



52H04NE0027 63.1711 LAC DES ILES

010

~~63-1711~~
63-1711

LAC DES ILES CLAIM GROUP

GUNNEX LIMITED

Introduction

Following is a summary report of exploration work in the Lac des Iles area during 1963.

During the latter part of June, W. Baker and G. Moore made a reconnaissance prospecting trip and found widespread low-grade copper-nickel mineralization in ultra basic rocks south of Lac des Iles. The indications were sufficiently encouraging to warrant additional time being spent in the area and subsequently a block of 175 contiguous claims were staked, with considerable detailed prospecting, geological mapping, and geophysical work on about 38 of them.

There has been no previous geological work done in the immediate area and a considerable part of the prospectors' time was spent in merely attempting to establish the boundaries of the favourable ultrabasic intrusive mass. It is also of interest that no evidence has been found of any previous prospecting activity. The area of favourable geology apparently was overlooked by prospectors and geologists because it lies on a height of land and there are no canoe routes through it.

Property & Location

The property consists of 175 contiguous claims numbered as follows:

TB 107854 to 107868 inclusive
TB 107872 to 107907 inclusive

TB 108122 to 108126 inclusive
 TB 108155 to 108184 inclusive
 TB 108521 to 108564 inclusive
 TB 108707 to 108733 inclusive
 TB 109361 to 109378 inclusive

They are located sixty miles north of Fort William. The only means of access is by airplane which ordinarily land on Camp Lake which is about one mile in length and is located near the centre of the property.

A new all-weather road, called the Spruce River Road, takes off from Highway 17 about three miles east of the city limits of Port Arthur and passes 11 to 12 miles east of the property. An access road to the property would be fairly easy to construct as the intervening ground is mostly well drained and gently rolling.

Diamond drilling equipment can be most economically flown in from Edmondson Lake which is on the Spruce River Road. This lake is 45 to 50 miles from Port Arthur by truck and is 22 air miles to the camp, thus it is within distance for the minimum flight rate.

Physical Features

The surface of the gabbro complex body lying south of Lac des Iles forms a plateau which rises steeply about 200 feet above Lac des Iles and slopes gently to the west, south and east. The surface in the vicinity of the mineralized zones is mostly gently rolling with a shallow cover of overburden consisting mostly of large boulders. There is little surface water except for the few scattered ponds. The topography is such that the whole area could be completely drained by one or two ditches.

General Geology

There is no record of previous geological work in the immediate area. A compilation of the existing information on the surrounding areas is shown on

Ontario Department of Mines Preliminary Geological Map No. P.187, Lac des Iles Sheet. However, this map is blank in the area in which the claim group is located. Aeromagnetic Survey Map No. 20990 shows anomalous readings over the ultrabasic intrusive body and work on the ground indicates that this map represents the broad geological picture with a fair degree of accuracy.

Table of Formations:

Diabase
 Fine grained basic dikes
 Quartz-feldspar porphyry dikes
 Granite
 Gabbroic-gneiss
 Gabbro complex
 Peridotite
 Granite-gneiss

Granite-Gneiss:

The body of ultrabasic rock referred to as the gabbro complex is in contact with granite-gneiss on the west. This gneiss generally is a medium-grained light to dark gray rock which commonly has a ribbed appearance due to differential erosion. Most of the banding is from a fraction of an inch to a few inches thick and is due mainly to the differences in the ratios of light to dark minerals. Very little work has been done in this area, but the gneiss appears to be about one mile in width and to grade into massive gray granite to the west. The age relationship of the granite-gneiss with the gabbro is unknown.

Peridotite:

A body of peridotite from $1\frac{1}{2}$ to 2 miles in diameter is believed to lie under the main part of Lac des Iles. This rock can only be observed at scattered locations due to the lake and a thin diabase sill capping which covers most of the higher ground. It is a rusty weathering fine to medium-grained rock and is considerably serpentized. The magnetite content is high and therefore the aeromagnetic anomaly probably delineates its boundaries. Minor fractures are

very common and some of the outcrops are highly sheared. Sulphides are very fine and sparse but assay results show low nickel values of about 0.1 to 0.2%.

Gabbro Complex:

A body of mafic rock of various phases consisting of gabbro, norite, anorthosite and pyroxenite extends in a south-southwest direction from the main body of Lac des Iles peridotite. This ultrabasic body appears to be about six miles in length and its southern boundary is about four miles south of Lac des Iles. It appears to have a maximum width of a little more than two miles. In addition to variations in mineral composition it varies from fine grained to very coarse grained pegmatitic phases. Its magnetic properties are also very erratic. Much of the rock carries no appreciable magnetite, but in some areas the magnetite content is over 50%. All the occurrences of copper-nickel of any importance that have been found to date lie within this assemblage of ultrabasic rocks.

Gabbroic-Gneiss:

The only location where this rock type has been located is near the southeast end of Centre Lake. It consists of a typical gabbro which has been intruded by narrow acid dikes in a lit-par-lit fashion. It is uncertain whether this is a distinctive rock type or if it is a part of a fault zone with the narrow acid dikes intruded along the planes of shearing.

Granite:

On the east side the gabbro complex is in contact with a body of massive medium grained biotite granite which is pinkish-red to red-brown in colour. This granite has only been examined near the gabbro contact and here it is distinctly porphyritic in texture. It is unknown whether the main body of the granite also has the porphyritic character.

Three outcrops were found where the granite-gabbro contact is well exposed and it is definitely established that the granite is intrusive into the gabbro. On two outcrops it was possible to determine the dip of the contact and these were 70° and 80° respectively to the east towards the granite body.

Quartz-Feldspar Porphyry Dikes:

Acid dikes from a few inches to a few feet in width are sparsely scattered throughout the gabbro body. They are medium grained and gray to pink in colour with well developed quartz and feldspar phenocrysts. They are probably related to the granite mass to the east.

Fine-Grained Basic Dikes:

Widely scattered throughout the gabbro complex are numerous fine-grained basic dikes. These dikes are all small, being from about one inch to a maximum of a couple of feet in width. They are very irregular in outline and pinch and swell rapidly.

A thin section examination of a specimen of this rock showed it to be essentially a mixture of plagioclase and pyroxene in the ratio of 70:30.

Wherever they have been observed these dikes are post sulphides.

Diabase:

Most of the northern portion of the claim group is covered by a capping rock consisting of a Keweenaw diabase sill. This is a part of the diabase which overlies much of the area surrounding Lake Nipigon to the east. On the islands and shore of Lac des Iles this sill is apparently only a few feet thick and most of the surface depressions are windows through the diabase to the underlying formations.

The Keweenaw diabase as exposed in this area is a medium to coarse-grained rock, weathering to a pale brownish colour but generally exhibiting a

characteristic fresh appearance. The lower portions of the flow become fine-grained near the contact with the underlying rocks. The rock commonly has a good ophitic texture, but in places it is non-ophitic and resembles a gabbro.

Small bodies of diabase also occur within the gabbro complex south of Lac des Iles. These have near horizontal contacts with underlying gabbro and some shearing is exhibited at these contacts.

Detailed Mapping

A base line 15,000 feet in length and bearing N.25°E. was run from the north shore of Two Island Lake to the south shore of Lac des Iles. Picket lines were turned off at 400-foot intervals and in the areas of the main showings intermediate lines at 200-foot intervals were established. The cross lines were extended so as to cover a strip 4,500 feet in width. This area covers all, or the major part of 38 claims, amounting to about 20% of the total area of the property.

Mapping was carried out on a scale of 200 feet to the inch by traversing along the lines and between the pickets of adjacent lines by pace and compass. So far as possible all outcrops were sketched and features of interest recorded. A large part of the area is covered with overburden, but much of this cover appears to be very light and when more time is available much more rock could be uncovered.

In order to map the various phases of the gabbro complex a detailed study will be necessary and there was not sufficient time to attempt this. However, it is suggested that this detailed work is well warranted for next season.

There are numerous lineaments recognizable on the aerial photographs and the more prominent of these have been plotted on a base map on a scale of one inch to 400 feet. A transparent overlay showing these lineaments has been prepared for the detailed geological map of the known mineralized zones.

Two of these lineaments appear to be regional structures. A ravine which strikes northeast and passes through Narrow Lake in the southeast corner of the property extends for a number of miles and apparently represents a major fault. Another very strong structure causes the steep and straight line of the south shore of Lac des Iles.

Within the limited area that has been mapped in detail some of these lineaments are recognizable as topographic depressions and shearing on the lower edges of outcrops lends support to the view that they are caused by faults. Other persistent linears are not recognizable on the ground, and they may be simple or dike-filled fractures.

I believe that it is significant that there is a pronounced concentration of these photo linears in the areas where the most important mineralized zones have been found. Of even more significance is the fact that there are other nearby overburdened areas where the air photos show a similar concentration of lineaments. A comparison of these photo-linears with the known geology indicate that the known mineralized zones are nearly all situated close to the junction of two or more of the lineaments.

Economic Geology

Extending over a length of about two miles in a south-southwest direction are a number of irregular mineralized zones carrying pyrrhotite, pentlandite and chalcopyrite. A thin section study of specimens from two separate zones identified them as being composed of plagioclase feldspar and hypersthene, thus classifying them as norite. The grain size of the noritic rock changes sharply in a short distance from fine-grained to a coarse-grained pegmatitic material and the relative mineral constituents also show abrupt changes, but as far as is known at this date these changes have no bearing on the abundance of the sulphide minerals.

The sulphides occur as finely disseminated grains, as coarse localized clusters, or, more rarely, as fracture fillings. Examination of thin sections

under microscopic low power indicates clots of sulphides consisting of bright yellow chalcopyrite and a pale yellow complex of two minerals. The chalcopyrite occurs as sharply defined crystals and areas and is possibly the last mineral to have crystallized. With a higher power the pale complex can be more readily resolved into its two components, a dominant creamy yellow mineral and a pinkish creamy yellow one with a darker complexion. The latter occurs in small blocky crystals that range down to 0.05 mms. in diameter, and in larger fractured individuals up to 1 mm. long. Both minerals are medium in hardness. The paler mineral has cleavage and is isotropic with crossed nicols. The chemical analysis of a tiny fragment of this mineral showed 34% nickel and a high content of iron. These data identified the mineral as pentlandite. The darker mineral is isotropic and this feature, together with its pinkish colour and a suggestion of magnetism, indicates pyrrhotite. In the sections examined, the percentage ratio of chalcopyrite, pentlandite and pyrrhotite is roughly 30:50:20. The ore minerals are moderately pocked with gangue. Although the pentlandite and pyrrhotite are closely mixed, they are not intimately so and the tendency is to a blocky or bladed type of crystallization. The genetic sequence is suggested to be pyrrhotite, pentlandite and chalcopyrite.

The relationship of the sulphides to the gangue appears to be more or less contemporaneous. No evidence was seen of secondary features such as shearing, schistosity or lines of weakness where solutions may have penetrated, nor was there any evidence of replacement of other minerals. Most of the sulphides observed were located between or in contact with grains of hypersthene, suggesting an affinity between them, although some of the sulphide was entirely surrounded by feldspar.

A Zone:

This mineralized zone lies on Claim 107901, at the northwest side of Shorty Lake. It has been opened up by two trenches 220 feet apart. It has a

strike of S.65°W. One trench is 46 feet in length and appears to expose the full width of the zone. The second trench is 10 feet in length and the full width of the mineralization is not exposed.

The norite varies from fine to medium grained and the sulphides are evenly distributed.

B Zone:

This zone lies about 3,000 feet southwest of A Zone on Claims 107873-74-75 and 107907. Sulphide mineralization occurs on a number of outcrops over an area several hundred feet in diameter. The mineralization occurs both as evenly disseminated grains and in massive form, filling narrow fractures. The noritic gabbro in this area is well foliated and shows a fold swinging from north-east to northwest, as indicated on the map. The dip of the foliation is from 70° to 45° to the east.

Sulphide mineralization here is associated with a variable magnetite content up to 25% of the rock. This magnetic zone is well outlined on the magnetometer survey map. Magnetite occurs as small to medium sized grains in disseminated form, but generally exhibiting a banded appearance which may reflect a layering within the gabbroic norite complex.

C Zone:

This zone lies about 1,500 feet S.25°W. of the B Zone on Claims 107874 and 107856. It has been opened up in a number of small pits and all sulphides so exposed are sparsely disseminated in medium-grained noritic gabbro. The visible zone is 500 feet in length and in excess of 100 feet in width, striking almost east-west. It may continue beneath the diabase capping to the west, but trends into swamp and low ground in an easterly direction. The so-called H Zone may represent a northeast swing in strike of the C Zone.

D Zone:

This zone lies about 2,000 feet S.25°W. of the C Zone on Claims 108175 and 108176. It also has been exposed in a number of pits over an area of 300 to 400 feet in dimension but, due to overburden, its full extent and its attitude is unknown.

The rock is medium to fine-grained noritic gabbro and the sulphides occur both in a finely disseminated form and as coarse blebs. This zone is fairly typical of much of the mineralization south of Lac des Iles, and samples from here were used in much of the thin section and polished section microscopic examination.

E Zone:

This zone lies about 1,000 feet southwest of the B Zone on Claim 107874. It has been opened up in three pits over an area of 130 by 60 feet. The rock is mostly very coarse-grained and varies in composition from a noritic gabbro to phases composed entirely of pyroxene.

The mineralized area is associated with a narrow northeast striking draw, and there could conceivably be some structural control of the sulphide mineralization at this point.

F Zone:

This zone lies about 1,000 feet S.25°W. of the E Zone, and near the west boundary of Claim 107874. The rock type and mineralization is similar to that of the E Zone, and there may in fact be some direct spacial relationship between the two.

G Zone:

This appears to be the largest zone, being at least 600 feet in diameter, and with the exception of localized areas, is also the lowest in sulphide content. It lies on Claim 108155 on the east side of Centre Lake and about 2,500 feet south of the D Zone. The rock is a fine to medium-grained norite and the sulphides are evenly and sparsely disseminated. Both the appearance of hand specimens and two polished sections indicate the sulphides to be of syngenetic origin.

H Zone:

Lying about midway between the B and C Zones are three small outcrops over a length of about 50 feet that have been designated as the H Zone. These outcrops are on the edge of a swamp which extends to the east and the presence of sulphide-bearing float in the swamp indicates that the outcrops could be on the edge of a zone of considerable size. It is possible that these outcrops may be part of the C Zone, the exposed part of which lies about 600 feet away.

Geophysical & Geochemical Surveys

Magnetometer, electromagnetic and self-potential surveys and soil sampling procedures have all been carried out over the known mineralized zones and none of these techniques has given positive results. A brief summary of the results follows.

Magnetometer Survey:

The distribution of magnetite within the gabbro complex is erratic and it appears that the scattered heavy concentrations of magnetite mask the bodies of sparsely disseminated pyrrhotite. Indeed it appears at this date that the sulphide-bearing zones always have a low magnetic susceptibility and that where appreciable magnetite is present there is an absence of nickel and precious metals. However, the sections that are high in magnetite often carry low but uniform copper values. A forty-foot long outcrop on the south side of Walter Lake carries about 0.3% Cu in a rock that is 50% magnetite, but there is no nickel or precious metals. Two or three other widely separated outcrops also exhibit this same mineral relationship.

Certain structural trends that are indicated by the magnetometer survey may eventually prove to be of use. There seems to be a rough correlation between the area of high magnetic intensity surrounding Walter Lake and the higher magnetic

area to the southwest of Centre Lake with the aerial magnetic information. However, there is no obvious correlation between disseminated sulphide zones and the magnetic anomalies.

The survey instrument used is an ABEM model MZ4 torsion wire magnetometer reading total field intensities with a scale division of 10.5 gammas. Please note that to facilitate plotting, all calculated readings have been divided by a factor of 10.

Electromagnetic Survey:

This survey was run with a Minigun horizontal coil two-phase instrument with a 200-foot connecting cable.

It was recognized that the sulphide mineralization in the known showings was too disseminated to be a conductor. However, it was thought possible that there might be heavier concentrations in overburdened ground which might be detected, and therefore an E-M survey was carried out in the vicinity of some of the known mineralization. No true conductors were located due primarily to the magnetite content and to overburden conditions.

Self-Potential:

The self-potential method gave results that can but be described as indefinite. Certainly it gave no results positive enough with which to locate a drill hole. It is believed that the type of overburden may have been a limiting factor. Over large parts of the survey area the surface is composed of a mass of large boulders with open interspaces, and the whole is covered with grass and brush. Therefore, at many stations the probes probably had poor contact. In view of these conditions it might be worth while to try a trial traverse with the self-potential on the snow.

Geochemical Survey:

Soil sampling was carried out over the entire grid on 100-foot centres with the exception of those areas where boulders precluded proper sampling procedures.

Analyses were made for total heavy metal, copper and nickel content and the results are plotted in ppm.

No true anomalies of major significance are indicated and apart from the C Zone, there appears to be little correlation between the anomalies as outlined and the known sulphide zones. The large number of boulders mixed in the overburden, some of which are mineralized, may have contributed to the confused geochemical picture but in any event the results as plotted are not indicative of sulphide bodies other than those already known.

Soil samples were taken with a 3-foot auger and after drying and sieving were analyzed by hot nitric acid extraction and colorimetric determinations employing variations of the Bloom procedure.

Sgd. "Bruce M. Arnott", P.Eng.

With revisions by:

W. F. Dix
W. F. Dix, P.Eng.

January 8, 1964.



*Autopositives stored
in separate drawer*

Heaven Lake Area (M-2908)

AREA OF 63.171,1

LAC DES ILES

DISTRICT OF THUNDER BAY

THUNDER BAY MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

- PATENTED LAND Ⓟ
- CROWN LAND SALE C.S.
- LEASES L
- LOCATED LAND Loc
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS —
- IMPROVED ROADS —
- KING'S HIGHWAYS —
- RAILWAYS —
- POWER LINES —
- MARSH OR MUSKEG —
- MINES *
- CANCELLED C.

NOTES

400' Surface Rights Reservation around all lakes and rivers.

NATIONAL TOPOGRAPHIC SERIES 52H4

PLAN NO. M.1788

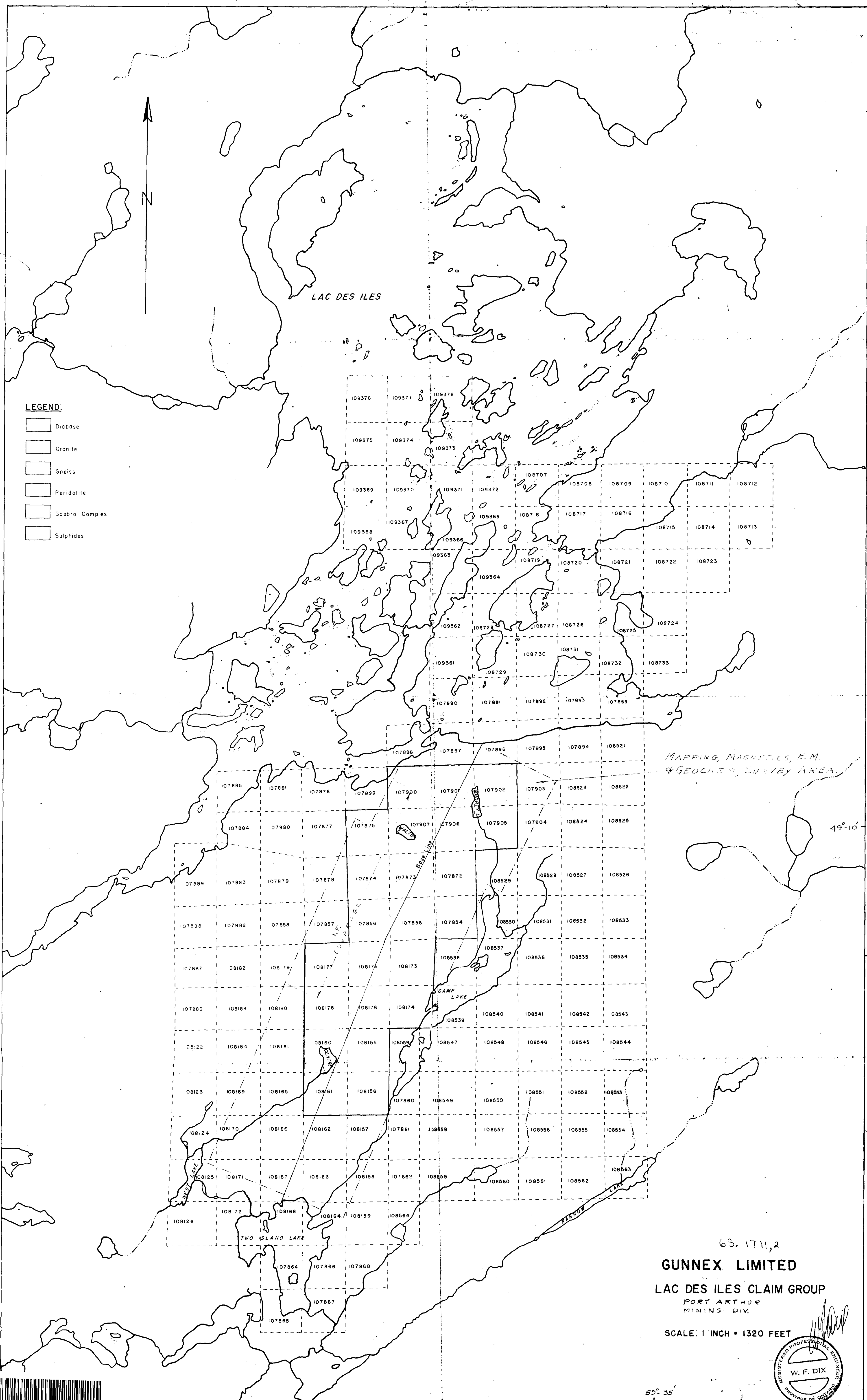
ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

Tib Lake Area (M-2911)

Max Lake Area - M.2899

Shelby Lake Area - M.2898





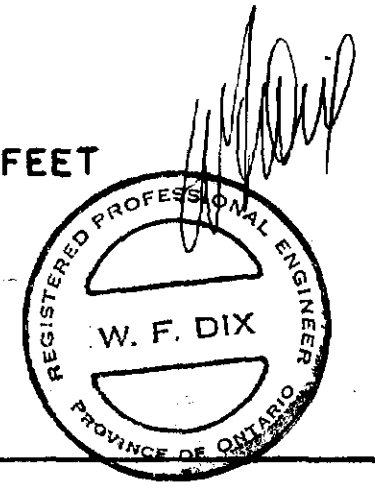
LEGEND:

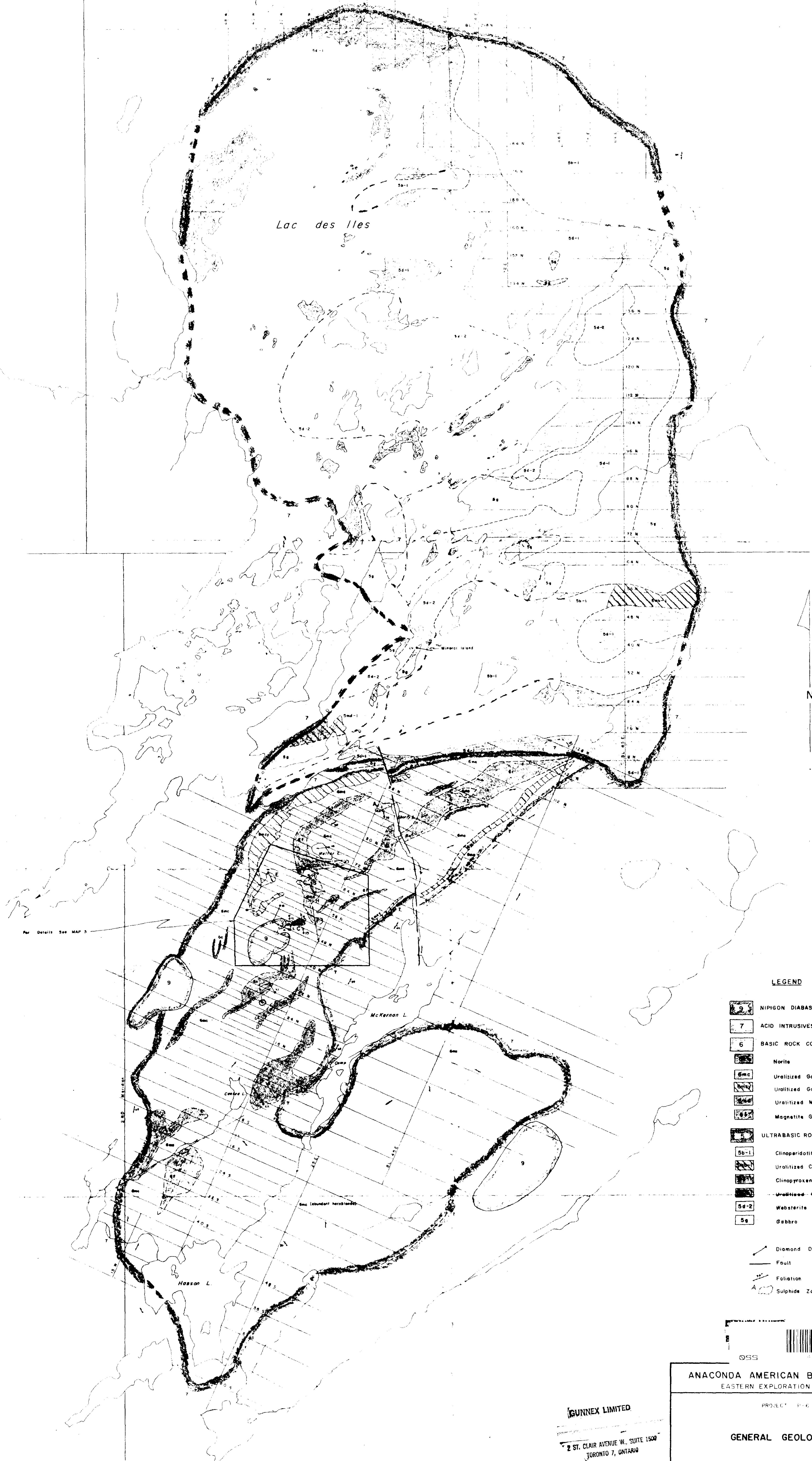
- Diabase
- Granite
- Gneiss
- Peridotite
- Gabbro Complex
- Sulphides

MAPPING, MAGNETICS, E.M.
& GEOCHEM. SURVEY AREA.

63. 1711,2
GUNNEX LIMITED
 LAC DES ILES CLAIM GROUP
 PORT ARTHUR
 MINING DIV.


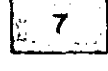
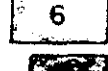
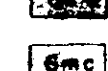
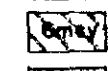


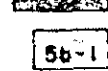



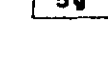







SCALE: 1 INCH = 1320 FEET





For Details See MAP 3

LEGEND

-  NIPIGON DIABASE
-  ACID INTRUSIVES
-  BASIC ROCK COMPLEX
 -  Norite
 -  Uralitized Gabbro
 -  Uralitized Gabbro (coarse grained)
 -  Uralitized Melagabbro
 -  Magnetite Gabbro
-  ULTRABASIC ROCK COMPLEX
 -  Clinoperidotite (Wehrite)
 -  Uralitized Clinoperidotite
 -  Clinopyroxenite
 -  Uralitized Clinopyroxenite
 -  Websterite
 -  Gabbro
-  Diamond Drill Hole
-  Fault
-  Foliation
-  Sulphide Zone

GUNNEX LIMITED
 2 ST. CLAIR AVENUE W., SUITE 1500
 TORONTO 7, ONTARIO

ANACONDA AMERICAN BRASS LIMITED EASTERN EXPLORATION DIVISION			
PROJECT 11-6			
GENERAL GEOLOGY			
Lac des Iles Area			
DATE March 1967	SCALE 1" = 1/4 Mile	DRAWN BY AEB	2

To Accompany Report Summer-Fall 66 E.H. Binley, A.E. Bosnar March 1967



LEGEND

- 9 NIPIGON DIABASE
- 7 ACID INTRUSIVE
- 6 BASIC ROCK COMPLEX
 - 6mb Anorthosite Gabbro
 - 6mf Melite
 - 6mc Uralitized Gabbro
 - 6mcb Uralitized Gabbro (coarse grained)
 - 6mcb Uralitized Melagabbro
 - 6mcb Magnetite Gabbro

GEOLOGICAL BOUNDARIES

- Observed
- - - Approximate
- · - GP Inferred
- ⊃ Outcrop
- Fault
- Sulphide Zone
- ⊃ Foliation
- Pit or Trench
- Diamond Drill Hole

ASSAYS: Length @ %Copper - %Nickel - oz Platinum Group

GIMNEY



GES

ANACONDA AMERICAN BRASS LIMITED
EASTERN EXPLORATION DIVISION

PROJECT P-6

GEOLOGICAL PLAN

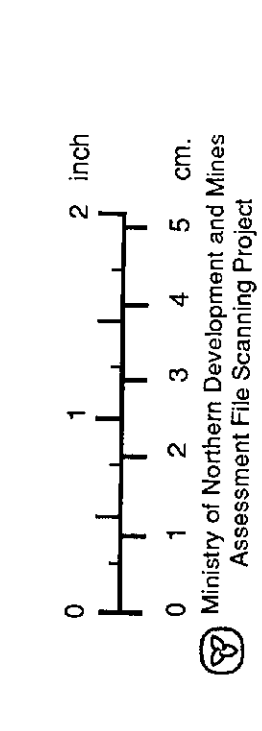
Zones B, C, E, F & H
PL 40N - 68N
Loc des Iles Area

DATE: March 1967	SCALE: 1" = 200'	DRAWN BY: AEB	3
---------------------	---------------------	------------------	---

LEGEND

Lightest shade	Less than 57000 Gamma
Light shade	57000 - 58500
Medium-light shade	58500 - 59000
Medium shade	59000 - 60000
Medium-dark shade	60000 - 61000
Dark shade	61000 - 62000
Darkest shade	62000 - 63000
Black	More than 63000 Gamma

NOTE - To convert readings to gamma, multiply by 100 (1 foot rise)



GUNNEX LIMITED
 6511117
 LAC DES ILES
 THUNDER BAY MINING DIVISION - ONTARIO
 MARKETETER SIRKEY
 GREEN TOTAL FIELD
 W.F.D.X.
 SCALE 1" = 200'
 1964

