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The Geological Setting of Gold Occurrences in the Lake of the Woods Area

by

J.C. Davies and P.M. Smith

1988

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FOREWORD

The Lake of the Woods has a lengthy history of gold exploration, dating from 1879, when the first discovery of gold in the area was reported. Over the next 25 years, the area was subjected to extensive exploration and many other discoveries of gold were made. Many of these were explored by pits, trenches and underground workings, and several were brought into production. Despite these successes, however, interest in the Lake of the Woods waned in the early part of the 20th century, and exploration moved elsewhere in Ontario.

Recent mapping and mineral deposits studies by geologists of the Ministry of Northern Development and Mines have generated a much expanded and improved geological database for the Lake of the Woods area, which will allow reassessment of the potential of the area to host significant accumulations of gold. This project, to gather all available geological information for all the known gold occurrences in the Lake of the Woods area, will assist in this reassessment. To complete their work, the authors carried out extensive literature research, and located and visited many of the occurrences. Their observations provide new insight on the geology of these occurrences, and suggest new exploration targets. The data presented in this report will be useful to both prospectors and exploration geologists.

This project was funded equally by the governments of Canada and Ontario under the Northern Ontario Rural Development Agreement (NORDA).

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MAP
(in back pocket)

Map 1. Locations of gold occurrences described in text. Numbers correspond to those in the text.

ABSTRACT

Information for 143 gold occurrences in the Lake of the Woods area has been assembled in this report. Information has been compiled from geological literature, from assessment files and company reports, and from geological mapping of many of the occurrences.

The Lake of the Woods gold study area lies within the Wabigoon Subprovince of Ontario's Superior Province. Supracrustal rocks of the Wabigoon Subprovince are largely volcanic; these rocks are steeply dipping, and most have not been metamorphosed above greenschist facies. The oldest volcanic rocks comprise a thick section of tholeiitic mafic flows. This section is overlain by intermediate to felsic volcanics, which are predominantly calc-alkaline pyroclastics. Metasediments are commonly associated with the pyroclastic rocks. The contact between the mafic and felsic sequences appears, in part at least, to be an unconformity.

At least three mafic to felsic cycles have been recognized in some parts of the Wabigoon Subprovince, and geochronological evidence indicates that there may be significant age differences among apparently similar sequences in different parts of the Subprovince. Correlation of stratigraphy is made difficult by lack of exposure and by folding and faulting. The folded supracrustal rocks are preserved between numerous, round to oval, granitoid diapirs, which characterize the Wabigoon Subprovince.

Attempts to identify stratigraphic controls of gold mineralization were abandoned because of the uncertainties in stratigraphic correlation. Instead, the gold occurrences were classified according to the lithology of the host rocks, the principal gangue minerals, and the orientation of the mineralized zone relative to stratigraphy. Four types of occurrence were thus defined:

1. Occurrences in mafic or ultramafic flows or sills. These occurrences are the most important class, both numerically and economically. Mineralization of this type is confined to a shear or fault zone from 25 cm to 15 m wide and at least 25 m long.

2. Occurrences in intermediate to felsic volcanic rocks. In general, these occurrences lack a narrow, well-defined shear zone.

3. Occurrences in metasedimentary rocks. There are a small number of these occurrences, and very little gold has been recovered from them.

4. Occurrences in granitoid rocks.

THE GEOLOGICAL SETTING OF GOLD OCCURRENCES

IN THE LAKE OF THE WOODS AREA

by

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INTRODUCTION

Lake of the Woods, with 14,000 islands, 100,000 kilometres of shoreline, and an abundance of outcrop, was part of the early trade route from east to west. During the last quarter of the nineteenth century, pioneers interested in the fur trade, lumber, fishing and prospecting were attracted to the area; in 1879, the first discovery of gold was reported. Shortly thereafter, several other gold discoveries were made, and news of these set in motion a 25-year period of intense prospecting and mining activity. Recorded production in the area to the end of 1904 totalled approximately 120,740 ounces of gold and 18,693 ounces of silver. It is probable that significant production of gold went unrecorded.

There were a number of reasons for the demise of gold exploration in the Lake of the Woods area. Prospectors, originally encouraged by the richness of surface showings, left the area when so few of these were developed into producing mines. British funding, transferred from South Africe to Canada during the Boer War, reverted to South Africa when that war ended. Most importantly, however, the existing mines ran out of ore.

Much of the work undertaken during the early years was apparently dictated by the belief that the gold content of a "vein" increased with depth. *(The term vein was used for any quartz or carbonated body, rock layer, fault, shear zone, or combination of these which might contain sulphide minerals or gold.)* While pioneer work with a diamond drill was carried out on a few properties, the majority of mineral occurrences were explored by pits and shafts. The presence of

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a local reduction works (mill), which would recover gold from small shipments of "ore" on a custom basis, encouraged the sinking of shafts on a vein. *(The term ore was used for any rock perceived to contain valuable metals, whether or not these could be profitably recovered.)* As a result, parts of the area are dotted with pits and shafts sunk down the dip of quartz veins or shear zones which may carry little or no gold. It has been an objective of this study to match these old workings with the names recorded in the early reports, and to assess the mineral potential of the zones in which they occur.

The principal objective of this study was to identify stratigraphic and structural controls of gold mineralization in the Lake of the Woods area and, thereby, to provide guidance for further exploration. This is not readily accomplished in parts of the area because of the lack of recent geological mapping (currently being completed by the Ontario Geological Survey) and because large parts of the area are water-covered, which makes tracing rock units virtually impossible.

The field work upon which much of this report is based was carried out in 1983 and 1984. Locations were established using 1:15 840 scale aerial photographs. In 1984, mapping in the Kenora area and in the vicinity of the Wendigo and Duport Mines was undertaken by the junior author; the mapping of all other areas was carried out by the senior author. Files of the Assessment Files Research Office, Ontario Geological Survey, Toronto, were searched by the junior author during the winter of 1983-84. This research provided the basis for the descriptions of exploration history and the references which have been compiled for most of the gold occurrences.

ACKNOWLEDGEMENTS

Prospectors who spent much of their lives in the area in the search for gold are now few in number. We would like to thank Roger Longe for information on the High Lake area and for arranging access to private holdings there. Special thanks is given to Albert Gauthier, who was born near the Lake of the Woods during the peak of the early exploration, and whose knowledge of the area is exceptional.

Many sources of information on the area are scattered and fragmentary. We are grateful to those in libraries, museums and land title offices who cooperated in the search.

Gratitude for support and assistance is expressed to C.E. Blackburn, Resident Geologist for the Ontario Ministry of Northern Development and Mines in Kenora, and to members of his staff - M. Hailstone, R. Scheinbein, C. Storey and M. Mars.

The numerous chemical analyses of rocks and mineralized samples from the area were provided by the Geoscience Laboratories, Ontario Geological Survey, Toronto.

REGIONAL SETTING

The Wabigoon Subprovince is a major, east-trending subdivision of the Superior Province. It has an exposed length of almost 900 kilometres and an average width of about 150 kilometres. To the west, in eastern Manitoba, and to the east, near Longlac, the Subprovince extends beneath flat-lying Paleozoic sedimentary rocks.

Supracrustal rocks of the Wabigoon Subprovince are predominantly volcanic. They are steeply dipping and most have not been metamorphosed above greenschist facies. In contrast, the English River Subprovince to the north consists of granitic and metasedimentary gneisses which have resulted from high temperature metamorphism, and the Quetico Subprovince to the south consists of metasediments which were subject to moderately high temperature metamorphism. Blackburn *et al.* (1985) pointed out that petrographic evidence suggests that peak metamorphic temperatures in the three subprovinces were similar.

Numerous, round to oval, granitoid diapirs, between which folded supracrustal rocks are preserved, characterize the Wabigoon Subprovince. The nature of the western part of the Wabigoon Subprovince and its relationship to the adjacent subprovinces have been discussed at length by Blackburn *et al.* (1985), who concluded that the three subprovices "developed, at least in part, contemporaneously, and there appears to be a lateral gradation from shallow water or terrestrial sedimentation in the Wabigoon Subprovince to deep water sedimentation in adjacent provinces". The presence of some rocks in the English River Subprovince that are much older than any found in the Wabigoon Subprovince suggests that the relationship between subprovinces is not simple.

The oldest volcanic rocks in the Wabigoon Subprovince are tholeiitic mafic flows. In places, at the top of the thick mafic section, there is evidence of a local unconformity. Overlying intermediate to felsic volcanics are predominantly calc-alkaline pyroclastics. At least three mafic to felsic cycles have been recognized in some parts of the Subprovince, and metasediments are commonly associated with the pyroclastic rocks. Geochronological data suggest that there may be significant differences in the ages of apparently similar sequences in different parts of the Subprovince. Blackburn *et al.* (1985) recognized that there is a genetic relationship between the granitic intrusions, "their overlying subvolcanic apophyses, and mantling felsic volcanic sequences."

The boundary between the Wabigoon and English River Subprovinces is generally defined as the contact between granitic gneisses and low grade volcanic rocks. North of the Lake of the Woods, this coincides with a fault or intrusive contact, but further east it may be gradational. The Dryberry Batholith has been considered to be part of the English River Subprovince (Breaks *et al.* 1978, Gower 1978, Morin 1979), most importantly because of the presence of migmatized metasediments along its southeastern boundaary. The western boundary is in contact with relatively low grade volcanics of Bigstone Bay and, here, the Batholith resembles more closely those of the Wabigoon Subprovince.

LAKE OF THE WOODS GOLD AREA

The Lake of the Woods gold area, as defined for this study, extends east from the Manitoba border to longitude 94°10′ west, and from latitude 49°30′ north to latitude 49°50′ north. It lies at the northern edge of the Wabigoon Subprovince, and near the western limit of its exposure. There are no known gold occurrences in areas adjacent to the north, east or south, but, to the southeast, in the Regina Bay - Kakagi Lake - Rowan Lake area, gold was recovered from the Regina Mine, and active exploration and development is currently taking place in the Flint Lake and Cameron Lake areas.

Regional geological mapping of the Lake of the Woods area has been carried out by a number of workers, but the early work of Lawson (1885) is the best known. It was here that Lawson was able to establish that the oldest rocks in the area were of volcanic origin, and he called these rocks the Keewatin Series.

The geology of the area is best described by reference to six sub-areas or domains (Figure 1).

Shoal Lake Area

The stratigraphic and structural problems which are evident in all parts of the Lake of the Woods gold area appear to be least complex in the northwestern part of the Shoal Lake area. Here, the volcanic rocks have an apparent thickness in excess of 9 kilometres (Davies 1978).

The oldest rocks are mafic metavolcanic flows exposed in the northeast-trending Gull Bay - Bag Bay Anticline. They consist of fine- to medium-grained, massive and pillowed flows, interlayered with medium- to coarse-grained sills or very thick flows. Pillowed flows are mostly fine-grained, with relatively thin pillow rims.

Pillow breccias are rare. Some flows contain coarse plagioclase phenocrysts and these feldspar-phyric basalts are in part pillowed.

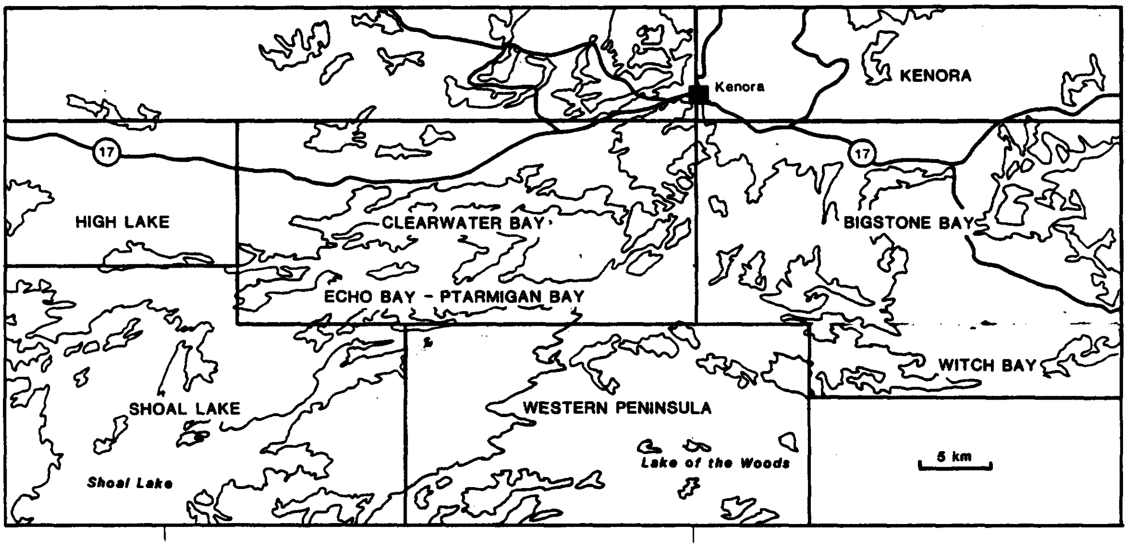

Figure 1. *Area of the Lake of the Woods gold study, showing the domains discussed in the text.*

The sills, or thick flows, show great continuity along strike and many are differentiated, with a fine-grained peridotitic base, a medium-grained central part of gabbro, and an upper part in which quartz may be present and where amphiboles may be up to 1 centimetre long. Some bodies of gabbro and feldspar-phyric gabbro appear to be cross-cutting and to lack continuity. Sills of hornblendite are also present. One of these is up to 200 metres thick and occurs near the top of the exposed mafic volcanic sequence at the western edge of Sirdar Peninsula: the rock is a cumulate, originally consisting of about 80%, medium- to coarse-grained pyroxene and finer, interstitial plagioclase. A differentiated sill, 150 metres thick, occurs in a comparable stratigraphic position on the southeastern limb of the anticline, and can be traced magnetically to the southwest for about 15 kilometres.

Overlying the metabasaltic rocks are felsic to intermediate metavolcanics, predominantly pyroclastics. On the southeastern limb are large, thick-rimmed andesitic pillows, and much pillow breccia, interbedded with felsic pyroclastic flows. The northwestern limb is mostly concealed beneath the lake, but at Clytie Bay, the immediately overlying rock is conglomerate, up to 300 metres thick, in which clasts are almost exclusively fine- or coarse-grained mafic rocks. This is, in turn, overlain by massive rhyolite with some flow breccia, and a thick sequence of pyroclastic material with some epiclastic layers and minor mafic flows.

Stratigraphically above the pyroclastic rocks on the northwestern limb is a sequence which is mainly fine-grained basalt, but includes medium-grained gabbro and some intermediate to felsic pyroclastics. The basalt includes thin rimmed pillows, pillow breccia, and tuff.

Two major granitic bodies are present in the area. The Canoe Lake quartz diorite stock occupies an anticlinal position and its boundaries have been modified by faulting. It is typically fractured, altered and quartz-rich, and several types of porphyry dikes are associated with it. The Snowshoe Bay granodiorite batholith lies mostly in Manitoba; in Ontario, it has regular boundaries, is essentially unaltered, and has no associated porphyry phase. The Canoe Lake stock lies on the extension of the Gull Bay - Bag Bay Anticline; it may be a high level intrusion, and the extensive fracturing and alteration may be due to late stage hydrothermal activity. The Snowshoe Bay batholith does not appear to occupy a particular structural position; the bedding in the volcanics adjacent to the intrusion appears to have been distorted and the intrusion may be late- or post-orogenic.

The Stevens Island complex of gabbro, anorthositic gabbro, diorite and quartz diorite lies near the contact of the lower mafic volcanics and the overlying intermediate to felsic volcanics, and appears to transgress that contact. Magnetic data indicate that this intrusion may have a length of 11 kilometres.

The structural framework of the Shoal Lake area is better understood than most other parts of the Lake of the Woods, but is complex. The trace of the Indian Bay Syncline lies about 10 kilometres northwest of the trace of the Gull Bay - Bag Bay Anticline, and trends northeast into the Crowduck Lake - Rush Bay Fault, a major zone of dextral dislocation. Between these axial traces, the lower and upper mafic volcanic sequences converge as the fault zone is approached. Strong foliation and shear folding are evident in the intermediate to felsic volcanics which lie between the mafic rocks, and this is interpreted to mark the convergence of a secondary anticline - syncline pair which, to the southwest, terminates against the Snowshoe Bay batholith. A major fault also occurs along the southeastern side of the Canoe Lake stock; southeast of this fault, the fold axes are closer spaced and foliation is more strongly developed (see the summary of the Western Peninsula area).

Faulting parallel to the strike of the lithologies is widespread, but difficult to recognize. It has undoubtedly been a controlling factor for some gold mineralization, *e.g.* the Duport and Mikado Mines. The lower mafic sequence also shows abundant evidence of faulting at a high angle to the strike of lithology. The two best developed fault sets are those which strike about 090° and 110°. The first provided controls on the boundary of the Canoe Lake stock in the vicinity of Bag Bay, and also effected a small dextral offset of volcanic units on the Sirdar Peninsula. The second set is best developed in a zone about 2 kilometres wide between Yum Yum Point and Cedar Island, and has locally effected significant offset of the volcanic units, especially in the vicinity of Helldiver Bay. It is also the trend of mineralized zones at the Cedar Island, Mikado Number 3, Olympia Number 3, and Gold Coin Number 1 occurrences, and most of the Yum Yum occurrences. Both the 090° and the 110° faults are believed to have been generated during the intrusion of the Canoe Lake stock.

There is also evidence for faults trending 075° across the lower mafic volcanic sequence, and some of these may be traced westward on the basis of magnetic surveys. One of this set is interpreted to coincide with the southern boundary of the Snowshoe Bay batholith, to pass between Dominique and Stevens Islands and, in the vicinity of Kelly's Point, to splay into a number of faults which are parallel to lithology. A second fault is interpreted to coincide with the northern boundary of the Snowshoe Bay batholith, and to curve to the north of Stevens Island so that it trends parallel to the fault along the southern boundary of the batholith. Such faults would have been related to the intrusion of the granodiorite, and may have provided effective plumbing systems for the transport of metals.

High Lake Area

To the north of the Crowduck Lake - Rush Bay Fault is a sequence of metavolcanic rocks which is similar in many respects to that of the Shoal Lake area. The oldest rocks of the High Lake area are massive to pillowed metabasalts. South and east of High Lake, pillowed flows face east to northeast. The mafic fragmental content is very small, and felsic volcanics are absent. The section is similar to the lower mafic section at Shoal Lake except that the gabbroic lenses are oblique to pillow elongation and there is no obvious volcanic stratigraphy. Farther to the south, these rocks are locally highly foliated and are interpreted to have been cut by a series of east-northeast-trending faults associated with the Crowduck Lake - Rush Bay Fault Zone (Davies 1965). West of Crowduck Lake, the mafic volcanics enclose lenses of intermediate and felsic pyroclastics which are interpreted to be part of the upper volcanic section at Shoal Lake. According to this interpretation, mafic rocks of the lower sequence of High Lake are in fault contact with mafic rocks of the upper sequence of Shoal Lake.

In the immediate vicinity of High Lake, the metabasalts have been intruded by porphyritic granodiorite and by equigranular tonalite and granodiorite. The porphyritic granodiorite is, in general, more highly deformed and on this basis was considered to be older (Davies 1965). This interpretation was recently confirmed by zircon dating (D. Davis, Geochronologist, Royal Ontario Museum, Toronto, oral communication, 1986). Numerous porphyry dikes are associated with the porphyritic granodiorite.

The basalt and dikes of porphyry are unconformably overlain by conglomerate, sandstone, wacke and chert of the Crowduck Lake Group. A few small lenses of felsic, intermediate and mafic volcanics are enclosed by the metasediments. To the east is a considerable thickness of intermediate to felsic pyroclastics and flows; recent zircon dating has demonstrated that some felsic volcanics are about the same age as the porphyritic granodiorite (D. Davis, Geochronologist, Royal Ontario Museum, Toronto, oral communication, 1986). North of High Lake, metasediments are exposed in a narrow zone between the two east-striking faults. Farther north, the mafic metavolcanics include a significant proportion of clastic material and are interlayered with felsic flows, tuff and gabbro.

It is interpreted that, following early mafic volcanism, a period of intermediate to felsic volcanism was initiated with the intrusion of the High Lake porphyritic granodiorite stock. This intrusion was accompanied by uplift, local sedimentation, and by extensive felsic volcanism, and was followed by renewed mafic volcanism.

Fold axes, major faults, and strong local foliation all trend approximately east. Shear folding is evident in some outcrops and may have modified the fold pattern. Fold style indicates dextral movement. Folding, faulting and foliation may all be associated with regional faulting at or near the contact between the Wabigoon and English River Subprovinces.

Mineralization is almost wholly confined to the "roof zone" of the porphyritic granodiorite, most notably in shears which lie at or near the contact with basalt. Some gold occurs in irregular, quartz-filled zones of dislocation in or near the basal conglomerate.

Clearwater Bay - Echo Bay - Ptarmigan Bay Area

Lithologic units of the High Lake area extend eastward through Clearwater Bay and the northern part of Ptarmigan Bay. North of Clearwater Bay, the contact between metabasalt and granitic rocks marks the northern boundary of the Wabigoon Subprovince. The metabasalt is foliated and is believed to face south and to be overlain by up to 2500 metres of intermediate to felsic pyroclastics.

Metawacke, some fine-grained slate and minor conglomerate occur in the eastern part of Clearwater Bay, and appear to be the youngest rocks.

The lower felsic sequence of Shoal Lake and the mafic rocks of the upper sequence extend eastward through Echo Bay and the southern part of Ptarmigan Bay. The area has not been mapped in detail, but reconnaissance mapping (Greer 1931, Thomson 1936) showed a mixed assemblage of mafic, intermediate and felsic metavolcanics to be present, with a number of felsic porphyries cutting these rocks. All of the recorded facing directions in the Ptarmigan Bay area are to the north.

The major structural feature of the area is the east-striking Crowduck Lake - Rush Bay Fault Zone. A parallel fault may lie beneath Clearwater and White Partridge Bays.

The fold pattern to the east of High Lake appears to die out in the western part of Ptarmigan Bay. Felsic metavolcanic rocks, prominent in the folds, may also die out or terminate against the Crowduck Lake - Rush Bay Fault Zone. However, their stratigraphic equivalent may crop out on Corkscrew Island and Northern Peninsula. The only identified fold in the area is an east-striking syncline which is marked by the metasediments in the eastern part of Clearwater Bay; the Y-shaped distribution of the metasediments suggests that the syncline may divide in the vicinity of White Partridge Bay. These metasediments are interpreted to be younger than the Crowduck Lake Group.

East-trending foliation is strongly developed in parts of the Clearwater Bay area, and in zones in the Echo Bay - Ptarmigan Bay area. Gold occurs with quartz in shear zones which are parallel to foliation, and in fractured felsic porphyry dikes.

Western Peninsula and Central Lake of the Woods Area

Rocks of Western Peninsula show no obvious correlation with those of northwestern Shoal Lake to the west, or with those of Ptarmigan Bay to the north. The Western Peninsula is mainly underlain by mafic, intermediate and felsic metavolcanic rocks and by metasediments which represent the reworking of pyroclastic material. A granodiorite stock crops out at Carl Bay, and high level granitic rocks occur at Portage Bay, but in most of the northern part of the peninsula granitic rocks occur as dikes or small plugs.

Intermediate and felsic metavolcanics predominate and are almost entirely pyroclastic. Individual rock units are lensoid. Locally, there is evidence for chaotic accumulation and distortion within rock units. At least one fold axis terminates in a fault zone and it is possible that, in the northern part of the peninsula, much of the lensing of units may be due to the stacking of fault slices which strike east to east-northeast. One mafic unit, averaging 1 kilometre in width and consisting mainly of massive and pillowed flows but also containing pyroclastic material, can be traced across Western Peninsula and the islands of Lake of the Woods for a distance of about 40 kilometres. It appears likely that at least the southern contact of this unit is partly fault controlled.

From Wiley Bay south to Tranquil Channel, there appears to be a 2-fold, south-facing sequence from mafic to felsic volcanics and to sediments. None of the mafic volcanics resemble the lower mafic volcanics of Shoal Lake, and it is possible that the oldest mafic rocks of Western Peninsula correlate with the youngest mafic rocks of northwestern Shoal Lake.

Many of the rocks of Western Peninsula can be traced eastward on islands in central Lake of the Woods. The southernmost exposures here, however, are believed to be equivalent to the lower mafic volcanics of Shoal Lake.

Well-developed foliation is characteristic of part of the area. This has resulted in elongation of clasts parallel to foliation, the largest component of strain being vertical. Carbonate alteration of foliated rocks is widespread, and where such alteration is evident, outcrop is less abundant.

There are few known gold occurrences on the Western Peninsula or on the islands of central Lake of the Woods to the east of Western Peninsula. Most of these few occurrences are associated with fracturing and carbonatized felsic dikes or small granitic intusions. Quartz veins occur in the altered rocks, and a low gold content is generally found in the veins.

Kenora Area

A wedge-shaped area of metavolcanic and metasedimentary rocks extends northeast from the main body of supracrustal rocks of the Lake of the Woods, and becomes a discontinuous septum marking the boundary between the English River and Wabigoon Subprovinces. East of this wedge are granitoid stocks which are considered to be related to the Dryberry batholith; these are typically massive or weakly foliated granodiorite or quartz diorite and contrast with the granitic gneisses to the northwest.

Rocks in the northwestern part of the wedge are interlayered mafic and felsic volcanics and derived sediments. These are cut by a gabbroic sill which is up to 400 metres thick. The volcanics are likely the equivalent of rocks in the Clearwater Bay area; *i.e.* they appear to be the youngest rocks in the area. Strike faults are common; one of them may mark the southeastern side of the gabbroic sill. Foliation is typically well-developed adjacent to the English River gneisses.

The southeastern part of the wedge consists of massive to pillowed basaltic flows which appear to be equivalent to the tholeiitic lower mafic sequence of Bigstone Bay and Shoal Lake. Near the contacts with granitoid stocks, the basalts are typically foliated, but in central portions the deformation is largely restricted to relatively narrow zones. An anticlinal axis can be defined in the basalt, and a small oval stock of porphyritic quartz monzonite occurs along it. The quartz monzonite and the adjacent basalts are virtually unfoliated.

The contact between the northwestern and southeastern parts of the wedge may be a fault. A number of gold occurrences within the basaltic flows are associated with shear zones which are parallel to volcanic lithology. One occurrence is associated with the younger mixed volcanic sequence.

Bigstone Bay - Witch Bay Area

Bigstone Bay is mainly underlain by massive to pillowed, fine- to medium-grained basaltic flows. A few thin mafic pyroclastic beds are present, but felsic extrusive rocks are absent. Near the top of the mafic pile, which has a cumulative thickness of about 8000 metres, are mafic and ultramafic sills, some of which show evidence of differentiation. Overlying these rocks, apparently concordantly, are intermediate to felsic pyroclastics with minor flows and sediments. In the Bald Indian Bay area, their exposure widens to the southwest, due to the plunge of the Sultana Syncline. The mafic volcanics farther northwest, in the eastern part of the Kenora wedge, may be correlative with the mafic volcanics in Bigstone Bay.

All of the volcanic rocks have been broadly folded about the Hay Island Antiform, the north limb of which strikes about north-northeast; and the south limb, about east-southeast. The core of the antiform to the east of Bigstone Bay is occupied by the Dryberry batholith; the contact on the northern limb is essentially concordant, but in the core the southern limb is discordant.

The Quarry Island stock, with its porphyritic quartz monzonite core and outer zone of quartz diorite, was intruded near the contact between mafic and felsic volcanics. A small granitic stock also occurs at the top of the mafic volcanics on the southern limb of the antiform, and a few felsite dikes occur within the thick basaltic section.

Extension of the Crowduck Lake - Witch Bay Fault Zone to the east is subject to interpretation. The zone may branch, part coinciding with the contact between mafic and felsic volcanics on the southern limb of the Hay Island Antiform at Andrew Bay (Ayer 1984), and part extending across Hay Island, where there has been extensive carbonatization, and into Moore Bay. Termination of mafic sills to the northwest of Hay Island may have been due to faulting, or may indicate the presence of folding, such as that which occurs north of Witch Bay. Faulting or shearing in the northern and southern limbs of the antiform is mainly parallel to volcanic stratigraphy, but in the southern part of the core area, many faults trend southeast to east-southeast, and cross-cut the lithology.

The area was the first to be intensively prospected and numerous old workings can be found. Most are associated with quartz or quartz-carbonate veins in faults or shears. The Wendigo Mine, the most productive mine in the Lake of the Woods area, occurs in a well-defined strike shear near the top of the mafic section. At the Sultana Mine, the largest ore zone was also associated with shearing or faulting parallel to volcanic stratigraphy and at the top of the mafic section. However, here the host is quartz diorite and porphyritic quartz monzonite. While minor production was recorded from veins which cut across stratigraphy, the mineralized zones are mostly discontinuous. A number of prospects were found in the Dryberry batholith near its contact with the volcanics, but none of these is of any importance.

CLASSIFICATION OF THE GOLD DEPOSITS

A principal objective of this study was to identify stratigraphic or structural controls on gold mineralization in the Lake of the Woods area. The original intent to define the relative stratigraphic position for each occurrence was in part abandoned because of uncertainties in stratigraphic correlation between different parts of the area.

The system used to classify the gold occurrences is based primarily on the lithology of the host rock, and secondly on the principal gangue minerals with which the gold is associated. For most occurrences, an additional notation refers to orientation of the mineralized zone, *i.e.* whether it is parallel (p) or oblique (o) to stratigraphy.

1. Occurrences within mafic or ultramafic flows or sills

Numerically and economically, this is the most important group. Significant amounts of gold were recovered at the Wendigo and Duport Mines, and minor amounts of gold were recovered from other properties. In virtually all occurrences of this type, mineralization is confined to a shear or fault zone from 25 cm to 15 m wide, and at least 25 m long. Sub-types include:

1a: Mineralized zones in which the principal gangue mineral is quartz.

1b: Mineralized zones in which both quartz and carbonate are prominent.

1c: Mineralized zones in which the principal gangue mineral is carbonate.

1d: Mineralized zones in which a felsite dike is present, regardless of whether the dike is mineralized.

1s: Mineralized zones in which the sulphides are disseminated, but only minor amounts of quartz or carbonate are present.

2. Occurrences within intermediate to felsic volcanic rocks

Felsic volcanic rocks of the Lake of the Woods area are predominantly of pyroclastic origin, and are typically well-foliated. Within the area, the only significant production of gold from felsic volcanic rocks was at the Kenricia Mine. In general, there is no narrow, well-defined shear zone; rocks are similarly well-foliated across considerable widths. In some occurrences, the gold is associated with felsic dikes. Sub-types include:

2a: Mineralized zones in which the principal gangue mineral is quartz.

2b: Mineralized zones in which both quartz and carbonate are prominent.

2c: Mineralized zones in which the principal gangue mineral is carbonate.

2d: Mineralized zones in dikes of porphyry or felsite, enclosed by intermediate or felsic rocks.

2s: Mineralized zones in which sulphides are disseminated but only minor amounts of quartz or carbonate are present.

3. Occurrences within metasedimentary rocks

A small number of gold occurrences in the Lake of the Woods area are associated with rocks of sedimentary origin. Very little gold has been recovered from any of these occurrences. Sub-types are:

3a: Mineralized zones hosted by argillite or cherty sediments.

3b: Mineralized zones hosted by siliceous sediments or tuff.

3c: Mineralized zones hosted by conglomerate.

3d: Mineralized zones hosted by granitic dikes enclosed by sediments.

4. Occurrences in granitoid rocks

A number of gold occurrences are within granitic stocks, the most important of which is the Sultana Mine. At the Mikado Mine, gold was concentrated where a fault zone intersected the contact between quartz diorite and basalt. Quartz is the dominant gangue mineral. Four sub-types have been distinguished:

4a: Mineralization in shear or fault zones at contacts with enclosing or enclosed basalt.

4b: Mineralization associated with the contact between two granitic phases.

4c: Mineralization within shear or mylonite zones within a granitoid body.

4d: Mineralization associated with felsite, quartz porphyry or granitic dikes, but not with the enclosing rocks.

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DESCRIPTIONS OF PROPERTIES

Locations of all properties are given on the Map 1 (back pocket). Property numbers in the text correspond to those on the map.

1. ABACO OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared basalt

CLASSIFICATION
1b, p

LOCATION

Indian Reserve 38B:	NTS	52E/9NW
	Lat.	49°43′35" (49.7265°)
	Long.	94°22′37" (94.3770°)

ACCESS
The main trenches are located 200 m west-southwest of the point where the eastern boundary of Indian Reserve 38B intersects the shore of Pine Portage Bay. That point is accessible by a road which leads 2 km south from Highway 17, or by boat to the northwestern end of Pine Portage Bay. From Kenora, the distance by water is 16 km.

DESCRIPTION
Geology: Fine- to medium-grained basalt of the upper part of the Bigstone Bay tholeiitic sequence trends north-northwest to northeast along the western side of Pine Portage Bay. In the northwestern part of Sultana Island, the basalt is overlain by chert, fine-grained volcaniclastics and intermediate to felsic flows, lapilli tuff and tuff breccia. These are folded about the Sultana Syncline and do not extend as far northeast as the Abaco Occurrence. The axial trace of the syncline is projected to be about 400 m northwest of the Abaco trenches.

Mineralization: Trenching has been carried out in 4 places (Thomson 1946) on the flanks of a basalt hill which is 150 to 200 m west of Pine Portage Bay. Two of these locations are on pyrite-bearing, siliceous sediments which have an estimated thickness of 4.5 m and trend northeast to east. The rusty weathering sediments are enclosed by basalt; shearing is evident in places adjacent to the sediments, and quartz stringers, with minor pyrite and chalcopyrite, occur in the schists. On the north side of the hill, a trench was sunk on a 5 cm wide vein of coarse quartz in rusty schists. The main area of interest is on the west slope of the hill, where a carbonatized shear zone is exposed in 4 trenches. The shear, bounded to the northwest by medium-grained basalt, has a maximum width of 6 m; it strikes about 035° and dips almost vertically. Lenses and veins of quartz and carbonate constitute up to 15 percent of the schist and contain minor pyrite, pyrrhotite and tourmaline.

ANALYSIS OF MINERALIZATION
Thomson (1946) panned rusty material from each of the worked areas; no gold was found in the rusty sediments, a trace of gold was recovered from the quartz vein in rusty schists, and a "moderate gold tailing" was found in each of the three samples panned from the wide shear zone. Grab samples of quartz-carbonate veinlets assayed 0.46 oz Au/ton and 0.08 oz Au/ton, respectively. Seven holes were drilled into the wide schist zone; although chalcopyrite "occurred abundantly" in core from one hole, the highest assay was only 0.04 oz Au/ton.

DEVELOPMENT HISTORY
Circa 1901: Prospecting, stripping and trenching.

1946: Prospecting, diamond drilling by Abaco Gold Mines Ltd.

SELECTED REFERENCE
Thomson, 1946, Resident Geologist's Files, Kenora

2. ABE LINCOLN OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Massive to foliated granodiorite

CLASSIFICATION
4c, p

LOCATION

Haycock Township:	Lot 12, Concession 6
	NTS 52E/16SW
	Lat. 49°47'56" (49.8322°)
	Long. 94°20'14" (94.3372°)

ACCESS
The main pit is 2.4 km east-northeast of the Kenora airport terminal. It is 50 m east of the Jones Road and 150 m west of Island Lake.

DESCRIPTION
Geology: The area is underlain by massive to foliated quartz diorite of the Island Lake intrusion. The contact of the intrusion with basalt is about 600 m west of the Abe Lincoln Occurrence. The contact is essentially linear at this point, trending 030°. A weak foliation in the quartz diorite is approximately parallel to the contact, and is northwest-dipping.

Mineralization: The main pit was sunk an estimated 3 m on a narrow shear zone, trending 070° and dipping 80° NW. Pyrite is contained within a 5 to 10 cm wide quartz vein. Direction of relative movement on the shear is unclear.

DEVELOPMENT HISTORY
1896 - 1897: Mineralization was discovered by Andrew Benson. Four or five test pits, from 1.2 to 3 m deep, were sunk on separate veins. Work was associated with exploration on the Black Sturgeon prospect to the north.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16, p. 9
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3. AMBROSE MINE (PROSPECT)

Also known as the Gull Island Prospect, or the Lake Hill Gold Mine

COMMODITY
Gold

ROCK ASSOCIATION
Basic to felsic flows and tuffs intruded by quartz-feldspar porphyry dikes

CLASSIFICATION
4dp, 2a

LOCATION
Gull Island, Lake of the Woods:

NTS	52E/10SE	
Lat.	49°31′14"	(49.5038°)
Long.	94°30′19"	(94.5051°)

ACCESS
The workings lie on the southern part of Gull Island on old mining location K65. The island is 11 km east-southeast of Wiley Point and about 27 km due south of Kenora. The area may be reached by boat from Kenora or Sioux Narrows.

SIZE AND GRADE
Neilson and Bray (1981) calculated a speculative tonnage of 2,600 tons grading 0.17 oz Au/ton for vein number 3, using a 48.8 m strike length, a 1.5 m mining width, and a 12.2 m depth.

DESCRIPTION
Geology: Reconnaissance mapping by Thomson (1936) indicated the rocks of the area to be pyroclastics and mafic volcanics, cut by porphyry dikes. Mafic and intermediate volcanics 6 km to the west were considered by Davies (1978) to belong to the upper volcanic sequence. The overlying sediments were interpreted by Davies to be synclinally folded; the axial trace of the syncline would trend toward Gull Island.

The island may be divided into four domains. A southern mixed domain consists mainly of andesitic flows and tuff, with minor mafic volcanics. A south-central domain consists of intermediate to felsic lapilli-tuff, tuff breccia and debris flows. A northern domain is predominantly massive to bedded intermediate tuff and tuff-derived sediments, and a mafic flow unit underlies the northeastern part of the island. All of the rocks are well foliated; bedding is not readily detectable but, where present, is typically at an angle to foliation. Some isoclinal folding may be present in the tuff-sediment unit, but it appears to be mainly north-facing and to be in fault contact with the south-facing mafic flows of the northeastern extremity of the island.

Quartz porphyry and quartz-feldspar porphyry dikes occur in the southern and northern domains and at least one dike occurs in the felsic domain. The dikes are mainly parallel to foliation but are also foliated. A 60 m wide diabase dike cuts the southern unit at a high angle.

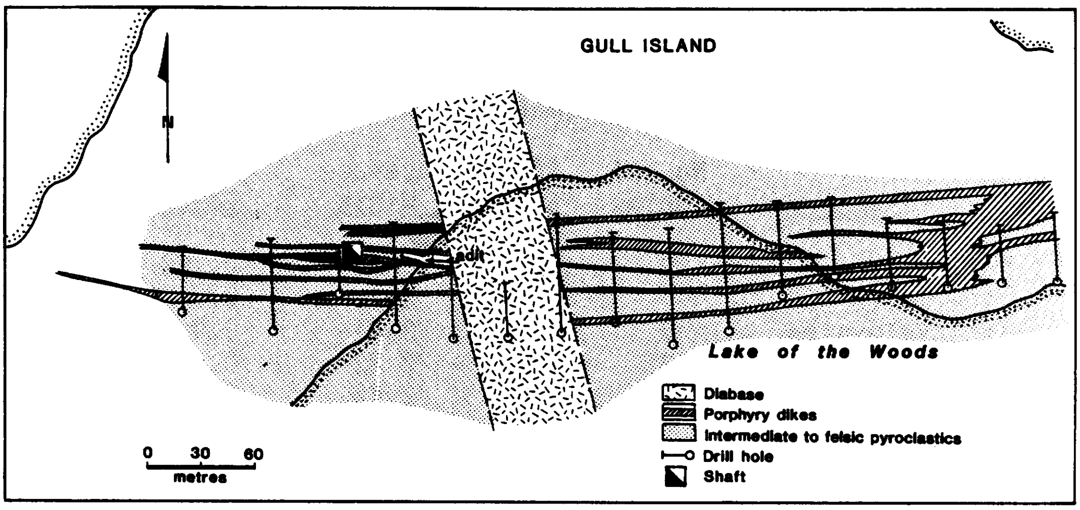

Figure 2. *Geology of the Ambrose Mine Prospect. After Sylvanite Gold Mines Ltd. (1943).*

Mineralization: Porphyry dikes are most numerous in a 60 m wide zone exposed both to the west and east of the bay on the southern side of Gull Island. The dikes are approximately parallel (Figure 2) but pinch and swell, and possibly join. They have an average width of 1 to 2 m. West of the bay, the dikes strike east and dip steeply; three of the dikes have a probable minimum length of 85 m. East of the diabase dike, both under and east of the bay, six dikes have apparent continuity over about 200 m, but drill evidence suggests they merge to the east and either die out or change strike.

White quartz is common in the fractured and sheared quartz porphyry, forming lenses, vein networks and irregular masses which, combined, may constitute up to 30% of the dike. Quartz veins also occur in the foliated volcanics. Ankerite is a common associate of the quartz and the quartz contains minor pyrite and traces of sphalerite, galena and visible gold (Forbes 1937).

In addition to surface trenching, an adit was driven 12 m along a mineralized porphyry dike (No. 1 Vein) from a point near the lake shore. A 6 m long crosscut to the south exposed a second dike (No. 2 Vein). Approximately 47 m west of the adit and an estimated 15 m above it, a vertical shaft was sunk 12 m on a third dike (No. 3 Vein) and a crosscut was driven north about 10 m. No. 5 Vein, about 25 m southeast of the shaft, is exposed over a strike length of 10 m.

A series of 16 drill holes, spaced approximately 30 m apart, intersected mineralized quartz over a minimum strike length of 450 m (excluding the 60 m wide diabase dike).

ANALYSIS OF MINERALIZATION

Sylvanite Gold Mines Ltd. (1943) have recorded on an assay plan the results of their sampling and that of others in the area west of the bay. These results may be summarized as follows:

Vein No.	Sampler	No. of Samples	Sample Length	Average Width	Weighted Ave. Gold Content
1	Bray	2	10 ft	1.65 ft	0.193 oz/ton
	Coll	1	-	2.2	0.2
adit	Sylvanite	7	39	3.21	0.086
2	Bray	13	270	2.29	0.082
	Coll	11	250	2.46	0.284
	Others	8	180	4.23	0.784
adit	Sylvanite	1	-	2.5	0.06
shaft	Sylvanite	2	12	2.95	0.036
3	Others	2	35	3.2	0.201
shaft	Sylvanite	2	12	4.0	0.02
5	Coll	2	25	3.5	0.014

The results of drilling by Lake Hill Gold Mines Ltd., as recorded by Sylvanite Gold Mines Ltd. (1943), require interpretation with respect to vein continuity. One interpretation may be summarized as follows:

Vein No.	No. of Intersections	Interpreted Length	Sampled Core Length	Weighted Ave Gold Content
1 West*	3	340 ft	2.2 ft	0.065 oz/ton
East	5	400	4.7	Tr.
2 West	4	400	3.75	0.037
East	3	200	5.4	0.059
3 West	4	350	6.4	0.01
East	2	100	6.8	0.18
4 West	2	175	13.7	Tr.
East	3	200	6.1	0.037
5 West	1	-	6.3	0.10

*The designation west and east is with respect to the diabase dike.

DEVELOPMENT HISTORY

1897: The Ambrose Mine and Development Co. Ltd. was incorporated March 19. A shaft was sunk at least 12 m, and an adit driven about 12 m.

1934-1937: Seven claims on Gull Island and 4 water claims were acquired by Lake Hill Gold Mines Ltd. Examination involved stripping, trenching, drilling 16 holes totalling 1069.5 m, and minor underground development.

1943: Trenching, sampling, and geological mapping by Sylvanite Gold Mines Ltd.

1965: Three holes, totalling 367.6 m, drilled by Arjon Gold Mines Ltd.

1971-1973: C. Kuryliw completed magnetometer, electromagnetic, and geological surveys.

1974: Eleven holes, totalling 609.6 m, drilled by Pango Gold Mines Ltd.

1979: A. Hopkins drilled one hole 91.6 m deep

SELECTED REFERENCES

Arjon Gold Mines, 1965, Sketch Map showing Diamond Drilling, Assessment Files, Kenora
Bow, 1898, OBM, Vol. 7, p. 39-40
Beard and Garratt, 1976, ODM, MDC 16, p. 7
The Canadian Mining Journal, 1937, p. 37
Lake Hill Gold Mines Ltd., 1936, Copy of Prospectus, Assessment Files, Kenora
Ferguson *et al.*, 1971, ODM, MRC 13, p. 242
Forbes, 1937, Report on Lake Hill Gold Mines, Ltd., Assessment Files, Kenora
Hopkins, 1979, Assessment Work, Assessment Files, Kenora
Kuryliw, 1973a, Report on an Electromagnetometer Survey over the Gull Island Claim Group, Assessment Files, Kenora
1973b, Report on a Magnetic Survey over the Gull Island Claim Group, Assessment Files, Kenora
Lees, 1937, Report on Diamond Drill Work, Lake Hill Gold Mines Ltd., Gull Island, Lake of the Woods, Assessment Files, Kenora
Pango Gold Mines Ltd., 1974, Assessment Work, Assessment Files, Kenora
Sylvanite Gold Mines Ltd., 1943, Assay Plan, Assessment Files, Kenora
Thomson, 1936, ODM, Vol. 45, p. 30-31

4. ARGYLE OCCURRENCE

Also called the Three Nuns Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Volcanic schists

CLASSIFICATION
2a, b, o

LOCATION
Clearwater Bay: NTS 52E/10NW
Approximate location shown by Lawson (1885)
Lat. 49°42′05″ (49.7014°)
Long. 94°47′10″ (94.7861°)

ACCESS
The area is adjacent to the McCallum Point Road, and is also accessible by boat from Kenora.

DESCRIPTION
Geology: Intermediate pyroclastics and interlayered mafic flows underlie most of Clearwater Bay. Foliation is well developed in most rocks and trends within about 15° of east.

Mineralization: Coste (1885) noted the presence of two south-dipping veins trending 100°, about 400 m apart. Vein No. 1 was described as 30 to 60 cm wide, but poorly defined, with quartz intermixed with schist. Four or five pits were sunk over an exposed length of about 400 m; in one pit the enclosed schist contained pyrite, arsenopyrite and calcite. Near the mill site, a 30-45 cm wide vein intersected the No. 1 vein at 60°. The No. 2 vein was reported to be 1.2 to 1.5 m wide and better defined, with one pit at the lake shore and a second, deeper pit on a nearby hill. The quartz is described as "white and hard" and containing pyrite, arsenopyrite, chalcopyrite and calcite.

DEVELOPMENT HISTORY
1882 - 1883: Prospecting and pitting.

1884: Mill construction.

1885: Operations discontinued.

SELECTED REFERENCES
Coste, 1885, Geological and Natural History Survey and Museum of Canada, 1882-3-4, p. 18k
Lawson, 1885, Geological Survey of Canada, Annual Report (new series), Vol. 1, Rpt. CC, 151p

5. ARONEK SYNDICATE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic and intermediate volcanics

CLASSIFICATION
1a

LOCATION

Indian Reserve 38b:	NTS	52E/9NW
	Lat.	49°44′32" (49.7422°)
	Long.	94°23′59" (94.3997°)

ACCESS
Highway 17 is near the north side of IR 38b. The Reserve extends east from Devil's Gap, near Kenora, to Pine Portage Bay, and is accessible by boat from Kenora.

DESCRIPTION
Geology: Indian Reserve 38b is mostly underlain by pillowed to massive mafic flows which are overlain to the southeast by intermediate to felsic pyroclastics. The Airport Anticline extends northeast across the Reserve and Ayer *et al.* (1985) mapped gabbro both parallel and at a high angle to volcanic lithology. The Island Lake quartz diorite intrusion occurs in the northeastern part of the area and the Jones Road quartz monzonite stock terminates about 200 m north of the Reserve boundary.

Mineralization: According to A. Gauthier (personal communication), all of the Reserve area was prospected during the 1930's and several mineralized zones were found. The principal occurrence appears to have been near the north boundary of the Reserve, where a shaft was sunk. Thomson (1935) reported that veins are "chiefly white quartz and black tourmaline with sulphides in places. Native gold occurs in the quartz veins. Values are reported to be spotty".

DEVELOPMENT HISTORY
1934: Surface trenching and pitting.

1935: Sold to Muton Long Lac Gold Mines Ltd. A 2.1 by 3.3 m shaft was sunk to 38 m on No. 1 vein and a 24 m crosscut intersected veins 2 and 3.

1937: Sold to Jane Gold Mines Ltd.

SELECTED REFERENCES
Ayer *et al.*, 1985, OGS, Map P.2830
Thomson, 1935, ODM, Vol. 44

6. ASH BAY OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
1a

LOCATION
Island MH 157, between Ash Bay and Ptarmigan Bay:
NTS 52E10/NW
Lat. 49°38'15" (49.6397°)
Long. 94°46'38" (94.7743°)

ACCESS
The vein is near the south shore of island MH 157, 1.8 km due north of Lower Ash Rapids. It is 25 km southwest of Kenora, and is accessible by boat.

DESCRIPTION
Geology: Basaltic flows in the area are interlayered with mafic and ultramafic sills, and with intermediate to felsic pyroclastic rocks. The assemblage may represent the transition between the lower mafic and lower felsic sequences. Quartz-feldspar veins have intruded the rocks.

Mineralization: Thomson (1936, p. 38) recorded the presence of a 20 to 50 cm wide quartz vein near the south shore of island MH 157. The vein strikes 110° and dips 60° NE and has been traced for 97 m along strike. Fractures in the quartz, parallel to vein walls, have been filled with tourmaline, and chalcopyrite is locally abundant. A grab sample of the well-mineralized material contained 0.19 oz Au/ton (Thomson 1936).

SELECTED REFERENCE
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 38

7. BAG BAY (D237) OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared quartz diorite

CLASSIFICATION
4c

LOCATION
Eastern shore of Bag Bay, Shoal Lake:

NTS	52E/10SW	
Lat.	49°36′03″	(49.6009°)
Long.	94°57′36″	(94.9600°)

ACCESS
The pit, on former mining location D237, is about 2.7 km south of Clytie Bay Landing and 1.3 km northeast of Cedar Island. It is accessible by boat from the landing, or from Kenora via Ash Rapids.

DESCRIPTION
Geology: The Canoe Lake quartz diorite stock underlies the eastern part of Bag Bay. The intrusion is characterized by altered feldspar, chloritized mafic minerals and abundant (up to 45%) quartz. Minor fractures are numerous and locally contain quartz veinlets.

Mineralization: A pit trending 120° was sunk an estimated 2.5 m on a quartz vein, about 10 m from the shore of Bay Bay. The pit is water-filled, but dump material indicates that repeated deposition of silica occurred along a strongly sericitized shear zone. Pyrite is disseminated in the quartz, especially at vein edges.

ANALYSIS OF MINERALIZATION
A grab sample of mineralized quartz and sericitized quartz diorite taken in this study contained 830 ppb Au.

DEVELOPMENT HISTORY
There is no record of work on the occurrence.

8. BARDYKE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt intruded by granitic dike

CLASSIFICATION
1d

LOCATION

Ewart Township:	NTS	52E/11NE
	Lat.	49°42'56" (49.7157°)
	Long.	95°08'50" (95.1472°)

ACCESS
The occurrence is 200 m north of the northernmost bay of High Lake and 450 m east of the provincial border. The eastern end of High Lake is accessible by road. The area may also be reached by foot from the pipeline road, a distance of about 1.5 km.

DESCRIPTION
Geology: North of the western part of High Lake, basalt has been intruded by porphyritic granodiorite and by dikes of quartz porphyry. Foliation in the basalt trends generally east and dips steeply north.

Oxidized shear zones are reported to occur along the northeast edge of an outcrop area where "encouraging quantities of gold" were found (Davies 1965). The shears are said to be associated with granitic dikes and a magnetic anomaly.

DEVELOPMENT HISTORY
1961: Ground magnetic survey and prospecting by Bardyke Mines Ltd.

SELECTED REFERENCE
Davies, 1965, ODM, GR 41, p. 44

At the shore, and approximately east of the shaft, a cut was made into the hillside exposing narrow shears with quartz veins and pyrite.

ASSAYS OF MINERALIZATION

Hughes (1919) took 129 channel samples. Only 12 surface samples contained more than 0.05 oz Au/ton; the two best assays were 0.75 and 0.185 oz Au/ton. Only four underground samples contained more than 0.05 oz Au/ton; the best assay was 0.124 oz Au/ton. The average of all 129 samples was 0.023 oz Au/ton.

DEVELOPMENT HISTORY

Circa 1896: Open cut made on vein.

1897: Bath Mining Co. of Toronto commenced a new shaft and sunk it to a depth of 14.6 m. Assays were reported to improve with depth (Coleman 1898).

1898: Shaft sunk to 30 m; crosscutting and drifting done (Bow 1899).

1898: Examined by Regina Gold Mines Ltd.

1915: Examined by D. MacGavin.

1919: Sampling by the Mining Corporation of Canada Ltd.

SELECTED REFERENCES

Bow, 1899, OBM, Vol. 8, pt. 1, p. 60
Coleman, 1897, OBM, Vol. 6, p. 103
1898, OBM, Vol. 7, pt. 2, p. 112
Hughes, 1919, Assay Plan, Assessment Files, Kenora

10. BENSON OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows cut by felsic dikes

CLASSIFICATION
1d

LOCATION
Jaffray Township: Lot 16, Concession 5
NTS 52E/16SW
Lat. 49°46′29" (49.7747°)
Long. 94°23′27" (94.3908°)

ACCESS
The old workings are about 15 m north of the relocated Homestake Rd., approximately 1.4 km west of the Jones Rd. - Homestake Rd. intersection. The workings have been filled in.

DESCRIPTION
Geology: The area, which is situated on the west limb of the northwest-trending Airport Anticline, is underlain by mafic volcanic rocks metamorphosed to amphibolite grade. The core of the anticline was intruded by porphyritic quartz monzonite of the Jones Road stock, which lies an estimated 400 m south of the workings. The basalt is predominantly pillowed and fine-grained, although coarser, massive varieties, possibly subvolcanic sills, are present. Pillows are elongate parallel to the dominant, northeast-trending, axial planar foliation. Felsic dikes intrude the volcanics in the vicinity of the occurrence. Shearing may have resulted in the rotation of these dikes into the axial planar direction. The dikes are cut obliquely by thin, folded, quartz-tourmaline veins, and the dike margins show minor offset by narrow, strike-slip faults.

In the vicinity of the old workings (Figure 4), medium-grained basalt is cut by two felsic dikes at 050°. A penetrative foliation, which strikes from 045° to 060°, is present within both the basalt and the dikes.

Mineralization: Quartz veinlets up to 2 cm wide cut the dikes near the shaft. Some quartz is white and unmineralized, and some, in brittle fractures, contains minor pyrite and tourmaline. As the workings are now covered, the nature of the mineralization in the shaft is not known. Much of the muck is felsic rock with minor amount of basalt and quartz.

9. BATH ISLAND OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate tuff, derived sediment, and quartz porphyry

CLASSIFICATION
2d, p

LOCATION
Bath Island, Lake of the Woods:

NTS 52E/9SW
Lat. 49°30′53″ (49.5147°)
Long. 94°26′50″ (94.4472°)

ACCESS
The old workings are on mining location P504, which consists of the eastern part of Bath Island. The island is 27 km south of Kenora and 27 km west-northwest of Sioux Narrows, and may be reached by boat from either place.

DESCRIPTION
Geology: North-facing basalts rim the northern edge of Aulneau Peninsula and crop out on adjacent islands. These are overlain by intermediate tuff and some tuff-derived sediments and basalt. The tuff is, in most places, strongly foliated. Quartz porphyry and quartz-feldspar porphyry dikes are locally numerous, possibly marking or lying near major fault zones.

Bath Island is mainly underlain by fine-grained, intermediate tuff, part of which is well bedded, and by tuff-derived sediments. These are cut, generally concordantly, by quartz-feldspar porphyry dikes. The dikes, which are 0.5 to 30 m wide, are more abundant in the northern part of the island; while some appear to be continuous for several hundred metres, others terminate abruptly. Foliation trends from 075° to 105° and has steep north dips. Bedding strike is from 060° to 085°, with dips from vertical to 75°N; individual beds are from 2 cm to 2 m thick and commonly are from 25 to 50 cm thick. Graded bedding is evident locally, with tops indicated to the north.

Mineralization: The principal work was done about 100 m from the southeastern shore, near the break in the slope, and focused on a 1 m thick, sheared, rusty, quartz porphyry dike which cuts fine-grained to cherty, bedded tuff. Foliation is moderately to well developed, and strikes approximately east at a small angle to the bedding. The dike strikes about 100°, dips almost vertically, and contains irregular quartz veins up to 4 cm wide. Fine pyrite and pyrrhotite are present in both the quartz and the porphyry dike; fine disseminated pyrite and minor carbonate are present in broken pieces of tuff on the dump.

Workings consist of an open cut about 10 m long and 3 m deep at the face (Figure 3). Immediately to the west is a 1 m by 45 m pit, sunk an estimated 3 m. The porphyry appears to have terminated a further 10 m to the west-northwest; here, a second shaft, 2.5 m by 3.5 m, was sunk to a depth of 30 m (Bow 1899), but there is no evidence that an extension of the porphyry was found. A cross-cut was driven 19.5 m to the north from the bottom of the shaft in order to intersect a second vein. Drifting was also carried out both to the east and west (Bow 1899).

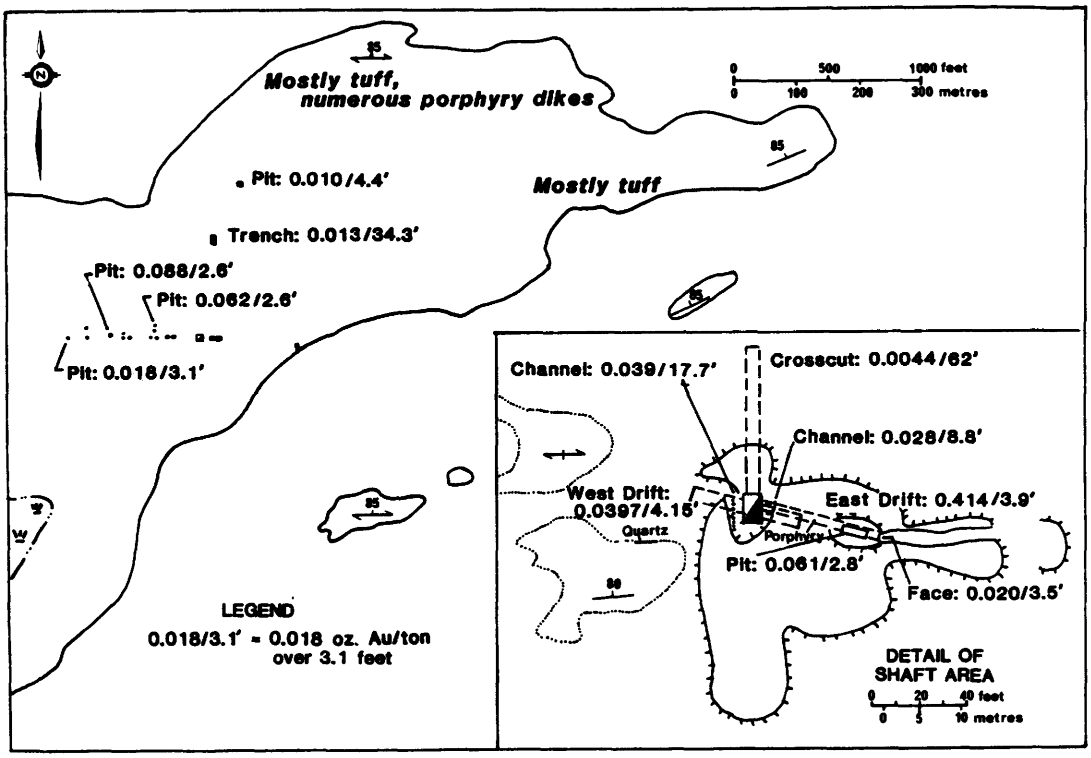

Figure 3. *Development at the Bath Island Occurrence. Assay data are from Hughes (1919); all assay values were calculated as weighted averages of dollar values with gold at $20.40/oz.*

An old plan shows a number of parallel, east-striking veins with considerable lateral extent, exposed in widely spaced pits. Most of the pits were very shallow and small and, although quartz is found in some of them, the veins appear to be irregular and unlikely to have much continuity.

ANALYSIS OF MINERALIZATION
A sample taken in this study of the felsic dike, with less than 1% sulphides, assayed 13 ppb gold. Several samples taken from the quarry directly south of the occurrence contained interesting gold values; one specimen of basaltic breccia with a matrix of sulphides (15% pyrite, pyrrhotite and chalcopyrite) assayed 1.41% Cu, 0.69 oz Au/ton, 0.31 oz Ag/ton and 108 ppm Ni.

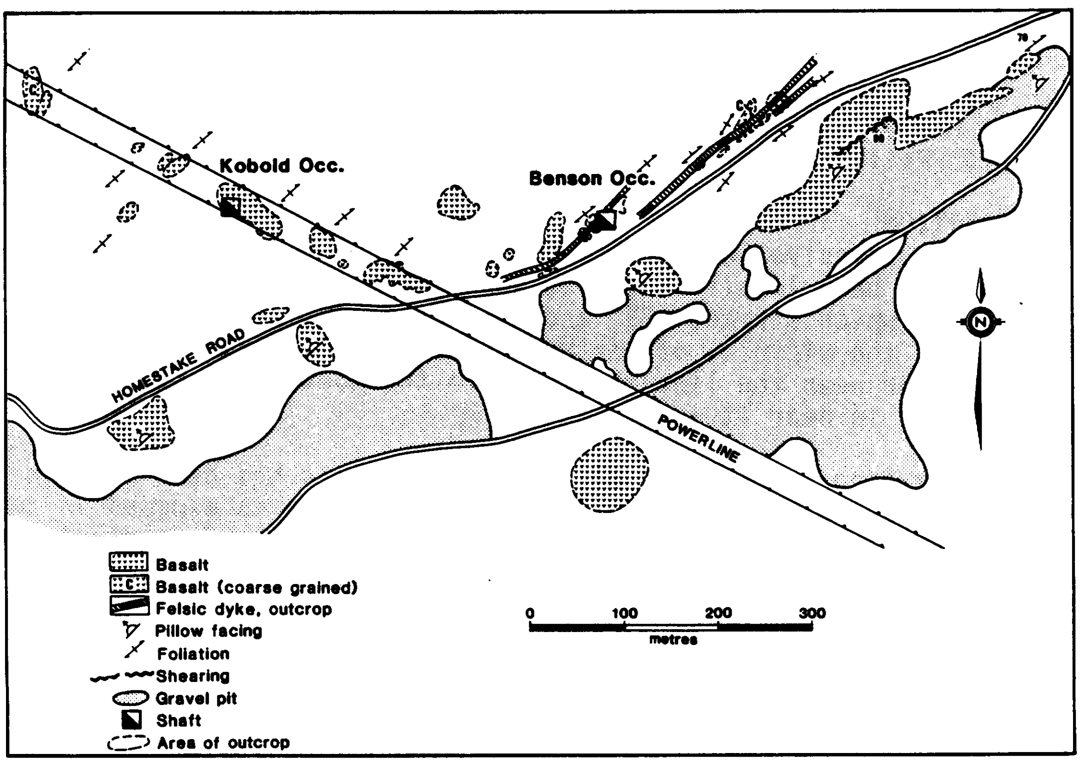

Figure 4. *Geology of the Benson and Kobold Occurrences.*

DEVELOPMENT HISTORY
Circa 1900: A shaft of unknown depth was sunk by persons unknown.

11. BLACK HAWK OCCURRENCE

COMMODITY
Gold

CLASSIFICATION
1s, p

LOCATION

Jaffray Township:	NTS	52E/16SW
	Lat.	49°45′30″ (49.7582°)
	Long.	94°24′41″ (94.4114°)

ACCESS
The occurrence is in the northern part of location P.246, 3.6 km east of the eastern limit of the Town of Kenora. It is 800 m north of the Trans-Canada Highway and 100 m south of the main line of the Canadian Pacific Railroad.

DESCRIPTION
Geology: Massive to foliated basalts to the west of the Jones Road stock have been locally sheared, especially in the vicinity of a lineament which strikes 025° and extends for over 3 km. To the south, in the vicinity of the Horne-Thrasher Occurrence, felsic dikes occur on or near the lineament, and to the north, the Benson Occurrence is near it.

Mineralization: A series of trenches and pits has been sunk in an area of shallow overburden. At present, outcrop is exposed in only two of the trenches, where the basaltic rock varies from massive to foliated. The foliated basalt is rusty, and contains a few quartz stringers and minor pyrite. Where best exposed, the foliation has a strike of 015° and a dip of 85°E and, although no quartz is evident, a pit was sunk here. In a railway cut 100 m north of the pit, there are a number of narrow shears exposed in which there are irregular, thin, quartz lenses, minor carbonate and a bit of pyrite, but no distinct zone of strong deformation is revealed.

DEVELOPMENT HISTORY
Circa 1895: Trenching and pitting carried out.

1981: Examined by Sherritt Gordon Mines Ltd.

12. BLACK JACK MINE (PROSPECT)

Also called the Bulldog Mine

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
1ao, 1co

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°38′24" (49.6399°)
	Long.	94°17′19" (94.2866°)

ACCESS
The Black Jack shaft is located on old mining location X90, 200 m north of the northwestern corner of Islet Lake and about 2.5 km south of the dam at the outlet of Blindfold Lake. The area may be reached by a forest access road leading west from Highway 71, or by a trail from the south end of the Storm Bay Road.

SIZE AND GRADE
In 1893, $300 of gold was removed from 50 tons of ore milled. The grade was 0.33 oz Au/ton.

Additional production is unrecorded; however, the Rat Portage Miner and News (Sept. 7, 1899) reported the production of gold bricks.

DESCRIPTION
Geology: The area (Figure 24) is underlain by fine-grained pillowed basalt, and massive, fine- to medium-grained mafic flows or sills. It is on the southern limb of the Hay Island Anticline (antiform), the axial trace of which trends northeast through Storm Bay. The northwest-trending contact of the Dryberry batholith lies 1.0 km to the northeast.

Elongate pillows, oriented 065°, indicate that tops are to the southeast. Vesicles and feldspar phenocrysts are visible locally.

Mineralization: Most of the known gold occurrences in the southern part of location X90 are associated with shear zones which trend from 090° to 120°. There are no known occurrences in the northern part of the location.

At least three veins were tested adjacent to the valley that extends north from the northwestern corner of Islet Lake, but there is confusion with respect to their nomenclature. The southernmost, or main, occurrence was known originally as the Bulldog Mine, but after

1895, as the Black Jack Mine. The host structure is called the Black Jack Shear in this report. From sketchy information provided by Bow (1900), a wide, northeast-trending and gold-bearing shear was intersected in a crosscut driven north from the Black Jack shaft at a distance of about 30 m; it is here referred to as the Dominion Shear (after the company which made the crosscut). A third shear lies 70 m north of the Black Jack shaft. The quartz vein in it was called the Bulldog Vein by Howard (1984), but as this may lead to confusion, it is here termed the Franks Vein (after the prospector, W. Franks, who was the first owner, and possibly the discoverer, of the vein).

The Black Jack Shear crops out on a west-sloping hill and consists of a 3 to 5 m width of chlorite schist with an apparent strike, near the shaft, of 100° and a dip of 65°S. An outcrop of relatively unaltered pillowed basalt is 5 m east of the shear exposure and, clearly, the Black Jack Shear does not pass through it. Approximately 70 m east of the shaft, a pit exposes 3 m of chlorite schist similar to that at the shaft, possibly defining a shear zone which trends about 080°.

The schist near the shaft contains a network of fine veinlets of carbonate and a few thin, irregular veinlets of cherty quartz. The quartz contains traces of pyrite, and minor pyrite is also smeared on slip surfaces in the schist. On the dump are some pieces of massive greenish (dike) rock with carbonate, quartz, and up to ten percent sulphides (pyrite, galena and sphalerite).

Bow (1900) recorded that, at a depth of 9 m, "a rich pay streak" was encountered in the shaft and that it was scheduled to be stoped to the 18 m level. The ore was 4.5 m wide and consisted of green schist "impregnated with quartz in small stringers". The Dominion Shear, intersected in the 18 m crosscut on the 18 m level, was reported to "be about 25 feet (7.6 m) wide" and of a similar nature to the main ore zone.

The Franks Vein is best exposed in an open cut in a steep rock face. The vein strikes about 100° and dips 65°S, and consists of rusty quartz up to 40 cm wide containing pockets of pyrite. Wall rocks next to the quartz are chloritic schist with minor carbonate, pyrite and pyrrhotite. A shaft, inclined to the south, was sunk 4 m east of the east end of the open cut. From 15 to 20 m east of the shaft, a thin, cherty, quartz vein striking east-northeast is exposed in a trench and pit; this may be part of an *en echelon* vein system which also includes the Franks Vein, but does not appear to be continuous with the latter.

Approximately half way between the Franks Vein and the Black Jack Shear, Howard (1984) located a 1 m wide shear zone. This would lie almost above the Dominion Shear and may be part of it. A narrow quartz-carbonate vein is present in a strong shear 45 m to the east.

The Dulmage Vein was located in the southeastern corner of X90, and was tested by an open cut and several trenches. The vein does not appear to be referred to in the old reports. Wright (quoted in report of the Royal Commission, 1890) indicated that work in the area of the Ada G Vein "was discontinued owing to a disputed claim", and this may have been a reference to the Dulmage Vein. The vein consists of massive to ribboned quartz in sheared to massive basalt; it strikes about 120°, dips 85°S, and has a width of up to 50 cm.

ASSAYS OF MINERALIZATION

The following assays were reported by Howard (1984):

Vein	Description	Oz/Ton Au	Oz/Ton Ag
Black Jack	4 grab samples from dump (ave.)	0.31	nil
Shear	quartz in shear	0.05	0.25
	quartz vein in shaft	0.48	nil
	quartz vein, pit 65 m E of shaft	0.07	nil
Franks	chips along vein in open cut	0.19	0.26
Vein	chips along vein to east	0.01	0.42
Dulmage	chips from either side of vein	0.21	-
Vein	chips from central part of vein	0.02	0.15
	chips from sheared walls	0.02	0.15

DEVELOPMENT HISTORY

1889 - 1891: Prospecting by W.J. Franks of Toronto. A 5.5 m deep test pit was sunk on a north-trending vein.

1892 - 1894: The Bulldog Mine was purchased by Black Jack Mining Co. A 2.1 by 3.4 by 24.4 m deep shaft was sunk on a 75°S incline. Some 9.1 m of lateral work was completed on a level at 15.8 m. Two Crawford mills were installed, and some production was reported.

1895 - 1898: Purchased by Dominion Gold Mining and Reduction Co. of London, Eng. Shaft was deepened to 27.4 m and total lateral workings were expanded to 45.7 m. Ore was tested at Gold Hill stamp mill.

1899: Britannia Consolidated Gold Mining Co. of Ontario, Ltd. deepened the shaft to 33.5 m. On the 15.8 m level, an additional 24 m of lateral work was done. A new level at 30.5 m may have had some drifting completed. Ore was tested at the Gold Hill stamp mill, which burned down at the end of the year.

1934: Adjoining Golden Gate property was worked by Johnson and Nilson of Kenora.

1939: Staked by Blackburn-Pattison Mines, Ltd. Sylvanite Gold Mines, Ltd. examined the property. Results were unfavourable.

1972: Thirteen contiguous claims staked by J.C. Arnott and R. Byng. Property examination by Trojan Geological Services. Dent (1972) notes 2 earlier drill holes, one 91 m deep, on the Black Jack Vein.

1982 - 1984: Thirty-two contiguous claims staked by E. Hanson and G. Zebruck. Property was optioned to Bonzano Exploration Ltd. in 1983. Work included stripping, trenching, sampling, and geophysical and cursory geological surveys.

1984: Optioned by Kidd Creek Mines Limited.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 9

Blue, 1896, OBM, Vol. 6, p. 50

Bow, 1900, OBM, Vol. 9, p. 42-43

Coleman, 1895, OBM, Vol. 5, p. 173-177

Dent, 1972, Report on Kirkup Township Property, Assessment Files, Kenora

Ferguson, 1971, ODM, MRC 13, p. 151-152

Hansen, 1983, Assessment Work, Assessment Files, Kenora

Howard, 1983, Report on the Black Jack - Gold Hill Property, Assessment Files, Kenora

1984, Summary of Field Work, 1983, and Geological Report, Gold Hill - Black Jack Property, Assessment Files, Kenora

Slaught, 1893, OBM, Vol. 3, p. 25-26

SMDR File, 1980, Black Jack Property

Smith, 1939, Preliminary Report - Blackburn Pattison Property, Assessment Files, Kenora

13. BLACK STURGEON PROSPECT (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Massive to foliated granodiorite

CLASSIFICATION
4c

LOCATION

Haycock Township:	NTS	52E/16SW	
	Lat.	49°48′33"	(49.8092°)
	Long.	94°19′35"	(94.3264°)

ACCESS
The shaft is on Lot 11, Concession 6, 50 m east of Jones Road, or about 300 m west-southwest of the outlet of Island Lake.

DESCRIPTION
Geology: The area is underlain by massive to foliated granodiorite of the Island Lake intrusion. Small inclusions of basalt are common in the granodiorite. Larger mafic and intermediate inclusions occur west of the occurrence.

Mineralization: Only one shaft was located during the present study. From the size of the muck pile, it is estimated to be between 50 and 100 ft deep. The mine site occupies low ground and any outcrop is covered by the muck pile. The muck is primarily medium-grained, foliated, hornblende-biotite granodiorite. Some zones are carbonate-rich. Trace pyrite is both disseminated in the granodiorite and smeared along slip surfaces. Quartz veins contain minor pyrite, which is located along slip planes. The 6 by 9 ft shaft trends 075°, possibly expressing the trend of the shear.

DEVELOPMENT HISTORY
Circa 1896 to 1897: Mineralization was discovered by Andrew Benson. On Lot 11 two shafts were sunk 375 m apart on a northeast-striking vein. One shaft was 12.8 m deep and the second was 11 m deep. Four or five test pits, from 1.2 to 3 m deep, were sunk on different veins on Lot 12 (Abe Lincoln Occurrence).

1898: The Black Sturgeon Gold Mining Co. was incorporated.

1899: Property was acquired by F. Gilchrist and P. Culligan. A new, 1.8 by 3.4 m vertical shaft was sunk 53.3 m. At the 28.3 m level, there was 4.0 m of drifting to the west, and 13.1 m to the east. On the 51.8 m level, there was 10.4 m of drifting to the west, 2.4 m of drifting to the east, and a 12.2 m crosscut was driven south.

1960: Restaked as K30202 and 30199 by N. Zroback. Seven holes, totalling 185.3 m, were drilled.

1983: Lot 11 was staked by G. Zebruck and transferred to a numbered company, 553215 Ontario Ltd.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 9
Bow, 1900, OBM, Vol. 9, p. 37
The Canadian Mining Review, 1898, Vol. 17, p. 172
Coleman, 1898, OBM, Vol. 7, p. 110
Ferguson *et al.*, 1971, ODM, MRC 13, p. 149-150
King, 1983, OGS, Map P-2618
Zroback, 1960, Diamond Drill Logs, Assessment Files, Kenora

14. BOULDER ISLAND OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Pillowed mafic volcanic flows

CLASSIFICATION
1b

LOCATION

Boulder Islands, Bigstone Bay:	NTS	52E/9NW	
	Lat.	49°40′17″	(49.6713°)
	Long.	94°20′08″	(94.3355°)

ACCESS
Island 264 in Bigstone Bay, originally mining location E148, is the easternmost of three small islands known as Boulder Islands. It is 1.8 km east-southeast of Copper Island and 2.3 km south-southeast of the dam on Longbow Creek, and is accessible by boat from Kenora.

DESCRIPTION
Geology: West-facing, fine-grained, pillowed to massive flows, openly folded about the Hay Island Antiform, underlie most of Bigstone Bay. The Boulder Islands lie very near the projected axial trace of the antiform, and the gold occurrence is about 1.8 km west of the contact between the basalts and the granodiorite of the Dryberry Batholith.

Mineralization: A strong shear zone, striking 035° and dipping 70°NW, cuts pillowed basalt near the southern end of the southeastern shore of Island 264. Minor shears trending in a number of directions are evident on the shore. One of these is associated with a breccia with a carbonate matrix, at a point where it changes direction. A 035°-striking shear on the northern shore of the island is probably a continuation of the main shear zone. In the southern exposure, the zone is 1 m wide, consists of interconnecting slip surfaces in chlorite schist, and contains minor pyrite and traces of pyrrhotite and chalcopyrite. Locally it contains abundant carbonate and irregular quartz veins, veinlets and lenses, some of which display very fine gold.

A 15 m length of the shear zone was blasted from a steep bedrock face, 4 m from the shore. Three metres further north, a 3 m by 4 m pit was sunk through overburden, but no bedrock is presently exposed in it.

ASSAYS OF MINERALIZATION
The following are assays of three samples taken in this study from the southernmost outcrop:

Sample	Au (ppb)	Cu (ppm)
Grey quartz with basalt fragments, minor pyrite and carbonate	4950	420
Sugary quartz, chlorite wisps, minor pyrite and carbonate	200	685
Chlorite schist, sugary quartz, much carbonate, minor pyrite	450	138

All three samples contained less than 2 ppm silver.

DEVELOPMENT HISTORY
1879: Gold discovered by W. Gibbons and Dr. Henson

1880: Vein was stripped and fine free gold was taken out. A 5-stamp mill was set up for 4 days, but was then moved to the Winnipeg Consolidated property. Work stoppage was reported to be due to a title dispute.

1980: Examined by Denison Mines Ltd.

SELECTED REFERENCES
Beard and Garrett, 1976, ODM, MDC 16, p. 10
Report of the Royal Commission on the Mineral Resources of Ontario, 1890, p. 118
Slaught, 1892, OBM, Vol. 2, p. 233

15. BRAE BREEST OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Rhyolitic flows

CLASSIFICATION
2s, 2a

LOCATION

Indian Reserve 38A:	NTS	52/10NE	
	Lat.	49°43'08"	(49.7188°)
	Long.	94°34'19"	(94.5720°)

ACCESS
Thompson (1936) located the main trenches near the northeastern side of a swampy pond, 8 km southwest of Kenora and less than 100 m from the northern boundary of Indian Reserve 38A. This is about 800 m east of the McKenzie Portage Road and about 500 m south of a cottage access road.

DESCRIPTION
Geology: Thomson (1936, p. 37) recorded that the trenches are in "mineralized porphyry, probably flow rhyolite porphyry which ... is interbanded with greenstone". The geology is apparently similar to that in the Kendall Inlet area, 4 km to the west, where intermediate to felsic tuff and tuff-breccia, consisting of light felsic fragments in a dark matrix, are interbedded with felsic fragmental rocks in which the matrix is felsic. These are overlain by well bedded greywacke. Thomson (1936, p. 21) noted that the trenching exposed 1.2 m of reddish-brown conglomerate which, he suggested, might have resulted from the cementing of water-worn pebbles of glacial derivation, or might be an isolated patch of Cretaceous conglomerate.

Mineralization: Gold is associated with disseminated sulphides in felsic porphyry. Thomson (1936, p. 38) was informed that a 43 cm channel sample contained 0.70 oz Au/ton and that samples from a 24 m trench contained between 0.05 amd 0.10 oz Au/ton. Results of the drilling are not known. A quartz vein up to 2.7 m wide, exposed for a length of 15 m and containing pyrite and chalcopyrite, was reported by Thomson to occur about 400 m west of the trenches.

DEVELOPMENT HISTORY
1936: Staked by J. Nutt. Prospecting, trenching and drilling by Brae Breest Gold Mines Ltd.

SELECTED REFERENCE
Thomson, 1936, ODM, Vol. 45, Part 3, p. 21, 37-38

16. BULLION MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Felsic, intermediate, mafic and ultramafic tuffs and flows

CLASSIFICATION
2a

LOCATION

Jaffray Township:	NTS	52E/10SW	
	Lat.	49°47'35"	(49.7931°)
	Long.	94°24'40"	(94.4111°)

ACCESS
The occurrence lies on mining location 263P, 1 km south of the junction of Highways 604 and 659, or 3.5 km east-northeast of the northeastern corner of the Town of Kenora. The shaft is between the two main slopes of Mt. Evergreen Ski Club, and may be reached from Kenora via Highway 604.

DESCRIPTION
Geology: The occurrence (Figure 5) is west of the western margin of a northeast-trending gabbro sill, which ranges in composition from melagabbro to leucogabbro, and which has been traced from the Town of Kenora to north of Highway 604. A pervasive, northeast-trending, vertically dipping foliation, developed within the host volcanic rocks, was not observed within the sill. Lithologies and foliation trend approximately parallel to the boundary of the English River and Wabigoon subprovinces, which is located less than 600 m to the west. Facing directions determined from sediments exposed to the southwest (King 1983) indicate that stratigraphic top in this area is to the northwest. Immediately northwest of the sill is a thin, unfoliated, tuffaceous, ultramafic unit. Abundant fragments, possibly mineral fragments, have been replaced by tremolite, actinolite and chlorite, indicative of greenschist grade metamorphism. Remnant titano-augite is common in the matrix. The ultramafic unit is overlain by fine-grained, sheared basalt, characterized by highly stretched pillows. Capping the sequence are tuffs, mainly andesitic at the base and dacitic at the top. The pervasive foliation masks most primary textures; however, abundant, highly stretched, lapilli to bomb-sized fragments are visible within the upper dacitic portion.

Mineralization: The shaft is sunk within andesite tuff. No vein was seen *in situ*, although large pieces of white quartz are abundant on the muck pile. Rare pyrite and tourmaline crystals are present in the quartz. The foliation in the pit trends 065° and dips 85° NW.

Iron carbonate occurs in the host andesite, as do local narrow quartz veinlets.

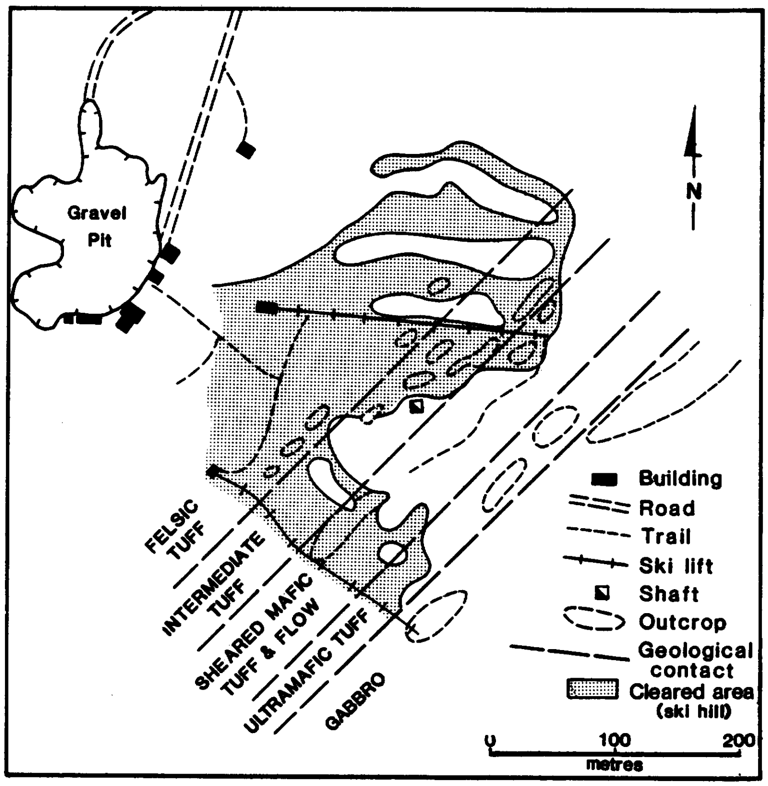

Figure 5. *Geology of the Bullion Mine Occurrence.*

ANALYSIS OF MINERALIZATION
A sample of pyritic andesite, taken some distance from the pit, contained 16 ppb gold, and a sample of ultramafic material contained <2 ppb gold. Two samples of quartz from the muck pile assayed 100 and 14 ppb gold, respectively, while a sample of wall-rock assayed only 2 ppb gold.

DEVELOPMENT HISTORY
Circa 1899: Test pits were sunk by the Gold Bullion Mining Co. of Ontario, Ltd.

1901: A contract was let for a 90 m deep shaft. It is apparent from the size of the muck pile that this shaft was never completed.

SELECTED REFERENCES
Bow, 1900, OBM, Vol. 9, p. 36
The Canadian Mining Journal, 1901, p. 95
King, 1983, OGS, Map P.2618

17. BULLION NUMBER 1 OCCURRENCE

Also called the Monarch Mine

COMMODITY
Gold

ROCK ASSOCIATION
Fine- to medium-grained mafic flows and/or sills

CLASSIFICATION
1a, 4a

LOCATION
Glass Township: NTS 52E/10NW

North Pit:	South Pit:
Lat. 49°34′42" (49.3442°)	Lat. 49°34′36" (49.3436°)
Long. 94°56′24" (94.9400°)	Long. 94°56′27" (94.9408°)

ACCESS
The property consisted of mining locations S105, S106 and S107, with work done primarily on S106. The northern pit is 600 m north of the eastern part of Helldiver Bay, and 1.2 km east-northeast of the Olympia No. 1 shaft. The area may be reached by boat from Clytie Bay Landing or from Kenora via Ash Rapids.

DESCRIPTION
Geology: Rocks in the vicinity of the workings are predominately fine- to medium-grained, mafic metavolcanic flows. Pillows indicate that the northeast-trending stratigraphy is southeast-facing. A narrow, coarse-grained peridotite sill is located in the central part of the property.

Mineralization: Two pits were found in the area of location S106 in this study. The north pit and an adjacent trench lie at the southern edge of a 105°-trending linear valley. The 1.8 by 2 m pit was sunk an estimated 3 m on a narrow, white, sugary quartz vein trending about 130° and dipping 85°N. The vein locally contains up to 20% pyrite and rare specks of gold. Enclosing basalts contain fine disseminated pyrrhotite; they are fractured but not sheared.

A second pit lies 250 m to the south, on the northwestern side of a linear valley which is apparently underlain by peridotite. The 1.8 by 2.4 m pit, now 2.5 m deep, was sunk on a 2 m wide felsite dike which trends 130° and narrows to the northwest. No quartz vein is present but the felsite contains abundant pyrite and a little pyrrhotite, both disseminated and on fine fractures. The pit lies near a weak 115°-striking lineament.

Coleman (1898) referred to two parallel veins, each 30 cm wide, one containing pyrite (the Monarch Vein) and the other containing "considerable free gold". He stated that two 20 foot (6 m) pits were sunk. Assuming that the vein in the north pit described here corresponds to one of the two described by Coleman, there may be a second quartz vein not found during the present work.

DEVELOPMENT HISTORY
Circa 1897: The Bullion Mining Co. of Rat Portage sank two 20 foot deep pits.

SELECTED REFERENCES
Coleman, 1898, ODM, Vol. 7, pt. 2, p. 121
Davies, 1978, ODM, OFR 5242, p. 65, 66

18. BULLION NUMBER 2 PROSPECT

COMMODITY
Gold

ROCK ASSOCIATION
Granitic dikes in basalt

CLASSIFICATION
4d, 1d

LOCATION
Bag Bay Area, Shoal Lake: NTS 52E/10SW
Lat. 49°35′12" (49.5867°)
Long. 94°56′50" (94.9472°)

ACCESS
The shafts are on mining location D233, 4.2 km south of Clytie Bay Landing, 1.0 km north-northeast of the northern end of Helldiver Bay and 600m east-southeast of the Mikado Mine. A winter trail crosses the property. Summer access is by foot along the trail from Helldiver Bay, or across country from Bag Bay.

DESCRIPTION
Geology: The principal volcanic units mapped by Davies (1982) between Bag Bay and Helldiver Bay are fine-grained basalt, medium-grained gabbro, and amphibolite. In the vicinity of the Mikado and Bullion No. 2 Occurrences, the contacts between these units strike about 170°. The volcanics have been intruded by quartz diorite of the Canoe Lake stock and by related, finer grained granodiorite dikes (Figure 6). East- to east-southeast-striking faults, along which the major component of movement appears to have been vertical, have offset the volcanic units and modified the contact between the volcanics and the quartz diorite. The contact on the Bullion No. 2 property corresponds closely with the northern and eastern boundaries of location D233; location D239, the other part of the original property, is almost entirely within the quartz diorite.

Mineralization: A number of south-southeast-striking faults are present, and along some of these are dikes of finer grained granodiorite. The dikes are compositionally similar to the Canoe Lake stock, and contain some mineralization where they are sheared.

The No. 1 shaft was reported by Bow (1900) to have been sunk near the intersection of two small veins "which exhibit distinct evidence of fracturing". The 1.5 by 2.1 m shaft was inclined 70°NE and, at the time of closure, had reached a depth of 35 m, with at least 30 m of drifting and cross-cutting on the 21 m level. Although the shaft was sunk in sheared granodiorite and felsite, much of the material on the dump is basaltic and it is likely that most cross-cutting was in basalt. The sheared granodiorite at the shaft is iron-stained and weakly mineralized with pyrite, but there is little quartz evident in the shaft walls or on the dump.

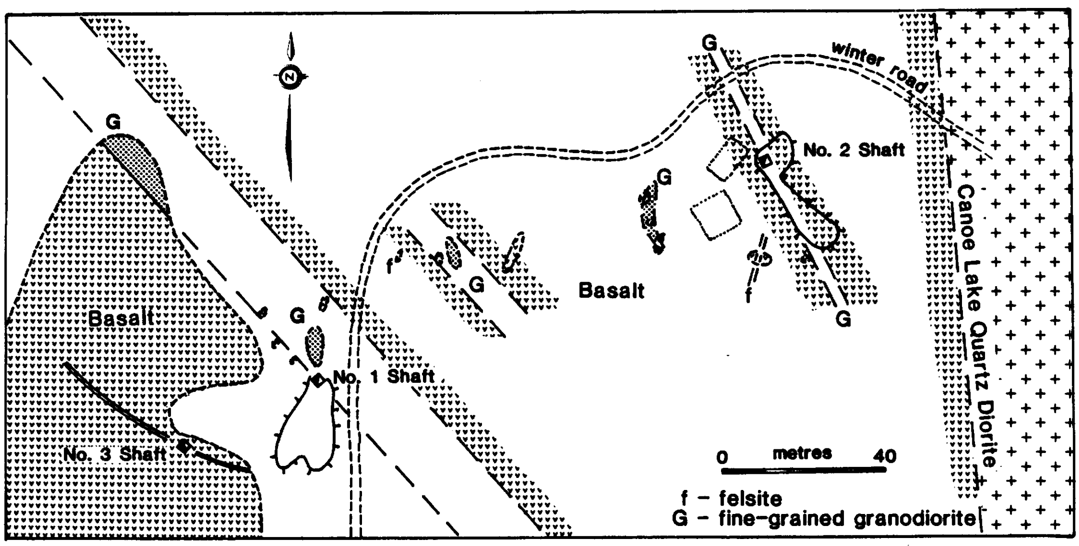

Figure 6. *Geology and development at the Bullion Number 2 Prospect.*

The No. 2 shaft, which has the same dimensions and dip as the No. 1 shaft, lies 120 m to the east-northeast. At the 21 m level, at least 22 m of drifting and cross-cutting were carried out. The granodiorite exposed at the shaft mouth is fine- to medium-grained and, where sheared, contains biotite, chlorite and veinlets of quartz; the shearing strikes about 160° and dips steeply east, and is probably parallel to the contact of the dike. Some rock on the dump contains fine pyrite and pyrrhotite.

A third shaft was sunk on a narrow dike of medium-grained granodiorite which strikes about 115° and dips 75°SW, but is curved. The shaft, about 1.8 by 3.5 m and 9 m deep (Bow 1900), is inclined down the dip of the dike. Some shearing has occurred adjacent to the dike, but no sulphide minerals were seen. The dike has been trenched along strike for a length of about 50 m.

ANALYSIS OF MINERALIZATION

Parsons (1911) reported molybdenite and visible gold in a test pit on the property "as well as the other minerals which occur at the Mikado".

Replicate analyses of samples of felsite from the No. 1 shaft area, taken during this study, returned values of 65, 110, 1570 and 120 ppb gold, and samples of sheared granodiorite with a thin quartz veinlet and minor quartz contained 151, 194 and 190 ppb gold. Samples of sheared granodiorite from the No. 2 shaft contained 24 ppb and 13 ppb gold. A grab sample taken near the shaft contained 100 ppb gold, while samples of sheared granodiorite containing fine pyrite, pyrrhotite and magnetite, taken further on the dump, assayed 332, 592 and 618 ppb gold. A chip sample of basalt and granodiorite from the No. 3 shaft contained 16 ppb gold, and a sample of fresh granodiorite from the same locality contained <2 ppb gold.

DEVELOPMENT HISTORY

Circa 1898: Property held by the Bullion Mining Company of Ontario, Ltd. Two shafts sunk.

1898: No. 1 and No. 2 shafts reached depths of 23 and 24 m, respectively.

1900: Closed June 1. The No. 1 shaft reached a depth of 35 m, with 90 m of development. Ownership transferred to the Bullion No. 2 Mining Company Ltd.

SELECTED REFERENCES

Bow, 1900, OBM, Vol. 9, p. 57
1901, OBM, Vol. 10, p. 79.
Parsons, 1911, OBM, Vol. 20, p. 165

19. BURLEY SHAFT PROSPECT

COMMODITY
Gold

CLASSIFICATION
4b?

ROCK ASSOCIATION
Porphyritic quartz monzonite

LOCATION
Bald Indian Bay, Lake of the Woods:

NTS 52E/9NW
Lat. 49°42′33" (49.7092°)
Long. 94°24′09" (94.4025°)

ACCESS
The cribbing in which the shaft was sunk is located in water lot D 193A, 30 m west of the west shore of Sultana Island. The boat route from Kenora is about 11 km.

DESCRIPTION
Geology: Ore mined at the Sultana Mine was largely located near the contact of porphyritic quartz monzonite, which forms the core of a granitic stock, with a quartz diorite, which forms the outer rim of the stock. The gold-bearing quartz was deposited where competency contrast between the quartz monzonite and the quartz diorite produced broad fracture zones. A second ore zone was a steeply north-dipping vein, known as the Crown Reef Vein, which formed in an S-shaped fracture which had been stoped to within 15 m of the lake shore.

The Burley Shaft was located west of, and approximately on strike with, the Crown Reef open stope. It was designed to intersect the Crown Reef Vein at depth. A square caisson, built of timbers on Queen Bee Island, was towed to a site where clays covered the bedrock, and filled with rock. After the collar was made relatively impervious to lake water, a shaft was sunk to a depth of 61.6 m, with levels established at 32.6 m and 45.7 m.

The cross-cut on the 32.6 m level was driven southeast toward the shore of Sultana Island. Bow (1900) noted that "at a distance of 35 feet from the shaft -- a zone of schistose rock heavily impregnated with pyrites eight feet wide, was passed through and will be cut again by the shaft as it is dipping towards the latter. At a depth of 60 feet a quartz vein eight feet wide, dipping 75° northwest, was passed through, but was concealed by the casing under the shaft timbers. Both of these veins are said to carry encouraging values. There is now about 18 or 20 inches of vein matter, mostly quartz, at the bottom of the shaft."

It would appear that all of the rock in the underground workings is porphyritic quartz monzonite, although the projected contact between this rock and the quartz diorite passes very close to the Burley shaft location.

DEVELOPMENT HISTORY

1896-1897: J. Burley Smith drilled 3 holes through the ice in an attempt to intersect the Crown Reef Vein.

1897-1899: Burley Gold Mining Co. of Ottawa, Ltd. built a caisson consisting of an outer wall of timbers 18 m square, and an inner wall of timbers 12 m square. The caisson was towed from Queen Bee Island and sunk into clays. A concrete collar was constructed and a shaft was sunk from a platform built on top of the caisson. The shaft reached a depth of 61.6 m. About 17 m of crosscutting was completed on the 32.6 m level and 24.7 m of drifting was done on the 45.7 m level.

1903: Owned by Coronation Gold Mining Co. Ltd. of Rat Portage. Shaft was dewatered but no work was reported.

1906: Litigation, involving underwater rights of Burley Mines Ltd., ceased when the Privy Council in Britain decided in favour of Burley Mines.

1934: Selected Canadian Gold Fields dewatered the Sultana shaft, completed 1070.5 m of underground diamond drilling, and 137.8 m of lateral work.

1950: Acquired by Caldwell interests. Some diamond drilling was reported.

1959: Purchased by Strathcona Mines, Ltd. Additional diamond drilling was done.

1972 - 1974: Minaki Gold Mines, Ltd. staked 5 contiguous claims, including the Burley location. Diamond drilling, geophysical and geological surveys were carried out on Sultana Island.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 11
Bow, J.A., 1899, OBM, Vol. 8, p. 52-54
1900, OBM, Vol. 9, p. 35-42
1904, OBM, Vol. 13, p. 60
Bow and Slaught, 1898, OBM, Vol. 7, pt. 1, p. 49
Caldwell, , Description of the Sultana Mine Property, Assessment Files, Kenora
The Canadian Mining Manual, 1899, p. 84

The Canadian Mining Review, 1897, p. 143
1898, p. 172, 197, 235, 258, 298
1899, p. 64-71
The Colonist, Dec. 1896, p. 175
Mar. 1897, p. 254
Nov. 1897, p. 205
DeKalb, 1899, OBM, Vol. 8, p. 46
Ferguson *et al*., 1971, ODM, MRC 13, 242p
Halladay, 1972, Geological Report for Minaki Gold Mines, Ltd., Assessment Files, Kenora
1973, Summary Report of Activities on Minaki Gold Mines, Ltd., Assessment Files, Kenora
Parsons, 1911, OBM, Vol. 20, pt. 1, p. 171-172
Strathcona Mines Ltd., 1959, Summary Analysis, Assessment Files, Kenora
1960, Annual Report, Assessment Files, Kenora

20. CAMERON OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared felsic tuff

CLASSIFICATION
2c

LOCATION
Northern Peninsula, Lake of the Woods:
NTS 52E/10NE
Lat. 49°39′23" (49.6564°)
Long. 94°39′45" (94.6625°)

ACCESS
The occurrence is 1.5 km northeast of Spruce Point and 17 km southwest of Kenora. It is accessible by boat from Clearwater Bay or Kenora.

DESCRIPTION
Geology: Interlayered mafic, intermediate and felsic volcanics strike east across the southern part of Northern Peninsula. The eastern extension of the Crowduck Lake - Rush Bay Fault Zone coincides with the southern edge of the Peninsula and numerous shear zones occur parallel to the fault.

Mineralization: Chlorite-sericite schist, derived from felsic tuff, is exposed in a small trench at the lake shore. The schist contains much carbonate, and disseminated pyrite occurs across a 90 cm width. Quartz-carbonate stringers with chalcopyrite and pyrite cut the schist. Approximately 300 m to the east-southeast, galena occurs in a felsite dike.

ANALYSIS OF MINERALIZATION
Chisholm (1950) reported that a sample containing approximately 25 percent chalcopyrite was said to have assayed 0.541 oz Au/ton, 0.40 oz Ag/ton, 2.1% Cu and 0.21% Zn. Channel samples across 90 cm in the trench assayed trace Au and 0.37 oz Ag/ton.

DEVELOPMENT HISTORY
1948: Discovered by M. Cameron.

1949: Examined by E. Chisholm.

SELECTED REFERENCE
Chisholm, 1950, Resident Geologist's Files, Kenora

21. CARIBOU OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION

LOCATION

Jaffray Township:	NTS	52E/16SW		
	Lat.	49°46'30"	(approx)	(49.7750°)
	Long.	94°22'30"	(approx)	(94.3750°)

ACCESS
The occurrence is on mining location P 288, near the intersection of the Jones Road and the Homestake Road. Since 1960, the surface topography has been changed, and the old pits were not located in this study.

DESCRIPTION
Geology: North-northeast-trending basaltic flows underlie mining location P 288. The axial trace of the Airport Anticline is projected to pass through the northeastern corner of the location, and an oval stock of quartz monzonite is centred on this anticline to the southwest. Near the eastern side of location P 288, the basalt has been intruded, approximately concordantly, by diorite of the Island Lake intrusion.

Mineralization: Webster (1935) stated: "Three veins have been identified on 288P having a general strike of east and west and dipping north." He quoted T. Lammers, from an 1893 property report: "No. 1 vein is 5 inches wide at the surface, 2 ft. down 8 inches wide. A sample from this vein gave $62.01 of gold to the ton. No. 2 vein is at the surface 10 inches wide, at 5 ft. deep it is 31 inches wide. Two samples gave an average of $48.58 gold to the ton. No. 3 vein is 8 inches wide, no work has been done; a sample gave $51.68 of gold to the ton" (values at $20.00 gold).

DEVELOPMENT HISTORY
Circa 1891-1893: Several test pits were sunk 5 to 6 ft. on P 288. The property was owned by J. Webster, who also owned the El-Diver Mine. A tiny, hand-cranked, wooden, stamp mill was erected and it is reported that a small amount of gold was produced. The ore was apparently free milling (Webster 1935).

1920: A small ore shipment was reported.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 11
Coleman, 1898, OBM, Vol. 7, p. 110
Ferguson *et al.*, 1971, ODM, MRC 13, p. 238
King, 1983, OGS, Map P.2618
Slaught, 1892, OBM, Vol. 2, p. 234
Webster, 1935, Caribou Mine, Assessment Files, Kenora

22. CEDAR ISLAND MINE (PAST PRODUCER)

Also known as the Cornucopia Mine

COMMODITY
Gold, silver

CLASSIFICATION
la, o; ld, o

ROCK ASSOCIATION
Metabasalts on the west side of the Canoe Lake stock are intruded by aplite and pegmatite dikes

LOCATION

Glass Township:	NTS	52E/10SW
	Lat.	49°35'34" (49.5928°)
	Long.	94°58'26" (94.9739°)

ACCESS
Cedar Island, in Bag Bay of Shoal Lake, is 3.9 km south-southeast of Clytie Bay Landing and 1.3 km west of the Mikado Mine. The site is on old mining location D212, and may be reached by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

SIZE AND GRADE
Probable reserves have been estimated at 28,000 tons grading 0.5 oz Au/ton (Neilson and Bray 1981). Total production from 1896, 1932 and 1936 was 4,941 ounces gold and 3,884 ounces silver from 17,050 tons milled (ODM Statistical Files).

DESCRIPTION
Geology: Extrusive rocks surrounding the mine area are primarily north-northeast-trending mafic flows (Figure 7). These are interlayered with thick, medium- to coarse-grained, gabbroic sills or flows. Dikes of quartz diorite, quartz-feldspar porphyry, feldspar porphyry, and felsite cut the mafic rocks both obliquely and parallel to stratigraphy. The axial trace of the Gull Bay - Bag Bay Anticline is interpreted to lie immediately east of Cedar Island.

The lithology of the island and mine workings is fine- to medium-grained, massive, high-iron tholeiitic basalt, intercalated with porphyritic basalt in which feldspar phenocrysts are 3 to 15 mm in size. White carbonate is ubiquitous along minor fractures in the basalts. Dikes of granite, pegmatite, feldspar porphyry, aplite and lamprophyre cut the basalts in the old workings (Thomson 1936). Granite encountered in the east drifts of the 283 ft. (86.3 m) level may be part of the Canoe Lake stock.

Mineralization: Three mineralized shear systems were identified at the surface and underground (Galbraith 1934). The Main, or No. 1, Zone strikes northwest and, at the surface, dips at about 70°SW. A near-vertical, north-northeast-trending shear or fault occurs to the west of Cedar Island and coincides with the northwestern termination of the Main Zone. A second northeast-trending fault is exposed at the northeastern corner of the island and has been called a "sulphide dike". Weak, east-trending shears are also present. All three systems contain quartz and sulphides, but only the Main Zone contained ore grade mineralization.

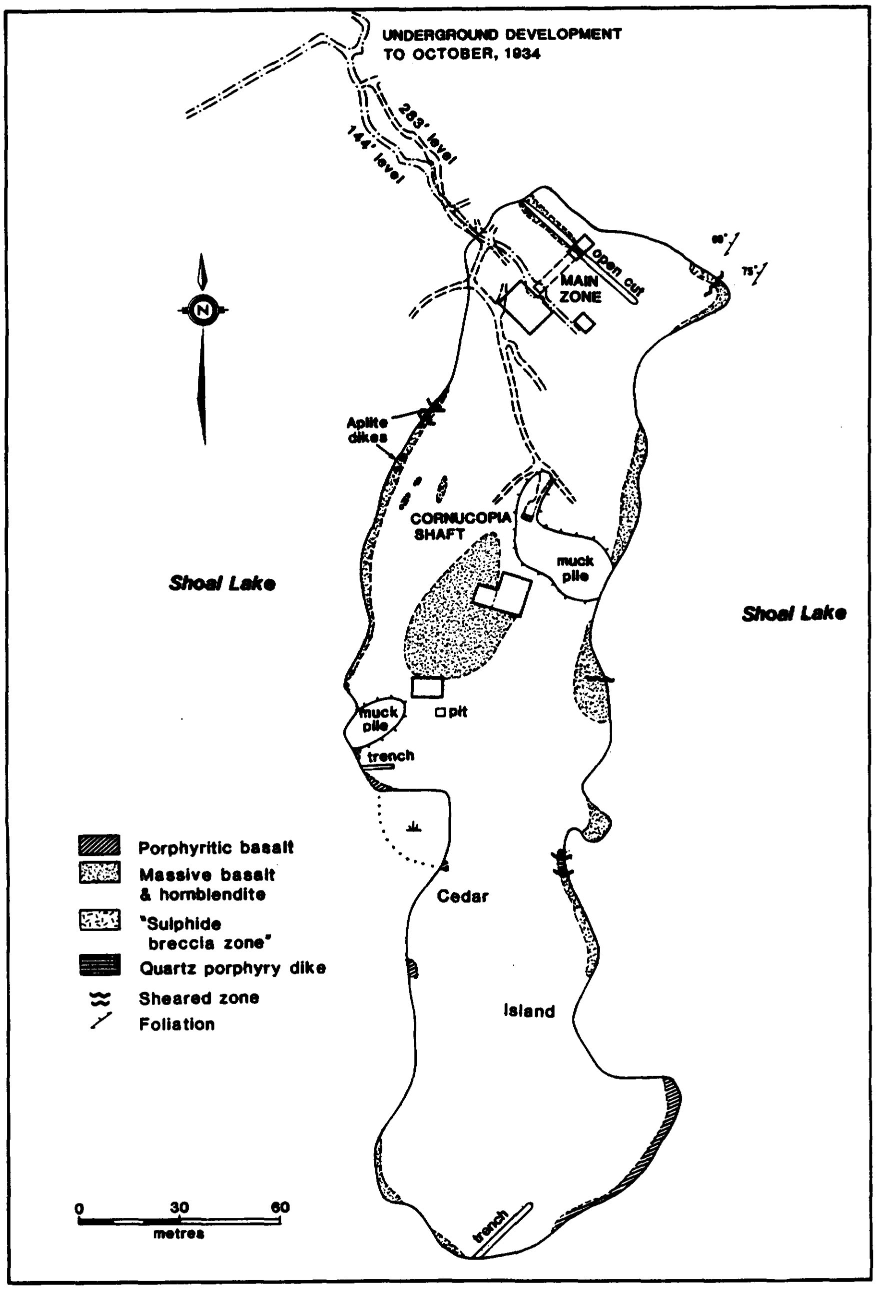

Figure 7. *Geology and development at the Cedar Island Mine.*

Thomson (1936), in describing the Main Zone, noted that "vein material is closely associated with a series of aplite dikes, which appear to be the latest phase of a series of intrusives. The vein often follows the contact of the aplite and the greenstone but in places will angle away from it and broaden out in the form of a stockwork of quartz stringers in the lava. Values seem to fall away in this structure. At certain locations the aplite simply grades into vein quartz. This association has produced irregular bodies of quartz, which are sometimes lenticular, sometimes contorted and folded...There are two generations of vein quartz. The earlier quartz is fine-grained and sugary in appearance, and generally contains narrow bands or wisps of chlorite. It is fractured, and fine-grained sulphides, chiefly pyrite, occur along the fractured zones. Two generations of pyrite occur, the first as distinct crystals, the second as fine-grained material. In some cases the fine-grained pyrite surrounds the earlier formed crystals. Small amounts of pyrrhotite, arsenopyrite, sphalerite, galena and chalcopyrite also occur in the quartz. Gold occurs as small grains and veinlets in the quartz and is usually associated with the later pyrite. A slightly later generation of white quartz cuts across the earlier quartz and sulphides." A 180 foot (55 m) long section of the main vein reportedly averaged 1.5 oz Au/ton across 46 inches (117 cm) (Thomson 1936).

Four "sulphide dikes" have been recognized in the old workings. Thomson (1936) noted that the boundaries are indefinite and suggested that they are replacement deposits. At the surface, pyrite and graphite occur along fracture surfaces and in cavities within a gossanous breccia zone which may be interpreted as sulphide replacement along a fault. Ennis (1973) suggested that "they may be the result of replacement of sheared sediments between flow contacts (interflow tuffs)". Galbraith (1934) considered that the "sulphide zones" may represent steep faults which "are definitely earlier than vein mineralization since they are cut by the quartz veins". In addition to pyrite, the zones contain pyrrhotite, chalcopyrite and traces of sphalerite.

ANALYSIS OF MINERALIZATION
A sample of pyritiferous quartz, from the open cut on the south end of the island, assayed 100 ppb gold and 425 ppm arsenic. A sample of the brecciated sulphide vein, from the northeast portion of the island, contained 50 ppb gold and 3600 ppm zinc. A sample of unaltered, massive basalt contained <2 ppb gold.

DEVELOPMENT HISTORY
Circa 1896: Messrs. Whiting and Kendall of Rat Portage discovered the Cornucopia Mine and sold it to Anglican Mining and Finance Co. Ltd., London, England. Two veins were explored, one striking northwest and the second, northeast. A vertical shaft was sunk 80 ft. (24.4 m) in the centre of the island and at that depth 100 ft.

(30.5 m) of lateral work was carried out. A mill run of 25 tons graded 3.0 to 3.5 oz Au/ton.

1897 - 1898: Cedar Island Gold Mining Co., with capital supplied by Dominion Gold Mining and Reduction Co., deepened the shaft to 110 ft. (33.5 m), completed 45 ft. (14 m) of lateral work and drilled four diamond-drill holes, totalling 869 ft. (265 m). Recovery of 78 ounces of gold was reported.

1928 - 1932: Incorporation of Kenora Prospectors and Miners Ltd. was followed by prospecting, trenching and stripping. Equipment was moved from the Mikado Mine, and an inclined, two-compartment shaft was sunk 165 ft (50.3 m). A level established at 144 ft. (43.9 m) had 548 ft. (167 m) of lateral work. Two batches of high-grade ore, sent for mill tests, graded 1.44 oz Au/ton, 0.35 oz Ag/ton and 5.07 oz Au/ton, 0.38 oz Ag/ton respectively. Thirty-two tons of ore sent to Copper Cliff yielded 185.9 ounces of gold. Seven holes were drilled on the island and adjoining mainland.

1934 - 1936: Same company extended lateral work on the 43.9 m level of the inclined shaft. The old Cornucopia shaft was extended to 646 ft. (197 m). Levels were established at depths of 282, 393, 500 and 625 feet (86.3, 119.8, 152.4 and 190.5 m). Development included 5,427 ft. (1654 m) of lateral work, 330 ft. (100 m) of raising, and stoping on all four levels. Some 8,182 ft. (2,494 m) of surface and underground drilling was reported in 1934 and 1935. Minor trenching was done on the surrounding islands and mainland. A 30-ton mill was constructed in late 1935.

Circa 1963: Geological mapping by D. Derry for Ventures Ltd.

1968: EM surveys completed for Kenora Prospectors and Miners Ltd.

1972 - 1973: Same company completed additional trenching and geophysical surveys.

1980 - 1981: Optioned to Denison Mines Ltd., which completed geophysical and geochemical surveys. Sampling studies of the tailings revealed 10,510 tons grading 0.064 oz Au/ton. Three diamond-drill holes, totalling 3095 ft. (934 m), were drilled below the 190.5 m level. These failed to intersect a definite vein. Trenching, on the mainland 300 m southeast of Cedar Island, revealed a possible extension of the number one vein. Denison dropped its option.

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23. CHAMPION MINE (PAST PRODUCER)

COMMODITY
Gold

ROCK ASSOCIATION
Massive to foliated quartz diorite

CLASSIFICATION
4c, d

LOCATION

Haycock Township:	NTS	52E/16SW
	Lat.	49°45′59" (49.7664°)
	Long.	94°19′11" (94.3197°)

ACCESS
The mine is situated on mining location P349, about 1.2 km east of Breakneck Lake, or roughly 600 m south-southeast of Island Lake. The property may be reached via a dirt road extending east from Jones Road.

SIZE AND GRADE
Total production has been reported as $31,447 (1521.4 oz gold) from 1,667 tons of ore (Canadian Mining Journal, May 1936, p. 237). It has also been reported as $29,226.00 from 1535 tons milled (Hopkins 1931), although there is no official record of production during the intervening period.

DESCRIPTION
Geology: The area is underlain by massive, medium- to coarse-grained quartz diorite of the Island Lake intrusion. In parts of the intrusion, mafic inclusions predominate and many show evidence of partial digestion; compositional variations within the intrusion may be due to assimilation of inclusions. The quartz diorite is cut, in places, by dikes and irregular bodies of pink to red aplite or fine-grained granite, which are mostly less than 1 m wide, but may be up to 7 m wide. Hopkins (1931) reported Keewatin volcanics and an iron formation a few hundred feet northwest of the Champion Mine.

Mineralization: Twelve veins, the locations of which were shown (Figure 8) in a prospectus of Ontario Champion Gold Mines Ltd. (1928), were known as the Hilltop, Porphyry, Lake, David A., Holmes, Garden, Tunnel, Gordon, Emmons, Boulder, Champion and South Veins. Some of these were later re-named, creating confusion.

The main workings were on the Champion Vein. Here, aplite occurs in a shear zone in the quartz diorite, and the vein quartz is mainly at the contact between the aplite and the sheared quartz diorite. In a few places the aplite has also been sheared. The vein strikes about 125° and dips 55°SW, and an inclined shaft was sunk on it to a slope depth of 71.6 m. Levels were established at 36.5 and 67 m. Thomson (1936) stated that the Champion Vein "roughly follows an aplite dike ... (which) may be traced from the surface to the 220 foot (67 m) level, but it pinches and swells considerably. On the surface the quartz has been traced about 100 feet (30 m) and ranges from 8 to 24 inches (20-61 cm) in width. On the 120 foot (36.5 m) level quartz occurs almost continuously along the 180 feet (55 m) of drifting. It has a somewhat irregular distribution, the veins being controlled by the irregularities of the aplite.... The vein quartz is white and somewhat banded in places due to chloritic seams. Sulphides are sparsely distributed and consist chiefly of pyrite, with traces of galena, sphalerite and chalcopyrite. The gold is mostly native and occurs in the quartz." Hopkins (1931) noted that some of the quartz lenses are drag folded and that these folds are higher in grade.

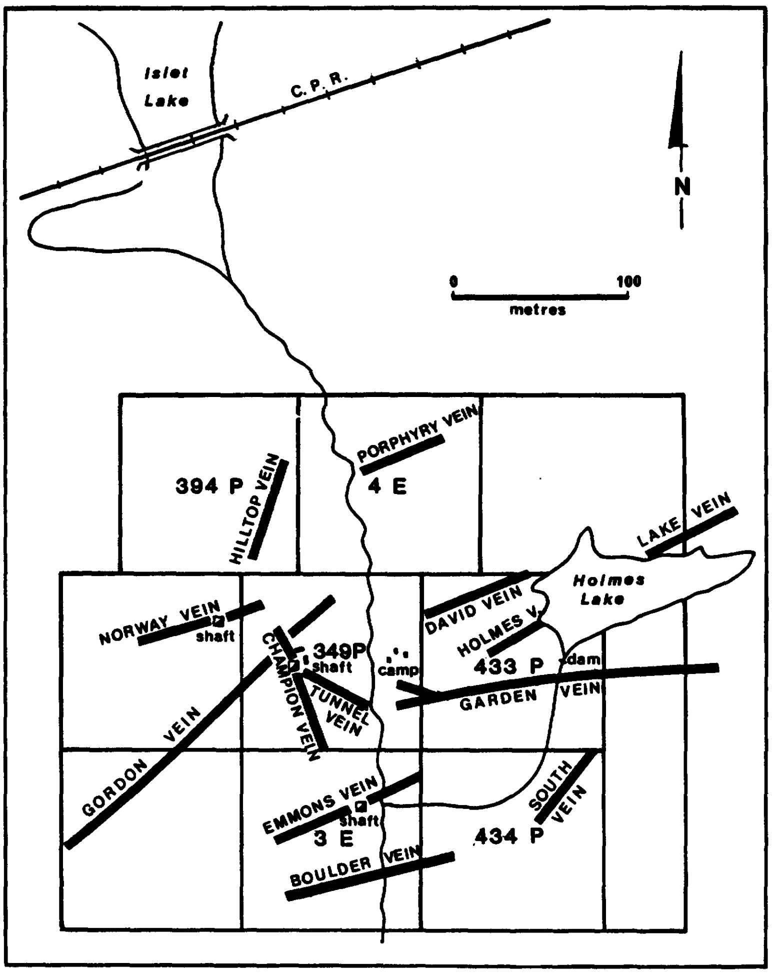

Figure 8. *Locations of veins at the Champion Mine. Modified from Ontario Champion Mines Ltd. (1928).*

Little is known about the other veins discovered near the mine. However, the Gordon, Tunnel and Garden Veins are also associated with felsic dikes.

ANALYSIS OF MINERALIZATION

Comparison of analyses of fresh and sheared quartz diorite suggests that shearing resulted in a loss of ferric and ferrous iron, magnesium, lime and soda, and gains in potash, carbon dioxide and water. The main mineralogical change was the replacement of hornblende by biotite. The gold content of the fresh rock was 4 ppb and, of the sheared rock, 8 ppb.

An analysis of sheared aplite at the Champion Vein taken in this study returned 13 ppb gold. A grab sample of milky white quartz with no visible sulphides contained 117.6 ppm gold.

DEVELOPMENT HISTORY

Circa 1892: The Bad Mine was staked by A. Swanson and shortly thereafter the property passed to H. Holmes. Some test pits were sunk, and two cars of ore were shipped to Rat Portage Reduction Works. Gold recovery from the ore was valued at $40.00 gold per ton (gold at $20.00 per oz) (Champion Gold Mines, circa 1924).

1893 - 1895: Optioned to the Rat Portage Mining and Reduction Co. A shaft was sunk 6.1 m.

1897: The owners removed at least 25 tons of hand-picked ore to the reduction mill at Rat Portage, where $60.00 per ton (gold at $20.00 per oz) was recovered (Champion Gold Mines Ltd., circa 1924). Optioned to W. Love of Buffalo, N.Y., but the contract requirements were not fulfilled and the court ordered the property returned to the owners.

1898: Bonded to H. Armstrong, W. Peters and J. Hildreth of Rat Portage. A 21 m shaft, inclined 50°SW, down the dip of the vein, was sunk on top of a hill. About 7.6 m down the shaft, drifts were driven 10.9 m to the southeast and 9.1 m to the northwest. A crosscut was made 3 m west from the end of the latter, and drifting was carried to the northwest for 3.7 m. An adit was driven 38.1 m into the hillside to intersect the shaft. Some 360 tons of ore were removed, grading $20.00 to $25.00 gold per ton (gold at $20.00/oz) (Champion Gold Mines, circa 1924).

Late 1899 - 1900: Bonded to the Bullion Mining Company of Ontario Company. The mine was controlled by a subsidiary, the Champion Company. The two-compartment shaft was deepened to 62.8 m, and 36 m of drifting was done on the 39.6 m level. Some 760 tons of ore were sent to the Keewatin mill but, reportedly because the mill was so badly worn and lacked a cyanide plant, recovery was only $7.60 gold per ton (gold at $20.00/oz) (Champion Gold Mines Ltd., circa 1924). The mine closed in December of 1900 and the company disbanded.

1923 - 1926: Incorporation of Champion Gold Mines Ltd. The shaft was deepened 7.3 m and total lateral work on the 39.6 m level was extended to 68.6 m. A second level was opened at a depth of 70.1 m, where 36.6 m of lateral work was carried out. Stoping was done on the 39.6 m level.

1931: Mine workings were dewatered and sampled by Vickers Porcupine Mines Ltd. The property was optioned to Ontario Gold Mines Ltd.

1934 - 1936: Incorporation of Franklin Gold Mining Co. Ltd. (later Franklin Gold Mines (1936) Ltd.). The workings were dewatered and sampled. Some drilling followed prospecting, and 89.3 m of drifting and 37.5 m of crosscutting were done.

1979 - 1980: Golden Bounty Mining Co. Ltd. completed geochemical surveys, rock trenching and 444 m of diamond drilling.

Note: Production additional to that listed here must have been realized in order to match total production figures.

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24. CLIMAX OCCURRENCE

Also known as Thrasher-Bigstone Property, J. Thrasher Property, or Climax Mine

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49° 41′ 00"	(49.6833°)
	Long.	92° 23′ 00"	(94.3833°)

ACCESS
The occurrence is on mining location P225, where it adjoins the northwestern corner of Location X-11. It is 325 m northwest of the dam on Longbow Creek, and lies beside Branch Road 5 of Storm Bay Road, 300 m from the junction of the two roads.

DESCRIPTION
Geology: West- to southwest-facing, interlayered, massive and pillowed basaltic flows, with minor volcaniclastic material, underlie most of Bigstone Bay. In the northern part of the bay, the basalts are predominantly fine-grained and west-facing. The Dryberry Batholith lies to the east; the curved contact being approximately parallel to volcanic stratigraphy to the north, but cutting it obliquely to the east of Thunder Bay.

Mineralization: Basalt at the Climax Occurrence displays a very subtle but pervasive planar fabric, which strikes about 110° and dips about 50°S. The fabric is evident over an outcrop width of about 25 m, but, as the outcrop slope is similar to the dip of the fabric, its true thickness may only be 3 to 4 m. A fault, locally containing up to 20 cm of chloritic gouge, lies within and is parallel to this zone.

The rock characterized by the planar fabric contains fine disseminated pyrrhotite and traces of pyrite, chalcopyrite and arsenopyrite. It has a rusty weathered surface, which is strongest at the fault trace. On broken surfaces, the rust coats joint surfaces and other fractures. Silica has been added to the rock, but well-defined quartz stringers are rare. Several trenches (Figure 9) have been cut into the hill slope; the long western trench provides a cross section of the fault, the overlying mineralized zone, and the poorly mineralized footwall rock. The known strike length of the zone is about 75 m, though rusty basalt is exposed in a pit beside Branch Road 5 about 50 m to the west. Thomson (1946) stated that two north-dipping drill holes, collared to the south, failed to intersect any significant mineralization.

Mineralization does not appear to be related to any known major structural feature, although a weak, 110°-striking lineament does coincide with the northern edge of the mineralized outcrop.

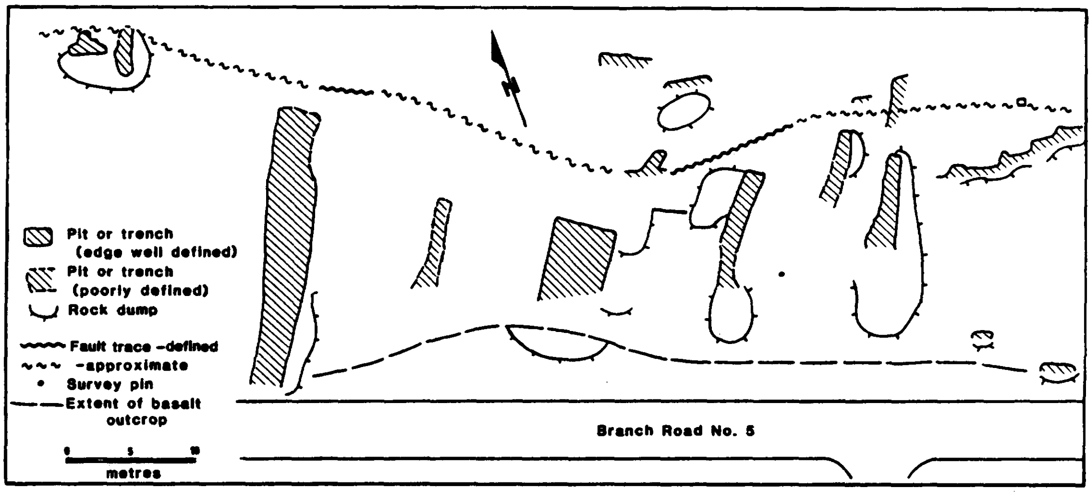

Figure 9. *Development at the Climax Occurrence. All trenches and open cuts are in mafic flows.*

ANALYSIS OF MINERALIZATION

Slaught (1892) recorded that "from an open cut in the side of the hill, 600 or 700 tons of ore have been raised, most of which has been taken to the Reduction Works at Rat Portage (Kenora) for treatment; 36 assays showed the average value of ore to be $19 (0.95 oz Au) per ton".

Thomson (1946) copied an assay plan of a prospector. The highest assay was 2.02 ounces of gold per ton, but most were between 0.01 and 0.07 ounces of gold per ton.

Sylvanite Gold Mines Ltd. (1943) took 38 channel samples from pits and rusty surface material within the main outcrop area. Half of these contained less than 0.05 oz Au/ton, but 3 of the assays contained in excess of 1.0 oz Au/ton.

DEVELOPMENT HISTORY

1891 - 1892: Owned by A. Egan. Some 600 to 700 tons of ore were shipped for treatment.

1898: Owned by Climax Gold Mining Company of Ontario Ltd.; work at this time centered on a vein system in the northwestern corner of P 225.

Early 1930's: Staked by Messrs. Thrasher and Earngey.

1935 or 1936: Optioned to Roeanor Gold Mines Ltd. Two holes were drilled on the Climax occurrence and three to the northwest at the Earngey Lindbury property.

1936-1946: Messrs. Thrasher and Roseland carried out prospecting.

1943: Examined by Sylvanite Gold Mines Limited.

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25. CRONLUND (LITTLE CROWROCK) OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Argillite between mafic and felsic volcanic flows

CLASSIFICATION
3a

LOCATION
Little Crowrock Island, Lake of the Woods:

NTS	52E/10SE	
Lat.	49°35′48"	(49.5968°)
Long.	94°36′34"	(94.6094°)

ACCESS
The occurrence is located on the western shore of Little Crowrock Island (also known as Island JES 85 or Island No. 616). The island lies about 20 km south-southwest of Kenora, or about 4 km northeast of Wiley Point. It may be reached by boat from Kenora.

DESCRIPTION
Geology: A major, east-northeast-trending anticlinal axis is located 100 m north of the occurrence, exposing pillowed metabasaltic flows on the southeastern limb Several hundred metres of fine-grained, carbonatized, chloritized, epidotized, pillowed basalts are unconformably overlain by fine- to medium-grained, felsic pyroclastic rocks (ignimbrite), composed of 60-70% quartz and feldspar phenoclasts, rare mafic phenoclasts, and rare questionable pumice fragments. The mafic volcanics and overlying felsic pyroclastics are separated by a thin (2-20 m) horizon of fissile, graphitic, pyritic, argillaceous, bedded sediments, intercalated with finely laminated chert (Figure 10). Bedding, striking 070° and dipping 55 to 75°S, is masked by a parallel, pervasive foliation, shearing, and local brecciation with quartz and carbonate blocky infill. This shear zone is up to 40 m wide, extending into the more competent rocks on either side of the unconformity. Apparently this zone has been traced nearly 1 km onto neighbouring islands. Parallel to sub-parallel shearing has been observed within the upper basaltic sequence (Sylvanite Gold Mines Ltd. 1944).

The presence of chert, graphite and argillaceous sediments indicates that a period of quiescence followed the deposition of basaltic flows, and preceded the deposition of the overlying pyroclastic rocks. It is possible that the sedimentation followed a low angle submarine slide within the basalts.

Mineralization: Disseminated and locally massive pyrite is abundant within black, graphitic, argillaceous shale or mudstone.

The unit displays a pronounced foliation parallel to the contacts of the unit. A fine-grained, quartz-rich matrix surrounds angular to subrounded, cherty clasts within brecciated portions. Occasional blebs of chalcopyrite are visible in the quartz.

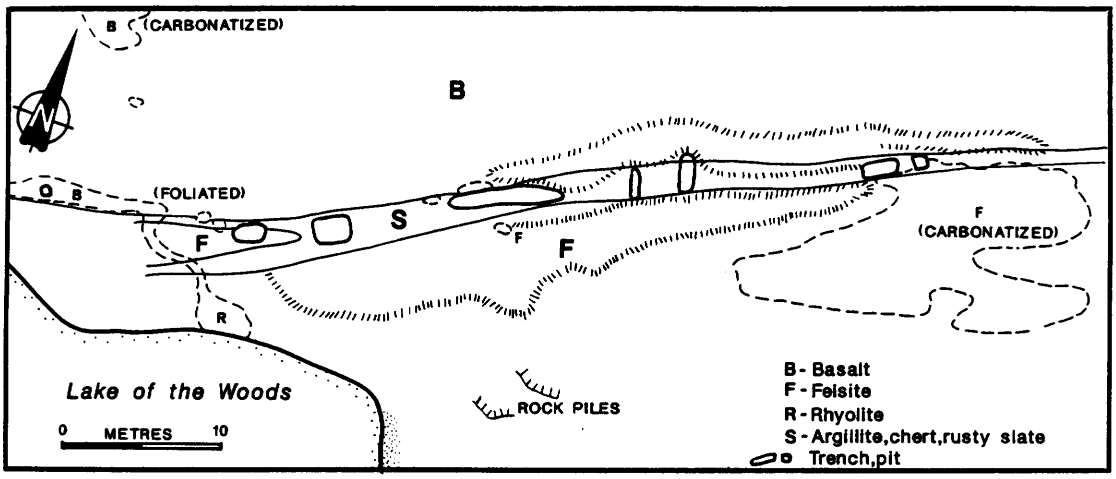

Figure 10. *Geology of the Cronlund (Little Crowrock) Occurrence.*

Taylor (1936) reported assay results from grab samples taken from five veins located on the island but did not give locations or attitudes for any of these veins. Most values are much less than 0.5 oz Au/ton. Two 3 ft grab samples across the argillaceous horizon yielded 3.52 and 9.08 oz Au/ton respectively. Sylvanite (1944), which later optioned the property, completed systematic sampling of the showing, but was unable to confirm Taylor's results. Most samples returned trace values; the highest being 2.4 DWTS (0.12 oz) Au/ton over a 0.9 m sample width. Holbrooke (1944) assessed the sampling results as follows: "These results show no values of interest and it is apparent that any ore shoots that may be present will be too small and erratically distributed to be mineable."

DEVELOPMENT HISTORY

1912-1936: K548 and 590 were staked by Oscar Cronlund. Deeded to Mrs. Cronlund in 1921. Stripping, trenching, sampling and minor geological mapping continued sporadically throughout the period. A 2-stamp mill was on site, but it is unknown whether installation was completed.

1943-1944: Optioned to Sylvanite Gold Mines Ltd., which completed systematic trenching, sampling and geological mapping. Results were unfavourable, and the option was cancelled June 14, 1944.

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Sylvanite Gold Mines Ltd., 1944, Resident Geologist's Files, Kenora
Taylor, 1936, Report on Little Crow Rock Island, Assessment Files, Kenora
Thompson, 1936, ODM, Vol. 45, pt. 3, p. 38

26. CROWN POINT MINE (OCCURRENCE)

Also known as Black Cat Mine

COMMODITY
Gold

CLASSIFICATION
4a, c

ROCK ASSOCIATION
Sheared quartz diorite

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°36′39″	(49.6108°)
	Long.	94°58′02″	(94.9672°)

ACCESS
The mine workings are situated on old mining location D 258, east of the narrows separating Clytie Bay and Bag Bay, and 2 km north-northeast of the northern end of Cedar Island. The property may be reached by boat from Clytie Bay Landing or from Kenora via Ash Rapids.

DESCRIPTION
Geology: An east-trending fault zone has brought quartz diorite of the Canoe Lake stock into contact with north-northeast-trending mafic metavolcanic flows and a fine-grained, felsic fragmental unit (Figure 11). Incorporated within the zone are dextrally offset slices of the mafic rocks. These include a thin porphyritic gabbro, with large (up to 25 mm), saussuritized feldspar phenocrysts, a fine-grained basaltic unit, and a medium-grained gabbroic unit. These units probably correspond to similar units on the Sirdar Peninsula to the west. A strong positive magnetic anomaly is coincident with this fault zone.

Mineralization: Gold mineralization on the property is restricted to thin, weakly to moderately silicified, weakly pyritiferous, east-trending shear zones within quartz diorite, and in a fault slice consisting of fine-grained basalt which is in contact with porphyritic gabbro. Crown Point Mining Co. reported a grade of 0.67 oz Au/ton (ODM Statistical Files); however, sampling by Sherritt Gordon Mines in 1980 produced few values above trace, the highest being 0.06 oz Au/ton over a 20 cm width. Drilling of a northeast-trending magnetic and EM anomaly north of the old workings intersected 0.17% Ni over 1.6 m, and 0.12% Cu over 1.3 m (Olympia Mines Ltd. 1968).

DEVELOPMENT HISTORY
Circa 1899: The newly incorporated Crown Point Mining Co. Ltd. sank three shafts, excavated numerous trenches, and stripped veins on

mining location D258. Shaft No. 1, the Main (west) Shaft, was 8 by 16 by 125 ft. deep with 60 ft. of lateral work; Shaft No. 2, called the Contact (northeast) Shaft, was 8 by 16 by 60 ft. deep; and Shaft No. 3, the Air (southeast) Shaft, was 3.5 by 10 by 65 ft. deep. A 5-stamp mill was erected and 150 tons were milled, grading 0.67 oz Au/ton.

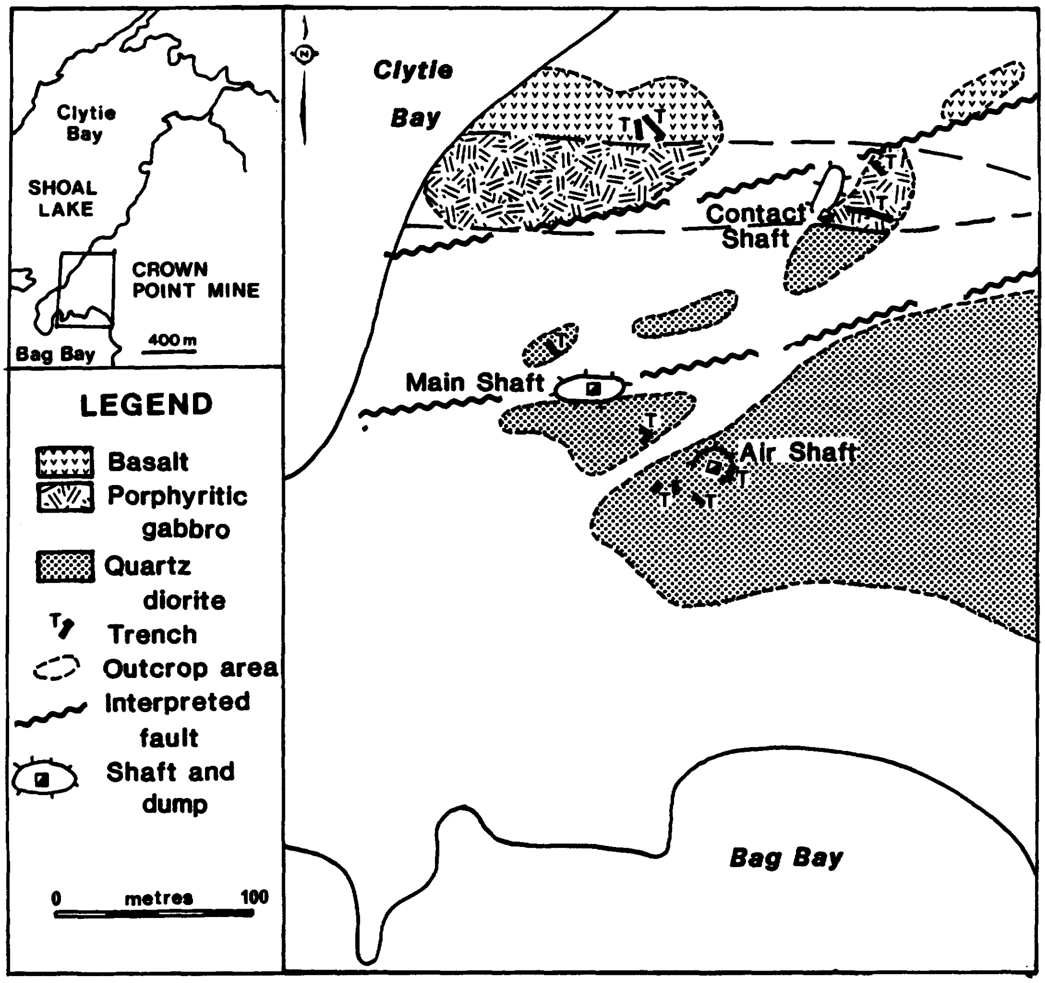

Figure 11. *Geology of the Crown Point Mine Occurrence. Modified after Morse (1980).*

1904: Sold to Black Cat Mining Co., Cincinnati, Ohio.

1968: Olympia Mines completed electromagnetic and magnetometer surveys, and diamond-drilled 6 holes, about 1 km northeast of the old workings.

1978: Long Lac Mineral Exploration Ltd., collected 5 samples on the property. All the samples assayed nil gold, except one which assayed 0.06 oz Au/ton.

1980: Staked by R. Fairservice and optioned to Sherritt Gordon Mines Ltd., which geologically mapped the property and sampled the old workings.

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Olympia Mines Ltd., 1968, Assessment Files, Kenora

27. DEAD BROKE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Felsite dike in basalt. Quartz vein in intermediate pyroclastics.

CLASSIFICATION
1d, 2a

LOCATION
Dead Broke Island, Lake of the Woods:

NTS	52E/7NE	
Lat.	49°29′55"	(49.4987°)
Long.	94°31′45"	(94.5293°)

ACCESS
Dead Broke Island, or location P64, is 11 km southeast of Wiley Point and 30 km south of Kenora. It is accessible by boat from Kenora or Sioux Narrows.

DESCRIPTION
Geology: Thomson (1936) mapped about 3 km of basalt to the north of the Aulneau batholith. This is believed to be north-facing and to be overlain by up to 4 km of interlayered basalt, intermediate to felsic pyroclastics and greywacke. East- to east-northeast-striking foliation is generally well developed, especially in the pyroclastics and sediments. Quartz-feldspar porphyry dikes, which typically are approximately parallel to foliation, are numerous in parts of the area.

Mineralization: Near a contact between basalt and intermediate or felsic pyroclastics, and at the east-central shore of the island, a 2 m wide felsite dike cuts basalt at an angle to foliation. A long pit or open cut has been sunk on the dike, and exposes irregular lenses and veinlets of quartz. Fine pyrite occurs in the altered felsite. A second pit, about 30 m to the north, exposes an irregular quartz vein in the pyroclastics; the quartz contains minor pyrite and traces of galena and chalcopyrite. Slaught (1892) reported that an open cut, about 6 m long by 3.6 m wide by 1 m deep, was abandoned due to water inflow (the lake level was approximately 1m lower at that time) and a 7.5 m long tunnel was driven 40 m from the open cut. Thomson (1936) also noted the presence of a tunnel, but this was not found during the present study.

ANALYSIS OF MINERALIZATION
Slaught (1892) was advised that about 75 tons of ore had been removed from the open cut and that assays of this were from $7 to $133 (0.35 to 6.65 oz) gold per ton. Thomson (1936) stated that a sample of the

pyrite, chalcopyrite and galena-bearing quartz contained only a trace of gold.

Chip samples from the quartz- and pyrite-bearing felsite taken during the present study contained 440 ppb gold.

DEVELOPMENT HISTORY

1892: Owned by J. Haldrith. An open cut and tunnel were made and 25 tons were taken to the Rat Portage Reduction Works. This may have been done by the Climax Gold Mining Co. Ltd.

SELECTED REFERENCES

Slaught, 1892, OBM, Vol 2, p. 232
Thomson, 1936, ODM, Vol. 45, Pt. 3, p. 29-30

28. DUPORT MINE (PAST PRODUCER)

Also known as the Cameron Island Mine and the Damascus Mine

COMMODITY
Gold, silver

ROCK ASSOCIATION
Sheared mafic volcanics, cut by felsic dikes

CLASSIFICATION
1a, d, p

LOCATION
Stevens Island, central Shoal Lake:

NTS 52E/1SE
Lat. 49°34′08" (49.5689°)
Long. 95°02′33" (94.0425°)

ACCESS
The old mine shaft was located on Cameron Island in Shoal Lake, 9 km southwest of Clytie Bay Landing and about 7.3 km southeast of Kejick Post Office. The portal to the new decline is located on adjacent Stevens Island, about 400 m southeast of the old shaft.

SIZE AND GRADE
Total reserves have been estimated at 1,445,235 tons grading 0.33 oz Au/ton over a width of 9 feet (2.7 m) (Northern Miner 1985). Total production to 1936 was 4,672 ounces of gold and 1,143 ounces of silver from 1,287 tons of ore (Beard and Garratt 1976).

DESCRIPTION
Geology: The mineralized zones lie on the western limb of the Gull Bay - Bag Bay Anticline, within a thick sequence of komatiitic and tholeiitic basalt flows. Intercalated ultramafic horizons may represent flows or subvolcanic sills. A few hundred metres west of the mine, the lower mafic sequence is overlain by felsic tuffs and tuff breccias and by andesitic tuffs and flows which, preliminary chemical data suggest, are calc-alkaline. A porphyritic basalt, in the upper part of the lower mafic unit, may be a marker horizon within the mine area.

The volcanic rocks of the Shoal Lake area have been intruded by a number of granitoid stocks, a granitoid batholith and by numerous mafic and felsic dikes. The Stevens Island intrusion, which ranges in composition from diorite to anorthositic gabbro, intrudes the mafic volcanics immediately east of the Duport deposit. The intrusion may represent a thick, differentiated, subvolcanic sill. The Snowshoe Bay granodiorite batholith intrudes the upper felsic-intermediate series about 1.5 km west of the ore zones and extends westward into Manitoba. Mafic and felsic dikes intrude the volcanic rocks and the Stevens Island intrusion. Lamprophyre dikes cross-cut felsic dikes and are considered the youngest intrusive event. Dikes appear to be more abundant within zones of greater deformation, where they trend both parallel and oblique to stratigraphy. Regional metamorphism is lower greenschist facies. In the general mine area, an upper greenschist to lower amphibolite facies assemblage predominates, while close to the gold-bearing zones, a lower greenschist assemblage is present.

The two principal mineralized zones, the East and Main Zones, have been traced over strike lengths of 700 and 730 m by diamond drilling and limited underground exposure (Figure 10). The zones are considered open below 300 m. A number of additional gold-bearing zones have been intersected within the hanging wall; to date, little work has been done to ascertain their significance. Within the immediate mine area, the major lithologies are metabasalt, metapyroxenite, amphibolite and varieties of chlorite schists. A lens of chert-sulphide iron formation, which strikes 060° and dips 75°NW, has been recognized underground. Felsic and mafic dikes are common throughout. Lithologies close to the ore zones are rich in chlorite, sericite, epidote, carbonate and magnetite; the ore zones themselves are quartz- and sulphide-rich.

The East and Main Zones lie within an intensely deformed zone, which has been called the Duport Deformation Zone (Smith 1984). The zone is a reverse fault system several hundred metres wide, trending approximately 035° and dipping roughly 75°W. The footwall contact, where it is crossed by the ramp, is sharp; relatively undeformed pillowed basalt is in contact with talc-chlorite schist, amphibolite and metapyroxenite. To the west, these rocks grade into zones of chlorite-actinolite-sericite schist and amphibolite, and finally into brecciated basalt. Feldspar phenocrysts which have been recognized within the brecciated basalt are similar to those found within the porphyritic basalt, suggesting that this zone is heterolithic and tectonic, rather than tuffaceous. Deformation styles reflect these transitions, ranging from ductile in the east to brittle/ductile in the west (Smith 1984).

Mineralization: Previous workers have interpreted the two main ore zones to be mineralized tuffaceous horizons (Troop 1980, Blackburn and Janes 1983). Blackburn and Janes (1983) suggested that felsic tuff units likely acted as favourable sheared hosts for gold-bearing solutions. Recent underground work has indicated that the main zone is actually a series of almond-shaped lenses, which appear to be arranged in an *en echelon* pattern, stepping left in the horizontal plane, and up and into the footwall in the vertical plane.

The East Zone, as described by Smith (1984), is generally hosted by talc-chlorite-carbonate schist. Locally it is hosted by nematoblastic amphibolite and metapyroxenite. The zone is located less than 10 m west of the eastern boundary of the Duport Deformation Zone. Fractured, mylonitized and brecciated felsic dikes were preferred sites for gold mineralization within the tight, impermeable, ductile schist. Competency contrasts between the schist and dikes resulted in boudinage and boudinage-like features. In places the gold-bearing zone and the dikes are folded and offset, reflecting reverse movement. Metapyroxenite and amphibolite have been traced through increasing degrees of deformation into the talc-chlorite schist. The ore is commonly surrounded by halos of biotite or biotite-pyrite schist. Carbonate is also enriched close to the ore. Coarse pyrite and biotite patches are common locally, and magnetite is found as porphyroblasts in the talc-chlorite schist.

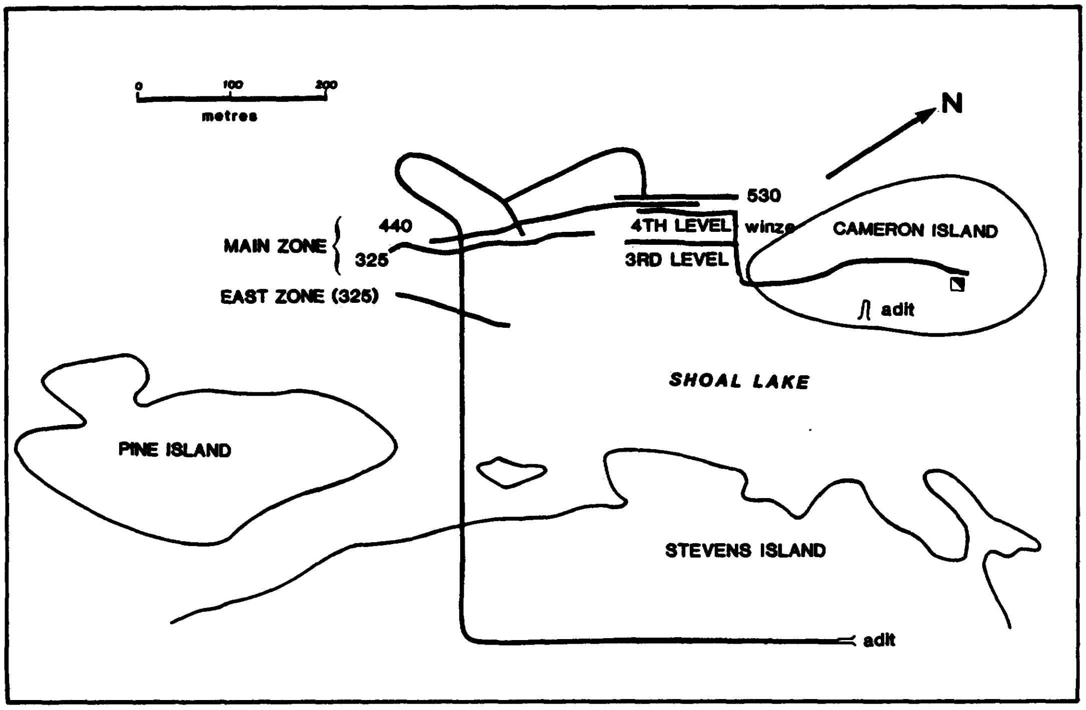

Figure 12. *Underground development at the Duport Mine.*

A particularly rich section, known as the Intermediate Zone, was intersected by the ramp, 10 m west of the East Zone. It is suspected to be a component of the East Zone.

The Main Zone is located approximately 60 m west of the East Zone. The zone generally parallels the dominant foliation, trending 035° and dipping 75°NW. It is hosted by chlorite-actinolite-sericite schist, amphibolite, porphyritic basalt and brecciated basalt. The latter has been traced through progressive fragment flattening into chlorite-actinolite-sericite schist (Smith 1984). Within the schistose areas, the highest concentration of gold is associated with altered felsic dikes, similar to the East Zone. Elsewhere, gold mineralization fills fractures and breccia zones within the basalt. In places, the fractures are orthogonal to the trend of the ore lens. Similar to the East Zone, rocks immediately surrounding the ore are enriched in biotite. Carbonate fills fractures and is found as lamellae within the schists. Magnetite is finely disseminated proximal to the Main Zone, and is locally concentrated about fragment margins within the brecciated basalt.

Gold-bearing horizons in both the East and Main Zones are enriched in quartz and sulphides, and contain varying amounts of feldspar, muscovite, sericite, pale-brown biotite, epidote, carbonate and chlorite. Gold is generally associated with arsenopyrite, both in solid solution (Thomson 1935), and as free gold encrusted along grain boundaries. Gold is also found in association with pyrite, both plating grains and as inclusions, and in lesser amounts is associated with pyrrhotite and chalcopyrite.

The mineralization can be divided into three types: layered and arsenopyrite-rich, pyrite-rich, and "mariposite ore". The arsenopyrite-rich type is generally considered high grade and is commonly interlayered with quartz. Layering is locally discontinuous and crosscutting, and in places penetrates the host schist oblique to the "vein" trend. Pyrite-rich mineralization is less abundant, but is similar to the former. The green "mariposite ore" (mariposite has not been positively identified as yet) is commonly brecciated; quartz forms the matrix of the breccia and arsenopyrite is concentrated along fragment boundaries. The widest mineralized intersections are of this type, and many of the early workings encountered this type of mineralization.

ANALYSIS OF MINERALIZATION
A sample of typical "mariposite ore" taken from the 440 north drift during this study assayed 1.79 oz Au/ton, 4.8% As, 470 ppm Cr, and 450 ppm Ni.

DEVELOPMENT HISTORY
Circa 1896: Discovered by R. McInkster and W.J. Cameron.

1897-1900: J.J. Foster purchased the property and formed the Cameron Island Mining and Development Co. Ltd. Four quartz-felsite veins were identified, 3 striking 030° and 1 striking east. Development included: extensive surface stripping; a 20 ft. (6.1 m) open cut on the No. 1 vein; a 30 ft. (9.1 m) open cut on the No. 2 vein; a 132 ft (40.2 m) deep shaft, inclined 75°E, and one test pit on the No. 3 vein; a test pit on the No. 4 vein; and a tunnel driven 66ft. (20.1 m) west from the eastern shore, intersecting veins 1 and 2.

1903-1904: Same company constructed a 10-stamp mill. Company name was changed to Damascus Gold Mining Co.

1910-1912: Cameron Island Syndicate Ltd. acquired the property, dewatered the shaft, and resumed underground work. A mill run was made, but details are unavailable.

1915: The same company resumed underground operations, extending total lateral work to 488 ft. (148.7 m) on the 67 ft. (20.4 m) and 127 ft. (38.7 m) levels. A small stope on the second level was worked to a height of 20 ft. (6.1 m). A 5 ton mill run graded 0.48 oz Au/ton and 1.2 oz Ag/ton.

1928-1929: Ventures Ltd. completed 3,837 ft. (1169.5 m) of diamond drilling, excavated several trenches and sunk several test pits.

1933-1934: Duport Mining Co. Ltd. drilled numerous diamond drill holes and dewatered the shaft.

1935-1936: Same company resumed underground development. A winze, inclined 75°, was sunk 245 ft. (74.7 m) from the second level. Additional levels were driven at 224 and 369 ft. (68.3 and 112.5 m) depths. Total lateral development was 2,341 ft. (713.5 m), with 83 feet. (25.3 m) of raising and some stoping on the second level. Total production for the two years was 1,190 tons of ore grading 3.84 oz Au/ton and 0.96 oz Ag/ton.

1950-1951: Optioned to Matachewan Consolidated Mines Ltd., which completed an electromagnetic survey, 18,169 ft. (553 m) of surface and underground diamond drilling, and 1,180 ft. (360 m) of surface trenching. The old shaft was dewatered and 32 ft. (9.8 m) of raising was completed on the second level. Total production for the two years was 1,190 tons of ore grading 3.84 oz Au/ton and 0.96 oz Ag/ton.

1965-1967: Westfield Minerals Ltd. optioned the property and carried out surface diamond drilling from the ice.

1973-1983: Consolidated Professor Mines Ltd. acquired the property, and worked first with TRV Minerals, which purchased 26% of Consolidated Professor shares, and later with Selco Canada Ltd. In 1973, the shaft was dewatered and bulk samples were taken from the second level. Airborne and surface geophysical surveys identified several conductors which were subsequently drilled.

1983-1985: Consolidated Professor worked in joint venture with Union Carbide Corporation (UMETCO), which did surface and underground diamond drilling. An 1185 m decline, driven from Stevens Island, intersected the main mineralized zones at 325, 440 and 520 ft. (99.1, 134.1 and 158.5 m) levels. Drifting was done to the north and south on the East and Main Zones on the 325 ft. level and on the Main Zone on the lower level. Bulk and channel samples were taken from all levels.

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29. EARNGEY-LINDBURG OCCURRENCE

Also known as the Thrasher-Bigstone Property, J. Thrasher Group, the Earngey Property and the Climax Property (East Break)

COMMODITY
Gold

CLASSIFICATION
la, b, c

ROCK ASSOCIATION
Mafic metavolcanic rocks

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°41'58"	(49.6994°)
	Long.	94°21'09"	(94.3525°)

ACCESS
The occurrence lies near the boundary between former mining locations 225-P and P-213, parts of which were subsequently restaked as K3819 and K3803 respectively. The workings are 1.0 km north-northwest of the dam on Longbow Creek and may be reached by a road which joins Branch Roads 3 and 5 of the Storm Bay Road.

SIZE AND GRADE
Gold is erratically distributed within a zone about 50 m long and 5 m wide.

DESCRIPTION
Geology: Fine- to medium-grained, west-facing, pillowed and massive basaltic flows have been intruded by massive, medium- to coarse-grained granodiorite of the Dryberry Batholith. Locally, granitic dikes intrude the basalt adjacent to the northwest-trending contact (Figure 13).

Mineralization: A zone of shearing, sometimes referred to as the "East Break", has been traced northward from Bigstone Bay from a point north of Maiden Island. It consists of bifurcating chloritic shears in basalt over a length of about 1.2 km; further north, the shear zone lies within granodiorite and is marked by an overburden-filled linear valley. Individual zones of shearing in the basalt are up to 25 m wide. Carbonate, quartz and sulphides are commonly associated with the shears and in places the basalt has been intensely altered to carbonate. A discontinuous and contorted 1-4 cm thick bed of magnetite iron formation is present near the eastern shore of Maiden Island and has been located 25 to 100 m west of the zone of shearing. It is interpreted to be a stratigraphic marker and would indicate that the East Break is essentially parallel to volcanic stratigraphy.

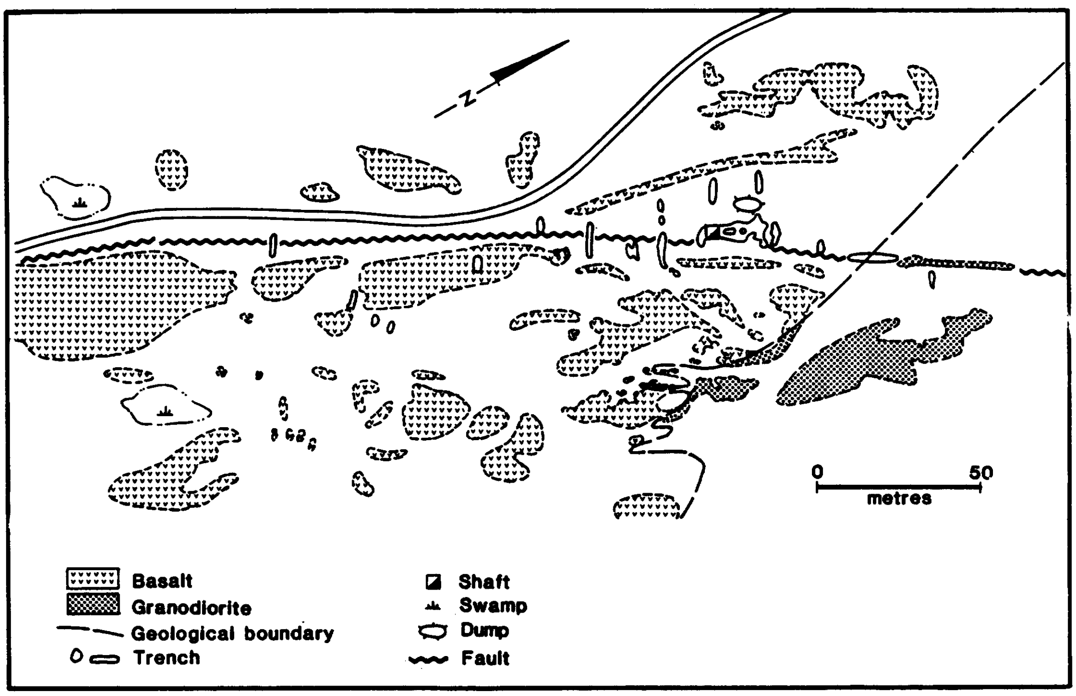

Figure 13. *Geology of the Earngey-Lindburg Occurrence.*

Quartz is most abundant in the sheared basalt within about 100 m of the granodiorite contact. Narrow zones of more intense foliation, which strike between 020° and 030° and dip steeply west, alternate with more massive basalt and appear to lack continuity. The quartz, which occurs as veins, veinlets, lenses and irregular masses, similarly lacks significant strike continuity. Pyrite is locally abundant in the quartz and, to a lesser extent, in the sheared basalt. Pyrrhotite and traces of chalcopyrite and sphalerite are also present. Holbrooke (1943) described the vein as "well mineralized and pans gold from many places. However, the lenticular character of the vein is very definite and the possibilities for a sizeable ore body are not good." By means of a cross-section through the shaft and across the 20 m wide valley, Silver (1934) indicated an erosion-resistant, 5 m wide, footwall zone with both high and low gold assays, an erosion-resistant central zone of similar width but no gold, and a more deeply weathered hanging-wall zone with a very low gold content. He also noted that "mineralization decreases as distance from the granite is gained." Bow (1899) recorded the presence of a felsite dike but this is not evident at present; he stated that "the best part of the vein is where it is associated with the felsite."

ANALYSIS OF MINERALIZATION

Thomson (1946) reported that a chip sample taken across 9 in. of quartz near the shaft assayed 2.68 oz Au/ton and 2.25 oz Ag/ton. Further to the south, 3 samples assayed 0.05, 0.01 and 0.01 oz Au/ton. Silver (1934) recorded an assay near the shaft of 1.42 oz Au/ton across 7.5 ft., including 3 ft. of 3.37 oz Au/ton; and, 40 ft. north, an assay of 0.37 oz Au/ton across 9.7 ft., including 2.5 ft. of 1.18 oz Au/ton. Grab samples taken more recently (Resident Geologist's Files, Kenora) include one of foliated and silicified basalt which assayed 0.25 oz Au/ton; several similar samples and one of mineralized quartz had very low gold contents.

DEVELOPMENT HISTORY

Circa 1891: Operations on location 225-P, owned by A. Egan, centered on the Climax mine, about 600 m to the southeast.

1898: Prospecting by Climax Gold Mining Company of Ontario Limited resulted in the discovery of a vein near the northwestern corner of location 225-P.

1930: Messrs. Thrasher and Earngey acquired the ground through restaking of parts of 225-P and P-213.

1934: Trenching, mapping and sampling were carried out by H.E. Silver, reportedly working for Robinson Gold Mines of South Africa.

1935 or 1936: Roeanor Gold Mines Ltd. drilled 3 holes on the "East Break" and 2 holes elsewhere on the property.

1943: Mapping and sampling were done by Sylvanite Gold Mines Ltd.

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30. ECHO BAY ADIT OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Fissile intermediate tuffs, locally interbanded with mafic tuffs

CLASSIFICATION
2c, a, p

LOCATION
Echo Bay, Lake of the Woods:

NTS	52E/10NW	
Lat.	49°39'18"	(49.6550°)
Long.	94°51'57"	(94.9594°)

ACCESS
An adit was driven 22 m north on location P324, on the northern shore of Echo Bay, near its outlet (Figure 14). The adit is about 6 km southwest of McCallum Point on Clearwater Bay, and is accessible by boat from Kenora or Clearwater Bay.

SIZE AND GRADE
Assays of channel samples taken along the length of the adit indicated that the highest grade section contained 0.17 oz Au/ton across 1.8 m. A channel sample taken from a trench vertically above the adit averaged about 0.11 oz Au/ton across about 4 m, and in a trench 35 m to the east a 4.6 m section averaged about 0.055 oz Au/ton (Tibbo 1980).

DESCRIPTION
Geology: Systematic mapping of the eastern part of Echo Bay has not been done. Greer (1930) depicted the rocks as dominantly greenstones, with intrusive felsic porphyries in the Rush Bay area to the north (Figure 14). In the area to the west, Davies (1965) identified a major dislocation zone coincident with the southern shore of Crowduck Lake and Rush Bay, which is known as the Crowduck Lake - Witch Bay Shear Zone. The Echo Bay Adit Occurrence lies in this zone.

Zones of weakly or moderately deformed, mafic to felsic volcanics and minor sediments, alternating with zones of intense deformation, characterize the fault zone. Gabbro, probably dikes but possibly including coarser flows or synvolcanic sills, is common in the fault zone, and is more resistant to deformation and erosion. The volcanic rocks are considered to be equivalent to the upper volcanic sequence mapped at Shoal Lake (Davies 1969). Many of the rocks in the vicinity of the adit have a high carbonate content and a very high soda to potash ratio; this is interpreted to be the result of metasomatism within the fault zone.

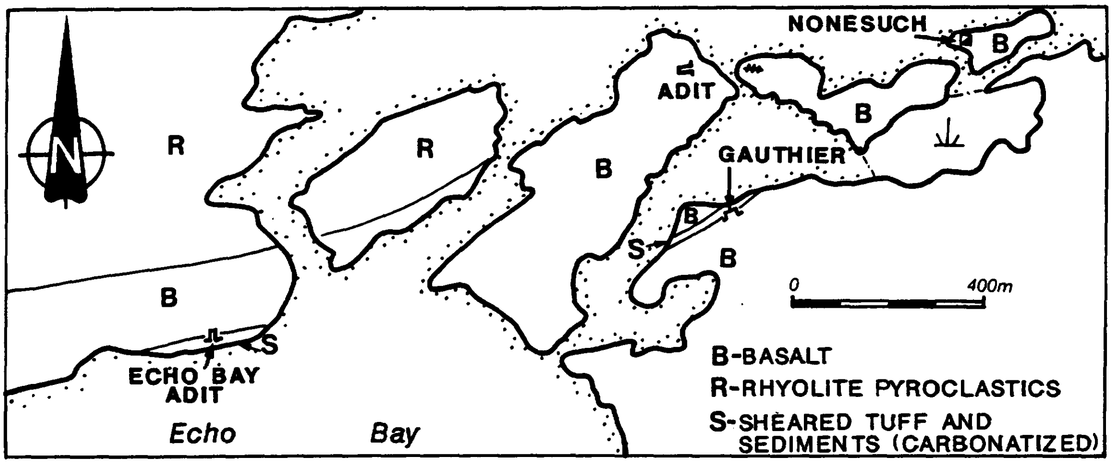

Figure 14. *Geology of the Echo Bay Adit, Gauthier and Nonesuch Occurrences. Modified from Greer (1930).*

Mineralization: The adit crosses highly schistose, intermediate pyroclastic rocks which strike between 065° and 080° and dip steeply north. Fine pyrite is disseminated in the rock and carbonate is pervasive. Thin, discontinuous quartz veins and veinlets are present locally. Beard and Rivett (1981) noted the presence of gold in two, 15 cm wide, glassy quartz veins which contained fine pyrite, carbonate and galena. Gauthier (reported by Thomson 1947) indicated the presence of considerable sphalerite in the adit.

The strike of the gold-bearing schists appears to be about 060°, possibly parallel to original lithology but at a small angle to foliation. A soil and humus geochemical survey by Tibbo (1982) outlined a broad band of anomalous gold values extending northeast approximately 460 m from the old workings.

ANALYSIS OF MINERALIZATION
Beard and Rivett (1981) state: "A single grab sample representing a width of 4 inches taken by the authors from the south vein gave assays of 0.19 ounces of gold per ton and trace silver. Two other samples from the north vein gave 0.01 and 0.04 ounce of gold per ton with trace silver. Analyses were performed by Geoscience Laboratories, Ontario Geological Survey, Toronto."

A sample of unmineralized schist taken during the present study contained <2 ppb gold.

DEVELOPMENT HISTORY

Circa 1895: Messrs. Kendall and Whiting acquired location P324, did some trenching and drove a 1.9 by 1.3 m adit north for 22 m. The adit is about 2 m above lake level.

1946: R. Thomson examined the area and noted that some drilling had been carried out. No evidence of any holes was found by Tibbo (1980).

1974: Hudson Bay Oil and Gas Ltd. flew airborne electromagnetic surveys in the surrounding areas.

1979 - 1983: Staked for Tasu Resources Ltd. Humus and channel sampling were done and geological, magnetometer, and VLF surveys were completed. Three holes, totalling 315 m, were drilled in June 1983; no assay results were released.

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31. ECHOLA OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Felsic schist

CLASSIFICATION
2c

LOCATION
Gauthier Bay, Lake of the Woods:

NTS	52E/10NW	
Lat.	49°38′48"	(49.6468°)
Long.	94°50′46"	(94.8461°)

ACCESS
The shaft is on mining location CR72, about 60 m south of the shore of Gauthier Bay and 8 km south-southwest of the highway access point to Clearwater Bay. The area may be reached by boat from Clearwater Bay or Kenora.

DESCRIPTION
Geology: No recent systematic mapping of the Gauthier Bay area has been carried out. The Bay is within the broad Crowduck Lake - Witch Bay Fault Zone, and the interlayered mafic, intermediate and felsic volcanics are weakly to intensely foliated. The northern contact of the Canoe Lake quartz diorite stock occurs 400 m south of the shaft.

Mineralization: The 2.7 by 2.1 m inclined shaft, reported to be 30 m deep (Beard and Garratt 1976, p. 15), was sunk on felsic schists which strike 095° and dip 75°N. The rusty weathering schists contain carbonate, but only traces of pyrite, and no vein quartz was evident on the dump.

SELECTED REFERENCE
Beard and Garrett, 1976, ODM, MDC 16, p. 15

32. EL DIVER OCCURRENCE

Also called the El Divere Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Contact zone of strongly foliated granodiorite and mafic metavolcanic rocks

CLASSIFICATION
4c

LOCATION

Haycock Township:	NTS	52E/16SW	
	Lat.	49°48'18"	(49.8050°)
	Long.	94°20'31"	(94.3419°)

ACCESS
The occurrence is on old mining location P.351, about 800 m south of the southwestern tip of Black Sturgeon Lake, or 3.4 km due north of the northern end of Breakneck Lake. The area may be reached via the Jones Road, north from Highway 604.

DESCRIPTION
Geology: Northeast-trending, mafic to intermediate flows and tuffs at the occurrence are in contact with granodiorite of the Island Lake intrusion (Figure 15). The contact appears conformable with the volcanic stratigraphy. The El Diver workings are underlain by the intrusion, which exhibits gneissic characteristics in the contact area, and contains numerous, variably assimilated blocks of medium- to fine-grained mafic rock. The gneissosity trends 035° and dips 80°NW.

The medium-grained granodiorite is biotite-rich, and feldspar has been weakly replaced by sericite, epidote, clinozoisite and minor carbonate. Biotite replaced sericite within some feldspar crystals. The rock records little strain: twinning is slightly bent in some feldspars, and some quartz exhibits undulose extinction; none of the biotite is bent. A chemical analysis of the granodiorite, done for this study, returned <2 ppb gold.

The contact between the granodiorite and the volcanic rocks lies less than 100 m northwest of the shaft. Near the contact, basalt and andesite are highly fractured, and are intruded by numerous felsic and granodiorite dikes. Thin quartz veins and stringers are also common.

Mineralization: An east-striking, 80°N-dipping, fine-grained, grey, sugary-textured, 50 cm wide mylonite zone is exposed both in the shaft and the adjoining trenches. North of the shaft, the margins of the zone can be seen to sharply cut the regional foliation. The zone is mineralized with up to 2% disseminated pyrite. A pyritiferous quartz vein follows the zone margin on the hanging wall side. Blue (1893) was informed that the quartz in the vein pinches and widens irregularly from 15 cm to 1.2 m. No mention was made of the mylonite, and possibly it was included in that width.

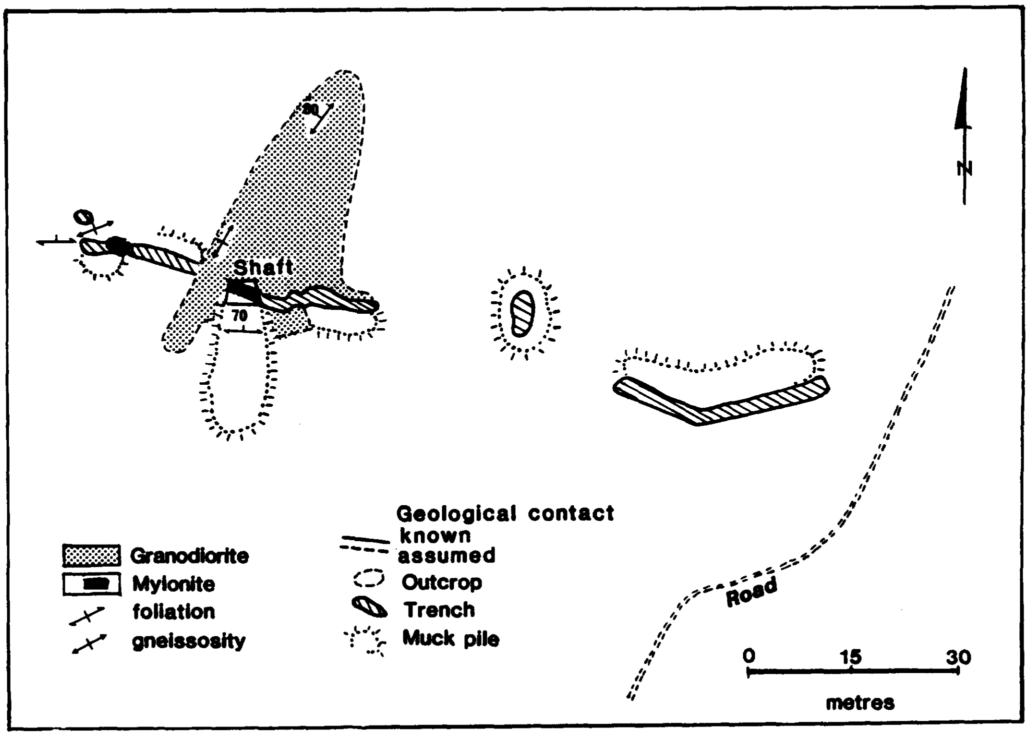


Figure 15. *Geology of the El Diver Occurrence.*

The mylonite consists of 95% very fine-grained (< 0.4 mm) quartz and feldspar, estimated to occur in the ratio albite:quartz:microcline = 45:35:15. Quartz displays undulose extinction and both feldspar and quartz in places have recrystallized to form polygonal grain boundaries. Both muscovite and biotite are oriented along slip planes. In places feldspar cores are partially replaced by dusty sericite and minor sphene. Fine, highly pleochroic, green and red tourmaline is locally present in the micas and quartz. Coarse pyrite is commonly broken and fine ilmenite is found locally. Texturally the mylonite is characterized by small tight folds and lenses of quartz. In places pyrite has overgrown the fold noses. Thin quartz stringers cut slightly oblique to the fabric.

ANALYSIS OF MINERALIZATION

A sample of the quartz vein taken in this study contained 200 ppb Au, while a sample of the mylonite assayed 3530 and 2050 ppb Au.

DEVELOPMENT HISTORY

1891 - 1893: The property, owned by J. Webster and E. Gaylord, was named "El-Diver", apparently after the duck "hell-diver". Two veins were discovered. A 2.4 m test pit was sunk on vein number one, where assays were reported averaging $11.89 per ton ($20 gold) (Webster 1935). On vein number two, a 31 m deep shaft was sunk, and 2 m of crosscutting was done on the 26 m level. A 5 ton/day Crawford mill was erected, but after a few days of operation in the spring of 1893, it burned down. The owners claimed some gold was stolen, and mining operations were never resumed.

1935: P. Webster attempted to interest the Mining Corp. of Canada in the property.

1957: Leased by Cougar Mines Development Corporation.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 15
Blue, 1893, OBM, Vol. 3, pt. 1, p. 29, 30
Coleman, 1894, OBM, Vol. 4, p. 69
1898, OBM, Vol. 7, pt. 2, p. 110
Cougar Mine Development Corp., 1957, Prospectus, Assessment Files, Kenora
Hoffmann, 1896, GSC, Report of the Section of Chemistry and Mineralogy, p. 1285
King, 1983, OGS, Map P.2618
The Port Author Daily Sentinel and North Shore Miner, Friday, June 3, 1892
Slaught, 1892, OBM, Vol. 2, p. 234, 235

33. ELECTRO-GOLD OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
1d

LOCATION
Jaffray Township: S1/2, SW1/4, Lot 13, Concession VI
NTS 52E/16SW
Lat. 49°46′48″ (49.7800°)
Long. 94°22′55″ (94.3819°)

ACCESS
The old workings are about 5 km east of the eastern limit of the Town of Kenora, and about 900 m southwest of the Scramble Mine shaft. A number of powerlines cross the area, one of which lies close to the Electro Occurrence.

DESCRIPTION
Geology: Fine- to medium-grained basalts underlie most of the area and trend northeast, parallel to the Airport Anticline, the axial trace of which lies east of the workings. The basalts, which are both massive and pillowed, are characterized by an amphibolite grade metamorphic mineral assemblage. A number of coarser grained varieties may represent either subvolcanic sills or coarser flows. Felsic dikes, which crop out at the Scramble Mine and are typically irregular, continue to the southwest in roughly the same stratigraphic position. Both pillows and felsic dikes display rotation into the axial planar direction.

Mineralization: Several outcrops of basalt, with amphiboles 2 to 3 mm in diameter, occur near the edge of a low area. At the northwestern edge of one of these outcrops, a rusty, foliated, felsic dike has been trenched, exposing a width of 3 m (Figure 16). Fine pyrite is present in much of the dike. A shaft has been sunk 8 m to the southwest, in the medium-grained basalt; the basalt contains fine pyrite and pyrrhotite, both disseminated and in fractures, and it is probable that the shaft was designed to intersect the felsic dike at depth. Bow (1900) reported that the Electro-Gold was believed to be an extension of the main Scramble orebody.

DEVELOPMENT HISTORY
Circa 1896: The Electro-Gold Mining and Milling Co., Ltd. owned 200 acres of land adjoining the Scramble Mine. No work was reported.

1899: Rainy Lake (or Rainy River) Gold Mining Co. Ltd. purchased the property and sank a 15.2 m shaft.

1984: Examined by Boise Cascade Ltd., which completed various geophysical surveys.

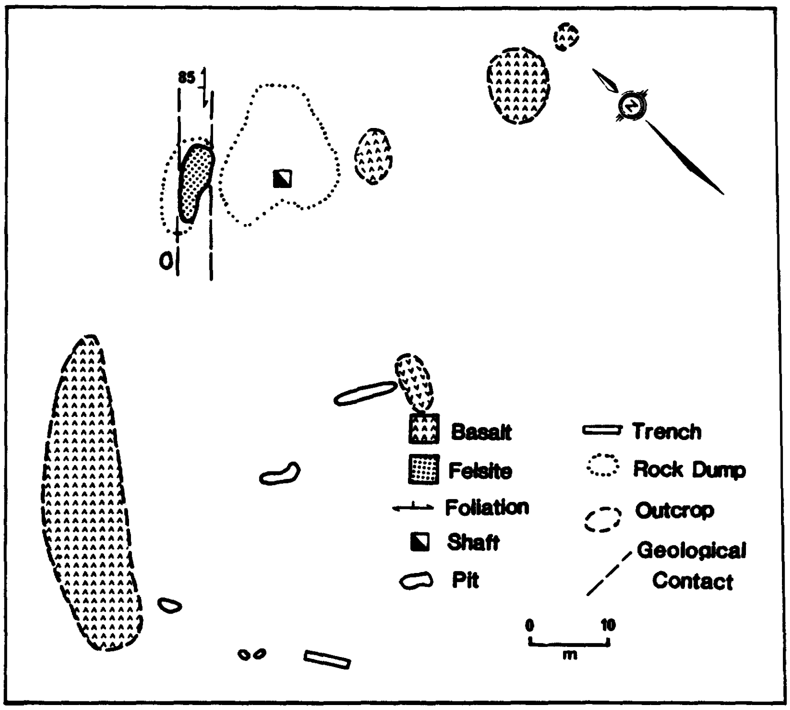


Figure 16. *Geology of the Electro-Gold Occurrence.*

SELECTED REFERENCES

Bow, 1900, OBM, Vol. 9, p. 37
The Canadian Mining Review, 1899, p. 324
The Colonist, Nov. 1896, p. 131
King, 1983, OGS, Map P.2618

34. ELECTRUM LAKE (ARSENIC ZONE) OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Felsic dikes and tuff, mylonite, conglomerate

CLASSIFICATION
2a, 3d?

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42'34"	(49.7094°)
	Long.	95°08'56"	(95.1489°)

ACCESS
The occurrence is 2.7 km south of the junction of the Shoal Lake Road and Highway 17. A trail leads 400 m east to the occurrence from the Shoal Lake Road at a point 150 m north of the junction with the High Lake Road.

SIZE AND GRADE
Davies (1965, p.39) stated: "If the intersections are directly connected, which they almost certainly are not, a simple average would be 0.31 ounces of gold per ton over a width of 6.4 feet (1.95 m) for a length of 350 feet (106.6 m)." However, it was noted that, by elimination of the western-most drill hole intersection, "the western limit is better defined and the grade is increased to 0.36 ounces of gold per ton over a width of 5.8 feet (1.76 m) for a length of about 320 feet (97.5 m). The deepest intersection is less than 130 vertical feet (39.6 m)."

DESCRIPTION
Geology: The occurrence is at the contact between porphyry-invaded mafic flows and sediments of the overlying Crowduck Lake Group, which are predominantly conglomerate, but also include finer grained lithologies. Intrusion of the porphyry was in part coincident with uplift and erosion, and some porphyry breached the surface, with the result that pyroclastics are locally interbedded with the sediments. Subsequent folding about east-trending axes was accompanied by deformation with a major east-trending component; this is evident in the well-developed foliation in many of the rocks, in shear folding and in strong linear features which are interpreted to be the traces of fault zones.

Mineralization: The Arsenic Zone (Figure 17) lies near the northern edge of a large outcrop. The principal rock units are, from north to south: strongly laminated, fine-grained clastics; felsic porphyry; and conglomerate with a thin basal bed of wacke. Davies (1965, p. 39) considered the laminated rocks to be greywacke, the porphyry to be intrusive into the greywacke, and the conglomerate to unconformably overlie the porphyry. It was recognized that this was not satisfactory, because of the apparent gradation between the greywacke and conglomerate. More recently, Davies *et al.* (1985) have suggested that both intrusive and extrusive phases of the porphyry are present. The dominant porphyry is considered to be extrusive and to be cut by dikes of compositionally similar intrusive porphyry, although it is not certain that the dikes pre-date deposition of the unconformably overlying conglomerate. The laminated rocks may be mylonite.

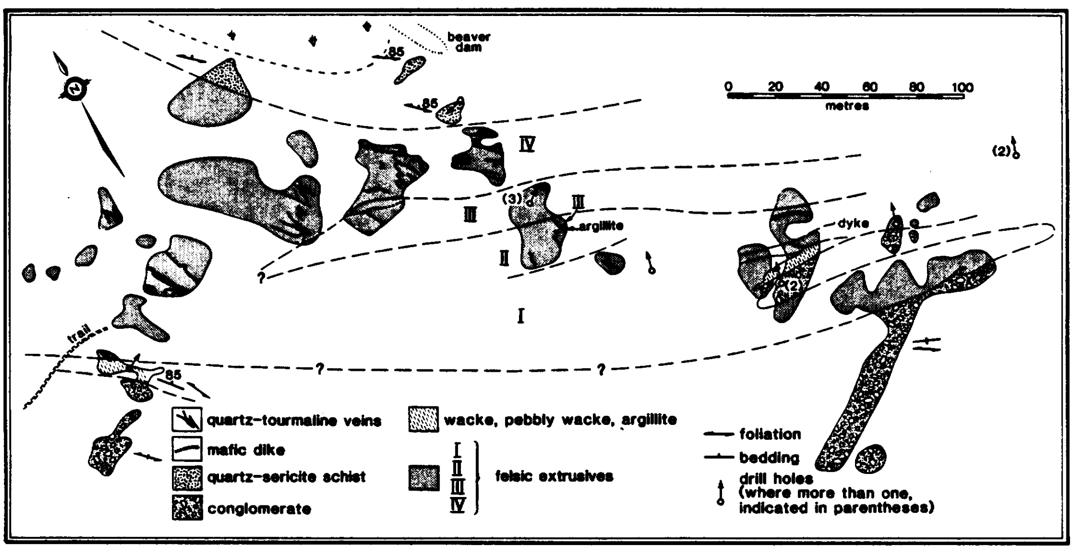


Figure 17. *Geology of the Electrum Lake (Arsenic Zone) Occurrence.*

Gold-bearing quartz veins occupy fractures which post-date the porphyries and sediments. Black tourmaline is abundant in places and pyrite, arsenopyrite and minor pyrrhotite are also associated with the gold. The fractures are complex and irregular, and are largely restricted to the extrusive porphyry; while there is no continuity to individual veins there may be a single zone of brittle fracture which acted as a zone of permeability for gold-bearing solutions.

ANALYSIS OF MINERALIZATION

Drilling by Pelican Mines Ltd. in 1977 failed to demonstrate continuity of mineralization, the best intersection being 0.33 oz Au/ton over 1.7 m. Two channel samples taken by Busch (1983) averaged 22.1 ppm Au (0.64 oz Au/ton). Samples of tourmaline-bearing quartz vein, of arsenopyrite-bearing felsic schist and of mylonite, taken during the present survey, contained 380 ppb, 110 ppb and 2 ppb Au respectively.

DEVELOPMENT HISTORY

1960 - 1961: Stripping and trenching by Electrum Lake Gold Mines Ltd. Twelve short holes totalling 529 m were drilled over a 198 m strike length.

1961: Hoey Grubstake (1959) Syndicate, including McIntyre Porcupine Mines Ltd., Conwest Exploration Co. Ltd., and Northern Canada Mines, Ltd., drilled 3 holes totalling 328 m on the adjoining property to the east.

1965: One 128 m hole drilled by persons unknown.

1977: Three holes totalling 192 m drilled by Selco Mining Corp.

1977: Electromagnetic survey, by Pelican Mines Ltd. followed by 9 diamond-drill holes, totalling 714.1 m, by Pelican Mines Ltd.

1983: Claim K 590718 was staked by D. Busch. Two channel samples were taken across the mineralized zone and sent for metallurgical tests. From a 10 kg sample, grading 22.1 g/t (0.645 oz. Au/ton), recovery was 85.1%.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 15
Busch, 1983, Electrum Gold Zone, Metallurgical Tests, Assessment Files, Toronto
Canadian Nickel Co. Ltd., 1983, Airborne Electromagnetic Survey, Assessment Files, Toronto
Colvine, 1979, OGS, MP 90, p. 239-241
Davies, 1965, ODM, GR 41
Davies *et al.*, 1985, ILSG Fieldtrip Guidebook, p. 31-35
Ferguson *et al.*, 1971, OGS, MRC 13, p. 142
McCannell, 1977a, Pelican Mines Ltd., Electromagnetic Survey, Assessment Files, Toronto
1977b, Pelican Mines Ltd., Geophysical Survey, Assessment Files, Toronto
1977c, Pelican Mines Ltd., Drill Logs, Assessment Files, Toronto
McIntyre Porcupine, 1961, Drill Logs, Assessment Files, Toronto
O'Flaherty, 1953, Barymin Co. Ltd., Assessment Files, Toronto
Pelican Mines Ltd., 1977a, Prospectus, Assessment Files, Toronto
1977b, Amendment to Prospectus, Assessment Files, Toronto
1978, Second Amendment to Prospectus, Assessment Files, Toronto

35. ELECTRUM (A - D ZONES) PROSPECT

Also called the Contact Zone

COMMODITY
Gold, copper

ROCK ASSOCIATION
Porphyry granodiorite and related dikes which have intruded mafic metavolcanic flows

CLASSIFICATION
1s, b, 4a, c

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42′54"	(49.7150°)
	Long.	95°06′14"	(95.1039°)

ACCESS
The workings are located on claims K23942 and K23943, about 500 m southwest of the western shore of Electrum Lake, and about 1.0 km north of the eastern end of High Lake. The area may be reached via a trail leading north from High Lake.

SIZE AND GRADE
The following data are modified from Davies (1965):

Zone	Length (metres)	Width (metres)	Oz Au/ ton	% Cu	Depth (metres)
A	30	1.5	0.34	0.14	45
B	45	0.9	0.27	1.0	61
C	45	1.5	0.32	0.94	30
D	only one hole drilled; very low assays				

Work by Sherritt Gordon Mines Ltd. (1981) on the C zone delineated approximately 15,000 tons grading 0.24 oz Au/ton (Forsgren 1982).

DESCRIPTION
Geology: Archean mafic metavolcanic flows have been intruded by porphyritic granodiorite and associated quartz and feldspar porphyry dikes. Lower to upper amphibolite facies metamorphism prevailed during intrusion, but lower grade mineral assemblages occur in fault zones.

Davies (1965, p. 40) stated, "Basic lavas, probably all basaltic, have been recrystalized to massive hornblende-rich hornfelses. These in places are veined by carbonate, quartz, and epidote, and in places are sheared. Biotite is abundant in the more schistose phases. Evidence of original pillows can be seen." Forsgren (1982) observed that the basalts contain from 40 to 80 percent plagioclase and that the more feldspathic "show porphyroblasts of plagioclase and/or quartz and may be impossible to distinguish from varieties of the intrusive High Lake stock". He also noted narrow zones of chemical sediment within the basalt. The High Lake porphyritic granodiorite stock crops out in the western portion of the property. The stock has been interpreted as two phase (Davies 1965, Colvine 1979). Numerous east-trending, quartz and feldspar porphyry dikes extend east from the intrusion. Large blocks of mafic metavolcanic rocks are enclosed by the dikes and can be considered as inclusions in the porphyry. Such is the case at the Electrum A, B, C, and D zones, where the mineralized zones are proximal to the basalt-porphyry contacts. Forsgren (1982) suggested that the High Lake stock was intruded at a very high level and as a relatively cool mass. He stated, "Field evidence collected on the Purdex claim group, approximately 3/4 of a mile (1.2 km) east of the Electrum, shows that the intrusive body breached the surface in at least one area."

Mineralization: Four mineralized zones have been identified on claims K23943 and K23942. These were known as the "A", "B", "C" and "D" zones.

The "A" zone lies in the south central portion of claim K23942. Three magnetic highs lie along or adjacent to an irregular porphyry-basalt contact. Twelve of thirteen holes drilled by Electrum Lake Gold Mines Ltd. were designed to test the north anomaly; six returned intersections of 0.11 oz. Au/ton over 1.5 m, or better. All intersections were hosted by pyrite- and magnetite-bearing basalt. Carbonate, quartz, pyrrhotite, and chalcopyrite are also present in some intersections. Davies (1965, p. 41) stated, "It may be possible to link the mineralized intersections in Drillholes E.1, E.7, E.28 and E.29. Such a mineralized zone would have a depth of at least 150 feet (45 m), an average width of over 5 feet (1.5 m), would average about 0.34 ounces of gold per ton and 0.14 percent copper, but would have a maximum length of less than 100 feet (30 m), if it extends parallel to the regional schistosity. It is possible the mineralization parallels the contact (and the magnetic anomalies), in which case only the west end has been delimited."

The "B" zone is located in the southwestern corner of claim K23942, and extends into the southeastern corner of claim K23943. Twenty-four holes were drilled by Electrum Lake Gold Mines Ltd. and San Antonio Gold Mines Ltd.; half of these intersected at least one zone containing gold in excess of 0.1 oz. Au/ton over 5 feet (1.5 m). Davies (1965, p. 41) stated, "Gold is present in sheared basalt associated with pyrite and chalcopyrite, and in a few places with pyrrhotite and magnetite. In the porphyry gold occurs with pyrite, and quartz, calcite, and chalcopyrite are common associates. Visible gold is found in both basalt and porphyry."

Forsgren (1982) took numerous chip samples from 5 trenches at the "B" zone; most returned nil to trace Au, and the best returned 1.4 oz

Au/ton over 1.2 m. All high values were restricted to zones of shearing, and are adjacent or confined to sericite schist. Davies (1965, p. 41) stated, "If intersections in Drillholes E.17, E.18, and SA.10 are connected to intersections in Drillholes E.12, E.13, E.22 and SA.14, a mineralized zone having a length of 150 feet (45 m), and depth of 200 feet (61 m), and a width of about 3 feet (0.9 m) can be envisaged, having an average grade of about 0.27 ounces of gold per ton and about 1 percent copper. Such a zone would be delimited both to the east and west. If, as is probable, the mineralized zones occur in an *en chelon* pattern, the mineralized area may possibly be extended along strike with further exploration."

The "C" zone is located in the southeast corner of claim K23943. Eleven holes were drilled by Electrum Lake Gold Mines Ltd. and San Antonio Gold Mines Ltd., seven of which intersected gold values in excess of 0.1 oz. Au/ton. The mineralization appears to be restricted to sheared metabasalt. A magnetic high corresponds to a "nose" of volcanic rock. Davies (1965, p. 41) stated, "The "nose" of volcanic rocks, surrounded on three sides by granite at the west end of this showing, is represented topographically by a ridge about 40 feet wide and 15 feet high. A trench has been blasted across the entire width of this ridge, exposing steeply north-dipping sheared and massive basalt." The basalt is well fractured, with alteration on some fractures. In general, the content of pyrite and chalcopyrite is proportional to the amount of fracturing; the sulphides, with carbonate and minor quartz, occur as massive streaks along shears, as films along fractures, and as disseminations in massive basalt. Gold is found with the sulphides. Porphyry exposed north of the zone encloses a mylonitic phase, but contains very little sulphides.

Six holes, drilled in 1981 by Sherritt Gordon Mines Ltd., delineated 3 distinct gold-bearing horizons, striking 060° and dipping 40-50°N. Relationships between intersections are complex. Forsgren (1982) indicated that the horizons bifurcate. The zones vary in width from 0.9 to 3.3 m, have been followed over a strike length of 42 m, and extend to a maximum depth of 42 m.

Forsgren (1982) concluded, "The total tonnage of the three blocked off zones is 15,675 tons of material at a grade of 0.24 oz. Au/ton. Potential for extending these zones to the west is limited by the termination of the volcanic block against the Q.F.P. (quartz-feldspar porphyry)."

Forsgren (1982) postulated that, "the gold mineralization was contemporaneous with primary deposition of the volcanic pile or periods of quiescence during the accumulation of the pile. The auriferous zones appear to correspond to horizons of chemical metasediments (exhalites) precipitated during interludes between volcanic activity. Evidence for this includes: auriferous exhalite-type, interpillow material observed on surface; drill intersected exhalite horizons of cherty quartz, Fe-carbonate (magnesium silicate?), and magnetite (primarily precipitated?), with or without thin stringers of sulfides; thin stringers of sulfides similar to those attributed to the lower portions of volcanogenic massive sulfide deposits, as observed on surface in the south end of the west trench; and finally the apparent association of chalcopyrite with the auriferous zones as evidenced in the drill logs."

The "D" zone is located in the central portion of claim K23943. The geological setting of the zone is quite similar to the others; magnetic highs are located within basalt proximal to basalt-porphyry contacts. No surface examination has been made of the zone, and only one hole was drilled by Electrum Gold Mines Ltd. The hole intersected 15 m of altered basalt, but assays were quite low. Davies (1965, p. 42) stated, "There is no reason why the D zone should be less favourable economically than the C zone, except that a surface showing has not been found. The rock is not so well exposed as it is to the south. The long narrow anomaly within the basalt does not appear to be a contact effect; the coarser grained nature of the "basalt" may indicate the presence of a gabbro sill. Pyrite, pyrrhotite, and minor chalcopyrite have been observed in the basalt, and the zone warrants further examination."

In all 4 zones, there is an apparent spatial relationship between the magnetic highs, porphyry-basalt contacts and gold mineralization. Mineralization appears to be associated with quartz veins, shear zones, and sulphides. Whether the mineralization is exhalative, as postulated by Forsgren (1982), or is hydrothermally controlled, is unknown. The gold seems to be located in zones of increased permeability, indicating epigenetic fluid migration.

DEVELOPMENT HISTORY

1953: Optioned by C. Alcock of Kenora to San Antonio Gold Mines Ltd. San Antonio completed geological surveys, and drilled ten holes, totalling 667.8 m, on the "B" and "C" zones.

1956: Examined by Green Bay Mining and Exploration.

1958: Five holes, totalling 179 m, were drilled in "C" zone by C. Alcock.

1960 - 1961: Optioned to Electrum Lake Gold Mines Ltd. Trenching, stripping, and geological and magnetometer surveys were done. One hole was drilled in "D" zone; 13, in "A" zone; 18, in "B" zone and 7, in "C" zone.

1965 - 1966: Magnetometer and IP surveys by Steep Rock Iron Mines Ltd.

1981 - 1982: Optioned to Sherritt Gordon Mines Ltd. Geological mapping, trenching, stripping, and sampling were followed by 6 diamond drill holes.

SELECTED REFERENCES

Alcock *et al.*, 1958, Diamond-drill Hole Logs, Assessment Files, Toronto
Beard and Garratt, 1976, OGS, MDC 16, p. 15
Colvine, 1979, OGS, MP 90, p. 239-241
Davies, 1965, ODM, GR 41
Electrum Lake Gold, 1961, Assessment File, Kenora
Ferguson *et al.*, 1971, OGS, MRC 13, p. 142
Forsgren, 1982, Report of Activities, Electrum Lake Group, Assessment Files, Kenora
San Antonio Gold Mines Ltd., 1953, Drill Hole Sections, High Lake Option, Assessment Files, Kenora
SMDR File, Toronto
Steep Rock Iron Mines Ltd., 1966, Geophysical Surveys, Assessment Files, Toronto

36. ELECTRUM (P ZONE) PROSPECT

Also called the Electrum Fault Zone, or the Porphyry Zone

COMMODITY
Gold

ROCK ASSOCIATION
Sheared quartz-feldspar porphyry

CLASSIFICATION
4c

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42'53"	(49.7147°)
	Long.	95°06'36"	(95.1100°)

ACCESS
The prospect is located on claim K20695 about 1 km southwest of the western end of Electrum Lake or about 1.9 km south of Baubee Lake.

SIZE AND GRADE
Davies (1965, p. 42) stated: "If the intersections are part of a single zone, it would be 100 feet (30.5 m) long, 100 feet (30.5 m) deep, average 11 feet (3.4 m) wide and would contain about 0.40 ounces of gold per ton (assays include visible gold)."

DESCRIPTION
Geology: The area is underlain by the High Lake porphyritic granodiorite stock, which intrudes Archean mafic metavolcanic rocks. The stock has been interpreted to be two intrusive phases (Davies 1965, Colvine 1979).

The "P" zone is close to a prominent linear feature, which trends about 065°. Davies (1965, p. 32) states, "Visible gold found in parallel shears along the north side of this lineation suggested that the linear feature may be a fault zone, which acted as a favourable structure for mineralizing solutions."

Mineralization: Visible gold is associated with sheared quartz-feldspar porphyry. There are no strong shears, but more fractures. Iron oxide stain is present throughout most of the rock, giving it a red to reddish-brown colour. Sulphides (pyrite and some chalcopyrite) are present on fracture surfaces, but in more strongly hematized portions sulphides are disseminated. Where the porphyry is stained, pyrite is less abundant, and large feldspar phenocrysts are typically white, or partially pink. In stained porphyry, the large feldspar crystals are pink. Gold is clearly associated with the more highly altered porphyry. Thin quartz veins, in places containing tourmaline, are also more abundant in the highly altered rock (Davies 1965).

San Antonio Gold Mines Ltd. drilled 5 holes to examine the linear feature. Only 1 hole intersected obvious fault features. Mineralization consisted of pyrite, pyrrhotite, and chalcopyrite, both in streaks and disseminated throughout the rock. In the definite fault zone, porphyry is stained red, calcite and sericite are common, and mineralization (including molybdenite) occurs partly in vuggy fractures (Davies 1965).

DEVELOPMENT HISTORY

1953: Examined by San Antonio Gold Mines Ltd. Five holes were drilled in the fault zone.

1960: Fourteen holes drilled in the "P" zone by Electrum Lake Gold Mines Ltd.

1965 - 1966: Magnetometer and IP surveys by Steep Rock Iron Mines Ltd.

SELECTED REFERENCES

Beard and Garratt, 1978, OGS, MDC 16, p. 15, 36
Colvine, 1979, OGS, MP 90, p. 240
Davies, 1965, ODM, GR 41
Electrum Lake Gold, 1961, Assessment File, Kenora
Ferguson *et al.*, 1971, OGS, MRC 13, p. 142
San Antonio Gold Mines Ltd., 1953, Drill Hole Sections, High Lake Option, Assessment Files, Kenora
SMDR File, 19 , Electrum (P and W) Zones, Kenora
Steep Rock Iron Mines Ltd., 1966, Geophysical Surveys, Assessment Files, Toronto

37. ELECTRUM (W ZONE) PROSPECT

Also called the Fault Zone, or the West Zone

COMMODITY
Gold

ROCK ASSOCIATION
Sheared quartz-feldspar porphyry

CLASSIFICATION
4c

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42′45"	(49.7125°)
	Long.	95°06′36"	(95.1100°)

ACCESS
The prospect is located on claim K20696, about 1.4 km west-southwest of the western end of Electrum Lake, or about 2.1 km south of Baubee Lake.

SIZE AND GRADE
Four holes may have succeeded in outlining a mineralization zone almost 61 m long, 19.8 m deep and 2.1 m wide, and averaging 0.23 oz. Au/ton (Davies 1965, p. 45).

DESCRIPTION
Geology: The area is underlain by the High Lake stock, which intrudes Archean mafic metavolcanic rocks. The stock has been interpreted to be composed of two intrusive phases (Davies 1965, Colvine 1979).

The "W" zone is close to a prominent linear feature, trending about 065°. Although the rocks at the "W" zone are similar to those of the "P" zone, they may not be as intensely altered.

Mineralization: Visible gold can be found on surface in a number of places, especially associated with pyrite-bearing, quartz-tourmaline veins, and has also been reported in drill core.

San Antonio Gold Mines Ltd. drilled 5 holes to examine the linear feature. Only 1 hole intersected obvious fault features. Mineralization consists of pyrite, pyrrhotite, and chalcopyrite disseminated through the rock. In the definite fault zone, the porphyry is stained red, calcite and sericite are common and mineralization (including molybdenite) occurs partly in vuggy fractures.

DEVELOPMENT HISTORY
1953: Examined by San Antonio Gold Mines Ltd. Five holes were drilled in the fault zone.

1960: Eight holes were drilled in the "W" zone by Electrum Lake Gold Mines Ltd.

1965 - 1966: Magnetometer and IP surveys by Steep Rock Iron Mines Ltd.

SELECTED REFERENCES
Beard and Garratt, 1978, OGS, MDC 16, p. 15, 36
Colvine, 1979, OGS, MP 90, p. 240
Davies, 1965, ODM, GR 41
Electrum Lake Gold, 1961, Assessment Files, Kenora
Ferguson *et al.*, 1971, OGS, MRC 13, p. 142
San Antonio Gold Mines Ltd., 1953, Drill Hole Sections, High Lake Option, Assessment Files, Kenora
SMDR File, 19 , Electrum (P and W) Zones, Kenora
Steep Rock Iron Mines Ltd., 1966, Geophysical Surveys, Assessment Files, Toronto

38. ELPHINSTONE (SHOAL LAKE NARROWS) OCCURRENCE

There is some uncertainty about the name of this occurrence. The Elphinstone property on Shoal Lake Narrows was acquired by Northern Gold Co. from Black Jack Mining Co. in 1985.

COMMODITY
Gold

CLASSIFICATION
1a, 4a

ROCK ASSOCIATION
Volcanics cut by granodiorite

LOCATION

Shoal Lake Narrows:	NTS	52E/10SW	
	Lat.	49°34′41"	(49.5781°)
	Long.	94°51′52"	(94.8645°)

ACCESS
The occurrence is on old mining location P.188, on the northwestern side of Shoal Lake Narrows and about 34 km southwest of Kenora. The area is on the main navigation route from Kenora to Shoal Lake.

DESCRIPTION
Geology: Fine- to medium-grained mafic flows and sills, interlayered with intermediate tuff, strike northeast and have near vertical dips. They are truncated by a small granodiorite plug (Davies 1970).

Mineralization: Coleman (1896) examined a "large mass of quartz at the contact of an eruptive mass of granite with greenish grey schist". He noted that the quartz is "not a fissure vein" and that it dips 80° to the northwest with granodiorite forming the hanging wall. "Black schist, a little pyrite and dolomite" were reported to be present in the quartz.

SELECTED REFERENCES
Coleman, 1896, OBM, Vol. 6, p. 107
Davies, 1970, ODM, Preliminary Map P.594

39. ESCHWEILER OCCURRENCE

Also spelled Esclimider (1901), Eishweiller (1936), and Eschweiller (1976). Also called the Stewart Mine.

COMMODITY
Gold

ROCK ASSOCIATION
Massive to foliated granodiorite

CLASSIFICATION
4c

LOCATION

Jaffray Township:	NTS	52E/16SW	
	Lat.	49°45'58"	(49.7661°)
	Long.	94°19'35"	(94.3264°)

ACCESS
The occurrence is on mining location 283 P, less than 150 m north of Hilly Lake, or about 2.6 km south of the Kenora airport terminal. It is easily reached via Hilly Lake Road.

DESCRIPTION
Geology: The area is underlain by the Island Lake intrusion, and is about 600 m east-southeast of its contact with basalt (Figure 18). Rocks at the mine site are primarily granodiorite, which has a moderately developed vertical foliation, trending 035°. The granodiorite contains numerous small, partially assimilated, mafic volcanic inclusions. Small shear zones, which trend east to northeast, are common The sheared granodiorite consists of very fine-grained quartzofeldspathic material, with abundant biotite associated with epidote and sphene. A little carbonate is present and pyrite is scattered throughout. Some quartz has been remobilized.

An irregular zone, less than 1 m wide, which on the fresh surface is grey-brown, quartz-rich and contains fine disseminated pyrite, minor carbonate, and inclusions of brecciated granodiorite, is interpreted to be a mylonite. The east-trending zone is exposed north of the shafts.

Mineralization: Two shafts were sunk on an east-northeast-trending, vertically-dipping shear zone up to 1 m wide. Narrow veins, lenses and stringers of white quartz are present in the zone, and large pieces of the sugary quartz are present on the muck pile. The quartz contains very little disseminated pyrite, but elongate blebs and stringers of pyrite occur along some of the fracture surfaces.

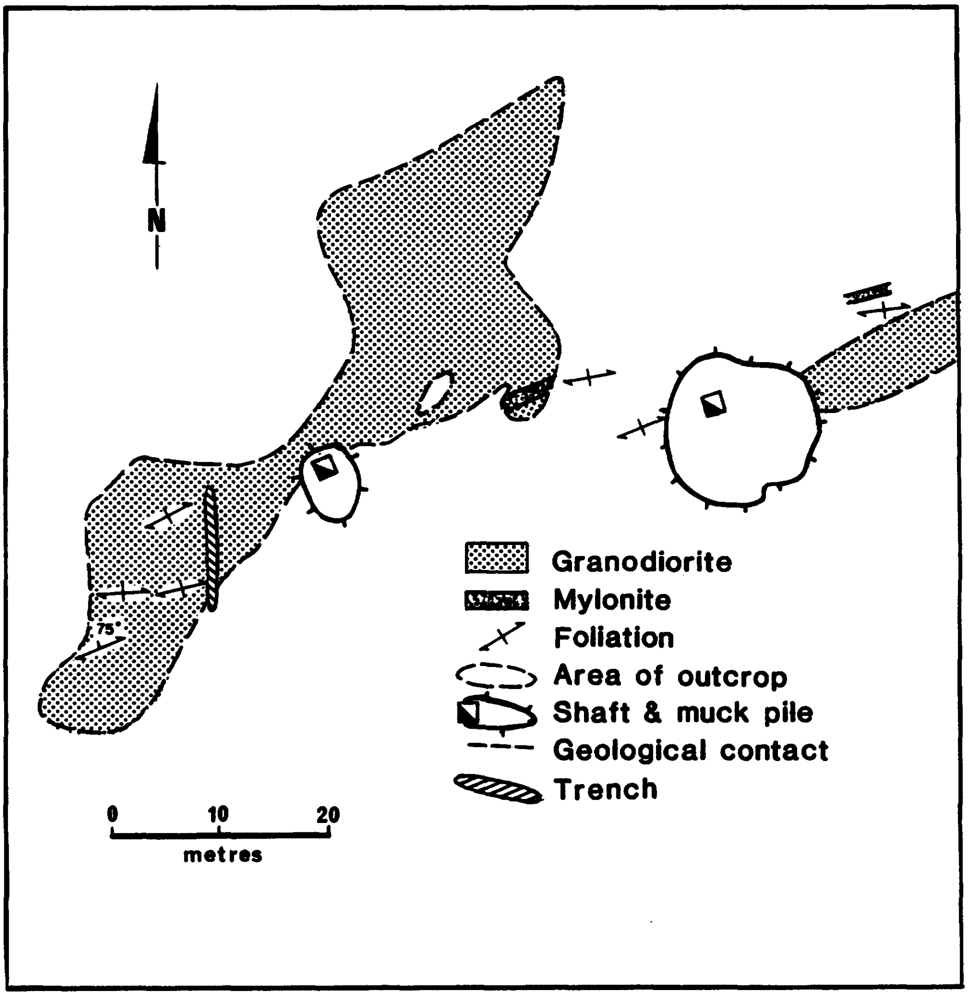


Figure 18. *Geology and development at the Eschweiler Occurrence.*

ANALYSIS OF MINERALIZATION

Samples from the shaft dumps contained from 0.18 to 0.64 oz Au/ton (Morse and Harder 1980).

A sample of the "ultramylonite" assayed 0.35 to 0.42 oz Au/ton (Morse and Harder 1980).

Beard (1976) took four grab samples which assayed 0.02, trace, 0.06 and 0.68 oz Au/ton respectively.

A 1 m, representative chip sample from the west shaft taken during field examination in this study returned 5703 ppb Au, while a grab sample of quartz also taken in this study assayed 167.8 ppm Au, with Cu and Zn contents of 405 and 890 ppm respectively.

DEVELOPMENT HISTORY

1890: The Stewart Mine was purchased by Prof. Eschweiler and Mr. Sanderson of Milwaukee. Work commenced April 7.

1901: Exploration by Mr. Hunter of Milwaukee. Around this time test pits and a 30 m shaft were sunk.

1936: Optioned by Montreal and Winnipeg interests.

Circa 1961: Dewatered and sampled by D. Loudon.

1980 - 1981: Optioned to Sherritt-Gordon Mines Ltd., which excavated several shallow trenches, sampled, and completed geophysical and geological surveys.

SELECTED REFERENCES

Beard, 1976, Resident Geologist's Files, Kenora
Beard and Garratt, 1976, OGS, MDC 16, p. 16
The Canadian Mining Review, 1901, p. 186
Gold Magazine, June, 1936, p. 2
King, 1983, OGS, Map P.2618
Morse and Harder, 1980, Kenora Gold Project, Eschweiler and Hilly Lake Claims, Resident Geologist's Files, Kenora
The Weekly Herald and Algoma Miner (Thunder Bay), April 12, 1890 and July 25, 1891

40. EVENLODE OCCURRENCE

Also known as the Eco Occurrence

COMMODITY
Molybdenum, gold

ROCK ASSOCIATION
Porphyritic granodiorite

CLASSIFICATION
4c, a

LOCATION

High Lake, Ewart Township:	NTS	52E/11NE	
	Lat.	49°42'10"	(49.7028°)
	Long.	95°06'07"	(95.1019°)

ACCESS
The main trench is near the point where High Creek enters the east end of High Lake, about 45 km west of Kenora. It is directly accessible by the High Lake Road, which leads 3 km west from the Shoal Lake Road.

DESCRIPTION
Geology: A thick sequence of massive to pillowed mafic flows is intruded by equigranular tonalite and granodiorite and by porphyritic granodiorite with feldspar phenocrysts up to 3 cm long (Figure 19). East- to northeast-striking faults and shears are common in the porphyritic granodiorite, and quartz is present in some of these.

Mineralization: Three principal veins are known on the property (Davies 1965). Each occurs in sericitized, foliated granodiorite. Molybdenite and fine pyrite are present in quartz veins and also in the altered granodiorite.

The No. 1 vein strikes about 100° and dips steeply north in its central position, and more shallowly to the east and west. The vein has been traced almost 700 m by drilling and is exposed in a trench near its centre.

Trenches on the No. 2 vein are about 700 m southwest of the No. 1 vein trench. The No. 2 vein consists of several parallel, but apparently discontinuous, quartz veins, lenses and stringers which strike northeast. Its known length is over 200 m.

Vein No. 3 crops out 100 m south of vein No. 1 and has a known length of about 200 m. It strikes southeast and dips 45° to 80°NE.

ANALYSIS OF MINERALIZATION
Extensive drilling of No. 1 vein indicated the presence of 126,000 tons grading 0.68% MoS_2 and 0.015 oz Au/ton over a length of about

365 m, a width of 1.4 m and a depth of about 155 m. The No. 2 vein included a 213 m length in which the average grade is about 0.47% MoS_2 and 0.02 to 0.05 oz Au/ton. The No. 3 vein contains 1 to 2% MoS_2, but the gold content is not known.

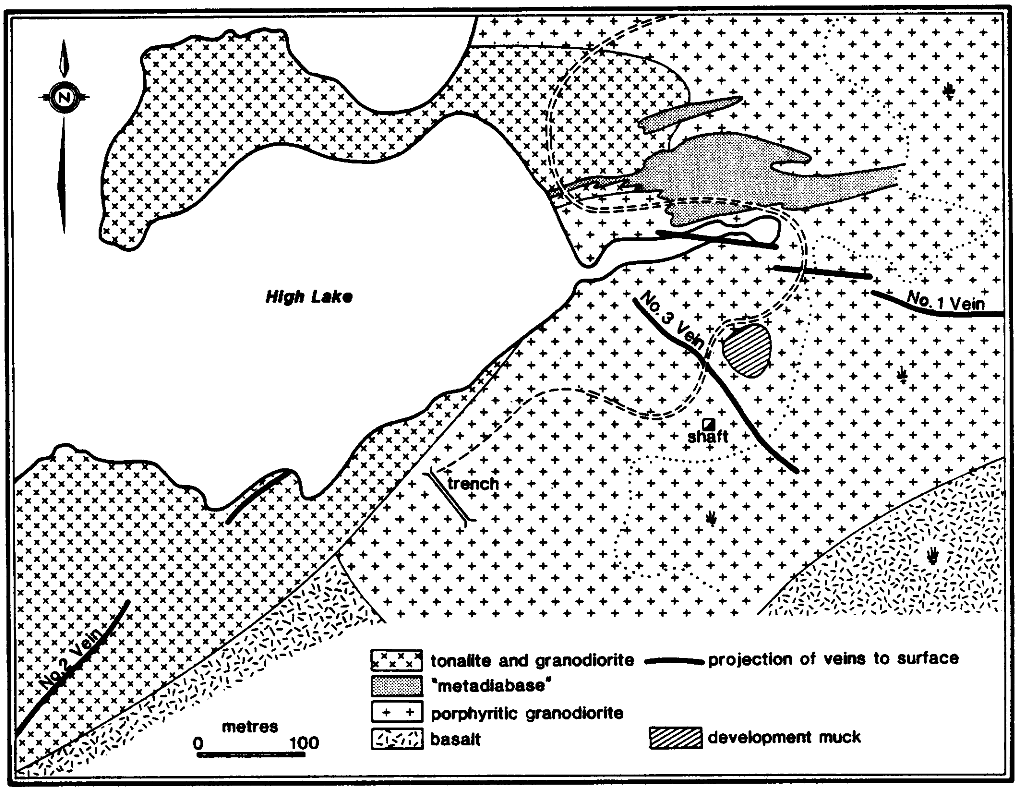


Figure 19. *Geology of the Evenlode Occurrence.*

DEVELOPMENT HISTORY
1937: Discovery by C.A. Alcock.

1938-1939: Trenches sunk on main vein.

1942: Drilling by Wartime Metals Corp.

1960-1962: Drilling and bulk sampling by Evenlode Mines Ltd.

1980: Shaft sunk near Vein No. 3, with a crosscut to Vein No. 1. Mill constructed.

1984: Mill removed.

SELECTED REFERENCES
Davies, 1965, ODM, GR 41, p. 49-51
Davies *et al.*, 1985, ILSG Field Trip Guidebook, p. 26-28

41. EXCELSIOR OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Pillowed basalt

CLASSIFICATION
la, p

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°38′22″ (49.6396°)
	Long.	94°18′36″ (94.3100°)

ACCESS
The trench is on old mining location K76, about 120 m southeast of the southeastern end of Bigstone Bay. The area is 19 km southeast of Kenora and accessible from there by boat.

DESCRIPTION
Geology: Massive to pillowed basalts predominate in the southeastern part of Bigstone Bay. The south-facing basalts lie on the southern limb of the Hay Island Antiform. East-southeast-trending shear zones are numerous in the area.

At the base of the north side of a high basalt hill, the basalt has been sheared over an exposed width of 1 m and a length of 3 m. Grey-mottled quartz is present in the shear and is cut by white quartz in which there is a trace of pyrite. The vein strikes 120° and dips very steeply south.

Mineralization: A grab sample of sugary quartz with minor vuggy pyrite, taken in this study, contained 11 ppb gold.

DEVELOPMENT HISTORY
Circa 1895: Trench sunk on claim known as Excelsior Claim.

1983: Trench, near the western end of the Bonanzo baseline, cleaned out by Bonzano Exploration Limited.

42. FLORENCE OCCURRENCE

Also known as the Hatmaker Lake Occurrence

COMMODITY
Gold, silver, copper

ROCK ASSOCIATION
Metamorphosed andesitic and dacitic tuff and lapilli tuff, with derived greywacke and chert

CLASSIFICATION
2d, p

LOCATION
Western Peninsula, Lake of the Woods:

NTS	52E/10NW	
Lat.	49°35′50"	(49.5972°)
Long.	94°40′00"	(94.6667°)

ACCESS
The occurrence lies on former mining location J.C. 78, about 3.5 km west of Crowrock Channel, or about 4 km north-northwest of Wiley Point. The area may be reached by boat from Kenora via either Micrometer Bay or Wiley Bay, Lake of the Woods.

SIZE AND GRADE
The main vein is 95 m long and 0.9 to 5.5 m wide. An assay of 0.2 oz Au/ton and 6 oz Ag/ton over 22 feet (6.7 m) has been reported (Beard and Garratt 1976).

DESCRIPTION
Geology: Mafic flows and tuff, exposed on the northern flank of the Wiley Bay Anticline, underlie much of the area between Wiley Bay and Hatmaker Lake. In the vicinity of Hatmaker Lake and the two smaller lakes to the north, intermediate to felsic pyroclastics predominate (Figure 20) and are interlayered with mafic flows and tuff and minor gabbro and siltstone. Common in the mafic and intermediate pyroclastics are 1 to 6 mm long hornblende grains, which are derived from pyroxene that was present in clasts and as individual grains in a crystal tuff (Davies 1978). Lithologic units are lensoid in shape, possibly due in part to faulting. Foliation is moderately well developed, but primary features are preserved. Granitic dikes, parallel to foliation, occur locally. Carbonate is widespread in more strongly foliated rocks and there has been some silica mobilization, especially associated with granitic dikes.

Mineralization: The known occurrences lie between the northern shore of Hatmaker Lake and the southern shore of Mud Lake (originally called Swamp Lake). All appear to be related to east-striking, steeply dipping, shear zones.

Five veins were mentioned in the 1909 prospectus of the Florence Gold Mining Company. The No. 1 vein is near Mud Lake, where felsite cuts felsic tuff and lapilli tuff. Irregular quartz veinlets and fracture fillings occur in the felsite, and a little quartz is also found in the tuff. Most of the quartz contains very little sulphides, although it was reported that the quartz "will occasionally yield a show of gold in the pan" (Florence Gold Mining Company 1909).

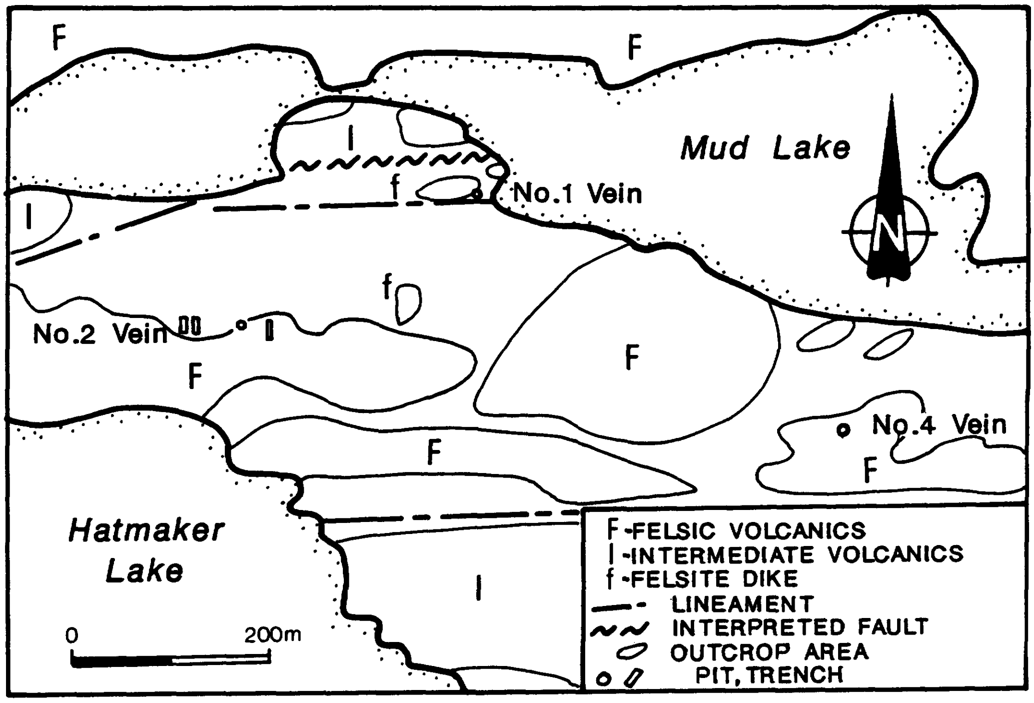


Figure 20. *Geology of the Florence Occurrence.*

Vein No. 2 is about 150 m from Hatmaker Lake, has a width of from 0.9 to 3.6 m and has been traced for almost 100 m (Davies 1978). The Florence Gold Mining Co. (1909) called it the most promising and described it as being "well mineralized with iron and copper pyrites, copper glance (chalcocite), galena and zinc blende." The main pit was enlarged in 1947 and exposes a steeply north dipping, east-striking, 5 m wide zone of shearing in which irregular veins of white sugary quartz constitute 30-40 percent of the sheared zone. The host rock is feldspar porphyry (felsite) which is altered and, in places, very strongly foliated. Chisholm (1949) noted that "the quartz vein is sparsely mineralized with pyrite and chalcopyrite locally", but he also identified gold in the rock dump.

Vein No. 4 is exposed in a pit 100 m south of Mud Lake and 600 m east of Vein No. 2. It consists of about 60 cm of white quartz enclosed by foliated, cherty volcanics. Minor pyrite is present in the fractured volcanics, but only traces of sulphides occur in the quartz. It is reported to have been traced for 300 m, to average 0.6 to 1.2 m in width, and to yield "a fine showing of coarse gold in the pan" (Florence Gold Mining Company 1909). A weak aerial photograph lineament extends from Vein No. 2 to Vein No. 4, and it is possible that both lie in or near a fault zone.

Veins 3 and 5 were apparently of little importance and no trenching was done on them. They were not found during the present survey.

ANALYSIS OF MINERALIZATION

The Florence Gold Mining Co. reported the average of 4 assays on the No. 2 vein to be 1.16 oz Au/ton, and the average of 3 assays on the No. 4 vein to be 1.10 oz Au/ton.

A sample from a trench was reported by Chisholm (1949) to contain 0.1 oz Au/ton and 6 oz Ag/ton over 22 feet (6.7 m). A grab sample from the dump assayed 1.12 oz Au/ton, 5.2 oz Ag/ton and 0.93 percent Cu (Beard and Garratt 1976).

DEVELOPMENT HISTORY

1907: Discovery of gold on former mining location J.C. 78.

1909-1910: J.C. 78 and adjoining location M.H. 187 were purchased by the Florence Gold Mining Co. Five veins were discovered; pits and trenches were sunk on two.

1948-1949: Fifteen claims staked by Messrs. Byberg, Gauthier, and Williams, encompassing the former mining locations. The main pit on Vein No. 2 was enlarged.

1949-1971: Staked several times, but no work was recorded.

1981-1982: Six contiguous claims staked by H.G. Tibbo (Tasu Resources Ltd.). Humus geochemistry, electromagnetic and magnetometer surveys were completed.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 20
Chisholm, 1949, A Brief Report on a Gold Showing on Hatmaker Lake, Assessment Files, Kenora
Davies, 1978, OGS, OFR 5242, p. 71-71a
Davies, 1983, OGS, Map 2423
Ferguson *et al.*, 1971, OGS, MRC 13, p. 242
The Florence Gold Mining Company, 1909, Prospectus, Assessment Files, Kenora.
Middaugh, 1981, Tasu Resources Ltd., Electromagnetic and Magnetic Surveys, Hatmaker Lake Property, Assessment Files, Toronto
Tibbo, 1982, Report on the Results of a Humus Geochemistry Programme, Assessment Files, Toronto

43. GAUTHIER OCCURRENCE

Also called the Echo Bay Property, the Hawes Property and the Gauthier-Thrasher Property

COMMODITY
Gold

ROCK ASSOCIATION
Variably sheared flows, tuffs and sediments

CLASSIFICATION
2b, p

LOCATION

Echo Bay, Lake of the Woods:	NTS	52E/10NW
	Lat.	49°39'24" (49.6568°)
	Long.	94°51'02" (94.8503°)

ACCESS
Early work was carried out on mining location S1052, on the southern shore of the easternmost channel leading from Echo Bay to Ptarmigan Bay, and due south of the channel between Islands M13 and M14 (Figure 14). The area is 5.3 km southwest of McCallum Point on Clearwater Bay, and is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The area is shown by Greer (1930) as predominantly greenstone and lies within the Crowduck Lake - Witch Bay Fault Zone, which consists of a series of parallel shear zones separated by relatively undeformed rocks. The rocks are mainly mafic flows which are interlayered with minor intermediate tuff and fine sediments. Medium-grained mafic rocks may be flows, sub-volcanic sills, or dikes which were intruded along the fault zone. Quartz veins occur locally in shear zones.

Mineralization: Near the shore of the lake, a number of trenches have been sunk over a strike length of about 200 m. Most are in mafic rocks but more felsic rocks are exposed in the two eastern trenches, including intermediate to felsic tuff, fine siltstone and carbonate-bearing sediment, and derived schists. Bedding in the fine-grained rocks strikes 065° and dips 70°NW.

Several shear zones are evident, trending east-northeast and dipping steeply north. Carbonate, pyrite and minor pyrrhotite are present in the mafic schists. In the easternmost trench, sericite schists predominate and contain fine disseminated pyrite and, close to the shore, two, irregular, 15-20 cm wide quartz-ankerite veins and a number of smaller quartz-carbonate veinlets. Fine-grained pyrite and a little chalcopyrite occur in the veins, especially at vein edges and in the adjacent rock.

The more felsic rocks appear to pinch out to the southwest, and probably extend northeast under the lake. Thomson (1947) suggested that the schist exposed in the easternmost trench may have been localized at a flexure in the contact between the basalt and more felsic rocks.

ANALYSIS OF MINERALIZATION
The easternmost trench was sampled by Sylvanite (Holbrooke 1945) across the strike of the foliation for about 9 m. This showed that the northern 4 m averaged 0.13 oz Au/ton, and the southern 5 m averaged about half that grade. Re-sampling gave very similar results. Thomson (1946) noted that a sample from the dump, containing 12% fine disseminated pyrite in a carbonatized rock with quartz veinlets, assayed 0.27 oz Au/ton.

The next trench, 15 m to the west, was sampled for a length of 30 m. The highest gold content was 0.04 oz Au/ton over 1.1 m, and the average content of the 11 m of felsic rocks was trace gold.

In trenches to the west, mainly in sheared basalt, gold assays were erratic, with a maximum of 0.3 oz Au/ton across 90 cm or 0.165 oz Au/ton across 2.7 m. Thomson (1946) took 3 samples from pyrite-bearing alteration streaks, which assayed 0.07, 0.07, and 0.03 oz Au/ton, respectively.

DEVELOPMENT HISTORY
Circa 1907: Locations S1052-1057 staked by Mr. J. Gauthier. The group was reportedly sold for $10,000 to American interests: insufficient work was done and the claims were allowed to lapse.

1943-1945: Claims K9792 and K9950-9958 were optioned by J. Thrasher and Arthur Gauthier to Sylvanite Gold Mines Ltd. Sylvanite completed a trenching and sampling survey, reportedly to confirm earlier results, but the gold content was considered to be too erratic and the option was dropped in 1945.

1947: Examined by K. North for J. Ginsberg of Winnipeg.

1949: H. Hawes drilled two holes beneath the old trenches. The best intersections were 0.08 oz Au/ton over 7.6 feet (2.3 m) and 0.17 oz Au/ton over 7.0 feet (2.1 m).

1974: Airborne geophysical surveys completed by Hudson's Bay Oil and Gas Company Ltd.

1979: Claims 489739-40 staked for Tasu Resources Ltd.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 15

Ferguson *et al.*, 1971, OGS, MRC 13, p. 237

Holbrooke, 1945, Report on Thrasher-Gauthier Property, Assessment Files, Kenora

Park, 1981, Tasu Resources Ltd., Report on VLF EM-16 and Magnetic Surveys, Echo Bay Property, Assessment Files, Toronto

Tibbo, 1980, Report on the results of a programme of channel sampling, Assessment Files, Toronto

1981, Report on a programme of humus geochemistry, Assessment Files, Toronto

1982a, Report on the results of a programme of geological mapping, Assessment Files, Toronto

1982c, Report on a humus geochemical survey, Assessment Files, Toronto

Thomson, 1947, Note on Gauthier-Thrasher property, Assessment Files, Kenora

Wagg and Dowse, 1974, Report on an airborne geophysical survey in the Shoal Lake area, Assessment Files, Kenora

44. GEROUX OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Ultramafic and mafic flows and sills with intermediate to mafic pyroclastics

CLASSIFICATION
1c

LOCATION

Ogema Bay, Lake of the Woods:	NTS	52E/10NW	
	Lat.	49°38'09"N	(49.6358°)
	Long.	94°47'24"W	(94.7900°)

ACCESS
A shaft or deep pit is on mining location FM174, on a point on the southern shore of the entrance to Ogema Bay. It is 2.2 km northwest of Lower Ash Rapids and 8.6 km south of the highway access point to Clearwater Bay. The area may be reached by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The area, which is about 2 km northeast of the Canoe Lake stock, is underlain by basalt, intermediate tuff, gabbro and peridotite. Thomson (1936) mapped carbonatized felsic volcanics about 300 m to the north and a porphyry dike about 300 m to the south.

Mineralization: Fine- to medium-grained peridotite is partly carbonatized and, at the northeastern point of land, is cut by irregular, thin, white quartz veins. About 20 m south of the point, carbonate veinlets are common in a zone approximately 25 cm wide. The zone strikes 080° and dips 70°N, and a shaft or pit, estimated to be less than 5 m deep, was sunk along it. Pyrite is sparsely disseminated in the carbonatized rock. A sample representing a 15 cm width of the central part of the zone contained 5 ppb gold.

DEVELOPMENT HISTORY
Circa 1895: Work was carried out under the direction of Capt. A. Geroux (A. Gauthier, personal communication).

SELECTED REFERENCE
Thomson, 1930, ODM, Map 45b

45. GOLD COIN GROUP OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Andesite and dacite, cut by felsite

CLASSIFICATION
2d, 4b

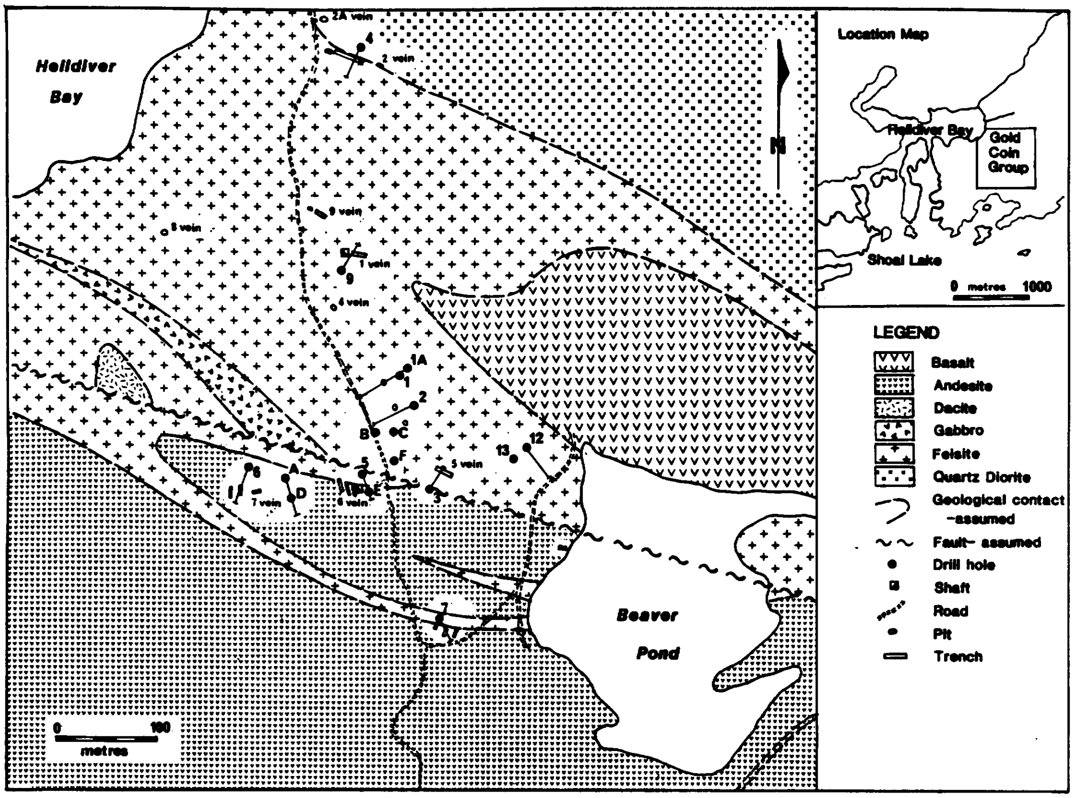
LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°34′06"	(49.5683°)
	Long.	94°56′20"	(94.9389°)

ACCESS
The original mining location, D128, was subsequently subdivided into three parts - K1317, K1395 and K1396. The area, located 1.2 km north-northeast of Machin Point and 0.2 km southeast of the eastern shore of the eastern lobe of Helldiver Bay, may be reached by boat from Clytie Bay Landing or from Kenora, via Ash Rapids. The claim group is also crossed by a winter road from Gold Point camp.

DESCRIPTION
Geology: Much of the southern half of the property is underlain by light to medium grey, fine-grained andesite flows (Figure 21). Light grey to white weathering felsite is abundant in the northern half and basalt crops out in the northeastern portion. The felsite has been interpreted as intrusive (Davies 1978), but may have an extrusive component. Feldspar porphyry dikes occur in many outcrops and the edge of the Canoe Lake quartz diorite stock is exposed near the northern margin of the property. A west-northwest-trending lineament, interpreted to be a fault (Davies 1978), bisects the property and may be related to the numerous mineralized shear zones. A zone of tectonic breccia, which is exposed at the south shaft 50 m south of the lineament, may reflect movement oblique to the fault.

Mineralization: At least 10 mineralized zones have been identified (Figure 21). Feldspar porphyry dikes are commonly associated with southeast-trending, north-dipping, carbonatized and pervasively silicified shear zones. Thin quartz veins and veinlets represent later fracture fill. Pyrite is abundant within sheared felsite and is found in minor amounts, together with rare chalcopyrite and molybdenite, within quartz veins. Vein No. 6 is a northeast-trending, north-dipping breccia zone. Anomalous gold values have been reported by Dunlop (1964), who considered high gold values to correspond with high pyrite content.



gure 21. *Geology of the Gold Coin Group Occurrence.*

ALYSIS OF MINERALIZATION

ympia Mines obtained the following results from a program of amond drilling in 1964:

ill Hole	Footage	Width	Oz Au/ton
1A		1.9 ft	0.32
4		7.0	0.12
5	46.7-51.7	5.0	0.33
	57.5-58.9	1.4	0.34
	66.8-69.4	2.6	0.22

says from 6 other holes were all "below ore grade" (Dunlop 1964).

VELOPMENT HISTORY

rca 1897: Shaft sunk on a 3 ft wide quartz vein in felsite. No ntion was made of ownership (Coleman 1898).

98: Ontario Limited Co. mined 50 tons of ore from an open cut near e shaft. Ore was milled at Keewatin Reduction Works with satisfactory results (Bow 1899).

1899: Incorporation of Gold Coin Mining Co.

1899-1926: Sinking of second shaft in brecciated greenstone.

1926-1929: Kenora Prospectors and Miners Ltd. excavated and sampled numerous pits and trenches near the south shaft. Gold values were reported in both breccia and surrounding undisturbed greenstone.

1962-1964: Olympia Mines drilled 10 holes totalling 1854 ft.

SELECTED REFERENCES

Blue, 1899, OBM, Vol. 9, p. 10
Beard and Garratt, 1976, OGS, MDC 16, p. 18
Bow, 1898, OBM, Vol. 7, pt. 1, p. 53
    1899, OBM, Vol. 8, pt. 1, p. 68
Coleman, 1898, OBM, Vol. 7, pt. 2, p. 121
Davies, 1978, OGS, OFR 5242, p. 107a, 108-109
Dunlop, 1964, Olympia Mines Prospectus 1965, Resident Geologist's Files, Kenora
Ferguson *et al.*, 1971, ODM, MRC 13, pt. 1, p. 237
Gold Coin, SMDR File, Kenora
Gold Coin, Assessment Files, Kenora
Greer, 1930, ODM, Vol. 39, pt. 3, p. 54
Kenora Prospectors and Miners, 1929, Assessment Files, Kenora
The Northern Miner, August 19, 1965
    March 09, 1967
Olympia Mines Ltd., 1963, SMDR Files, Kenora
    1964, Assessment Files, Kenora

46. GOLD CREEK MINE (PROSPECT)

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic rocks

CLASSIFICATION
la, b, p

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°43'01"	(49.7169°)
	Long.	94°21'29"	(94.3581°)

ACCESS
The property lies on old mining location P347, about 0.4 km east of Pine Portage Bay, or 2.6 km southwest of the Storm Bay Road - Highway No. 17 intersection. The area may be reached via an extension of Branch Road 3 of Storm Bay Road.

SIZE AND GRADE
Some 300 tons of ore were removed to Rat Portage Reduction Works for treatment in 1892. The grade of the ore was undisclosed.

DESCRIPTION
Geology: The area is underlain by west-facing, fine- to medium-grained, grey-green weathering, massive and pillowed basalt (Figure 22). Volcanic stratigraphy trends north-northeast, approximately parallel to the contact with the Dryberry Batholith, which is 600 m to the east. Quartz porphyry dikes occur in a few places. The more prominent lineament directions are 020° and 055°.

Mineralization: A quartz-bearing shear zone in fine-grained, pillowed basalt, about 5 m from the base of an overlying medium-grained, massive basalt flow, occurs 550 m east-northeast of the mouth of Gold Creek. The shear zone is 1 to 2 m wide and strikes about 025°, approximately parallel to the base of the massive flow. It dips very steeply to the east, and was reported by Slaught (1892) to have been traced for over 600 m. Near its exposed northern end, and at the edge of a cedar swamp, the zone changes strike or merges with a second shear zone striking 040°.

The first shaft was sunk at the point where the shear zone changes strike. Here the chlorite schist, which has a width of about 1.5 m, contains carbonate; within the schist are a number of quartz and quartz-carbonate stringers and lenses, and a quartz vein up to 20 cm wide. Boudinage features are evident in veins, with some offset of boudins. It was reported to Thomson (1935) that a "roll" in the

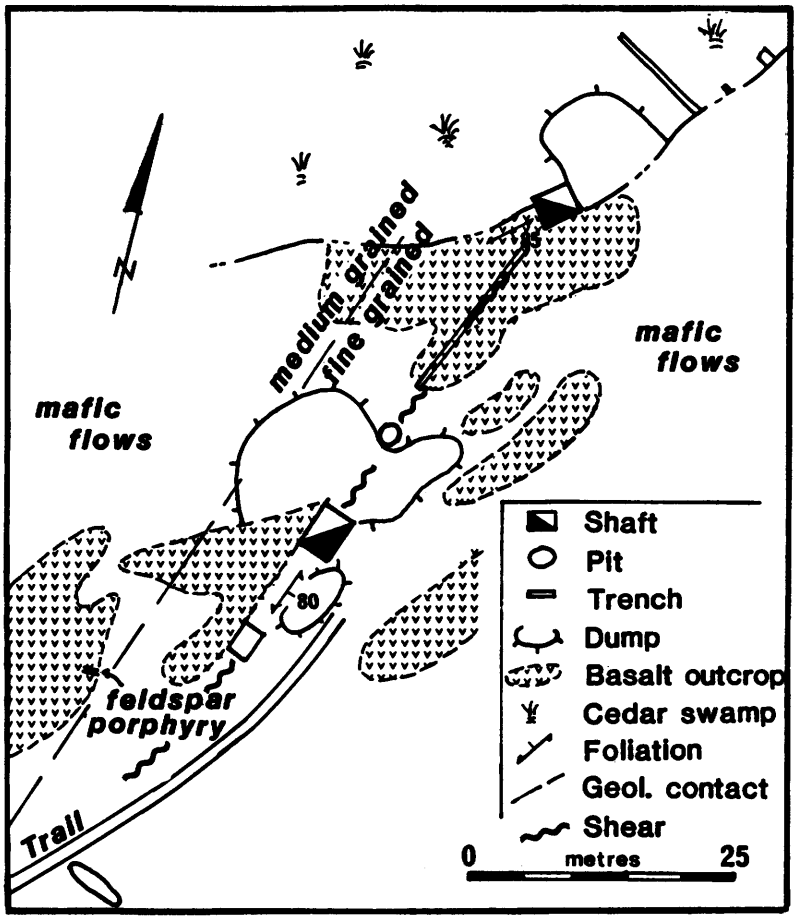


Figure 22. *Geology of the Gold Creek Mine Prospect. Modified from Forsgren (1980).*

quartz vein is present below the collar and that beneath it the vein is 1.8 m wide. He noted that "the quartz vein is of two types. There is white quartz with tourmaline, which is rather deficient in sulphides, and a bluish, sugary quartz with galena, zincblende, pyrite and traces of chalcopyrite. Native gold and tellurides are also found in a sample from the vein submitted to the writer by Captain Silver. Professor Thomson.....found three tellurides, tetradymite (bismuth telluride) pitzite (gold-silver telluride), and calaverite (gold-silver telluride)....These metallic minerals are associated with a quartz-carbonate gangue and occur in the following forms; pyrite as isolated crystals associated with gangue and the tellurides; the remaining metallic minerals in vein-like forms associated chiefly with gangue and to a lesser extent with the pyrite. The order of deposition appears to have been: (1) pyrite, (2) quartz, (3) carbonate tellurides, chalcopyrite and native gold."

A sample analyzed by Lawson (Coleman 1895) contained hessite (silver telluride).

The shear zone is similar 40 m south-southwest, where a second shaft was sunk to 7.5 m. The sugary quartz vein is 6 to 35 cm wide, and contains fine veinlets and small pods of pyrite. Black tourmaline is abundant in a quartz lens or "roll" at the southeast edge of the shaft. Galena is reported to be associated with quartz in a pit 12 m further south (Forsgren 1980).

Near the mouth of Gold Creek are a number of pits, and a shaft was also thought to be located near the lake shore (Beard 1980). This shaft has not been found, and it has been speculated that the pits were dug to test the gravels for gold (Beard and Rivett 1981).

ANALYSIS OF MINERALIZATION

Results of the early work are not known. H. Silver (see Thomson 1935) reported channel samples with "gold values as high as 0.27 ounces across 52 inches (132 cm), and 0.46 ounces across 18 inches (46 cm)" as well as grab samples from the old dump which assayed 0.43 and 0.98 oz Au/ton. Beard and Rivett (1980) recorded that "assays of two grab samples of quartz off the rock dump ran 0.31 ounce of gold per ton and 0.15 ounce of silver per ton, and 0.31 ounce of gold and 0.13 ounces of silver per ton respectively. Chip sampling across the mineralized zone at the (south) shaft resulted in assays of 0.02 ounces of gold per ton, 0.12 ounces of silver per ton and 0.035 percent copper over 30 inches (76 cm) of schist; trace gold, trace silver, and 0.02 percent copper over 26 inches (66 cm) of schist; and 0.18 ounces of gold per ton and 0.12 ounces of silver per ton across 30 inches (76 cm) of quartz and schist." They also stated that "a thirty pound sample of quartz and schist taken...over a 1.5 m interval from the west face of the (north) shaft ran 0.14 ounces of gold per ton".

Chip samples taken during the present survey across 1.2 m of mineralized schist at the north shaft contained 6760 ppb gold. A second chip sample taken across 1.2 m at the edge of the south pit contained 1630 ppb gold.

DEVELOPMENT HISTORY

1890-1892: Discovered in 1890 and owned by E. Kendell, S. Whiting and J. Thompson. Development began in 1891 and the shaft reached a depth of 15 m in 1892. Test pits were sunk 2.4 m and 4.9 m deep on zones 3 m and 4.3 m wide, respectively. The vein was followed 600 m south and 150 m west (east?) (Slaught 1892). Some 300 tons of ore were removed to the Rat Portage Reduction Works in 1892, but the gold content is not known.

1897: Incorporation of Gold Creek Mines and Exploration Co. of Ontario, Ltd.

1931-1934: Acquired by Bigstone Gold Mines, Ltd. of Ontario and 14 holes were drilled. Surface stripping and sampling was carried out by H. Silver.

1936: Gold Creek Mines acquired the property. A second shaft was sunk 25 feet, and discontinued.

1980 - 1983: Held by L. Moyer. A road was constructed to Pine Portage Bay and some surface work was carried out at the Gold Creek occurrence.

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Slaught, 1892, OBM, Vol. 2, p. 232
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47. GOLD CROSS OCCURRENCE

There is some uncertainty as to the original name. It has also been referred to as the "Triumph South" Occurrence.

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
1a, p

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°43′53"	(49.7314°)
	Long.	94°20′19"	(94.3386°)

ACCESS
The workings are about 500 m northwest of the Storm Bay Road - Highway No. 17 intersection, or about 1.4 km east-northeast of the northeastern end of Pine Portage Bay.

DESCRIPTION
Geology: The contact between the granodiorite of the Dryberry Batholith and northwest-facing, fine- to medium-grained basaltic flows is relatively straight and nearly parallel to volcanic stratigraphy. There are very few basalt inclusions in the granodiorite and very few granitic dikes in the basalt. Prominent lineaments trend 025° to 030°, possibly marking shear zones.

Mineralization: Approximately 250 m northwest of the granodiorite contact, a shear zone can be traced about 150 m near the base of the eastern slope of an outcrop area (Figure 23). The shear zone dips about 75°W and strikes 030° to 040°. It is almost entirely in fine-grained basalt, but to the north it converges with the base of a northeast-trending, medium-grained basaltic flow. A sugary quartz vein up to 70 cm wide, containing minor pyrite, is present in the shear. A number of pits and trenches, and a shaft estimated to be 10 m deep, were sunk on the vein. At the shaft the shear terminates sharply against undeformed basalt of the hanging wall.

At its southern end, the vein ends abruptly. Here, two pits reveal a strong, vertical foliation, striking 060°. The pits are at the northern edge of a hill of basalt and, 12 m to the east, a 3.5 m thickness of non-pyritiferous, tourmaline-bearing quartz is exposed at the northeastern edge of the hill. About 25 m southwest of this exposure, two pits reveal a 1 m wide, sugary quartz vein which is almost devoid of pyrite. However, the adjacent basalt, which is foliated, contains much fine pyrite over a width of a few centimetres.

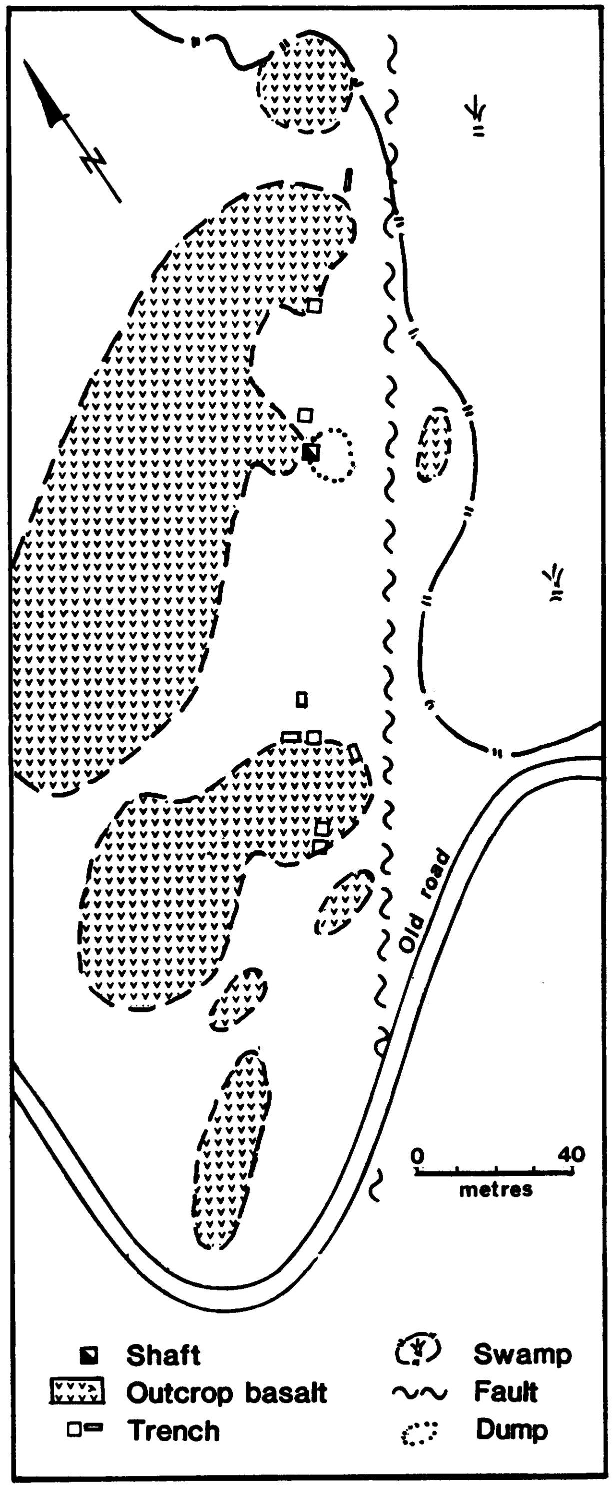

Figure 23. *Geology of the Gold Cross Occurrence.*

ANALYSIS OF MINERALIZATION

A grab sample from the northernmost trench and a chip sample across the quartz vein at the shaft, taken during this study, each contained 25 ppb gold. Quartz from the southernmost pit contained 75 ppb gold, and the adjacent pyritiferous basalt contained 3020 ppb gold.

DEVELOPMENT HISTORY

1898: Rich gold samples were reported to have been taken to Rat Portage by two ladies who owned the Gold Cross property. A shaft on the property was said to be 9 m deep which "shows gold all the way down" (The Canadian Mining Review 1898).

1979 - 1983: Staked by President Mines Ltd. The property lay idle until 1983 when a geophysical survey was reported.

SELECTED REFERENCES

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The Canadian Mining Review, 1898, Vol. 17, p. 172

48. GOLD HILL MINE (PAST PRODUCER)

Also called the Northern Gold Property, and part of the Blackburn-Pattison Property or Arnott and Byng Property

COMMODITY
Gold, silver

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
la, b, o

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°38'24"	(49.6400°)
	Long.	94°17'06"	(94.2850°)

ACCESS
The original property of the Gold Hill Mining Company consisted of mining locations 70K (also known as Ada G or Gold Hill), 175K (Jerusalem), 190P (Combination), 191P (Judge Mills), 193P (Lady Slipper) and part of 194P. These locations covered a strip of land from Moore Bay on the west to Hollow and Oblong Lakes. Most of the early work was concentrated on 70K, which was then accessible by a log tramway from Moore Bay and by a wagon trail from Bigstone Bay. In 1982, a trail led southwest from the Storm Bay Road to Islet Lake, and in late 1983 access to the eastern part of the area was provided by a pulpwood haul road.

SIZE AND GRADE
Some 1090 oz of gold were produced from 220 tons of ore milled in 1886 and 1893 (SMDR File, Toronto).

Some additional gold was produced in later years; the Rat Portage Daily Miner and News (Nov. 29, 1895) reported an additional 64 ounces extracted from 43 tons of ore.

DESCRIPTION
Geology: The area is mainly underlain by fine-grained, massive and pillowed tholeiitic basalt (Figure 24). The basalt is on the southern limb of the Hay Island Antiform; pillow facing directions in two places are to the southeast. Coarse mafic rocks occur 0.5 km to the west of Islet Lake, the contact relationship with fine-grained basalt apparently being discordant. Gabbro, in part with coarse clusters of mafic minerals, crops out on the peninsula extending from the southern shore of Islet Lake, and wedges out to the east and west of Islet Lake; the gabbro is probably a sill, with a maximum thickness of about 100 m, and the wedging out in both directions may be due to faulting.

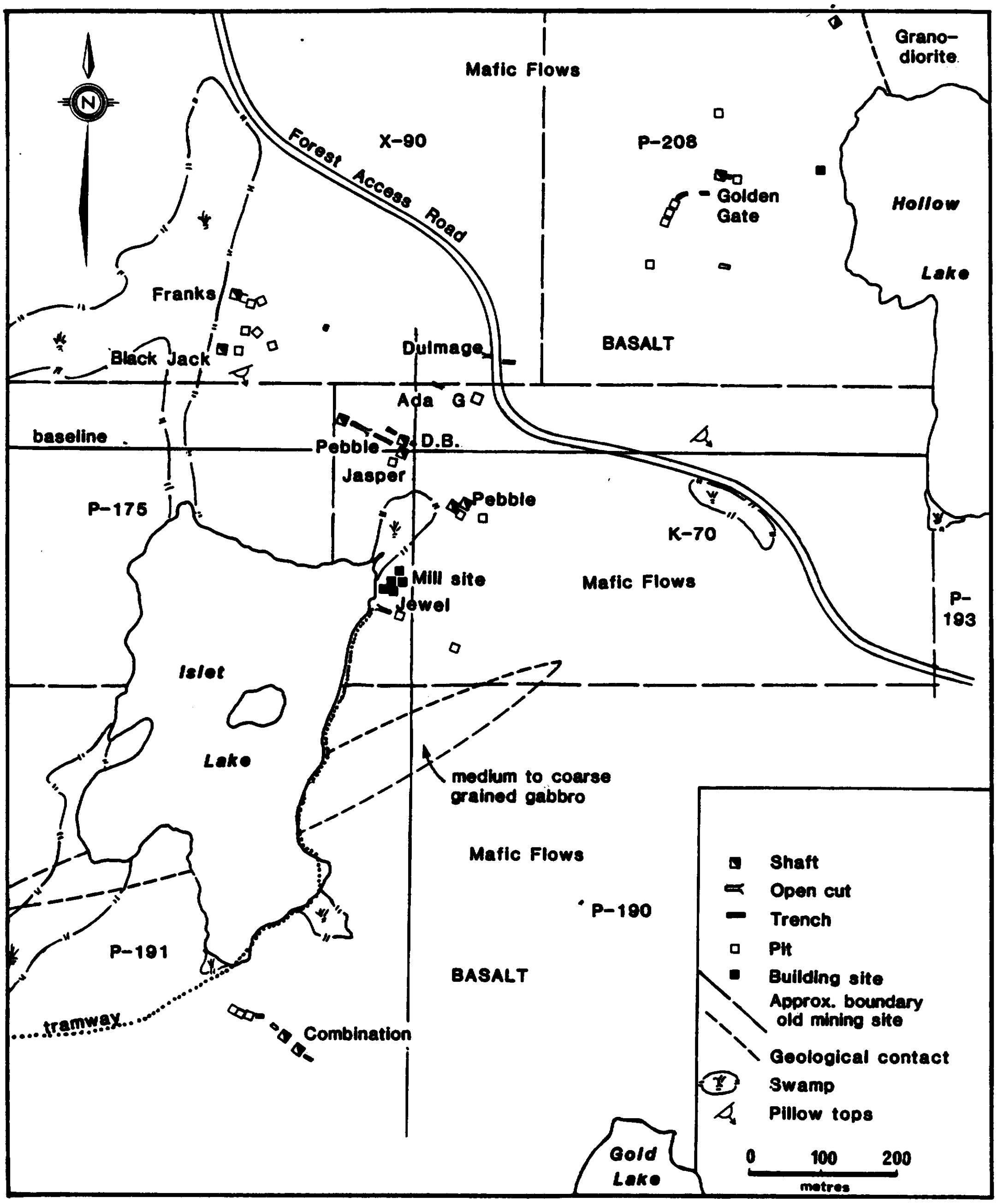

Figure 24. *Development at the Gold Hill Mine, the Golden Gate Mine Prospect and the Black Jack Mine Prospect.*

Sediments, with silt- to sand-size grains and 1 to 6 cm thick beds, were reported by Howard (1963). They were visible in an angular block in an area now covered by a forest access road, but were thought to be locally derived.

The intrusive contact between the basalt and the granodiorite of the Dryberry batholith trends south-southeast through Hollow Lake. Dikes of the granodiorite cut the basalts in the vicinity of the contact.

A study of aerial photograph lineaments of the area indicates several sets of fractures. Prominent are lineaments which trend about 015° and 080°, but the most numerous are those which trend within 10° of 130°.

Mineralization: All of the principal veins of the Gold Hill area are in shear zones which strike between 110° and 140° and dip 60° to 80°SW. North-striking veins have also been reported (Slaught 1893).

The naming of veins in the old reports has resulted in some confusion. On the basis of descriptions, especially by Slaught (1893), the most northern vein on K-90 is the Ada G, and the next to the south is the DB. Slaught noted three veins 45, 95 and 295 feet south of the DB Vein; the first is clearly the Pebble Vein, the second has been called the Jasper Vein by Howard (1983) and the third was not located during the present study. The Jewel and Combination Veins are readily recognized from old descriptions but the Judge Mills Occurrence (Report of Royal Commission 1890), presumed to be on the northwestern extension of the Combination Vein, was not found in this study. The Keystone Vein was also not found; Slaught (1893) indicated that it was exposed in a cliff on the western side of Hollow Lake (presumably near the western boundary of P193) and that it could be traced south to Gold Lake. A reference to the Pearl Shaft (Canadian Mining Review 1894) probably refers to the No. 2 shaft on the Pebble Vein but could refer to the DB shaft. Vein nomenclature used in this report is given on Figure 24.

The Ada G Vein occurs in a zone is sheared basalt which strikes about 115° and dips 55°S, and was exposed in an inclined shaft and at least two trenches. Wright (quoted in report of Royal Commission 1890) said the vein was "about 16 inches wide on the surface and 3 feet at 10 feet". Slaught (1893) described the vein matter as fine-grained quartz with some mica chlorite schist, and carrying copper carbonate.

Bedrock is not presently exposed in the water-filled shaft, and much of the vein has been removed from a trench about 17 m long, 1.5 m wide and over 1.5 m deep. Near the western end of this trench, chloritic basalt with abundant carbonate is about 40 cm wide. Within the altered zone is a more intense shear zone with several irregular, thin and discontinuous quartz-carbonate veins containing traces of pyrite. The known length of the vein is about 65 m, but Howard (1983) suggested that a south-dipping shear zone about 1m wide, exposed in a cliff face 125 m east-southeast of the shaft, may represent the continuation of the vein.

The DB Vein is about 90 m southwest of the Ada G main trench, near the northeastern edge of an outcrop area. A shaft was sunk on the vein to a depth of 15 m in 1892 (Slaught 1893). Northwest of the shaft, a 6 by 1.5 by 1.5 m trench exposed a shear zone over a width of about 1 m. The zone, which strikes 110° and dips 65°S, has been partly silicified and contains minor pyrite and a trace of chalcopyrite. Discontinuous, thin quartz veins occur parallel to foliation, and a few thin quartz-carbonate veinlets occupy northeast-striking secondary shears (Howard 1983). A narrow quartz vein was also exposed in a 3 m long trench southeast of the shaft. In the latter part of 1983, the DB Vein workings were largely covered during operations to strip the adjacent outcrop area.

Shaft No. 2. on the Pebble Vein is 20 m south of the DB shaft, 100 m southeast of the No. 1 shaft, and 105 m northwest of the No. 3 shaft, which was intended to be the main production shaft (Coleman 1895). The overall trend between shafts No. 1 and 3 is about 125°.

Surface exposures indicate that quartz is not continuous between the shafts. The Pebble 'Zone' consists of a series of *en echelon* quartz veins that pinch and swell along the strike, which is from 110° to 125°, and down the dip, which averages 75°S. The best exposure is at the northwestern end of a 35 m long open cut, sunk in 1895 to provide mill feed. Here, carbonatized chlorite schist up to 25 cm wide lies above a massive basalt footwall, and at the base of the schist there is a white to grey, sugary to cherty quartz vein with white carbonate. Minor pyrite and traces of chalcopyrite occur in the schist, and a trace of pyrite occurs on fractures in the quartz. The maximum exposed width of the vein is 25 cm but the 2 m width of the open cut suggests that the vein was wider to the southeast. Chlorite schist also marks the hanging wall of the zone; it contains minor pyrite and a few thin veinlets of quartz and carbonate. Between the shears, massive basalt is locally fractured. The No. 3 shaft was reported by Coleman (1895) to lie on the crown of a ridge, and so must be the eastern shaft of the two in the area. It is cribbed, but was apparently sunk on a quartz lens in sheared basalt. A pit in which rounded clasts ("pebbles") of basalt occur in siliceous carbonate, lies 18 m to the southeast. The carbonate is part of a narrow, northeast-trending bed of primary carbonate within the basaltic flows. A second shaft, 20 m west of the No. 3 shaft, was sunk on a parallel shear zone which corresponds to the Jasper Vein; two thin quartz veins occur in a trench 8 m to the southeast of this shaft in carbonatized, sheared basalt, but pinch out rapidly. A third shear zone, with a thin quartz carbonate vein, is exposed between these two shafts.

The Jasper Vein, as defined by Howard (1984), consists of cherty quartz in a 1 m wide shear zone exposed in two pits which are 13 m southwest and 25 m southeast of the Pebble Vein No. 2 shaft. The strike between the pits is 110°. In addition to the cherty quartz, which is several centimetres wide, there are quartz-carbonate veinlets which pinch and swell within the foliation (Howard 1984).

The Jewel Vein is 60 m south of the old mill, and is exposed in a 15 m long open cut. A well-defined shear zone up to 60 cm wide, within a massive, fine-grained basalt, strikes 115°, dips 65°S, and encloses a cherty, grey-white quartz vein up to 40 cm wide. Pyrite and traces of chalcopyrite occur in the sheared basalt and at vein edges. Quartz-carbonate veinlets also occur in the shear zone. Howard (1984) reported that quartz and carbonate are associated with sheared basalt in a pit about 100 m to the east-southeast of the open cut.

The Combination Vein is best exposed in a series of trenches, pits and shallow shafts which extend southeast for more than 100 m from a point about 60 m south of the southernmost bay of Islet Lake. The quartz vein, with pyrite, minor chalcopyrite and traces of galena, is up to 35 cm wide, strikes 120° to 130°, and dips 75° to 80°SW. It occurs in sheared basalt. Wright (as recorded in the Report of the Royal Commission 1890) stated that the vein could be traced 3 miles (about 5 km) southeast from near the Lake of the Woods, and that at a wide place in the vein (known as the Judge Mills location) a shaft was sunk to a depth of 10 m (33 feet).

The Keystone Vein reportedly consisted of a 9 m width of quartz and chlorite schist exposed in a high cliff near Hollow Lake (Slaught 1893). The vein was said to strike south and dip 65°E, and to be traceable for at least 400 m and possibly as far as Gold Lake. The vein was not located during the present work but Slaught's description indicates that it must be near the eastern boundary of mining location K70, with a strike of about 020°.

ANALYSIS OF MINERALIZATION

Howard (1984) obtained the following assay results:

Vein	Sample Description and Location	Oz/ton Au	Oz/ton Ag
Ada G	Quartz, sheared basalt; NW end, chips, 1.5 m	0.02	nil
	Quartz; SW end, main trench,chips,0.3 m	1.16	0.58
	Quartz-carbonate; grab from shaft dump	0.38	0.14
DB	Quartz, basalt, pyrite, chalcopyrite; NW trench	1.53	nil
	Quartz-carbonate veinlets oblique to foliation; NW trench	0.68	nil
	Quartz vein; grab from SE trench	0.08	nil

Pebble	Quartz in shear; from pit 60 m NW of shaft No. 1	0.09	nil
	Quartz vein; grab from NW end of open cut	0.04	0.21
	Quartz vein; grab from NW end of open cut	0.09	nil
	Quartz vein; grab from NW end of open cut	0.06	nil
	Quartz-carbonate veinlets, basalt; open cut, chips, 1 m	0.02	0.28
	Schist, quartz, pyrite; open cut, chips, 0.5 m	0.02	0.42
	Quartz, sheared basalt; grab from No. 2 shaft dump	0.12	0.14
	Quartz, sheared basalt; grab from No. 2 shaft dump	0.06	nil
	Basalt clasts in carbonate; pit SE of No. 3 shaft	0.02	0.20
Jasper	Quartz or quartz-carbonate; pit 13 m SW of Pebble No. 2	0.16	nil
	Quartz-carbonate, pyrite, basalt; trench 18 m SW of Pebble No. 3	0.02	0.17
	Quartz-carbonate vein; trench 15 m W of Pebble No. 3	0.11	nil
Jewel	Quartz, pyrite; near end of open cut	1.12	0.14
	Quartz, pyrite; E end of open cut	0.11	0.54
	FW and HW schist; open cut	0.03	0.28
	Rusty fractured basalt; open cut	0.02	0.20
	Quartz-carbonate; 100 m SE of Jewel open cut	0.03	0.11
Combination			
	Quartz vein; NW pit, chips	0.19	0.09
	Quartz vein; NW side of NW shaft, chips	1.07	0.17
	Quartz vein; SE side of NW shaft	1.00	0.76
	Quartz vein; NW side of SE shaft	0.12	nil
	Quartz vein; SE pit	0.26	0.50
	Quartz; dump, NW shaft	1.40	nil

DEVELOPMENT HISTORY

1884: Discovered by G. Dulmage.

1885 - 1886: Prospecting by D.B. Burdett, F.W. Moore, J. Thompson, J.K. Wright, and G. Dulmage, who together formed the Gold Hill Mining Co. The Ada G and Combination Veins were surveyed. In 1886, 17 openings were made, including a 17 m inclined shaft on the Ada G Vein and a 10 m shaft on the Combination Vein (Judge Mills Location?).

1888 - 1893: Burdett received patents for 190P, 191P, 193P, 194P, 175P and 70K, and formed the Northern Gold Co. of Michigan. Other veins were discovered on 70K. The DB Vein was explored by several test pits, and by two shafts, 15 and 6 m deep. The Keystone Vein was traced onto location 190P. A mill was built and a log tramway was constructed from Moore Bay to the mill. Ore from the Golden Gate Mine was tested at the mill. The Leedes process mill was later replaced by a Crawford 10-stamp mill. Gold to the value of $19,610 ($20.67/oz) was reportedly recovered from 220 tons of ore milled between 1886 and 1893.

1895 - 1898: Purchased by the Dominion Gold Mining and Reduction Co. Ltd. The company also purchased the adjoining Black Jack property. Three shafts were sunk on the Pebble Vein. The No. 1 shaft was sunk near the northwestern corner of claim 70K. It was 1.8 m by 2.7 m, and 18 m deep. The No. 2 shaft, 99 m to the east, was 1.8 m by 2.7 m and 38 m deep, and was inclined 75°S. Some 10.4 m of lateral work was done on the 18 m level, and a 3.4 m drift was driven on the 35 m level. The No. 3 shaft, 102 m east of No. 2, was 2.2 m by 3.3 m and was 6.7 m deep, inclined 76°S. A 6 m long open cut, 4.6 m deep on the eastern end, exposed the Jewel Vein. The mill was re-equipped, and 100 tons of ore yielded $1,500 ($20.67/oz) gold.

1899: Purchased by Britannia Consolidated Gold Mining Co. of Ontario Ltd. The mill was renovated, and muck from the shaft dumps was treated. New development work was confined to the Black Jack Vein. The mill burned late in the year.

1934: The adjoining Golden Gate property was worked by Johnson and Nilson of Kenora.

1939: Staked by Blackburn-Pattison Mines, Ltd. Sylvanite Gold Mines, Ltd. examined the property; results were unfavourable.

1968: Two diamond drill holes by Kerr Addison Ltd.

1972: Thirteen contiguous claims were staked by J.C. Arnott and R. Byng. Property examined by Trojan Geological Services.

1982 - 1983: Thirty-two contiguous claims staked by G. Zebruck and E. Hansen. Property was optioned to Bonzano Exploration, Ltd. in 1983. Work included stripping, trenching, sampling, and geophysical surveys.

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Howard, 1983, Report on the Black Jack - Gold Hill Property, Assessment Files, Kenora
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Kerr Addison Mines, 1968, Diamond Drill Logs, Assessment Files, Kenora
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1892, OBM, Vol. 2, p. 232
SMDR File, 1980, Gold Hill Property
Smith, 1939, Preliminary Report - Blackburn Pattison Property, Assessment Files, Kenora

49. GOLD MOUNTAIN PROSPECT

COMMODITY
Gold

ROCK ASSOCIATION
Quartz porphyry intruding rhyolite tuff

CLASSIFICATION
4a, c

LOCATION
Western Peninsula, Lake of the Woods:

NTS	52E/10SE	
Lat.	49°33'03"	(49.5508°)
Long.	94°44'10"	(94.7361°)

ACCESS
The prospect is situated on old mining location P. 48, about 120 m northeast of Umbel Lake (also called Lily Lake), or about 300 m southwest of Gold Mountain Lake. The area may be reached by boat from Kenora.

SIZE AND GRADE
Kuryliw (1974b) concluded that: "The Gold Mountain represents a large-tonnage low-grade porphyry type gold deposit. Its length appears to be 1500 feet (457 m) with a silicified zone width of 400 feet (122 m), the more intensely silicified and mineralized portion occurs over a width of about 50 feet (15.2 m). The occurrence of gold in the zone is established; however, its exact quantity has yet to be determined."

Neilson and Bray (1981) gave a speculative reserve of 100,000 tons grading 0.04 oz Au/ton, for an open pit area 107 m by 9.1 m by 46 m deep. Grade was established from a grab sample taken from the old shaft dump.

DESCRIPTION
Geology: The area lies about 1.7 km south of a major east-northeast-trending anticlinal axis. Davies (1978) stated: "Rocks of the area are predominantly metamorphosed intermediate to felsic tuff, lapilli tuff, and derived metasediments which have been intruded by felsic dikes. Most of the rocks are sheared and highly carbonatized." Units strike east-northeast and dip steeply south (Figure 25).

Kuryliw (1974b) completed detailed geological mapping of the area between Umbel and Gold Mountain Lakes. The northernmost unit, exposed on the western shore of Gold Mountain Lake, is a variable sequence of rhyodacite tuff-breccia intercalated with finely bedded rhyolitic tuff. The groundmass is largely dacitic, with rhyolite fragments composing up to 20% of the rock. Tuffaceous horizons strike 060°and dip 75 to 85°S. To the south, a thick syenite sill or stock separates the coarser pyroclastics from 305 m of finely bedded, buff-coloured rhyolite tuff. The syenite is generally fine-grained, massive, and buff coloured. The southern contact of the sill is brecciated, carbonatized, and silicified. Low gold values are associated with strongly silicified zones. South of the rhyolite tuff are rhyodacite tuff breccia and intercalated rhyolite tuff. Capping the sequence to the south is a unit of fine-grained, greenish-grey, andesitic agglomerate, containing about 10% coarse andesitic fragments aligned parallel to the regional foliation at 060°.

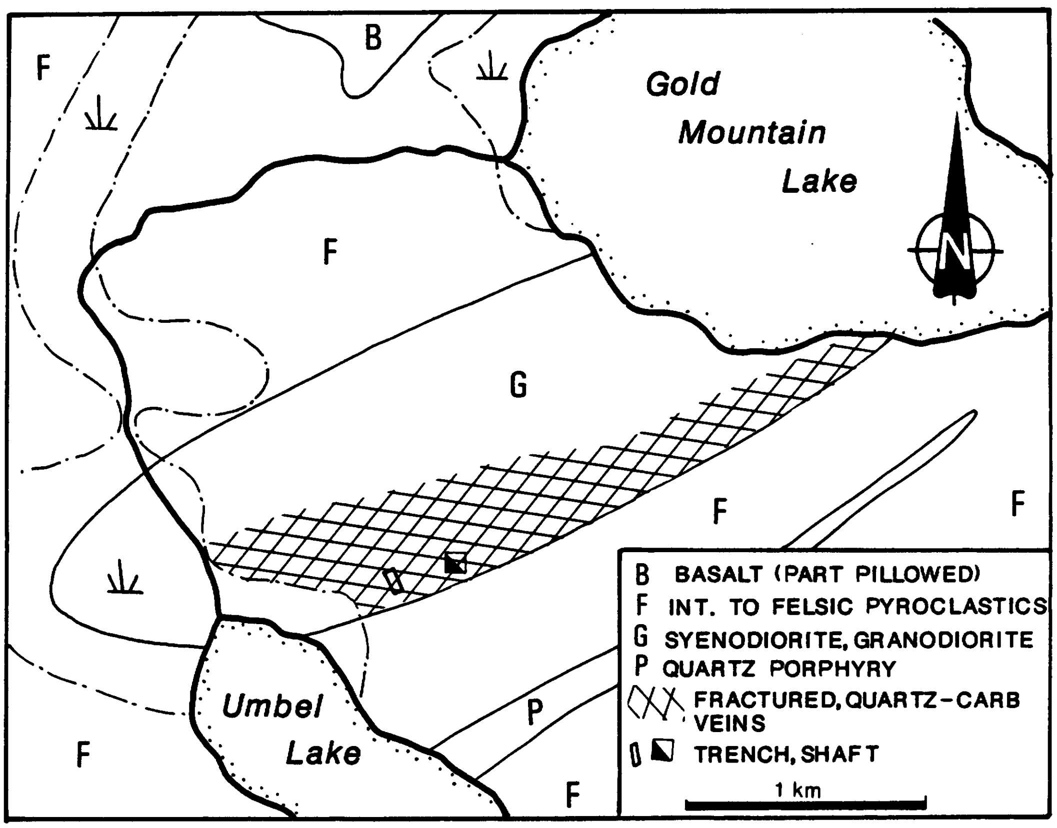

Figure 25. *Geology of the Gold Mountain Prospect. Geology by Davies (1970) and Kuryliw (1974).*

Mineralization: The mineralized zone is contained within the syenite porphyry. The southern portion of the sill is brecciated and fractured over an exposed strike length of 300 m, and over a width of at least 120 m. Quartz and carbonate fill the fractures and breccia matrix. Kuryliw (1974a) noted that, "At its southern contact, the fracturing in porphyry approaches true coarse brecciation. The breccia and fracture voids have been filled with quartz and minor quartz-carbonate. The porphyry contains about 25% fracture-filling quartz at its most southerly 25 to 50 feet (7.6 to 15 m) of edge. From about 50 feet to 150 feet (15 to 46 m) from the south contact the porphyry contains about 10% to 7% quartz in fractures and from 150 feet to 400 feet (46 to 122 m) from the south contact the quartz in fractures composes 5% - 2% of the porphyry. These quartz filling fractures may carry minor pyrrhotite, pyrite and traces of galena mineralization. The best assays in gold were obtained where galena and/or mariposite were present."

Kuryliw (1974a) further noted that: "The quartz carbonate consists largely of about 80% quartz and 20% carbonate filling breccia voids or fractures. Carbonatization is more prevalent in breccia fragments. The quartz carbonate breccia zone carries values in samples taken that assay trace to 0.06 ounce gold per ton. Fine disseminated pyrite is also prevalent."

Later drill logs show a pyrite content of up to 5% locally; a few specks of chalcopyrite were also observed.

Cherty, black graphitic tuff, interlayered with light-grey rhyolite, was intersected in 2 holes. Fine, disseminated, well-banded pyrite was found to be associated with graphitic bedding planes.

Radiovanovic (1977) noted: "There appears to be three generations of quartz, the oldest white quartz veins are cut by bluish-grey quartz veinlets. Often in strongly brecciated areas the bluish-grey quartz veinlets are cut by strong very white quartz veins which appear to be third generation. Galena specks in most cases are associated predominantly with the youngest white quartz although they also occur in the bluish grey quartz veins."

Blue (1895) also noted a little chalcopyrite.

A magnetic survey (Kuryliw 1974a) of the claim group delineated the silicified syenite as a "magnetic low".

Several persistent "high magnetite bands" are evident within the host rock and possibly represent iron formations.

DEVELOPMENT HISTORY

Circa 1890: E.V. Wright of Ottawa acquired the patent for mining location 48P.

Circa 1895: Some trenches were opened, and a shaft was sunk 9.1 m by E.V. Wright and J. Foley. Blue (1895) was informed that assays of 13 samples gave an average of $12.72 (0.62 oz Au) per ton.

1973-1976: Four contiguous claims, K364458 - K364461, were staked by C.J. Kuryliw. Geological, magnetometer, and electromagnetic surveys were completed. Four holes, drilled in 1976, totalled 24 m.

1977: Two holes were drilled for a total of 198 m by Cominco under an option agreement with Kuryliw. The best 2 intersections were 0.14 oz Au/ton over 5 ft (1.5 m), and 0.12 oz Au/ton over 2 ft (0.61 m): all other assays ranged from nil to 0/.05 oz Au/ton (Beard and Rivett 1979).

1983: One 46 m hole drilled by Kuryliw.

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Thomson, 1936, ODM, Vol. 45, pt. 3, p. 29

50. GOLDEN GATE MINE (PROSPECT)

Also called the Johnson-Nilson Group, or Blindfold Mining Group

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic rocks

CLASSIFICATION
la, b, o

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°38′31" (49.6421°)
	Long.	94°16′42" (94.2782°)

ACCESS
The main shaft is located on old mining location 208P, 165 m west of the northwestern shore of Hollow Lake, and about 0.7 km northeast of the northeastern corner of Islet Lake. The area may be reached by a trail from Blindfold Lake or via a forest access road extending to the old Gold Hill property from Highway No. 71 (Figure 24).

SIZE AND GRADE
A mill test run at the Gold Hill Mine graded $62.00 (3 oz) Au/ton (The Canadian Mining Review 1896, p.115). Neilson and Bray (1981) estimated a speculative 1600 tons grading 0.89 oz Au/ton.

DESCRIPTION
Geology: The southwestern portion of the property is underlain by fine-grained, mafic metavolcanic flows, and the remainder by medium- to coarse-grained, pink granodiorite of the Dryberry batholith. The intrusive contact trends north-northwest. Pillow facing directions have not been established on the property, but at the Gold Hill Occurrence to the south, some pillows face southeast. The area lies on the southern limb of the Hay Island Anticline, the northwest-trending axis of which passes through Storm Bay.

Mineralization: Fourteen veins were identified on the original property (Coleman 1898). Pits were sunk on several of these and the main vein was developed in an open cut and in a 26 m deep shaft.

The Main or Shaft Vein is within carbonatized, sheared basalt which strikes about 100° and dips near vertical. Muir (1934) and Thomson (1935) both indicated that quartz was largely restricted to short lenses and close-spaced veinlets over a width of up to 0.9 m. Muir also noted that the shaft was sunk on a short lens of quartz lying along the south side of the other shear zone, and that on the 8 m level "the quartz and values die out about 25 ft from the shaft".

An open cut about 15 m long and 3.5 m deep at the western end is 35 m south-southwest of the shaft. The fine-grained basalt is locally fractured but there is no evidence of any significant structure which might have been host to a quartz vein. About 15 m to the west is a narrower 15 m long trench which curves from 080° in the east to 050° in the southwest. Quartz and carbonate occupy a narrow shear or breccia zone which dips 45°NW. The quartz contains minor sulphides and traces of visible gold. Several other trenches which occur further southwest contain quartz, carbonate and a little pyrite.

Muir (1934) noted that, about 100 m north of the shaft, a deep pit was sunk on an east-striking shear zone which dips 70°S. The pit exposed a lens of quartz 0.9 m wide on the eastern side, but only chloritic schist on the western side. He also noted that a narrow, northeast-striking quartz vein occurs 120 m east of this pit.

A 45 cm wide, north-striking quartz vein occurs near the shore of Hollow Lake and "is fairly well mineralized in places" (Muir 1934).

About 120 m northwest of the northwestern corner of Hollow Lake, a 1.8 by 3.0 m shaft, estimated to be 6 m deep, was sunk on a 30 cm wide, irregular quartz vein which strikes 030° and dips 75°NW. The shaft is very near the contact with granodiorite of the Dryberry Batholith, and is in a zone of sheared basalt which lies adjacent to a granodiorite dike. The basalt contains minor pyrite, and black tourmaline is present in quartz pods and along minor fractures in the white to clear quartz vein.

ANALYSIS OF MINERALIZATION

Muir (1934) recorded the results of assays of 12 samples taken from the back of the 21 m long drift in the 8 m level. These may be summarized as follows:

Sample	Oz Au/ton (weighted average)
Schist (5 samples over 86 cm)	0.017
Schist plus quartz (4 samples over 96 cm)	0.033
Schist plus quartz (2 samples over 67 cm)	0.165
Massive greenstone (1 sample over 112 cm)	0.01

Muir also listed the assay results of 2 grab samples: the first, from a vein 100 m north of the shaft, returned 0.04 oz Au/ton, and the second, from a vein near the shore of Hollow Lake, returned 0.02 oz Au/ton.

Thomson (1935) recorded the following assays:

Sample Location	Width	Oz Au/ton
Open cut, near drift	76 cm	0.58
Shaft, opposite drift	91	0.02
Trench, 50 m SW of shaft	46	0.44
Trench, 50 m SW of shaft	20	3.22
Trench, 50 m SW of shaft	30	0.79
Trench, 50 m SW of shaft	46	0.21
Pit, 75 m SSW of shaft	18	2.32
Pit, 75 m SSW of shaft	15	2.86

Grab samples from the last-mentioned trench and pit, taken during the present study, assayed 3.42 and 1.96 oz Au/ton, respectively. A sample of carbonatized basalt from the southern wall of the Main Vein open cut returned only 2 ppb Au.

DEVELOPMENT HISTORY

1895: Prospecting and discovery by D. Burdett and party.

1896 - 1897: Dominion Gold Mining and Reduction Co. sold the property to W.A. Laycock. Fourteen veins were discovered on the property and test pits were sunk on several. A shaft, sunk on the Main Vein, was 19 m deep, with 21 m of lateral work on the 8 m level. Trenching was also reported.

After 1898: Shaft sunk to 26 m depth.

1910: Reverted to the Crown for non-payment of taxes.

1934: Shaft dewatered. Additional trenching and sampling by H. Johnson and A. Nilson of Kenora. Examined by A. Muir.

1936: Sampling by the Blindfold Mining Group.

1985: Examined by Kidd Creek Mines Ltd.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 9
Blue, 1896, OBM, Vol. 6, p.
Bow, 1898, OBM, Vol. 7, p. 37-38
The Canadian Mining Review, 1896, p. 115
Coleman, 1896, OBM, Vol. 6, p. 98
1898, OBM, Vol. 7, p. 112
Harding, 1936, Blindfold Mining Group, Assessment Files, Kenora
Muir, 1934, Report on Johnson Nilson Group, Blind Fold Lake, Assessment Files, Kenora
Neilson and Bray, 1981, OGS, OFR 5332, Vol. 2, p. A-2
Slaught, 1893, OBM, Vol. 3, p. 21
Thomson, 1935, ODM, Vol. 44, pt. 4, p. 41-42

51. GOLDEN HORN MINE (PROSPECT)

Also known as the Rush Bay Mine

COMMODITY
Gold

ROCK ASSOCIATION
Felsic and mafic volcanic flows

CLASSIFICATION
2a, p

LOCATION

Glass Township:	NTS	52E/10NW
	Lat.	49°39'31" (49.6585°)
	Long.	94°54'29" (54.9080°)

ACCESS
The mine lies on old mining location D288 (Corkill 1906), about 200 m south of Rush Bay and about 7.5 km due west of the western shore of Victoria Island. The area may be reached by boat from Kenora.

SIZE AND GRADE
The following data are modified from SMDR File 001314, Assessmant Files Research Office, Toronto:

Year of Production	Gold (ounces)	Value (dollars)	Ore Milled (tons)
1904	63	560	265
1906	45	500	250
1907	5	60	100
Totals	113	1120	615

DESCRIPTION
Geology: Rush Bay, and the area to the north, are characterized by interlayered intermediate felsic flows and pyroclastics, with minor mafic flows (Davies 1965). The sequence is considered to be the equivalent of the calc-alkaline,lower felsic assemblage of Shoal Lake. South of Rush Bay, the rocks are predominantly fine- to medium-grained mafic flows and sills, which are correlative with the predominantly mafic upper sequence of Shoal Lake. The intermediate rocks of Rush Bay are north-facing; the facing direction of the mafic rocks to the south is not known.

The major structural features of the area is the Crowduck Lake - Witch Bay Shear Zone, which has been traced from the Manitoba border east to Witch Bay, a distance of over 40 km. The zone consists of areas in which foliation is weak or moderate and in which primary features are commonly preserved, separated by relatively narrow areas where foliation is intense and primary features have been destroyed.

The Golden Horn Mine is interpreted to lie at the northern edge of the Crowduck Lake - Witch Bay Shear Zone. It is in felsic flows and pyroclastics which appear to pinch out several hundred metres to the west but have a thickness of 600 m about 1 km to the east. The rocks are intensely foliated, but their pyroclastic origin is evident on the weathered surface of outcrops adjoining the mine to the south.

Mineralization: Two shafts were sunk on an east-striking, north-dipping quartz vein, which has a maximum thickness of about 1 m. Thomson (1936) noted that "the main vein would average less than a foot in width over the whole of the underground workings. On the 30.5 m (100 foot) level, the vein is about 58 m (190 feet) in length. The wall rock is silicified rhyolite with disseminated pyrite. There are two distinct types of quartz, a blue and a white variety, the latter being by far the more common. The blue quartz generally occurs near the outer margin of the vein. The vein has a banded appearance in places due to the presence of narrow seams of schist. Sulphide mineralization is scanty and consists largely of pyrite. Some of the blue quartz on the dump contains traces of galena and sphalerite. Sampling of underground workings indicated that the gold values were closely associated with the sulphides in the main vein. It is reported that the wall rock and parallel quartz stringers do not carry gold values."

ANALYSIS OF MINERALIZATION
Bruce (1925) stated: "Some of the quartz on the dump is pure white and some has a bluish shade. Samples of both kinds were assayed with the following result: white quartz, $1.60 (0.08 oz. Au) per ton; blue quartz, $5.80 (0.29 oz. Au) per ton."

DEVELOPMENT HISTORY
Circa 1897 - 1901: Shafts and pits sunk by persons unknown.

1901 - 1906: Acquired by Rush Bay Golden Horn Mining Co., Ltd. of St. John, N.B. Previous workings were abandoned. Two shafts were sunk 25.6 m apart. No. 1 (main) shaft was sunk 77 m, inclined 81°N. No. 2 shaft was 34.4 m deep, and connected with the first level of the main shaft.

Underground development in the No. 1 Shaft included:

Level	Drifting (m)	Crosscutting (m)
1 (30.5 m)	70.4	19.8
2 (50.6 m)	110.3	9.4
3 (71.6 m)	36.0	86.8

Stoping was done on levels 2 and 3. A two-stamp mill was installed during 1905.

1934: Claim K390 was acquired by Rush Bay Holding Co., Ltd.

1935: Optioned to Consolidated Mining and Smelting Co., Ltd., which dewatered and sampled the shafts.

1963: Patented mining location K12160 was held by P. Thrasher of Winnipeg.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p.
Bruce, 1925, ODM, Vol. 34, pt. 6, p. 13-15
Carter, 1902, OBM, Vol. 11, p. 251-252
1904, OBM, Vol. 13, pt. 1, p. 61
1905, OBM, Vol. 14, pt. 1, p. 47
Corkill, 1906, OBM, Vol. 15, pt. 1, p. 59
1907, OBM, Vol. 16, pt. 1, p. 60
Davies, 1965, ODM, GR 41
Ferguson *et al*., 1971, OGS, MRC 16
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 55
Miller, 1903, OBM, Vol. 12, p. 94
Sinclair *et al*., 1936, ODM, Vol. 45, pt. 1, p. 96-97
SMDR, File No 001314
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 39

52. GOLDEN REEF MINE (OCCURRENCE)

Also known as the Mikado Reef Mine

COMMODITY
Gold

ROCK ASSOCIATION
Shear zones in gabbro

CLASSIFICATION
4c

LOCATION

Island D484, Shoal Lake:	NTS	52E/11SE
	Lat.	49°33′27" (49.5545°)
	Long.	95°01′59" (95.0332°)

ACCESS
The original property consisted of mining locations D484 to D489. The shaft is located on a small island 100 m southeast of Stevens Island in Shoal Lake, which may be reached by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

DESCRIPTION
Geology: The island is underlain by the Stevens Island intrusive complex. Thin section studies by Thomson (1935) revealed that basic differentiates such as gabbro, diorite, and amphibolite have locally undergone intense hydrothermal alteration, which locally produced much secondary epidote, ziosite, sericite, carbonate and chlorite. On location D484, medium-grained gabbro is intruded by lamprophyre dikes. On the southeastern side, inclusions of ultramafic rock have been incorporated into the complex. Numerous shear zones are present, most striking between north and east. A fault zone, trending east-northeast, has been interpreted to lie near the northern shore of the island. Movement partly post-dates intrusion of the lamprophyre dikes, which are folded within the shear zone. Numerous quartz-carbonate veins are found throughout the gabbro; vein margins are bleached and strongly chloritized. Quartz appears to be fracture controlled. Vein offsets indicate at least three periods of fracture fill. Pervasive carbonatization, strong silicification and chloritization occur within some shear zones. The geology of the occurrence is shown on Figure 26.

Mineralization: Mineralization appears to be fault controlled. The old shaft and workings explored a strongly silicified, carbonatized shear zone, striking 025° and dipping 75°NW. Free gold is said to be associated with narrow, irregular quartz veins and stringers, which comprise 5 to 10% of the shear zone (Carter 1904). Carter stated: "very little if any other mineral, such as iron pyrites, is visible. Judging from a few assays, the gold is not uniformly distributed."

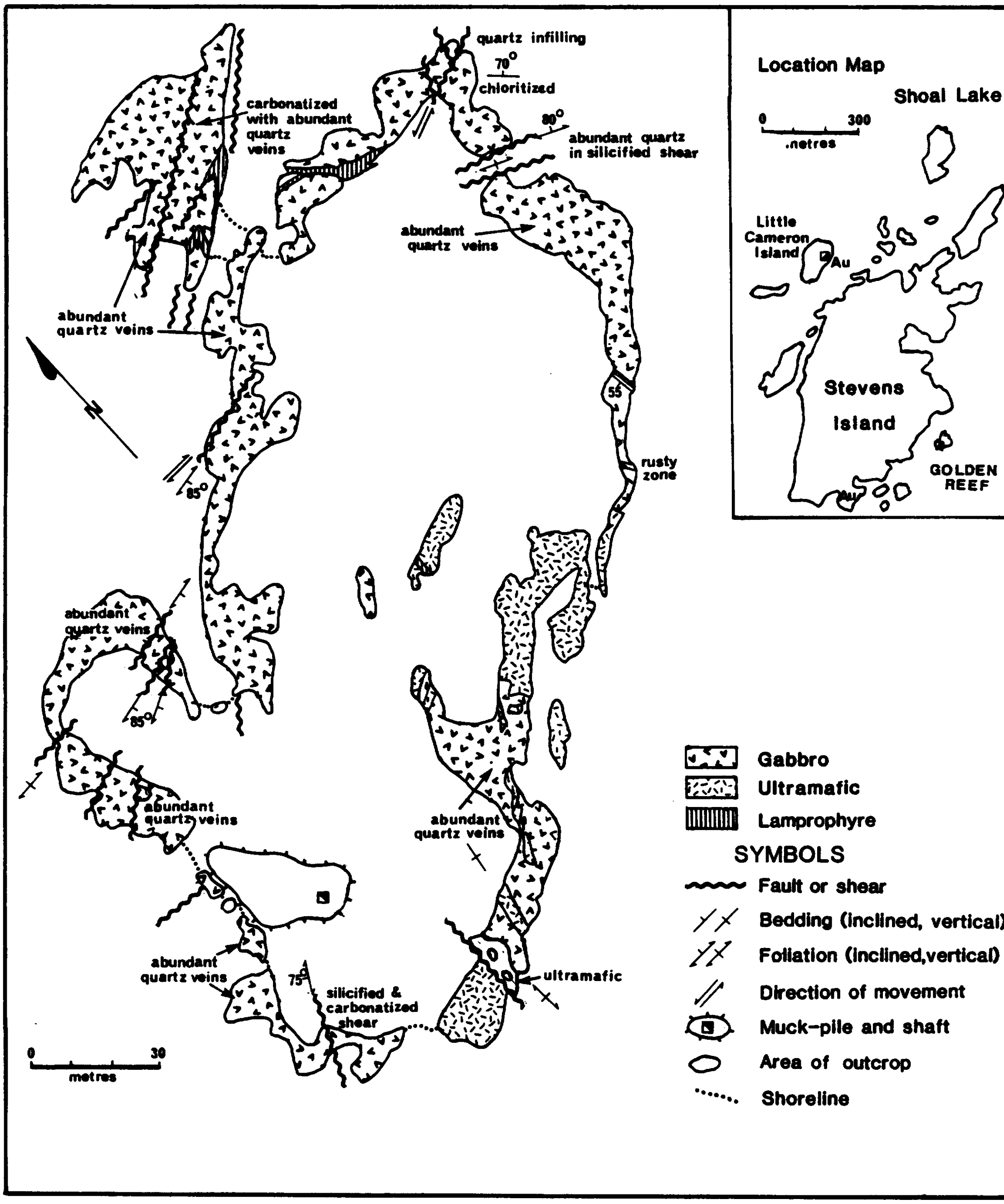


Figure 26. *Geology of the Golden Reef Mine Occurrence.*

ANALYSIS OF MINERALIZATION

A 1 m chip sample taken in this study across the mineralized shear, where it is exposed on the southwestern portion of the island, contained an average of 430 ppb gold.

DEVELOPMENT HISTORY
Circa 1901: Extensive surface examination of the Mikado Reef vein. Twenty tons of ore were sent to the Crown Point stamp mill for treatment. Results were very satisfactory.

Late 1901 to 1903: The Mikado Reef Mine was sold to Golden Reef Mining Co. of Traverse City, Michigan, and was renamed the Golden Reef Mine. A 2 m by 2.7 m shaft, inclined 60°S, was sunk to a depth of 56 m, with 29 m of lateral work on the 30.5 m level and 42 m of lateral work on the 56 m level.

SELECTED REFERENCES
Carter, 1902, OBM, Vol. 11, p. 253
1904, OBM, Vol. 13, p. 62
Miller, 1903, OBM, Vol. 12, p. 94
Davies, 1978, OGS, OFR 5242, p. 103-104
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 44-51

53. GREAT NORTHWEST MINING COMPANY LIMITED OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic to intermediate metavolcanic rocks with felsic porphyry tuff or dike

CLASSIFICATION
1d, 2s(?)

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°37'40"	(49.6278°)
	Long.	94°55'42"	(94.9283°)

ACCESS
The occurrence is on old mining location C.R.26, on the northern side of Clytie Bay, about 600 m northwest of Clytie Bay Landing. The old workings may be reached by boat, or by foot from a cottage access road.

DESCRIPTION
Geology: A moderate to strong, pervasive foliation, striking 055° and dipping nearly vertically, is oblique to a feldspar porphyry unit, which strikes 115°. The porphyry is either intrusive or is a tuffaceous horizon, conformable with the surrounding intermediate and mafic tuffaceous rocks.

Mineralization: The shaft was sunk on a sheared and brecciated felsic porphyry, with local zones of quartz-sericite schist trending 055° and dipping vertically. No major quartz veins are visible, although quartz is present as 1 cm wide veinlets and as irregular lenses. The sheared rock is iron-stained, and minor disseminated pyrite is visible on the muck pile. A grab sample of mineralized quartz taken by Davies (1978) contained trace gold.

DEVELOPMENT HISTORY
Circa 1903: A 3.0 m by 2.1 m and 10 m deep shaft (pit) sunk on mining location C.R. 26 by the Great Northwest Mining Co., Ltd. of Toronto.

Post-1903: The property was restaked by Olympia Gold Mines Ltd. as K13464.

SELECTED REFERENCES
Carter, 1904, ODM, Vol. 13, pt. 1, p. 62
Davies, 1978, OGS, OFR 5242, p. 76-77

54. GREY EAGLE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Felsic dike in basalt

CLASSIFICATION
1d, p

LOCATION

Jaffray Township:	NTS	52E/16SW
	Lat.	49°45′22″ (49.7560°)
	Long.	94°24′58″ (94.4160°)

ACCESS
A shaft was sunk on location P217, subsequently restaked as K-6164. The shaft is 3.3 km east of the eastern limit of the Town of Kenora and is accessible by a trail which leads north from Highway 17.

DESCRIPTION
Geology: The bedrock is predominantly fine- to medium-grained basalt (Figure 27). Locally, shearing has developed parallel to volcanic stratigraphy and to the contact of the Jones Road quartz monzonite stock, which is 400 m to the east. Felsite dikes occur in some shear zones.

Mineralization: A massive, very fine-grained dike of felsite or quartz porphyry, about 8 m wide, strikes 020° and dips 80°E. Traces of quartz, carbonate, tourmaline and pyrite occur in fractures in the dike. Minor pyrite is also evident in the basalt hanging wall. A shaft, believed to be about 29 m deep (Thomson 1945), is in felsite near the hanging wall, and 90 m to the north a pit was sunk to expose the felsite at the hanging wall. A distinctive quartz vein is not evident in either of these workngs.

DEVELOPMENT HISTORY
Circa 1896: Shaft sunk to a depth of 9 m.

1897: Pitting, trenching and shaft sinking to 15 m carried out by International Gold Mining and Development Co.

Circa 1939: Prospected by J. Thrasher.

SELECTED REFERENCE
Thomson, 1945, A Short Report on the Thrasher Claim Group, Resident Geologist's Files, Kenora

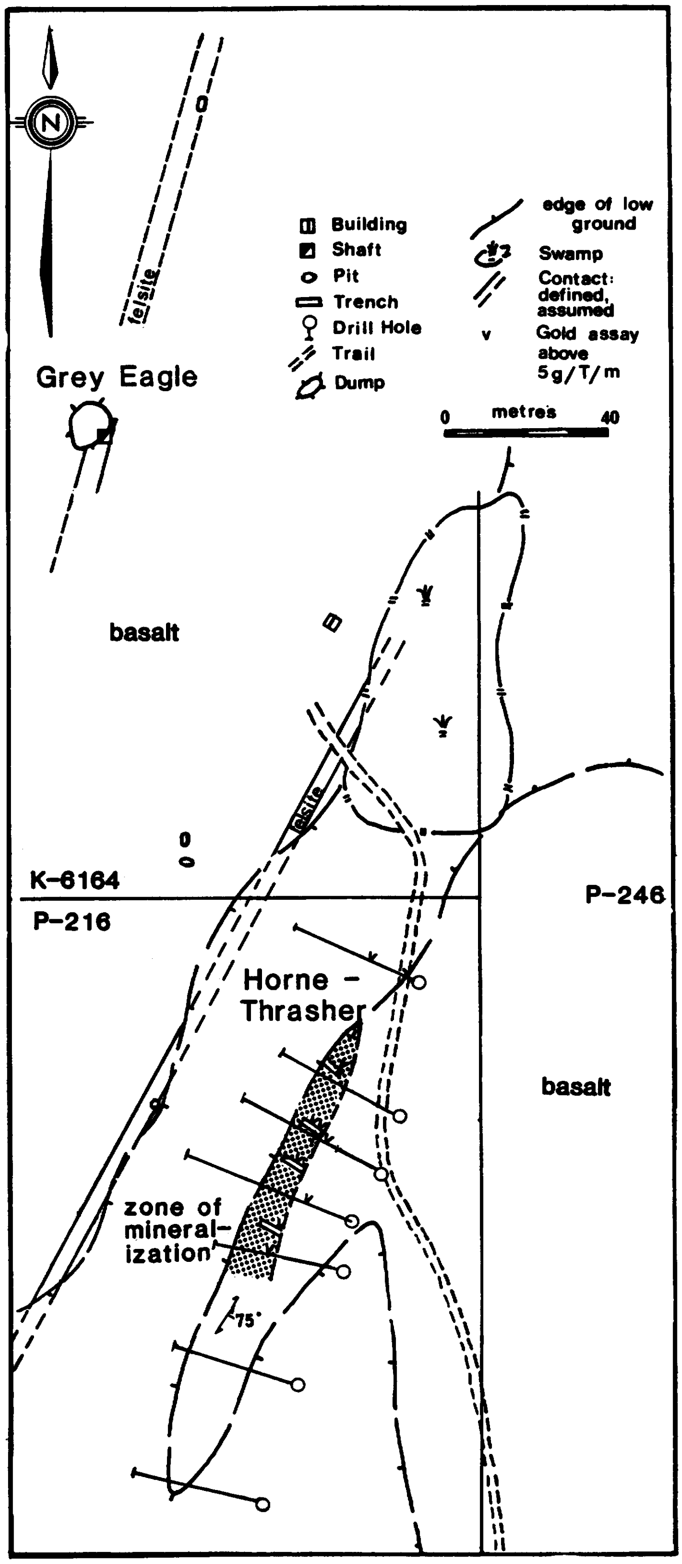


Figure 27. *Geology of the Grey Eagle and Horne-Thrasher Occurrences.*

55. HEENAN MINE

Also known as the Hay Island Mine

COMMODITY
Gold

ROCK ASSOCIATION
Sheared, mafic volcanics

CLASSIFICATION
la, c

LOCATION
Hay Island, Lake of the Woods: NTS 52E/9NW
Lat. 49°39'26" (49.6573°)
Long. 94°22'32" (94.3754°)

ACCESS
Location K-511, sometimes referred to as Heenan's Mining Location, is in the northwestern part of the long eastern arm of Hay Island. The body of water to the north, shown on some maps as East Bay, is separated from the main body of Bigstone Bay by a number of small islands. The location is 13 km southeast of Kenora, and is accessible by boat from there.

DESCRIPTION
Geology: The basalts of Bigstone Bay have been folded about the Hay Island Antiform, the axial trace of which approximately coincides with the northwestern corner of K-511. On the eastern arm of Hay Island, the basaltic rocks are fine- to medium-grained flows, including flow breccia and south-facing pillows.

Mineralization: The original pit was sunk 2 m from the lake shore, on a relatively flat part of an outcrop about 2 m above the present lake level (Figure 28). Coste (1885) indicated that quartz in schist was rich in gold; he reported the mined zone to be 2 ft (60 cm) wide with a strike of 090° and a dip of 85°S. The 1.8 by 3 m pit was apparently sunk to lake level.

About 220 m west, and approximately on strike with the original pit, a 2 m by 3 m vertical shaft was sunk to an estimated depth of 25 m. There is no obvious quartz vein in the well-defined shear zone evident in the shaft walls, but a vertical, carbonate-bearing alteration zone is present on the eastern wall. Coste (1885) reported that the friable mineralized rock consisted of quartz and calcite, with pyrite and arsenopyrite. Most of the rock on the dump is fine-grained basalt with carbonate-filled fractures, but quartz up to 5 cm across was present in one block. Pyrite, with minor pyrrhotite and a trace of arsenopyrite, is mainly associated with the carbonate and slip surfaces.

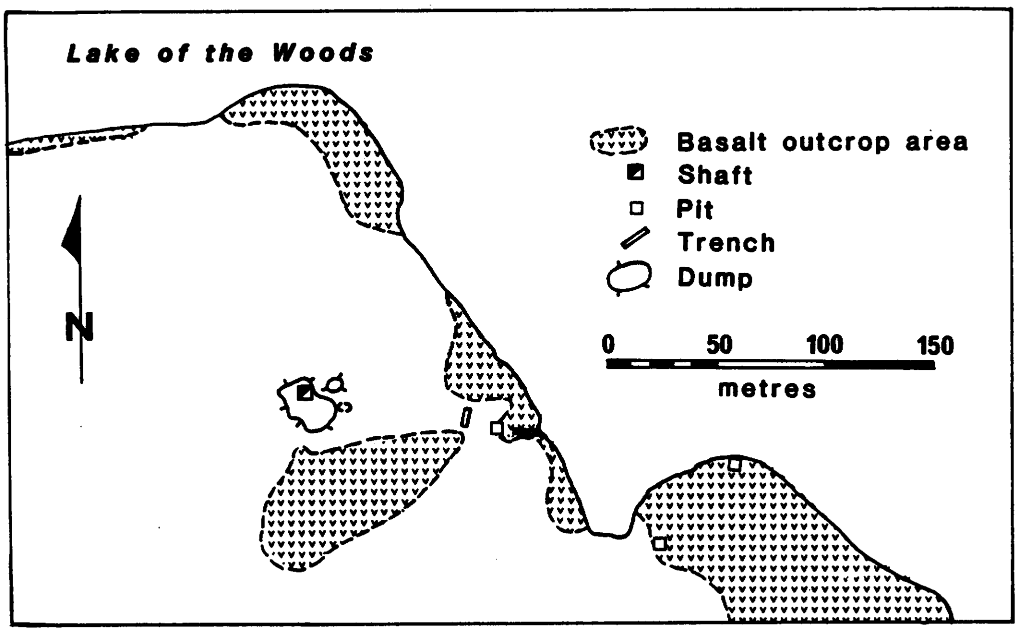


Figure 28. *Geology of the Heenan Mine.*

DEVELOPMENT HISTORY
Circa 1880: Gold discovered at the lake shore.

Circa 1881-82: High grade gold removed from pit. The lack of trenching along strike suggests that gold was restricted to a very short strike length.

Circa 1883: Shaft sunk on supposed continuation of the vein.

Circa 1884: Work terminated, presumably due to lack of gold.

SELECTED REFERENCE
Coste, 1885, GSC, Part K, p. 11

56. HILLY LAKE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Strongly sheared zone hosted in granodiorite

CLASSIFICATION
4c

LOCATION

Jaffray Township:	NTS	52E/16SW	
	Lat.	49°45'26"	(49.7573°)
	Long.	94°22'32"	(94.3756°)

ACCESS
The mining group consisted of the "White" mineral claim, 432 P, 431 P and the east half of 555 P. The main occurrence is located on the central-western shore of Hilly Lake, 1 km south-southeast of the Jones Road - Canadian Pacific Railroad intersection. The site is easily reached from the western segment of Hilly Lake Road, which lies about 100 m to the west.

SIZE AND GRADE
Eight tons of "ore", which included a large proportion of waste, were sent to the Kenopo Mill in Kenora. The average net return was $18.19 per ton (Assessment Files, Toronto; Whimster 1940). An additional 2 tons were shipped, but the results are not recorded.

DESCRIPTION
Geology: The occurrence is hosted by granodiorite of the Island Lake stock, and lies about 600 m east of the western margin of the intrusion, where a 60 m wide hybrid zone contains numerous partially assimilated blocks of basalt (Figure 29). The Island Lake body is separated by a 250 m wide strip of basalt from the Jones Road quartz monzonite stock, which has been interpreted to be the youngest intrusion in the area (King 1983) and which lies along the axial trace of the northeast-trending Airport Anticline.

A sample of medium-grained granodiorite taken 15 m from the mineralized zone records little strain; quartz displays undulose extinction, but has not been recrystallized to subgrains. Oligoclase is partly altered to epidote and sericite. Orthoclase crystals are, locally, largely replaced by sericite and epidote. Hornblende and biotite appear to be primary, although the margins of numerous hornblende crystals are replaced by secondary biotite. The absence of chlorite and actinolite-tremolite, combined with the presence of epidote, biotite and hornblende, indicates at least epidote-amphibolite grade metamorphism. The basalts to the west have amphibolite grade mineral assemblages.

Mineralization: Gold values are restricted to several northeast-trending zones of shearing. Background values within the host granodiorite are less than 2 ppb. The two main zones are about 110 m apart, strike approximately 065° and have near vertical dips. The southernmost shear zone was examined in detail in this study.

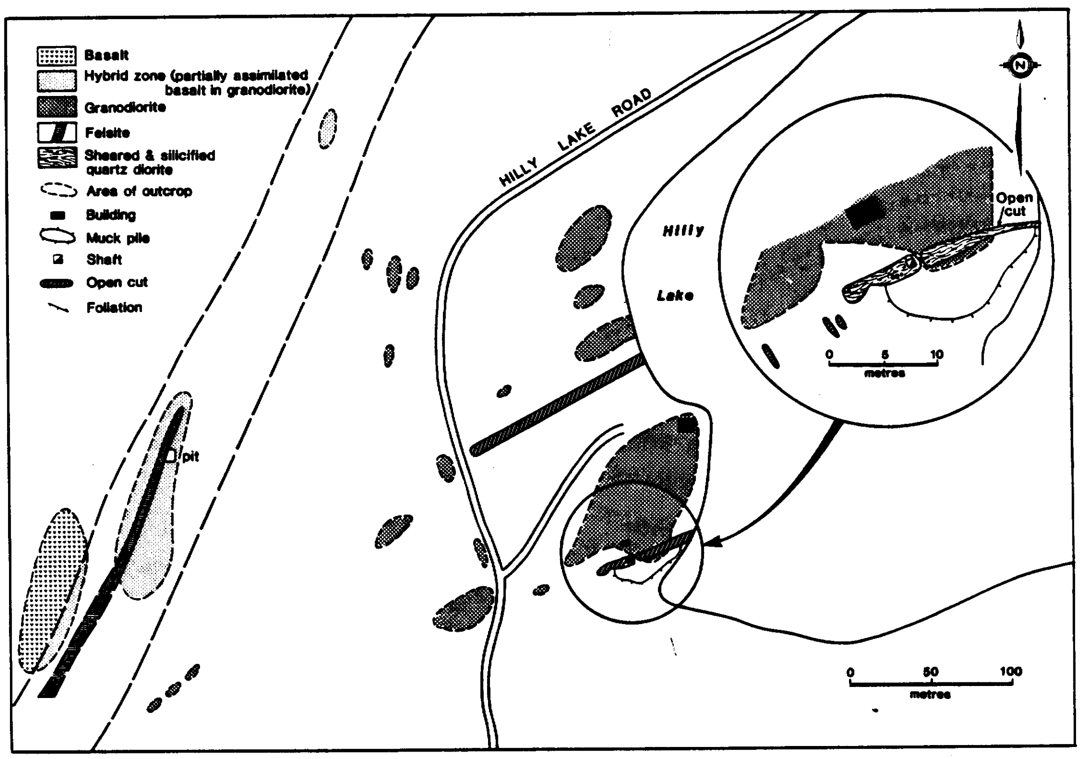


Figure 29. *Geology of the Hilly Lake Occurrence. Modified from Harder and Morse (1980).*

This zone is about 0.5 m wide and ranges from cataclasite on the margins to mylonite in the core. All of the samples examined under the microscope are strongly deformed. Quartz subgrains and coarse feldspars form augen, and phyllosilicates are wrapped around the augen. Quartz also occurs as narrow veinlets and stringers. Oligoclase is replaced by sericite and by coarse muscovite. Larger grains of oligoclase are crumbled and broken. Biotite is the only ferromagnesian mineral present and both sericite and biotite are concentrated along slip planes oriented parallel to the foliation. Considerable epidote is present. In the mylonite end members, quartz also occurs as fine microscopic material throughout the groundmass. In places, quartz is the major rock constituent, and these samples also contain the highest gold values, 210 to 600 ppb.

Assays obtained by Harder and Morse (1980), who examined the northern vein, returned nil gold.

One of several other veins that have been examined by earlier workers occurs close to the granodiorite-basalt contact. This vein contained only a trace of gold (Whimster 1940).

In the southern portion of old mining claim 432P, 2 veins up to 0.3 m wide may be extensions of Veins 1 and 2 of the adjacent Split Lake Occurrence. Whimster (1940) indicated that the veins occur within zones of shearing along the flanks of a northeasterly trending quartz-feldspar porphyry dike. At this site he described tourmaline-bearing, milky white quartz, in places flecked with gold, and associated with both pyrite and chalcopyrite. Gold also occurs within pyritic black schist, which contains small lenses and stringers of quartz. Of the two veins, the easternmost vein contains the most sulphides. Gold values as high as 2 oz/ton ($69.70) were reported; however, values in the range of 0.01 to 0.3 oz Au/ton were more common.

Whimster (1940) also noted that, about 300 m north and 100 m west of the main Hilly Lake Occurrence, 2 narrow, parallel veins yielded $6.00 (0.17 oz Au/ton) and $14.50 (0.41 oz Au/ton) from representative chip samples.

ANALYSIS OF MINERALIZATION
Analyses of material taken in this study from the deformed zone returned 0.3, 0.7, 0.005, 0.2, 0.6, 0.018 and 1.0 ppm Au.

DEVELOPMENT HISTORY
Circa 1925: The main vein was exposed by a 30 m long open cut, 3 to 4 m deep, and a small mill was erected on the property. No production was recorded.

1939 - 1940: A shaft of unknown depth was sunk and considerable trenching was done. Ten tons of ore were sent to the Kenopo Mill in Kenora for treatment.

1980: Examined for Sherritt-Gordon Mines Ltd. Work included geological mapping, a VLF survey and a small amount of trenching.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16, p. 21
Harder and Morse, 1980, Kenora Gold Project, Eschweiller-Hilly Lake Claims (Terrell Option), Geological and Sampling Report, Assessment Files, Toronto
King, 1983, OGS, Preliminary Map P.2618
Tower *et al*., 1940, ODM Vol., 49, pt. 1, p. 119-120

Whimster, 1940, Supplemental report on mineral claims near Hilly Lake, Ontario, Assessment Files, Toronto. (N.B. Whimster's name does not appear on the document.)

57. HOMESTEAD OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared felsic volcanics

CLASSIFICATION
2c

LOCATION

Gauthier Bay, Lake of the Woods:	NTS	52/E/10NW
	Lat.	49°38′54" (49.6483°)
	Long.	94°54′29" (94.9080°)

ACCESS
The shaft is on old mining location J.C. 103. It is on a point on the east side of Gauthier Bay (westernmost Ptarmigan Bay), 1.6 km southwest of the western end of Victoria Island and 7.2 km south of the highway access point to Clearwater Bay. The area is accessible by boat from Clearwater Bay or from Kenora.

DESCRIPTION
Geology: No recent, systematic mapping of the Gauthier Bay area has been carried out, but it would appear that mafic flows are interlayered with considerable intermediate to felsic volcanics. The Canoe Lake quartz diorite stock lies 1 km to the southwest and the volcanic rocks are believed to be stratigraphically equivalent to the lower felsic sequence or upper mixed sequence of Shoal Lake (Davies 1978) and to be mainly north-facing. The area is within the Crowduck Lake - Witch Bay Shear Zone, in which the rocks are predominantly foliated but vary from relatively undeformed to intensely deformed.

Mineralization: Moderately to intensely foliated, intermediate to felsic pyroclastics occur in the general vicinity of the shaft. Foliation trends about 100° and dips steeply north. On a point in the bay a pit, about 2.4 by 2.7 m and 1 m deep, was sunk in carbonatized sericite schist containing disseminated fine pyrite. Approximately 150 m east, and 40m from the shore, a shaft was sunk on cream-coloured, very fine-grained, sericitized rhyolite; only traces of pyrite are evident and no vein quartz was seen. The shaft is 110 feet (33.5 m) deep and only insignificant amounts of gold were encountered in it (A. Gauthier, prospector, personal communication).

DEVELOPMENT HISTORY
Circa 1900: Shaft sunk by J. Gauthier, J. Earngey and Mr. Birbeck.

SELECTED REFERENCE
Davies, 1978, OGS, OFR 5242

58. HOPKINS-HEINTZMAN PROPERTIES (OCCURRENCE)

Includes the B, Q, Miner's and Robby Zones

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows and conformable gabbroic sills and/or flows

CLASSIFICATION
la, o, d

LOCATION

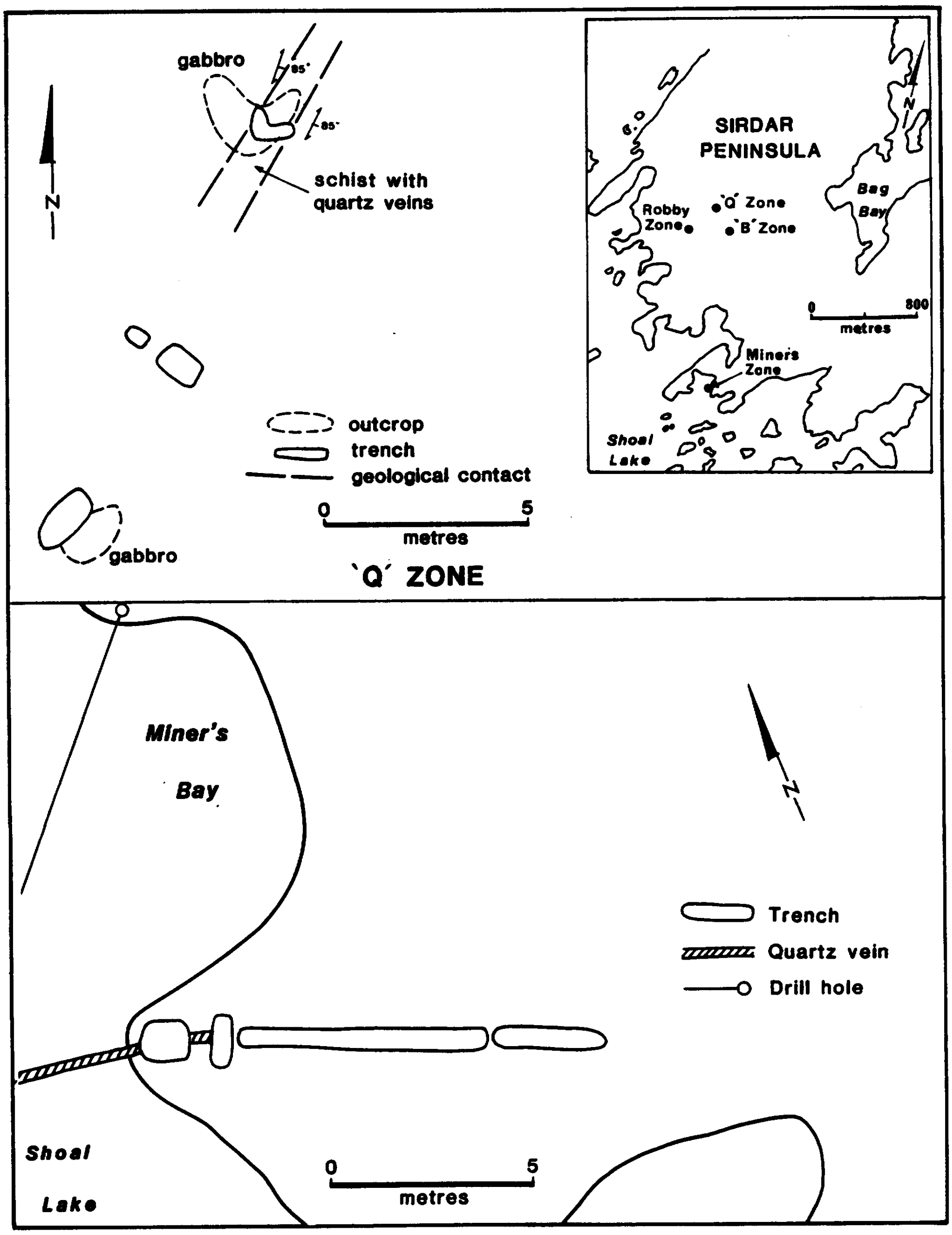
Glass Township:	NTS	52E/10SE	
Miner's Zone -	Lat.	49°34'18"	(49.5717°)
	Long.	94°59'15"	(94.9875°)
Q Zone -	Lat.	49°35'01"	(49.5836°)
	Long.	94°59'30"	(94.9917°)

ACCESS
The Q, B, and Robby Zones are located on claim K31936, about 1.5 km southwest of Cedar Island and 300 to 600 m from the southern shore of Sirdar Peninsula (Figure 30). The Miner's Zone is on claim K32456 on the southern shore of the peninsula, 2.3 km south-southwest of Cedar Island. The area is accessible by boat from Clytie Bay Landing or from Kenora, via Ash Rapids.

DESCRIPTION
Geology: Northeast-trending, fine- to medium-grained, basaltic flows are interlayered with medium- to coarse-grained gabbro, which may, in part, be flows. The Miner's Zone is east of the axis of the northeast-trending Gull Bay Anticline, while the other three zones are to the west of this axis. A west-northwest-trending fault, with apparent dextral displacement, occurs near the Q, B and Robby Zones.

Mineralization: Q Zone: A shear zone, trending 025° and dipping near vertical, is exposed for only 40 m (Figure 30). The 2 m wide zone, which is hosted by medium-grained, massive gabbro, is characterized by three rock types: (1) thin, white, sugary quartz veins; (2) fine-grained to cryptocrystalline, blue-green mylonite or cherty fracture filling containing disseminated pyrite and possibly arsenopyrite; and (3) inclusions of sheared and highly fractured gabbro. Davies (1978) stated "...it is reported to be mineralized in places by sphalerite, chalcopyrite, pyrrhotite and galena. Gold assays are said to be up to 0.36 ounces (12 gms) per ton". Beard and Garratt (1976) reported assays of 0.72 oz Au/ton, 7.5% Zn, and 0.1% Ni.

B Zone: Some 200 m east-southeast of the Q Zone, fine-grained basalt has been intruded by a felsite dike. A weakly to moderately arbonatized, quartz-bearing shear zone up to 1 m wide is contained .lmost entirely within the felsite, striking 080° and dipping steeply orth. Fragmental felsic rock is common on the dump, some of which :ontains considerable pyrite. Arsenopyrite has been noted on the lump, although only low gold values were obtained (Davies 1978). lopkins (1961) reported values up to 0.1 oz Au/ton.



:igure 30. *Geology and development at the Hopkins-Heintzman* *Properties.*

Robby Zone: A series of pits and trenches explored quartz veins, 300 m south-southwest of the Q Zone.

Miner's Zone: According to Davies (1978): "A quartz vein known as the Miner's vein occurs in metabasalt...The vein strikes N80W, dips steeply north, and is up to 5 feet (1.5 m) wide at the surface. In places the vein contains a little sphalerite, chalcopyrite, galena and pyrite: gold is reported to be erratically distributed with assays up to 0.25 ounces per ton." One of 2 drill holes intersected a lightly mineralized shear zone.

ANALYSIS OF MINERALIZATION

Q Zone: A 1 m chip sample taken across the Q Zone during this study assayed 120 ppb gold.

B Zone: A 2 m chip sample of sheared felsite and a grab sample of sheared basalt, taken from the main, or northernmost pit at the B Zone in this study, contained 100 and 710 ppb gold, respectively. A sample of strongly pyritiferous, sheared, chlorite schist from a trench 33 m west of the main pit, and a sample of relatively fresh, medium-grained basalt taken about 75 m north of the trench contained 180 and 3 ppb gold, respectively.

DEVELOPMENT HISTORY

Circa 1898: Trenching and pitting by persons unknown.

1961 - 1964: Hopkins Mining Consultants Ltd. examined parts of the Sirdar Peninsula and the adjoining area to the south. Work included prospecting, geological mapping, stripping and trenching. Two diamond-drill holes (totalling 78.5 m) were drilled to intersect the Q Zone. A second two holes (totalling 84.3 m) were drilled to test the Miner's Zone.

1983: Selco completed geological mapping and geophysical surveys over the Q and B Zones.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 21
Davies, 1978, ODM, OFR 5242, p. 81
Hopkins, 1961a, Report on a Geological Survey on the Hopkins-Heintzman Gold Prospect, Assessment Files, Kenora
1961b, Drill logs and maps, Hopkins-Heintzman Gold Prospect, Assessment Files, Kenora

59. HORNE-THRASHER OCCURRENCE

Also called the Thrasher-Horne Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Sheared basalt and felsite

CLASSIFICATION
lb, d, p

LOCATION

Jaffray Township:	NTS	52E/16SW
	Lat.	49°45'15" (49.7543°)
	Long.	94°24'50" (94.4138°)

ACCESS
The original property consisted of mining location P-216 and claims K6164 and 6165. The occurrence is in the northeastern corner of P-216, 3.4 km east of the eastern limit of the Town of Kenora, and is accessible by a trail which leads 350 m north from the Highway 17.

DESCRIPTION
Geology: Fine- to medium-grained basalt to the west of the Jones Road quartz monzonite stock is locally sheared, especially parallel to the edge of the stock which here approximates the trend of the volcanic stratigraphy. Felsite dikes are present in some of the shear zones (Figure 27).

Mineralization: A number of shear zones contain quartz veins, tourmaline and pyrite, hosted both by fractured felsite and chloritic schists. The main Horne-Thrasher zone consists of carbonate-bearing, chloritic schists, striking between 025° and 045° and dipping about 75°SE, within which are some small felsic lenses. Four trenches and a pit were sunk over a 50 m strike length; widths of 6 to 10 m were encountered in 6 of 7 holes drilled over a strike length of 135 m. The mineralization consists of fine pyrite and pyrrhotite and minor arsenopyrite, mostly in the basaltic schists but also in sheared felsite and in quartz veinlets.

ANALYSIS OF MINERALIZATION
The trenches were sampled by Sylvanite Gold Mines Ltd. in 1939 and averaged about 0.17 oz Au/ton over widths of 17 ft (about 6 gms Au/tonne over 5.2 m). In 1940, 7 holes were drilled by Pioneer Gold Mines Ltd., but the best intersections were 0.32 oz Au/ton over 2 ft and 0.27 oz Au/ton over 5 ft. A hole drilled 17 m north of the north pit intersected 0.17 oz Au/ton over 8 ft (Holbrooke 1943).

DEVELOPMENT HISTORY
Circa 1895: Some pitting done. A shaft was sunk on the Grey Eagle Occurrence, about 160 m to the north-northwest.

Circa 1939: Trenching by J. Thrasher and sampling by Sylvanite Gold Mines Ltd.

1940: Drilling by Pioneer Gold Mines Ltd.

1944: Sampled by MacIntyre Porcupine Gold Mines Ltd.

SELECTED REFERENCES
Holbrooke, 1943, Horne-Thrasher Property (for Sylvanite Gold Mines Ltd.), Resident Geologist's Files, Kenora
Thomson, 1945, A Short Report on the Thrasher Claim Group, Resident Geologist's Files, Kenora

60. IMPERIAL MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Contact zone between mafic metavolcanic flows and the Canoe Lake quartz diorite stock

CLASSIFICATION
1a, d

LOCATION

Glass Township:	NTS	52E/10 NW	
	Lat.	49°34′51"	(49.5808°)
	Long.	94°56′17"	(94.9381°)

ACCESS
The workings are on mining location D397, 1.6 km southeast of the Mikado Mine, or 0.9 km north of the eastern end of Helldiver Bay. The area may be reached by boat from Clytie Bay Landing or from Kenora via Ash Rapids.

DESCRIPTION
Geology: The contact between the Canoe Lake quartz diorite stock and fine-grained basalt strikes west-northwest across the property, 100 m northeast of the old workings. Close to the contact, granite dikes and veins, quartz veins and silicified zones occur, mainly along shear zones in the basalt (Davies 1978). The north-trending stratigraphy terminates abruptly at east-trending faults both south and north of the property. Numerous east- and northeast- trending linear features cross the property. In the vicinity of the old workings, the granite is altered and the basalt is carbonatized.

Mineralization: Bow (1900) reported that "there are said to be five parallel zones within a distance of 110 or 120 feet; these are simply zones of quartz and greenstone, mixed; the quartz occurring in small stringers and sometimes forming a definite vein." The east shaft is located on the contact between a fine-grained granodiorite dike and fine-grained pyritiferous basalt. A 20 to 30 cm wide quartz vein and several smaller quartz veins and veinlets cut the contact. The relationships between basalt and granodiorite are difficult to determine, due to a large muck pile covering the area. The southeast-striking, east-dipping quartz veins are poorly mineralized with spotty pyrite; however, visible gold has been reported (Davies 1978).

The west shaft was sunk in basalt, and was probably designed to provide access to the quartz vein at depth. There is no evidence in the muck pile that the vein or the granodiorite dike were encountered. North of this shaft is a northeast-trending fracture zone; blocks derived from a shallow, 30 m long trench indicate that cherty silica occurred in the zone and that brecciation of this was followed by intense carbonatization.

ANALYSIS OF MINERALIZATION
Samples taken in this study of the altered, fine-grained granodiorite and footwall basalt contained 7 ppb and 23 ppb of gold, respectively.

DEVELOPMENT HISTORY
Circa 1899: The Imperial Mine was owned by H.C. Symmes of Niagara Falls, Ontario. Workings consisted of a 5 by 8 ft shaft that was 70 ft deep, with 18 ft of lateral work on the 65 ft level. A second shaft, 50 ft to the east, was said to be 50 ft deep, and was full of water.

SELECTED REFERENCES
Bow, 1900, OBM, Vol. 9, p. 57, plates 17, 19
1901, OBM, Vol. 10, p. 79
Davies, 1978, ODM, OFR 5242, p. 82-83

61. INDIAN JOE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Strongly foliated intermediate tuff and flows

CLASSIFICATION
2a, o

LOCATION
North shore of Clytie Bay on Shoal Lake:

NTS 52E/10SW
Lat. 40°37′24" (49.6233°)
Long. 94°58′37" (94.9769°)

ACCESS
The occurrence, which is 1.6 km west of Clytie Bay Landing, is in an area which has been developed for summer cottages and workings are no longer visible. The peninsula on which the original work was done is now accessible by road, as well as by boat.

DESCRIPTION
Geology: Intensely sheared intermediate volcanics strike northeast in the Clytie Bay area, but there is evidence that bedding is, in part, at a high angle to foliation (Davies 1978). According to Carter (1904, p. 62) "the shaft is sunk in a disturbed schistose band of slaty trap (which) contains a few parallel stringers and pockets of quartz".

Mineralization: Miller (1903, p. 94-95) reported that the vein strikes northeast, dips 75°NW, and possesses a "banded character, and is made up of quartz, vein pyrites, and schists". Parsons (1911, p. 167) indicated that compositional layering crosses foliation.

DEVELOPMENT HISTORY
1902: Property developed by the Great Northwest Company, with a 3 by 4 m shaft sunk to 18 m depth.

1903: Shaft reached depth of 26 m. At 24 m depth, 3.5 m of drifting and cross-cutting were carried out.

SELECTED REFERENCES
Carter, 1904, OBM, Vol. 13, p. 62
Davies, 1978, OGS, OFR 5242, p. 83-84
Miller, 1903, OBM, Vol. 12, p. 94-95
Parsons, 1911, OBM, Vol. 20, p. 167

62. INGLIS LAKE OCCURRENCE

Also called the Williams Option, the Waite Option and the Westricia Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate to felsic pyroclastics

CLASSIFICATION
2a

LOCATION

Inglis Lake Area:	NTS	52E/10NE	
	Lat.	49°43'13"	(49.7203°)
	Long.	94°40'58"	(94.6828°)

ACCESS
The main vein is about 100 m east of the southeastern corner of Inglis Lake. The Inglis Lake Road passes west and south of the Lake and, at its closest point, is about 400 m south of the vein.

DESCRIPTION
Geology: A synclinal axis passes through Clearwater Bay. The intermediate to felsic pyroclastics to the north overlie mafic volcanics, which are in contact with granitic rocks of the English River Subprovince. Typically, foliation is well developed in all of the rocks, and they are locally cut by quartz veins or felsic dikes.

Mineralization: A vein has been traced for over 100 m. Over much of its length, the vein has a width of about 22 cm. However, a 12-metre long bulge has an average width of 80 cm. Prospecting revealed several other veins, but these are all short.

ANALYSIS OF MINERALIZATION
The main vein was sampled over much of its length. The western 90 m averaged about 0.14 oz Au/ton. The bulge in the vein contains about 0.22 oz/ton Au. Thomson (1936) stated that "the gold values were not encouraging".

HISTORY OF DEVELOPMENT
Circa 1935: Discovery and trenching of main vein.

1936: Optioned by J.H.C. Waite. Prospecting carried out.

1937: Optioned by Westricia Gold MInes Ltd; which trenched and sampled the veins.

SELECTED REFERENCES

Thomson, 1936, ODM, Vol. 45, Map 45B
Assay Plan, Williams Option, Resident Geologist's Files, Kenora

63. ISLAND 220 OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
1a, o, p

LOCATION

Indian Reserve 38B:	NTS	52E/9NW	
	Lat.	49°43′16"	(49.7210°)
	Long.	94°22′42"	(94.3778°)

ACCESS
The western side of Pine Portage Bay has, since the latter part of the 19th century, been an island separated from the mainland Indian Reserve by a weed-filled "channel". It is known as Island 220, although it is part of the Reserve, and is accessible by boat from Kenora.

DESCRIPTION
Geology: West-facing, fine- to medium-grained basalt of Pine Portage Bay is in the upper part of the Bigstone Bay tholeiitic sequence. Near the top of the sequence, a few thin sedimentary layers are present between basaltic flows. Overlying the sequence at Sultana Island are chert, fine volcaniclastics and intermediate to felsic flows and pyroclastics, which are folded about the Sultana Syncline.

Mineralization: Thomson (1946) examined a rusty shear zone at least 3 m wide in the north central part of the island. The shear strikes 055°, dips 80°SE, and consists of chlorite schist with up to 30% pyrite and some sugary quartz veins with pyrite, chalcopyrite and arsenopyrite. A 1.5 m by 3 m shaft was sunk an estimated 5.4 m on the schist.

Thomson (1946) reported the presence of trenches in rusty sediments near the northern shore of the island. Some coarse white quartz veinlets occur here and in nearby chloritic schists. Thomson also examined a shear zone 300 m to the south of the shaft, where a vein of coarse white quartz was exposed in a 3.3 m by 1.8 m pit which is 3 m deep. The vertically dipping vein strikes 022° and encloses some carbonate, chlorite and specks of chalcopyrite. A fourth zone, on the western side of the island, consists of quartz veinlets in a carbonatized basaltic schist.

ANALYSIS OF MINERALIZATION
Samples of sugary quartz from the shaft dump with chlorite, pyrite, chalcopyrite and arsenopyrite contained 0.04, trace, and 0.02 oz Au/ton (Thomson 1946).

DEVELOPMENT HISTORY
Circa 1895: Pitting, trenching and shaft sinking.

Circa 1935: Sample collected by J. Skee was reported to assay $200.00 per ton.

SELECTED REFERENCE
Thomson, 1946, Report on Abaco Mines Ltd., Resident Geologist's Files, Kenora

64. ISLAND 276, BIGSTONE BAY OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
la, o

LOCATION
Southwestern part of Bigstone Bay:
NTS 52E/9NW
Lat. 49°39'32" (49.6588°)
Long. 94°22'06" (94.3683°)

ACCESS
Island 276, originally mining location 642P, is about 14 km southeast of Kenora, from which it may be reached by boat.

DESCRIPTION
Geology: Pillowed and massive basaltic flows of East Bay, in the southwestern part of Bigstone Bay, lie near the crest of the Hay Island Antiform. Flows face west in the northern part of the bay and south-southwest in the southern part of the bay. Foliation is developed locally, mainly parallel to volcanic stratigraphy.

Mineralization: The foliation in the basalt is parallel to the axial trace of the antiform, with a strike of about 060° and a dip of 75°NW. At the southeastern edge of the island a shear zone, striking northeast and dipping steeply northwest, contains an irregular white quartz vein and some carbonate. The quartz vein is 15 to 60 cm wide; it is almost devoid of sulphides, except for pyrite which has filled small vugs. A trench has been blasted near the water's edge.

ANALYSIS OF MINERALIZATION
A grab sample of rusty grey quartz with rare pyrite taken in this study contained 1000 ppb gold.

DEVELOPMENT HISTORY
Not known.

65. ISLAND MH 71 OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
1a, b

LOCATION
Northern part of Shoal Lake: NTS 52E/11
Lat. 49°37′56″ (49.6322°)
Long. 95°00′12″ (95.0032°)

ACCESS
Island MH 71 is near the north part of Shoal Lake, about 3.5 km west-northwest of Clytie Bay Landing. It is accessible by boat from Clytie Bay.

DESCRIPTION
Geology: The volcanic stratigraphy in the Shoal Lake area strikes northeast and has been subdivided into a lower mafic assemblage, a lower felsic assemblage and an upper mafic assemblage (Davies 1978). In the northern part of Shoal Lake, the volcanics face northwest, although the felsic volcanics have been strongly sheared and there is some evidence for folding within them. The lower part of the upper mafic assemblage includes medium-grained sills or thick flows and in this respect resembles the lower mafic assemblage, but it also includes more pillow breccia and some interlayered intermediate volcanics and sediments.

Mineralization: On Island MH 71, approximately 400 m above the base of the upper volcanic assemblage, sheared basalt lies to the northwest of a mafic sill. The basalt contains irregular veins and veinlets of quartz, which are in part oblique to the northeast-striking foliation. Locally there is abundant carbonate and up to 10% pyrite. A shaft was sunk to an estimated depth of 9 m on one vein, which is 30 to 40 cm wide, strikes 020° and dips 75°E. The vein is sugary, white, and contains <1% pyrite; it also crops out in trenches 10 m and 20 m to the southwest of the shaft. Some 30 m to the east-northeast, another trench exposes a second quartz vein about 15 cm wide.

ANALYSIS OF MINERALIZATION
A chip sample, taken in this study across 35 cm of the quartz vein in the shaft, contained 270 ppm gold. Samples of the adjacent sheared basalt showed increases in CaO, Na_2O, K_2O, As, Au, Ba, Sr, CO_2 and S

toward the vein, and decreases in TiO_2, Fe_2O_3, FeO, MgO, Cu, Zn, Zr, F and H_2O^+. The gold content 5 cm from the vein was 24 ppb; 12 cm from the vein, it was 24 ppb.

DEVELOPMENT HISTORY
Circa 1898: Trenching and shaft sinking by persons unknown.

SELECTED REFERENCE
Davies, 1978, ODM, OFR 5424

66. JENNY LEIGH MINE OCCURRENCE

Also called the Jenny Lea Mine

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
4c, 1b, o

LOCATION

Manross Township:	NTS	52E/9SE	
	Lat.	49°37′16"	(49.6213°)
	Long.	94°14′15"	(94.2300°)

ACCESS
The occurrence is on old mining location S47, about 650 m northwest of the western tip of Stella Lake, or about 1.7 km southeast of Oblong Lake. Winter timber access trails extend from the Witch Bay Road south and west of Stella Lake to within 700 m of the occurrence.

DESCRIPTION
Geology: The area north of Witch Bay is underlain by basalt, which is interlayered with mafic and ultramafic sills. The mafic-ultramafic section is about 3 km across, but incorporates a syncline through Lac la Belle and an anticline near the Wendigo Mine. Another anticline and syncline may be present between Oblong Lake and Lac la Belle. The east- to east-northeast-striking stratigraphy is cut obliquely by the granodiorite of the Dryberry Batholith; the contact strikes northwest from the western end of Stella Lake.

The contact between the medium-grained, grey granodiorite and the mafic rocks coincides with low, wet ground in many places. It is exposed in the northern part of mining location S47, where "strain streaking" in the basalt and weak foliation in the granodiorite both strike about 130° and dip 70°NE.

Mineralization: A northeast-trending valley crosses the contact at a high angle, and a number of pits and trenches were sunk along this valley. None of these now exposes outcrop, but one 6 m long trench on the southeastern side of the valley is in rusty basalt which contains disseminated pyrite. A little quartz is present in the muck pile. The trench is within 80 m of the contact. About 50 m east of the contact a 3 m by 3 m shaft was sunk in sheared granodiorite, also on the southeastern side of the valley. The shaft is estimated to be 10 m deep. Veins, veinlets and lenses of white quartz, containing minor pyrite and carbonate, occur in the shear zone; the strike of these is about 040° and dips are about 70°SE.

The veins and lenses are mostly less than 10 cm wide, but a piece of pyrite-bearing quartz on the dump was 30 cm wide.

Coleman reported that "the vein appears to be traceable several hundred yards, nearly north and south, with a width of two or two and a half feet (60-75 cm) of quartz where uncovered. Two shafts have been sunk upon it ... The northern shaft is in grey granite; the southern appears to be in greenstone. The quartz in the first shaft seems to narrow as it goes down." The second shaft was not located during the present survey.

ANALYSIS OF MINERALIZATION
A grab sample from the shaft taken during this study of quartz, containing pyrite and carbonate, contained 45 ppb Au. A grab sample of mineralized granodiorite from the dump contained 100 ppb Au. The rusty basalt from the trench west of the contact contained 55 ppb Au and 360 ppm Cu, and rusty quartz from the muck beside the trench contained 130 ppb Au. All samples contained less than 2 ppm Ag, but were high in As (average about 90 ppm).

DEVELOPMENT HISTORY
Prior to 1898: Two shafts sunk, depths unknown.

SELECTED REFERENCES
Beard and Garratt, 1976, OGS, MDC 16, p. 22
Bow, 1898, OBM, Vol. 7, p. 39
Coleman, 1898, OBM, Vol. 7, p. 112
Suffell, 1930, Bigstone Bay Area, ODM, Map 39f

67. KEEWATIN MINE (PROSPECT)

Also known as the Keywadin Mine or the Hay Island Mine

COMMODITY
Gold

ROCK ASSOCIATION
Massive and pillowed mafic flows

CLASSIFICATION
lb, p

LOCATION

Hay Island, Lake of the Woods:	NTS	52E/9NW	
	Lat.	49°40′18"	(49.6717°)
	Long.	94°22′38"	(94.3772°)

ACCESS
The original property consisted of patented location 7K and adjoining water lot MCP5. Located on the eastern side of the northern tip of Hay Island (originally called Heenan Point but now shown on maps as Needle Point), the prospect is 1.2 km west-southwest of Copper Island in Bigstone Bay, and 13 km southeast of Kenora. It is accessible by boat from Kenora.

DESCRIPTION
Geology: West-facing, fine-grained, pillowed and massive, mafic flows on the northern tip of Hay Island (Figure 31) occur in the upper third of a thick sequence of tholeiitic flows and sills. The top of the sequence consists of mafic and ultramafic sills and pillowed basalts, which are overlain by intermediate to felsic pyroclastics. The sequence has been folded about the Hay Island Antiform.

In the vicinity of the Keewatin Mine, much of the basalt is strongly foliated, with strikes of 010° to 040° and dips from 60°E to 85°E. The foliated basalt commonly contains up to 2% pyrite and thin veins and lenses of quartz, some of which contain black tourmaline. Carbonate is abundant, occurring as veins, veinlets, lenses, thin coatings on slip surfaces and as amygdule fillings. Small scale folding of the quartz and carbonate lenses is evident in some of the most highly foliated zones. Some minor folding is indicative of reverse movement.

Mineralization: Three shafts and a number of pits and trenches tested the veins. The northern shaft was, in 1884, at the water′s edge; it is now totally under water and difficult to locate, but was sunk to a depth of 9 m on a 1.2 m wide quartz vein. The southern shaft is on a hill some 100 m southwest of the present shoreline. Here, foliated basalt, with carbonate veins and lenses and minor pyrite, strikes 035° and dips southeast. A fracture, nearly parallel with the foliation and with a strongly foliated zone up to 20 m wide in the hanging wall, contains a cryptocrystalline to sugary, white quartz vein which at the surface was about 15 cm wide (Coste 1885). The vein was reported to contain tourmaline, pyrite, minor chalcopyrite, traces of galena, sphalerite and arsenopyrite, and to release fine gold when crushed (Coste 1885). The adjacent schist contains abundant 1 mm pyrite cubes. The shaft, about 3 m by 3 m, is inclined 62° to the southeast with the quartz-bearing fracture as the footwall. The shaft is 20 m deep; at the bottom the quartz was 45 cm wide, but was not as well mineralized. A third shaft was sunk vertically to 30 m at a point near the present shore and between the other shafts. The 3 m by 4 m shaft is now beneath 3.5 m of slumped muck and overburden, but was sunk in foliated basalt having a strike of 027° and a steep east dip (Forsgren 1981). Drifting and cross cutting, totalling 65 m, were carried out in two directions before the property was abandoned. Pitting was done on an east zone which consists of a 2 m wide shear zone striking 101° and dipping 60°E. The sheared basalt is cut by granular white quartz stringers, which are reported to contain pyrite, chalcopyrite and arsenopyrite (Coste 1885).

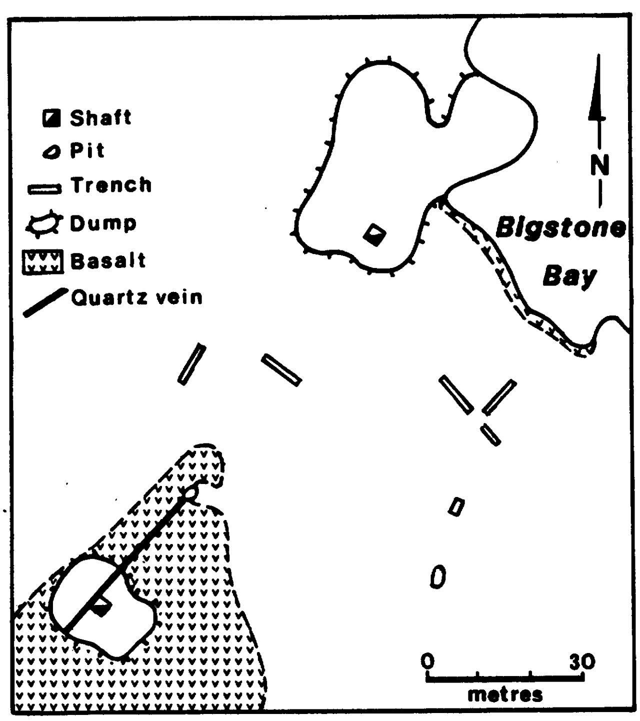


Figure 31. *Geology of the Keewatin Mine Prospect. Modified from Forsgren (1981).*

ANALYSIS OF MINERALIZATION

Forsgren (1981) took a chip sample across 3 m of carbonatized, foliated basalt at the south shaft but it contained only a trace of gold and silver. He also took a grab sample of sulphide-bearing quartz from the footwall of the shaft, 3.6 m below the surface, which contained 0.03 oz Au/ton and trace Ag. From the dump of the south shaft, he took a sample of silicified and carbonatized, foliated basalt with 3% pyrite, 1% chalcopyrite and quartz-tourmaline stringers, and a sample of glassy quartz with minor tourmaline, 2% carbonate, 3% pyrite and 2% chalcopyrite; both samples contained 0.02 oz Au/ton and trace Ag. A grab sample of pyrite- and tourmaline-bearing quartz, taken during the present survey from the south shaft, contained 780 ppb Au, <2 ppm Ag and 24 ppm As, and quartz from a pit 30 m to the northeast contained 27 ppb Au, <2 ppm Ag and 5 ppm As.

A 40 cm chip sample across silicified and carbonatized mafic volcanics of the east zone, which included a 6 cm wide quartz vein and about 4% sulphides, contained 0.04 oz Au/ton and a trace of silver (Forsgren 1981).

DEVELOPMENT HISTORY

1879: Mr. J. Dewe presented a sample of quartz to Dr. Bell of the Royal Commission, reportedly from Hay Island. The sample assayed 37.3 oz Au/ton and 1.4 oz Ag/ton. This is the first reported gold discovery on Lake of the Woods.

1883-1884: South shaft sunk 20 m on west vein. North shaft sunk 9 m on east vein (now submerged). An unknown amount of ore was sent to the Argyle Mine to be milled. Partially owned by G. Heenan.

1892: Owned by Messrs. Good and Jones of Winnipeg.

1897-1899: Owned by the Hay Island Gold Mining Co. Name was changed from Keewatin Mine to Hay Island Mine. A third shaft was sunk on a line between the two earlier shafts. Depth was 31 m, with 65.5 m of lateral work at the 30 m level.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 21
Bow, 1898, OBM, Vol. 7, pt. 1, p. 36-37
1899, OBM, Vol. 8, p. 55
1900, OBM, Vol. 9, p. 42
Canadian Mining Review, 1883, p. 4-5
Charlton, 1890, Report of the Royal Commission on the Mineral Resources of Ontario and Measures for Their Development, p. 25, 65
Coleman, 1896, OBM, Vol. 6, p. 97
1898, OBM, Vol. 7, pt. 2, p. 111
Coste, 1885, Gold Mines of Lake of the Woods; Report of Progress 1882-83-1894, Geological Survey of Canada, p. 10K, 11K
Ferguson *et al.*, 1971, ODM, MRC 13, p. 242

Forsgren, 1981, Hay Island Mine, Resident Geologist's Files, Kenora
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 60
Lawson, 1885, GSC, Vol. 1, p. 140-142
Parsons, 1911, OBM, Vol. 20, p. 172
Slaught, 1892, OBM, Vol. 2, p. 233

68. KENOPO CONGLOMERATE SHOWING (PROSPECT)

Also called the Poirier Group

COMMODITY
Gold

ROCK ASSOCIATION
Conglomerate, mudstone, and mafic metavolcanic flows

CLASSIFICATION
3c

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42′28″	(49.7078°)
	Long.	95°04′56″	(94.0822°)

ACCESS
The prospect is located on claim K8555, about 600 m southeast of the southernmost bay of Electrum Lake and 1.6 km east of the eastern end of High Lake. The pit is 25 m south of the High Lake Road at a point 1 km west of its junction with the Shoal Lake Road.

SIZE AND GRADE
Approximately 76 tons of rock were removed from a pit on claim K8555. The average value of gold recovered was $4.87 (0.14 oz.) per ton (Davies 1965, p. 35).

DESCRIPTION
Geology: Basalts, cut by porphyry dikes related to the High Lake intrusion, predominate to the east of High Lake. These are unconformably overlain by sediments of the Crowduck Lake Group, which includes conglomerate, sandstone and cherty siltstone. The unconformity is irregular, probably due to an irregular depositional surface subsequently modified by folding and faulting. A thin regolith is locally preserved and in places the finest sediments are near the base.

The westernmost east-trending embayment of the conglomerate is enclosed by basalt on 3 sides and has an average width of 15 m over an exposed length of 95 m. Both the basalt and the conglomerate are foliated. Clasts are rounded to sub-rounded and consist mainly of quartz porphyry and granodiorite, with lesser amounts of feldspar porphyry and basalt. There is no distinct bedding, but clast size decreases from west to east. Clast elongation, which is slightly greater near the contacts with basalt, is parallel to east-striking foliation and plunges 65°E. Spatial relationships between the basalt and conglomerate suggest that the conglomerate is tightly folded synclinally, but clast size distribution does not provide confirmation and the conglomerate may represent a down-faulted block within a fault zone.

Mineralization: Quartz is present as lenses, thin veins and irregular masses which cut across foliation, especially in the vicinity of a large pit. Quartz also occurs in tension fractures in some granitic clasts and in a porphyry dike which cuts foliated basalt at the northern edge of the outcrop. Pyrite is present in pockets in the irregular masses of quartz and as disseminations in quartz veins and along slip and foliation planes, especially in the conglomeratic matrix. Minor tourmaline is associated with some of the quartz.

The pit was the source of a 76 ton bulk sample from which an average gold recovery of 0.14 oz Au/ton was obtained in 1939 (the tailings ran 0.02 oz Au/ton according to Holbrooke 1944). Extensive drilling and channel sampling were undertaken by Sylvanite Gold Mines Ltd. in 1944, but only 11 core samples of greater than 1.5 m length had gold assays exceeding 0.08 oz Au/ton. The erratic nature of the mineralization is demonstrated by a 1.8 m intersection which assayed 1.48 oz Au/ton (Davies 1965, p. 35). Significant mineralization is apparently restricted to a strike length of less than 50 m.

ANALYSIS OF MINERALIZATION
A sample of quartz with abundant pyrite contained 3.58 oz Au/ton, and a sample of conglomerate matrix with disseminated pyrite contained 0.01 oz Au/ton (Thomson 1944). Samples of basalt from the northern and southern sides of the pit, taken during the present survey, contained 4 ppb and < 2ppb Au, respectively.

DEVELOPMENT HISTORY
1937: Staked by C.A. Alcock and R. Young of Kenora.

1937: Optioned to Oliver-Severn Gold Mines Ltd. which discovered the high grade zone.

1938: Sold to J.A. Poirier.

1939 - 1941: Kenopo Mining and Milling Co. Ltd. (incorporated in 1938) acquired 15 claims near High Lake, including K8334. About 76 tons of ore were milled at the company's custom mill in Norman. The material reportedly came from the conglomerate showing (Davies 1965).

Prior to 1944: The property reverted to J.A. Poirier.

1944: Examined by Sylvanite Gold Mines Ltd., which drilled 26 holes totalling 1,526 feet (465 m) and completed 200 ft. (61 m) of channel sampling.

1958: Francoeur Mines Ltd., optioned the property, and drilled 7 additional holes.

1966: Drilling, IP, magnetic, EM and geological surveys for base metals.

1974: Airborne electromagnetic surveys in the general area by Hudson Bay Oil and Gas.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 23
Colvine, 1976, OGS, MP 90, p. 239-241
Davies, 1965, ODM, GR 41
Ferguson *et al*., 1971, ODM, MRC 13, p. 143
Francoeur Mines Ltd., 1958, Assessment Files, Kenora
Holbrooke, 1944, Preliminary Report, Poirier-High Lake Property, Assessment Files, Kenora
Thomson, 1944, Report on the J.A. Poirier Group, Assessment Files, Kenora
Tower *et al*., 1940, ODM, Vol. 49, pt. 1, p. 138
1941, ODM, Vol. 50, pt. 1, p. 59-60
1942, ODM, Vol. 51, pt. 1, p. 123

69. KENOPO ELECTRUM PITS (PROSPECT)

Also called the Kenopo Mining and Milling Co. Ltd. Property, Electrum Pits, or the Poirier Option

COMMODITY
Gold, silver, copper

ROCK ASSOCIATION
Quartz porphyry dikes intrude mafic metavolcanic flows

CLASSIFICATION
1d

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42'39"	(49.7108°)
	Long.	95°05'10"	(94.0861°)

ACCESS
Several pits and trenches were sunk on claim K8334, about 160 m east of the southern end of Electrum Lake and about 1.5 km east-northeast of the northeastern end of High Lake. The pits are about 20 m north of the High Lake Road at a point about 1.4 km west of the Shoal Lake Road.

SIZE AND GRADE
An estimated 250 tons of rock were removed from 3 pits but it is not known if this was milled or if gold was recovered.

DESCRIPTION
Geology: The area northeast of High Lake is dominated by porphyritic granodiorite of the High Lake intrusion, within which are blocks or roof pendants of basalt. Further east, the basalt predominates and the porphyry is mainly in dike-like bodies. A number of east-trending faults have been interpreted in the area.

In the vicinity of the pits, the basalt-porphyry distribution is complex. On the basis of surface exposures it appears that there are several quartz porphyry dikes or lenses separated by basalt, but drilling has indicated that the geology is equally complex in the third dimension. The trends of some shearing and of a narrow porphyry dike suggest that a south-southeast-striking cross fault may occur near the pits.

Mineralization: Pits or trenches were sunk in basalt cut by quartz porphyry and felsite. Mineralization is reported to be associated with thin quartz veins in felsite and altered quartz porphyry; to consist of electrum, arsenopyrite, pyrite, pyrrhotite, chalcopyrite, tourmaline and traces of galena and sphalerite; and to extend slightly into the enclosing basalts (Davies 1965, p. 33).

One of the drill holes intersected a narrow, high grade section beneath the south trench. However, most of the holes encountered only traces of gold.

ANALYSIS OF MINERALIZATION
A grab sample of sheared felsite, mineralized with arsenopyrite and taken in this study from the east wall of the south pit, contained 68 ppb gold. A 15 cm chip sample of a quartz vein at the footwall side of a felsite dike in the northwest pit contained galena, pyrite and arsenopyrite and assayed 23.6 ppm gold and 285 ppm silver.

DEVELOPMENT HISTORY
1937: Eight claims K8334-41 staked by C.A. Alcock and R.J. Young of Kenora.

1937: Optioned to Oliver-Severn Gold Mines Ltd.

1938: Sold to J.A. Poirier

1939 - 1941: Kenopo Mining and Milling Co. Ltd. (incorporated in 1938) acquired 15 claims near High Lake, including K8334. Some 250 tons of rock were removed from the 3 largest pits. About 76 tons of samples were milled at the company's custom mill in Norman. This material may have come from the Conglomerate Showing.

Prior to 1944: The property reverted to J.A. Poirier.

1944: Examined by Sylvanite Gold Mines Ltd.

1958: Francoeur Mines Ltd. optioned the property, and drilled 11 holes totalling 508 m.

SELECTED REFERENCES
Beard and Garratt, 1976, OGS, MDC 16, p. 23
Colvine, 1976, OGS, MP 90, p. 239-241
Davies, 1965, ODM, GR 41
Ferguson *et al*., 1971, ODM, MRC 13, p. 144
Francoeur Mines Ltd., 1958, Assessment Files, Kenora
Poirier Group (Sylvanite Gold Mines Ltd.), 1944, R-1, R-2, Assessment Files, Kenora
Tower *et al*., 1940, ODM, Vol. 49, pt. 1, p. 138
1941, ODM, Vol. 50, pt. 1, p. 59-60
1942, ODM, Vol. 51, pt. 1, p. 123

70. KENRICIA MINE (PAST PRODUCER)

Also called the Three Ladies Occurrence

COMMODITY
Gold, silver

ROCK ASSOCIATION
Intermediate to felsic pyroclastics

CLASSIFICATION
2a, b

LOCATION
Clearwater Bay Area, Lake of the Woods:

NTS 52E/10NE
Lat. 49°43′04″ (49.7178°)
Long. 94°39′51″ (94.6642°)

ACCESS
The mine is located on a peninsula between two inlets on the northern shore of Clearwater Bay, about 13 km west-southwest of Kenora. It is on mining location P.211, and is accessible by the Kendall Inlet Road which leads north from Highway 17.

SIZE AND GRADE
The mine was in production in 1939 and 1940, and produced 2,533 ounces of gold and 5.21 ounces of silver from 22,344 tons of ore. Neilson and Bray (1981) estimated possible reserves of 10,900 tons of 0.68 oz Au/ton and 28,125 tons of 0.15 oz Au/ton for veins No. 1 and No. 3, respectively.

DESCRIPTION
Geology: The east- to east-northeast-trending boundary between the English River and Wabigoon subprovinces is from 1.5 to 3 km north of the northern shore of Clearwater Bay. The volcanic sequence south of the boundary includes about ?000 m of mafic flows, 2000 to 3000 m of intermediate to felsic coarse pyroclastics and at least 800 m of fine pyroclastics and related sediments. The fine clastics are synclinal and, although facing directions in the mafic flows and coarse pyroclastics have not been determined, the entire sequence is assumed to face south.

The peninsula on which the mine is located is underlain by lapilli tuff and tuff breccia, characterized by dacitic to rhyolitic clasts in a dark matrix. Bedding, where it has been recognized, strikes east to east-northeast. Clast elongation is essentially parallel to foliation, which is generally within about 10° of east. Two quartz porphyry dikes crop out near the southeastern shore of the peninsula; these, like most of the felsic dikes in the area, are approximately parallel to foliation.

Mineralization: At least 7 quartz veins have been discovered on the peninsula (Figure 32). The No. 1 Vein has been traced for 200 m and is up to 1.8 m wide. The No. 3 Vein crops out discontinuously over a length of 700 m and has a width of from 0.5 to 2.8 m. No. 4 Vein has a known length of 135 m and a width of from 0.5 to 2.5 m. The other veins are shorter and have received little attention. All of the veins except No. 5 are parallel to foliation and appear to be fracture-controlled, although Jewel (1974) concluded that "they bear a special relationship to specific volcanic stratigraphic zones". The present work was unable to confirm any stratigraphic control. In 1889 and 1890 a shaft was sunk on the No. 1 Vein and two others were sunk on the No. 3 Vein, leading to the property being called the Three Ladies. Subsequent work was almost wholly on the No. 3 Vein, although a crosscut was driven south to explore the No. 1 Vein at depth.

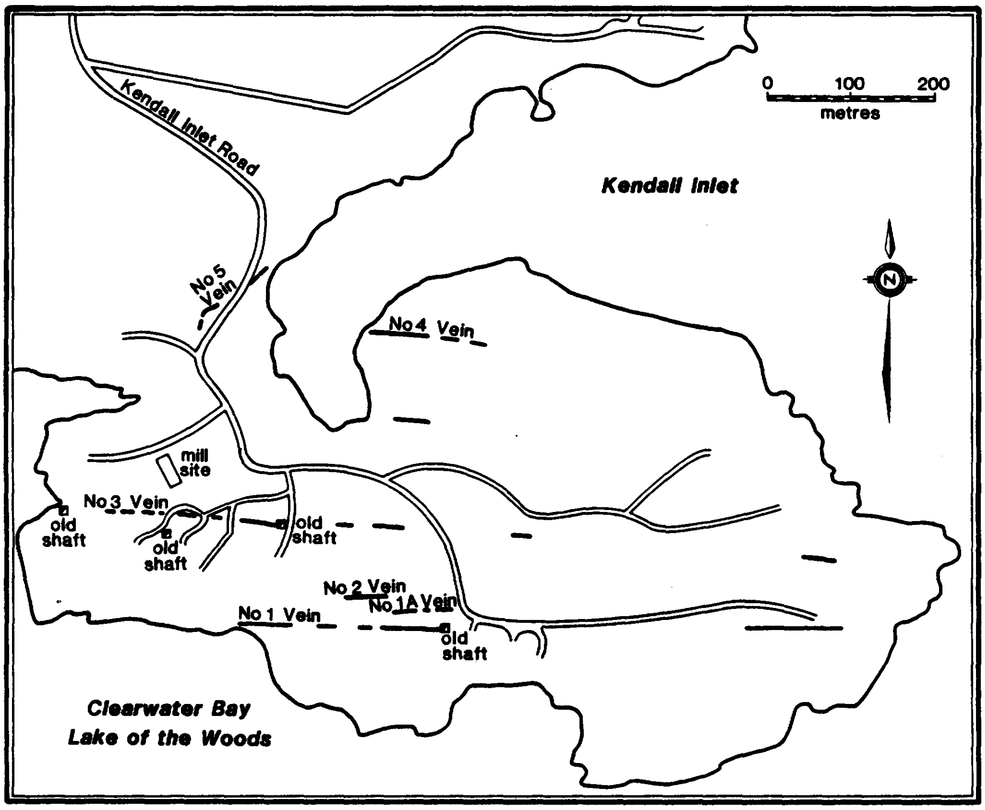


Figure 32. *Locations of veins at the Kenricia Mine.*

Thomson (1936) has described 3 generations of quartz in the No. 3 Vein. Early quartz-carbonate veins are cut by sugary, faintly bluish quartz in which tourmaline and sulphides occur along thin fractures which parallel vein edges. These are cut by glassy, white quartz. Gold is restricted to the sugary quartz. Thomson (1936) quoted from a polished section description: "The chief metallic mineral in this section is pyrite, but it contains considerable galena as well as minor quantities of gold, chalcopyrite and altaite. These metallic minerals are associated with a mixed quartz-tourmaline gangue and occur in the following forms: pyrite as isolated crystals or small crystal aggregates scattered through the gangue; galena, chalcopyrite, native gold as short veinlets or tiny blebs in the quartz gangue; altaite (lead telluride) as two or three tiny inclusions in the larger galena areas. The order of mineral deposition appears to have been as follows: (1) pyrite and tourmaline; (2) early quartz; (34) galena chalcopyrite gold, altaite; (4) later quartz".

Thomson (1936) reported that a 13 m section of the vein averaged $20.00 in gold (0.57 oz/ton) over an average width of 75 cm. Gold recovery was much less than this. Three ore shoots were defined on level one (Burton 1937) and it was believed that these raked 20° to 25° west. However, levels 2 and 3 failed to intersect any appreciable ore.

Vein No. 4 is in part a stockwork of quartz in brecciated pyroclastics and derived schists. It is mineralized with pyrite, chalcopyrite and gold. Vein No. 5 strikes irregularly northeast and has been traced over 90 m. The white quartz vein is lenticular, is from 10 to 69 cm wide, and contains spotty sulphides and gold.

DEVELOPMENT HISTORY

1889-1890: Oliver Daunais sank 3 shafts 17.4, 14.6 and 9.1 m deep.

1935-1936: Trenching, sampling carried out. Fifteen holes were drilled by optionees J. Errington and C. Greenland.

1936-1940: Kenricia Gold Mines Ltd. was incorporated and development and production were carried out. A shaft was sunk to 162 m adjacent to the No. 3 Vein and the following underground development took place:

Level (metres)	Drifts (metres)	Crosscuts (metres)	Raises (metres)
61	555.5	170.7	115.8
107	877.5	268.8	106.4
152	224.5	20.4	-

At least 1732 m of surface, and 1709 m of underground diamond drilling were done. A 100 ton per day cyanide mill was installed during 1938.

1940: Sold in part to Hoyle Gold Mines, Ltd.

1974: Nine contiguous claims, encompassing former claim P211, were staked by Aumac Exploration Ltd. Magnetometer and VLF surveys were completed over the group.

1983: Optioned to Atikwa Lake Resources.

SELECTED REFERENCES

Aumac Exploration Ltd., 1974, Prospectus, Assessment Files, Kenora
Beard and Garratt, 1976, OGS, MDC 16, p. 23
Blackburn, 1983, Kenricia Mine, Kendall Inlet of Clearwater Bay, Field Notes, Resident Geologist's Files, Kenora
Blue, 1896, ODM, Vol. 6, p. 48
Burton, 1937, Memorandum on Kenricia Gold Mines Ltd., Kenora, Ontario, Assessment Files, Kenora
Canadian Mining Journal, Sept. 1936
Ferguson *et al*., 1971, ODM, MRC 13, p. 182-183
Goodwin, 1965, ODM, PR 1965-2, p. 42
Jewell, 1974, Report on Mining Claims of Aumac Exploration Ltd., Kenora District, Northwestern Ontario, Assessment Files, Kenora
1975, Report on Geophysical Results, Aumac Exploration Ltd., Kenora District, Northwestern Ontario, Assessment Files, Toronto
Muir, 1935, Report in the Three Ladies Property (Errington-Greenland Options) Clearwater Bay, Lake of the Woods, Kenora, Ontario, Assessment Files, Kenora
Neilson and Bray, 1981, OGS, OFR 5332, Vol. 2, p. A-7
NMI File, 1978, Kenricia Mine
Sinclair *et al*., 1937, ODM, Vol. 46, pt. 1, p. 153
1938, ODM, Vol. 47, pt. 1, p. 143
1939, ODM, Vol. 48, pt. 1, p. 130-131
1940, ODM, Vol. 49, pt. 1, p. 138-139
Slaught, 1898, OBM, Vol. 6, p. 252
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 31-36
Tower *et al*., 1941, ODM, Vol. 50, pt. 1, p. 60

71. KING MINE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared granodiorite

CLASSIFICATION
4c

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°42′53"	(49.7147°)
	Long.	94°20′57"	(94.3492°)

ACCESS
A shaft and adit, on old mining locations 221P and 223P respectively, are near the southwestern end of a small unnamed lake about 1.7 km southwest of the junction of Highway 17 and the Storm Bay Road. The easiest access is by canoe from the Storm Bay Road at a point about 1.5 km south of Highway 17.

DESCRIPTION
Geology: Granodiorite, which underlies the eastern half of the area between Pine Portage Bay and Longbow Lake, constitutes the westernmost part of the Dryberry batholith. The contact between the granodiorite and fine- to medium-grained, pillowed to massive basalt is less than 200 m west of the King Mine workings and trends 025°, approximately parallel to volcanic stratigraphy.

Mineralization: A well-defined shear zone in granodiorite strikes 055° and dips 70°NW. The zone is up to 3.5 m wide and consists of strongly foliated granodiorite, quartz-sericite schist, and massive quartz. Stringers of glassy to sugary quartz are common in the foliated rocks. The zone was intersected by a northwest-striking, 30 m deep adit near the southwestern end, and by a 2 by 2.5 m inclined shaft near the northeastern end, and is probably continuous over the intervening 270 m. Pyrite is present throughout the zone but in general is proportional to the degree of deformation and is most abundant near the footwall. Pyrite occurs on foliation planes and as disseminations in quartz stringers. In the quartz veins it is partly disseminated and partly occurs on fracture surfaces.

ANALYSIS OF MINERALIZATION
Beard and Rivett (1981) record the assay results of chip samples taken at the shaft: "0.02 ounces of gold per ton, trace silver across 2.7 feet of quartz stringers in schist; trace gold and trace silver across 2.1 feet of schist, and trace gold and 0.18 ounce of silver per ton across 5.3 feet of white quartz and minor schist". Assay results of chip samples taken from the adit were: "0.02 ounce of gold

per ton and trace silver across 2.4 feet and 2.8 feet respectively of mineralized schist; and trace gold and silver across 2 feet of white quartz."

DEVELOPMENT HISTORY

Circa 1895: Small shaft sunk on location P221.

Date unknown: Adit driven 30 m on location P223.

SELECTED REFERENCES

Beard and Rivett, 1981, OGS, MP 95, p. 1-16
Coleman, 1897, OBM, Vol. 6

72. KOBOLD OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
1a

LOCATION
Jaffray Township: Lot 15, Concession V
NTS 52E/16SW
Lat. 49°46′23″ (49.7731°)
Long. 94°23′38″ (94.3939°)

ACCESS
The shaft is located on the power line crossing the southern portion of old mining claim K3540, 150 m north of Homestake Road and 1.6 km west of the Jones Road - Homestake Road intersection (Figure 4).

DESCRIPTION
Geology: The area, which is situated on the western limb of the northeast-trending Airport Anticline, is underlain by mafic rocks metamorphosed to amphibolite grade. The core of the anticline was intruded by the Jones Road quartz monzonite stock, which lies about 400 m to the south. The basalt is predominately pillowed and fine-grained, although coarser, massive varieties are present locally. Pillows are elongate parallel to the dominant axial planar foliation.

Mineralization: A milky-white, sulphide-poor, granular quartz vein strikes 055° and dips 70°NW (Figure 33). Included wisps or ribbons of chlorite parallel the vein walls. The immediate host rock is hornblende schist, which is also sulphide-poor. The basalt some distance from the vein is less strongly foliated parallel to the regional trend at 055°.

ANALYSIS OF MINERALIZATION
A 27 cm chip sample of quartz vein material taken in this study assayed <0.1 oz Au/ton and <0.1 oz Ag/ton. A second, similar quartz vein, located about 120 m northwest along the powerline, returned similar values over a 60 cm width.

DEVELOPMENT HISTORY
Circa 1894: The property was optioned by Messrs. Hay and Ahn from lessees A. Goulet, A. Goulet and G.A. Kobold. A 4.6 m deep shaft was sunk and a small amount of trenching was done on a vein which was reported to pan gold.

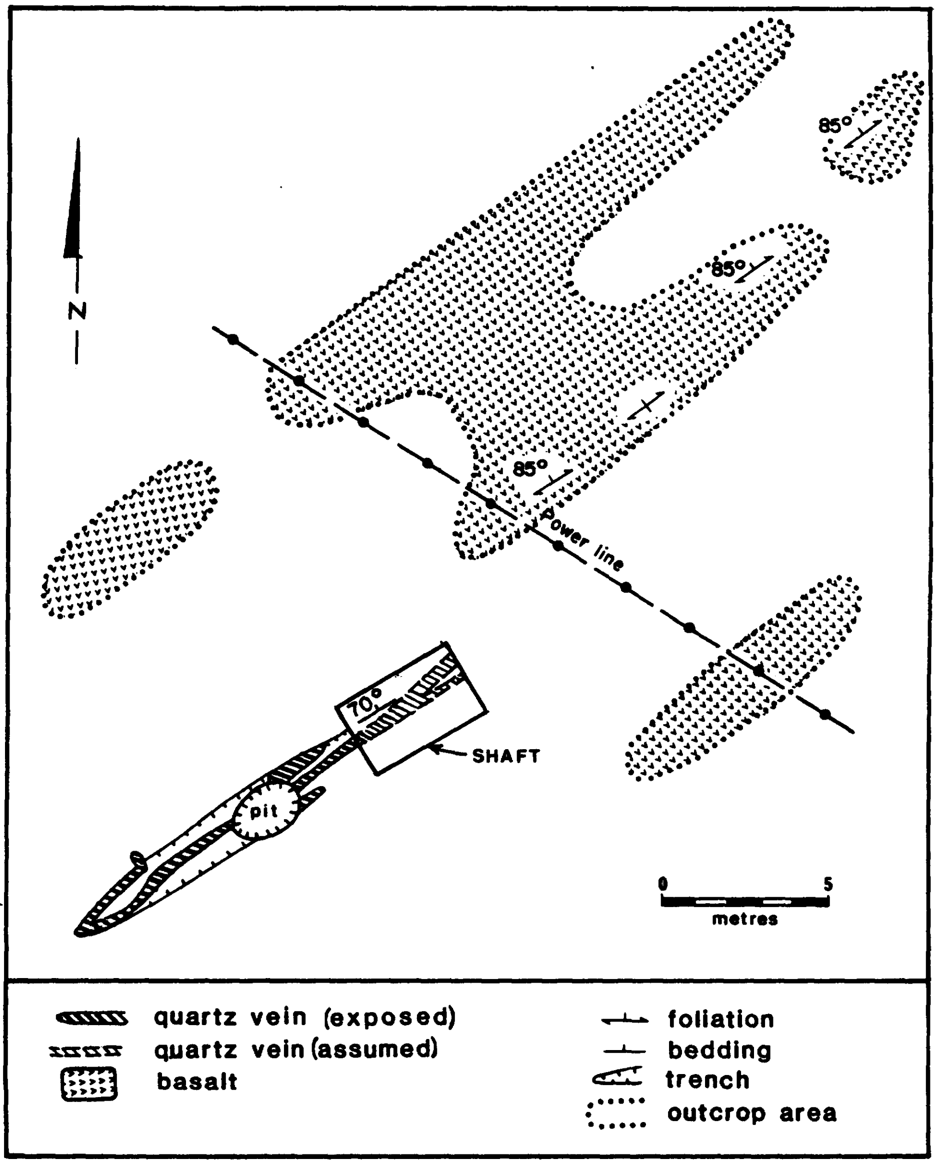


Figure 33. *Geology of the Kobold Occurrence.*

SELECTED REFERENCES

Blue, 1895, OBM, Vol. 5, p. 185

King, 1983, OGS, Map P.2618

73. LAC LA BELLE GROUP OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
la, d

LOCATION

Manross Township:	NTS	52E/9SE
	Lat.	49°36'19" (approx.) (49.6053°)
	Long.	94°14'24" (approx.) (94.2400°)

ACCESS
The group consisted of claims K6400, K6401, K5997, K5998, K5964, K5965, K5966, located north and east of Lac La Belle. Pitting and trenching were done northeast of Lac La Belle, about 1 km north of the Wendigo Mine shaft.

DESCRIPTION
Geology: Mafic flows trending east lie on the south limb of the Hay Island Antiform and are interlayered with sills of gabbro, leucogabbro and peridotite. In the area of Lac La Belle, there is evidence of folding, with a synclinal axis passing approximately through the main workings of the Lac La Belle Occurrence.

Mineralization: A northwest-trending vein was reportedly traced over 180 to 210 m by trenching. One 2.4 m long trench gave $35.00 (1 oz Au/ton) over a 60 cm width. Chalcopyrite is found in the wall rock, and strong shearing is associated with the vein, which is close to a quartz porphyry dyke.

DEVELOPMENT HISTORY
Prior to 1945: One hole drilled by Wendigo Mines Ltd.

1945 - 1946: Seven contiguous claims staked by P. Hutchinson and M. Carlson. Minor trenching and sampling done.

1972 - 1973: Airborne and ground magnetometer and electromagnetic surveys completed by Dome Exploration (Canada) Ltd.

1981: Sherritt Gordon Mines Ltd. completed a magnetometer survey over six contiguous claims.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 24

Hanigan, 1981, Report on Geological Survey, Whitefish Bay Area, Manross Township (M-2338), Sherritt Gordon Mines Ltd., Assessment Files, Toronto

Suffel, 1929, ODM, Map 17B

Thomson, 1945-1946, Conversations with Mag Carlson: Re: Lac La Belle Group, Assessment Files, Kenora

Woodward, 1973, Electromagnetic and Magnetometer Survey for Dome Exploration (Canada) Ltd., Project 55 and North Portion 56, Manross, Code, and Lemay Townships, Assessment Files, Toronto

74. LITTLE BOBS OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
1a, p

LOCATION
Island between Northern Peninsula and Western Peninsula, Lake of the Woods:

NTS 52E/10NE
Lat. 49°38′49" (49.6469°)
Long. 94°37′54" (94.6317°)

ACCESS
Island 1074, originally within mining location S420, is 2 km west of Brule Point and about 16 km southwest of Kenora. The island is near the main navigation route west of Ptarmigan Bay, and is accessible by boat from Kenora.

DESCRIPTION
Geology: The area south of Northern Peninsula is underlain by basaltic flows, intermediate and felsic pyroclastics and minor sediments (Thomson 1936). It is in a zone where relatively undeformed volcanics are interlayered with intensely deformed rocks that mark the eastern extension of the Crowduck Lake - Witch Bay Fault Zone. Carbonate and quartz are common in the sheared rocks.

Mineralization: A "schist vein" called the "14 foot vein" was reported by Brent (1900) to contain a pay streak with a "very large quantity of coarse free gold". The vein was reported to have been traced to islands east and west.

ANALYSIS OF MINERALIZATION
The "14 foot vein" was reported to average \$5.13 (0.26 oz) per ton and a 45 cm footwall pay streak to average \$276.58 (13.83 oz) per ton (Rat Portage Miner, April 13, 1900).

DEVELOPMENT HISTORY
January - May 1900: Bulk samples were taken for treatment in Rat Portage.

April 1900: Little Bobs Mining Co. was formed and an option was obtained on Island S420.

May 1970: The vein was traced to adjacent islands.

August 1900: A shaft sunk on the pay streak, reached a depth of 12 m; values played out and the work was abandoned.

SELECTED REFERENCES

Brent, 1900, Rat Portage Miner and Rainy Lake Journal, April 13
1900, Rat Portage Miner and Rainy Lake Journal, August 19
Thomson, 1936, ODM, Map 45b

75. MACHIN ZONE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared felsic porphyry in massive, fine-grained basalt

CLASSIFICATION
1d, p, 2a?

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°34′30"	(49.5750°)
	Long.	94°59′06"	(94.9850°)

ACCESS
The occurrence is located in the northwestern corner of mining location S130 and has been traced onto locations D203 to the southwest and K2460 to the northeast. It is 1.7 km south-southwest of Cedar Island. The area is accessible by boat from Clytie Bay Landing or from Kenora via Ash Rapids.

DESCRIPTION
Geology: Northeast-trending mafic rocks of the area are near the core of the Gull Bay - Bag Bay Anticline and thus are the oldest rocks of the Shoal Lake area. Typically they are massive to pillowed, fine-grained, basaltic flows, some of which contain very coarse feldspars, interlayered with massive, medium-grained flows or sills, some of which show gross compositional layering. Felsic porphyries are rare in the mafic section and are considered to be intrusive, but some are essentially concordant and could represent felsic ash flows in which primary textures have been destroyed.

Mineralization: The Machin zone consists of northeast-striking, steeply southeast-dipping, sheared felsic porphyry enclosed by sheared basalt. The porphyry has a width of up to 6 m and has a known outcrop length of about 70 m. Quartz is present in fractures. Pyrite, pyrrhotite and traces of chalcopyrite and sphalerite are disseminated in the porphyry. Magnetite is locally sufficiently abundant to produce magnetic anomalies. Pyrite and pyrrhotite are also present in the enclosing, sheared basalt. The gold content of core from holes drilled along strike is reported to be low (Hopkins 1965).

ANALYSIS OF MINERALIZATION
A chip sample of sheared porphyry, taken in this study across 1 m, contained 370 ppb Au, <2 ppm Ag, 1130 ppm Zn, 525 ppm Cu, and 420 ppm As. An unsheared sample of the porphyry contained the same amount of Zn, but the content of the other metals was an order of magnitude lower.

DEVELOPMENT HISTORY

Circa 1896: Gold discovered on the property by Israel Gagne.

1897: Purchased by Markell who sold the property to Ontario Ltd. Gold Mining Co. of London, England. The latter completed trenching and pitting on 13 quartz and felsite veins, one of which is the Machin Zone.

1928 - 1973: Kenora Prospectors and Miners Ltd. excavated several trenches.

1974 - 1975: Magnetometer and EM surveying by Imperial Oil Ltd.

Post-1975: Further trenching and channel sampling by persons unknown.

SELECTED REFERENCES

Bow, 1898, OBM, Vol. 7, p. 53, 54
1899, OBM, Vol. 8, p. 68
Davies, 1978, OGS, OFR 5242, p. 81, 82
Doborznski, 1975, Imperial Oil Ltd., Assessment Files, Kenora
Ennis, 1973, Kenora Prospectors and Miners Ltd., Assessment Files, Kenora
Greer, 1930, ODM, Vol. 39, pt. 3, p. 54, 55
Hopkins, 1965, Hopkins-Heintzman, Assessment Files, Kenora
Ontario Ltd. Gold Mining Co., 1897, SMDR File, Kenora

76. MAGNET POINT OCCURRENCE

Also known as the Popham-Byberg or Popham-Olsen Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows and conformable gabbroic sills and/or flows, intruded by quartz porphyry dykes

CLASSIFICATION
1d

LOCATION

Indian Reservation No. 33:	NTS	52E/6NE	
	Lat.	49°29′25″	(49.4903°)
	Long.	95°08′20″	(95.1389°)

ACCESS
The site is located southwest of Magnet Point on Shoal Lake, 19 km southwest of Clytie Bay Landing. It may be reached by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

DESCRIPTION
Geology: Rocks exposed at Magnet Point are fine- to medium-grained, northeast-trending, east-facing, mafic metavolcanic flows, and conformable gabbroic sills, which may be, at least in part, coarser mafic flows (Figure 34). In the first bay southwest of Magnet Point, 2 quartz porphyry dykes are exposed. There, the rocks are predominantly mafic and include fine-grained basalt, porphyritic basalt with 1 cm feldspar phenocrysts, and dark, fragmental basalt. Magnet Point lies along a zone of significant movement, and all the rocks have a well-developed, northeast-trending (035-045°) foliation. Some outcrops display a series of branching shears, locally intersecting at high angles.

The quartz porphyry outcrops are highly pyritiferous, and display considerable shearing. The contacts are sharp and appear intrusive; however, there is additional later shearing which masks the relationship. In contact with the porphyry is a dioritic rock, which resembles the Stevens Island diorite.

Mineralization: According to Thomson (1947), gold occurs in two structural settings: (1) light coloured dikes, and (2) shear zones. Gold-bearing, thin quartz veins and veinlets characterize both settings. In the main showing, a 10 to 25 ft wide, northeast-trending, quartz porphyry dike is charged with pyrite, and appears conformable to stratigraphy. The dike is intersected, near its northern end, by a north-northeast-trending shear zone, characterized by abundant pyrite, pervasive silicification and sericitization, and locally by weak carbonatization. Quartz is sugary textured and contains finely disseminated, cubic pyrite. Visible gold was reported by Thomson. Mineralization within the silicified shear zone varies locally. In areas where silicification is less intense, wisps of magnetite parallel the foliation within sericite schist. Elsewhere, biotite is visible as flakes (<2 mm) which parallel the foliation and are associated with finely disseminated cubes of pyrite. Pyrite and magnetite seem mutually exclusive. The presence of galena was reported by Byberg (1938).

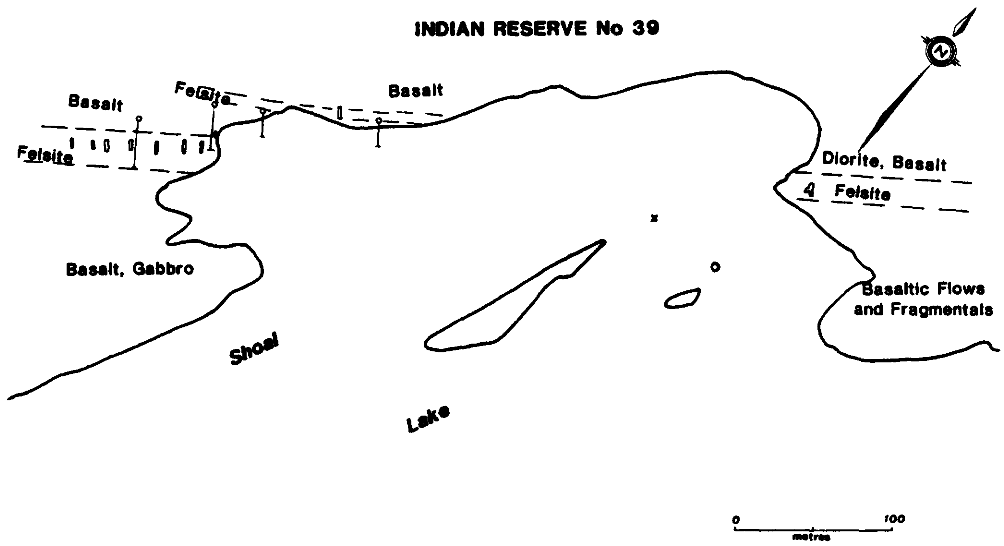


Figure 34. *Geology of the Magnet Point Occurrence. From Sylvanite Gold Mines Ltd. (1944).*

ANALYSIS OF MINERALIZATION

A few assays were reported as high as 1.12 oz Au/ton; however, most assays are between trace and 0.1 oz Au/ton over intervals varying from several inches to 5 ft. Samples of mineralized felsite and quartz, taken in this study from the northern end of the occurrence, averaged 3150 ppb Au and 330 ppb Au, respectively.

DEVELOPMENT HISTORY

Prior to 1936: Trenching by persons unknown.

Early 1936: Surface exploration by Hollinger Gold Mines.

Late 1936 - 1938: Mr. H. Byberg and Judge E.C. Popham excavated trenches and drilled four X-ray diamond drill holes totalling 458 ft. Formation of Magnet Point Syndicate Group.

1944: Trenching and surface mapping by Sylvanite Gold Mines Ltd.

19 : Prospecting by Byberg.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MRC 16, p. 33
Byberg, 1937, Magnet Point Syndicate, Assessment Files, Kenora
1938, Drill Report of Magnet Point Syndicate Diamond Drilling, Assessment Files, Kenora
Davies, 1978, OGS, OFR 5242, p. 101-102
Sylvanite Gold Mines Ltd., 1944, Surface Plan, Assessment Files, Kenora
Thomson, 1947, Note on Popham - Byberg Gold Occurrence, Assessment Files, Kenora

77. MAIDEN ISLAND MINE (OCCURRENCE)

COMMODITY
Gold, copper

ROCK ASSOCIATION
Mafic metavolcanic flows and intercalated iron formations

CLASSIFICATION
1a

LOCATION

Island 257, Lake of the Woods:	NTS	52E/9NW	
	Lat.	49°41'25"	(49.6903°)
	Long.	94°21'14"	(94.3539°)

ACCESS
Island 257, also known as Maiden Island, is situated several hundred metres west of the mouth of Longbow Creek, or 1.2 km north-northeast of Copper Island. The area may be reached by boat from Kenora.

DESCRIPTION
Geology: The area is underlain by massive, fine-grained mafic flows. A layer of fine magnetite and interbedded jasper occurs discontinuously on the eastern side of Maiden Island, having a width of up to 10 cm and a length of about 3 m. Similar iron formation, noted about 1.0 km to the north, may represent a brief period of chemical sedimentation during volcanism.

Mineralization: A shear zone about 30 cm wide, striking about 030° and dipping 75°NW, is exposed in a shallow pit near the eastern shore of the island. The shear zone consists of lensing slip planes along which there has been silicification and carbonatization; some pyrite and traces of chalcopyrite are present. There is little quartz visible in the pit but one piece on the dump is indicative of a quartz vein up to 15 cm wide.

ANALYSIS OF MINERALIZATION
A chip sample across a 25 cm thickness of the shear exposed in the south wall of the pit contained 0.02 oz Au/ton, 0.1 oz Ag/ton and 0.44% Cu. A 76 cm chip sample across a shear zone in the north wall of the shaft contained 0.24 oz Au/ton, and 0.41% copper (Forsgren 1980). Mineralized basalt adjacent to the shear zone contained 450 ppb gold.

DEVELOPMENT HISTORY
Circa 1893: Discovered by Mr. Young. A 3.7 m deep shaft was sunk.

SELECTED REFERENCES

Beard and Rivett, 1981, OGS, MP 95, p. 10
Coste, 1895, GSC, Report of Progress, 1882-83-84 pt. K, p. 10
Forsgren, 1980, Maiden Island Occurrence, Resident Geologist's Files, Kenora

78. MANDARIN OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Amphibolite

CLASSIFICATION
1a

LOCATION
Jaffray Township: SW Part of Lot 11, Con. VIII
NTS 52E/16SW
Lat. 49°48'04" (49.8010°)
Long. 94°24'21" (94.4058°)

ACCESS
The shaft is located 120 m south of the junctions of Highways 604 and 659, 4.6 km northeast of the northeastern corner of the Town of Kenora.

DESCRIPTION
Geology: Northeast-trending amphibolites are in contact with felsic gneisses about 300 m northwest of the junction of Highways 604 and 659, and are considered to be metamorphic equivalents of Keewatin basalts and a felsic intrusion, respectively. The contact is commonly considered to be the boundary between the Wabigoon and English River subprovinces.

Metamorphic layering near the old Mandarin shaft is of the order of 5 to 30 mm thick. It strikes 055° and dips 85°NW. Pyrite is abundant along some foliation planes, and is also associated with quartz veinlets and small quartz boudins.

Mineralization: The shaft has been filled but has been reported to have been about 3 by 3 m, and 5 m deep. A. Gauthier (personal communication) said that pyrite in the shaft was associated with boulder-like bodies of quartz, which were likely quartz boudins. Broken pieces of rock are virtually all amphibolite, with traces of pyrite and pyrrhotite on slip planes and hairline fractures. Quartz veinlets are rare in the dump material.

79. MANITOBA CONSOLIDATED OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic and intermediate volcanics

CLASSIFICATION
2a

LOCATION
Clearwater Bay, Lake of the Woods:

	NTS	52E/10NW
Approximate location:	Lat.	49°42′15" (49.7042°)
	Long.	94°46′40" (94.7778°)

ACCESS
A shaft on mining location P552, as shown by Thomson (1936), coincides with the position of the Manitoba Consolidated Mine shown by Lawson (1886). It is immediately south of the McCallum Point Road. The area is accessible by road or by boat from Kenora.

DESCRIPTION
Geology: Intermediate pyroclastics, interlayered with mafic flows, underlie most of Clearwater Bay. Foliation is well developed in most rocks and trends within 15° of east.

Mineralization: A 4 ft (1.2 m) wide vein, trending northwest and dipping near vertical, is reported to lie at the base of a cliff at the water's edge (Henson 1890). A vertical, 3.1 by 3.3 m shaft was collared 10 m from the top of the cliff (Coste 1885) and sunk 75 feet (23 m) with the intention of cross-cutting to the vein, but this was not done. The vein was described by Henson (1890) as "white quartz containing free gold and a little silver."

DEVELOPMENT HISTORY
1884: Shaft sunk 75 feet by Manitoba Consolidated Co.

SELECTED REFERENCES
Coste, 1885, Geology and Natural History Survey and Museum of Canada, Report of Progress, 1882-83-84, p. 19K
Henson, 1890, Reported in Report of the Royal Commission on the Mineral Resources of Ontario, p. 118
Lawson, 1886, Geology and Natural History Survey of Canada, Annual Report, Vol. 1, Rept. CC, Map 5
Thomson, 1936, ODM, Geological Map 45b

80. MASTER JACK PROSPECT

COMMODITY
Gold

ROCK ASSOCIATION
Medium-grained granodiorite

CLASSIFICATION
4c

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°39'18"	(49.6550°)
	Long.	94°16'22"	(94.2728°)

ACCESS
The original property consisted of mining locations 208P and 604P. A shaft near the southeastern corner of 604P is 250 m west of the southernmost point of the west bay of Blindfold Lake, 1.3 km southeast of the dam at the outlet of the lake (Figure 36). The area may be reached by boat through Blindfold Lake, or by walking 1 km southeast of the Storm Bay Road at a point 400 m south of the dam.

DESCRIPTION
Geology: The area is underlain by the grey weathering, medium- to coarse-grained, weakly foliated, biotite granodiorite of the Dryberry Batholith (Figure 35). The northwest-trending contact between the granodiorite and basalt lies about 400 m southwest of the shaft. Foliation strikes about 055° and dips vertically near the shaft.

Mineralization: Coleman (1898) recorded that "the vein of white or reddish quartz runs N. 20°E through a granite, generally red, sometimes greatly decayed, along the quartz. The body of quartz as seen in the upper part of the shaft is wide, and 100 yards to the south the prospector showed us that the vein contained two or three feet of good looking quartz".

Presently, about 1.5 m of quartz, dipping 75°E, is exposed on the northern side of the shaft. The quartz appears to lie within a north-northeast-trending fracture. Most of the quartz in the dump is white and devoid of sulphides, but quartz with a mauve-grey or green-grey hue contains minor pyrite along irregular, very fine fractures.

ANALYSIS OF MINERALIZATION
A grab sample of mauve-grey quartz with fine pyrite, taken in this study, contained 4 ppb Au and less than 2 ppm Ag.

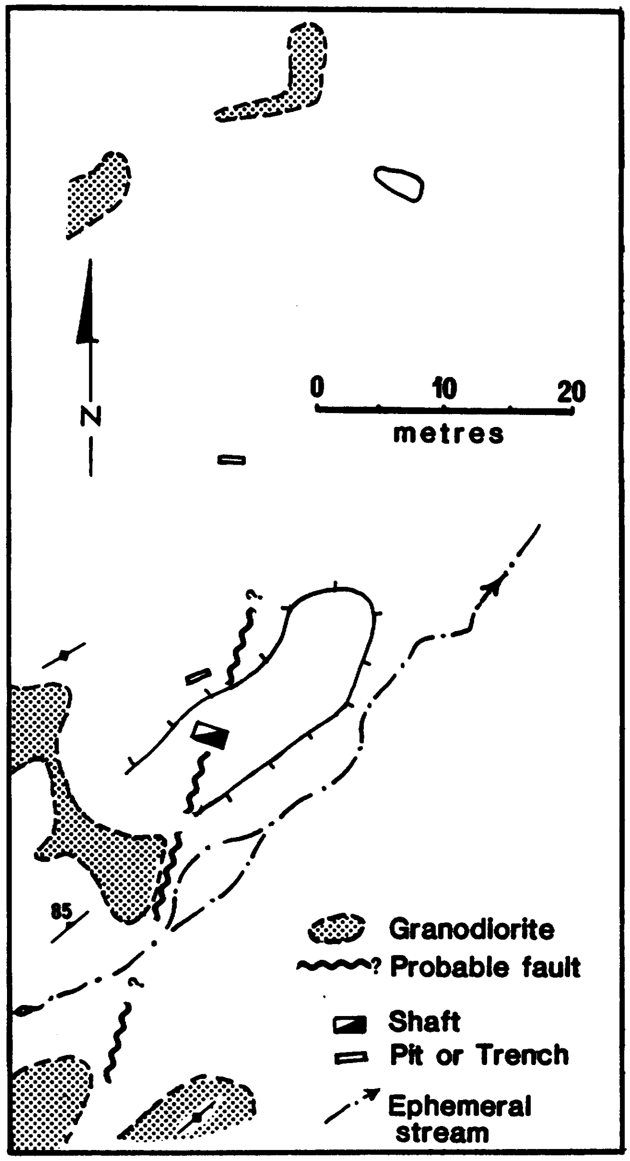


Figure 35. *Geology of the Master Jack Prospect.*

DEVELOPMENT HISTORY
Circa 1897: Owned by the Rat Portage Gold Mining Company. A shaft was sunk 33 m, with two drifts, each 18 m long.

SELECTED REFERENCES
Coleman, 1898, OBM, Vol. 7, pt. 2, p. 111
The Colonist, 1897, p. 181, 223.

81. MAZIE'S ISLAND OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Granitic dike cutting felsic tuff-breccia

CLASSIFICATION
2d

LOCATION
Mazie's Island, Lake of the Woods:

NTS 52E/9NW
Lat. 49°40'25" (49.6745°)
Long. 94°26'52" (94.4480°)

ACCESS
Mazie's Island is about 10 km south-southeast of Kenora, east of the northeastern end of Scotty Island. It is accessible by boat from Kenora.

DESCRIPTION
Geology: Intermediate to felsic tuff, lapilli tuff and tuff breccia have an apparent thickness of about 2 km in the vicinity of Middle and Scotty Islands. They occupy the core of the Sultana Syncline, which passes through Scotty Island and is apparently folded by the Hay Island Antiform. Mazie's Island is about 500 m from the trace of the Sultana Syncline.

Mineralization: Foliated pyroclastics trending northeast are cut by a 1 m wide, east-striking granitic dike. The dike is poorly exposed, highly sericitized, and contains a number of irregular quartz veinlets. Rare pyrite is present in the quartz and altered granite; the granite is typically pink weathering, but is greenish adjacent to the pyrite. A shaft, estimated to be 15 m deep, was sunk on the dike and may have a steep south incline.

On the eastern shore of Mazie's Island, approximately due east of the shaft, irregular masses of white, vuggy quartz fill fractures, many of which are subhorizontal. Pyrite is present in some of the vugs.

ANALYSIS OF MINERALIZATION
A specimen of lightly mineralized granite from the shaft, taken in this study, contained 290 ppb Au. Quartz from the eastern shore of Mazie's Island contained 60 ppb Au.

82. McCALLUM OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared, medium-grained basalt or gabbro

CLASSIFICATION
1a

LOCATION

Ewart Township:	NTS	52E/10NE
	Lat.	49°39′24" (49.6788°)
	Long.	94°36′42" (95.1401°)

ACCESS
The occurrence is 400 m east of the southernmost tip of High Lake, or about 1 km east of the provincial border. The eastern end of High Lake is accessible by road.

DESCRIPTION
Geology: South of High Lake, fine-grained basalt and north-northeast-trending lenses of medium-grained basalt or gabbro are in sharp contact with grey granodiorite of the High Lake stock. A few dikes of the granodiorite cut the mafic rocks.

Mineralization: Quartz is reported to be present in a northwest-striking shear zone in a thick lens of medium-grained basalt or gabbro. The quartz is said to contain pyrite and to have assayed 0.40 oz Au/ton across a 4 ft width.

EXPLORATION HISTORY
1937: Staked and prospected by F. McCallum.

1982: Prospecting by E. Roberecki.

SELECTED REFERENCE
Davies, 1965, ODM, GR 41, p. 44

83. MEDICINE LEDGE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Medium- to coarse-grained granodiorite

CLASSIFICATION
4c

LOCATION

Kirkup Township:	NTS	52E/9NW	
	Lat.	49°39′51"	(49.6643°)
	Long.	94°17′33"	(94.2924°)

ACCESS
The shaft is located near the southern edge of old mining location S88. It is 200 m north-northeast of the dam at the outlet of Blindfold Lake (Figure 36). The easiest access is via the Storm Bay Road, which is within 100 m of the shaft.

DESCRIPTION
Geology: The area is underlain by massive, medium- to coarse-grained, pink granodiorite of the Dryberry Batholith. The contact of the granodiorite with basalt is about 500 m southwest of the shaft; it trends northwest at this point but is more irregular than most other exposures of the contact. A number of northwest-striking lineaments are evident in the area, one of which is near the shaft.

Mineralization: Coleman (1898) described: "a vein of white quartz with some pyrites (which) is said to have been traced 1800 feet with a strike of N. 10°W. Where work was being done it averaged about six feet wide, but narrowed to two or three feet at the bottom of the shaft, which was 38 feet deep on an incline of about 45°. The hanging wall was well defined but the footwall was somewhat broken up." The hanging wall coincides with a narrow shear zone, which strikes about 010° and dips 45°E, but at the mouth of the shaft the dip of the vein appears to flatten. Most of the quartz is sugary and contains no mineralization; rust marks the weathered surface of thin, pyrite-bearing fractures in the quartz. There is a bluish tint to the quartz of the host granodiorite.

ANALYSIS OF MINERALIZATION
A grab sample of rusty pyrite-bearing quartz taken in this study from the north wall at the mouth of the shaft contained 92 ppb gold.

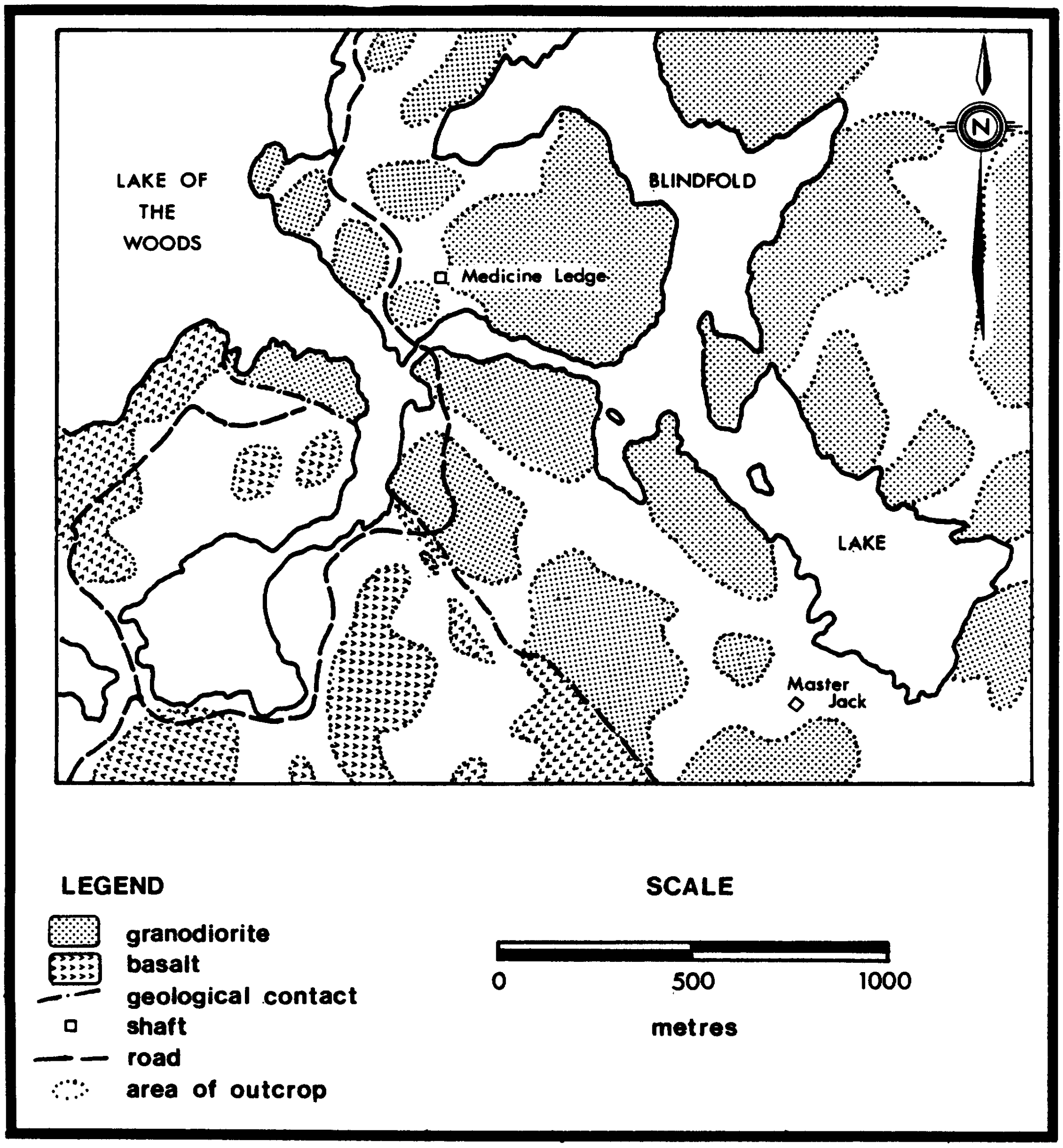


Figure 36. *Locations of the Master Jack and Medicine Ledge Occurrences.*

DEVELOPMENT HISTORY
Circa 1897: A shaft, inclined 45°, was sunk at least 11.5 m.

SELECTED REFERENCES
Beard and Garratt, 1976, OGS, MDC 16, p. 27
Coleman, 1898, OBM, Vol. 7, pt. 2, p. 111

84. MIDDLE ISLAND OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate to felsic pyroclastics

CLASSIFICATION
2c

LOCATION
Middle Island, Lake of the Woods: NTS 52E/9NW
Lat. 49°40′02" (49.6673°)
Long. 94°26′29" (94.4415°)

ACCESS
The shaft is in the western part of mining location 444P, about 0.9 km southwest of Heaps Point on Middle Island. It is 1 km south-southeast of Kenora from where it is accessible by boat.

DESCRIPTION
Geology: Approximately 2 km of intermediate to felsic pyroclastics overlie the basal tholeiitic basalts and are exposed in the northeast-trending Sultana Syncline. The lower part of this succession is exposed on Middle Island. Foliation is mostly well developed, striking between 020° and 060°, with very steep dips to the southeast. The geology of the occurrence is shown on Figure 37.

Mineralization: A non-foliated, strongly carbonatized, 1 m wide zone, striking 005° and dipping 85°E, lies at the edge of an outcrop of foliated, dacitic tuff-breccia and lapilli tuff. The carbonatized rock is pale green and contains irregular, quartz-filled fractures. Pyrite and galena are present in carbonate-rich irregular veins and, to a lesser extent, in the massive rock. A near-vertical shaft on the carbonatized zone has an estimated depth of 12 m.

ANALYSIS OF MINERALIZATION
A sample with abundant carbonate and minor galena and pyrite, taken in this study from a pile of mineralized blocks, contained 28 ppb Au and 6 ppm Ag.

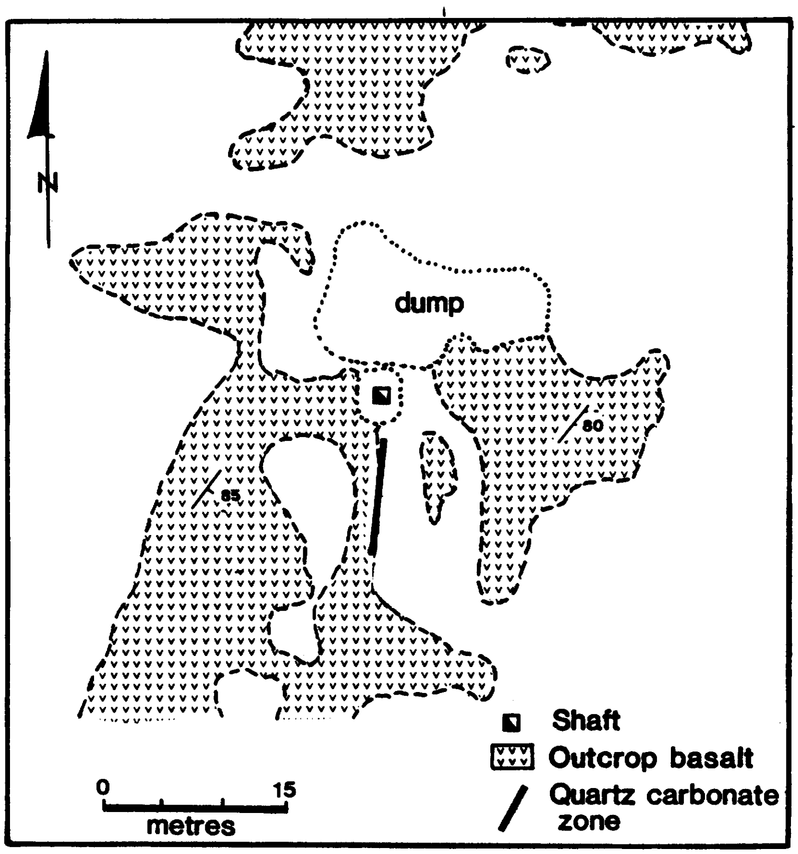


Figure 37. *Geology of the Middle Island Occurrence.*

85. MIKADO MINE (PAST PRODUCER)

COMMODITY
Gold, silver

ROCK ASSOCIATION
Mafic metavolcanic rocks cut by quartz diorite

CLASSIFICATION
1a, p; 4a, c

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°35′18"	(49.5883°)
	Long.	94°57′22"	(94.9561°)

ACCESS
The property consisted of mining locations D147, 148, 200, 201 and 201A near the southeastern lobe of Bag Bay. The main shafts and buildings were on location D148, 1.4 km east of Cedar Island. The site may be reached by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

PRODUCTION
Through the years 1896-1902, 1910-1911 and 1931, 57,813 tons of ore were milled, yielding 28,335 oz of gold and 41 oz of silver (ODM Statistical Files). Most production was prior to 1902. Parsons (1911) stated, "much of the high grade was stolen and for this and other reasons it is impossible to form a correct estimate".

SIZE AND GRADE
Simpson (1922) stated: "A compilation of assay results as shown in the mine records seem to show the existence of two ore shoots, one about 50 ft. (15 m) long giving an average assay value of about 14 dollars per ton for an average width of 8 ft. (2.4 m), the other about 250 ft. (76 m) long assayed 19 dollars over an average width of about 5 ft. (1.5 m) wide." Values were given at $20 gold.

The 1922 Mikado Prospectus reported, "Thirty thousand tons of ore blocked out on three sides, and nearly blocked out on the fourth side - of an average grade of $10.00....30,000 tons of tailings....at $4.00 per ton...Former Resident Mining Engineer, Mr. F. Carwell Pengilly, estimated that in Mikado No. 1 vein, south of the shaft, there was 1,230,000 tons of ore available, of a value of $10.00."

Drilling by Denison Mines Ltd. in 1980 and 1981 outlined a new zone of mineralization known as the Grano zone, consisting of 30,977 tons grading 0.356 oz Au/ton. Probable reserves were estimated to be 200,000 tons (Desson 1982).

DESCRIPTION

Geology: North-trending, fine-grained mafic volcanic flows and coarser, subvolcanic gabbro sills or flows have been intruded by the Canoe Lake stock (Figure 38). The stock is primarily quartz diorite in composition (Davies 1978). Quartz diorite, quartz porphyry, granodiorite and aplite dikes intrude the volcanics; quartz porphyry, quartz-feldspar porphyry and rare feldspar porphyry dikes cut the quartz diorite stock. In the area southeast of Bag Bay the intrusive contact is "stepped" due to modification by east-trending faults.

In the vicinity of the main workings, the mafic rocks have been cut by a dike of quartz diorite up to 90 m wide. The quartz diorite, which is presumably related to the Canoe Lake stock, has a red pegmatite phase, strikes east and has a dip to the south of about 30° (Davies 1978). A sample of the quartz diorite, taken about 25 m west-southwest of the No. 1 vein, consists of 55% strongly zoned oligoclase/albite, 30% quartz, 10% mafic minerals (mostly olive-brown, secondary biotite), 5% microcline and minor sphene and magnetite. The oligoclase is partly saussuritized. The host basalt is komatiitic in composition. A sample, taken about 30 m west-southwest of the No. 1 vein close to the quartz diorite-basalt contact, consists primarily of pale green, slightly pleochroic, 0.1 to 0.5 mm amphiboles showing a weak preferred orientation. Minor quartz and feldspar are interstitial to the amphiboles, and a little sericite is present. Vague veinlets are marked by sphene, zoisite and magnetite. The rock has been metamorphosed to amphibolite grade.

Mineralization: Two mineralized veins, about 150 m apart, strike about 150° and dip between 60° and 80°NE. Both veins were developed, although most production was along an ore shoot in the No. 1 (west) vein, where the vein transects the red pegmatite phase of the quartz diorite.

A third vein, located about 550 m south of the main shaft, was described by Carter (1902) as "...striking east and west at right angles to the No. 1 vein, with an 80° dip north through a formation of trap schists (basalt), from 6 to 12 feet (1.8 to 3.7 m) wide, and assaying about $5 from wall to wall" (Values at $20 gold).

A fourth zone, the Grano Zone, was discovered in 1981 by Denison Mines. It comprises quartz-filled fractures in sericitized granodiorite. It is almost parallel to, and lies about 70 m to the east of, the No. 2 vein.

The main, or No. 1, vein has been described by Bruce (1925); it is presently not exposed. The vein passes through both the quartz diorite dike and altered basalt. Vein character differs according to the host rock, although no difference was noted in the actual quartz which, in general, is white to bluish-white and transparent. Much of the quartz is ribboned, apparently due to replacement of schistose rock adjacent to the vein. A sample of altered quartz diorite, taken

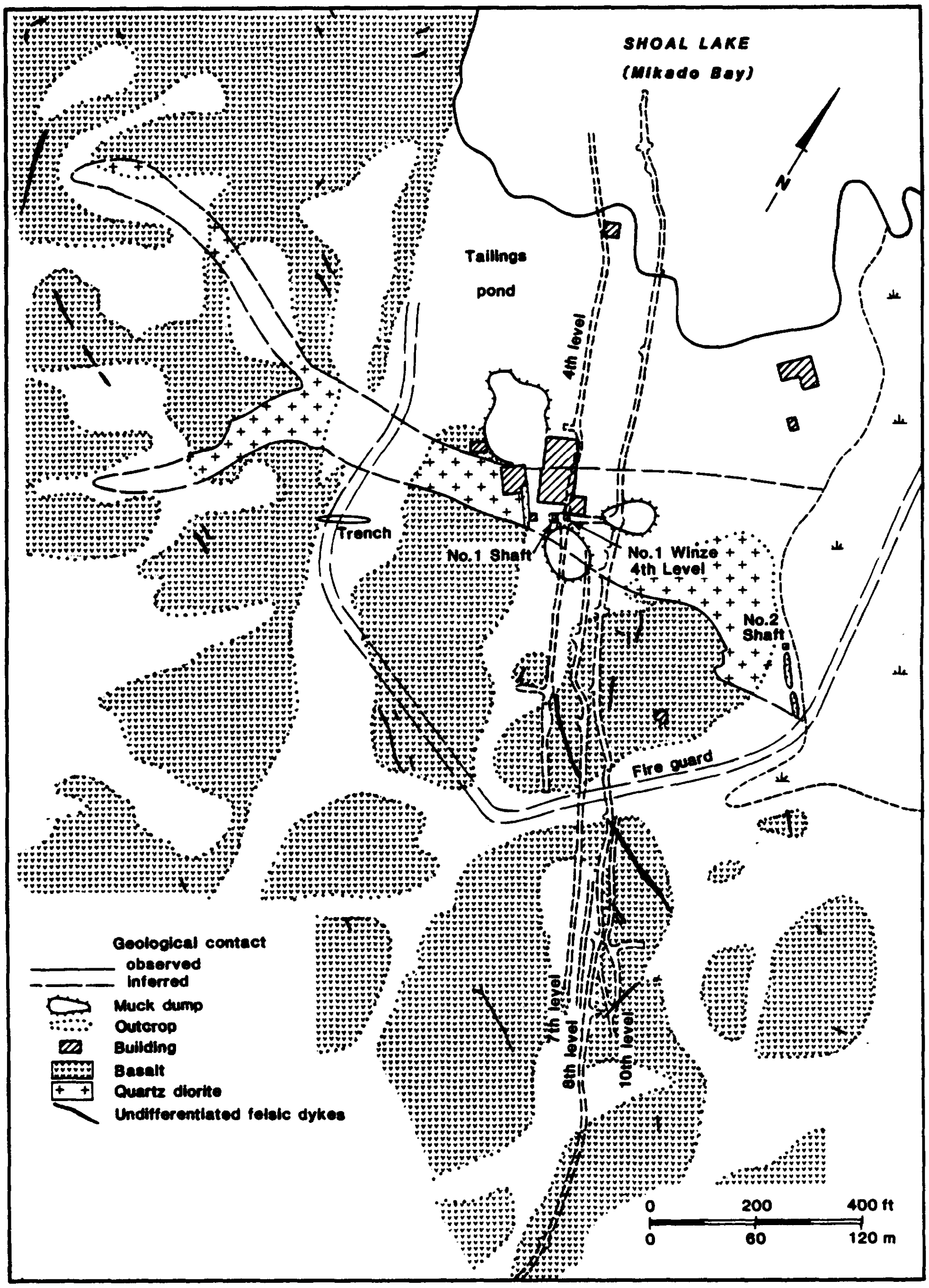


Figure 38. *Geology and development at the Mikado Mine.*

on the western edge of the open cut from which the vein was first mined, consists of about 50% quartz. Feldspars are almost totally sericitized. There is some intergrowth of muscovite and ilmenite. Pyrite is widely distributed and commonly rimmed by hematite. Thin quartz-carbonate veinlets occur locally; both minerals have been strained. Where the vein transects the pegmatite phase, it is well defined, with widths in places greater than 1.5 m; where the vein is hosted by quartz diorite, widths of quartz are somewhat less; where it is hosted by basalt the "vein" is reduced to a series of quartz stringers. Bruce (1925) concluded: "there may be some doubt that the (gold) values are as high where the vein is in granite as they are when the walls are greenstone. An assay of one sample taken from the vein on the 7th level where the walls are granite gives $1.40 per ton, whereas a short distance along the vein where the walls are in greenstone, gold is visible in the quartz, and no doubt the average gold content is considerably higher." (Values at $20 gold).

Several gold-bearing specimens were found during the field examination for this study. Free gold was visible in both vein quartz and silicified wall-rock. Native gold occurs as small grains (up to several millimetres) between grain boundaries and in microfractures, and as "leafy" gold along chloritic slip planes. Gold was most commonly observed within specimens of silicified basalt, which were chlorite- and biotite-rich, schistose, and contained numerous thin quartz veins and stringers. Only one silicified granitic sample contained visible gold. A number of other minerals have been identified by previous workers (Coleman 1896, Hopkins 1921) including pyrite, chalcopyrite, galena, molybdenite, bismuthinite, tetradymite, and malachite.

In a letter to The Canadian Mining Review (1900), a former mine manager reported that, "Slate (basalt) bearing slopes assayed $4-5 per ton...and caused a sliming under the stamps up to 42 percent of the tailings. The plant did not provide for working the slimes. The gold in these slimes, not amalgamable, had no chance to be extracted by cyanide (as the slimes were rejected), and therefore was lost. The tailings leaving amalgamation in Dec. 1898 and Jan. 1899, carried gold up to $8,755, from which amount were extracted but $2,373. Whether, since, an improvement in cyaniding has been accomplished, I do not know." (Values at $20 gold).

The No. 2 vein, where exposed on surface, is no more than a few centimetres wide, but apparently reached widths of up to a metre at depth (Bruce 1925). Bruce (1925) noted that there is a similar close relationship between high gold values and the red pegmatite phase of the quartz diorite as there is in the No. 1 vein. A sample of carbonatized basalt taken about 1 m west of the vein consists of about 50% very fine (0.03 - 0.05 mm) carbonate grains. Much of the remainder is chlorite, part of which is replaced by biotite. Rare, thin quartz stringers contain a little pyrite. The vein, where presently exposed, is associated with a narrow, sugary, quartz-porphyry dike. The dike is comprised of 1 mm, strained quartz and totally sericitized feldspars. Carbonate, pyrite, sphene, chlorite and epidote are present in minor amounts. There is no apparent fabric, but slickensides observed on the western side of the dike suggest a pitch of 35°S, approximately the same as the dip of the quartz diorite dike and the rake of the main ore shoot on the No. 1 vein.

Bow (1899) interpreted the No. 1 and No. 2 veins to lie along parallel fault planes, with the block between them offset 12 m to the north.

ANALYSIS OF MINERALIZATION

Background gold values within quartz diorite samples, taken in this study about 25 m on both sides of the No. 1 vein, were less than 2 ppb, while the sample described earlier from the western edge of the open cut contained 190 ppb gold. A sample of fresh-looking basalt taken 30 m west of the No. 1 vein contained 8 ppb Au, while another taken about 80 m from the vein assayed less than 2 ppb Au. A sample of carbonatized basalt, taken less than 1 m from No. 2 vein, returned 3 ppb. Three samples of quartz vein material from the No. 2 vein assayed 1425 ppb, 71.5 ppm and 580 ppb Au. Replicates of these analyses varied considerably, testifying to the erratic nature of the gold mineralization.

Three samples containing visible gold were also analyzed, with wide variation in replicate analyses. These samples, which were found near the No. 1 vein, contained an average of 61.5 ppm Au and 1290 ppm Bi, 22.3 ppm Au and 180 ppm Bi, and 145 ppm Au and 1260 ppm Bi. The latter sample is silicified quartz diorite and the other two are quartz, containing ribbons of mafic schist.

DEVELOPMENT HISTORY

Circa 1893: Discovered by George Green, an Indian, who brought back rich samples to the Hudson Bay post in Rat Portage. Dr. Scovil and Mr. C. Bunn staked the location. Work included stripping and trenching.

1894: Sold to Col. Engledue, representing the South African General Development Syndicate, for $25,000.

1895 - Mar. 1899: Same company formed the Mikado Gold Mining Co. Ltd., naming Col. Engledue president. Mill runs were reported in 1895. The construction of a 20-stamp mill was later followed by the installation of a cyanide plant. The Canadian Mining Review (1898) noted the arrival of gold bricks at intervals.

A vertical shaft was sunk 250 ft (76 m) on the No. 1 vein. Levels were established and the following development was completed:

(1) Level one (61 ft (19 m)) had 61 ft (19 m) of crosscutting, 190 ft (58 m) of drifting to the south, 189 ft (57 m) of drifting to the north, 18 ft (5.5 m) of raising, and a winze sunk to the second level.

(2) Level two (120 ft (36.5 m)) had 56 ft (17 m) of crosscutting, 587 ft (179 m) of drifting to the south and 154.5 ft

(47 m) to the north, 25 ft (7.6 m) of raising, and a winze sunk to the fourth level.

(3) Level three (180 ft (55 m)) was cut from the second level winze: there was 100 ft (30.5 m) of drifting to the south and 162 ft (49 m) to the north.

(4) Level four (240 ft (73 m)) had of crosscutting, 421 ft (128 m) of drifting to the north and 553 ft (169 m) to the south, and a raise cut to the third level.

Stoping was done on all levels, primarily along an ore shoot pitching 30°S.

Shaft No. 2, located about 150 m east of the No. 1 vein, was sunk 180 ft (55 m) on No. 2 vein. A level was established at 120 ft (37 m), with 140 ft (43 m) of drifting to the north and 130 ft (40 m) to the south. On a second level at 180 ft (56 m), drifts were cut 178 ft (54 m) to the south and 250 ft (76 m) to the north. Stoping was done on both levels.

Shafts 3 and 4, located south of the main workings, were sunk 80 ft (24 m) and 65 ft (20 m), respectively.

Additional work included stripping and test pitting, which was carried out for 300 m south along strike of the No. 1 vein; 150 ft (46 m) and 65 ft (20 m) long open cuts on the No. 1 vein and No. 2 veins, respectively, and underground and surface diamond drilling.

March 1899 - 1903: There was a change in mine management. The No. 1 shaft was deepened to 325 ft (99 m) and then abandoned. The No. 1 vein was developed by a shaft inclined 26-35° S, which extended 1300 to 1400 ft (396-427 m) along the principal ore shoot to a vertical depth of 395 ft (120 m). Underground development included:

(1) 94 ft (29 m) of lateral work on level 3,

(2) on level 4, the south drift was extended to 652 ft (199 m), the north drift was extended to 760 ft (231 m), and a winze was sunk 20 ft (6 m),

(3) on level 5 (300 ft, 91 m), there was 240.5 ft (73 m) of drifting to the south and a winze was sunk to level 6,

(4) on level 6 (360 ft, 110 m), there was 50 ft (15 m) of drifting to the north and 104 ft (32 m) to the south, and a winze was sunk 12 ft (3.6 m),

(5) on level 7 (395 ft, 120 m), there was 206 ft (63 m) of drifting to the north and 121 ft (37 m) to the south,

(6) on level 8 (455 ft, 139 m), there was 24 ft (7 m) of drifting to the north and 256 ft (78 m) to the south, and a winze sunk to level 9,

(7) on level 9 (522 ft, 159 m), there was 800 ft (244 m) of drifting to the south, and a winze sunk to level 10, (8) on level 10 (590 ft, 180 m), there was 94 ft (29 m) of drifting to the south.

Stoping continued on all levels.

Late in 1900, a winze was sunk 45 ft (13.7 m) from level 2 in the No. 2 shaft.

Underground and surface diamond drilling continued through the period.

The mill was closed in November of 1902, and all operations ceased in April, 1903.

1910 - 1911: H.A.C. Machin formed Kenora Mines Ltd. The main shaft was dewatered and the workings were sampled to the 9th level. A new cyanide plant was installed and the mill was remodeled. A winze was sunk 90 ft (27 m) from the 4th level. Considerable drifting was done on the 4th and 6th levels.

1920: Sold to Chicago interests.

1921 - 1923: Incorporation of Mikado Consolidated Gold Mines, Ltd. No. 1 shaft was dewatered to the 7th level, where 35 to 40 ft (10-12 m) of drifting was done.

1924: Mikado-Bullion Mines was formed.

1928: Incorporation of Kenora Miners and Prospectors Ltd. Shaft No. 2 was dewatered to the 2nd level.

1932 - 1934: Same company dewatered the main shaft. Some equipment was transferred to Cedar Island Mine. The winze from level 4 was extended to level 9, where 1,651 ft (503 m) of drifting and 264 ft (80 m) of crosscutting were done. Some 478 ft (145 m) of drifting and 78 ft (24 m) of crosscutting extended the 10th level, and 2,760 ft (841 m) of underground diamond drilling was done in 1934.

1980 - 1981: Optioned by Denison Mines Ltd., which completed geological and geophysical surveys. Thirteen holes were drilled, totalling 4,326 ft (1,319 m).

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86. MINERVA MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Mafic flows cut by a porphyritic granite dike

CLASSIFICATION
la, d, o

LOCATION

Poplar Bay, Lake of the Woods:	NTS	52E/10NE	
	Lat.	49°41'10"	(49.6861°)
	Long.	94°32'41"	(94.5447°)

ACCESS
The workings are on old mining location I9, on the western shore of Poplar Island in Poplar Bay. The island is about 10 km south-southwest of the Town of Kenora, from which it may be reached by boat.

SIZE AND GRADE
Twenty-eight tons of "high-grade" ore yielded $1,372 (39.2 oz.) of gold (ODM, Vol. 49, p. 22).

DESCRIPTION
Geology: Northeast-trending, fine- to medium-grained mafic and intermediate flows have been intruded by a small plug of hornblende granite, the southern extremity of which crops out on the northern tip of Poplar Island (Chisholm 1949). In the vicinity of the shallow (5.5 m) shaft, the contact between massive, medium-grained basalt and finer grained, lighter coloured flow breccia trends northeast, parallel to the shoreline. These volcanics are cut at a high angle by narrow, quartz-filled shear zones. A 5 m wide porphyry dike also cuts the volcanics at a high angle, and quartz veining is present near its northern side (Figure 39).

Mineralization: The quartz veins are up to 30 cm wide, trend within about 10° of 115°, and dip 70° to 80°N. Minor pyrite occurs in both the quartz and the enclosing foliated basalt. The shaft was sunk where a quartz vein up to 15 cm wide cuts the medium-grained volcanics, although about 5 m to the southwest, the vein is wider. Chisholm (1949) reported the presence of chalcopyrite, galena and rare visible gold and noted that "values of gold 0.25 oz/ton and 1.0 oz/ton were reported from grab samples." J. Cavanagh advised Chisholm (1949) that a 107 cm chip sample from the pit east of the shaft was assayed and contained about 1.2 oz of gold per ton.

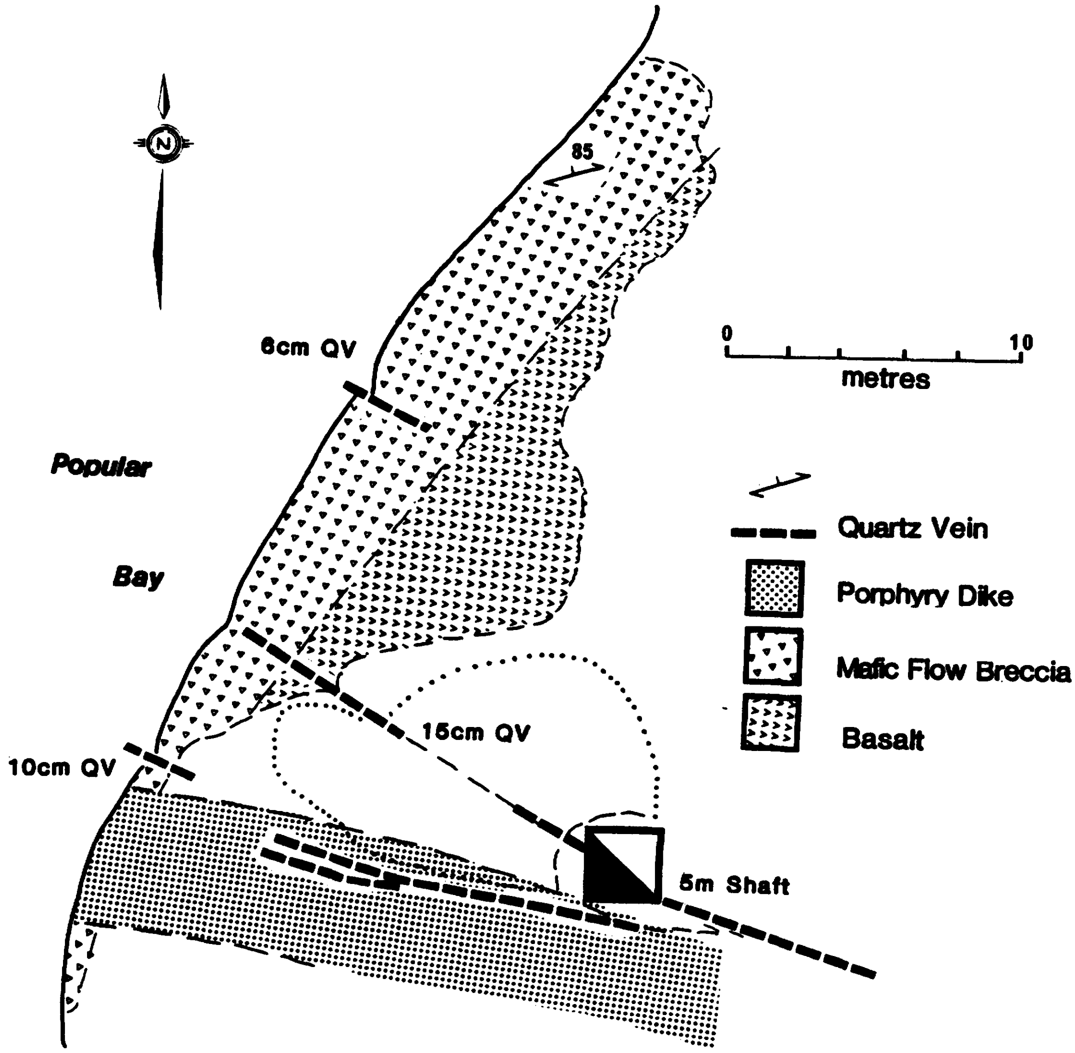

Figure 39. *Geology of the Minerva Mine Occurrence.*

DEVELOPMENT HISTORY

Circa 1895: Discovered by persons unknown, who sank a 3 by 2.3 by 5.5 m deep shaft.

1901: Secured by American interests, which reported assay results of up to 15 oz Au/ton.

1903: Acquired by J. McNaughton of Wisconsin.

1911: The ground passed to J.M. Rosebush.

1940: Reverted to the Crown for non-payment of taxes.

1949: Nine claims were staked by Mr. B.J. Cavanagh of Aero Prospecting Syndicate. The shaft was dewatered and sampled. Addition trenching and stripping were completed. Two short holes were drilled to intersect the quartz veins; only one was successful. The best assay result from drill core was 0.06 oz Au/ton over 90 cm. Better results were found through surface sampling; 0.28 oz Au/ton over 66 cm; 0.1 oz Au/ton over 66 cm; and a grab sample of 1.18 oz Au/ton.

1981: Denison Mines staked two claims on the island. The shaft was dewatered and a grid was cut. Geophysical, geochemical and geological surveys were completed.

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87. MINNESABIC ISLAND OCCURRENCE

COMMODITY
Gold, silver

ROCK ASSOCIATION
Basalt

CLASSIFICATION
1a

LOCATION

Bigstone Bay, Lake of the Woods:	NTS	52E/9NW
	Lat.	49°39′33" (49.6592°)
	Long.	94°20′13" (94.3370°)

ACCESS
Location 147E, or Minnesabic Island, also referred to as Island 308, is about 16 km southeast of Kenora and may be reached from there by boat.

DESCRIPTION
Geology: Rocks of the southern part of Bigstone Bay are on the south limb of the Hay Island Antiform and are predominantly south-facing, massive to pillowed basalts. At Minnesabic Island, the massive basalt is fractured and sheared. Quartz occurs in many of the shear zones, which have no obvious pattern.

Mineralization: Coste (1885) reported two inclined shafts near the western end of the island, each sunk on a 15 to 60 cm wide quartz vein striking 010°. One shaft was inclined 80°E and the other 60°E, with depths estimated to be 9 m. At present, there are several cottages on the island; evidence for one shaft was found during the present study, but it had been filled. A block of rusty basalt, with quartz, was found at the surface. The quartz contained chlorite, carbonate, and up to 10% pyrite and chalcopyrite. Coste (1885) noted the presence of galena.

ANALYSIS OF MINERALIZATION
A piece of mineralized, grey-white quartz taken in this study contained 15 ppm silver and >10 ppm gold.

DEVELOPMENT HISTORY
1882-1883: Sinking of 2 shafts was carried out, but ownership of the property and grade of the ore are not known.

SELECTED REFERENCE
Coste, 1885, Geology and Natural History Survey of Canada, Report 1882-83-84, p. 13K

88. MONTE CRISTO OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanics

CLASSIFICATION
1a

LOCATION

Glass Township:	NTS	52E/10NW
	Lat.	49°38'17" (49.6380°)
	Long.	94°59'00" (94.9833°)

ACCESS
A pit is located 250 m north of Shoal Lake at a point 2.6 km northwest of Clytie Bay Landing. The area is accessible by boat from the Landing, or by foot from the Clytie Bay Road, which passes 600 m north of the pit. The property originally consisted of mining location D158.

DESCRIPTION
Geology: The area is mainly underlain by fine- to medium-grained mafic volcanics of the upper volcanic sequence of Shoal Lake. Felsic porphyries of extrusive and intrusive origin are present locally. The area is marginal to the Crowduck Lake - Witch Bay Shear Zone and foliation is well developed in places. A strong linear feature trending approximately parallel to the shear zone occurs immediately south of the pit (Davies 1965).

Mineralization: Coleman (1896, p. 107) noted that a "bedded vein, in places 10 feet wide, runs east and west for at least 500 feet ....and the quartz had not a very promising look, being little charged with iron oxides or sulphides."

SELECTED REFERENCES
Coleman, 1896, OBM, Vol. 6, p. 107
Davies, 1965, ODM, Map 2069

89. NONESUCH OCCURRENCE

Also called the Skunk Island Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Variably sheared and altered mafic metavolcanic flows and tuffs

CLASSIFICATION
1d

LOCATION

Echo Bay, Lake of the Woods:	NTS	52E/10NW	
	Lat.	49°39'39"	(49.6608°)
	Long.	94°50'48"	(94.8467°)

ACCESS
The shaft is located on Island M12, approximately 2.8 km due west of the western shore of Victoria Island, or about 6.4 km south-southeast of the highway access point to Clearwater Bay (Figure 14). The area may be reached by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The area is mainly underlain by basalt which appears to be equivalent to the upper mafic volcanic sequence of Shoal Lake. Felsic pyroclastic rocks, in places forming broad lenses, are interlayered with the basalts. Medium-grained dikes or sills of gabbro may have been intruded along east-trending faults of the Crowduck Lake - Witch Bay Shear Zone which crosses the area. Although topography has been influenced by a 060°-trending fracture set, the dominant linear features and the principal foliation direction trend east, parallel to the fault zone.

On Island M 12, much of the exposed basalt has been sheared and carbonatized. The shear zone has a strike of 085° and a steep north dip. A 7 m wide feldspar porphyry dike, with subhedral phenocrysts up to 2 cm long, and an adjacent, more equigranular, granite dike, form the central part of the western end of the island and trend east.

Mineralization: The porphyry and granite dikes have been altered, with irregular veinlets, veins and masses of quartz and some carbonate filling fractures. Pyrite is sparse in both the quartz and the enclosing porphyry. Coleman (1896) was informed that the mineralization occurred at the contact between granite and the foliated basalt, and reported the presence of visible gold in dolomite. A 1.8 by 2.7 m shaft was sunk in the hanging wall of the feldspar porphyry and the dump rock indicates that the underground workings were mainly in this rock.

ANALYSIS OF MINERALIZATION

A grab sample taken in this study from the dump, consisting of partly carbonatized feldspar porphyry with a vein of clear quartz and a trace of pyrite, contained over 10 ppm gold.

DEVELOPMENT HISTORY

July 1895 - May 1896: Mining location M12 was owned by Oliver Daunais of Norman. A 1.8 by 2.7 m shaft was sunk 21.3 m, with 5.5 m of drifting on the 7.9 m level. Some production was reported. An additional 7.6 to 10.7 m of drifting was done in an adit on Island M14, about 600 m west of the shaft.

1943: Work in the surrounding area by Sylvanite Gold Mines, Ltd. The option on Island M12 was held by Arthur Gauthier.

1974: Airborne geophysics by Hudson Bay Oil and Gas Company, Ltd.

1979-1983: Work in the surrounding area by H.G. Tibbo (Tasu Resources Ltd.). No work has been done recently on the island since it is the site of 2 summer cottages.

SELECTED REFERENCES

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Coleman, 1896, OBM, Vol.6, p. 30

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90. NORAH MINE PROSPECT

Also spelled Nora; also known as Gold Leaf Mine

COMMODITY
Gold

ROCK ASSOCIATION
Carbonatized basalt cut by granitic dike

CLASSIFICATION
1d, b, p

LOCATION
North of Nola Lake, Western Peninsula:

NTS 52E/10SE
Lat. 49°36'36" (49.6100°)
Long. 94°41'16" (94.6878°)

ACCESS
The Norah Mine shaft is on mining location JES 38, about 200 m north of the eastern end of Nola Lake, 22 km southwest of Kenora. During the early work, access from the Lake of the Woods was across a portage to Fox Lake, and by a road extending southeast from Fox Lake for about 700 m. An alternate, canoe route is west from Micrometer Bay via Brocket and Nola Lakes.

DESCRIPTION
Geology: The northern part of Western Peninsula is underlain by a complex of mafic, intermediate and felsic volcanics, with volcanic sandstone and cherty sediments exposed in the core of a syncline through Fox Lake. Locally, bedding is at a high angle to the dominant, east-striking faults which cross the area. Volcanic units have been interpreted to lens out along strike (Davies 1983) but this may be a function of faulting.

Mineralization: North of Nola Lake, the predominant rock is foliated basalt. This has been intruded, in places, by fine-grained granitic dikes. Faults are commonly marked by abundant, reddish brown weathering, iron carbonate.

The shaft is located where a felsite or quartz porphyry dike cuts carbonatized basalt, near a carbonatized fault. Thomson (1936) reported that a sugary quartz vein about 45 cm wide, having a strike of about 065°, occurs at the contact between the porphyry and basalt. He also noted that the quartz contains no sulphides, that there are 2 ages of quartz and that chrome mica occurs in trace amounts in the porphyry and along fractures in the quartz.

Bow (1900) recorded that the 1.2 by 2.1 m shaft dips 79°N. He noted that, at a depth of 22 m, a branch of the vein dipping 45° was followed by a 7.6 m long incline; that a 15 m long drift was driven east at the 22 m level; and that the shaft continued to a depth of 36.5 m. He also reported a vein width of 30 to 120 cm, but this may represent the width of fractured felsite in which quartz veinlets occur. Dump material indicates that most of the workings are in foliated basalt.

Approximately 160 m to the east, a second shaft was sunk on a quartz-bearing felsite dike. The 2.5 by 1.5 m shaft dips about 75°N. This shaft was east of the western boundary of mining location JES 44, which was not owned by the same company as the Norah Mine. Bow (1900) noted that this shaft was said to be 9 m deep.

ANALYSIS OF MINERALIZATION

Thomson recorded an assay of 0.30 oz Au/ton from a representative sample of quartz and porphyry, but indicated that "subsequent sampling by prospectors did not reveal such encouraging gold values".

A grab sample taken in this study from the Norah dump, consisting of foliated carbonatized basalt, with minor pyrite, cut by felsite with vein quartz and fine pyrite, contained only 6 ppb Au. A sample of pink felsite from the edge of the east shaft contained quartz and much fine disseminated pyrite and assayed 25 ppb Au.

DEVELOPMENT HISTORY

Circa 1899: Shaft sinking on mining locations JES 38 and JES 44.

1900: The shaft on JES 38 (Norah Mine) reached a depth of 36.5 m.

SELECTED REFERENCES

Bow, 1900, OBM, Vol. 9, p. 60
Davies, 1983, OGS, Map 2423

91. NOR-PENN PROPERTY (PROSPECT)

COMMODITY
Gold

ROCK ASSOCIATION
Sheared intermediate pyroclastics

CLASSIFICATION
2c

LOCATION
Northern Peninsula, Lake of the Woods:

NTS 52E/10NE
Lat. 49°39'24" (49.6567°)
Long. 94°36'42" (94.6117°)

ACCESS
The occurrence is about 5 km east of Spruce Point and about 15 km southwest of Kenora. The area is accessible by boat from Kenora.

DESCRIPTION
Geology: Mapping by Chisholm (1950) and Holbrooke (1950) indicated that the southern part of Northern Peninsula is underlain by interbedded mafic, intermediate and felsic volcanic rocks (Figure 40). It also lies on the eastern extension of the Crowduck Lake - Witch Bay Shear Zone, which is characterized by a series of intense, east-striking shear zones separated by relatively undeformed rocks and has been traced for about 50 km.

At the Nor-Penn Occurrence, the principal zone of shearing is in what appear to be intermediate pyroclastics, immediately south of a 120 m wide unit of massive, rhyolitic lapilli tuff and tuff breccia. Within the shear zone, Howard (1983) noted "varying zones of chemical alteration ... both along and across the shear, with zones of silicification, carbonatization, chromium enrichment (*i.e.* fuchsite/mariposite) and phyllitization (*i.e.* clay minerals) being most common". The shear zone has a width of up to 46 m. Two well defined fabrics were evident in a thin section of quartz-carbonate-sericite schist. The later fabric apparently post-dates carbonatization.

Mineralization: Howard (1983) noted pyrite and traces of chalcopyrite in the schist and concluded that gold "is associated with sulphides and where they appear in greater concentrations gold values appreciate correspondingly." Nor-Penn Mines Ltd. reported sphalerite, galena and tennantite in the sheared rock in addition to pyrite.

The main showing was trenched at intervals over a length of about 500 m on the Nor-Penn property and an additional 75 m to the east.

Chisholm (1950) suggested that the presence of mineralized outcrops may indicate that the zone extends over 1 km to the west of the Nor-Penn property.

Weathering of the schist has been up to 90 cm deep at the surface and the gold content of this material is, in general, higher than fresh rock at depth (Chisholm 1950). Holbrooke (1950) indicated that "numerous grab samples taken by the owners have returned from trace to $25.00 (0.71 oz) in gold." Beard and Garratt (1976) report "chip samples across a 9 foot section gave 0-3 oz/ton over 3 feet or 0.11 oz/ton over 9 feet". Samples taken during 1983 by Academy Exploration Ltd. contained from trace to 4.8 oz Au/ton over 3 m.

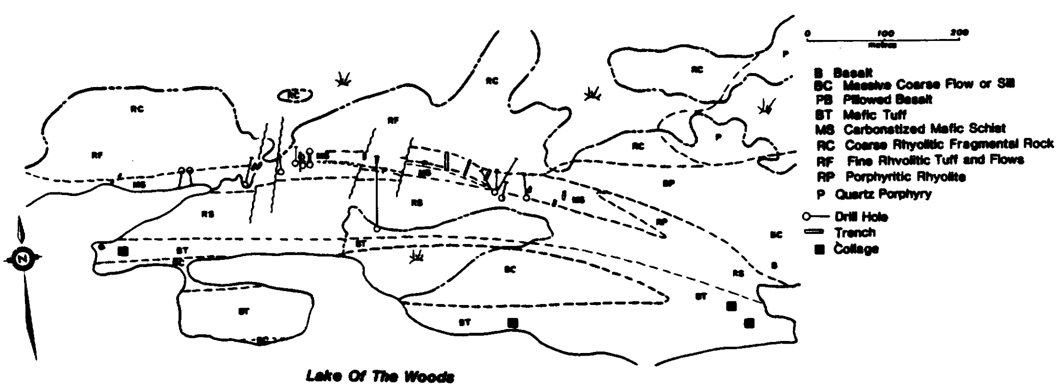

Figure 40. *Geology and development at the Nor-Penn Prospect.*

DEVELOPMENT HISTORY

1947: Gold discovered by R. Longe in dry creek bed.

1948-1950: Nor-Penn Mines was incorporated. Extensive stripping and trenching were followed by 145 drill holes, totalling 608 m. The best drill intersection was 0.12 oz Au/ton over 2.1 m, but most mineralized core contained only a trace of gold.

1974: Area examined by Hudson Bay Exploration and Development Co. Ltd.

1980-1981: Geological, geochemical and electromagnetic surveys by Raleigh Minerals Ltd. Three holes, totalling 182 m, were drilled.

1983: Five holes, totalling 305 m, were drilled by Academy Explorations Ltd.

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1980b, Geological Survey, Raleigh Minerals Ltd., Clearwater Bay Area, Assessment Files, Kenora
Szetu, 1980, A report on VLF electromagnetic survey and geology, Raleigh Minerals Ltd., Clearwater Bay, Assessment Files, Toronto
Thomson, 1936, ODM, Map 45b
1954, ODM, MTC 1, p. 13

92. NORWAY MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Sheared diorite

CLASSIFICATION
4c

LOCATION

Haycock Township:	NTS	52E/16SW
	Lat.	49°45′58" (49.7661°)
	Long.	94°19′26" (94.3239°)

ACCESS
The Norway Occurrence is on old mining location 395P, about 1 km east of Breakneck Lake and about 1 km south of the Canadian Pacific Railroad, where it crosses Island Lake. The shaft is exposed on the northeast side of a power line right of way. Dirt trails provide vehicle access to within 120 m of the shaft.

DESCRIPTION
Geology: The area is underlain by medium-grained diorite and quartz diorite of the Island Lake intrusion, which locally contains inclusions of fine-grained basalt. Larger blocks of basalt, with iron formation, have been reported to the northeast (Hopkins 1931). Fragment edges are typically well defined, and many elongate fragments are oriented with long axes trending east. Several narrow shears trend 070° to 090°. Locally, thin quartz veins and granite veins cut the diorite.

Mineralization: At the Norway shaft, a 25 to 30 cm wide zone of schistose diorite strikes east and dips steeply south. Several quartz veins, which pinch and swell in the zone, contain minor pyrite.

ANALYSIS OF MINERALIZATION
A 28 cm chip sample taken in this study across the sheared zone assayed 1933 ppb Au. Grab samples of silicified, foliated diorite from the shear and from 10 cm south of the shear contained 17 and 25 ppb Au respectively. Whole-rock analyses of these samples indicate a higher silica content (73.9%) within the shear than adjacent to the shear (54.5%).

DEVELOPMENT HISTORY
Circa 1892: A 7.6 m deep shaft was sunk by Messrs. McKellar and Horne of Fort William, and Ross of Rat Portage. It was reported that the shaft was actually about 45 m deep (Resident Geologist's Files, Kenora, 1946), but the size of the dump does not bear this out.

SELECTED REFERENCES

Blue, 1893, OBM, Vol. 3, p. 31
King, 1983, OGS, Map P.2618

93. NOVASADE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Foliated basalt

CLASSIFICATION
1a

LOCATION
Jaffray Township: N 1/2, Lot 7, Con. I:
NTS 52E/16SW
Lat. 49°44′55″ (49.7486°)
Long. 94°26′32″ (94.4422°)

ACCESS
The occurrence is near Highway 17 at a point about 1.5 km by road east of the Town of Kenora.

DESCRIPTION
Geology: The area is underlain by massive to pillowed, fine-grained basalts, and interlayered, coarser, mafic flows and subvolcanic sills. The pillows are commonly distorted, but in general face northwest. Foliation, where present, is typically parallel to northeast-trending volcanic stratigraphy but may be at an angle to it.

Mineralization: Foliated basalt, dipping steeply to the north, is cut by a northeast-striking fault. The immediate vicinity of the fault was stripped over a length of 35 m, exposing a 10 to 15 cm wide quartz vein. To the west, several quartz stringers occur over a width of about 1.5 m.

ANALYSIS OF MINERALIZATION
Two channel samples across the western stringers contained only traces of gold. Where the vein was better defined, samples across 55 cm and 17 cm contained 0.06 and 0.14 oz Au/ton, respectively.

DEVELOPMENT HISTORY
1939: Sampled by Sylvanite Gold Mines Ltd.

SELECTED REFERENCE
Sylvanite Gold Mines Ltd., 1939, Assay Plan, Resident Geologist's Files, Kenora

94. OLIVER SEVERN OCCURRENCE

Also called the McCallum Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate to felsic lapilli tuff

CLASSIFICATION
2a

LOCATION

Kendall Islet, Clearwater Bay:	NTS	52E/10NE
	Lat.	49°43'12" (49.7200°)
	Long.	94°38'30" (94.6417°)

ACCESS
All of the known veins at the occurrence are within about 300 m of Kendall Inlet, about 12 km west-southwest of Kenora. The area is traversed by the Kenricia Road.

DESCRIPTION
Geology: Granitic rocks of the southern edge of the English River Subprovince crop out at War Eagle Lake, about 3.5 km northwest of the McCallum Occurrence. These rocks are in contact with foliated basalt, having a thickness of about 1 km. The basalt is overlain by intermediate to felsic tuff, lapilli tuff and tuff breccia. Near the shore of Clearwater Bay, fine argillaceous sediments cap the sequence. These show evidence of shear folding; bedding in the sediments strikes northeast.

Mineralization: Seven quartz veins, trending about 085° to 100°, have been located in the area. The No. 1 Vein has a known length of about 35 m and an average width of about 15 cm. The vein is irregular in dip and locally bulges to 50 cm in width. A weighted average of 9 samples contained 0.27 oz Au/ton over a width of 8 to 90 cm. The No. 2 Vein is 75 m to the west and may be an extension of the No. 1 Vein. It has a known length of about 25 m. The No. 3 Vein, consisting of a lens of quartz up to 1.8 m wide with a known length of <15 m, is parallel to the No. 1 Vein and about 140 m north of it. Pyrite, chalcopyrite, molybdenite and galena were reported to be present (Taylor 1935) in both the quartz and enclosing schists. The No. 4 Vein is only about 8 cm wide, but persists for up to 350 m. Gold can apparently be panned from the western 200 m, but not the eastern extension (Taylor 1935). Vein No. 5 has been traced about 25 m and has an average width of 20 cm; coarse gold may be panned from it. The vein is said to be highly fractured and well-mineralized with pyrite and galena, and to be identical in appearance with the main vein at the Kenricia Mine to the west. Vein No. 6 is highly fractured, but poorly mineralized. It is lens-shaped, with a length of about 8 m and a maximum width of 50 cm. Vein No. 7, with a width of upto 60 cm and a length of over 75 m, is poorly fractured with little mineralization; it may be the western extension of Vein No. 2. Taylor (1935) concluded that "the merits of the property are by no means exhausted".

ANALYSIS OF MINERALIZATION

Sampling results reported by Taylor (1935) may be summarized as follows:

No. 1 vein: 9 samples representing an average width of 27 cm had a weighted assay of 0.27 oz Au/ton.

No. 2 vein: 3 samples contained only trace gold.

No. 3 vein: 2 samples of schist and quartz had an average gold content of about 0.10 oz/ton.

No. 4 vein: 8 samples of both quartz and schist, representing an average width of 7 cm, had a weighted average of 0.27 oz Au/ton. Resampling after trenching, over an average width of 33 cm, indicated a weighted average gold content of 0.037 oz Au/ton.

No. 5 vein: parts of this vein are well mineralized with pyrite and galena. The average of two 20 cm samples was 0.88 oz Au/ton.

No. 6 vein: fine gold was obtained on panning.

No. 7 vein: no gold could be obtained by panning.

DEVELOPMENT HISTORY

1935: Work carried out by F. McCallum of Winnipeg. Assessment of the property (K3912, 3913, 3963) was made by C. Taylor for Oliver Severn Gold Mines Ltd.

SELECTED REFERENCES

Taylor, 1935, Resident Geologist's Files, Kenora
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 36-37

95. OLYMPIA MINE (PAST PRODUCER)

COMMODITY
Gold

ROCK ASSOCIATION
Mafic flows and/or sills

CLASSIFICATION
la, b, c, d, o

LOCATION

Glass Township:	NTS	52E/10 SW
	Lat.	49°34'34" (49.5761°)
	Long.	94°57'26" (94.9572°)

ACCESS
The mine site is on mining location M11, near the western shore of the northwestern arm of Helldiver Bay, 1.6 km southeast of the southern tip of Cedar Island. The site may be reached by boat from Clytie Bay Landing on Shoal Lake, or from Kenora via Ash Rapids.

SIZE AND GRADE
Production during 1906, 1911, 1912 and 1915 was reported to be 332 oz Au and 58 oz Ag from 1958 tons (Beard and Garratt 1976). Sampling of the No. 1 tunnel over a length of 38 m indicated an average grade of 0.107 oz Au/ton across an average width of 1.1 m.

DESCRIPTION
Geology: Rocks within the general mine area are predominantly fine- to medium-grained, mafic volcanic flows and/or sills (Figure 41). Stratigraphy in the area trends northeast, and is offset by east-southeast-trending faults. Pillows west and east of the property face southeast. On the property, stratigraphy is partly based on texture; an equigranular gabbroic unit in the west is overlain by a gabbroic body with elongated amphiboles which, in turn, is underlain by a porphyritic gabbro on the shore of Helldiver Bay. A massive felsic unit crops out directly north of Helldiver Bay, and may extend under the bay. If so, it lies stratigraphically above the porphyritic gabbro.

A major lineament south of the property extends west from Helldiver Bay through the northern portion of Yum Yum Peninsula. This is probably the surface expression of a fault zone. The stratigraphy of the Olympia Mine area is similar to that of the Yum Yum area and may indicate dextral movement of about 600 m along the fault. Ultramafic rocks are present in both areas.

Mineralization: Seven gold-bearing quartz veins have been reported on the property (Olympia Mines Prospectus 1962). Of these, development was centred on 3 quartz veins and 2 fault zones.

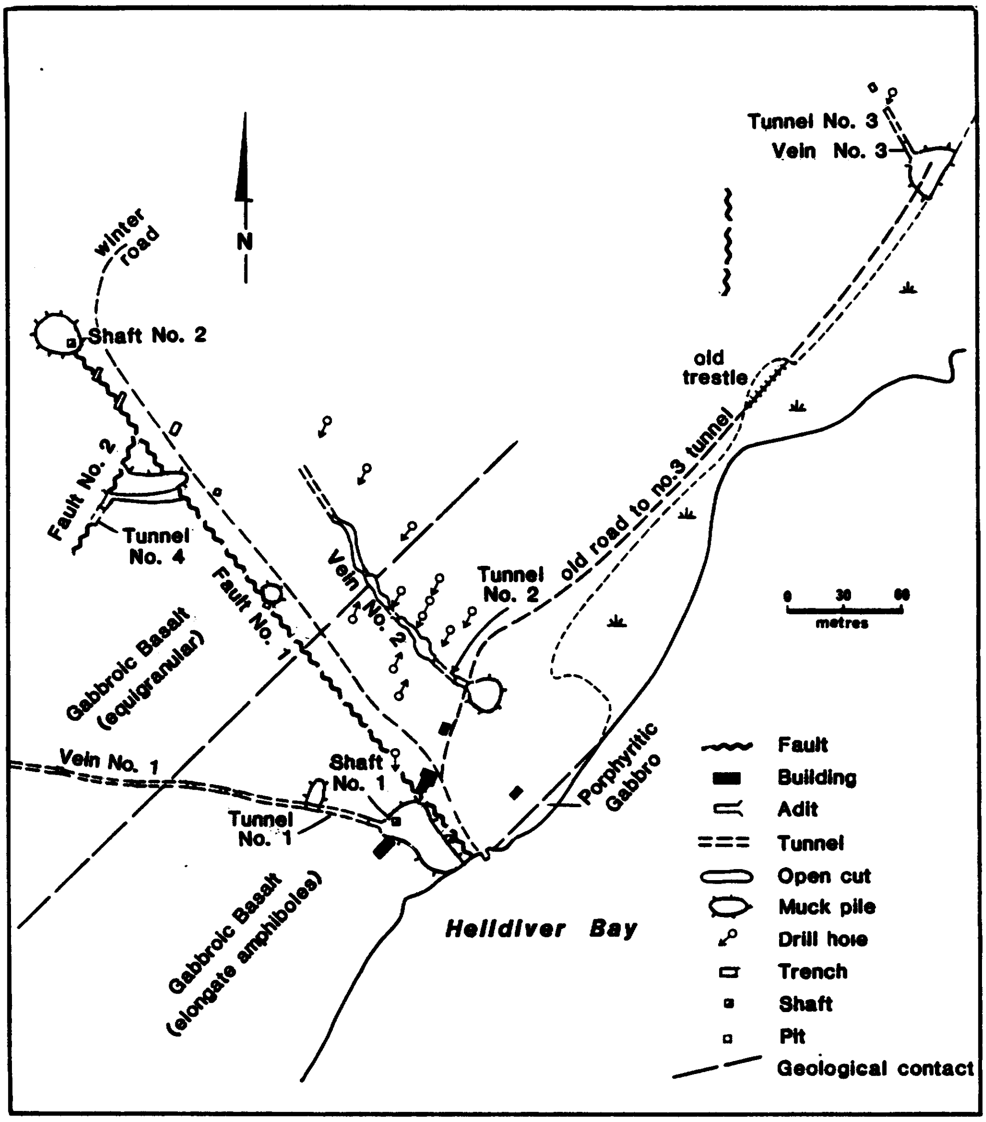

Figure 41. *Geology and surface plan of the Olympia Mine. Modified from Dunlop (1964).*

The No. 1 vein occurs in a narrow shear zone in massive, medium-grained, quartz-bearing basalt or gabbro. The zone has been traced for more than 200 m and coincides in part with a topographic lineament that strikes 100°. Discontinuous felsite occurs in the zone. Basalt on both walls is massive and contains up to 2% disseminated pyrrhotite. Quartz is present as one or more veins of variable width. At the entrance to a 239 m long tunnel, 2 parallel quartz veins that dip 55°N are separated by 15 cm of silicified basalt. The northern vein has a width of up to 30 cm and contains minor pyrite. The southern vein is 15 cm wide and contains abundant pyrite and pyrrhotite. A shaft, located near the tunnel entrance, is

38 m deep; at the 33 m level, 88 m of crosscutting and 14 m of drifting were carried out.

The No. 2 vein is in a near-vertical fault zone which strikes about 150°. A tunnel was driven 140 m along it and some stopes reached the surface. The zone consists of quartz and carbonate with angular fragments of basalt. Fault gouge occurs locally and fracture surfaces are heavily oxidized. Pyrite is abundant in and adjacent to some of the quartz.

The No. 3 vein is parallel to the No. 2 vein and consists of a steeply north-dipping, chloritic shear zone about 1 m wide in which carbonate is abundant and quartz, with minor pyrite, occurs as lenses, thin veins and veinlets. A 24 m long tunnel lies along it and, at the surface beyond the end of the tunnel, a 4 m deep pit was sunk.

A fault zone parallel and to the south of the No. 2 vein has been referred to as the No. 1 fault (Dunlop 1964). It lies along the southwestern side of a valley, and is poorly exposed, but the No. 2 shaft was apparently sunk along its northwestern extension. Dump material at the No. 2 shaft indicates that the zone contains more carbonate and less quartz than the No. 2 vein and that some sulphides are associated with the carbonate. An intersecting fault, known as the No 2. fault, apparently strikes north-northeast and was investigated by a tunnel (Dunlop 1964).

ANALYSIS OF MINERALIZATION

The tunnel along the No. 1 vein was sampled by Sylvanite Gold Mines Ltd. in 1944: over a length of 220 m and an average width of 52 cm, the average gold content was 0.18 oz/ton, with the highest gold content on the footwall side of the vein. During the present survey a series of samples was taken at the entrance to the No. 1 tunnel. A sample of wallrock 2 m from the northern vein contained 12 ppb Au, one 30 cm from the vein contained 22 ppb Au and the 30 cm width of the vein assayed 7850 ppb. A sample from the 15 cm wide southern vein and the 15 cm of silicified wallrock which lies between the 2 veins averaged 101 ppm Au (2.94 oz Au/ton). Wallrock on the footwall of the southern vein contained 300 ppb Au, and a gold content of 70 ppb was determined from a sample taken 20 cm from the southern vein.

Sylvanite Gold Mines Ltd. sampled 27 m of the No. 2 tunnel across an average width of 51 cm, with an average gold content of 0.15 oz/ton. A 60 cm chip sample across the zone of mineralization at the No.2 tunnel contained 180 ppb Au. A sample of a pyritiferous quartz vein cutting this zone contained 17.5 ppm Au (about 0.5 oz Au/ton). A drill core intersection from 89 m below the vein averaged 0.95 oz Au/ton (32.6 ppm) across 0.5 m.

Vein No. 3 was systematically sampled by Sylvanite Gold Mines Ltd. and the average gold content was 0.01 oz/ton across 64 cm and along

26 m of the No.3 tunnel. Samples of weakly mineralized massive basalt and carbonatized sheared basalt from the pit on the northwest extension of the vein contained 6 ppb Au and 55 ppb Au, respectively, and a relatively high arsenic content (> 50ppm).

Five samples from the dump of the No. 2 shaft were assayed by Sylvanite Gold Mines Ltd. but the highest gold content was only 0.04 oz/ton. Samples taken by Dunlop (1964) in the No. 4 tunnel contained no gold.

Results of sampling and diamond drilling in 1964 by Olympia Gold Mines Ltd. failed to confirm the results obtained by Sylvanite Gold Mines Ltd.

DEVELOPMENT HISTORY

Circa 1899: Silas Griffis of Rat Portage discovered mineralization and commenced work on mining location M11. Initial examination included two 6 by 8 ft. and 12 ft. deep exploration shafts and 2 trenches.

1902-1903: Olympia Mining Co., under the same management, extended one shaft to 95 ft.

1905-1906: Same company constructed a 10-stamp mill, with which one test mill run was completed.

1907-1915: Same company developed 5 prospect shafts of 110, 75, 70 (with 9 ft. of lateral work at 53 ft. level), 32 and 25 ft. depths. Further development included three tunnels: one 125 ft. long connected with the 70 ft. shaft; the second 40 ft. long; and the third 460 ft. long, stoping to surface in several places. Mill runs in 1912 and 1915 produced several thousand dollars of gold.

1936-1937: I.F. and I.A. Machin of Shoal Lake, Kenora, commenced work on the property, adding patented claims D202, D199, and S105. The 70 ft. shaft was deepened to 125 ft., with total lateral work of 337 ft. on the 109 ft. level.

1944: Sylvanite Gold Mines Ltd. undertook a comprehensive sampling survey of the tunnels.

1964: Olympia Mines Ltd. contracted B. Dunlop to assess the property; 2683 ft. of diamond drilling revealed subeconomic grades. Surface samples assayed much lower than 1944 results.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16
Bow, 1925, ODM, Vol. 24, pt. 6, p. 4, 4A
Carter and Miller, 1903, OBM, Vol. 12, p. 95
1904, OBM, Vol. 13, p. 61
Chisholm, 1948, Assessment Files, Kenora

Corkhill, 1906, OBM, Vol. 15, pt. 2, p. 59
1911, OBM, Vol. 20, p. 162
1912, OBM, Vol. 21, pt. 1, p. 100
Davies, 1978, OGS, OFR 5254
Dunlop, 1964, Assessment Files, Kenora
Gibson, 1907, OBM, Vol. 16, pt. 1, p. 5
1913, OBM, Vol. 22, pt. 1, p. 38
Greer, 1930, ODM, Vol 39, pt. 3, p. 53
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 55
Kenora Daily Miner and News, Feb. 1st, 1969
McClasky, 1944, Letters to Sylvanite Gold Mines Ltd., Assessment Files, Kenora
Olympia Mines Ltd. Prospectus, 1962, SMDR Files, Kenora
Rogers, 1916, OBM, Vol. 44, pt. 1, p. 169

96. ONTARIO LIMITED OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt, gabbro

CLASSIFICATION
1a, d

LOCATION

Bag Bay, Shoal Lake:	NTS	52E/10SW	
	Lat.	49°34′51"	(49.5808°)
	Long.	94°58′43"	(94.9786°)

ACCESS
Old mining locations D203, D204, and S74 lie between Bag Bay and Miner's Bay in Shoal Lake. The area is accessible by boat from Kenora via Ash Rapids, or from Clytie Bay Landing, Shoal Lake.

DESCRIPTION
Geology: Fine- to medium-grained mafic rocks, including massive to pillowed flows, feldspar-phyric flows, and thick flows or subvolcanic gabbroic sills, occur in the core of the Gull Bay - Bag Bay Anticline. The northeast-trending mafic units have been dextrally offset along an east-southeast-striking fault, and parallel to this are a large number of shear zones, some of which contain felsite dikes or quartz veins. There is also evidence for east-northeast-striking shear or fault zones, and for faulting parallel to volcanic lithology. Two kilometres northeast of the occurrence, in the central part of Bag Bay, the volcanic rocks are truncated by the Canoe Lake stock.

Mineralization: Twelve east-southeast-striking veins were explored on the property in 1897 and were briefly described by Bow (1898). These may be summarized as follows:

Vein No.	Location	Length (m)	Width (m)	Vein Material	Comments
1	S74	270	0.9 - 2.1	quartz, felsite, schist	much pyrite in quartz
2	South of Vein No. 1	125	0.6 - 1.8	quartz, felsite	
3	Mostly D204	105	0.3		
4	-	150	3.6 -	felsite	large pit

4	-	150	3.6 - 4.2	felsite	large pit sunk
5	-	30	0.5 - 0.9		
6	Central D204	30	0.6 - 1.2		joint veins 7 and 8
7	Central D204	60	0.6 - 1.2	quartz	open cut 15m long; pit 7.5m deep
8	Central D204	-	0.2 - 0.25		
9	-	5	0.6		2 pits
10	-	12 - 15			not important
11	Southern D204	65	5.1	quartz, felsite, schist	5 pits, much pyrite
12	South of vein 11	65	1.5		2 pits

Of these, only Vein No. 1 could be positively identified during the present survey, though it would appear that No. 3 Vein was in the northwestern corner, and No. 4 was in the north-central part of mining location D204 (Figure 42). In 1899, the manager reported that shafts on No. 1 Vein had reached depths of 16.7 m and 13.4 m; that on No. 4 Vein, 6 m of drifting was done at the bottom of a 23 m deep shaft, and that a shaft was sunk about 20 m at the junction of Veins 5, 6 and 7 (Bow 1899). The vein numbering system in the two reports was apparently different.

The southeastern part of Vein No. 1 consists of a near-vertical shear zone having a width of about 1 m. Felsite is present in a few places, and from 15 to 30 cm of sugary vein quartz is exposed in both sheared basalt and felsite. Carbonate in one place is fractured, with quartz in the fractures. Pyrite occurs in the quartz and the wallrocks.

The No. 3 vein (No. 4 in 1899?) consists of 14 to 40 cm of fractured, white, sugary quartz. Pyrite is present in fractures and in wall rocks, but little carbonate is evident. This vein is exposed for some 40 m, northwest from a shaft estimated to be 25 m deep.

A large pit on No. 4 vein exposes about 75 cm of quartz and felsite; pyrite is most abundant along the northeast side.

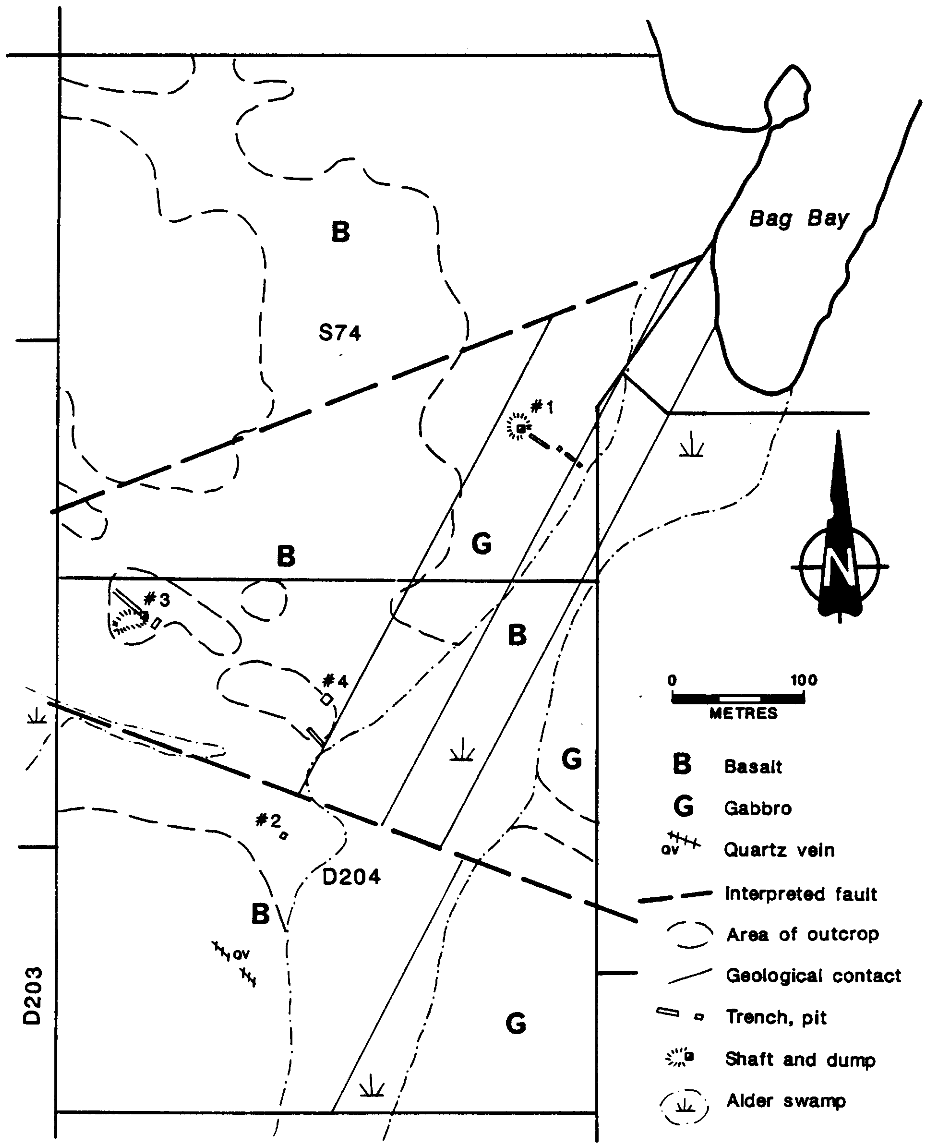

Figure 42. *Geology of the Ontario Limited Occurrence, showing locations of quartz veins.*

ANALYSIS OF MINERALIZATION

A grab sample of quartz with sheared basalt and fine pyrite, taken during this study from Vein No. 1, and a similar sample from Vein No. 4, contained >10 ppm gold.

DEVELOPMENT HISTORY
1896: Discovered by I. Gagne and sold to C. Markell.

1897: Sold to Ontario Limited Gold Mining Company of London (England). Prospecting, trenching, pitting shaft sinking and diamond drilling began.

1898: Work suspended.

1928: Exploration by Kenora Prospectors and Miners Ltd.

SELECTED REFERENCES
Bow, 1898, OBM, Vol. 7
1899, OBM, Vol. 8
Davies, 1978, ODM, OFR 5242

97. OPHIR MINE (PAST PRODUCER)

Also known as Sultana Ophir

COMMODITY
Gold

ROCK ASSOCIATION
Quartz monzonite

CLASSIFICATION
1c

LOCATION
Sultana Island, Lake of the Woods:
NTS 52E/9NW
Lat. 49°42'12" (49.7034°)
Long. 94°24'02" (94.4005°)

ACCESS
The shaft is located near the west-central shore of Sultana Island on mining location A20. The area is 8 km southeast of Kenora, from which it may be reached by boat.

SIZE AND GRADE
Some 6089 tons of ore, milled during 1893, 1894, 1900 and 1911, yielded $22,677.00 (1097 oz of gold) (Tremblay 1949).

DESCRIPTION
Geology: The bedrock on Sultana Island is predominantly west-facing, massive to pillowed, tholeiitic basalt. The basalt is overlain to the northwest by calc-alkaline, intermediate to felsic, fine to coarse pyroclastics and associated flows and cherty sediments. The contact is sharp, is probably an unconformity, and is possibly modified by faulting. The southwest-trending axial trace of the Sultana Syncline lies a short distance northwest of Sultana Island.

The northeastern end of the Quarry Island stock is exposed in the west-central part of Sultana Island. It consists of two phases; a central, porphyritic quartz monzonite, with weakly to well-developed foliation, and a rim of massive, medium-grained quartz diorite. The contact between the two rock types is gradational over 1 m; it is regular, and is approximately 75 m to 100 m from the outer boundary of the intrusion. Foliation in the quartz monzonite, marked by the orientation of biotite and by the long axes of orthoclase phenocrysts, is about 020° with steep dips. Strong local shearing has obliterated the phenocrysts and developed a very dark, biotite-rich schist.

The Ophir vein lies in a narrow, northeast-trending valley in the quartz monzonite (Figure 43). Some bending of the foliation adjacent to the valley indicates that the valley corresponds to a shear zone along which dextral movement took place. At the southwestern end, where the shaft was sunk, the vein is composite and has a thickness of about 1.8 m, but 25 m to the northeast, the vein width is about 30 cm. Furse (1934) records a vein length of 120 m; the pits and trenches which were sunk over this length are, at present, partly soil-filled so that vein widths could not readily be established. The shaft is inclined about 60°NW.

A second, parallel vein occurs 10 m west of the shaft. It is short and pinches out to the northeast. A third vein lies 125 m east of the shaft, trends north and has been trenched for 8 m.

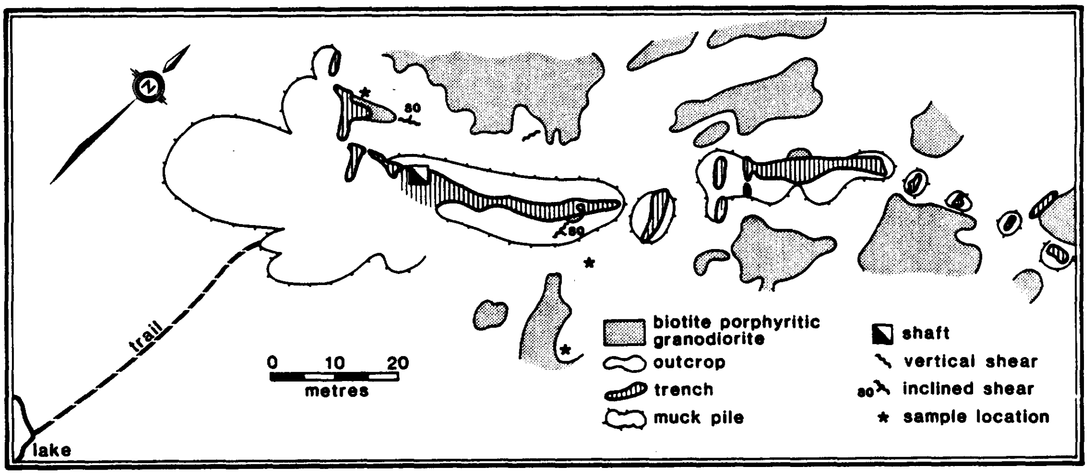

Figure 43. *Geology of the Ophir Mine.*

Mineralization: The quartz at the shaft consists of three bands (Parsons 1913), separated by altered quartz monzonite or biotite schist. The quartz is predominantly massive to smoky to white (rarely rose tinted or bluish). Minor pyrite and pyrrhotite are present, especially near the vein edges and in the biotite schist. A trace of arsenopyrite was detected 25 m northeast of the shaft. Blue (1893) confirmed the presence of considerable free gold in the quartz. Furse (1934) concluded that there is no obvious relationship between the gold and sulphides, but that "gold could be panned from almost any piece of quartz", and Bruce (1925) indicated that care was taken to obtain a sample of quartz with no visible gold, but that the sample assayed over 2 oz Au/ton. However, samples taken by Furse (1934) from the southwestern wall of the shaft were mostly low in gold, with the higher gold content being near the hanging wall in the upper 15 m of the shaft, and he concluded that "the gold-bearing quartz lenses were too small to be profitable".

ANALYSIS OF MINERALIZATION
A sample of moderately sheared quartz diorite taken in this study from 10 m southeast of the vein and a sample of strongly sheared aquartz diorite from 10 m west of the shaft contained 1460 ppb and 70 ppb Au, respectively. Samples of the vein taken at the shaft and 25 m northeast of the shaft contained 2540 ppb and >10 ppm Au, respectively. All samples contained <2 ppm Ag.

DEVELOPMENT HISTORY
1873: Sultana Island was ceded to the Indians by the Dominion Government, which determined that the area lay west of the Ontario boundary.

1875: A 21 year lease on Sultana Island was assigned to Keewatin Lumber Company.

Circa 1880: Gold found in Ophir vein, reportedly by J. Taylor, and some high-grade ore removed.

1886: Sultana Island surrendered by the Indians to the Dominion in trust for sale.

1889 and 1890: Patents issued by the Dominion Government to A.C. McMicken, G. Heenan, and H.G. McMicken, who formed the Ontario Mining Co. A working option, given to the Canadian Pacific and Prospecting Co., was later acquired by Mr. J.W. Moyes.

1890 - 1894: Work done by Canadian Pacific and Prospecting Co. and/or J.W. Moyes. A shaft was sunk 15 to 21 m.

Prior to 1898: Optioned for a short time to Messrs. Taylor Brothers Ltd. of London, England

1897: Ontario Mining Company requested confirmation of their title to three locations.

1898: Judgement assigned a one-third interest in the property to Ontario Mining Company, but the decision was appealed.

1903: Ontario Mining Company lost all rights to the property. The Sultana Ophir Mining Company, Limited, acquired a majority holding in the property.

1910 - 1911: Shaft deepened to 49 m, with 6 and 9 m drifting at 12 and 30 m depths. Work done by Sultana Ophir Mining Co. Ltd.

1934: The shaft was dewatered, and extensive surface and underground sampling was completed by G.D. Furse, or J.H.C. Waite.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 32
Blue, 1893, OBM, Vol. 3, p. 15-16
Bruce, 1925, ODM, Vol. 34, pt. 6, p. 19-20
The Canadian Mining Review, 1899, p. 305
1903, p. 37
The Colonist, Feb. 1898
Corkill, 1912, ODM, Vol. 21, p. 100
Ferguson *et al*., 1971, ODM, MRC 13, p. 181
Furse, 1934, Report on Sultana-Ophir Property, Assessment Files, Kenora
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 58
Parsons, 1911, OBM, Vol. 20, p. 171
1912, OBM, Vol. 21, p. 191
1913, OBM, Vol. 22, p. 226-227
Slaught, 1892, OBM, Vol. 2, p. 233
Tremblay, 1940, ODM, Vol. 49, pt. 1, p. 22

98. J.J. O'SULLIVAN PROPERTY (PROSPECT)

Also known as the Split Lake, Oliver Severn or Compton Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Granodiorite

CLASSIFICATION
4a

LOCATION

Indian Reserve No. 38B:	NTS	52E/9NW
	Lat.	49°44'24" (49.7000°)
	Long.	94°22'48" (94.3800°)

ACCESS
The old workings are in the northeastern corner of Indian Reserve 38B, about 2.4 km north-northeast of the northern tip of Sultana Island and 0.7 km southwest of the southern end of Hilly Lake. Highway No. 17 is 0.5 km to the north.

SIZE AND GRADE
Some 150 tons of ore were sent to Kenopo custom mill in Norman. Results are not known (Tremblay 1940).

DESCRIPTION
Geology: The area (Figure 44) is underlain by granodiorite of the southwestern lobe of the Island Lake intrusion. The greenstone-granite contact lies 0.6 km to the west and 3.2 km to the east. Inclusions of metabasalt are found within the granodiorite. Near inclusions, the intrusion is more basic (diorite). The Island Lake granodiorite consists mainly of biotite granodiorite. The rock has undergone minor strain; all quartz displays undulose extinction, biotite laths are commonly bent and, locally, plagioclase is broken. Orthoclase is present in minor amounts and is cloudy. Sericite is a retrograde product. Epidote is common within sericite mats, and rare, well-formed zoisite crystals occur locally. Carbonate is found interstitially in minor amounts. Zircons, with dark halos, occur within the biotite.

Mineralization: Thomson (1936) reported: "the vein quartz has a fine-grained, cherty appearance, and is generally banded with tourmaline. It carries sulphides in places, mostly pyrite and chalcopyrite. Native gold occurs in several of the veins and is usually found along fracture planes in the quartz. The walls of the vein are sharply defined, and the wall rock does not carry gold values. Gold values in the quartz are erratic in distribution. The quartz veins appear to occupy a fracture pattern in the granodiorite and diorite. They strike N.25°E to N.50°E."

Outcrop near Vein No. 1 is granodiorite with a weak to moderate foliation, trending about 035°. Very little vein material is presently exposed; however, on the muck pile is milky white quartz, with 2 to 3 cm thick layers of biotite-sericite schist and sheets of tourmaline. Samples display rolled tourmaline knots, indicating late movement. Quartz contains minor pyrite and trace chalcopyrite.

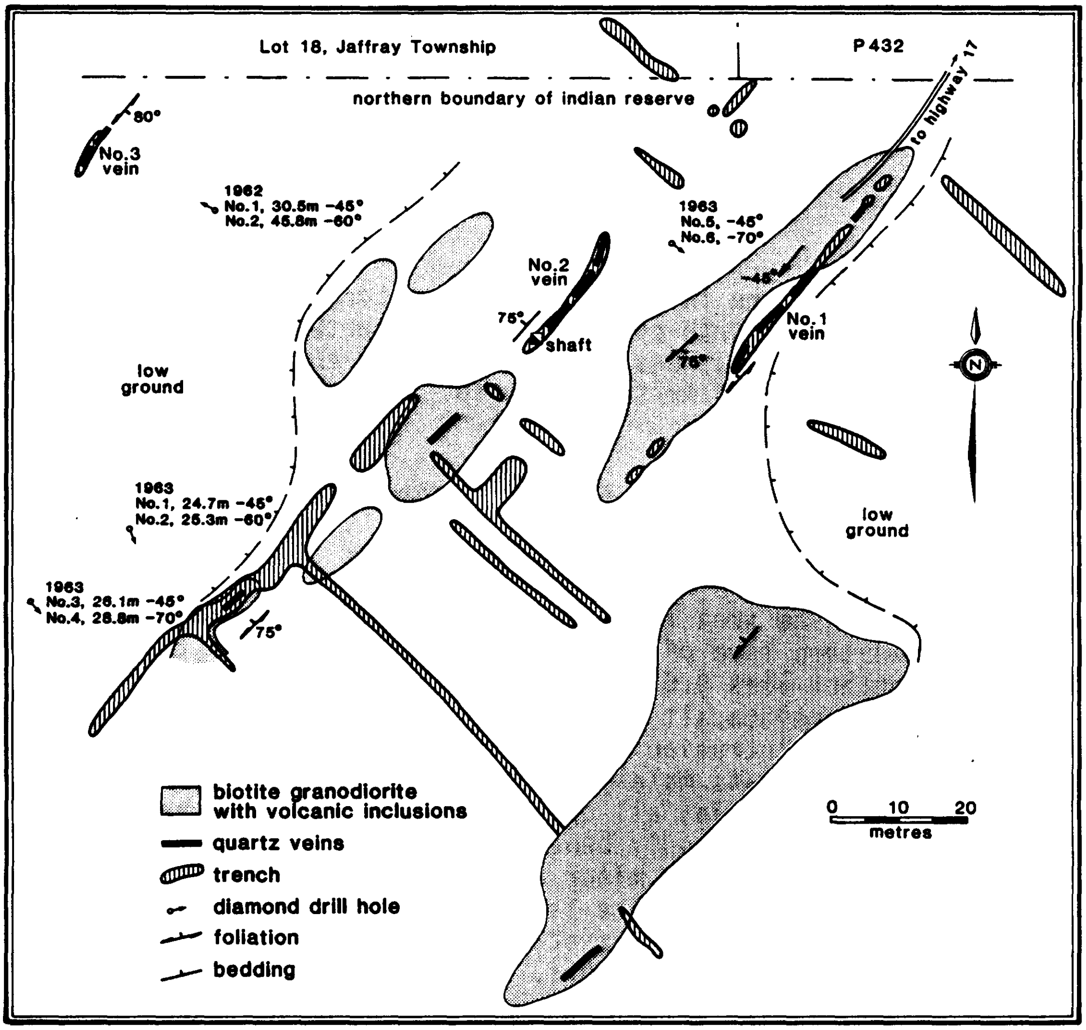

Figure 44. *Geology and development at the J.J. O'Sullivan Property. From Smith (1984), modified from Davies (1963).*

Sampling of the quartz during this study confirmed Thomson's assessment that gold values within the quartz are erratic in distribution; a chip sample of quartz across 30 cm ran only 6 ppb Au, while a grab sample of tourmaline-bearing quartz ran 1.6 and 3.8 oz

Au/ton. The quartz veins, which are up to 30 cm wide, lie within a narrow mylonitic zone. In places, the quartz veins split into two or more distinct, narrower veins. The zone is characterized by a well-developed shear layering or C fabric, which is essentially parallel to the earlier foliation observed within the host granodiorite, trending 035° and dipping 85°W. The mylonitic schist contains 2-3% sulphides, predominately pyrite, and local quartz stringers. The schist comprises a lower greenschist facies metamorphic assemblage, rich in sericite, biotite, chlorite, quartz, and rounded and broken albite, and containing lesser amounts of euhedral tourmaline, carbonate, broken pyrite, laths of ilmenite, epidote, rare zoisite and minor sphene. Microscopically, the C fabric is pronounced; there are well-developed shear planes, and in the intervening layers plagioclase phenocrysts are broken and rolled and have pronounced tails and shadow zones. The phyllosilicates display a well-developed preferred orientation, parallel to the shear layers.

The No. 2 Vein is presently not exposed, although some tourmaline-bearing quartz is scattered on the muck pile. A sample of tourmaline-bearing quartz taken in this study ran only 36 ppb Au.

ANALYSIS OF MINERALIZATION

According to Thomson (1936), "the best values were obtained on No. 2 vein, which was reported to average 0.53 ounces gold across an average width of 24 inches, over a length of 83 feet. On No. 1 vein, located 100 feet east of the above, a section 38 feet in length was reported to average 1.40 ounces gold across an average width of 7 inches. None of the other quartz veins yielded commercial results".

Thomson further noted that "J.F. Wright, consulting geologist, reported that No. 2 vein averaged approximately $24 in gold (0.68 oz/ton) across 3 feet for a length of 80 feet."

DEVELOPMENT HISTORY

1936: Discovered by J.J. O'Sullivan and optioned to Oliver-Severn Gold Mines, Ltd. Considerable surface trenching, and some diamond drilling were reported.

1937 - 1938: Optioned to Split Lake Gold Mines, Ltd. A two compartment shaft, inclined 75°NW, was sunk 62.8 m. Some 12 m of drifting was done on the 30.5 m level, and 15.2 m of drifting and 61 m of crosscutting were done on the 62 m level. Some diamond drilling was done during this period.

1941: Machinery sold by creditors.

1944: Examined by Sylvanite Gold Mines Ltd.

1962 - 1963: Known as the Compton Claims. Six diamond-drill holes, totalling over 179 m, were drilled.

SELECTED REFERENCES

Beard and Garratt, 1976, OGS, MDC 16, p. 32
Davies, 1963, Sketch map of Compton Claims, Resident Geologist's Files, Kenora
Sinclair *et al*., 1938, ODM, Vol. 47, pt. 1, p. 207
1939, ODM, Vol. 48, pt. 1, p. 198
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 43
Tremblay, 1940, ODM, Vol. 49, pt. 1, p. 21

99. PAGE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Greywacke, argillite and tuff

CLASSIFICATION
3a, b

LOCATION

Forgie Township:	NTS	52E/10NW	
	Lat.	49°42′46"	(49.7128°)
	Long.	94°54′10"	(94.9027°)

ACCESS
The occurrence is about 200 m east of the eastern end of Lake of Two Mountains, about 30 km west of Kenora. A cottage access road passes within about 100 m of the old trenches.

DESCRIPTION
Geology: Mafic, intermediate and felsic volcanics trend south of east in the vicinity of Lake of Two Mountains. Fine-grained greywacke crops out in the western, central and eastern part of the lake, associated with intermediate lapilli tuff.

Mineralization: A sulphide-bearing horizon in greywacke has been traced over 200 m east from the lake. Three trenches were sunk across this horizon.

ANALYSIS OF MINERALIZATION
Channel sampling by Sylvanite Gold Mines Ltd. (1944) gave the following results:

Western trench:	0.018 oz Au/ton over 2.5 m
Central trench:	0.02 oz Au/ton over 1.5 m
Eastern trench:	all assays returned trace Au.

DEVELOPMENT HISTORY
1943: Trenching by Page.

1944: Sampling by Sylvanite Gold Mines Ltd.

SELECTED REFERENCE
Sylvanite Gold Mines Ltd., 1944, Assessment Files, Kenora

100. PINE ISLAND (S173) OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Shear zones in diorite

CLASSIFICATION
4c, 4a?

LOCATION

Shoal Lake:	NTS	52E/11SE	
	Lat.	49°33'37"	(49.5603°)
	Long.	95°02'45"	(95.0458°)

ACCESS
The occurrence, located on Pine Island (mining location S173), is 700 m south-southwest of Cameron Island and 200 m west of Stevens Island. It may be reached by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

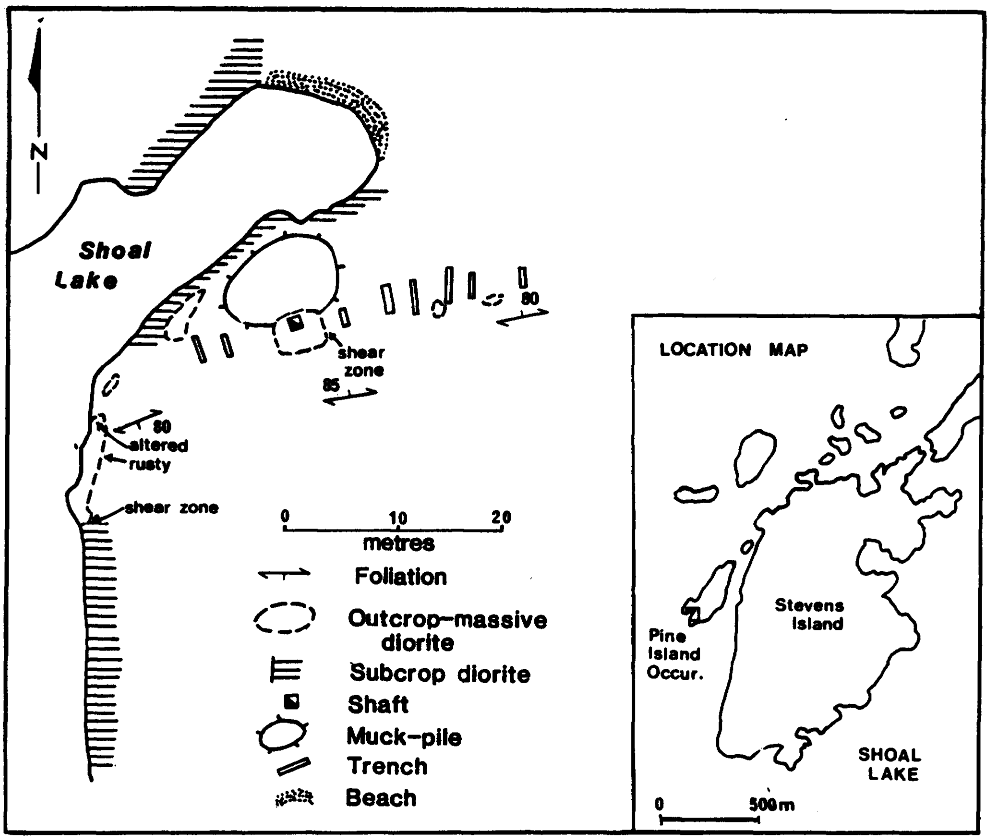

Figure 45. *Geology and development at the Pine Island Occurrence.*

DESCRIPTION

Geology: Medium-grained, massive, diorite or gabbro of the Stevens Island Complex underlies the eastern portion of the island. Medium-grained rocks underlying the western portion appear to be coarse flows, but may be a phase of the Stevens Island intrusion (Figure 45).

Mineralization: Quartz, chlorite, sericite and pyrite are the major constituents of a shear zone, that is 1.5 m wide, strikes between 060° and 080° and dips 85°N. The shear zone is more siliceous than the enclosing rocks and might coincide with a layer of intermediate volcanics. Pyrite content is as high as 30%, and irregular, discontinuous quartz veins form 5% of the zone.

DEVELOPMENT HISTORY

Circa 1897: A 2.1 by 1.8 m shaft was sunk to an estimated depth of 8 m. Trenches were excavated at intervals along the shear zone.

1982: Trenches cleaned and re-sampled by Selco Canada Ltd.

SELECTED REFERENCE

Thompson, 1936, ODM, Vol. 45, pt. 3, p. 44-51

101. PINE PORTAGE MINE (PROSPECT)

Also known as the Whale Mine

COMMODITY

Gold, silver

ROCK ASSOCIATION

Mafic flows intruded by granodiorite

CLASSIFICATION

1a

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°43'40" (49.7278°)
	Long.	94°20'36" (94.3433°)

ACCESS

The workings are on old mining location P219. The shaft is about 900 m east of the northeastern corner of Pine Portage Bay and 700 m west of the junction of the Storm Bay Road and Highway 17. A dirt trail provides access to the immediate vicinity of the workings.

SIZE AND GRADE

Neilson and Bray (1981) estimated a possible ore reserve of 2100 tons grading 2.05 oz Au/ton. The Canadian Mining Review (1885, p. 6) reported "it is impossible to ascertain the amount of gold produced at the Pine Portage Mine, but it is believed to have been between 150 and 200 ounces or some $3,500 worth."

DESCRIPTION

Geology: The intrusive contact between the Dryberry batholith and fine- to medium-grained basalt is broadly convex westward in the vicinity of the Pine Portage Mine and appears to be approximately parallel to west-facing volcanic stratigraphy. Angular fragments of the basalt are present in the granodiorite, but are not numerous, and a few dikes of granodiorite and aplite cut the basalt. Locally, foliation is well developed in the granodiorite near its margin. Forsgren (1980) noted that the granodiorite was bleached and altered near the contact, and that the basalt has been subject to amphibolite grade metamorphism.

A prominent north-northwest-striking lineament extending through both the granodiorite and basalt is interpreted to mark a fault zone with which the mineralization is associated.

Mineralization: The shaft of the Pine Portage Mine was sunk on a well developed, north-trending shear zone on the west side of a valley (Figure 46). At the surface, the zone consists of curving and intersecting slip surfaces in chloritic schist over a width of 1 to 3 m. Lenses, veins and veinlets of quartz occur in the zone, which dips 65° to 75°E and has been traced over a length of about 200 m. Drilling has demonstrated that the chloritic schist may have a width of up to 10 m, and it is possible that there is a series of *en echelon* shears having limited strike continuity. Parts of the zone appear to contain little quartz.

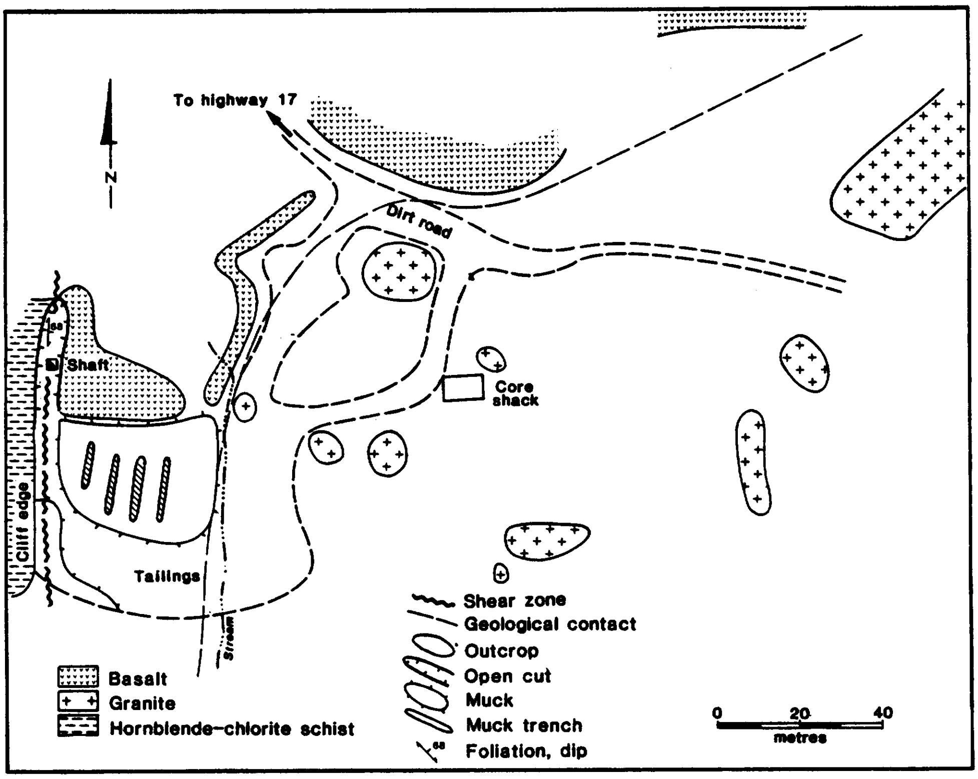

Figure 46. *Geology and development at the Pine Portage Mine Prospect.*

A quartz vein averaging 33 cm in width occurs in the centre of the southern face of the inclined shaft from the surface to the 10.5 m level, but the northern wall of the shaft exposes only lenses and irregular masses of quartz (plan dated December 1932). At the 10.5 m level, about 32 m of lateral development was carried out.

Quartz is white to grey, vitreous to sugary, and is commonly associated with carbonate and tourmaline. Minor pyrite is present in the quartz and in the enclosing schist. Pyrrhotite has been reported (Wolfe 1937) and galena, sphalerite, silver and a telluride (calaverite?) have been identified by microprobe analysis (Forsgren 1980). Arsenopyrite and covellite were noted by Anderson (1981). Gold was reported by many of the early workers to be readily visible in significant amounts, but its distribution was erratic and confined almost wholly to the quartz.

ANALYSIS OF MINERALIZATION

Assays of 5 grab samples reported by Coste (1885) range from nil Au and Ag to 12.8 oz Au/ton and 20.4 oz Ag/ton. According to an assay plan dated December 1932, which is here interpreted to show assays in pennyweights (0.05 oz), the quartz vein in the southern wall of the shaft has a weighted average gold content of 0.44 oz/ton (15.1 gms/tonne). Hanging wall samples from the same wall, across an average of about 60 cm, contained a weighted average gold content of 0.068 oz/ton (2.3 gms/tonne), and footwall samples, across about 70 cm, contained a weighted average gold content of 0.60 oz/ton (20.6 gms/tonne). Samples taken systematically across the back of the drift contained, with one exception, less than 0.20 oz Au/ton (<7 gms/tonne).

Three holes were drilled by Northfield Mining Co. Ltd. in 1936. Two of the holes in the vicinity of the shaft intersected significant gold-bearing quartz over narrow widths at down-dip depths of about 12 m and 17 m, respectively.

A grab sample of the mineralized zone exposed in the face of the surface open-cut contained 0.26 oz Au/ton, 0.66 oz Ag/ton and 0.05% Cu (Beard 1979). A second sample, from the dump, assayed 1.20 oz Au/ton, 28.86 oz Ag/ton and 0.29% Cu.

President Mines Ltd. undertook sampling of the shaft and drift in 1980 (Anderson 1981) with the following results:

Location	Width (ft)	Au (oz/ton)	Ag (oz/ton)
N. Wall of shaft to 35 ft	3.83	0.64	1.22
S. Wall of shaft to 35 ft	2.33	1.59	3.30
Combined N. and S. wall	3.00	1.00	2.00
Drift from 0 to 61 ft	3.55	0.62	1.25
Drift, 61 to 104 ft and N. Face	3.27	0.02	0.06
Combined N. and S. walls and drift to 61 ft	3.36	0.76	1.53

The gold to silver ratio is remarkably uniform; the silver content is higher than in most occurrences in the Kenora area.

Six holes were drilled in 1980 by President Mines Ltd., but the maximum reported assays were 0.09 oz Au/ton (Anderson 1981).

DEVELOPMENT HISTORY

1882-1885: Owned by Mr. T.W. Dobie and others. A 50 ft (15 m) long open cut was excavated; and a shaft was sunk 110 ft (34 m), with 104 ft (31.7 m) of lateral development on the 35 ft (11 m) level. A 5 to 10 stamp mill was installed on a creek, which was dry in summer. Some production was reported.

1932: Shaft was dewatered and sampled, reportedly by Messrs. J. Cameron and P. Williams.

1937: Northfield Mining Co. Ltd. drilled three diamond drill holes.

1961: Examined by Madsen Red Lake Gold Mines, Ltd.

1968-1972: Approximately 1000 ft (305 m) of diamond drilling (details unknown).

1979-1983: Examined by President Mines, Ltd. The shaft was dewatered, and bench sampling and mill tests were completed. Six holes were drilled totalling 991 ft (302 m).

SELECTED REFERENCES

Anderson, 1981, President Mines, Ltd., Report on the Pine Portage Property, Haycock Twp. and Kirkup Twp., Kenora Area, Ontario, Assessment Files, Kenora
Beard, 1974, Pine Portage Prospect, Resident Geologist's Files, Kenora
Beard, 1978, Resident Geologist's Annual Report, p. 6
Beard and Garratt, 1979, ODM, MDC 16, p. 33
Blue, 1893, OBM, Vol. 3, p. 26-28
Boni and Gibson, 1980, OGS, SMDR 001359
The Canadian Mining Review, 1883, p. 5
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1886, p. 9
1887, p. 5
1894, p. 56
1901, p. 97
Coste, 1885, Geological and Natural History Survey and Museum of Canada (GSC), Report of Progress 1892-83-84; Report of the Gold Mines of the Lake of the Woods, pt. K, p. 13-17
Ferguson *et al.*, 1971, ODM, MRC 13, p. 242
Forsgren, 1980, A study of the Pine Portage Prospect, Kenora District, Ontario, Unpublished BSc Thesis, University of North Dakota
Johns, 1981, OGS, MP 100, p. 24
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 59, 60
Lawson, 1886, GSC, AR, Vol. 1, p.
Morton, 1960, Madsen Red Lake Gold Mines, Geological Department, Report No. 1 on the Pine Portage Mine, Assessment Files, Kenora
1961, Madsen Red Lake Gold Mines, Geological Department, Report No. 2 on the Pine Portage Mine, Assessment Files, Kenora
Neilson and Bray, 1981, OGS, OFR 5332, Vol. 2, p. A-9
Royal Commission, 1890, Report of the Royal Commission on the Mineral Resources of Ontario, p. 114, 116, 119

Slaught, 1892, OBM, Vol. 2, p. 233
Storey, 1984, Geologist, OGS, Personal Communication
Suffel, 1930, ODM, Vol. 39, pt. 3, p. 71
Wolfe, 1937, Resume report of work done during the summer of 1936 on the Pine Portage Property, Assessment Files, Kenora

102. PRINCESS MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Felsite dikes intrude mafic metavolcanic flows

CLASSIFICATION
1a, d

LOCATION

Haycock Township:	NTS	52E/16SW	
	Lat.	49°48′33"	(49.8092°)
	Long.	94°20′22"	(94.3394°)

ACCESS
The workings are located on old mining location D118, about 300 m southeast of the southern tip of western Black Sturgeon Lake, or about 2.6 km northeast of the Kenora airport terminal. The area may be reached from Kenora via a trail leading north from Jones Road.

DESCRIPTION
Geology: The area is within a northeast-trending wedge of fine-grained mafic metavolcanic rocks, that lies between two arms of quartz diorite of the Island Lake intrusion. The intrusive contacts are subparallel to the northeast-striking volcanic stratigraphy. Both the basalt and the quartz diorite are intruded by the Long Tent Bay granodiorite, the contact of which is 600 m north of the Princess Mine shaft. The basalt is iron tholeiite. In general, basalt in the area is massive, with a pronounced axial planar foliation striking between 040 and 055° and dipping steeply north; pillowed flows were not observed. The basalt was intruded by numerous narrow felsic dikes. A 1 m wide, east-northeast-trending felsic dike crops out several metres south of the shaft, and is exposed over 21 m. A second, 1 m wide dike was reported by Bow (1898) to dip north and to be 17 m north of the shaft. East of the shaft, a vertical face of strongly foliated basalt displays isoclinal folding of felsite stringers, some of which are transposed.

Mineralization: A 0.5 m wide quartz vein, striking 055° and dipping 70°NW, is exposed on the southeastern side of the shaft. The quartz is predominantly sugary and white; grey, nearly cryptocrystalline quartz is also abundant. Carbonate is found locally, and there are rare specks of graphite, hornblende, chlorite, and biotite. Bow (1898) reported "white quartz which shows free gold plentifully". According to Bow (1898), the felsite, which contains a little quartz, also carries a certain amount of gold.

ANALYSIS OF MINERALIZATION

Samples of quartz from the muck pile and of the felsite dike, taken in this study, returned values of 6 ppb and <2 ppb Au, respectively.

DEVELOPMENT HISTORY

1896: Incorporation of the Princess Mining Company of Ontario, Ltd.

1897: Same company acquired mining location D118, and sank a 12 by 7 by 65 ft. shaft, inclined 70°NW. Assays were reported from $6. to $12.60 Au/ton across the shaft width ($20/oz gold).

1920: Reported to have shipped ore to smelters from which a few hundred dollars were recovered.

1960: N. Zroback drilled 7 holes, totalling 608 ft. south and east of the old workings.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 33
Blue, 1898, ODM, Vol. 7, pt. 1, p. 12
Bow, 1898, ODM, Vol. 7, pt. 1, p. 58
The Canadian Mining Manual, 1899, p. 511
Coleman, 1898, ODM, Vol. 7, pt. 2, p. 110
Ferguson *et al*., 1971, ODM, MRC 13, p. 238
King, 1983, OGS, Map P.2618
Zroback, 1960, Diamond Drill Logs, Assessment Files, Kenora

103. PURDEX (A-D) OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic rocks intruded by quartz-feldspar porphyry dykes

CLASSIFICATION
1a, d

LOCATION

Ewart Township:	NTS	52E/11NE	
	Lat.	49°42'47"	(49.7131°)
	Long.	95°04'42"	(95.0783°)

ACCESS
The occurrence is located on claims K25130 and 25131, 400 m southeast of the southeastern corner of Electrum Lake and 2.3 km south-southwest of the junction of the Shoal Lake Road and Highway 17. It is about 700 m west of the Shoal Lake Road and 700 m north of the High Lake Road, and may be reached by foot from either road.

SIZE AND GRADE
Six zones have been examined. The combined indicated tonnage in four of the zones is 76,500 tons, with an average grade of 0.32 oz Au/ton (Davies 1965).

DESCRIPTION
Geology: South and west of Electrum Lake a sequence of massive and pillowed basaltic flows, essentially devoid of interlayered pyroclastics or sediments, is cut by porphyritic granodiorite of the High Lake intrusion. The porphyry occurs as dike-like bodies trending approximately east, on the margins of the main body of granodiorite.

The porphyry and basalt are unconformably overlain by sediments of the Crowduck Lake Group. This unconformity extends south-southeast through Electrum Lake and has been mapped about 100 m north of the A-D Occurrence (Davies 1965). Here, the sediments are cherty and argillaceous and the contact with the porphyry is not convincingly an unconformity.

The contact between the basalt and the porphyry is irregular in the vicinity of the A-D trenches; the main contact is an open, curving Z shape, and quartz appears to occur in gash fractures which mimic this curve. The area has been subjected to two periods of folding and subsequent modification along east-southeast-striking fault zones, and the gash fractures may be related to the late-stage dextral faulting.

Mineralization: Work by Purdex Minerals Ltd. outlined 6 zones; the A, B, C, D, E and P zones. The first five of these constitute the main zone; and the last, a second zone about 50 m to the north-northwest. In the main zone "a complex of quartz veins, most of which trend within 20 degrees of N.75°W., includes numerous lenses of altered quartz porphyry and volcanic material. Much of the quartz contains tourmaline. Pyrite, ankerite, pyrrhotite, and chalcopyrite are commonly associated with tourmaline. Gold occurs with the sulphides, and also as fine to coarse, visible grains" (Davies 1965, p. 36).

Lytle (1959) concluded that "the immediate area in the vicinity of the showings is composed of interzoned feldspar porphyry and greenstone. The area has been subject to folding in both the horizontal and vertical planes. Quartz showings are numerous and are located in both the greenstone and porphyry, which show considerable alteration. The zones of quartz follow the general structure and when located off the nose of dragfolds, or at least certain ones, contain varying gold values and some fine visible gold. The mineralization associated with the quartz consists of pyrite, pyrrhotite, chalcopyrite and gold." Blackburn (1981) attempted to verify the presence of drag folds: "On-site observation by this writer suggests that folding is not substantiated. Only one drag fold was seen on the property, and that in a quartz vein." Davies (1965, p. 37) noted that "a steep east plunge of the zones is indicated by drilling. Whether the gash fractures are related to simple folding or to local stress phenomenon may have a bearing on the extent of the mineralized zones."

Zone "A" is roughly conformable to the contact between basalt and the porphyry. Both the width and grade of the zone are at a maximum at the crest of the fold, and decrease along its flanks. Where the zone is exposed on the surface it strikes 160°. The main trench is about 10 m long and 1.8 m wide. The southern end exposes grey sheared porphyry, striking 110° and dipping 80°N. At the centre on the west side is massive quartz porphyry. The two are separated by massive, irregular bull quartz with some tourmaline and minor pyrite. The northern end shows a series of white quartz veins up to 80 cm wide, interlayered with what may be rusty, grey, sheared porphyry. There is some tourmaline and, locally, considerable pyrite.

Zone "B" is at the contact between basalt and porphyry. The best widths and values encountered are at the crest of the curve. The main trench exposes sheared quartz porphyry and basalt. Narrow, quartz-filled fractures strike about 060°. The mineralized zone is oriented at about 020°.

Davies (1965, p. 37) described the C and E zones as: "surface showings, smaller than A and B zones and not sufficiently explored at depth to determine their possible extent. Both appear to continue to the east."

"D" zone is not exposed on surface. Drilling has intersected a quartz zone roughly conformable to "B" zone. Continuation of the zone to the south and east is not known.

"P" zone is also "folded" in the horizontal and vertical planes, with an increase in width and gold values at the crest (Davies 1965). It is a quartz stringer zone in a quartz porphyry host.

ANALYSIS OF MINERALIZATION
Numerous intersections containing visible gold returned low gold values. Lytle (1959) noted that "Of 27 drill intersections used in the calculations, 15 (55%) contained some v.g. and, of those containing v.g., 25% assayed not over 0.04 oz./ton." The following estimate of possible reserves is based on Lytle's data:

Zone	Length (m)	Width (m)	Depth (m)	Av. Grade (oz Au/Ton)	Tonnage
A	45	1.4	99	0.30	21,400
B	49	1.7	66	0.40	19,600
D	40	2.3	52	0.30	17,000
P	52	1.4	72	0.23	18,500
			Combined:	0.308	76,500

DEVELOPMENT HISTORY
1952 - 1953: Twelve claims staked by J. Duncan and A. Duncan were optioned to Barymin Co. Ltd., which completed geological mapping and some trenching.

1956: Restaked by C.A. Alcock and A. Duncan. Four holes were drilled, totalling 157 m.

1958: Claims K25128-25134 and 26631-26634 were optioned to Purdex Minerals Ltd. Thirty-three holes totalling 616 m were drilled.

1960: Examined by Electrum Lake Gold Mines Ltd.

1973: Four holes drilled on the A-D zones by Hanson Mines Ltd.

1980: Trenching by Ken Harrison of Fort Frances, and geological mapping by P. Hanigan.

1981: Surface examination by Sherritt Gordon Mines Ltd.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16, p. 33
Blackburn, 1981, Purdex Prospect, Resident Geologist's Files, Kenora
Colvine, 1979, OGS, MP 90, p. 240
Davies, 1965, ODM, GR 41
Ferguson *et al.*, 1971, ODM, MRC 13, p. 144-145

Forsgren, 1982, Report of Field Activities - Electrum Lake Group, Assessment Files, Kenora
Lytle, 1959, Report on Electrum Lake Gold Property, Assessment Files, Kenora
O'Flaherty, 1953, Barymin Co. Ltd., Electrum Lake, Assessment Files, Kenora
Purdex Minerals, 1958, Drill Logs, Assessment Files, Toronto
SMDR File, Purdex Property

104. QUARRY ISLAND OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Porphyritic quartz monzonite

CLASSIFICATION
4a

LOCATION
Quarry Island (also called Surrey Island), Lake of the Woods:

NTS 52E/9NE
Lat. 49°42'19" (49.7053°)
Long. 94°24'26" (94.4072°)

ACCESS
Quarry Island is 9 km southeast of Kenora. The pit, near the northern end of the island, is 800 m southwest of the old mill at Sultana Island. The area is accessible by boat from Kenora.

DESCRIPTION
Geology: The Sultana intrusion consists of a core of porphyritic quartz monzonite and an outer zone of quartz diorite. The contact between these is gradational over about 1 m. Foliation is typically weak in the quartz diorite and may be absent from it, but is more strongly developed in parts of the quartz monzonite.

Mineralization: Ore zones at the Sultana Mine occurred in fracture or shear zones, with the best mineralization at the quartz diorite - quartz monzonite contact. The Quarry Island Occurrence is also at this contact. At the occurrence, a pit about 2.7 by 3.0 m exposes irregular lenses and veinlets of quartz in the sheared contact zone. Traces of pyrite occur in both the quartz and the enclosing schists.

ANALYSIS OF MINERALIZATION
A grab sample taken in this study of mica schist cut by grey-white quartz, and containing minor pyrite, returned >10 ppm Au, and <2 ppm Ag.

DEVELOPMENT HISTORY
Circa 1897: Pitting by persons unknown. Much of the rock appears to have been removed and was probably milled at the Sultana Mine.

105. QUEEN OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate pyroclastics and mafic flows

CLASSIFICATION
2a

LOCATION

Glass Township:	NTS	52E/10NW
	Lat.	49°00'00" (49.0000°) (approximate)
	Long.	94°58'30" (94.9750°) (approximate)

ACCESS
Former mining location McA46 is south of a tiny lake, 2.3 km northwest of Clytie Bay Landing and 400 m south of the Clytie Bay Road. The two shallow shafts reported to be present on the location were not found during semi-reconnaissance mapping for this study.

DESCRIPTION
Geology: The area is underlain by intermediate pyroclastics and flows interbedded with mafic flows and thin felsic units (Davies 1965, 1969) and may be within a zone of shear folding. A transition from lower felsic volcanics to upper mafic volcanics is interpreted to occur here (Davies 1978). A steeply north-dipping foliation trends east-northeast and is best developed in the pyroclastic rocks. The area is in the southern part of a zone marginal to the Crowduck Lake - Witch Bay Shear Zone.

Mineralization: It was reported (Coleman 1896) that shafts 5 and 6 m deep were sunk on two veins striking 110° and 130°, respectively. The veins were said to be 1.5 m wide, with assays of 0.125 oz Au/ton at the surface and 0.575 oz Au/ton at the bottom of the shafts.

SELECTED REFERENCES
Coleman, 1965, ODM, Map 2069
Davies, 1969, ODM, Map P. 528
1978, OGS, OFR 5242

106. QUEEN BEE OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite

CLASSIFICATION
4c

LOCATION
Queen Bee Island, Lake of the Woods:

NTS	52E/9NW	
Lat.	49°42′00"	(49.7000°)
Long.	94.25′12"	(94.4200°)

ACCESS
Island 390P, or Queen Bee Island, is 1.2 km west of Sultana Island and about 8 km southeast of Kenora, from which it may be reached by boat.

DESCRIPTION
Geology: Massive, medium-grained quartz diorite of the Quarry Island stock underlies Queen Bee Island. Several east-trending, steeply north-dipping shear zones, with widths of up to 20 m, are exposed at the southern shore.

Mineralization: Veins and lenses of glassy white quartz occur in sheared quartz diorite, and contain minor pyrite and pyrrhotite along hairline fractures, as well as small pockets of coarse pyrite. The adjacent, altered quartz diorite contains veinlets of quartz and euhedral, 1-2 mm, pyrite grains. Carbonate is present in fractures.

An irregular pit or shallow shaft was sunk in a quartz-bearing shear zone 10 m from the lake shore. This is probably the 9 m shaft which Bow (1899) records as having been sunk on 2 quartz veins.

ANALYSIS OF MINERALIZATION
A composite chip sample taken in this study across 2.1 m, which included approximately equal amounts of altered quartz diorite, sheared quartz diorite and vein quartz, contained 85 ppb gold.

SELECTED REFERENCES
Beard and Garrett, 1976, ODM, MDC 16, p. 34
Bow, 1899, OBM, Vol. 8

107. RAJAH OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows and tuffs

CLASSIFICATION
1b, p

LOCATION

Jaffray Township:	NTS	52E/16SW	
	Lat.	49°47′52″	(49.7978°)
	Long.	94°22′44″	(94.3789°)

ACCESS
Mining location 317P is 1.3 km northwest of the Kenora airport terminal and may be easily reached from Kenora via Highway 604.

DESCRIPTION
Geology: The host rocks are northeast-trending, fine-grained, dark green, basaltic flows and tuffs (Figure 47), generally with the chemistry of high iron tholeiites. However, a coarse-grained rock in the western portion of the property has the chemistry of a komatiitic basalt. Both pillowed and massive flows have been recognized, and coarser grained varieties may represent either coarse flows or subvolcanic sills. Pillows in the area face southeast and are elongate parallel to the regional (axial planar) foliation at about 045° with near vertical dip. The occurrence lies on the northwestern flank of a northeast-trending syncline. Quartz is present along pillow margins and within zones of pillow breccia. Mafic fragmental horizons are moderately to strongly carbonatized, and may represent strongly sheared basaltic flows. Regional metamorphism is amphibolite grade, with hornblende comprising up to 80% of the rock and the remainder being a mixture of quartz, feldspar, iron oxide, epidote, clinozoisite and sphene.

Less than 100 m northwest of the occurrence is a strongly deformed felsic fragmental unit. Clasts are highly elongate parallel to the regional trend, and in places mafic and felsic components are segregated into distinct layers. Petrographic examination of this material indicates it to be rich in quartz and biotite, with up to 15% amphibole (hornblende and a clear amphibole). Oligoclase is a minor constituent and carbonate, chlorite, sericite, epidote and clinozoisite are present in lesser amounts. The felsic unit is bounded to the west by medium-grained gabbro which has been traced south to Kenora; it varies in composition from melanogabbro to leucogabbro.

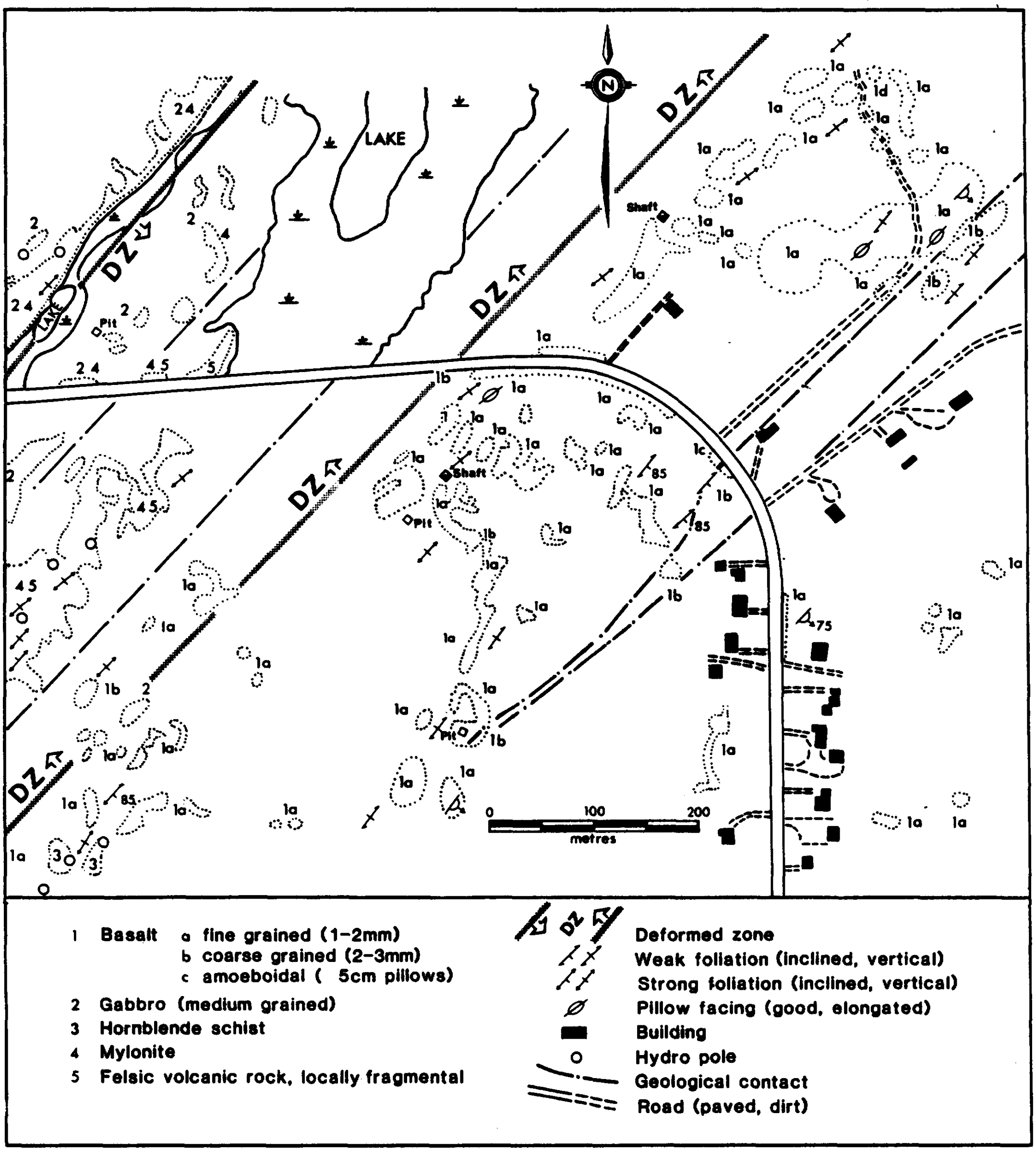

Figure 47. *Geology and development at the Rajah Occurrence.*

The felsic rocks appear to have been the locus for considerable deformation, which extends into the basalts to the southeast and the gabbro to the northwest. Within the basalts the deformation is recorded as zones of shearing, small-scale folds and highly elongate pillows. Small quartz-carbonate stringers and thin, limonite-stained, quartz-carbonate veins are common within the basalts. Within the gabbro a strong foliation is developed along the eastern margin. In places the contact between the felsic volcanics and the gabbro is difficult to distinguish, as strong shearing has significantly altered the textures of both rock types.

Mineralization: Gold mineralization is restricted to quartz veins which trend roughly parallel to the volcanic stratigraphy and dip steeply southeast. Veins range in width from several centimetres to 2 m, and have unknown strike length. Silicified and carbonatized shear zones occur adjacent to the quartz veins. These zones are poorly exposed along a strike length of more than 400 m. The quartz is milky white, with limonite staining and thin bands of tourmaline, biotite and amphibole parallel to the vein trend. Minor pyrite is found in places, but in general sulphides are absent.

ANALYSIS OF MINERALIZATION
Background gold values within the basalt range from 10 to 15 ppb, although analyses of samples of the komatiitic rock taken in this study returned values of 120 and 115 ppb. The gold content of 7 samples of silicified material taken in this study from the old workings ranged from 4 to 70 ppb; the majority of the samples being close to background. The only high grade samples taken in this study came from pits close to the lake, west of the main shaft; they contained 65.6 ppm and 150 ppb Au, and also contained above-background Ag (7 and 8 ppm).

The results of this sampling do not substantiate past published figures; assay values of up to $200 gold/ton (Blue 1893) and up to 39 oz silver (The Weekly Herald and Algoma Miner, July 21, 1893) were reported.

DEVELOPMENT HISTORY
1890: Messrs. McGee, Brereton and Henesy staked mining location 317P, which consisted of 131 acres. Sold to J.F. Caldwell, owner of the Sultana Mine.

1892 - 1894: Optioned to the Rajah Gold Mining Co. of London, England. Two shafts and two test pits were sunk. The northern shaft was 18 m deep, inclined 85° northwest. At a depth of 11 m, 14 m of drifting was completed southwards. The southern shaft was 19 m deep.

SELECTED REFERENCES
Blue, 1893, OBM, Vol. 3, p. 28
1895, OBM, Vol. 5, p. 183
King, 1983, OGS, Map P.2618
The Port Arthur Daily Sentinel and North Shore Miner, Dec. 2, 1890
The Weekly Herald and Algoma Miner (Thunder Bay), July 21, 1893

108. ROSEMAN OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite, near the contact with basalt

CLASSIFICATION
4a, c

LOCATION

Jaffray Township:	NTS	52E/9NW	
	Lat.	49°44'53"	(49.7480°)
	Long.	94°21'11"	(94.3530°)

ACCESS
The main vein lies in the southwestern part of old mining location 304P, about 7.5 km east of Kenora and 400 m north of Highway 17.

DESCRIPTION
Geology: The Island Lake quartz diorite stock lies between the Dalles and Dryberry batholiths, separated from each by a septum of basalt. The western and southeastern contacts of the Island Lake intrusion are relatively straight and are essentially parallel to volcanic stratigraphy. The southwestern end of the intrusion consists of two lobes, which appear to plunge southwest beneath the basalt on either side of the axial trace of the Sultana Syncline. The contact of the eastern lobe, where exposed, is complex, with numerous small to very large basalt inclusions. In the quartz diorite, near the contact with the basalt, are a number of northeast-trending shear zones.

Mineralization: The Roseman vein was reported (Hawmandale Gold Mining Syndicate 1946) to have been traced for about 200 m. The main or south section, which strikes 040° and dips near vertical, is exposed in a series of pits and trenches over a length of 130 m and consists of a single shear zone, or several close-spaced, *en echelon*, narrow shears, along which two or more quartz veins occur (Figure 48). The veins, separated by strongly foliated quartz diorite, have a combined width of over 7 m near the southwestern end, but narrow to a few centimetres at the northeastern end. A shaft, estimated to be about 9 m deep, was sunk at the widest part of the vein (in the southwestern corner of old mining location 304P). Black tourmaline is present along most of the length of the vein, and pyrite is a minor constituent.

The northern part of the vein was shown by Thomson (1945) to crop out from 175 to 225 m northeast of the shaft, to be similar in strike and to have a width of up to 7 m. Stripping exposed sheared quartz diorite over a width of 2.5 m, with approximately 25% of the total consisting of quartz stringers.

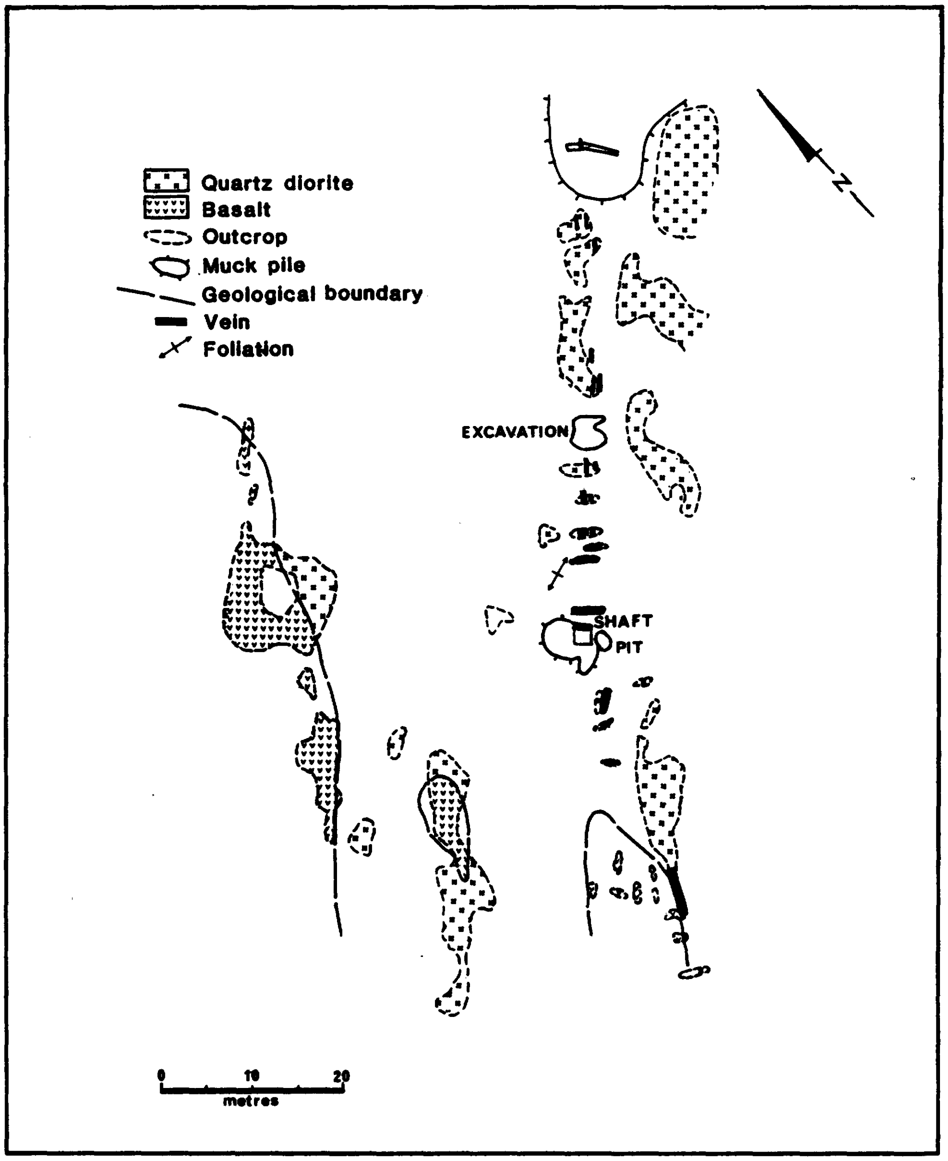

Figure 48. *Geology and development at the Roseman Occurrence.*

ANALYSIS OF MINERALIZATION

Hawmandale Gold Mining Syndicate (1946a) reported assays of 11 grab samples from the Roseman vein, the average of which was 1.78 oz Au/ton. Subsequently, channel samples from the vicinity of the shaft were assayed but only traces of gold were found (Hawmandale Gold Mining Syndicate 1946b). A hole designed to test the vein at a depth of 15 m at a point south of the shaft contained a 23 cm section which assayed 0.23 oz Au/ton, but another hole designed to intersect the vein at 30 m depth at a point adjacent to the shaft contained only a trace of gold (Hawmandale Gold Mining Syndicate 1946c).

Channel samples from the north part of the vein assayed, respectively, 0.56 oz Au/ton over 91 cm, and 0.01 oz Au/ton over 91 cm. Eight holes were drilled on the north part; one intersected 152 cm of 0.86 oz Au/ton; another, 213 cm of 0.48 oz Au/ton; a third, 43 cm of 0.16 oz Au/ton, and sludge from a fourth assayed 0.44 oz Au/ton. None of the others intersected more than a trace of gold (Hawmandale Gold Mining Syndicate 1946c).

Three channel samples from the pit on the vein at the basalt-quartz diorite contact assayed 0.13 oz Au/ton, 0.29 oz Au/ton and 0.01 oz Au/ton. A hole beneath this pit intersected 3.96 m of 0.40 oz Au/ton but two other holes, respectively 10 m and 23 m to the south, contained only traces of gold (Hawmandale Gold Mining Syndicate 1946c).

DEVELOPMENT HISTORY
Circa 1900: Shafts were sunk on the southern part of the Roseman vein, and on the southern vein by persons unknown.

1931-36: Stripping, trenching and prospecting by H.N. Hawes.

1945-1947: Hawmandale Gold Mining Syndicate sampled the veins.

SELECTED REFERENCES
Hawmandale Gold Mining Syndicate, 1946a, Prospectus, Resident Geologist's Files, Kenora

1946b, Roseman Vein - Kenora District, Sketch Map 1"=50, Resident Geologist's Files, Kenora

1946c, Progress Report, December 31, 1946, Resident Geologist's Files, Kenora

Thomson, 1945, Report on Roseman Group of Claims K11128 to 11133, Resident Geologist's Files, Kenora

1947, Hawmandale Gold Mining Syndicate, Assessment Files, Kenora

109. ROYAL OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Foliated diorite

CLASSIFICATION
4a

LOCATION

Jaffray Township:	Lot 20, Concession 5
	NTS 52E/16SW
	Lat. 49°46'28" (49.7744°)
	Long. 94°21'57" (94.3658°)

ACCESS
The occurrence is located on the main powerline, about 600 m east-southeast of the Jones Road - Homestake Road intersection.

DESCRIPTION
Geology: The workings are underlain by a dioritic phase of the Island Lake intrusion, about 100 m east of the basalt-diorite contact. Foliation within the diorite trends 060°, and numerous basaltic xenoliths are elongate parallel to this foliation. Margins of the xenoliths are partially assimilated.

Mineralization: A shallow shaft and a pit were sunk at this location. The shaft was reported to be 7 m deep in moderately foliated diorite. The foliation trends 065° and dips about 85°SE. Some white-grey quartz on the dump is massive to cryptocrystalline, with fine biotite and tourmaline. The pit is 2 m deep, and appears to have been sunk in an elongate basaltic xenolith. Foliation in the basalt is at 070°, in contrast to that in the host diorite, which trends 060°. Sulphides were not observed at either working.

DEVELOPMENT HISTORY
Circa 1900: A shaft and pit were sunk to intersect stringers and masses of quartz.

SELECTED REFERENCES
Coleman, 1898, OBM, Vol. 7, pt. 2, p. 110
King, 1983, OGS, Map P.2618

110. SCOTTY ISLAND PROSPECT

COMMODITY
Gold

ROCK ASSOCIATION
Felsic schist

CLASSIFICATION
2a

LOCATION
Scotty Island, Lake of the Woods: NTS 52E/9NW
Lat. 49°39′58″ (49.6662°)
Long. 94°27′42″ (94.4617°)

ACCESS
The shaft, near the eastern shore of Scotty Island, is on mining location JC100, some 11 km south-southeast of Kenora. The area is accessible by boat.

DESCRIPTION
Geology: Intermediate to felsic tuff, lapilli tuff and tuff breccia with a thickness of about 2000 m overlies the Bigstone Bay mafic volcanics. The well-foliated pyroclastics are exposed in the Sultana Syncline, the axial trace of which approximately coincides with the eastern shore of Scotty Island.

Mineralization: An irregular quartz vein up to 20 cm wide cuts felsic schists near the shore. The enclosing schists contain minor carbonate and fine pyrite. At the contact with the vein, the pyrite grains are larger. A 1.8 by 2.5 m shaft was sunk on the slope above the vein, about 20 m from the shore. The vertical, 20 m deep shaft is in schist which strikes 060° and dips steeply southeast. At a depth of 18 m, a crosscut was driven southeast and intersected the vein 7.5 m from the shaft. A drift was extended 9 m to the northeast of the vein, and a 4.5 m deep winze was sunk on it (De Kalbe 1900, p. 42). A pit or shallow shaft was also sunk about 200 m to the southwest.

ANALYSIS OF MINERALIZATION
A grab sample of the vein quartz and enclosing pyritiferous schist contained 1600 ppb gold.

DEVELOPMENT HISTORY
1899: The Ottawa Gold Mining and Milling Company Limited, which owned the adjoining water location JES 154, optioned the property from E. Gardiner and G. Derry.

1900: Underground work was in progress early in the year.

SELECTED REFERENCE

De Kalbe, 1900, OBM, Vol. 9, p. 42

111. SCRAMBLE MINE (PROSPECT)

Also called the Homestake Mine

COMMODITY
Gold

ROCK ASSOCIATION
Fine-grained metavolcanic flows, subvolcanic gabbroic sills and felsic dikes

CLASSIFICATION
1a, d, p

LOCATION

Jaffray Township:	Lots 13 and 14, Concession 6		
	NTS	52E/16SW	
	Lat.	49°47′07″	(49.7853°)
	Long.	94°22′35″	(94.3764°)

ACCESS
The old workings are about 1 km north of the Homestake Road - Jones Road intersection, or 250 m south-southwest of the western end of the Kenora airport runway. They may be reached by a dirt road extending 1.1 km northwest from the Jones Road.

DESCRIPTION
Geology: The area lies west of the northeast-trending Airport Anticline, and is underlain by northwest-facing, northeast-trending, fine-grained, pillowed and massive, tholeiitic basalt flows and intercalated, coarser grained gabbroic sills or flows (Figure 49). A weak to moderate axial planar foliation and stretched pillows characterize much of the area. Numerous narrow felsic dikes intrude the volcanic rocks parallel or slightly oblique to the stratigraphy. The regional metamorphic grade is amphibolite facies.

The immediate shaft area is underlain by pillowed basalt. These are cut by basalt dikes which are probably feeder dikes. Pillow rims are commonly offset several centimetres by small scale faults. Amoeboidal pillows are present in a number of places. Several felsic dikes cut obliquely through a 20 m wide sheared zone which strikes 052°, roughly conformable with stratigraphy. Within the sheared zone, pillow margins are difficult to discern, although the smaller amoeboid pillows are recognizable locally. Small scale folding is common in both the basalt and the felsic dikes; both S and Z folds have been recognized, though the latter are more common. Narrower portions of the dikes and individual basaltic units (notably a brown basalt) reflect these folding styles. The boundaries between the zone and less deformed lavas on either side are relatively sharp. Where the dikes pass from the less deformed basalt into the shear zone, they have been drag folded. Geologists from Boise Cascade Ltd. have interpreted the shear zone to coincide with a mafic tuff horizon.

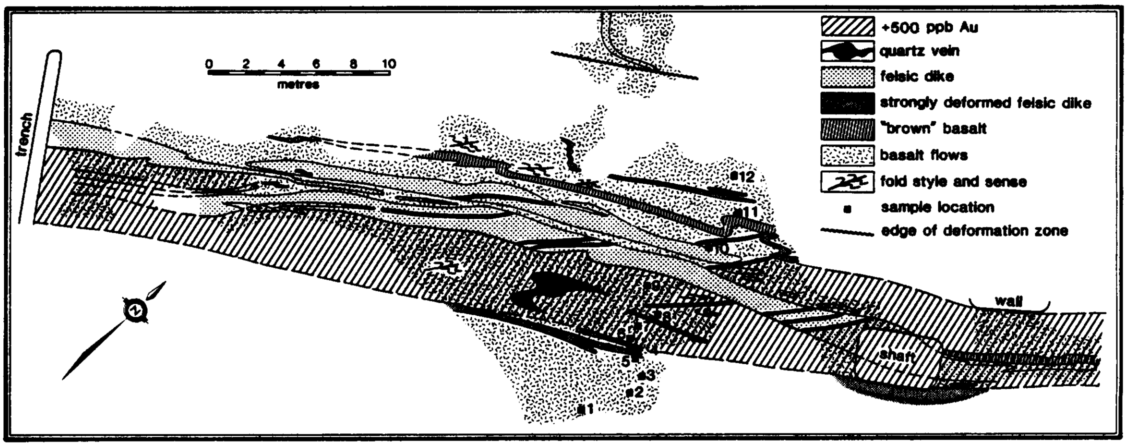

Figure 49. *Geology of the Scramble Mine Prospect. From Smith (1984).*

Mineralization: Gold mineralization at the Scramble Occurrence is restricted to the sheared zone, which Davies *et al.* (1985) term the Scramble Deformation Zone. Quartz and quartz-tourmaline veins occur both within the dikes and the host basalt, striking about 040°. The veins show evidence of folding and boudinage, although they were clearly formed late and filled pre-existing shears in the dikes. These late quartz-tourmaline veins are not enriched in gold (G. Clark, 1984, personal communication). Sampling during this study and by Boise Cascade Ltd. found gold values in a siliceous zone which lies near the southeastern side of the felsic dike. Bow (1898) reported that the zone had been traced over 594 m. Gold values are highest at the old shaft; here the gold-bearing zone appears to cross from the mafic volcanics into a felsic dike. Gold has reportedly been panned over widths of 7.6 to 11.6 m (The Colonist, February 1897, p.221). The shaft dips about 75°NW, probably corresponding to the dip of the mineralized zone. Several quartz-rich zones occur west of the shaft, but there is no evidence of gold enrichment here. The southern limit of the deformed zone is interpreted to coincide with two altered felsic dikes. An analysis of these, made during this study, returned 1000 ppb Au. Thin section examination of a series of samples taken systematically across the deformed zone indicates an increase in biotite and quartzofeldspathic material toward the centre. The biotite (up to 20% in some samples) occurs mainly at the expense of hornblende. Epidote, zoisite and sphene are present in minor amounts. Quartz is strained and very fine-grained. Carbonate is common at the zone margins.

Chemical analyses of a number of samples taken across the deformed zone during this study demonstrate an increase in potash and a corresponding decrease in soda within the zone. There is an overall increase in iron and an increase in the oxidation state, reflected by the presence of magnetite. Gold values within basaltic rocks are highest where there are high iron and potash contents.

ANALYSIS OF MINERALIZATION

Three samples were taken in this study from a trench 28 m northeast of the main shaft. A grab sample of sheared mafic volcanics with 1% pyrite contained 2400 ppb Au. A sample of vein quartz containing 3% pyrite assayed 980 ppb Au. Sheared mafic volcanics adjacent to the quartz assayed 4200 ppb Au.

Three chip samples were taken from the mineralized zone at the main shaft. A 1.2 m sample, with minor pyrite, from the northwestern side of the shaft assayed 0.15 oz Au/ton. A 1.5 m sample from the northeastern side of the shaft, containing abundant pyrite, assayed 0.37 oz Au/ton. Both of these samples were taken within a strongly silicified felsic dike. A 1.0 m sample within altered mafic rock (biotite-pyrite schist) from the southwestern corner of the shaft contained 0.15 oz Au/ton.

DEVELOPMENT HISTORY

July 1894-1896: Gold mineralization was discovered by H. Benson and A. Norman. The name Scramble was given to the property following the very active bidding to acquire option rights to it. Lots 13 and 14, of Concession 6, were optioned to S.V. Halstead, of Chatham. A 2.1 by 3.4 m shaft was sunk to 17.4 m, and 8.2 m of crosscutting were done on the 15.2 m level. Mill tests on a 2.5 ton sample indicated an average gold content of $12.60 Au/ton. Seven other assays averaged $17.24 Au/ton (values at $20.00 gold).

1897: The Scramble Gold Mining Co. Ltd. was incorporated on April 7. The shaft was deepened to 25.9 m. Lateral work on level one was extended to 21.6 m and 6.4 m of drifting was done on a second level at 22.9 m. A second shaft, 61 m from the main shaft, was sunk 15.9 m and discontinued. Extensive surface stripping, trenching and test pitting were completed.

1899: An English company examined the property, then under the direction of the same mine manager as Sultana Mine.

1902: Control passed to the Kenora Mining and Milling Co.

1911-1914: Work resumed by C. Brent for the Canadian Homestake Company Ltd. Electricity was first used to power the equipment. The main shaft was deepened to 68.6 m and 30.5 m of lateral work was done on the 62 m level. Some ore was tested at the Hollinger mill.

1983-1984: Boise Cascade Ltd. stripped an area roughly 70 by 30 m, centred on the Scramble shaft. The shaft was dewatered a few metres. Geophysical surveys and geological mapping were done.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 36
Blue, 1895, OBM, Vol. 5, p. 186
1896, OBM, Vol. 6, p. 49
1896, Geological Survey, Vol. 9, pt. A, p. 41
1898, OBM, Vol. 7, pt. 1, p. 58-59
Bow, 1898, OBM, Vol. 7, pt. 1, p. 13
1900, OBM, Vol. 9, p. 58-59
The Canadian Homestake Mining Co. Ltd., 1911, Prospectus, Assessment Files, Kenora
The Canadian Mining Manual, 1899, p. 556
The Canadian Mining Review, 1899, p. 87, 156
Coleman, 1896, OBM, Vol. 6, p. 108-109
1898, OBM, Vol. 7, p. 109-110
The Colonist, May 1896, p. 511-512
Oct. 1896, p. 100
Nov. 1896, p. 131
Jan. 1897, p. 180
Feb. 1897, p. 221
Mar. 1897, p. 237-241
Corkhill, 1912, OBM, Vol. 21, pt. 1, p. 100
1913, OBM, Vol. 22, pt. 1, p. 98
Ferguson *et al.*, 1971, ODM, MRC 13, p. 46
Gibson, 1912, OBM, Vol. 21, pt. 1, p. 98
1913, OBM, Vol. 22, pt. 1, p. 46
1914, OBM, Vol. 23, pt. 1, p. 56
Hopkins, 1921, ODM, Vol. 30, pt. 2, p. 58
King, 1983, OGS, Map P.2618
Miller, 1903, OBM, Vol. 12, p. 96
Parsons, 1911, OBM, Vol. 20, p. 175
1913, OBM, Vol. 22, p. 227
Sutherland, 1914, OBM, Vol. 23, pt. 1, p. 110-111
1915, OBM, Vol. 24, pt. 1, p. 96

112. SENTINEL OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Granodiorite

CLASSIFICATION
4c

LOCATION

Labyrinth Bay, Shoal Lake:	NTS	52E/10 SW
	Lat.	49°35'31" (49.5920)
	Long.	94°47'19" (94.7887°)

ACCESS
The original property consisted of mining locations WA7, 8, and 9, south of central Labyrinth Bay. It is about 28 km southwest of Kenora, 2.7 km south of Upper Ash Rapids, and is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: East-trending, intermediate to felsic pyroclastics are interbedded with mafic volcanics and minor cherty and argillaceous sediments in the Labryinth Bay area. These rocks have been intruded by sills of gabbro and peridotite. The sequence is mostly north-facing, but some isoclinal folding or fault-block stacking may have occurred. Foliation is weak to moderate and essentially parallel to bedding. A small oval stock of medium-grained granodiorite cuts the volcanics obliquely; a fine-grained border phase may be present along the southwestern side of the stock. The granodiorite is massive and jointed, with rare, east-southeast-trending alignment of the few biotite grains. Carbonate and traces of pyrite occur on fractures and fine sericitic alteration is widespread. Quartz-filled fractures are locally numerous.

Mineralization: A zone of fracturing and shearing about 1 m wide lies near the southwestern contact of the granodiorite. The zone strikes 150° and has a near-vertical dip. Pyrite is present along fractures and is also associated with irregular quartz veinlets. A vertical, 1.5 by 1.5 m shaft was sunk on the zone, and pieces of quartz on the dump are up to 20 cm wide. Bow (1899) noted the presence of 2 shafts, one 12 m deep and the other 32 m deep, and of a sugary white quartz vein, which could be traced 6 m at the deeper shaft.

ANALYSIS OF MINERALIZATION
A grab sample of the vein from the deeper shaft contained 0.11 oz Au/ton, as reported by Thomson (1936). Grab samples of granodiorite cut by quartz, with pyrite along fractures, were taken from the dump

of the shallower shaft and from a pit 200 m to the east in this study; they contained 9 ppb and 7 ppb gold, respectively.

DEVELOPMENT HISTORY

Circa 1897: Owned by Coronada Gold Mining Company, Ltd. Work was begun on shafts but operations were suspended.

1898: Property optioned to Sentinel Consolidated Gold Mining Company of Ontario, Ltd. Work recommenced and 60 tons of vein material were test milled at the Rat Portage Reduction Works. A 50 ton sample from the large shaft is reported to have averaged $14 (0.7 oz) Au/ton (Canadian Mining Review 1898, p. 258).

SELECTED REFERENCES

Bow, 1899, OBM, Vol. 8, pt. 1, p. 64
Canadian Mining Review, 1898, Vol. 17, p. 235, 258, 298
Davies, 1978, ODM, OFR 5242
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 29

113. SHOAL LAKE NARROWS OCCURRENCE

Also called Island J.O. 154 Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate pyroclastics cut by quartz porphyry

CLASSIFICATION
2d

LOCATION
Island J.O. 154, Labryinth Bay in Shoal Lake:

NTS	52E/10SW	
Lat.	49°35'16"	(49.5878°)
Long.	94°50'04"	(94.8344°)

ACCESS
The island is 5 km southwest of Upper Ash Rapids and is near the navigation channel between Kenora and Shoal Lake.

DESCRIPTION
Geology: Intermediate to felsic tuff with minor argillaceous and cherty sediments apparently lie near the top of a heterogeneous sequence of volcanics and sediments in the southern part of Labyrinth Bay (Davies 1970). The area is structurally complex, and these north-facing rocks may be in fault contact with mafic and ultramafic sills to the north.

Mineralization: A 1.5 m wide, carbonate- and quartz-rich felsite dike occurs within a massive felsic tuff unit. About 9 m from the western shore of Island J.O. 154, a pit was sunk an estimated 3 m on the dike. Rock on the dump contains "considerable pyrite and a little marcasite or pyrrhotite.. ...It is reported that gold can be panned from the mineralized rock" (Davies 1978).

SELECTED REFERENCES
Davies, 1970, ODM, Map P594
1978, OGS, OFR 5242, p. 84-85

114. SILVERMAN PROPERTY (PROSPECT)

COMMODITY
Gold

ROCK ASSOCIATION
Diorite and quartz diorite

CLASSIFICATION
4c

LOCATION

Haycock Township:	NTS	52E/9NW
	Lat.	49°44′35″ (49.7430°)
	Long.	94°20′46″ (94.3467°)

ACCESS
The workings are on the northwestern part of old mining location P.357, 200 m north of Highway 17 at a point about 8 km east of Kenora.

SIZE AND GRADE
Hawmandale Gold Mining Syndicate (1946a) reported the milling of 184 tons of ore from 7 locations on 3 veins on the Silverman Property. A net average return of $10.14/ton was realized after a deduction of $10.00/ton for milling and a gold recovery of 77.6%. This indicates that the original gold content averaged 0.74 oz/ton.

DESCRIPTION
Geology: The Island Lake quartz diorite lies between the Dalles and Dryberry batholiths, separated from each by a septum of basalt. The western and southeastern contacts of the Island Lake intrusion are relatively straight and are essentially parallel to volcanic stratigraphy. At the southwestern end, the intrusion appears to plunge beneath the basalt and the contact, where exposed, is complex. Basalt inclusions are common. Lineaments trending 030° are moderately well developed throughout the area, and probably represent a regional fracture pattern.

Mineralization: A series of sub-parallel, near-vertical quartz veins occur in shear zones near the southeastern extremity of the quartz diorite intrusion, about 100 m northwest of its contact with basalt (Figure 50). Exploration has centered on the No. 1, or Silverman, Vein which trends from 020° to 035° and has a known length of about 100 m. The vein, up to 1 m wide, is in a strong, 0.5 to 1.5 m wide shear zone and consists of massive to sugary quartz with abundant black tourmaline, some pyrite and pyrrhotite, and traces of chalcopyrite. "Visible gold is found and the distribution appears to be somewhat erratic" (Thomson 1947).

Vein No. 2 lies about 15 m to the west. It was trenched over a length of about 100 m but is poorly exposed at present. Vein No. 3, which is about 9 m east of the deep cut in Vein No. 1, was traced for over 100 m; it consists of a narrow shear with minor, discontinuous quartz veining and some black tourmaline. Additional quartz-tourmaline veins and irregular stringers and lenses have recently been uncovered southeast of No. 3 Vein and minor trenching was begun on these. The trend of the veins is approximately parallel to No. 1 Vein.

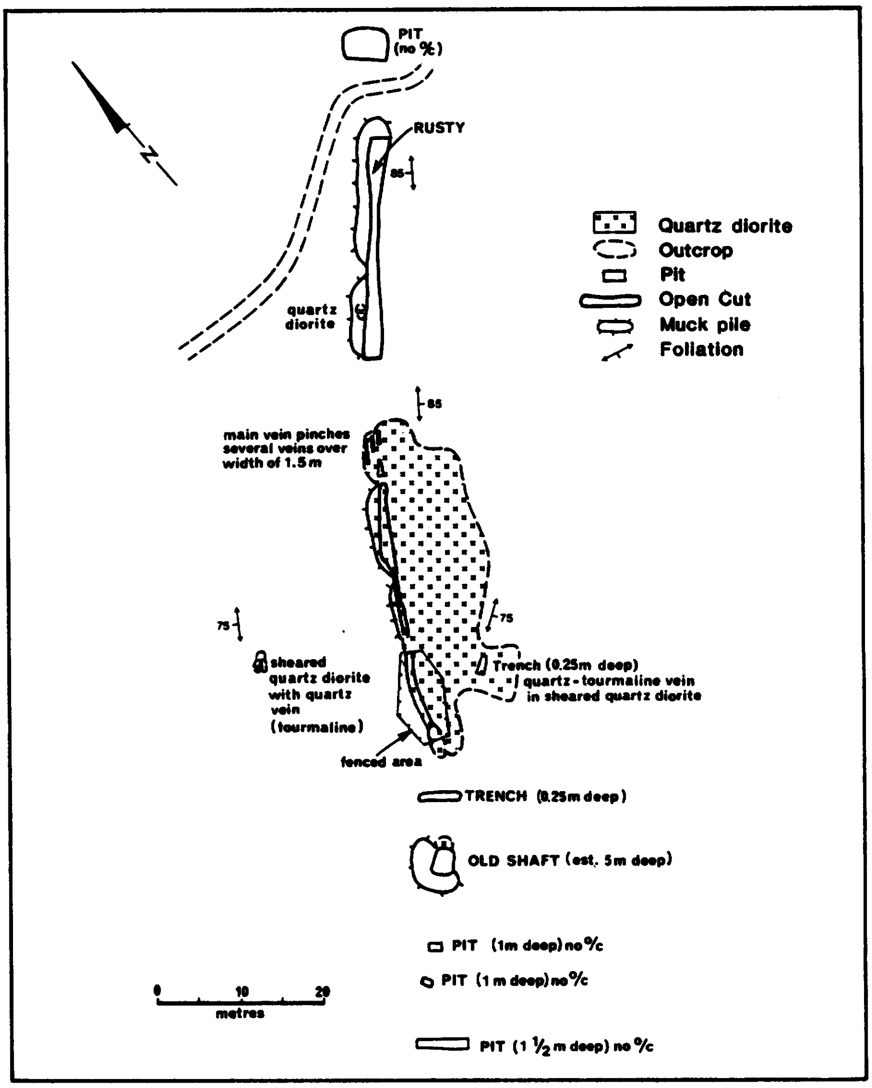

Figure 50. *Geology and development at the Silverman Property.*

ANALYSIS OF MINERALIZATION
Hawmandale Gold Mining Syndicate (1946a) recorded the assay results of 17 channel samples from No. 1 Vein, apparently taken by P.E. Hopkins prior to 1934. These range from 0.73 oz Au/ton over 203 cm and 5.23 oz Au/ton over 23 cm, to 0.035 oz Au/ton over 195 cm. The weighted average was 0.625 oz Au/ton. The weighted average of 3 samples from the No. 3 Vein was 0.375 oz Au/ton. The results of the milling of bulk samples from the No. 1 Vein were also recorded; the "net mint return" being:

33 tons, taken from shaft	$ 4.86
22 tons, trench # 1; 3 ft wide	$20.18
52 tons, trench # 2; 6 ft 7 in wide	$ 9.60
11 tons, trench # 2; 1 ft 2 in wide	$ 5.25
6.4 tons, trench # 3, 7 ft wide	$ 3.66
49.6 tons, trench # 3, 7 ft 3 in wide	$11.75

This constitutes a "net average return of $10.14 after deducting a charge of $10.00 per ton milling costs, and figured at the $35.00 gold price" (Hawmandale Gold Mining Syndicate 1946a). Using the stated gold recovery of 77.6%, this represents an original ore grade of 0.74 oz Au/ton.

Hawmandale Gold Mining Syndicate (1946c) subsequently analyzed 28 additional channel samples from the No. 1 Vein, the weighted average being 0.11 oz Au/ton and the average width sampled being about 45 cm. The weighted average of 3 channel samples from the No. 2 Vein was 0.086 oz Au/ton and the average sample width was 47 cm. Two channel samples from No. 3 Vein averaged 0.11 oz Au/ton over 35 cm. Six holes were drilled into the No. 1 Vein: a gold-bearing intersection was found in each of the cores, the weighted average being 0.08 oz Au/ton and the average width being 63 cm.

DEVELOPMENT HISTORY
Circa 1900: Initial surface work done. Shaft was begun.

Circa 1938: The property was held by S. Silverman and was prospected by H.N. Hawes. The shaft was deepened to 13.4 m (Thomson 1947).

1941: La-Re Exploration Co. dewatered and sampled the shaft, completed surface trenching and sank 4 test pits. Some 203 tons of ore were treated at Kenopo Mill in Kenora.

1943: Examined by Sylvanite Gold Mines Ltd.

1945-1947: Hawmandale Gold Mining Syndicate acquired the ground. Stripping, channel sampling and minor trenching was done. Six drill holes were drilled, totalling approximately 360 m.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 21
Holbrooke, 1943, Silverman Property, Assessment Files, Kenora
Hawmandale Gold Mining Syndicate, 1946a, Prospectus, Assessment Files, Kenora
1946b, Assay Plan, Silverman Claim, Assessment Files, Kenora
1946c, Progress Report, Assessment Files, Kenora
MacClasky, 1943, Silverman Property, Assessment Files, Kenora
Thomson, 1947, Hawmandale Gold Mining Syndicate, Assessment Files, Kenora
Tremblay, 1941, ODM, Vol. 50, pt. 1, p. 72

115. SIRDAR MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Altered quartz diorite

CLASSIFICATION
4d

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°35′24"	(49.5900°)
	Long.	94°56′58"	(94.9494°)

ACCESS
The occurrence is on old mining locations D410 and D411, about 500 m east of the Mikado Mine. The area may be reached from Clytie Bay Landing, or from Kenora via Ash Rapids.

SIZE AND GRADE
The Canadian Mining Review (1899, p. 145) reported "...ore in bulk in the upper portion of the vein, chiefly Mikadoite, averaged about $4 per ton, as was shown by a test of about 45 tons treated at the Keewatin reduction works. Again by sampling a pile of about 30 tons of the ore taken from a depth of 65 to 80 feet (20 to 24 m), and another pile of 25 tons from a depth of 80 to 90 feet (24 to 27 m), the yield was found to be $4 in the former and $24.20 in the latter (values at $20.00 gold)."

DESCRIPTION
Geology: An east-trending fault, with an apparent sinistral horizontal component, has brought the Canoe Lake stock into contact with north-trending, fine-grained, mafic metavolcanic flows, and medium- to coarse-grained, mafic flows or sills. The old workings (Figure 51) are entirely within the quartz diorite stock, nearly 200 m north of the fault. Northwest-trending dikes of quartz porphyry, quartz-feldspar porphyry, and granodiorite intrude both the mafic volcanics and the quartz diorite.

In the vicinity of the old workings, the quartz diorite displays a faint east-northeast-trending foliation (Davies 1978). Bruce (1925) described a sample from the dump as consisting of "...orthoclase microcline and acidic plagioclase with brownish green hornblende. Sericite and kaoline are alteration products."

Mineralization: Two main "veins", striking 155° and dipping between 60° and 80°NE, are about 60 m apart. The trends of several smaller "veins" vary from parallel to perpendicular to that of the major veins. Bow (1900) reported that "the veins consist...of a zone of altered granite 3 or 4 feet (1 to 1.2 m) in width, which coincides with planes of faulting in the eruptive granite formation of the Mikado peninsula. There is usually a small stringer of quartz in the plane of faulting, and small stringers are also occasionally found in the altered zone or vein matter. More or less pyrites is found in the latter and it is said to carry gold all through.....The quartz in the plane of faulting is often very rich, considerable visible gold being sometimes found in it."

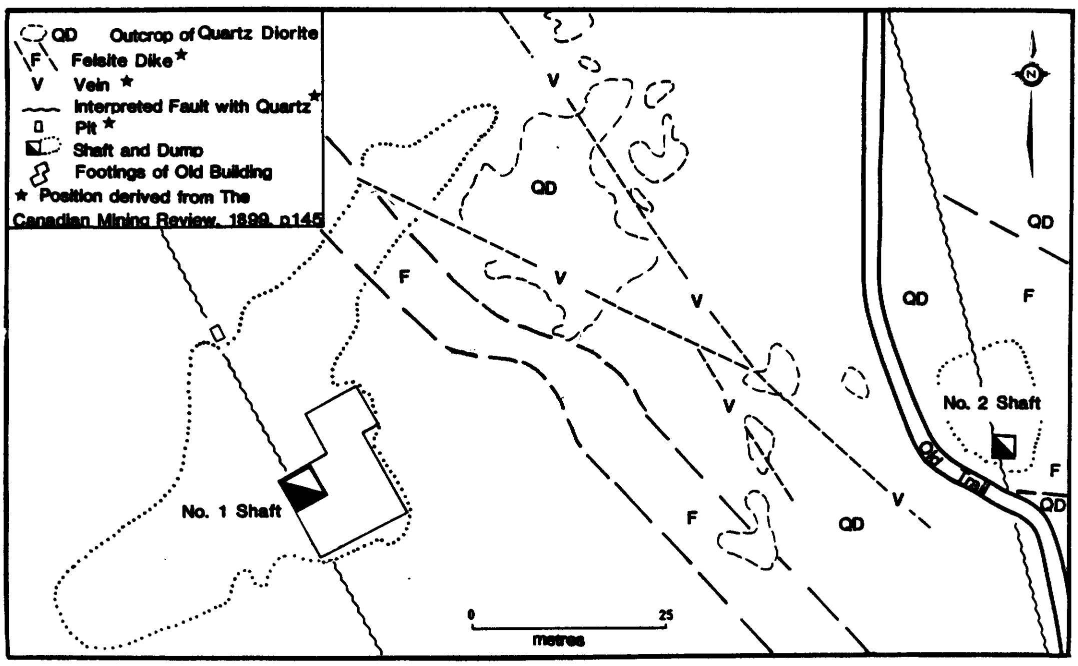

Figure 51. *Geology and development at the Sirdar Mine Occurrence.*

P. MacKellar of the Toronto and Western Mines Development Co. stated (Canadian Mining Review, 1899, p. 144-147) that the "vein zone seems to be a talco-siliceous mineral resembling sericite. It appears to have been formed by alteration of the granite. Its colour is greenish-white to green; it is massive and slightly unctuous, and merges with the quartz as if they were one mineral.....It first became noted in the Mikado Mine, and it forms the principal productive portion of the gold veins in the Sirdar Group.....These veins consist of small quartz sheets with comparatively large quantities of altered granite (mikadoite) which shows a schistose structure next to the quartz, and passes by gradual transition into massive granite. It is generally charged with fine pyrites amounting to 0.5 to 3 percent, and carries more or less gold, as grains and not in leaves.....Small quantities of copper, lead, zinc and bismuth are occasionally present, more particularly in quartz, rarely in mikadoite.....The veins are shown to be true fissures by the faulting of the formations. Along No. 2 vein the felsite dike is displaced laterally over 200 ft. (60 m)." An accompanying surface plan indicates relative horizontal movement to be dextral.

A search during this study of the tops of the shafts and surrounding dumps failed to locate any vein material, although some small quartz-carbonate stringers and veinlets were noted. Rare disseminated sphalerite and chalcopyrite, and minor (up to 2%) pyrite were identified in highly altered quartz diorite. The hanging wall and footwall contacts are well defined, and the footwall quartz diorite is relatively fresh. Alteration is much more intense within the hanging wall, and decreases away from the contact. Rocks on the dump vary from fresh to altered and strongly foliated granite. Green quartz porphyry was also abundant.

Bruce (1925) concluded, "It is evident both of these properties (Tycoon and Sirdar) were operated only on account of their proximity to Mikado."

ANALYSIS OF MINERALIZATION

A sample of altered quartz diorite taken in this study, containing visible sphalerite and pyrite mineralization, assayed 10.2 ppm Au and 2.5% zinc. Four similar samples, containing 5%, 3%, 1% and trace pyrite and no sphalerite, assayed 1580, 400, 120 and 70 ppb Au, respectively. A sample of fresh quartz diorite contained 6 ppb Au, and an assay of the feldspar porphyry returned <2 ppb Au.

DEVELOPMENT HISTORY

1897: Incorporation of Toronto and Western Mines Development Co., Ltd.

1898 - July 1899: Same company owned and operated the Sirdar Mine (D410) and the adjoining locations (D411 and D412). Two shafts, inclined 60° to 80°E, were sunk 300 ft. (90 m) apart on parallel veins. The No. 1 (west) Shaft was sunk 120 ft. (37 m) with minor lateral development on the 60 and 100 ft. (18 and 30 m) levels. The No. 2 (east) Shaft was sunk 57 ft. (17 m) and discontinued. Several test runs were made at Keewatin reduction works.

July 1899 - 1900: Transferred to the Sirdar Gold Mining Co. Ltd., which operated the following properties on Bag Bay; D410, 411, 412, 418, 419, 419A, 421, S182, 184 and SV209.

The Main, or No. 1, Shaft was extended to 200 ft. (60 m). Bow described the underground development as follows: "The south drift of the first (30 m) level has been driven a total distance of 49 ft. (15 m)...The measurements in the second (60 m) level...south drift, 130 ft. (40 m); crosscut in drift, 100 ft. (30 m) from the shaft, driven west 169 ft. (52 m). Drifting in the west crosscut; first drift, 32 feet (10 m) from the main drift, driven south 28 ft. (9 m); second drift, 147 ft. (45 m) from the main drift, driven south 69 ft. (69 m). North drift, 67 ft. (20 m)."

Test pits were sunk on other veins and some underground diamond-drilling was completed.

1929: A portion of mining location D410 was restaked as K1269, by Kenora Miners and Prospectors.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 37
Bow, 1899, OBM, Vol. 8, p. 67
     1900, OBM, Vol. 9, p. 35, 56-57
     1901, OBM, Vol. 10, p. 78
Bruce, 1925, ODM, Vol. 34, p. 9, 76-78
The Canadian Mining Manual, 1899, p. 587
The Canadian Mining Review, 1898, p. 197, 235, 276, 298, 328
                            1899, p. 144-147, 156, 216
Davies, 1978, ODM, OFR 5242, p. 97-99
Ferguson *et al*., 1971, ODM, MDC 13, p. 238
Parsons, 1911, OBM, Vol. 20, p. 165

116. SIRDAR POINT OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt

CLASSIFICATION
lb, c, s, o

LOCATION

Glass Township:	NTS	52E/10SW	
	Lat.	49°36′29″	(49.6079°)
	Long.	94°58′37″	(94.9769°)

ACCESS
Former mining location S182 is at the northeastern end of Sirdar Point, 2.2 km southwest of Clytie Bay Landing, and is accessible by boat.

DESCRIPTION
Geology: The area is mainly composed of fine- to medium-grained basalt, which is part of a west-facing sequence of tholeiitic and komatiitic flows and sills that form the upper part of the lower mafic volcanic sequence in the northern Lake of the Woods. Much of the shoreline of Bag Bay consists of quartz diorite, which forms the westernmost edge of the Canoe Lake stock. An east-striking fault zone truncates the sequence near the northern shore; a dextral component component of movement in excess of 1 km is indicated along the fault (Davies 1983).

Mineralization: Bow (1901, p. 78) noted the presence of three shafts on the property, referred to as the Belt Vein No.1 and 2 shafts, and the Mikado Vein shaft. Two shafts were found during this project: a northern shaft near the main fault zone, and a southwestern shaft. The latter is on a shear zone which strikes southeast and dips from vertical to 85°NE. Minor quartz and carbonate occur in the shear, and pyrite is both disseminated and in small vugs in the quartz. Very little quartz is present on the dump.

The north shaft is flanked by shallow trenches which trend about 120° to the west of the shaft and 110° to the east of the shaft. However, there is no evidence of a shear zone in this direction. No quartz is to be seen on the dump.

In one pit, a vertical shear striking 050° was noted; a little carbonate is in the shear and there is, locally, fine disseminated pyrite and pyrrhotite.

DEVELOPMENT HISTORY

1898: Owned by Toronto and Western Mines Development Company, Limited. A shaft was sunk 7 m with the intention of reaching, at 20 m, an ore zone encountered by drilling.

1900: The Belt Vein No. 1 shaft had reached a depth of 32.6 m and, at the 30.5 m level, a crosscut was driven 6 m east and a drift was 1.2 m long. The Belt Vein No. 2, inclined 70°W, had reached a depth of 21 m and the No. 3 shaft on the supposed Mikado Vein had reached 6 m depth. Only the No. 3 Vein was being worked. Drilling (9 holes) totalled 785 m.

SELECTED REFERENCES

Bow, 1900, OBM, Vol. 9, p. 57
1901, OBM, Vol. 10, p. 78
Davies, 1983, OGS, Map 2422.

117. SPIKE POINT OCCURRENCES

COMMODITY
Gold, silver

ROCK ASSOCIATION
Granodiorite in mafic and intermediate volcanics

CLASSIFICATION
2d

LOCATION
Spike Point on Shoal Lake:
NTS 52E/10SW
Lat. 49°32′51″ (49.5475°) (approximate)
Long. 94°54′45″ (94.9125°) (approximate)

ACCESS
Spike Point, near the southwestern end of Shoal Lake Narrows, is 9.5 km south-southeast of Clytie Bay Landing and 39 km southwest of Kenora. It is accessible by boat from both locations.

DESCRIPTION
Geology: Irregularly shaped, long, narrow bodies of granodiorite have intruded south-facing mafic and intermediate volcanics at Spike Point. Granodiorite dikes are also present near James Lake, 5 km east of Spike Point (Davies 1984), and may mark a zone of structural weakness. Quartz veining occurs in and adjacent to the granodiorite and it is reported (A. Gauthier, personal communication) that the veins contain minor amounts of gold and silver.

SELECTED REFERENCE
Davies, 1984, OGS, Map 2423

118. STANDARD OCCURRENCE

COMMODITY
Gold, silver

ROCK ASSOCIATION
Mafic and felsic volcanics

CLASSIFICATION
1b, 2b

LOCATION

Echo Bay, Lake of the Woods:	NTS	52E/10NW
	Lat.	49°38'20" (49.6388°)
	Long.	94°53'32" (94.8923°)

ACCESS
Shaft No. 2, at the western edge of old mining location McA 51, is 800 m east of a long point extending westward into Echo Bay. The area is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The area is underlain by mafic and felsic volcanics, which probably are equivalent to the upper mafic and lower felsic sequences of Shoal Lake. The Canoe Lake quartz diorite stock lies about 200 m south of the No. 2 shaft and the contact extends east, parallel to the shore of Echo Bay. Foliation in the volcanic rocks strikes within 10° of 095° and dips near vertical. The mafic rocks are mainly fine-grained flows and the felsic rocks are mainly tuffs.

Mineralization: Blue (1896) recorded the presence of two "lodes" on the property. No. 1 vein was stripped for 45 m and a 2.4 by 2.4 m shaft was sunk 7.6 m. This vein was not located during the present survey.

No. 2 Vein was "crosscut" across the 26 m "vein" to a depth of 3 m and a shaft was sunk at one end (Blue 1896). Assays of from $6 to $15 Au/ton (0.3 - 0.75 oz/ton) were reported from a 60 ton "ore" pile. At the shaft, there is a quartz vein, up to 20 cm wide, in a shear zone that is east of the contact between mafic and felsic volcanics. This vein strikes 105° and dips vertically, and is weakly mineralized. A small "ore" pile nearby indicates that vein quartz up to 30 cm wide contains iron carbonate, chalcopyrite, pyrite, sphalerite, galena and arsenopyrite. Dump rocks are mainly foliated basalt containing fine pyrite and pyrrhotite; they typically contain carbonate and are cut by carbonate veins.

ANALYSIS OF MINERALIZATION

A grab sample taken in this study of mineralized white quartz, with carbonate, contained >10 ppm Au, 61 ppm Ag, 390 ppm As, 0.28% Zn, 0.25% Cu and 44 ppm Pb. A grab sample of foliated, mineralized basalt returned 2 ppb Au.

DEVELOPMENT HISTORY

1896: Property was owned by R.H. Ahn and Company of Rat Portage. Work was begun in October and "ore" stockpiled.

1897: "Ore" was shipped to the Rat Portage Reduction Works (Parsons 1921).

1936: Property was staked by Rhond Prospectors Syndicate.

SELECTED REFERENCES

Blue, 1896, OBM, Vol. 6, p. 49-50
Davies, 1965, ODM, Map 2069
Parsons, 1921, ODM, Vol. 30, pt. 2, p. 60

119. STELLA MINE (PROSPECT)

Also called the Blue Star, Stella - Lac La Belle, or Contact Mine

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic rocks are intruded to the north by granodiorite

CLASSIFICATION

LOCATION

Code and Manross Townships:	NTS	52E/9SE	
	Lat.	49°36′47″	(49.6131°)
	Long.	94°13′41″	(94.2281°)

ACCESS
The workings are on old mining claims S87 and S86, south of Stella Lake, or about 2.5 km southeast of the eastern end of Witch Bay. The area can be reached from the Witch Bay Road.

SIZE AND GRADE
Gold production has been reported, but information is incomplete. Bow (1899) stated: "A mill test of two tons gave a return of $3.75 (0.18 oz) free milling ... Twenty tons of ore from one cut gave $406 (19.6 oz.) gold brick, and 800 pounds from the same vein gave a return of $134 (6.4 oz.) per ton at Keewatin Reduction Works." The Canadian Mining Review (1898, p. 258) reported that: "The mill run of 150 tons at the Keewatin Reduction Works was rather disappointing to the Stella people, as the yield was only about $500.00 (24.2 oz.), or hardly $3.50 (0.17 oz.) per ton."

DESCRIPTION
Geology: The area south of Stella Lake is underlain by mafic volcanic and intrusive rocks, which are intruded to the north by the Dryberry batholith (Figure 52). The greenstone-granite contact trends northwest and underlies Stella Lake. The contact has been modified by faulting.

Fine-grained basaltic flows have been intruded by a series of differentiated gabbroic bodies, which may represent subvolcanic, stratabound sills. The sills grade from melanogabbro and peridotite at the base to leucogabbro in the upper portion. Similar gabbroic bodies underlie the Wendigo Mine property, located several kilometres to the southwest.

Petrographic examination of metaperidotite proximal to the Dryberry batholith indicates a lower greenschist facies mineral assemblage. Remnant pyroxene phenocrysts occur within a matrix of chlorite, talc, serpentine (antigorite) and magnetite, with rare secondary euhedral amphibole (actinolite). Laths of chlorite are bent indicating the rock has undergone some strain following thermal metamorphism.

The old workings are hosted by fine-grained basalt, underlying the basal portion of a 100 m thick gabbro sill, located on the northern limb of a fairly tight, east-northeast-trending, west-plunging syncline.

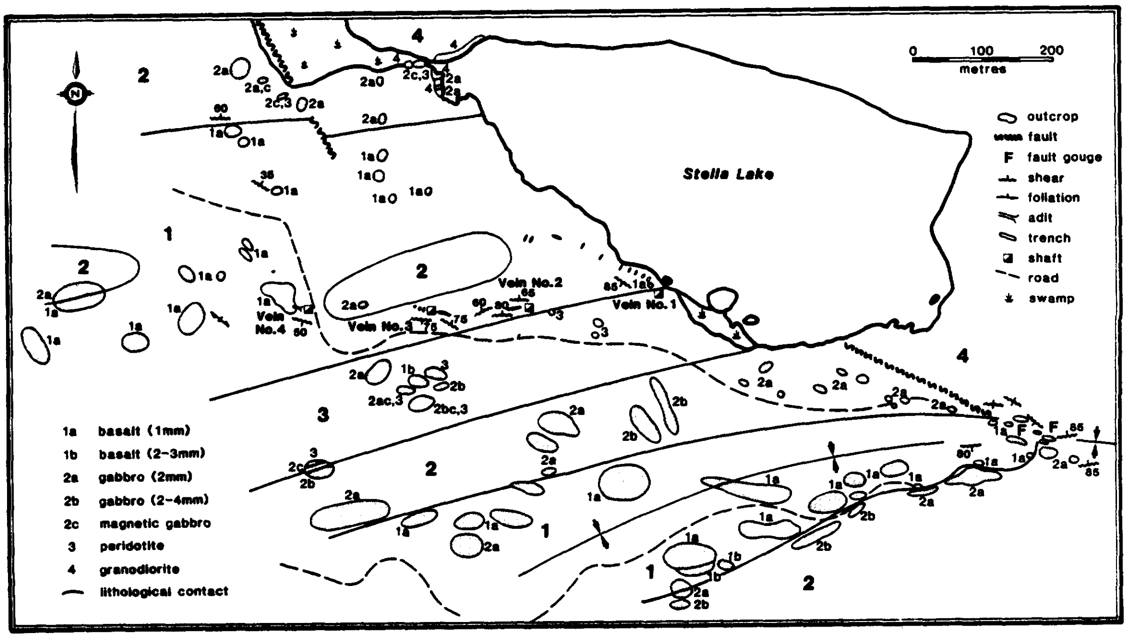

Figure 52. *Geology of the Stella Mine Prospect. From Smith (1984).*

Mineralization: Whimster (1931) separated the mineralized zones into two types:

> "1. Veins of quartz containing a small amount of sulphide and in some cases bounded by considerable sulphide intheir schist walls.
>
> 2. Veins of sulphides, in which small quantities of quartz schist and quartz are heavily mineralized ... the walls of these veins are indetermined, the sulphide content extending into the accompanying schist to some distance."

Six "vein" systems were indicated by Thomson (1946). Veins 2, 3, 4, 6 and D are type 1, while vein 1 is type 2.

Vein No. 6 is the southernmost "vein" and was not investigated during this study. It strikes approximately east and reportedly contains free gold (Thomson 1946).

Vein No. 4 strikes east-southeast and dips 50 to 70°SW. Several narrow, discontinuous, white quartz veins, some of which reach widths of over 45 cm (Thomson 1935), occur in a shear zone hosted by massive, fine-grained basalt. The shear zone is up to 1.2 m wide and comprises pervasively carbonatized chlorite-biotite schist. In thin section, chlorite is seen to occur along fracture margins and within mats of quartz, epidote, sphene, zoisite and minor sericite. In places chlorite is retrograde from biotite. Quartz and calcite occur in the schist, and as the matrix of a late breccia in which fragments of schistose material are suspended. Pyrite is found in minor amounts and contains inclusions of all other minerals. Quartz displays undulose extinction and zoisite crystals are broken and highly fractured. The shear zone appears to have been an early deformation zone which was silicified and carbonatized. Later strain resulted in brittle deformation, permitting quartz-carbonate and sulphide vein filling. The strain probably persisted past this period, resulting in the undulose extinction observed in the late quartz. The minerals present are indicative of lower greenschist grade metamorphism.

Vein No. 3 trends south of east and dips 75 to 80°S. It was not exposed during this study, but was described by Whimster (1931) as being a 45 to 60 cm wide quartz vein which hugs the footwall on the northern side and is bounded on the southern side by an area of schist and quartz, 60 to 90 cm wide. Thomson (1946) indicated that the quartz was mineralized with up to 4% sulphides (pyrite and a little chalcopyrite), while the schist contained up to 10-15% pyrite. He described one zone about 6 m wide, in which 2 separate quartz stringers, up to 30 cm wide, were contained within the silicified schist.

Vein No. 2 trends slightly north of east and dips about 60°S. The exposure was described by Thomson (1946): "At the time of the writer's visit, due to caving and water-filling, the quartz vein, from which the ore that was shipped appeared to have been largely taken, could not be seen over most of the cut. In one place a vein of sugary quartz, containing plentiful visible gold, is exposed at the bottom. Part of the quartz in the vein is dark grey or bluish and quite coarse grained. The vein is evidently not continuous as schist can be seen extending completely across the cut in places. The schistose zone is at least five feet wide in parts of the open cut and appears to have formed from dark, dense fine-grained hornblende rock, probably basalt. Pyrite and chalcopyrite make up an estimated 15% in part of the schist."

Schistose material, which is cut by narrow ribbons of quartz, is characterized by a lower greenschist facies mineral assemblage.

Chlorite is the major constituent. Biotite occurs in association with muscovite and seems to have partly replaced the muscovite. Fragments of earlier schistose material occur throughout the quartz veins. Quartz has polygonal grain boundaries and no undulose extinction. Fine (<80 mm) grains of magnetite are scattered throughout the schistose material. Hematite is common, especially along fracture margins and later sulphide intergrowths. Gold occurs plated on pyrite grains and as free grains within the quartz. Slightly brownish chalcopyrite and magnetite are included within the pyrite. Sulphides are found along quartz vein boundaries while magnetite occurs within the schists further from the veins.

The D zone is reportedly located 45 m north of Vein No. 2 but was not examined during this study. Whimster (1931) described a sulphide-poor, 2.1 m wide vein of white quartz which had not been developed. At the western limit of its strike, it is apparently bounded to the north by a zone of heavy sulphide mineralization (pyrite and chalcopyrite).

Vein No. 1 strikes about 110° and dips about 70°S. The "vein", which is located on the southern shore of Stella Lake, is a fissile, gossanous, 2.0 to 2.5 m wide, shear zone within fine-grained metabasalt. The central core is pervasively silicified, containing abundant, fine, disseminated pyrite (locally up to 40%, but more commonly 10%). Carbonate is locally abundant. On the shaft dump, much of the basaltic material is sulphide-rich, and sulphide-poor material is highly magnetic. Thomson (1946) reports that granitic dikes are contained within the shear. Similar dikes intrude the volcanics on the western shore of Stella Lake.

A sample of basalt from the Vein No. 1 area contains a lower greenschist metamorphic assemblage. Most of the fine groundmass is a mixture of chlorite, biotite and plagioclase (An_{50-60}). Fine aggregates of epidote occur in the groundmass, and as layers parallel to the foliation. Biotite content is greater where foliation is more intense and where carbonate is present as veining and fill. Biotite-rich areas have less opaques. Magnetite is the dominant opaque (80%). Two phases of pyrite occur: an early, inclusion-rich phase is commonly rimmed by a later, massive phase. The later pyrite is concentrated in areas of carbonate enrichment. Earlier pyrite contains inclusions of iron oxide, chalcopyrite, and pyrrhotite. Locally, pyrite seems to replace iron oxide.

Shear zone material is highly brecciated: fragments of basaltic material are suspended within a matrix of quartz. The basaltic material maintains a lower greenschist facies assemblage, which is essentially chlorite, quartz, zoisite, and epidote, with fine sphene and opaques, and containing minor sericite, biotite and tremolite. The quartz-rich matrix contains abundant epidote and opaques, with lesser amounts of hematite, sphene and biotite. Epidote seems to be associated with areas rich in pyrite. Pyrite contains inclusions of chalcopyrite and pyrrhotite, as well as rare magnetite, arsenopyrite, and gold. Sphene is most common proximal to the sulphides. Much of the pyrite is rimmed by hematite, which also occurs along fracture margins and, with pyrite, in a botryoidal habit. Quartz flooding seems to have been contemporaneous with, or later than, brecciation. Although quartz fills fractures parallel to the schistosity, it also crosscuts the schistosity.

Whimster (1931) stated: "It was apparent from the data on hand, dealing with the former operations of the mine, that shafts #1 and #2, were believed to lie on the same vein and that shaft #3 lay on the Easterly extension of this vein. It is now quite certain that each of these shafts penetrated a separate vein. The pay ore was thus removed not from one vein, as formerly thought, but from two distinct bodies."

Thomson (1946) concluded that the quartz veins seemed small and discontinuous, and advised additional surface sampling to check the altered schistose wallrock.

DEVELOPMENT HISTORY

1897 - 1900: Discovered by Mr. Neil Campbell. Owned by The Ontario Prospecting, Mining and Development Co. of Rat Portage. Four shafts and several test pits were sunk; stripping, trenching, and open cutting were done; and a 29.6 m long adit was driven west on the main vein into a steep hill.

1930 - 1931: Seven claims were staked by P.H. Hutchinson and W.E. Wilson. The property was held by Hutch Mining and Exploration Ltd. Geological examination by H.M. Whimster.

1934: Trenching and sampling by Wendigo Mines Ltd.

1935 - 1936: Operated by Blue Star Mines Ltd. Shafts were dewatered and 9.7 m of drifting was completed on the 18.2 m level of shaft No. 2.

1937: Sinclair *et al.* (1937) summarized underground development to include (modified from Sinclair *et al.* 1937):

Vein No.	Shaft No.	Shaft Depth (metres)	Lateral Work (metres)	Level (metres)	Inclination (degrees)
1	1	12.2	--	--	80
2	2	20.4	15.8	18.2	80
3	3	11.3	--	--	90
4(main)	4	44.8	9.1	3	50

1945 - 1948: Surface work by P.W. Hutchinson.

1948: Sampling by Wright Hargraves Mines Ltd.

1960: Eleven holes drilled by persons unknown; total length about 794 m. Assay results were very poor (the highest assay was 0.02 oz Au/ton). The drill hole locations are unknown.

1972 - 1973: Airborne and ground electromagnetic and magnetometer surveys by Dome Exploration (Canada) Ltd. over 90 contiguous claims in Code and Manross Townships.

1981 - 1983: Stripping and trenching by E. Roberecki.

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120. SULTANA MINE (PAST PRODUCER)

COMMODITY
Gold

ROCK ASSOCIATION
Granitoid plug intruding metavolcanic rocks

CLASSIFICATION
4b, c

LOCATION
Sultana Island, Lake of the Woods:
NTS 52E/9NW
Lat. 49°42′44" (49.7122°)
Long. 94°24′01" (94.4003°)

ACCESS
The mine site is on old mining locations 42X and 43X, on the northwestern part of Sultana Island. It is about 8 km southeast of Kenora, from which it may be reached by boat.

SIZE AND GRADE
During the periods 1894 to 1902, 1904 to 1906, and in 1949, some 15,977 oz of gold were produced from 7,481 tons milled (Ferguson *et al.*, 1971, p. 182).

DESCRIPTION
Geology: West-facing basaltic flows and interbedded mafic fragmental rocks underlie much of Sultana Island (Figure 53) and represent the top of a tholeiitic sequence. These are overlain, along the northwestern side of Sultana Island, by intermediate to felsic, calc-alkaline flows and tuffs, with some interbedded cherty sediments. The contact is sharp, probably an unconformity, and has possibly been modified by faulting. The southwest-trending axial trace of the Sultana Syncline lies a short distance northwest of Sultana Island.

Porphyritic quartz monzonite, rimmed by massive, medium-grained quartz diorite, intrudes the basaltic rocks of the west-central part of Sultana Island, and possibly also the overlying intermediate and felsic rocks. The quartz monzonite has a weak to well-developed foliation and is gradational, over 1 m, with the quartz diorite, which typically lacks foliation. Both rock types are part of the Quarry Island stock, interpreted to be oval in outline with an area of about 2.5 sq. km. Strong shear zones are common in the quartz monzonite, and to a lesser extent in the quartz diorite.

Near the northern extremity of the quartz monzonite, shear zones up to 10 m wide, dipping steeply and striking about 020°, extend through the quartz monzonite, the quartz diorite and the basalt. Vein quartz is locally abundant in these shear zones.

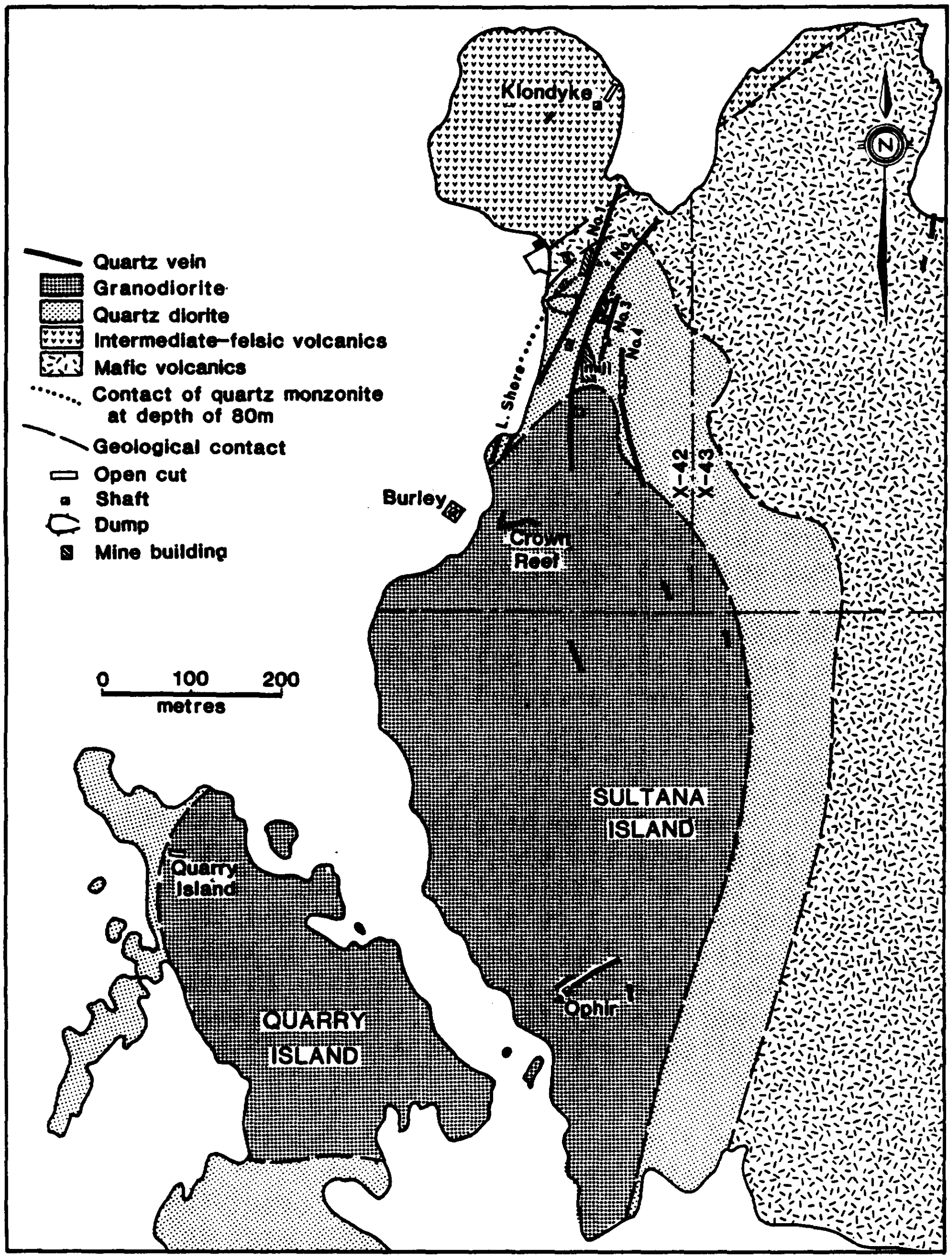

Figure 53. *Geology of Sultana and Quarry Islands, showing development at the Sultana Mine.*

Mineralization: Virtually all gold production from the Sultana Mine was from 6 veins near the northern end of the granitic stock. Deflection of the shear zones apparently took place at the contact between the quartz monzonite and quartz diorite, and it is here that some of the best ore was found. Information on the ore zones and veins is very sketchy and vein nomenclature is confusing and in part contradictory.

The No. 1, or Main, vein was the most profitable. This vein, termed the No. 3 vein by Blue (1893), strikes about 025°, dips very steeply, and has a known length of 250 m. Blue (1893) refers to one outcrop as "whitish-yellow quartz, 23 1/2 feet wide, and quite free from any portion of country rock. Sixty yards south, where the vein might be expected....there are only scattered stringers of quartz from one to six inches wide, but extending over a breadth of 30 feet". In 1892 there was a surface exposure near the northern end of the vein on which an open cut was made and a shaft sunk to a depth of 30 m. Here a zone of white quartz and sheared quartz diorite, 6 to 7.5 m wide, was reported to contain free-milling gold throughout. Blue (1893) stated that the central part of this vein consisted of "stratified quartz, carrying brown oxide of iron and some pyrites". At present, these workings are apparently concealed beneath a waste dump.

Underground access to the No. 1 vein was later gained from a shaft sunk on vein No. 2. A high stope, plunging about 65°N, was developed on the Main Vein and the ore was reported to be very rich (Figure 54). Drill results indicate that the stope is in porphyritic quartz monzonite. The zone of auriferous quartz and schist was mined over widths of up to 20 m (Bruce 1925) and almost 150 m down plunge from the 2nd to the 7th level, along a strike length of about 20 m. Below the 4th level, the ore zone narrowed rapidly; at the 7th level it was so narrow that it was believed to have been faulted (Bruce 1925), but exploration failed to prove this or to locate any significant extension of the ore.

Vein No. 2, also known as the Sultana or Gagne Vein, has an apparent length of over 300 m. In plan it is gently curving, with a strike of about 165° in the south and 035° in the north. The dip is about 80°W. The vein is exposed in quartz monzonite in a trench 120 m south of the old mill site and also in quartz diorite in the walls of the main shaft; in both places clear quartz, in one or more veins or lenses less than 40 cm wide, occurs in a strong shear zone, with minor pyrite present in the quartz and schist. Small-scale structural features in the schist indicate relative movement to be reverse, or west side up.

Neither the geometry of the vein, nor the extent to which it was developed, is adequately known. Ore was apparently obtained from both the upper and lower levels. L. Caldwell (19) records that the 'ore chute' in this vein plunged to the north and crossed the shaft between the 6th and 7th levels. Here the plunge steepened or reversed, and the 'ore chute' was followed by winzes to the 8th level where it was 9 m long and the width of the drift.

Vein No. 3 was said to crop out about 10 m to the east of Vein No. 2 and was considered by J. Caldwell to have been "one of the most valuable ore deposits on the property" (L. Caldwell 19). It was worked on the 1st. level, where it was reported to average 1.25 oz Au/ton (L. Caldwell 19).

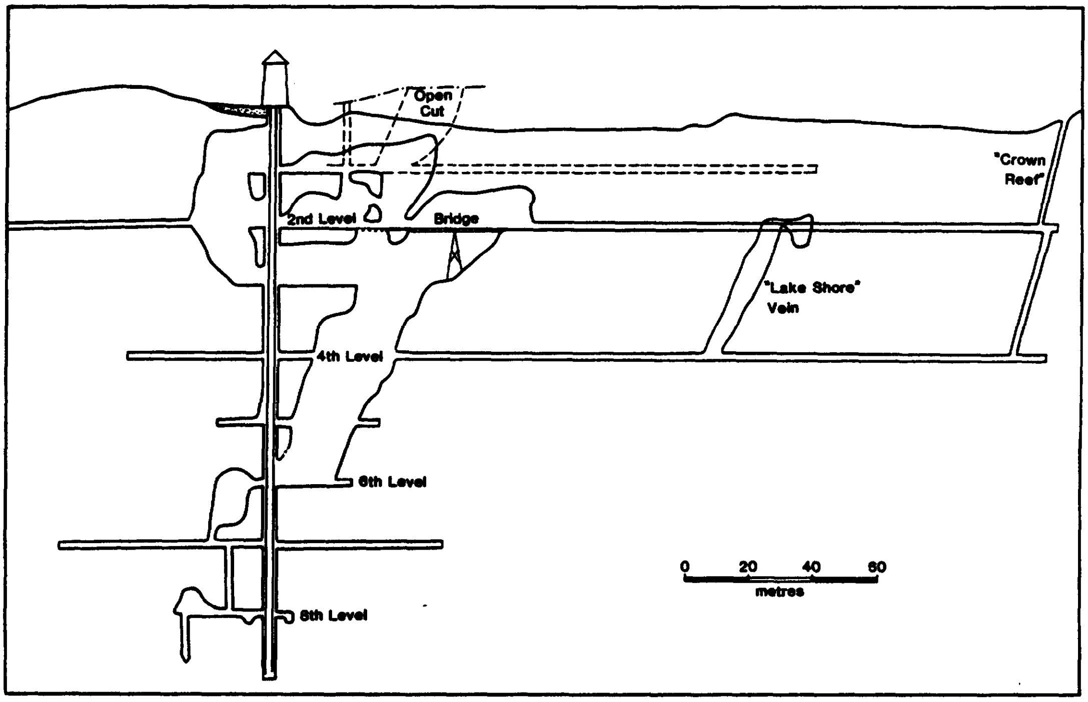

Figure 54. *Longitudinal cross-section of the Sultana Mine. Plane of section strikes N23°30'E. After Selected Canadian Golds Ltd. (1935).*

The No. 4, or Bullfrog Vein was referred to by Blue (1893) as No. 1 Vein. It is about 35 m east of Vein No. 2. It was worked from the 1st. level and is exposed in an open cut on the slope above the mill site. An old sketch indicated that the vein is 120 m long, but it is lensy and probably discontinuous. Blue (1893) stated that a shaft was sunk on this vein in 1892. From his description, the quartz was up to 90 cm wide, with 3 m of schist on the footwall and 3 cm on the hanging wall. He also stated that the ore, reported to contain up to 15 oz Au/ton, contained pyrrhotite, galena and pyrite, with minor chalcopyrite and sphalerite. The open cut is in quartz diorite, about 10 m from the quartz monzonite.

The Lakeshore Vein is about 20 m west of Vein No. 1, and is of unknown length. It was stoped between the 2nd. and 4th. levels at a point about 125 to 150 m south of the main shaft, the stope plunging steeply to the northwest. Caldwell (19) recorded that it was a "large body of low grade quartz", which averaged 0.4 oz Au/ton on the 4th. level. It probably occurs within the quartz monzonite.

The Crown Reef is a sinuous, north-dipping vein which intersects, at a high angle, the foliation in the quartz monzonite. Stoped from the 4th. level to the surface, the vein was reported to have assayed from 5 to 10 oz Au/ton (Caldwell 19). At surface, the stope is S-shaped in plan with a length of about 35 m and walls from 1 to 2 m apart; at depth the stoped length appears to have been about 50 m. The Sultana Mine of Canada, Ltd. did not own the mineral rights under the water to the west of the Crown Reef and it is not known how far west the Reef extends. Although quartz was reported to have been intersected beneath the Burley cribbing, it is not clear whether this quartz was part of the Crown Reef.

Biotite-chlorite schist with fine pyrite is common on the hanging wall of the Reef and is parallel to it. Veins and veinlets of sugary quartz occur parallel and at a high angle to the wall. While the sinuous open cut is believed to reflect continuous mining of a single vein system, it is possible that two or more intersecting veins were mined here.

The Klondyke Vein is near the northwestern extremity of the island and is hosted by intermediate volcanics. An open cut, 22 m long and trending 040°, reveals a 2 m wide vertical shear zone in which quartz occurs as lenses and stringers. The quartz contains only traces of pyrite although it was reported (Caldwell 19) to assay 0.4 oz Au/ton. The sheared wall rocks locally contain much fine pyrite and pyrrhotite. About 15 m southwest of the open cut, a shaft was sunk to an estimated depth of over 20 m and recovered ore was milled. According to Caldwell (19), work was discontinued when the large ore zone on Vein No. 1 was discovered.

The Galena Vein, upon which a shaft was sunk, was reported by Bruce (1925) to have been shown on old mine plans to the east of the Bullfrog Vein. As no shaft has been found at the surface in this location, it is possible that the Bullfrog shaft follows an east branch of the Bullfrog Vein to the 1st. level, where it was called the Galena Vein.

Other quartz veins were discovered on the Sultana Property, but the lack of extensive surface work indicates that the gold content was not significant. A pit exposing blocks of brecciated quartz containing chlorite, tourmaline and minor pyrite in the matrix, was sunk near the southeastern corner of location X-42. The pit, in quartz monzonite, trends approximately north and is about 75 m west of the contact with quartz diorite. A northeast-striking, irregular quartz vein (Pasha Vein?) with minor tourmaline and pyrite occurs in dacite, about 45 m west of the Klondyke shaft. A quartz vein in basalt was found at the northeast corner of X-43 (Figure 53), and was thought to extend south-southwest along a valley (Caldwell 19).

DEVELOPMENT HISTORY
1873: Sultana Island was included in Indian Reserve No. 38, which was set aside for the Rat Portage Band in accordance with the provisions of Treaty No. 3.

1875: A 21 year lease on Sultana Island was assigned to the Keewatin Lumber Co.

Circa 1880: Discovery of gold on Sultana Island.

1886: Indians surrendered the island for sale. Litigation began regarding ownership of the adjoining Ophir Mine property, which was not resolved until 1903.

1888: Patent 42X was issued by the Indian Department to H. Bulmer, Jr., J.H. Henesy, C.A. Moore and S.S. Covil. At least 6 different veins were identified, and 3 m deep test pits were sunk on each.

1890 - 1891: Locations 42X and 43X were purchased by J.F. Caldwell of Winnipeg. Prospecting operations proved at least 3 good veins, and established the possibility of a fourth. The vein numbering system subsequently became confused.

1887 - 1899: Caldwell continued working the property throughout this period, despite rumours of property sale, and involvement in complicated land disputes. Veins 1, 2 and 3 were believed to converge to the north; however, a 7.6 m shaft sunk on the proposed intersection encountered only small amounts of quartz. The only reported production was from the No. 1 Vein system. The original 10-stamp mill and cyanide plant were replaced in 1887 by a 30-stamp mill and chlorination process. Gold recovery reportedly increased to 86%, although previous recovery had not been noted.

By 1899, the main shaft had been extended to a depth of 122 m. Levels were established at 20, 38.4, 57, 79, 103 and 122 m depths; approximately 61, 93, 74, 72, 34 and 14 m of lateral work was completed on each level respectively. Numerous winzes connected various levels, and several air shafts were driven to surface for ventilation. At least 2 sublevels were driven from the winzes. Stoping was extensive and locally connected levels. Production was also reported from an open cut on the Crown Reef. During the winter of 1898, Burley Smith reportedly established the continuation of the Crown Reef Vein under Bald Indian Bay. Caldwell neglected to establish water rights west of the Crown Reef and was again involved in litigation.

1899 - 1903: The property was sold to an English syndicate. The Sultana Mine of Canada, Ltd. was incorporated, and Mr. Caldwell was named managing director. The main shaft was deepened to 161 m. On the 1st. level, lateral work was extended by more than 270 m. The workings crosscut to the early shafts on No. 3 and No. 4 Veins, using them for ventilation. Drifts were driven on the Sultana or Gagne or No. 2 Vein. The shaft on No. 4 Vein (known as the Galena Shaft) was deepened to 50 m. The 2nd. level was driven south, connecting with the Crown Reef Shaft at a 39 m depth. Total lateral work was extended to 373 m on this level. Some lateral work was reported on the 3rd. level, but exact details are not known. Level four was extended to intersect a winze from the Crown Reef workings; total lateral work was extended to 289 m. No work was reported on the 5th. level. Lateral workings on the 6th. level were extended to 35 m. Level 7 was established at 141 m, with 201 m of lateral work, and on level 8, drifts were driven from a shaft sunk 44 m on the Sultana Vein. A 3rd. shaft, sunk 23 m on the Pasha Vein, was north of the main shaft. Three diamond-drill holes were reported, totalling 235 m.

1902: The mine was allowed to flood due to a large inflow of water from the Crown Reef workings. Halladay (1973) claimed the Sultana workings connected to the Burley workings; using them for access and ventilation.

1903 - 1906: The mine was sold in May 1903 to the Sultana Gold Mine, Ltd. of Rat Portage. Caldwell was retained as managing director. Main workings were dewatered and blocked off from the original Crown Reef workings. Diamond drilling was continued. The main shaft was deepened to 183 m. Lateral work continued at a slower pace, and little is reported of the results. At least 80 m of lateral work was done on the 4th. level, and an additional 29 m on the 8th. level. Numerous winzes and raises connected the various levels, and stoping continued throughout the period.

1934 - 1935: Selected Canadian Golds, Ltd., a subsidiary of Ventures Ltd., optioned the property. The shaft was dewatered and sampled. Some 52 m of lateral work was done on the 4th. level; and 86 m, on the 7th. Approximately 1,070 m of underground diamond drilling was reported.

1943: Dump was sampled for tungsten by persons unknown.

1950: Caldwell interests acquired the Burley Property.

1951: Tailings were examined for gold. Some 73 post holes were driven with a 10 foot spacing. The results showed an estimated 8,000 tons averaging $6 Au/ton (1951 gold prices).

195-: The mill and shaft house burned.

1959 - 1961: Strathcona Mines Ltd. acquired the ground from the Caldwell interests. They completed geological mapping, rock trenching, sampling, and drilled 22 holes totalling 3,160 m.

1972 - 1974: Minaki Gold Mines, Ltd. did geophysical, geochemical and geological surveys. Six diamond drill holes were bored, totalling 707.5 m.

1981: Stripping and 1 diamond-drill hole by E. Roberecki.

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121. SWEDEN MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite and diorite

CLASSIFICATION
4c, d

LOCATION

Haycock Township:	NTS	52E/16SW
	Lat.	49°45'50" (49.7639°)
	Long.	94°19'51" (94.3308°)

ACCESS
The occurrence is on old mining locations D58 and 477P, about 700 m east of Breakneck Lake, and 1.3 km south of the Canadian Pacific Railroad main line.

DESCRIPTION
Geology: The area is underlain by quartz diorite of the Island Lake intrusion, which is characterized by the irregular occurrence of numerous mafic inclusions. The larger inclusions have been fractured and intruded by irregular bodies and diffuse veins of quartz diorite. The exposed bedrock in the vicinity of the old workings varies from predominantly basalt to predominantly quartz diorite.

Mineralization: The main zone cuts the inclusion-laden quartz diorite to the east of an area of muskeg and swamp, and consists of a 1 to 2 m wide shear zone striking 055° and and dipping 70°SE. A 2.5 by 3 m, inclined shaft was sunk 21 m in the zone at a point about 50 m from the swamp. Carbonate, quartz and thin discontinuous felsite dikes occur in the zone, but no distinct quartz vein was seen. A piece of quartz on the dump may indicate the presence of discontinuous quartz lenses up to 20 cm wide. Fine, disseminated pyrite occurs in sheared felsite, and small "pockets" of pyrite with minor chalcopyrite were noted in a piece of sheared quartz diorite, but most of the shear zone contains very little sulphides. Minor molybdenite, sphalerite and galena were also reported by Clark (1983), who indicated that the zone could be traced over 240 m.

ANALYSIS OF MINERALIZATION
Clark (1983) reported grab sample gold assays of 0.28 oz/ton, 7140 ppb (0.208 oz/ton) and 1460 ppb (0.042 oz/ton). The Colonist (1896) reported grades of $36.00 to $120.00 per ton from several assayed samples (gold at $20.00 per ounce).

DEVELOPMENT HISTORY
Prior to 1896: A shaft was sunk 9.1 m on the main vein.

1896-1897: The Sweden Gold Mining Company of Ontario deepened the shaft to 21.3 m and did 3 m of lateral work., Two additional veins were stripped and minor test pitting was done.

1983: Staked by P. Karwacki and G. Clark who did some stripping, sampling and a VLF survey.

1984: Optioned to Jalna Resources Ltd.

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122. THOR OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt

CLASSIFICATION
1a

LOCATION
Pipestone Peninsula, Manross Township:

NTS 52E/9SW
Lat. 49°37′02" (49.6171°)
Long. 94°21′57" (94.3659°)

ACCESS
Mining location S135 is on the southern part of Pipestone Peninsula, 4 km east-southeast of Pipestone Point. It is accessible by boat from Kenora or from Sioux Narrows.

DESCRIPTION
Geology: The uppermost part of the Bigstone Bay tholeiitic sequence in the vicinity of Witch Bay consists of south-facing basalt interlayered with peridotite and gabbro sills. The periodotite and gabbro are closely related, with the gabbro apparently forming the upper part of a differentiated sill, similar to that described by Davies (1978) at Shoal Lake. Overlying the tholeiitic sequence are calc-alkaline dacitic and rhyolitic volcanics, mainly tuff breccia and lapilli tuff.

On Pipestone Peninsula, west-northwest of Witch Bay, both mafic and felsic volcanics crop out between the mafic and ultramafic sills. This is interpreted to be due to isoclinal folding, similar to that at the Wendigo Mine, and possibly modified by faults which are parallel to lithology. A few small, irregular, granitic intrusions occur near the contact between basalt and the felsic volcanics.

Mineralization: At the Thor Occurrence, basalt is in contact with altered periodotite (Figure 55). A narrow, rusty-weathering zone of tuff, fine-bedded chert and a little magnetite iron formation occurs at the contact, which trends about 080°. A 20 to 40 cm wide shear zone, striking 135° and dipping 75°NE, contains a quartz vein which is up to 20 cm wide. The shear intersects the peridotite-basalt contact 10 m from the shore and at this point a shaft was sunk. Nearer the shore a pit was sunk in peridotite, and further to the northwest is a series of pits and trenches, most of which have caved in.

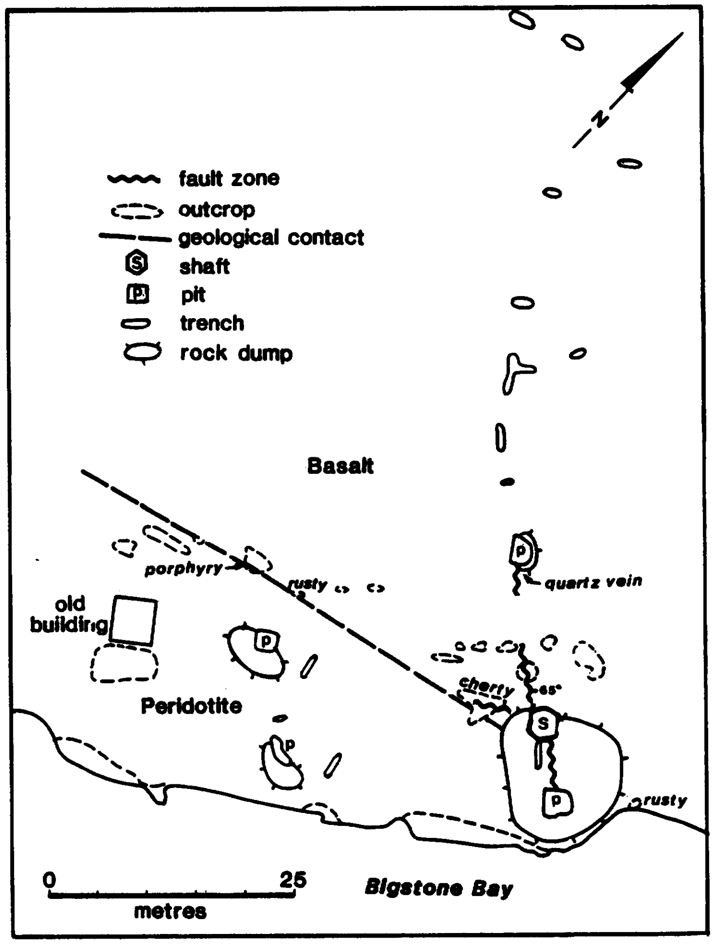

Figure 55. *Geology of the Thor Occurrence.*

The quartz vein contains minor disseminated pyrite and a few small pockets of pyrite. Disseminated pyrite is also present in the enclosing shear. A. Gauthier (personal communication) said that some spectacular specimens of gold were recovered prior to 1914.

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123. THRASHER-WILLIAMS OCCURRENCE

Also called Pipestone Point Occurrence

COMMODITY
Gold, silver

ROCK ASSOCIATION
Quartz-feldspar porphyry

CLASSIFICATION
4a

LOCATION
Pipestone Peninsula, Lake of the Woods:

NTS 52E/9SW
Lat. 49°37′24″ (49.6233°)
Long. 94°23′03″ (94.3842°)

ACCESS
Pipestone Point is about 17 km south-southeast of Kenora and is accessible by boat from Kenora or Sioux Narrows. The occurrence is 2.5 km east-southeast of Pipestone Point and is accessible by a trail leading east from a beach.

DESCRIPTION
Geology: Pipestone Peninsula consists of mafic and ultramafic sills or thick flows and intercalated, fine-grained basalt, overlain by felsic pyroclastics. Near the western end of the peninsula, a small body of altered quartz-feldspar porphyry occurs near the base of the pyroclastics.

Mineralization: Trenches sunk into the porphyry expose a series of east-trending quartz stringers. The stringers average 1 to 2 cm in width, are less than 1 m long and are spaced about 60 to 90 cm apart. Pyrite is disseminated in the sericitized porphyry, and galena, pyrite and sphalerite occur in the quartz stringers.

ANALYSIS OF MINERALIZATION
Channel sampling, reported to have been carried out in 1921 by Dome Mines Ltd., gave the following results:

0.08 oz Au/ton over 1.2 m,
0.58 oz Au/ton over 1.5 m,
0.15 oz Au/ton over 1.5 m, and
0.17 oz Au/ton over 1.5 m.

Chip sampling by Sylvanite Gold Mines Ltd. gave assays of 0.02, 0.04 and 0.08 oz Au/ton. Grab samples of massive galena (Chisholm 1949) contained traces of gold, and 61.78 and 13.43 oz/ton of silver.

DEVELOPMENT HISTORY
1921: Sampled by Dome Mines Ltd.

1932: Staked by J. Thrasher.

1945: Examined by Sylvanite Gold Mines Ltd.

1949: Examined by E. Chisholm.

SELECTED REFERENCES
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124. THREE FRIENDS OCCURRENCE

Also called Kenjoe, Kenjoseph and Clearwater Bay Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Sheared contact zone of basalt and intermediate pyroclastics

CLASSIFICATION
1a, 2a, b

LOCATION
Northwestern Zigzag Island, Ptarmigan Bay:

NTS	52E/10NW	
Lat.	49°41′37″	(49.6936°)
Long.	94°46′04″	(94.7678°)

ACCESS
The workings are located on old mining locations AL36, 37 and 38, near the northern shore of Zigzag Island, and 2.0 to 3.2 km west southwest of Zigzag Point. The area is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The Ptarmigan Bay area is underlain by mafic flows and interbedded intermediate to felsic flows and pyroclastics. These are mainly north-facing. Felsic and lapilli tuff predominate at the northeastern end of Zigzag Island, which lies between Ptarmigan and Clearwater Bays. Pyroclastic rocks are widely distributed in the Clearwater Bay Syncline, and to the west are overlain by clastic sediments, most of which are fine-grained. Patterson (1980) reported carbonate-rich sediments with quartz stringers in a mafic clastic rock near the south shore of eastern Zigzag Island. East- to east-northeast-striking foliation is locally well developed, and felsic porphyry dikes are common parallel to foliation (Thomson 1936).

Mineralization: A steeply dipping, east-northeast-trending zone of strong foliation occurs very near the contact between basalt and intermediate pyroclastics on eastern Zigzag Island. Veins, veinlets and lenses of quartz occur in the zone and are exposed on the upper part of a slope, about 200 m south of the northern shore of the island. The central shaft, about 2 m by 3.5 m at the surface, is inclined steeply south on a quartz lens having a maximum exposed thickness of about 50 cm. Ankerite is associated with the quartz; minor pyrite and sphalerite occur in the quartz, and pyrite is locally abundant in the adjacent schist. There is little exposure in the 1.2 by 1.8 m east shaft, or the water-filled, 2.1 by 2.7 m west shaft, but quartz in the dump is weakly mineralized and the adjacent schist contains pyrite and arsenopyrite. Patterson (1980) noted the presence of pyrite, arsenopyrite, pyrrhotite and galena in the quartz and the common occurrence of carbonate. Approximately 1 km to the west-southwest, an adit extends 15 m south from the lake shore and intersects silicified, foliated volcanics which are interpreted to be of pyroclastic origin. At the surface, and from 10 m to 35 m south of the shore, a large trench exposes quartz veins and veinlets in schistose volcanics. Fine pyrite and arsenopyrite are present in the quartz, both at the shore and in the trench, and Thomson (1936) noted traces of chalcopyrite. Thomson also reported trenches about 90 m west of the adit.

ANALYSIS OF MINERALIZATION

Thomson (1936) analyzed grab samples from the vicinity of the adit and from a trench to the west: these contained 0.02 oz/ton and a trace of gold, respectively. Patterson (1980) concluded that the quartz-bearing zone is over 900 m long and 1.8 m wide, but that "grade appears to be low (0.02 to 0.05 oz Au/ton)".

DEVELOPMENT HISTORY

1890-1891: A shaft was sunk by O. Dunais, and 15 m of drifting was carried out. The other two shafts, the adit and trenches were likely sunk at this time.

1936: The area was re-examined by Clearwater Bay Syndicate.

1980-1981: Denison Mines Ltd. completed geological, electromagnetic, magnetometer and soil-geochemical surveys.

SELECTED REFERENCES

Blue, 1896, OBM, Vol. 6, p. 49

Patterson, 1980, Assessment Report - Claims K575061-3, 560010, 12, 13, Assessment Files, Kenora

Thomson, 1936, ODM, Vol. 45, pt. 3, p. 30

125. THREE NUNS OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate to felsic pyroclastics

CLASSIFICATION
1a

LOCATION
Clearwater Bay, Lake of the Woods:

NTS 52E/10NW
Lat. 49°42′15" (49.7034°)
Long. 94°46′46" (94.7793°)

ACCESS
Mining location P552, presently used as a cottage lot, is directly accessible by the McCallum Point Road, or is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: The tuff and lapilli-tuff breccia of the Clearwater Bay area consists of felsic fragments in a more mafic matrix. Foliation is well-developed in most places, with clasts elongate parallel to foliation. Quartz veins and felsic dikes, which are nearly parallel to foliation, are present in a few places.

Mineralization: A shaft was shown by Thomson (1936) in the western part of mining location P552, but was not located during the present survey. The shaft was known, according to A. Gauthier (personal communication), as the Three Nuns Mine. There is no known record of work on the property.

SELECTED REFERENCE
Thomson, 1936, ODM, Map 45b

126. THUNDER OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°42'06" (49.7016°)
	Long.	94°21'27" (94.3575°)

ACCESS
The shaft is near the northern boundary of mining location 328P, about 240 m east of the beach at the northeastern end of Thunder Bay. It is 3.3 km south-southwest of the Highway 17 - Storm Bay Road intersection and may be reached via Branch Road 3 of the Storm Bay Road.

DESCRIPTION
Geology: The area is underlain by north-trending, west-facing, fine-grained, basaltic flows. The north-northwest-trending contact of the Dryberry batholith is about 400 m to the east.

Mineralization: Coste (1895) described the area as follows: "Bay to the East of Pine Portage Bay - Two veins have been discovered... One is on the east shore, 300 or 400 feet back into the woods; its strike is 170°. A few blasts only have been fired and show a clean fracture, thirteen feet thick, filled with white, glassy quartz, holding a little iron and copper pyrites and mispickel (arsenopyrite); a small speck of gold was visible in one specimen. The second vein is at the head of the bay, and is also some way back in the woods. Its strike is 10°, its thickness eleven feet, and it is filled with quartz in which no mineral is present. These two veins seem to dip towards the east, but they have not been sufficiently opened up...".

A third vein, probably located near the second vein referred to by Coste, is in sheared basalt. The shear zone strikes about 120° and dips about 70°NE. Quartz in the shear zone is up to 40 cm wide but is irregular, discontinuous, and essentially devoid of sulphides. A shaft, estimated to be about 7 m deep, followed the dip of the shear.

DEVELOPMENT HISTORY
Circa 1893: A shaft was sunk by G. Heenan.

SELECTED REFERENCE
Coste, 1895, GSC Report of Progress, 1892-83-84, pt. K, p. 9-10

127. TREASURE MINE (PROSPECT)

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite

CLASSIFICATION
4a

LOCATION

Haycock Township:	NTS	52E/9NW
	Lat.	49°44′55" (49.7485°)
	Long.	94°20′12" (94.3367°)

ACCESS
The old workings are about 2.2 km east of Hilly Lake and 650 m south-southeast of the southern tip of Breakrock Lake. The area is 9 km east of Kenora and may be reached by a dirt road which extends 1.1 km northeast from Highway 17.

SIZE AND GRADE
It was recorded by Webster (circa 1935) that "in November 1898 two mill runs were made at the Reduction Works at Keewatin, reported in the local newspaper thus - 33 tons of ore taken from the property, which yielded 29 oz of gold valued at $525.25 or about $16 to the ton. The gold is very pure and it is worth $18.25 an ounce. This mill run, however, is not so good as one made earlier, when two tons and a quarter of ore yielded $114.06 or a little over $50 to the ton."

DESCRIPTION
Geology: The Island Lake quartz diorite stock occurs between the Dallas batholith to the west and the Dryberry batholith to the east, separated from each by a northeastward-narrowing band of basalt. The western and southeastern contacts of the stock are relatively straight, but basalt inclusions, many of which have been partly digested, are locally abundant. A number of shear zones strike about 030° in the area, parallel to a dominant aerial photograph lineament set. East-northeast-trending mylonite zones have been identified in a few places. A felsite dike post-dates the mylonite.

Mineralization: The northern part of the Treasure Vein strikes 030° and dips about 75°NW (Figure 56). It lies in a shear zone which Webster (1935) believed could be traced across mining location 400P onto 409P. Mylonite, about 1 to 3 m wide, extends west-southwest from the southern corner of the No. 1 shaft for at least 100 m, and the southern part of the main Treasure Vein curves to intersect the mylonite at a low angle, where the Treasure Vein appears to pinch out. North of the No. 1 shaft, the vein is 15 to 60 cm thick and is at, or near, the well-defined hanging wall of the shear zone. The vein contains tourmaline, minor pyrite and carbonate, and erratically distributed visible gold. The gold occurs not only as isolated grains and small nuggets, but in pockets and as smears along slip surfaces (Cougar Mine Development Corporation 1957). The main shear, as exposed in the No. 1 shaft, consists of strongly foliated, chloritic quartz diorite alternating with weakly foliated quartz diorite, and has a maximum width of 2.5 m. Toward the footwall side of the shaft some of the quartz veins are curved and dissipate in horse-tail fractures so that they have little continuity (J. Langelaar, prospector, personal communication, 1984). The curved veins and small-scale structural features indicate that the vertical component of movement on the shear was west side up, *i.e.* reverse.

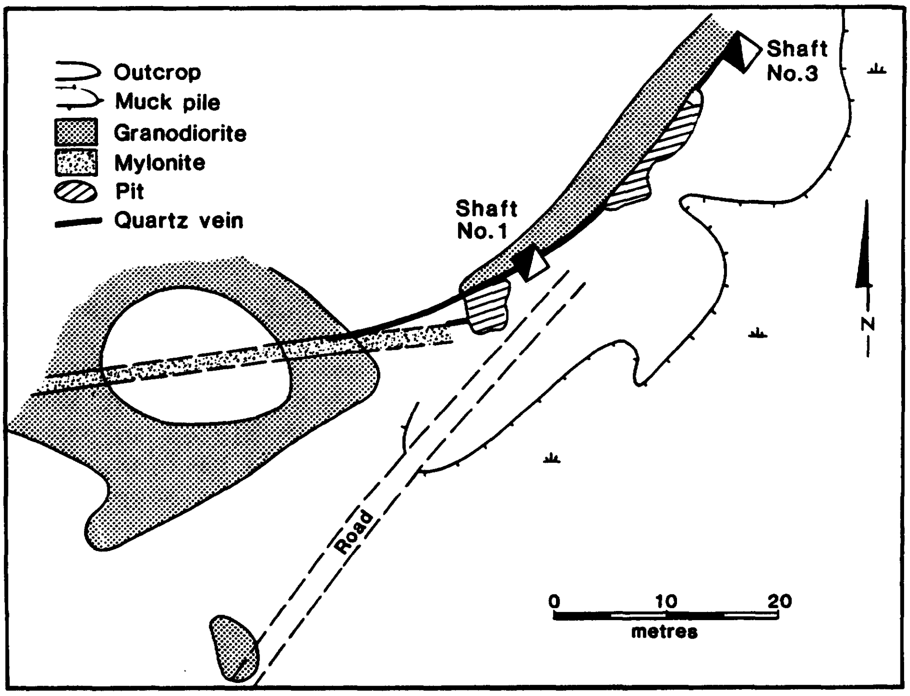

Figure 56. *Geology and development at the Treasure Mine Prospect.*

ANALYSIS OF MINERALIZATION

A 23 m chip sample taken in this study across the Treasure Vein and consisting of coarse, clear quartz with minor tourmaline, showed the gold to be erratically distributed: replicate analyses gave 20 ppb, 160 ppb, 690 ppb and 17.7 ppm gold. A grab sample from the open cut north of No. 1 shaft returned values of 34.0, 35.0, 52.5 and 77.5 ppm gold. A 53 cm chip sample of the footwall foliated quartz diorite, adjacent to the vein, returned 40, 80 and 140 ppb gold and a 2 m chip sample of the mylonite zone in the shaft contained 12 ppb gold.

DEVELOPMENT HISTORY

Circa 1891 - 1897: Purchased by Messrs. Angel and J.H. Webster. Two shafts were sunk: No. 1 was 2.1 by 2.7 m, 19.8 m deep, and inclined 80°W. An 11 m long crosscut was driven on the 15.2 m level. The No. 2 shaft is now known as the Treasure (east) Shaft.

1899-1900: A third shaft, also inclined 80°W, was sunk 30 m north of the No. 1 shaft. A.B. Upton, owner of the Triumph Mine, held the option. An open cut adjacent to the No. 3 Shaft was excavated over a length of 13.7 m, a width of 1.5 m, and a depth of 5.2 m. Some 29 oz of gold were removed.

Circa 1935: P.W. Webster attempted to promote the property.

1949: H.D. Ball drilled 4 short holes. The best assay result was $61.60 Au/ton over 1.5 feet (1.76 oz Au/ton over 46 cm). All 4 holes intersected narrow gold-bearing horizons.

1955-1956: Cougar Mine Development Corporation installed a bulk sampling mill and an amalgamation plant. The No. 1 Shaft was dewatered and stripping, trenching and test-pitting were carried out. This company concluded that "assays do not establish the existence of gold-bearing ore in commercial quantities".

1938: New Ambrose Mines dewatered shafts 1 and 3 and completed an underground sampling program.

SELECTED REFERENCES

Arnoldi, 1950, ODM, Vol. 59, pt. 1, p. 20
Ball, 1949, Treasure Claim P-400, Assessment Files, Kenora
Beard and Garratt, 1976, ODM, MDC 16, p. 40
Blue, 1893, OBM, Vol. 3, p. 30
The Canadian Mining Review, 1898, Vol. 17, p. 172
1899, Vol. 18, p. 276
1900, Vol. 19, p. 41
Cougar Mine Development Corp, 1957, Prospectus, SMDR Files, Kenora
Davies, 1963, Notes on Old Treasure Property, Resident Geologist's Files, Kenora
Ferguson *et al*., 1971, ODM, MRC 13, p. 151
Hoffmann, 1896, GSC, Section of Chemistry and Mineralogy, p. 128s
Slaught, 1892, OBM, Vol. 2, p. 234-235
Webster, Circa 1935, Treasure Mine, Assessment Files, Kenora

128. TREASURE EAST OCCURRENCE

Also called the Treasure South Occurrence

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite and mylonite

CLASSIFICATION
4c

LOCATION

Haycock Township	NTS	52E/9NW
	Lat.	49°44′50" (49.7472°)
	Long.	94°20′07" (94.3352°)

ACCESS
The shaft is in the east-central part of mining location P400, about 150 m southeast of the main Treasure shaft. The area is accessible via a dirt road which leads northeast from Highway 17 for 1 km, to the main Treasure shaft.

DESCRIPTION
Geology: The linear edge of a valley, striking 030°, lies 50 m east of the main workings of the Treasure Mine. East of this valley, medium-grained quartz diorite is exposed on a hill. A zone of strongly foliated, fine-grained rock of felsic composition trends east-northeast across the southern part of this hill, approximately parallel to the contact of the quartz diorite intrusion and 120 m north of it. The foliated rock is mylonitized quartz diorite, having a width of at least 2 m.

Mineralization: At the contact between massive quartz diorite and the mylonite, a near-vertical, 1.8 by 2.7 m shaft has been sunk in the mylonite. Rubbly, rusty chloritic shears, thin gouge zones, and an irregular quartz vein are exposed in the shaft. The vein, which is from 15 to 70 cm wide, contains minor pyrite and tourmaline; adjacent foliated quartz diorite contains up to 10% pyrite. Traces of molybdenite and sphalerite were detected on slip surfaces in the mylonite.

ANALYSIS OF MINERALIZATION
Beard and Rivett (1981) record that a trace of gold and silver was found in each of 6 chip samples taken across the width of the shear zone on both sides of the shaft, and that "A grab sample of quartz, from the rock dump ran 0.01 ounce of gold per ton and trace silver".

Chip samples taken during the present survey across the quartz vein, the foliated quartz diorite and the massive quartz diorite contained 17 ppb, 25 ppb and 15 ppb gold, respectively.

DEVELOPMENT HISTORY

Circa 1891 - 1897: Purchased by Messrs. J.H. Webster and Angel. Two shafts were sunk: No. 1 was the main Treasure shaft; No. 2, here referred to as Treasure East, was 15 m deep.

Circa 1935: P.W. Webster attempted to generate interest in the property.

Circa 1982: The muck pile was examined and a 10 ton bulk sample was removed.

SELECTED REFERENCES

Beard and Rivett, 1981, OGS, MP 95, p. 10
Blue, 1893, OBM, Vol. 3, p. 30
Webster, circa 1935, Treasure Mine, Assessment Files, Kenora

129. TRIGGS MINE (PROSPECT)

COMMODITY
Gold, silver, copper

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
la, o

LOCATION

Code Township:	NTS	52E/9SE
	Lat.	49°36′45" (49.6125°)
	Long.	94°10′00" (94.1667°)

ACCESS
The main workings occur on old mining locations McA 56 and 129, about 1 km north of the western end of Gibi Lake and about 0.6 km west of Riley Lake. The western end of Gibey Lake is accessible by a dirt road which leads south from the Witch Bay Road at a point 5 km from Highway 71. A trail leads 800 m north from Gibi Lake to the workings.

SIZE AND GRADE
At least 100 tons of ore were sent to Keewatin Reduction Works. The Canadian Mining Review (1899, p. 276) states, "A sample of (the ore) taken for 40 feet (12.2 m) along the crosscut, when assayed at the Keewatin Reduction Works, yielded at a rate of $6.07 (0.29 oz. Au) per ton."

DESCRIPTION
Geology: The bedrock of the area is predominantly fine-grained mafic flows which represent the upper part of the lower mafic sequence that occurs in the northern Lake of the Woods area. These lie on the southern limb of the Hay Island Antiform. Felsic pyroclastics overlie the basalts about 2 km to the south. To the north and east, the volcanics are truncated by the Dryberry batholith; the irregular margin of the batholith lies about 1 km to the north and northeast of the Triggs prospect, and a small body of granodiorite crops out about 100 m north of the main shaft.

The trend of the volcanics is about 070°, but most of the shear zone foliation strikes 060°. Foliation dips are consistently between vertical and 75°NNW.

Mineralization: The No. 1 and No. 2 Veins occur near the top of the south and north slopes of an east-northeast hill, respectively (Figure 57). The No. 1 Vein is presently best exposed in the main shaft, where it consists of a vertical, 1 to 1.5 m wide shear zone in which there is a 20 to 60 cm wide quartz vein. The quartz and enclosing schists are rusty; Campbell (1970b) noted that the "quartz is well mineralized in places with pyrite, pyrrhotite and chalcopyrite, and some good values in Au have been obtained form this vein and off the adjoining ore dump". Bow (1899) was advised that the "shaft followed a very rich pay streak for the greater part of the distance" but that, at depth, the vein flattened to the north. A second shaft, known as the Air Shaft (Bow 1901) although it is unlikely there is any underground connection between the shafts, lies 74 m west-southwest of the main shaft and reached a depth of 18.6 m. Trenches and pits in the vicinity of the Air Shaft suggest that the vein here trends about 070°. However, the drift at the 12 m level in the main shaft, trends 050°, and it is possible that the No. 1 Vein is really a series of *en echelon* veins at a small angle to the general trend of the mineralized zone.

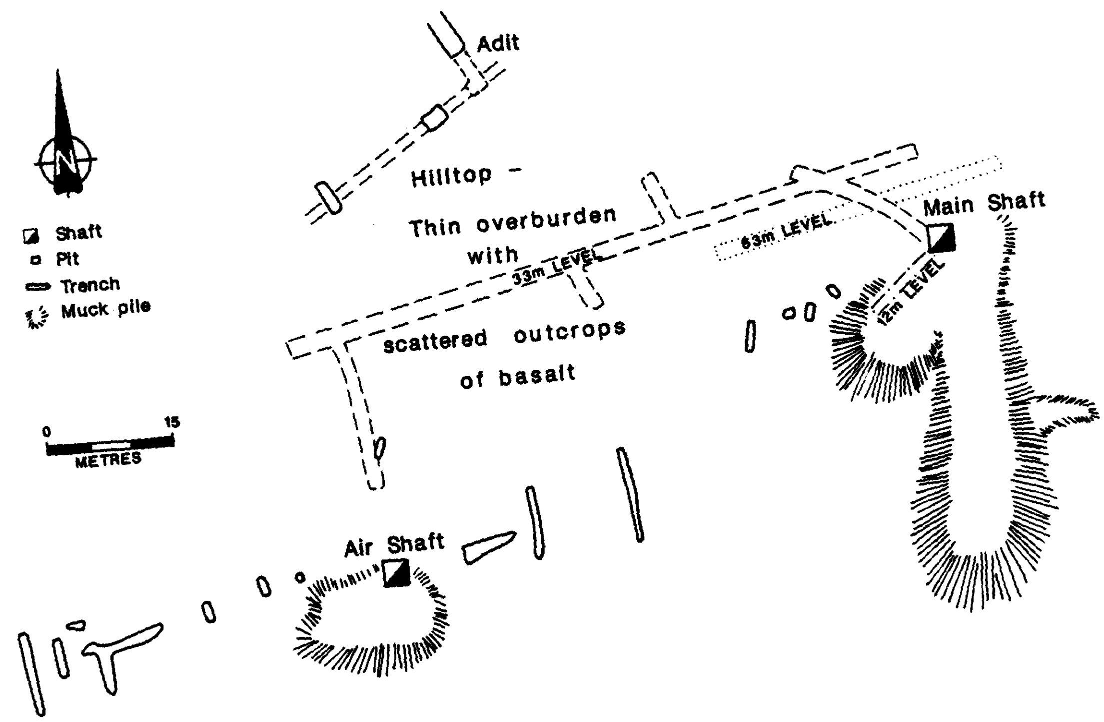

Figure 57. *Development at the Triggs Mine Prospect. The positions of the 33 m and 63 m levels are interpreted from Bow (1901) and are unlikely to be accurate with respect to surface features.*

No. 2 Vein is reported to have been traced up to 800 m. It consists of a quartz-bearing zone, exposed near the hill top in a pit, a deep trench, and a short adit. The strike of the vein is about 055° and the dip is steep to the north; the vein is irregular, and up to 20 cm wide in both the adit and the pit above the adit. The shear zone varies in width from 75 cm in the adit, to 3 m in the trench 22 m to the southwest. Pyrite, chalcopyrite and pyrrhotite occur in both the quartz and the enclosing schists, and are "said to assay well" (Bow 1899).

The position of the main drift on the 33 m level is difficult to explain; based on available information it does not appear that it was along the No. 1 Vein. Bow (1899) recorded that "the manager has made repeated tests, resulting in the conclusion that gold is contained to a sufficient extent and sufficiently diffused to warrant treatment of the whole mass between the veins. The quartz in the veins assays exceptionally high, and the greenstone between gives promising returns." The drift position may reflect this confidence in the potential of the greenstone. Underground development at the property is shown on Figure 52.

On mining location McA 130, about 350 m to the west-southwest, a zone of parallel, rusty shear zones, striking about 060° and dipping about 75°NW, was considered by Bow (1900) to be the extension of the No. 1 Vein. A 20 m shaft was reportedly sunk by previous owners (probably originally knwn as the Beck Mine). Pits in this zone expose lenses, veinlets and irregular veins of quartz, with pyrite present in both the quartz and the enclosing schists. Bow (1899) was also advised that a 9 m shaft had been sunk on location McA 138.

ANALYSIS OF MINERALIZATION

Fourteen grab samples taken by Rexora Mining Corporation averaged over 1 oz Au/ton. A bulk sample from the main shaft assayed 0.50 oz Au/ton, 1.5 oz Ag/ton, and 4% Cu (Campbell 1950b).

During the present survey the following grab samples were taken:

North Vein (pit above adit): sugary quartz with traces of pyrite in fine fractures

South Vein (Air Shaft dump): foliated basalt with sugary quartz veinlets and some pyrite, chalcopyrite and pyrrhotite

West Vein (dump 350 m west southwest of air shaft): streaky quartz, with pyrite associated with darker streaks

The North Vein sample contained 35 ppb Au; the other two contained in excess of 10 ppm Au.

DEVELOPMENT HISTORY

Prior to 1897: Shafts were sunk 20.4 and 9.1 m on mining locations McA 130 and 138 respectively. The former was probably known as the Beck Mine.

1897 - 1900: Triggs Gold Mining Co. of Ontario, Ltd. sank two shafts, and several test pits and trenches. The main shaft, on claim McA 129, was sunk 68.6 m, with 9 m of drifting on the 12 m level, 122 m of lateral work on the 33 m level, and 42 m of lateral work on the

63 m level. An adit was driven about 5 m to intersect No. 2 Vein at about 12 m. A vertical shaft was sunk 18.6 m, at a point about 74 m west-southwest of the main shaft and was apparently designed to be an air shaft. Some 100 tons of ore were shipped to the Keewatin Reduction works; results are not known.

1950: Geological mapping, trenching, and sampling were done by Rexora Mining Corporation, Ltd.

1961: Trenching and 3 diamond-drill holes totalling 170 m were completed by Macassa Mines Ltd.

1972 - 1973: Airborne and ground magnetometer and electromagnetic surveys were done by Dome Exploration (Canada) Ltd.

SELECTED REFERENCES

Beard and Garratt, 1976, ODM, MDC 16, p. 40
Bow, 1898, OBM, Vol. 7, p. 39
1899, OBM, Vol. 8, p. 63
1900, OBM, Vol. 9, p. 43-44
1901, OBM, Vol. 10, p. 72
Campbell, 1950a, Preliminary Report, Rexora Mining Corporation Ltd., Gibi Lake Property, Ontario, Assessment Files, Toronto
1950b, Report on Rexora Mining Corporation Ltd., Property at Gibi Lake, Ontario, Assessment Files, Toronto
Ferguson *et al*., 1971, ODM, MRC 13, p. 237
Macassa Mines Ltd., 1961, Diamond Drill Logs, Assessment Files, Toronto
Woodward, 1973, Electromagnetic and Magnetometer Survey for Dome Exploration (Canada) Ltd., Project 55 and North Portion 56, Manross, Code and Lemay Townships, Assessment Files, Toronto

130. TRIUMPH MINE (PROSPECT)

COMMODITY
Gold

ROCK ASSOCIATION
Mafic volcanic flows

CLASSIFICATION
1a, h, o

LOCATION

Haycock Township:	NTS	52E/9NW
	Lat.	49°44'45" (49.7458°)
	Long.	94°19'37" (94.3270°)

ACCESS
The original property consisted of mining locations I1, I2, P47 and X33, upon which 30 veins were identified (Bow 1898). The shaft was sunk in the northwestern part of location I1, or possibly the southern part of I2, and is about 700 m east-southeast of the Treasure Mine. From the yard of Tri-Lake Timber Co., situated on the northern side of Highway 17, a trail leads 1.2 km northeast to the shaft site.

DESCRIPTION
Geology: Northwest-facing tholeiitic basalt occurs in a band which lies between the Island Lake quartz diorite intrusion and the Dryberry batholith, and narrows to the northeast. The basalts are predominantly fine-grained flows, in part pillowed, and are interlayered with massive, medium-grained flows up to 300 m wide. Foliation in the rocks is mainly parallel to volcanic stratigraphy. Felsic dikes are rare.

The Triumph vein is in fine-grained basalt, less than 50 m east of a 120 m thick, medium-grained flow. It is about 700 m northwest of the contact with the Dryberry batholith and 300 m southeast of the Island Lake quartz diorite.

Mineralization: Foliated basalt, striking 050° is exposed in the southern corner of the shaft. The orientation of the shaft, however, indicates that the strike of the vein at the surface was probably 110°. A very narrow shear zone, containing a 5 mm wide, discontinuous stringer of quartz, cuts basalt 60 m east of the shaft: it strikes 100°, dips steeply south, contains a trace of pyrite and may represent the continuation of the Triumph vein.

Coleman (1896) recorded that the quartz vein was very irregular, that it was in shattered and greatly altered green diabase, and that it had a width of 3 to 4 feet at a depth of 55 feet. The vein contained large quantities of sulphides and some free gold. By 1898 the shaft had been sunk to 226 feet (69 m); on the 107 foot (32.6 m) level drifting was begun to the east and west but "both drifts curve sharply to the east until about parallel, forming almost a half circle" (Bow 1899).

Mineralized quartz from the dump is mainly sugary and white, but there is some later clear quartz together with traces of sphalerite. Blue (1898) reported that there are 30 other veins on the property.

ANALYSIS OF MINERALIZATION
Coleman (1896) noted that ore which was run through the mill assayed about 1.25 oz Au/ton but that only 0.5 oz Au/ton was recovered.

DEVELOPMENT HISTORY
Circa 1895: Property consisted of mining locations I1, I2, P247 and X33, owned by C.S. Morris.

1896: Shaft sunk to 17 m. Property sold to E. Barnes and A. Upton. Work was halted during summer.

1897: Work recommenced July 1. Property sold to Triumph Mining Company in September. Shaft sunk to 34 m by year's end.

1898: Shaft reached depth of 69 m. At 32 m level, drifting 11 m east and 13 m west. Work suspended in September.

1912: Incorporation of The Kenora Golden Mines Ltd.

1952: Property forfeited to the Crown.

SELECTED REFERENCES
Blue, 1898, OBM, Vol. 7, pt. 1, p. 27
Bow, 1899, OBM, Vol. 8, p. 55-56
Coleman, 1896, OBM, Vol. 6, p. 26
DeKalb, 1899, OBM, Vol. 9, p. 42
Gibson, 1913, ODM, Vol. 22, pt. 1, p. 54
The Canadian Mining Review, 1898, Vol. 17, p. 172, 327

131. TYCOON MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Altered quartz diorite

CLASSIFICATION
4c

LOCATION

Bag Bay in Shoal Lake:	NTS	52E/10SW
	Lat.	49°35′55" (49.5986°)
	Long.	94°57′34" (94.9594°)

ACCESS
The property originally consisted of three small islands, D219, D220 and D221, and the surrounding water location JES 54. The shaft is on Island D219, 1.2 km northeast of Cedar Island and 3 km south of Clytie Bay Landing. The property may be reached from Clytie Bay Landing or from Kenora, via Ash Rapids.

DESCRIPTION
Geology: The area is underlain by quartz diorite of the Canoe Lake stock. The nearest outcrop of basalt is about 700 m south of the shaft. Heterogeneity of the quartz diorite and the presence of east-trending shear zones were indicated by geophysical surveys carried out by Tasu Resources Ltd. over the islands and the surrounding water. A study of drill core by Valliant (1979) concluded that potassic alteration of the quartz diorite has occurred in the vicinity of the Tycoon prospect. Similarly, Campbell (1973) concluded that parts of the quartz diorite stock had been subject to potassic, phyllic and propyllitic alteration.

Mineralization: The Tycoon property was considered to be on strike of the Mikado Vein. Under the direction of the manager of the Mikado Mine, 5 holes, totalling 713 ft (217 m), were drilled on locations D219 and D221. A vertical shaft was sunk 28 m following the release of the following assays (Breidenbach 1898):

Mining Location	Hole No.	Depth (ft)	Assay Width (ft)	Quartz Veins Number/Total Width (ft)	Assay per ton (Au = $20/oz)
D221	1	120-133	11	1/11	$19.00
D221	1	155-175	20	3/5.7	$13.00
D219	2	0-60	60	7/19	$24.10
D219	2	106-126.5	20.5	2/10.5	$57.65
D219	3	42-77	35	1/26	$ 6.70
D219	3	120-128	8	1/6	$16.50

A thin, pyritiferous quartz vein is exposed near the shore line west and southwest of the shaft, which was probably sunk on a similar vein. However, it has been reported (Park 1979) that "assay values correlate well with samples which exhibit fracture controlled alteration and which contain related disseminated pyrite". The alteration may be marked by sericite, chlorite, epidote, carbonate and hematite; and by a decrease in magnetite and corresponding increase in pyrite, whether or not quartz is associated with the fracture. Chalcopyrite and pyrrhotite have also been detected along fractures.

Following the drilling of 5 holes in 1978, Tibbo (1979) concluded that "the report by Breidenbach was shown to be erroneous".

ANALYSIS OF MINERALIZATION
Core assays from 3 holes drilled in 1934 included 0.4 ft of $0.40 Au, 0.5 ft of $46.00 Au, 1.5 ft of $8.20 Au and 0.8 ft of $25.40 Au. Tibbo (1979) assayed 160 drill core samples, of which 22 assayed nil gold, 117 assayed trace gold and 19 samples assayed 0.01 oz Au/ton or greater (the best intersection was 0.28 oz Au/ton over 3.5 ft).

DEVELOPMENT HISTORY
Circa 1896: J. Emmons, H. Langford and M. Kyle patented 3 small islands, D219, D220 and D221.

1898 - 1901: J. Conmee formed the Tycoon Mining and Development Company of Ontario, Ltd., and acquired the 3 islands and water location JES 54. Five holes were drilled and a shaft was sunk.

1934: Three holes drilled by persons unknown.

1964: Examined by G.F. Ennis.

1972 - 1974: Staked by C. Kuryliw; magnetometer and EM-17 surveys completed.

1978: H. Tibbo, in partnership with Pancontinental Mining (Canada Ltd., drilled five 200-ft holes.

1981: Tibbo formed Tasu Resources Ltd. and completed magnetometer and EM-16 surveys.

1983: Tasu Resources drilled two 105 m holes from island D219.

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132. UNICORN OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Sheared basalt

CLASSIFICATION
1b

LOCATION
Near Zigzag Point in Clearwater Bay, Lake of the Woods:
NTS 52E/10NE
Lat. 49°41'32" (49.6922°)
Long. 94°44'58" (94.7494°)

ACCESS
The shaft is on former mining location D184, the eastern part of an "island" off the southern side of Zigzag Point, and separated from the Point by a swampy area. The occurrence is approximately 20 km west-southwest of Kenora and 3.2 km north of the east tip of Victoria Island, and is accessible by boat from Kenora or Clearwater Bay.

DESCRIPTION
Geology: North-facing, fine- to medium-grained, massive to pillowed basaltic flows on Zigzag Island are overlain by intermediate to felsic pyroclastics. The pyroclastics and argillaceous sediments to the east mark a synclinal axis which extends eastward through Clearwater Bay. Foliation strikes east to northeast. A number of felsic porphyry dikes, striking approximately parallel to foliation, have been mapped by Thomson (1936).

Mineralization: At the occurrence, foliated mafic flows predominate and enclose minor chlorite-sericite schist which appears to be more felsic. Near the eastern end of the "island", a white quartz vein about 1 m wide cuts chlorite-sericite schist at a small angle; the vein contains carbonate but only a trace of pyrite. West of this, a 2.5 by 1.8 m, near-vertical shaft was sunk on a hillside about 6 m north of the shore. Discontinuous, *en echelon* lenses of quartz up to 70 cm wide occur in the walls of the shaft. Foliation here strikes about 060°, with steep south dips. Rock on the dump is mostly chlorite-sericite schist with abundant carbonate. Only a few pieces of quartz are present, and these contain minor pyrite and black tourmaline. It is possible that quartz was sent for milling.

DEVELOPMENT HISTORY
Thomson (1936) indicated the shaft location on Map 45b, but no other reference to the occurrence was found in the literature. According to A. Gauthier (personal communication), an Englishman named McMillan

supervised the work about the turn of the century. The shaft is estimated to be 10 to 15 m deep.

SELECTED REFERENCE

Thomson, 1936, ODM, Map 45b

133. VICTORIA ISLAND OCCURRENCES

COMMODITY
Gold

ROCK ASSOCIATION
Felsic, intermediate and mafic volcanics

CLASSIFICATION
1a, 2a, d

LOCATION
Victoria Island, Ptarmigan Bay, Lake of the Woods:
NTS 52E/10NW
Lat. 49°39′55" (49.6388°)
Long. 94°46′53" (94.8923°)

ACCESS
Victoria Island is 24 km west-southwest of Kenora and 6 km south of the highway access point to Clearwater Bay. It may be reached by boat.

DESCRIPTION
Geology: Mafic flows are interbedded with intermediate and felsic pyroclastics in the Ptarmigan Bay area (Thomson 1936). The volcanics are believed to be north-facing. The eastern extension of the Crowduck Lake - Witch Bay Shear Zone passes to the south of the island. East-striking foliation is well-developed in places. Felsic dikes, most of which are parallel to foliation, are common in the area.

According to Chisholm (1949), fine- to coarse-grained pyroclastics are interbedded with mafic volcanic flows on Victoria Island, with a layer of rhyolite along much of the northern side of the Island.

Mineralization: A pit near the northern shore in the central part of the island was sunk on an east-northeast-trending, vertically dipping quartz stringer zone about 2.4 m wide in quartz porphyry. Arsenopyrite and pyrite are present in the quartz (Chisholm 1949). At the shore, and 30 m to the west, a 10 m wide quartz porphyry dike enclosed by rhyolite appears to be unmineralized.

At the northernmost tip of the island, a 1.8 m wide quartz vein containing ribbons of coarse arsenopyrite and minor chalcopyrite has been traced about 45 m. The vein strikes 050°, dips vertically, is enclosed by basalt, and has been explored in three trenches. In the central and southern part of the island, several east-northeast-striking quartz veins have been located. These veins are 2.4 to 3.0 m wide, and contain minor pyrite and arsenopyrite (Chisholm 1949).

ANALYSIS OF MINERALIZATION
Eight separate locations were sampled and assayed by Chisholm (1949). The vein in basalt contained 0.01 oz Au/ton; all other samples contained only trace gold.

DEVELOPMENT HISTORY
Circa 1900: Pit sunk near northern shore by H. Foster.

1937: Pit sampled by Albert Gauthier.

1949: Island staked and prospected. Area examined by E. Chisholm.

SELECTED REFERENCES
Chisholm, 1949, Resident Geologist's Files, Kenora
Thomson, 1936, ODM, Vol. 45, pt. 3
1936, ODM, Map 45b

134. WENDIGO MINE (PAST PRODUCER)

COMMODITY
Gold, silver, copper

ROCK ASSOCIATION
Mafic metavolcanic flows, intruded by mafic to ultramafic sills

CLASSIFICATION
1a

LOCATION

Manross Township:	NTS	52E/9SE	
	Lat.	49°35′56"	(49.5989°)
	Long.	94°14′05"	(94.2347°)

ACCESS
The original property, 25 km southeast of Kenora, consisted of mining locations MH 208, 209, 210, and was later expanded to include 30 contiguous claims. The main shaft is about 300 m south of the southeastern end of Lac La Belle, or about 800 m north of the eastern end of Witch Bay. The old mine site may be reached via the Witch Bay Road off Highway No. 71. The area may also be reached by boat from Kenora.

SIZE AND GRADE
In the years 1900, 1936 to 1943, and 1951 to 1967, 67,423 ounces of gold, 14,762 ounces of silver, and 1,886,246 pounds of copper were produced from 206,054 tons of ore milled. The average grade of ore milled was 0.33 oz Au/ton.

DESCRIPTION
Geology: Regional mapping in the area has been done by Suffel (1930) and Ayer (1984). In the area, felsic and mafic metavolcanic rocks have been intruded by a series of mafic and ultramafic sills, and subsequently folded into a series of tight anticlines and synclines (Figure 58). The Dryberry batholith intrudes the volcanics and subcrops 2.5 km north of the mine; it forms the core of the Hay Island Antiform, the axis of which trends southwest through Bigstone Bay. The Wendigo Mine lies on the southern limb of the anticline, within east-trending stratigraphy. The metamorphic grade in the area is lower greenschist facies.

Felsic pyroclastic rocks are exposed along the shore of Witch Bay, south of the mine. Most of the felsic rocks are intensely deformed, commonly to sericite schist. Where primary features are preserved, the pyroclastics face south (Ayer 1984). The felsic sequence has been interpreted to be the locus of an extensive fault system which Ayer (1984) called the Andrew Bay - Witch Bay Fault Zone. This may be an extension of the Crowduck Lake - Rush Bay Fault Zone, which

Davies (1965, p. 29) suggested could be traced over 70 km across the Lake of the Woods.

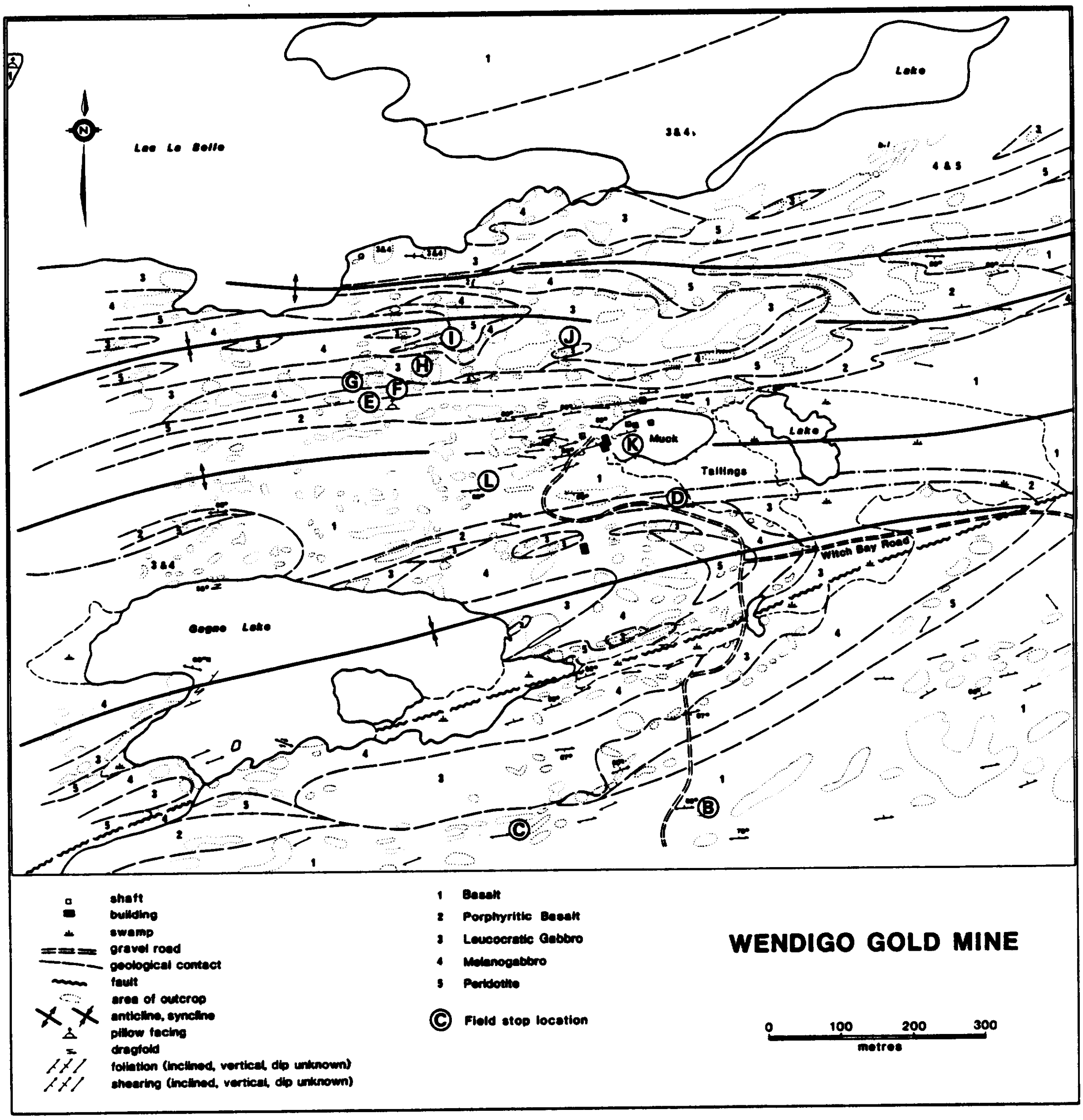

Figure 58. *Geology of the Wendigo Mine area. From Smith (1984).*

The Wendigo Mine site is primarily underlain by porphyritic and aphyric basalts, which have been intruded by gabbro and peridotite sills. Both massive and pillowed varieties of aphyric basalt underlie the property. The basalt is mainly fine-grained, and some of the medium-grained basalt present may represent subvolcanic intrusions. Composition varies from tholeiite to high-iron tholeiite. Fine-grained, massive basalt consists principally of chlorite, epidote, plagioclase (albite-oligoclase), and a mixture of clinozoisite, sphene, leucoxene, remnant hornblende, and minor opaques. Texturally the basalt varies from weakly foliated to schistose. Eighty thin sections from the mine were examined by Brownell (1941); some showed remnants of original feldspars and hornblende, but most were mixtures of chlorite, epidote, carbonate, quartz and leucoxene.

The porphyritic basalt overlies the massive basalt. Pillows of porphyritic basalt observed near the shaft face north. This basalt is compositionally an Mg-tholeiite and contains up to 20% white feldspar phenocrysts from 0.5 to 3.0 cm in length. The phenocrysts have been replaced by epidote, carbonate, quartz and sericite. The groundmass is essentially an intergrowth of chlorite, actinolite, albite, epidote, sphene and magnetite. Porphyritic basalt is altered and deformed in places to chlorite schist.

Much of the property is underlain by gabbro and peridotite, which are interpreted to be thick, differentiated sills. Fine-grained peridotite, which commonly overlies the porphyritic basalt, forms the stratigraphic base. The peridotite, where less altered, is composed principally of serpentine, talc and magnetite. Chlorite, carbonate, leucoxene and specks of pyrrhotite or pyrite are typically present. Primary textures are partially retained and indicate that the original rock consisted of abundant, 0.2 - 0.7 mm, rounded olivine and subhedral orthopyroxene and clinopyroxene grains. In most places the peridotite is overlain by medium- to coarse-grained melanogabbro, which is commonly overlain by leucogabbro. Locally, the melanogabbro is magnetic and displays rhythmic layering, but more commonly it is non-magnetic and massive. Magnesium clinopyroxene was originally the main constituent of the melanogabbro, occurring as 2 - 3 mm, randomly oriented, subhedral grains. The pyroxene has been replaced by chlorite, which subsequently was partially replaced by tremolite. The matrix is now a mass of pale green chlorite and fine fibrous tremolite. Scattered specks of sphene occur in pyroxene pseudomorphs, but there is no magnetite. In more highly strained masses, abundant clear amphiboles are replaced by tremolite, carbonate and talc. The leucogabbro is noticeably more felsic, consisting of 2 - 5 mm, subhedral, clear amphiboles, replacing original pyroxenes, and interstitial, close-packed clusters of 1 mm plagioclase laths, largely replaced by zoisite and minor albite. The original feldspar:pyroxene ratio must have been close to 1:1. In places the leucogabbro contains feldspar phenocrysts up to 3 cm in size.

In some locations, gabbro intermediate in composition between melanogabbro and leucogabbro is present. Contacts are difficult to discern: all three phases occur in some outcrops. Brownell (1941) stated, "The contact between all three phases can only be set arbitrarily in many places because of the manner in which the diorite (leucogabbro) penetrates the earlier hornblendite (melanogabbro). In some places the diorite has soaked into the hornblendite creating an intermediate product; in others there is a more or less brecciated contact with fragments of hornblendite floating in all stages of assimilation; or there may be narrow stringers of diorite threading through the earlier rock. In all of these, the diorite maintains its coarseness of texture, a fact which suggests no rapid loss of temperature when it comes in contact with the hornblendite."

Coarser peridotite occurs as dikes and narrow layers in the cores of the sills, and as dikes or sills in the basalt. In places this peridotite displays rhythmic layering. The succession, peridotite-melanogabbro-leucogabbro, has been used to suggest the presence of fold axes within the map area, trending east and plunging steeply towards the west.

Mineralization: Gold mineralization seems to be restricted to zones of silicification, notably 4, east-trending, steeply north-dipping veins. All the veins were explored while the mine was in operation, but production was restricted to the No. 1 Vein. In general, the attitude of the veins is close to that of the enclosing lava flows. They occur in both the porphyritic and aphyric basalt, much of which has been altered to chlorite schist. The south (ore proximal) side of a parallel peridotite sill has been altered to a soft "talcose" rock.

The No. 1 (Main) Vein is hosted primarily by aphyric basalt. However, a plan of the geology of the 500 ft level (Brownell, circa 1943) shows that the vein is not conformable to the stratigraphy, but cuts through the aphyric basalt and follows the contact between it and the porphyritic basalt (Figure 59). Much of the basalt has been altered to chlorite schist. Proximal to the vein, the schist is greatly enriched in carbonate and quartz, and contains abundant epidote and zoisite, minor sphene, and lesser amounts of clinozoisite, opaques and sericite. Less-deformed material contains remnant actinolite and feldspar, which in places forms the cores of augen, elongate within the plane of the foliation. The Main Vein, which strikes 080° and dips about 79°N, maintains an average width of 30 cm, pinching and swelling to a maximum width of 76 cm. The plan of the 500 ft level indicates that the vein in places occurs *en echelon*, or is discontinuous. Quartz is well mineralized with pyrite, pyrrhotite and chalcopyrite. Locally the sulphide content is greater than that of the quartz. Thompson (1935) estimated that, throughout the mine, half the vein material was sulphide. He noted that "pyrrhotite and chalcopyrite form the bulk of this material and that chalcopyrite is the dominant sulphide. The vein quartz is generally well fractured, and the sulphides are often concentrated near the outer margin, but in a narrow vein the sulphide impregnation is quite uniform. The schist immediately adjoining to quartz is often well mineralized with sulphides." Milky-white, unmineralized quartz veins, locally containing traces of ankerite, are present at

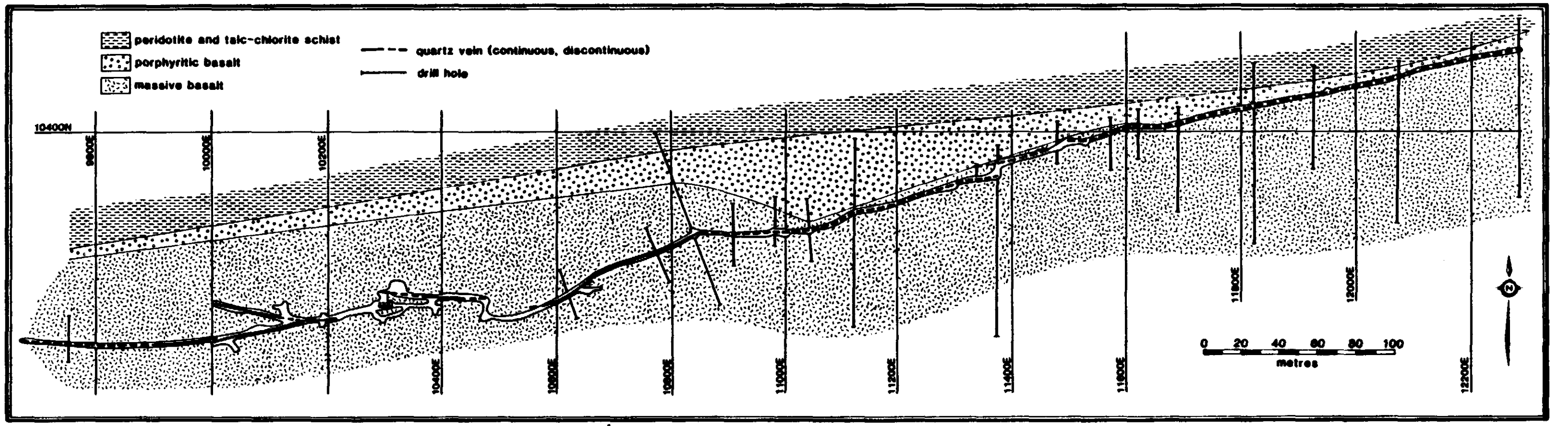

Figure 59. Plan of the 500 level, Wendigo Mine. From Smith (1984).

the surface and underground, and in places cross-cut the mineralized quartz. These seem to indicate two generations of silicification (Thomson 1935).

Veins 2, 3 and 4 are located about 460 m east of the main shaft on No. 1 Vein. Vein No. 2 trends 082-087° and dips 78°N. It has been traced over a strike length of 118 m, and drilling indicates that it extends an additional 46 m to the east and 70 m to the west. Vein No. 2 is hosted by porphyritic basalt, and is essentially a series of quartz lenses up to 60 cm wide within a shear zone. Quartz is mineralized with pyrite and a little chalcopyrite. Thomson (1935) reported native gold and a telluride, probably tetradymite, occurring in the eastern end of the exposed vein.

No. 3 Vein crops out along strike from, and is parallel to, the No. 1 (Main) Vein. It is less than 75 m south of the No. 2 Vein, and has been followed over 180 m. Test pitting revealed lenticular masses of quartz up to 30 cm wide, containing some sulphides.

No. 4 Vein is south of, and is similar to, the No. 3 Vein. It has been exposed in several test pits, and trends slightly south of east.

A fifth vein has been examined northwest of the Main Vein; some sampling was done, returning only trace gold.

A hole drilled north from the 518 m level encountered a section of silicified greenstone north of a peridotite sill. This section assayed $7.75 (0.22 oz) Au/ton over 2.1 m (Brownell 1943). It is not known whether further exploration was continued on this new "vein", although it was recommended by Brownell (1943).

Petrography, on polished sections prepared from bulk samples, was done by Ore Dressing and Metallurgical Laboratories in 1934 and 1935. The samples must have been taken from above the 157 m level. This work showed native gold to be present as relatively coarse grains within a very translucent quartz. Pyrite and chalcopyrite are the dominant sulphides, with minor amounts of pyrrhotite, sphalerite and arsenopyrite. Brownell (1943) noted distinct mineralogical changes in the vein which directly related to a sudden decrease in gold content. In the upper levels of the mine, gold was accompanied by pyrite and chalcopyrite. The 335 m level marks the transition zone. Pyrrhotite, which is relatively minor above this level, becomes increasingly more abundant through this zone, and is the dominant sulphide below the 335 m level. Where pyrrhotite is dominant, the vein ceases to yield ore. Brownell suggested that this relationship is essentially temperature dependent; pyrrhotite is normally deposited at higher temperatures than are pyrite, chalcopyrite and gold, so that below the 335 m level temperature conditions were interpreted to have been unfavourable for precipitation of gold and copper. Brownell referred to similar situations at other deposits, *i.e.* the Sherritt Gordon Mine, where the underlying pyrrhotite bodies were referred to as the "roots" of an ore deposit, and concluded that additional ore could not be expected below the 335 m level at the Wendigo Mine.

ANALYSIS OF MINERALIZATION

The No. 1 or Main Vein reportedly contained the following values: 0.24 oz Au across 24 in for 212 ft; 0.46 oz Au across 21 in for 303 ft; 0.60 oz Au across 30 in for 128 ft, and 0.40 oz Au across 30 in for 388 ft (Thomson 1935, p. 38).

Chemical analyses of samples of weakly altered and less deformed basalt (including the porphyritic basalt), taken some distance from the mineralized horizons during this study, indicated background gold values ranging from <2 to 7 ppb. All lithologies within the gabbro sill contained <2 to 2 ppb Au.

A sample of milky-white quartz with no visible sulphides, taken from the southeastern corner of the peninsula on the western side of Gangue Lake, assayed 1560 ppb Au. The quartz is hosted by strongly sheared gabbro. This location is close to the axial trace of the syncline which trends east through Gagne Lake.

DEVELOPMENT HISTORY

Prior to 1899: Owned by I. Gagne.

1899: Work initiated by a Toronto-based syndicate. A shaft was sunk 18 m, and work began on a second shaft located to the west, along the Main Vein.

1900: Wendigo Mines of Canada, Ltd. was formed. The Main (east) shaft was deepened to 33 m, and 15 m of lateral work was done on the 15 m level. The No. 2 shaft was 2.1 by 2.7 m by 23 m deep, and 9 m of lateral work was done on the 18 m level. According to the Canadian Mining Review (1900, p. 146), 215 tons of ore milled at the Rat Portage Reduction Works had the following results:

"The yield in free milling gold was six dollars per ton, and the concentrates were estimated to contain $7.25 per ton of ore. The values in the tailings have not been reported, any further than that they contained a considerable amount of sulphides. The ore has about 1.60 percent of copper. About 40 percent of the ore is sulphides, chiefly iron and copper pyrites. (values at $20.00 gold)." About 1,000 additional tons were reported milled at the Keewatin Reduction Works (Canadian Mining Review 1901, p. 98).

1902: Operated by Chippewa Consolidated Gold Mining and Milling Co. of Buffalo. No additional work was reported.

1929: Stripping and sampling by persons unknown.

1931: Work by Ribago Copper Corp.

Oct. 5, 1933 - Jan. 5, 1943: Wendigo Gold Mines, Ltd. acquired the property. The main shaft was expanded to a three compartment shaft and was sunk to 342.2 m, inclined 77 to 79°N. No. 2 (west) shaft was deepened to about 30.5 m, and connected to the main shaft on the 30.5 m level. A three compartment vertical winze, collared 53 m north of the main shaft on the 335 m level, was sunk an additional 193 m, to a total depth of 528 m. Lateral development was increased to 55.8 and 19.8 m on the 15 and 18 m levels respectively. Fifteen addition levels were developed by the following:

Level (metres)	Drifts (metres)	Crosscuts (metres)	Raises (metres)
30.5	120		35.1
61	31.8	62.8	69.8
107	356.9	17.4	77.1
152	903.1	32.9	98.8
175	141.7	10.7	24.1
198	415	51.8	187.0
221	202.7	9.1	67.1
244	412	13.7	97.8
267	154	11	19.5
290	166	11	98.1
335	97.5	41.5	77.1
381	89.3	11.6	53.3
427	75.6	7.3	68.9
472	81.7	32	53.3
518	292	96	12.2

Some 9,010 m of underground and surface diamond drill holes were bored, and more than 987 m of surface trenching was reported. A 50 ton/day amalgamation and cyanide mill was later expanded to 100 ton/day.

1951: Mill clean-up produced some gold.

1968: Tailings examined by G.F. Ennis, who calculated the average grade to be 0.027 oz. Au/ton and total volume to be 170,418 tons of tailings.

1980: Tailings recalculated, and volume factor changed. Total volume estimated at 61,970 tons.

1981: Porto Metal Mills from Sudbury moved a mill on site. Recovery grades from tailings were less than expected.

1981-1982: Geological evaluation by Denison Mines Ltd.

1983: Acquired by P. Sheridan.

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    1935, ODM, Vol. 44, pt. 1, p. 150
    1936, ODM, Vol. 45, pt. 1, p. 168-169
    1937, ODM, Vol. 46, pt. 1, p. 216
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Suffel, 1930, ODM, Vol. 39, pt. 3, p. 70-71
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    1942, ODM, Vol. 51, pt. 1, p. 210-211
    1943, ODM, Vol. 52, pt. 1, p. 197-198
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    1938, Annual Report
    1939, Annual Report
    1940, Annual Report
    1941, Annual Report
    1942, Annual Report

135. WESTERN PENINSULA OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Intermediate pyroclastics

CLASSIFICATION
2a

LOCATION
Between Melborne and Parth Lakes, Western Peninsula:
NTS 52E/10NE
Lat. 49°37'29" (49.6247°)
Long. 94°39'36" (94.6600°)

ACCESS
Melborne Lake, which is 20 km southwest of Kenora, is accessible from Lake of the Woods via a 300 m long portage. Parth Lake is accessible from Melborne Lake via a 150 m long portage. The occurrence is on claim K3888, between the two lakes.

DESCRIPTION
Geology: The predominant trend of mafic, intermediate and felsic volcanic units in the northern part of Western Peninsula is east to east-northeast. Evidence for shearing and faulting parallel to this trend is widespread. A fault near the southern side of Parth Lake apparently truncates the northeast-trending volcanic lithology which lies to the north (Davies 1984).

Mineralization: Thomson (1936) indicated that a 5 to 20 cm wide quartz vein occurs in felsic pyroclastics near Melborne Lake. Although the white, sugary quartz contained only traces of sulphides, a chip sample assayed 0.13 oz Au/ton. Thomson also reported that massive pyrite and chalcopyrite were exposed across a width of 30 cm in a pit to the west of the gold occurrence.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16
Davies, 1984, OGS, Map 2423
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 38

136. WESTIN OCCURRENCE

Also spelled Westeen

COMMODITY
Gold

ROCK ASSOCIATION
Quartz diorite

CLASSIFICATION
4c

LOCATION

Haycock Township:	NTS	52E/9NW
	Lat.	49°44′44" (49.7457°)
	Long.	94°20′46" (94.3426°)

ACCESS
The old shaft, on mining location 350P, is about 500 m northeast of Highway 17, at a point about 8 km east of Kenora.

DESCRIPTION
Geology: The Island Lake quartz diorite stock lies between the Dalles and Dryberry batholiths, separated from each by a septum of basalt. The southwestern end of the intrusion consists of two lobes which appear to plunge beneath the basalt, and here the contact is complex, with numerous basalt inclusions in the quartz diorite. Lineaments trending 030° probably represent a regional fracture pattern.

Mineralization: Several sub-parallel quartz veins are approximately equidistant from the western and eastern contacts of the southeastern lobe of the Island Lake stock. They are probably associated with narrow shear zones. An assay plan (Thomson 1947) shows that the No. 1 Vein, which trends about 030°, was traced over a length of 35 m. Channel samples from 4 locations averaged 27 cm in width, and contained a weighted average of 0.387 oz Au/ton. The No. 2 Vein, to the east of No. 1 Vein and approximately parallel to it, was stripped over a length of 50 m and a single channel sample across 81 cm assayed 0.11 oz Au/ton. In the west-central part of the location, a shaft was sunk on the No. 3 Vein; 15 m to the northeast of the shaft, a grab sample assayed 0.08 oz Au/ton. The No. 4 Vein is parallel to the No. 3 Vein and lies 10 m to the northwest. A channel sample taken 120 m northeast of the shaft across 122 cm assayed 0.07 oz Au/ton, but it is not known whether this is on No. 3 or No. 4 Vein.

DEVELOPMENT HISTORY
Circa 1900: Prospecting was carried out and a shaft was sunk.

1945 - 1946: The location was held by Hawmandale Gold Mining Syndicate. Additional prospecting was done and veins were channel sampled.

SELECTED REFERENCE

Thomson, 1947, Hawmandale Gold Mining Syndicate, Assessment Files, Kenora

137. WHITE PARTRIDGE BAY OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Rhyolite

CLASSIFICATION
2a

LOCATION
Island in White Partridge Bay, Lake of the Woods:

NTS	52E/10NE	
Lat.	49°42′29"	(49.7081°)
Long.	94°35′42"	(94.5951°)

ACCESS
The island is 300 m southeast of the shore of Indian Reserve 38A, at a point where the western branch of McKenzie Portage Road terminates. It is 10 km southwest of Kenora, and may be reached by boat from Kenora.

DESCRIPTION
Geology: Massive rhyolite and rhyolitic tuff which underlie the island (Thomson 1936) are near the top of an intermediate to felsic pyroclastic sequence, and are overlain by bedded greywacke. Foliation in the area trends east.

Mineralization: According to Thomson (1936), white quartz up to 45 cm wide was traced for 15 m to the west of a shaft, and a 10 cm wide quartz vein was exposed 6 m to the east of the shaft. No quartz was seen in the shaft (Thompson 1936). Thomson reported that a grab sample from the eastern exposure contained 0.06 oz Au/ton.

DEVELOPMENT HISTORY
Circa 1900: Shaft was sunk

Circa 1934: Shaft was dewatered and some stripping of overburden was done.

SELECTED REFERENCE
Thomson, 1936, ODM, Vol. 45, pt. 3, p. 38

138. WIMOR OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Mafic metavolcanic flows

CLASSIFICATION
1a, b

LOCATION

Jaffray Township:	NTS	52E/16SW	
	Lat.	49°46′14″	(49.7706°)
	Long.	94°22′19″	(94.3719°)

ACCESS
The shaft is located on old mining location P 289, about 600 m north-northeast of the Canadian Pacific Railroad - Jones Road intersection, or 1.2 km west-northwest of the northern end of Hilly Lake. It is about 40 m east of Jones Road.

DESCRIPTION
Geology: The area is underlain by north-northeast-trending tholeiitic basalts, which are characterized by an amphibolite grade metamorphic mineral assemblage. The fine-grained basalt near the shaft is massive to slightly foliated. Stretched pillows trend 025° and dip 80°E. The occurrence is on the eastern limb of the Airport Anticline. The Jones Road quartz monzonite stock is about 300 m northwest of the shaft. About 650 m to the east, basalt is in contact with the border phase of the Island Lake stock.

Mineralization: The quartz vein in the south face of the 2.4 by 3.5 m shaft is continuous from surface to water level (about 4 m), with a maximum width of 40 cm. A number of fractures are parallel to the vein but there is no clearly defined shear zone. On the north face of the shaft, there is a distinct foot wall shear zone, striking 005° and dipping 75°E. Carbonate occurs in the shear zone. Parallel, but less well defined, shears occur over a width of 1.5 m, and associated with these are silicified zones and rusty quartz. The quartz contains minor pyrite and tourmaline, but the veins are very irregular and discontinuous.

DEVELOPMENT HISTORY
Circa 1899: Test pits and a 26 m deep shaft were sunk.

1980: Geophysical surveys were done by Sherritt Gordon Mines Ltd.

SELECTED REFERENCES

Bow, 1900, OBM, Vol. 9, p. 37
King, 1983, OGS, Map P.2618
Sherritt Gordon Mines Ltd., 1980, Assessment Files, Kenora

139. WINNIPEG CONSOLIDATED MINE (OCCURRENCE)

COMMODITY
Gold

ROCK ASSOCIATION
Sheared mafic volcanics

CLASSIFICATION
la, b, o

LOCATION

Kirkup Township:	NTS	52E/NW
	Lat.	49°38'56" (49.6489°)
	Long.	94°18'20" (94.3054°)

ACCESS
The shaft, on location F-22, is 250 m east-southeast of a Small Bay of Bigstone Bay due east of Fish Island. The Storm Bay Road passes 90 m west of the shaft.

DESCRIPTION
Geology: Massive and pillowed basalt underlies most of Bigstone Bay and has been gently folded about the Hay Island Antiform. Volcanic lithology in the southeast part of the Bay trends east-southeast, approximately parallel to the contact of the Dryberry batholith, but swings to the northeast to the east of the Bay. East-northeast fractures are common in the basalt, and many contain quartz veins.

Mineralization: A shear zone, 0.5 to 1 m wide and striking 120°, is exposed at the west end of an outcrop of massive, fine- to medium-grained basalt. An adit less than 5 m long was driven in the outcrop and a shaft was sunk nearby to the west of the outcrop.

Coste (1885) stated that the shaft followed the dip of the shear zone: it was inclined 65° south at the surface, shallowed to 45° part way down, and at the bottom (29 m) was 65°. He noted that, at 80 feet (24.4 m), a drift extended west for 11.3 m and east for 7.6 m, and that additional lateral work had been reported at the 29 m level.

The quartz vein is at or near the footwall of the shear zone. In outcrop and in the adit back the vein is 1 to 10 cm wide and contains pyrite and a trace of arsenopyrite, gold and traces of galena an sphalerite in the quartz. Carbonate is present in the chloritic schist of the shear zone.

Coste recorded the presence of three other veins on the property. One was 0.6 m wide, with a strike of 110° and a dip of 80° S, and was located 60 to 90 m north of the old mill (on the small bay east of Fish Island). The second, 120 to 150 m south of the mill, was 0.9 m wide with a strike of 110° and a dip of 45° S. The third was 90 to 120 m south of on the small bay east of Fish Island. The second vein, 120 to 150 m south of the mill, was 0.9 m wide with a strike of 110° and a dip of 45°S. The third vein was 90 to 120 m south of the shaft, with a width of 90 to 120 cm, a strike of 110°, and a south dip. Coste also reported that a 3 m deep pit had been sunk 0.5 mi. (800 m) east of the shaft, on a vein in a fissure striking 165° and dipping to the east; this would have been on location X-2, part of which may have been held by Winnipeg Consolidated Mines. All four veins were described as quartz, with pyrite and chalcopyrite; the vein on X-82 also contained carbonate and minor galena.

ANALYSIS OF MINERALIZATION
Mitchell (quoted in report of the Royal Commission, 1890) stated that the vein was 8 inches (20 cm) wide at the surface and that "a mill run gave $48.60 clear across the vein from five tons of rock carefully crushed", but that "there was a good deal of slaty matter in the gangue and a good deal of gold found its way into the tailings". This test ore came from a depth of 18 m. He also reported that "a great quantity of ore was milled, the average yield of which was $43 per ton" (Gold at $20/oz).

A chip sample taken in this survey across 1 m of the back in the adit contained 80 ppb gold and <2 ppm silver.

DEVELOPMENT HISTORY
1881: Discovered by G. McVicar and sold to A. Matheson.

1883: Sold to Winnipeg Consolidated Mines. A five-stamp mill was constructed and a shaft was sunk.

1884: Underground operations ended and the mill was shipped to the Argyle Mine. The miners continued to work the property for a brief period following closure.

SELECTED REFERENCES
Coste, 1885, GSC, Report of Progress 1882-83-84, Part K, p. 11-13
Report of the Royal Commission on the Mineral Resources of Ontario, p. 109, 115, 117-118, 446
Slaught, 1892, OBM, Vol. 2, p. 233

140. WITCH BAY OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basaltic flows

CLASSIFICATION
1b, o

LOCATION

Code Township:	NTS	52E/9SE	
	Lat.	49°36'35"	(49.6097°)
	Long.	94°11'57"	(94.1992°)

ACCESS
The occurrence is located on claim K4544, about 3 km east-northeast of the Wendigo Mine, and about 1.2 km east-southeast of Stella Lake. The area may be reached from the Witch Bay Road.

SIZE AND GRADE
Assessment information (SMDR File 001352) indicates that: "Surface samples taken from the main showing were reported to run from 8.2 g/t to 29.5 g/t (0.24 - 0.86 oz./ton) of Au across an average width of 30 - 36 cm for a length of 240 m."

DESCRIPTION
Geology: Mafic rocks in the Witch Bay area are at the top of the lower mafic sequence of Bigstone Bay, and are overlain by felsic pyroclastic rocks. The top of the mafic sequence contains differentiated sills of gabbro, commonly with peridotite at the base. Basalts are massive or pillowed flows, some of which contain large plagioclase phenocrysts. Reversals in the sequence basalt - porphyritic basalt - peridotite - melagabbro - leucogabbro in the Wendigo Mine area provide evidence for tight folding. To a limited extent, this is supported by pillow facings. Shear zones are mainly parallel to lithology.

A sill which is immediately north of the Wendigo Mine continues east-northeast as far as Kite Lake, where it is truncated by granodiorite of the Dryberry Batholith. The basalts at the southern end of Kite Lake are assumed to be stratigraphically below the sill and to be equivalent to the basalts at the Wendigo Mine.

Mineralization: A shear zone striking 085° and dipping from 50° to 75°S is exposed near the southern tip of Kite Lake. According to Thomson (1935), the zone contains "lenticular masses of white quartz located at intervals over a length of 280 feet (85 m)......The maximum width of the quartz is 18 inches (46 cm)".

The No. 1 and No.2 shafts are 30 m apart. Most work was done at the more shallowly inclined No. 2 shaft, where more encouraging gold values were obtained (Thomson 1935). At the shaft collar, the shear or breccia zone is >1 m wide and contains carbonate as well as quartz. The quartz has a cumulative width of about 55 cm and is fractured; chalcopyrite and pyrite are abundant in and near fractures. A third shaft, 110 m east of No. 2 shaft, is water-filled.

A rusty shear zone striking 060° and dipping about 70°NW is exposed in an excavation beside the road, due south of the No. 2 shaft. The shear zone may be traced up a hill, where No. 4 shaft was sunk. Dump material is mainly basalt, some of which is sheared and strongly carbonatized, with quartz containing chalcopyrite, pyrite and pyrrhotite.

ANALYSIS OF MINERALIZATION
A chip sample taken in this study across 50 cm of the mineralized quartz vein at the collar of No. 2 shaft contained 65 ppm gold (1.9 oz Au/ton).

DEVELOPMENT HISTORY
Circa 1898: Three shafts were sunk on an east-trending vein and one on a northeast-trending vein. The two deepest shafts were 18 and 30 m deep. The property may have been known as the Gordon James Mine, owned by the Chemical Gold Mining Co.

1934 - 1935: Trenching and sampling by Witch Bay Gold Mines, Ltd. The middle shaft on the main vein was deepened from 9.1 to 13.7 m.

1950: Geological mapping and shaft sampling by Rexora Mining Corp. Ltd.

1972 - 1973: Airborne and ground magnetometer and electromagnetic surveys by Dome Exploration (Canada) Ltd.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16, p. 44
Campbell, 1950a, Preliminary Report, Rexora Mining Corporation Ltd., Gibi Lake Property, Ontario, Assessment Files, Toronto
1950b, Report on Rexora Mining Corporation Ltd. Property at Gibi Lake, Ontario, Assessment Files, Toronto
NMI File, 1977, Witch Bay Occurrence
Sinclair *et al*., 1935, ODM, Vol. 44, pt. 1, p. 151
SMDR Files, 1980, No. 001351
Thomson, 1935, ODM, Vol. 44, pt. 4, p. 39-40
Woodward, 1973, Electromagnetic and Magnetometer Survey for Dome Exploration (Canada) Ltd., Project 55 and North Portion 56, Manross, Code and Lemay Townships, Assessment Files, Toronto

141. X-45 OCCURRENCE

Also known as Cameron Occurrence, Cameron-Byberg Occurrence or Cameron-Earngey Occurrence

COMMODITY
Copper, silver, gold

ROCK ASSOCIATION
Basalt and marble

CLASSIFICATION
1c

LOCATION

Kirkup Township:	NTS	52E/9NW
	Lat.	49°38'27" (49.6408°)
	Long.	94°18'28" (94.3078°)

ACCESS
The area of mineralization is in the southwestern part of mining location X-45, about 200 m east of the southeastern-most shore of Bigstone Bay. It is accessible by boat from Kenora, which is 17 km to the northwest, or by an 800 m long trail leading south from the south end of the Storm Bay Road.

DESCRIPTION
Geology: Rocks of the area are predominantly fine-grained basalts, part of the mafic tholeiitic sequence in Bigstone Bay. They are on the southern limb of the Hay Island Antiform, and are believed to be south-facing.

Mineralization: All of the trenches and pits expose massive to sheared, fine-grained basalt (Figure 60). In the pit within the main trench, a 30 cm thick layer of white carbonate dips shallowly southeast. The carbonate displays no obvious primary features, but may be of sedimentary origin. In a second trench, mafic volcanics also dip shallowly southeast.

Secondary carbonate and, to a lesser extent, quartz are widespread in the sheared basalt. Pyrite and chalcopyrite are commonly present in minor amounts. Where quartz or quartz-carbonate veins or lenses have been brecciated, especially in the main trench, chalcopyrite may constitute 5 to, very locally, 25% of the rock. Attempts to locate this higher grade mineralization to the southeast during the present study were not successful.

Mineralization may have been concentrated in the vicinity of a series of parallel shear zones, separated by relatively unaltered basalt. King (1971) concluded that the shearing in the main trench trended about 015°, with a dip of about 80°E.

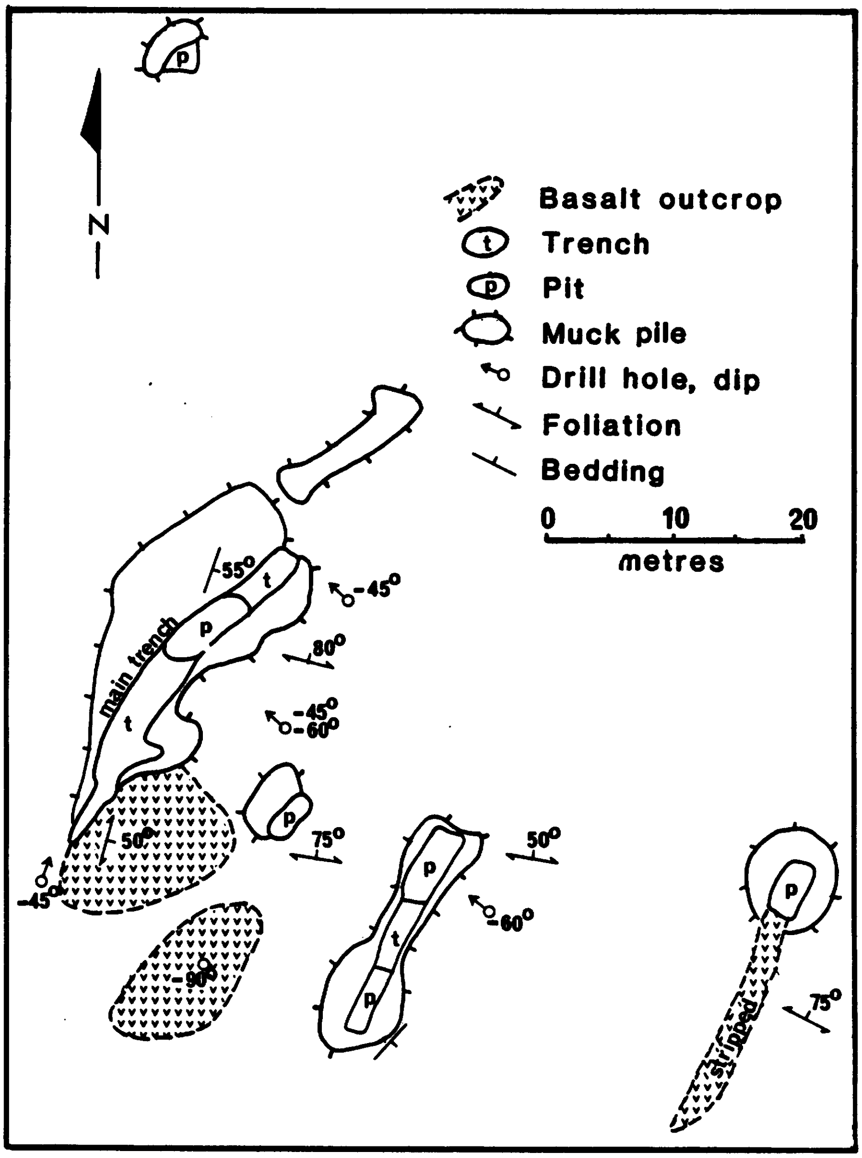


Figure 60. *Geology and development at the X-45 Occurrence.*

ANALYSIS OF MINERALIZATION

Suffel (1930) recorded that a grab sample of unoxidized material contained 12.66% copper. M.Y. Cameron advised King (1971) that "selected grab samples of the best material .. run up to 11.5 oz silver, .08 oz gold and 24.5% copper". Results of six assays, given by Cameron to King, show an average gold content of 0.09 oz/ton, an average silver content of 7.1 oz/ton, and an average copper content of 15.3 percent.

A grab sample of fragmented basalt, with sugary carbonate, pyrrhotite and chalcopyrite, taken during the present survey, contained >10 ppm gold, 16 ppm silver, and 0.34% copper, and was high in arsenic. A sample of quartz and carbonate with mafic fragments and copper stain contained 25 ppb gold and 5 ppm silver, and a sample of sugary quartz with pyrite in fractures contained 90 ppb gold and 8 ppm silver.

DEVELOPMENT HISTORY
1920's: Trenching and sampling.

1956 and 1958: Diamond drilling.

SELECTED REFERENCES
Beard and Garratt, 1976, ODM, MDC 16
King, 1971, Resident Geologist's Files, Kenora
Suffell, 1930, ODM, Vol. 29, pt. 3

142. YUM YUM OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt, felsite (main occurrences)

CLASSIFICATION
1a, b, d, o

LOCATION

Glass Township:	NTS	52E/10SW
	Lat.	49°34′34" (49.5761°)
	Long.	94°58′24" (94.9733°)

ACCESS
Mining location S94 consists of Yum Yum Point and the area to the north. Yum Yum Point is about 6 km south-southwest of Clytie Bay Landing and 2 km south of Cedar Island, and is accessible by boat from Clytie Bay Landing, or from Kenora via Ash Rapids.

DESCRIPTION
Geology: The area is on the southeastern limb of the Gull Bay - Bag Bay Anticline, approximately half way between the axial trace and the top of the lower mafic volcanic sequence. The land between Perido and Yum Yum Bays, often referred to as Yum Yum Peninsula, is mainly underlain by gabbro and anorthositic gabbro which grades upward (southeastward) into amphibolite, similar to exposures on some islands to the southwest (Davies 1978). Peridotite lies stratigraphically beneath the gabbro, but it has not been ascertained whether this is a separate flow or sill, or the differentiated base of a 325 m thick sill. Overlying the amphibolite are 5 to 10 m of fractured, massive to foliated basalt, which coincides with the steep southeast slope of the gabbro-amphibolite hills. Southeast of the basalt is strongly jointed, very fine-grained rhyolite, devoid of primary features but considered to be extrusive.

The northern end of Yum Yum Bay coincides with a 115°-trending lineament. North of this lineament and within the Yum Yum property, the outcrop is almost entirely fine- to medium-grained basalt, and a major fault has been interpreted to coincide with the lineament. There are numerous shear zones parallel to this trend but, where the strongest lineaments are projected to cross outcrop areas, there is no clear evidence of significant movement. This had led to the interpretation that the major movement has occurred along a generally east-trending fault. On the assumption that rhyolite lies beneath the northern arm of Helldiver Bay (Davies 1978), and that this is correlative with the Yum Yum rhyolite, dextral movement is indicated, with an apparent horizontal component of about 600 m.

Mineralization: South of the inferred fault are a number of trenches and pits (Figure 61). Near the contact between peridotite and gabbro, several shallow trenches expose a zone of alteration that has negligible associated mineralization. A pit, or shallow shaft, and a curved trench were sunk near the shore but do not expose quartz; some pieces of very weakly mineralized quartz at the shore may represent material removed from these workings.

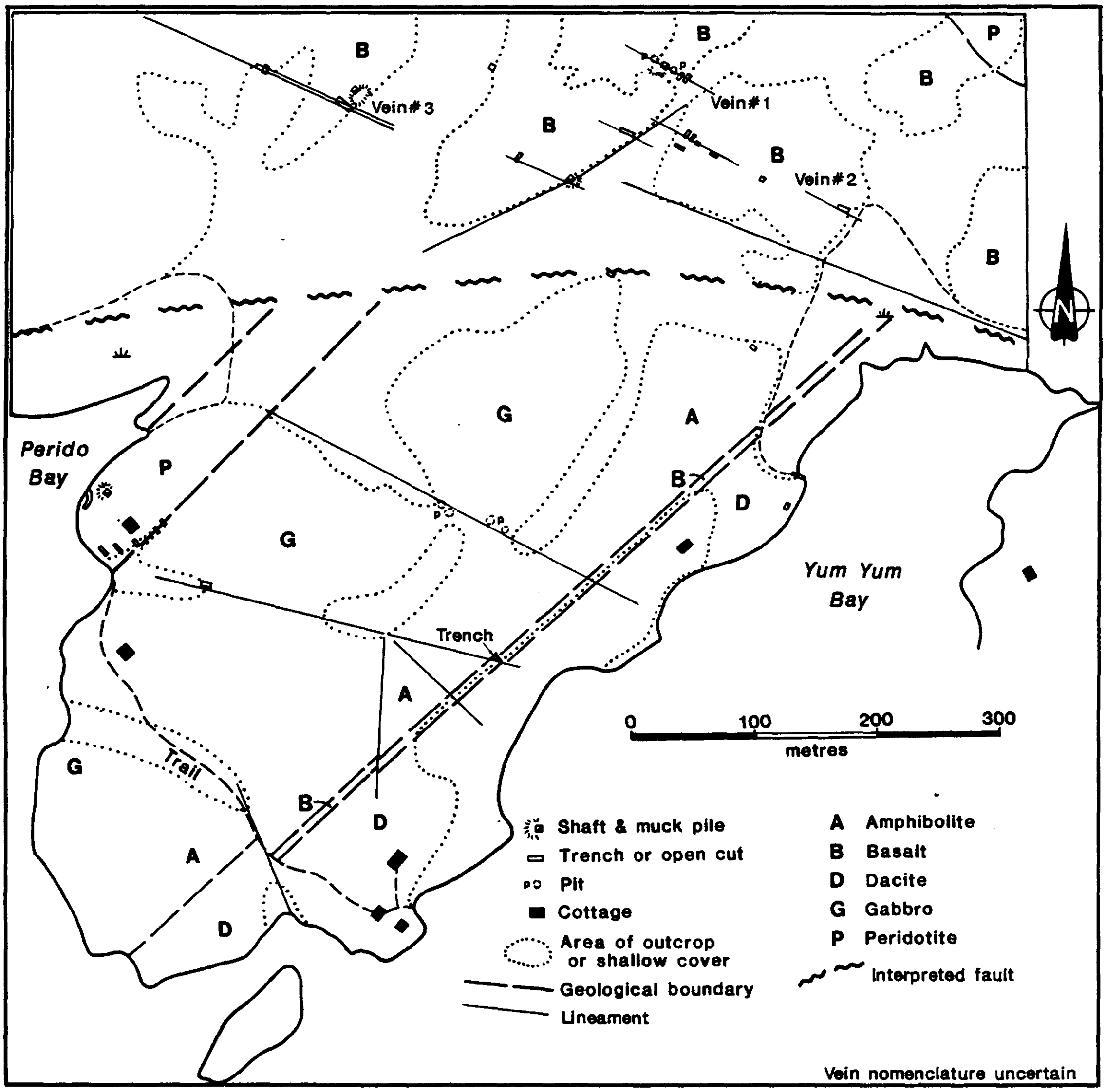


Figure 61. *Geology and development at the Yum Yum Occurrence.*

In the gabbro, 60 m east of the peridotite contact and coincident with the trace of a 105°-trending lineament, a large pit was sunk in a shear zone. Felsite and irregular masses of white, unmineralized quartz occur in the shear. Some 230 m to the east, along the same lineament but at the amphibolite-basalt contact, a pit was apparently sunk on quartz associated with felsite; the pit has caved but quartz on the dump contains tourmaline, pyrite and chalcopyrite. Along another linear feature, some 100 m to the north, shearing occurs in gabbro and minor pyrite and pyrrhotite occurs in fractures. Some small pits expose a little quartz.

Most of the early work was done to the north of the inferred fault. Both Bow (1898) and Coleman (1896) described some of the work, but there is some uncertainty in relating their descriptions to present exposures. The original No. 3 Vein is clearly identifiable near the western end; Veins 1 and 2, as outlined below, are believed to be Veins 1 and 2 of the early work.

Vein No. 1, according to information given to Bow (1898), is at the northeastern end of the location and can be traced over most of the property and onto the property to the north. It consists of 45 to 150 cm of quartz and felsite, is "heavily mineralized", and contains sphalerite. This is believed to be the "Joe Vein" reported to contain "considerable free gold" and on which two pits, 5 and 6 m, were sunk (Coleman 1898). It may also be the "Indian Joe Vein", on which a 13.7 m shaft was sunk and where a second shaft was begun "where a small rich stringer of quartz was contained in the felsite" (Bow and DeKalb 1900). At present, this vein is best exposed in a hillside cut near the north-central edge of the property. Here, the 2 m wide cut is entirely in felsite, which is fine-grained and locally contains up to 3% pyrite. Two shallow trenches expose the felsite. Felsite was also located about 200 m east-southeast of the cut and it is possible that the zone was intermittently exposed over this length in 1898.

Vein No. 2 was reported to have been "traced across the location" (Bow 1898), to have a width of up to about 1 m, to consist of quartz, and to have been exposed in an open cut, a 6 m pit and several trenches. During the present study, a series of workings, which may be the No. 2 Zone, was located over a length of 300 m. In an 8 m long open cut at the eastern end, chlorite-mica schist defines a southeast- striking, steeply northeast-dipping, narrow shear zone within which is a sinuous quartz vein up to 6 cm thick. The quartz is sugary and white and contains traces of pyrite. The footwall schist contains up to 5% pyrite, but the hanging wall is essentially barren. Almost 200 m to the west-northwest is a second open cut of similar size; pyrite is disseminated in the schist and the quartz is locally thicker, but the quartz branches and lenses out. Between the two open cuts are several small pits and trenches, but they expose very little quartz. About 120 m further west-northwest, a schistose zone at least 1.2 m wide strikes 120° and dips steeply south, but a quartz vein up to 60 cm wide is very irregular and appears to strike about 150°. Pyrite is present in both the quartz and the chloritic schist.

Vein No. 3 was reported to be one of the best on the property and to be traceable over 800 m (Bow 1898). Its principal exposure is in a southeast-trending, 20 m long open cut that is 8 m wide at the face. Here an irregular felsite dike with a width of about 1 m lies in a fracture zone in altered, medium-grained basalt. The felsite contains up to 10% fine pyrite near the northern side. Silica appears to have been mobilized along the fracture and there are numerous small quartz-carbonate stringers in the altered zone. North of the open cut, a vertical shaft was sunk; a drill hole had intersected quartz about 16.7 m below the open cut, and it had been planned to sink the shaft to a depth of 36.5 m before crosscutting and stoping (Bow 1898). The shaft reached a depth of 26 m (Beard and Garratt 1976).

No. 4 vein was reported by Bow (1898) to trend northwest and to consist of up to 60 cm of quartz and schist exposed in a pit and 2 trenches. The zone was well mineralized, with assays of 0.85 to 0.90 oz Au/ton, but was considered to be of little importance because it could not be traced very far. This vein was not identified during the present work.

No. 5 vein was reported to be up to 3 m wide and to be traceable over 800 m (Coleman 1898) onto the Ontario Ltd. property to the west (Bow 1898). This northwest-trending vein was not identified during the present work.

Vein G and Vein H were reported to occur in the northwestern part of the property, to strike northeast, and to have been traced a short distance (Bow 1898). Coleman (1898) referred to the "White Show" which had been stripped over much of its 800 m length. None of these veins was positively identified during the present study, though the "White Show" may be the No. 2 vein.

ANALYSIS OF MINERALIZATION

The following is a summary of the analytical results of Yum Yum mineralized zones.

Sample Location	Sample Material	Anomalous Metals
No. 1	Felsite	165 ppb Au; 25 ppm Sb, 150 ppm Pb
Vein	Quartz	>10 ppm Au; 690 ppm Cu, 195 ppm Zn

No. 2 Vein	Altered Basalt (W. cut)	560 ppb Au; 58 ppm As, 550 ppm Cr 159 ppm Ni
	Altered Basalt (E. cut)	340 ppb Au; 22 ppm As, 620 ppm Cr 163 ppm Ni, 175 ppm W
	Quartz (E. cut)	1240 ppb Au; 10 ppm As, 230 ppm B 275 ppm Mo, 500 ppm W
No. 3 Vein	Felsite (Open cut)	255 ppb Au; 16 ppm As
	Altered Basalt (Open cut)	26 ppb Au
	Quartz in schist (E. pit)	>10 ppm Au; 470 ppm As, 570 ppm Cr 400 ppm Cu, 159 ppm Pb 15 ppm Sb, 160 ppm Zn 1200 ppm B
Pit No. 1	Felsite	22 ppb Au; 60 ppm Sb
	Basalt	25 ppb Au; 63 ppm As, 215ppm Ni
Pit No. 2	Altered Basalt	>10 ppm Au; 54 ppm As, 380 ppm B 1310 ppm Cu
	Altered Basalt	30 ppb Au; 47 ppm As
Pit No. 3	Altered Basalt	>10 ppm Au; 34 ppm As

DEVELOPMENT HISTORY

1896: Discovered by Indian Joe and sold to Dr. Edminson of Rat Portage.

1897-1900: Prospecting, trenching, pitting, open cutting, shaft sinking and at least 320 m of diamond drilling.

1961: Mapped by A. Hopkins.

SELECTED REFERENCES

Bow, 1898, OBM, Vol. 7, pt. 1, p. 18-20
Bow and De Kalb, 1900, OBM, Vol. 9, p. 58
Coleman, 1898, OBM, Vol. 7, pt. 2, p. 120
Corkhill, 1911, OBM, Vol. 20, p. 62
Davies, 1978, OGS, OFR 5242, p. 78-80
Hopkins, 1961, Resident Geologist's Files, Kenora

143. ZEUS OCCURRENCE

COMMODITY
Gold

ROCK ASSOCIATION
Basalt, medium-grained mafic rocks

CLASSIFICATION
la, s, p

LOCATION

Glass Township:	NTS	52E/10SW
	Lat.	49°36'23" (49.6065)
	Long.	94°59'09" (94.9859)

ACCESS
The Zeus Occurrence is near the western shore of Sirdar Peninsula, 3 km southwest of Clytie Bay Landing and 3 km northwest of the Mikado Mine. It is on old mining location S82 and is accessible by boat from Clytie Bay Landing or from Kenora, via Ash Rapids.

DESCRIPTION
Geology: The north-northeast-trending Sirdar Peninsula is underlain by interlayered gabbro, feldspar-phyric gabbro, diorite, amphibolite, hornblendite and basalt. These units, in general, strike parallel to the western shore of the peninsula. The coarser rocks appear to have been thick flows or sills which have undergone some differentiation. These rocks are at the top of the lower mafic sequence in the northern Lake of the Woods area, and are tholeiitic to komatiitic in character. Shearing and faulting occurred mainly parallel to lithology, but some faulting strikes east.

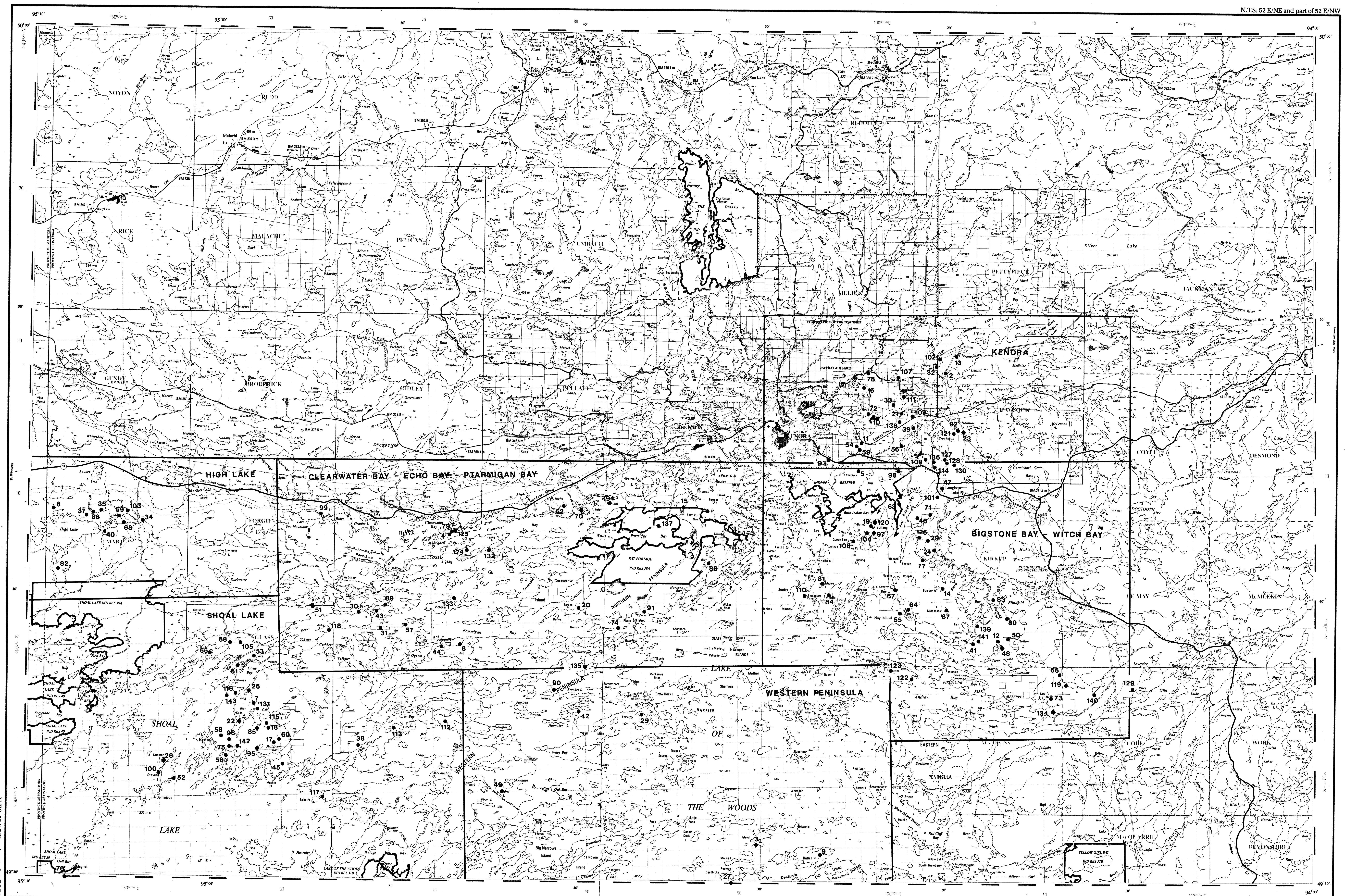
Mineralization: The Zeus Occurrence is a sulphide-rich zone, at least in part controlled by shearing at the contact between hornblendite and basalt. The zone has been traced over 200 m but there is very little outcrop. At the northeastern end of the zone, and 35 m from the lake shore, a vertical, 2.5 by 1.5 m, cribbed shaft was sunk an estimated 8 m. Dump rocks are very rusty and consist of sheared basalt with abundant pyrrhotite, some pyrite and traces of chalcopyrite. Hopkins (1963) drilled the zone but found no gold.

Numerous trenches and pits, and several shafts have also been found on location S82. Hopkins (1963) was able to define 5 north- to northeast-trending veins. Exploration results were summarized by Davies (1978, p. 72-73). The A Vein strikes about 005°, dips vertically, is up 1.5 m wide, and is associated in places with quartz-feldspar porphyry. It consists mainly of quartz, with pyrrhotite, sphalerite, arsenopyrite and pyrite. Gold is apparently erratically distributed,with assays of up to 0.72 oz Au/ton having been reported. Three holes were drilled through the vein, but the core did not contain significant gold. The B Vein is also vertical and strikes about 015°. It consists of a series of quartz veins with pyrrhotite, pyrite and traces of arsenopyrite, chalcopyrite, galena and sphalerite. Assays of up to 0.46 oz Au/ton have been reported from the B Vein. Veins C, D and E are reported to contain only traces of gold.

DEVELOPMENT HISTORY
Circa 1898: Trenching, pitting and shaft sinking.

1960: Trenches re-examined by A. Hopkins.

SELECTED REFERENCES
Davies, 1978, OGS, OFR 5242
Hopkins, 1961, Assessment Files, Kenora



Ontario Forest Resources Inventory Maps compiled from air photographs flown in 1975 were used for the base of this map. Revised to 1982.
Transverse Mercator Projection

Cartography by SURVEYS & MAPPING BRANCH, MINISTRY OF NATURAL RESOURCES, Queen's Park Toronto, from which additional copies of this map may be obtained.

MAP 1. LOCATIONS OF GOLD OCCURRENCES IN THE LAKE OF THE WOODS GOLD STUDY AREA.

PROPERTY NUMBERS CORRESPOND TO THOSE IN THE TEXT.

BOUNDARIES SHOWN ON THE MAP DEFINE GEOLOGICAL DOMAINS DISCUSSED IN THE TEXT.

● = OCCURRENCE OR PROSPECT

◆ = PAST PRODUCER

1:100 000

One centimetre represents one kilometre

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