

REPORT
ON THE
SIBOLA AND TWINKLE LAKE CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

- Prepared for -

KINGSVALE RESOURCES LTD.
904 - 675 West Hastings Street
Vancouver, B.C. V6B 1N2

- Prepared by -

DAWSON GEOLOGICAL CONSULTANTS LTD.
203 - 455 Granville Street
Vancouver, B.C. V6C 1T1

James M. Dawson, P.Eng.
March 12, 1991

KINGVALE RESOURCES LTD.

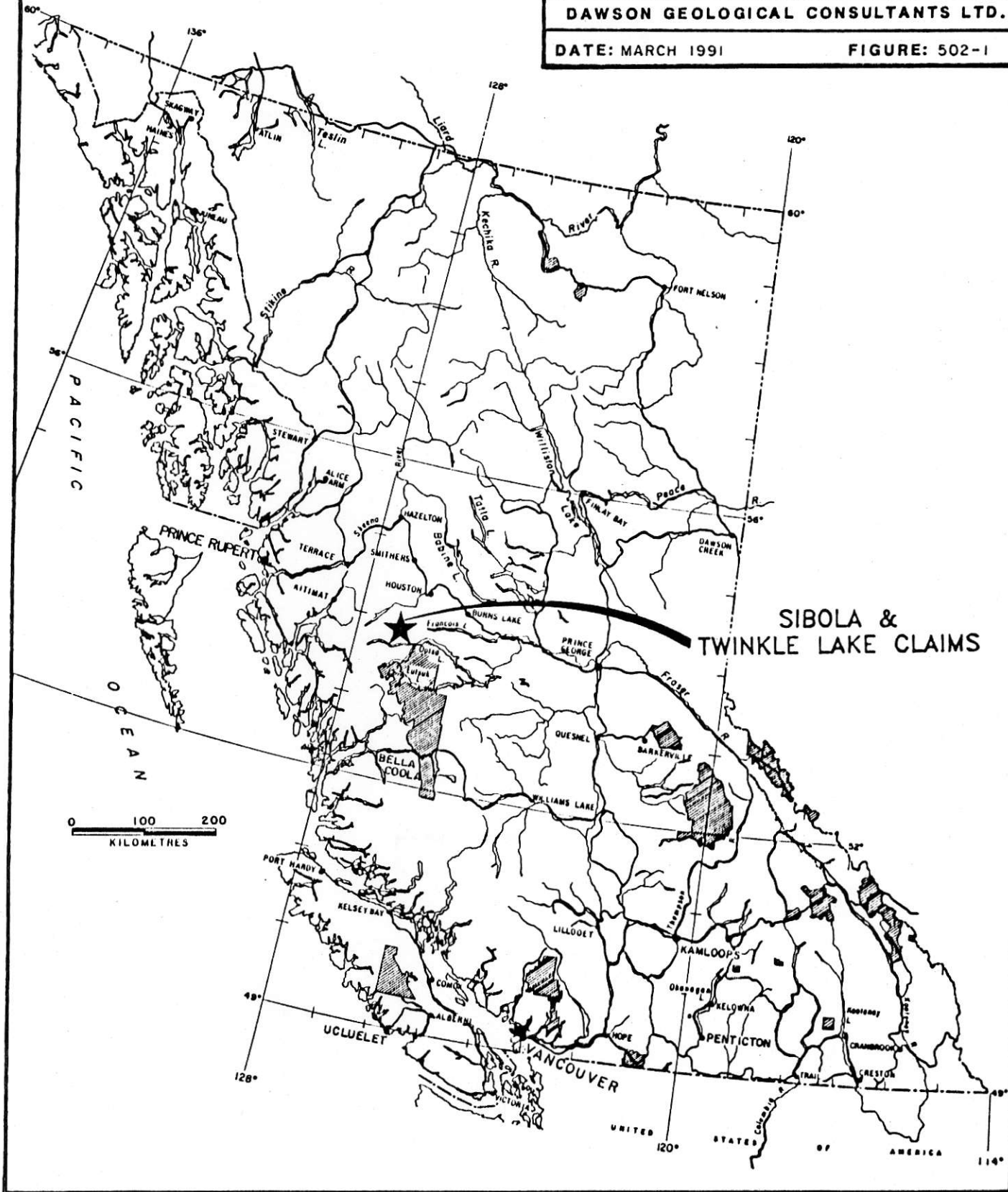
LOCATION MAP

SIBOLA & TWINKLE LAKE CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

DAWSON GEOLOGICAL CONSULTANTS LTD.

DATE: MARCH 1991

FIGURE: 502-1



**REPORT ON THE SIBOLA AND TWINKLE LAKE CLAIMS
OMINECA MINING DIVISION, BRITISH COLUMBIA**

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
SUMMARY AND CONCLUSIONS	2
PROPERTY	4
LOCATION AND ACCESS	5
PHYSIOGRAPHY AND VEGETATION	6
HISTORY	7
GEOLOGY	10
MINERALIZATION	12
DISCUSSION OF EXPLORATION POTENTIAL	15
RECOMMENDATIONS	17
APPENDIX A: Estimated Cost of Recommended Programme	
APPENDIX B: Model for Volcanism, Plutonism and Hydrothermal Activity - Tahtsa Lake District (after MacIntyre 1985)	
APPENDIX C: References	
APPENDIX D: Writer's Certificate	
LIST OF MAPS ACCOMPANYING THIS REPORT:	
Figure 502-1:	Location Map
Figure 502-2:	Claim Map
Figure 502-3:	Surface Geology - Sibola Claim Group
Figure 502-4:	Surface Geology - Twinkle Lake Claim Group
Figure 502-5:	Drilling and Geophysical Compilation - Sibola Claim Group
Figure 502-6:	Drill Hole Data Compilation - Twinkle Lake Claims
Figure 502-7:	Porphyry Deposits and Showings - Tahtsa Lake District, B.C.

INTRODUCTION

The recent increase in the price of copper has refocused attention on the exploration and evaluation of porphyry copper prospects in British Columbia.

This report reviews the setting and exploration potential of two such prospects in the Tahtsa Lake District. This district hosts a number of significant porphyry deposits and prospects but has been largely inactive since the mid-1970's.

Data on geology, mineralization and previous exploration of the subject properties are presented on a series of maps accompanying this report.

SUMMARY AND CONCLUSIONS

- 1) The Sibola and Twinkle Lake claim groups consist of two separate blocks of four claims (72 units) and two claims (40 units) respectively. They are approximately 6 km apart and are located in the Tahtsa Lake District of west-central British Columbia. The claims cover relatively gentle, tree-covered terrain and are road accessible.

- 2) The Tahtsa Lake District was extensively explored during the 1960's and early 1970's when a significant number of porphyry copper and copper-molybdenum occurrences were discovered. The two subject properties were explored during the period 1973-1976. Exploration work consisted of geological mapping, soil geochemistry, magnetometer and induced polarization surveys as well as core and percussion drilling. No work has been performed since 1976.

- 3) The claims are underlain by mid to upper Mesozoic volcanic and sedimentary rocks which have been folded, faulted and intruded by several small granitic intrusions. These intrusions vary from quartz monzonite to quartz diorite and in at least three instances, have associated porphyry-type copper or copper-molybdenum mineralization.

- 4) Exploration work to date has partially delineated three areas of low grade, disseminated sulphides which have not been analyzed for gold content. In addition, there is some suggestion that potentially significant parts of the I.P. anomalies were not investigated.

- 5) The Tahtsa Lake District is a highly mineralized area where at least 20 separate, porphyry systems have been recognized. These systems are eroded to different levels and some contain associated mineral deposits, e.g. disseminated high level, polymetallic types or mineralized breccia pipes, which contain much better economic grades than conventional, calc-alkaline porphyry protore. In many cases the gold content is not known.

- 6) The subject claims cover at least two, poorly explored porphyry systems. There is significant potential for the discovery of additional higher grade material within or adjacent to the presently known mineralization and further work is recommended.

PROPERTY

The property consists of two separate claim blocks as follows:

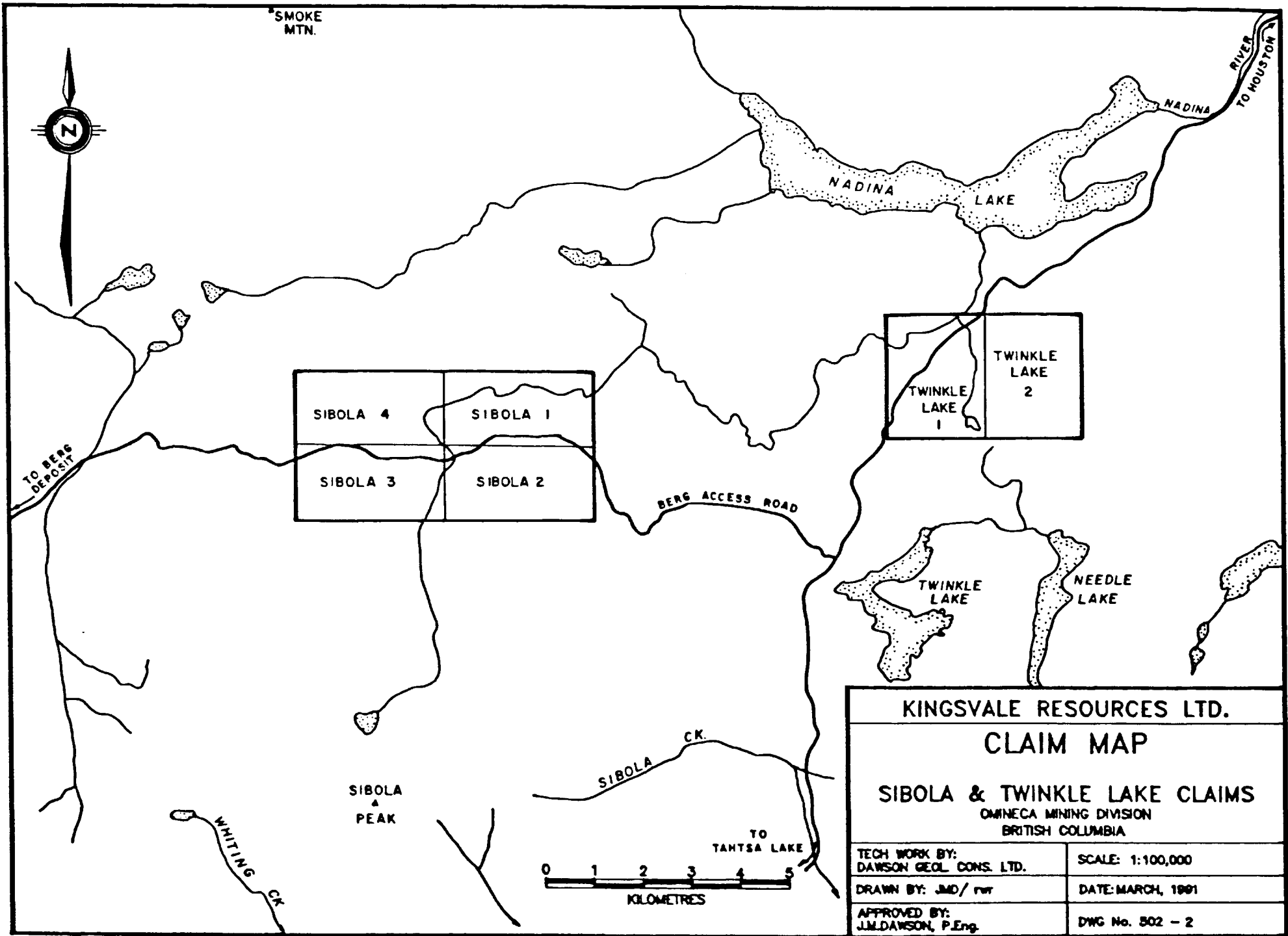
Sibola Property

<u>Claim Name</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
Sibola #1	18	12965	Feb. 9/92
Sibola #2	18	12966	Feb. 10/92
Sibola #3	18	12967	Feb. 11/92
Sibola #4	18	12968	Feb. 11/92

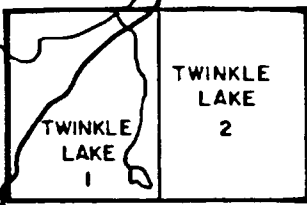
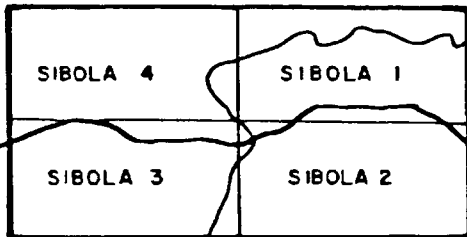
Twinkle Lake Property

<u>Claim Name</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
Twinkle Lake #1	20	12969	Feb. 13/92
Twinkle Lake #2	20	12970	Feb. 13/92

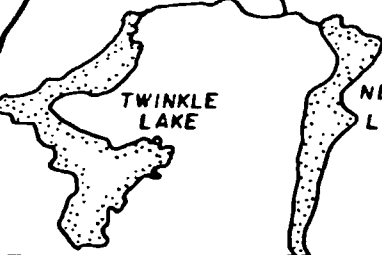
Disposition of these claims is shown on Figure 502-2.



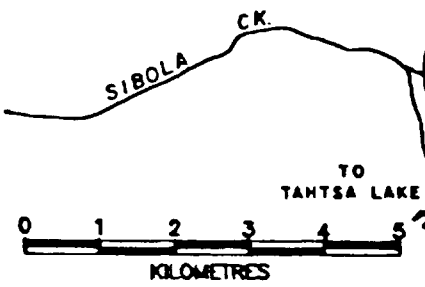
SMOKE
MTN.



BERG ACCESS ROAD



SIBOLA
▲
PEAK



KINGSDALE RESOURCES LTD.	
CLAIM MAP	
SIBOLA & TWINKLE LAKE CLAIMS	
OMNICA MINING DIVISION BRITISH COLUMBIA	
TECH WORK BY: DAWSON GEOL. CONS. LTD.	SCALE: 1:100,000
DRAWN BY: JMD/rwr	DATE: MARCH, 1991
APPROVED BY: J.M. DAWSON, P.Eng.	DWG No. 502 - 2

TO BERG
DEPOSIT

WHITING
CK

RIVER
TO HOUSTON

NADINA
LAKE

TWINKLE
LAKE

NEEDLE
LAKE

SIBOLA
CK.

TO
TAHMTSA LAKE

LOCATION AND ACCESS

The properties are located in west-central British Columbia about 60 km south-southwest of the town of Houston and roughly 280 km west of Prince George. The geographic center of the properties is at 53°50' north, 127°08' west.

The properties are accessible via about 80 km of gravel road from Houston, B.C. The town of Houston is located on the Northern Trans-Provincial Highway with the nearest airports at Smithers or Prince George.

The Sibola property is located about 7 km west of the all-weather Tahtsa Reach road and is reached via the Berg property access road. This road is a poor quality jeep road which may be washed out at several places.

Several very old drill access roads provide further access to both the Sibola and Twinkle Lake properties (see Figure 502-5 & 502-6).

PHYSIOGRAPHY AND VEGETATION

The properties occur on the Nechako Plateau, along the east flank of the Coast Mountains. Topography is gently rolling with elevations varying from 3300 to 4000 feet above sea level.

Outcrop is relatively scarce and overburden depth can locally exceed 30 to 40 metres.

Both properties are completely tree-covered. Jack pine is the predominant species with some spruce and fir in the creek bottoms.

HISTORY

The first prospecting activity in the Tahtsa Lake District dates back to the early 1900's. In the period 1915-1940, a number of precious metal, vein and shear zone occurrences (in many cases peripheral to presently known porphyry systems) were worked sporadically. A number of these, e.g. Lead Empire, Swannell and Emerald Glacier were active into the 1960's and even had some limited production.

The main thrust of exploration activity and an appreciation for the tremendous mineral potential of the area began in the early 1960's when exploration philosophy became oriented toward large tonnage deposits amenable to open-pit mining. Helicopter supported prospecting and stream geochemistry resulted in the discovery of a large number of disseminated occurrences of copper-molybdenum. These include: Berg (400 million tons grading 0.4% Cu and 0.05 % MoS₂), Bergette, Huckleberry (87 million tons grading 0.41% Cu, 0.025% MoS₂), Troitsa, Poplar Lake, Whiting Creek (123.5 million tons grading 0.062% Cu, 0.043% MoS₂), Ox Lake (23.6 million tons grading 0.35% Cu equivalent), Coles Creek, Red Bird, Lucky Ship, and Nanika. A number of other similar porphyry occurrences have been explored to a lesser degree and included among these are the Sibola and Twinkle Lake properties.

In 1973, Hudson's Bay Oil and Gas Ltd. carried out regional exploration in the Tahtsa Lake district and staked a number of claim blocks which included most of the ground now covered by the Sibola and Twinkle Lake claims. Preliminary work included geochemical soil and silt sampling surveys, regional mapping and induced polarization surveys.

In 1974, road construction and percussion drilling was carried out on both the current properties. Ten holes totalling 1740 feet were completed on the Sibola ground and nineteen holes totalling 3565 feet were drilled on the Twinkle Lake ground (see Figures 502-5 and 502-6).

In 1975, HBOG completed a magnetometer survey on part of Sibola ground and drilled a further six percussion holes, aggregating 1140 feet. During 1975, Noranda Exploration Company Ltd. acquired ground which is now covered by the western and southwestern parts of the Sibola property. Noranda carried out geological mapping as well as geochemical soil sampling, magnetometer and induced polarization surveys, and limited diamond drilling. A total of six holes aggregating 526 metres were drilled.

Additional work on the Twinkle Lake ground was also completed by HBOG in 1975. A ground magnetometer survey was

carried out as well as 625 metres of percussion drilling in ten holes.

In 1976, the eastern half of what is now the Sibola claims was optioned by Rio Tinto Canadian Exploration Ltd. from Hudson's Bay Oil and Gas Company. Rio carried out magnetometer and induced polarization surveys but did no additional drilling.

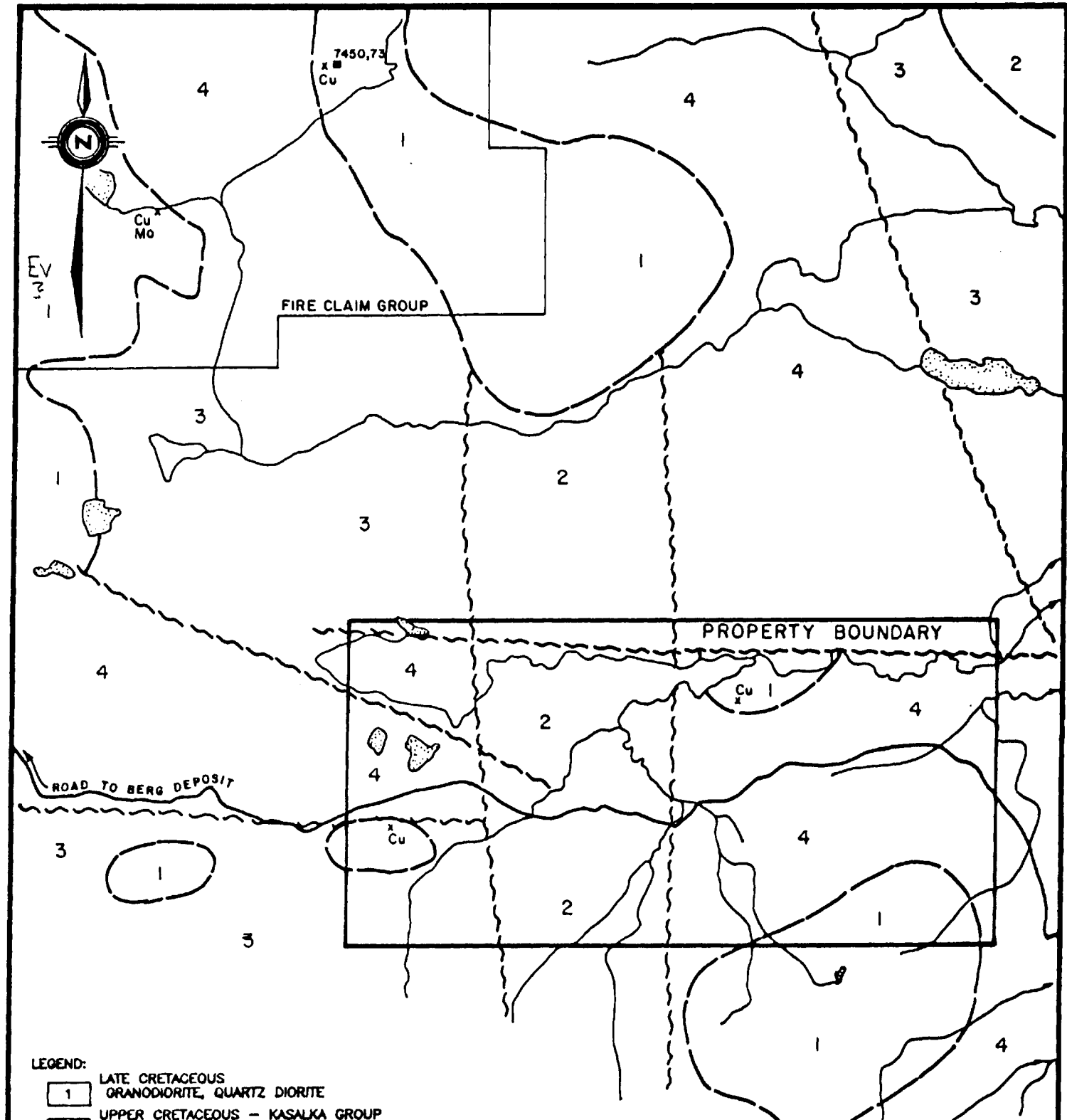
No further work is recorded up to the present time.

GEOLOGY

The Tahtsa Lake district is underlain by Jurassic and Early Cretaceous volcanic and sedimentary rocks that have been folded and faulted. They are unconformably overlain by relatively flat-lying Late Cretaceous volcanic rocks. The entire sequence is cut by plutons of Late Cretaceous to Early Tertiary age.

At the Twinkle Lake claims, Middle to Lower Jurassic sediments, and Lower Cretaceous volcanic rocks are intruded by a Late Cretaceous granitic stock. The Jurassic sediments have been assigned to the Smithers Formation of the Hazelton Group. These rocks consist of dark brown, thin to thick bedded siltstone, arkosic sandstone and lesser pebble conglomerate. In the northeast portion of the claim block these rocks are unconformably overlain by volcanics of the Lower Cretaceous Skeena Group. The rocks are described as grey, platy, porphyritic andesite flows. A small granitic plug cuts both the older successions. It does not outcrop and is covered by up to 20 metres of overburden. It was intersected by several percussion drill holes and is described as "altered quartz monzonite".

At the Sibola claims, Middle to Lower Jurassic volcanic fragmental rocks are unconformably overlain by or are in fault contact with both Lower Cretaceous and Upper Cretaceous volcanic



LEGEND:

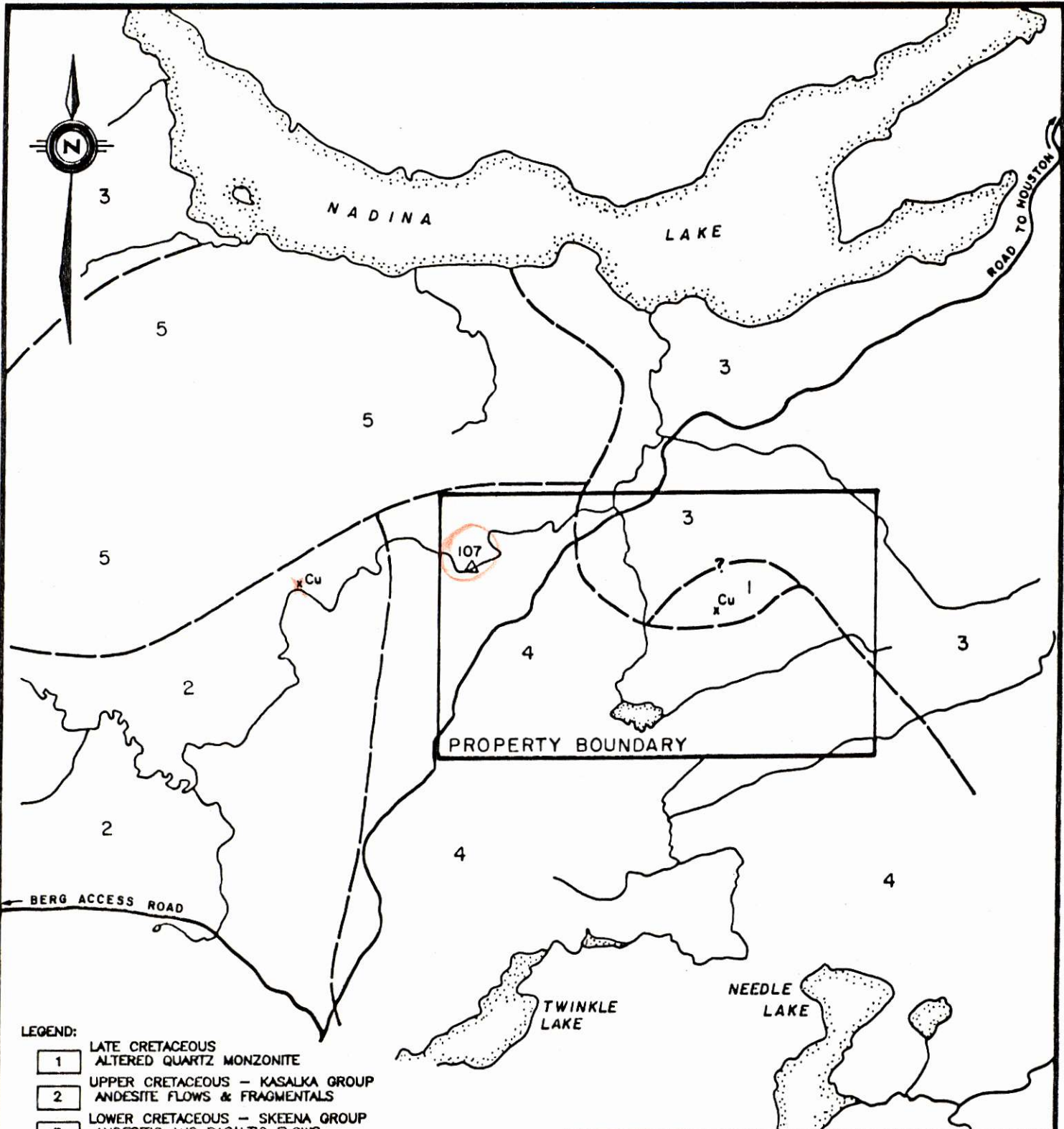
- 1 LATE CRETACEOUS GRANODIORITE, QUARTZ DIORITE
- 2 UPPER CRETACEOUS - KASALKA GROUP BASALT FLOWS
- 3 LOWER CRETACEOUS - SKEENA GROUP PORPHYRITIC ANDESITE FLOWS
- 4 MIDDLE & LOWER JURASSIC - HAZELTON GROUP ANDESITE & RHYOLITE FLOWS & FRAGMENTALS

— GEOLOGICAL CONTACT
 - - - FAULT

x Cu, Mo MINERAL OCCURENCE; COPPER, MOLYBDENUM
 ■ 7450,73 ROCK GEOCHEMICAL SAMPLE LOCATION WITH GOLD & SILVER VALUES IN PPB and PPM RESPECTIVELY



KINGVALE RESOURCES LTD.	
SURFACE GEOLOGY	
SIBOLA CLAIM GROUP	
OMINECA MINING DIVISION BRITISH COLUMBIA	
TECH WORK BY: DAWSON GEOL. CONS. LTD.	SCALE: 1:50,000
DRAWN BY: JMD/rwr	DATE: MARCH, 1991
APPROVED BY: J.M.DAWSON, P.Eng.	DWG No. 502 - 3



LEGEND:

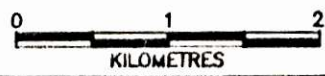
- 1 LATE CRETACEOUS ALTERED QUARTZ MONZONITE
- 2 UPPER CRETACEOUS - KASALKA GROUP ANDESITE FLOWS & FRAGMENTALS
- 3 LOWER CRETACEOUS - SKEENA GROUP ANDESITIC AND BASALTIC FLOWS
- 4 MIDDLE & LOWER JURASSIC SMITHERS FORMATION SILTSTONE, SANDSTONE & CONGLOMERATE
- 5 TELKWA FORMATION ANDESITIC & RHYOLITIC FRAGMENTALS

--- GEOLOGICAL CONTACT

--- FAULT

x Cu MINERAL OCCURENCE; COPPER

△ 107 SILT SAMPLE LOCATION WITH GOLD VALUE IN PPB (PARTS PER BILLION)



KINGSDALE RESOURCES LTD. SURFACE GEOLOGY TWINKLE LAKE CLAIM GROUP OMINECA MINING DIVISION BRITISH COLUMBIA	
TECH WORK BY: DAWSON GEOL. CONS. LTD.	SCALE: 1:50,000
DRAWN BY: JMD/ rwr	DATE: MARCH, 1981
APPROVED BY: J.M.DAWSON, P.Eng.	DWG No. 502 - 4

flows. At least three separate granitic bodies intrude the volcanics.

The Jurassic volcanics are part of the Telkwa Formation of the Hazelton Group. They consist of andesitic and rhyolitic tuffs and coarser fragmentals along with some andesitic flows.

In the southwest corner of the property (see Figure 502-3) porphyritic andesite flows of the Lower Cretaceous Skeena Group are in fault contact with older and younger rocks. A fault-bounded, northerly-trending block of younger volcanics occupies the central part of the claim block. These rocks are mapped as Upper Cretaceous Kasalka Group. They consist of relatively fresh, fine grained, dark brown to black basalt which frequently has prominent columnar jointing.

The three areas of granitic rocks may be separate stocks or apophyses of a much larger buried pluton. The body outcropping in the southeast corner of the claim block is described as biotite, hornblende granodiorite. The small plug located in the southwest corner of the property is mapped as granodiorite but includes areas of intensely bleached and chloritized diorite, quartz diorite and hornblende-feldspar porphyry. The intrusive body located in the northeastern part of the property is described as quartz diorite.

MINERALIZATION

Both the Twinkle Lake and Sibola properties are largely overburden covered and most of the data concerning mineralization is derived from the various drilling programmes.

At the Twinkle Lake claims, pyrite and chalcopyrite occur as disseminations in altered quartz monzonite and adjacent Skeena andesitic volcanics. The extent of this mineralization is not known, however shallow percussion drilling encountered anomalous copper values over an irregular area of at least 300 metres by 700 metres. The best hole averaged 1053 PPM copper over 240 feet. This mineralization is still open to the north and west and a satellite zone could extend to the east. Interestingly, some holes contain significantly anomalous molybdenum while others contain elevated zinc values. Some sections contain moderately anomalous silver values (up to 3.4 gm/tonne), however no analyses were done for gold.

It is impossible to define the size of the porphyry system at the Twinkle Lake property at this time, however mineral showings are located both west and east of the claim block. Minor malachite staining was noted in calcite veinlets in andesite about 1200 metres west of the property (see Figure 502-4). Also, a silt sample taken downstream from this outcrop (by a government mapping crew) and located in the northwest corner of



SIBOLA PROPERTY BOUNDARY

CREEK

ROAD

CREEK

BERG ACCESS ROAD

SE 3 (*)

SE 1 (NM)

SE 2 (NM)

SE 5 (*)

SE 4 (*)

HBOG SLIDE (EAST) GROUP
(1973-75) DRILL TEST
OF I.P. / GEOCHEM.?

ALT. PORPH (NM)

ALT. PORPH (NM)

DIORITE (NM)

ALT. PORPH. (300-1100 PPM Cu)

COPPER SHOWING

ALT. PORPH. (400-1100 PPM Cu)

NORANDA - TARA GROUP (1974)
PART OF EXTENSIVE I.P. ANOMALY
EXTENDING ON TO SLIDE GROUP TO WEST
AND SYLVIA CLAIMS TO EAST

MAIN AREA OF SYLVIA GROUP
(1973-76) HBOG

ROAD TO HOUSTON

LEGEND:



STRONG I.P. ANOMALY



WEAK TO MODERATE I.P. ANOMALY

SE 3 (240' / 140 PPM)

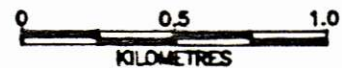
DRILL HOLE WITH INTERCEPT IN FEET OVER
AVERAGE Cu VALUE IN PPM

SE 1 (NM)

DRILL HOLE WITH NO SIGNIFICANT MINERALIZATION

SE 3 (*)

DRILL HOLE WHICH DID NOT REACH BEDROCK



KINGSVALE RESOURCES LTD.

DRILLING & GEOPHYSICAL COMPILATION

SIBOLA CLAIM GROUP

OMINECA MINING DIVISION
BRITISH COLUMBIA

TECH WORK BY:
DAWSON GEOL. CONS. LTD.

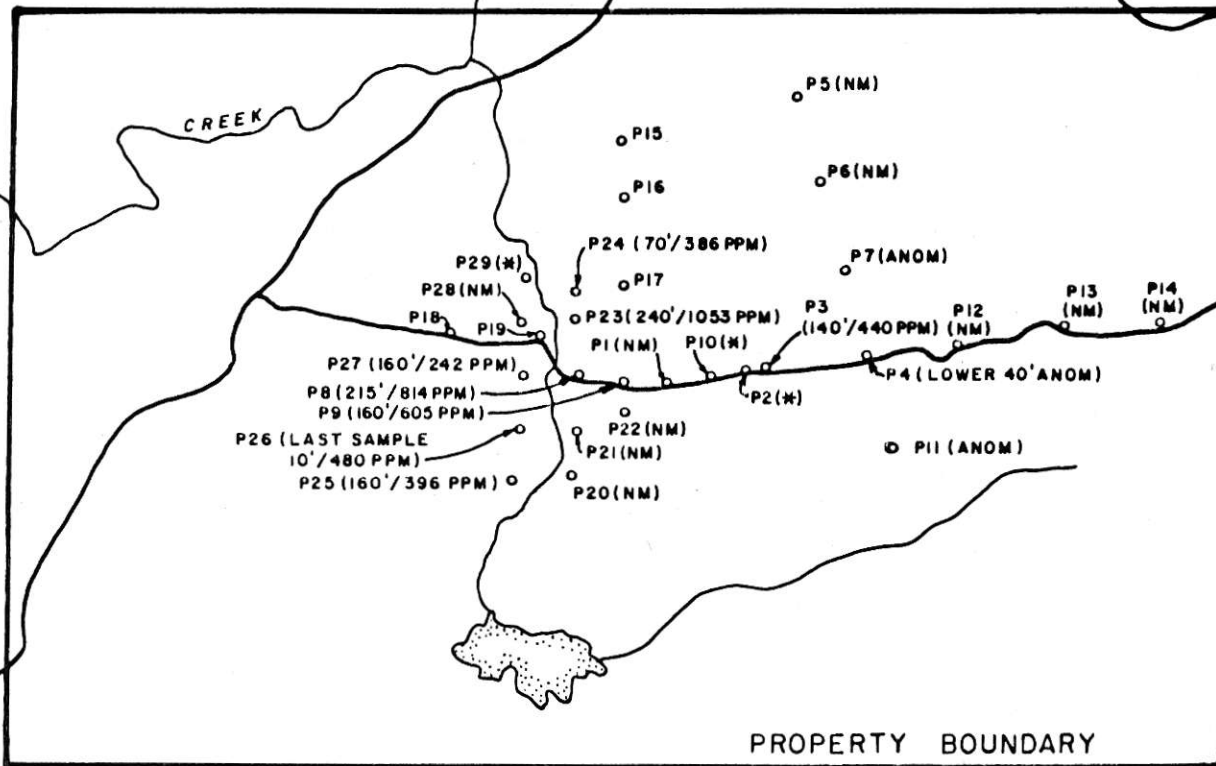
SCALE: 1:25,000

DRAWN BY: JMD / rwr

DATE: MARCH, 1991

APPROVED BY:
J.M. DAWSON, P. Eng.

DWG No. 802 - 5



LEGEND:

- P8 (215'/814 PPM) DRILL HOLE WITH INTERCEPT IN FEET OVER AVERAGE Cu VALUE IN PPM
- P13 (NM) DRILL HOLE WITH NO SIGNIFICANT MINERALIZATION
- P29 (*) DRILL HOLE WHICH DID NOT REACH BEDROCK
- P15 DRILL HOLE FOR WHICH NO DATA IS RECORDED



KINGVALE RESOURCES LTD.	
DRILL HOLE DATA COMPILATION	
TWINKLE LAKE CLAIMS	
OMINECA MINING DIVISION BRITISH COLUMBIA	
TECH WORK BY: DAWSON GEOL. CONS. LTD.	SCALE: 1:25,000
DRAWN BY: JMD/ rwr	DATE: MARCH, 1991
APPROVED BY: J.M.DAWSON, P.Eng.	DWG No. 502 - 6

the claim block returned a value of 107 PPB gold. On the Tets claim about 3000 metres east of the property, bornite, sphalerite, chalcopyrite and minor galena occurs as disseminations and lenses in shear zones.

At the Sibola claims, pyrite, chalcopyrite and lesser molybdenite occur as disseminations, fracture coatings and within quartz veins in altered granitic rocks and peripheral volcanics.

In the southwesterly plug (drilled by Noranda) weak mineralization extends over an area at least 200 metres in diameter and has not been defined to the north, east or south. Low grade copper mineralization was encountered over the entire length of the two easterly holes (approximately 300 feet deep) with the best value being 0.12% Cu over ten feet. No assays for gold or silver are recorded.

In the main area of the "Sylvia" drilling (see Figure 502-5) anomalous copper values were encountered over an area of approximately 500 metres by 250 metres. This mineralization seems to be cut off to the east and west, however several holes drilled to the north and west did not reach bedrock. Within the mineralized zone, hole S8 averaged 3350 PPM copper over 207 feet with the best ten foot section assaying 6350 PPM Cu. A second ten foot section returned 5500 PPM Cu, 1320 PPM Mo and 15 PPM Ag.

A number of other ten foot sections contained strongly anomalous silver values. None of the holes were assayed for gold.

It should be noted that the HBOG drilling was centered on a strong east-west trending induced polarization anomaly (see Figure 502-5). The weaker parts of the anomaly to the north and south were not drilled. While the I.P. anomaly may reflect the greatest sulphide content, it may not define the best areas of copper mineralization.

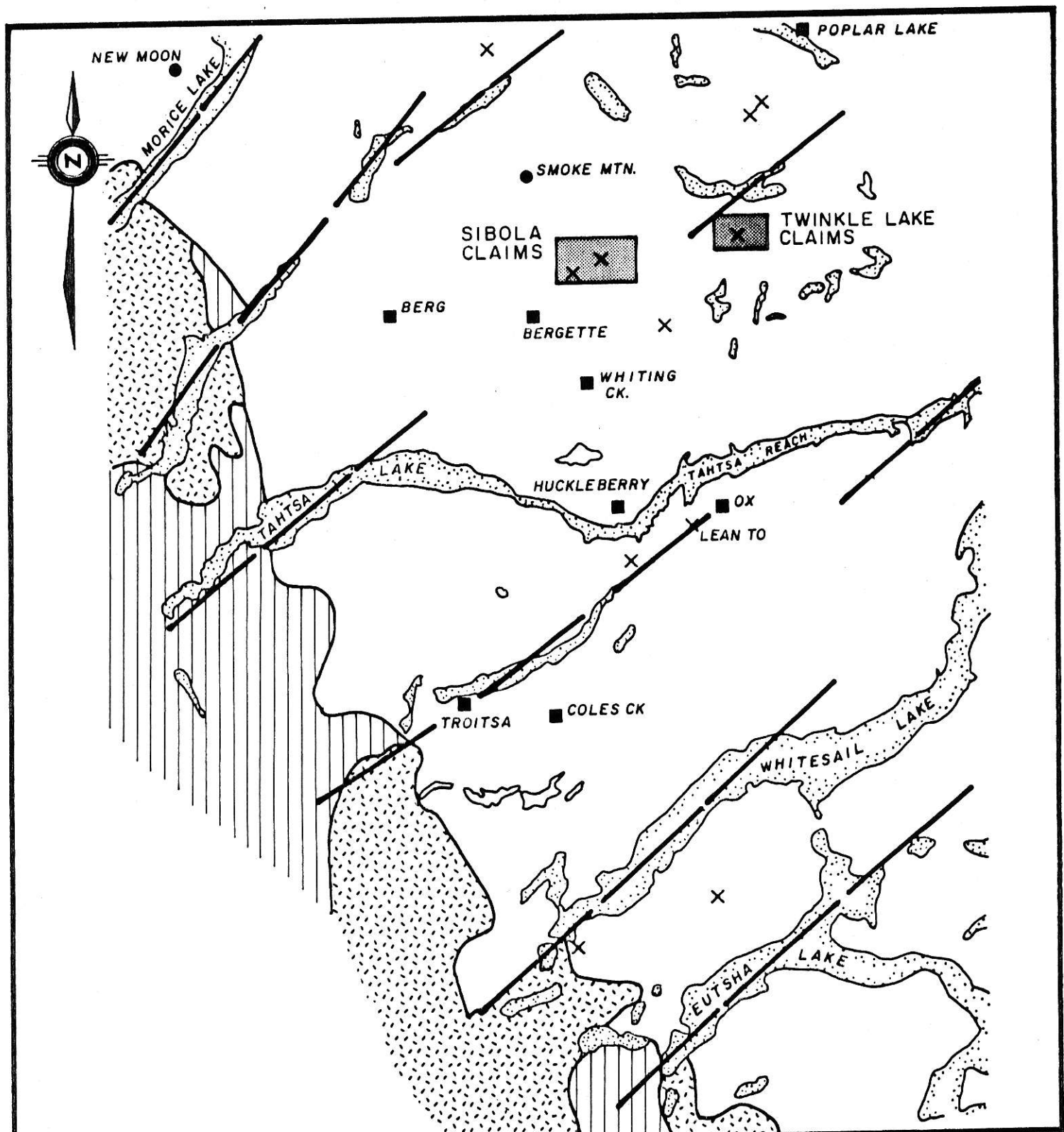
Again, as at the Twinkle Lake claims, the mineralized zones at the Sibola property are only partially defined and were not analyzed for gold. This is particularly significant in the light of a recent discovery near the Smoke Mountain porphyry copper occurrence located about 4 km north of the Sibola claims (see Figure 502-3). A government mapping crew sampled some narrow veinlets of quartz and calcite (in granodiorite) which contained minor (less than 1%) chalcopyrite, pyrite and malachite. This sample returned values of 7450 PPB gold and 73 PPM silver.

DISCUSSION OF EXPLORATION POTENTIAL

Porphyry-type mineralization is widespread in the Tahtsa Lake District and is frequently associated with calc-alkaline stocks less than 1 km in diameter. In addition, many occurrences are related to a series of prominent, northeasterly-trending linears (see Figure 502-7). The Sibola and Twinkle Lake properties are proximal to one such linear.

MacIntyre (1985) has developed a model which incorporates all the known showings in the Tahtsa Lake District (see Appendix C). He sees at least four intrusive events with various mineral deposits related to them in a proximal or distal sense. In any porphyry system, depth of erosion may be fundamental to the preservation of potentially economic zones of mineralization. Type 1C (see Appendix C) which is a pervasive, high level, polymetallic (Pb-Zn-Ag-Au) type of mineralization may be preserved in grabens as at the Coles Creek property. There is a suggestion of some down-dropped blocks of Kasalka Group rocks adjacent to both the subject claim blocks.

The recent interest in porphyry deposits of the B.C. cordillera has focused primarily on porphyry deposits of alkaline affinity, since they usually have higher gold-silver values than calc-alkaline porphyries. However, significant precious metal credits are known to occur with some calc-alkaline porphyry



LEGEND:

- Cu PORPHYRY
- Cu/Mo PORPHYRY
- X PORPHYRY PROSPECT
- LINEAMENT

- COAST INTRUSIONS
- ▨ GNEISSIC COMPLEX
- ▨ TAKLA - HAZELTON



KINGSVALE RESOURCES LTD.	
PORPHYRY DEPOSITS & SHOWINGS TAHTSA LAKE DISTRICT	
BRITISH COLUMBIA	
TECH WORK BY: DAWSON GEOL. CONS. LTD.	SCALE: 1cm = 4km approx.
DRAWN BY: JMD/rnr	DATE: MARCH, 1991
APPROVED BY: J.M. DAWSON, P.Eng.	DWG No. 502 - 7

systems, e.g. Island Copper, Poison Mountain and Fish Lake. Very little work has been done on the precious metal contents of porphyries in the Tahtsa Lake District. The Berg deposit is known to contain "less than 0.2 gm/tonne gold and about 4.6 gm/tonne silver". However, this is a relatively young deposit associated with a more acid stock. "Significantly higher" gold content is reported to occur at the Ox Lake deposit (personal communication, G.O.M. Stewart).

Another potentially significant deposit type which occurs in the Tahtsa Lake district is mineralized breocia pipes. These have been found associated with several porphyry systems and can carry significantly higher grade mineralization (e.g. Lean-To property where one drill hole returned an intersection averaging 1.59% Cu and 42.2 gm/tonne silver over 18 metres).

In summary, the subject properties cover portions of at least two poorly explored, porphyry systems. There is significant potential for the discovery of additional higher grade material within or adjacent to the presently known areas of mineralization. An exploration programme to test the further potential of these properties is therefore recommended.

RECOMMENDATIONS

Phase I

- a) Prospect creeks, ridges and hills along the north flank of the Sibola Range, extending east from the area immediately west of the Sibola Claims to the Twinkle Lake Claims.
- b) Sample creeks (silt and pan cons) along traverse routes.
- c) Carry out reconnaissance rock and soil geochemical sampling.
- d) Tie in old drill sites and roads and sample drill core or old drill cuttings.
- e) Stake additional prospective ground if available.

Contingent upon the success of Phase I:

Phase II

- a) Lay out grids over areas selected from Phase I (say 80 km) on 200 or 400 metre intervals.
- b) Carry out geological mapping, soil sampling and induced polarization/resistivity surveys over the established grid(s).

APPENDIX "A"

ESTIMATED COST OF RECOMMENDED PROGRAMME

PROGRAMME COSTS

PHASE I (30 days' duration)

a)	Wages - geologist and assistant 30 days	\$18,000
b)	Truck rental 30 days @ \$50/day	1,500
c)	Accommodation and meals 30 days @ \$40/man/day	2,400
d)	Research and pre project planning	1,000
e)	Assays and analyses	2,000
f)	Miscellaneous field equipment, maps, expendibles, etc.	<u>1,500</u>
	Sub total	26,400
	Contingency @ <u>±</u> 15%	<u>3,600</u>
	Total estimated cost Phase I	\$30,000 ----- -----

APPENDIX "B"

REFERENCES

REFERENCES

- Diakow, L. and
Drobe, J. (1989): Geology and Mineral Resources in North
Newcombe Lake Map Sheet; BCMEMPR Open
File 1989-1
- Panteleyev, A. (1981): Berg Porphyry Copper-Molybdenum Deposit;
BCMEMPBR Bulletin #66
- MacIntyre, D.G.
(1985): Geology and Mineral Deposits of the
Tahtsa Lake District, West Central
British Columbia; BCMEMPBR Bulletin #75
- Sutherland-Brown, A.
et al (1976): Porphyry Deposits of the Canadian
Cordillera; CIMM Special Volume #15
- Carter, N.C. (1981): Porphyry Copper and Molybdenum Deposits,
West Central British Columbia; BCMEMPBR
Bulletin #64
- Titley, S.R. et al
(1982): Advances in Geology of the Porphyry
Copper Deposits, Southwestern North
America; University of Arizona Press,
Tucson, Arizona
- Belik, G.D. (1991): Summary Report on the Sibola and Twinkle
Lake Claims; Private Report to Kingsvale
Resources Ltd.
- Hall, G.I. (1975): Report on Percussion Drilling on Pam
Claims, Omineca Mining Division, B.C.;
Assessment Report #5668
- Hall, G.I. (1975): Report on Percussion Drilling in Sylvia
Claims, Omineca Mining Division, B.C.;
Assessment Report #5670
- McChance, J. A.
(1976): Report on Induced Polarization and
Magnetic Surveys on Sylvia Claims,
Omineca Mining Division, B.C.; Assessment
Report #6078
- Hall, G.I. (1975): Report on Magnetometer Survey on Pam
Claims, Omineca Mining Division, B.C.;
Assessment Report #5669

- Kilbey, D.B. (1974): Report on Percussion Drilling Programme on the Sylvia Property, Omineca Mining Division, B.C.; Assessment Report #5213
- Hall, G. I. (1975): Report on Percussion Drilling Programme on the Sylvia Property, Omineca Mining Division, B.C.; Assessment Report #5054
- Hall, G.I. (1975): Report on Magnetometer Survey on the Sylvia Property, Omineca Mining Division, B.C.; Assessment Report #5671
- Wolfhard, M.R.
(1971): Geological and Geochemical Report on the Sib Claims, Omineca Mining Division, B.C.; Assessment Report #3259
- Belik, G.D. (1975): Report on Diamond Drilling on the Sibola Property, Omineca Mining Division; Assessment Report #5646
- Crowe, D. (1981): Geochemical Report on the Kem Claims, Omineca Mining Division, B.C.; Assessment Report #9099

APPENDIX "C"

MODEL OF VOLCANISM PLUTONISM AND HYDROTHERMAL ACTIVITY
TARTSA LAKE DISTRICT
(AFTER MACINTYRE)

TIMING OF IGNEOUS AND HYDROTHERMAL EVENTS

The temporal relationships between volcanism, plutonism, and hydrothermal activity are best documented at Coles Creek (MacIntyre, 1974). Here, a dacite porphyry laccolith was injected into the base of the Kasalka Group shortly after crystallization of nearby quartz diorite (border phase of a larger granitic mass at depth?). This was followed by faulting and fracturing with concomitant intrusion of granodiorite magma upward into the base of the laccolith. Crystallization of porphyritic granodiorite was accompanied by fracturing and development of extensive zones of pervasive phyllic and advanced argillic alteration of the epithermal type within the dacite laccolith and overlying Kasalka Group volcanic rocks. Potassic alteration was restricted to the outer margins of the stock. Syn-ore and post-ore faulting resulted in preservation of the near-surface parts of this hydrothermal system. Similar systems may have been present at other porphyry prospects in the district but have now been removed by erosion. Figure 22 and Table 5 summarize the inferred relationships between various intrusive phases and types of mineral deposits in the Taitsa Lake district.

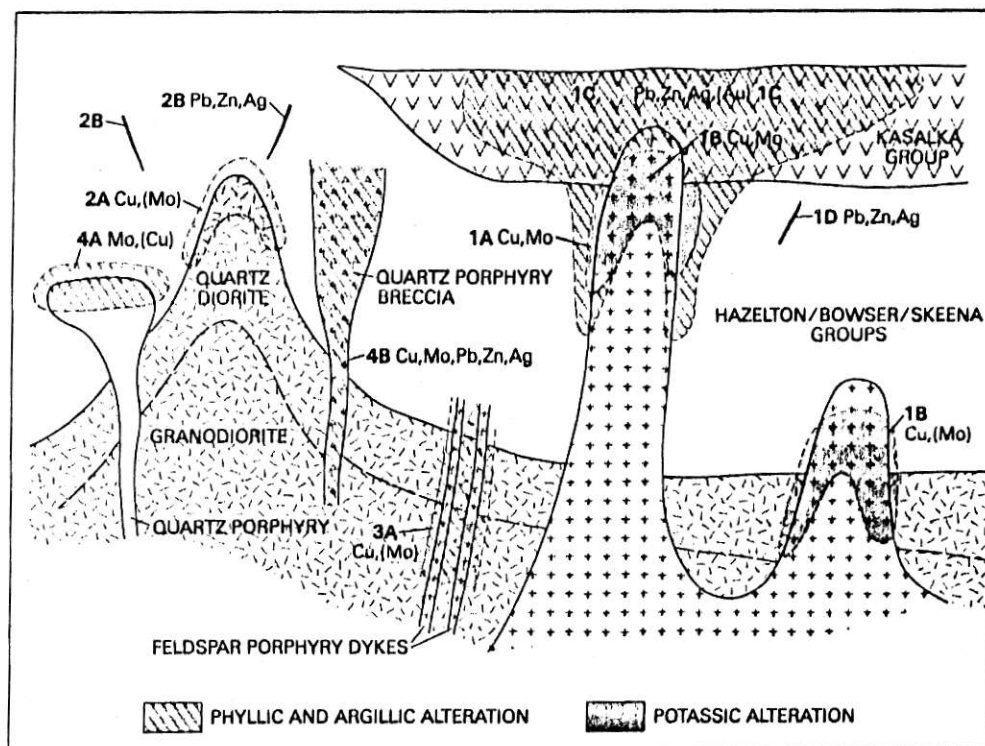


Figure 22. Schematic relationships between intrusive rocks and mineral deposits (see Table 5 for deposit type classification).

TABLE 5. PLUTONIC-HYDROTHERMAL RELATIONSHIPS, TAHTSA LAKE DISTRICT

1. DEPOSITS RELATED TO SUBCIRCULAR STOCKS OF PORPHYRITIC GRANODIORITE AND QUARTZ MONZONITE	
A. Annular zones of disseminated and fracture-controlled pyrite, chalcopyrite, and molybdenite surrounding stock	BERG HUCKLEBERRY OX LAKE WHITING CREEK (RUSTY ZONE)
B. Zones of quartz veining with chalcopyrite, molybdenite, and attendant potassic alteration within stock	COLES CREEK WHITING CREEK (CREEK ZONE)
C. Pervasive argillic altered zones with fine-grained disseminated and fracture-controlled pyrite, galena, and sphalerite; silver and gold (?) bearing; high-level epithermal system	COLES CREEK (GRABEN)
D. Veins and veinlets of pyrite and quartz with galena and sphalerite in propylitic zone peripheral to stock	LEAD EMPIRE
2. DEPOSITS RELATED TO QUARTZ DIORITE AND GRANODIORITE STOCKS	
A. Low-grade zones of disseminated and fracture-controlled pyrite and chalcopyrite with potassic alteration near contact of stock	WHITING CREEK (SWEENEY ZONE) BERGETTE COLES CREEK SYLVIA WEE
B. Quartz veins and veinlets with pyrite, galena, sphalerite; minor arsenopyrite, tetrahedrite, specular hematite, and chalcopyrite; veins peripheral to stock	EMERALD GLACIER CAPTAIN WEST VIEW ORIENTAL GLORY RIVERSIDE (?)
3. DEPOSITS RELATED TO FELDSPAR PORPHYRY DYKES	
A. Low-grade zones of disseminated and fracture-controlled pyrite, chalcopyrite, and molybdenite adjacent and within potassic and phyllic altered dykes	TROITSA WHITING CREEK
4. DEPOSITS RELATED TO QUARTZ PORPHYRY PLUGS, PIPES, AND LACCOLITHS	
A. Zones of pervasive phyllic alteration with quartz flooding with disseminated and vein-controlled pyrite, molybdenite, and minor chalcopyrite	WHITING CREEK (RIDGE ZONE)
B. Brecciated and phyllic altered quartz porphyry with superimposed breccia-healing phases of chalcopyrite, molybdenite, magnetite, pyrite, galena, sphalerite, and minor arsenopyrite and tetrahedrite; locally high grade; silver bearing	COLES CREEK LEAN-TO BERGETTE

APPENDIX "D"

WRITER'S CERTIFICATE

JAMES M. DAWSON, P. ENG.

Geologist

#203 - 455 GRANVILLE STREET
VANCOUVER, B.C. V6C 1T1

TEL: (604) 688-8278
FAX: (604) 683-4395

CERTIFICATE

I, JAMES M. DAWSON of Vancouver, British Columbia do hereby certify that:

1. I am a geologist employed by Dawson Geological Consultants Ltd. of Suite 203 - 455 Granville Street, Vancouver, B.C.
2. I am a graduate of the Memorial University of Newfoundland, B.Sc. (1960), M.Sc. (1963), a fellow of the Geological Association of Canada and a member of the Association of Professional Engineers of British Columbia. I have practised my profession for 27 years.
3. I am the author of this report which is based on a personal examination of the subject properties in October, 1973, as well as various published and unpublished data.
4. I have no direct or indirect interest in the property discussed in this report or in the securities of Kingsvale Resources Ltd. nor do I expect to receive any.
5. Permission is hereby granted to use this report in a Statement of Material Facts or Prospectus to be filed with the Vancouver Stock Exchange and the British Columbia Securities Commission.



Vancouver, British Columbia
March 12, 1991

DAWSON GEOLOGICAL CONSULTANTS LTD.

James M. Dawson

James M. Dawson, P.Eng.