565

57°; 131°

KENNCO EXPLORATIONS, (WESTERN) LIMITED

REPORT ON 104 G/3W

GEOLOGICAL AND GEOCHEMICAL SURVEYS

SPHALER CREEK EXAMINATION
Goat & Kim M.C., Liard M.D., B.C.

G.H. Rayner, C.S. Ney

October 13,1964

KENNCO EXPLORATIONS, (WESTERN) LIMITED

SPHALER CREEK EXAMINATION
GOAT & KIM CLAIM GROUPS

Stikine River Area
British Columbia

57° 131° S.E.

70 miles south of Telegraph Creek, B.C.
Liard Mining Division

REPORT

ON

GEOLOGICAL AND GEOCHEMICAL SURVEYS

by

G.H. Rayner - Author
C.S. Ney - Supervisor

August 2 - August 29, 1963
June 20 - September 21, 1964

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KENNCO EXPLORATIONS, (WESTERN) LIMITED

SPHALER CREEK EXAMINATION

INTRODUCTION

This report describes geological mapping and geochemical silt surveys carried out on the GOAT 1 - 48 and KIM 1 - 10 Mineral Claims in the Stikine River area of Northern British Columbia. The claim groups lie astride Sphaler Creek about 11 miles above its junction with the Porcupine River and about 16 miles east of the Stikine River. The Galore Creek Camp lies approximately 8 miles to the northwest.

TOPOGRAPHY

Sphaler Creek lies near the axis of the Coast Range Mountains in a region of rugged topography. The valley of Sphaler Creek is a sharp V-shaped valley and does not show the U-shaped cross section commonly seen in glaciated valleys in this area. Small hanging glaciers heading in extensive icefields occur along both sides of the valley. Total relief on the claims is over 3000 feet on the north side and slightly less on the south. The steep and broken nature of the ground coupled, in the lower areas, with dense coast-type underbrush, make access to various parts of the property difficult. To add to this problem, Sphaler Creek is not fordable and effectively divides the property in two.

GEOLOGY

Field Methods: Geological mapping was carried out under three types of control. Much of the reconnaissance was done on air photos at a scale of 1" = 400'. In areas of special interest about 1 1/2 square miles was mapped by plane table on a scale of 1" = 100'. On the West Zone about 1/2 square mile was mapped on the same scale using a grid with 200-foot line spacing for control.

GEOLOGY
(cont'd)

General Geology: The country rocks consist of Triassic volcanic flows, flow breccias and tuffs. These are intruded on the south by a large body of Coast Range granodiorite. The main controlling structure on the property is a zone of faulting half a mile wide, traceable for four miles in a northerly direction. Along this structure a series of copper positive plugs, dykes and breccia pipes have been emplaced. Minor areas of limestone occur in the zone of faulting and are thought to have been drag faulted into their present positions.

Triassic Volcanics: Triassic flows, flow breccias and tuffs make up by far the greater part of exposed outcrops on the claim group. These are largely andesitic in composition. The general attitude of these beds where it can be determined is very steep and striking north-northwest. Over much of the property the volcanics have been involved in movement related to the main fault zone and attitudes are locally quite variable. In some sections evidence of bedding has been destroyed so that attitudes cannot readily be determined.

This volcanic sequence shows an increasing sedimentary character towards the west and southwest. On the north and northeast flows and flow breccias predominate; on the southwest the sequence is almost entirely tuffs, flow breccias and thin sedimentary horizons composed mainly of volcanic materials. An increasing lime content in the rocks is also noted in this area.

Permian(?) Limestone: Limestone occurs in two areas on the property. On the north side of Sphaler Creek, a narrow band of limestone forms the footwall of the main fault structure for several hundred feet in the area of the Lower North Zone, and occurs intermittently in this position for about 3000 feet along the structure to the north to a point above the North Zone (c.f. Plate I). This limestone is generally recrystallized but otherwise quite fresh. It shows none of the often intense shearing and alteration that has affected the adjacent volcanic rocks. Pyrite, which is common in the surrounding rocks, is virtually absent in the limestone. The contacts at the edges of these bodies seem to be fault contacts wherever observed. The scarcity of alteration effects in the limestone suggest that it was faulted into its present position subsequent to hydrothermal alteration. Evidence elsewhere indicates that all the fault movement preceded alteration.

A second small area of limestone occurs on the south side of Sphaler Creek just west of the main fault. This is also fresh and unaltered. The relations of this body to the surrounding rocks are obscured by overburden.

The limestone is only assumed to be Permian in age. No fossils have been noted in it. An extensive area of similar appearing limestone of Permian age outcrops to the east of the property.

Intrusives: Coast Range granodiorite occurs on the southern end of the property as a large massive, mountain-forming unit. This is a uniform equigranular rock showing no alteration or copper mineralization. About a mile to the southwest of the property, skarn zones occur on the contact between the granodiorite body and limy horizons in the Triassic volcanics and sediments. These skarn zones carry no trace of copper. From this it would appear that the Coast Range intrusives were not strongly copper positive in this area, and were probably not directly related to the nearby copper mineralization. The area of intersection of the main northerly fault with the granodiorite is covered by glacial ice so that the age relationships are unknown.

The most significant intrusive on the property is a fine to medium-grained leucocratic unit occurring intermittently as dykes and small plugs along the fault structure for about three miles. It also forms the bulk of the fragments in the breccia pipes at the northern end of the belt. This unit is almost invariably associated with copper mineralization. It definitely occurs on all of the mineralized zones on the property with the exception of one, and here it may be masked by alteration and shearing. This rock unit was originally probably a monzonite. The original feldspar content appears to have been about one-third orthoclase and two-thirds plagioclase (An_{38}). This picture has been drastically changed by large scale addition of orthoclase so that in some areas the rock composition is essentially syenitic.

Mafic content seldom exceeds 5 percent. This, originally largely pyroxene, is now strongly chloritized over large areas.

A few basalt dykes are noted in the central and northern sections of the property. These do not seem to follow any pattern and cut across the general northerly trend more often than they parallel it.

Mineral Deposits:

North Zone: The North Zone consists of a series of breccia pipes cutting through an area of monzonite sills, dykes and Triassic volcanics. The breccia fragments in the pipes are almost entirely intrusive (monzonite), regardless of the type of wallrock. Only some of the pipes are mineralized with chalcopyrite and lesser pyrite. Sulphides seem to prefer to replace the matrix rather than the intrusive fragments.

North East Zone: This is the only zone on the property showing a definite control by strong east-west structures. An east-west fracture system dipping to the north cuts across a body of monzonite in this area. These fractures are mineralized with varying amounts of bornite and magnetite.

Lower North Zone: The Lower North Zone lies along the most strongly sheared section of the main northerly fault zone. The long axis of the zone parallels the northerly fault. Mineralization appears to be localized along it by minor fracture sets cutting across the main shear direction.

Silver Standard Zone: This area of presumably volcanic rock is strongly sheared and altered to an extent that details of geology and ore control are largely obscured. Mineralization seems to occur in discontinuous lenses roughly en echelon and parallel to the main fault direction.

Camp Zone: The Camp Zone consists of a group of small monzonite plugs and dykes punching through a series of Triassic flows, flow breccias and limy tuffs. Sections of the volcanics have been highly fractured and brecciated by the intrusions. The areas of intrusion and brecciation do not appear to follow any particular pattern or control. Chalcopyrite and pyrite occur in the monzonite and to some extent in the adjacent tuffs.

West Zone: The West Zone consists of mineralization contained within a large monzonite dyke. This lies about 3000 feet west of the main northerly fault and appears to have filled a parallel fracture. The dips in both cases are steep and to the east. This dyke is rather irregular, varying from 100 to 300 feet in width. It has been traced for a total length of over 2000 feet.

However, significant mineralization does not occur throughout this length. There also does not appear to be any relationship between the width of the dyke and the width of the mineralized sections within it. Intensity of mineralization appears to be related to intensity of fracturing, although the sulphides occur as disseminations rather than on the fractures themselves.

Conclusions: From work done to date it has indicated a close relationship between the monzonite intrusive and copper mineralization. The evidence indicates that this intrusive is not c closely related to the Coast Range granodiorite, but is rather a s local intrusive localized by the strong fault structure on the property.

GEOCHEMISTRY

Sample Collection and Treatment: Samples were collected from streams and seepages whenever available on three lines on each side of the Sphaler Creek valley. Because of the rugged nature of the terrain, no attempt was made to maintain straight lines or to lay out a grid. The six lines of samples roughly parallel contours along the sides of the valley. All sample locations were plotted in the field on air photos enlarged to a scale of 400 feet to the inch, so that a good accuracy of location was attained.

The majority of the samples were treated in a field laboratory at Telegraph Creek, British Columbia, and the remainder at Kennco's laboratory in North Vancouver. The analytical procedure followed in both cases was essentially the same. The samples were first dried, then screened on a minus 80 mesh screen. A sample of the minus 80 mesh fraction was tested for extractable copper, using the Holman test. A further sample of minus 80 mesh material was then selected for Total Copper and, in some cases, Total Molybdenum determinations. This was digested in perchloric acid. An aliquot of this solution was tested for Total Copper by the biquinaline colourimetric method. Another aliquot of the same solution was, for some samples, tested for Total Molybdenum by the thiocyanate method.

Results: Holman and Total Copper results are plotted on Plate II. Holman Copper values show a close correlation with Total Copper values in this area, so the two are considered together in evaluating the program.

All of the known mineralized areas on the claim group give good copper anomalies. As well as these, a number of areas gave anomalous results for which there was no known source. In some of these areas the anomalies were found to have visible bedrock sources. This was particularly true of the extension of the West Zone intrusive on the north side of Sphaler Creek, an area that had not been thoroughly prospected prior to the Geochemical Survey. A sizeable area on the south bank of Sphaler Creek, just west of the main fault zone, shows anomalous geochemistry in an area of no outcrop. As yet no explanation for this anomaly has been found.

Total Molybdenum analyses were not run on all samples. The values obtained are plotted on Plate III. These are generally low, but where values above 2 occur, they generally coincide with high copper values.

Conclusions: It was found that because of the steep terrain and good percentage of outcrop, most of the high copper values could be traced to visible bedrock sources. In general, these features make geochemical interpretation and follow-up simple and direct in this area.

Molybdenum geochemistry does not appear to be too informative on this property.

Vancouver, B.C.

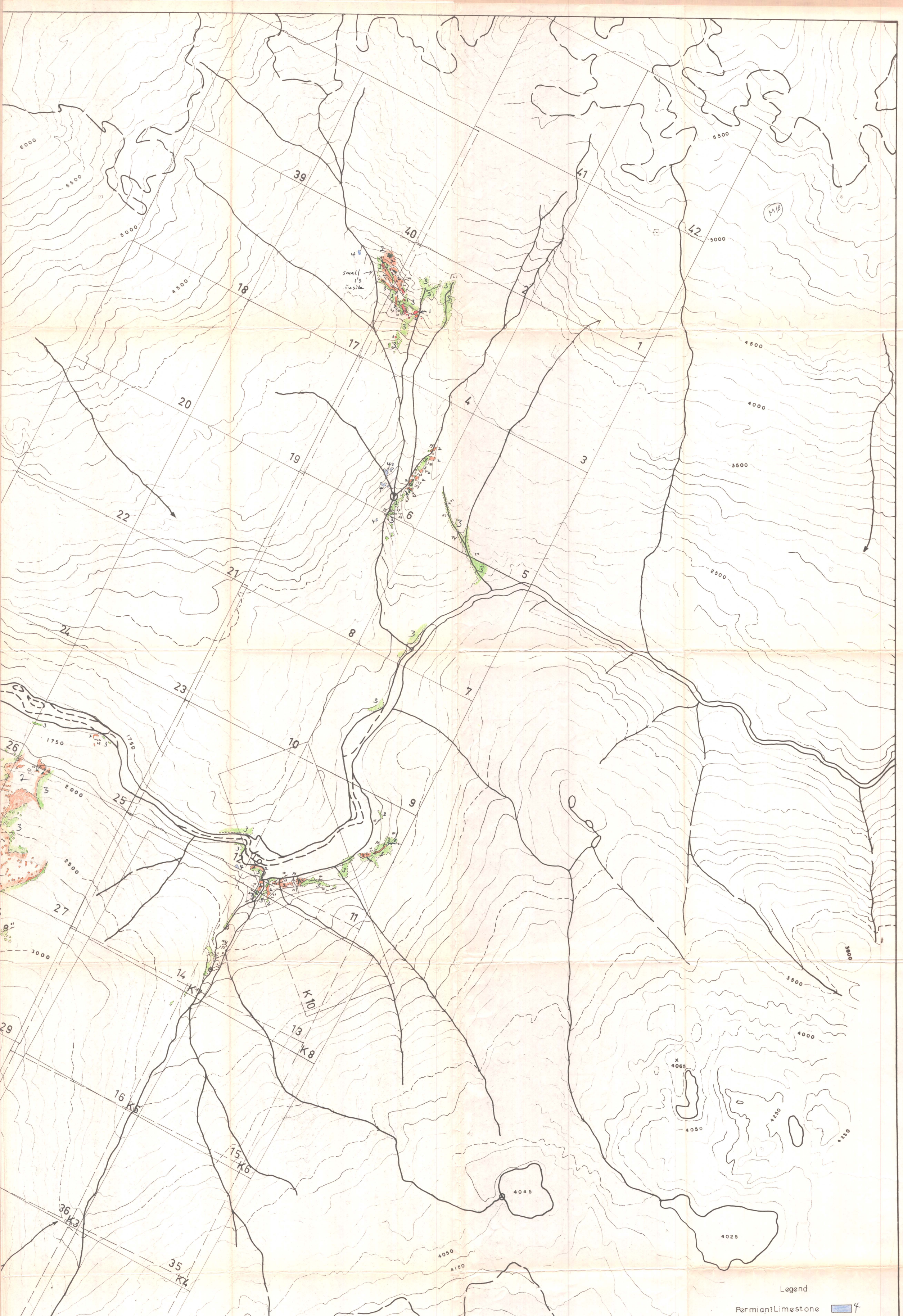
October 13, 1964

Gerald H. Rayner

G. H. Rayner - Author

C. S. Ney - Supervisor
(p.Eng)

MIA


small
i's
inside
Legend
Permian?Limestone 4
Triassic Volcanic 3
Monzonite 2
Breccia 1
Felsite
Basalt
Fracture Attitude
Bedding
Pyrite py
Chalcopyrite cp
Magnetite mag
KENNCO EXPLORATIONS (WESTERN) LIMITED
SPHALER CREEK (Goat-Kim Gps
GEOLOGICAL MAP
Liard M.D., B.C.
DATE: 14-10-64
DRAWN BY: G.H.R. A.P.
PLATE NO.: 1
REVISED BY
DATE
SCALE:
0 400
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Trench	Length
1	12'
2	146
3	24
4	28
5	46
6	75

Trench	Length
15	25'
16	20
17	15
18	30
19	18
20	22
21	45
22	42
23	68
24	80
25	83
26	58
27	57
28	108
29	40
30	15
31	45
32	25
33	46

Trench	Length
7	30'
8	110
9	25
10	38
11	40
12	35
13	40
14	52

Trench	Length
34	12'
35	20
36	60
37	16

Trench	Length
1	12'
2	146
3	24
4	28
5	46
6	75

Trench	Length
7	30'
8	110
9	25
10	38
11	40
12	35
13	40
14	52

Legend

- Permian? Limestone
- Triassic Volcanic
- Monzonite
- Breccia
- Felsite
- Basalt
- Fracture Attitude
- Bedding
- Pyrite — py
- Chalcopyrite — cp
- Magnetite — mag

Typical Cross-section of Hand Trench

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KENNCO EXPLORATIONS (WESTERN) LIMITED

SPHALER CREEK (Goat-Kim Gps

GEOLOGICAL MAP

Liard M.D., B.C.

DATE: 14-10-64	DRAWN BY: G.H.R. A.P.	PLATE NO.: 1
REVISED BY	DATE	SCALE: 0 400

M3A

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 565 MAP 2

M36

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LEGEND

Silt Sample Site ○ 730

Holman Copper Value / Total Copper Value — 8 / 290

Approx. Claim Outline ——

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KENNCO EXPLORATIONS (WESTERN) LIMITED

SPHALER CREEK (GOAT GP.)
GEOCHEMICAL MAP
COPPER IN STREAM SEDIMENT

DATE: 7-4-64	DRAWN BY: G.H.R.	PLATE NO.: 2
REVISED BY	DATE	SCALE: 0 400.

Charles A. Ney P.Eng.

MAP

M46

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LEGEND

SAMPLE SITE O 4
with total molybdenum value

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KENNCO EXPLORATIONS (WESTERN) LIMITED

SPHALER CREEK (Goat-Kim Grps)
GEOCHEMICAL MAP
TOTAL MOLYBDENUM

DATE: 26-5-64.	DRAWN BY: GHR.	PLATE NO. 3
REVISED BY	DATE	SCALE: 0 400

Charles A. Kay
P. Eng.