



FORWARD

Jonsmith Mines Limited own a single block of 94 mining claims in the southeast part of Mann Township, Cochrane Area, Ontario. The ground was acquired by staking for the Company in the spring of 1964. This staking followed important discoveries of copper, zinc and silver ore by the Texas Gulf Sulphur Company in Kidd Township, located 19 miles to the southwest.

Following the staking of the claims geophysical work was carried out by Jonsmith through the fall and winter of 1964-65, and diamond drilling commenced under contract to the Longyear Company Feb. 14, 1965.

To date 9,705' of diamond drilling has been completed and 102.3 miles of picket line surveyed by geophysical methods. The continuing program on the property includes diamond drilling and electromagnetic surveying in selective areas by a deeper penetration electromagnetic method.

Geological mapping was begun in the summer and fall of 1964 and completed July 13<sup>th</sup>, 1965. A geological map on a scale of 1 inch to 400' accompanies this report.

PROPERTY AND ACCESS

Mann Township is Government surveyed and the claims comprise approximately 3,760 acres located in Concessions

I, II, and III, Lots 1 to 8 inclusive. The claims are recorded in the Forepine Mining Division as follows:

Nos. P.61325 - P.61348 Incl.	.....24 Claims
Nos. P.68490 - P.68547 Incl.	.....58 Claims
Nos. P.71643 - P.71654 Incl.	.....12 Claims

Total	<u>94 Claims</u>
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There are two routes to the property which is located 16 miles due south of Cochrane. The route used during the recent Jonsmith work was by way of No. 11 Highway turning west on a country road 3 miles north of Nellie Lake. The distance to the Jonsmith camp from No. 11 Highway is 8 miles. Swamp conditions along this route during the summer months required the use of a swamp-buggy for transportation. A second access to the property is by way of the dam at High Falls on the Frederick House River, 15 miles north of Connaught. The road to High Falls may be car driven winter and summer and after crossing the dam a trail leads two miles northeast to the Jonsmith camp in Claim P.61335.

#### HISTORY

The site of the Jonsmith property in Mann Township includes the location of the former Canigold Mines Limited. Work by Canigold Mines Limited was concentrated in the outcrop area in the North Half of Con. II, Lot 6, and included test pit work and short diamond drill holes. The work was carried out

by Cunigold in the 1940's. Previous to the Cunigold activity a deep pit had been squared up for shaft work and a hoist, compressor and boiler moved in which are still on the property in old condition. This installation on the S.W.  $\frac{1}{4}$ , N $\frac{1}{2}$ , Lot 6, Con. II (Jonsmith Claim P. 61334) is estimated to be 30 years old or more. The surface comp at which the shaft site is located shows some massive pyrrhotite and pyrite with a minor chalcopyrite content.

#### GEOLOGY

The geological mapping of the 94 claims was carried out by traversing the 102 miles of picket line and marked boundaries, and investigating any rise of ground which might indicate rock exposures. The topography is one of low relief with a second tree growth of spruce, poplar and birch. The ground is approximately 90 percent overburdened with depth to bedrock varying up to 150 feet.

The rocks found on the Jonsmith property are composed of keewatin volcanics intruded by a series of basic rocks which include peridotite and gabbro. These rocks in turn are intruded by Algonian feldspar porphyry dikes and granite and granodiorite bosses.

#### Keewatin

The keewatin volcanics where exposed are composed of rhyolite flows and rhyolite agglomerate and tuff. This keewatin formation strikes northwest-southeast in the western

part of the property and east-west in the central part of the ground. Geophysical evidence indicates that there may be a north-south strike to the formation at the east side of the property along the Newmarket Township boundary.

At the west boundary of the Jonsmith claims exposures of rhyolite show a dip of  $75^{\circ}$  to the north. In the central part near the location of the current drilling, dips have been found at about  $45^{\circ}$  to the north. This evidence may indicate that the axis of an anticline lies to the southwest where the steeper dips occur and the central and northern part of the property are on the north flank of this structure with probably a syncline located between Jonsmith and the general location of Pickerel Lake two miles to the north.

#### Halleyburian

A series of basic and ultra basic intrusives are exposed on the claims. These include a highly magnetic peridotite and a gabbro of lower magnetic attraction. These rocks are possibly differentiates of the same igneous body, and have a general sill-like attitude, being conformable to the Sedawan rocks. Where explored by diamond drilling in the central part of the Jonsmith property, these basic intrusives have been fairly predictable with a dip of  $45^{\circ}$  to the north.

In addition to the two above mentioned rock types of probable Halleyburian age, there is one occurrence

Jensmith  
Geol. Conf'd.

of a basic highly magnetic gabbro dike intruding the peridotite area in Claim P. 61333. This dike is believed to be associated with the older basic intrusives as it terminates with them to the west. The east half of the claim group is largely underlain by basic rock intrusives as indicated by the magnetometer survey. The basic intrusives terminate to the west in two long tongues, one at the north boundary of the property and one in the central part of the map area, as shown by the magnetics. The assumption is that these intrusives are pitching to the east, and surfacing to the west.

#### Outcrop

Outcrop of acid intrusives composed of feldspar porphyry dikes, gray hornblende granite and granodiorite were found in the central and western part of the property. These intrude all the above mentioned rocks and may compose a larger part of the bedrock than indicated on the western claims.

#### Faulting.

Considerable faulting of small offset in a northeast-southwest direction exists, as shown by the quartz veins occupying the fault planes on Claim P.61333. Additional evidence of faulting is probably represented by frequent mud filled seams encountered in diamond drilling. One fault of possible economic significance is indicated on surface located in the depression between the peridotite and gabbro outcrops on Claims P.61333-34. This fault strikes N.60° W, and traverses the area of the known sulphide occurrence.

The fault does not appear to have appreciable lateral displacement but diamond drilling as shown in the profile section indicates vertical offset with the north side of the fault dropping down.

#### MINERAL DEPOSITS

The program of exploration currently being carried on by Jonsmith Mines Limited is directed largely toward a search for copper, zinc and silver bearing sulphides. The possibility of nickel occurrence on the property should be considered, as significant nickel values have been found in Mann Township with the peridotite intrusives.

A program of diamond drilling followed the locating on Jonsmith of two strong electromagnetic conductors each extending 2500 feet in length and each known to be in rhyolite formation containing graphite and sulphides from surface evidence. These two locations are termed the North and South Conductors. The South Conductor shows widths up to 100' of brecciated rhyolite containing irregular concentrations of graphite and sulphides including pyrite, pyrrhotite and minor amounts of chalcopyrite and sphalerite. On surface the sulphide concentrations, traceable by brown oxidation, appear to follow the jointing system which is prominent in three directions, northeast, northwest, and flat. Important amounts of sulphides

have been intersected in diamond drilling such as the results of No. 2 Hole which showed 51.0' of 1.68% zinc, .22% copper, and silver values in the neighborhood of 0.1 to 0.3 ozs. per ton. The material contains considerable massive sulphide content bearing a close visual resemblance to Texas Gulf ore type. Further diamond drilling in close proximity east and west of the No. 2 Hole intersected varying amounts of sulphides in the graphitic rhyolite formation. In short core sections some values have run over 5% copper and 7% zinc. The attitude of the sulphide zones intersected is not definitely known but is thought to be lenticular occurrences in the rhyolite, possibly localized underneath the flat dipping peridotite and gabbro. The prominent fault nearby may have had some influence on the deposition of the sulphides in the drilling area.

In addition to the presence of sulphides in the rhyolite numerous sulphide burns in peridotite rock occur in dimensions up to 50 feet in diameter on Claim P. 61333. The sulphides are similar in appearance to those in the rhyolite and are localized in shears and joint planes. This location shows a concentration of sulphides not found on other outcrop areas during the recent geological mapping.

#### CONCLUSION AND RECOMMENDATIONS

Brocciated rhyolite formation has been found on the western half of the Jonsmith property in Mann Township

containing considerable graphite with associated sulphide mineralization. Sulphides are distributed over a zone up to 100 feet wide striking in a general east-west direction and dipping to the north. The sulphides are composed largely of pyrite and pyrrhotite with minor amounts of chalcopyrite and sphalerite.

The results of 9,000 feet of diamond drilling carried out during the past year show a favorable chance that a copper, zinc and silver type of sulphide ore may be found on the property. The geological correlation indicates that the rhyolite formation is the favorable ore horizon and that the attitude of the sulphide lenses may be conformable to the lower contacts of the basic intrusives including the peridotite and gabbro sill-like zones. On the other hand the sulphide distribution might be controlled by fault occurrences such as the possibly important fault shown on the geological map sheet.

The presence of the graphite with some of the pyrrhotite and pyrite appears to be older than the observed copper and zinc bearing sulphides. The presence of the two ages of sulphide mineralization together is likely due to the access available in the brecciated rhyolite. In the writer's opinion the origin of the copper, zinc and silver values would be the acid intrusives of Algonian age. In at least one Jonsmith diamond drill hole, No. 5, zinc, copper and silver bearing sulphides were found in a fracture zone in a wide feldspar



porphyry dike. Except for the absence of graphite these sulphides are in every respect similar to those drilled in the rhyolite formation.

The known areas of the favorable rhyolite formation on the Jonsmith property are those shown on the outcrop locations in the west half of the property. At shallow depth some of the peridotite and gabbro outcrop areas will be underlain by rhyolite. No sulphide zones were observed in the rhyolite formation at the west boundary of the property. These rocks strike northwest-southeast and their extensions along strike may be potentially favorable as the geophysical method might not have penetrated the overburden depth present. The eastern half of the property shows a large percentage of peridotite and gabbro formation under the general overburden. Quite possibly Keewatin rocks including rhyolite, will be found in this area. Cross-section diamond drilling or deep penetration electromagnetic methods might be used in the exploration of this ground.

The widespread presence of graphite in the rhyolite formation, particularly near the peridotite, makes difficult the exploration for sulphides by electrical methods. A maximum amount of geological correlation will give direction to diamond drill exploration in the future, aided by evidence of favorable sulphide associations such as found on Jonsmith.

It is recommended that the immediate program on Jonsmith be a continuation of 3,000 feet of diamond drilling in the outcrop area of Claims P.61333-34-35. Concentrated drilling so far has not returned ore values here though considerable encouragement has been met. Several other likely exploration bets based on geology and geophysics remain to be tried out.

A magnetometer and a Ronka Horizontal Loop electromagnetic survey have been completed on the property. At the present time a deeper penetration electromagnetic method is being tried out in selective parts of the property. Results of these trial efforts may encourage the use of a deeper penetration method over all those parts of the property known or believed to be underlain by rhyolite formation.

Respectfully submitted,



July 12, 1965,  
Halleybury, Ontario.

E.L. MacVeigh B.A., M.S.

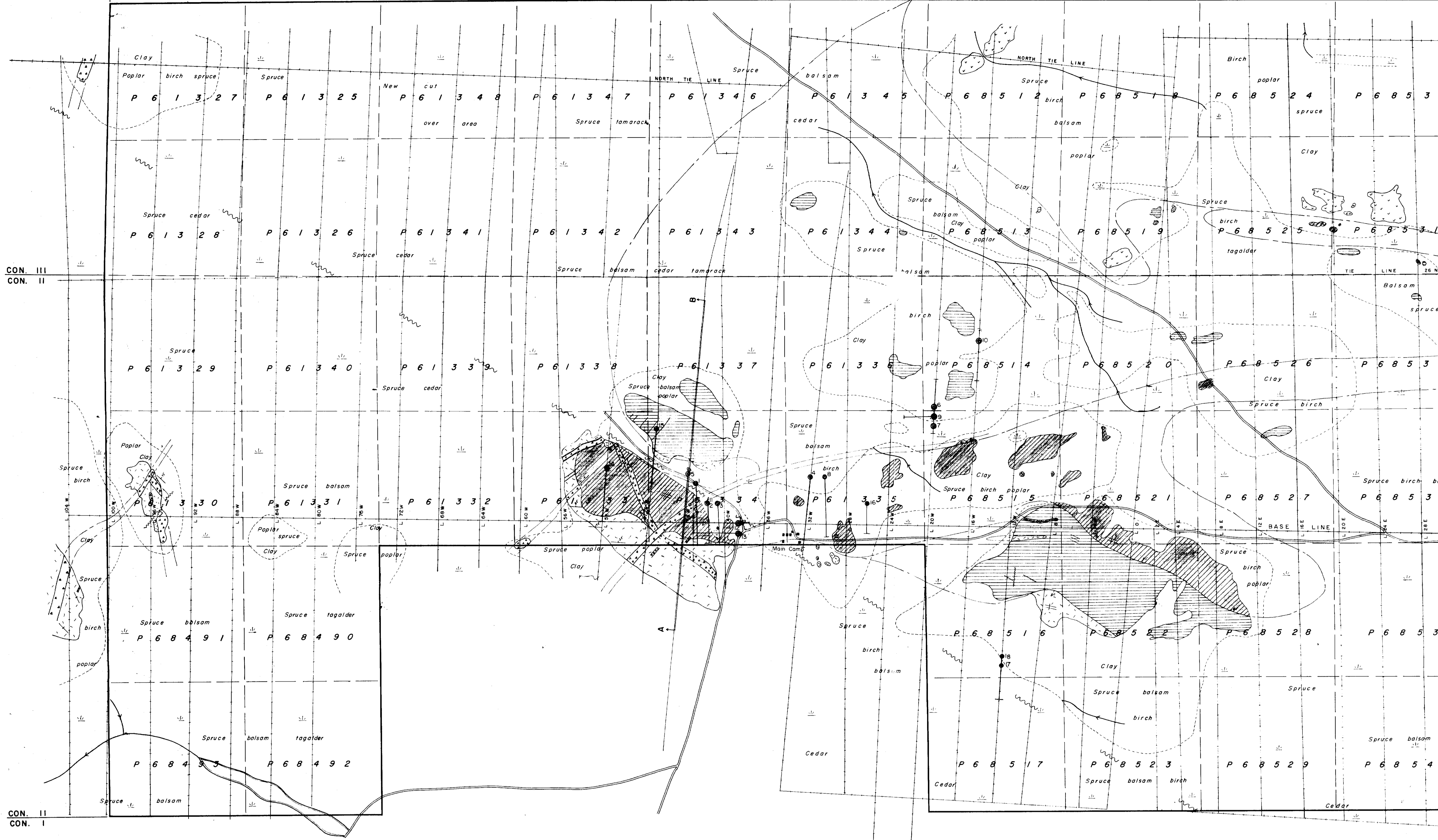
LOT 8

LOT 7

LOT 6

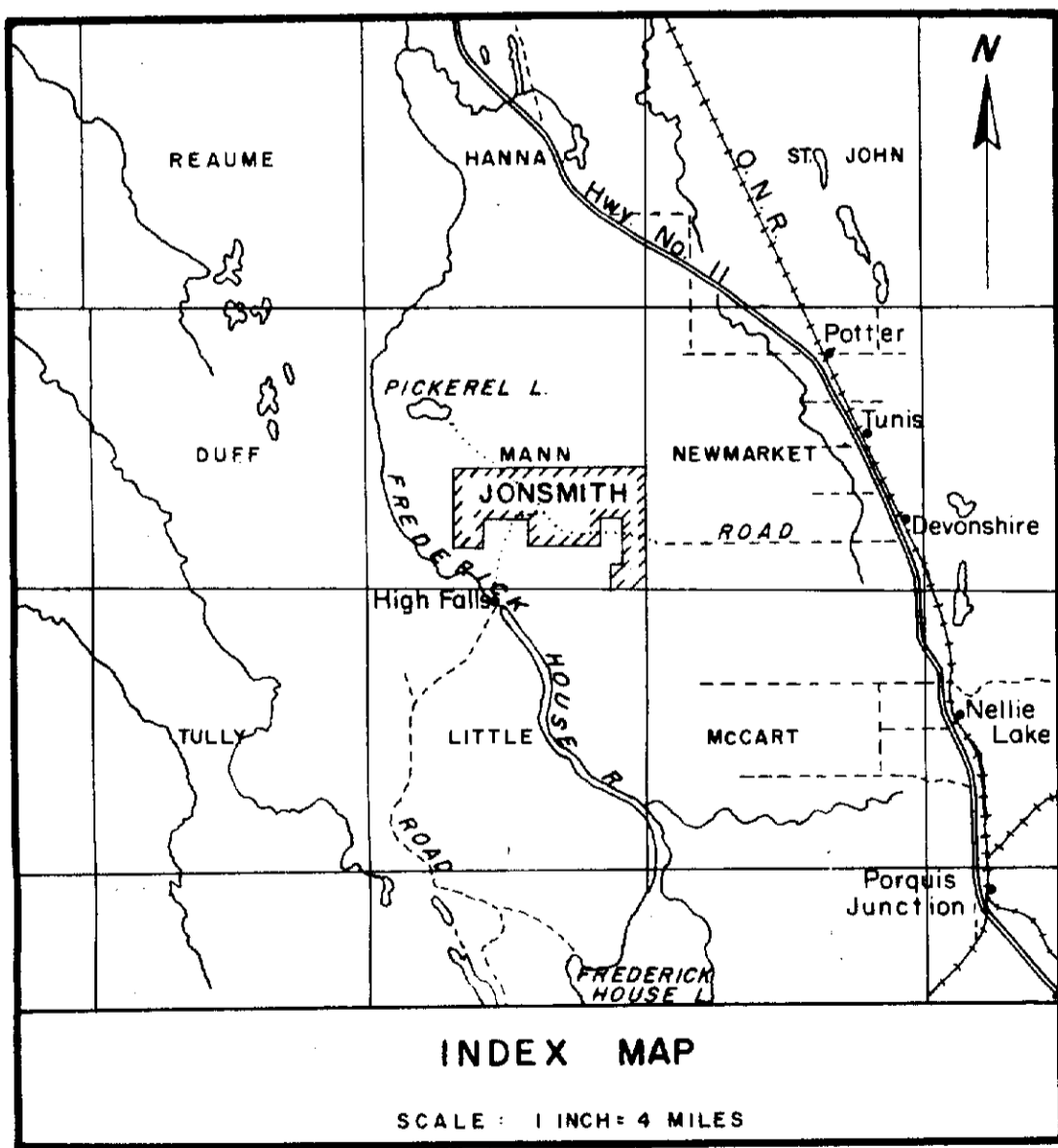
LOT 5

LOT 4



CON. III  
CON. II

CON. II  
CON. I



INDEX MAP

SCALE: 1 INCH = 4 MILES

CORRECTION

The claim line and property outline needs to be shifted 87' to the east with respect to the picket line system, to be correctly positioned.

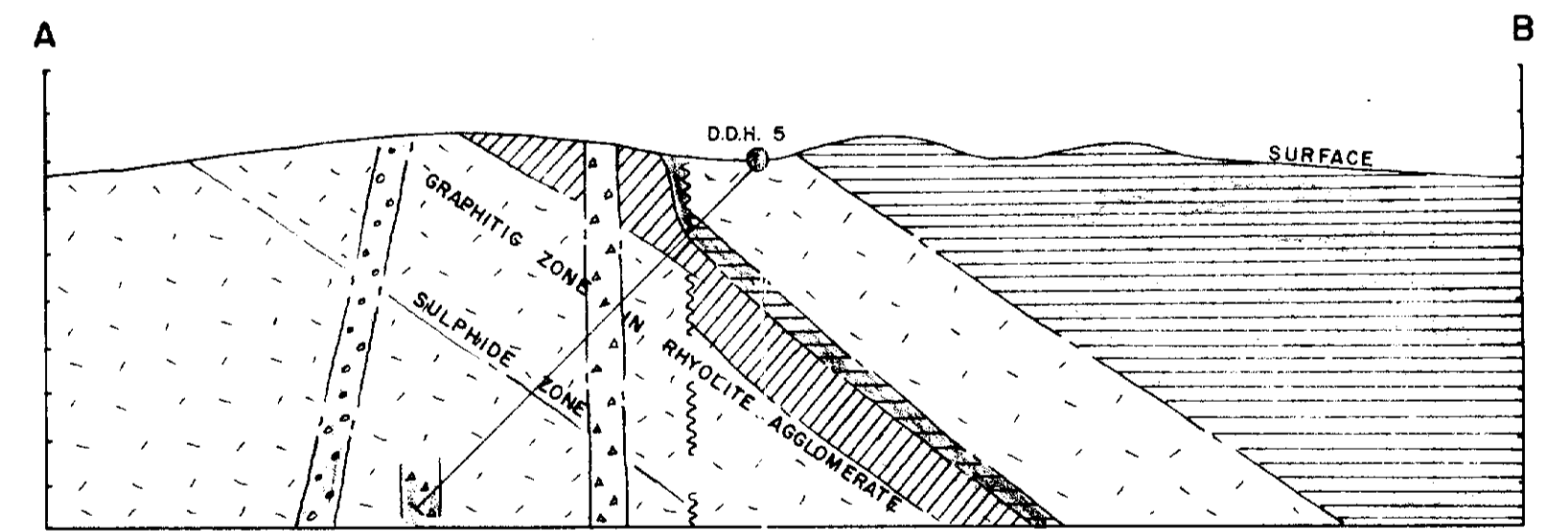
SYMBOLS

- Property boundary
- - - Claim boundary
- - - Township boundary
- Base and picket lines
- ~ Ponds and creeks
- Swamp
- New and old camps
- Tractor road
- Pit or trench
- Geological contact (defined, assumed)
- Rock outcrop
- Fault (defined, assumed)
- Strike and dip
- Joining directions
- ◆ Diamond drill hole

PROFILE SECTION ALONG A - B

(looking west)

SCALE  
1" = 400'  
Horiz. - Vert.



	LOT 8	LOT 7	LOT 6	LOT 5	LOT 4	LOT 3	LOT 2	LOT 1
CON. III	P 6 1 3 2 7	P 6 1 3 2 5	P 6 1 3 4 8	P 6 1 3 4 7	P 6 1 3 4 6	P 6 1 3 4 5	P 6 8 5 1 2	P 6 8 5 1 1
CON. II	P 6 1 3 2 8	P 6 1 3 2 6	P 6 1 3 4 1	P 6 1 3 4 2	P 6 1 3 4 3	P 6 1 3 4 4	P 6 8 5 1 3	P 6 8 5 1 4
	P 6 1 3 2 9	P 6 1 3 4 0	P 6 1 3 3 9	P 6 1 3 3 8	P 6 1 3 3 7	P 6 1 3 3 6	P 6 8 5 1 5	P 6 8 5 2 0
	P 6 1 3 3 0	P 6 1 3 3 1	P 6 1 3 3 2	P 6 1 3 3 3	P 6 1 3 3 4	P 6 1 3 3 5	P 6 8 5 2 1	P 6 8 5 2 6
	P 6 8 4 9 1	P 6 8 4 9 0					P 6 8 5 2 7	P 6 8 5 2 8
	P 6 8 4 9 2						P 6 8 5 2 9	P 6 8 5 3 4
CON. I								

KEY MAP  
SCALE: 1 INCH = 40 CHAINS

GEOLOGY PLAN  
**JONSMITH MINES LTD.**  
 MANN TWP.  
 PORCUPINE MINING DIVISION  
 ONTARIO

TO ACCOMPANY REPORT BY E. L. MacVEIGH B.A., M.S.

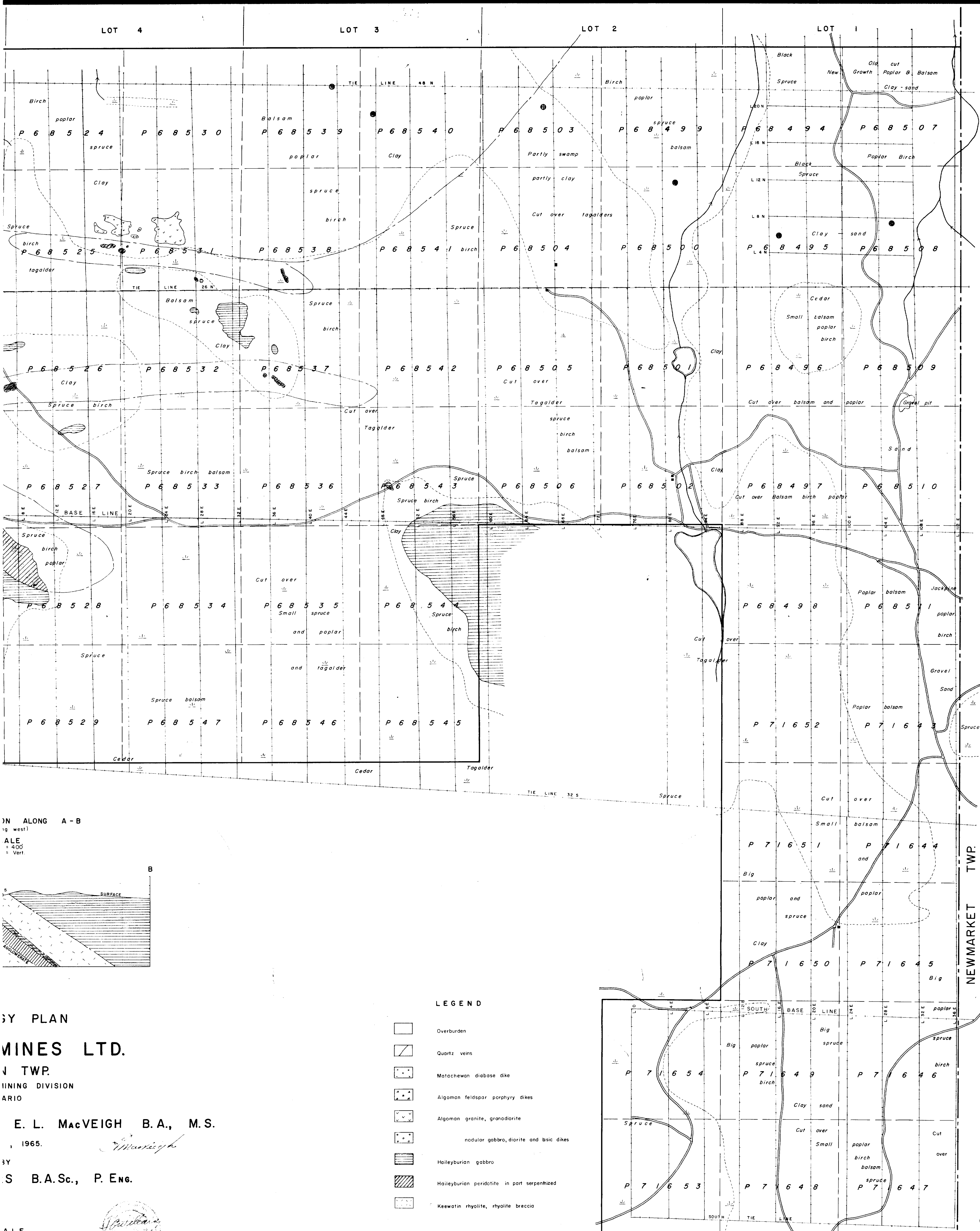
JULY 10, 1965.

BY  
**JACK G. WILLARS B.A.Sc., P. Eng.**

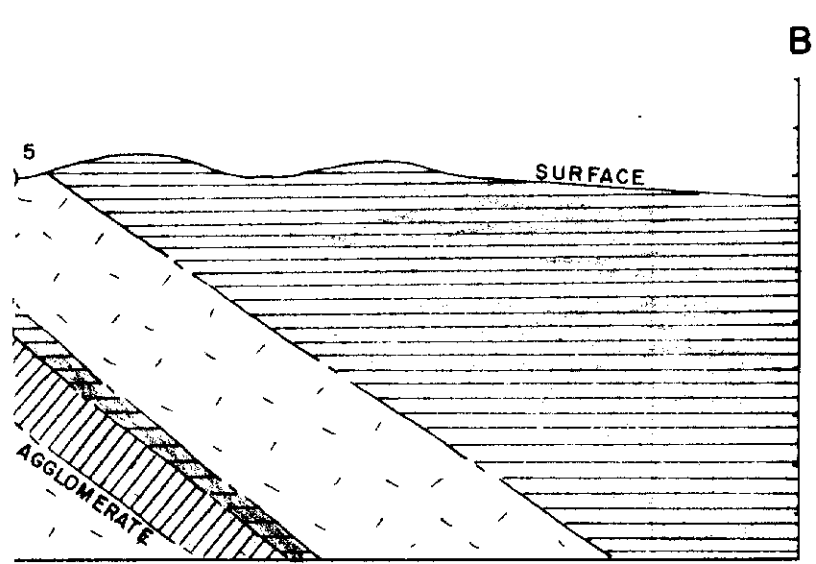
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1 INCH = 400 FEET

ASA-405



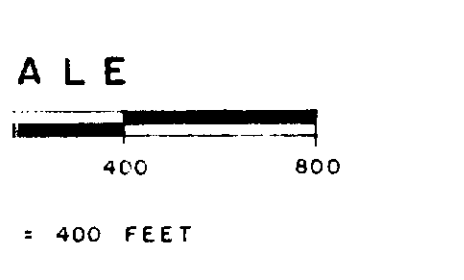


IN ALONG A-B  
 (to west)  
 SCALE  
 1" = 400'  
 = Vert.



BY PLAN  
**MINES LTD.**  
 TWP.  
 MINING DIVISION  
 ARIO  
 E. L. MacVEIGH B.A., M.S.  
 1965.  
 B.S.A.Sc., P. Eng.

- LEGEND**
- Overburden
  - Quartz veins
  - Matachewan diabase dike
  - Algoman feldspar porphyry dikes
  - Algoman granite, granodiorite
  - nodular gabbro, diorite and basic dikes
  - Haileyburian gabbro
  - Haileyburian peridotite in part serpenitized
  - Keewatin rhyolite, rhyolite breccia



CON. I

LITTLE TWP.

NEWMARKET TWP.

63A.465