82-577-10632

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ASSESSMENT REPORT

on the

# GEOLOGY OF THE PHOENIX – ORO DENORO AREA

CLAIMS: see Appendix B

GREENWOOD MINING DIVISION

| | |
|---|---|
| NTS: | 82E/2E |
| Latitude: | 49°04.8' – 07.6' North |
| Longitude: | 118°30.1' – 37.7' East |
| Owner: | Noranda Exporation Co. Ltd. |
| Operator: | Kettle River Resources Ltd. |
| Author: | James T. Fyles |
| Date: | August 15, 1982 |

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## LIST OF ILLUSTRATIONS

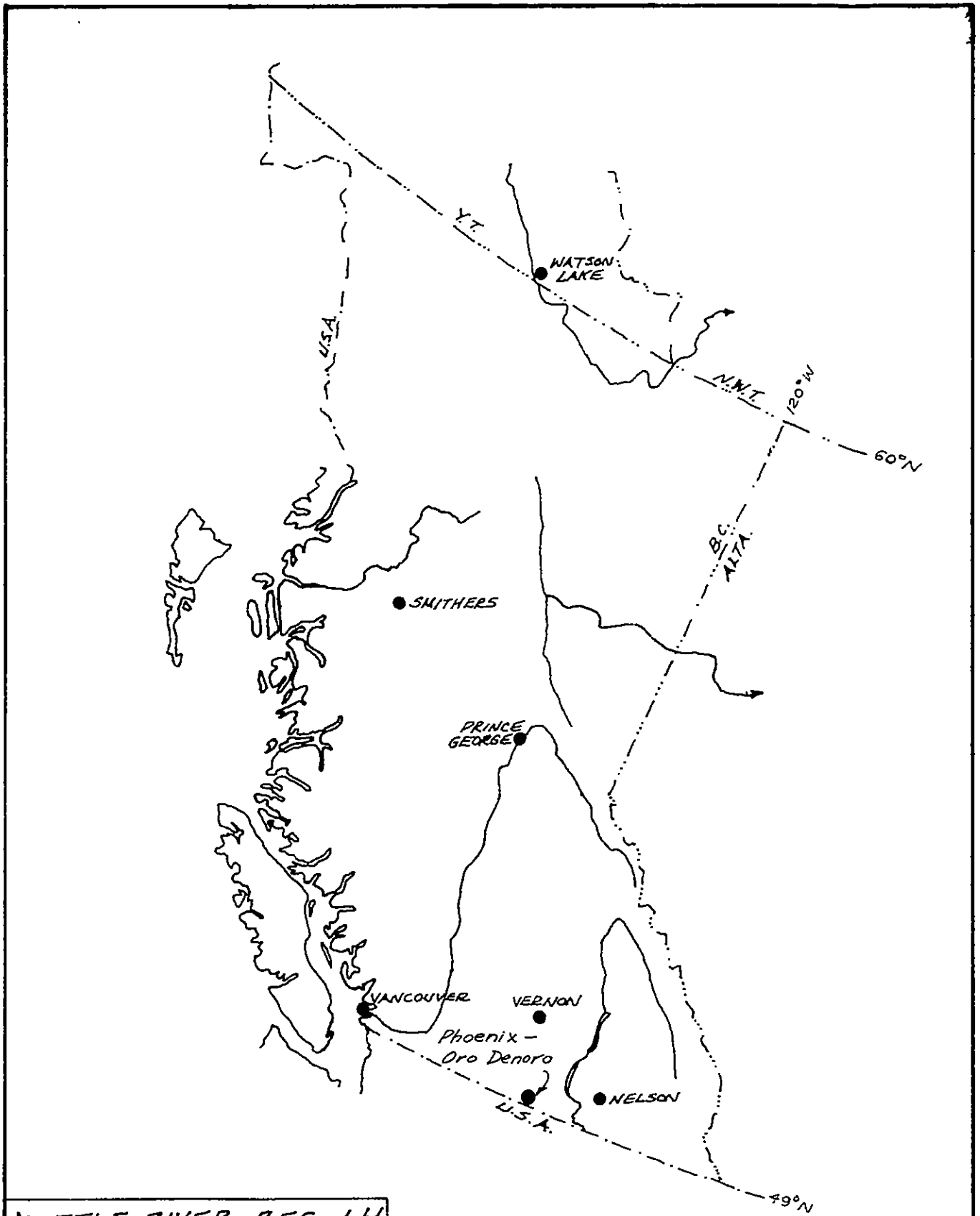
## SUMMARY

This report describes the results of a regional geological mapping programme of an area including the Phoenix and Oro Denoro mines and the area between them. Mapping was carried out at a scale of 1:12,000.

The mapping defines two basins containing mineralized Triassic rocks of the Brooklyn Formation. The Phoenix Basin in the south has the form on a plunging syncline broken by a series of north trending Tertiary faults. It is truncated on the north by the Snowshoe fault trending northwest and west which separates it from the Cyclops Basin containing the mineralized zones on the Cyclops and Oro Denoro properties.

The stratigraphy of the Brooklyn Formation is typically highly lenticular. Chert breccia and limestone are the main rock types and were probably deposited in fault bounded basins in which there was local volcanic activity. Facies transitions between chert breccia and limestone produced sites favourable for later skarn development and may have been the source of the copper-iron mineralization.

This is a preliminary report - further mapping and analysis is required to clarify the structure, stratigraphy and implications for copper and gold mineralization.




KETTLE RIVER RES.. Ltd.

LOCATION MAP

PHOENIX – ORO DENORO AREA

AUGUST, 1982 FIG NO. 1.

## LOCATION, ACCESS, TOPOGRAPHY

The Phoenix – Oro Denoro area includes an area around the former town of Phoenix and extending northeastward to the former Summit Mining Camp. It is 5 km east of Greenwood and south of Provincial Highway No.3. The National Topographic System map reference is 82E/2E. Elevations range from 1000 metres (3500 ft) in the south to about 1500 metres (5000 feet) on the hills around Phoenix.

Good access throughout the area is provided by many roads, railway grades, ski runs and rights of way for electric and telephone lines as well as the main highways from Greenwood to Phoenix and Grand Forks. One advantage of this geological mapping has been the many new exposures of rock provided by recent road work. One disadvantage has been the extensive dump areas near the mines at Phoenix which have obscured vital geological exposures.

## PROPERTY

The property comprises 96 located claims (L), 3 reverted Crown-granted claims (R), 55 Crown-granted claims (C), and 3 mineral leases (M), totalling 159 claims. The claims are grouped as the PHOENIX 82 and CYCLOPS 82 groups. Appendix A is an alphabetical listing of all the claims. Noranda Exploration Company, Limited (no personal liability) is the registered owner of all but 5 of the claims. In 1981 Noranda granted to Kettle River Resources Ltd. an option to acquire a 49% interest in the property.

## HISTORY

In the Greenwood area there has been important copper-gold-silver production from the Triassic Brooklyn Formation. The Phoenix, Deadwood and Summit Camps have produced about 35.4 million tons of ore grading 0.86% copper, .033 oz/ton gold and 0.20 oz/ton silver. The main periods of mining were 1900-19 and 1957-78.

# GEOLOGY AND MINERALIZATION

## Introduction

The Phoenix-Oro Denoro area lies south of the southern transprovincial highway between Greenwood and Grand Forks. It has been studied by many geologists since the beginning of the century, particularly by Le Roy (1912), McNaughton (1945), Little et al (1957, 1966) of the geological Survey of Canada, Seraphim (1956), Carswell (1957), Reinsbakken (1968), Peatfield (1978), Church (1970, 1976, 1982) and by geologists of the Granby Company. The work of R. H. Seraphim has been most useful in this study as have been the unpublished maps prepared by Granby geologists between 1969 and 1971. These outcrop maps on the scale 1:12,000 have been used to define traverses, locate areas of outcrop and extend geological contacts beyond the areas which have so far been studied. The attached map, however, is based on field work by J. T. Fyles between May 15 and June 23, 1982. The present report and map are preliminary and will of necessity be modified as the work proceeds. Areas within the map still require some refinement and studies beyond it will undoubtedly modify some of the conclusions and interpretations.

The purpose of this study has been a) to obtain first-hand data on the geological framework of the mineralized zones within the area; b) to rationalize the many maps, reports and ideas based on studies by previous workers, particularly in the last fifteen years; c) to develop a model for the mineralization which fits as closely to the observed geological facts as possible in the expectation that such a model will assist in exploration within and beyond

the known areas of mineralization.

Successive geological investigations have shown that the area contains three principal rock units. The oldest, the Knob Hill Group, considered to be Late Paleozoic, consists of dominantly chert and mafic volcanic rocks. These rocks are overlain unconformably by the Brooklyn Formation, a thick lenticular succession of sedimentary and volcanic rocks of Triassic age. Both these rock units were faulted in the Tertiary and unconformably overlain by the Tertiary sedimentary Kettle River and volcanic Marron formations. They are intruded also by many dykes and irregular bodies of post Triassic, principally Tertiary diorite, syenite and phonolite. The present work has not changed the formation names. Descriptions of the geology, particularly of the rock types, are not repeated in this report and emphasis is placed on new features and on the structure and geometry of the rock units.

The work on which this report and map is based was carried out using the latest British Columbia Government airphotos and a topographic base map at a scale of 1:12,000 prepared by McElhanney Surveying and Engineering Ltd. for the Granby Company in 1969. Mapping was done using altimeter, airphoto, hip chain and topographic map for location. Rock descriptions are based on field observations and although thin sections from Granby collection were studied during the work no reference is made to them in this report.

## Knob Hill Group

The Knob Hill Group has been mapped only around the fringes on the outcrops of the Brooklyn Formation and, therefore, its stratigraphy and structure have not

been defined on a regional scale. Within this area the prinicpal rock types are cherts and volcanic rocks trending in general eastward and dipping to the north and interrupted by the outcrops of the overlying Brooklyn formation. The cherts are grey, buff to white weathering, very hard and highly fractured siliceous rocks. Locally they are pinkish and greenish and grade laterally into siliceous argillites. Banding and bedding is commonly difficult to determine although many of the rocks are highly fractured and have colour bands parallel to the fracturing. In a few places, particularly on the new B. C. Hydro power line east of Glenside Creek, the siliceous rocks are bedded white to buff quartzite in which visible grey and whitish quartz grains can be distinguished. In places, particularly on the Phoenix road near the north end of the Phoenix tailings dam, the cherts and siliceous argillites grade laterally into grey phyllites and agrillaceous breccia containing fragments of argillite. In other places they grade into thin-bedded green volcanoclastic rocks and lens out into green volcanics which, at least in part, are lava flows. Lenses of limestone no more than one metre thick and ten metres long are present in places and occur both within the phyllites and argillites, cherts and volcanics. Volcanic rocks are green, aphanitic, massive or vaguely banded. Locally, poorly defined fragments of lighter coloured green volcanic rock occur within the darker matrix. In a few places calcareous lenses define oval masses which are probably remnants of pillows. In some places the volcanic rocks are fine-grained and may in fact be intrusions belonging either to the Knob Hill Group or to some later period of intrusion.

Within the Knob Hill Group, formations can be mapped and formational

boundaries, athough poorly defined, appear generally to be concordant with the bedding or banding within adjacent rock units. Volcanic units appear to be lenticular and several lens-like masses have been defined. West of Phoenix on the south slope on Montezuma Ridge and on the ridge west of Knob Hill the formations strike west northwest and dip at moderate angles to the north. Open folds on a map scale as well as on an outcrop scale plunge on the average at 40° towards 020° and have steeply dipping axial planes. All the folds in the area studied west of Phoenix have an easterly vergeance. East and northeast of Phoenix the formations strike east and northeast and dip to the north. No clear pattern of folding has been discovered but at one place graded beds and scour show that on the ridge southeast of Deadman Hill the stratigraphic tops are to the north.

A much more widespread study of the Knob Hill rocks is necessary to define both their structure and their stratigraphy.

## Brooklyn Formation

The Brooklyn Formation of sedimentary and volcanic rocks occurs in two basin-like areas separated by faults. One area at Phoenix contains the Phoenix orebodies and is referred to as the Phoenix Basin. The other area to the northeast, the eastern boundary of which has not been defined, is referred to as the Cyclops Basin. In both basins the principal rock types are similar but differ in detail. Most members of the Brooklyn Formation are well described by previous workers particularly by Seraphim (1956). Characteristically the

sedimentary units are remarkably lenticular - a lenticularity caused by rapid sedimentary facies changes and by erosional disconformities. The basal unit of chert breccia which has been described by Seraphim as sharpstone conglomerate grades upward and laterally into green sandstone and green, grey and purplish siltstone. Lenses of cream and white crystalline limestone, referred to as the Brooklyn formation, reach about 1000 metres in thickness but pinch out laterally into siltstones and chert breccia. The upper part of the formation in the Phoenix Basin contains volcanic conglomerates and breccias which have not yet been recognized in the Cyclops Basin. However, in the Cyclops Basin a lithologically distinct volcanic conglomerate does occur above what is probably the Brooklyn limestone on the PAC claims.

The most complete section in the Phoenix Basin is north of the tailings pond and the road to Phoenix on the eastern end of Montezuma Ridge and the south slopes of the former mine lookout. In this area the chert breccia is as much as 600 metres thick and consists of angular fragments of various colours of chert, minor amounts of jasper and volcanic rocks. In the lower part of the section fragments are generally less than one cm across but higher, the breccia becomes more varied and lenses with fragments more than three cm across are common. The chert breccia grades upward and is overlain by green sandstone with interlayers of chert breccia locally containing lenses of limestone and green argillite. These rocks which are well exposed in road and railway cuts just west of the Ironsides pit show many graded beds and scour and fill structures which indicate that the stratigraphic top is to the east. This unit of interbedded sandstone and chert breccia which is as much as 150 metres thick was referred to by Granby

geologists as the footwall argillite because of its position beneath the orebodies and skarn. In places within it are lenses of limestone some of which contain round, white quartz pebbles as much as 0.5 cm in diameter which are described by Seraphim as aeolian sandstone.

This footwall argillite is overlain north of Phoenix by the Brooklyn limestone, a white-weathering, creamish to white crystalline limestone which is commonly massive or poorly banded and in a few places contains interbeds of greenish siltstone and calcareous argillite. The Brooklyn limestone is as much as 600 metres thick and fairly uniform in appearance throughout its exposed length. However, it appears to thin and tail out very rapidly beneath the Phoenix tailings area and at the extreme north along the Snowshoe fault it contains abundant lenses of white quartz sand grains which resemble the aeolian sandstone described by Seraphim as part of the footwall rocks. These quartz carbonate conglomerates, however, along the B.C. Hydro power line north of Providence Lake contain rounded pebbles as much as three cm in diameter and it seems unlikely that pebbles of this size are of aeolian origin.

The Brooklyn limestone at the Brooklyn pit is overlain by a chert breccia much the same as the basal chert breccia in general characteristics. However, higher in the section this breccia becomes much coarser-grained and about 300 metres above the Brooklyn limestone contains angular fragments of limestone as much as 8 cm across. These limestone chert breccias are very close to the Stemwinder limestone which consists of two lenses of cream to white crystalline limestone breccia with fragments of limestone in a carbonate matrix generally 7 to 15 cm across but locally as much as one metre across. Two lenses of the Stemwinder limestone

are exposed north of the tailings pond and on to the hill of the lookout where they rapidly thin and die out in and above the chert breccia.

The uppermost Stemwinder limestone is overlain by a distinctive green volcanoclastic rock composed of rounded and angular fragments of mafic volcanic rocks, minor chert and limestone in a matrix of green volcanic sandstone containing scattered crystals of augite or hornblende. These rocks are exposed only on the south slope of the hill of the lookout but they may have been present in the Ironsides pit on strike to the south. Granby geologists refer to a volcanic breccia and show it on generalized maps of the pit. This is the highest member of the Brooklyn Formation recognized within the Phoenix Basin. However, in the upper part of Glenside Creek on the ridge west of the ski lodge and in poorer exposures in logging roads along the western tributaries of the creek a green volcanic breccia is exposed which appears to overlie the Brooklyn limestone and may well be on strike from the distinctive volcanoclastic rocks on the lookout hill. They are exposed also at the Gilt Edge showings and on the ski run at elevations of 1370 metres (4500 feet) on the northwest slope of Deadman Hill. These rocks are mottled on weathered surfaces and contain angular fragments of aphanitic greenstone in a green volcanic(?) matrix. The breccia structure is clearly apparent in the field at many places but on the ridge west of the ski lodge the brecciated structure is not well marked and the rocks resemble a microdiorite. Similar rocks are exposed on the south shore of Providence Lake where they transect the Brooklyn limestone in the form of a small intrusion referred to here as the Marshall microdiorite. As a working hypothesis it is suggested that this microdiorite is somehow related to and may be the source of

the volcanoclastic rocks both on the lookout and on the ridge west of the ski lodge.

The Brooklyn Formation in the Cyclops Basin is somewhat different than that in the Phoenix Basin although locally the basal chert breccia and the Brooklyn limestone are very similar in both basins. In the Cyclops Basin the chert breccia grades upward into bedded green sandstone, siltstone, interbeds of chert breccia, limestone and occasional calcareous sandstone resembling the aeolian sandstone in the footwall argillite unit of the Phoenix Basin. These rocks are overlain by white massive crystalline limestone which is correlated with the Brooklyn limestone and contains the mineralized zone on the Cyclops and the Oro Denoro. The section is well exposed along the B. C. Hydro power line east of Glenside Creek and along the old Phoenix - Oro Denoro railroad grade. The Brooklyn limestone is about 1000 metres thick and outcrops widely on both sides of the power line. Traced southward, however, it seems to thin and pinch out almost entirely into green sandstone and calcareous sandstone and ultimately into chert breccia of the lowermost member. This lensing out to the south is comparable to the lensing out of the Brooklyn limestone in the Phoenix Basin just west of Phoenix. At one place along the B. C. Hydro power line the limestone appears to contain a conformable lens of a typical fine-grained green chert breccia whereas farther south, the same limestone seems to have lying above it a carbonate conglomerate which is overlain by a purplish to greenish volcanic conglomerate more than 30 metres thick. This volcanic conglomerate lies beneath or is in fault contact with another limestone which contains abundant carbonate breccia with fragments of limestone about 10 cm across in a carbonate matrix

lithologically similar to the Stemwinder limestone in the Phoenix Basin. More work is required to complete the study of the Brooklyn Formation in the Cyclops Basin. It would appear that successively higher units of calcareous and conglomeratic rocks occur to the east which probably overlie the formations studied in this preliminary work and include the Eholt member described by Church (1982).

## Tertiary Rocks

Tertiary rocks recoginzed in the area mapped include the Kettle River Formation of sedimentary and volcanoclastic rocks, the overlying Marron lavas and many related dykes, sills and irregular intrusions. These rocks are all well displayed in the Phoenix Basin where they have been known and described by previous geologists (Monger, 1966; Church, 1982). The distribution of the Tertiary rocks is important because the volcanic and sedimentary formations are generally found in fault bounded basins and the related intrusions commonly follow the faults and obscure them. In the Phoenix pit the Kettle River Formation is grey, white, buff-weathering sandstone, siltstone, arkose and volcanoclastic rock. These sedimentary rocks are overlain by amygdaloidal, porphyritic lavas which have been determined by Church to be mafic phonolite. Many feldspar porphyry dykes resembling the lavas are common and one such dyke trends eastward along the southeastern part on the mine area separating it from the Monarch workings. Another similar dyke lies about 15 metres south of the southern edge of the Ironsides pit. It trends 120°-130° toward the War Eagle

workings. These dykes dip steeply and probably follow faults.

Tertiary intrusions of syenite are common throughout the area mapped but have not been outlined in detail. Of particular interest is a very irregular body of brown-weathering biotite syenite exposed on the lookout hill north of the Phoenix pit. It extends from there southeastward toward the main area of Marron lava and to the north and west of Providence Lake as a series of branching dykes. Although the relationship between this syenite and the lava is still to be determined, this large intrusion may represent a Tertiary volcanic centre and one source of the Marron lavas in this area.

The eastern margin of the Tertiary rocks in the Phoenix area is probably a fault dipping westward and trending north and the western margin beneath the Kettle River Formation is an irregular erosional surface dipping eastward. The fault is obscured by intrusions and its extensions to the south and to the north have not yet been defined. Tertiary intrusions of syenite and feldspar porphyry are numerous both to the north and east of Deadman Hill and zones of Tertiary faulting probably follow both these trends.

## Structure

The base of the Brooklyn is of particular importance in defining the structure of the map area. This contact, or more precisely, this surface, transects the rocks of the underlying Knob Hill Group. In most places it is well defined and can be closely mapped. With few exceptions, green chert breccia of the base of the Brooklyn overlies the Knob Hill rocks and this breccia at the

contact very commonly resembles a fault breccia. In a few places, such as south of the Snowshoe workings, black argillite referred to by early workers as the Rawhide shale appears to lie directly above the rocks of the Knob Hill Group although the contact is nowhere exposed. Thus, the surface beneath the Brooklyn transects rocks both below and above it. The coarse, angular, unsorted chartracter of the chert breccia and its great thickness and pronounced lenticularity suggest that it formed by erosion from fairly steep and active surfaces. It seems likely that the erosional unconformity beneath the Brooklyn was an active fault scarp at the time of Brooklyn deposition. This irregular surface was subsequently folded and faulted.

In the Brooklyn Basin the unconformity defines a syncline with vertical western limb striking northward and eastern limb dipping gently to the northwest. Attitudes of beds within the syncline in general reflect this shape and when plotted on stereograms define a fold with axis plunging 10°-15° toward 015° and with axial plane dipping 80° to the west. Because of the wedge type stratigraphy, bedded attitudes within the Brooklyn define conical folds with curvilinear axes. Within the Brooklyn, minor folds are uncommon but one prominent open fold in the south wall of the Ironsides pit conforms to this average plunge and represents a flattening of the generally eastward dip of the beds. The eastern limb of the syncline is defined by the attitude of the Rawhide shale and by beds of limestone, skarn and chert breccia in the northwestern most pits of the Snowshoe workings. The syncline is truncated on the north by a northwesterly trending fault called the Snowshoe fault.

The Snowshoe fault, though not exposed, can be closely located north of the

Snowshoe workings. Probably it was encountered in the mine workings or penetrated by drill holes but mine records have not yet been checked. The fault strikes southeast and probably dips at moderate angles to the southwest. The surface trace is defined by the termination of rocks in the Brooklyn Formation including the skarn and Snowshoe orebodies along a moderately straight line trending $120^0$–$130^0$ which transects rock units in both the Brooklyn Formation and the Knob Hill Group. To the west toward Phoenix, the fault is offset 600-900 metres to the right by the fault forming the eastern margin of the Tertiary rocks referred to in an earlier section of this report. The offset extension of the Snowshoe fault can be closely located on the ski run at an elevation of 1370 metres (4500 feet) on the north slope of Deadman Hill and on the western upper slopes of Glenside Creek at elevations of about 1200 metres (4000 feet). To the northwest it is virtually exposed where the new B. C. Hydro power line crosses the northern slope of the hill north of Providence Lake. The fault curves westward in strike and judging from the surface trace probably dips at a low angle to the south. This structure appears to be a fault of regional significance and may be a south or southeasterly dipping thrust or tear. No estimate of offset is yet possible although it appears that the unconformity at the base of the Brooklyn is at least 300 metres lower near the Snowshoe workings than it is to the north along the southwest side of the Cyclops Basin.

In the Cyclops Basin the base of the Brooklyn has been traced from west of the Oro Denoro property southward and eastward across the eastern slopes of Deadman Hill to the valley of Snowshoe Creek. In this distance it transgresses several rock units in the underlying Knob Hill. It appears to be folded into a

series of anticlines and synclines with axes trending northeast and with steeply dipping northwestern limbs. These folds of the unconformity, which plunge to the northeast and curve northward, are reflected also in the chert breccia and sandstone within the Brooklyn Formation. Erosional irregularities in the base of the Brooklyn affect its surface trace and structural form. The wedgelike nature of the Brooklyn stratigraphy produces conical folds at structurally higher levels. Northward from Deadman Hill strikes swing from northeast to north and the dips steepen. Extension of the mapping to the northeast is required to completely outline the structure of the Cyclops Basin.

## Skarn and Mineralized Zones

The significant copper deposits of the Greenwood Camp occur within zones of skarn within the Brooklyn Formation (Seraphim 1956). In the area mapped these zones are close to but not at the same stratigraphic interval. The major skarn zone containing the Old Ironsides, Knob Hill, War Eagle, Monarch, Rawhide and Snowshoe orebodies is stratigraphically above the basal chert breccia. The footwall argillite--well formed and essentially unmineralized west of the Knob Hill and Old Ironsides orebodies--contain zones of skarn and sulphides on the Sylvester K claim and claims to the north along the western side of Providence Lake. In this area it is more calcareous than it is to the south. The Brooklyn skarn zone and probably also the Idaho lie above the Brooklyn limestone whereas the Stemwinder, Victoria and Gilt Edge zones are still higher in the Brooklyn stratigraphy. In general this transition is from chert breccia laterally or stratigraphically upward into limestone. The nature of the intervening rocks of

the transition zone is commonly obscured by skarn mineralization but siltstones, calcareous siltstones and sandstone, impure limestone and probably calcareous chert breccia occur within it, and during thermal metamorphism were favourable for the development of skarn. It seems probable that these sediments may originally have been rich in copper and iron and provided the source for these metals in the present day orebodies.

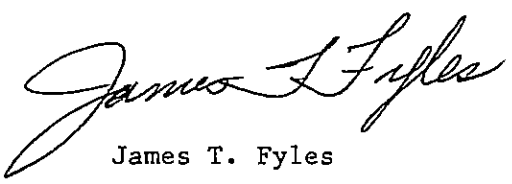
These skarn relationships are clear in the Phoenix Basin but imperfectly known in the Cyclops Basin. Skarn at the Cyclops and the Oro Denoro is well above the base of the Brooklyn limestone and appears to be contained within it. Extension of mapping to the north and east will clarify these relationships and may lead to new targets for exploration.

## DISCUSSIONS AND RECOMMENDATIONS

This preliminary regional geological work in the Phoenix-Oro Denoro area suggests a stratigraphic model for the Brooklyn Formation which may help in understanding the distrubution of the mineralized zones. Active faulting of the Knob Hill Group during deposition of the chert breccia may account for its thick, unsorted character and the sharply angular shape of the fragments. The breccia fingered out into sands, silts and carbonates away from faults and fault scarps and was buried in these fine and sorted sediments during fault inactivity. Non-faulted basin margins may have permitted the development of silts and carbonates and at some stage volcanoclastic rocks have been deposited from nearby or distant centers of vulcanism. Such active fault-bound basins would provide opportunities for circulating metal-bearing solutions and deposition of metals at favourable sites.

Further studies are required to extend this model of mineralization through a period of thermal metamorphism and to account for the present distribution of zones of copper and of gold. Further studies are also necessary to determine the original outlines of the basins and to complete our knowledge of their present structure.

Respectfully submitted,



August 15, 1982

James T. Fyles

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| | | |
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## STATEMENT OF COSTS

| | | | |
|---|---|---|---|
| 1. | Professional Services | | |
| | J.T. Fyles, geologist | | |
| | 30 days fieldwork (May 15 - June 23) | | |
| | 5 days report writing | | |
| | 35 days @ $250/diem | | $ 8,750.00 |
| 2. | Field Assistant | | |
| | S. Fyles 30 days @ $50/diem | | 1,500.00 |
| 3. | Transportation | | |
| | Victoria - Greenwood return | $ 180.00 | |
| | Truck rental | | |
| | 30 days @ $30/day | 900.00 | |
| | 1000 km @ $0.30/km | 300.00 | |
| | | $1,380.00 | 1,380.00 |
| 4. | Accomodation and Food | | |
| | 2 people - 30 days each @ $30/day | | 1,800.00 |
| 5. | Drafting, printing | | 350.00 |
| 6. | Secretarial | | 250.00 |
| | | TOTAL | $14,030.00 |

## STATEMENT OF QUALIFICATIONS

I, James T. Fyles of 1720 Kingsberry Crescent, Victoria, B. C., hereby certify that:

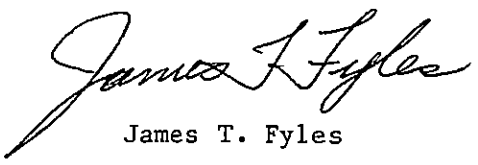
1) I am a consulting geologist and Director of Kettle River Resources Ltd.

2) I have practiced my profession in British Columbia since 1948.

3) I am a graduate of the University of British Columbia (BASc'47, MASc'49) and of Columbia University (PhD'54).

4) I am a registered Professional Engineer in British Columbia (#2563), a Fellow of the Geological Association of Canada, a Fellow of the Society of Economic Geologists and a Member of the Canadian Institute of Mining and Metallurgy.

5) This report is based on field work done by me in the area shown on the included map.



James T. Fyles

Victoria, B. C.
August 15, 1982

APPENDIX A

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| AETNA | | C | | PHOENIX 82 | NORANDA | 978 |
| AETNA FR | | C | | PHOENIX 82 | NORANDA | 10245 |
| ALMA FR | | C | | CYCLOPS 82 | NORANDA | 2125 |
| BANK OF ENGLAND | | C | | PHOENIX 82 | NORANDA | 1235 |
| BANNER | | C | | PHOENIX 82 | NORANDA | 1847 |
| BELMONT FR | 220 | M | 821026 | CYCLOPS 82 | NORANDA | 14225 |
| BOBCAT # 5 | 21759 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 6 | 21760 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 7 | 21761 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 8 | 21762 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 9 | 21763 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #10 | 21764 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #11 FR | 21765 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #12 FR | 21766 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 1 | 19118 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 2 | 19119 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 3 | 19120 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 4 | 19121 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOSTON | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1645 |
| BROOKLYN | | C | | CYCLOPS 82 | NORANDA | 796 |
| BULLION | | C | | CYCLOPS 82 | NORANDA | 865 |
| CAP 1 FR | 36972 | L | 840128 | CYCLOPS 82 | NORANDA | |
| CAP 2 FR | 36973 | L | 840128 | CYCLOPS 82 | NORANDA | |
| CAP 3 FR | 36974 | L | 840130 | CYCLOPS 82 | NORANDA | |
| CIMERON | | C | | PHOENIX 82 | NORANDA | 980 |
| COY # 6 | 22080 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY # 7 | 22081 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY # 8 FR | 22082 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY NO 1 | 20521 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 2 | 20522 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 3 | 20523 | L | 930921 | PHOENIX 82 | NORANDA | |
| COY NO 4 FR | 20524 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 5 FR | 20525 | L | 830921 | PHOENIX 82 | NORANDA | |
| CRACKER JACK | 3098 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1195 |
| CURLEW | | C | | PHOENIX 82 | NORANDA | 893 |
| CYCLOPS | 20028 | L | 830706 | CYCLOPS 82 | NORANDA | |
| DENVER | | C | | | NORANDA | 2875 |
| DEXTER FR | | C | | PHOENIX 82 | NORANDA | 3298 |
| ETHEL VERNE FR | | C | | CYCLOPS 82 | NORANDA | 3173 |
| EYE 1 FR | 36969 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 2 FR | 36970 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 3 FR | 36971 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 4 FR | 37186 | L | 840530 | CYCLOPS 82 | NORANDA | |
| FAIRPLAY FR | | C | | CYCLOPS 82 | NORANDA | 1328 |
| FOUR PAW | | C | | PHOENIX 82 | NORANDA | 3550 |
| FOURTH OF JULY | | C | | PHOENIX 82 | NORANDA | 922 |
| GARFIELD | | C | | PHOENIX 82 | NORANDA | 1264 |
| GILT EDGE | | C | | CYCLOPS 82 | NORANDA | 977 |
| GIPSY | | C | | CYCLOPS 82 | NORANDA | 1811 |
| GOLD DROP | | C | | PHOENIX 82 | NORANDA | 899 |
| GOLD DROP FR | | C | | PHOENIX 82 | NORANDA | 1252 |
| GOLDEN EAGLE | | C | | CYCLOPS 82 | NORANDA | 921 |
| GREY EAGLE | | C | | PHOENIX 82 | NORANDA | 793 |
| IDAHO | | C | | PHOENIX 82 | NORANDA | 981 |
| JOKER | | C | | CYCLOPS 82 | NORANDA | 1692 |
| KNOB HILL | | C | | PHOENIX 82 | NORANDA | 590 |
| LITTLE DALLES | | C | | PHOENIX 82 | NORANDA | 2628 |

# APPENDIX A

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| PAC # 53 | 22156 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 54 | 22157 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 55 | 22158 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 56 | 22159 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 57 | 24893 | L | 911219 | PHOENIX 82 | NORANDA | |
| PAC # 58 | 24894 | L | 911219 | PHOENIX 82 | NORANDA | |
| PAC # 60 | 36625 | L | 840620 | PHOENIX 82 | NORANDA | |
| PAC NO 9 FR | 18259 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO10 | 18260 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO11 | 18261 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO12 | 18262 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAX FR | 26988 | L | 840228 | PHOENIX 82 | NORANDA | |
| PHEASANT | | C | | CYCLOPS 82 | NORANDA | 864 |
| PHILLIPSBURG FR | | C | | PHOENIX 82 | NORANDA | 1842 |
| PHOENIX | | C | | PHOENIX 82 | NORANDA | 894 |
| PILOT | | C | | PHOENIX 82 | NORANDA | 3297 |
| PRADO #1 FR | 37058 | L | 840405 | CYCLOPS 82 | NORANDA | |
| RAWHIDE | | C | | PHOENIX 82 | NORANDA | 892 |
| RAWHIDE FR | 14548 | L | 840612 | PHOENIX 82 | NORANDA | |
| ROB ROY | | C | | PHOENIX 82 | NORANDA | 1556 |
| SILVER CHIEF FR | 20029 | L | 830706 | CYCLOPS 82 | NORANDA | |
| SILVESTER K FR | 289 | M | 820922 | CYCLOPS 82 | NORANDA | 2386 |
| SNOWSHOE | | C | | CYCLOPS 82 | NORANDA | 891 |
| SNOWSHOE FR | | C | | CYCLOPS 82 | NORANDA | 30028 |
| STAFFORD FR | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1703 |
| STANDARD | | C | | CYCLOPS 82 | NORANDA | 982 |
| STEMWINDER | | C | | PHOENIX 82 | NORANDA | 588 |
| SUPERCHIEF FR | 37188 | L | 840604 | CYCLOPS 82 | NORANDA | |
| SURPRISE FR | | C | | CYCLOPS 82 | NORANDA | 2384 |
| SYLVESTER K | | C | | CYCLOPS 82 | NORANDA | 2385 |
| TIMER FR | | C | | CYCLOPS 82 | NORANDA | 1705 |
| TOOTHPICK FR | | C | | PHOENIX 82 | NORANDA | 3171 |
| VAL #1 | 16010 | L | 840220 | PHOENIX 82 | NORANDA | |
| VAL #2 FR | 16011 | L | 840220 | PHOENIX 82 | NORANDA | |
| VAL #3 FR | 18075 | L | 831201 | PHOENIX 82 | NORANDA | |
| VAL 4 FR | 3102 | L | 850618 | PHOENIX 82 | KETTLE RIVER | |
| VICTORIA | | C | | PHOENIX 82 | NORANDA | 933 |
| WAR EAGLE | | C | | PHOENIX 82 | NORANDA | 678 |
| WENDY FR | 3120 | L | 830706 | PHOENIX 82 | KETTLE RIVER | |
| WENDY NO 13 | 18055 | L | 831026 | PHOENIX 82 | NORANDA | |
| WENDY NO 15 FR | 18057 | L | 831026 | PHOENIX 82 | NORANDA | |
| WILLAMENA FR | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1693 |
| WOODSTOCK | | C | | PHOENIX 82 | NORANDA | 2627 |
| YELLOW JACKET | | C | | PHOENIX 82 | NORANDA | 1327 |
| YUKON FR | 3097 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1193 |

# APPENDIX A

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| LOG CABIN FR | | C | | PHOENIX 82 | NORANDA | 3299 |
| MAY | | C | | PHOENIX 82 | NORANDA | 2629 |
| MIDNIGHT | | C | | CYCLOPS 82 | NORANDA | 1809 |
| MISSING LINK | | C | | PHOENIX 82 | NORANDA | 979 |
| MONARCH | | C | | PHOENIX 82 | NORANDA | 701 |
| MONTE CHRISTO FR | | C | | CYCLOPS 82 | NORANDA | 3381 |
| MONTEZUMA | | C | | CYCLOPS 82 | NORANDA | 915 |
| NEW YORK | | C | | CYCLOPS 82 | NORANDA | 901 |
| NO 13 | | C | | CYCLOPS 82 | NORANDA | 1260 |
| NUGGET | | C | | PHOENIX 82 | NORANDA | 1257 |
| OLD IRONSIDES | | C | | PHOENIX 82 | NORANDA | 589 |
| ORONOCO | 3096 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1196 |
| PAC 13 | 18346 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 14 | 18347 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 15 | 18348 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 16 | 18349 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 33 | 21925 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 34 FR | 21926 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 35 | 21927 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 36 | 21928 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 37 | 21929 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 38 | 21930 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 39 FR | 21931 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 40 FR | 21932 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC # 1 | 16130 | L | 840403 | PHOENIX 82 | NORANDA | |
| PAC # 2 | 16131 | L | 840403 | CYCLOPS 82 | NORANDA | |
| PAC # 17 | 21714 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 18 | 21715 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 19 | 21716 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 20 | 21717 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 21 | 21718 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 22 | 21719 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 23 | 21720 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 24 | 21721 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 25 | 21722 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 26 | 21723 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 27 | 21724 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 28 | 21725 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 29 | 21726 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 30 | 21727 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 31 | 21728 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 32 | 21729 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 33 FR | 21730 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 34 FR | 21731 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 35 | 21767 | L | 830707 | PHOENIX 82 | NORANDA | |
| PAC # 41 | 22144 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 42 | 22145 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 43 | 22146 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 44 FR | 22147 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 45 | 22148 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 46 | 22149 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 47 | 22150 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 48 | 22151 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 49 | 22152 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 50 | 22153 | L | 831102 | PHOENIX 82 | NORANDA | |
| PAC # 51 | 22154 | L | 831102 | CYCLOPS 82 | NORANDA | |
| PAC # 52 | 22155 | L | 831102 | CYCLOPS 82 | NORANDA | |

APPENDIX B

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| AETNA | | C | | PHOENIX 82 | NORANDA | 978 |
| AETNA FR | | C | | PHOENIX 82 | NORANDA | 10248 |
| ALMA FR | | C | | CYCLOPS 82 | NORANDA | 2125 |
| BANK OF ENGLAND | | C | | PHOENIX 82 | NORANDA | 1235 |
| BANNER | | C | | PHOENIX 82 | NORANDA | 1847 |
| BELMONT FR | 220 | M | 821026 | CYCLOPS 82 | NORANDA | 14228 |
| BOBCAT # 5 | 21759 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 6 | 21760 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 7 | 21761 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 8 | 21762 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT # 9 | 21763 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #10 | 21764 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #11 FR | 21765 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT #12 FR | 21766 | L | 830707 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 1 | 19118 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 2 | 19119 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 3 | 19120 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOBCAT NO 4 | 19121 | L | 840613 | CYCLOPS 82 | NORANDA | |
| BOSTON | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1645 |
| BROOKLYN | | C | | CYCLOPS 82 | NORANDA | 796 |
| BULLION | | C | | CYCLOPS 82 | NORANDA | 865 |
| CAP 1 FR | 36972 | L | 840128 | CYCLOPS 82 | NORANDA | |
| CAP 2 FR | 36973 | L | 840128 | CYCLOPS 82 | NORANDA | |
| CAP 3 FR | 36974 | L | 840130 | CYCLOPS 82 | NORANDA | |
| CIMERON | | C | | PHOENIX 82 | NORANDA | 980 |
| COY # 6 | 22080 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY # 7 | 22081 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY # 8 FR | 22082 | L | 830922 | PHOENIX 82 | NORANDA | |
| COY NO 1 | 20521 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 2 | 20522 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 3 | 20523 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 4 FR | 20524 | L | 830921 | PHOENIX 82 | NORANDA | |
| COY NO 5 FR | 20525 | L | 830921 | PHOENIX 82 | NORANDA | |
| CRACKER JACK | 3098 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1195 |
| CURLEW | | C | | PHOENIX 82 | NORANDA | 893 |
| CYCLOPS | 20028 | L | 830706 | CYCLOPS 82 | NORANDA | |
| DENVER | | C | | | NORANDA | 2875 |
| DEXTER FR | | C | | PHOENIX 82 | NORANDA | 3298 |
| ETHEL VERNE FR | | C | | CYCLOPS 82 | NORANDA | 3170 |
| EYE 1 FR | 36969 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 2 FR | 36970 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 3 FR | 36971 | L | 840128 | CYCLOPS 82 | NORANDA | |
| EYE 4 FR | 37186 | L | 840530 | CYCLOPS 82 | NORANDA | |
| FAIRPLAY FR | | C | | CYCLOPS 82 | NORANDA | 1328 |
| FOUR PAW | | C | | PHOENIX 82 | NORANDA | 3550 |
| FOURTH OF JULY | | C | | PHOENIX 82 | NORANDA | 922 |
| GARFIELD | | C | | PHOENIX 82 | NORANDA | 1264 |
| GILT EDGE | | C | | CYCLOPS 82 | NORANDA | 977 |
| GIPSY | | C | | CYCLOPS 82 | NORANDA | 1811 |
| GOLD DROP | | C | | PHOENIX 82 | NORANDA | 899 |
| GOLD DROP FR | | C | | PHOENIX 82 | NORANDA | 1252 |
| GOLDEN EAGLE | | C | | CYCLOPS 82 | NORANDA | 921 |
| GREY EAGLE | | C | | PHOENIX 82 | NORANDA | 793 |
| IDAHO | | C | | PHOENIX 82 | NORANDA | 981 |
| JOKER | | C | | CYCLOPS 82 | NORANDA | 1692 |
| KNOB HILL | | C | | PHOENIX 82 | NORANDA | 590 |
| LITTLE DALLES | | C | | PHOENIX 82 | NORANDA | 2628 |

APPENDIX B

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| LOG CABIN FR | | C | | PHOENIX 82 | NORANDA | 3299 |
| MAY | | C | | PHOENIX 82 | NORANDA | 2629 |
| MIDNIGHT | | C | | CYCLOPS 82 | NORANDA | 1809 |
| MISSING LINK | | C | | PHOENIX 82 | NORANDA | 979 |
| MONARCH | | C | | PHOENIX 82 | NORANDA | 701 |
| MONTE CHRISTO FR | | C | | CYCLOPS 82 | NORANDA | 3381 |
| MONTEZUMA | | C | | CYCLOPS 82 | NORANDA | 915 |
| NEW YORK | | C | | CYCLOPS 82 | NORANDA | 901 |
| NO 13 | | C | | CYCLOPS 82 | NORANDA | 1260 |
| NUGGET | | C | | PHOENIX 82 | NORANDA | 1257 |
| OLD IRONSIDES | | C | | PHOENIX 82 | NORANDA | 589 |
| ORONOCO | 3096 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1196 |
| PAC 13 | 18346 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 14 | 18347 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 15 | 18348 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 16 | 18349 | L | 830908 | PHOENIX 82 | NORANDA | |
| PAC 33 | 21925 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 34 FR | 21926 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 35 | 21927 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 36 | 21928 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 37 | 21929 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 38 | 21930 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 39 FR | 21931 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC 40 FR | 21932 | L | 830812 | CYCLOPS 82 | NORANDA | |
| PAC # 1 | 16130 | L | 840403 | PHOENIX 82 | NORANDA | |
| PAC # 2 | 16131 | L | 840403 | CYCLOPS 82 | NORANDA | |
| PAC # 17 | 21714 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 18 | 21715 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 23 | 21720 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 24 | 21721 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 25 | 21722 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 26 | 21723 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 32 | 21729 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 33 FR | 21730 | L | 830625 | PHOENIX 82 | NORANDA | |
| PAC # 34 FR | 21731 | L | 830625 | CYCLOPS 82 | NORANDA | |
| PAC # 35 | 21767 | L | 830707 | PHOENIX 82 | NORANDA | |
| PAC # 57 | 24893 | L | 911219 | PHOENIX 82 | NORANDA | |
| PAC # 58 | 24894 | L | 911219 | PHOENIX 82 | NORANDA | |
| PAC # 60 | 36625 | L | 840620 | PHOENIX 82 | NORANDA | |
| PAC NO 9 FR | 18259 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO10 | 18260 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO11 | 18261 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAC NO12 | 18262 | L | 830621 | PHOENIX 82 | NORANDA | |
| PAX FR | 26988 | L | 840228 | PHOENIX 82 | NORANDA | |
| PHEASANT | | C | | CYCLOPS 82 | NORANDA | 864 |
| PHILLIPSBURG FR | | C | | PHOENIX 82 | NORANDA | 1842 |
| PHOENIX | | C | | PHOENIX 82 | NORANDA | 894 |
| PILOT | | C | | PHOENIX 82 | NORANDA | 3297 |
| PRADO #1 FR | 37058 | L | 840405 | CYCLOPS 82 | NORANDA | |
| RAWHIDE | | C | | PHOENIX 82 | NORANDA | 892 |
| RAWHIDE FR | 14548 | L | 840612 | PHOENIX 82 | NORANDA | |
| SILVER CHIEF FR | 20029 | L | 830706 | CYCLOPS 82 | NORANDA | |
| SILVESTER K FR | 289 | M | 820922 | CYCLOPS 82 | NORANDA | 2386 |
| SNOWSHOE | | C | | CYCLOPS 82 | NORANDA | 891 |
| SNOWSHOE FR | | C | | CYCLOPS 82 | NORANDA | 30025 |
| STAFFORD FR | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1703 |
| STANDARD | | C | | CYCLOPS 82 | NORANDA | 982 |

APPENDIX B

| CLAIM NAME | RECORD# | TYPE | EXPIRY | GROUP NAME | OWNER | LOT # |
|---|---|---|---|---|---|---|
| STEMWINDER | | C | | PHOENIX 82 | NORANDA | 588 |
| SUPERCHIEF FR | 37188 | L | 840604 | CYCLOPS 82 | NORANDA | |
| SURPRISE FR | | C | | CYCLOPS 82 | NORANDA | 2384 |
| SYLVESTER K | | C | | CYCLOPS 82 | NORANDA | 2385 |
| TIMER FR | | C | | CYCLOPS 82 | NORANDA | 1705 |
| TOOTHPICK FR | | C | | PHOENIX 82 | NORANDA | 3171 |
| VAL #1 | 16010 | L | 840220 | PHOENIX 82 | NORANDA | |
| VAL #2 FR | 16011 | L | 840220 | PHOENIX 82 | NORANDA | |
| VAL 4 FR | 3102 | L | 850618 | PHOENIX 82 | KETTLE RIVER | |
| VICTORIA | | C | | PHOENIX 82 | NORANDA | 933 |
| WAR EAGLE | | C | | PHOENIX 82 | NORANDA | 678 |
| WENDY NO 13 | 18055 | L | 831026 | PHOENIX 82 | NORANDA | |
| WENDY NO 15 FR | 18057 | L | 831026 | PHOENIX 82 | NORANDA | |
| WILLAMENA FR | 115 | M | 821121 | PHOENIX 82 | NORANDA | 1693 |
| YELLOW JACKET | | C | | PHOENIX 82 | NORANDA | 1327 |
| YUKON FR | 3097 | R | 830608 | PHOENIX 82 | MCLENNAN S | 1193 |


# LEGEND

Electro centre (1968)
Photo centre (1959)
Road: primary
Road: secondary
Trail or track
Railroad
Railroad: abandoned
Bridge
Building
Shoreline
Creek
Swamp
Trees
Contours
Depression contours
Spot elevation
Cut line
Power line
Ridge
Pit
Trench

## TERTIARY

| | | |
|---|---|---|
| MARRON FM | Tsy\|p\|s | SYENITE\ PHONOLITE\ UNDIFFERETIATED |
| KETTLE RIVER FM | 5ak | AKROSE, SANDSTONE, BRECCIA |

## TRIASSIC

| | | |
|---|---|---|
| BROOKLYN FM | 3vc | VOLCANIC CONGLOMERATE & BRECCIA |
| | 3sls | STEMWINDER LIMESTONE |
| | 3ussc | UPPER CHERT BRECCIA (SHARPSTONE CONGLOMERATE) |
| | 3s | ZONES OF SKARN, CALC-SILICATE SILTSTONE & CALC-SILICATE BRECCIA (SHARPSTONE) |
| | 3Bls | BROOKLYN LIMESTONE - MASSIVE & BEDDED CREAM & WHITE CRYSTALLINE LIMESTONE, MINOR INTERBEDS OF GREEN & GREY SILTSTONE, LENSES OF QUARTZ PEBBLE CONGLOMERATE |
| | 3ss | GREEN SANDSTONE WITH INTERBEDS OF CHERT BRECCIA, SOME CALCAREOUS BEDS & LIMESTONE |
| | 3ssc | MASSIVE CHERT BRECCIA (SHARPSTONE CONGLOMERATE) |
| | 3sh | GREY SILTSTONE (RAWHIDE SHALE, ETC) |

## PRE-TRIASSIC

| | | |
|---|---|---|
| KNOB HILL GP. | 2v | MAFIC VOLCANIC ROCKS, AMPHIBOLITE, MINOR SERPENTINE |
| | 2c-q | GREY & GREEN CHERT & QUARTZITE, SILICEOUS ARGILLITE |
| | 2p | GREY PHYLLITE & ARGILLITE |
| | 2ls | LIMESTONE |

## MAFIC INTRUSIONS

| | |
|---|---|
| G\CG | FINE GRAINED GABBRO\ CYCLOPS GABBRO |
| D | MICRODIORITE (MARSHALL L.) |
| -\sp?\ | SERPENTINE |

AREA OF LITTLE OR NO OUTCROP
LIMIT TO MAPPING
50 ATTITUDE OF BEDDING, OR BANDING IN VOLCANIC ROCKS
50 ATTITUDE OF SCHISTOSITY
30 PLUNGE OF MINOR FOLDS
FAULTS - LOCATED, APPROXIMATE, ASSUMED
GEOLOGICAL CONTACTS - LOCATED, APPROXIMATE, ASSUMED

GEOLOGY BY J.T. FYLES MAY/JUNE 1982

MINERAL RESOURCES BRANCH ASSESSMENT REPORT
10,632

0 300 METRES

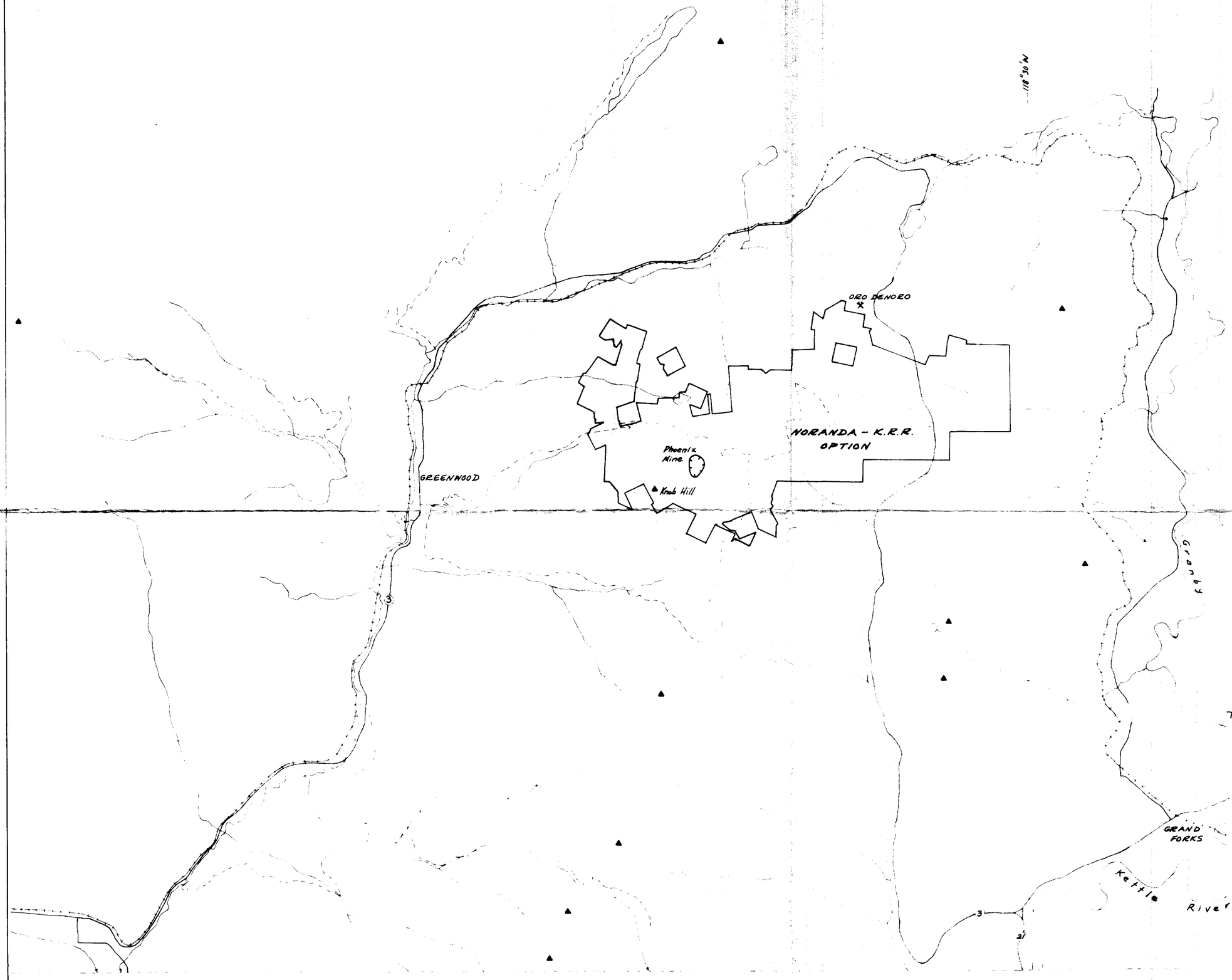
N

KETTLE RIVER RESOURCES LTd.

GEOLOGICAL MAP

PHOENIX - ORO DENORO AREA

| | |
|---|---|
| GREENWOOD M.D. | 82 E/2E |
| SCALE: 1:12,000 | DATE: AUGUST, 1982 |
| DWN BY WRG | PROJ. N°129 FIGURE N° 3 |






0 1 2 3
km

KETTLE RIVER RESOURCES LTD.

INDEX MAP

PHOENIX - ORO DENORO AREA

| | |
|---|---|
| GREENWOOD M.D. | 82E/2E |
| SCALE: 1:50,000 | DATE: AUGUST, 1982 |
| DWN. BY: WRG | PROJ. NO: 129 |
| | FIGURE NO. 2 |