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Property Visits by the Dryden Area Mineral Commodity Geologist, 1989

by

P.C. Delisle

1990

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V.G. Milne, Director
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FORWARD

The Mineral Commodity Geologist program in the Dryden area, 1987 to 1990, funded under the five-year Canada-Ontario 1985 Mineral Development Agreement (COMDA), followed the Dryden-Ignace Economic Geologist Program, 1984 to 1987, funded by the Ontario Ministry of Northern Affairs. The purpose of the program was to encourage and promote mineral exploration by providing a geologist to make property visits, conduct geological work, and monitor and promote exploration activity by publishing reports, and giving talks and presenting displays.

The purpose of this report is to present detailed descriptions of 30 gold deposits, mostly in the Manitou Lakes area, visited in 1989, including chemical analytical data, and summaries of work done on each property.

This report will be of interest to mineral exploration industry geologists, and to prospectors.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF CHARTS

(IN BACK POCKET)

ABSTRACT

During the 1989 field season, the Mineral Commodity Geologist for the Dryden area, funded under the five-year Canada-Ontario 1985 Mineral Development Agreement (COMDA), visited 30 gold deposits, mostly in the Manitou Lakes area.

The deposits were found to be: in quartz veins hosted in shear zones; in narrow semi-massive sulphide bands filling fissures; or in mineralized shear zones with or without quartz veins.

The geometry of quartz veins was found to be dependant on deformation style. Strike-slip movement resulted in: oblique veins, connected by extension veins; "en echelon" oblique veins; sigmoidal extension veins; extension veins external to shear zones; and short micro extensional fractures. Dip-slip movement rotated the quartz veins and shear zones, and also gave rise to flat-lying veining.

Sulphides associated with gold, in decreasing order of abundance, are pyrite, chalcopyrite, arsenopyrite, pyrrhotite, sphalerite and galena. Rock geochemical analyses indicate that, in general, amount of gold in quartz veins is neither related to total sulphide content nor to a specific sulphide species, but that there is a strong relationship between gold and total sulphide content in narrow semi-massive sulphide bands, and a good relationship between gold and total sulphide in mineralized shear zones with or without quartz veins. In addition, there is a moderate relationship between gold and arsenic and antimony content in narrow semi-massive bands.

Each gold occurrence has a unique alteration pattern. Alteration products include widely dispersed iron carbonate, and in decreasing order of abundance chlorite, calcite, sericite, iron sulphide, mica, silica and anthophyllite.

Recommendations for further investigation are given for the following areas: Barker Bay of Lower Manitou Lake; Aronson Lake; the area between Blanchard Bay of Lower Manitou Lake and Merrill Lake; and Peep Bay on Manitou Stretch and Gates Lake.

The main body of the report consists of descriptions of the 30 properties visited, including their location and access, general geology, alteration, structure, mineralization assays of collected samples, development history and selected references. Sketch maps are included for many of the properties.

PROPERTY VISITS BY THE DRYDEN AREA MINERAL COMMODITY GEOLOGIST, 1989

by

P.C. Delisle

Project Geologist, Kenora Resident Geologist's office.

Manuscript approved for publication by Ken Fenwick, Manager, Mineral Resources, Northwestern Ontario Region, April 24, 1990.

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INTRODUCTION

This report summarizes the results of investigation of gold occurrences in the Dryden area during the 1989 field season. In 1989, the program was staffed by P.C. Delisle assisted by M. Perrault. The program continued a regional study and inventory of gold occurrences and their structural and lithologic setting initiated by J.R. Parker in 1984, with fundings from the Ministry of Northern Affairs, and continued under the five-year Canada-Ontario 1985 Mineral Development Agreement (COMDA) from 1987 to 1990 (Parker 1989). The objective of the program was to encourage and promote mineral exploration by: assisting prospectors, geologists and mineral companies with property visits; mapping, sampling, assaying and documenting old and new mineral occurrences; facilitating contact between prospectors and the mining industry; conducting literature searches; monitoring local exploration activities; providing limited free analytical services; publishing property descriptions and recommendations for exploration in the report of Activities of the Resident Geologist, and in Open File Reports; and presenting displays and talks at conferences and seminars.

Field work in 1989, although conducted throughout the Dryden District, focused on the Lower Manitou Lake and Manitou Stretch area, and led to the re-discovery of old gold occurrences, such as the Queen Alexandra Mine, the Queen Alexandra Northern Occurrence, the King Edward Occurrence, the A.L. 212 Occurrence and the H.W. 479 Occurrence. Also in 1989, the S.500 Occurrence was relocated by prospector B.Barton, the Copeland Mine by Venturex Resources Ltd. and Nexus Resources Ltd. personnel, and the Gold Standard G.340 occurrence by prospector R. Fairservice. New occurrences were also discovered: the Barton occurrence by B. Barton, and a few occurrences east of the Gold Standard G.340 occurrence by Canhorn Mining Corporation. In this report, detailed descriptions are given of 30 gold deposits visited in 1989 (Chart A, back pocket), including assay data obtained from samples collected, and a comprehensive up-to-date summary of exploration work conducted on each property.

CHARACTERISTICS OF GOLD OCCURRENCES

The gold occurrences are either found in quartz veins hosted in shear zones, or in narrow semi-massive sulphide bands filling fissures, or mineralized shear zones with or without quartz veins. Shearing exhibits a brittle-ductile style of deformation and occurs in wide to narrow zones of schistose or fissile ferroan carbonate altered rock. Rock type plays no part in determining whether the occurrences are shear hosted quartz vein type, fissure-filling type, or shear zone type. Felsic dikes occur with or in proximity to twelve of thirty-one gold occurrences, and were emplaced either during or after shearing. The role of the felsic dikes was to provide a strong competency contrast between adjacent rock types, providing a setting for gold-bearing, shear hosted veins in the strongly sheared wall rock at the contact with the less deformed felsic dikes. It cannot be demonstrated that the dikes are the source for the gold. In only a few cases are the felsic dikes slightly anomalous in gold.

A major structural feature, the Manitou Straits Fault, strikes northeasterly from Manitou Stretch to Upper Manitou Lake, and is a regional feature extending northeast to Dinorwic Lake, and to the west to connect with the Pipestone-Cameron Fault (Blackburn 1981a). The fault is a zone, 60 m or more wide, of highly schistose and fissile rock. The majority of the metavolcanic rocks northeast of the fault have been variably sheared, and shear zones separated by less sheared rock parallel the fault. The trend surfaces of all the northeast trending shear zones define helicoidal shapes, such that they dip to the northwest in the vicinity of the Manitou Stretch, and to the southeast at Lower Manitou Lake. Fabric orientation and kinematic indicators (Robert 1987; Hodgson 1989), such as rotation of "S" fabric into "C" fabric (Figure 1, feature 2) and extensional veins (Figure 1, feature 10), sigmoidal extension veins (Figure 1, feature 11) and oblique vein arrays (Figure 1, feature 8), indicate a strike-slip component of movement. The wrench-fault tectonic model of Moody and Hill (1956), which suggests that at least eight directions of wrench shearing should accomodate a strike-slip deformation and that these directions should have a more or less symmetrical disposition relative to the direction of the primary compressive stress, is generally applicable to the Lower Manitou Lake-Manitou Stretch area. These directions are:

1) Second and third-order sinistral north trending direction.
2) Second and third-order dextral 030° direction.
3) First, second and third-order 045° direction (the first-order shear is represented by the Manitou Straits Fault).
4) Third-order dextral 075° direction.
5) Second and third-order sinistral 090° direction.

6) Second and third-order dextral 120° direction.

7) Third-order sinistral 135° direction.

8) Third-order dextral 165° direction.

However, shallow lineations that would substantiate strike-slip deformation, are difficult to detect. When they are detected, the lineations are subtle and always seen on wall rocks immediately adjacent to quartz veins. The whole area is, however, characterized by a set of steep lineations. These lineations, in conjunction with other kinematic indicators, suggest that a dip-slip component of movement also occurred, and was responsible for south-side-up movement to the northwest of the Manitou Straits Fault, and north-side-up movement to the southeast.

All these observations suggest that one phase of deformation of oblique-slip shearing occurred. This hypothesis accomodates the strike-slip and dip-slip components of movements, the predominant steep lineations, and the eight directions of shearing described above. The resultant oblique shearing has produced sinuous shear zones and has imparted complex geometries to the quartz veins. Progressive deformation led to simultaneous folding and shearing, which suggests that some of the faults interpreted in the regional compilation map (Blackburn 1981b) may be explainable by folding, compatible with a more ductile tectonic regime.

Determining the sense of movement on individual shear zones is of critical importance in predicting the geometry of quartz veins, and this type of analysis has been incorporated into the accompanying property descriptions. It can also be used as an aid in interpreting other types of surveys, such as geophysical and geochemical surveys. For example, the interpretation, by the author of the humus soil survey at the Dryden Red Lake occurrence described under the property description, fits the dextral sense of strike-slip movement determined at the occurrence. The contouring of the humus anomalies shows two right stepping sinuous gold-bearing trends (figure 7).

VEIN GEOMETRY

The geometry of quartz veins is dependant on the style of deformation. The strike-slip component of movement has resulted in the following vein geometries a) oblique veins, connected by extension veins (Figure 1, feature 9), such as at the Smooth Rock Lake occurrence, Sakoose mine, and the H.W. 479 occurrence; b) "en echelon" oblique veins (Figure 1, feature 8), such as at the Giant prospect; c) sigmoidal extension vein (Figure 1, feature 10), such as in trenches 5A and 5C at the Peep Bay occurrence; d) extensional veins external to shear zones (Figure 1, feature 4), such as vein 3 at the S.500 occurrence and; e) short micro extensional fractures (Figure 1, feature 5), such as those filled with sulphide at the Gaffney prospect, and at the Gates Lake occurrence.

The dip-slip component of movement resulted in rotation of quartz veins, and of shear zones. It has modified the steep dip of shear zones, and quartz veins can be seen to be folded on vertical planes, such as at the Austin occurrence and at the Beehive prospect. It is also responsible for flat-lying quartz veining such as at the Gates Lake occurrence, at the Peep Bay

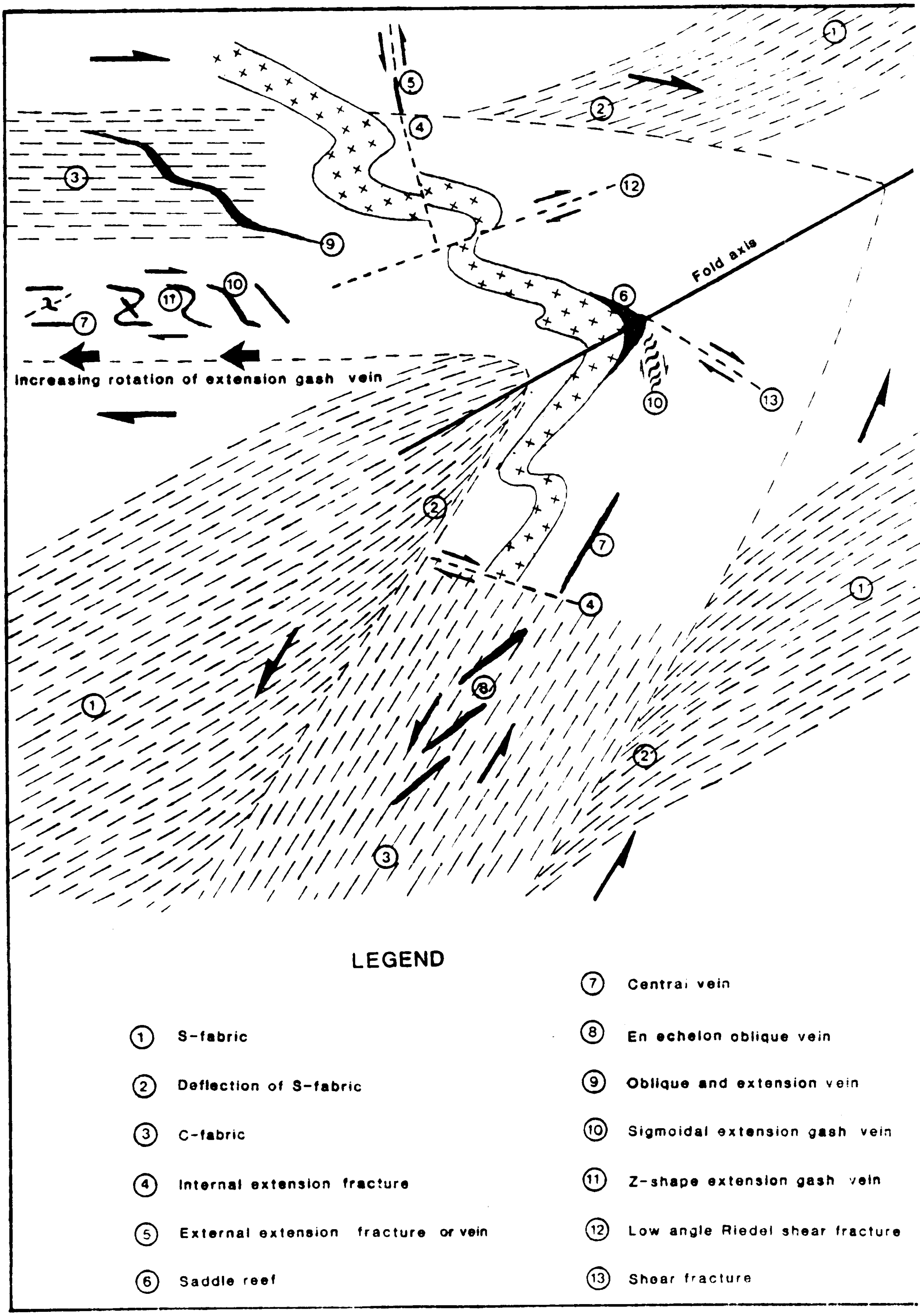

Figure 1: Schematic of common vein and fabric geometries.

occurrence, and at the Sakoose mine.

The quartz veins are commonly folded into "S" or "Z" shapes seen on horizontal surfaces, such as at the Queen Alexandra mine; contorted, such as at the Gold Standard H.W. 271 occurrence; or boudinaged, such as at the Dryden Red Lake occurrence.

Conjugate systems of quartz veins are present at the S.500 occurrence, at the Copeland mine, at the Gaffney prospect and at the Queen Alexandra mine. The Maw occurrence is a fold-related saddle-reef type (Figure 1, feature 6).

DEPOSIT TYPES

1) Gold-bearing quartz veins: This is the most common type encountered throughout the Manitou-Stormy lakes greenstone belt. All these veins share the same two characteristics: a) wispy to well layered ribboned texture with layers of sericite, and/or chlorite, and/or iron carbonate, and/or sulphide, and more rarely tourmaline, and b) calcite-filled fractures.

Because quartz veins are commonly of "crack and seal" type, (Colvine et al 1988, plate 2.4) gold is commonly found along the contact of the vein and its immediately adjacent wall rock in addition to within the vein.

Some occurrences display replacement texture, such as in trench C at the Sorry Mac occurrences, and at the Copeland mine, and a few have a breccia texture such as in trench E at the Sorry Mac occurrences. The gold distribution and the alteration zonation for the replacement texture exposed in trench C at the Sorry Mac occurrences is discussed under the property description.

2) Gold-bearing narrow semi-massive sulphide bands: This type of deposit is specific to the Sorry Mac occurrences, to the Gates Lake occurrence, to trenches 1, 3, 4, and 10 at the Peep Bay occurrence, and to the Aronson Lake occurrence. At the first three of these occurrences, gold occurs in a strongly iron carbonatized (ankerite, dolomite) fissile zone. These sulphidized gold-bearing zones comprise disseminated sulphides to semi-massive sulphide bands up to a few centimetres thick. If quartz veinlets and veins occur in the anastomosing fissile zone, they usually have a low tenor in gold.

3) Gold-bearing shear zones with or without quartz veins: Some shear zones that host gold-bearing quartz veins contain gold in the sheared wall rock. This is the case at the Barker Brothers mine where the hornblende-plagioclase schist yields high gold assays. Two grab samples taken by the author assayed 1.103 ounces gold per ton and 0.843 ounce gold per ton. The shear zones at the Smooth Rock Lake occurrence, the Aronson Lake occurrence, the Swede Boy prospect, the Dryden-Red Lake occurrence, and the Gaffney prospect yielded erratic gold values. At the Smooth Rock Lake occurrence, gold is associated with pyritized chlorite-epidote schist. Two of seven grab samples assayed 1.219 ounces gold per ton and 0.093 ounce gold per ton. At the Aronson Lake occurrence, a grab sample of gossanous chert assayed 0.57 ounce gold per ton. Three other grab samples gave anomalous gold values on assay. At the Swede Boy prospect, one of five grab samples from the pyritized chlorite-biotite schist assayed 2090 ppb gold. At the Dryden-Red Lake occurrence, one of three

grab samples from the pyritized hornblende-mica-calcite-plagioclase schist assayed 0.048 ounce gold per ton. At the Gaffney prospect, two grab samples from the pyritized quartz diorite assayed 0.103 and 0.044 ounce gold per ton.

SULPHIDE ASSOCIATION

The most common sulphides associated with gold, in decreasing order of importance, are pyrite, chalcopyrite, arsenopyrite, pyrrhotite, sphalerite, and galena. Visible gold was noticed at some occurrences. Rock geochemical analyses indicate that amount of gold in quartz veins is neither related to total sulphide content nor to any specific sulphide species. However, there are a few exceptions. There is a strong relationship between the amount of gold and copper at the Beehive prospect and at the Queen Alexandra mine, and between amount of gold and total sulphide content at the Gold Standard H.W. 271 occurrence, and at the Beehive prospect.

Amount of gold is strongly related to total sulphide content and moderately related to arsenic and antimony content in gold-bearing, narrow, semi-massive sulphide bands, except at the Aronson Lake occurrence. Samples taken by the author from these occurrences were analyzed for arsenic, antimony, and mercury, to investigate the possibility that they are of epithermal type . The presence of disseminated to massive narrow bands of stibnite at the Austin occurrence, west of the Gates Lake occurrence, suggests this association. Berger (in prep.) has shown a good correlation between the amount of gold and antimony both at the Peep Bay occurrence, and at the Gates Lake occurrence.

Gold-bearing shear zones with or without quartz veins show a good association between gold and the amount of sulphide.

Silver is present in some cases such as at the Smooth Rock Bay occurrence, the

King Edward occurrence, the Queen Alexandra Northern occurrence, the S.500 occurrence, the Aronson Lake occurrence, the Weasel occurrence, and the Barker Brothers mine. The King Edward occurrence and Queen Alexandra Northern occurrence both of which are within the Carleton Lake Stock, are low grade silver deposits associated with lead. The best assay from grab samples from the King Edward occurrence was 115 g/T Ag and 0.34 percent Pb, and at the Queen Alexandra Northern occurrence was 35 g/T Ag and 0.41 percent Pb.

ALTERATION PRODUCTS

Each gold occurrence has a unique alteration pattern. The common and broad alteration product is iron carbonate. Other alteration products are, in decreasing order of importance, chlorite, calcite, sericite, iron sulphide, mica (including fuchsite), silica, and anthophyllite.

West of the Bretz Lake stock, the Sorry Mac occurrences, the Peep Bay occurrence (trenches 1, 3, 4, and 10), and the Gates Lake occurrence all have a common alteration pattern dissimilar to other occurrences in the Lower Manitou Lake area, characterized by addition of dolomite and arsenopyrite. Sulphidization (Asp, py) is widespread whereas dolomitic alteration is confined to shear zones. The style of gold setting is also unique and consists of shear hosted, gold-bearing, narrow, semi-massive, sulphide bands, as described previously. This style of mineralization, as well as the specific alteration assemblage, is restricted to the Manitou Stretch over a known length along the Stretch of 2 km and a width of 3 km.

CONCLUSIONS

Gold occurrences are of three types: 1) shear-hosted quartz veins; 2) shear-hosted, narrow, semi-massive, sulphide bands; and 3) altered shear zones with or without quartz veins. The three types are found in all rock types, and within the northeast, north-northeast and east trending faults that characterize this portion of the Manitou-Stormy Lake belt. Gold is generally erratic in shear hosted quartz veins, and is believed to occur in the free state because it shows no relationship between the amount of sulphide or any specific sulphide. However, there is a correlation between gold and sulphide content in semi-massive sulphide bands and sulphidized shear zones with or without quartz veins. The "crack and seal" texture of the quartz veins indicate that they formed as open space fillings. The veins were emplaced during the earlier shearing, and continued to be emplaced through progressive deformation due to shearing, so that overprinted shearing has imparted complex geometries to the quartz veins.

RECOMMENDATIONS

The high-grade, gold-bearing, hornblende-plagioclase schist in the Barker Bay area, Lower Manitou Lake, is surprising because of the lack of sulphides and alteration in the sheared rock. The Barker Brothers mine (7) and the Petrie occurrence (38) should be re-investigated in light of these new results and also because many old trenches were newly discovered during the present work, near the old Barker Brothers shaft.

The Aronson Lake occurrence should be investigated in detail because of:

1) Two northeast-trending anomalous IP zones and coinciding VLF-electromagnetic and magnetic anomalies correspond to the upper section of auriferous sulphide chert units which have been delineated over a length of 800 m and a width of 15 to 100 m.

2) Competency constrast during shearing between massive and competent brittle chert units, and relatively ductile volcanic sequences, makes this environment favourable for dilatent zones.

3) Geochemically anomalous levels of zinc, copper, lead, arsenic and antimony as well as significant gold anomalies occur within the chert unit. One grab sample taken by the author assayed an unexpected 0.57 ounces gold per ton, in spite of low sulphide content (less than 1% pyrite). In addition, the quartz vein found on the island by the author, within the chert unit, returned 3830 ppb gold on analysis. Subsequently, a sample of the same quartz vein taken by R. Fairservice, analysed 10261 ppb gold (R. Fairservice, prospector, personal communication 1990).

The area between Blanchard (Shaughnessy) Bay and east of Merrill Lake should also be investigated in order to delineate gold-bearing quartz veins. The East Shear Zone at the Swede Boy occurrence is believed to be on the same structural trend as that which includes the Dryden Red Lake occurrence. The humus geochemical survey done by D. Nelson in 1987 over the Dryden Red Lake occurrence indicates two extensive, sinuous anomalous gold zones 50 m apart, and a minnimum, limited by the survey, of 1.2 km in length. In addition, some old trenches found in 1989 by D. Nelson, 550 m south of the Dryden Red Lake occurrence, appear to be on strike with the eastern gold zone (Figure 7). D. Nelson reported that one chip sample from a mineralized quartz vein with phyrrotite, pyrite and chalcopyrite analyzed 5 090 ppb gold over a 40 cm width. The overall structural trend is about 025° over a 4 km strike length.

The specific alteration assemblage and style of mineralization in the Peep Bay-Gates Lake area is localized in a dilatant zone of the Manitou Straits Fault. A careful look should be taken at a similar structural environment which occurs at the junction of Lower Manitou Lake and the Manitou Stretch. It is interesting to note that dolomite alteration-filled shears and arsenopyrite sulphidized zones occur at the inflexion of the Manitou Straits Fault from a northeast trend to an easterly trend at the southwest end of the Manitou Stretch, and that a silicified alteration zone occurs at the inflexion of an interpreted shear zone to the north. Smith and Stephenson (1988) noted a highly silicified area between Vista Lake and Dogfly Lake, south of the Bretz Lake Stock. A curve with a north-northeast trajectory can be drawn between all these alteration zones which is the locus of the inflexion of all the structures. This area of inflexion should be investigated as a potential area for mineralization.

It is probable that the shear zone between Gates Lake and Peep Bay extends to the northeast along the boundary between the Wapageisi Lake Group and the Upper Manitou Lake Group, and this could also be a favourable area for mineralization. The western extension of the same shear zone between the Austin occurrence and the Gates Lake occurrence should also be investigated.

Stripping of overburden should always be a priority at any occurrence, because it exposes the geometries of the veins and shear zones and allows prediction of their attitude. Detailed mapping of the stripped area will help to resolve structural complexity. A case in point is the Sakoose mine - Maw occurrence, where recent stripping enabled the extension and clarification of the setting of the mineralized zone, and the definition of new exploration targets (Delisle and Perrault, 1989).

ACKNOWLEDGEMENTS

The author would like to thank C.E. Blackburn, Resident Geologist, Kenora, for his assistance, constructive criticisms and geological discussions. Special thanks to M. Perrault, who assisted me and showed enthusiasm during the field work. The author also thanks Ginger Tetreault and Joel Lemay for their typing skills and patience. All analyses presented in this report were done by the Geoscience Laboratories, Ontario Geological Survey in Toronto and the Temiskaming Testing Laboratories, Mines and Minerals Division, Ministry of Northern Development and Mines in Cobalt.

A special thanks to all mining company personnel and prospectors who worked in the Dryden - Ignace area for their helpful co-operation, hospitality and friendship.

L I S T O F P R O P E R T I E S

(Keyed to Chart A, back Pocket)

PROPERTY DESCRIPTIONS

(An occurrence is defined as a deposit on which less than 600 m of diamond drilling has been done; a prospect is a deposit on which underground development or more than 600 m of diamond drilling has been done, and where there has been significant surface work; and a mine is a former producer of any amount of the commodity).

A.D. 34 OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

The shaft is located 71 km south-south-west of Dryden, on the north shore of Napanee Lake, at its west end. The property can be accessed by road and lake, via two portages, but is best accessed by float plane.

DESCRIPTION

Geology and Alteration: The property is underlain by pillowed intermediate to mafic flows. The rock has been sheared, and alteration consists of chlorite, sericite, and ankerite.

Structure: The main shear is poorly exposed. Shearing produced highly schistose and altered rock. The schists are injected by narrow quartz veins and veinlets over a width of 5 m. Vertical schistosity strikes 075°. Slikensides plunge 78° to the west-southwest, indicating dip-slip movement.

Mineralization: The quartz vein is white to light grey in colour, opaque, contains patches of ankerite, sericite, and muscovite, and fractures are filled with calcite. One percent disseminated pyrite occurs in the schists, but no sulphides are present in the vein material.

ASSAYS OF MINERALIZATION:

Grab samples of quartz vein material in the dump returned 6 ppb gold on analysis. Samples or wall rock material gave nil values an analysis.

DEVELOPMENT HISTORY

There is no record of the shaft prior to 1988, when it was discovered during detailed geological mapping (Berger 1989, in prep.) when it was mistakenly identified as the Sairey Gamp occurrence, which is located on the east side of Harris Falls, north of Grant Lake.

SELECTED REFERENCE

Berger 1989. OGS, MP 141, p. 145-148.

Berger In prep. OGS, OFR.

A.L. 212 OCCURRENCE

NTS: 52F/07 SW

LOCATION AND ACCESS

The occurrence is located on the largest of a number of islands immediately northeast of Watson's Narrows in the Manitou Straits. Access to the occurrence is via motor boat or float plane. The shaft is located at the southwest end of the island, near a swampy area.

DESCRIPTION

Geology: The surrounding geology is schistose mafic volcanics of the Blanchard Lake group (Blackburn 1976, 1982). No bedrock is exposed immediately around the shaft.

Mineralization: Rock in the dump is of two kinds: a medium grey, opaque, quartz-carbonate vein material that has a ribbon texture defined by chlorite with very fine grained, disseminated pyrite, in amounts less than 1%; and wall rock material consisting of carbonatized chlorite schist with a trace of pyrite. Quartz stringers occur in the wall rock.

ASSAYS OF MINERALIZATION

A grab sample of quartz vein material taken from the dump assayed 15 ppb gold, and two grab samples of the wall rock returned trace amounts of gold.

DEVELOPMENT HISTORY

1898: Mr. Blum sunk a shaft to 35 or 40 feet depth (Coleman 1898).

SELECTED REFERENCE

Blackburn 1976. OGS, GR 142.

Coleman 1898. OBM, Vol. 7, Part 2, p. 123.

ARONSON LAKE OCCURRENCE

NTS: 52F/02 NW

LOCATION AND ACCESS

The occurrence, 60 km South of Dryden, is on one island and on the peninsula at the northwest end of Aronson Lake, immediately southeast of lower Manitou Lake. The occurrence may be reached via Hwy 502, south from Dryden. At 108 km from Dryden, a 150 m long portage from the west side of the highway leads to the south end of Vickers Lake. Aronson Lake is reached by water, via 15 km journey north on Vickers lake, and a portage into Weasel and Aronson lakes.

An area on the peninsula has been stripped by Jalna Resources after they discovered sheared, pyritic chert.

DESCRIPTION

Geology and Alteration: The occurrence is underlain by clastic metasediments of the Etta Lake group (Blackburn 1976, 1982; Berger 1989), interbedded with plagioclase phyric metabasalt. The metasediments consist of interbedded siltstone, mudstone and minor chert. The gossan zone has been extended by Jalna Resources for a minimum length of 800 m and a width of 15 to 100 m.

Structural Geology: Bedding in the metasediments strikes 020° and dips 75° to the southeast. Flame structure and cross bedding indicate the bedding to face west. Narrow shear zones strike at 037°, and dips 88° to the southeast, and the rotation of the schistosity into the shear fabric indicates a sinistral component of strike-slip movement.

Mineralization: The shear zones are characterized by semi-massive sulphides with or without quartz veining. The very fine grained sulphides consists of 1 to 50% pyrite with traces of chalcopyrite and arsenopyrite. According to Jalna Resources, who most recently investigated the occurrence, pyrrhotite is commonly present. On the peninsula a 16 cm semi-massive sulphide zone is exposed in the stripped area over a length of a few metres. On the island immediately south of the peninsula, a quartz vein occurs adjacent to a semi-massive sulphide zone of unknown width along the edge of the west shore over a minimum length of 15 m. The 11 cm wide smokey grey quartz vein contains up to 10% pyrite and 1% of chalcopyrite.

ASSAYS OF MINERALIZATION

Six grab samples were taken by the author. The mineralized quartz vein on the island analysed 3410 ppb gold whereas the unmineralized vein returned 1780 ppb gold on analysis. The best gold assay came from a grab sample of rusty, brecciated and sericitized chert containing fine disseminated pyrite which yielded 0.57 ounce of gold per ton (Table 1).

DEVELOPMENT HISTORY

1984-1989: Jalna Resources conducted geological, ground VLF-EM, magnetic and IP surveys, and rock sampling. Their best gold analysis was from a chert sample collected on the island, which returned 3830 ppb gold (Assessment

Files, Resident Geologist's Office, Kenora).

1989: The occurrence is staked by R. Fairservice. One grab samples taken from the quartz vein returned 10,261 ppb gold (R. Fairservice, prospector, Kenora, personal communication 1990).

SELECTED REFERENCES

Blackburn 1976. OGS,GR 142.

Berger, 1989. OGS, MP 141, p. 145-148.

Jalna Resources. Files 52F/02 NW, D-1, D-4; 52F/07 SW, Z-5, Assessment Files, Resident Geologist's Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	Hg (ppb)	Sb (ppm)	S (%)	Location	Rock Type Description
1	3410	-	750	46	410	24	24	0.5	7.52	island	pyritized quartz vein
2	480	-	356	20	710	32	30	0.4	6.24	island	pyritized sericite schist
3	1780	3	8	96	16	32	17	0.5	0.05	island	quartz vein
4	75	-	435	-	161	9%	17	0.8	23.1	island	semi-massive sulphide, sericitized chert
5	0.57 oz/T	4	19	246	35	28	-	0.4	0.08	island	gossanous brecciated chert
6	360	2	178	58	425	200	10	1.0	9.64	peninsula	semi-massive sulphide, sericitized chert

Table 1: Analytical data: Aronson Lake occurrence.

AUSTIN OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

The occurrence is located 76 km south-southwest of Dryden, on the narrow strip of land between the south of Manitou Stretch and Adams Lake, a small lake on Mister Creek. Road access to the occurrence is from Hwy 502, along the Cedar Narrows Road to the landing on to Manitou Stretch. A short boat trip of about 12 km reaches the occurrence.

Two trenches expose the quartz vein and it can be traced on a cliff face to the west, about 180 m northwest of the largest inlet of Adam Bay.

DESCRIPTION

Geology: The occurrence lies within a dacitic crystal tuff. Immediately to the south, a wide quartz porphyry outcrops (Smith and Stephenson 1989).

Structure and Alteration: The area is moderate as sheared at 090° with shallow to moderate dip, from 38° to 70°, to the north. Alteration products are sericite, quartz, potash feldspar, and sulphides. The steep lineation plunging 67° to the east, and the folds in the vein observed in the cliff face suggests north-side-up, dip-slip shear.

The width of the vein varies from 9 to 80 cm. It is exposed discontinuously over 76 m (Figure 2).

Mineralization: The quartz vein material is fractured, medium to dark grey, opaque to cloudy, and in some places semi-translucent. Accessory minerals are sericite and minor ankerite and muscovite. Stibnite is the predominant sulphide. It occurs as a semi-massive band, 1 to 6 cm wide, near the vein contact within the wall rock, or disseminated throughout the quartz vein and the wall rock in amounts up to 2%. Pyrite and arsenopyrite occur in amounts of less than 1% in the wall rock.

ASSAYS OF MINERALIZATION

Eight samples were taken by the author. Despite the presence of appreciable amounts of antimony (up to 10% detected on analysis), gold values obtained on analysis were low, and showed no correlation with antimony (Table 2).

DEVELOPMENT HISTORY

1940: Discovery of antimony by Fred Austin. A sample from the main pit returned 3.74% antimony over 3.2 feet on analysis (Assessment Files, Resident Geologist's Office, Kenora).

1942: Austin Antimony Syndicate diamond drilled 6 holes for a total of 208.6 m. The best intersection analysed 2.29% antimony (Assessment Files, Resident Geologist's Office, Kenora).

1983-1984: Noranda Exploration performed geological mapping, ground magnetic and IP surveys and rock and humus geochemical surveys. Gold tenor returned less than 10 ppb on analysis (Assessment Files, Resident Geologist's Office, Kenora).

1984-1985: Agassi Resources Ltd. undertook geological mapping and took a few grab samples for gold and antimony. Gold ranged from 1 to 99 ppb while antimony was 625 ppm to 20,000 ppb (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Agassi Resources. File 52F/03 NE, N-1, Assessment Files, Resident Geologist's Office, Kenora.

Austin Claims. Files 52F/03 NE, A-1, Assessment Files, Resident Geologist't Office, Kenora.

Noranda Exploration. File 52F/03 NE, F-2, F-3 and F-4, Assessment Files, Resident Geologist's Office, Kenora.

Smith and Stephenson 1989. OGS, MP.141, p.138-144.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Sb (ppb)	Hg (ppb)	As (ppm)	Rock Type Description
1	120	-	17	-	21	5.23	10%	58	1500	quartz vein
2	110	-				0.43	680		4500	sericite schist
3	110	-				0.23	800		4300	silicified int. volcanic
4	28	-				0.03	106	-	4400	quartz vein
5	65	-				0.33	4300		2800	potassic silicified int. volcanic
6	70	-	22	-	28	4.36	8.6%	575	2200	quartz vein
7	22	-				0.05	400	-	900	quartz vein
8	105	-				0.32	400		3600	potassic int. volcanic

Table 2: Analytical data: Austin occurrence.

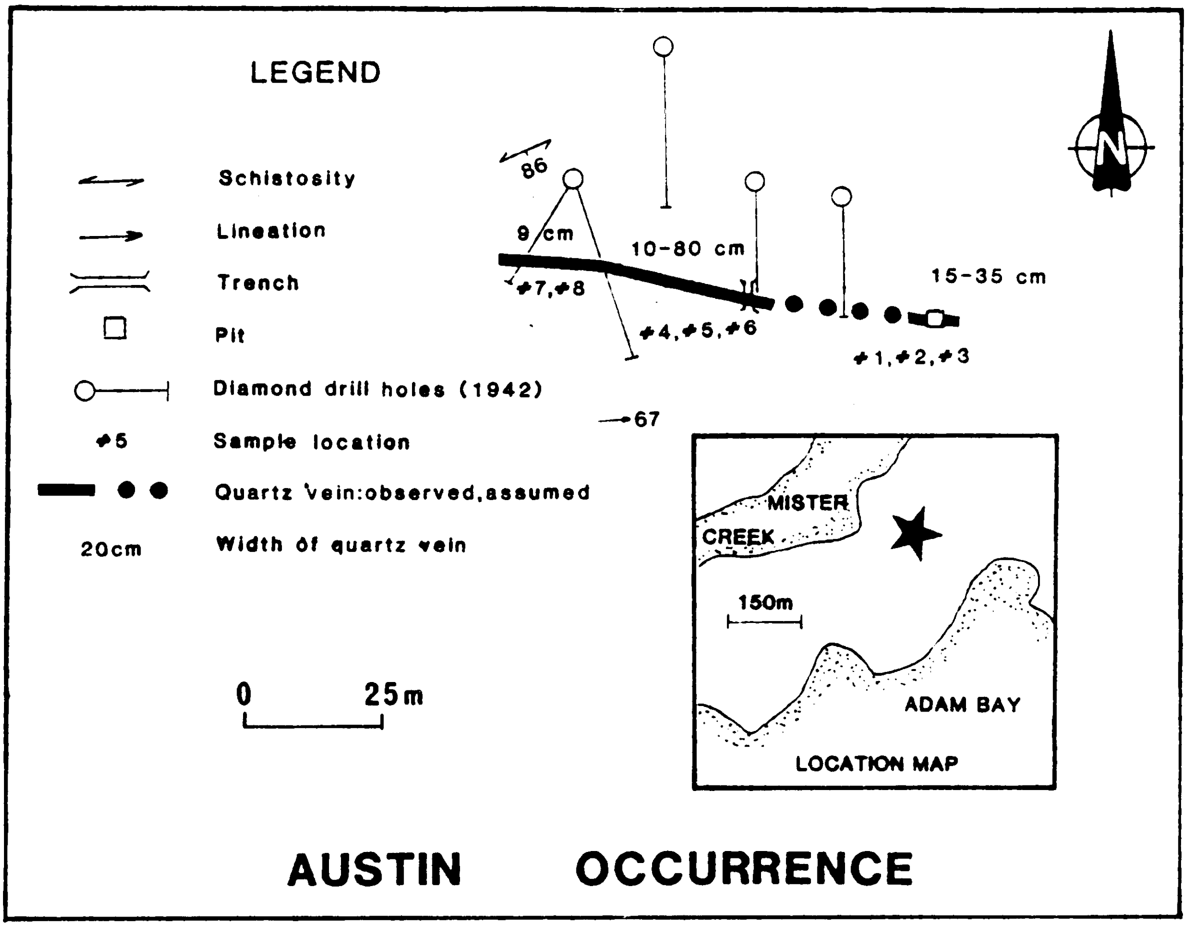

Figure 2: Geology of Austin Occurrence.

BARTON OCCURRENCE

NTS: 52F/11 NW

LOCATION AND ACCESS

The Barton occurrence is located 25 km south of Vermilion Bay, 450 m east of the east end of Higbee Lake. The property is accessible by float plane.

DESCRIPTION

Geology: The occurrence lies within a large intermediate to felsic intrusion north of the Mulcahy Lake Intrusion (Sutcliffe and Smith 1985). The occurrence is in quartz-diorite which contains blue quartz eyes.

Structure and Alteration: A 40 cm to 1 m wide shear zone is exposed over 50 m, and is strongly foliated, with minor alteration. The shear zone strikes 066° and dips 84° northwest, with steep lineations.

Mineralization: A narrow white to light grey quartz carbonate vein lies within the shear zone. The vein pinches and swells, and has a sugary texture with a few patches of ankerite. Mineralization consists of traces of chalcopyrite and pyrite. Rare specks of visible gold were noticed. The maximum width of the vein is 7 cm.

ASSAYS OF MINERALIZATION

A grab sample of the quartz vein yielded 0.189 ounce gold per ton and 34 ppm Cu, whereas the wall rock returned 55 ppb Au and 25 ppm Cu.

DEVELOPMENT HISTORY

The occurrence was found by B. Barton in the summer of 1989, while prospecting near the S.500 occurrence.

SELECTED REFERENCE

Sutcliffe and Smith 1985. OGS, Map P 2826

BARKER BROTHERS MINE

NTS: 52F/06 SW

LOCATION AND ACCESS

The Barker Brothers mine is located 57 km south south-west of Dryden. The shaft is situated west of Barker Bay of Lower Manitou Lake. The property may be accessed via a lumber road commencing from Moose Point Lodge on the west shore of Barker Bay. The road crosses the mine dump at a point 1.5 km from Barker Bay.

The occurrence consists of one shaft, two exploration pits and numerous trenches (Figure 3). 24 trenches and pits were recorded by the author. Other trenches and pits in the general vicinity which exposed quartz vein material, might indicate parallel or conjugate shear zones in the area.

DESCRIPTION

Geology and Alteration: The Barker Brothers mine is underlain by fine grained mafic metavolcanic flows and minor felsic tuffs. Rock exposure is very poor in the vicinity of the mine. The shear zone, where exposed, varies from 10 to 40 cm wide, and consists of hornblende-plagioclase schist injected by quartz veins and veinlets that pinch and swell.

Structural Geology: Because most of the trenches and pits are filled with overburden and water, very few structural measurements could be taken. However, because the numerous trenches and pits are closely spaced, they serve as a guide to the shear orientation (Figure 3). The shear generally strikes at 170°, but varies between 160° and 180°, and dips 87° to the west. The shear has been traced by previous workers over a minimum length of 375 m to the north of the shaft.

Slickenside lineation plunges 46° to the south southeast, suggesting an oblique-slip shear. Strike of schistosity at 150°, dipping 85° to the west, within the shear zone, suggests a dextral component of movement for the oblique-slip shear.

Mineralization: The quartz vein material is semi-translucent to opaque and commonly sugary in texture. The vein is white to dark grey, with limonitic staining. The fine grained mineralization in the vein consists of 1% combined pyrrhotite and pyrite and traces of chalcopyrite. The vein commonly contains hornblende laminae, which also contain up to 1% pyrrhotite. The hornblende-plagioclase schist of the wall rock also contains up to 1% combined pyrrhotite and pyrite.

ASSAYS OF MINERALIZATION

Gold is associated with the hornblende-plagioclase schist, and more rarely with the quartz vein material. Two grab samples from the hornblende-plagioclase schist assayed 0.843 and 1.013 ounce gold per ton (Table 3). These results are surprising because of lack of sulphides and alteration in the sheared rock. The best assay from 14 grab samples of the quartz vein was 0.694 ounce gold per ton; the second best assay was 0.032 ounce gold per ton over a 40 cm width; other samples were in the tens of ppm to nil range.

DEVELOPMENT HISTORY

1898-1899: The Barker brothers sunk a shaft to a depth of 62 feet, with some considerable drifting (Bow 1900). The vein, which is 4 feet wide at the shaft, produced ore having a mill run of 0.89 ounce of gold per ton (Gold Magazine, June 1936). Production statistics (Arnoldi 1950) specified that the mine produced 29 ounces of gold, valued at $490, from 70 tons of ore milled (0.41 ounce of gold per ton). However, the Manitoba Free Press (1899) indicated that 23.6 ounces of gold, valued at $400 was obtained from the first 8 tons of ore milled.

1899:The mine was sold to Mr. N.F. Hugo of Duluth (Rat Portage Miner, June 15, 1899).

1983-1984:Teck Exploration carried out ground VLF electromagnetic and magnetic surveys over a large area around the patented claim (Assessment Files, Resident Geologist's Office, Kenora).

1984:Lacana Mining Corporation conducted a geological survey on one claim adjacent to the patented claim on which The Barker Brothers mine is situated (Assessment Files, Resident Geologist's Office, Kenora).

1987-1989: Black Cliff Mines conducted a magnetic survey following geological mapping. A grab sample of quartz vein material taken from the muck pile at the Barker Brothers mine assayed 24 540 ppb (Assessment Files, Resident Geologist's Office, Kenora).

1989:Alex Glatz staked the four claims dropped by Black Cliff Mines to the north of the patented ground on which the mine is situated.

SELECTED REFERENCES

Arnoldi 1950, ODM, Vol. 59, Part I, p. 18.

Black Cliff Mines. Files 52F/06 SE, E-1 and E-2, Assessment Files, Resident Geologist's Office, Kenora

Bow 1900. ODM, Vol. 9, p. 63.

Lacana Mining. File 52F/06 SE, E-1 and E-2, Assessment Files, Resident Geologist's Office, Kenora.

Teck Exploration. File 52F/06 SE, D-5, Assessment files, Resident Geologist's Office, Kenora

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Rock Type Description
1	0.015 oz/T	-	12	0.05	quartz vein
2	78	-	17	0.12	quartz vein
3	0.843 oz/T	0.07 oz/T	0.029%	1.20	hornblende schist
4	24	-	88	3.26	quartz vein
5	137	-	2420	6.70	quartz vein
6	1.013 oz/T	0.123 oz/T	0.036%	0.68	hornblende schist
7	0.032 oz/T	-	42	0.19	quartz vein
8	66	-	26	0.09	quartz vein
9	85	-	98	0.72	quartz vein
10	-			0.71	altered basalt
11	-	-	40	0.14	quartz vein
12	-	-	15	0.09	quartz vein
13	44	-	91	0.10	quartz vein
14	62	-	129	0.39	quartz vein
			44	0.14	quartz vein
16	-	-	29	0.12	quartz vein
17	-	-	20	0.14	quartz vein
18	0.694 oz/T	-	131	0.49	quartz vein

Table 3: Analytical data: Barker Brothers Mine.

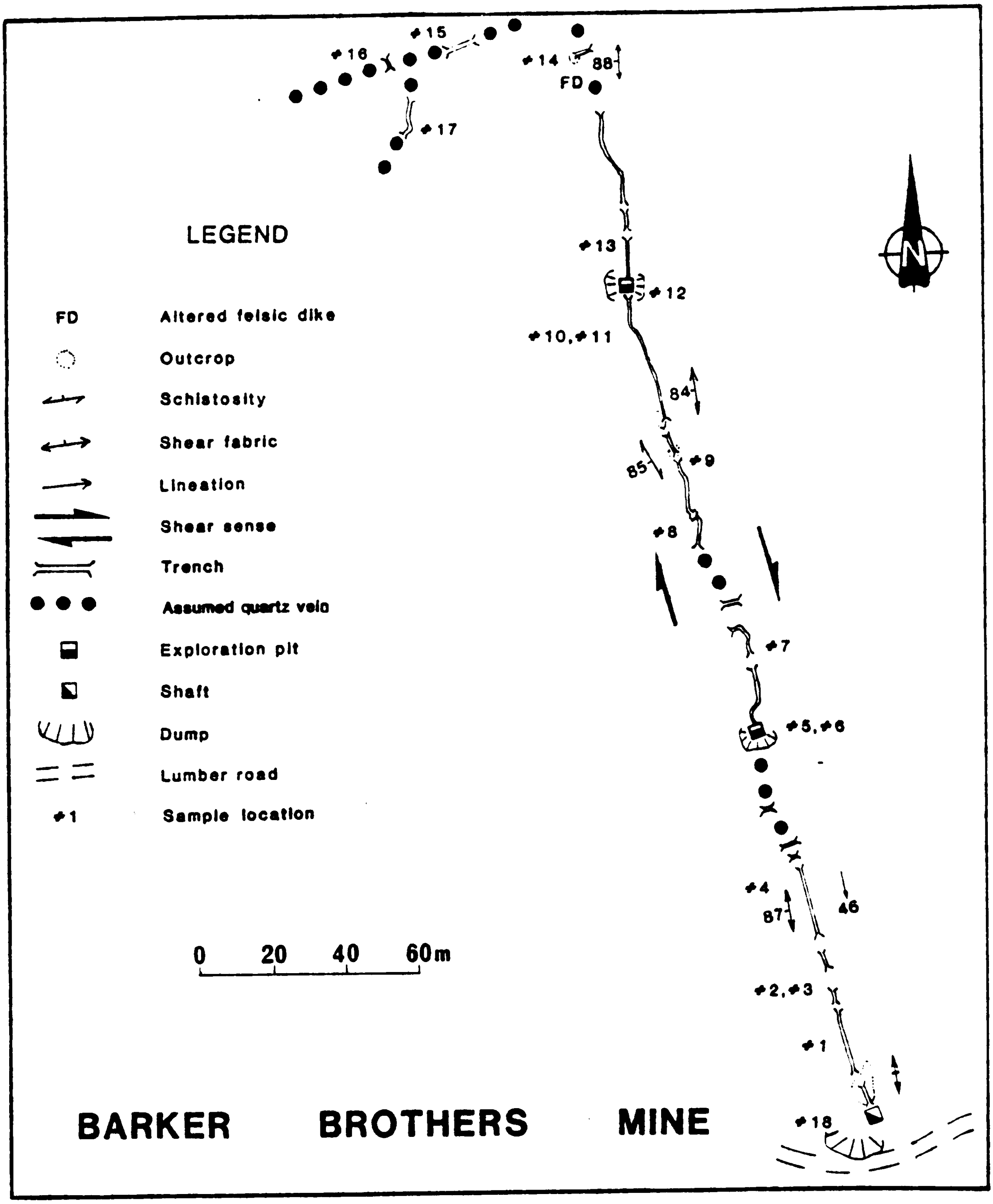

Figure 3: Geology of Barker Brothers mine

BLACK FOX OCCURRENCE

NTS: 52F/09 SE

LOCATION AND ACCESS

The Black Fox occurrence is located about 69 km east of Dryden on Highway 17 in Hodgson Township, a few hundred metres south of the highway.

The occurrence consists of one shaft and a stripped area.

DESCRIPTION

Geology: The occurrence is underlain by metagabbro (plagioclase-amphibole) intruded by a number of basaltic dikes. The gabbro is intruded into mafic metavolcanics of the greenstone belt, at the north edge of the granodioritic Revell Batholith (Satterly 1960).

Structure: A moderate foliation in the metagabbro strikes 165° and dips 70° east. The foliation is deflected into the poorly developed shear fabric which strikes about 125° and dips 85° northeast. The basaltic dikes and the quartz veins are parallel to the shear fabric.

Mineralization: The setting of the quartz veins south and north-northwest of the shaft is within the basaltic dikes or at its contact with the metagabbro. The light white to grey, cloudy, quartz veins have a limonitic staining but are barren of sulphide minerals. The width varies from 10 cm to 170 cm. The wall rock in places contains up to 3% very fine-grained pyrite.

About 50 metres to the west of the shaft, good outcrop exposure shows that quartz here, in the form of a plug, may represent 30% of the rock.

ASSAYS OF MINERALIZATION

Four chip samples and three grab samples were taken by the author. A grab sample of quartz vein material from the dump assayed 50 ppb, and a grab sample of the wall rock from the dump assayed 7 ppb. The highest value obtained from chip samples of quartz vein surrounding the shaft was 8 ppb.

DEVELOPMENT HISTORY

1889: Maple Leaf Gold Mining Company discovered a quartz vein which assayed 0.5 ounce gold per ton (The Weekly Herald, January 25, 1890).

SELECTED REFERENCE

Satterly 1960. ODM, Vol.69, Part 6.

BEEHIVE PROSPECT

NTS: 52F/07 SW

LOCATION AND ACCESS

The Beehive prospect is located 56 km south-southwest of Dryden, at the northeast corner of Manitou Island, on Lower Manitou Lake. Access to the prospect is via motor boat or float plane.

The occurrence consists of 5 trenches and one shaft (Figure 4).

DESCRIPTION

Geology and Alteration: The property is underlain by mafic metavolcanic rocks of the Blanchard Lake group (Blackburn 1976, 1982). The shear consists of pyritic chlorite-carbonate schist, locally mica schist. The schist is injected by quartz veins that pinch and swell.

Structural Geology: Two shear zones are observed in the vicinity of the workings. The main shear zone has a general strike of 090^0, dipping 70^0 to the south. The major quartz veins are about 40 cm wide. The minimum width of the exposed shear zone is about 15 m in the shaft area.

Kinematic indicators suggest a north-side-down, dip-slip shear, based on steep lineations defined by elongate chlorite clots which plunge 81^0 to the east, and by the fold in Vein #2 in the cliff face north of the shaft. However, the orientation of the schistosity ($040^0/72^0$ SE) and of the extension quartz vein ($170^0/70^0$ E) in relation to the shear fabric suggests dextral oblique movement.

The shaft appears to have been sunk as the intersection of an extensional quartz vein (#3) and a central quartz vein (#1). The attitude and the geometry of vein #3 suggests that this vein is a sigmoidal extension quartz vein.

Thirty metres east of the shaft, the east-trending shear zone is truncated by a northeast-trending shear zone, consisting of chlorite-carbonate schist, injected by quartz veinlets tht pinch and swell.

Mineralization: The quartz-carbonate veins are opaque, and milky white to dark grey. Mineralization consists of 1-2% disseminated medium grained chalcopyrite and pyrite. Malachite staining is common, and azurite less common. The veins have a layered appearance due to tourmaline seams up to a few centimeters wide. Sulphides are commonly located at the edges of the tourmaline layers. Tourmaline constitutes 3-5% of the quartz vein material. Schists of the shear zone contain 1% disseminated pyrite.

ASSAYS OF MINERALIZATION

Eight grab samples were collected by the author. Analytical data (Table 4) indicate that the gold in the quartz veins is related to both total sulphide content, and to copper content, and that the schists are low in gold. The best grab samples from the quartz veins yielded:

1) Vein #1: trace

2) Vein #2: 0.538 ounce gold per ton

3) Vein #3: 0.887 ounce gold per ton

DEVELOPMENT HISTORY

1895: Issac Saunders found visible gold in loose rock debris (Rat Portage Miner December 30, 1897).

1897: The discovery of the main vein (#1) which was traced over 140 feet (Thomson 1933).

1898: A shaft was sunk to a depth of 100 feet (Rat Portage Miner, February 11, 1989) by the Sheridan brothers (Rat Portage Miner, December 30, 1897).

1933: Thomson (1933) noticed some visible gold within vein #1.

1943: Chip sampling undertaken by Sylvanite Gold Mines Ltd. yielded 0.549 ounce gold per ton (uncut) for a 15.5 foot length, and an average of 2.5 feet width, or 0.433 ounce gold per ton (cut at 1 ounce), between the shaft and Pit #1 (Assessment Files, Resident Geologist's Office, Kenora).

1983-1984: Teck Corporation purchased the patented ground.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Thomson 1933. ODM, Vol. 42, Part IV, p. 29 and 31.

Sylvanite Gold Mines Ltd. Files 52F/07 SW, EE-1, Assessment Files, Resident Geologist`s Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Location	Rock Type Description
12	12	-	43	0.25	vein 2	quartz vein
13	0.538 oz/T	7	5,200	1.98	vein 2	quartz vein
14	91			0.74	vein 2	chlorite-carbonate schist
15	-	-	268	0.24	vein 1	quartz vein
16	83			1.04	vein 1	chlorite-carbonate schist
17	0.887 oz/T	-	2,550	1.84	vein 3	quartz vein
18	474	-	930	0.24	dump	quartz vein
19	18			0.25	vein 1	chlorite-carbonate schist

Table 4: Analytical data: Beehive Prospect.

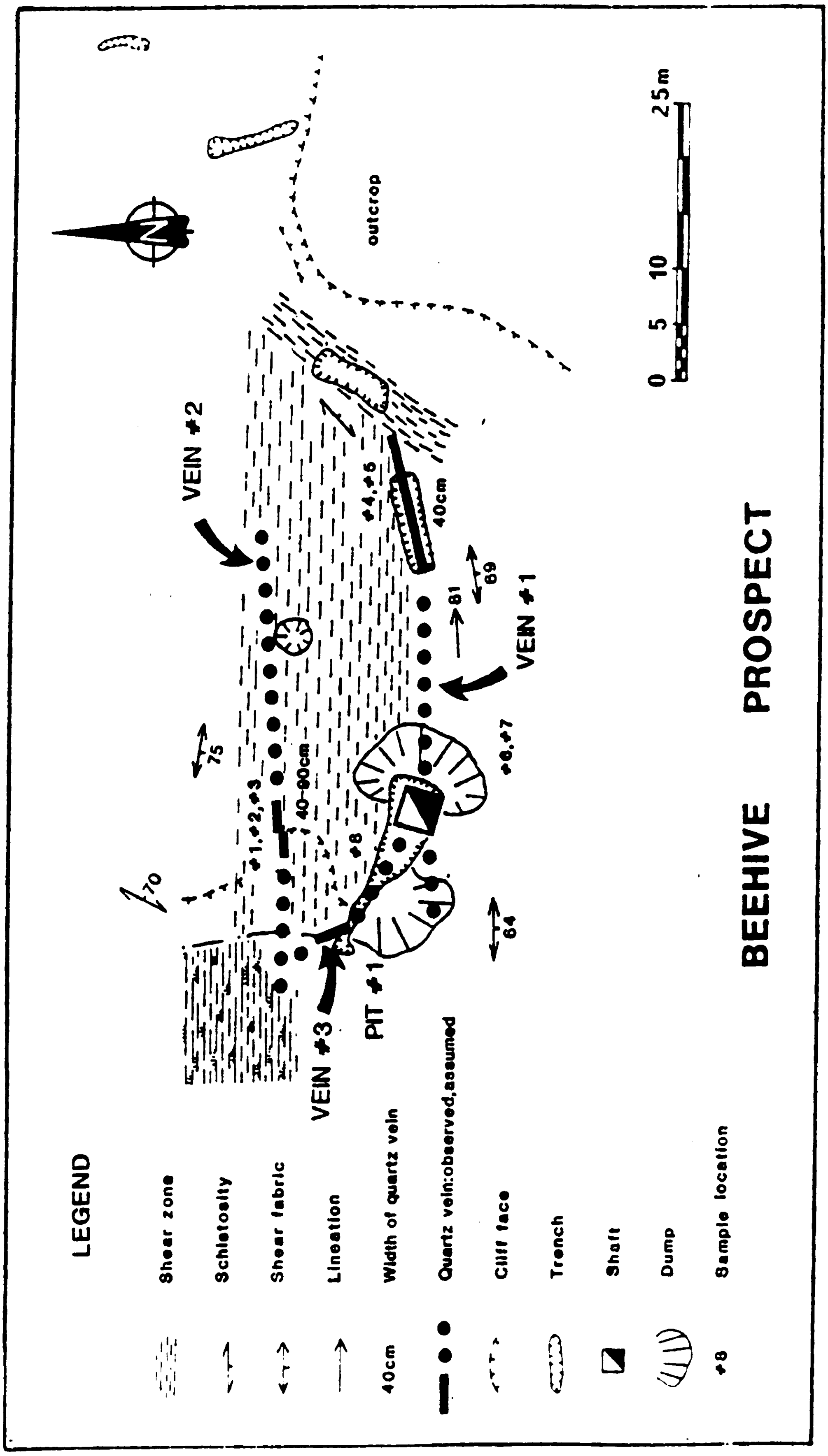

Figure 4: Geology of Beehive prospect

COPELAND PROSPECT

NTS: 52F/09 SW

LOCATION AND ACCESS

The Copeland prospect may be reached 49 km east from Dryden on Hwy 17, at Borups Corner, and thence 7.1 km south on the Sandy Point Road. At this point, turn east onto a dirt road for an additional 0.35 km to the Sakoose mine. The Copeland prospect can be reached at a point 1450 m from Shaft #4 of the Sakoose Mine, on a bearing of N152°. It is on line 2W, 14 + 50 S, on the Venturex grid.

The occurrence consists of one shaft, five trenches, and one exploration pit (Figure 5).

DESCRIPTION

Geology and Alteration: The property is underlain by mafic meta volcanic rocks (Kresz 1987) intruded by two parallel felsic dikes (here called the Shaft Zone and the Main Zone). The shear zones that contain the felsic dikes are characterized by intense ankeritic alteration over a 2 m or greater width. The Shaft Zone appears to be entirely iron carbonatized felsic dike, whereas the Main Zone is a combination of felsic dike rock and host basalt, all of which are strongly iron carbonatized.

Structural Geology: The two parallel, tight shear zones (Shaft Zone and Main

Zone) strike betweem 010° and 020° and are 18 m apart. They vary in dip from 30° to 68° to the west. North of the shaft, a quartz carbonate vein strikes at high angle to the north- northeast trending shear zones. The quartz-carbonate vein is interpreted to be an extensional quartz vein related to the north-northeast trending shear zones. The angular relationship of the extension vein to the shear zones, the orientation of the schistosity (034°/46°NW) within the shear fabric, and the left-stepping attitude of the north-northeast-trending shearing suggests a sinistral component of movement in the shear zone. These structural observations are comparable with those made elsewhere in this area, which indicate sinistral, east-side-down, oblique-slip shearing.

Mineralization: The mineralized zone within the Main Zone is about 2 m wide and is exposed in two trenches and one test pit over a 75 m length. The mineralized zone displays a replacement texture and consists of a stockwork of quartz-dolomite veinlets with fuchsite. The rock included within the stockwork is bleached and pyritized (5% pyrite). The quart-dolomite stockwork is light to medium grey in colour. The veinlets have a semi-translucent to opaque texture. Some ribbons of chlorite occur within the veinlets. The mineralization consists of up to 5% very fine to medium grained pyrite and traces of pyrrhotite.

The Shaft Zone is similar to but less altered than the Main Zone. The iron carbonatized felsic dyke contain 5% pyrite. The zone is exposed in one trench and one shaft over a 30 m length.

The extensional quartz-carbonate vein is poorly exposed. It is 55 cm wide, and surrounded by ankeritic alteration. The vein is light grey to smoky grey, and opaque. Some wispy ribbons of chlorite and magnetized mafic xenoliths occur in the quartz. Mineralization is up to 1% fine grained pyrite.

ASSAY OF MINERALIZATION

All fifteen grab samples taken by the author returned less than 100 ppb on analysis (Table 5).

DEVELOPMENT HISTORY

1935: Nordic Sturgeon Gold Mines Ltd. accidentally discovered the old workings. They discovered a quartz vein with visible gold (Gold Magazine, June, 1936).

1987: Venturex Resources Ltd. and Nexus Resources Ltd. re-discovered the old workings during joint-venture exploration at the Sakoose mine and Maw occurrence. They report that samples they took ranged from 193 ppb gold to 0.39 ounce gold per ton on analysis (Assessment File, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Kresz 1987, OGS, OFR 5659.

Venturex Resources Ltd. File 52F/07 SW, 00-1, Assessment Files, Resident Geologist`s Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Location	Rock Type Description
1	28	-	30	0.18	Extension Vein	quartz vein
2	26	-	33	0.91	Extension Vein	quartz vein
3	2	-	10	2.40	Main Zone	quartz carbonate vein
4	16	-	188	0.56	Main Zone	bleached mafic rock
5	14	-	189	1.20	Main Zone	quartz carbonate vein
6	30	-	39	2.13	Main Zone	replacement vein
7	19	-	33	1.37	Main Zone	replacement vein
8	33	-	160	1.02	Main Zone	replacement vein
9	7	-	33	1.74	Main Zone	replacement vein
10	23	-		0.04	Main Zone	dolomite-chlorite schists
11	-	-		0.03	Main Zone	felsic dike
12	21	-	21	0.17	Main Zone	replacement vein
13	13	-	37	0.98	Main Zone	replacement vein
14	40	-	195	2.10	Main Zone	replacement vein
15	100	-	38	1.79	Shaft Zone	altered felsic dike

Table 5: Analytical data: Copeland Prospect.

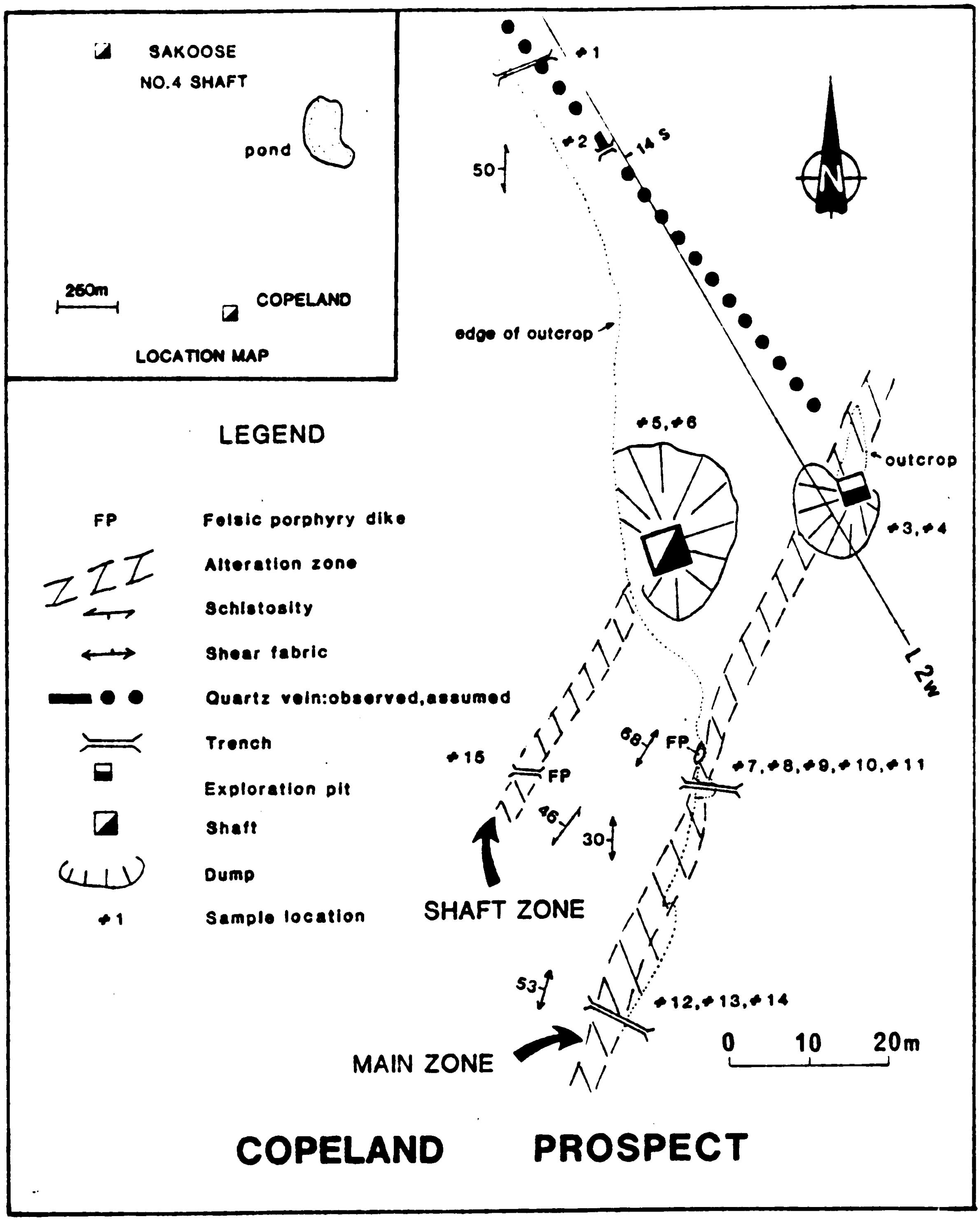

Figure 5: Geology of Copeland prospect.

DRYDEN RED LAKE OCCURRENCE

NTS: 52F/07 SW

LOCATION AND ACCESS

The occurrence is located North 51 km south of Dryden, at a point about 2 km north of Blanchard Bay of Lower Manitou, on the west side of the south-flowing creek which connects Early Lake to Blanchard (or Shaughnessy) Bay. Access is via motor boat or float plane to Blanchard Bay.

The occurrence consists of four exploration pits over a length of 60 metres (Figure 6).

DESCRIPTION

Geology and Alteration: The occurrence is underlain by mafic metavolcanic rocks of the Blanchard Lake group (Blackburn 1976, 1982). The shear zone consists of a carbonatized mica-hornblende-plagioclase schist. The zone is strongly schistose and very fissile, and is about 5 m wide.

Structural Geology: The schistosity (360°/66° E) is clearly rotated into the shear fabric (020°/40° E), indicating a dextral component of horizontal movement. The shear can be traced for a minimum length of 700 m according to Thomson (1933). A few hundred metres to the north of the prospect occur extension quartz veins (65°/70° N), some of which are folded into a Z-shape, supporting the interpretation of a dextral component of horizontal movement.

The dip of the quartz veins varies from 30 to 66° to the east. The overall attitude of the quartz veins therefore suggests a dextral, west-side-down, oblique-slip movement along the shear zone.

Interpretation of a humus geochemical survey done by D. Nelson in 1987 over a grid with 120 m line spacing (Assessment Files, Resident Geologist's Office, Kenora), indicates two extensive sinuous anomalous gold zone (3 ppb to 34 ppb) having a right stepping attitude over a 1.2 km strike length (figure 7). This interpretation suggests a dextral sense of strike-slip component of movement during shearing.

Mineralization: The opaque quartz-carbonate veins at the occurrence are commonly pale to dark grey, to pale yellowish brown, and locally white, and generally have a sugary texture. In Pit 2, four veins are observed in the shear zone. Their width varies from 10 to 40 cm, and some are boudinaged. Ankeritic alteration commonly occurs within the quartz veins. Accessory minerals are chlorite in clots, and rare tourmaline and hornblende. In some cases the veins have a laminated appearance due to hornblende or chlorite seams. Less than 1% fine to medium grained pyrite occurs within the quartz veins, whereas the wall rocks have up to 2% pyrrhotite and pyrite combined.

ASSAYS OF MINERALIZATION

Nine grab samples were taken by the author (Table 6). The best sample came from Pit 4, where a quartz vein assayed 0.658 ounce gold per ton. One of the three grab samples from the carbonatized mica-horblende-plagioclose schist assayed 0.048 ounce gold per ton.

DEVELOPMENT HISTORY

1932-1933: The occurrence was discovered by the Dryden-Red Lake Prospecting Partnership (Thomson 1933). Thomson took two samples, one from Pit 2 which assayed 0.034 ounces gold per ton across 8 feet, and one from Pit 4 which assayed 0.44 ounces of gold per ton across 4 feet.

1987: D. Nelson carried out geological, soil, and rock geochemistry surveys. His best chip sample assayed 0.81 ounces of gold per ton over 90 cm (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Blackburn 1976. OGS, GR. 142.

Nelson D. Files 52F/07 SW, BB-1, BB-2 and BB-3, Assessment Files, Resident Geologist's Office, Kenora.

Thomson 1933. ODM, Vol. 42, Part IV, p. 30-31.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Location	Rock Type Description
1	0.077 oz/T	-	0.005%	0.89	pit 2	quartz vein
2	0.145 oz/T	-	0.004%	0.17	pit 2	quartz vein
3	82	-	0.006%	0.98	pit 2	carbonatized biotite schist
4	57	-	0.003%	0.10	pit 2	quartz vein
5	0.048 oz/T	-	0.004%	2.05	pit 2	carbonatized biotite schist
6	31	-	0.001%	0.25	pit 2	quartz vein
7	0.008 oz/T	-	0.001%	0.23	pit 3	quartz vein
8	0.658 oz/T	-	0.003%	0.32	pit 4	quartz vein
9	31	-	0.004%	0.15	pit 4	carbonatized biotite schist

Table 6: Analytical data: Dryden Red Lake occurrence.

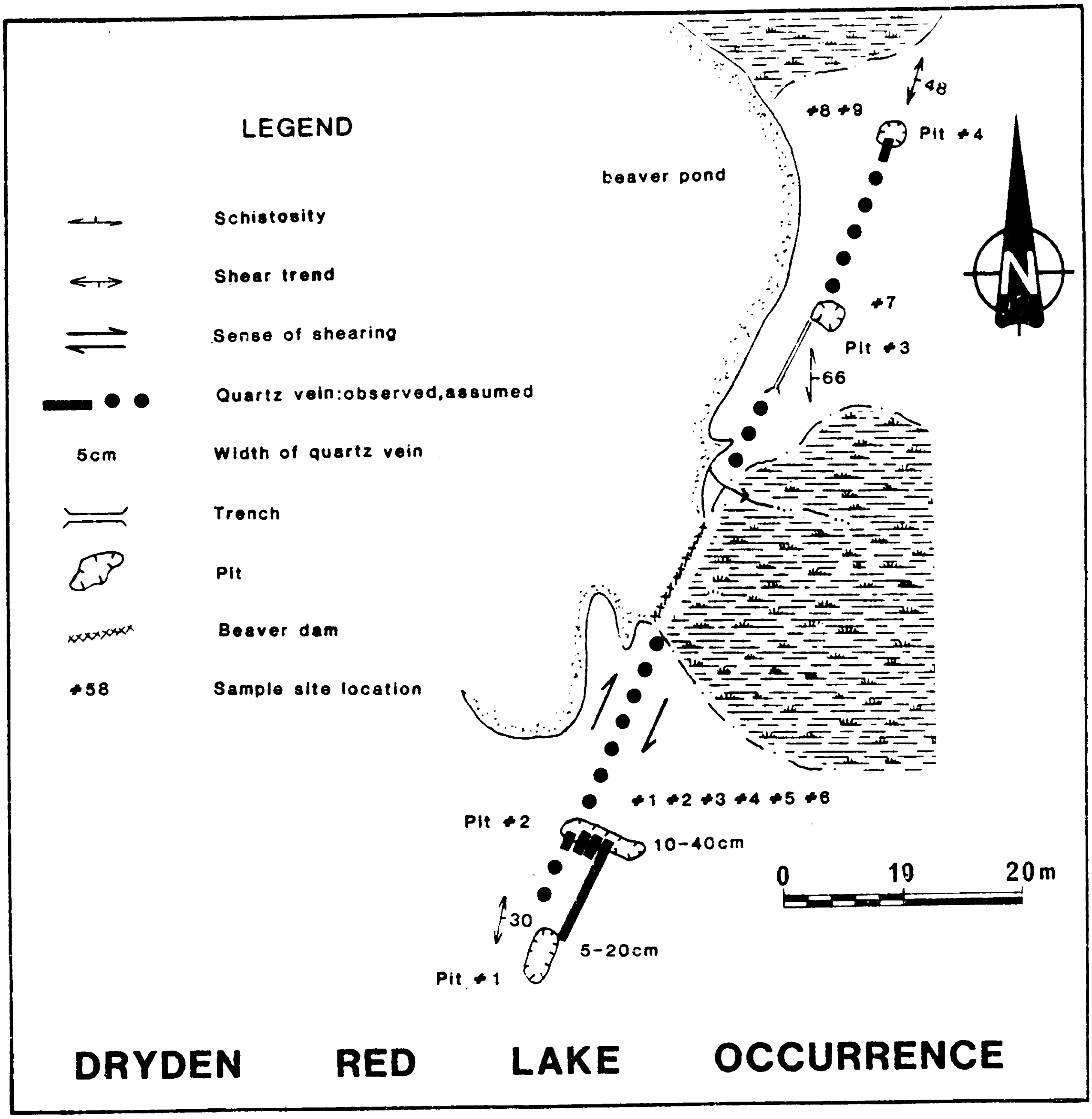

Figure 6: Geology of Dryden Red Lake occurrence.

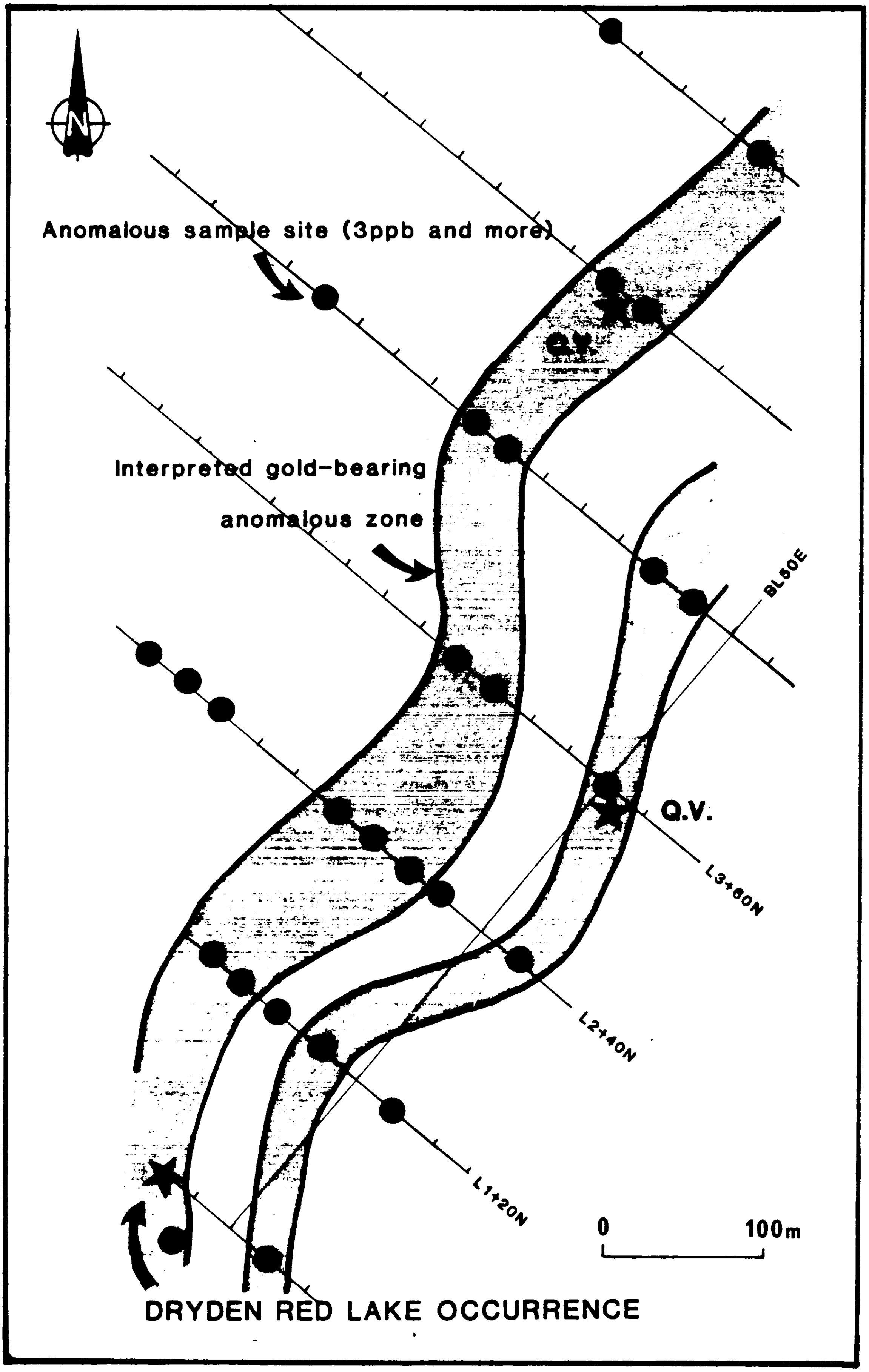

Figure 7: Interpretation of humus geochemical survey.

GAFFNEY PROSPECT

NTS: 52F/07 SW

LOCATION AND ACCESS

The Gaffney prospect is located 57 km south-southwest of Dryden, midway along the southeast shore of Manitou Island of Lower Manitou Lake. Access to the prospect is via motor boat or float plane.

The prospect consists of two pits and 26 trenches.

DESCRIPTION

Geology and Alteration: The prospect is underlain by mafic volcanic and intermediate to felsic volcanic rocks of the Blanchard Lake group (Blackburn 1976, 1982) and magnetite-bearing quartz-diorite, all of which were intruded by quartz-feldspar porphyry dikes. Shearing of all the above rocks resulted in iron-carbonate and sulphide-bearing schists.

Structural Geology: Mapping by Teck Corporation (Assessment Files, Resident Geologist's Office, Kenora) indicates the quartz diorite to have been folded about an overturned antiform dipping to the southeast. The trace of the axial plane trends about 050°. The schistosity fabric strikes 045° - 050°, and dips 60-65° to the southeast.

The area is characterized by two cross-cutting sets of felsic dikes. The first set trends to the northeast and the second set to the north.

Mineralized zones are closely associated with felsic dikes (Figure 8). Three mineralized zones, here called A,B, and C, have been investigated by previous worker at the Gaffney prospect. In Zone A, a narrow altered and deformed felsic dike is associated with the mineralized zone but too narrow to include in Figure 8.

The locations of the mineralized zones are controlled by both competency contrasts during deformation between the quartz diorite and surrounding rocks, and by behaviour during deformation of the quartz-diorite itself. These zones are: 1)localized at the contact of the quartz diorite and surrounding rock, but within the quartz diorite, and 2) within the body of the quartz diorite. Sulphide stringers in micro fractures trend at 130°/70° NE, at high angle to the shear zone.

The area is characterized by a penetrative steep lineation defined by chlorite clots, which plunges 70-75° to the south southeast through south southwest. In addition, a very subtle lineation plunging shallowly to moderately to the northeast, defined by elongate plagioclase on shear planes, is locally observed in the north and northeast trending mineralized zone. The second set of lineations, attributed to shearing, indicates that the northeast-trending shear shows oblique-slip to strike-slip movement.

Kinematic indicators such as the geometry and the attitude of the mineralized zone, the major north trending felsic dike, and high-angle microfractures suggest that the northeast trending shear is a dextral oblique-slip whereas sinistral sense of movement, is attributed to the north trending shear.

Teck Corporation and San Paulo Exploration Inc. have delineated 300,000 tons grading 0.15 ounce of gold per ton (Northern Miner, May 9, 1989), mainly from Zone A. Zone A is about 100 m long by about 4 m wide width at surface, and is located at the intersection of conjugate shears. Drill intersections (Assessment Files, Resident Geologist's Office, Kenora) suggest that the ore shoot plunges 70° to the southwest.

Mineralization: The mineralization consists of medium to course grained pyrite, and traces of chalcopyrite. The shear zones contain an average of 8% disseminated pyrite, to semi-massive lenses locally. Quartz veinlets are opaque and light to medium grey in colour. The veinlets display chlorite-filled fractures, ankerite, and calcite, with $\leq$1% pyrite and chalcopyrite.

ASSAYS OF MINERALIZATION

Six grab samples were taken by the author (Table 7). The best sample, pyritized quartz diorite, assayed 0.103 ounce gold per ton.

DEVELOPMENT HISTORY

1904-1905: Mike Nooman sunk a 37.5 feet deep shaft on a quartz vein (Assessment File 52F/07 SW, EE-1, Resident Geologist's Office, Kenora), now filled in but probably at the intersection of Zone C and the northeast trending felsic dike.

1927-1928: Anglo-Canadian Explorers Ltd. opened up 15 trenches uncovering several quartz veins and a zone of sulphides over a length of 900 feet. The claims were allowed to come open in 1928 (Assessment Files, 52F/07 SW, EE-1, Resident Geologist's Office, Kenora).

1928: Frank Gaffney re-staked the claims and organized the Manitou Island syndicate (Assessment File: 52F/07 SW, EE-1, Resident Geologist's Office, Kenora). He collected a number of samples, all of which returned gold values on assay, the best being 2.07 ounces of gold per ton (Assessment File 52F/07 SW, EE-1, Resident Geologist's Office, Kenora).

1931: Claims came open and were restaked by F. Gaffney (Thomson 1933).

1933 - 1934: Property optioned by D.H. Angus. Six holes were diamond drilled for a total footage of 1506 feet (Assessment File 52F/07 SW, E-1, Resident Geologist's Office, Kenora), and thirty samples of the core sent for assay. The best result was 0.29 ounce of gold per ton over 5 feet from hole #1. Resampling and assaying of the trenches was also done. The best chip sample across 5 feet assayed 0.91 ounces of gold per ton in trench #8 (Assessment File 52F/07 SW, CC-1, Resident Geologist's Office, Kenora). A chip sample taken by Thomson (1933) across 12 feet of sulphide material from pit #1 assayed 1.48 ounces gold per ton.

1937: Gaffney Mines Ltd. diamond drilled fourteen holes for a total footage of 1651 feet, to test beneath several trenches to a depth from fifty to one hundred feet. The best assay from core samples yielded 0.54 ounce of gold per ton over 11 feet in hole #12 (Assessment Files 52F/07 SW, E-1, Resident Geologist's Office, Kenora).

1943: The property was optioned by Sylvanite Gold Mines from Frank Gaffney.

1944-1945: Twenty-one holes were diamond drilled by Sylvanite Gold Mines for a total footage of 3100 feet. The deepest holes tested 200 feet below Zones A and B (Assessment Files 52F/07 SW, EE-1, Resident Geologists's Office, Kenora).

1983-1984:Teck Corporation purchased the patented ground. With their joint-venture partner Noxe Petroleum Corporation they conducted magnetic, VLF-electromagnetic, and geological surveys, and diamond drilled 21 holes totalling 2,738 m (Assessment Files 52F/07 SW, Y-2, Resident Geologist's Office, Kenora). The best intersection assayed 0.157 ounce of gold per ton over 20.5 m (The Northern Miner, December 14, 1987).

1987:Teck Corporation and San Paulo Exploration Inc. diamond drilled 7 holes (The Northern Miner, May 9, 1988).

SELECTED REFERENCES

Angus D.H. File 52F/07 SW, CC-1, Assessment Files, Resident Geologist's Office, Kenora.

Blackburn 1976. OGS, GR 142.

Gaffney Mine. File 52F/07 SW, E-1, Assessment Files, Resident Geologist's Office, Kenora.

Manitou Island Syndicate. File 52F/07 SW, DD-1, Assessment Files, Resident Geologist's Office, Kenora.

Sylvanite Gold Mines. File 52F/07 SW, EE-1, Assessment Files, Resident Geologist's Office.

Teck Corporation. File 52F/07 SW, Y-2, Assessment Files, Resident Geologist's Office, Kenora.

Thomson 1933. ODM, Vol. 42, Part IV, p. 27-31.

Sample Number	Au (oz/T)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Location	Rock Type Description
1	0.014	-	89	-	-	1.61	Trench 4	quartz vein
2	0.012	-	30	-	-	2.83	Trench 12	quartz vein
3	0.103					2.86	Trench 9	pyritized quartz diorite
4	0.005	-	51	-	-	1.10	Trench D,E	altered QFP
5	0.041	-	44	-	-	0.83	Trench D,E,F	quartz vein
6	0.044					2.02	Trench 4	quartz diorite

Table 7: Analytical data: Gaffney Prospect.

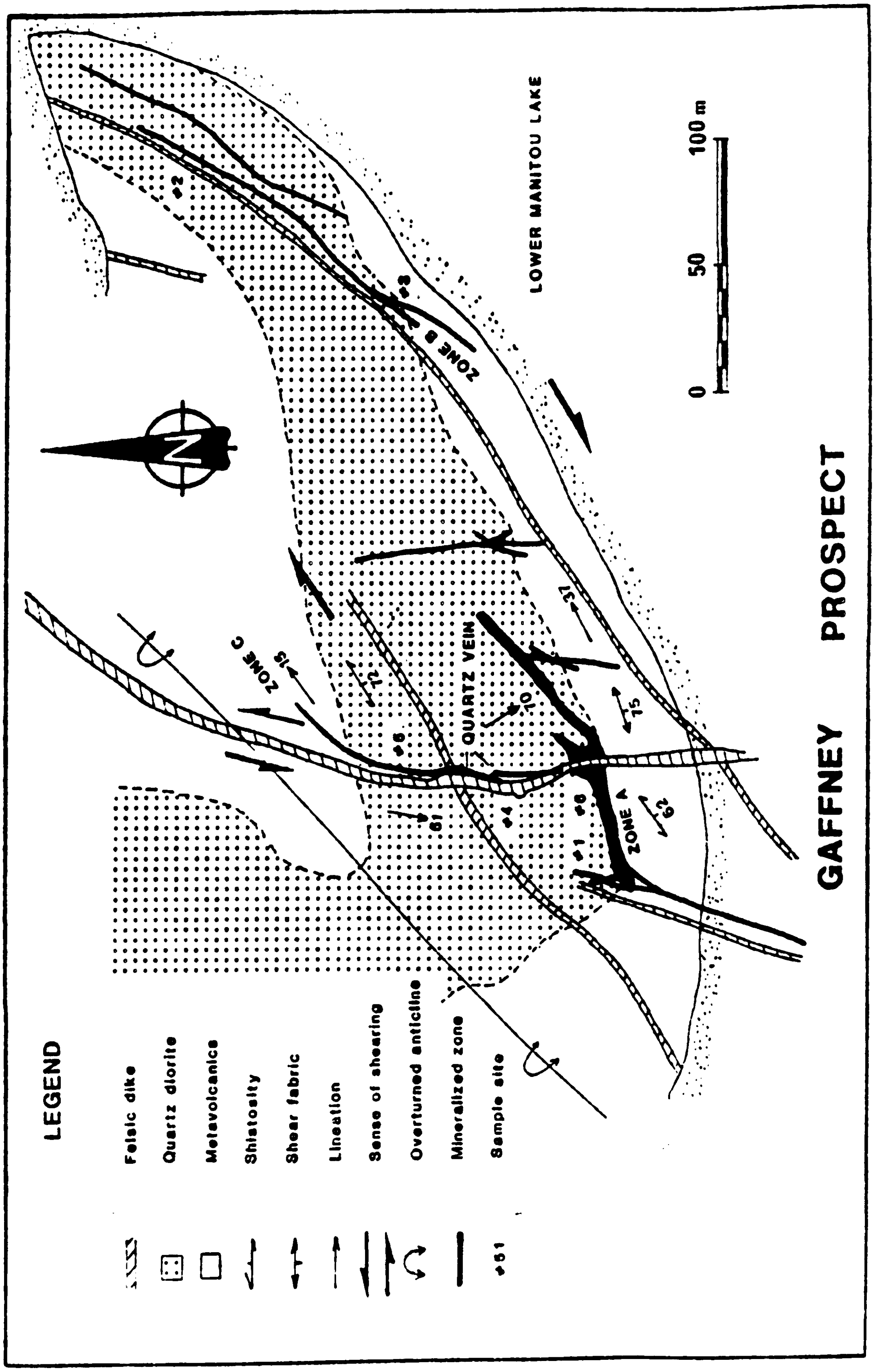

Figure 8: Geology of the Gaffney prospect. Data compiled from Assessment Files, Resident Geologist's Office, Kenora, and interpreted by P.C. Delisle (1990).

GATES LAKE OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

The Gates Lake occurrence is located 76 km south-south-west of Dryden on the narrow strip of land between Manitou Stretch and Gates Lake. Road access to the property is from Hwy 502, along the Cedar Narrows Road to the landing on the Manitou Stretch. A short boat trip of about 16 km reaches the occurrence.

Five trenches are spread out along a 200 m zone trending northeasterly (Figure 9).

DESCRIPTION

Geology and Alteration: The trenches are sunk in a gabbro surrounded by pillowed mafic metavolcanics (Berger 1989). All the bedrock is sheared, and iron carbonatized and sulphidized.

Structural Geology: Shear zones intersected in the trenches consist of fissile schists varying from 2.5 to 5 m wide. The shears have a general northeast trend and dip 74^0 to the northwest. The position of the trenches (Figure 9) suggests two different structural interpretations. The first interpretation is that of two parallel sheared zones, 15 m apart, so that trench 2 and trench 3 were opened up on one shear zone, and trenches 3A, 4 and 5 were opened up on the other one. The second interpretation is that these five trenches are on the same shear, but that it was dextrally faulted by a north-trending fault between trench 3 and trench 3A or perhaps both shear is connected by a right-stepping flexure. Regardless of which interpretation is correct, flat-lying quartz stringers in all the trenches suggest a dip-slip component of shear.

Mineralization: Coarse, loose, quartz vein material is found beside all the trenches, but none was found in place in the trenches. The quartz vein material is white to pale grey, opaque and sometimes contains ribbons of chlorite. Fractures in the quartz are filled with calcite. Accessory minerals are ankerite, and minor sericite, chlorite, and muscovite. Sulphides consist of less than 1% pyrite.

The schistose rock in the trenches is moderately to strongly iron carbonatized, sulphidized, and locally silicified. Sulphides vary from trace to 40% pyrite, arsenopyrite, and pyrite. The amount of sulphides is greatest in the fissile zone, which in some places contains narrow semi-massive sulphide bands and stringers.

ASSAYS OF MINERALIZATION

Eleven grab samples were taken by the author (Table 8). Gold mineralization is associated with the sulphidized and iron carbonatized fissile zone. This type of mineralization is identical to that at the Sorry Mac occurrences and to trenches 1, 3, 4, and 10 as the Peep Bay occurrence.

Analytical results indicate a correlation between gold, and antimony and arsenic contents. The best assay came from trench 3 which returned 5410 ppb gold. If the second structural interpretation is the correct one, high gold values could be expected to occur near the junction of the shear with the north-trending fault or in the flexure of the shear zone.

DEVELOPMENT HISTORY

1901: The Pan American Exposition 1901 reported an assay of 0.865 ounce gold per ton (Assessment File 52F/03 NE, H-1, Resident Geologist's Office, Kenora).

1941-1944: Sporadic work which included trenching and 1,145 m of drilling by Goldale Mines Ltd., and by Birch Bay Gold Mines (Kenora Miner, August 22, 1944, and Canadian Mines Handbook, 1945). Pit 3 yielded 0.16 ounce gold per ton over 10 feet of selected rocks (Assessment File 52F/03 NE, H-2, Resident Geologist's Office, Kenora). Seven percent antimony was detected over an average width of 10 feet in drilling over a 250 foot long zone (Assessment Files, 52F/03 NE, H-1, Resident Geologist's Office, Kenora).

1988-1989: Homestake Mineral Development Co. undertook ground VLF-electromagnetic,magnetic, and geological surveys, aadoanaissance soil and rock geochemical sampling program. The best grab sample came from trench 2, which assayed 21.95 g/t gold (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Berger 1989. OGS, MP.141, p. 145-148.

Gates Lake area general. File 52F/03 NE, H-1 and H-2, Assessment Files, Resident Geologist's Office, Kenora.

Homestake Mineral Development Co. Files 52F/03 NE, R-2, R-3 and R-4, Assessment Files, Resident Geologist's Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Sb (ppm)	As (ppm)	S (%)	Location	Rock Type Description
1	61	-	16	-	2.3	320	1.22	trench 5	pyritized, carbonatized & silicified gabbro
2	105	-	-	-	2.9	2600	0.03	trench 5	quartz vein
3	52	-	25	-	14	3900	1.25	trench 5	pyritized and carbonatized gabbro
4	1160	-	11	-	53	9.6%	1.78	trench 5	fissile zone
5	870	-	7	-	7.2	6800	6.48	trench 3A	sulphidized and silicified gabbro
6	105	-	143	-	11	2.6%	1.99	trench 3A	pyritized gabbro
7	-	-	-	-	0.8	150	0.02	trench 3A	quartz vein
8	75	-	8	-	0.7	350	0.02	trench 2	quartz vein
9	40	-	50	5	36	6%	3.52	trench 2	sulphidized gabbro
10	21	-	143	10	5.7	3000	2.19	trench 2	pyritized, carbonatized & silicified gabbro
11	5410	-	30	6	101	24%	7.48	trench 3	fissile zone

Table 8: Analytical data: Gates Lake occurrence.

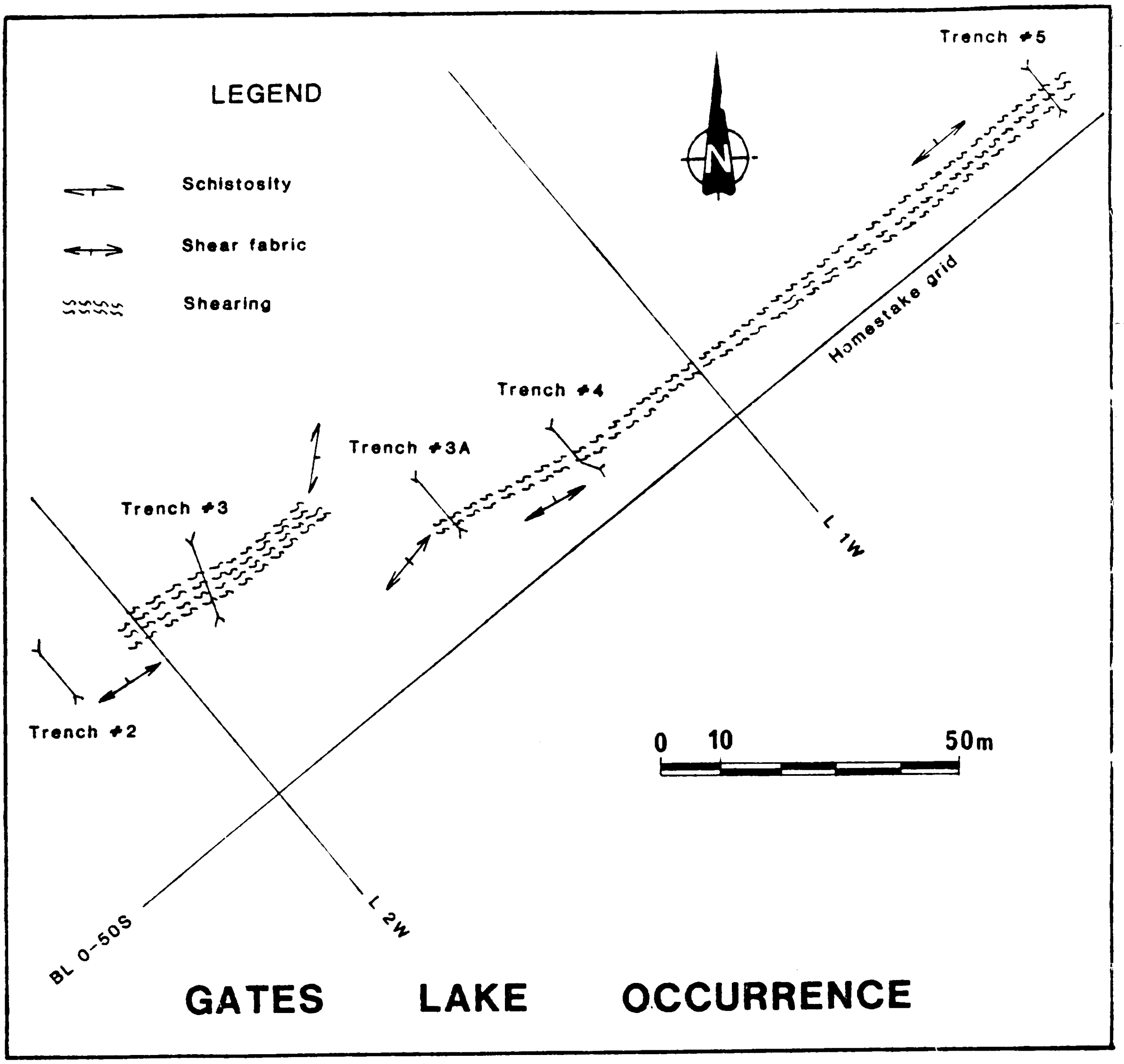

Figure 9: Geology of the Gates Lake occurrence.

GIANT PROSPECT

NTS: 52F/07 NE

LOCATION AND ACCESS

The Giant prospect is located 45 km south of Dryden, 400 south of the west end of Mosher Bay of Upper Manitou Lake. The property is accessible by float plane, or can be reached by a series of portages along the creek between Mosher Bay and Rattlesnake Lake, where it is crossed by Highway 502.

The Giant prospect consists of two shafts (here called the East and West Shafts) sunk on the same shear zone, but 1 km apart (Figure 10). In addition, a minimum of 23 trenches and pits were recorded by the author. More trenches and pits exist to the east of those shown in Figure 10.

DESCRIPTION

Geology: Giant prospect lies within sheared metasediments of the Manitou group (Blackburn 1981a; 1982). The metasediments are polymectic conglomerates, greywackes, siltstones, argillites and magnetite iron formation, all of which have been intruded by narrow quartz-feldspar porphyry dikes.

Structure and Alteration: The shear zone hosting the Giant prospect is about 80 m wide, strikes about 080°, and dips at 87^0 to the north. Shearing resulted in a highly schistose and altered rock, a chlorite-biotite-sericite-quartz schist. The schistosity strikes 070° and dips 85^0 to the north. Minor kink-bands are observed. Flat slickensides plunging from 0 to 32^0 to east-northeast, fabric orientation, and kinematic indicators, such as the Z-shape folding of the vein, imply a dextral strike-slip component of shear. This resulted in an oblique quartz vein array, and possibly Z-shaped oblique and extension quartz veins (Figure 10).

Mineralization: The quartz-carbonate veins are white, to light grey to dark grey, and opaque with patches of ankerite and dolomite. The quartz has a laminated texture due to ribbons of chlorite and sericite. Less than 1% pyrite occurs in the quartz, whereas up to 5% pyrite is present within the ribbons. Visible gold was noticed in the vicinity of the East Shaft.

The width of the quartz veins varies from 10 to 125 cm. At the East Shaft, several quartz veins are exposed over a 220 m strike length. Many more trenches exist to the east, suggesting that the shear-hosted veins may extend further in that direction. Including the West Shaft, the shear zone has the potential of hosting oblique shear vein arrays over a minimum of 1.5 km length.

ASSAY OF MINERALIZATION:

Eight grab samples were taken by the author (Table 9). The best sample, from 130 m east of the West Shaft, assayed 0.59 ounce of gold per ton.

DEVELOPMENT HISTORY

1897: A shaft (East Shaft) was sunk to a depth of 24 feet on a quartz vein hosting visible gold (Coleman 1898) on Mining Location HW 75. A grab sample taken by Coleman assayed 0.337 ounce gold per ton.

1901-1904: Several pits and trenches were sunk over a distance of 300 feet (Carter 1902) on Mining Location HW 75. An adit was driven into a cliff face for a distance of 100 feet on Mining Location HW 74, by the Giant Gold Company (Miller 1903). The East Shaft was deepened to 212 feet with 150 feet of drifting to the east and 24 feet of crosscutting to the south (Carter 1904). A shaft (West Shaft) situated above the adit, on Mining Location HW 74, was sunk to a depth of 60 feet and intersected the adit at 55 feet (Carter 1905). A shaft was also started on Mining Locatin HW 185 east of the East Shaft but was discontinued due to lack of "pay ore" (Carter 1905).

1983-1984: Cochrane Oil and Gas Limited conducted geological mapping, ground VLF-electromagnetic and magnetic surveys, trenching, stripping, and sampling, and diamond drilled 10 holes for a total length of 699.2 meters. Their best channel sample, from 30 m east of the East Shaft, assayed 0.599 ounce gold per ton over 0.8 m. (Assessment Files, Resident Geologist's Office, Kenora).

1989: Alex Glatz staked the prospect and optioned it to Noranda Exploration.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 202.

Carter 1902. ODM, Vol.11, p. 247.

Carter 1904. ODM, Vol.13, p. 67.

Carter 1905. ODM, Vol. 14, p. 53.

Coleman 1898. OBM, Vol. 7, Part II, p. 123.

Cochrane Oil and Gas. Files 52F/07 SW, X-2, X-4, X-5 and X-6, Assessment Files, Resident Geologist's Office, Kenora.

Miller. 1903. ODM, Vol. 12, p. 92.

Thomson. 1933. ODM, Vol. 42, p.24-25.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Location	Rock Type Description
1	90	-	13	0.08	east shaft	quartz vein
2	-	-	34	0.07	east shaft	quartz vein bearing sericite-chlorite schist
3	215	-	27	0.19	east shaft	quartz vein
4	6	-	29	0.17	east shaft	quartz/chlorite/sericite schist
5	2	-	14	0.02	east shaft	quartz vein bearing sericite schist
6	0.59 oz/T	-	13	1.95	west shaft	quartz-carbonate vein
7	110	-		1.93	west shaft	sheared quartz feldspar
8	1960	-	8	0.21	west shaft	quartz vein

Table 9: Analytical data: Giant Prospect.

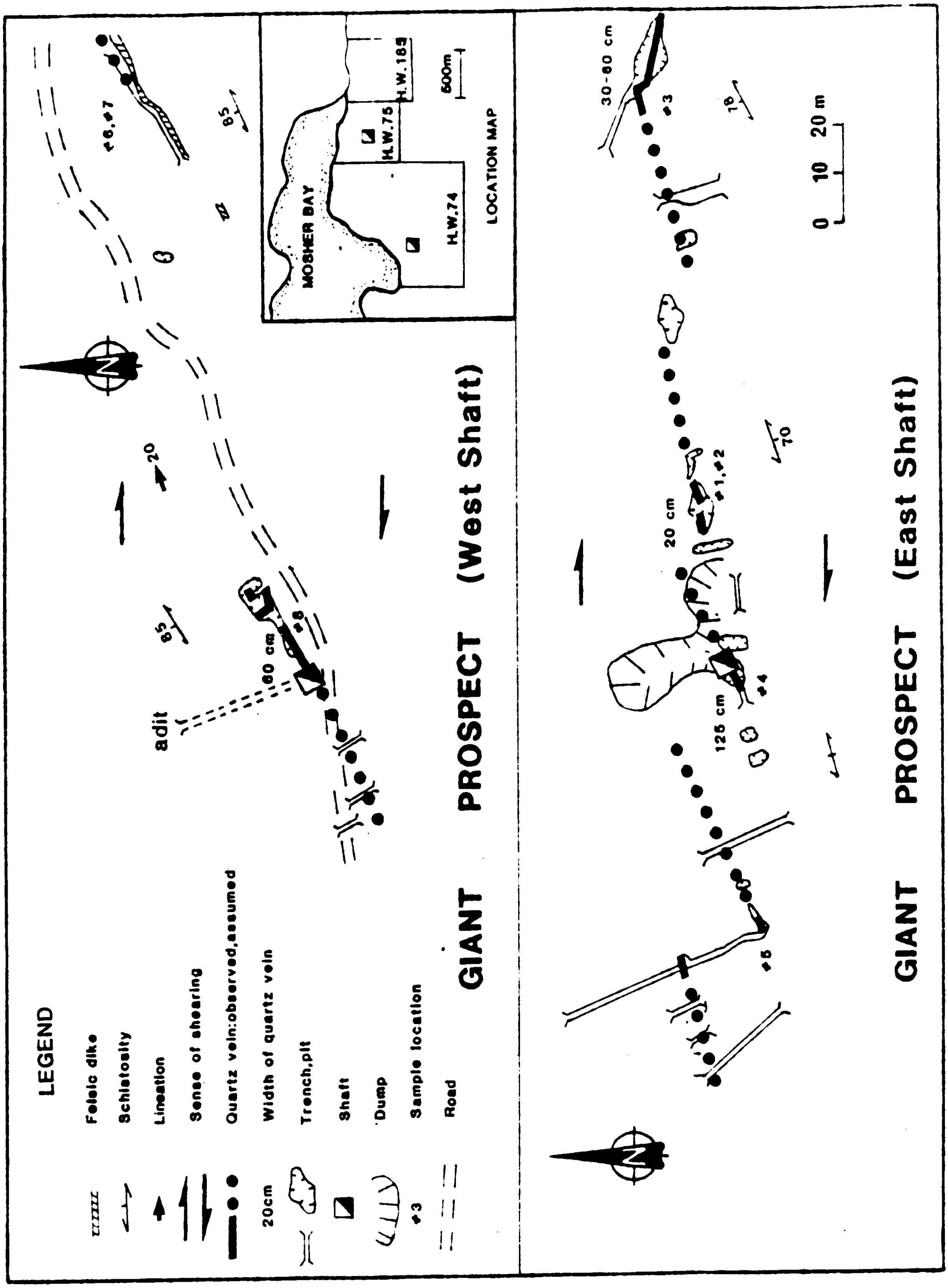

Figure 10: Geology of Giant prospect.

GLASS REEF MINE

NTS: 52F/07 SW

LOCATION AND ACCESS

The Glass Reef mine is located 57 km south of Dryden, on the south shore of Lower Manitou Lake, south of Beaverhead Island. A 350 m long trail leads from the shore line to the shaft.

In addition to the shaft, there is an adit 60 m southeast of the shaft, near the bottom of a hill, which connects with one of the levels of the shaft.

DESCRIPTION

Geology: Bedrock is not well exposed at the shaft, but according to a report for Cochrane Oil & Gas (Assessment Files, Resident Geologist's Office, Kenora), the shaft is underlain by quartz-carbonate-sericite-fuchsite schist . The schist is enclosed within sedimentary, pyroclastic, and mafic metavolcanic rocks of the Etta Lake formation (Blackburn 1976, 1982).

Structure and Alteration: Because no outcrop is exposed in the vicinity of the shaft, no structural measurements was taken. Regional mapping by geologists working for Cochrane Oil & Gas (Assessment Files, Resident Geologist's Office, Kenora) suggests that the schist strikes 055^{0}. Alteration seen in material in the dump consists of calcite, ankerite, and sericite.

Mineralization: The quartz-carbonate material is white and light to dark grey. The quartz has a mosaic texture,is generally fractured, and contains patches of ankerite. The vein displays wispy ribbons of sericite and ankerite. Mineralization consists of 1-2% pyrrhotite, pyrite and chalcopyrite, in both the vein and the wall rock material.

ASSAYS OF MINERALIZATION

The best assay from five grab samples taken by the author from the dump was 46 ppb gold (Table 10). Three samples returned nil values for gold.

DEVELOPMENT HISTORY

1899: Glass Reef Gold Mining Co. of Lake Manitou Ltd. sank a 200 feet deep three compartment vertical shaft with 2 levels and did 1,076 feet of drifting and cross-cutting (Carter 1901).

1901: The mine closed after producing 22 ounces of gold from a quartz stockwork in a feldspar porphyry dike (Carter 1902).

1983-1984: Cochrane Oil and Gas conducted geological, geophysical, and geochemical surveys in the vicinity of the mine. One 33 m long hole was drilled southwest of the shaft (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Blackburn 1976. OGS, GR 146.

Carter 1901. ODM, Vol. 10, p. 99-100.

Carter 1902. ODM, Vol. 11, p. 248.

Cochrane Oil and Gas. Files 52F/07 SW, X-2, X-3 and X-4, Assessment Files, Geologist's Office, Kenora.

Thomson 1933. ODM, Vol.42, part IV, p. 25.

Sample Number	Au (ppb)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Rock Type Description
1	-	88	-	-	0.48	quartz carbonate vein
2	-	107	-	-	0.69	quartz vein bearing sericite schist
3	46	69	-	-	0.59	sericite schist with quartz stringers
4	-				0.26	quartz vein
5	39				0.62	altered mafic volcanic

Table 10: Analytical data: Glass Reef Mine.

GOLD STANDARD G.340 OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

The occurrence is located 70 km south-southwest of Dryden, northwest of Manitou Stretch, between Grant Lake to the south and Napanee Lake to the north. Road access to the property is from Hwy 502, along the Cedar Narrow Road to the landing on the Manitou Stretch. A short boat trip of about 20 km reaches the occurrence.

The occurrence consists of one shaft. The author estimated the shaft to be 110 deep.

DESCRIPTION

Geology: Rocks in the vicinity of the shaft are vesicular pillowed mafic metavolcanics and glomeroporphyritic mafic metavolcanics, containing elongate quartz eyes.

Structure and Alteration: The shear is not well exposed, but appears to trend northerly. The schistosity strikes 049° and dips 85° to the southeast. In the south wall of the shaft, a 3 m wide portion of the shear zone is exposed which consists of sericite-chlorite-ankerite-(fuchsite) schist, injected by many quartz veins and veinlets.

Mineralization: The quartz vein is white to light grey, and opaque. The veins contain ribbons of chlorite and sericite. Fractures in the quartz are filled with calcite. Accessory minerals are ankerite and muscovite. The sulphide consists of 1% pyrite, in both the quartz veins and the schists.

ASSAYS OF MINERALIZATION

A grab sample of the quartz vein in the dump returned 50 ppb gold on analysis, whereas a sample of the wallrock gave 4 ppb gold.

DEVELOPMENT HISTORY

1901: Gold Standard Mining Co. sunk a shaft to a depth of 150 feet, and did 20 feet of drifting (Carter 1902). The shaft was collared on an 8 foot wide quartz vein (Carter 1901).

1989: Canhorn Mining Corporation optioned the property from R. Fairservice. The company conducted an airborne magnetic and electromagnetic survey and did geological mapping and prospecting.

SELECTED REFERENCES

Berger 1989. OGS, MP 141, p. 145-148.

Carter 1901. ODM, Vol. 10, p. 100.

Carter 1902. ODM, Vol. 11, p. 250.

GOLD STANDARD H.W. 271 OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

The occurrence is located 68 km south-southwest of Dryden, on a peninsula on the northwest shore of Neilson Lake. Access to the occurrence is via float plane.

Two pits and one shaft are located within 9 m of the shore line.

DESCRIPTION

Geology and Alteration: The occurrence is underlain by felspar-phyric mafic metavolcanic flows, and mafic lapilli-tuff, that have been sheared, to produce chlorite-sericite-carbonate schist. Schist included in the quartz vein is locally silicified and pyritized.

Structural Geology: The schistosity strikes about 025° and dips 78° to the southwest. The shear zone is very subtle, and strikes 45°, dipping 53° to the southwest. The quartz vein strikes 050°, and dips to the northwest at about 40°. An extension vein occurs under shallow water close to the shoreline, striking at 115°. These structural observations suggest a dextral, north-side-down, oblique-slip component of movement in the shear zone.

Mineralization: The opaque quartz-carbonate vein is white to light grey in colour, and has a ribbon texture defined by tourmaline and ankerite layers. The vein consists of contorted veins and veinlets over a width of 1.5 to 2.5 m. The quartz veins are exposed over a 35 m length. The mineralization in the quartz material consists of trace amounts of disseminated pyrite. Locally, massive chalcopyrite occurs within quartz stringers, with <1% pyrite and bornite. The schist included in the quartz material consists of 1-5% disseminated pyrite.

ASSAYS OF MINERALIZATION

The best analysis from 5 grab samples was 2640 ppb gold (Table 11). Analytical results suggest correlation between amounts of gold and total sulphide.

DEVELOPMENT HISTORY

1902-1903: A shaft was sunk by Gold Standard Mining Co. to a depth of 95 feet at about 10 m of the quartz vein having a width of 1 to 8 feet. At a depth of 80 feet, 110 feet of crosscutting was done (Carter 1904).

1934: Thomson (1934) obtained an assay of 1.80 ounces gold per ton from grab samples of the dump material.

1989: Berger (1989) obtained from a quartz vein in the dump an assay of 1.37 ounces of gold per ton, 29 g/t silver and 1.52 % copper during a regional mapping survey.

1989: Canhorn Mining Corporation optioned the property from R. Fairservice.

The company conducted airborne magnetic and electromagnetic surveys and did geological mapping and prospecting.

SELECTED REFERENCES

Berger 1989. OGS, MP 141, p.145-148

Carter 1904. ODM, Vol. 13, Part I, p. 68.

Thomson 1934. ODM, Vol. 43, Part IV, p. 21.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Rock Type Description
1	2640	76	6.8%	-	295	7.66	quartz vein bearing carbonate schist
2	8	-	100	-	-	0.01	quartz vein
3	14	-	210	-	135	0.50	chlorite-carbonate schist
4	160	-	91	-	60	0.50	chlorite-sericite-carbonate schist
5	750	-	90	-	106	1.05	pyritized altered mafic volcanic

Table 11: Analytical data: Gold Standard H.W. 271 occurrence.

H.W. 479 OCCURRENCE

NTS: 52F/09 SW

LOCATION AND ACCESS

The HW 479 occurrence is located 52 km east of Dryden on Highway 17. From Borups Corner, drive 9.6 km south on the Sandy Point road then turn easterly onto a gravel road, and proceed about 1.5 km.

A shaft is sunk on one of two quartz veins (Figure 11).

DESCRIPTION

Geology: The occurrence is underlain by mafic metavolcanic rocks of the Kawashegamuk Lake group (Kresz 1987).

Structural Geology: Two parallel undulating quartz veins 62 m apart strike about west-northwest. The subtle vertically-dipping shear zone at the more southerly of the two veins strikes 135°, but the quartz vein strikes 110° and dips 73° to the north, with left-stepping portions striking 055°. These represent oblique and extension veins respectively. Kinematic indicators such as lineations plunging 43° towards 300°, the S-shape of the quartz vein and the left-stepping attitude of the quartz vein suggest a sinistral, oblique-slip sense of movement in the shear zone (Figure 11).

Mineralization:

The more southerly quartz-carbonate vein is medium to dark grey, to whitish in places. The vein is opaque to cloudy, with a granular texture, with some ribbons of chlorite. Mineralization consists of up to 3% chalcopyrite, and traces of pyrrhotite and bornite. The vein is exposed over a 27 m length, and varies in width from 10 cm to 2.5 m (Figure 11).

The second quartz vein, 62 m north of the shaft, trends at about 120° and dips 74° to the north. It is exposed over an 11 m length, and varies from 20 - 50 cm in width. It shows the same structural features as the southerly vein. A contorted narrow felsic dike occurs close to the quartz vein.

ASSAY OF MINERALIZATION:

Three grab samples were taken by the author from the south vein and one from the north vein. Analytical results indicate that the amount of gold is related to the amount of copper. The best sample returned 530 ppb gold on analysis (Table 12).

DEVELOPMENT HISTORY

1898: John Maw and S.O. Greening sunk a shaft to a depth of 40 feet (Bow 1899).

1983: Teck Exploration performed ground VLF-electromagnetic and magnetic surveys and a geological mapping over claims that included the H.W. 479 occurrence (Assessment Files, Resident Geologist's Office, Kenora).

1984: International Platinum Co. optioned the dproperty from Alex Kozowy, and as of February, 1990, continue to hold the option.

SELECTED REFERENCES

Bow 1899. OBM, Vol.8, p. 74.

Kresz 1987. OGS, OFR 5659.

Teck Exploration. File 52F/09 SW, LL-1, Assessment Files, Resident Geologist`s Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S %	Location	Rock Type Description
1	50	3	3100	0.46	south vein	quartz carbonate vein
2	10	-	380	0.10	south vein	mafic volcanic rock
3	530	7	5500	0.79	south vein	quartz carbonate vein
4	2	-	116	0.04	north vein	quartz carbonate vein

Table 12: Analytical data: H.W. 479 occurrence.

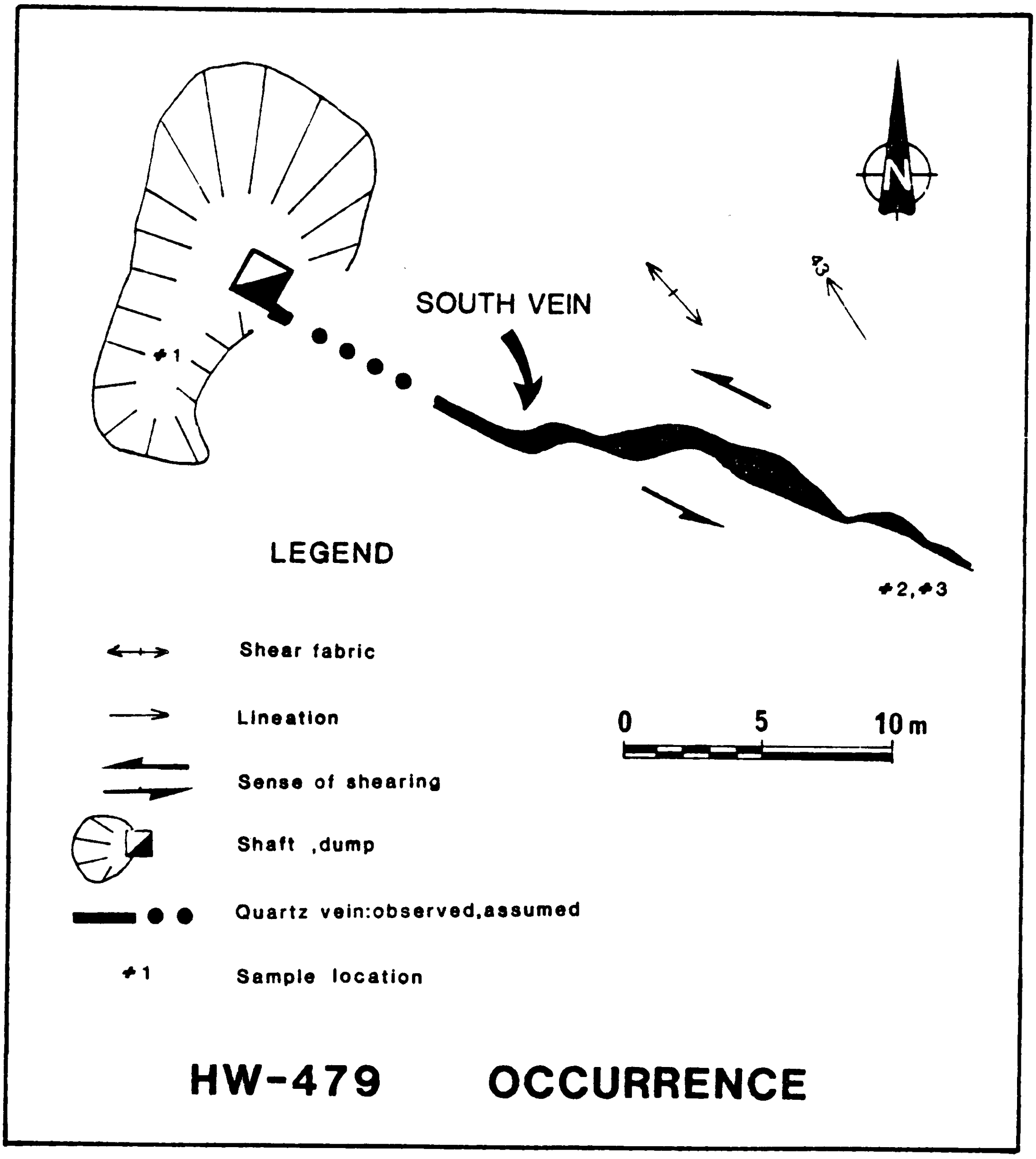

Figure 11: Geology of H.W. 479 occurrence.

KING EDWARD OCCURRENCE

NTS: 52F/07 SW

LOCATION AND ACCESS

The King Edward occurrence is located 48 km south of Dryden, about 300 m southwest of Carleton Lake, just north of a wide swamp which connects Carleton Lake to Troutlet Lake. Access to the prospect is via motor boat or float plane.

The occurrence consists of one pit.

DESCRIPTION

Geology: The pit is sunk in biotite granodiorite of the Carleton Lake Stock (Blackburn 1976). The rock is carbonatized, and poor exposure and the crumbly nature of the altered rock prevented investigation of the pit. There is no outcrop in the immediate vicinity of the occurrence.

Mineralization: The quartz vein in the pit strikes 030^0 and dips 56^0 to the southeast. The vein is 70 cm wide, accompanied by quartz veinlets in the country rock. The quartz vein is light to medium grey, vitreous to translucent, rarely cloudy, and stained by limonite alteration. Fine grained mineralization is 1% pyrite, and locally 1% galena and 1-2% chalcopyrite with a trace of bornite.

ASSAYS OF MINERALIZATION

Eight grab samples were taken by the author. Gold values are uniformly low, but silver values are relatively high compared to regional background mineralization (Table 13). The mineralization and geological setting is similar to that at the Queen Alexandra Northern occurrence.

DEVELOPMENT HISTORY

1903: English capitalists reportedly sunk large numbers of test pits and open cuts. They found two differing trends of quartz veins, at 30°, and at 135°. Both carried pyrite, chalcopyrite, galena and sphalerite (Carter 1904).

1989: The property was staked by Robert Fairservice.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Carter 1904. ODM, Vol. 13, Part I, p. 69-70.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Rock Type Description
1	27	2	10	92	-	0.31	quartz vein
2	28	15	14	2560	-	0.23	quartz vein
3	-	-	179	-	-	0.20	quartz vein
4	31	3	2,130	280	26	0.34	quartz vein
5	-					0.28	biotite-granodiorite
6	39	3	114	240	37	0.08	quartz vein
7	0.014 oz/T	115	13	3400	33	0.16	quartz vein
8	13					0.13	chlorite schist

Table 13: Analytical data: King Edward occurrence.

MATSON OCCURRENCE

NTS: 52F/08 NW

LOCATION AND ACCESS

The Matson occurrence, otherwise known as the Lee Lake occurrence, is located 47 km southeast of Dryden, northeast of Kawashegamuk Lake. From Dryden,one drives 49 km to the east on Hwy 17 to Borups Corner. Then, one proceeds south on the Sandy Point Road a distance of 15.7 km, and takes a right hand turn for 4.9 km. At a right hand curve, a 40 m long trail at the west side of the road leads to the occurrence.

The occurrence consists of one open cut.

DESCRIPTION

Geology and Alteration: The occurrence is located within a wide east-trending sheared and carbonatized quartz feldspar porphyry dike which intrudes mafic metavolcanic rocks of the Kawashegamuk Lake group (Kresz 1987). The felsic dike is strongly altered to sericite and iron carbonate.

Structural Geology: On the north wall of the open cut, the schistosity (130°/79°NE) is seen to be rotated into the shear fabric (140°/90°) indicating a west-side-down, dip-slip sense of movement in the shear zone. Two quartz veins in the north wall of the open cut strike 140°/90° and 160°/66° E respectively, and merge together at the bottem of the wall.

Mineralization: The quartz-carbonate veins are white to light grey in colour, and opaque. The quartz has a ribbon texture defined by layers of chlorite. Mineralization consists up to 2% pyrite and chalcopyrite, with some visible gold. The two veins vary from 4 cm to 56 cm wide where they merge, and can be traced over a 15 m length beyond the end of the open cut.

ASSAYS OF MINERALIZATION

Six grab samples were taken by the author. The best samples returned 0.34 ounce gold per ton, 8620 ppb, and 5720 ppb gold on analysis (Table 14).

SELECTED REFERENCE

Kresz 1987. OGS, OFR 5659.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Rock Type Description
1	180	-	10	0.14	quartz carbonate vein
2	8620	-	10	0.06	quartz carbonate vein
3	-	-		0.04	chloritized & carbonatized QFP
4	90	-	66	0.05	quartz carbonate vein
5	5720	-	276	0.21	quartz carbonate vein
6	0.34 oz/T	-	3220	0.92	quartz carbonate vein

Table 14: Analytical data: Matson occurrence.

PEEP BAY OCCURRENCE

NTS: 52F/03 NE

LOCATION AND ACCESS

A number of pits and trenches are located at the southwest end of Peep Bay on the northwest side of Manitou Stretch, 74 km south-southwest of Dryden. Road access to the property is from Hwy 502, along the Cedar Narrows Road to the landing on the Manitou Stretch. A short boat trip of about 18 km reaches the occurrences.

The Peep Bay occurrence consists of eleven trenches and one pit, all within an area 350 m by 250 m (Figure 12).

DESCRIPTION

Geology: The occurrence is underlain by plagioclase-phyric melagabbro with 1% blue-quartz eyes, leucogabbro, pillowed and pillow brecciated intermediate metavolcanics, and quartz amygdaloidal mafic metavolcanic rocks..

Structure and Alteration: Eleven trenches are opened up on three different structures. Trenches 1, 3, 4, and 10 were opened up on a structure which strikes N045° and dips to the north. Three shear zones, here called Zones 1, 2 and 3, consist of anastomosing shears and intervening lithons. Alteration in the shear zones consists of dolomite, ankerite, sulphidization, calcite, and locally silicification, over a width of 1.5 m to 9 m. The zones appear to be discontinuous lenses of alteration over a minimum strike length of 330 m. Flat, short, extension quartz veinlets are observed in trenches 1 and 3 in the vicinity of the fissile shear. A narrow halo of sulphide envelopes these extension veinlets. Slickensides plunge in many directions.

Pit 5a and trenches 6a and 6b were opened up on a second northeast trending structure which dips 75° to the northwest. Three fissile shear zones are identified. Alteration consists of sericite, chlorite, ankerite, calcite, and sulphides. A 4.5 m wide quartz vein in trench 6a connects with a 50 cm quartz vein in pit 5a over a length of 50 m (central shear vein). At trench 6b, a 30 cm wide quartz-filled shear connects with the shear exposed in trenches 5b and 9 over a minimum length of 150 m. Some flat quartz veins are present. Lineations plunge at 68° to the west-southwest.

Trenches 5b and 5c, and trench 9, expose two S-shaped sigmoidal extension quartz veins which lie within the above mentioned shear structure. The width of the vein in trenches 5b and 5c varies from 12 cm to 80 cm., and the dip varies from 27° to 66° to the east. The shape of this sigmoidal extension vein combined with the lineation plunge and flat quartz veins, suggests a sinistral oblique-slip movement on the shear zone.

In a third structure, trench 8 appears to have been opened up on a portion of a sigmoidal quartz vein from another shear zone lying to the northwest. The rock is very fissile and altered to calcitic sericite-chlorite-ankerite schists.

Mineralization:

In the first structure, mineralization is characterized by semi-massive sulphide bands and quartz-carbonate stringers and veinlets filling shears. Quartz veins are rarely observed. Quartz is white to medium grey, opaque, and granular in texture in places. Accessory minerals in the quartz veins are sulphide in amounts $\leq$1%, calcite, and muscovite. Sulphide minerals are arsenopyrite in amounts up to 15%, and pyrite in amounts up to 10%.

In the second structure, the 4.5 m wide central quartz vein is light grey, semi-translucent to opaque, and characterized by ribbons of chlorite and patches of ankerite. No sulphide minerals were observed. The sigmoidal extension quartz vein is similar in color and texture to the central quartz vein. It contains some ribbons of sericite, and pyritized, sericitic and chloritic fragments, and wispy fractures filled with calcite and ankerite. Sulphide minerals are widespread in the wall rock, and consist of arsenopyrite in amounts up to 5%, and 2% pyrite.

In the third structure the extension quartz vein is white to medium grey, opaque, fractured, and contains ribbons of chlorite, stringers of sulphide minerals, and patches of chlorite, sericite and ankerite. Arsenopyrite occurs as stringers or is associated with the chlorite ribbons, in amounts up to 3%.

ASSAYS OF MINERALIZATION

Analytical results indicate a correlation between amounts of gold, and antimony and arsenic contents (Table 16).

Fourteen grab samples were taken by the author from the first structure, from trenches 1, 3, 4 and 10. Gold is associated with sulphidized and iron carbonatized fissile rocks. This type of mineralization is identical to that at the Sorry Mac occurrences and the Gates Lake occurrence. The best result came from trench 1 where a sample returned 6100 ppb on analysis.

Nine grab samples were taken by the author from the second structure, from trenches 5a, 6a and 6b. The best result came from trench 6a, where a sample returned 1630 ppb on analysis.

Five grab samples were taken by the author from the sigmoidal extension quartz vein structure, from trenches 5b and 5c. The best sample came from trench 5c, where a sample returned 2910 ppb gold on analysis.

Four grab samples were taken by the author from trench 8 with the best assay return being 3360 ppb gold.

DEVELOPMENT HISTORY

1941: In a report of a visit by Noranda Exploration on property held by Goldale Mines Ltd. and Birch Bay Gold Mines, a sample from a quartz vein that hosted visible gold was reported to assay 0.46 ounce gold per ton over 2.4 feet (trench 8), and a sample from an arsenopyrite-bearing zone returned 0.10 ounce gold per ton over 17 feet (trench 3) (Assessment File 52F/03 NE, H-2, Resident Geologist's Office, Kenora).

1984-1985: Sparton Resources Inc. did ground VLF-electromagnetic, and magnetic, soil geochemical, and geological surveys. They re-trenched and channel-sampled the old trenches. Good assays came from trench 1, where a sample returned 0.27 ounce gold per ton over a 2 m width, trench 4 where a sample returned 0.15 ounce gold per ton over a 3 m width, and trench 6 where a sample returned 0.15 ounce gold per ton over a 2 m width. Sparton Resources Inc. diamond drilled 2 holes totalling 153.9 m (Assessment Files, Resident Geologist's Office, Kenora).

1989: Homestake Mineral Development Co. did ground VLF-electromagnetic, magnetic, and IP surveys, a soil geochemical survey, and a geological survey. They cleaned out and chip sampled the old trenches (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Berger 1989. OGS, MP141, p. 145-148.

Gates Lake area general. File 52F/03 NE, H-2, Assessment Files, Resident Geologist's Office, Kenora.

Homestake Mineral Development Co. Files 52F/03 NE, R-3, R-4 and R-5, Assessment Files, Resident Geologist's Office, Kenora.

Sparton Resources Inc. Files 52F/03 NE, K-2, K-3, K-5, K-7 and K-8, Assessment Files, Resident Geologist's Office, Kenora.

Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Sb (ppm)	As (ppm)	S (%)	Location	Rock Type Description
28	-	22	-	2.7	410	2.08	trench 4	zone 1: gabbro, minor silicified
215	-	56	-	11	4200	2.71	trench 4	zone 1: fissile zone
38	-	7	-	3.6	2600	0.93	trench 4	zone 2: fissile zone
180	-	-	-	3	2800	0.10	trench 3	zone 1: quartz vein
2280	-	16	8	27	6.5%	8.54	trench 3	zone 1: fissile zone with quartz carbonate vein
190	-	20	-	2.6	2500	2.24	trench 3	zone 1: fissile zone
2540	-	56	-	16	2.3%	9.54	trench 3	zone 2: fissile zone with quartz carbonate vein
3050	-	22	9	32	3.3%	2.46	trench 3	zone 2: fissile zone
40	-	65	5	30	1500	1.30	trench 10	zone 3: fissile zone
22	-	5	-	0.9	550	0.02	trench 1	zone 1: quartz vein
6100	-	12	-	24	9.4%	2.05	trench 1	zone 1: fissile zone
20		10	6	1.1	1450	0.19	trench 1	zone 1: quartz vein
2110	-	9	-	21	2.9%	2.61	trench 1	zone 3: fissile zone with quartz dolomite vein
23	-	15	-	2.3	3400	2.49	trench 10	zone 2: fissile zone
210	-	7	8	3.5	2000	0.19	trench 5C	quartz vein
355	-	19	-	4.5	6000	1.12	trench 5C	altered vesicular volcanic
2910	-	18	12	5.6	1.05%	0.86	trench 5C	quartz vein
280	-	36	7	3.5	3300	1.01	pit 5A	altered vesicular volcanic
28	-	15	7	1.2	310	0.02	pit 5A	quartz carbonate vein
5	-	43	5	1.7	135	0.40	pit 5A	altered vesicular volcanic
7	-	6	-	0.9	490	0.03	trench 5B	quartz carbonate vein
12	-	39	-	2.1	270	0.65	trench 5B	altered vesicular volcanic
10	-	5	5	4.2	330	0.02	trench 9	quartz carbonate vein
-	-	50	-	2.1	280	0.06	trench 9	carbonatized chlorite-sericite schist
1630	-	27	7	9.5	3400	1.82	trench 6A	altered vesicular volcanic
16	-	-	7	1.7	350	0.01	trench 6A	quartz vein
34	-	9	-	1.1	540	0.10	trench 6B	quartz carbonate vein
470	-	47	5	0.7	2200	1.58	trench 6B	altered vesicular volcanic
635	-	41	-	4.7	4700	0.90	trench 8	carbonatized sericite-chlorite schist
790	-	13	8	14	6300	0.37	trench 8	quartz vein
3360	-	22	7	16	2.3%	2.07	trench 8	sericite schist
445	-	16	8	4.2	4400	0.40	trench 8	quartz vein

Table 15: Analytical data: Peep Bay Occurrence.

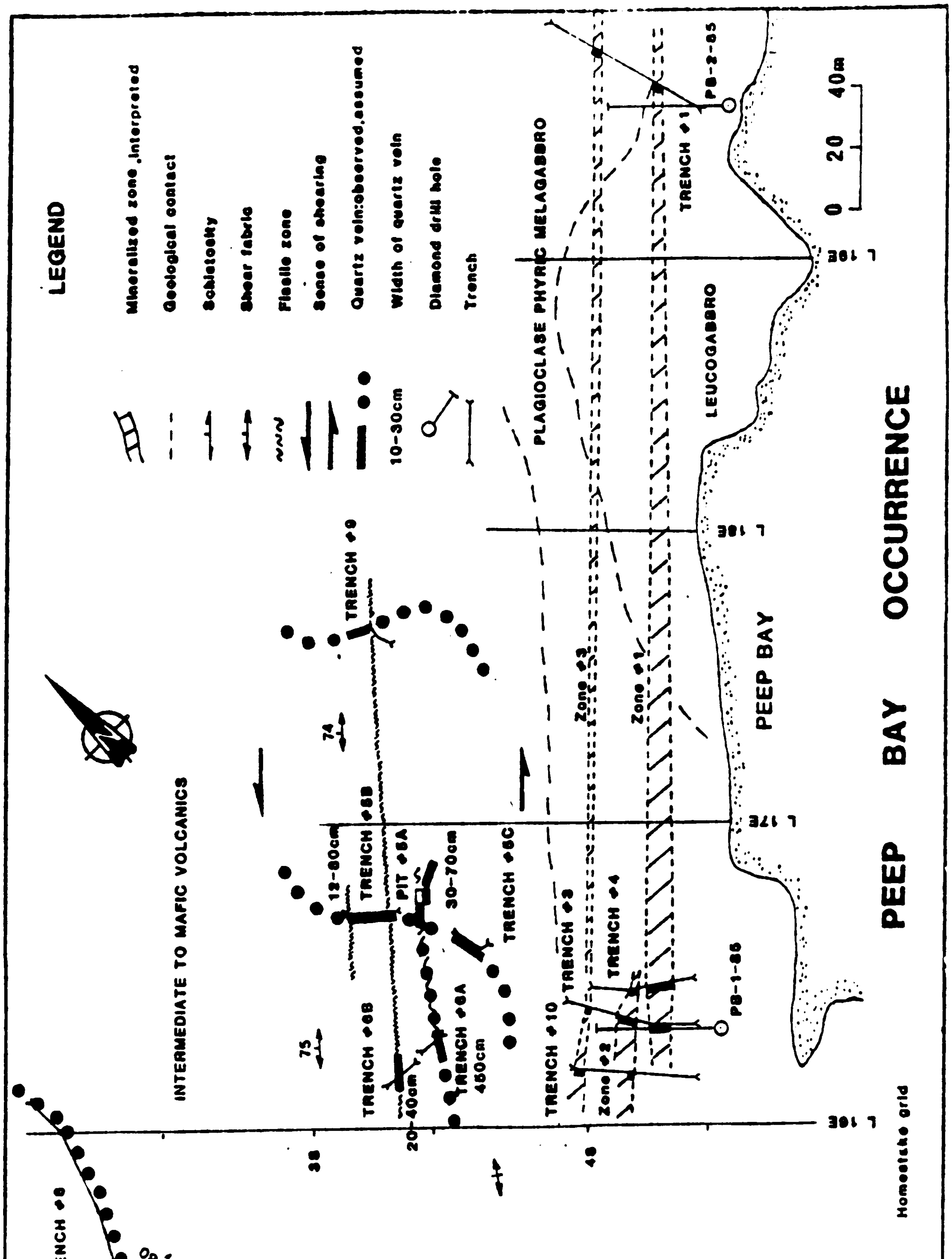

Figure 12: Geology of Peep Bay occcurrence.

PETRIE OCCURRENCE

NTS: 52F/06 SW

LOCATION AND ACCESS

The Petrie occurrence is located 54 km south-southwest of Dryden. Access to the property is via the Cedar Narrow Road off Hwy 502. At a point 77 km from Hwy 502, a road to the right, in the vicinity of Price Lake, brings one within 100 m of the occurrence.

The occurrence consists of a shaft.

DESCRIPTION

Geology and Alteration: The rocks in the vicinity of the shaft are north-striking felsic tuffs interbedded with amphibolitic mafic metavolcanic rocks. A felsic dike intrudes the volcanic rocks. The metamorphic derivates of the altered volcanic rocks are hornblende-plagioclase schists.

Structure: The shaft is sunk in a 25 m wide intensely protomylonitic shear zone which strikes about 175^0 and dips 80^0 to the west. A 50 to 100 cm wide quartz vein parallel to the shear zone, can be traced 80 m along the strike. At the shaft, the vein is 5.8 m wide and is enclosed in chlorite-sericite schist. Internal fabric in the shear zone ranges from N160° to N180°. Minor Z-shaped drag folds occur in the vicinity of the shaft. A shallow lineation, plunging at 30° towards 160°, occurs in the hornblende schists. This lineation, the rightsteeping contact between felsic and mafic rocks, and the rotation of xenoliths in the felsic dike, suggest a dextral oblique-slip component of movement in the shear zone.

Mineralization: The quartz vein is pale grey, opaque, and stained brown due to hematite. No mineralization was noted.

ASSAYS OF MINERALIZATION

One chip sample was taken by the author, on the east side of the shaft, across a 6 m width in the schist. It returned <2 ppb gold on analysis.

DEVELOPMENT HISTORY

1899: D.C. Petrie sunk a shaft. He took 13 samples from the shaft. Resultant assay values ranged between 0.096 and 0.33 ounce of gold per ton (Thomson 1934).

1987: Black Cliff Mines conducted ground magnetic and geological surveys over a claim group including the occurrence.. The best of 24 chip samples came from the quartz vein, northeast of the shaft, which returned 1141 ppb gold over 1 m (Assessment Files, Resident Geologist`s Office, Kenora).

SELECTED REFERENCES

Black Cliff Mines. Files 52F/06 SE, E-1 and E-2, Assessment Files, Resident Geologist's Office, Kenora.

Thomson 1934. ODM, Vol.43, Part IV, p. 19.

QUEEN ALEXANDRA MINE

NTS: 52F/07 SW

LOCATION AND ACCESS

The mine is located 47 km south of Dryden, 400 m east of Carleton Lake, on the south side of a broad swamp. The property is accessible from Manitou Straits.

The Queen Alexandra mine consists of one shaft and one exploration pit, 65 metres apart, and seven trenches (figure 13). The occurrence exposes two conjugate quartz veins.

DESCRIPTION

Geology: The mine is underlain by mafic volcanic rocks of the Blanchard Lake group (Blackburn 1976, 1982).

Structure and Alteration: Shearing at the shaft strikes 080°, whereas shearing at the exploration pit strikes 030°. Both shears contain a quartz vein. The sheared rocks are weakly schistose and altered to chlorite-carbonate schists. Both shears are of unknown width, and dip vertically. Kinematic indicators, such as the Z-shape of the vein 2, suggests a dextral strike-slip component of movement on the shear at the exploration pit. The differing strike of the two shears suggests conjugate shearing (Figure 13).

Mineralization: The quartz carbonate vein (vein 1) at the shaft is 10 cm wide and exposed over a 2 m length, is pale to dark grey, opaque, and contains ribbons of pyrite and chlorite. Patches of pink calcite and chlorite occur in the vein material. 2-5% very fine to coarse grained pyrite is present in the vein. The amount of quartz material in the dump suggests that the quartz vein is probably wider at depth in the shaft.

The quartz vein (vein 2) at the exploration pit pinches and swells, but averages 45 cm in width and can be traced over 23 m in length. The quartz is white to pale grey, is opaque, and fractures are filled with calcite. The vein has a laminated and wispy texture due to ribbons of pyrite and chlorite. One per cent medium grained pyrite is present in the vein.

ASSAY OF MINERALIZATION

Nine grab samples were taken by the author (Table 16). Gold occurs in the quartz vein, but appears to be low in the schist. Analytical results indicate a correlation between amount of gold and copper and zinc.

DEVELOPMENT HISTORY

1904: An English syndicate sunk a shaft 85 feet, and milled 18 tons of ore, producing gold valued at $16 to the ton (16.6 ounces of gold) (Carter 1905; Thomson 1933).

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Carter 1905. ODM, Vol 14, part I, p. 51.

Thomson 1933. ODM, Vol. 42, Part IV, p. 27.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Location	Rock Type Description
1	0.60 oz/T	-	174	120	805	0.43	vein 1	quartz carbonate vein
2	0.64 oz/T	-	160	-	575	0.81	vein 1	quartz carbonate vein
3	2.24 oz/T	-	500	114	1200	0.96	vein 1	quartz carbonate vein
4	695	-	22	15	203	1.61	vein 1	quartz carbonate vein
5	2						vein 1	carbonatized basalt
6	45					0.18	vein 2	chlorite schist
7	0.46 oz/T	-	169	26	32	0.40	vein 2	quartz vein
8	2380	-	37	-	11	0.43	vein 2	quartz vein
9	35		8			0.10	vein 2	carbonatized and silicified chlorite/sericite schist

Table 16: Analytical data: Queen Alexandra Mine.

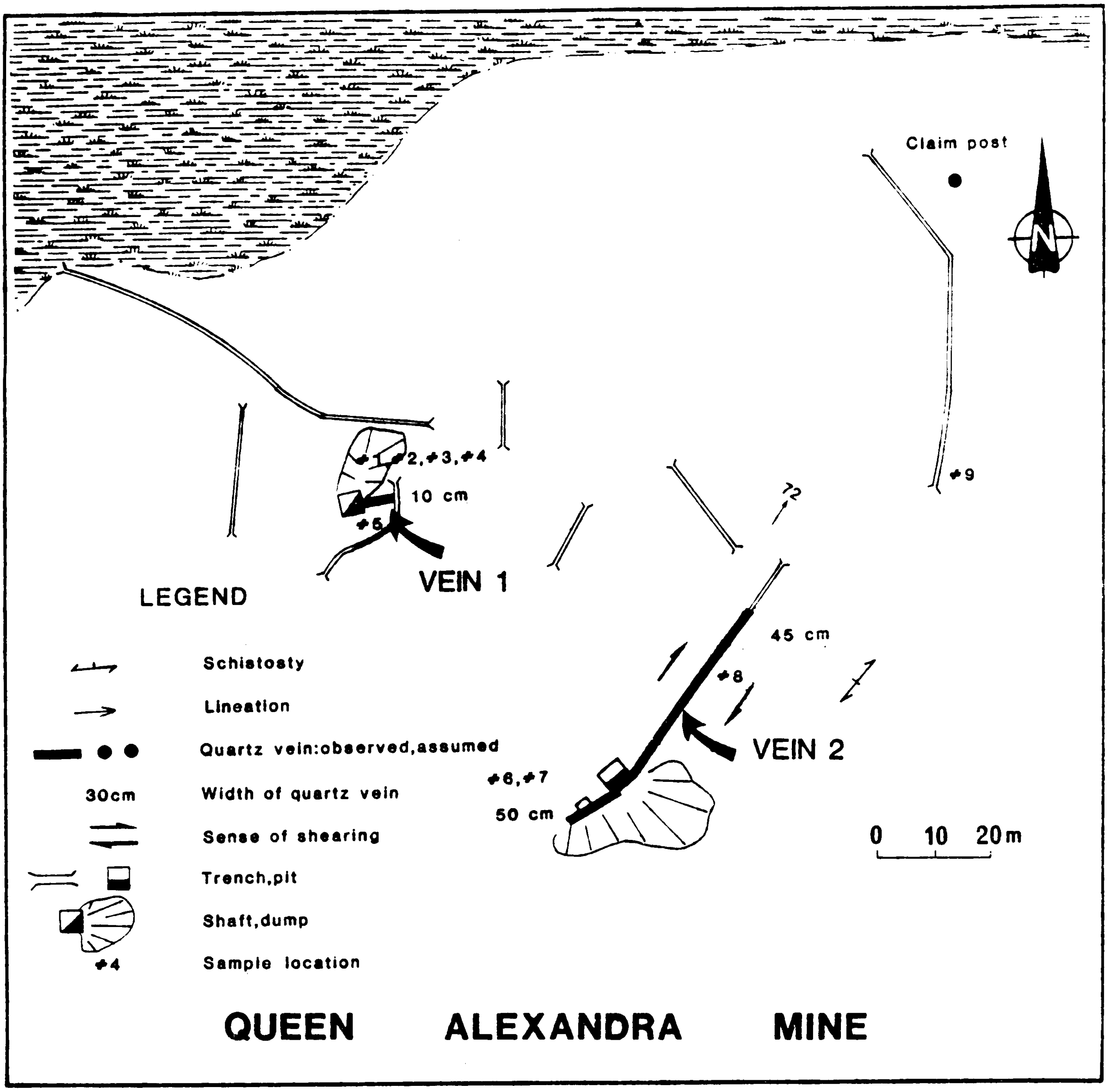

Figure 13: Geology of Queen Alexandra mine.

QUEEN ALEXANDRA NORTHERN OCCURRENCE

NTS: 52F/07 SW

LOCATION AND ACCESS

The occurrence is located 47 km south of Dryden, at the northeast end of Carleton Lake, 70 m east of the lake shore. Access to the occurrence is from Reliance Bay of Upper Manitou Lake, via a portage into Carleton Lake.

Three pits are found at the occurrence, all within 13 m of each other. Several other trenches and pits occur along the east shore of Carleton Lake to the south of the occurrence, but were not investigated.

DESCRIPTION

Geology: The pits are opened up in biotite granodiorite of the Carleton Lake stock (Blackburn 1976). Lack of outcrop in the vicinity of the occurrence, and poor exposure of bedrock in the pits, hampered investigation. Rocks in the shear zone are not altered.

Mineralization: A quartz vein in the northern pit strikes 030° and dips 75° to the southeast. The vein is 80 cm wide, and is exposed over a 2.25 m length. The quartz is translucent, stained with limonite, and has a sugary texture. Fine to coarse grained 5-10% pyrite, and 2% galena, is disseminated in the vein.

The second pit, to the south, exposes two narrow quartz stringers which strike 176° and dip 50° to the east. They vary from 8 cm to 1 cm wide and pinch at depth. The quartz is medium grey and translucent, shows strong ankerite alteration at its contact, and contains 1% disseminated pyrite.

The third pit is covered by dirt and was not investigated.

ASSAYS OF MINERALIZATION

Three grab samples were taken by the author (Table 11). Gold content is uniformly low, but silver content is higher than characteristic of most gold occurrences visited. The mineralization and geological setting is similar to that at the King Edward occurrence.

DEVELOPMENT HISTORY

No record.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Rock Type Description
1	23	11	36	1140	21	0.35	quartz vein
2	55	36	51	4100	-	0.75	quartz vein
3	60	10	14	2060	38	0.70	quartz vein

Table 17: Analytical data: Queen Alexandra Northern occurrence.

ROYAL SOVEREIGN MINE

NTS: 52F/07 SW

LOCATION AND ACCESS

The Royal Sovereign mine is located 55 km south of Dryden. The property is situated on the northwest shore of Lower Manitou Lake immediately northeast of Manitou Island. Access to the old mine is via motor boat or float plane.

The mine consists of two shafts and one adit (Figure 14).

DESCRIPTION

Geology: The mine is underlain by mafic metavolcanic rocks of the Blanchard Lake group (Blackburn 1976, 1982). Bedrock is exposed at the adit entrance. In the dump, rock consists mainly of chlorite-carbonate schist and rarely of greywacke. Blackburn (1976) interpreted the greywacke to be intermediate tuff.

Structural Geology: The quartz vein exposed in the entrance of the adit is parallel to the shear fabric which trends 048° and dips 62° to the southeast. Kinematic indicators suggest a north-side-down, dip-slip component of movement based on flat extension tourmaline veinlets striking at 050° and dipping 10° to the southeast in the quartz vein, and on the moderate to steep lineation which plunges at 69° to the southeast. The shear zone has a minimum width of 20 metres.

Mineralization: The quartz vein is generally light to dark grey, rarely white, opaque, and has a mosaic texture. The quartz veins are commonly fractured. Mineralization consists of 1% disseminated fine to medium grained pyrite with trace chalcopyrite. Accessory minerals are tourmaline, chlorite and ankerite. Tourmaline is both disseminated and in layers.

ASSAYS OF MINERALIZATION

Six grab samples were taken from the dump by the author (Table 19). A sample of chlorite-carbonate schist assayed 0.061 ounce gold per ton, whereas the best assay from quartz vein material was only 0.019 ounce gold per ton.

HISTORY

1897-1902:Neepawa Gold Mining Co. sank an inclined shaft to a depth of 105 feet, and drifted on two levels for a total amount of 66 feet (Carter 1902). Seven quartz veins were reported at the shaft. At the first level, 65 feet deep in the shaft, an 11.5 foot quartz vein was reported to assay 0.29 to 8.40 ounces gold per ton (Bow 1898). Twenty three tons of ore were milled yielding 0.31 ounce gold per ton (ODM Statistical Files).

1902: St. Paul Syndicate optioned the property. The company sank a shaft on a second vein, 80 feet southwest of the first one. A short adit was driven from the base of the ridge to intersect the drift from Shaft #1 (Thompson 1933).

1933: A chip sample taken by Thomson (1933) of the vein in the adit assayed

0.007 ounce gold per ton over 6 feet, and a sample of similar vein material from the dump assayed 0.007 ounce gold per ton.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Bow 1898. OBM, Vol. 7, Part 1, p. 50.

Carter 1902. ODM, Vol. II, p. 247-248.

Thomson 1933. ODM, Vol. 32, Part IV, p. 26-27.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Rock Type Description
1	0.019 oz/T	-	55	-	-	0.66	quartz vein bearing chlorite schist
2	12	-	55	-	-	0.22	quartz vein
3	240	-	155	-	-	2.90	quartz vein bearing chlorite-carbonate schist
4	0.061 oz/T					2.42	chlorite carbonate schist
5	117	-	14	-	-	0.26	quartz vein
6	15	-	25	-	-	0.32	quartz vein bearing chlorite-carbonate schist

Table 18: Analytical data: Royal Sovereign mine.

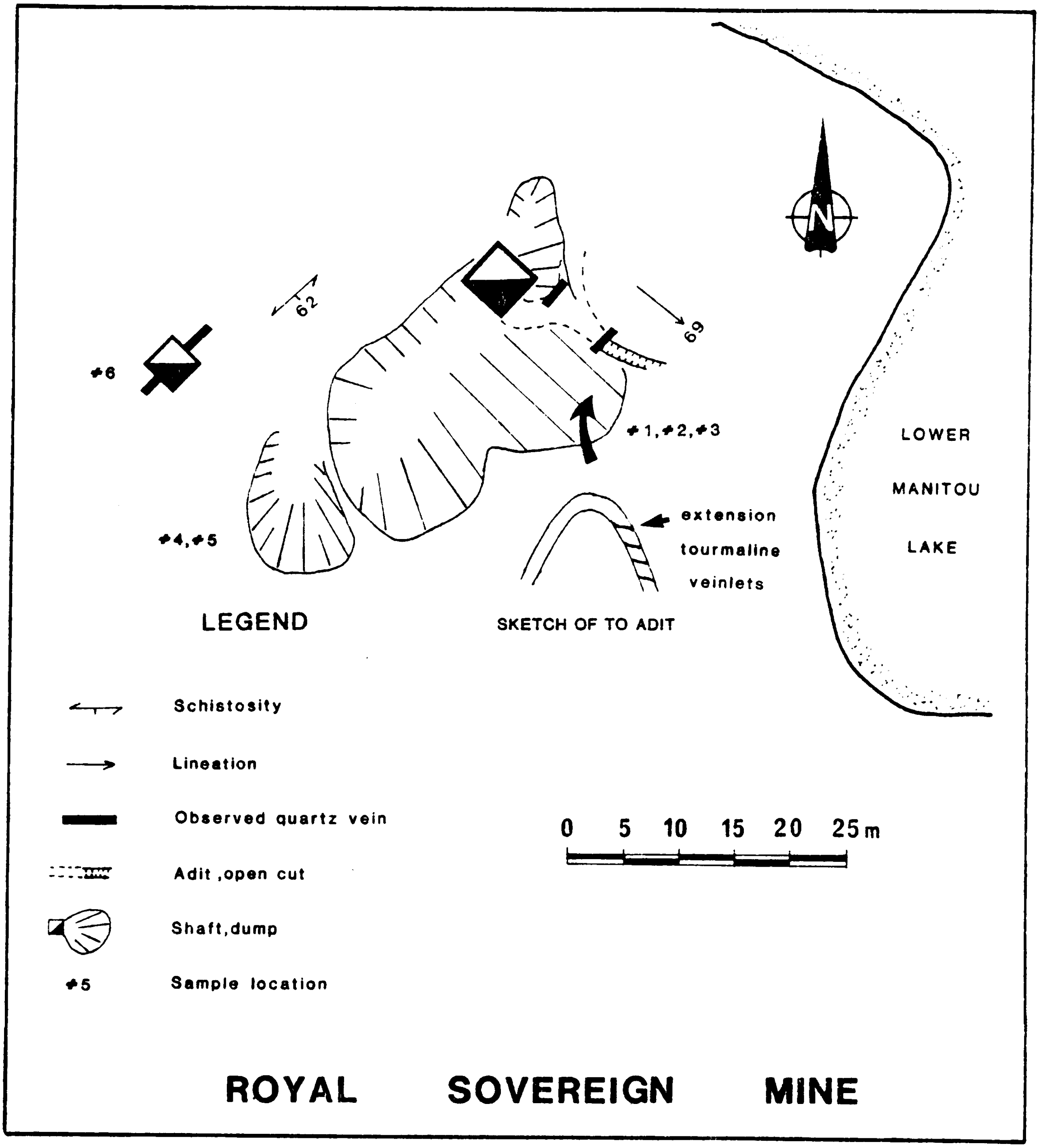

Figure 14: Geology of Royal Sovereign mine.

S.500 OCCURRENCE

NTS: 52F/11 NW

LOCATION AND ACCESS

The S.500 occurrence is located 25 km south of Vermilion Bay, on the south shore of Higbee Lake, between the first and second narrows from the west end of the lake. The property is accessible only by float plane.

An old adit is located 13 m southeast of the lake shoreline. The stripped area above the adit exposes three narrow quartz veins: two parallel veins striking north northeast, and a third cutting them at a high angle (figure 15).

DESCRIPTION

Geology and Alteration: The occurrence lies within a large intermediate to felsic intrusion, immediately north of the Mulcahy Lake Intrusion (Sutcliffe and Smith 1985). The gold-bearing veins are hosted by carbonatized quartz-diorite which contains blue quartz eyes. The primary texture of the quartz-diorite is strongly masked and overprinted by the pervasive ankerite alteration. The area is characterized by many anastomosing conjugate shear zones.

Structure: The 10 m wide shear zone strikes 015° and dips 86° to the northwest. Strike of internal foliation ranges from 175° to 230°. The shear zone contains two discontinuous steep dipping quartz veins 3 m apart, exposed over a strike length of 25 m.

Within the north-trending shear, lineations trend 026° and plunge 73° north northeast, and there is dextral offset of the east trending quartz vein in the adit along the shear zone. The north trending quartz vein has a Z-shape in plan. All these observations indicate a dextral oblique - slip movement within the shear zone.

The third quartz vein occurs in a moderate deformation zone 1 m wide and strikes at 140° with a steep dip to the southwest. The adit was driven along the vein a distance of 15.3 m. The vein can be traced a distance of 240 m to the east. Within the southeast trending shear zone, the sigmoidal schistosity, the S-shape of the quartz vein and slickenside lineation at 120°/37°SE, indicate a sinistral oblique slip shearing.

Mineralization: The quartz veins are medium grey, locally a smokey grey. The quartz is massive and opaque, rarely vuggy. Mineralization consists of up to 1 - 2% medium to coarse grained pyrite, up to 1% medium grained chalcopyrite, and malachite staining. The veins vary from 10 to 16 cm in width.

ASSAYS OF MINERALIZATION

Twenty grab or chip samples were taken by the author (Table 19). The best assays of chip samples in each of the three veins were:

Vein #1: 1.76 g/T/12cm

Vein #2: 8.13 g/T/19cm

Vein #3: 1.88 ounce gold per ton over 16 cm

DEVELOPMENT HISTORY

1902: N. Higbee and associates discovered the occurrence. They drove an adit for 50 feet (Carter 1904)

1988-1989: B. Barton relocated the old adit. He stripped and sampled the occurrence.

SELECTED REFERENCES

Carter 1904. ODM Vol. 13, Part I, p. 66.

Sutcliffe and Smith 1985. OGS, Map P.2826, p.1.

Sample Number	Au (ppb/cm)	Ag (ppm)	Cu (ppm)	S (%)	Location	Rock Type Description
1	16/15	-		0.05	HW of vein 3	carbonatized quartz diorite
2	0.41 oz/T/12	-	121	0.04	vein 3	quartz vein
3	28/50	-		0.02	FW of vein 3	carbonatized quartz diorite
4	150/20	-		0.14	FW of vein 2	quartz diorite
5	1265	5	11	0.03	vein 1	quartz vein
6	380	-		0.79	FW of vein 2	carbonatized quartz diorite
7	1760	5	6	0.12	vein 1	quartz vein in quartz diorite
8	155	-	11	0.25	vein 2	quartz vein in quartz diorite
9	245/16	-	85	0.04	vein 3	quartz vein
10	395/10	-		0.67	wall rock of vein 3	carbonatized quartz diorite
11	285/50	-		0.12	wall rock of vein 3	carbonatized quartz diorite
12	2290/16	2	380	0.56	vein 2	quartz vein in quartz diorite
13	5580/50	4	75	0.46	vein 2	quartz vein in quartz diorite
14	8130/19	9	419	0.98	vein 2	quartz vein
15	1410/15	-	10		adit at 4 m; vein 3	quartz carbonate vein
16	4640/15	15	-	0.43	adit at 6.4 m; vein 1	quartz vein
17	440/200	2	59	0.65	adit at 8.5 m; vein 2&3	quartz vein
18	1150/110	-	34	0.14	adit at 15 m; vein 3	quartz vein
19	1.88 oz/T/16-	35	0.03		vein 3, 50 m from adit	quartz carbonate vein

Table 19: Analytical data: S.500 occurrence (HW=hanging wall; FW=foot wall)

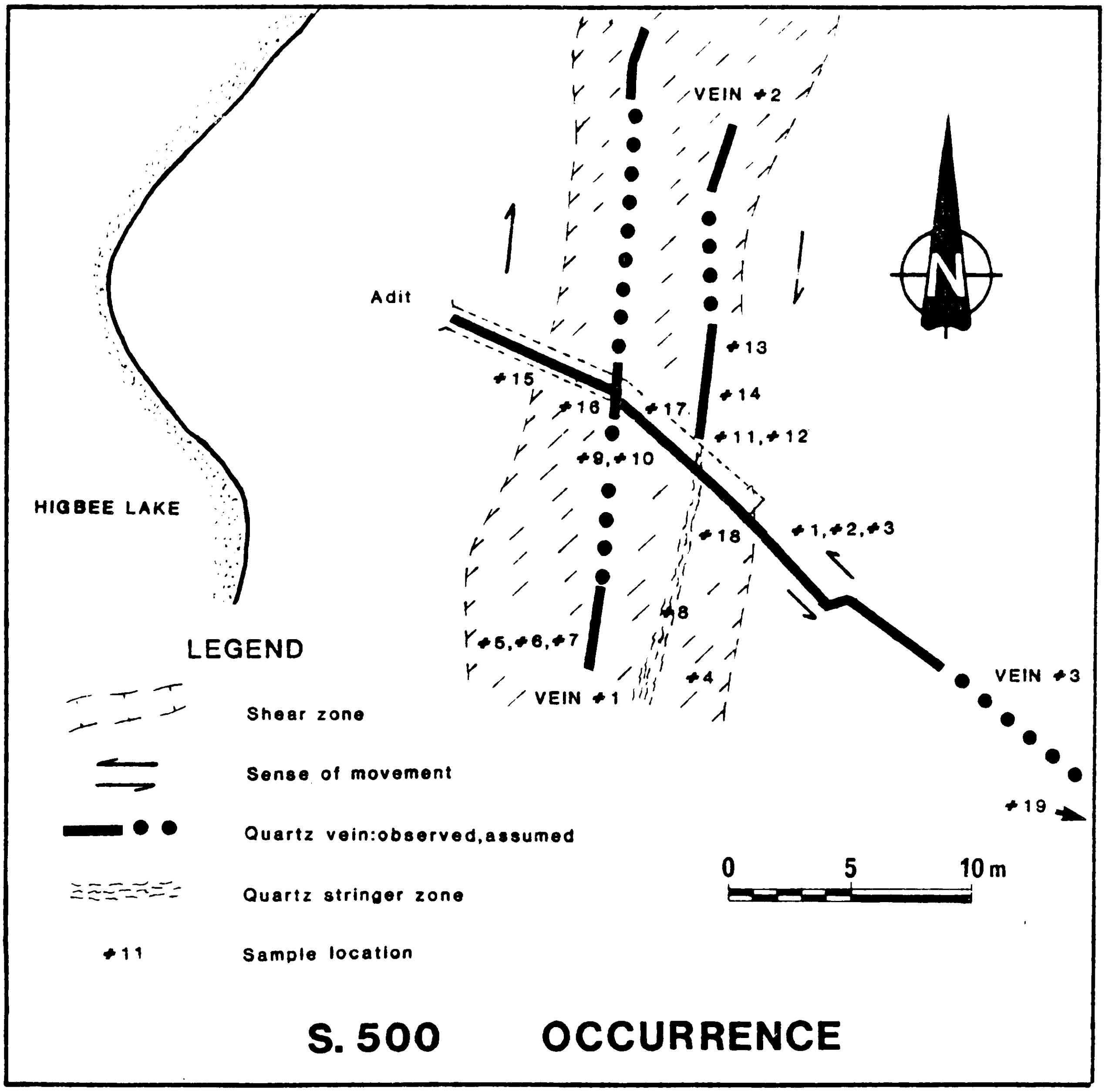

Figure 15: Geology of S.500 occcurrence.

SAKOOSE MINE AND MAW OCCURRENCE

NTS: 52F/09 SW

LOCATION AND ACCESS

The old Sakoose mine is located 46 km southeast of Dryden. The property can be reached south from Borups corners, 49 km east of Dryden on the Trans Canada Hwy 17, via the Sandy Point road. At a point 7.1 km, the Sakoose property is reached on a dirt road, 0.4 km east of the Sandy Point road.

Mine workings at the Sakoose mine consist of four shafts, and two open stopes, all sunk on the same quartz vein system, over a length of 280 m. The Maw occurrence is situated 200 m southeast of the Sakoose No.3 shaft (chart B, back pocket).

DESCRIPTION

Geology and Alteration: Both the Sakoose mine and the Maw occurrence are situated within volcanic and sedimentary rocks of the Kawashegamuk Lake group (Kresz 1987). They are located along the contact of a thick sequence of mafic metavolcanics with an overlying lens of epiclastic metasediments. Detailed geological mapping by Kresz (1987) suggests on the basis of top determinations that the Kawashegamuk Lake group faces homoclinally southwest. To the east, metavolcanics of the Kawashegamuk Lake group are intruded by massive granodiorite of the Revell Batholith. Lithologies in the vicinity of the Sakoose mine and the Maw occurrence consist of: mafic metavolcanics comprising tuffs, lapilli-tuffs, pillowed basalts, pillowed breccias, and massive flows; and interbedded metasedimentary rocks and felsic tuffs comprising siltstones, argillites, greywackes, cherts, sulphide-bearing argillites and magnetite-bearing greywackes. Irregular felsic dikes, that commonly display plagioclase and/or quartz porphyritic texture, intrude all the above rock types. Iron carbonate is the characteristic alteration product in sheared rocks.

Structural Geology: All lithologies, including felsic dikes, have been folded into a chevron-type, synclinal fold in which the dip of the northwest limb is steeper than that of the southwest limb. Structural facing to the southwest is indicated by cross-bedding, graded bedding, slumping, and flame structures in sedimentary rocks. The old Sakoose mine is located on the northwest limb of the syncline, whereas the Maw occurrence is on the southeast limb. Folding created a penetrative schistosity which strikes 230° and dips 85° northeast. Lineations plunge 64° to the south southwest. The surface axial plane trace of the syncline trends 050° in southwest of the mapped area, and is deflected to 037° in the northeast, probably due to intrusion of the Revell Batholith. The hinge of the syncline plunges about 55° to the south southwest. Major and minor Z-shaped drag folds are observed on the northwest limb of the syncline and S-shaped drag folds on the southeast limb of the syncline.

Deformation was progressive, simultaneously involving folding, shearing and faulting, during northwest-southeast compression. The beginning of deformation involved progressive folding, and sinistral north-south faulting and shearing which displaced the northwest limb of the developing fold: delamination along bedding in the southeast limb propagated into cross-cutting faults that similarly displaced units on the northwest limb. Bedding in the northwest limb was discordantly and concordantly sheared. These shears were subsequently folded and intruded by felsic dikes. Delamination continued mainly along the contacts between competent discordant felsic dikes and incompetent sedimentary and volcanic rocks, and also along lithological contacts of interbedded sedimentary rocks.

Fabric orientation and kinematic indicators show that oblique-slip shearing was involved in this deformation. On horizontal surfaces, the schistosity fabric (S) is clearly seen to have been rotated into the shear fabric (C). Shallow lineations could only be seen on wall rocks immediately adjacent to quartz veins. They plunge 36° to the south-southwest at No.1 shaft and 33° to the south-southeast at the Maw occurrence. Shearing on the northwest limb of the syncline is therefore dextral, accompanied by "en-echelon", right-stepping, shear-hosted quartz veins. The shear-hosted quartz vein in each step is connected by an extensional quartz vein. These extension veins were slightly rotated in the shear zone giving them a sigmoidal Z-shape. In addition, it is suggested that individual blocks between proposed north-south faults were rotated, so that the moderate southeast dip on the northwest limb of the syncline was steepened and, locally, overturned to the northwest. However, refolding is an alternative interpretation, which could also explain the mushroom-shape of the felsic dike, and the change in strike of the metasedimentary rocks toward the interior of the fold, where the second fold axis could trend north-northeast near the no.3 shaft.

In contrast, shearing on the southeast limb of the syncline is sinistral. The opposing sense of movement on each limb of the fold is due to their differing bedding orientation. Diamond drilling (Assessment Files, Resident Geologist's Office, Kenora) indicates the Sakoose vein to be horizontal between no.2 and no.3 shafts at the 25 m level, beneath the sigmoidal Z-shaped vein on surface. This suggests that the bedded units in the interior of the fold moved up relative to those in the exterior. Later minor faults occur parallel the schistosity fabric. These northeast trending oblique-slip faults display sinistral movement, with northwest sides up and southeast sides down.

The oblique-slip shear controlled the emplacement of the gold-bearing quartz veins. Evidence for this is found in the three open cuts East of No.1 shaft, which are sunk on quartz veins occupying dilation zones associated with the dextral shear. In addition, data from the no.1 shaft (Assessment Files, Resident Geologist's Office, Kenora) indicate that the ore-shoot plunged about 25 to 30° to the south southwest, corresponding to lineations on the surface near the shaft.

The felsic dike structurally controls a good part of the gold-bearing shear zone. Quartz veins, pods and lenses occur predominately along either contact of the felsic dike. Quartz veins also transect other lithological units, and less commonly are within the felsic dike, or occur along lithological contacts of other units. The structural setting has led to two different structures which host gold bearing quartz veins: shear fractures with conjugate vein arrays; and fold-related zones. At No.1, No.2, and No.4 shafts, oblique shear-hosted veins are combined with extension shear-hosted veins; at No.3 shaft, shear-hosted veins are of leg-reef and saddle-reef type; and at the Maw occurrence, veins are of saddle-reef type and oblique shear-hosted veins.

Mineralization: The dark blue to smoky quartz veins pinch and swell. The quartz is opaque to cloudy and displays a granular texture. The vein is very often fractured and rarely carbonatized. The veins are up to 6.5 m wide in places but in general are about 50 cm wide. Mineralization consists of minor pyrite, chalcopyrite, sphalerite, galena, and visible gold.

ASSAYS OF MINERALIZATION:

Fifteen grab samples were taken by the author at the Maw occurrence, and eleven as the Sakoose mine (Table 20, Samples 1 to 15, and 16 to 26 respectively). Analytical data indicate that content of gold in quartz veins is neither related to total sulphide content nor to contents of any specific sulphide species (see Table 20).

DEVELOPMENT HISTORY

A) SAKOOSE MINE:

1897-1902: Beck discovered the main vein of the Sakoose Mine. J.M. Monroe and R. Watson acquired the property (Bow 1898) and sold it to The Ottawa Milling and Mining Co. Ltd. Three shafts were sunk and mining carried out. The No.1 shaft was sunk to 165 feet with about 400 feet of drifting, No. 3 shaft to 108 feet, and No.2 shaft to 108 feet (Carter 1901).

1902: Operations were suspended (Carter 1902). By that time, a total of 8,028 tons of ore had been milled yielding 3,413 ounces of gold for an average grade of 0.476 ounce of gold per ton (Ontario Department of Mines, Statistical Files).

1934-1935: Sakoose Gold Mines Ltd. diamond drilled seven holes totalling 2,973 feet, sunk No.4 shaft to a depth of 143 feet (Assessment Files, Resident Geologist's Office, Kenora) and deepened the no.1 shaft to a depth of 250 feet (The Fort William Daily Times Journal, July 19, 1934)

1944-1947: Van Houten Gold Mines Ltd. did 362 feet of drifting, diamond drilled 40 underground holes for a total length of 3,601 feet, and 51 surface holes totalling 3,891 feet (Kresz 1987; Assessment Files, Resident Geologist's Office, Kenora). About 800 tons of ore were treated in the mill, from which 256 ounces of gold and 145 ounces of silver were recovered (Ontario Department of Mines, Statistical Files).

1978: Jim Redden acquired the property, pumped out the old workings accessed by No.1 and 2 shafts, and did some surface work. A small heap leach pad and recovery circuit was tested.

1987-1988: Venturex Resources Limited and Nexus Resources Limited, in a joint venture option from Redden, did geological mapping and stripping, and diamond drilled 26 holes totalling 3,667 m all between shafts 3 and 4. Their best intersection was 0.3 ounce gold per ton over 6.86 m (Assessment Files, Resident Geologist's Office, Kenora).

1989: Match Resources optioned the property from Jim Redden.

B) MAW OCCURRENCE:

1899: Discovery of the Maw Occurrence by B. Greening Wire Company who sunk a shaft (Bow 1899). No further work is reported.

1987-1988: Venturex Resources Limited and Nexus Resources Limited reported that two samples assayed 0.15 and 0.18 ounce gold per ton (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Bow 1898. OBM, Vol. 7, part I, p. 72-73.

Bow 1899. OBM, Vol. 8, p. 74-75.

Carter 1901. ODM, Vol. 10, p. 100-101.

Carter 1902. ODM, Vol 11, p. 251,255.

Kresz 1987. OGS, OFR 5659.

Sakoose Gold Mines. File 52F/09 SW, P-2, Assessment Files, Resident Geologist's Office, Kenora.

Van Houten Gold Mines Ltd. Files 52F/09 SW, T-1 and T-2, Assessment Files, Resident Geologist's Office, Kenora.

Venturex Resources Limited. File 52F/07 SW, 00-1, Assessment Files, Resident Geologist's Office, Kenora.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Grid Location (Map B)	Rock Type Description
1	14	3	1530	0.21	4+35E, 0+50S	quartz vein
2	55	-	138	0.25	2+04E, 2+73S	altered sediments
3	3,380	-	61	0.12	2E, 2+65S	shear zone
4	21	-	22	0.03	2+07E, 2+65S	quartz vein
5	22	-	78	0.20	2+03E, 2+65S	quartz vein
6	1,730	-	17	0.04	1+90E, 2+35S	quartz vein
7	100	-	9	0.01	1+96E, 2+35S	quartz vein
8	50	-	17	0.03	2+05E, 2+40S	quartz vein
9	155	-	5	0.01	1+85E, 2+58S	quartz vein
10	2,740	-	17	0.02	2+04E, 2+19S	quartz vein
11	865	-	14	0.04	2+02E, 2+14S	quartz vein
12	23	3	1760	0.26	2+06E, 1+94S	quartz vein
13	-	-	5	0.01	2E, 1+73S	quartz vein
14	-	-	10	0.01	2+07E, 1+57S	quartz vein
15	9	-	167	1.18	2+25E, 1+69S	sheared sediment
16	25	-	20	0.01	2+03E, 0+42S	quartz vein
17	135	-	89	0.14	2+03E, 0+41S	gossan zone
18	50	-	23	0.05	2+10E, 0+42S	felsic dike
19	2	-	13	0.01	2+05E, 0+48S	felsic dike
20	25	-	35	0.17	2+06E, 0+47S	quartz vein
21	40	-	56	0.04	2+28E, 0+66S	quartz vein
22	10	-	50	1.15	3+15E, 0+60S	altered mudstone
23	75	-	5	0.01	1+74E, 0+46S	quartz vein
24	1,380	-	26	0.01	1+77E, 0+50S	quartz vein
25	1,200	-	374	0.29	1+30E, 0+41S	quartz vein
26	285	-	375	0.16	1+11E, 0+30S	quartz vein

Table 20: Analytical data: Sakoose Mine and Maw Occurrence (Maw occurrence, samples 1 to 15; Sakoose Mine, samples 16 to 26).

SMOOTH ROCK LAKE OCCURRENCE

NTS: 52F/02 NW

LOCATION AND ACCESS

The occurrence is located on the west shore of the southern end of Vickers Lake. Access to the lake is via Hwy 502, at a point 108 km south of Dryden, where a 150 m long portage leads to the southern end of the lake.

The occurrence consists of one shaft, one pit, one trench and three newly stripped areas (Figure 16).

DESCRIPTION

Geology: The occurrence is underlain by pillowed and pillow-brecciated mafic metavolcanics. Pillow rims and epidote clots in the matavolcanics are strongly stretched. Immediately to the west on, the east shore of Vickers Lake, occurs granodiorite of the Irene-Eltrut Lakes batholithic complex (Smith and Stephenson 1988).

Structure and Alteration: Strong shearing is preferentially developed in the pillow-brecciated mafic metavolcanics, resulting in a chlorite-plagioclase schist. Anastomosing shears which vary in strike from 285° to 305° dip 85° to the southwest. West-northwest of the shaft a 20 cm wide quartz vein striking 305° swings to 020° over a 3 m length, and swings back again to 305°. This right-stepping feature suggests a dextral component of movement in the horizontal plane. Dextral movement is also indicated by small-scale, tightly Z-shaped folds in the schist close to the quartz vein. Sinistral offset along small-scale faults striking 210° and dipping 40° to the east, suggests that the overall movement was dextral oblique slip.

The limonite-stained shear zone is characterized by moderate alteration due to sulphidization, epidotization, and locally pervasive silicification. The width of the alteration envelope varies from 2.5 m to 14 m., and has been exposed over a 120 m length.

Mineralization: The main alteration zone is occupied by a quartz vein that pinches and swells, is white and light to dark grey, sugary in texture, is opaque to cloudy, and contains ribbons of chlorite. Calcite occurs in the vein in places. Up to 1% pyrite and pyrrhotite, and <1% molybdenite and chalcopyrite and traces of sphalerite and galena occur in the vein. The contact between the quartz and its host rock is commonly gradational. At the discovery pit, the newly stripped area exposes the vein over a 1.2 m width and 5.5 m length (figure 16).

A 40 m long trench cross-cuts the main zone 48 m northwest of the shaft. Two quartz veins are exposed over a 25 m width in the hanging wall, north of the main zone. The veins vary from 27 to 30 cm in width. Mineralization is much weaker than in the main zone.

The wall rock contains about 1-2% very fine grained sulphide minerals. Predominant sulphides are pyrrhotite and pyrite, with traces of chalcopyrite.

ASSAYS OF MINERALIZATION

Fourteen grab samples were taken by the author. Both the wall rock and the quartz vein material returned gold values (Table 21). A sample of the quartz vein taken from the discovery pit, which contained 1% pyrrhotite, <1% combined pyrite and chalcopyrite, and traces of molybdenite, assayed 0.914 ounce gold per ton. A sample of chlorite schist, adjacent to the quartz at the discovery pit, which contained 1% pyrrhotite and pyrite, assayed 1.219 ounces gold per ton.

DEVELOPMENT HISTORY

1911: A.L. Parsons, geologist for Ontario Bureau of Mines, mentioned that a shaft was sunk to about 40 feet, and a test pit to 10 feet. A grab sample from the vein yielded 0.128 ounce gold per ton (Parsons 1911).

1984: Northair Mines Ltd. and Sennol Resources Ltd. conducted a geological survey and drilled eight Winkie drill holes for a total of 186.29 m. The best assay from samples taken from the test pit was 0.56 ounce gold per ton over 75 cm. A 76 cm length of core from hole VL-84-1 (see Figure 14 for location) assayed 0.33 ounce gold per ton (Assessment Files, Resident Geologist's Office, Kenora).

1989: Wellington Cove Exploration Ltd. did ground VLF-electromagnetic, magnetic and I.P. surveys, and geological mapping. They stripped the zone surrounding the shaft and the discovery pit, and took rock samples from the stripped areas. The best assay obtained from chip samples was 0.697 ounce gold per ton over a 1.2 m width.

SELECTED REFERENCES

Northair Mines and Sennol Resources. Files 52F/02 SW, A-1 and 52F/03 SE, G-1, Assessment Files, Resident Geologist`s Office, Kenora.

Parsons 1911. OBM, Vol. 20, p. 188.

Smith and Stephenson 1988. OGS, MP 141, p.138 - 144.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	S (%)	Mo (ppm)	Rock Type Description
1	31					1.29		chlorite schist
2	31					1.07		chlorite schist
3	1.219 oz/T					2.12		chlorite schist
4	0.211 oz/T	62	331	36	820	1.24	16	quartz vein
5	118	-	98	-	13	0.19	368	quartz vein
6	17					0.29		silicified mafic volcanic
7	0.914 oz/T	123	160	34	194	0.58	191	quartz vein
8	0.084 oz/T	-	25	-	-	0.04	-	quartz vein
9	175	-	200	-	-	0.30	44	quartz vein
10	-					0.81		chlorite/epidote schist
11	485	-	73	-	-	0.05	229	quartz vein
12	19	-	45	-	-	0.07	242	quartz vein
13	0.093 oz/T					0.30		limonite chlorite schist
14	201					1.05		chlorite/epidote schist

Table 23: Analytical data: Smooth Rock Lake occurrence.

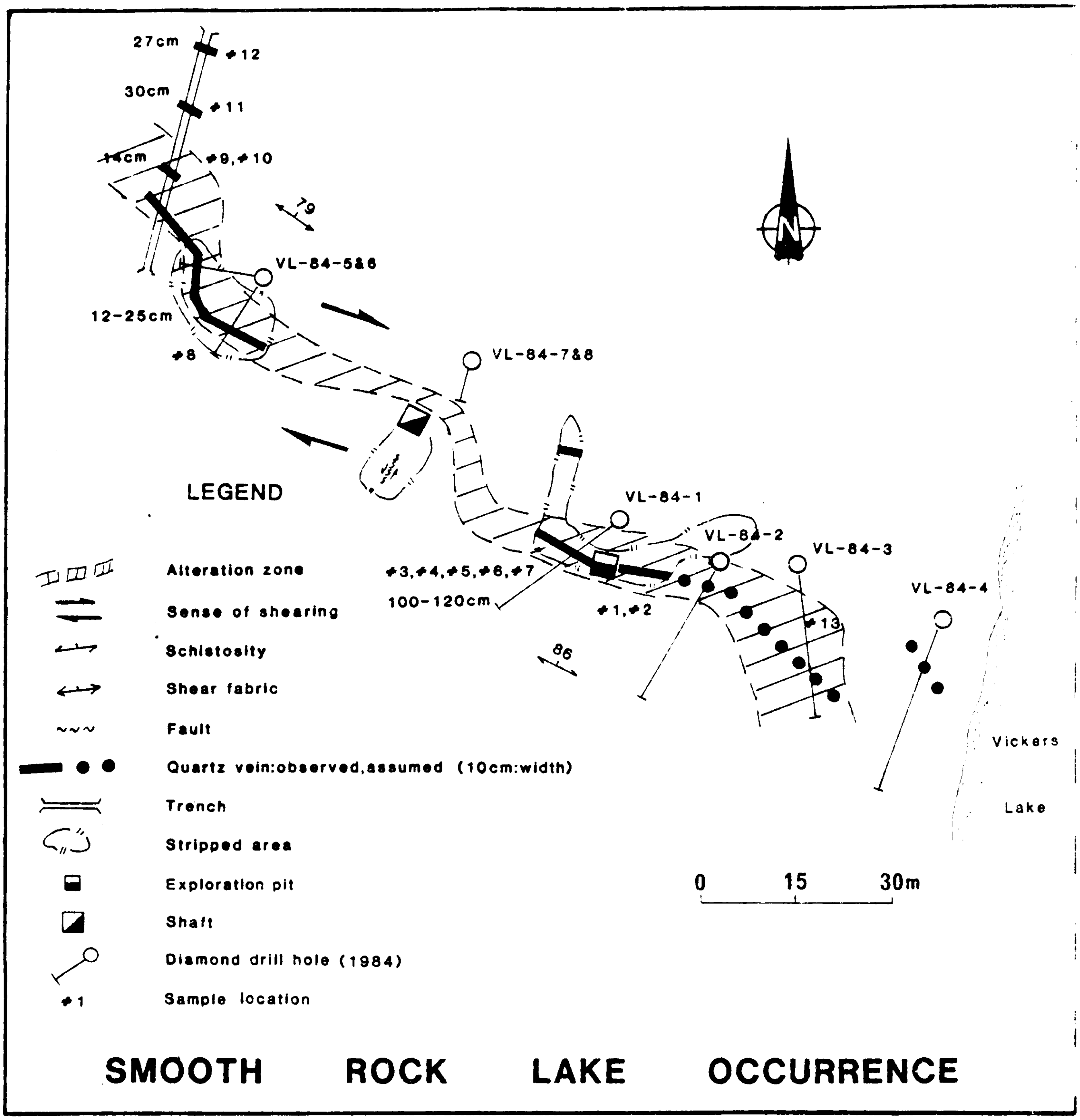

Figure 16: Geology of Smooth Rock Lake occurrence.

SORRY MAC OCCURRENCES

NTS: 52 F/03 NE

LOCATION AND ACCESS

The Sorry Mac occurrences are located 75 km south-southwest of Dryden, between Hailstone Bay and Hidden Bay, on the southeast side of Manitou Stretch. Road access to the property is from Hwy 502, along the Cedar Narrows Road to the landing on the Manitou Stretch. A boat trip of about 17 km reaches the occurrences.

The Sorry Mac occurrences consist of six trenches along a 1.8 km length trending northeasterly (Figure 17).

DESCRIPTION

Geology: The gelogy of the area as mapped by Smith and Stephenson (1988), consists of metavolcanic and metasedimentary rocks intruded by gabbroic rocks. Mafic metavolcanic rocks are predominant.

Structure and Alteration: The property is widely sheared, so that the rocks are iron carbonatized and schistose. The core of the shear zone is characterized by a steeply-dipping, fissile, rock. Alteration products, in order of decreasing abundance, are dolomite, ankerite, sulphides, fuchsite, grey sericite, chlorite, calcite, and quartz veining. At least three parallel, gold-bearing, shear zones have been identified by the author over a 1.7 km length. Shearing trends approximatley northeast at the Hidden Bay, but is deflected at Hailstone Bay toward the north-northeast. All the shear zones display vertical to flat dip to the northwest (90° to 25°), with moderate to steeply plunging slickenside lineations, indicating a north-side-up, oblique slip component of movement in the shear zones.

Mineralization: The highly altered zone is about 1 to 10 m wide. The fissile zone, up to 3 m in width, is filled with narrow, semi-massive, bands of sulphide minerals and/or quartz veinlets. The quartz material is white to pale grey, opaque to rarely vitreous, commonly brecciated, and commonly laminated due to narrow ribbons of sericite, chlorite, calcite, ankerite, and dolomite. Tourmaline may also be present. Sulphide minerals are up to 25% arsenopyrite, up to 2% pyrite, and locally up to 2% chalcopyrite, and traces of bornite. Disseminated sulphides vary from very fine- to coarse-grained.

Trench C has been opened up over a 16.25 m strike length, and displays a typical replacement-type vein, in which a gradational to more altered zone consists of fissure-filling. The alteration zonation from the south to the north is:

0-7 m: weak to moderate iron carbonatized and chloritized mafic metavolcanics.

7-7.25 m: bleached zone with 1% arsenopyrite and pyrite and traces of chalcopyrite.

7.25-10.25 m: fissile zone, characterized by pervasive ankerite and dolomite alteration. Sulphidization consists of up to 25%

sulphide minerals (asp>>py), including a few semi-massive bands. Injection of a few concordant quartz veinlets. The host rock is strongly overprinted and masked by the alteration product.

10.25-16.25 m: zone of dolomite-fuchsite-ankerite-quartz mixed with minor wall rock remnants. The zone shows intense injection of quartz veins and quartz pods giving the outcrop a stockwork pattern. The quartz material is weakly brecciated.

ASSAYS OF MINERALIZATION

Analytical results of fifteen grab samples taken by the author across the area indicate a correlation between gold, and antimony and arsenic contents, and that gold is preferentially associated with the sulphidized and iron carbonatized fissile zone. The best result came from such a sample from trench C, which assayed 0.34 ounce gold per ton (Table 22).

DEVELOPMENT HISTORY

1934: Thomson (1934) identified a quartz vein (now trench C) on map 43a during regional geological survey.

1984 - 1986: Sparton Resources conducted ground VLF-electromagnetic and magnetic surveys, a soil geochemical survey, a geological survey, and trenching and rock sampling. They exposed five mineralized sites known as trenches A to E. The best results from the sampling came from trench C where a chip sample assayed 0.344 ounce gold per ton over 1 m, and trench D where a chip sample assayed 0.355 ounce gold per ton over 1 m. Sparton

Resources conducted a follow-up diamond drill program in 10 holes for a total amount of 918.4 m. Among assays recorded from the first seven holes only, the best intersection was 0.18 ounce gold per ton over 1.2 m in a hole beneath trench E (Assessment Files, Resident Geologist's Office, Kenora).

1989: Homestake Mineral Development Co. conducted geological, ground VLF-electromagnetic, magnetic, induced polarizations and soil geochemical surveys, and re-sampled the trenches (Assessment Files, Resident Geologist's Office, Kenora).

SELECTED REFERENCES

Homestake Mineral Development Co. Files 52F/03 NE, R-3, R-4 and R-5, Assessment Files, Resident Geologist's Office, Kenora.

Smith and Stephenson 1988. OGS. MP 141, p 138-144.

Sparton Resources. Files 52F/03 NE, K-2, K-3, K-5, K-6, K-7 and K-8, Assessment Files, Resident Geologist's Office, Kenora.

Thomson 1934. ODM. Vol. 43, Part IV, Map 43a.

Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Sb (ppb)	As (ppm)	S (%)	Location	Rock Type Description
0.34 oz/T	-	34	-	9.2	5.2%	5.56	trench C	sulphide-rich in fissile zone
160	-	245	5	1.1	1700	0.90	trench C	bleached zone
190	-	8	-	2	2900	0.13	trench C	dolomite-fuchsite-ank-quartz replacement zone
-	-	6	321	0.2	40	0.01	trench C	quartz vein
31	-	231	-	8.6	180	0.83	LO,2+43S	chlorite-carbonate schist
1640	-	87	-	16	3.1%	4.00	trench B	fissile zone
185	-	10	-	2.3	4200	0.33	trench B	quartz vein
1330	2	214	82	10	220	2.15	trench B	sulphide-rich in fissile zone
445	-	111	43	2	160	1.70	trench D	sericite schist
105	-	413	58	2.6	470	1.48	trench D	sericite schist
166	-	85	-	2.1	300	0.44	L14W,6+60S	chlorite-sericite-carbonate schist
2820	-	104	-	2.7	3200	4.72	trench E	brecciated sericite-dolomite tourmaline vein
110	-	39	-	2.1	1150	0.11	L7W,8+20S	altered vesicular mafic metavolcanic
13	-	44	-	1.7	1100	0.26	L7W,8+20S	altered basalt and quartz veins
845	-	64	-	1.2	69	1.72	L18W,8+20S	altered greywacke

Table 22: Analytical data: Sorry Mac occurrences.

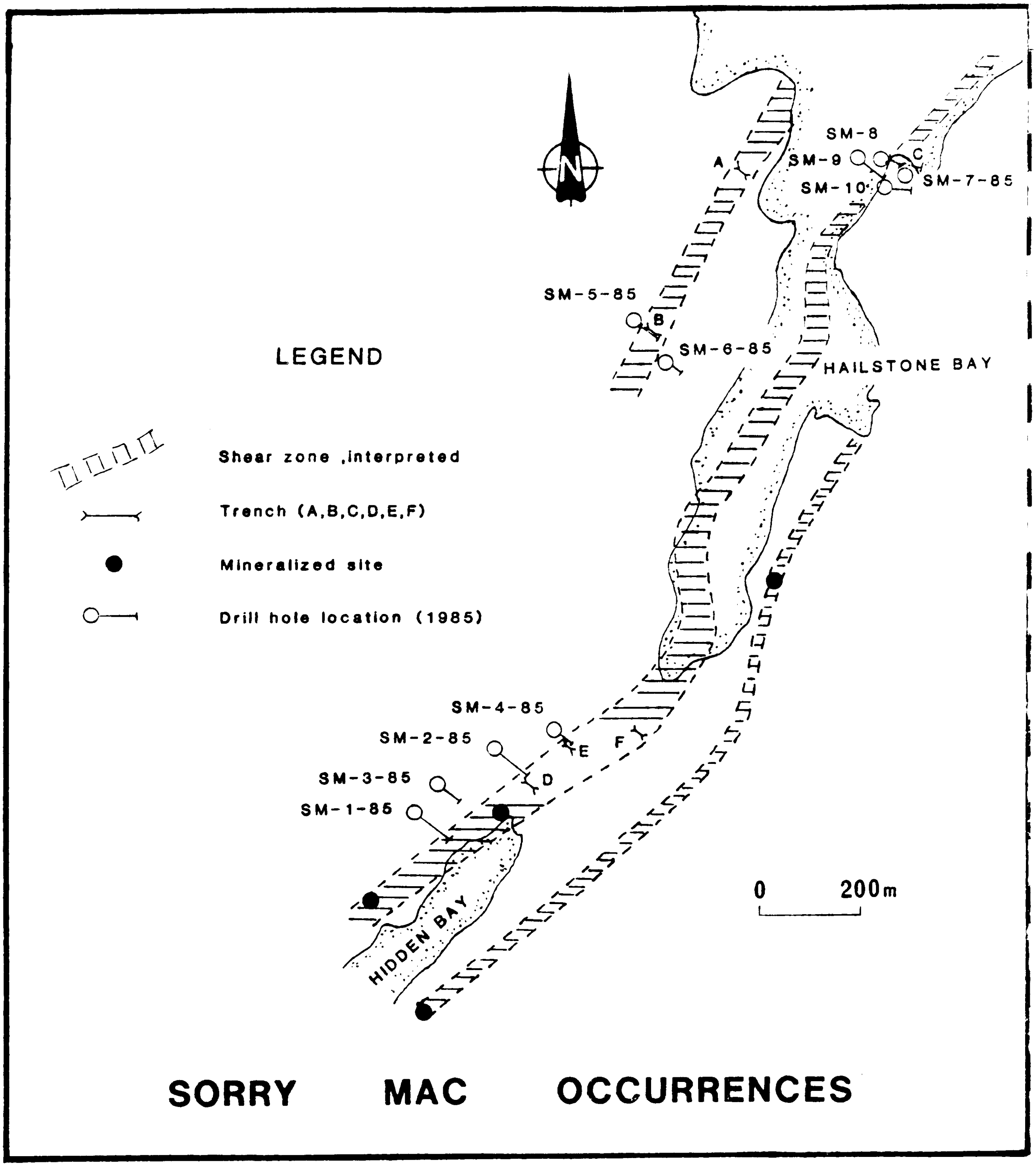

Figure 17: Geology of Sorry Mac occurrences.

SWEDE BOY PROSPECT

NTS: 52F/07 SW

LOCATION AND ACCESS

The prospect is located 47 km south of Dryden, 850 m east from the north end of a lake immediately east of Merrill Lake. Access to the property is best obtained from Jackfish Bay of Upper Manitou Lake.

The occurrence consists of two sets of quartz veins, which have been pitted and trenched.

DESCRIPTION

Geology and Alteration: The occurrence is underlain by mafic metavolcanic rocks of the Blanchard Lake Group (Blackburn 1976, 1982). Two northeast-trending shear zones (here named the West and East Shear Zones) are intruded by carbonatized feldspar porphyry dikes. Shearing resulted in a highly schistose and altered rock. The alteration products and metamorphic minerals consist of chlorite, amphibole, biotite, carbonate, anthophyllite in rosettes, and sulphide minerals.

STRUCTURE: The West Shear Zone strikes 050° and dips 55° to the southeast, and is sub-parallel to the schistosity (Figure 15). The East Shear Zone, 100 m to the east, strikes 030° and dips 65° to the southeast, and rotation of the schistosity into the shear fabric suggests a sinistral oblique-slip sense of movement on this shear.

Mineralization: The quartz-carbonate veins are white to light grey, semi-translucent to translucent, and rarely cloudy to opaque. The quartz is fractured and contains ribbons and patches of chlorite, carbonate, and anthophyllite. Sulphides consist of pyrite, locally up to 5%, both in the quartz veins and in the wall rock.

In the West Shear Zone, a minimum of four parallel quartz veins occur within a width of 25 m over a length of 80 m (Figure 18). The main vein, which dips to the southeast, has a width ranging from 1.5 m to 2.8 m, over a 35 m length. In the exploration pit, the footwall of the 2.7 m thick massive main vein is well mineralized. It consists of pyritized amphibole schist, with 10% pyrite over 50 cm and a stringer zone of unknown width in a silicified and pyritized amphibole schist, with 25-30% pyrite.

The vein in the East Shear Zone, 100 m to the east, is traced by numerous trenches in overburden over a length of 335 m. The reader is referred to Thomson (1934, Figure 5) for a sketch of these trenches. Because the vein is not exposed, the writer was unable to investigate it in detail.

Thomson (1934) indicated (Figure 5) another quartz vein 215 metres to the northeast of the West Shear Zone, but the author was unable to find this vein. This vein was the discovery vein.

ASSAYS OF MINERALIZATION

Thirteen grab samples were taken by the author, all from the westerly shear zone. The quartz from the vein at the shaft returned 4380 ppb gold on analysis. One of the five grab samples from the pyritized hornblende-mica-calcite-plagioclase schist analysed 2090 ppb gold (Table 23).

DEVELOPMENT OF HISTORY

1895: Three Swedes attempted to recovered gold from a small placer operation. Gold was reported to occur in the mud of the swamp near a 2 1/2 foot wide quartz vein. A specimen taken from this vein yielded 38 1/3 ounces of gold per ton (Coleman 1896). A second 7 foot wide vein, approximately 850 feet to the southwest (main vein of the West Shear Zone), yielded 0.803 ounce of gold per ton in a mill run (Coleman 1896).

1896: The property was sold to Kansas city capitalists (January 1897, The Colonist).

1932-1933: Charles Merrill and James Walmsley uncovered a new quartz vein about 300 feet east of the main vein, and exposed it over 325 metres along strike (Thomson 1934). This vein would be in the East Shear Zone.

1933-1934: The property is optioned to Arnold Hughes. Surface trenching and test pitting was carried out.

1934: Thomson (1934) noted visible gold to be commonly found in the main veins in the West Shear Zone, and obtained an assay of 0.16 ounce gold per ton across 3 feet, and 4.64 ounces per ton from a grab sample.

1939: Charles Merrill and James Walmsley brought the claims to patent.

SELECTED REFERENCES

Blackburn 1976. OGS, GR 142.

Coleman 1896. OBM, Vol. 6, p. 14.

Thomson 1933. ODM, Vol. 42, Part IV, p. 35-36.

Thomson 1934. ODM, Vol. 43, Part IV, p. 26-27.

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	S (%)	Rock Type Description
1	12	-	12	0.46	quartz vein
2	13	-	26	1.27	chlorite-anthophyllite-carbonate schist
3	-	-	12	0.03	quartz vein
4	90	-	13	0.06	quartz vein
5	2090	-	22	3.64	chlorite-biotite-carbonate schist
6	190	-	222	1.65	chlorite-biotite schist
7	5	-	7	0.25	quartz vein
8	4380	-	85	5.55	quartz vein & chlorite-carbonate schist
9	105	-	86	2.45	chlorite-biotite-carbonate schist
10	980	-	31	0.79	quartz vein
11	40	-	113	0.01	anthophyllite-chlorite-biotite-carbonate schist
12	225	-	25	0.02	quartz vein
13	190	-	62	0.85	quartz vein

Table 23: Analytical data: Swede Boy prospect.

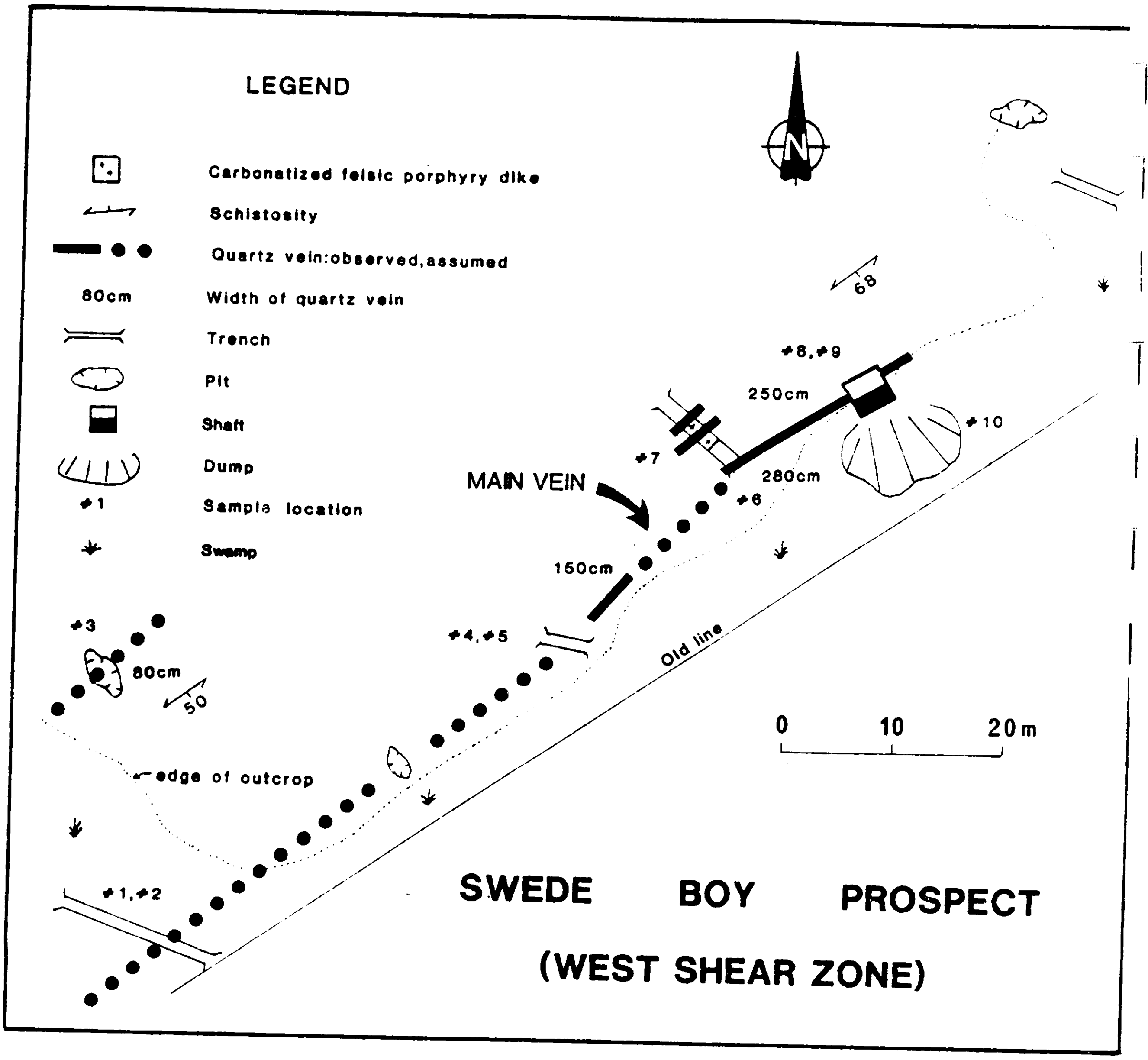

Figure 18: Geology of Swede Boy prospect.

WEASEL OCCURRENCE

NTS: 52F/07 SW

LOCATION AND ACCESS

The Weasel occurrence is located 60 km south-southwest of Dryden. The pit is situated on the portage which connects Lower Manitou Lake to Weasel Lake. The portage follows the Weasel River.

The occurrence consists of one pit.

DESCRIPTION

Geology: The pit is sunk in chert interbedded with clastic sediments of the Etta Lake formation (Blackburn 1976, 1982). No bedrock is exposed around the pit.

Structural Geology: On the north wall of the pit, the schistosity, striking at 040° and dipping 50° to the southeast, is rotated into the narrow shear fabric striking 050°, and dipping 85° to the southeast, indicating a north-side-up, dip-slip component of movement on the shear.

Mineralization: Two quartz veinlets, 5 cm wide and 40 cm apart, are present in the pit. The quartz is light to medium grey, stained yellow by limonitic alteration, and sugary in texture. Mineralization in the veins consists of about 5% of very fine grained pyrite. Adjacent wall rock has rusty staining over a very narrow width, and contains <1% very fine grained pyrite.

ASSAYS OF MINERALIZATION

Three samples were taken by the author. A sample from the first vein assayed 0.255 ounce gold per ton and 0.47 ounce silver per ton, and a sample from the second vein assayed 0.534 ounce gold per ton and 0.44 ounce silver per ton. A sample of the wall rock assayed 0.009 ounce gold per ton and 0.07 ounce silver per ton.

DEVELOPMENT HISTORY

1972: The pit was identified on Map 2320 (Blackburn 1976) during regional geological mapping.

SELECTED REFERENCE

Blackburn 1976. OGS, GR 142.

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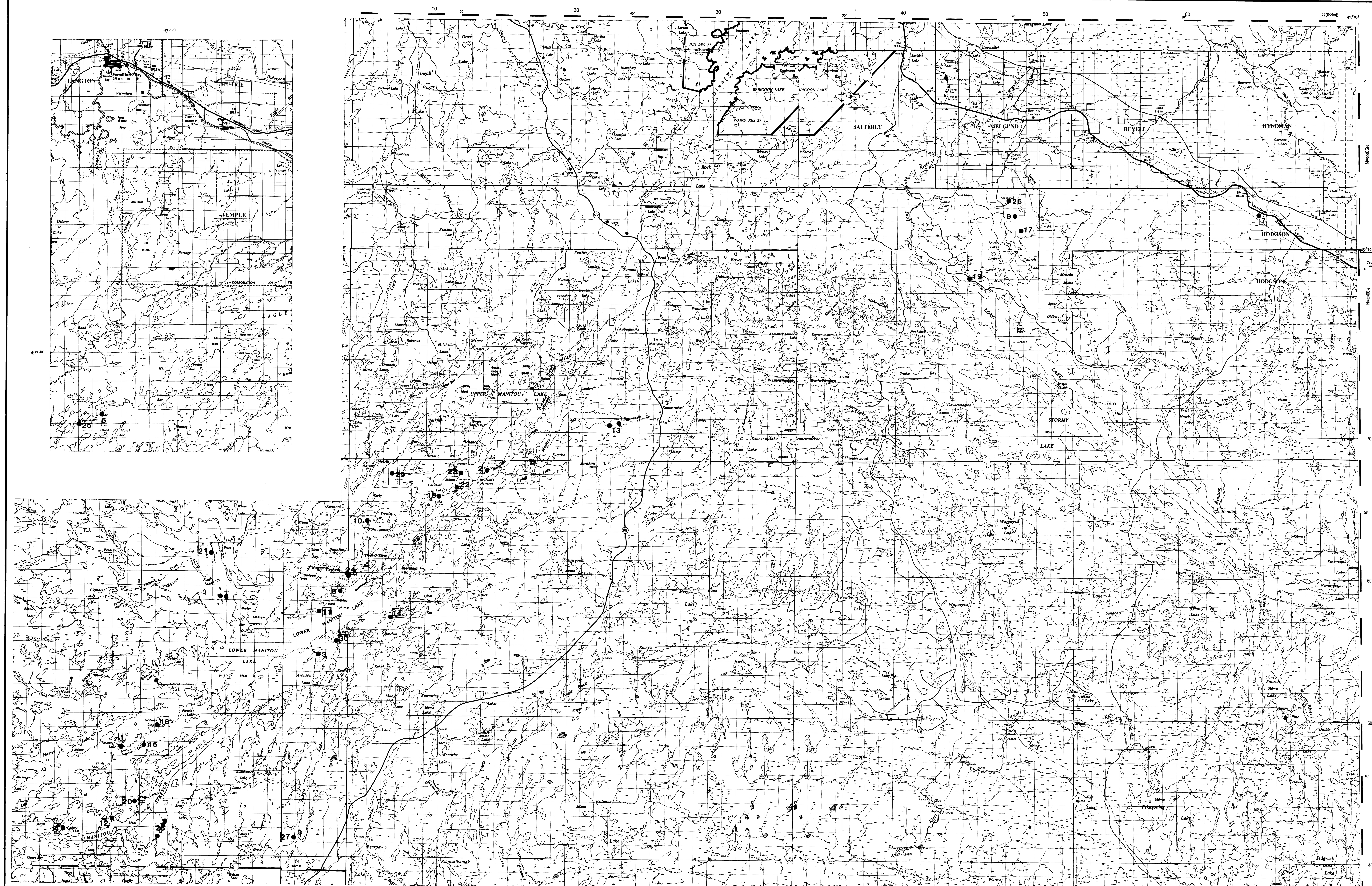
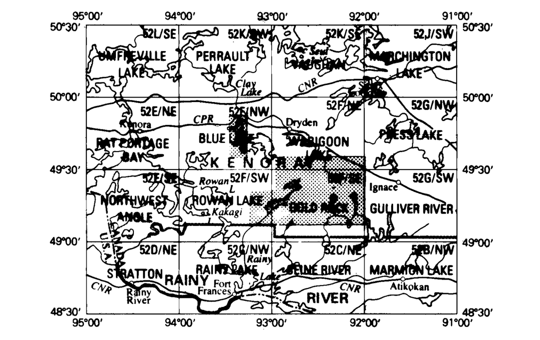


CHART A

LOCATION OF PROPERTIES VISITED BY THE DRYDEN AREA MINERAL COMMODITY GEOLOGIST 1989



Index to adjoining maps of the 1:100 000 series

1:100 000

One centimetre represents one kilometre

The 1980 magnetic bearing approximately 2°E of true north. Annual change decreasing 10′W.

King's Highway (surfaced)
Secondary Highway (surfaced)
All weather road (surfaced)
Dry weather road (un-surfaced)
Trail or portage
Railway
Airfield
Seaplane base
International boundary
Provincial boundary
County or District boundary
Township boundary (Surveyed / Unsurveyed)
Municipal boundary
Park boundary
Reserve boundary
Horizontal control point
Bench mark in metres — BM 1027m
Elevation in metres — 1099m
Building
Post Office — PO
Hospital or Red Cross outpost
Power transmission line
Electric generating station
Natural gas pipeline
Mine
Tower
Esker
Marsh or Swamp
Inundated land
Picnic or Camping site
Alienated surface rights and Indian lands

(Other lands are set aside by the Ministry of Natural Resources as crown reserves. These may be of temporary nature and for this reason have not been shown)

● 11 Location of gold occurrence : number corresponds to occurrence name in List of Properties

CHART B

GEOLOGY OF THE SAKOOSE MINE AND THE MAW OCCURRENCE