

W.A. No.

NAME KINGFISHER (BRIGHT STAR; FX)

SUBJECT REPORTS

8224/E009707
PROPERTY FILE

004393

BLACKJACK PROPERTY

VERNON MINING DIVISION

KINGFISHER CR - MABEL LAKE - 82 L/10 E

50°43', 118°45'

82LNE009

COLBY MINES LIMITED - VANCOUVER, B. C.

PROPERTY FILE

DISTRICT GEOLOGIST

KAMLOOPS, B. C.

AUGUST 6, 1974

SUMMARY

Zinc/lead mineralization is found in or near a recrystallized limestone/siliceous units in a metamorphosed complex 7 miles east of the north end of Mabel Lake and east of Enderby, B. C.

Advertised tonnage figures of 1.8×10^6 tons seem to be optimistic because of the wide spacing of the mineralized holes and therefore the lack of detailed information on the control of the mineralization.

The mineralization appears to be of a strataform type but because of the lack of horizon markers, the continuity of the mineralization is not entirely understood. Wide mineralized zones may be the result of tight drag folding and/or recumbent folding and therefore may not be used so liberally in calculating mineralized widths.

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Table 1 Assay Summary Sheet

Figure 1, 1"=100', DDH & mineralized zone plan

Figure 2, 1"=20', vertical section, DDH 73-3 & 73-4

INTRODUCTION

Colby Mines Limited, 885 Dunsmuir Street, Vancouver, control mining claims which encompass Zn/Pb showing known as the Dakota, the Blackjack, the Kingfisher and the R1. Recent work by trenching and drilling has been carried out on the Blackjack under the guidance of Mr. Ken Daughtry, a Vernon consultant.

The property is located 31 miles east of Enderby and is accessible by vehicle by logging road near Kingfisher Creek. The area is forested and is in a region of modest hills. Most of the showing are around 2400 MSL.

Cominco seems to have done some of the first work in the area during the mid 1960's.

GENERAL GEOLOGY

Rocks in the area are recrystallized limestone, calcareous quartzite, quartzite, and fine-grained garnet-sillimanite-biotite-quartz-feldspar gneiss. This metamorphic sequence contains ubiquitous quartz and/or pegmatite with white feldspar dikes. Less commonly, andesite-dikes, pink feldspar porphyritic green dikes, or lamprophyric dikes are present. Cominco mapped a syenite mass to the northeast.

The plane of gneissosity usually strikes northeast, changing to easterly to the northeast with variable dips either way with a suggested southeast bias. Drag folding from hundreds of feet to localized drags with 12 foot wave lengths and ptigmatic folding were observed. Outcrops are limited.

Faulting of a general northwest strike is apparent on aerial photos and Cominco report a maximum 2500 foot right hand, plan view, displacement.

Mineralization consisting of sphalerite, pyrrhotite, pyrite, galena, and occasionally chalcopyrite occurs as coarse, irregular grains and patches, and as oval-shaped aggregates. Fluorite, graphite, sericite, tremolite and diopside are also present. In most cases, mineralization is banded but it may occur as more massive sulphide/vitreous quartz bodies under the crests of drag folds.

The host rock is either a recrystallized limestone, a coarse grained calcareous quartzite, a quartzite, or a biotite quartz gneiss. The mineralization on a regional basis is in or near the limestone unit and this unit with mineralization can be traced for four miles total across the country to the northeast and southwest from the Blackjack. Within a local area, there does not appear to be any

preferred horizon. Rock unit correlation is not possible; gneissosity is probably close to original bedding. Drag folding characteristically would suggest that the beds to the northwest moved to the northeast relative to the southeast beds. Tops are not apparent.

Cominco report isoclinal and frequent recumbent folds typically plunging southwest at a modest angle.

The sulphides appear to conform to a strataform pattern and as there are no obvious marker horizons or lithologic continuity to the beds, the continuity of mineralized zones is not understood by the undersigned.

GRADE AND TONNAGE, BLACKJACK

Colby Mines have reported a body of mineralized rock which would approximate 1.8×10^6 tons grading around 3.5% Zn/Pb combined.

Mr. Ken Daughtry of Colby Mines explains that these figures of mineralized rock were preliminary and were not intended for release.

Copies of the drill hole plans and drill hole sections, along with weighted assay results were used to calculate these preliminary figures; a plan of the drill holes is included herein with an outline of the parameters used by Gilmour to calculate tonnage. (Figure 1).

Table 1 included herein is a summation of the assay results from the drilling.

Vertical sections of mineralized holes are available in this office; in somewhat controversial manner, a request was made not to submit these to Victoria, but for purposes of discussion, photostat copy or copies will be used to comment of the work.

In calculating tonnage, Gilmour assumed presumably a mineralized horizon and a general vertical dip.

In calculating grade, where there is more than one mineralized section in the core, only the better mineralized section was used.

Referring to Figure 1, the projected mineralized rock distance between DDH 74-10 and 74-11 is about 235 feet. The distance between DDH 74-6 and 74-17 is about 210'.

Figure 2 shows a section in the plane of DDH 73-3 and 73-4; this is included to show the abrupt apparent change to lithologic or structural folding within a relatively short distance.

At this point we do not even pretend to understand the possibly continuity of the mineralized zones. Field evidence suggests tight folding may account for the thicker mineralized sections, but to what extent these thicker sections should be used to determine overall width, is academic at this time. Examination of the drill core over the extended mineralized sections shows a continually changing foliation angle to core length.

CURRENT WORK

Apparently new trenches to the north and northeast of 74-10 have uncovered mineralization.

Some of these trenches have been sampled by the Department and submitted for metal analysis.


CONCLUSIONS

The advertised grade and tonnage appear optimistic using the 73, 74 drill series because of the distance between holes and the degree of width "weighting" used based on the wider mineralized sections.

There seems to be some correlation between sulphide concentration and drag folding and trenching and detailed mapping should be pursued with this in mind. Lithologic correlation seems impossible on this spacing. DDH holes should be more closely spaced in order to interpret the mineralization.

This property has some interesting mineralized zones.

Yours truly,


Gordon White, P. Eng.
District Geologist

Aug 6/74

REPORT ON THE
DIAMOND DRILL PROGRAM

82LNE009

PROPERTY FILE

at the

BLACK JACK PROPERTY

for

COLBY MINES LTD.

by

WILLIAM R. GILMOUR
K. L. DAUGHTRY & ASSOCIATES LTD.

April, 1974

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SUMMARY

The drilling program has indicated that significant zinc and lead mineralization occurs on the Black Jack Property. Pyrrhotite, pyrite, sphalerite and galena occur in quartzites and marbles as a probable metamorphosed Kootenay-Arc type deposit.

Further mapping, geophysical and geochemical surveys along strike of the favorable rock units are recommended.

INTRODUCTION:

From November 12, 1973 to March 2, 1974, a diamond drill program was carried out on the Black Jack Property (FX #2, FX #3, FX # 21, FX # 22) under direct field supervision of the writer. General supervision of the project was undertaken by K. L. Daughtry, P. Eng. and E. O. Chisholm, P. Eng. The program consisted of 25 AQ diamond drill holes, totalling 5604 feet.

Targets for drilling were stratabound occurrences of zinc, with or without lead, in quartzite and /or marble units of the Monashee Group, probably correlative to the Hamill-Badshot sequence.

Geological mapping and a magnetometer survey had been completed over the property and an E. M. survey completed over the northern half of the property.

Drilling was generally restricted to zones of surface showings and geophysical anomalies. Holes were drilled along strike at about 100 foot intervals.

All drill holes were logged in detail and zones of sulphide mineralization were sampled by the writer. Sample widths varied, with 5 feet being the most common width. The split core was sent to General Testing Laboratories Ltd. and assayed for zinc and lead.

GEOLOGY: Regional

The Kingfisher Creek area is underlain by metasediments of the Monashee Group comprising marble, gneiss, quartzite and pegmatite. On the regional scale an impure carbonate member with associated zinc-lead mineralization strikes northeast through the area (see Geological Assessment Report by Cominco, 1964). The rocks underlying the property probably correlate with the Hamill-Badshot sequence of Lower Cambrian age.

GEOLOGY: Property

Diamond drilling intersected metasedimentary units of gneiss, quartzite, marble and feldspathic quartzite (including pegmatite), occasionally cut by andesite dykes. The units vary greatly in thickness and composition with many gradational rock types. However, rock contacts are usually distinct. Drill hole 74-17 provides a good example of the complex geology. In 323 feet of core, 65 units were mapped ranging from an intersection width of 1 foot to 27 feet. Descriptions of the rock types follow.

Marble:

Medium to coarse grained, recrystallized limestone occurs as pure white marble (95% calcite) grading into green-grey calcareous foliated quartzites. The marble, even with micas present, commonly does not give a foliated appearance. The usual appearance of marble units is massive when pure and spotty or speckled when impure.

Micas (phlogopite, biotite, and/or muscovite) are commonly present, occasionally up to 30% but generally about 10%. Quartz, with or without feldspar, is present along with green calc-silicate minerals (diopside and tremolite) in impure marbles. Some sections contain up to 15% diopside and Ca-rich garnets were noted. Certain sections have undergone chloritic alteration but others appear relatively unaltered. The marble appears to have undergone remobilization in a few local places. When cut by an andesite dyke (probably along a fault zone) calcite has cemented andesite breccia fragments. Thickness of the marble units ranges up to about 40 feet. About 30% of the rocks encountered in the drilling were marble.

QUARTZITE:

Medium to coarse grained quartzite occurs as pure grey quartzite (95% quartz) grading through siliceous marble to siliceous & micaceous gneiss or feldspathic quartzite (fine to medium grained or pegmatic).

Three types of quartzite are common with many gradational types. The pure, grey, massive quartzite is usually more fractured than the other rocks. It commonly contains minor blebs of pyrrhotite and pyrite. In banded quartzites, buff to pale green, medium grained feldspar and calcite grains have concentrated in thin, discontinuous layers resulting in a banded appearance. The banding could be of either primary or metamorphic origin. In places the feldspar has gradationally increased in size and amount to form a non-banded feldspathic-rich quartzite. The third type is a green-grey calcareous and/ or foliated quartzite, containing calc-silicates, micas and/or feldspars. Like the marble, quartzite has undergone various degrees of chloritic alteration. Pale green feldspars (slightly chloritic) are common. One 10 foot section of graphitic quartzite (graphite 10%-15%) was noted. Thickness of the quartzite units ranges up to about 30 feet. About 20 % of the rocks encountered in the drilling were quartzites

FELDSPATHIC QUARTZITES:

This rock type includes pegmatites which appear to be coarse grained mobilized feldspar-rich quartzites. The pegmatites have similar composition to fine to medium grained feldspathic quartzites and have gradational contacts in places with pure quartzites, feldspathic quartzites and the gneisses. In most cases the pegmatites are conformable to the surrounding rock.

Compositionally the pegmatites are simple, composed of feldspar, quartz and biotite. Feldspar varies from 20% to 80%, Quartz 20% to 50% and biotite 0% to 10%. Occasional garnet was noted. Feldspar crystals up to 1 1/2 inches were noted. Quartz commonly occurs as intergrowth between euhedral to subhedral feldspar crystals. The pegmatite generally shows no foliated appearance unless significant biotite present.

The fine to medium-grained feldspathic quartzites contain more quartz and less feldspar. Biotite, generally evenly distributed throughout the rock, gives it a slightly speckled and foliated appearance. Garnets are more common than in the pegmatites.

Quite often, the gneissic rock takes on a pegmatitic texture with a decrease in mica content and an increase in grain size. The feldspathic quartzites appear much more unaltered with only slightly chloritization sometimes noted. Barren thin pegmatite units conformably cut some mineralized zones and hence appear to have been mobilized at a later date than the recrystallization of the sulphide host rock. Thickness of feldspathic quartzite ranges up to about 60 feet. About 5 % - 10% of the rocks encountered in the drilling were fine to medium grained while about 10% - 15% were pegmatitic.

GNEISS:

The gneiss is composed of quartz, feldspar and biotite with or without garnet. The rock is usually medium grained except for coarse grained feldspar-rich bands and some coarse grained garnets.

Compositionally, biotite averages about 30% with quartz and feldspar in approximately the same ratio (30% - 40% each). Garnet can reach 10 % and then is usually coarse grained (up to 3/4 inch). Minor alteration and shearing is usually restricted to the areas along micaceous foliations.

Thickness of the gneiss units range up to 50 feet . About 25% of the rocks encountered in the drilling were gneiss.

DYKES:

Dykes of probable Tertiary age are fairly common (in 15 of 25 drill holes).

Most of the dykes are a dark grey-green, non-foliated, fine grained andesite. Commonly the dykes are highly fractured and seem to be associated with fault zones. Slightly porphyritic sections were noted with scattered medium grained rounded feldspar phenocrysts. Calcite coating on fractures is usually very common. In sections where contacts were preserved, thin (1 inch) aphanitic chill margins were noted. A general chloritic alteration is present.

It is difficult to determine attitudes of the dykes since most contacts were sheared or irregular. However, there are indications that the dykes dip fairly steeply and strike at a high angle to the country rock.

Dacite (or rhyodacite?) dykes were noted in 2 drill holes. They are siliceous, lighter colour, and more porphyritic than the andesite dykes. White to buff euhedral feldspar phenocrysts and some anhedral quartz phenocrysts occur in a light green to brown matrix. Phenocrysts compose about 25% of the rock with grain size up to 1/2 inch. Flow banding texture was noted and calcite coating on fractures is common.

The dykes range in thickness up to about 20 feet, with an average about 5 feet. In drill hole 74-13 an intersection of 74 feet occurred but the thickness is believed to be much less as the hole appears to have bent down and along a fault zone associated with the dyke. About 5 % of the total rock drilled was dyke rock.

STRUCTURE: Regional

Airphotos of the region show that the showings in the report area occur on the west limb of a fold whose axis strikes northeast along a prominent ridge east of Kingfisher Creek. The east limb of the fold is along the west side of Mabel Lake, where other similar showings and rock types are known.

STRUCTURE: Property

Folding and faulting is very complex with several stages of deformation present. Beds tend to be discontinuous and irregular due to the polyphase deformation, metamorphism and/ or original sharp facies changes. Folding occurs on a small scale as noted in drill core. Ptygmatic folding of quartz was noted in some gneisses. Attitudes of foliations can be very variable over short distances. Generally, however, the rocks strike north-northeast to northeast and dip steeply to the east. The age relationship between the dykes and associated fault zones could not be determined. The core obtained from some of these zones consisted of rounded gravel fragments of andesite dyke. Although small scale faulting and shearing is general, the rocks are usually fairly competent away from major fault zones.

The drill holes are believed to have wandered and followed structural weaknesses such as foliations (particularly in the gneisses) and fault zones. This tended to give at the dip of the foliations and faults a flatter appearance. Correlation of rock types between drill holes was not possible with any degree of confidence (for example, see 73-3 and 73-4).

From airphotos various cross cutting faults are seen to displace the rock units eastward as they strike north.

On the Black Jack property, drilling confirmed one of these faults, which separates ZONE A from ZONE B. The vertical displacement is unknown but it might be fairly large. Just south of the fault, drill hole 74-16 intersected a graphitic quartzite unit which has not been encountered elsewhere on the property. The horizontal displacement is about 200 feet.

MINERALIZATION:

The principal sulphides are pyrrhotite, pyrite, sphalerite and galena. They occur in stratabound zones in quartzites and marbles ranging in thickness up to 50 feet.

Sphalerite, the chief economic mineral present, is a dark black-brown color, probably due to the high iron content. The generally coarse grain size would be a plus in zinc recovery.

Galena is present in significant amounts only in sections of higher grade zinc mineralization.

The sulphides have been recrystallized and possibly slightly remobilized by the same metamorphic processes which have effected the host rocks. Generally the host rocks are slightly more altered. The low silver content and the stratabound nature of the mineralization suggests that the deposit is of the Kootenay -Arc type.

Quartzite is the chief host rock with marble hosting some of the mineralization.

In the quartzites, commonly banded or impure, non-calcareous, coarse grained quartzites, medium to coarse grained sulphides commonly form thin discontinuous bands parallel to other mineral foliations. The sulphides commonly form slightly elongated, rounded blebs. In higher grade sections (sulphides 20%) the sulphides, especially pyrrhotite, tends to more massive texture with decrease in foliated appearance and sulphides occurring along fractures and shears. Generally the quartzites contain higher zinc and lead values.

In the marbles the sulphides, like other minerals present do not show as strong a foliated texture. They occur as patchy aggregates similar to the mafic minerals present. The sulphides are medium to coarse grained, tending to a massive texture in some sections. Some sections contain up to 50% sulphides, chiefly pyrrhotite.

Interlayered quartzite and marble can occur in the same continuous sulphide zone. The mineralized zones have a relatively sharp contact with the country rock, even if the country and host rocks are similar. Some sections contain 10% or more pyrrhotite and pyrite but no significant zinc or lead mineralization. Pyrrhotite generally is present in amount twice that of pyrite but pyrite can be greater than pyrrhotite in particular sections. In some higher grade sections (zinc > 4%), sphalerite is the chief sulphide.

In some holes, two distinctive sulphide zones were intersected, sometimes in different rock types. It is not known whether two zones are present or if it is folding of the same zone.

Sulphide mineralization away from the main zones tends to be in small scattered layers or lenses or sparsely disseminated.

The gneisses are generally devoid of sulphides except occasional fine grained disseminations of pyrrhotite and pyrite in biotite rich sections.

The feldspathic quartzites contain even less sulphides. Some thin bands in sulphide zones contain minor pyrrhotite and pyrite but these rocks are tending to impure, feldspathic and calcareous quartzites.

Impure green-grey calcareous quartzites and siliceous marbles commonly contain up to 5 % disseminated pyrrhotite and pyrite.

The dykes commonly contain 1 % - 4 % disseminated cubes of pyrite.

Pyrite can occur as thin coatings and small cubes on fractures. This appears to be a later stage of mineralization.

MINERALIZATION:

Tonnage and Grade

Drilling on the Black Jack Property has indicated a fairly continuous thin tabular stratabound zone of zinc and lead mineralization. Zones A and B, which in effect are the same zone dislocated by a fault, have been calculated to obtain 1,840,000 tons of mineralized rock grading 0.58 % lead and 2.60 % zinc over an average width of 15.4 feet and a length of 1730 feet. The zones contain small but higher grade sections totalling 154,000 tons of mineralized rock grading 0.98 % lead and 4.02% zinc over an average width of 5.6 feet.

The cutoff grade used in the calculation was 1 % lead and zinc. Topography gives a known minimum down dip extension of about 400 feet but the depth was assumed to be equal to 1/2 the strike length (or 865 feet). The mineralized zone was assumed to dip vertically. The widths were corrected for dip and strike but probably have an error of about $\pm 20\%$.

KINGFISHER CREEK

C L A I M S.

1. Black Jack Claim Group

Claim Name	Record Number	Expire Date *
FX # 4	16 232	April 18, 1984
FX #5	16 233	April 18, 1984
FC #1	16234	April 18, 1982
FC #4	16 426	May 17, 1984
FC #5	16 427	May 17, 1982
FC #6	16 428	May 17, 1984
FC #7	16 429	May 17, 1982
FC # 8	16 430	May 17, 1984
FX # 8	16 432	May 17, 1984
FX #9	16 433	May 17, 1981
FX #10	16 434	May 17, 1984
FX # 11	16 435	May 17, 1981
FX # 12	16 436	May 17, 1984
FX # 13	16 437	May 17, 1984
FX # 6	16 504	June 5, 1984
FX # 7	16 505	June 5, 1984
FC # 2	16 514	June 12, 1983
FC # 3	16 515	June 12, 1982
FC # 10 FR	16 516	June 12, 1984
FC # 12	16 518	June 12, 1982
FX # 16	16 520	June 12, 1984
FX # 20	16 560	July 28, 1984
FX # 21	16 561	July 28, 1984
A 1	17 396	Aug. 10, 1984
A 2	17 397	Aug. 10, 1984
A 3	17 398	Aug. 10, 1984
A 4	17 399	Aug. 10, 1984
A 5	17 400	Aug. 10, 1982
A 13	17 408	Aug. 10, 1979
A 14	17 409	Aug. 10, 1978
A 15	17 410	Aug. 10, 1984
A 16	17 411	Aug. 10, 1982
LM 2	17 512	Nov. 30, 1982
LM 8	17 518	Nov. 30, 1977
LM 10	17 520	Nov. 30, 1977
LM 12	17 522	Nov. 30, 1976
LM 16	17 526	Nov. 30, 1978
LM 17	17 527	Nov. 30, 1978
LM 18	17 528	Nov. 30, 1978
MC 17	17 545	Nov. 30, 1981

2. KINGFISHER Claim Group:

Claim Name	Record Number	Expire Date
FX #14	16 438	May 17, 1982
FX #15	16 503	May 30, 1978
R 1	17 217	June 11, 1981
FC #11 FR	16 517	June 12, 1984
FC #13	16 519	June 12, 1976
FX # 17	16 557	June 29, 1979
FX # 18	16 558	June 29, 1979
FX # 19	16 559	June 29, 1976
FX # 22	16 562	July 28, 1984
D 1	17 416	Aug. 7, 1979
D 2	17 417	Aug. 7, 1977
D 3	17 418	Aug. 7, 1978
D 4	17419	Aug. 7, 1975
D 5	17 420	Aug. 7, 1977
D 6	17 421	Aug. 7, 1979
D 7	17 422	Aug. 7, 1979
D 8	17 423	Aug. 7, 1979
D 9	17 424	Aug. 7, 1977
D 10	17 425	Aug. 7, 1978
LM 4	17 514	Nov. 30, 1975
LM 5	17 515	Nov. 30, 1975
LM 6	17 516	Nov. 30, 1975
MO 5	17 557 A	Nov. 30, 1975
MO 6	17 558 A	Nov. 30, 1975
MO 7	17 559 A	Nov. 30, 1975
MO 8	17 560 A	Nov. 30, 1975
EX 1	17 578	Feb. 19, 1976
EX 2	17 579	Feb. 19, 1977
EX 3	17580	Feb. 19, 1976
EX 4	17 581	Feb. 19, 1976
EX 5	17 582	Feb. 19, 1977
EX 6 FR	17 587	March 14, 1976
EX 7 FR	17 588	March 14, 1976

3. Mabel Claim Group:

FX #2	16 230	April 18, 1984
FX #3	16 231	April 18, 1984
FC # 9	16 431	May 17, 1984
A 6	17 401	Aug. 10, 1979

Mable Claim Group continued:

Claim Name	Record Number	Expire Date
A 7	17 402	Aug. 10, 1979
A 8	17 403	Aug. 10, 1977
A 9	17 404	Aug. 10, 1979
A 10	17 405	Aug. 10, 1979
A 11	17 406	Aug. 10, 1977
A 12	17 407	Aug. 10, 1976
A 17	17 412	Aug. 10, 1979
A 18	17 413	Aug. 10, 1979
A 19	17 414	Aug. 10, 1979
A 20	17 415	Aug. 10, 1977
LM 1	17 511	Nov. 30, 1978
LM 3	17 513	Nov. 30, 1977
LM 7	17 517	Nov. 30, 1975
LM 9	17 519	Nov. 30, 1975
LM 11	17 521	Nov. 30, 1975
LM 13	17 523	Nov. 30, 1975
LM 14	17 524	Nov. 30, 1975
LM 15	17 525	Nov. 30, 1975
MC 1	17 529	Nov. 30, 1975
MC 2	17 530	Nov. 30, 1976
MC 3	17 531	Nov. 30, 1975
MC 4	17 532	Nov. 30, 1976
MC 5	17 533	Nov. 30, 1975
MC 6	17 534	Nov. 30, 1976
MC 7	17 535	Nov. 30, 1975
MC 8	17 536	Nov. 30, 1975
MC 9	17 537	Nov. 30, 1975
MC 10	17 538	Nov. 30, 1975
M 1	17 546	Nov. 30, 1975
M 2	17 547	Nov. 30, 1976
M 3	17 548	Nov. 30, 1975
M 4	17 549	Nov. 30, 1976
M 5	17 550	Nov. 30, 1976
M 6	17 551	Nov. 30, 1975
M 7	17 552	Nov. 30, 1976
M 8	17 553	Nov. 30, 1975

4. Other Claims

Claim Name	Record Number	Expire Date
MO 1	17 553 A	Nov. 30, 1974
MO 2	17 554 A	Nov. 30, 1974
MO 3	17 555 A	Nov. 30, 1974
MO 4	17 556 A	Nov. 30, 1974
MO 9	17 561 A	Nov. 30, 1974
MO 10	17 562A	Nov. 30, 1974
MC 11	17 539	Nov. 30, 1974
MC 12	17 540	Nov. 30, 1974
MC 13	17 541	Nov. 30, 1974
MC 14	17542	Nov. 30, 1974
MC 15	17 543	Nov. 30, 1974
MC 16	17 544	Nov. 30, 1974

* NB

- annual rental must be paid by recording date of claims to keep claims in good standing.

- Annual rental on FX #2 - FX # 22 and FC # 1 - FC # 13 paid for 1974.

CONCLUSIONS:

Based on the results of the geological mapping, geophysical surveys, and drill program, the following conclusions of the results and the property can be made:

1.) Drilling encountered a stratabound, zinc and lead deposit of possible economic significance. Approximately 1.8 M tons of mineralized rock grading 0.58% lead and 2.60% zinc over an average width of 15.4 feet and length of 1730 feet is indicated. Grades as high as 6 % zinc and 2 % lead were encountered.
2.) Sulphide mineralization (pyrrhotite, pyrite, sphalerite, and galena) is restricted to units of quartzite and marble, probably correlative with the Hamill-Badshot sequence of Lower Cambrian Age. This sequence is a well documented host of lead and zinc deposits in other parts of the southern interior of B. C.
3.) The deposit is open along strike at both ends.
4.) Other showings are known to exist to the north and south of the Black Jack showing over a total strike length of about 5 miles.
5.) The amount of pyrrhotite usually present in the sulphide zones makes magnetometer and electromagnetic surveys a valuable exploration tool.

RECOMMENDATIONS:

- 1.) The drilling results fully warrant further exploration on the property.
- 2.) A 30,000 feet by 1,000 feet grid should be established for ground control for mapping, geophysical and geochemical surveys.
- 3.) Detailed geological mapping should be carried out on all showings.
- 4.) A detailed magnetometer survey at reading intervals of 25 feet on lines 50 feet apart should be carried out over the entire strike length of the favorable rock units.
- 5.) A lead and zinc geochemical soil survey with sample intervals at 100 feet on lines 100 feet apart should also be carried out over the entire strike length of the favorable rock units. Detailed sampling at 50 foot intervals could be done in anomalous (geochemical and/or geophysical) areas.
- 6.) An electromagnetic survey should also be carried out along the strike of the favorable rock units.
- 7.) Special attention should be paid to the other known showings.

Claim

Dakota South	A 1
unnamed	FC #3
Dakota Main	FX #6
Dakota North	FX #5
unnamed	FX #12
Cominco-Kingfisher	FX #14
Cominco-King	R 1.

- 8.) An accurate compass and chain survey of all the claims held by Colby Mines should be carried out as soon as the weather permits.
- 9.) Diamond drilling should follow up significant geological, geophysical and/or geochemical anomalies.

Respectfully Submitted By

William R. Gilmour

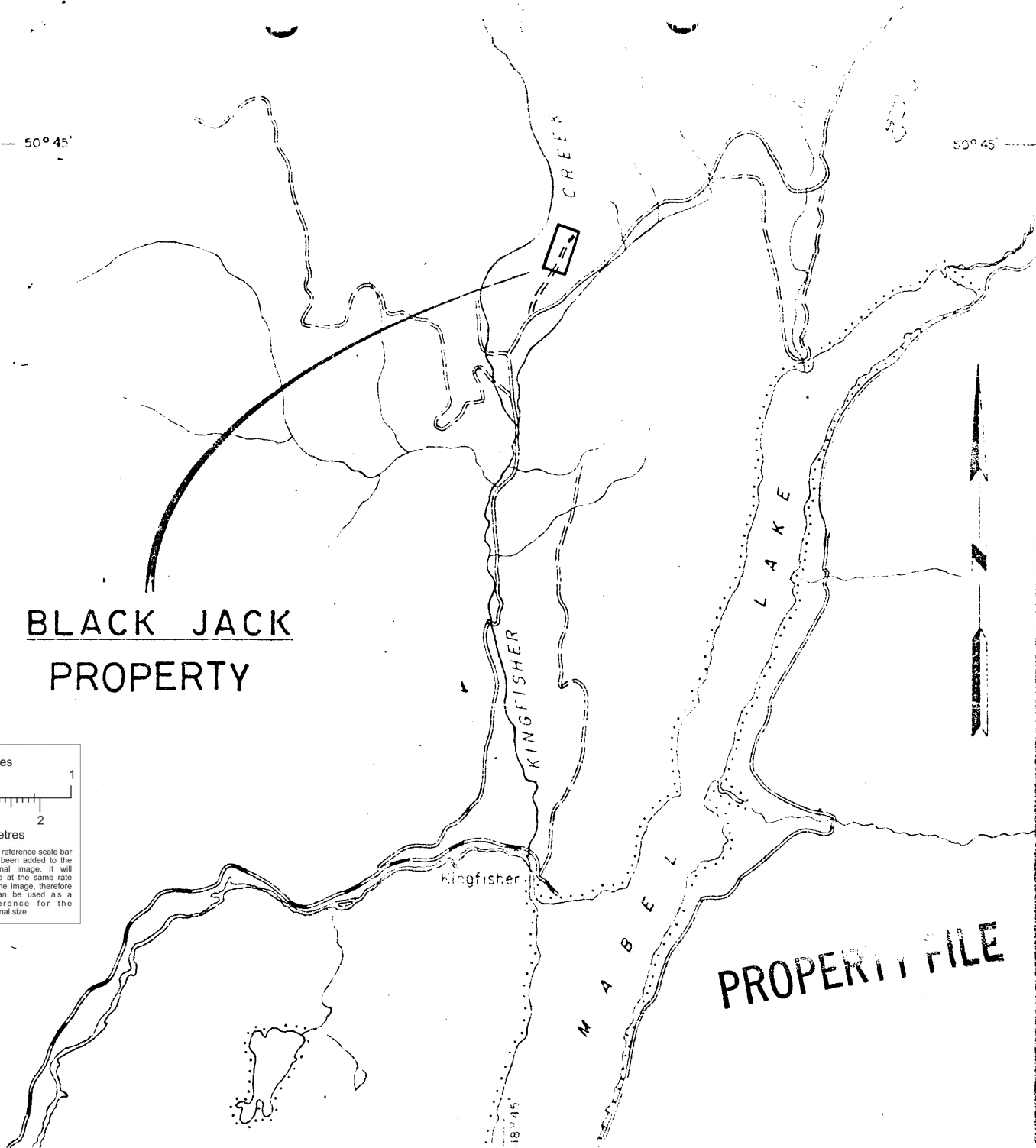
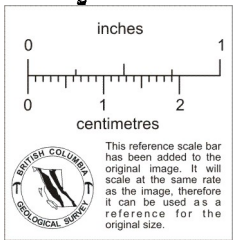
William R. Gilmour, geologist
K. L. Daughtry & Associates Ltd.

April, 1974

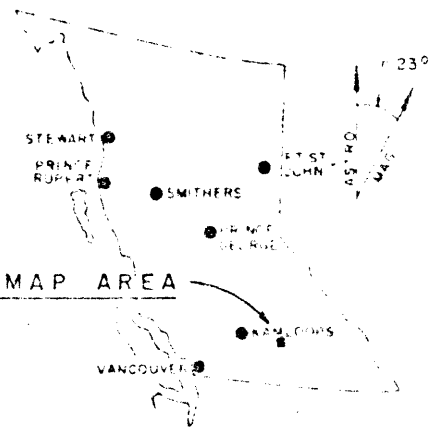
50° 45'

50° 45'

BLACK JACK PROPERTY



PROPERTY FILE



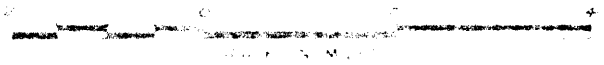
K.L. DAUGHTRY & ASSOC. LTD.

LOCATION MAP
OF

BLACK JACK PROP.

VERNON MINING DIVISION

BRITISH COLUMBIA



WRG

MARCH 1974

DRAWING NO. 1

BRITISH COLUMBIA

FC 1 to 13

16234
16514, 15
16426-31
16431
16516-19

Apr, May, June '72
92 and
map 92 ~~82~~ 10E

FX 2-22

16230-33
16504, 05
16432-38
16503
16520
16557-62

82L/10E mainly
some 10W

EX 1 to 7

17578-82, 87, 88

PROPERTY FILE

SUMMARY OF GRADE & TONNAGE OF MINERALIZED ZONES

BLACK JACK PROPERTY

CROSS METAL CONTENT
AND PRICES!

ZONE	TONNAGE	TONS/ VERTICAL FT.	% Pb	% Zn	WIDTH	LENGTH	VALUE (Pb) per TON	VALUE (Zn) per TON	TOTAL VALUE per TON
A		1180	0.62	2.35	17.1'	862'	\$2.48	\$16.00	\$18.50
including	102,000	280	0.86	3.75	4.8	730	3.44	25.50	28.90
B		954	0.53	2.91	13.8	864	2.12	19.90	21.90
including	51,500	242	1.13	4.34	7.1	426	4.52	29.50	34.00
A+B	1,840,000	2130	0.58	2.60	15.4	1730	2.32	17.70	20.00
including	154,000		0.98	4.02	5.6	1160	3.92	27.30	31.20

N.B.

- depth assumed $\frac{1}{2}$ strike length
- width corrected for dip & strike $\pm 20\%$
- cut off grade at 1% Pb+Zn
- assumed general vertical dip of mineralized zones
- assumed Pb at 20¢/lb.
- assumed Zn at 34¢/lb.

82L/10E

A PRELIMINARY REPORT

O N

THE KINGFISHER, ELK

&

JULIE CLAIM GROUPS

Vernon Mining Division
British Columbia

Submitted to: Dakota Silver Mines Ltd.

*Asses
2/6/64
Jury map*

Vancouver, B.C.
June 20, 1964

Albert F. Reeve
Geological Engineer

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ESTIMATED COST OF RECOMMENDED PROGRAMME	12

APPENDIX:	FIG. 1 - Location Map
	FIG. 2 - Claim Location Sketch
	FIG. 3 - Elk Showings
	FIG. 4 - Kingfisher Showings

I N T R O D U C T I O N

On June 12, 1964, the writer was requested by Mr. L. G. White, P. Eng., to examine and report on the mineral properties described herein, on behalf of Dakota Silver Mines Ltd.

The examination was carried out from June 14th to 16th, 1964. Mineral showings on the Elk and Kingfisher claims were inspected, sampled and roughly mapped. A general examination of the geology on the Julie Group was also made. General Location maps of the properties and sketch plans of the mineral occurrences are enclosed in the appendix. The work was supervised by Jos. Sullivan, P. Eng. of Vancouver.

LOCATION AND ACCESS

The properties are located in Vernon Mining Division, west of the north end of Mabel Lake, on the headwaters of Kingfisher Creek. (Approximately $50^{\circ} 45'$, $118^{\circ} 45'$).

Local access is from Enderby, which is 335 highway miles from Vancouver. Enderby is a rail point on a branch line of the C.P.R. The properties are reached by travelling 20 miles east from Enderby on a secondary highway which runs along the north side of the Shuswap River valley; then turning northward on logging road which follows the course of Kingfisher Creek. Nine road miles north of the highway intersection, a road branches westward to the Julie and Elk Groups. The Kingfisher showings are located about one quarter mile west of the main logging road, 12 miles north of the intersection. Logging roads are in good condition and are passable by automobile.

LOCAL RESOURCES

Adequate supplies of water and timber are available for the purposes of preliminary exploration and development. The nearest electric power source is a single phase 7200 volt line which runs eastward along the Shuswap River to Mabel Lake some 3 scale miles south of the properties.

PROPERTY

The following 34 claims are held by Dakota Silver
Mines Ltd. under private agreements to options:

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>	<u>ASSESSMENT ANNIVERSARY</u>
Elk #1	7307	May 15, 1965
" #2	7308	" " "
" #3	7309	" " "
" #4	7310	" " "
" #5	7311	" " "
" #6	7312	" " "
" #7	7324	May 26, 1965
" #8	7325	" " "
Kingfisher #7	7107	November 19, 1964
" #8	7108	" " "
" #9	7109	" " "
" #10	7110	" " "
" #11	7111	" " "
" #12	7112	" " "
" #13	7113	" " "
" #14	7114	" " "
" #104	7139	" " "
" #105	7140	" " "
" #106	7177	November 25, 1964
" #107	7178	" " "
" #120	7141	" " "
" #121	7142	" " "
" #123	7144	" " "
" #142	7374	May 29, 1965
" #143	7375	" " "
" #144	7376	" " "
" #145	7373	" " "
Rodney	7368	" " "
Barbie	7367	" " "
Deer #1	7326	" " "
Rich #2	7050	August 13, 1964
" #3	7051	August 16, 1964
" #4	7052	" " "
Bright Star Trio #4	7044	July 3, 1964

PROPERTY (Cont'd)

The following 18 claims are jointly held by Dakota Silver Mines Ltd. and Sunshine Lardeau Mines Ltd.

<u>CLAIM NAME</u>	<u>TAG NUMBER *</u>	<u>ASSESSMENT ANNIVERSARY</u>
Julie #1	527101	June 12, 1965
to	to	
Julie #18 incl.	527118 incl.	

*NOTE: No record numbers were assigned at the time of title search. (Vancouver, June 17, 1964).

The above property information was obtained from the owners and verified at the Vancouver and Vernon Mining Recorder's offices.

HISTORY AND DEVELOPMENT

The general area is underlain by Shuswap rocks, in which few metallic mineral deposits have been discovered and very little in way of intensive exploration and development work has been done.

According to the owners, zinc showings in the vicinity of Kingfisher Creek have been known for at least ten years. Work on these occurrences has been limited to prospecting and a small amount of surface trenching.

GENERAL GEOLOGY

The area is underlain mainly by Precambrian meta-sediments known regionally as the Monashee Group, a sub-division of the Shuswap terrane. Localized remnants of tertiary volcanics and sediments overlie the Monashee.

Lithology

Gneiss, composed principally of feldspar, quartz and mica, comprises most of the Monashee rocks.

Locally the gneisses are inter-bedded with bands of quartzite and calcareous marble. The quartzite is coarse and crystalline and grades into the enclosing gneiss. The marble variously contains lenses and masses of quartz, lime-silicates and gneiss.

Lenses and wisps of coarse, gneissic quartz feldspar pegmatite are enclosed concordantly in the complex.

Structure

The gneissic fabric of the above rocks is believed to conform approximately with the original sedimentary bedding. Internal isoclinal folding, accompanied by high-grade metamorphism has left the foliated strata in steep to moderately inclined positions.

A north-south oriented fault structure transects the Elk Claim Group along Kingfisher Creek.

(1) Kingfer - (see Fig. 4 Appendix)

The mineralization here consists of coarse vaguely banded disseminations of sphalerite in marble. The sphalerite varies from black to light honey coloured. It is generally accompanied by pyrite and by sub-massive pyrrhotite in places. Minor amounts of galena are also present.

The heaviest mineralization occurs in a green silicious section of the marble. The principal exposure of this type of material is in a bulldozer cut about 50' in length. The mineralization appears to extend about 30' along the rock wall of the trench, but because of sloughing and caving, only about 14' of this was well enough exposed to sample.

The following are samples taken from the main trench:

<u>NO.</u>	<u>DESCRIPTION</u>	<u>LENGTH</u>	<u>Zn.</u>	<u>Pb.</u>	<u>Au.</u>	<u>Ag.</u>	<u>BY</u>
59404	Min. grey-white marble	9'	3.25	0.23	Tr	0.1	AFR
59405	" " " "	5'	0.87	0.70	Tr	Tr	AFR
#3	" green lime-silicates	grab	7.72	-	-	-	Owners
#1	"caprock"	grab	0.12	-	-	-	Owners

In addition, there are 4 lesser outcrops of gneiss, quartz, and marble carrying zinc mineralization, as noted on Figure 4. The mineralized outcrops occur in an area about 900' in length.

The writer has tentatively assumed a strike of about N50W and a dip of 55° SE at the main trench; however, there is insufficient information available at this point to firmly establish strike, true width or dip of the mineralized zone or zones.

ECONOMIC GEOLOGY (Cont'd)(2) Elk - (See Fig. 3 Appendix)

On the Elk zone the mineralization consists of coarse disseminations of sphalerite, pyrite and irregularly distributed galena in smokey grey crystalline quartzite. A slight blue stain on fracture surfaces suggests the possibility of a little copper mineralization as well. In the discovery trench this type of material is cleanly exposed over a width of 10'. This trench has cut the east wall of the zone, but stops in strongly mineralized material on the west side.

Samples taken from the main pit are as follows:

<u>NO.</u>	<u>DESCRIPTION</u>	<u>LENGTH</u>	<u>Zn.</u>	<u>Pb.</u>	<u>Cu.</u>	<u>Au.</u>	<u>Ag.</u>	<u>BY</u>
59402	Mineralized grey qtz.	10'	6.47	0.05	0.04	Tr	Tr	AFR
59403	High Pb section	1'	5.11	8.27	-	Tr	0.2	AER
#4	Mineralized quartz	30#bulk	3.23	2.99	0.04	-	0.1	Owners

One hundred feet north of the main pit, a section of heavily mineralized gossan in a small pit was sampled (not a full section).

<u>NO.</u>	<u>DESCRIPTION</u>	<u>LENGTH</u>	<u>Zn.</u>	<u>Pb.</u>	<u>Au.</u>	<u>Ag.</u>	<u>BY</u>
59401	Mineralized gossan	2½'	4.09	2.32	0.01	0.2	AFR

In addition, several other small exposures of mineralized quartz and gossan were found along strike as noted on Figure 3. A narrow band of calcareous marble follows the zone, on the west side, but is apparently not mineralized.

ECONOMIC GEOLOGY (Cont'd)

This zone was traced by the writer for a distance of about 800' and it is reported by the owners to extend several hundred feet further north. It has a steep dip and well defined average strike of about N 15° E.

Note Re Sampling: It should be noted that the samples taken on both the Kingfisher and Elk Showings do not represent full mineralized widths and can only be interpreted as very limited indications of character and tenor.

(3) Julie Group

These claims were staked about a week prior to the examination and no detailed prospecting has been carried out yet by the owners. The writer made a brief general inspection of the geology. The most abundant rock types are quartz-feldspar, biotite gneiss, and pegmatitic feldspar-quartz gneiss. Several minor bands of marble and quartzite were observed; none being more than 10' in thickness. In general, these rocks have a strike of about S 70° W and dip variably northward.

SUMMARY AND CONCLUSIONS

The Kingfisher, Elk, and Julie claim groups are underlain by precambrian rocks of the Monashee meta-sedimentary complex.

As a result of relatively recent prospecting, zinc mineralization has been discovered in a marble-quartzite horizon on the Elk and Kingfisher claims.

In addition, between the Elk and Kingfisher showings along an apparent strike of N60°W, there are a number of other mineralized zones located on claims held by the Bright Star Trio mining company.

The zinc mineralization appears to be a replacement type; either introduced hydrothermally, favouring the quartzite-marble horizon, or metamorphic mobilization and concentration of zinc minerals contained in original sedimentary beds. This apparent stratigraphic control suggests the possibility of substantial extension or repetition of the mineralization within the favourable horizon.

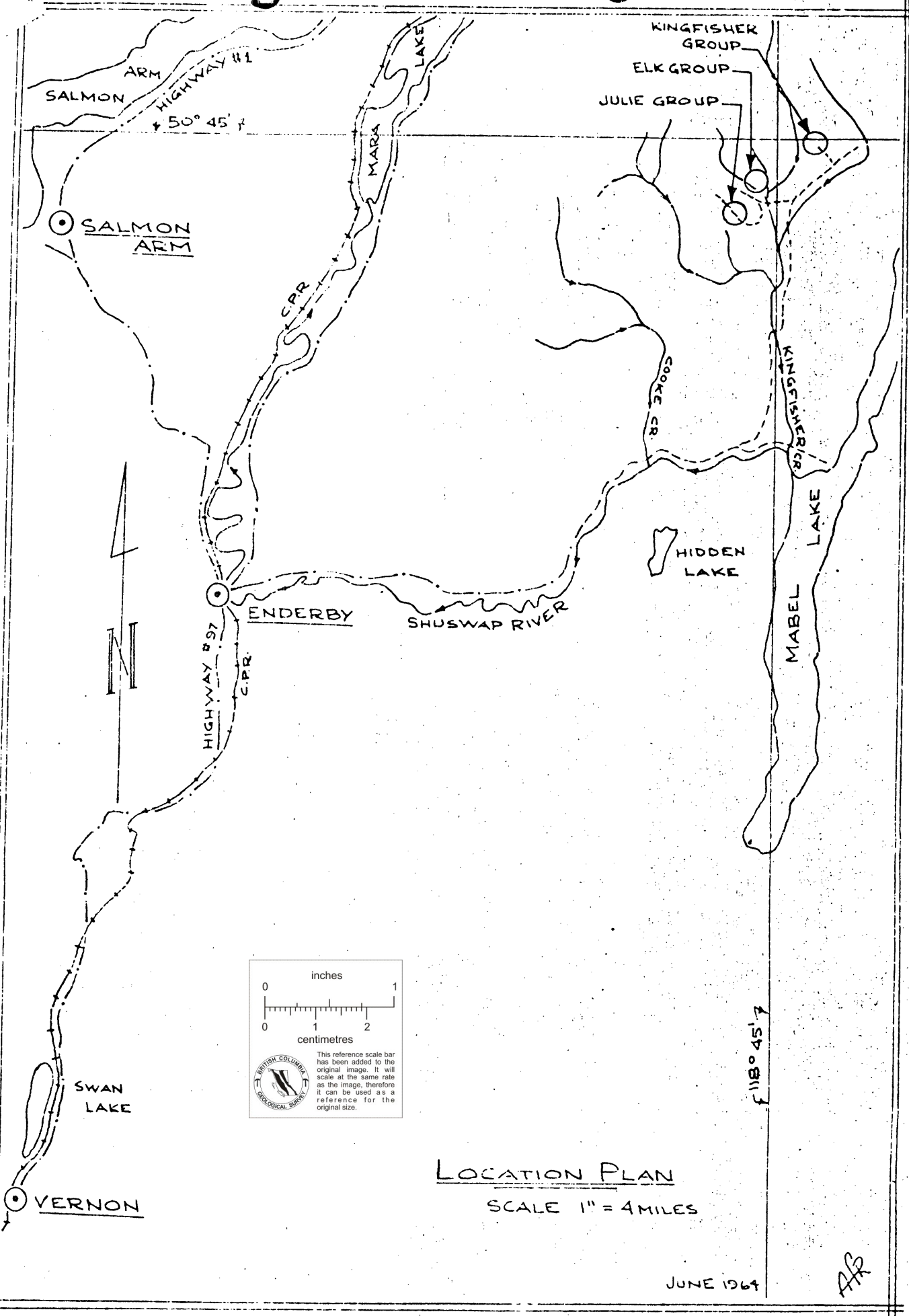
Since there has been very little metallic mineral exploration carried out locally, and in the Monashee complex generally, these showings represent relatively new and untested exploration potential.

Locally, exploration work to date has consisted of limited prospect trenching. Further exploratory work on a broader basis will be required to obtain a reasonable assessment of economic possibilities.

On the Kingfisher and Elk Groups a programme of surface trenching, stripping and sampling, guided by geological, geophysical and geochemical mapping should be carried out. Contingent upon the results of this type of work, some preliminary diamond drilling would be required. The Julie Group will require preliminary prospecting to determine whether more detailed work is justified.

In exploring this area particular attention should be paid to tracing and prospecting the quartzite and marble horizons.

FIGURE 1



LOCATION PLAN
SCALE 1" = 4 MILES

JUNE 1964

AR

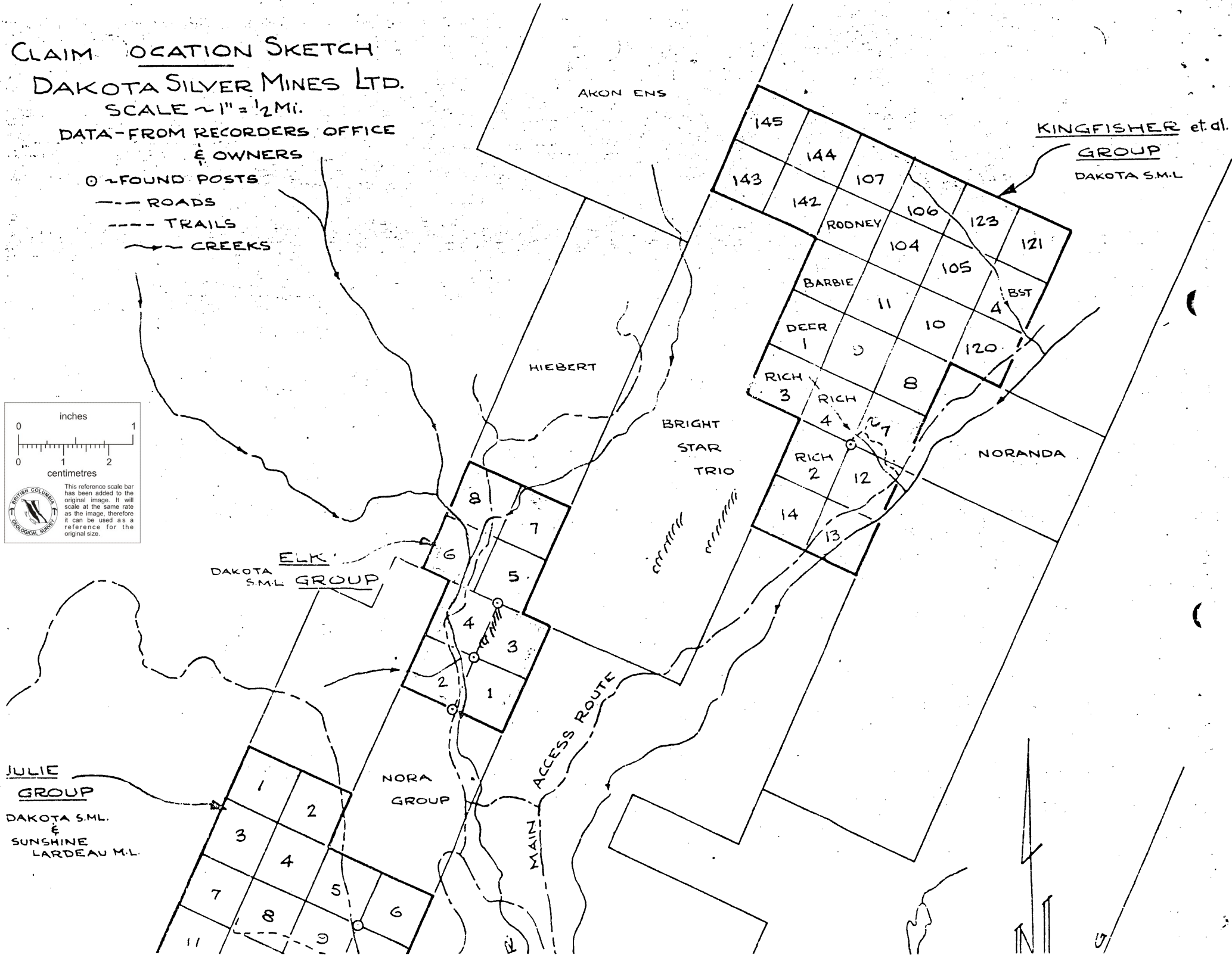
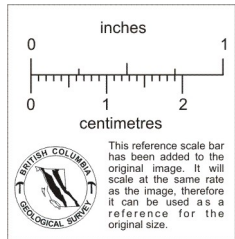
CLAIM LOCATION SKETCH

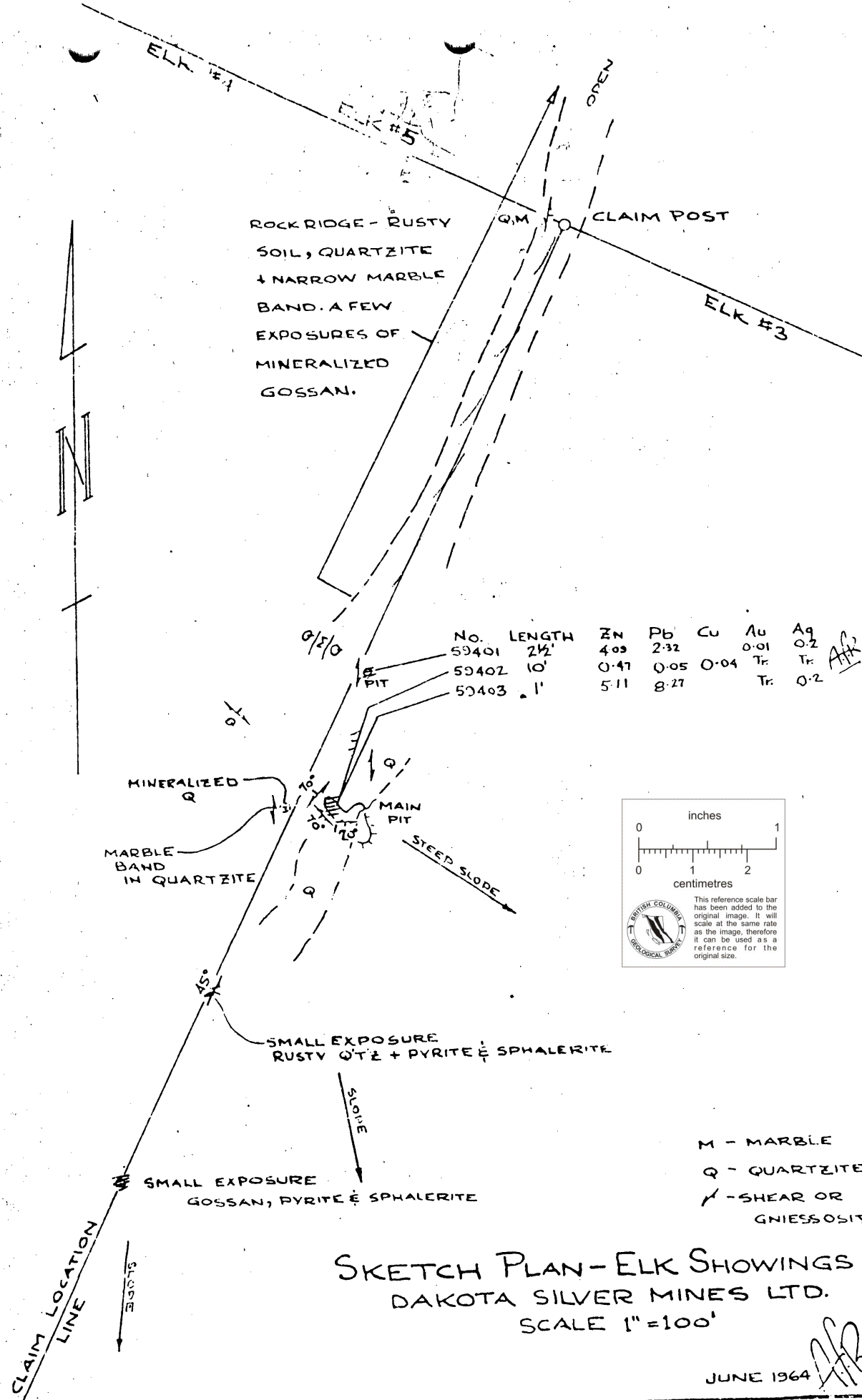
DAKOTA SILVER MINES LTD.

SCALE ~ 1" = 1/2 Mi.

DATA FROM RECORDERS OFFICE
& OWNERS

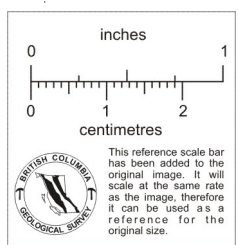
- FOUND POSTS
- ROADS
- TRAILS
- ~ ~ ~ CREEKS





ROCKRIDGE - RUSTY
SOIL, QUARTZITE
+ NARROW MARBLE
BAND. A FEW
EXPOSURES OF
MINERALIZED
GOSSAN.

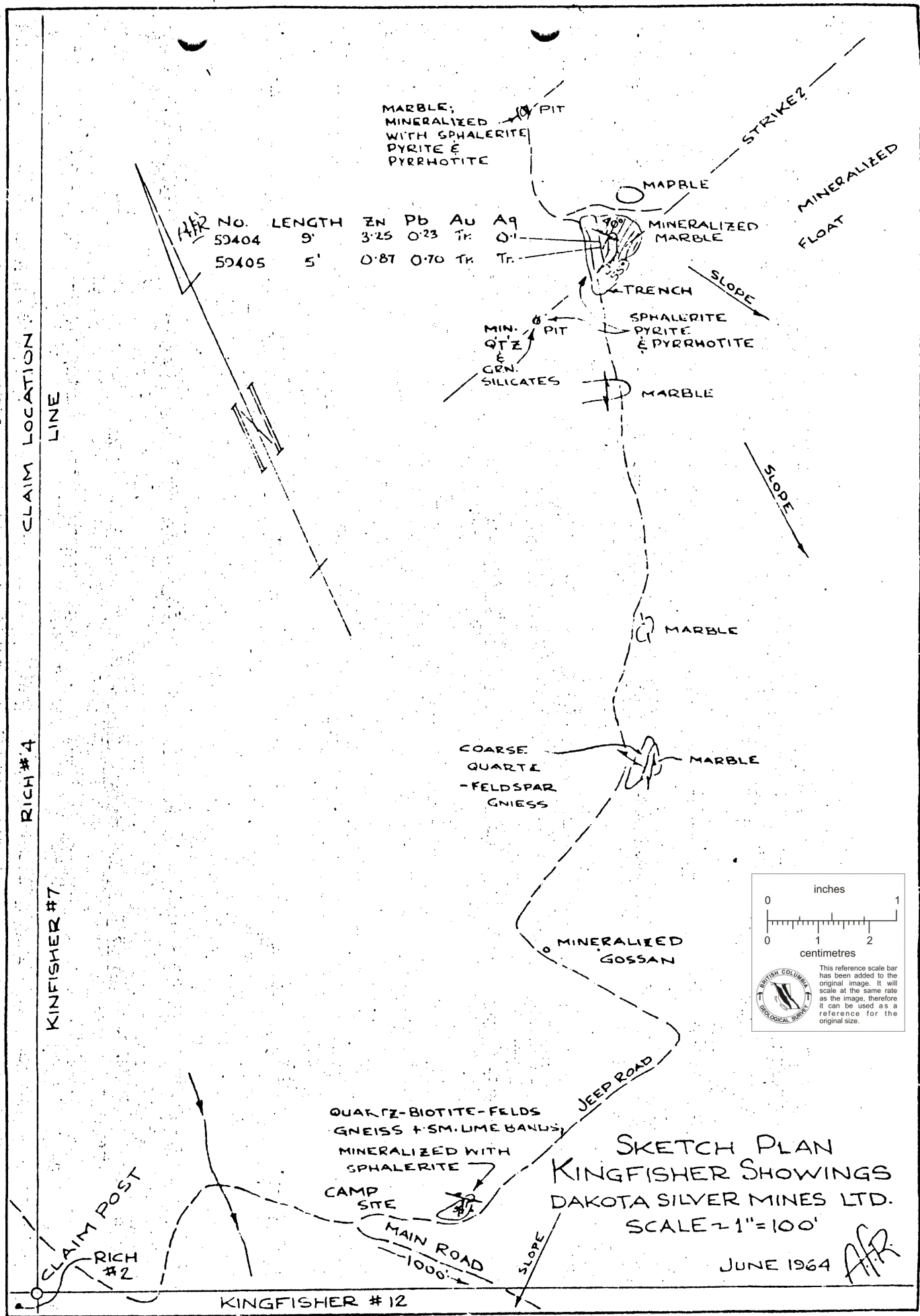
No.	LENGTH	Zn	Pb	Cu	Au	Ag
59401	2 1/2'	4.09	2.32		0.01	0.2
59402	10'	0.47	0.05	0.04	Tr	Tr
59403	1'	5.11	8.27		Tr	0.2



- M - MARBLE
- Q - QUARTZITE
- |— SHEAR OR GNEISSOSITY

SKETCH PLAN - ELK SHOWINGS
DAKOTA SILVER MINES LTD.
SCALE 1" = 100'

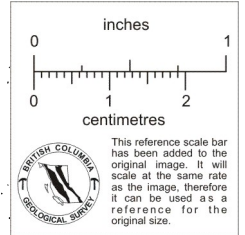
JUNE 1964 *AR*



SKETCH PLAN
 KINGFISHER SHOWINGS
 DAKOTA SILVER MINES LTD.
 SCALE = 1" = 100'

JUNE 1964

APR



PHASE I

A. Kingfisher Group

1. Line-cutting and chaining - 10 miles
2. Geological mapping - 10 claims
3. Geochemical survey, - 10 line miles
T.H.M. colour tests
4. Magnetic survey - 10 line miles
5. Stripping, trenching, and sampling.

B. Elk Group

1. Line-cutting and chaining - 8 miles
2. Geological mapping - 8 claims
3. Stripping, trenching and sampling.

C. Julie Group

Preliminary prospecting.

PHASE II

Diamond drilling, 3000' contingent upon the success
of A and B.

ESTIMATED COST OF RECOMMENDED PROGRAMMEPHASE I

1)	Line-cutting 18 miles @\$75.00	\$ 1,350.00
2)	Geological mapping, 18 claims @\$100.00	1,800.00
3)	Magnetic survey, 10 lines miles @\$50.00	500.00
4)	Geophysical survey, 10 line miles @\$45.00	450.00
5)	Stripping, bulldozer, 120 hrs. @\$18.00	2,160.00
6)	Trenching & sampling (a) Plugger rental 2 mo.	300.00
	(b) Labour 2 men, 2 mo.	1,800.00
	(c) Assaying, 100 samp. @\$5.00	500.00
7)	Camp	1,500.00
8)	Camp maintenance, 200 man days @\$5.00	1,000.00
9)	Misc. field supplies	1,000.00
10)	Local transportation	1,500.00
11)	Engineering (incl. preliminary report)	2,500.00
12)	Travelling expenses	1,500.00
13)	Prospecting Julie group	500.00
		<u>\$ 18,360.00</u>
	Contingency Allowance	<u>1,640.00</u>
	TOTAL OF PHASE I	<u>\$ 20,000.00</u>

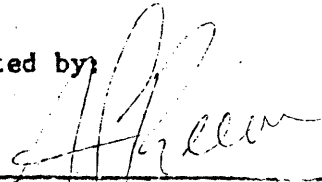
PHASE II

Diamond drilling 3000' (projected) A\$5.00/ft.	\$ 15,000.00
Ancilliary costs and contingency	<u>5,000.00</u>
TOTAL OF PHASE II	<u>\$ 20,000.00</u>

TOTAL ESTIMATE \$ 40,000.00CONDITIONS

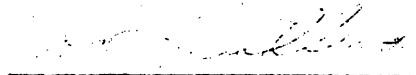
- (1) Time 2½ months
- (2) Items 1, 2, 3, 4, and drilling contracted

Submitted by:



A. F. Reeve, Geological Engineer

Supervised by:



Jos. Sullivan, P. Eng.

June 20, 19