

63.4196

REPORT
ON
THE CUNNINGHAM STURGEON NARROWS PROPERTY
SIXMILE LAKE AREA
STURGEON LAKE AREA
PATRICIA MINING DIVISION, ONTARIO

S2G1SNW0019 S2G1SNW0088A1 SIXMILE LAKE

010

INTRODUCTION

The property is a gold prospect consisting of a block of unpatented, contiguous mining claims covering two documented gold occurrences which had been acquired prior to the recent staking rush (December 1982 - February 1983).

The writer prospected, mapped and drilled 2 short holes within the claim group in 1971. In 1982 the writer prospected over part of the present claim group.

Following the discovery of massive sulphide deposits (Mattabi, Lyon Lake, Sturgeon Lake zones) in the area in 1969-71, the Ontario Geology Survey of the Ministry of Natural Resources, Ontario, mapped the area. Consequently recent geological maps and reports are now available on the Sturgeon Area.

References are given in an appendix.

LOCATION & DESCRIPTION

Sturgeon Lake is located 210 km. northwest of Thunder Bay. From Ignace on Highway 17, a paved highway, No. 599, runs north to the Village of Savant Lake. A number of access roads between Kilometre 80 (north of Ignace) and Kilometre 130 (Savant Lake) give convenient access to the Sturgeon Lake Area. The lake is over 100 km. long and provides easy access by boat to most of the area.

The claims are located within the Sixmile Lake Area (Plan No. 2877) within the Patricia Mining Division (Recording Office, Sioux Lookout, Ontario).

The 31 claims are numbered as follows:

- Pa. 642478 - 82 inclusive
- 611504 - 06 "
- 642974 - 86 "
- 642988 - 97 "

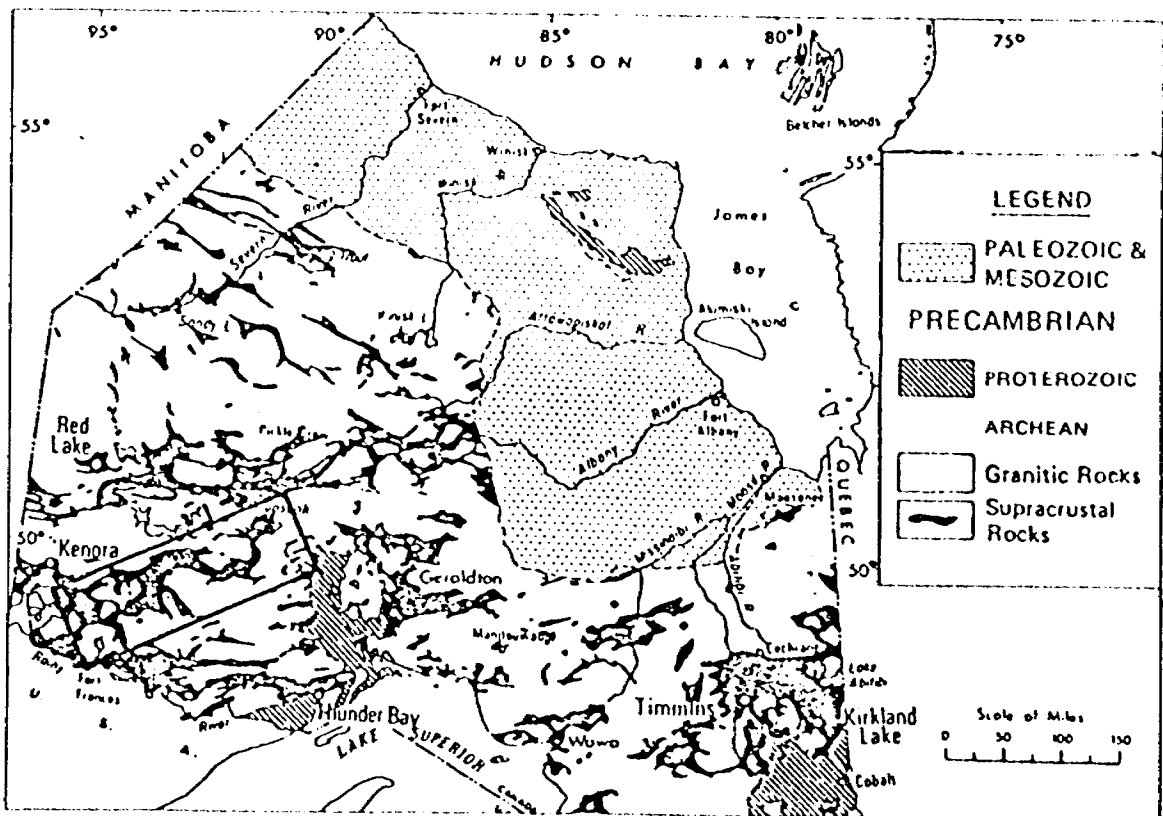
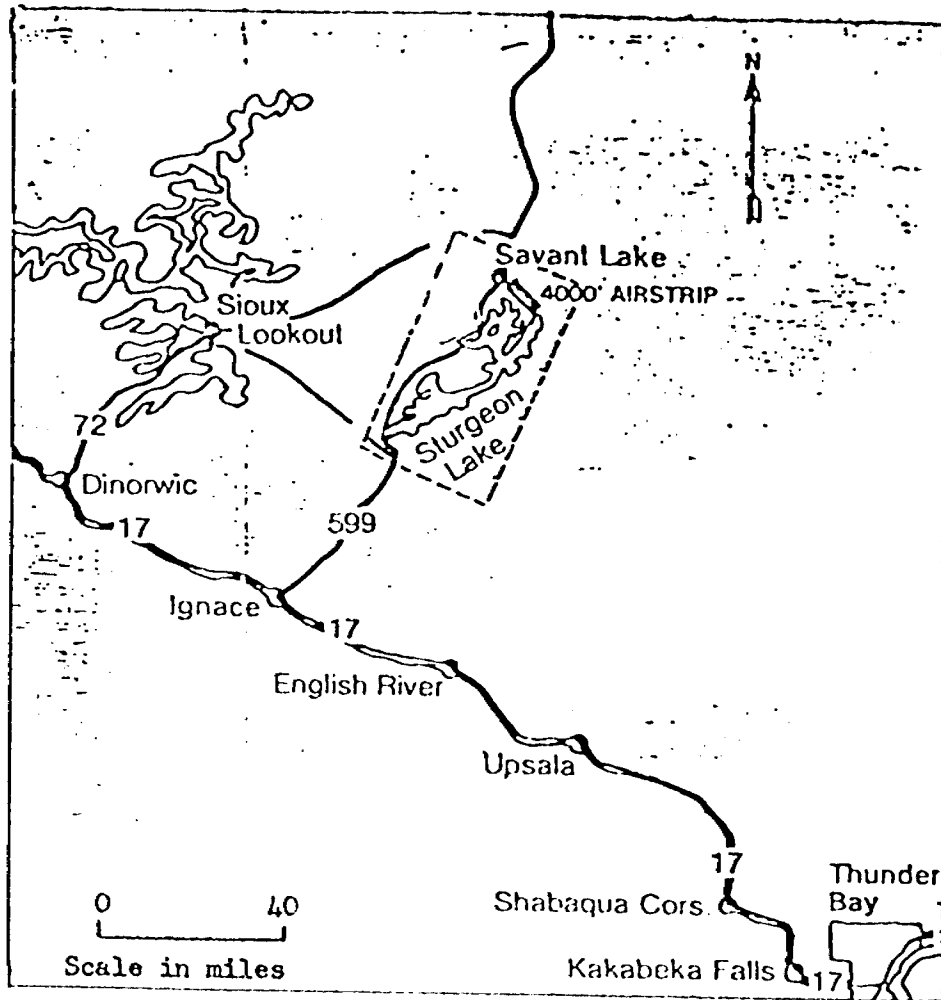


Figure 1—Location of Savant Lake Crow Lake area and its position within the Superior Province

Under the Ontario Mining Act, an unpatented mining claim requires annual assessment work commitments as follows:

| | |
|---|-----------------|
| Within the 1st year following recording of the claim, | 20 days of work |
| " 2nd year | " " 40 " " |
| " 3rd year | " " 40 " " |
| " 4th year | " " 40 " " |
| " 5th year | " " 60 " " |
| Total | 200 " " |

Line cutting, geological mapping, geophysical surveying, trenching, sampling, diamond drilling, etc. are acceptable forms of work. The average cost of a day's work is estimated at \$20.00.

The claims are presently in good standing but work on 31 claims will be required in 1983.

HISTORY

The Sturgeon Lake Area was the scene of one of Canada's earliest gold rushes. Gold was first found in 1898 and in 1900 the St. Anthony Mine (now Aubet) was discovered. By 1911 numerous gold occurrences were recorded. Extensive trenching, a number of shafts and a limited production resulted. The activity was short lived for all but St. Anthony Mines which operated intermittently from 1908 to 1941 to produce 331,000 tons grading 0.19 oz. gold per ton. A discovery in 1935 on Beidelman Bay, 35 km. southwest of the St. Anthony at the southwest end of Sturgeon Lake, led to extensive underground development but no production resulted.

The area was inactive until 1969 when the Mattabi base metal deposit was discovered. By 1972 three additional deposits had been discovered (Sturgeon Lake, Lyon Lake and Creed Deposit).

All of the area now staked for gold was staked in 1969-75 and tested by mapping, geophysics and some drilling without success for base metal mineralization.

Undoubtedly the present claim block was prospected in the early days, although no records are known of this probable work.

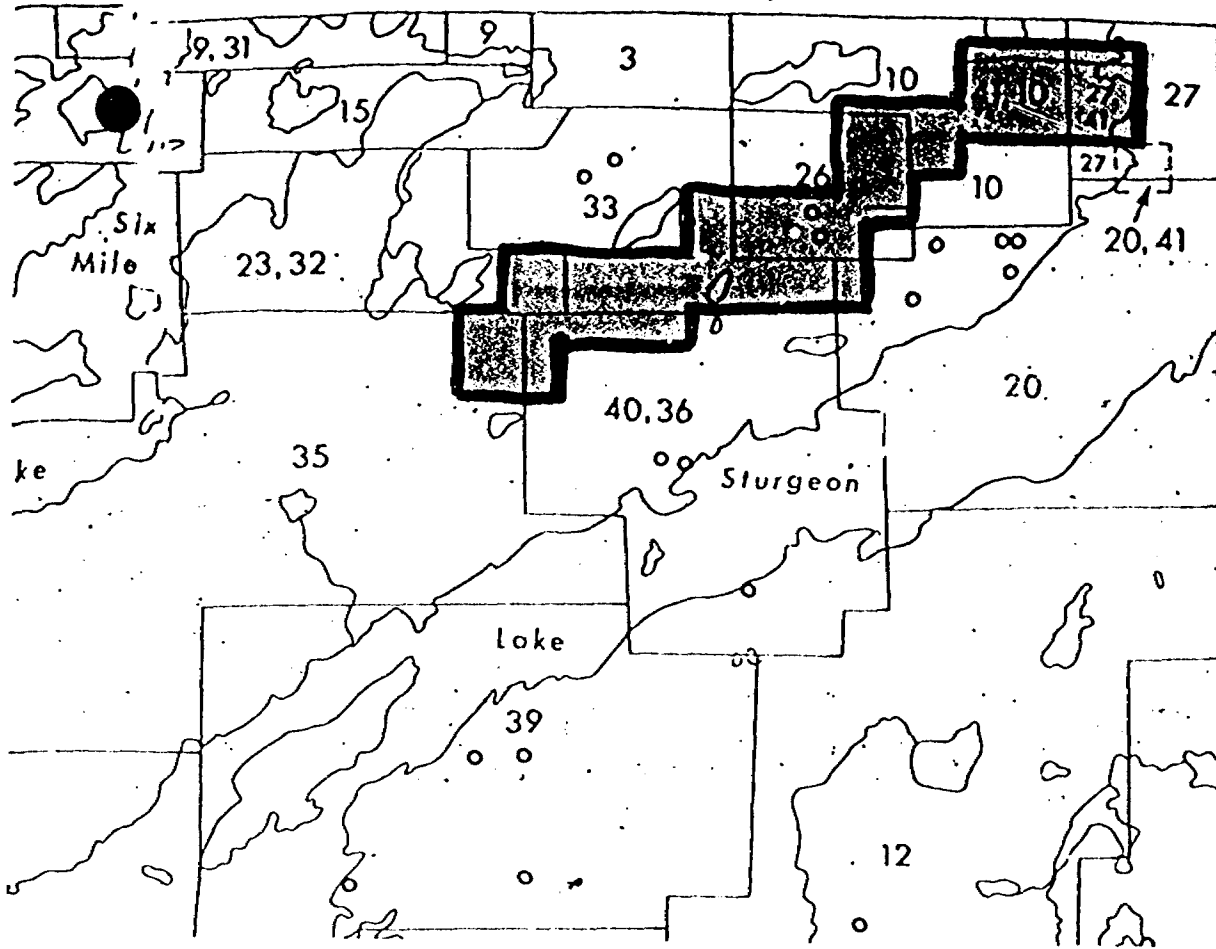
In 1939 Willims, A.D. recorded trenching on claims which form the northeast end of the present group.

In 1970 L. J. Cunningham, B.Sc., P.Eng. and E. Chorzepa, prospector, discovered a heavily gossaned area which was mapped, geophysically surveyed and tested with two 100 foot holes in 1971. No significant base metal values were encountered but highly anomalous gold values were recorded, 0.055 oz. gold per ton over 9 feet. The property was subsequently dropped.

Sturgeon Narrows
Feb. '83
Cunningham

- 4 -

- 1968-69 W. G. Wahl completed ground geophysical surveys and drilling on Sturgeon Narrows.
- 1970-71 Mattagami Lake Mines drilled two holes (Mattagami Block 27) to test an airborne conductor. Felsic-carbonaceous rocks were encountered but no base metal mineralization was found. On Mattagami Block 28, ground geophysics was completed.
- Conwest Exploration Company completed ground magnetic and electromagnetic surveys.
- Rio Tinto Canadian Explorations Limited completed mapping and geophysical surveys.
- Greenpoint Mines completed ground and geophysical surveys and drilling.
- Selco Exploration Company drilled the Wahl property at Sturgeon Narrows.
- 1973 Northex Management completed mapping, geophysics and drilled 2 holes on 1 claim east of Maria Lake.
- 1974 Northex Management staked and completed geophysics on 8 claims centred on Mattagami drill hole no. 27.
- Falconbridge Nickel Mines tested by drilling and mapping a gold-bearing syenite dike on Sturgeon Narrows.
- 1982 A 31 claim block was staked to cover the Williams-Cunningham/Chorzepa showings.
- 1983 The claim block was increased to a total of 104 claims to include the former Falconbridge showing.



| | | | |
|--------|------------------------------|---------|-------------------------------|
| No. 10 | Conwest Exploration Co. Ltd. | 1970 | Geophysics |
| 20 | Greenpoint Mines | 1970-71 | Geophysics, drilling |
| 26 | Mattagami Lake Mines | 1970 | Drilling |
| 27 | Mattagami Lake Mines | 1970 | Geophysics |
| 32 | Northex Management (Canadex) | 1972 | Geophysics, drilling |
| 33 | Rio Tinto Canadian Limited | 1970 | Geophysics, drilling, mapping |
| 35 | Rio Tinto Canadian Limited | 1970 | Geophysics, drilling |
| 36 | Selco Explorations | 1970 | Drilling |
| 40 | Wahl | 1968-9 | Geophysics, drilling |
| 41 | Williams, A.D. | 1939 | Trenching |

Part of
 SIDMILE LAKE DATA SERIES
 O.D.M. Map P.928, 1974
 showing

PRESENT PROPERTY OUTLINE

Scale 1" = 1 mile

ONE MILE

FIGURE 2

GENERAL GEOLOGY

The Sturgeon Lake Area is a 75 km. long section within the Savant-Crow Lakes Greenstone Belt. Figure 2.

In the Sturgeon Lake Area, the volcanic rocks have been tightly folded inward and form a steep trough with the older rocks located on the outer edges of the belt and facing inward. The axis of the trough is transected by the Sturgeon Narrows Fault Zone which is marked by brecciation, shearing and syenite & porphyry intrusions.

GEOLOGY OF THE PROPERTY Plate 1

Trowell (1983) interpreted the rocks in the property area to be composed of the North Sturgeon Lake Assemblage and the Centre Sturgeon Lake Assemblage. The property straddles the boundary between these two assemblages.

The north assemblage is comprised of two volcanic cycles - the Fourbay (the lower) and Jumping Lake-Sixmile Lake (the upper) cycles. The property overlies the top of the upper cycle which is comprised of two formation - D1 and E1. The latter is described by Trowell (1983):

"The intermediate to felsic rocks that constitute the upper part of the north assemblage have been subdivided into three main types: (1) autoclastic breccia, (2) pyroclastic and redeposited pyroclastic detritus and (3) conglomerate and wacke-siltstone."

"The gabbro-diorite intrusions occur in two modes: (1) as large ellipsoidal or equidimensional bodies on the order of several hundred metres in extent; and (2) as narrow dikes and sills and small irregular pods. Several phases of gabbro-diorite are defined by contrasts in grain size and texture. In general, medium- to coarse-grained, equigranular, gabbro-diorite is cut by later feldspar porphyry to anorthositic gabbro-diorite. Fine-grained to aphanitic intrusive phases are also present. These gabbro-diorite masses could represent the hypabyssal equivalents, and could have been the feeder dike system for the North Cycle of mafic volcanism."

"The central Sturgeon Lake assemblage comprises three formations, two of which, A4 and C4, are found within the property boundary.

Formation A4 consists of a lower mafic flow sequence of massive and pillowed, commonly amygdaloidal flows; porphyritic flows; and autoclastic/hyaloclastic breccia

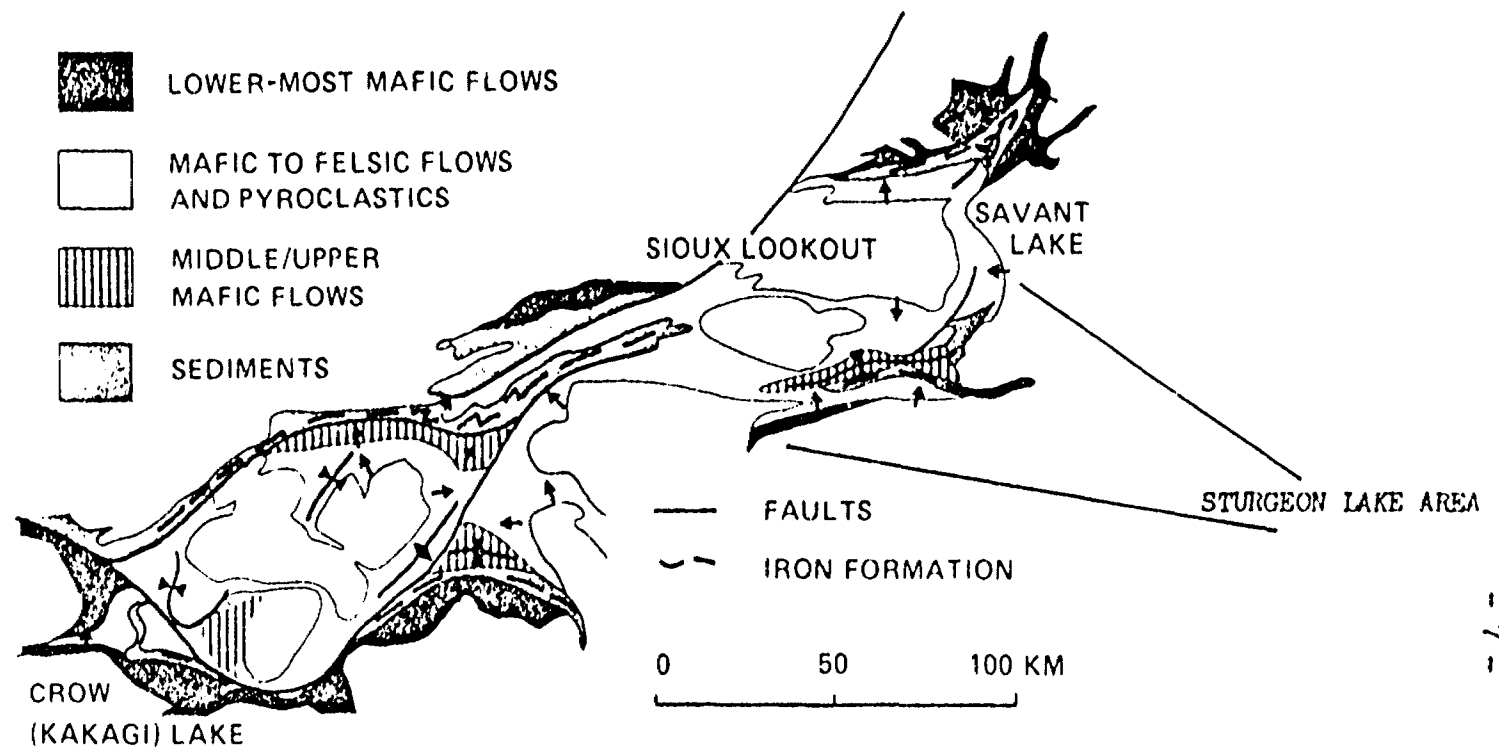
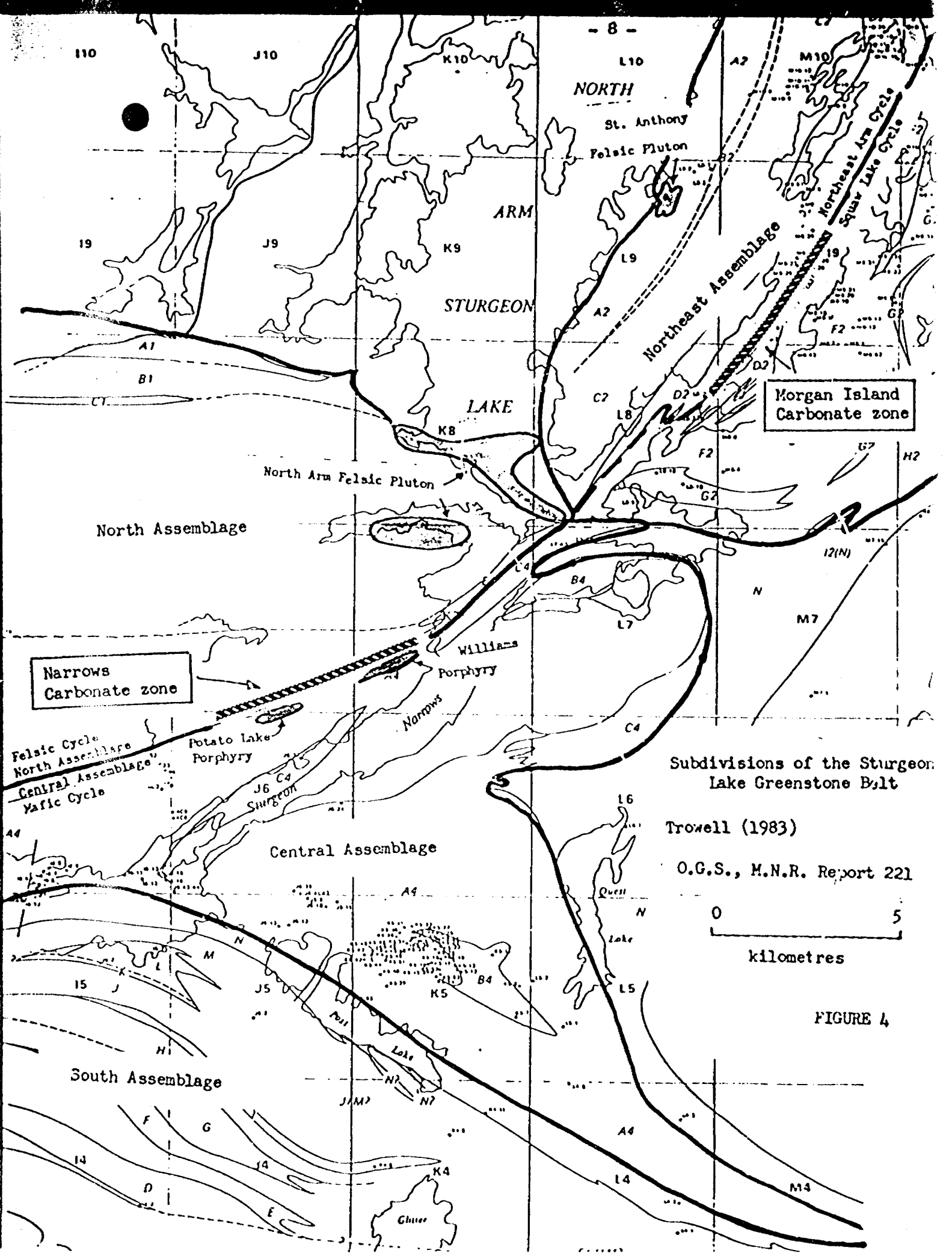


Figure 2—Sketch map showing broad lithostratigraphic relationships and structural complexity of the Savant Lake--Crow Lake area

Source O.G.S. Paper MP 89

FIGURE 3



Subdivisions of the Sturgeon Lake Greenstone Belt

Trowell (1983)

O.G.S., M.N.R. Report 221

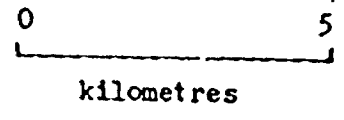


FIGURE 4

zones. Formation A₄ disconformably overlies Formation E₁."

Overlying the lower volcanic formation (A₄ and B₁) are clastic meta-sediments: arkosic to pebbly wacke and arkosic conglomerate.

Trowell (1973) described a carbonate breccia zone (The Morgan Island Unit) located at the top of a volcanic cycle in the Northeast Arm:

1. approximately 4,500 M long and up to 200 M wide,
2. it contains 1 to 2 percent disseminated sulphide minerals predominantly pyrite with minor magnetite and ilmenite,
3. it contains anomously values in gold,
4. it appears to be an equivalent stratigraphic horizon to the massive sulphide deposit of Mattabi Mines and
5. a green micaceous mineral identified as sericite may be fuchsite. If so this could be of significance as similar associations occur with gold deposits in the Kirkland Lake and Red Lake camps."

The writer suggests that this newly discovered carbonate horizon, / is described below the stratigraphic equivalent of the Morgan Island carbonate zone.

Preliminary mapping by the writer in 1982 has identified a carbonate zone being several hundreds of feet in thickness and extending over a strike length of at least 10,000 feet and occupying the same stratigraphic position as the Morgan Island unit, i.e. at the top of the North Sturgeon Lake Assemblage. In addition south of Potato Lake a carbonatized quartz-feldspar porphyry intrusive having minimum dimensions of 1,000 feet in length by 50 - 100 feet in width is located at the top of the carbonate unit and is overlain by mafic volcanics of Formation A₄. Locally a highly carbonatized mafic dike, 15 to 40 feet in width, discordantly cut the carbonate rocks.

South of Dan's Lake a second intrusive, a pink equigranular to porphyritic syenite body (Williams porphyry), is found at the contact between the volcanic cycles. Strongly carbonatized felsic pyroclastics are found to the north of this intrusive (underlying it) and mafic flow and intercalated tuff and chert of Formation C₄ overlie it.

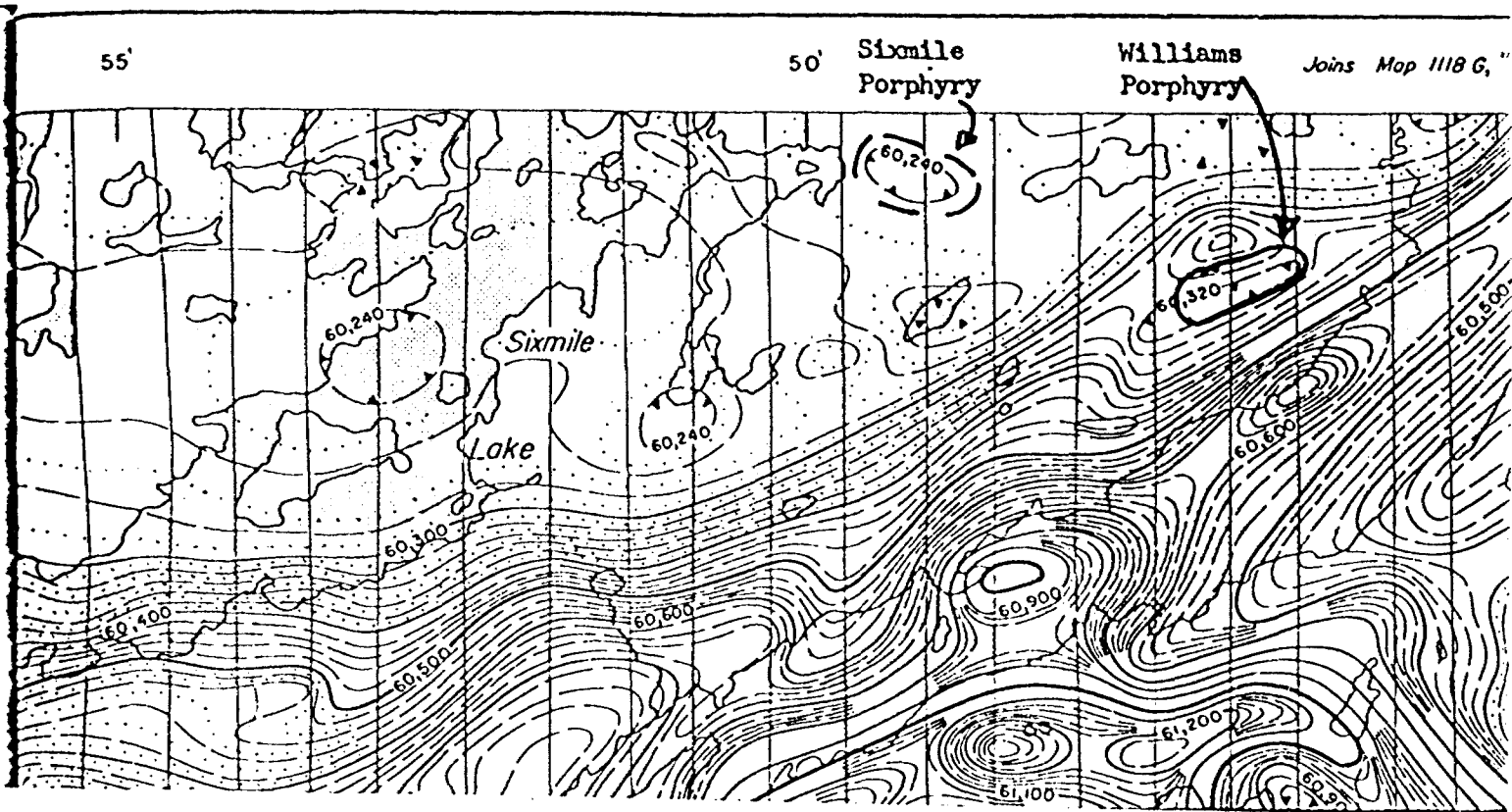
Drilling (Mattagami 1970, Santa Maria 1974, Rio Tinto 1970) and preliminary mapping (Cunningham 1982) show that the felsic fragmental rocks, of the

upper part of Formation E1 consist of felsic tuff, graphitic tuff, chert, variously carbonatized and becoming progressively more carbonatized toward the top of the unit where sedimentary features are evident as bedding and fine laminations.

The pillowed mafic volcanics, the base of Formation C4 which overlies the carbonate horizon, are intercalated with pale white to grey interflow chert horizons which in several locations strike northwesterly. This trend is apparently reflected in the trend of the aeromagnetic contours which show a similar irregularity from a normal northeasterly strike.

An aeromagnetic low located between Sturgeon Narrows and Dan's Lake apparently overlies the 'Williams' intrusive. A magnetic high located north of this low and extending southwesterly to and immediately south of the Mattagami drilling area was defined by surface magnetic surveys. No outcrop was found which would explain this anomaly which is interpreted in geophysical reports as probably being oxide iron formation.

Reconnaissance mapping (Cunningham 1982) identified a large outcrop of grey feldspar porphyry east of the east end of Sixmile Lake. The occurrence coincides with an aeromagnetic low, Figure Drilling by Falconbridge Copper in 1972-73 encountered considerable grey feldspar porphyry approximately one mile to the northeast. The significance of this intrusive is not known but it may represent a major volcanic centre.



ONE MILE

Part
of
AEROMAGNETIC MAP
HELL LAKE SHEET
No. 1117G
O.D.M. - G.S.C.
Scale 1" = 1 mile
showing
PRESENT PROPERTY OUTLINE

FIGURE 5

ECONOMIC GEOLOGY

Williams (1939) submitted sketches of trenching and assays on an 8 claim block which constitute the northeast corner of the present group. The sketch shows extensive trenching along a syenite/greenstone contact, Figure . Marginal notes refer to heavy mineralization in all trenches and state "well mineralized body probably 50 to 60 feet wide and trenched for approximately 1000 feet. Assays made at St. Anthony Mine." The following assays (grab samples?) are shown:

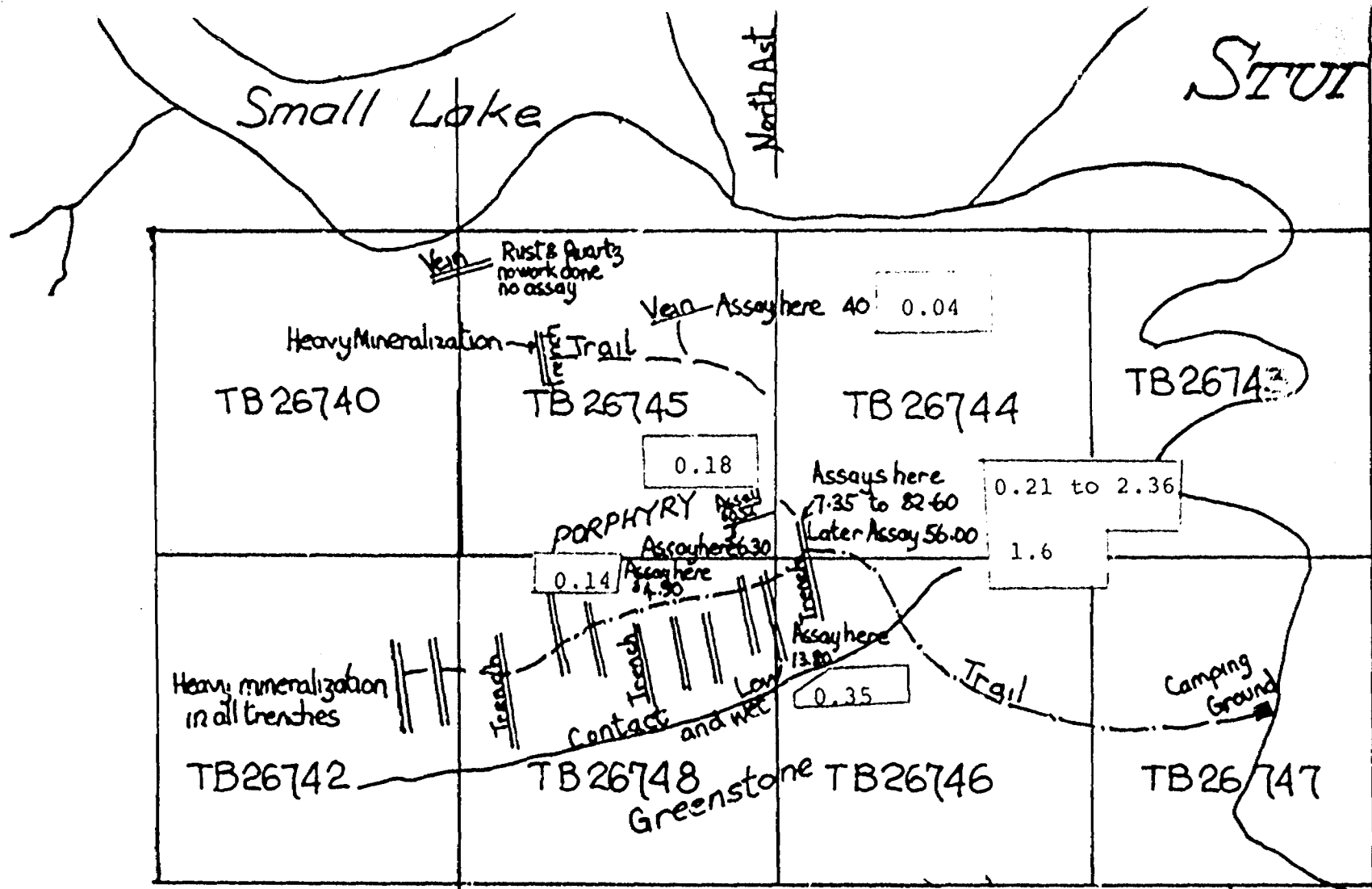
| | |
|--------------|-------------|
| 0.04 | oz. per ton |
| 0.21 to 2.36 | " |
| 1.6 | " |
| 0.35 | " |
| 0.14 | " |
| 0.18 | " |

In 1982 the writer located two of the trenches, the porphyry and extensive heavily oxidized carbonate rock. The site or sites from which the gold values are reported was not positively identified.

Trowell (1983) discusses the two felsic intrusives, the North Arm and St. Anthony plutons, which are located at the contact of the volcanics and granite "They are likely comagmatic and coeval and are equigranular to slightly porphyritic. These plutons have associated gold mineralization. In the case of the North Arm pluton, the gold mineralization is of the hydrothermal vein type, possibly superimposed on volcanic stratigraphy (examples Steep Rock, Kuhner and Rickaby gold showings). The gold mineralization associated with the St. Anthony pluton (the St. Anthony Mine) possibly resulted from the upgrading of an original carbonate rich stratiform gold occurrence by hydrothermal activity during the emplacement of the St. Anthony pluton. It is possible that both are intrusives emplaced at high crustal levels."

Further investigation is warranted (Cunningham 1983) to determine if the Williams porphyry is possibly genetically related to the North Arm pluton.

Mapping and drilling (Cunningham 1973) revealed a pyritic-carbonate felsic tuff cut by quartz-carbonate veining which returned 0.055 oz. gold per ton over 9 feet in one of two short, 100 foot, holes drilled to test a showing described as follows:



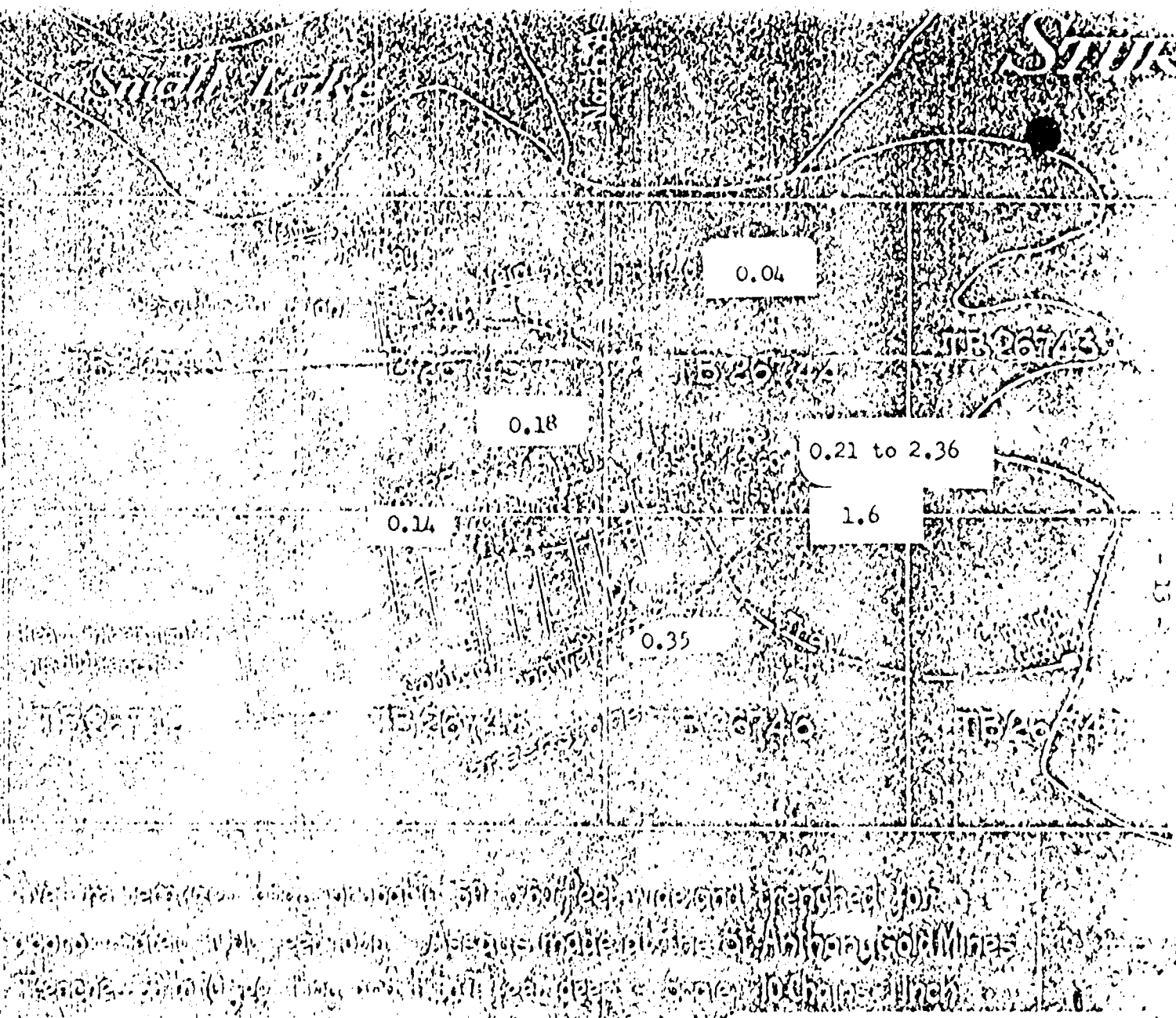
Well mineralized body probably 50 to 60 feet wide and trenched for approximately 1000 feet long - Assays made at the St. Anthony Gold Mines Trenches 30 to 70 feet long and 1 to 7 feet deep - Scale 10 Chains = 1 inch

DUPLICATE COPY
POOR QUALITY ORIGINAL
TO FOLLOW

Gold at \$35.00/ounce
 Scale 1" = 660 feet
 Source: O.D.M. Files

1" = 660' FIGURE 6

TB 2



Gold at \$35.00/ounce

Scale 1" = 660 feet

Source: O.D.M. Files

FIGURE 6

660

" A gossan area 100 feet long and about 40 feet in width was discovered in a low outcrop in a swamp in 1971. Intense weathering prevented adequate sampling so drilling was carried out in July, 1973. Summary logs are as

follows: Hole No. 1 0 - 19 Felsic Lapillistone - mineralized 25-50% pyrite
 19 - 23 Felsic Lapillistone
 23 - 31 Felsic Tuff
 31 - 48 Felsic Lapillistone - mineralized 25-50% pyrite
 48 - 101 Felsic Tuff

Hole No. 2 0 - 30 Felsic Lapillistone - mineralized 5-30% pyrite
 30 - 55 Felsic Tuff
 55 - 101 Felsic Lapillistone

The drilling showed a mineralized felsic lapillistone - white to creamy in colour, consisting of acid fragments to 2.5 cm. in diameter with fine dense pyrite in the matrix and sometimes in the fragments - commonly in a wormy dendritic form suggesting a chemical precipitate. Mineralization varied from 10% to 50% of the core and was accompanied by quartz-carbonate stringers. The lapillistone was bounded on each side by thin bedded felsic tuffs, white to creamy coloured, sericitized with an occasional dark bed and an occasional dark fragment - a few fragments consisting of over 50% fine pyrite mineralization also were cut suggesting the violent expulsion of earlier sulphide deposits.

The sulphide mineralization, the carbonatization and the quartz-carbonate veins suggest the existence of a stratigraphic horizon, probably related, to a broad scale change in volcanic activity, along which hot springs were actively depositing chemical sediments and iron sulphides concomitantly with local accumulation of pyroclastics."

Assays for Hole No. 1 follow:

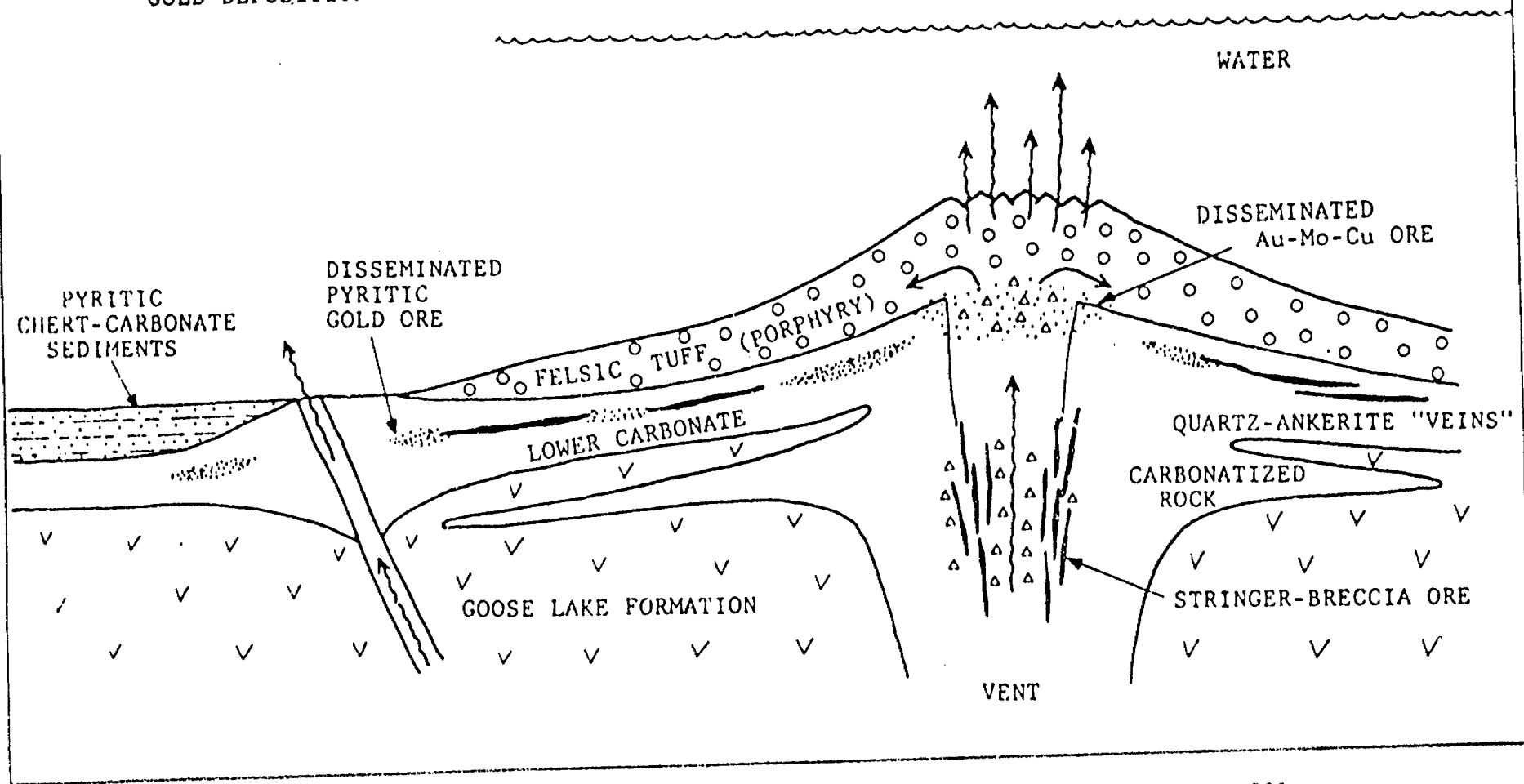
| Sample No. | From | To | Au. |
|------------|------|----|-----|
| 121 | 0 | 5' | .01 |
| 122 | 5 | 10 | .01 |
| 123 | 10 | 15 | .02 |
| 124 | 15 | 20 | .02 |
| 125 | 31 | 36 | .05 |
| 126 | 36 | 40 | .06 |

No additional sections of the hole were assayed and no samples were taken from Hole No. 2.

Cunningham (1983) identified several carbonate-rich mafic dikes in the immediate area. A carbonatized quartz-feldspar porphyry intrusive containing sparse pyrite was located approximately 1,000 feet to the southeast of the showing.

A similar model, as proposed by Karvinen (1980) for Timmins Figure 7, is suggested for this area.

FIG. 15 ENVIRONMENTS OF PRIMARY GOLD DEPOSITION



Karvinen, W.O. 1980 Geology & Evaluation of Gold Deposits O.G.S. M.N.R. Open File 5293

FIGURE 7

BASE METAL POTENTIAL

The potential for base metal mineralization should not be overlooked.

Beswick (1981) Figure 8 identified, by means of regional alteration patterns, an anomalous area with base metal potential which lies within the present property near the northeast end of Sturgeon Narrows.

Trowell (1973) states that the northeast arm carbonate breccia unit appears to be in an equivalent stratigraphic position to the Mattabi deposit which is accompanied by extensive carbonate alteration. By analogy, the newly discovered carbonate unit must be considered favourable for base metal mineralization.

CONCLUSIONS

A previously unrecognized carbonate zone with associated gold mineralization and felsic porphyry intrusives has been identified over a strike length in excess of 10,000 feet. Work to date has been minimal. Detailed investigation is warranted.

Line cutting, mapping, stripping and geophysical surveys are planned for 1983.

Signed,



L. J. Cunningham, B.Sc., P.Eng.,
Mining Engineer

Dated at
Kirkland Lake, Ontario
3rd March, 1983

Beswick, A.E. 1981 Regional Alteration in Archean Greenstones
An application for exploration for massive sulphide
deposits
O.G.S. M.P. 98

Studies of chemical alteration patterns identifies two small clusters
of anomalous results which suggest the possibility of massive sulphide
mineralization to the north of Mattabi. The easterly site is on Sturgeon
Narrows south of Dan's Lake on the present claim group.

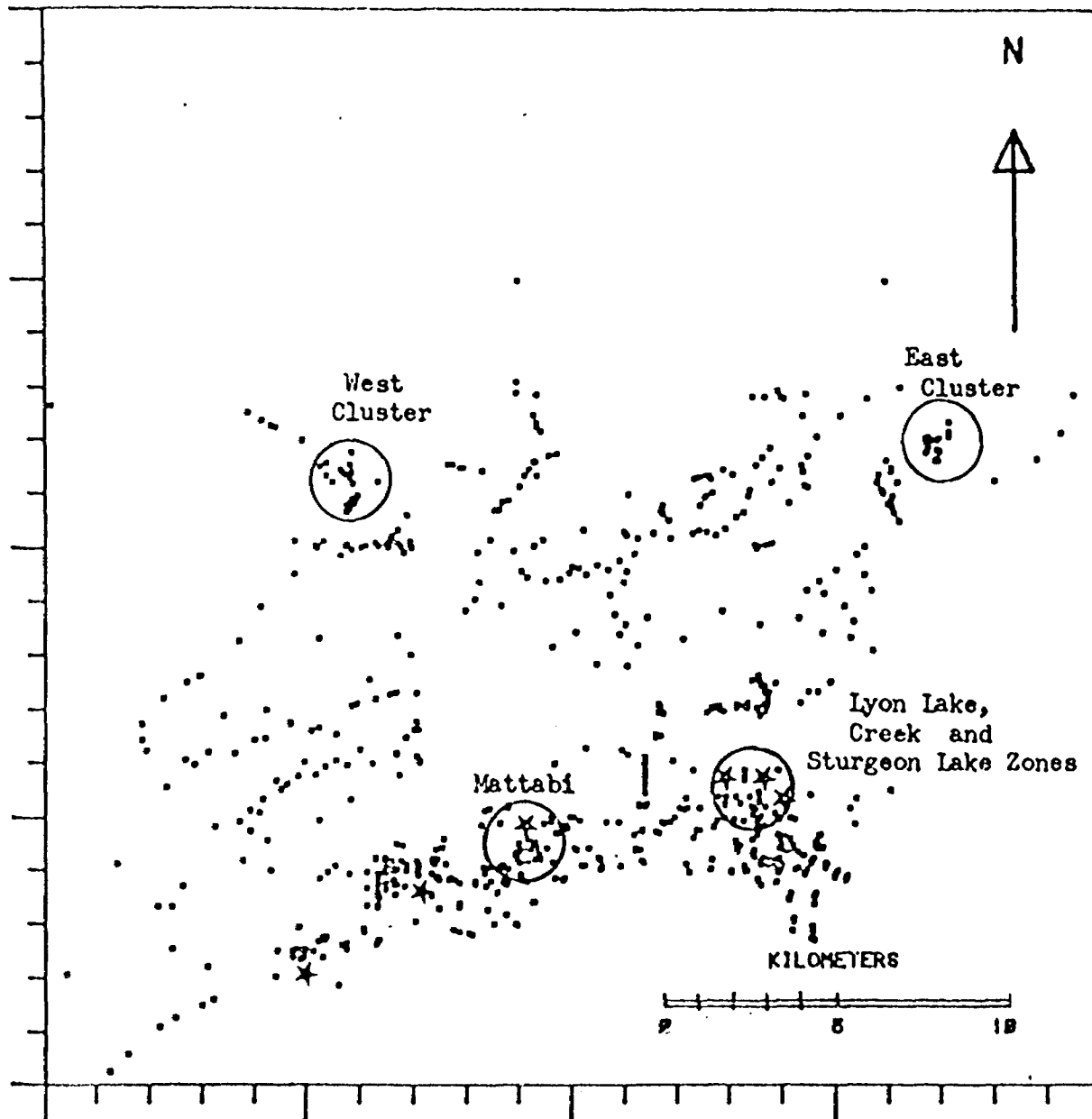


Figure 3 - Locations of 820 samples from the Sturgeon Lake area (N-S and E-W coordinates are arbitrary).

Sturgeon Narrows
Feb. '83
Cunningham

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- 1974A Geology of the Bell Lake-Sturgeon Lake Area O.D.M. G.R. 114
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- 1983 Geology of the Sturgeon Lake Area O.G.S. M.N.R. Report 221
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O.G.S. M.P. 98

Maps:

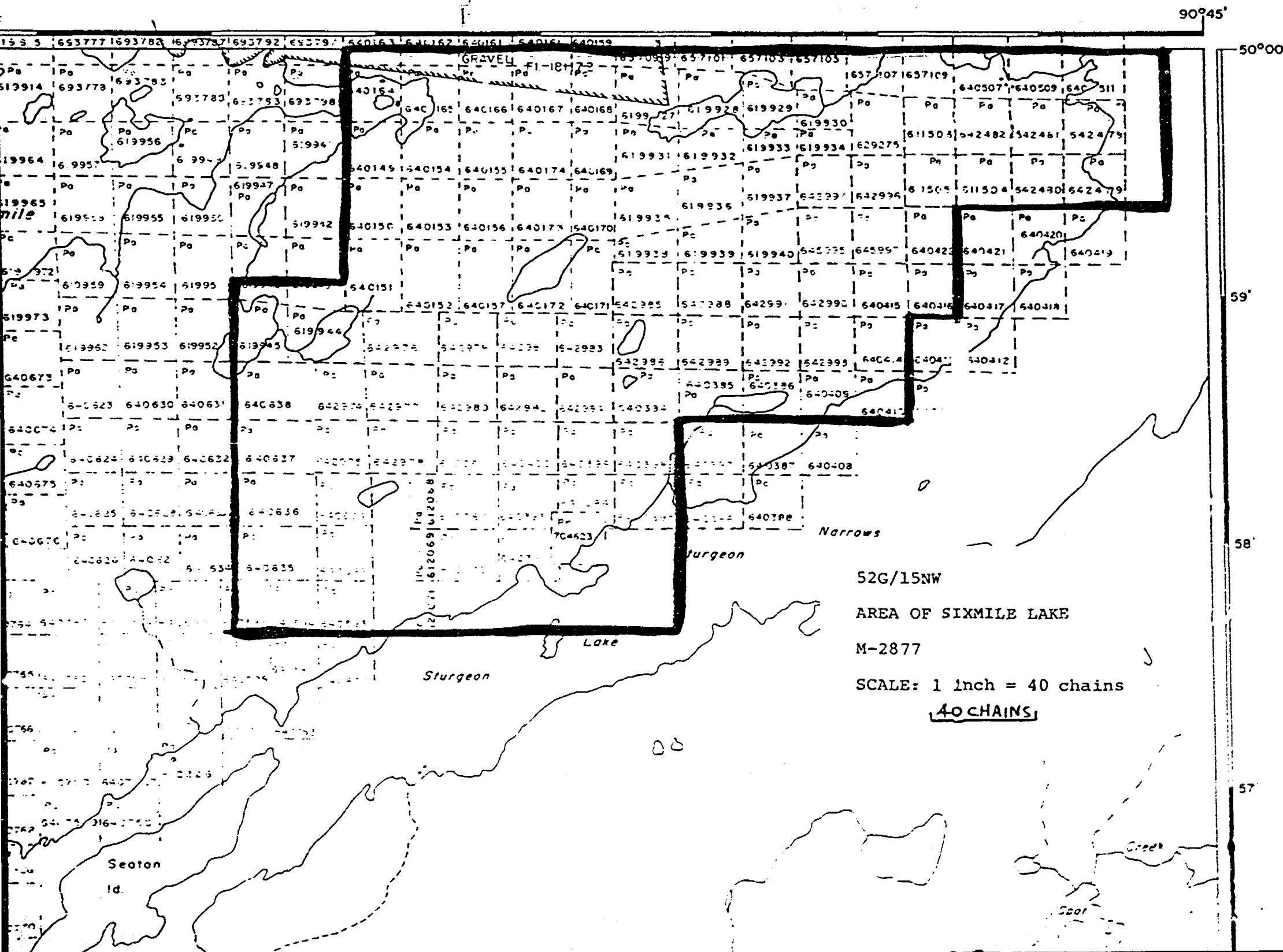
Aeromagnetic Series Papers 1117G Bell Lake Sheet
1118G Sturgeon Lake Sheet G.S.C. and O.D.M.



52G15NW0019 52G15NW0088A1 SIXMILE LAKE

900

M. 2879



90°45'
50°00'
59'
58'
57'

AREA OF

SIXMILE LAKE

DISTRICT OF
KENORA - THUNDER BAY

PATRICIA
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

| | |
|-----------------------|--------|
| PATENTED LAND | Ⓟ |
| CROWN LAND SALE | CS |
| LEASES | Ⓛ |
| LOCATED LAND | Lcc |
| LICENSE OF OCCUPATION | LO |
| 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 | X |
| CANCELLED | C |

NOTES

400' surface rights reservation along
the shores of all lakes and rivers.

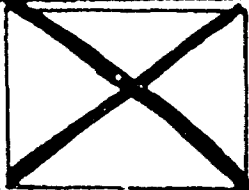

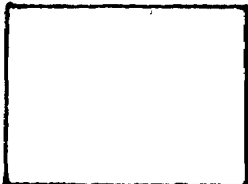
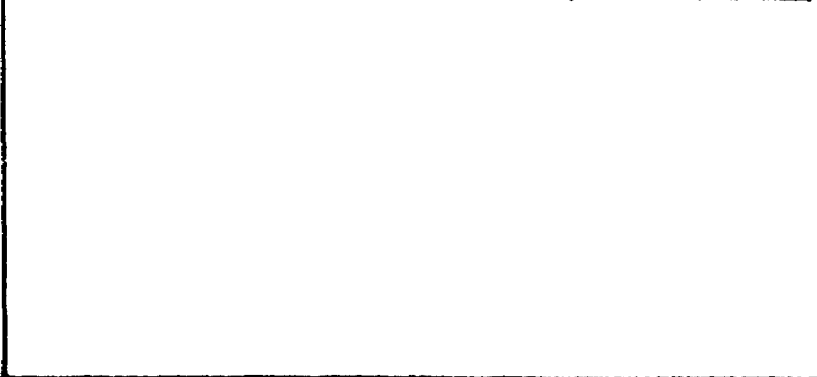
reg - M.2875

SEE ACCOMPANYING
MAP(S) IDENTIFIED AS

52G/15NW-0088-A1# 1

LOCATED IN THE MAP
CHANNEL IN THE
FOLLOWING SEQUENCE

(X)

| | | |
|--|--|---|
|  |  |  |
|  | | |

SYMBOLS

- Drill Hole J5 Falconbridge
- 69-1 Wahl
- 242-23 Selco
- 27-70-1 Mattagami
- R1 Rio Tinto
- S1 Santa Maria

- Trench
- Ground Magnetic High
- Aeromagnetic Low
- EM Conductor
- Fault



| | | | | | | |
|--------|--------|--------|-------------------|--------|--------|--------|
| 437184 | KB-6 | KB-2 | 437183 | | | |
| | | | KB3 | 437182 | 437181 | 437180 |
| | KB5 | KB4 | KERR A ADDISON | 437181 | 437180 | 437179 |
| 437187 | 437188 | 437189 | 437190 | 437191 | 437192 | 437193 |
| | | 437200 | 437199 | 437198 | 437197 | 437196 |
| 437202 | 437201 | | | | | |

63.4196

GEOLOGY
 CUNNINGHAM STURGEON NARROWS GROUP
 SIXMILE LAKE AREA
 STURGEON LAKE AREA
 PATRICIA MINING DIVISION
 Scale 1" = 1/4 mile
 L.J. Cunningham, B.Sc., P.Eng.
 1 March, 1983

LEGEND

Intrusive Rocks

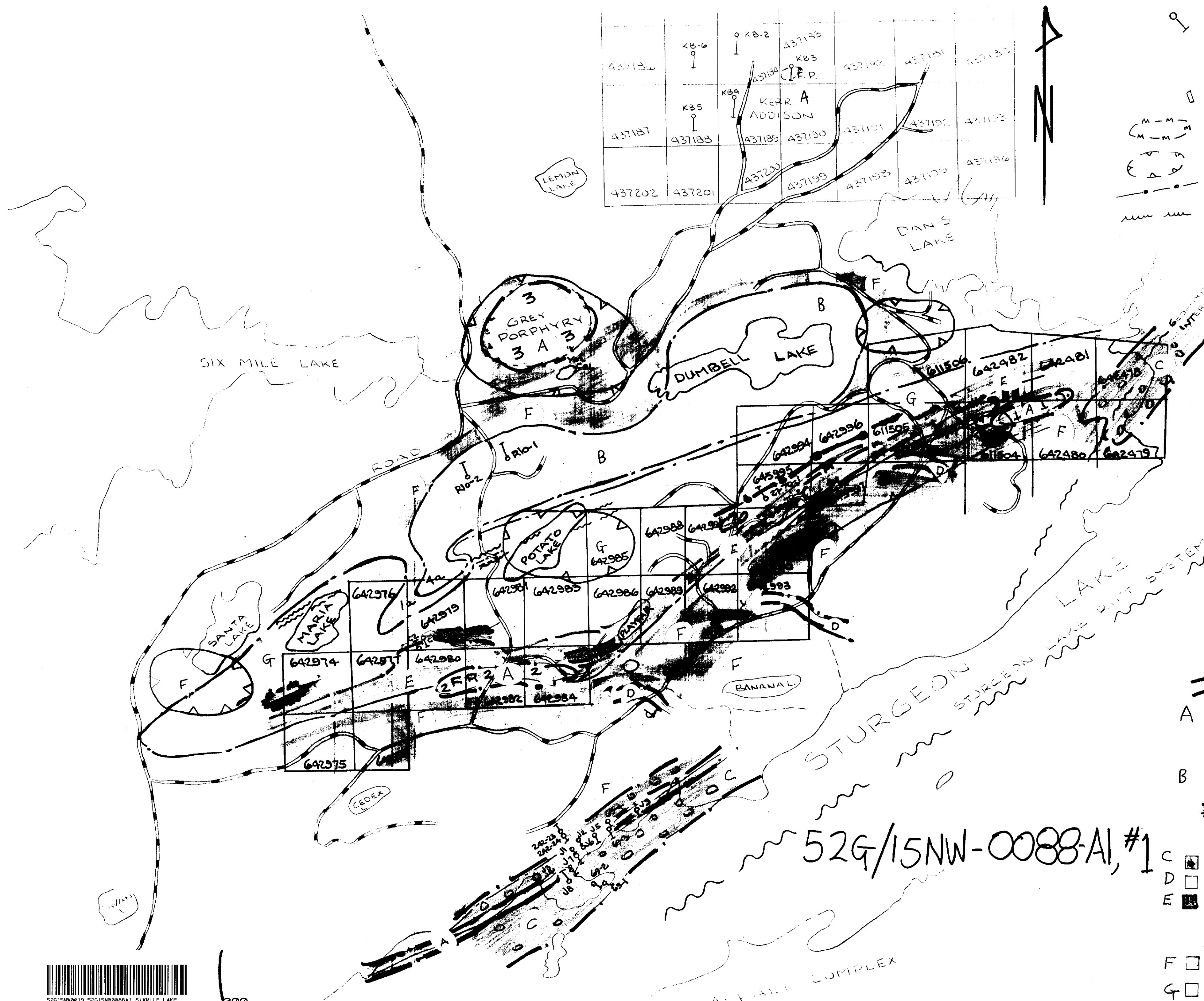
- Felsic**
- Syenite Dike
- Syenite Porphyry Dome
- Quartz Feldspar Porphyry Dome
- Grey Porphyry Pluton
- Mafic**
- Diorite-Gabbro-Sill, Dike and irregular bodies
- Dark Mafic Dikes carbonatized

Sediments

- Volcaniclastic Conglomerate
- Interflow Chert, grey Tuff
- Chemical Sediment carbonate, chert, pyrite

Volcanic Rocks

- Mafic Volcanics flow, minor pyroclastic
- Felsic Tuff, graphitic horizons



52G/15NW-0088-A1, #1

