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GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL REPORT

ON THE

"POLE CLAIM GROUP"

Omineca Mining Division

British Columbia

for

TOTEM MINERALS LIMITED

POLE GROUP I, II, III, IV, V, VI.

Location 24 Miles Northeast of Takla Landing

(125° 55° NE)

Lundberg Explorations Limited

Hans Lundberg

July 23 to August 29, 1958

I N D E X

M A P S

Four Maps Accompany This Report

#1 **Map No. 1** **Shows the results of the magnetic survey** (Scale 1: 10,000)

#2 **Map No. 2** Shows an interpretation of the results of the magnetic survey (Scale 1: 10,000)

#3 **Map No. 3** **Shows the results of the geochemical survey** (Scale 1: 10,000)

#4-10 **Map No. 4** Sketch map showing the grouping of the claims (Scale 1: 50,000)

(Groups I – VI)

DIGEST

Early in the summer of 1957 a moderately strong magnetic anomaly was recorded in the airborne reconnaissance near the confluence of Silver Creek and Kwanika Creek in the Omineca Mining Division. This anomaly was staked in August 1957.

In all, 97 claims were staked and thought to completely enclose the anomaly. During July and August of 1958 a geological and prospecting campaign has been carried out over the claims and detail magnetic and geochemical surveys were performed. The highest magnetometer reading was in excess of 7000 gammas but no negative effect was recorded within the claim boundaries. During the prospecting campaign, outcrops and floats were studied and where possible, the overburden was removed to expose the rocks. Picket lines were run over the most intense portions of the anomaly and pace and compass over the remainder. Eight men were employed in this work and two Geophysical technicians carried out the geochemical and magnetic work on the claims.

LOCATION AND ACCESS

The Pole Claim Group is located on Silver Creek in the Omineca Mining Division. It is between the east and west coordinate of 125° 20' and 125° 25' and north and south coordinates of 55° 30' and 55° 35'.

The area can be reached from Fort St. James by motor road. The road passes through Manson Creek and follows the north edge of

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Germansen Lake. Beyond Germansen Lake the road is only passable to trucks and four wheel drive vehicles. It is also possible to reach the property by boat from Fort St. James to Takla Landing and thence by road. The nearest lake large enough for aircraft is Tsayta about eight miles south.

TOPOGRAPHY

The general area in which the claims are situated has a average relief of five hundred feet. Drift deposits, chiefly of glacial origin, mantle the timbered slopes and spread out widely and deeply over most of the lowland areas were claims are located .

The property is traversed by Silver Creek and is somewhat swampy in certain areas along the creek.

The timber growth is quite heavy but there are numerous areas of brush and alders. The main trees are jackpines and fir.

GEOLOGICAL CONDITIONS

A. Distribution of Outcrops

The valley in which the Pole Claims are situated is largely covered with glacial drift and outcrops are scarce. Some outcrop was observed on the north and east sides of the anomalous zone and on the west side but these appeared to be too far away from the centre of the indication to yield a clue as to its origin. Wherever the overburden appears to be thin, attempts were made to reach bedrock for sampling and examination.

B. Rock Types Encountered

(1) Diorite

Outcrops of medium grained diorite were observed in the north and east sections of the map area. The rock is composed of plagioclase and pyroxene. No visible magnetite was seen but the rock carries minor amounts of pyrite. This rock is part of the Omineca batholith.

(11) Limestone

Outcrops of Permian limestone were observed along the western border of the claim group. This limestone is grey in colour and partially crystalline but for the most part massive. The rock was highly fractured but no mineralization was observed.

Numerous samples of float were examined and tested for magnetic characteristics in an attempt to establish the cause of the anomaly but without success. Samples of the limestone were crushed and tested geochemically for mercury as will be described in a later section.

C. Structure

The Pinchi Fault Zone traverses the western section of the claims. This zone is described by J.E. Armstrong* as a site of major thrust faulting from the west whose eastern margin represents the contact between the stratified Permian rocks in the west and the Omineca batholith on the east. The fault zone varies in width from 200 feet to 5000 feet but in most places does not exceed 1000 feet. J.E. Armstong states that deposits of cinnabar occur along, or near, the Pinchi Fault Zone and the wall rocks are commonly carbonatized or silicified.

The general strike in the vicinity of the claims is N to N 25° W; the dip steeply to the west.

D. Economic Geology

The main economic minerals of the area are mercury and placer gold. While no mercury was observed in outcrops on the claims the area is considered to have merit for two reasons: (a) the anomaly lies close to or in contact with the Pinchi fault. While there is no direct evidence to support such a hypothesis it is possible that the anomaly outlines the magmatic source of the cinnabar deposits. (b) The intrusion of a basic body in the vicinity of the fault could be responsible for serpentinisation and redeposition of the cinnabar.

For these reasons a detailed ground magnetic survey was undertaken to determine the exact location of the anomaly

* J.E. Armstrong: Northern Part of Pinchi Lake Mercury Belt British Columbia, Geological Survey 44-5 Ottawa, 1944

and the fault zone. In addition geochemical soil analysis was employed in an attempt to discover traces of mercury at the surface.

THE GEOPHYSICAL AND GEOCHEMICAL SURVEY

The magnetic survey was conducted with an Askania-Schmidt type magnetometer having a sensitivity of 42 gamma per scale division. Readings were taken at one hundred foot stations on cut and chained lines over the most intense portion of the anomaly. Pace and compass lines were used where magnetic deflection of the compass was slight.

The geochemical technique used was obtained from the United States Geological Survey Geochemical Laboratory at Denver Colorado. Soil samples were collected and a standard amount (.5 gm.) weighed out and pulverized. The sample was then dissolved in acid and a sublimate of mercury (when present) produced by heating. This sublimate was then dissolved in dithizone and a semi-quantitative result produced by colorimetric comparison with prepared standards. Difficulty was encountered in obtaining soil samples in areas of deep humus. Attempts were made to use the same or similar soils in all cases.

THE RESULTS OF THE SURVEY

The results of the various surveys are shown on the accompanying maps all drawn to a scale of 1: 10,000.

Map No. 1 shows the results of the magnetic survey

Map No. 2 shows an interpretation of the results of the magnetic survey.

Map No. 3 shows the results and interpretation of the geochemical survey and limited geology.

Map No. 4 (scale 1: 50,000) is a sketch of the grouping of the claims.

THE MAGNETIC SURVEY

The results of the magnetic survey show the strong magnetic zone to be confined to claims number 46,47,48,49,50,51,52,53 and 54. It appears from the regularity of the contours shown on Map No. 3 that the anomaly is caused by an intrusive basic plug of uniform composition. That is to say the rock contains a relatively uniform dissemination of magnetite. As no outcrops of such a material were observed it is impossible to name or describe the type of rock responsible for the anomaly.

The strong magnetic gradient, 6000 gamma in 3000 feet suggests the overburden covering the plug is not extremely deep. However, without further knowledge of the nature of the material causing the anomaly; its composition and magnetic susceptibility, it is impossible to predict the possible depth of soil cover.

From the limited geological data and from the geophysical results the Pinchi fault has been interpreted to lie between the 1500 and 2000 gamma contours on Map No, 2. This assumption is based on a 1000 gamma normal level for the area and the proximity of the plug to the fault which would tend to raise the normal level somewhat. It is also assumed that the main body of basic rock is

enclosed by the 5000 gamma contour giving an approximate length of 7000 feet and width of 1700 feet.

THE GEOCHEM ICAL SURVEY

The results of the geochemical survey are somewhat erratic and indefinite. Areas of high mercury content are shown on Map No. 3 and the values are indicated in parts per million. The elongation of the geochemical anomalies parrallel with the valley floor may - be indicative of transported rather than residual accumulation. Until the true depth of overburden is determined by drilling or electrical methods it will be impossible to assess the true value of the geochemical results. With a shallow depth of overburden it would be possible for traces of mercury to migrate upward with the ground water and redeposit in the surface soil. However, with deep overburden it is not likely that upwdrd migration would reach the surface.

The traces of mercury in the soil of the property may have been transported by stream or glacial action from the mercury occurences to the northwest. Thus a degree of caution should be used in the consideration of the survey results.

CONCLUSIONS

The magnetic survey of the Pole claim group has served to pin-point an intrusive plug which is thought to be the source of the mercury deposits in the vicinity. The geochemical survey

while it has produced some positive results is indefinite as the mercury may be of transported origin.

From the results of these surveys we recommend that a section through the Pinchi fault and into the intrusive plug be diamond drilled to determine the geology and prospect the zone.

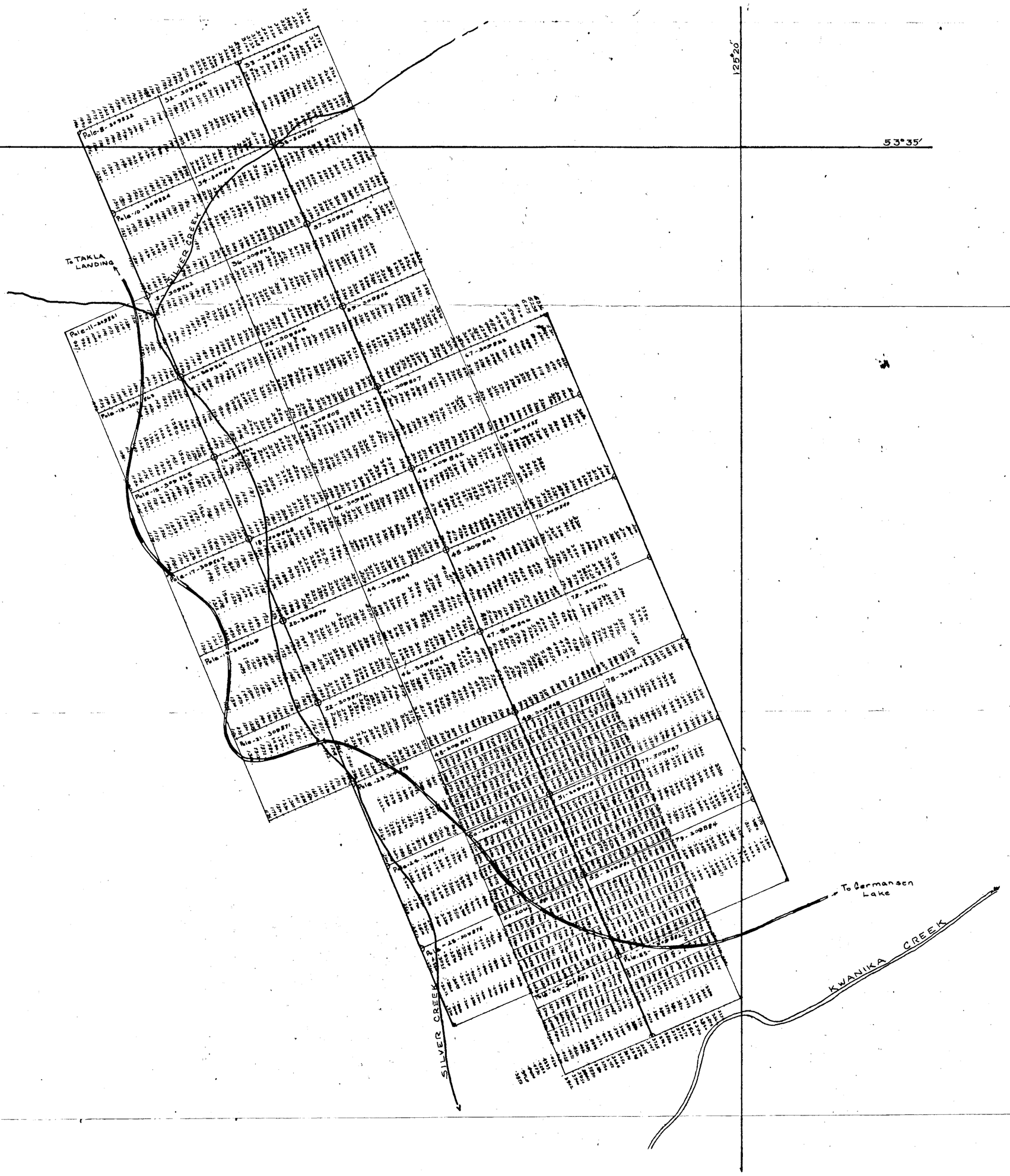
Respectfully Submitted

LUNDBERG EXPLORATIONS LIMITED

Hans Lundberg

Hans Lundberg
President

Toronto: August 31, 1958.



LEGEND

- Location Line
- Claim Line
- Claim Post Location
- POLE-25-309875 - Claim Name - Number - Serial Number
- Road
- River
- 3580, 3630, 3670, 3730 — GAMMA VALUES on Cut Lines.
- 3580, 3670, 3760 — GAMMA VALUES on Posed Lines.

MAP SHOWING

THE RESULTS OF THE GEOPHYSICAL SURVEY

ON THE

POLE CLAIM GROUP

OMINECA MINING DIVISION

BRITISH COLUMBIA

FOR

TOTEM MINERALS LIMITED

To Accompany a Report by

Lundberg Explorations Limited

TORONTO - CANADA

Aug. - 1958

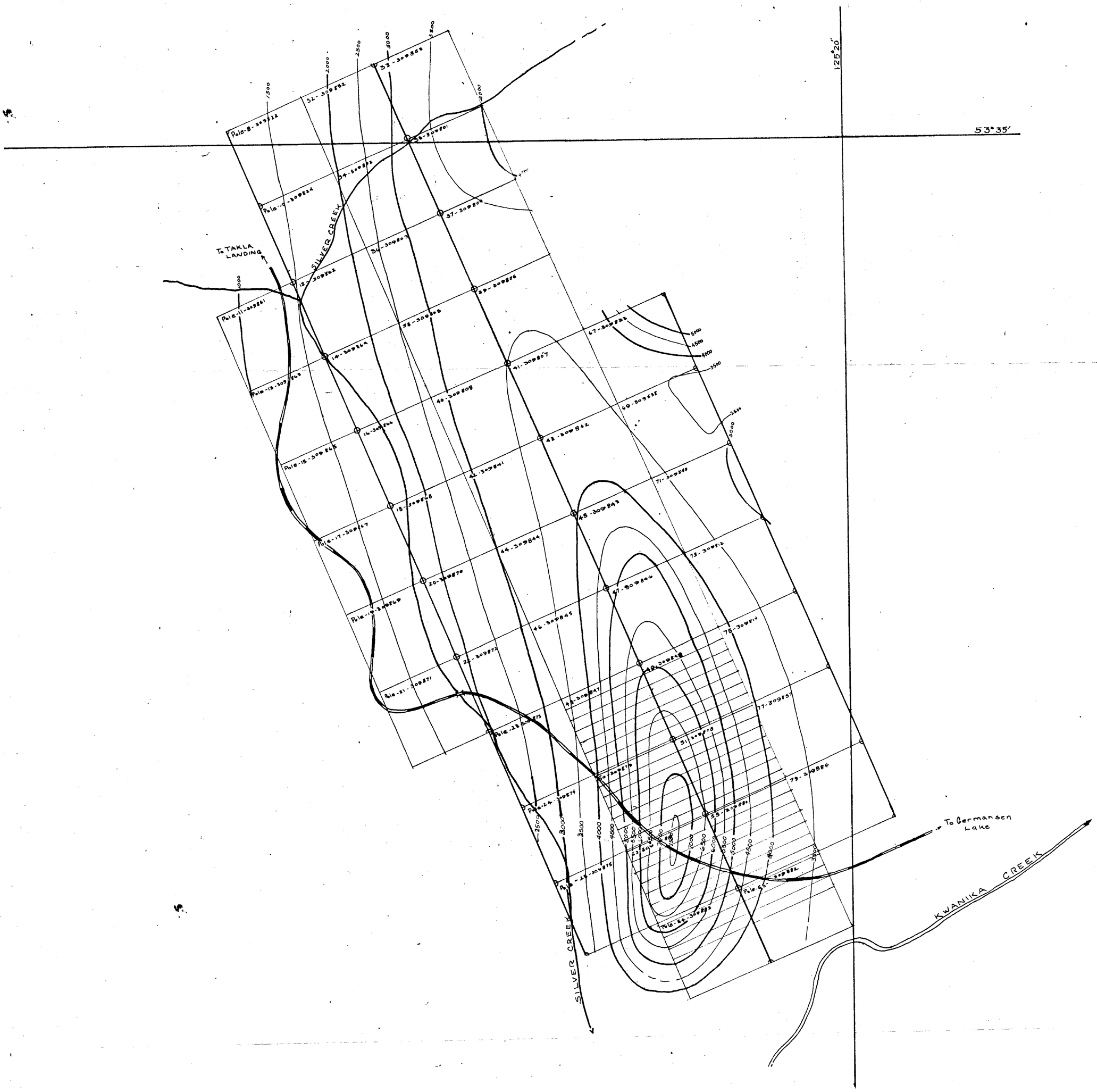
Hans Lundberg

3/4 1/2 1/4 0 1 Mile

SCALE OF MILES

SCALE - 1: 10,000

219 MAP No. 1



LEGEND

- Location Line
- Claim Line
- Claim Post Location
- POLE-25-309875 - Claim Name - Number - Serial Number
- Road
- River
- 7500 - Magnetic Contours. Interval - 500 gamma.

MAP SHOWING

AN INTERPRETATION OF THE RESULTS OF THE GEOPHYSICAL SURVEY

ON THE

POLE CLAIM GROUP

OMINECA MINING DIVISION

BRITISH COLUMBIA

FOR

TOTE M. MINERALS LIMITED

To Accompany a Report by

Lundberg Explorations Limited

TORONTO - CANADA

Aug. 1958

Hans Lundberg

3/4 1/2 1/4 0 1 Mile

SCALE OF MILES

SCALE - 1: 10,000

Department of Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 219 MAP #2

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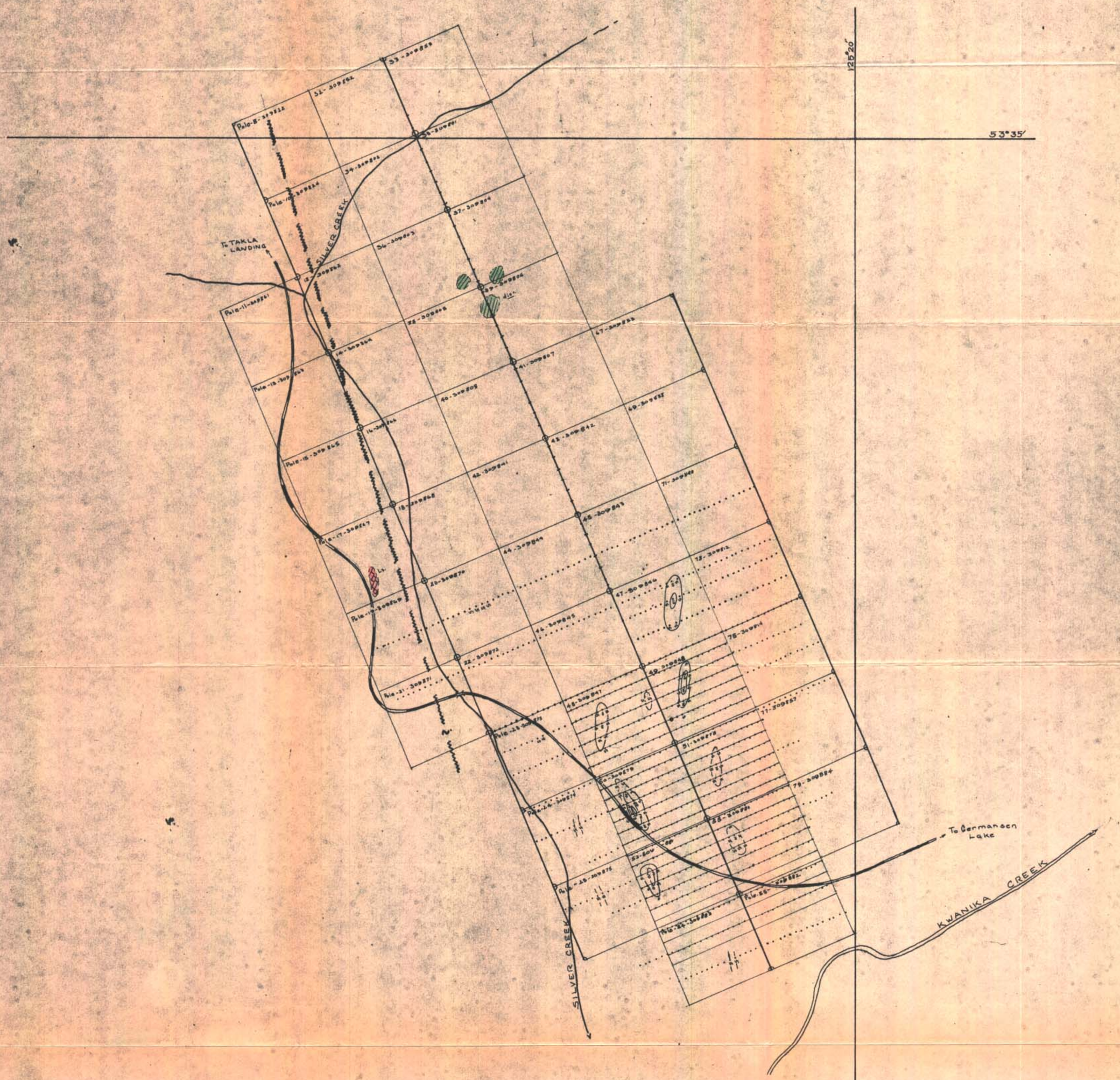
MAP No. 2



LEGEND

- Location Line
- Claim Line
- Claim Post Location
- POLE-25-309875 - Claim Name - Number - Serial Number
- Road
- River
- Geochemical Sample Locations.
- Values in ppm. where positive tests obtained.
- Assumed Location of Pinchi Fault.

MAP SHOWING

AN INTERPRETATION OF THE RESULTS OF THE GEOCHEMICAL SURVEY

ON THE

POLE CLAIM GROUP

OMINECA MINING DIVISION

BRITISH COLUMBIA

FOR

TOTEM MINERALS LIMITED

To Accompany a Report by

Lundberg Explorations Limited

TORONTO - CANADA

Aug. 1958

Hans Lundberg

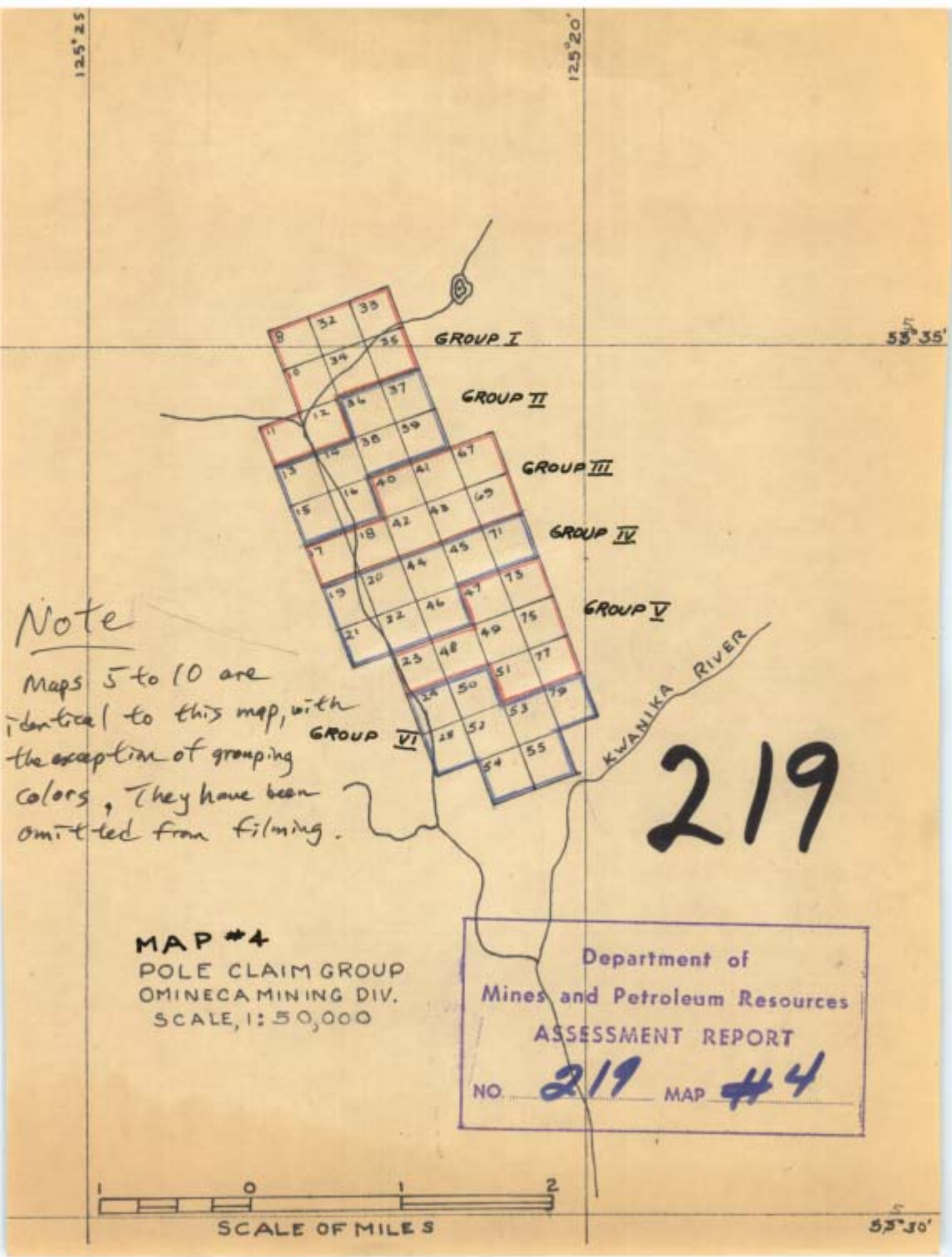
3/4 1/2 1/4 0 1 Mile.

SCALE OF MILES

SCALE - 1: 10,000

219

MAP No. 3



Note

Maps 5 to 10 are identical to this map, with the exception of grouping colors. They have been omitted from filming.

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MAP #4
POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000

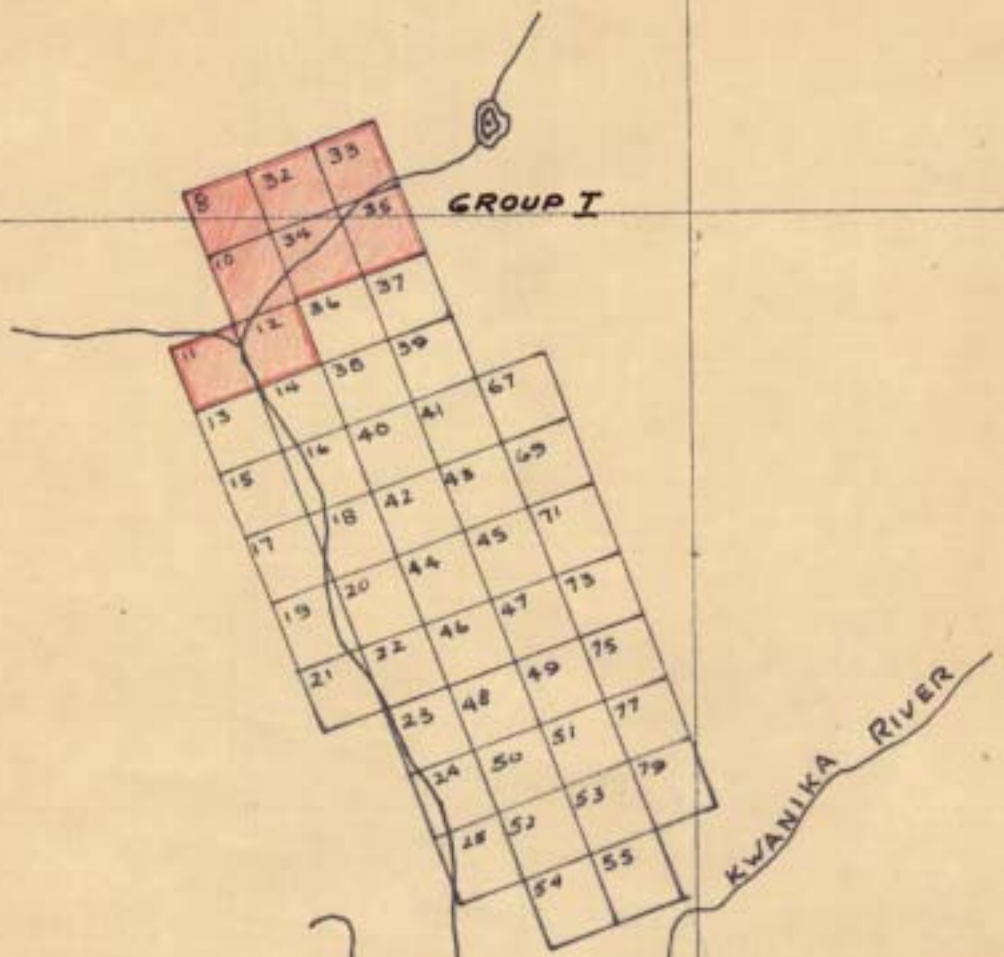
Do not film

125°25'

125°20'

55°35'

GROUP I



POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 219 MAP #5

1 0 1 2
SCALE OF MILES

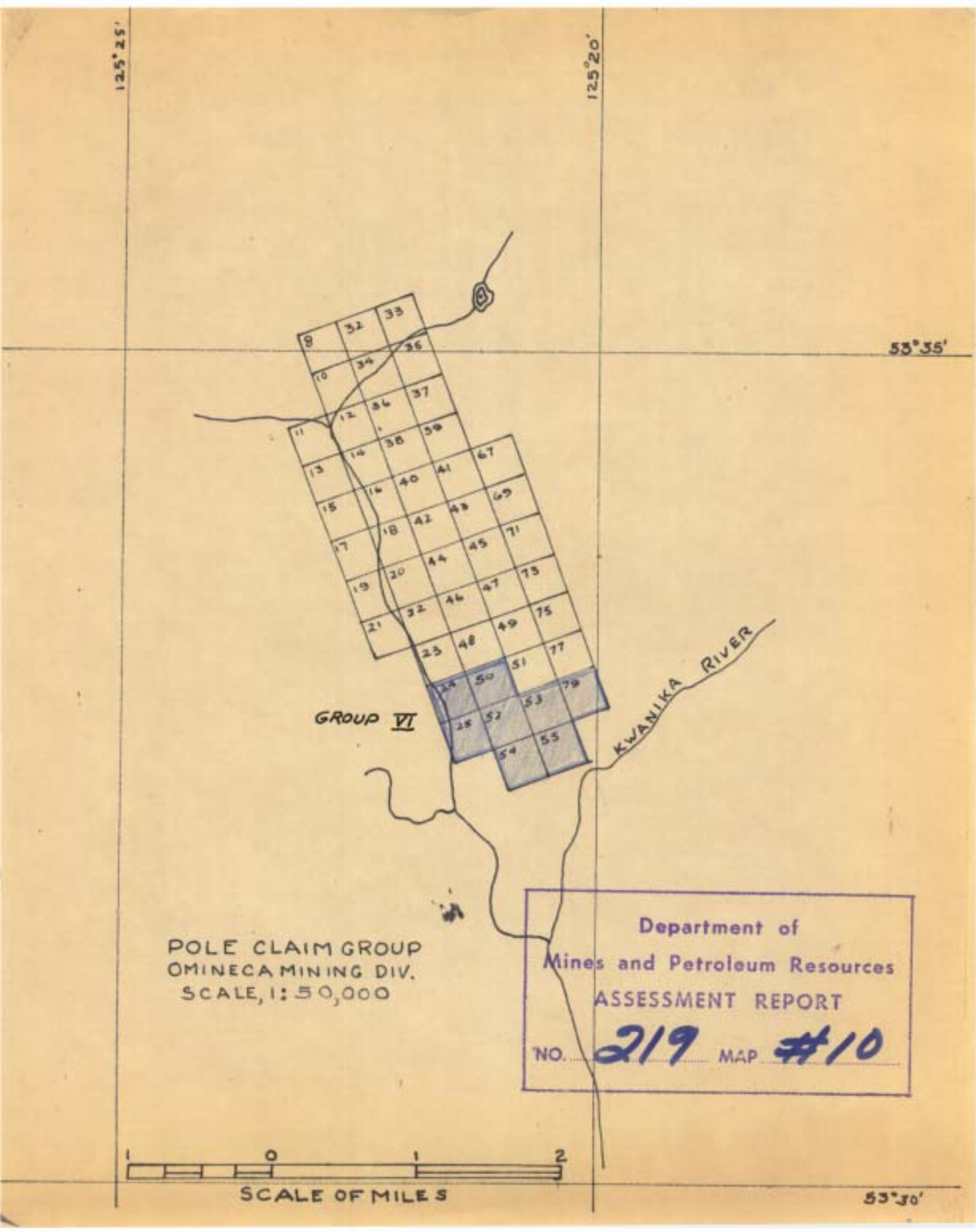
55°30'

POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000

POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000

POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000

POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000


125°25'
125°20'
53°35'
53°30'
GROUP VI
KWANIKA RIVER
POLE CLAIM GROUP
OMINECA MINING DIV.
SCALE, 1:50,000
1 0 1 2
SCALE OF MILES
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 219 MAP #10