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G E O L O G I C A L R E P O R T

ON THE

PENHORWOOD TOWNSHIP CLAIMS

BURTHO GOLD MINES LIMITED

ROOM 1405 - 302 BAY STREET

T O R O N T O

SEPTEMBER 1, 1947

B.M. ARNOTT

INTRODUCTION:

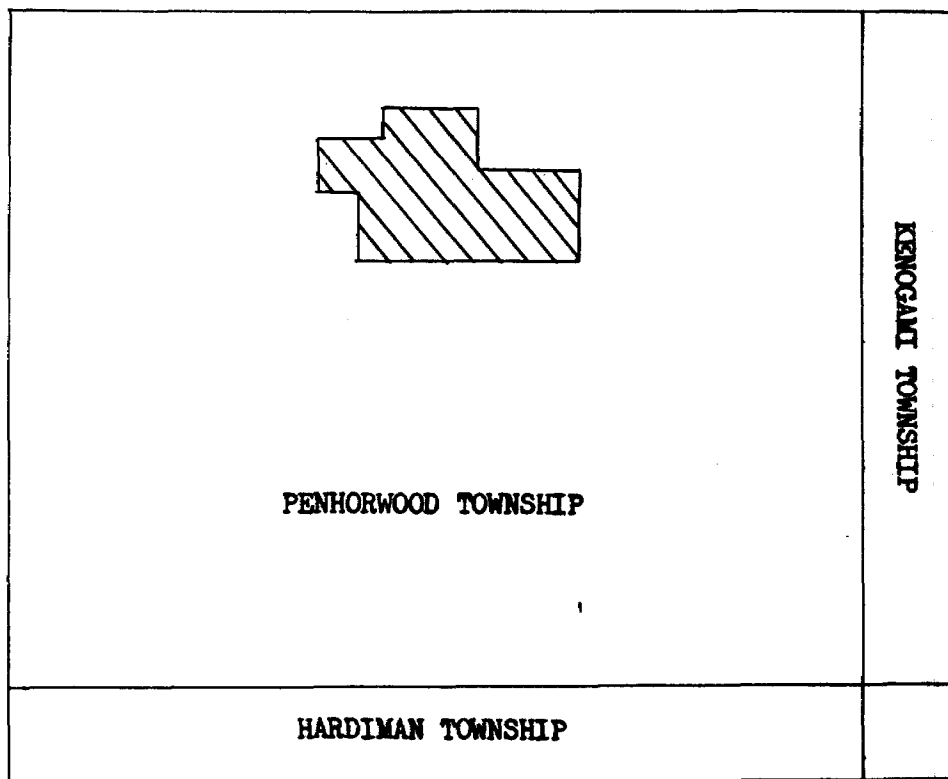
The Penhorwood group of Burtho Gold Mines Limited consists of Thirty (30) claims, Nos. S 46445 - S 46453 inc., S 46841 - S 48657 inc., and S 48797 - S 48800 inc. They are in the south-central part of Penhorwood Township in the Sudbury Mining Division and are about two miles north of Tionaga.

This group was staked in November 1946 to include part of an area which, as shown on Government geological maps, appears to possess certain favorable conditions. After a preliminary examination it was decided that the best method to start prospecting was to traverse the ground thoroughly and make an accurate outcrop map. Although most of the area is heavily overburdened it was believed that there were sufficient outcrops to get an idea of some of the structure in detail. This work was carried out from May 15th to August 15, 1947.

SUMMARY AND CONCLUSIONS:

Several mineralized shear zones have been found but no values of importance have been obtained from them, nothing higher than 0.03 oz. However, the amount of rock exposed is so limited that the failure to obtain values to date is not conclusive evidence that the ground is of no value. Gold occurrences are known along the general strike both to the south-west and to the north-east, and the structure is such that, if it could be proven that gold bearing solutions were active in the immediate area, it would be a reasonable chance that economic deposits might occur somewhere along the length of the fracture zones.

The overburden is too deep to make any more surface prospecting possible and an extensive diamond drilling program is not warranted on the information that is available at the present time. At present it could only consist of cross-sectioning of overburdened areas where shear zones have been



KEY MAP SHOWING LOCATION OF PENHORWOOD GROUP
BURTHO GOLD MINES LIMITED

projected. If information later becomes available as to the conditions under which gold is likely to occur in the vicinity, a drilling program might then be considered.

PHYSICAL FEATURES:

A good truck road extends from Tionaga nearly to the south boundary of the property. The road continues beyond this point through the centre of the group but as it traverses considerable low ground it can be used by a truck in dry weather only. From the main road there is a network of branching logging roads. Although they are partly overgrown they are useful as trails and with a little work would make tractor roads.

Most of the claims are very difficult to traverse as they are covered with slash from logging operations, through which second growth has grown up. The area is badly infested with the spruce bud worm which has killed all the balsam and most of the spruce. These dead trees and the slash make the fire hazard particularly great. The four north-west claims lie in an old burned area.

Rock outcrops occupy only a very small percentage of the area and most of them are small and covered by a mantle of moss. The north-west portion is covered with high gravel hills, among which there are several little lakes. Most of the central part is swamp or sand plains. In some places the overburden is undoubtedly very deep but it was found that careful search often revealed small outcrops in places where the overburden might be expected to be heavy, and it is likely that in the swamps the rock is not far from surface.

The Nat River in the south-east claims and the little lakes in the north-west are the only sources of water apart from the swamps. So that, in dry weather or in the winter time, water for drilling would not always be easy to obtain.

MAPPING METHODS:

Preliminary reconnaissance showed that the rock outcrops occurred in widely scattered areas and that the outcrops on the east had strikes of about N. 60° E., whereas on the west the average strike was a little west of north. Therefore to cross the formation as nearly at right angles as possible it was decided to traverse the eastern part at N. 30° W. and the western part at N. 60° E. This worked out satisfactorily since no rock is exposed over a large part of the central area where the two sets of traverses join. Compass traverses at 400 foot intervals were run from base lines. Chained picket lines were then run to tie in outcrops where the preliminary compass traverses had found enough rock to make it worthwhile to cut lines.

Plotting was done on a scale of 200 feet to the inch in order to get the entire group on one sheet, although a larger scale would have been desirable on certain outcrop areas where the geology is complicated.

GENERAL GEOLOGY:

This group of claims lies at the north end of a belt of greenstones which extends from Horwood Lake across P~~ro~~horwood in a north-east direction. On Map No. 339 the greenstones are shown about 1½ miles wide. However, the width is a great deal greater than is shown. The contact of the granite mass on the east was found to be much farther south and east than had been assumed. The approximate position of the contact of the west body of granite is heavily overburdened and it could not be determined whether or not the north-west corner of the property reaches this contact.

TABLE OF FORMATIONS:

DIABASE
LAMPROPHYRE
YOUNGER QUARTZ, FELS, PORPHYRIES
QUARTZ PORPHYRY
GRANITE
DIORITE
HORNEBLENDE SCHIST
ANDESITIC LAVA
TUFS AND AGGLOMERATES.

Tuffs and Agglomerates: - Volcanic breccia containing coarse angular fragments is exposed in fairly thin beds on S 46845. Beds of fine grained tuffs are widely distributed as shown on the map. As it was not possible to have any microscopic work done at the time of writing it is possible that some of the outcrops on the south boundary that are shown as tuff may be wrongly classified. The tuff is apparently a more competent rock than the flows as it does not show the same degree of schistosity, being comparatively massive in appearance.

Andesitic Lava: - Most of the area is underlain by flows of intermediate composition. They are all chloritized and are strongly sheared.

Horneblende Schist: - The volcanic rocks in the vicinity of the granite contact in the south-east corner of the property are highly metamorphosed and altered to horneblende schist and the original structures have been obliterated. The schistosity has been developed parallel to the granite contact.

Diorite: - A single outcrop of diorite occurs on the east bank of the Mat River on S 46844. It is a fairly coarse grained and shows considerable alteration. It is possible that this is merely a basic phase of the neighboring granite.

Granite: - Granite is exposed on the south-east corner of the property.

The actual contact can be seen on the west side of the Nat River just south of the boundary. It is also exposed on the west bank of the Nat River on Claim No. S 45213 where the contact can be determined within a few feet. At this point a north-south fault causes a displacement to the south on the east side for an undetermined distance. The granite adjacent to the contact is slightly porphyritic and gradually grades into a granite gneiss away from the contact.

Quartz Porphyry: - Quartz porphyry containing large phenocrysts of bluish quartz outcrop over an area of several hundred feet in the west-central part of the property and also about 300 feet away, about one claim south of the north boundary. On most of the outcrops it is sheared and contains fine pyrite with narrow quartz stringers. It is distinctive in appearance and evidently older than the other porphyries. This appears to be a particularly interesting area.

Younger Quartz Fels. Porphyries: - Porphyry dikes are numerous exposed in all the outcrop areas, most of them are only a few feet in width. They range from feldspar porphyry with large well developed phenocrysts to fine-grained acid dikes. There does not seem to be any clear cut distinction between the different types and they have not been separated on the map.

Lamprophyre: - Two dikes of lamprophyre are exposed on the south side of the Kettle Lake on Claim No. S 46449. They are about two feet in width and ~~xxxx~~ one of them lies within the quartz porphyry.

Diabase: - A fine to medium grained basic intrusive has been mapped as diabase. It is a dark green rock with a fresh appearance. Textural changes take place abruptly, the rock being diabasic at one point and granitoid at another only a few inches away. It was not found in contact with the Algonian so the age relationship could not be established. In the hand specimen it is, in most places,

similar in appearance to Matachewan diabase, in other places it resembles rock near Horwood Lake that has been mapped as Haileyburian diorite. Not all of the outcrops can be correlated as dikes, but one on the west boundary strikes north-south and is 200 feet in width. Considerable magnetic attraction was noted in the vicinity of this dike.

STRUCTURAL GEOLOGY:

The topography suggests that a long zone of structural weakness extends along the belt of volcanics. This is marked by a steep, well defined valley. The long narrow channel of Hardiman Bay lies in the south-west portion and it is a deep steep-walled depression for some distance to the north-east of the lake. Crossing the Burtho claims it is not clearly defined as it is obscured by broad swamps and sand plains. Just east of the Burtho boundary, however, the Nat River, for some distance follows a well defined valley which from its position and direction could be the continuation .

FOLDING:

The belt of volcanic rocks probably occupies a major syncline, striking north-east but conclusive evidence to prove this could not be found. Local folding has produced many changes in dips, but in the south-eastern portion of the property the average dip is fairly flat (40° - 50°) to the north-west, while in the west portion the dips are mostly vertical. No outcrops were found where the tops of lava flows could be determined.

Wherever the relationship could be observed it was seen that the strike of the schistosity follows the contour of the granite intrusive. The nose of granite which lies in the south-east corner of the property has thus caused the volcanics to be folded sharply around it.

Drag folds and abrupt changes in strike are particularly evident on S 46449 and S 46845, showing that severe local folding has taken place, but the outcrop areas are too small to trace out any of the folds.

SHEARING:

Near the north side of S 46449 is a particularly strong shear zone. The average strike is Nc. 20°W. and it is dipping nearly vertically. The centre of the zone is marked by a depression about 75 feet wide which parallels the schistosity. On the west wall the volcanics have been sheared and altered to a highly contorted talc schist. A small exposure of quartz porphyry is also strongly sheared and shows drag folding. On the west wall of the depression the exposed rocks have been altered to a carbonate schist. It is likely that this is a fault zone but there are no rock exposures on strike either to the north or south from which to gain more evidence.

A wide zone of shearing occurs around the nose of granite in the south-east part of the group. The width of this shearing has not been determined but it is probably several hundred feet. In the area, as elsewhere on the property, it was found that the edges of the outcrops dropped off abruptly under deep overburden and nothing could be learned of the rock between the outcrops.

A north-south fault is well exposed on the Nat River on the east side of S 46448. The walls show no sign of alteration and it is evidently post-mineralization in age. It causes a displacement to the south on the east side for a distance which could not be determined but is probably several hundred feet.

Another fault striking N. 40° E is exposed on the north side of S 46851. It has produced a three foot zone of shearing with stringers of barren quartz.

MINERALIZATION:

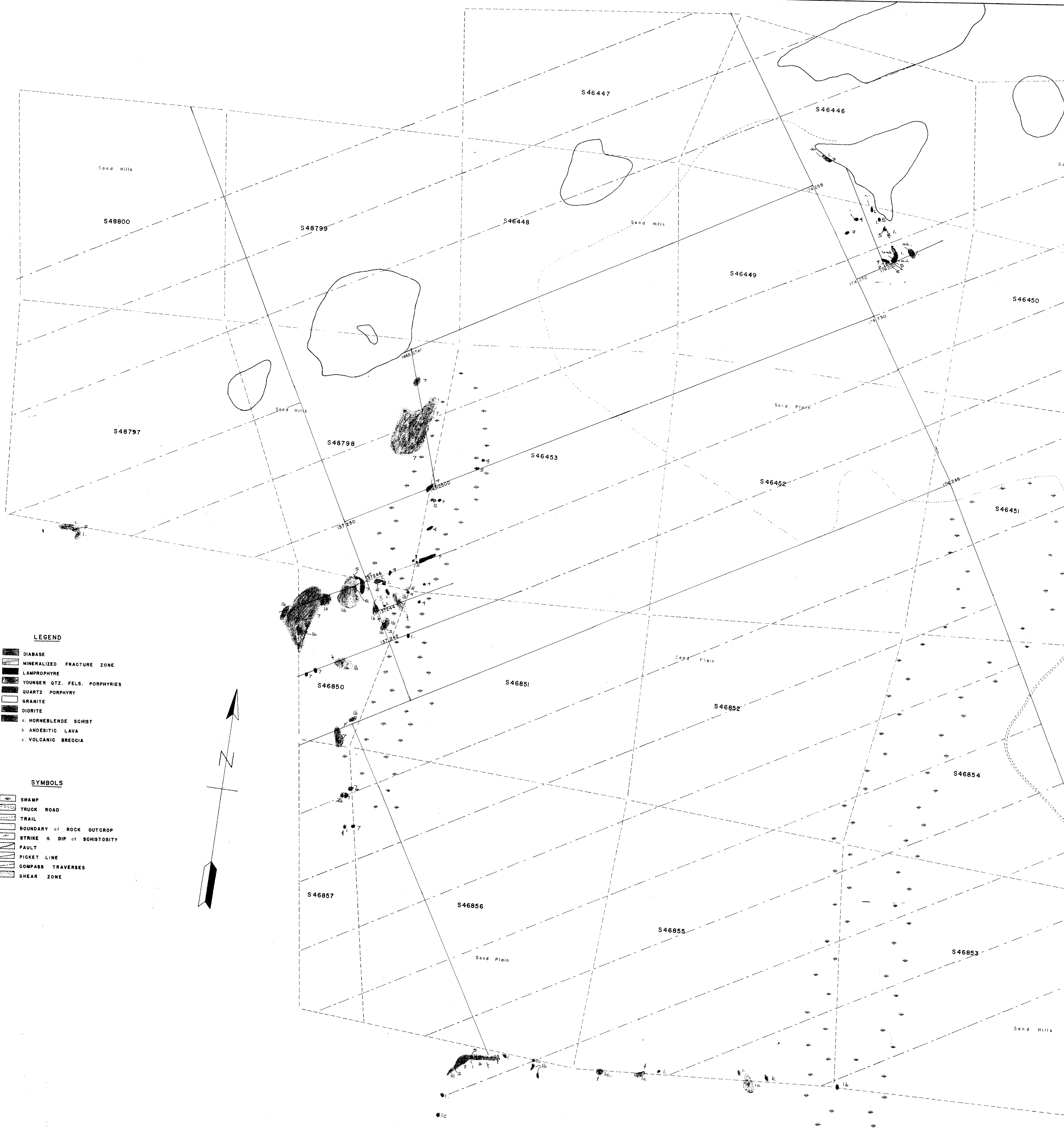
The most promising looking areas where there is some exposed rock are:

- (a) - the shear zone on S 46449;
- (b) - the neighborhood of the quartz porphyry bars;
- (c) - the zone of shearing near the Nat River.

The shear zone on S 46449 contains lenses and stringers of silicified schist heavily mineralized with pyrite. A number of grabs and character samples were taken of this material but no higher values than 0.03 oz. were obtained. It is possible that if at somewhere along its length the fracture were enclosed in a more competent rock than the lavas in which it is exposed it might make ore. The tuffs or the quartz porphyry base might be a favorable host rock and it was hoped that when all the outcrops were plotted it would be possible to project the strikes to a comparatively small area. The extent of the overburden, however, makes this impossible.

The zone of shearing near the Mat River contains scattered showings of mineralized schist and quartz stringers. It appears that the less competent beds have formed schists whereas those of a more brittle character were fractured. Pyrite and a little chalcopyrite were the only sulphides identified and all the samples gave low values, none being higher than 0.03 oz. It is possible that some of these zones may contain commercial values somewhere along their length but at the present there is no clue to indicate that this is the case.



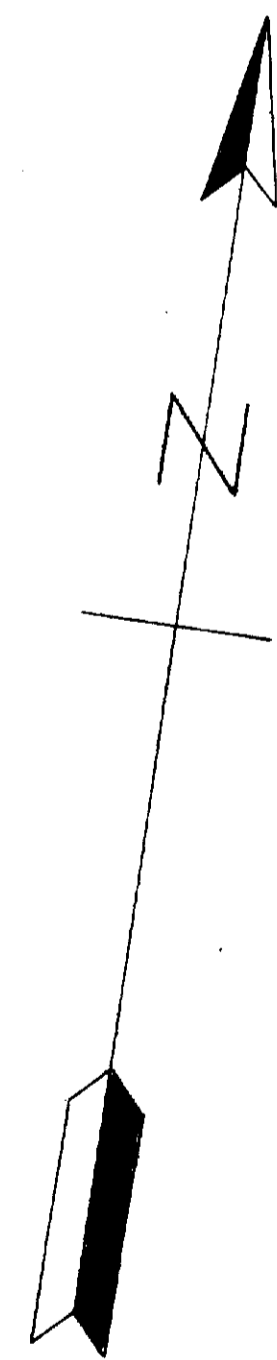


LEGEND

- 7 DIABASE
- MINERALIZED FRACTURE ZONE
- 6 LAMPROPHYRE
- 5 YOUNGER QTZ. FELS. PORPHYRIES
- 4 QUARTZ PORPHYRY
- 3 GRANITE
- 2 DIORITE
- 1. HORNBLENDE SCHIST
- ANDESITIC LAVA
- VOLCANIC BRECCIA

SYMBOLS

- SWAMP
- TRUCK ROAD
- TRAIL
- BOUNDARY of ROCK OUTCROP
- STRIKE & DIP of SCHISTOSITY
- FAULT
- PICKET LINE
- COMPASS TRAVERSES
- SHEAR ZONE



GEOLOGICAL MAP
OF THE
PENHORWOOD GROUP
BURTHO GOLD MINES LTD.

SCALE: 200 FEET = 1 INCH

DATE: AUGUST, 1947

