4005

CANNON-HICKS ASSOCIATES LTD.
SUITE 713-744 WEST HASTINGS ST.
VANCOUVER 1, B.C.

REPORT

ON

THE JAM AND TT CLAIM GROUPS

KAMLOOPS, BRITISH COLUMBIA

OF

BOW RIVER RESOURCES LTD.

SUBMITTED BY

R.W. PHENDLER, B.SC., P. ENG.

VANCOUVER, B.C. APRIL 12, 1972

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DECLARATION OF EXPENDITURES

I, R.W. PHENDLER, P. ENG., do hereby declare:

1. That the following days were spent by me in carrying out geological mapping on the claims of Bow River Resources in the Kamloops area.

   March 27 (1/2), 28, 29, 30, 31

   April 3 (1/2), 4 (1/2), 5, 6, 7 (1/2), 10 (1/2), 11, 12, 17 (1/2)

2. Rates are as follows:

$ 150.00 per day (field time) x 7.5 days	-	$ 1,125.00
$ 75.00 per day (office time) x 3.5 days	-	262.50

3. Other direct costs are as follows:

Draughting charges (Altair Ltd.)	-	113.75
Travel & living expenses of myself	-	63.23
TOTAL AMOUNT FOR WHICH CREDIT IS CLAIMED		$ 1,564.48

R.W. Phendler, P. Eng

R.W. PHENDLER, B. SC., P. ENG.

Sept 28, 1972

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 3
day of November 1972, A.D.

D G . M Leaf

Joan Turner

A Commissioner for taking Affidavits within British Col
A Notary Public in and for the Province of British Colum

Sub - mining Recorder

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 4005 MAP #1

CANNON-HICKS ASSOCIATES LTD.
VANCOUVER B.C.

BOW RIVER RESOURCES LTD.

PROJECT: JAM & T.T. CLAIMS No. 1

by: R. W. PHENDLER

SCALE: 1" = 136 Miles DATE: March-72

ALTAIR drafting services ltd.

PART "A"

SUMMARY & CONCLUSIONS:

Bow River Resources Ltd. holds about six square miles of ground in the Cherry Creek Area about ten miles west of Kamloops in central British Columbia. The claims cover an area four miles long by 1½ miles wide, the long dimension striking northwest parallel to and about half a mile southwest of the Trans-Canada Highway.

The area is underlain essentially by volcanic rocks of the Nicola Group which are composed of andesites and rhyolites. These are cut by plugs, batholiths and dykes of the Coast Intrusions which range from rhyolites through granite and diorites to peridotite. Overlying the volcanics and intrusives erratically and in part are Tertiary agglomerates and basalt porphyrys of the Kamloops group.

The Coast Intrusion in the Kamloops area is made up primarily of the Iron Mask batholith, and later intrusions known as the Sugarloaf and Cherry Creek intrusions. Copper mineralization is associated with the later intrusives which are associated with the peripheries of the Iron Mask stock.

Extensive exploration and some mining has been carried out in the area for many years but it is only recently that sizable deposits with appreciable copper mineralization have been discovered.

A 1600' band of what is believed to be Cherry Creek intrusive crosses the eastern corner of the Bow River Resources

Ltd. claims. West of this area and obscuring the contact between the intrusive and the Nicola volcanics are volcanic rocks of the Kamloops group. This contact area is important in the search for copper mineralization and warrants testing.

Geological mapping by the writer has determined the limits of the various rock types in the area and corresponds generally with results of a recent magnetometer survey which was carried out on about one third of the claims under discussion.

The claim group is made up of the TT claims which are owned by Bow River and the Jam group to the northwest which are optioned to Bow River. The following work has been carried out on the two groups, which are contiguous:

TT GROUP	JAM GROUP
Complete Grid Coverage	Partial Grid Coverage
Geological Mapping	Geological Mapping
Magnetometer survey	Geochemical Survey
Induced Polarization Survey	

TT GROUP:

The magnetometer survey vaguely outlined the principal rock types and showed one isolated high reading in an area of negative values. This corresponds with a large area of high conductivity disclosed by the induced polarization survey. Although underlain by Kamloops volcanics, it is possible that an intrusive of interest exists at depth. However, it is more likely due to disseminated magnetite.

JAM GROUP:

Geological mapping shows that the claim group is almost completely underlain by volcanic rocks of the Nicola group. These are composed of andesites, tuffaceous andesites and limonite - stained rhyolites that are reported to contain pyrite specks and some malachite staining. Geochemical anomalies of low intensity correspond generally with those areas.

Being favourably located along the strike of the southwest margin of the Iron Mask - Cherry Creek - Sugarloaf intrusive complex, the claim group warrants extensive exploration.

RECOMMENDATIONS:

It is recommended that:

1. The TT Claims be geochemically surveyed and samples be analyzed for copper content.
2. That an induced polarization survey be conducted over the complete claim group. Depth penetration should be maximum. It is not believed that 350 foot penetration is sufficient.
3. That diamond drilling be carried out in areas where the induced polarization survey discloses the presence of anomalous condition.

COST ESTIMATE:

1.	Geochemical Survey:	
	700 Samples @ $1.50/Sample	$ 1,050.00
	Analyze 700 Samples @ $1.20/Sample	840.00
2.	I. P. Survey:	
	40 Miles @ $400/Mile	16,000.00
3.	Diamond Drilling:	
	5,000 Feet @ $12.00/Foot	60,000.00
4.	Sample Assaying:	
	1,000 Samples @ $3.00/Sample	3,000.00
5.	Engineering and Geology:	5,000.00
	TOTAL	85,890.00
	15% Contingencies	12,884.00
	GRAND TOTAL	$ 98,774.00

Respectfully submitted,

R. W. Phendler, P. Eng.

R. W. PHENDLER, P. ENG.

PROFESSIONAL ENGINEER OF R. W. PHENDLER BRITISH COLUMBIA

PART "B"

INTRODUCTION:

Between March 28 and April 6, 1972,, the writer carried out geological mapping on the Jam and TT claim groups of Bow River Resources Ltd. Mr. G. Bleiler of Bow River Resources guided the writer to the property but, he carried out the mapping unaccompanied.

In conjunction with the mapping, an induced polarization survey was conducted over the TT claim group.

Mapping on the TT group was done by walking the 24 miles of grid line assisted by aerial photographs. As some mapping had previously been done on the Jam group, it was felt that checking of some of these outcrops and the examination of and locating of other outcrops by the use of photos would be sufficient. All outcrops, roads, and geographic features were tied in to the grid lines.

LOCATION AND ACCESS:

The property lies at an elevation of 1700' - 2700' about 10 miles due west of Kamloops in south central British Columbia, about 250 road miles from Vancouver. The claims lie parallel to and about half a mile southwest of the Trans-Canada Highway and are networked by many good quality dirt roads.

About half the claims cover open pasture or park -

land, while the higher levels have moderate to thin vegetation cover of jack pine and spruce. A few small lakes exist in the area but other than this, little water is available.

PROPERTY AND OWNERSHIP:

The TT groups consist of 28 claims as follows:

NAME	TAG NUMBER	EXPIRY DATE
TT 69, 71, 73, 75	305013M - 16M	Feb. 23, 1973
TT 77, 78	305018M - 19M	Feb. 23, 1973
TT 79 - 88	305024M - 33M	Feb. 23, 1973
TT 105, 106	305020M - 21M	Feb. 27, 1973
TT 107, 108	305034M - 35M	Feb. 27, 1973
TT 110.	305023M	Feb. 27, 1973
TT 111.	305008M	Mar. 2, 1973
TT 113 - 117	305006M - 02M	Mar. 2, 1973
TT 118	328501M	Mar. 2, 1973

These claims are held in the name of Bow River Resources Ltd.

The JAM claims are comprised of 60 contiguous claims as follows and are optioned by Bow River Resources Ltd.

NAME	TAG NUMBER	EXPIRY DATE
JAM 1 - 20	190131M - 50M	December 6, 1972
JAM 21 - 53	298015M - 47M	December 6, 1972
JAM 54 - 59	218923M - 28M	December 6, 1972
JAM 60	298014M	December 6, 1972

HISTORY:

The mineral deposits of the Kamloops area include several types and occur at widely scattered points. Deposits of gold, silver, lead, zinc, copper, mercury, tungsten and iron as well as industrial minerals and coal have been discovered. Some of these are among the earliest lode discoveries of British Columbia, having been found as early as 1882. However, in spite of the number of discoveries that have been made, the mineral production of the area remains relatively small compared to other nearby mining areas. Total metal production to 1961 has been calculated to be $1,679,000 with gold production totalling $386,000.

Silver production totals 316,000 ounces, copper 6 million pounds and lead and zinc 2.5 million pounds.

Coal production has totalled 2.7 million tons valued at about 11 million dollars.

Most of the mineral output has come from a very few properties and the great majority of this, value - wise has been derived from the copper production from the Iron Mask Mine, located about seven miles east of the TT and Jam claims.

The Iron Mask property was staked in 1896 and produced 190,000 tons of ore averaging 1.5% copper between 1901 and 1928. It has not produced since.

Since 1950, interest has been intermittently shown in the Kamloops area with most exploration pointed toward copper. Several properties in and around the Iron Mask batholith have reported tonnages of mineralized material prior to 1970 as follows:

Property	Tons	% Cu.	Environment
Cominco (Jacko Lake)	10,000,000	0.51	Microdiorite
Galaxy Copper Ltd.	5,000,000	0.50	Andesite & Diorite
Pinnacle Mines Ltd.	75,000	0.66	Microdiorite
Afton Mines Ltd.	600,000	0.63	Diorite
Rolling Hills Ltd.	311,450	1.12	Basalt & Diorite

More recently, extensive diamond and percussion drilling has indicated the presence of 36 million tons of 0.66% Cu. on the Afton property (Feb. 21, 1972.) Since that date, drilling results have been most encouraging on that property, suggesting that a mineral deposit exists that may be profitably exploited. The results of the drilling on the Afton property has led to extensive ground acquisition with widespread geological, geophysical and geochemical investigations with some diamond drilling.

The Pothook shaft which was sunk in 1899, disclosed interesting mineralization. Additional exploration by Kennecott in 1952, Noranda in 1958 and others in the 1960's failed to find anything approaching commercial grade

mineralization until 1971.

GEOLOGY AND MINERALIZATION:

The area in which the TT and Jam claim groups are located is underlain by Nicola volcanic rocks of Triassic age intruded by a small monzonite porphyry plug of the Coast Intrusions of Jurassic Age. Overlying these formations in part and masking their relationship along the contact areas are relatively fresh agglomerates and porphyrytic basalts and andesites belonging to the Kamloops group of Tertiary age.

The Nicola volcanics vary from fine - grained nearly aphanitic to coarsely porphyrytic. They are predominantly green but also occur in various shades of purple, red, brown or grey. They are chiefly andesites but include basaltic types as well as porphyrytic rhyolites (See Fig. 3). The more tuffaceous andesites are often chloritized with epidote and calcite. Minor amounts of sedimentary rocks are associated with the volcanic members. Shaly argillite was found north and east of Beaton Lake.

Coast intrusions of Jurassic age, consist of syenite, monzonite, diorite and gabbro and are intrusive into the Nicola volcanics. In the vicinity of Kamloops, plutonic rocks of this type form a small but important body that is referred to as the Iron Mask batholith. The

main exposure is 12 miles long and 2½ miles wide, the direction of elongation paralleling the strike of the enclosing rocks (northwest). Several later porphyry stocks intrude the batholith, among thses are the Cherry Creek intrusions which are found along the east and north margins of the batholith and are typified by a pinkish to orange cast imparted to it by the widespread introduction of potash feldspar. These rocks range from fine grained phases of latite or monzonite porphyry to angular fragments of plutonic rocks set in a highly altered matrix. It is the former which is believed to exist on the northwest portion of the TT claims.

A few miles to the west in the vicinity of Sugarloaf Hill is a promontory of microdiorite porphyry.

It has been observed by Dr. J. M. Carr (Minister of Mines, B.C., 1956, pages 47 - 54) that the Cherry Creek and Sugarloaf intrusive rocks are almost totally restricted to the east and west margins of the Iron Mask batholith and in each locality copper mineralization has been found associated with these intrusions.

On the northern part of the TT claims the Cherry Creek intrusive plug disappears below the later overlying Kamloops group. This formation covers the contact between the intrusive and the Nicola andesites, which is considered to be favourable for the occurrence of copper mineralization.

The volcanic rocks of the Kamloops group are widely distributed in the region but except in the northern part close to Kamloops Lake their areal extent is relatively small. They are comprised of rhyolite, trachyte, andesite and basalt, are usually massive and fine grained but are locally porphyritic. Occassionally they are so coarse grained as to resemble plutonic rocks. Agglomerates and breccias are also common.

In places the distinction between Nicola and Kamloops volcanics is often difficult to determine in the fields, but in general, the Kamloops rocks are fresher, lack alteration and are decidedly less magnetic than the Nicola volcanics.

Copper mineralization is found around the periphery of the Iron Mask batholith with minor amounts in the central part. Many deposits are situated in the batholithic rocks and some in the intruded Nicola rocks at the borders of the intrusive complex. They are impregnations, veins stock-works and mineralized shear zones and some of the disseminated impregnations appear to have no solution channels. The principal minerals are chalcopyrite and bornite with some chalcocite, native copper, cuprite, azurite and malachite. Chrysocolla, galena and molybdenite have also been reported in the area. Magnetite and pyrite are both common and occur as lenses, veins or as fine disseminations. Gold and

silver values are generally low but a few deposits in the Iron Mask area carry good values.

On the Afton property the preferred host rock for copper mineralization appears to be fine to medium grained syenite and altered dioritic rocks; however, some native copper has been identified in picrite basalts which are lens - like intrusions that appear to occur mainly on the east and west margins of the batholith along pre-existing lines of weakness at the contacts with the Nicola volcanics. Alteration is moderate to intense and the rocks are badly shattered and fractured as a result of repeated faulting.

Chalcopyrite appears to be the predominant copper mineral, although significant amounts of chalcocite and native copper have been observed in drill core. Secondary copper is very rare.

It is reported that the principal mineral zones strike E W or slightly north of west.

Some of the rhyolite on the Jam claim is limonite-stained, indicating the presence of pyrite, which had been observed by earlier mappers in 1969. On the eastern edge of the TT claim shattered and pyritized andesite float was observed by the writer.

The area underlain by Kamloops volcanics between Sugarloaf Hill and Cherry Bluff probably is underlain at depth by intrusive rocks of the Cherry Creek group. These

rocks are closely related to copper mineralization and at several localities they are extensively mineralized. They are not known to cut Kamloops volcanics, which contain no copper mineralization of any consequence.

In Carr's discussion of the structural setting of the Iron Mask Batholith he pointed out the existence of at least three major zones of recurring fractures, along the northeast, north and southwest margin. The distribution of the favourable Cherry Creek and Sugarloaf intrusive rocks is almost totally restricted to these zones and suggests that these zones were the loci of recurring structural and igneous activity.

From this it can be said that the area underlain by Kamloops volcanics along the strike extension of the margins of the Iron Mask Batholithic complex has good possibilities of containing copper mineralization.

GEOCHEMISTRY:

In 1969, 1397 soil samples were collected along 54 miles of grid line that covered the central section of the Jam claims. These samples were taken at 200' intervals on lines 500' apart and covered an area 4½ miles long by one mile wide.

Distribution of results are as follows:

Category	No. of Sample	Range
Background	978	Less Than 76 ppm Cu.
Threshold	258	76 - 100 ppm. Cu.
Anomalous	161	Greater than 100 ppm Cu.

The anomalous areas appear to coincide with areas underlain or draining limonite - stained rhyolite in the northern limits of the Jam claims. Malachite staining and sulphide specks were reported by personel of Cannon-Hicks Associates Ltd., who in 1969, conducted the geochemical survey and carried out some geological mapping.

No geochemical work has been carried out on the TT claim group.

GEOPHYSICAL:

A magnetometer survey using a Model G - 110 fluxgate magnetometer was conducted over the 28 TT claims during March, 1972. Readings were taken at 100 foot intervals on the 400' spaced lines; total miles of line run was 25.3. This work was carried out by Geotronics Surveys Ltd. of Vancouver. The purpose of the survey was to assist in the differentiation between Nicola volcanics, Coast intrusive and Kamloops volcanics.

In a general way the magnetometer survey outlined the Coast intrusive plug, which is well shown on the ground

by numerous outcrops. Continuous negative readings are shown over this area but continue well into the area shown to be underlain by Kamloops volcanics. Because of the highly variable results it appears that no clear-cut demarcation lines can be shown between the intrusive and the Kamloops volcanics and between the Kamloops volcanics and the Nicola volcanics.

Concurrent with the present geological mapping an induced polarization survey was being conducted on the TT claims. Although no results are as yet forthcoming, it is understood that anomalous conditions showing chargeability about twice background existed on the northwest limit of the grid. This coincides with some high magnetometer readings within an area of continuous low readings shown to be underlain by intrusives. Outcrops in this area appear to be Kamloops agglomerates with rounded fragments of microdiorite and may indicate the presence in depth of a plug of favourable Sugarloaf type intrusive.

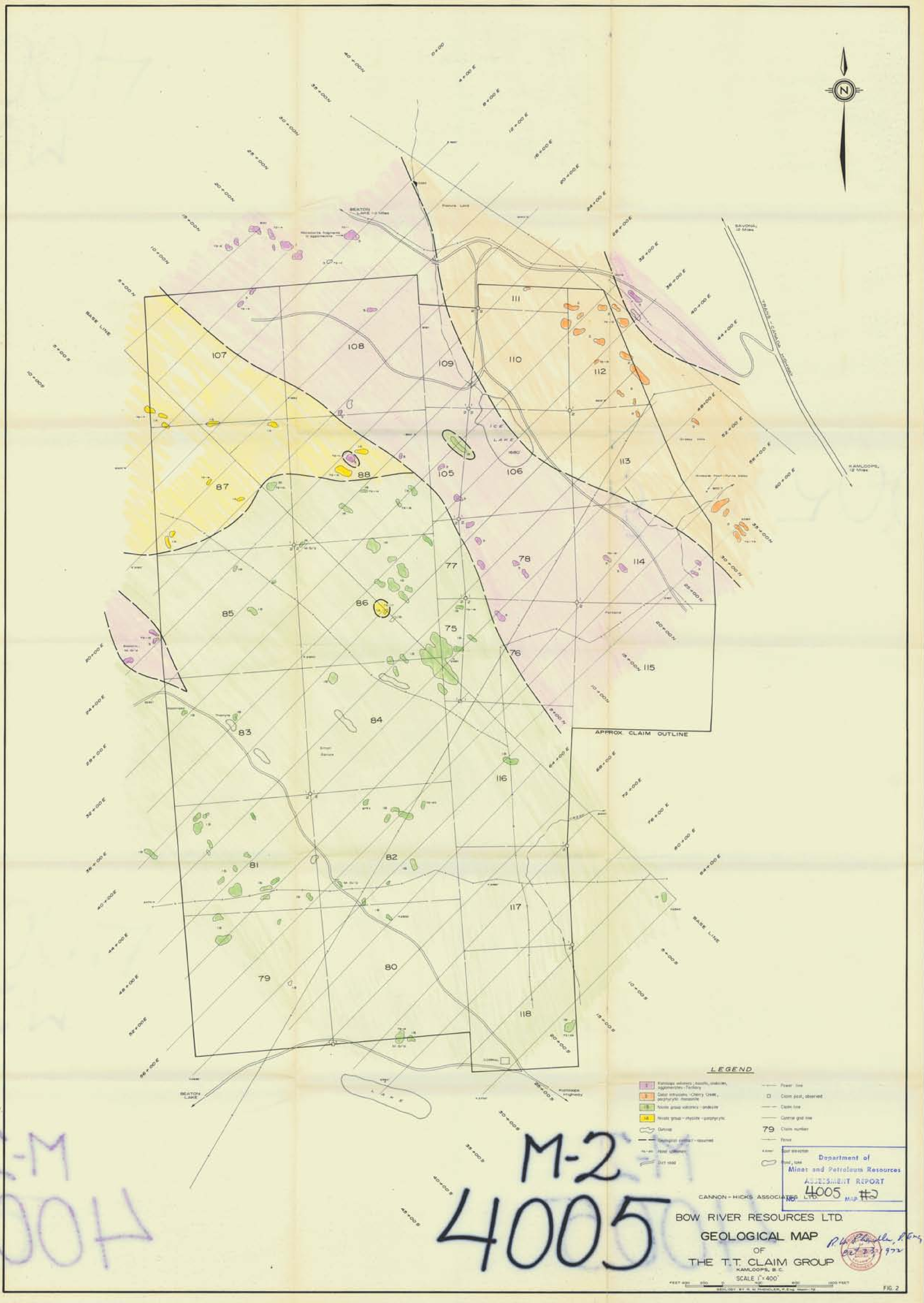
Respectfully submitted,

R. W. Phendler, P. Eng.

R. W. PHENDLER, P. ENG.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. W. PHENDLER

RWP/lcc



LEGEND

- Kamloops volcanics; basalts, andesites, agglomerates - Tertiary
- Coast intrusions - Cherry Creek, porphyritic rhyodacite
- Nicola group volcanics - andesite
- Nicola group - rhyolite - porphyrite
- Outcrop
- Geological contact - assumed
- Road allowance
- Dirt road
- Power line
- Claim post, observed
- Claim line
- Control grid line
- 79 Claim number
- Fence
- Spot elevation
- Road, type

CANNON - HICKS ASSOCIATES LTD.

BOW RIVER RESOURCES LTD.

GEOLOGICAL MAP OF THE T.T. CLAIM GROUP

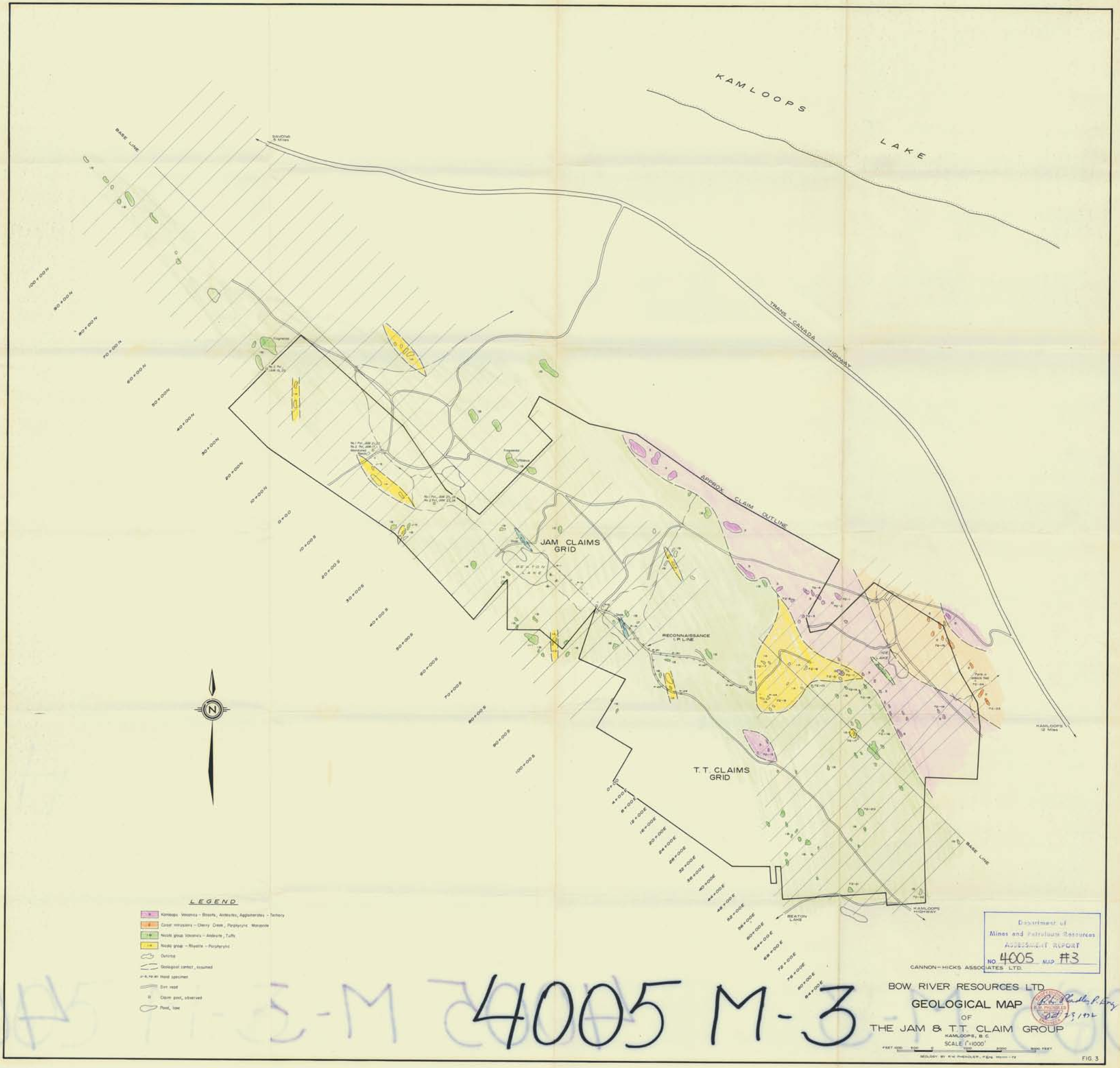
KAMLOOPS, B.C.

SCALE 1" = 400'

FEET 400 200 0 400 800 1200 FEET

GEOLOGY BY R. W. PHENDLER, P.Eng.

FIG. 2


KAMLOOPS LAKE
TRANS - CANADA HIGHWAY
BASE LINE
JAM CLAIMS GRID
BEATON LAKE
APPROX. CLAIM OUTLINE
RECONNAISSANCE I.P. LINE
T.T. CLAIMS GRID
KAMLOOPS 12 Miles
KAMLOOPS HIGHWAY
BEATON LAKE
100+00N
90+00N
80+00N
70+00N
60+00N
50+00N
40+00N
30+00N
20+00N
10+00N
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60+00S
70+00S
80+00S
90+00S
100+00S
LEGEND
Kamloops Volcanics – Basalts, Andesites, Agglomerates – Tertiary
Coast Intrusions – Cherry Creek, Porphyritic Monzonite
Nicola group Volcanics – Andesite, Tuffs
Nicola group – Rhyolite – Porphyritic
Outcrop
Geological contact, assumed
Hand specimen
Dirt road
Claim post, observed
Pond, lake
Department of Mines and Petroleum Resources ASSESSMENT REPORT NO 4005 MAP #3
CANNON–HICKS ASSOCIATES LTD.
BOW RIVER RESOURCES LTD
GEOLOGICAL MAP OF THE JAM & T.T. CLAIM GROUP
KAMLOOPS, B.C.
SCALE 1"=1000'
FEET 1000 500 0 1000 2000 3000 FEET
FIG. 3
4005 M-3