 and #4 blocks are quite similar to #1 in occurrence, and in composition, though there may be more facies change on the steeper slope.

### 3. YARDAGE ESTIMATE

As shown in the table, approximately 6 million cubic yards of gravel may be recovered without much difficulty from the #1 and #2 blocks.

As local facies change in the glacial till is expected, occasional use of screen may become necessary in order to remove finer grained section, although the quality required for the back-fill is not exactly specified.

When 30 million metric tons of ore with a specific gravity of 3.5 is assumed, it will occupy 8.5 million cubic metres in volume, namely 11.1 million cubic yards.

Considering only half of the ore reserve will be recovered in underground mining for the first stage, 6 million cubic yards of gravel may be regarded as sufficient.



Tats Takeda

TT:1mp  
enc:

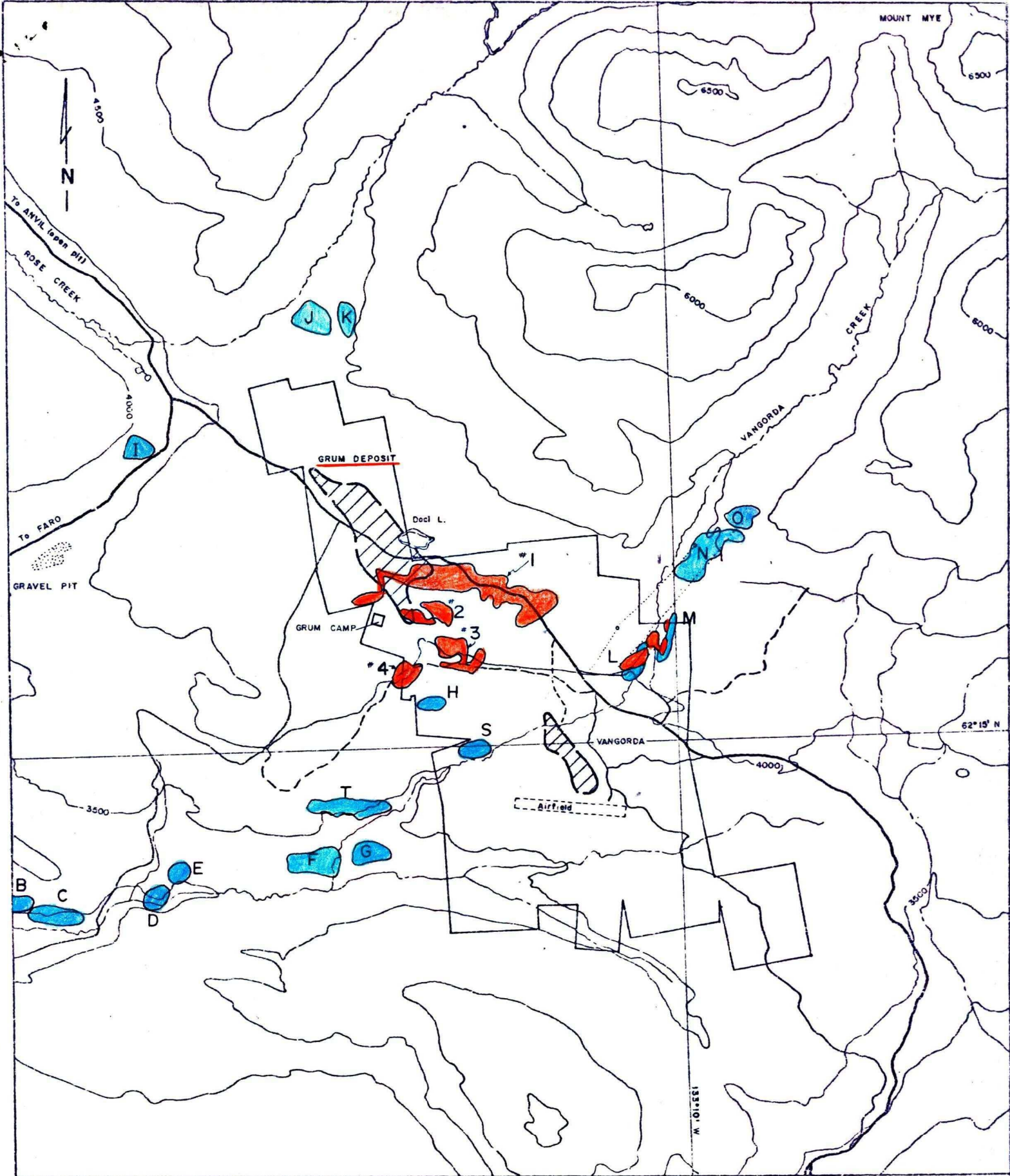
cc: M.D. Rowswell  
✓ J.K. Carrington  
A. Brown - CMS

TABLE

<u>Block of Gravel Deposit</u>	<u>Area Sq.M. (Approx)</u>	<u>Recoverable Thickness Metre</u>	<u>Recoverable Volume Cu.M. (Approx)</u>	<u>Conversion Co-efficient</u>	<u>Recoverable Volume Cu.Yd. (Approx)</u>
#1	391,250	10*	3,912,500	1.308	5,118,000
#2	64,250	10	642,500	1.308	840,000
Sub Total	<u>455,500</u>	<u>10</u>	<u>4,555,000</u>	<u>1.308</u>	<u>5,958,000</u>
#3	83,750**	10	837,500	1.308	1,095,000
#4	59,850**	10	598,500	1.308	783,000
Sub Total	<u>143,600**</u>	<u>10</u>	<u>1,436,000</u>	<u>1.308</u>	<u>1,878,000</u>
Grand Total	<u><u>599,100</u></u>	<u><u>10</u></u>	<u><u>5,991,000</u></u>	<u><u>1.308</u></u>	<u><u>7,836,000</u></u>

Note: \* Recent diamond drill holes A129 and A130 indicate the thickness of gravel bearing glacial till as 94.5m and 72m respectively. Recoverable thickness of 10m is safely assumed in the near surface portion. Sizing by the use of screen may be partially required.

\*\* #3 and #4 blocks are regarded as the supplementary source because of the occurrence at the lower elevation and in the Champ zone.



GRAVEL DEPOSITS IN THE VICINITY OF GRUM DEPOSIT  
YUKON TERRITORY



COMPILED BY: TATSUYA TAKEDA, P. Eng.

DRAWN BY: P HAILLOT

DATE: JULY 30, 1976

SCALE: 1:50,000

ELEVATION ABOVE SEA LEVEL IN FEET. CONTOUR INTERVAL = 500 FT

-  New gravel deposits outlined by Takeda during current field work.
-  Gravel deposits outlined by Montreal Engineering Co. by means of airphoto interpretation.

