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REPORT ON THE NSR RESOURCES LTD. PROPERTY

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Mining & Exploration Consultant
298 Ruggles Avenue
Richmond Hill, Ontario L4C 1Z1
(416) 737-0823

New Senator Resources

REPORT ON THE
NSR RESOURCES LTD. PROPERTY
Rouyn-Noranda
Quebec

NTS 32/D-3

MAY 1986.

TABLE OF CONTENTS

FIGURES

1) Location Map and Regional Geology

2) Location Map

3) Distribution of Surface & Mineral Rights.

4) General Geology

5) Diagramatic section across South West Rouyn Township.

6) Mineral Deposits

7) Fault/Fold Concept

8) "Senator-Rouyn" Type Hydrothermal Gold Deposit.

9) Proposed Drilling

TABLES

1) Table of Formations.

APPENDICIES

1) An Evaluation, New Senator Rouyn Mine Ltd.

2) Mine Descriptions

   i) Camflo

   ii) Lamaque

   iii) Stadacona

3) Compilation Maps. 1" = 200 ft.

4) Stratigraphic Section. 1" = 100 ft.

5) Vertical Projection of Mine Workings. 1" = 200 ft.

6) Longitudinal Sections. 1" = 100 ft.

INTRODUCTION

Scammell & Associates Inc. was retained by:-

North American Mining & Exploration Corp. (N.A.M.E).
188, Perreault Ave.,
Val d'Or, Quebec.
J9P 2H5

to compile all the available data on the NSR Property situated in Rouyn Township, Quebec. This compilation comprises the initial phase of an Option Agreement between N.A.M.E. Inc. and NSR Resources Inc. The majority of the information is stored at the office of :-

NSR Resources Inc.,
Ste. 200, 931 Yonge St.,
Toronto, Ont.
M4W 2H7

The following report was prepared by D.R. Scammell and is based on a study of all the available information. The author also paid a short visit to the property. However, it should be noted that many of the original underground plans and maps were illegible. W. G. Wahl reconstucted the plans of the underground workings and geological mapping and these are available at the NSR office. Unfortunately, no assay plans of the underground workings are available.

CERTIFICATE OF QUALIFICATIONS

I, David. Roger Scammell, residing at 298 Ruggles Ave., Richmond Hill, Ontario, do hereby certify that:-

(1) I am a consulting geologist, president of Scammell & Associates Inc.

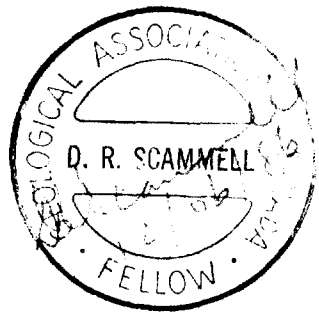
(2) I am a graduate of the University of London, England. (1970) and have been practising my profession since graduation.

(3) I am a registered Fellow of the Geological Association of Canada.

(4) I have no interest in, nor do I expect to receive any interest, direct or indirect, in North American Mining Exploration Corp.

(5) This report, and the conclusions and recommendations made, are based on examination of all available data. I have visited the property.

(6) I hereby consent to the use of the foregoing report by North American Mining Exploration Corp in a prospectus or a statement of material facts relating to the raising of funds for this project.



D. Roger Scammell, B.Sc., F.G.A.C.,
Consulting Geologist.

Toronto, Canada
30th May, 1986.

SUMMARY.

The NSR Rouyn Property, situated immediately to the west of the Town of Rouyn, covers the leases of the Senator Rouyn Mine as well as the adjoining leases of the Bagamac Property. The Senator Rouyn Mine* produced 1,837,807 tons grading 0.135 oz Au/sht between 1940 and 1955. According to W.G. Wahl, (1981) the mine still contains 167,659 tons of which 98,974 tons grading 0.127 oz Au/sht are available for extraction. It should also be noted that the mineralization extends below the lower limit of the mine workings.

The property is located within the Abitibi Greenstone Belt, approximately 400 km northwest of Montreal. It is situated at the southern border of the Superior Structural Province. The rocks underlying the property are of Early Precambrian (Archean) Age, except for a series of Late Precambrian (Proterozoic) diabase dykes. The rocks are covered by a thick blanket of non-consolidated material of Cenozoic Age, which consist of Holocene and Pleistocene clays, sands and gravels of glacial origin.

The Senator Rouyn deposit is a typical epigenetic hydrothermal gold deposit. Gold occurs in its native state in close association with pyrite and is hosted by quartz carbonate veins. These veins are structurally controlled and are restricted to the Smoky Creek Fault/Shear Zone. This structure strikes in a northwest-southeast direction and dips between 45 - 60 deg. to the northeast.

* Name changed to New Senator Rouyn mine in 1953.

Typically the auriferous veining is associated with a zone of intense alteration of the dioritic intrusive host. This alteration consists of carbonate (ankerite), chlorite, sericite, fuchite, albite and minor tourmaline.

The economic gold mineralization is restricted to folds on the fault plane, with the widest part of the ore zone coinciding with the axis of the fold. Underground development has identified two additional mineralized fold structures (East and West Zones) located between 800 and 1,000 feet from the main zone. Although some minor development and exploratory drilling has been conducted in the vicinity of these zones, they remain primary exploration targets at depth or down their plunges.

The fold structures associated with the Smoky Creek Fault within the bounds of the property therefore, have already been delineated. However, outside the present property the strike extensions of the fault remains relatively untested. It is therefore, recommended that in addition to the exploratory drilling of the east and west zones, the possibility of acquiring additional property to the northwest and southeast should be considered. If these properties are optioned, the experience gained from the exploration of the NSR Property would be invaluable in exploring the strike extensions of the Smoky Creek Fault as well as other potential auriferous structures.

In the 1950's, a stratigraphic section was drilled, near the center of block 96, to test for additional fault/shear structures in the hanging wall of the mine. This drilling

outlined four zones of sheared diorite with associated hydrothermal alteration. Only two of the four intersections were assayed. The presence of these hanging wall structures is significant in view of the recent success by Norex on their Ribago Property. To date, Norex has outlined 500,000 tons grading 0.165 oz Au/sht. This deposit is hosted by a shear structure which is believed to be located in the hanging wall of and paralled to the Smoky Creek Fault. The four shear zones therefore, are also prime exploration targets.

The Bagamac & Senator "Y" Faults on the Bagamac ground are also potential targets for exploration, however, due to the lack of surface rights would make drilling on these leases would be extremely difficult. The ideal situation would be to drill from the underground workings. It is the aim of the initial program, therefore, to delineate sufficient tonnage and grade to warrant dewatering the New Senator Rouyn mine. Once this has been accomplished revenue from the production could be utilized to test the Bagamac and Senator "Y" Faults from the underground workings.

PROPERTY - DESCRIPTION

The NSR property is situated in northwestern Quebec immediately to the southwest of the city of Rouyn, within ranges VI and VII of Rouyn Township (Fig. 1 & 2). It includes the leases of the Senator Rouyn property as well as the adjacent Bagamac property, for a total of 433.60 hectares:-

Senator Rouyn	Block 44
" "	" 80 - 83 inclusive
" "	" 96 and 97
Bagamac	Blocks 41 and 42

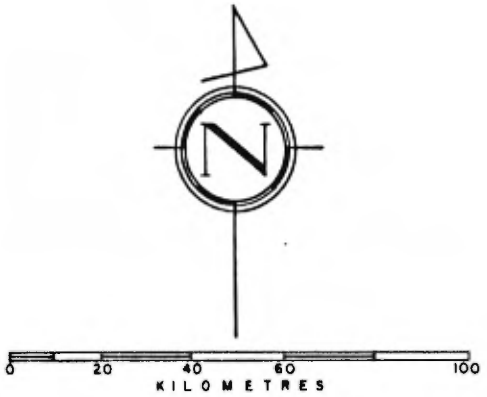
These mining leases are presently held by:-

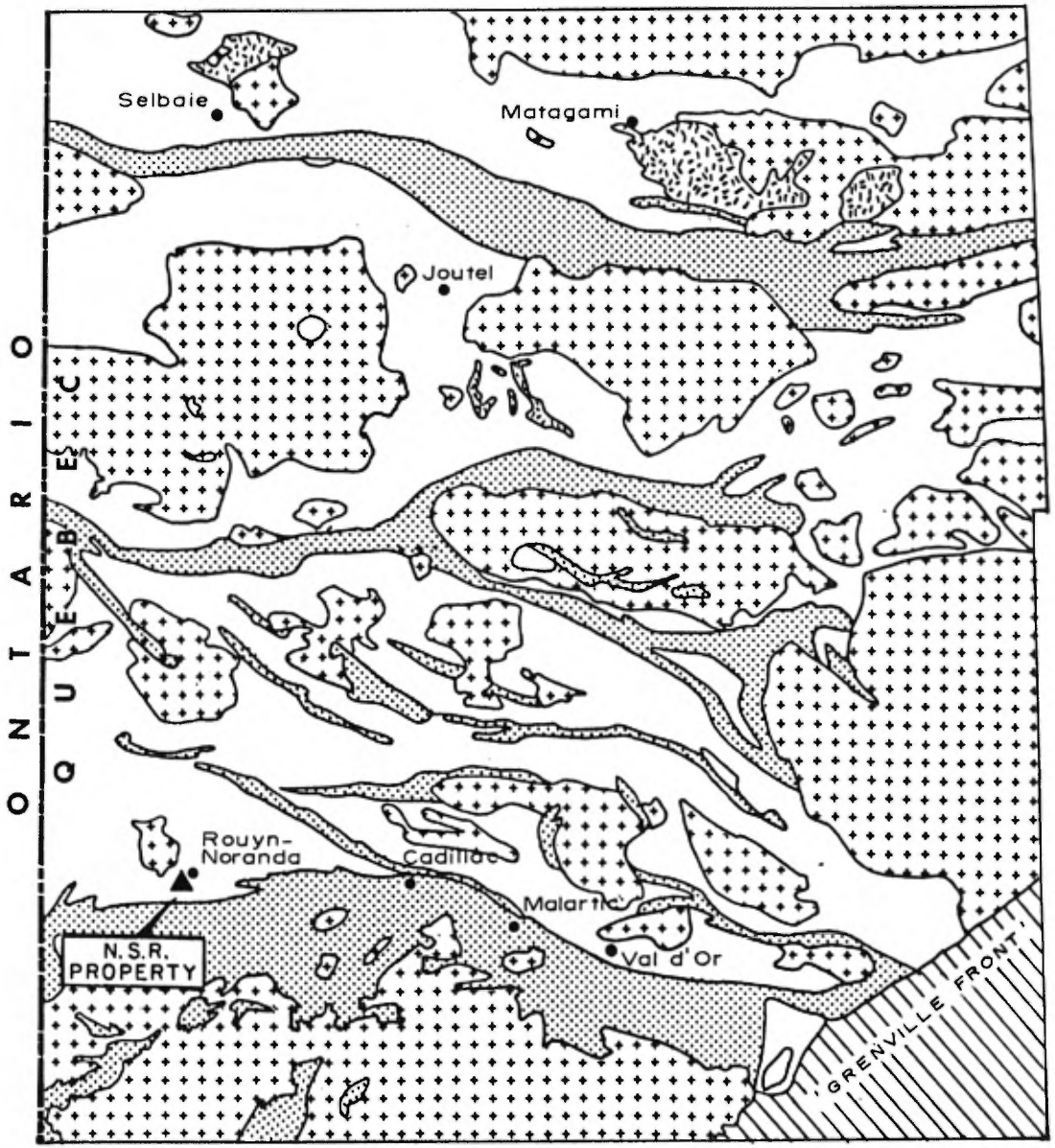
NSR Resources Inc.
931, Yonge St., Suite 200,
TORONTO, Ont.
M4W 2H7.

Although NSR Resources Ltd. hold the mineral rights on the property, they do not have the surface rights on blocks 41, 42 and part of blocks 96 and 97. The eastern half of Block 41 is now covered by the townsite (Fig. 3).

The property is bounded on the north and east by the Chadbourne claims of the (Noranda) Horne Mine. To the south, the claims are currently held under option by Ressources Minieres Eider Inc. from Flag Oils Ltd.

Access to the claims is excellent, since the Provincial highway 117 crosses the north-eastern part of the property. In addition highway 391 traverses block 44. Gravel roads off the main highways provide access to the remainder of the





LEGEND:

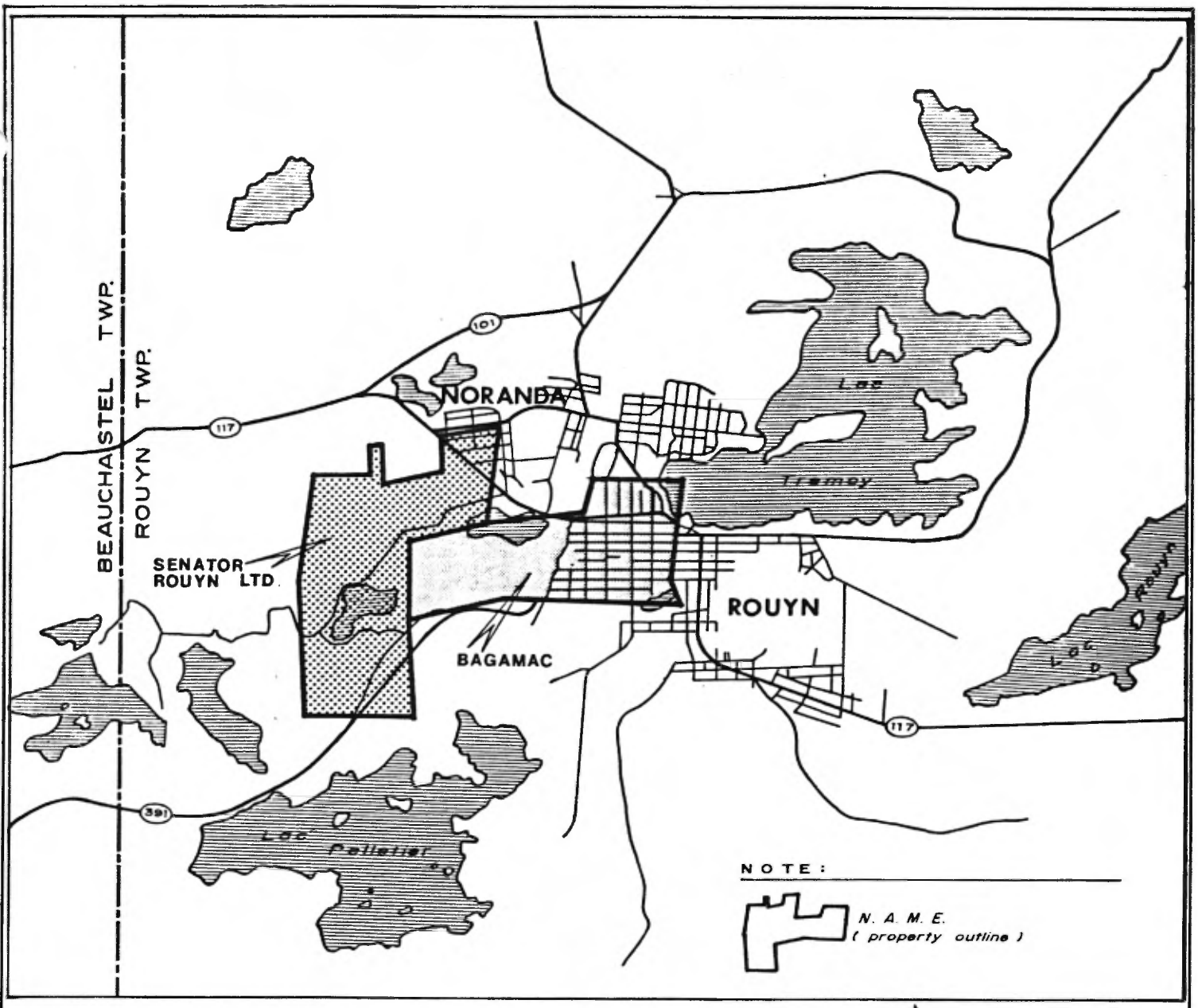
- Granitic rocks
- Volcanic rocks
- Sedimentary rocks
- Ultramafic & Mafic rocks

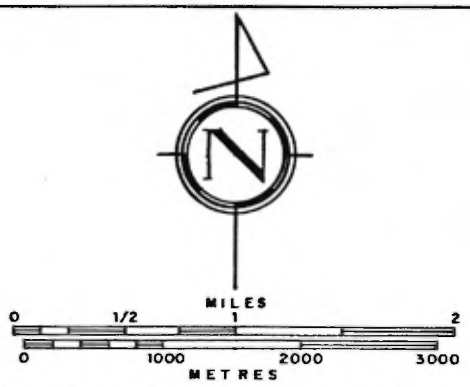
N.A.M.E.

LOCATION MAP
and
REGIONAL GEOLOGY

Work by: Scammell & Associates Incorporated

Drawn by: R. Ortiz Date: May 1986 Figure No.



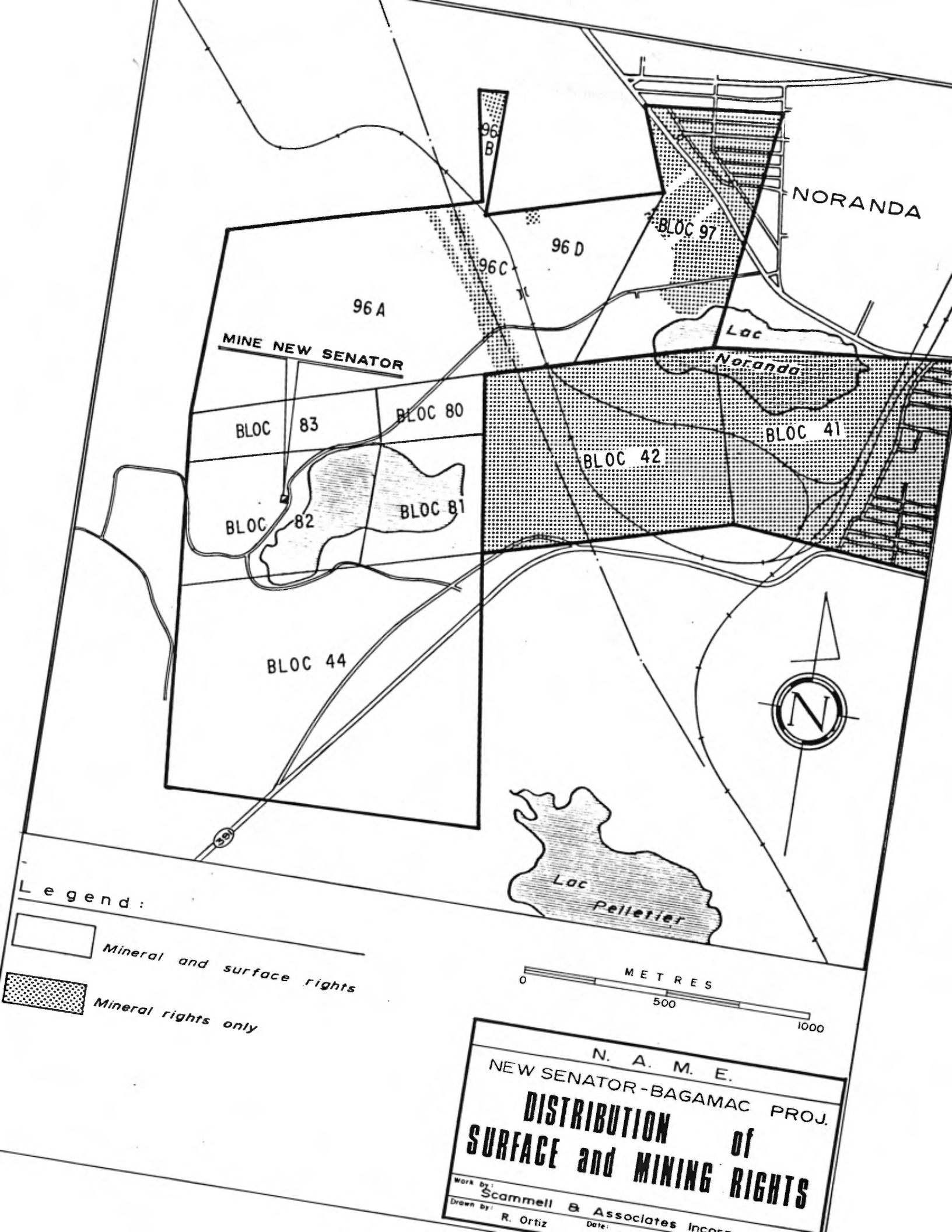


N. A. M. E.

LOCATION MAP

Work by: Scammell & Associates Incorporated

Drawn by: R. Ortiz | Date: May 1986 | Figure No. 2


96 B
NORANDA
BLOC 97
96 D
96 C
96 A
MINE NEW SENATOR
Lac Noranda
BLOC 83
BLOC 80
BLOC 42
BLOC 41
BLOC 82
BLOC 81
BLOC 44
N
Lac Pelletier
Legend:
Mineral and surface rights
Mineral rights only
METRES
0
500
1000
N. A. M. E.
NEW SENATOR-BAGAMAC PROJ.
DISTRIBUTION of SURFACE and MINING RIGHTS
Work by: Scammell & Associates Incorp.
Drawn by: R. Ortiz
Date:

property. One of these gravel roads is utilized by Noranda Mines to provide year round access to their tailing ponds, situated approximately 1 km to the west of the western property boundary. This road passes through the site of the Senator mill and headframe and provides excellant access to the majority of the property.

The topography of the claim group is generally one of gently undulating terrain. Changes in elevation usually do not exceed 10 metres, with areas of rock outcrop occupying the higher ground. The center of the Senator Rouyn claims is occupied by a lake which appears to be situated directly over the main mine workings. It is at the south end of this lake, that the original "discovery" trench is situated.

HISTORY - SENATOR ROUYN PROPERTY.

1936 : gold was discovered in a zone of sheared carbonatized quartz-diorite. The shear has a strike of N 50 deg.W and dips at 40 deg. to 60 deg. to the northeast. This showing was located in the middle of the southern boundary of block 82 on the south shore of the lake.

1936 - 1937 : trenching exposed the zone for a width of 35 feet and was traced, along strike for a length of several hundred feet by 17,000 feet of diamond drilling (46 holes). This drilling indicated an ore reserve of 188,000 tons grading 0.274.

1939 : a two compartment exploratory shaft was developed to a depth of 500 feet.

1940 : an estimate of the indicated ore reserves between the 275 ft level and the 562 foot level was 171,224 tons grading 0.265 oz/sht. This reserve was based on the following chip samping:-

375 Level

Length 543.0', average width 17.56' grade 0.291 oz/sht*.

500 Level

Length 455.5, average width 11.05 ft grade 0.106oz/sht*.

* all high assays cut to 1-oz.

Mine production began October 15, 1940 and initially the ore was treated in the neighbouring mill of Arntfield Gold Mines Ltd. (Wilson & Lee, 1948).

1941 - 1950 : a 330 tpd cyanide and floation mill was built on the Senator Rouyn property in 1941 (Wilson, 1962). This was modified in 1947 and 1948 to increase its capacity to 600 tpd.

The main vertical shaft was enlarged and deepened to 2,000 feet between 1942 and 1945. Subsequent exploration indicated the ore continued to at least 2,750 ft., consequently, a 3 compartment inclined shaft (No. 2) was developed from the 1875 foot level to below the 2,800 feet. (750 feet vertically below the 1,875 foot level).

1952 : in September the company's name was changed from Senator Rouyn Ltd. to New Senator Rouyn Ltd.

1955 : all operations ceased at the end of November, 1955. During the period 1940 to 1955, the New Senator Rouyn, produced 1,837,807 tons of ore with a recovered grade of approximately 0.14 oz Au/sht.

1981 : W.G. Wahl evaluated the "Mine Manager's Annual Reports" and estimated that of the 167,659 tons of ore remaining in the mine grading 0.139 oz Au/sht, which was reported in the last Annual Report (January 1st 1955), only 98,974 tons grading 0.127 oz. Au/ton is available for extraction. This ore is located above the 2,775' level, however, Wahl states that below this level

"the "A" ore zone should continue and have dimensions and grades of mineralization similar to that of the mines lower levels. (Appendix 1).

HISTORY - BAGAMAC PROPERTY.

1926 : Bagamac-Rouyn Mines Ltd, was incorporated to explore blocks 41 and 42.

1927 : Prospecting and trenching identified three veins:-

a) South Vein - a vein of dark glossy quartz 4 to 6 ft in width that was traced in a northeast-southwest direction for 1,000'. It was located on the south side of Cardinal Begin Street.

b) Middle Vein - located on Taschereau Street (near the church). It varied in width from a stringer to 10 feet and extends for a distance of 1,200 feet.

c) North Vein - this "vein" consisted of a series of stringers of white quartz within a pink feldspar porphyry intrusive. It was exposed to the south of Perrault Street and the best assay that was obtained was from a dark quartz stringer mineralized with fine grained pyrite which yielded 0.11 oz Au/sht.

1927 - 1937 : during these years a series of diamond drilling programs were completed on the property. Although some of the drilling was directed towards gold exploration, much of the exploratory drilling was concentrated in the northern part of the property and directed towards the search for copper. A total of at least 9,200 feet were drilled but the holes did not encounter any significant values. In 1933 a vertical

shaft was sunk on the Bagamac Fault to a depth of 220 feet and about 110 feet of lateral drifting was undertaken on the 220 foot Level. This shaft is located at the junction between the Bagamac and Senator "Y" Faults.

1938 : Bagamac Mines Ltd. drilled a 2,495 foot vertical hole to investigate the Senator Rouyn ore zone at depth. It is believed that the hole encountered the zone from 2,006.3' to 2,011.6'. It consisted of carbonatized and sheared diorite (GM 20429). In addition a geophysical program, consisting of a self potential and a magnetometer survey, was conducted over the property.

1945 - 1946 : Senator Rouyn drilled 43 holes (Kelly, 1938), totalling 28,048 ft., to investigate the Bagamac and Senator "Y" Faults on the Bagamac ground. They also drilled two vertical holes from the ice on Oskisko Lake at the north east corner of the property. (GM 20432).

1953 : Bagamac Mines drove an exploration drift from the New Senator Rouyn Mine approximately half way across block 42, (4,000 ft from the western boundary) The purpose of the drift, which was located on the 2475 level, was to investigate the Bagamac and Senator "Y" Faults at depth. It also was designed to explore the area where Noranda drilled a hole (No. S417) which intersected 0.10 oz Au/sht over 10 feet near the northern boundary of the Bagamac ground. (Jerome, 1954).

1959 : Tribag Mining Co. Ltd., formally Bagamac Mines Ltd., drilled nine holes for a total of 7,618 feet. The drilling did not encounter any significant values.

1961 : Tribag Mining Co. Ltd., drilled 14 holes for a total footage of 19,045. The best value obtained was 0.91 oz Au/sht in hole 61-10 from 701.0 ft. to 703.0 ft.

1970 : Geophysical Engineering and Surveys Ltd. conducted a geophysical program consisting of an electromagnetic and magnetometer survey on the Bagamac ground. They concluded that "extraneous effects have resulted in survey results of little value".

1983 : NSR Resources Inc. acquired the two mining concessions, blocks 41 and 42, comprising the Bagamac Property.

REGIONAL GEOLOGY.

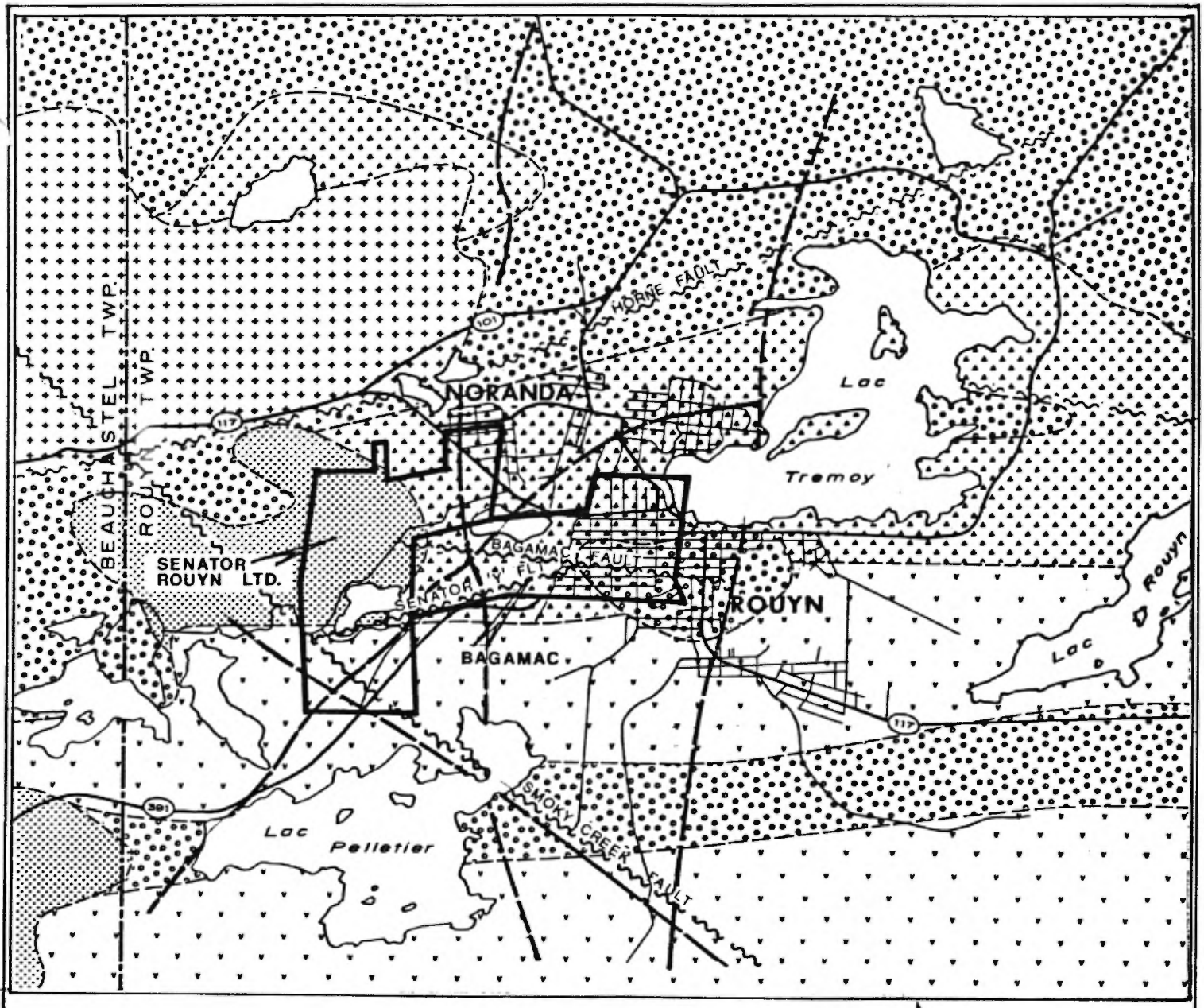
The property is located within the Abitibi Greenstone Belt approximately 400 km northwest of Montreal. It is situated at the southern border of the Superior Structural Province. The area is underlain by a series of volcanic, volcanoclastic and sedimentary rocks of Early Precambrian (Archean) age. To the south of the Cadillac-Bouzan Fault Zone, these rocks are overlain by Late Pre-Cambrian (Proterozoic) conglomerates and greywackes of the Cobalt Group (Fig. 4). All the rocks have been intruded by a series of Late Precambrian diabase dykes. They have been metamorphosed to the "Greenshist" level of metamorphism but for convenience the prefix "meta" has been ommited from this report.

The Archean rocks have been sub-divided into three groups, the Abitibi, Timiskaming and Pontiac (Table 1). These rocks occur in three east-trending belts, which form north to south are:-

a) the volcanic rocks of the Abitibi Group, which hosts the New Senator Rouyn Mine;

b) the Timiskaming sediments, which are the continuation of the Timiskaming sediments of the Kirkland Lake-Larder Lake district in Ontario.

c) the mica schist or metamorphose greywacke with some interbedded lavas and pyroclastic rocks forming the Pontiac Group.



Legend:

- Potassic Granite, Albite Granite
- Quartz Diorite and Diorite
- Felsic Metavolcanic Rocks (dacite, rhyolite, rhyodacite)
- Intermediate Metavolcanic Rocks (andesite, andesite flow breccia)
- Matic Metavolcanic Rocks (basalt, komatiite, some andesite)
- Diabase dyke
- fault
- N.A.M.E. (property outline)

N

MILES
0 1/2 1 2

0 1000 2000 3000
METRES

N. A. M. E.

GENERAL GEOLOGY

Work by: Scammell & Associates Incorporated

Drawn by: R. Ortiz Date: May 1986 Figure No. 4

NOTE: Geology from G.S.C. Map 1461 A.

Table of Formations

Era or period	Series or group	Lithology
Cenozoic	Post-Glacial	Stratified clay, sand, and gravel
	Glacial	Boulders, gravel, sand, and boulder clay
		Unconformity
Proterozoic (Late Precambrian)		Quartz diabase-gabbro dykes Olivine diabase-gabbro dykes Quartz diabase-gabbro dykes
		Intrusive contact
	Cobalt group	Conglomerate and greywacke
		Unconformity
Archæan (Early Precambrian)		Quartz diabase-gabbro?
		Intrusive contact
	Post-Timiskaming	Lamprophyre dykes Syenite porphyry dykes, sills, and masses Potassic granite dykes, and masses Albite granite dykes, and masses Amphibolite Quartz diorite dykes, sills, and masses Andesite and related rocks in dykes and sills Rhyolite (quartz-albite) porphyry dykes, and sills
		Intrusive contact
	Timiskaming series	Conglomerate and greywacke
		Unconformity
		Amphibolite Quartz diorite dykes, sills, and masses Andesite and related rocks in dykes and sills Rhyolite dykes, and sills Rhyolite (quartz-albite) porphyry dykes, and sills
		Intrusive contact
	Pontiac group	Mica schist, amphibolite, amphibolite-schist, andesite, and andesite tuff
	Abitibi group (Keewatin)	Andesite, andesite agglomerate, and tuff; rhyolite, rhyolite agglomerate, and tuff; dacite; trachyte

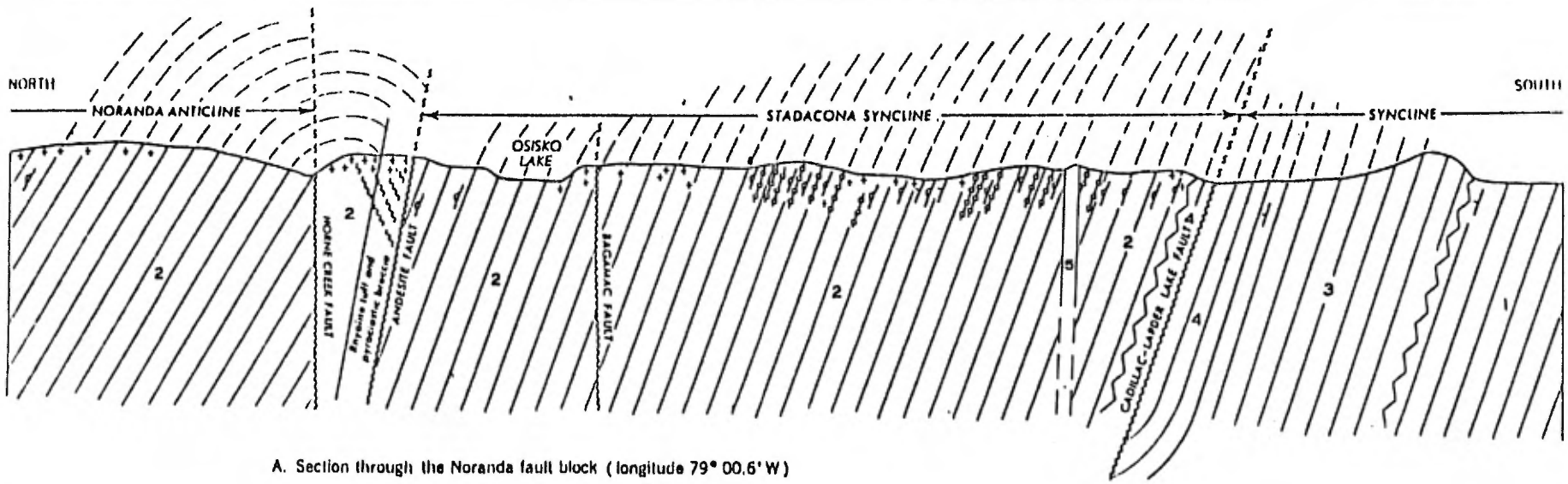
Table 1 Wilson, 1962

The Timiskaming series is separated from both the Abitibi and Pontiac groups by unconformities. It is believed that the Pontiac groups may belong to the Abitibi. (Wilson 1962).

The Abitibi rocks have been intruded by masses of quartz diorite and by dykes, sills and masses of syenite porphyry which also intrude the Timiskaming series. Late Precambrian diabase or gabbro bodies are the only igneous intrusions that intrude all the other rock units.

The area has been subjected to strong and persistent deformation and is part of an east-trending belt of tectonic activity extending for about 125 miles from the Kirkland area in Ontario to the Malartic-Val d'Or district in Quebec. Rock units within this belt have been folded into a succession of anticlinal and synclinal folds which generally trend in a east-north-east direcion. The Abitibi rock units, within the vicinity of the mine, all dip steeply to the north and are located on the south limb of the Stadacona syncline (Fig. 5). As shown in figure 5, only the southern limb of the syncline remains and the Andesite-Horne Creek Faults mark its contact with the Noranda Anticline to the north.

The area adjacent to the New Senator Rouyn Property centers around the Cadillac - Larder Lake Break, (Cadillac - Bouzan Fault), a zone of intense structural deformation. This structure is marked by a zone of rusty weathering ankerite-talc-chlorite schist from 100 ft (30m) to 500ft (150m) in width. The break or fault strikes in an east to



A. Section through the Noranda fault block (longitude 79° 00.6' W)

LEGEND

PROTEROZOIC (LATE PRECAMBRIAN)

5 — Olivine diabase and gabbro

ARCHEAN (EARLY PRECAMBRIAN)

TIMISKAMING

4 — Greywacke with subordinate beds of conglomerate

3 — Conglomerate with subordinate beds of greywacke

KEEWATIN (ABITIBI)

2 — Andesite, andesite flow breccia, andesite agglomerate and tuff; rhyolite, rhyolite flow breccia, rhyolite agglomerate and tuff

PRE-TIMISKAMING

PONTIAC GROUP

1 — Mica schist

Flow contact

Bedding, tops known (inclined, overturned)

Bedding, pillow structure, tops known (inclined)

Fault (defined, approximate, assumed)

Unconformity

Intrusions of diorite

Horizontal Scale of Feet

0 2000 4000 6000

Wilson, 1962

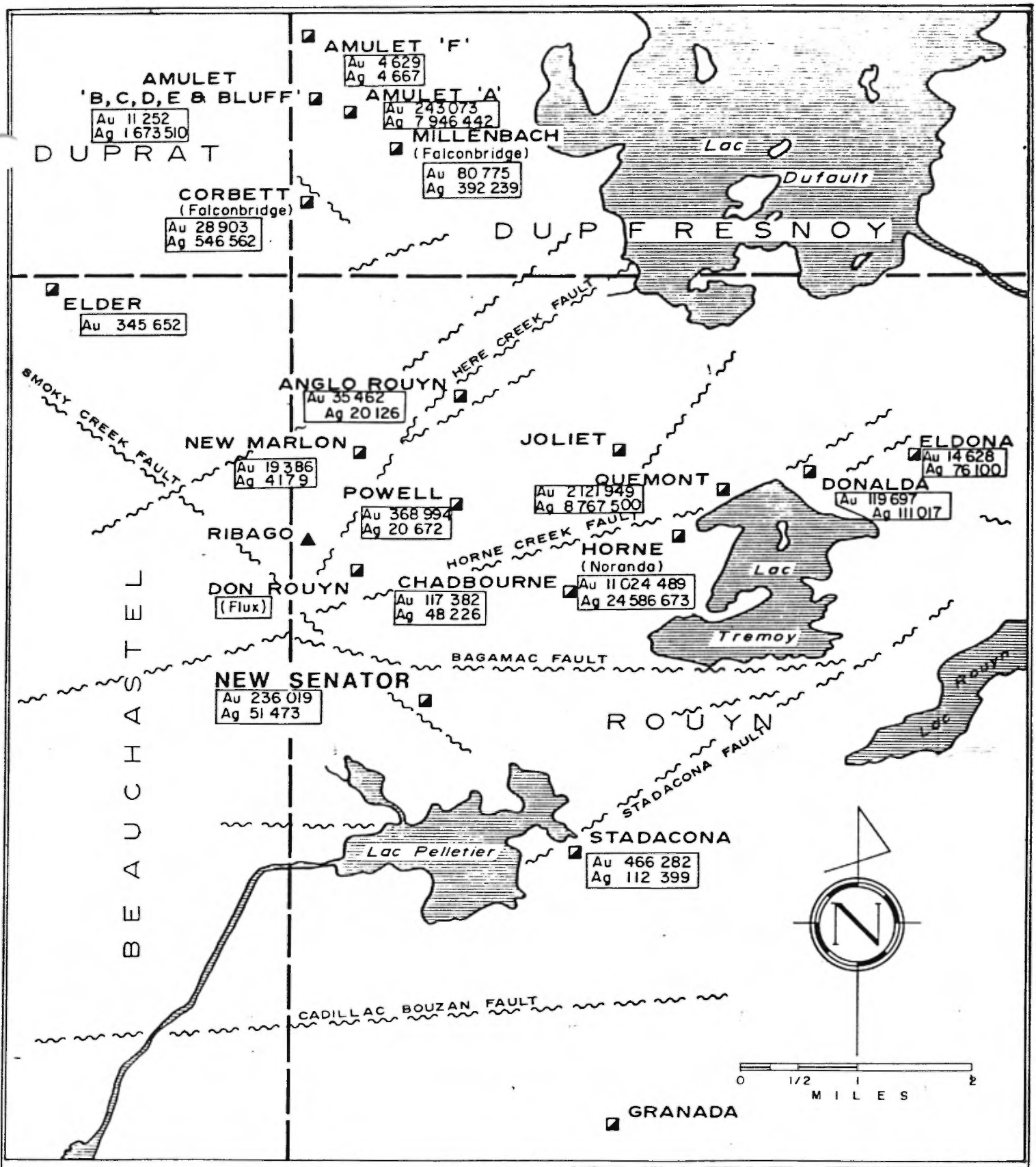
N. A. M. E.

DIAGRAMMATIC SECTION ACROSS SOUTH-WEST ROUYN TOWNSHIP

Work by: Scammell & Associates Incorporated

Drawn by: D. R. S. Date: May 1986 Figure No. 5

west direction and dips at about 70 deg. to the north. It has been traced from the Ontario border eastward to the centre of Bourlamague township near Val d'Or, a distance of approximately 200 km. Many of the other fault structures in the area, are associated with this major fault zone as well as many of the mines in the Rouyn - Noranda area (Fig. 6).



Legend:

- ◪ *Producing or past producer*
- ▲ *Mineral deposit*

N. A. M. E.

ROUYN–NORANDA AREA, QUEBEC

MINERAL DEPOSITS MAP

Gross Gold and Silver Production in Troy Ounces

Work by: Scammell & Associates Incorporated

Drawn by: R. Ortiz | Date: May 1986 | Figure No. 6

LOCAL GEOLOGY (Appendix 3).

The property is underlain by a series of volcanic flows ranging in composition from andesite to rhyolite with minor interbedded tuffs. These rocks are of Abitibi Age belonging to the Blake River Volcanic Group and are mainly exposed in the southern parts of blocks 41,42 and 44. These rocks have been intruded by a series of quartz-diabase and quartz-syenite porphyry and by late diabase dykes.

A brief description of the predominant rock types are given below:-

a) Volcanics.

i) Andesite - this is the predominant rock unit of Abitibi Age exposed on the property. It is, however, mainly confined to the southern half of blocks 41 and 42 and is separated from the rocks to the north by the Bagamac Fault. It is fine grained, dark green in colour, melanocratic and occasionally exhibits flow breccias, amygduloidal textures and pillows. The flows generally strike S 65 deg. E, dip steeply to the north and the tops also face to the north.

ii) Dacite - this rock is exposed in scattered outcrops in the southern and south-western corner of block 44. This fine grained, dark grey rock weathers to a light grey. It consists of microscopic prismatic crystals of oligolclase feldspar with scattered irregular masses of granular and chlorite. These rocks strike and dip in a

similar direction to the andesitic flows. Ropey flow textures and "ghost" amygdules have been noted in the diamond drill logs.

iii) Rhyolite - this dark grey aphanitic rock is found in the eastern part of the Bagamac ground on block 41. It is also found as xenoliths within the main quartz-diorite intrusive. The rhyolite breccia along the shore of Osisko Lake appears to have been silicified (Keevil, 1950).

b) Intrusives

i) Quartz Diorite - this is the most extensive and economically important rock type on the property. It is part of an irregular mass that exends west from the town of Rouyn under Noranda Lake and then underlies most of the original Senator Rouyn claims. Most of its contacts are intrusive except along the Bagamac Fault zone.

The diorite ranges in texture from a coarse grained well crystalized, melanocratic rock to a dark, finer grained phase. In many areas it is extremely difficult to separate the fine grained intrusive phase from the massive andesitic flow material. The coarse grained phase exhibits a "salt and pepper texture" and often contains isolated sulphide grains, usually pyrite.

A large diorite hosts the main ore body on the Senator Rouyn property. On the Bagamac ground, there are a number of smaller quartz diorite intrusive bodies located to the south of the Bagamac Fault. These masses are somewhat

irregular but in general their long axes are parallel to the main east to west strike of the enclosing volcanics.

The intrusive on the Bagamac property, in the early literature, was divided into an acid phase termed a syenite porphyry and a basic phase for which the term quartz diorite was assigned. The albite granite shown on the compilation map may be an example of the syenitic phase of the intrusive.

ii) Feldspar Porphyry Dykes: these are medium grained intrusives red to purplish grey in colour. The feldspar phenocrysts are generally anhedral and equigranular. The dykes are generally less than 25 feet in width and were intersected by a number of underground drifts and diamond drill holes. A microscopic examination of the rock shows that the phenocrysts of feldspar consist of microperthite in a matrix of plagioclase, some quartz, chlorite and carbonate. These intrusions are probably a phase of syenite prophyry that occurs extensively in the Rouyn-Noranda area. (Wilson, 1962).

iii) Diabase Dykes.

There are three diabase dykes on the property which are younger than all the other rock units and the mineralization. These dykes cross the western part of the property. The "Noranda" diabase is a northeasterly trending dyke of quartz diabase which extends under Noranda Lake. This dyke is continuous with the east-west dyke found in Noranda's Horne Mine. A second dyke, strikes in a north east direction and

STRUCTURE

The volcanic rocks, as mentioned previously, have been folded and faulted are now located on the south limb of the Stadacona Syncline. The faulting/shear is the single most important factor in the localization of the auriferous mineralization the NSR Property. A brief description of the principal stuctural features is given below :-

i) Smoky Creek Fault

The Senator Rouyn Mine is located on a zone of intense shearing and alteration believed to be the Smoky Creek Fault. (G.M. 1332) This structure is orientated in an approximately northwest-southeast directon and dips at between 40 deg and 60 deg to the northeast. The south wall or footwall is often a well defined fault zone characterised by a zone of gouge, broken rock and a grooved and slickensided surface. These grooves and slickensides would indicate that the final movement, along the fault, was vertical or nearly vertical with the north or hanging wall moving upwards. The fault is therefore a thrust of reverse fault (Wilson and Lee 1948).

The quartz veining has a braided nature and more than one ore shoot breaks into several bands. This fault structure appears to dip a lower angle than the ore zone since on the 375 foot level it is located in the footwall while on the 575 foot level it is located on the hanging wall. This fault structure is cut by a number of steeply dipping younger cross faults which are orientated in a north to northeast

direction. The displacement along these cross structures is small, usually less than 2 feet.

ii) Bagamac Fault

This fault strikes in an easterly direction across blocks 41 and 42 just to the south of Noranda Lake. The fault, which dips to the south at 83 deg, has been traced for several miles. In surface outcrops, it consists of a schistose zone containing parallel or branching zones of fracturing up to 25 feet in width.

The displacement along this fault is unknown but as previously mentioned there is a marked dissimilarity between the rocks to the north of the structure than those to the south. To the north, the rocks are predominantly rhyolite, rhyolite breccia and quartz diorite, while to the south basic volcanics predominate.

iii) Senator "Y" Fault

This fault was initially identified on the 875 foot level and by drilling on the Bagamac ground. It strikes in an eastnortheast direction. The Bagamac shaft is located at the confluence of this fault and the Bagamac Fault.

iv) The No. 2 East Fault

This fault traverses the main ore zone and separates it into the "A" (to the northwest) and "B" (to the southeast) zones. The horizontal displacement along this fault is approximately 50 feet.

v) Hanging Wall Shears

Previous drilling has identified four zones of shearing between 3,000 feet and 4,000 feet to the north of the Smoky Creek Fault. These zones appear to be parallel to the main fault, although, until additional drilling has been completed their exact strike and dip cannot be determined. The shears, from north to south have been designated by the letters "A" to "D" on the compilation map (Appendix 3) and on the stratigraphic section(Appendix 4). The following is a brief description of each of the shears as taken from the drill logs:-

a) Shear "A" :- was intersected by hole S-97 between 177 and 220 ft. The shearing, at 45 deg to the core axis occurs within a chloritized and carbonatized diorite host. A zone of quartz with chlorite and minor tourmaline occured between 196.0 and 197.5 feet but no assays were taken.

b) Shear "B" :- was intersected by hole S-96 between 448 and 475 ft. Once again the zone consisted of sheared (45 deg to the core axis) and chloritized diorite. A zone of quartz stringers described as "almost barren" was intersected between 465.0 and 467.0 ft. No assays were taken. In addition the hole intersected strong shearing at 45 deg to the core axis between 470.0 and 473.0

feet.

c) Shear "C" :- was intersected by hole S-95 from 348.0 to 389.9 feet. Assayed sections from 360.0 to 363.0 ft and 364.0 to 367.0 ft yielded only trace amounts of gold. The zone was described as sheared and chloritized, silicified diorite with minor pyrite and fuchite from 360.0 to 377.0 ft.

d) Shear "D" :- was also intersected by hole S-95 between 559.0 and 58.2 ft. The chloritized diorite was sheared at 45 deg to the core axis. A zone of silicification, quartz stringers, carbonate, tourmaline and pyrite once again yielded only trace amounts of gold.

vi)Folds

In addition to the regional folding, the Smoky Creek Fault and possibly the other major faults have been folded. The amplitude of the fold in some cases is not great and therefore can be more correctly termed, flextures. These folds or flextures are directly related to the distribution of the gold mineralization.

The main ore zone is located within a fold which plunges to the northeast. The east limb of the fold strikes 270 deg to 290 deg while that of the west limb strikes between 310 and 330 deg. There is some indication in the mine that

where the amplitude of the fold is greater there is a corresponding increase in the amount of ore material present. The mine workings have also identified two additional folds on the fault plane, one situated approximately 1800 feet to the north west of the ore body (West Zone) and the other approximately 2000 feet to the southeast (East Zone). The folds may have a rhythemical nature occurring at regular intervals along the fault. If this is the case, then the interval between the folds and potential zones of economic mineralization would be approximately 2,000 ft.

MINERALIZATION & ALTERATION

The Senator Rouyn deposit is a typical epigenitic gold deposit with its associated hydrothermal alteration. A "halo" of chloritic alteration envelopes the shear/fault zone and extends for a distance of 50 to 75 feet out into the host rock. In addition, carbonate is also a significant alteration product. This carbonate is probably ankerite since it weathers to a rusty brown and because of this characteristic is easily identifiable in outcrop. This weathering is particularly obvious in the "discovery" trench located at the south end of the lake.

The veining within the shear zone consists of brecciated and fractured white and grey quartz associated with fuchite, sericite, epidote and albite feldspar. The albite feldspar and epidote are formed by the process known as sausseritization which is probably responsible for the extensive "bleaching" described in the underground mapping. The alteration associated with the gold is similar to that of many of the epigenetic gold deposits of the Abitibi Region, such as Lamaque Mine. (Appendix 2). Minor amounts of graphite and tourmaline are also present.

The gold occurs in its free state intimately associated with sulphides, mainly pyrite. As with many of the Abitibi gold deposits, the percentage of sulphide present is usually around 5% although it may be as high as 20%. Specularite and magnetite are also commonly associated with the ore zone. Structurally controlled epigenetic gold deposits of this type are not usually restricted to one rock unit. Any competent

rock unit which would produce a profusion of dilation fractures during deformation would be a suitable host for a gold deposit. In many cases this correct competency may be derived by the alteration such as silicification or albitization, of an incompetent rock unit. In the case of the Senator Rouyn Mine, the coarse variety of diorite appears to the most suitable rock type for the higher grade mineralization. (Derry, 1973). Gold deposits, however, also found in the sheared and fractured andesitic and rhyolitic units for example the Stadacona Mine (Appendix 2). Although the sheared diorite is the prime target for additional exploration, the other rock types particularly if they have been silicified or albitized should also be given consideration. It is of interest to note that in the original discovery trench, the highest assays (0.73 oz Au/sht) were obtained from the northern part of the trench where the silicification was strongest (GM 20737).

SENATOR ROUYN MINE.(Appendicies 5 & 6)

The vertical depth of the mine is approximatly 2800 feet. A vertical three compartment shaft was developed to 2,000 ft. below the surface. To eliminate the problem of long cross-cuts to connect the shaft with the ore zone a second inclined shaft (Winze), 10 ft 8 ins. by 6 feet was developed from the 1875 foot level to the bottom of the mine (750 feet vertically below the 1875 level). The deepening of the shaft was almost an annual event and only proceeded when additional ore was required.

Stations were cut at 250 foot intervals with sub-level development halfway between the stations. This effectively provided a level at every 125 foot interval but required less cross-cutting in barren rock. The main method of mining was shrinkage with some "blast-hole caving" to recover the pillars. This type of mining was an economic necessity, however, due to the irregular nature of the ore it resulted in a considerable amount of dilution. Reid (1948), states that the cut and fill method would have been better suited, however, it was rejected on the basis of cost which would have been 15% higher than the shrinkage method. This attitude towards the cut and fill method has changed over the past ten years since it has been demonstrated in a number of mines that the higher recovery grade more than compensates for the additional cost. One or two of the stopes were filled after the ore in them had been removed, however, most of them were left "open".

The initial mill recovery of gold from the ore was 94.8%. However, this was later increased to 96% by changing the mill from one of cyanidation and floatation to straight cyanidation in 1947. During the period October 1940 to May 1946, the mine produced 524,002 tons with a mill head grade of 0.204 oz Au/sht. The total production of the mine between 1940 and 1955 was 1,837,807 tons grading 0.135 oz Au/sht.

ORE RESERVES. (Appendix 1).

In 1937, an exploratory shaft was developed to a depth of 500 feet on the basis of a drill indicated ore reserve of 188,000 tons grading 0.274 oz Au/sht. This reserve was modified to 171,224 tons grading 0.265 oz Au/sht, after the 375 foot and 500 foot level were developed. In all the ore reserve grades high assays were cut to 1 oz/sht.

An estimation of the New Senator Rouyn Ltd. Mine was undertaken by W.G. Wahl in 1981. The Mine Manager's last Annual Report, submitted January 1st, 1955, indicated that above the 2,775 foot level the mine contains 167,659 tons grading 0.139 oz Au/ton. According to Wahl, "the proven ore reserve figure for the New Senator Rouyn Ltd. mine (167,659) is composed of two components:-

i) 68,785 tons grading 0.155 oz Au/ton is believed to represent critical stope and pillar supports that are not readily available for extraction;

ii) 98,874 tons grading 0.127 oz Au/ton of which 75,928 tons at 0.130 oz Au/ton is in place and 22,946 tons @ 0.122 oz Au/ton is broken reserve.

Therefore the total actual "proven ore", available for extraction at the New Senator Rouyn Ltd. mine is 98,874 tons grading 0.127 oz Au/ton".

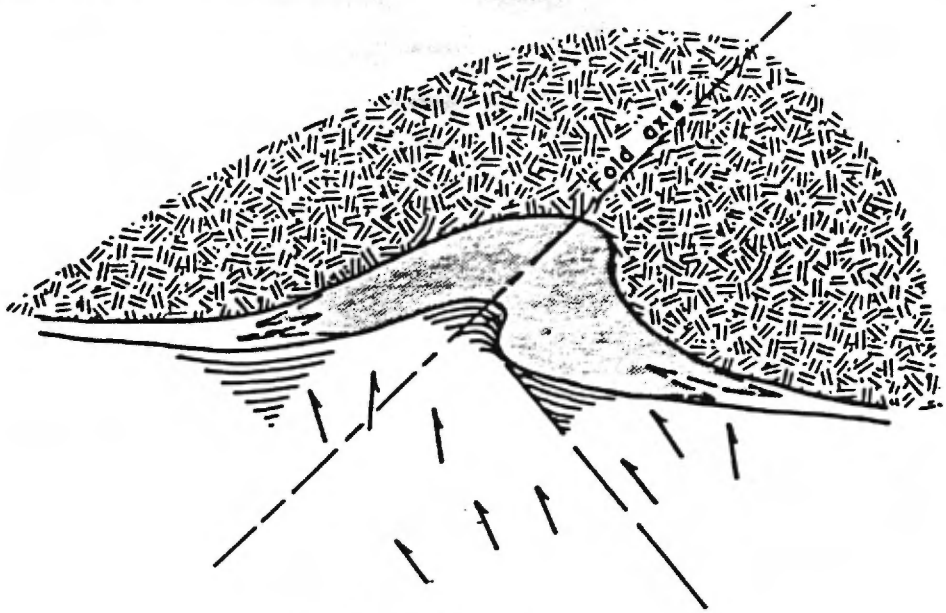
An interesting observation was made by Reid (1948) regarding the comparision between the drill indicated reserves; the mining grade; and the calculated mill head grade. According to Reid, "the ore reserve grade was approximately 24% lower than the ore recovered by mining."

(mining grade). He also noted, however, that the mining grade was 18% higher than the calculated mill heads (bullion plus tailings).

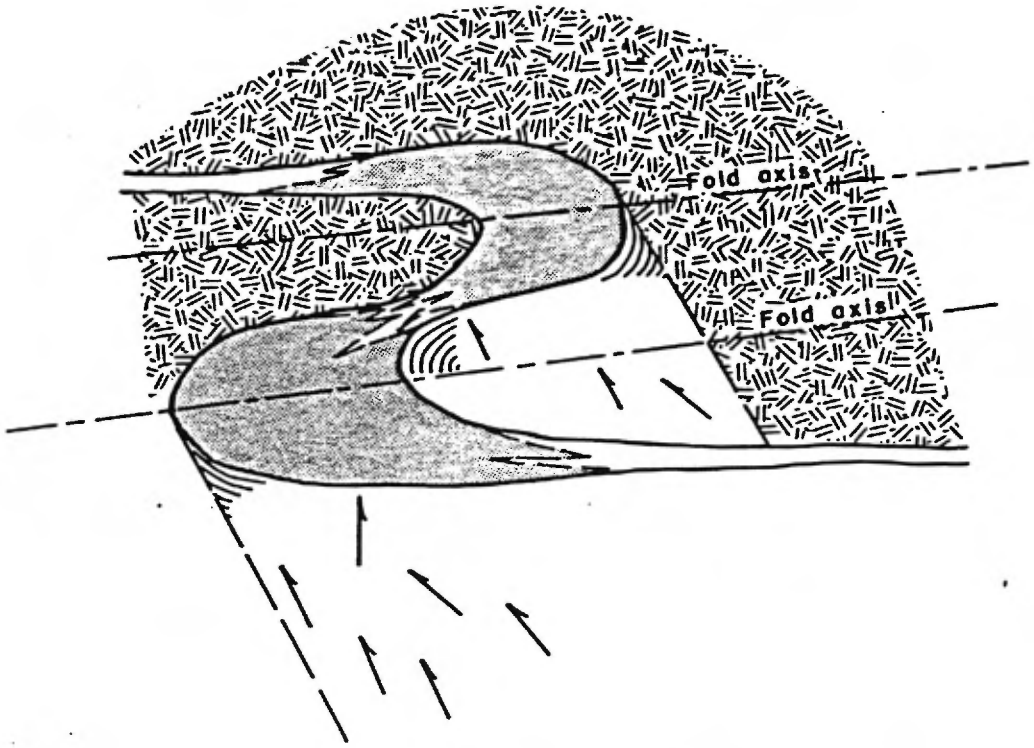
GEOLOGICAL CONCEPT

The Senator Rouyn deposit is a classical example of the economic concentration of gold mineralization associated with folds and flextures of a major fault structure. This relation between ore bodies and the folding has been known for many years. Perhaps one of best examples, within the Abitibi Region, of a deposit associated with a fault/fold structure is the Camflo Mine near Malartic Quebec (Appendix 2).

The basic premiss in epigentic gold deposits is that the major fault and/or shear zones tap the source of the gold bearing hydrothermal solutions and provide the pathway or conduit along which these solutions rise to the surface. These faults, however, although anomalous in gold (higher than .04 oz Au/sht), are narrow structures, consequently, they do not permit significant volumes of gold and its related minerals to accumulate. However, folds and flextures on the fault planes provide voids or areas of dilation (Fig 7a and 7b). Upon entering these areas of dilation there is a reduction of the dynamic pressure resulting in a boiling of the hydrothermal solutions with a corresponding deposition of their contained minerals, in this case they are generally gold, pyrite, tourmaline with a corresponding alteration the host rock. Figure 9 is a diagramatical representaton of the events leading to the deposition of the Senator Rouyn ore body. The alteration of the host rock in contact with the ore body is similar to that found in many gold deposits of the Abitibi Region, consisting of quartz, carbonate, albite



a) FLEXTURE



b) DRAG FOLD

LEGEND

- Relatively impermeable rock
- Fault/Shear Zone
- Gold mineralization
- Migrating hydrothermal solutions

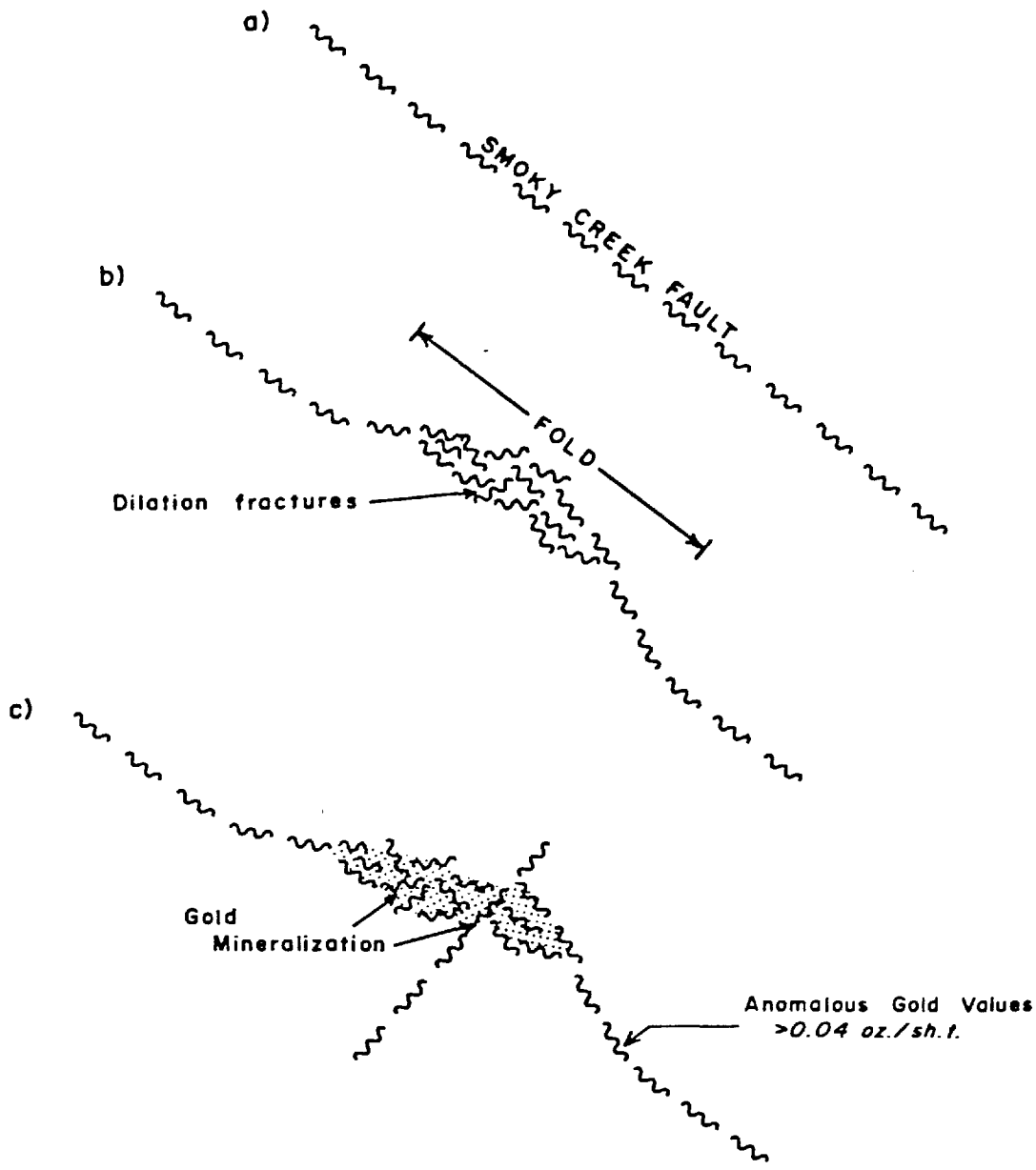
N.A.M.E.

FAULT / FOLD CONCEPT

Work by: Scammell & Associates Incorporated

Drawn by: D. R. S. Date: May 1986 Figure No. 7

"SENATOR - ROUYN" TYPE HYDROTHERMAL GOLD DEPOSIT



a) Development of Fault.

b) Folding of fault plane resulting in dilation / tension fractures.

c) Introduction of gold mineralization

N.A.M.E.

"SENATOR-ROUYN" TYPE HYDROTHERMAL GOLD DEPOSIT

Work by Scammell & Associates Incorporated

Drawn by D. R. S. Date May 1986 Figure No 8

and chlorite(Appendix 2). It should be noted that the accumulation of the auriferous mineralization usually restricted to one event but may be the result of multiple injections of hydrothermal fluids. Infact there is some evidence that inorder for a significant amount of gold to be accumulated the system must be active for a considerable amount of time. The Cadillac - Larder Lake Break and its associated structures are thought to have been very persistent structures which have been re-activated on a number of occasions. Consequently, this is believed one of the reasons for the proliferation of deposits in the vicinity of the "Break".

Recently the "Fault/Fold Concept" has been applied to gold exploration in the Abitibi Region by Lac Minerals et al. Their exploration programs are designed to identify and delineate flexturing and folding of fault and shear zones and associated intrusive. A recent application of this geological model by Aur Resources resulted in the discovery of the Orenada Zone 4, located on the Cadillac Break, to the southeast of Val d'Or. The original discovery was subjected to an intensive exploration program consisting of a drilling program trenching and bulk sampling by Brominco. This program, however, failed to identifty any economic mineralization. Aur Resources reviewed the Brominco data and concluded that the mineralization may be related to a fold structure. Subsequent, drilling identified a "Z" shaped fold with economic concentrations of gold within the noses of the fold. (Fig. 7b). To date, Aur Resources have identified

740,000 tons grading 0.16 oz Au/sht. to a depth of 850 feet. (N.M. Magazine, February 1986).

The main zone at the Senator Rouyn was located in a northeasterly plunging fold. The widest part of the zone is found in the axis of the fold and decreases along the limbs to the point where mineralization is uneconomic over the mining width of five feet. It should, however, be noted that the gold mineralization persists in low concentratrions throughout the fault plane. Therefore anomalous gold values (>0.04) associated with a fault or shear zone indicates the structure is auriferous and has the potential for an economic deposit. Low gold values, therefore, should not be dismissed by the statement, "you can drill almost any fault zone in the Abitibi region and obtain anomalous gold values."

The exploration development on the 850, 1300 and 2400 foot levels of the Senator Rouyn Mine have indicated the presence of additional mineralized fold structures on the Smoky Creek Fault. These occur approximately 2,000 feet to the northwest (West Zone) the southeast (East Zone) of the main zone (Appendix 6). Although some minor development and exploratory drilling and drifting has been carried out, these areas, particularly below the 1,300 foot level, remain relatively unexplored.

CONCLUSIONS

The Smoky Creek Fault is a proven gold bearing structure which hosts the Senator Rouyn mine. Underground mining and development at the Senator Rouyn Mine has demonstrated that although the majority of the fault zone is anomalous in gold, the economic concentrations of gold are restricted to specific areas on the fault plane. These areas are defined by flexturing and folding of the fault plane. The relationship between the ore bodies and the folded fault planes are extremely important in exploring for gold deposits. The identification and delineation of a fold structures by Aur Resources directly lead to the discovery of the Orenada Zone 4. In the Senator Rouyn mine, the exploratory development on the 850, 1300 and 2400 foot levels has indicated the presence of two additional fold structures (East and West Zones). Although some minor development and exploratory drilling has been conducted in these areas, they remain primary exploration targets. The fault structure to the northwest and southeast outside the present boundaries of the NSR Property do not appear to have been explored in any detail. Consideration, therefore, should be given to acquiring additional ground along the strike.

The four shears identified by stratigraphic drilling near the center of block 96 occur in the hanging wall of the Smoky Creek Fault. This is particularly significant in view of the recent success by Norex on their Ribago Property, 2.5km to the northwest of the Senator Rouyn Mine. To date, Norex has outlined 500,000 tons grading 0.165 oz Au/sht.

This deposit is believed to occur in a shear structure which is located in the hanging wall of and parallel to the Smoky Creek Fault. These four shear zones are, therefore, also prime exploration targets.

In addition, the fault zones of the Bagamac Senator "Y" and perhaps the No.2 Fault should be examined for their gold potential. However, only a limited amount of drilling can be carried out from surface since most of the Bagamac ground is covered by the town of Rouyn-Noranda. The ideal situation would be to explore these faults from undergound as proposed and partially carried out during the life of the Senator Rouyn Mine.

The aim of the exploration program should be to delineate sufficient tonnage and grade in the vicinity of the mine to warrant dewatering the shaft. If an ore zone(s) in excess of 500,000 tons grading 0.20 oz Au/sht. could be outlined then production from this would provide sufficient funds to cover the capital expenditure and facilitate additional underground exploration. Considering the history of the mine, this type of exploration target could easily be attainable if the west and possibly the east fold structures are similar to the main zone.

RECOMMENDATIONS.

Geophysical surveys, as demonstrated in the past, are of little value due to the abundance of cultural features on the property, consequently, the main exploration tool has to be that of diamond drilling. The proposed program has a distinct advantage over other similar exploration programs in that the two mineralized fold structures have already been defined and their rake, within certain bounds, can be predicted. This should lead to a very effective and efficient diamond drilling campaign.

It is of interest to bear in mind a few points that have lead to the recent sucess of Aur Resources in identifying and delineating the fold structures, they are:-

a) Due to the continual changes in the rake or plunge of the fold it is necessary to drill at least 3 holes on each section. The information from these holes allows for a better definition of the geology and the identification of structural deformation.

b) Because of the changes rake or plunge of the fold axis. It is necessary to revise the drilling pattern to compensate for these changes. As demonstrated in the Senator Rouyn Mine, the thickest part of the ore body is found in the axis of the fold. Therefore, by constantly calculating and plotting "grade x thickness" a crude trace of the fold can be obtained and the diamond drill program can be adjusted accordingly.

The recommendations for the initial phase of the exploration program are given below:-

a)WEST AND EAST ZONES.

The primary targets for the exploration are the West and East zones of the Smoky Creek Shear Zone. Ten holes should be drilled as shown on the long sections to define mineralized folds. The main aim of the holes is to intersect the mineralization at its widest point i.e., the axis of the fold. Once this initial series of holes has been drilled, additional intersections can be obtained by wedging from the original hole. Consequently all casings should be left in the holes and in any holes which may intersect the underground workings or areas that have potential for future mining. It should be noted that these holes will also test the hanging wall for additional mineralized structures.

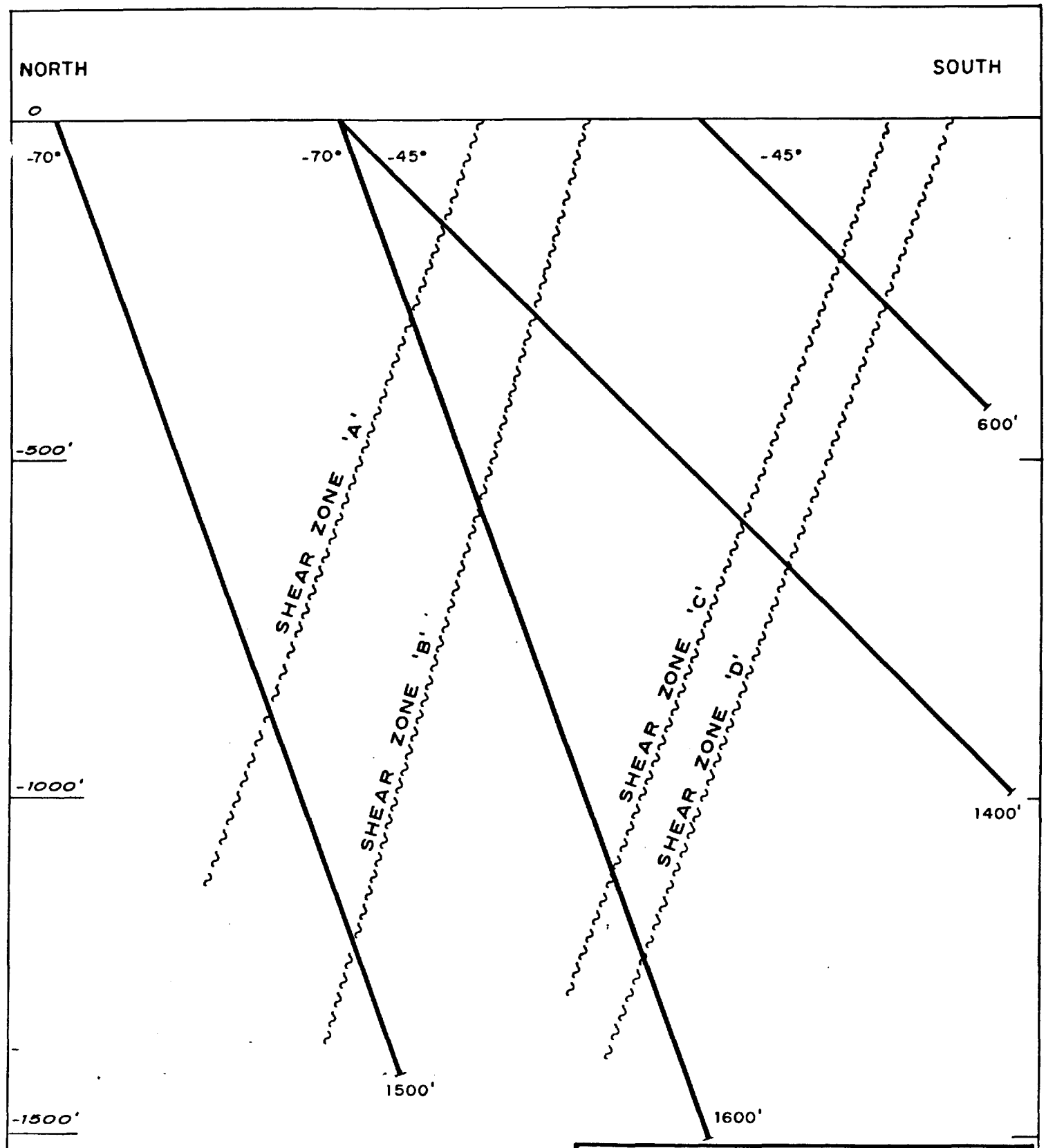
b)STRIKE POTENTIAL.

The previous production has demonstrated that the mineralization concentrates in the axes of the folds which distort the Smoky Creek Fault. Presently there is an indication that these folds are repetative, occuring at intervals of between 1,800 and 2,000 feet along the strike of the fault. Those folds within the property have already been delineated, however, outside the present property most of the exploration has been directed to defining east-west fault structures and the strike extensions of the Smoky Creek Fault remain relatively untested. It is therefore, recommended that the possibility of optioning additional property to the northwest

and southeast be investigated. If such property is optioned the experience gained from the NSR Property would be invaluable in exploring the strike extensions of the Smoky Creek Fault as well as other potential auriferous structures.

c) Hanging Wall Shear Zones

Although the gold values obtained from these four shear zones are low, the alteration is typical of that associated with gold mineralization. A drilling program is recommended for these zones to identify mineralized fold structures. It is recommended that these zones be drilled on sections, 300 feet apart, with a drill pattern as indicated in figure 9.



Scale 1" = 200'

0 200 400

FEET

N. A. M. E.

PROPOSED

DRILLING LAYOUT for 1986 EXPLORATION PROGRAM of HW. SHEAR ZONES

Work by: Scammell & Associates Incorporated

Drawn by: R. Ortiz Date: May 1986 Figure No. 9

BUDGET 1986

An estimate of the cost of the recommended program is outlined below:

Phase 1

East and West Fold Areas 3,650 m (11,975ft) @ $75/m (all inclusive)	$ 273,750
North Shear Zones 12,200 m (40,026ft) @ $75/m (all inclusive)	915,000
Line Cutting or part of the property 25 km @ $160/km	4,000
Verification of surface outcrops 15 days @ $600/day	9,000
Total Phase 1	$1,201,750

Phase 11

Follow-up drilling of East & West Fold Areas - 4150m (13,615ft) @ $75/m (all inclusive)	$ 311,250
Total Phase 1 and 11	1,513,000
Supervision 10%	151,300
Sub-Total	$1,664,300
Contingency (15%)	249,645
Grand Total	$1,913,945

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GM 20741 Surface Plan of Senator Rouyn Property. S.H. Ross, 1939, 1" = 300'.

GM 20742 Senator Rouyn Mines Ltd. Surface Sketch showing Ore Zone and Surface Drilling. Approx. 1" = 400'.

GM 20743	Senator Rouyn, Surface Plan Sheets 24-10 and 34-10 1" = 40', April 1940.
GM 20744	Senator Rouyn Ltd., Main Showing Trenches 1" = 8'.
GM 20746	Senator Rouyn Ltd., 8 assay Plans, 375 and 500 Levels, 1940, 1" = 20'.
GM 20748	Senator Rouyn Mines Ltd., Drill Logs, May 1950.
GM 20748	Senator Rouyn Ltd., Diamond Drill Logs, May 23, 1950, holes S1 to S138.
GM 20771	Stadacona Mines Ltd., 1 Plan of Surface Plan of Diamond Drilling, 1" = 200'.

APPENDIX 1

An Evaluation, New Senator Rouyn Mine Ltd.

A N

E V A L U A T I O N

NEW SENATOR ROUYN LIMITED MINE

NSR RESOURCES INC.

14 August 1981

W. G. Wahl Limited

TABLE OF CONTENTS

ACCOMPANYING MAPS:

Drawing No. 1 - Surficial Geology and Topographical Data
Drawing No. 2 - Longitudinal Section N55°45'W
Drawing No. 3 - Horizontal Projection
Drawing No. 4 - Level 125 Geology
Drawing No. 5 - Level 250 Geology
Drawing No. 6 - Level 375 Geology

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TABLE OF CONTENTS

(continued)

INTRODUCTION

The following evaluation and subsequent report was commissioned by the President and Directors of NSR Resources Inc. and was carried out by W. G. Wahl Limited under the direct supervision of D. G. Wahl, P.Eng., Consulting Engineer, assisted by Z. D. Gyongyossy, B.Sc. and G. W. Booth, B.Sc. The evaluation and report is based on our examination of all available company data and government publications. A personal visit to the property was not undertaken since no advantage would be served by doing so, due to the flooded nature of the old mine workings.

GENERAL

The New Senator Rouyn Limited mine, situated approximately 1.5 miles (2.3 km) southwest of the city of Rouyn, is located in ranges VI and VII of Rouyn Township in Northwestern Quebec (Figure 1). The mine site consists of 599 acres and is readily accessible by provincial road and railway. During the operating life of the mine (October, 1940 to November, 1955), 1,837,807 tons of ore grading about 0.13 ounces of gold per ton, having a value of approximately $8,708,520 was recovered (Q.D.N.R. Spec. Paper No. 2, 1967).

HISTORY

Gold, occuring in a rusty weathered carbonatized outcrop, was first found on the New Senator Rouyn property in 1936. Subsequent trenching on surface uncovered a good grade vein (central width of 7') which had several short high grade shoots. In order to proceed with the

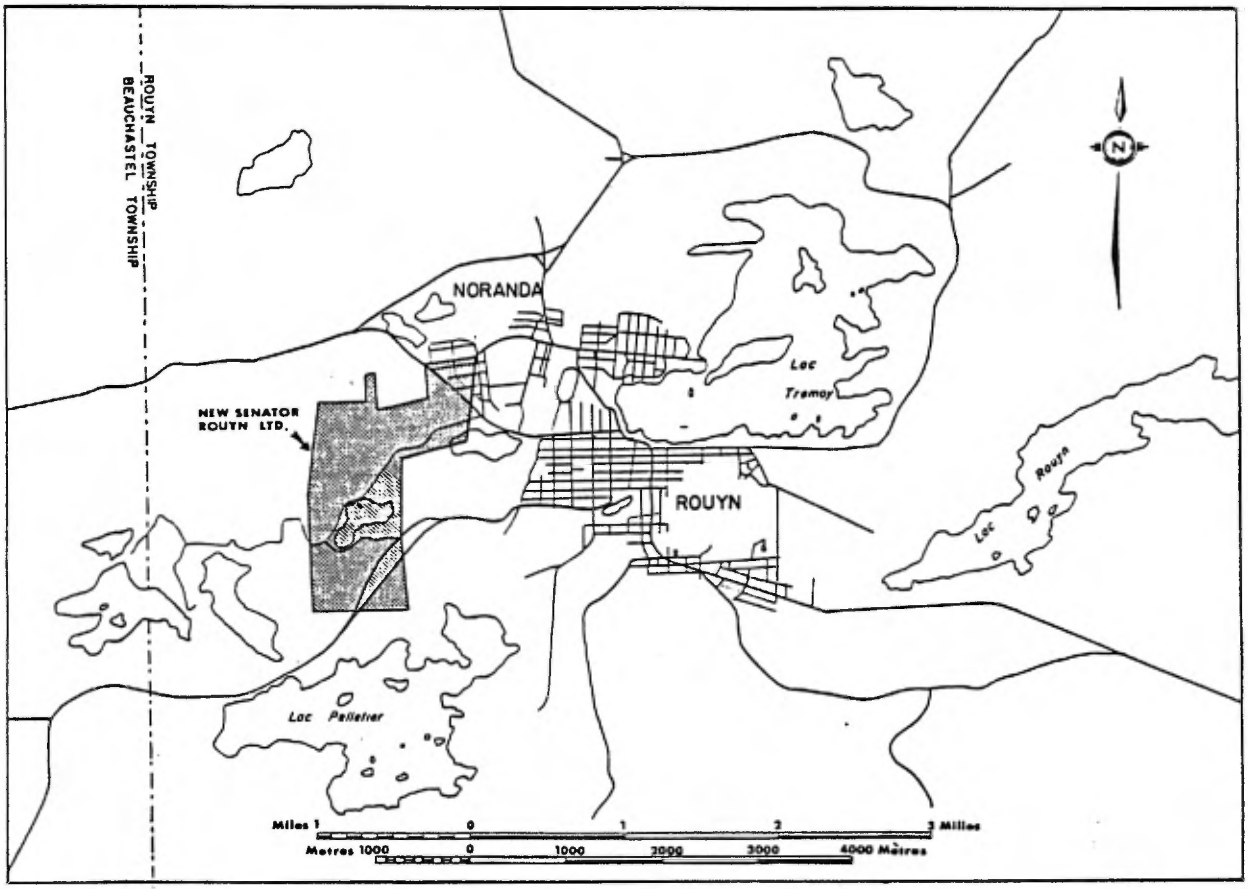


FIGURE 1. LOCATION MAP

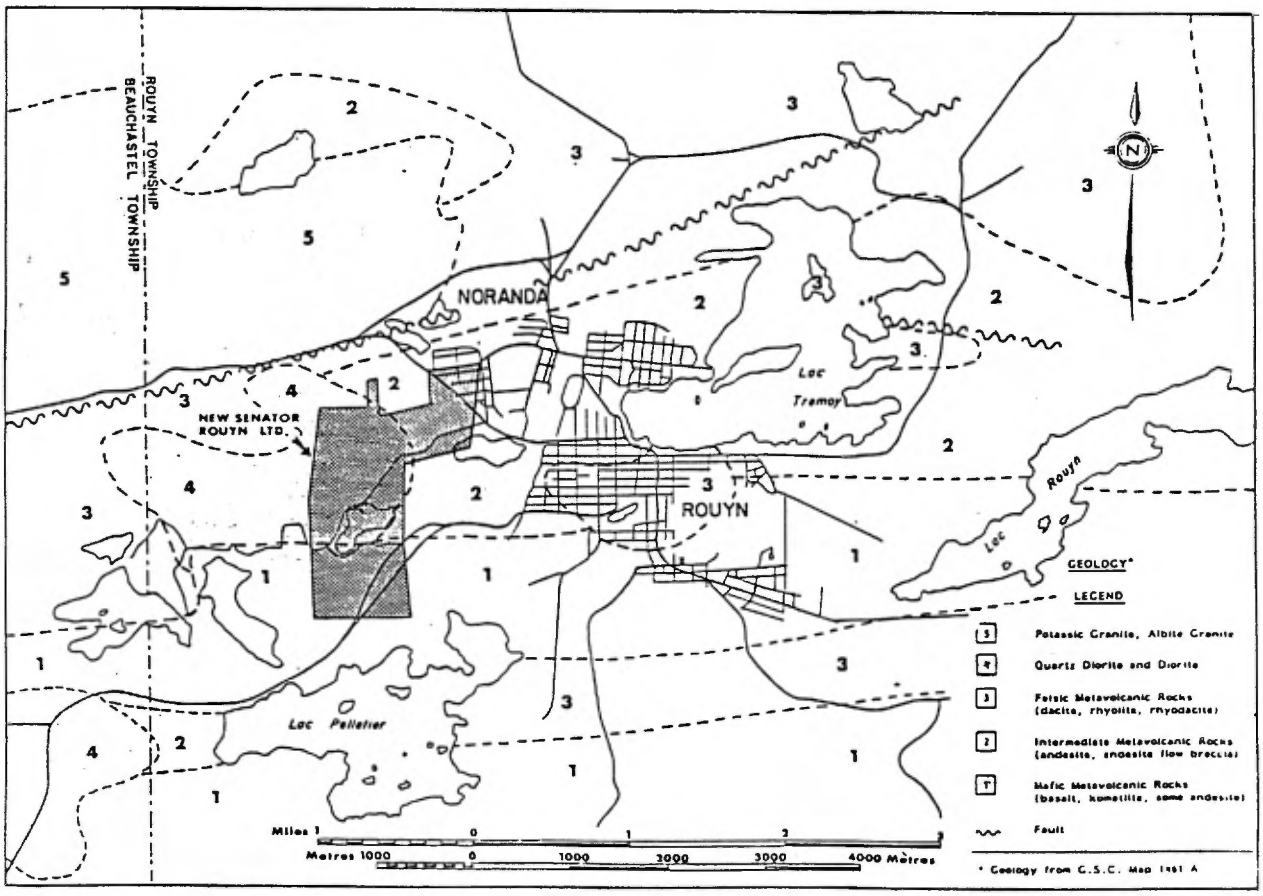


FIGURE 2. GENERAL GEOLOGY MAP

development of the property, Senator Rouyn Limited was incorporated under a Quebec mining charter in March 1937.

During 1937 and 1938, a total length of 17,000 feet of diamond drilling was completed to determine the extent of the deposit at depth and a shaft was sunk to the 500' level (Wilson & Lee, 1948; Dresser and Denis, 1949).

Mine production began October 15, 1940, and from the period to April 15, 1941, ore was treated in the neighbouring Arntfield Gold Mines Limited mill (Wilson & Lee, 1948). On April 25, 1941, a 330 ton cyanide and floatation mill commenced operation on the Senator Rouyn property (Wilson, 1962). The conversion of the mill to a straight cyanide process in 1945 and the installation of new equipment in 1947-48 resulted in a mill capacity of 600 tons a day and a more cost-effective method of ore treatment (Canadian Mines Handbook, 1945-47-48).

In September, 1952, the company's name was changed from Senator Rouyn Ltd. to New Senator Rouyn Ltd. (Canadian Mines Handbook, 1953). All operations ceased at the end of November, 1955. During the span of time from 1940 to 1955, the New Senator Rouyn Ltd. mine yielded $8,708,520 from 1,837,807 tons of ore grading about 0.13 oz Au/ton. At the close of operations in 1955, there was a three-compartment shaft extending to 2000', a three-compartment winze extending from the 1875' level to 2800' and 21 levels of drifting. Shortly after the mine's closing, mill and mining equipment were sold.

MINE DESCRIPTION

Geology:

The New Senator Rouyn Ltd. property is underlain by rocks

of Precambrian age. The predominant rock type throughout most of the mine (wallrock of the ore zone) is a medium to moderately coarse grained massive quartz diorite. In the northern part of the property, inclusions of rhyolite occur throughout the quartz diorite (refer to accompanying Surficial Geology Map - Drawing No. 1). In the southern part of the property, the most extensive rock is a grey oligoclase-quartz-chlorite bearing dacite. The later, east-west trending (S65°E), steep north dipping felsic-to-intermediate volcanics belong to the Blake River Group and have tops facing the north (Derry, 1930, Q.D.N.R., Spec. Paper No. 2, 1967).

In diamond drill cores and mine workings, dykes of andesite and feldspar porphyry were found crosscutting both volcanic rocks and the quartz diorite. The andesite and feldspar porphyry are believed to represent phases of the diorite and felsic intrusives respectively, that occur extensively in the Noranda-Rouyn area (Figure 2). All of the later Archean rocks have been metamorphosed to greenschist facies.

Younger, Proterozoic NW-SE trending porphyritic olivine-bearing diabase and NE-SW trending quartz-bearing diabase dykes, having uncertain crosscutting relationships, intrude the older sequence of rocks.

Structure:

The principal structural feature of the New Senator Rouyn Ltd. mine is the association of the ore with a northwest-striking (N56°W), northeast dipping (50°NE) fault which cuts quartz diorite (Q.D.N.R., Spec. Paper No. 2, 1967; Wilson & Lee, 1948; Wilson, 1962). Subsequent folding of the fault plane resulted in the formation of two northeast-plunging anticlinal structures. The larger northern-most anticlinal structure contains the Main Ore Zone while the southeastward anticlinal structure

contains only minor quantities of gold mineralization (East ore zone = 875 level SE zone, 1375' level SE zone, 2475' level East zone).

On some levels (875' - 1625') movement along the fault resulted in the main ore zone being broken into two parallel striking bands (No. 1 hanging wall ore zone, and No. 2 south footwall ore zone). Upward movement of the north hanging wall with respect to the south footwall indicated the major fault associated with the ore body is of the reverse type (Wilson & Lee, 1948; Wilson, 1962).

At the western edge of the main ore zone, minor northeast trending rotational cross-faults of small displacements were found in the upper levels of the mine (ie. No. 1 West fault).

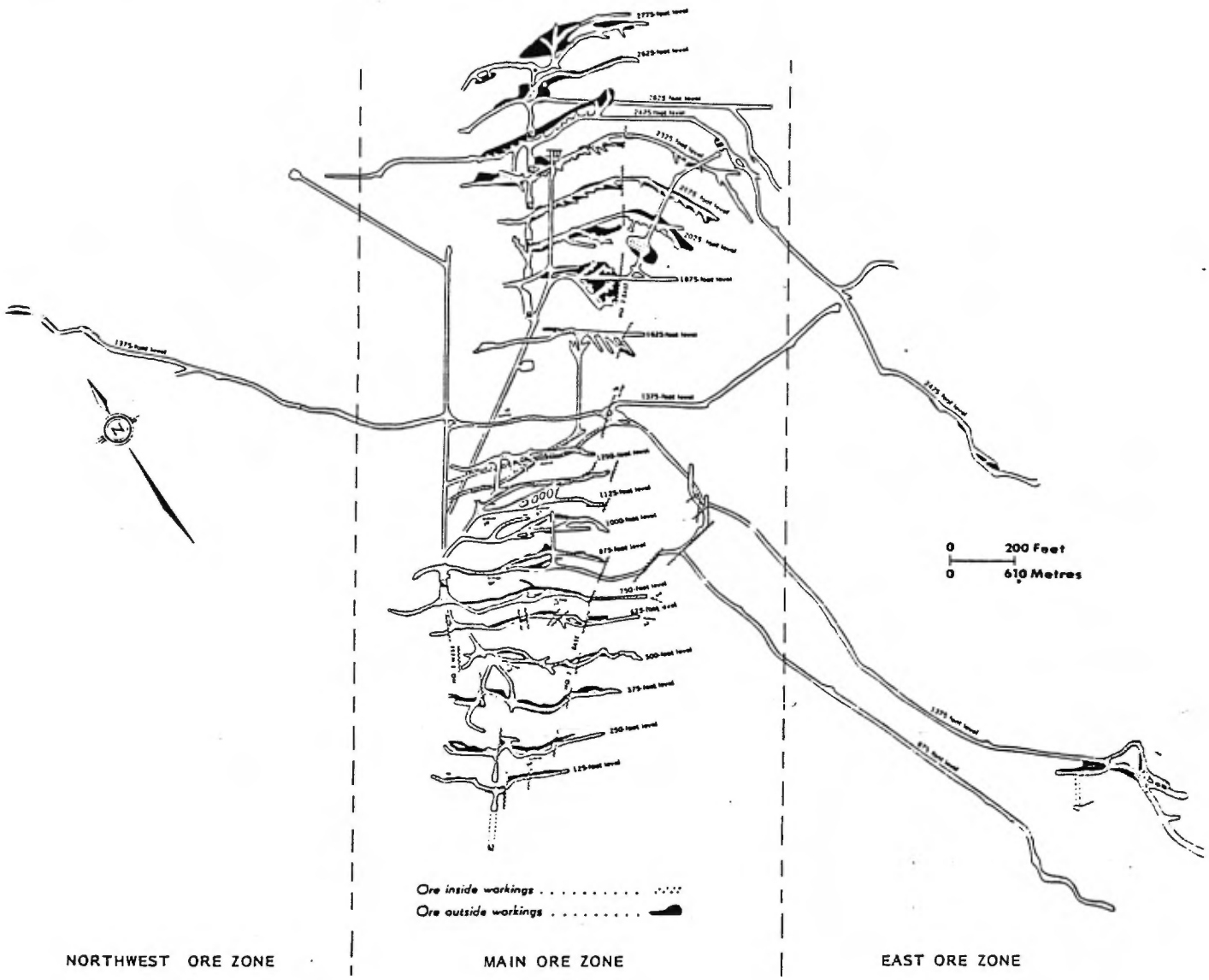
The eastern part of the main ore zone in the upper levels is characterized by the presence of east-northeast striking steeply north dipping faults designated as the 'Y' faults. The No. 2 East transverse fault, found on the lower levels of the main ore zone, is thought to be the downward expression of the 'Y' fault.

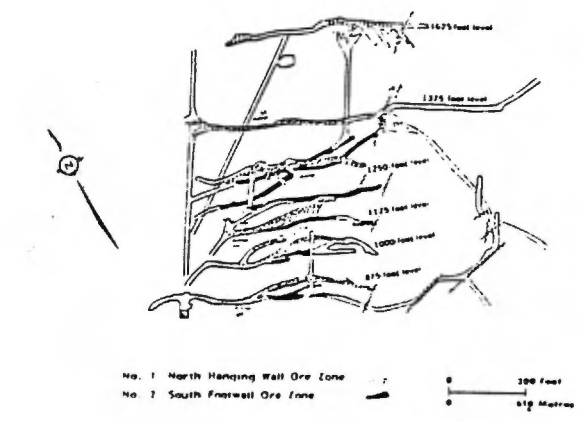
Nature of Mineralization:

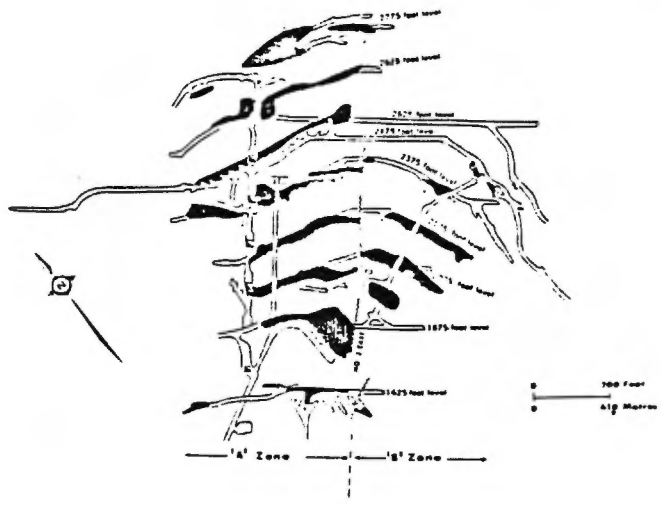
The ore deposits comprising the New Senator Rouyn Ltd. mine, occur in zones of carbonatized rock cut by quartz veins which are similar to the zone of alteration associated with major faults elsewhere in Archean rocks of northwestern Quebec.

The Main Ore Zone, between the 875' and 1625' level, occurs as two partially parallel northwest striking, northeast dipping tabular panels (Figure 3). The No. 1 hanging wall ore zone occurs in a zone of shearing and alteration striking N50°W and dipping 45 to 52° NE and maintains a remarkably uniform drift length of 500 to 600 feet. The No. 2 Footwall ore

FIGURE 3. NEW SENATOR ROUYN LIMITED SPATIAL DISTRIBUTION OF ORE DEPOSIT







zone, which has a dip ranging between 40 - 60°NE, is displaced as much as 130' southwest of the No. 1 ore zone on the 1375' level (Dresser & Denis, 1949). Both ore zones are characterized by the presence of gouge, broken rock and grooved slickensided surfaces (Wilson, 1962).

Below the 1875' level, the main ore zone bends sharply toward the SE and occurs as a mass that strikes at 56°W and dips at 54°NE and attains widths in excess of 85'. Below this level, the main ore zone adjoins the No. 2 East transverse fault and again separates into two separate ore bodies. The 'B' zone, situated east of the No. 2 East fault, strikes toward the north and dips to the NE while the 'A' zone, west of the No. 2 East fault, trends to the northwest and dips to the northeast (Figure 3).

The East Ore Zone, situated in the axial plane of the southeast anticlinal structure (875' east zone, 1375' southeast zone, 2475' east zone) is a single N-NW striking, NE dipping tabular mass (Figure 3). With the exception of production figures, little information concerning the structure and nature of the 1375' level Northwest Ore Zone is available.

The ore in all three zones (Main, East and Northwest) consists of free gold and sulfide associated gold which occurs in irregular aggregates and veins of grey highly factured quartz in a carbonatized, silicified schistose pyritic matrix composed mainly of ankerite, green mica (fuchsite), white mica (sericite), chlorite and plagioclase. Tourmaline, graphite and chalcopyrite were locally noted occurring in the quartz.

COMPILATION OF MINE DATA

Construction of Level Plans:

The level plans that accompany this report were compiled and drawn from New Senator Rouyn Limited mine's drift plans, stope maps and

geological 'thumb nail' sketches, used in grade control. Reconstruction of the level plans was facilitated by using pre-existing horizontal projections that gave the basic configuration of the drifts and subsequent 'piecing together' of 'thumb nail' sketches using mine survey points as controlled register marks. Generally speaking, control during level reconstruction was good; however, insufficient information prevented reconstruction of the 375' level. The poor physical quality of some 'thumb nail' sketches, coupled with illegible underground notes often made interpretation of geological information difficult. When the latter problem was encountered, a subjective interpretation, based on information known about adjacent levels and the general mine geology was employed.

Estimation of Ore Reserves:

Estimation of ore reserves of the New Senator Rouyn Ltd. mine was obtained principally from the mine manager's last annual report, submitted January 1st, 1955. Examination of Table 1 and Table 2 indicates that above the 2775' level, the New Senator Rouyn Limited mine contains 167,659 tons grading 0.139 oz Au/ton of "proven ore" (measured ore) which is defined as:

> *that material for which tonnage is computed from dimensions revealed in outcrops or trenches or underground workings in drill holes and for which the grade is computed from the results of adequate sampling, and for which the site for inspection, sampling and measurement are so spaced and the geological character so well defined that the size, shape and mineral content are established, and for which the computed tonnage and grade are judged to be accurate within limits which shall be stated and for which it shall be stated whether*

TABLE 1. ESTIMATED ORE RESERVES-DECEMBER 31st, 1954

Location Level	Wording Place	Available Reserve In Place Tons	In Place Grade	Broken Reserve Tons	Broken Reserve Grade	Total Tons	Total Grade	Not available Tons	Not available Grade	Totals Total Tons	Totals Total Grade	Totals Percentage Tons	Totals Percentage Grade	Cumulative Tons	Cumulative Grade	Cumulative Percentage Tons	Cumulative Percentage Grade
Total 125								490	0.242	490	0.242	0.29	0.51	490	0.242	0.29	0.51
Total 250								2590	0.251	2590	0.251	1.43	2.68	2680	0.258	1.72	3.19
Total 375								2160	0.288	2160	0.288	1.29	2.67	5040	0.271	3.01	5.86
Total 500								8250	0.163	8250	0.163	4.92	5.78	13290	0.204	7.93	11.64
Total 625								1420	0.145	1420	0.145	0.85	0.88	14710	0.198	8.78	12.52
Total 750								1650	0.224	1650	0.224	0.98	1.59	16360	0.201	9.76	14.11
Total 875								-						16360	0.201	9.76	14.11
Total 1000								280	0.143	280	0.143	0.17	0.17	16640	0.200	9.93	14.28
Total 1125								-						16640	0.200	9.93	14.28
Total 1250								3070	0.155	3070	0.155	1.83	2.04	19710	0.193	11.76	16.32
	1375 west 1305-6 St. 1307 St.	1585 4200	0.125 0.125	 12589 47	 .122 .112	1585 16789 47	0.125 0.123 0.112			1585 16789 47	0.125 0.123 0.112						
Total 1375		5785	0.125	12636	.122	18421	0.123	2500	0.125	20921	0.123	12.48	11.07	40631	0.157	24.24	27.39
Total 1500								857	0.150	857	0.150	0.51	0.55	41488	0.157	24.75	27.94
Total 1625								-						41488	0.157	24.75	27.94
Total 1750								1623	0.168	1623	0.168	00.97	1.17	43116	0.157	25.72	29.11
Total 1875								3892	0.147	3892	0.147	2.32	2.46	47008	0.156	28.04	31.57
Total 2025								11400	0.172	11400	0.172	6.80	8.42	58408	0.159	34.84	39.99
Total 2175								-						58408	0.159	34.84	39.99
Total 2325								-						58408	0.159	34.84	39.99
	2401 ABC 2101 K St.	21029 2205	0.123 0.120	129 524	0.100 0.120	21157 2729	0.123 0.120	6198	0.132	27355 2729	0.125 0.120						
Total 2475		23234	0.123	652	0.132	23886	0.123	6198	0.132	30084	0.125	17.94	16.13	88492	0.148	52.78	56.12
	2601 A B	43809	0.133	-		43809	0.133	-		43809	0.133						
Total 2625		43809	0.133	-		43809	0.133	-		43809	0.133	26.13	25.03	132301	0.143	78.91	81.15
	2701 A B 2701 W	3100	0.125	9158 500	0.122 0.115	12258 500	0.123 0.115	22600	0.125	34858 500	0.124 0.115						
Total 2775		3100	0.125	9658	0.122	12758	0.122	22600	0.125	35358	0.124	21.09	18.85	167659	0.139	100.00	100.00
Total		75933	0.130	22946	0.122	98874	0.127	68785	0.155	167659	0.139	100.00	100.00	167659	0.139	100.00	100.00

From: New Senator Rouyn Limited Mine Manager's Annual Report, January 1st, 1955, page 18.

TABLE 2. ORE RESERVES

The following is a summary of the ore reserves of New Senator Rouyn Limited Mine as of December 31, 1954.

LOCATION	TONS	GRADE
Above the 1875 Level		
Available		
1375 West Zone	1,585	0.125
1375 East	16.836	0.123
Not Available	28,587	0.178
From 1875 to 2025 Level		
Not Available	11,400	0.172
From 2025 to 2175 Level	Nil	-
From 2175 to 2325 Level	Nil	-
From 2325 to 2475 Level		
East Zone	2,729	0.120
'A' Zone	21,157	0.123
Not Available	6,198	0.132
From 2475 to 2625 Level		
'A' Zone	43,809	0.133
FROM 2625 to 2775 Level		
'A' Zone	12,758	0.122
Not Available	22,600	0.125
TOTAL	167,659	0.139

After: New Senator Rouyn Limited Mine Manager's Annual Report, January 1, 1955, page 17.

the tonnage and grade of proven ore or measured ore are in situ or extractable.

The proven ore reserve figure for the New Senator Rouyn Ltd. mine (167,659 tons) is composed of two components:

i) 68,785 tons grading 0.155 oz. Au/ton is believed to represent critical stope and pillar supports that are not readily available for extraction;

ii) 98,874 tons grading 0.127 oz. Au/ton of which 75,928 tons @ 0.130 oz. Au/ton is in place and 22,946 tons @ 0.122 oz. Au/ton is broken reserve ore.

Therefore the total actual "proven ore" available for extraction at the New Senator Rouyn Ltd. mine is 98,874 tons @ 0.127 oz. Au/ton. Confirmation of the latter figure or derivation of an independent "proven reserve" figure could not be done with the information provided.

Due to the uncertain nature of vein mineralization and the complete lack of any diamond drill hole information, any "probable ore" present in the different levels of the mine or at depth below the 2775' level could not be quantitatively estimated. However, all indications suggest that below the 2775' level the 'A' ore zone should continue and have dimensions and tenor of mineralization similar to that of the mine's lower levels (refer to Horizontal Projection of Mine Levels - Drawing No. 3).

CONCLUSIONS

The results of our evaluation of NSR Resources Inc.'s New Senator Rouyn Limited mines indicates:

- gold mineralization is associated with a NW striking (N56°W), NE dipping (50°NE) fault located within a massive medium to

coarse ground quartz diorite;

- mineralization, which exists as free gold and sulfide (pyrite) associated gold, occurs in three distinct zones (East Ore Zone, Main Ore Zone, Northwest Ore Zone) along the plane of the fault;

- all mineralized areas in the mine are similar and consists predominantly of a schistose quartz-carbonate-chlorite ± fuchsite ± sericite ± tourmaline matrix;

- "proven ore" above the 2775' level, which consists of that material broken and remaining in the stopes or insitu and can be extracted, is estimated by the Mine Manager at the close of oeprations in 1955 as being 98,874 tons grading 0.127 oz. Au/ton;

- the lack of diamond drill hole information prevents any estimation of "probable ore" present in the different levels of the mine or at depths below the 2775' level. However, in all probability, the 'A' ore zone should continue below the 2775' level.

All of which is respectfully submitted.

Sincerely yours,
W. G. WAHL LIMITED

Z. D. Gyongyossy, B.Sc.
Project Geologist

D. G. Wahl, P.Eng.
Consulting Engineer

ZDG,DGW/pl

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APPENDIX 2

Mine Descriptions

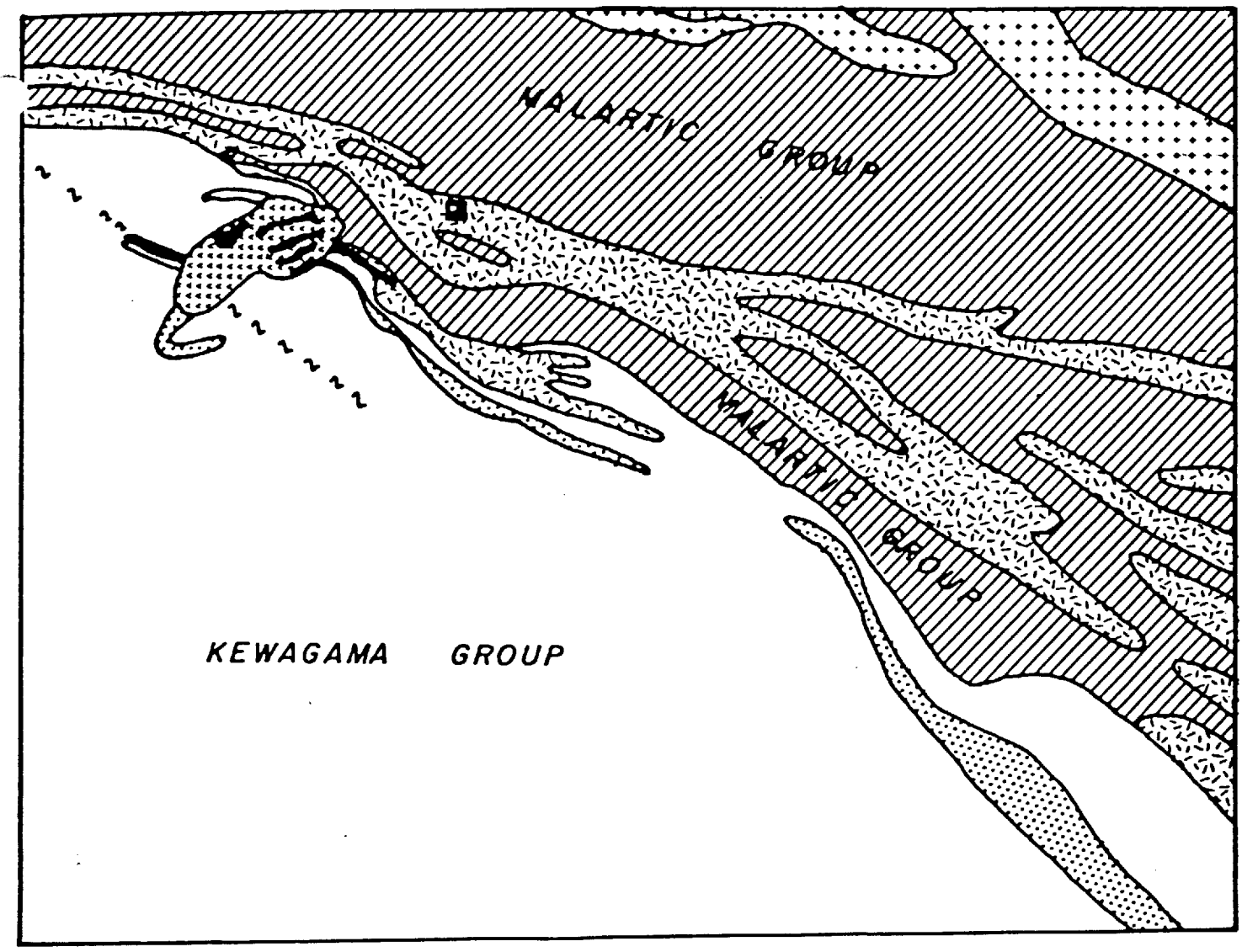
i) Camflo
ii) Lamaque
iii) Stadacona

CAMFLO MINE (Latulippe 1976, 1980).

In 1980, the Camflo Mine was the sixth largest gold producer in Canada. Since mining began in 1965, the mine produced 5,768,309 tons at an average grade of 0.219 oz. Au/ton. The mine, located approximately 4 km to the east of the town of Malartic was discovered through drilling a magnetic anomaly associated with a band of folded iron formation. Subsequent surface diamond drilling outlined 1.2 million tons grading 0.22 oz. Au/ton. The original reserve estimate was accurate as to grade but far underestimated the size of the deposit.

The main Camflo orebody is located within monzonite porphyry (mine term "Feldspar porphyry") at the contact between the Malartic Group of volcanic rocks and the overlying Kewagama sediments (Figure 2-1). The porphyry plunges at 55 deg. to the northeast remaining at the same stratigraphic position over its known depth. It is in the form of an oval stock approximately 300 ft. by 600 ft. and plunges parallel to a large drag fold within the enclosing volcano-sedimentary package.

There are at least eight parallel faults which intersect the rock units at different levels. These faults have a strike of N55 deg W and dip at 45 deg. to the northeast. Only one of these faults is shown on Figure 2-1. The displacement along the faults which are between 10 and 150ft. apart, is not significant. They appear to be the channelways for the hydrothermal fluids which were responsible for the host rock alteration and the transportation of the gold.



CAMFLO MINES LIMITED

MALARTIC TOWNSHIP

LEGEND

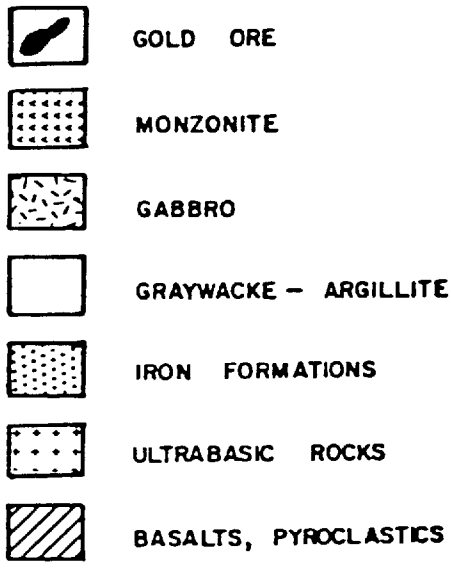


Figure 2-1

In the main intrusive pipe approximately 25% of the intrusive is ore while the remainder is sub-economic. Individual ore zones may be up to 130 ft. wide, over 400 ft. long and more than 400 ft. deep. The richer parts of the orebody contain 3 - 5% white-grey quartz stringers and 1 - 3% disseminated pyrite. Small specks of visible gold are common within the quartz stringers and are closely associated with the pyrite crystals.

Outside the porphyritic stock, smaller orebodies are located where the faults intersect rocks which have a high iron content, i.e., iron formations and gabbro or diorite (mine term). Where the faults intersect the magnetite iron formations a considerable amount of pyrite has been generated from the reduction of the iron oxide (magnetite). It is within these zones that the highest gold values occur although because the iron formations are relatively thin their tonnage potential is small.

LAMAQUE MINES LTD. (Bedard, 1976)

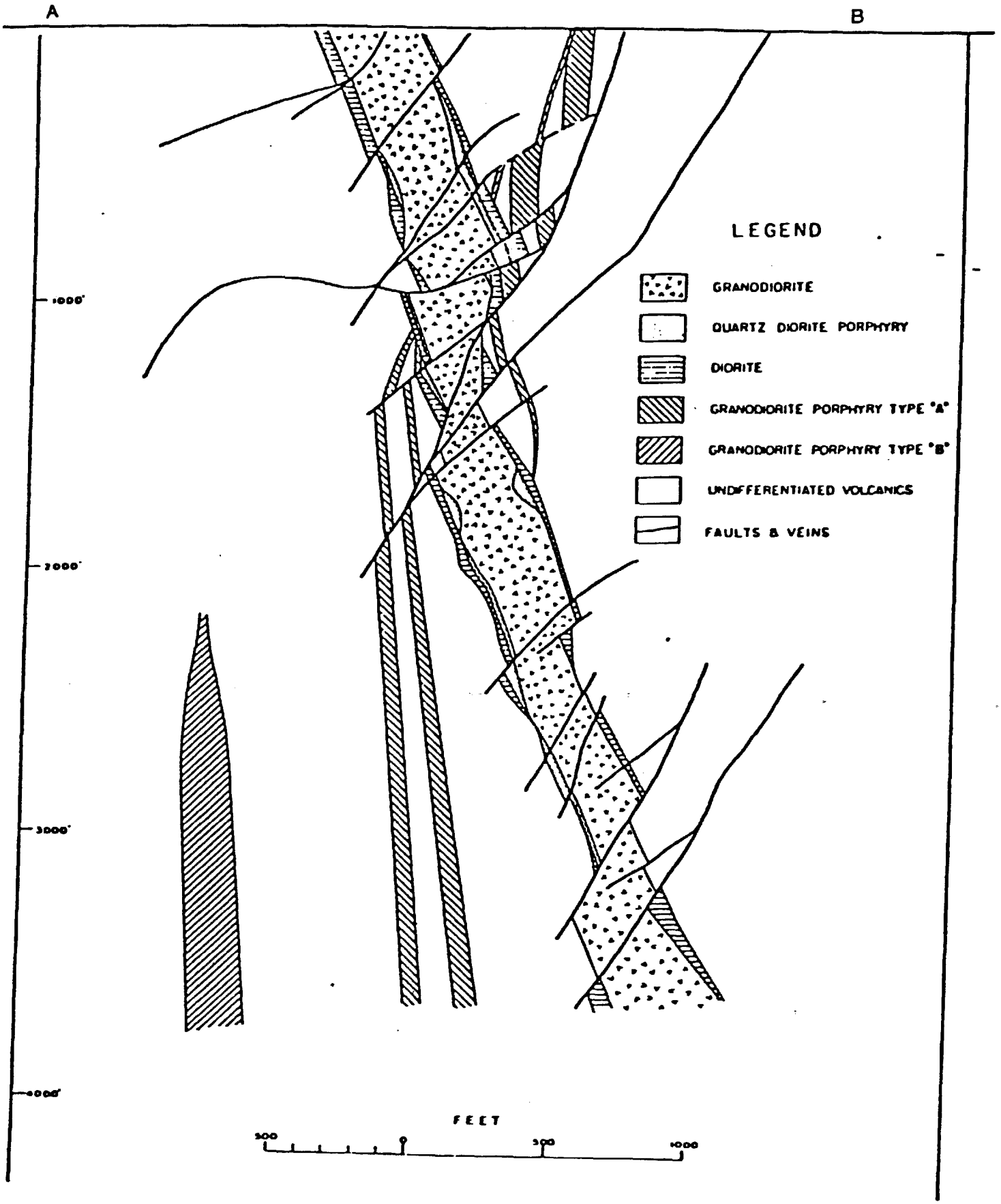
Gold was first discovered at the Lamaque in the fall of 1923. The official opening of the mine took place in March, 1933 with ore reserves of 74,495 tons grading 0.31 oz. Au/ton. The main production shaft now reaches a depth of 3,680 ft., with the bottom level at 3,600 ft. below the surface.

The value realized by Lamaque from the bullion produced between April 2, 1935 and September 30,1979 was $211,838,611. This was produced from the following areas (Figure 2-2).

Areas	Tons Milled	Oz./Ton	Total Oz.
Main Plug	18,306,723	.202	3,699,005
East Plug	2,999,842	.115	343,827
West Plug	1,644,606	.133	219,014
"35" Zone	518,282	.068	35,083
Northwest Zone	168,056	.119	20,003
No. 2 Mine Flats	727,297	.170	123,450
No. 3 Mine	139,185	.211	30,711
No. 3 Mine	318,560	.183	58,536
Total Production to Sept. 30, 1979	24,822,551	0.183	4,529,629

The property is underlain by both intrusive and extrusive igneous rocks. A series of andesitic and dacitic rocks, belong to the Malartic Group, are the oldest rocks on the property. They strike in an east to west direction and dip vertically or at a steep angle. These rocks have been intruded by a series of dykes and irregular bodies ranging in composition from diorite to albite granodiorite.

The most important mineralized intrusive referred to as the "Main Plug", is a chimney-like stock approximately



Vertical Cross-Section through the Main Plug, Lamaque Mine

Figure 2-3

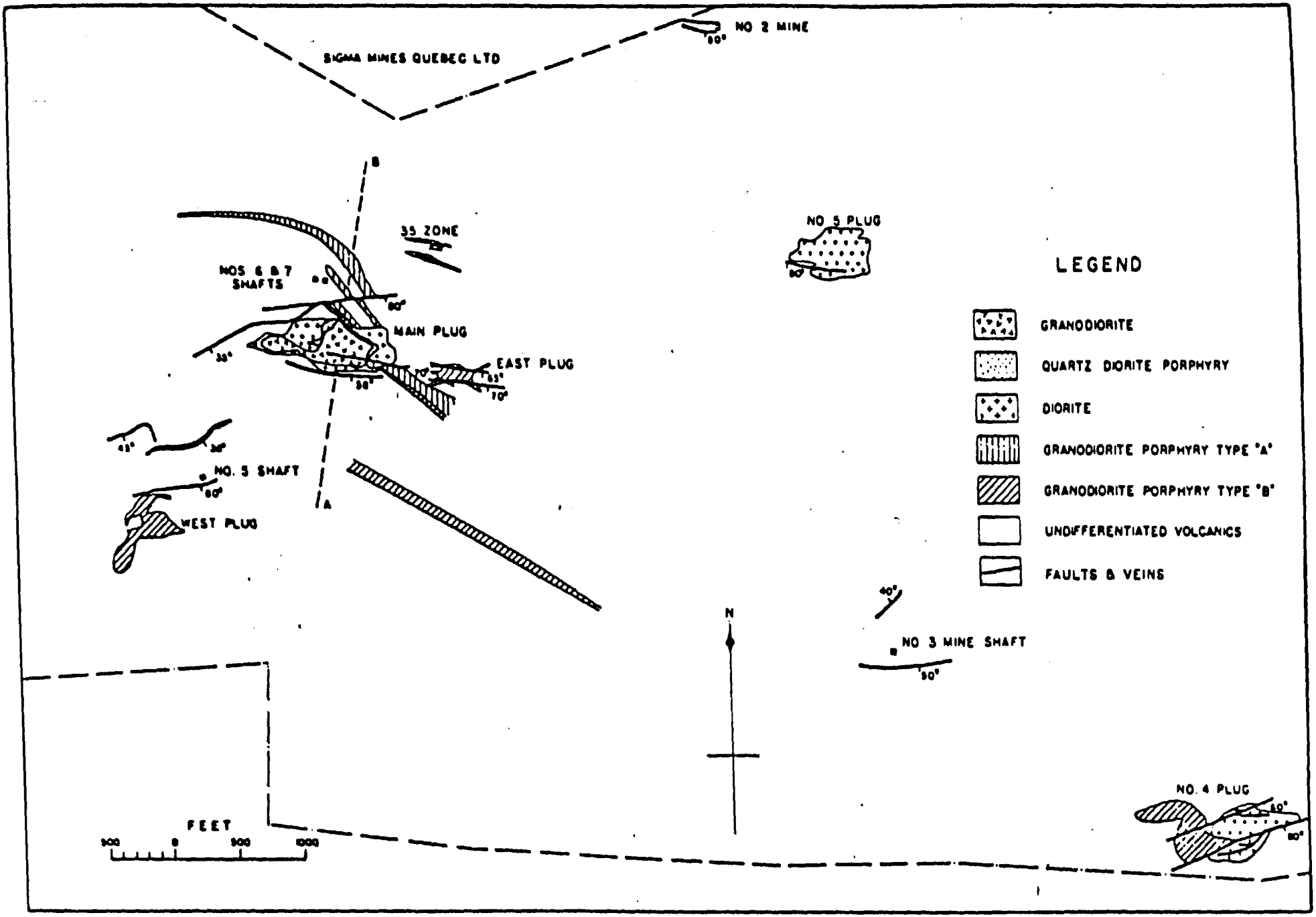


Figure 2-2 *PLAN SHOWING THE DISTRIBUTION OF GOLD DEPOSITS AT THE LAMAQUE MINE*

elliptical in plan (Figure 2-2). It has an east to west length of about 800 ft. and a north-south width of 350 ft., dipping north at 70 deg. and raking east also at 70 deg. This plug is composed of three concentric rock types with albite granodiorite in the centre surrounded by quartz diorite porphyry which is in turn enclosed by a dioritic envelope.

In vertical cross-section, the plug is traversed by a series of reverse faults which dip at angles between 25 deg. and 70 deg. to the south. There are eight such faults all of which are occupied by gold-bearing quartz veins of economic importance (Figure 2-3). Associated with these major faults is a series of complex subsidary faults and fractures also filled with auriferous quartz veining.

The wall rock in contact with this veining has been hydrothermally altered for a distance ranging from a few inches to several feet. This alteration takes the form of bleaching and the replacement of the original minerals by albite, carbonate for the most part ankerite), quartz and tourmaline. The variation in the amount of pyrite appears to be related to the amount of iron present in the original rock. In Lamaque the highest degree of alteration and associated high gold values is indicated by the mineral fuchsite, a bright green chrome mica.

The principal vein materials are quartz, tourmaline and carbonate (ankerite, calcite or dolomite) with lesser quantities of pyrite, pyrrhotite, chalcopyrite, scheelite, fuchsite, gold and tellurides. The relative proportions of

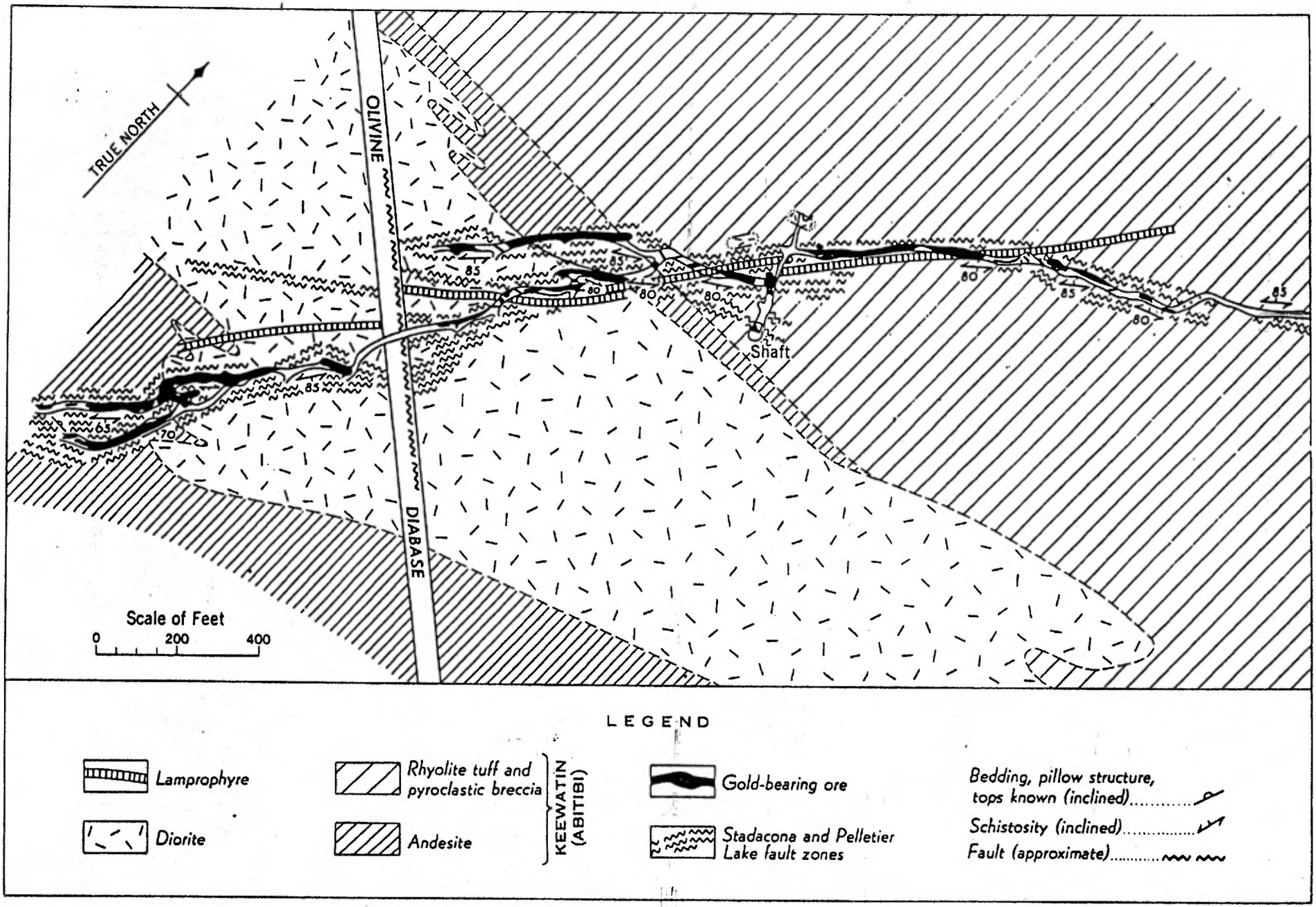
Stadacona Mine

The Stadacona Gold Mine is located 2.5 miles southeast of the Senator Rouyn Mine. It is an example of a epigenetic gold deposit hosted by a variety of rock types. They include diorite, andesite, rhyolite and rhyolite breccia (Figs. 2-4 and 2-5). The mine, situated on mining claim. ML 1818 commenced operations in 1928 and except for 1931 and 1931 was in continuous operation until 1958. It produced 3,022,757 tons grading 0.153 oz Au/sht.

The rocks which host the deposit are located on the south limb of the Stadacona Syncline. East trending, north dipping beds of rhyolitic agglomerate and tuffs are interbedded with numerous flows of andesite and rhyolite. These rocks have been intruded by a series of diorite dykes, sills and masses. The largest mass is that crossed diagonally in the mine workings. A dyke of olivine diabase about 50 feet in width cuts across the vein structure. This intrusive strikes in a northwest direction and dips steeply to the southwest.

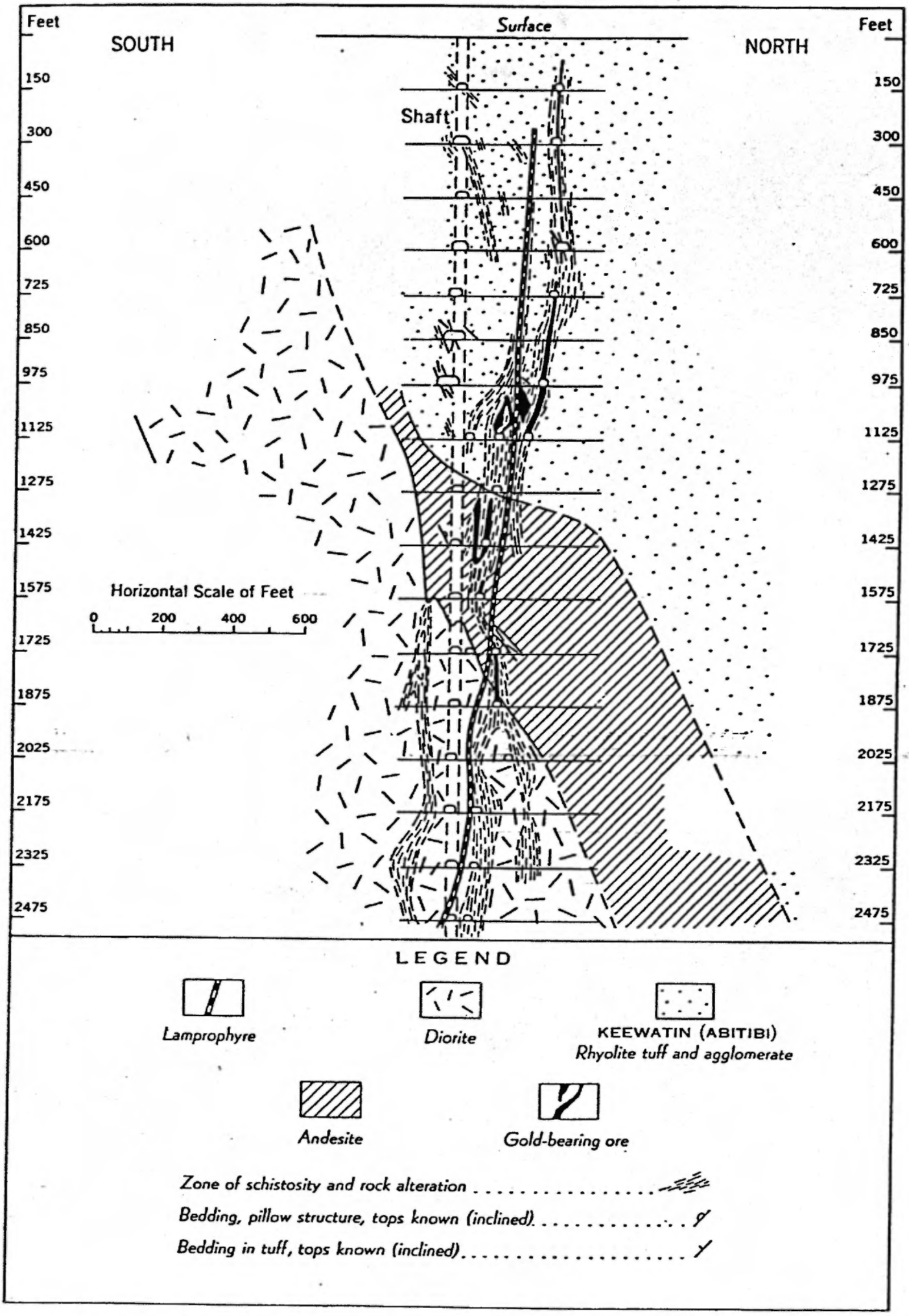
The deposit, as with the Senator Rouyn, is hosted by a shear zone in this case the Stadacona Fault. The fault zone varies in width from a few feet up to 100 feet, strikes northeast to east-northeast and its dip varies from 70 deg. NW to vertical.

The ore zone is very similar to that of the Senator



. Geological plan 1,125-foot level, Stadacona mine, Southwest Rouyn township map-area.

Figure 2-4



Vertical geological cross-section through shaft, Stadacona mine, Southwest Rouyn township map-area.

Figure 2-5

Rouyn, consisting of parallel to anastomosing veins of quartz and carbonate (mainly ankerite) and carbonatized wall rocks impregnated with pyrite and other minerals. In addition to the quartz and carbonate other alteration minerals associated with the gold are brown tourmaline, talc and fuchite. The mineralization consists of free gold pyrite the gold-silver telluride petzite, arsenopyrite, chalcopyrite and galena. There are atleast two ages of quartz present, an older highly fractured grey variety and a younger white less fractured variety.