4623

PINE LAKE MINING CO. LTD. [NPL]

GEOLOGICAL REPORT

LILLOOET MINING DIVISION, BRITISH COLUMBIA

OWL CREEK SIX MILES NORTH OF PEMBERTON, B. C.

60°, 122° SE

By

H. Naylor, B. Sc.

and

J. S. Scott, P.Eng.

June 15 to September 10, 1973

MINERAL CLAIM GROUP, MINERAL CLAIM NAME [RECORD NUMBER]

OWL GROUP: Owl 1 [30908]; Owl 2 [30909]; Owl 3 [28053]; Owl 4 [30910]; Owl 5 [28055]; Owl 6 [30911]; Owl 7 [28057]; Owl 8 [28058]; OC 1-6 [23736-23741]; OC 43 [23847]; OC 44 [23848]; OC 46-48 [23850-23852]; KB2 [23854]; KB8 [23860]; KB9-14 [23887-23892]; OLN 17-24 [32207-32214]

LES GROUP: OC 45 [23849]; OCS 15-17 [32195-32197]; OCS 18 [32215]; OCS 19 [322216]; OCS 20 [32198]; OCS 21 [32199]; OCS 22-26 [32200-32204]; OLS 1 [32205]; OLS 2 [32206]; OLS 3 [30898]; OLS 4 [30899]; KB 1 [23853]; KB 7 [23859]

JIM GROUP KB 3 [23855]; KB 5 [23857]; OL 3 [30888]; OL 15-22 [31977-31984]; OLS 5-12 [30900-30907]; OLS 13-30 [31957-31974]; BO 9 [31993]; BO 11 & 12 [31995-96]

RAY GROUP: KB 4 [23856]; KB 6 [23858]; OL 1 [29588]; OL 2 [29589]; OL 4-12 [30889-30897]; OL 13 & 14 [31975 & 76]; BO 1-8 [31985-31992]; BO 10 [31994]; OLN 1-16 [29614-29629]

TABLE OF CONTENTS

MAPS

INTRODUCTION

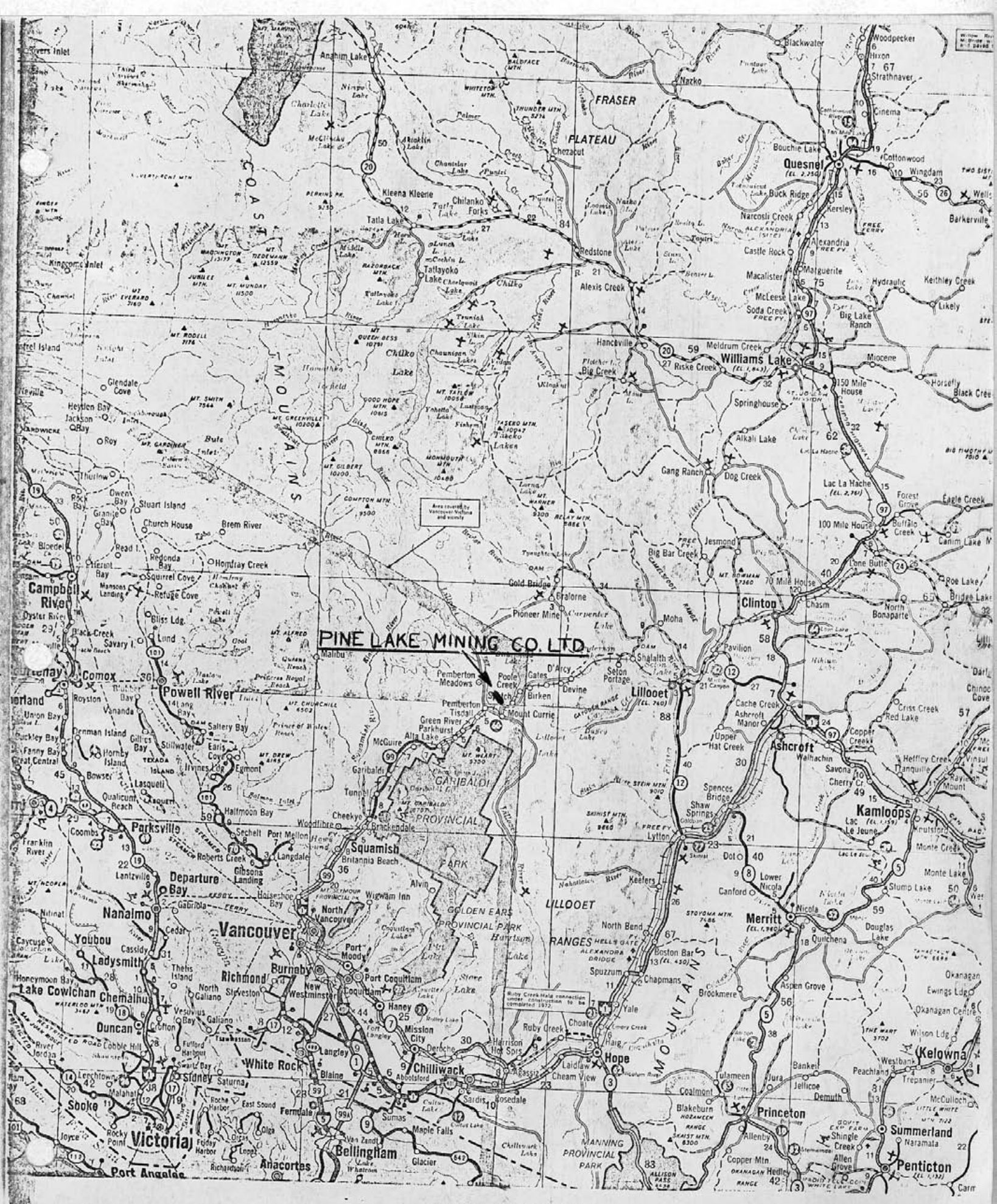
The writer was employed by Pine Lake Mining Co. Ltd. [N.P.L.] to map the Owl Creek area north of Pemberton, British Columbia. The objective was to regionally assess the 134 claim property and to indicate additional exploration targets.

A 400 feet to 1 inch topographic map, prepared from air photographs, was used as a base map. Much of the central claim area, that is, the vicinity of the known mineral occurrences along Owl Creek, had already been mapped and documented and the writer therefore concerned himself mainly with the outlying claims.

Field work and report preparation was carried out by H. Naylor; J. S. Scott, P. Eng., and R. Hrkac provided the supervision and direction.

LOCATION AND ACCESS

The property straddles seven miles of Owl Creek starting about one mile from its junction with the Birkenhead River. An access jeep road traverses most of the length of the claims. This road branches from the Pemberton - D'Arcy highway about 2½ miles north of Mount Currie and 100 miles north of Vancouver.



SCALE: 1" = 34 MILES

4623-M1

Fig. 1

PHYSIOGRAPHY

Owl Creek flows southeasterly into the Birkenhead River. The valley forms a linear topographic trough which continues southeast of the Birkenhead River and forms the western arm of Lillooet Lake. From the uppermost showing on Little Owl Lake, Owl Creek drops steeply through a canyon most of the way to its mouth. The valley is generally steep walled and heavily timbered to the tops of the ridges which rise to 5,500 feet or more.

PROPERTY HISTORY

The lowermost copper showing, now known as the A zone, was reportedly discovered in 1913 and was known as the Copper Queen. At approximately that time an Adit was driven 217 feet in length under the exposed mineralization.

Britannia Mining and Smelting Co. Ltd. drilled three short holes on this showing in 1928-29. Mining Corp. of Canada undertook geological and geochemical silt surveys, trenching and road building in 1963.

L. R. Harrison and J. S. Scott acquired the property in 1968 and subsequently optioned it to Pine Lake Mining Co. Ltd. Since that time Pine Lake has carried out extensive exploration projects and defined

four mineralized zones designated the 'A', 'B', 'C' and 'D' zones, in the order in which they appear working upstream on Owl Creek. The extent of the work and the results are tabulated below:

Zone 'A' One 958 foot diamond drill hole yielding 600 feet of 0.2% Cu

Zone 'B' Soil sampling with a weakly anomalous geochemical response but essentially negative results.

Zone 'C' Soil sampling, magnetometer surveys, induced polarization, 10 diamond drill holes totalling 8,113 feet, the best intersection being 330 feet of 0.40% Cu and 0.029% MoS_2.

Zone 'D' Soil sampling, magnetometer surveys, induced polarization, 19 percussion holes to an average depth of 300 feet, indicating sub-economic grades of copper mineralization coincident with a geochemical anomaly, and pyrite accompanied by minor chalcopyrite and traces of bornite in the anomalous I.P. area.

The work was completed in 1972.

GENERAL GEOLOGY

Remnants or pendants of Mesozoic volcanic and sedimentary rocks trend northwesterly within younger typical Coast Range granitic rocks. This is a common situation along the eastern margin of the coast batholiths. Faulting and therefore the axis of valleys also trend in this direction.

PROPERTY GEOLOGY

The volcanic rocks outcropping on the claims are comprised of several types. They include breccias and agglomerates with fragments and pebbles of cherty, granitoid, tuffaceous or limy chloritic rocks and sometimes clear vitreous quartz 'eyes'. Although these breccias are typically massive, individual beds could probably be traced, by noting the variations in composition and angularity of the fragmental constituents, if the property were to be mapped in more detail.

Feldspar rich, often schistose tuffs, are sometimes difficult to identify and are easily confused with breccias comprised of feldspar rich fragments whose outlines are only discernable on a weathered surface.

A green porphyritic rock [andesite or dacite] is also common. Phenocrysts are most typically augite

but hornblende and feldspar are also present.

Limy chlorite schists are less common.

A unique occurrence of a purple volcanic breccia was noted in the vicinity of the OLS 17 and 18 claims and to the west of the property. This unit does exhibit foliation and occasionally bedding and a detailed tracing would probably help to solve the structural complexities of the area.

All the volcanic rocks are typically dioritized near the contact with the dioritic intrusives but appear to be only chilled near the more acid granites northeast of Owl Creek.

Sedimentary rocks are comprised mainly of thin bedded cherts and argillites with minor interbeds of pyroclastics. Two beds of conglomerate are shown on the map. They are, however, dissimilar, the most northerly occurrence being comprised of granitoid and felsite boulders and the other feldspathic pyroclastic boulders.

Intrusive rocks form the ridge flanking the northeast border of the property. They range from a leucogranite to granodiorite and occasionally a hornblende diorite. Similar rock underlies a portion of the ridge west of Zone 'C'. Elsewhere, including the

smaller mineralized stocks in the Owl Creek valley, the composition ranges from a diorite to a quartz diorite.

STRUCTURES

Faulting, and to a lesser extent bedding and foliation is revealed through a study of air photo linears. This evidence, combined with field observations of shears, foliation, slickensides and sparse bedding attitudes permits the following generalizations.

A major fault system trends northwesterly along Owl Creek and probably well beyond both to the southeast and northwest. Numerous parallel and subparallel complementary faults traverse the property.

Whereas the northerly granite contact is conformable with bedding and foliation in the adjacent units, with the exception of the exposures of sedimentary rocks on the OLN 18 claim, the situation is more complex in the valley and the southwestern flanks of Owl Creek. Here numerous crossfaults have offset beds and possibly provided zones of structural weakness into which intrusive rocks have entered. The most notable of these faults and joint sets trend:

1] N 50° E, near vertical dip with slickensides commonly plunging 10° SW. This is also the trace of the intrusive contact on the OLS 21

to 24 claims and the direction of the Owl Creek offsets in the 'C' Zone.

2] Due NW, with vertical dip. This is best developed in the 'B' Zone, but occurs elsewhere as well. A left handed sense of movement along this strike was noted in a dyke offset on the OLS 4 claim.

3] Due EW, dipping moderately to the north. This shear zone forms the zone of weakness resulting in the change of direction of Owl Creek in the vicinity of the KB 9, 11 and 13 claims and is best developed along the intrusive contact to the west on the OLS 5 and 7 claims.

4] NE with a shallow dip to the west.

Given the attitudes of the sedimentary rocks exposed on the OLS 11 and 12 claims and assuming that these beds are equivalent to those exposed in Zone 'C' [in altered form] and on the OLN 18 claim, a regional syncline is postulated, with a fold axis trending roughly parallel to Owl Creek. Additional data would be required to confirm or deny this theory.

ALTERATION, MINERALIZATION

Intrusive rocks, especially the dioritic phases, exhibit propylitic alteration where they are contaminated with volcanic rocks. Propylitic alteration along with minor K-feldspar alteration is also seen in some joints within the granitic rocks.

Volcanic rocks are all altered to some degree with the exception of the purple breccia beds. A halo of dioritization varying locally in extent occurs around the diorite bodies. This is accompanied by epidote, calcite, chlorite, quartz and pyrite. Intense pyritization and resulting gossans occur where fracturing is concentrated in brittle aphanitic rocks of both sedimentary and volcanic origin. The intrusives are completely altered in patches in the vicinity of the mineralized shear zones. The resulting gossans are formed from quartz, sericite, kaolin and sulphides.

No detailed mapping was done on the mineralized zones by the writer. Descriptions of previous examinations are contained in reports by W. R. Bacon, J.S. Scott and R. H. Seraphim.

Some observations by the writer, placing the mineralization in a regional context are as follows.

The four important mineralized zones known to date are distributed along the postulated fold axis and related fault traces which form the main Owl Creek topographic depression.

Zone 'C' lies at the confluence of the projection of an east-west trending shear system and the fold axis, while Zone 'B' lies at the confluence of a north-south shear system with the same fold axis. Zone 'D' is probably an offset continuation of Zone 'C'.

At Zone 'A' strong shearing dipping steeply to the southeast is evident locally and although photo evidence is lacking here, there may be a confluence of this shearing with the northwesterly striking faulting and fold axis. Fracturing is particularly intense and well developed here.

At the lower end of Big Owl Lake a hitherto unexplored potential for mineralization exists. Dioritic intrusives, with a strong halo of alteration and pyritization trend into the covered terrain in the valley. A northeasterly striking joint and shear set also trends into the area.

It is not clear why the mineralization in Zone 'B' is so much weaker compared with the other zones. The

gossans are almost exclusively formed from pyrite rather than chalcopyrite. The covered area between the canyon and the road northeast of Zone 'B' has some exploration potential in spite of the poor geochemical response. The two factors of deep glacial till and the probable extensive groundwater runoff would interfere with the vertical percolation of ions from bedrock to surface soils. Strong shearing is known to intersect the volcanic-intrusive contact in the area, making a favourable environment for mineralization.

The only additional copper occurrence noted is located on the OLN 17 claim. Chalcopyrite and malachite occurs on a few joints in quartz diorite at one known location only.

CONCLUSIONS

Regional mapping of the Owl Creek property has indicated specific structural control for the four known zones of copper and trace molybdenite mineralization. In addition to these zones a potential for mineralization exists in the covered area at the outlet of Big Owl Lake and northeast of Zone 'B'.

DECLARATION OF COSTS

	Work Period	Rate	Total
Geological Mapping:			
H. Naylor	Field - June 15 to July 31	$1,000	$1,500.00
	Expenses - truck, etc.		125.36
Supervision:			
J. S. Scott	July 17 and 30		249.00
Office Preparation of Map and Report:			
H. Naylor	August 1 to Sept. 10		160.00
Versatile Drafting			342.00
			$2,376.36

Declared before me at the City of Vancouver, in the Province of British Columbia, this 2 day of October 1973, A.D.

H. Naylor

J. S. Scott

Joan Turner

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia,
Sub-mining Recorder

C E R T I F I C A T E

I, Hugh Naylor, of the Town of Pemberton, in the Province of British Columbia, hereby certify that:

1] I am a geologist with residence at Pemberton, B. C.

2] I am a graduate of the University of British Columbia [B.Sc. 1962].

3] I have worked as an exploration geologist since graduation primarily in British Columbia with various exploration companies.

4] From June 15th to July 31st and parts of August, 1 to 12, I carried out the field work pertaining to this report and prepared the documentation.

DATED at Vancouver, British Columbia, this tenth day of September, 1973.

Hugh Naylor

C E R T I F I C A T E

I, James S. Scott, of the District of Surrey, in the Province of British Columbia, hereby certify that:

1] I am a geologist residing at 12642 - 14A Avenue, Ocean Park, B. C.

2] I graduated from the University of Saskatchewan in 1935 with the degree of Bachelor of Arts and Science in Geology.

3] I am a member of the Association of Professional Engineers of Ontario [1958] and of the Association of Professional Engineers of British Columbia [1952].

4] I am a member of the Canadian Institute of Mining and Metallurgy [1947], and of the Geological Association of Canada [Charter].

5] I have practised my profession as geologist for 33 years in Ontario, Quebec, Nova Scotia and British Columbia.

DATED at Vancouver, British Columbia this tenth day of September, 1973.

J. S. Scott, P. Eng.

4623-172

PINE LAKE MINING COMPANY LTD.

GEOLOGY

HARRISON PROPERTY, BRITISH COLUMBIA

400 0 400 800 1200

SCALE IN FEET

DATE : AUGUST 1973

BY : H. NAYLOR

SHEET 1 of 2

INTRUSIVE ROCKS

A — Granite, Granodiorite

B — Diorite, Quartz Diorite

VOLCANIC ROCKS

C — Breccias, Tuffs, Agglomerates Andesite Porphyries, minor Basalt, Rhyolite; Purple Breccias

SEDIMENTARY ROCKS

D — Chert, Argillite, including minor Pyroclastics

E — Conglomerates

ALTERATION, MINERALIZATION

Silicification . . . sil

Calcite . . . . . cal

Epidote . . . . . epi

Propylitic . . . . prop

Serpentine . . . . serp

Hematite . . . . hem

Chalcopyrite . . . chpy

Pyrite . . . . . py

STRUCTURE

Bedding

Jointing

Slickenside with Plunge

Foliation

Faulting

SYMBOLS

Contact

Photo Linear

Area of Frequent Outcrop

Road

Trail

OWL LAKE

LITTLE OWL LAKE

Owl Creek

ZONE "D"

ZONE "C"

BO 12 BO 11 BO 10 BO 9 BO 8 BO 7 BO 6 BO 5 BO 4 BO 3 BO 2 BO 1

OL 22 OL 21 OL 20 OL 19 OL 18 OL 17 OL 16 OL 15 OL 14 OL 13 OL 12 OL 11 OL 10 OL 9 OL 8 OL 7 OL 6 OL 5 OL 4 OL 3 OL 2 OL 1

OLN 2 OLN 1 OLN 3 OLN 4 OLN 5 OLN 6 OLN 7 OLN 8 OLN 9 OLN 10 OLN 11 OLN 12

OLS 30 OLS 29 OLS 28 OLS 27 OLS 26 OLS 25 OLS 24 OLS 23 OLS 22 OLS 21 OLS 20 OLS 19 OLS 18 OLS 17 OLS 16 OLS 15 OLS 14 OLS 13 OLS 12 OLS 11 OLS 10 OLS 9 OLS 8 OLS 7 OLS 6 OLS 5 OLS 4 OLS 3 OLS 2 OLS 1

KB 8 KB 7 KB 6 KB 5 KB 4 KB 3 KB 2 KB 1

4623-M3

INTRUSIVE ROCKS

A — Granite, Granodiorite

B — Diorite, Quartz Diorite

VOLCANIC ROCKS

C — Breccias, Tuffs, Agglomerates Andesite Porphyries, minor Basalt, Rhyolite

D — Purple Breccias

SEDIMENTARY ROCKS

E — Chert, Argillite, including minor Pyroclastics

F — Conglomerates

ALTERATION, MINERALIZATION

Silicification . . . . sil

Calcite . . . . . cal

Epidote . . . . . epi

Propylitic . . . . prop

Serpentine . . . . serp

Hematite . . . . hem

Chalcopyrite . . . chpy

Pyrite . . . . . py

STRUCTURE

Bedding

Jointing

Slickenside with Plunge

Foliation

Faulting

SYMBOLS

Contact

Photo Linear

Area of Frequent Outcrop

Road

Trail

PINE LAKE MINING COMPANY LTD.

GEOLOGY

HARRISON PROPERTY, BRITISH COLUMBIA

400 0 400 800 1200

SCALE IN FEET

DATE AUGUST 1973

BY H. NAYLOR

SHEET 2 of 2