

GEOCHEMICAL AND GEOLOGICAL REPORT
ON THE
KLAUDETTELLE PROPERTY
55° 18' N, 124° 35' W
(DINGLE CLAIMS)

FOR
NORANDA MINES LIMITED
DECEMBER 9, 1971; DECEMBER 10, 1972

Submitted by: 93N/2E, 7E

G.E. DIROM, P. ENG.

A. BENTZEN, GEOLOGIST

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GEOCHEMICAL AND GEOLOGICAL
REPORT

ON THE

KLAWDETELLE PROPERTY
55° 18' N, 124° 35' W

(DINGLE CLAIMS)

BY

G.E. DIROM, P.Eng.

AND

A. BENTZEN, Geologist.

NORANDA MINES LTD.
Dec. 9, 1971 - Dec. 10, 1972

Department of	
Mines and Petroleum Resources	
ASSESSMENT REPORT	
NO. 4099	M.P.

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PART A

GEOCHEMICAL REPORT

ON THE

KLAWDETELLE PROPERTY
55° 18' N, 124° 35' W

(DINGLE CLAIMS)

BY

G.E. DIROM, P.Eng.
NORANDA MINES LTD.

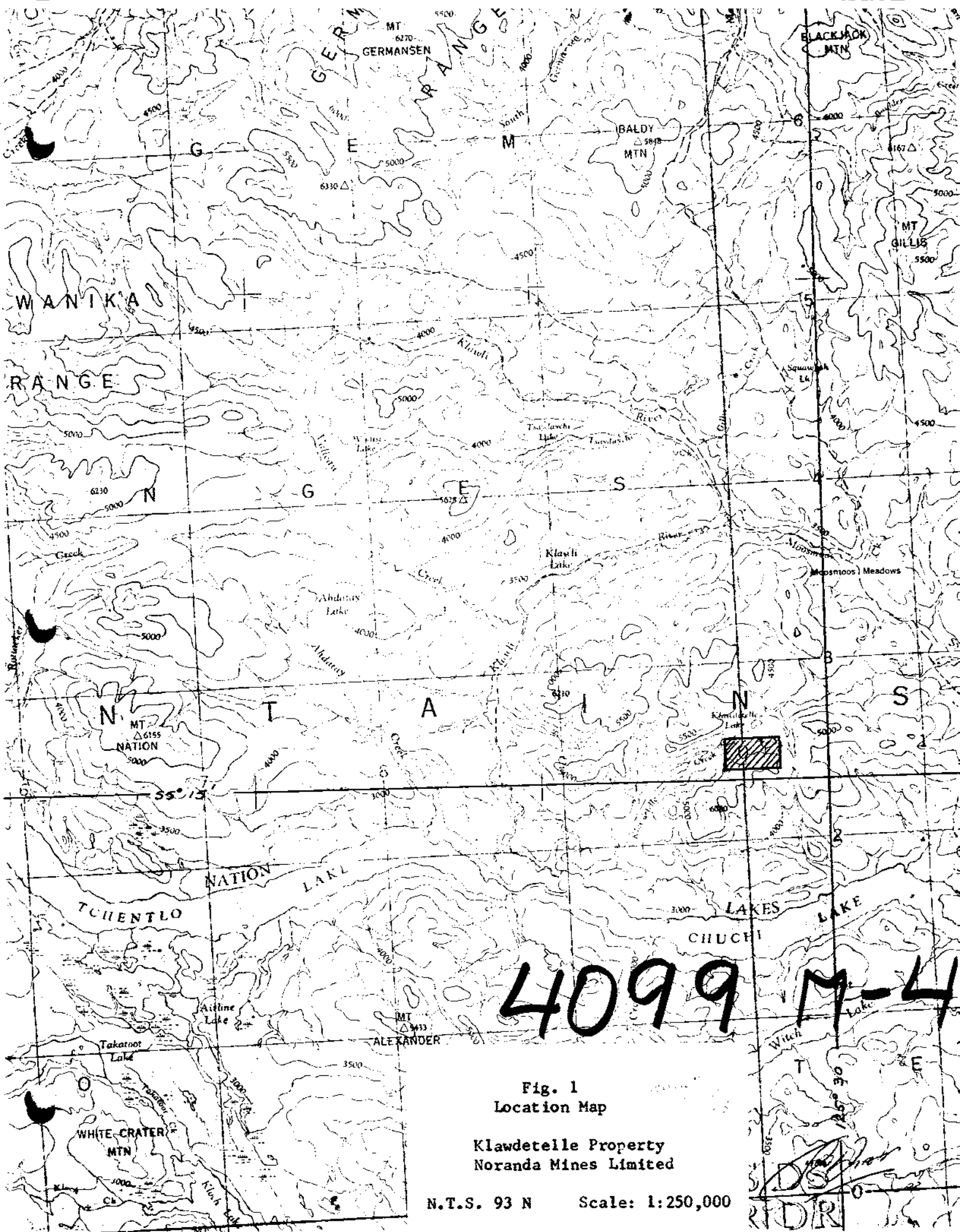
INTRODUCTION

The Klawdetelle property is located on a ridge approximately 5 miles north of Chuchi Lake and 1½ miles south of Klawdetelle Lake, (see Fig.1). Access to the property is by contract or charter helicopter from Fort St. James or Germansen Landing to helicopter pads within the property.

Elevations range from 3800 to 5500' with only a very small portion of the property being above treeline at approximately 5250'. The terrain ranges from hilly to mountainous and is characterized by forest and dense underbrush.

The property consists of 36 contiguous mineral claims in the Omineca Mining Division of British Columbia. Claims were staked following detailed geochemical and prospecting examination in the years 1970-1971. The claims are as follows:

<u>Claims</u>	<u>Record #</u>	<u>Record Date</u>	<u>Owner</u>
Dingle #1	106124	Dec. 9, 1971	Noranda Mines Limited
Dingle #2	106125	"	" " "
Dingle #3	106126	"	" " "
Dingle #4	106127	"	" " "
Dingle #5	106128	"	" " "
Dingle #6	106129	"	" " "
Dingle #7	106130	"	" " "
Dingle #8	106131	"	" " "
Dingle #9	106132	"	" " "
Dingle #10	106133	"	" " "
Dingle #11	106134	"	" " "
Dingle #12	106135	"	" " "
Dingle #13	106136	"	" " "
Dingle #14	106137	"	" " "
Dingle #15	106138	"	" " "
Dingle #16	106139	"	" " "



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Fig. 1
Location Map

Klawdetelle Property
Noranda Mines Limited

N.T.S. 93 N Scale: 1:250,000

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Department of
Mining and Geology
NO. 4099 MAP #4

<u>Claims</u>	<u>Record #</u>	<u>Record Date</u>	<u>Owner</u>
Dingle #17	106140	Dec. 9, 1971	Noranda Mines Limited
Dingle #18	106141	"	" " "
Dingle #19	106142	"	" " "
Dingle #20	106143	"	" " "
Dingle #21	106144	"	" " "
Dingle #22	106145	"	" " "
Dingle #23	106146	"	" " "
Dingle #24	106147	"	" " "
Dingle #25	106148	"	" " "
Dingle #26	106149	"	" " "
Dingle #1 Fr.	106150	"	" " "
Dingle #2 Fr.	106151	"	" " "
Dingle #3 Fr.	106152	"	" " "
Dingle #4 Fr.	106153	"	" " "
Dingle #5 Fr.	106154	"	" " "
Dingle #6 Fr.	106155	"	" " "
Dingle #7 Fr.	106156	"	" " "
Dingle #8 Fr.	106157	"	" " "
Dingle #9 Fr.	106158	"	" " "
Dingle #10 Fr.	106159	"	" " "

The geochemical survey and necessary line preparation was carried out by a 2-man Noranda Exploration Company, Limited geochemical sampling crew and a 2-man contract line cutting crew under the direction and supervision of G.E. Dirom, P.Eng. between August 6, 1972 and August 23, 1972, following a preliminary survey completed between August of 1970 and September, 1971.

GENERAL GEOLOGY

The Klawdetelle property covers part of an area underlain by rocks of the Takla Group, and by the Chuchi Lake syenite which form a large stock at the southern extremity of the Hogem Batholith, (J.E. Armstrong, G.S.C. Memoir 252; Fort St. James Map Area, 1949).

The Hogen Batholith is a composite pluton extending approximately 75 miles northwest of the Nation Lakes. It is bounded on the west by the Pinchi-Omineca fault system and on the east by rocks of the Takla Group.

Although outcrops are sparse, six distinct rock units were noted, comprising two volcanic units of the Takla Group and four igneous units of subsequent intrusions, (see accompanying geological report).

GRID PREPARATION

The grid was laid out with a 20,400' cut baseline running east-west and designated as 100+00N. Six 4500' north-south lines, two 3000' N-S lines and four 1500' N-S lines were established at 800' intervals (approximately) with tie lines being established at 85+00N, 115+00N and 130+00N for grid control.

GEOCHEMICAL SOIL SURVEY

All samples were analysed for copper, molybdenum and zinc in the Noranda Exploration Company Limited laboratory, located at 1050 Davie Street, Vancouver, B.C., analyst Evert VanLeeuwen.

Sampling Method:

Samples were obtained by digging holes with a shovel to a depth at which the visible C horizon or sub-outcrop was encountered. The C and B horizons were both sampled over the majority of the grid, however, where this was not possible the best sample available was taken. The samples were placed in "Hi Wet Strength Kraft 3½ x 6 1/8 Open End" envelopes and the grid station marked

on the envelopes with indelible felt pens. Soil samples were taken at 200 foot intervals along the grid lines.

Laboratory Determination Method:

The samples are first hung in a drying cabinet for a period of 24 to 48 hours. They are then mechanically screened and sifted to obtain a -80 mesh fraction.

The determination procedure for total copper, zinc and molybdenum is as follows: 0-200 grams of -80 mesh material is digested in 2 ml. of HClO_4 and 0.5 ml. of HNO_3 for approximately four hours. Following digestion each sample is diluted to 5 ml. with demineralized H_2O . A Varian Techtron Model AA-5 Atomic Absorption spectrophotometer was used to determine the parts per million Cu, Zn and Mo in each sample.

The theory of Atomic Absorption spectrophotometry is fully described in the literature and will not be described in this report.

PRESENTATION OF RESULTS

Results of the geochemical soil survey are contoured and presented on 1" = 400' scale topographic base maps designated drawing No.'s 1 and 2. Drawing #1 presents copper and molybdenum. Drawing No. 2 presents copper and zinc. All values are shown on both presentations to facilitate correlation of anomalous areas.

DISCUSSION OF RESULTS

Values of 150 ppm Cu were considered the lower limit of threshold or possibly anomalous values. Values of 10 ppm Mo or greater are considered anomalous for molybdenum. Values for Cu ranged from a background of less than 150 ppm to a high of 4600 ppm. Values for Mo ranged from a background of less than 10 ppm to a high of 46 ppm.

Copper and molybdenum show a correlation of anomalies over the larger anomalous areas. Smaller occasional "spot" anomalies do not always have a readily apparent Cu-Mo correlation.

Contouring the 150 ppm Cu and greater values yields a somewhat northeasterly trend to the anomalous results of the survey. This is in contradiction to the general northwesterly regional trend and may reflect a local structural feature. Values for zinc do not yield any significant trends over the grid area. Previous work in the area has indicated that only values over 150 ppm Zn should be considered significant.

RECOMMENDATIONS

A two phase program is recommended for the Klawdetelle property in the forthcoming field season.

Phase one should consist of detailed geological mapping and prospecting combined with an extension of the geochemical soil sampling program north and south of the baseline, particularly

over the eastern portion of the grid area. In addition, intermediate lines may be deemed desirable to fill in many of the areas previously outlined as anomalous.

Phase two would be largely dependent on the outcome of phase one and would entail an Induced Polarization survey over the anomalous regions defined.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "G.E. Dirom".

G.E. Dirom, P.Eng.

PART B

GEOLOGICAL REPORT
ON THE
KLAWDETELLE PROPERTY
55° 18' N, 124° 35' W
(DINGLE CLAIMS)

BY

A. BENTZEN, Geologist
under the supervision of

G.E. DIROM, P.Eng.

INTRODUCTION

The Klawdetelle property is located on a ridge 5 miles north of Chuchi Lake and 1½ miles south of Klawdetelle Lake. Elevations range from 3800' to 5500' with only a very small portion of the property above treeline at about 5250'. The remainder of the property is covered by forest and dense underbrush. The terrain ranges from hilly to mountainous, and east of line 180+00E, below an elevation of 4800', it is characterized by glacial structures such as eskers, kettles and moraines.

REGIONAL GEOLOGY

The following is quoted and paraphrased from selected sections of G.S.C. Memoir 252 (Armstrong, 1949).

Armstrong indicates the area of the property to be underlain by rocks of the Takla group, and by what he calls the Chuchi Lake syenite which forms a large stock at the southern extremity of the Hogen batholith.

The Takla group of rocks range from Upper Triassic to Upper Jurassic and forms a sequence of dominantly volcanic rocks possibly greater than 25000' in thickness. The rocks comprise andesitic and basaltic flows, tuffs, breccias, agglomerates, and interbedded shale, greywacke, conglomerate, and limestone. The sediments predominate in the lower sections.

The Chuchi Lake syenite is a medium to coarse-grained, pink

rock, in part porphyritic. The average mode of five specimens

is:

- 4.8% quartz
- 14.1% orthoclase
- 15.6% oligoclase
- 51.5% microperthite
- 12.4% mafic minerals
- 1.6% magnetite, apatite, and sphene

The microperthite occurs generally as large pink crystals up to $1\frac{1}{2}$ inches long. The hornblende, which also occurs in long crystals, is partly altered to brown biotite and magnetite.

Armstrong states that the Chuchi Lake syenite definitely intrudes the main part of the Hogen batholith. He assumes that it represents a late phase of the main batholith although he feels that it may be much younger, as lithologically similar intrusions in southern British Columbia are of Late Upper Cretaceous or Tertiary age.

LOCAL GEOLOGY

Six mapable rock units are recognized on the property: two volcanic units belonging to the Takla group and four igneous units belonging to subsequent intrusions. Descriptions of the units are as follows:

- Unit A It is dominantly augite porphyry andesite but with minor andesite and augite feldspar porphyry andesite. Both flow-rock and agglomerate are present.
- Unit B This second volcanic unit consists of light green silicified tuffs and bedded cherty siltstones.
- Unit C This is a medium to coarse grained monzonite. Characteristically it contains rounded phenocrysts which appear to be knots of individual plagioclase laths. Sometimes these phenocrysts are surrounded by a thin rim of potassic feldspar. An approximate

composition is:

15% plagioclase phenocrysts
50% interstitial feldspar, mostly potassic
15% biotite
15% hornblende

Unit D This is a fine to medium grained pink weathering syenite. The feldspar appears almost entirely potassic and there is about 15% mafic minerals, commonly as biotite. This appears to be the rock that Armstrong calls the Chuchi Lake syenite and forms the main mass of the six thousand foot peak located two miles outhwest of the property. Station 34/20 is located here.

Unit E This is a dark grey porphyritic monzonite containing approximately:

25% microcline in slim phenocrysts up to 2 cm in length showing Carlsbad twinning and a characteristic blue iridescence.
60% interstitial feldspar mostly plagioclase
15% biotite, minor hornblende

Near the contact with the Takla rocks at station 34/14 the rock is lighter in colour, and the matrix is much finer grained.

Unit F This is a porphyritic diorite occurring in two small plugs on the property and consists of about 30% rounded plagioclase phenocrysts up to 2 mm in size in a fine grained matrix. The rock in the northwestern plug is light grey in colour, kaolinized, and contains about $\frac{1}{2}$ % pyrite. The rock in the eastern plug is dark in colour due to magnetite and mafic minerals in the matrix. Throughout the plug are occasional books of secondary biotite up to 1 cm in size.

Although not a mapable unit, there is a frequent occurrence of granophyre composed of coarse grained potassic feldspar and about 15% coarse biotite.

The following geological "time-table" is listed with the youngest unit at the top:

granophyre	observed to cut all units except unit C
Unit F	cuts Takla rock but is not in contact with other units.
Unit E	cuts Takla rock but is not observed in contact with other units
Unit D	cuts unit C
Unit C	probably cuts Takla rocks
Takla group	

GEOCHEMISTRY

A number of samples were obtained for rock-geochemical analysis.

The results are as follows:

Sample No.	Rock Type	Cu ppm
34/24/2	granophyre	44
34/17	unit F, east plug	560
34/21	"	340
34/22	"	140
34/23	"	190
34/24	"	260
34/34	"	208
34/30	unit F, northwest plug	38
34/14	unit E	148
34/11	unit D	160
34/20	"	14
34/25/1	"	60
34/28	"	90
34/12	unit C	150
34/27	"	90
34/29	Takla rock, close to 34/30	140

ECONOMIC GEOLOGY

At station 34/4 there is an occurrence of brecciated volcanics containing small amounts of pyrite. This could be a sign of nearby igneous activity which may warrant further consideration.

At the northwestern corner of the grid there is a small intrusion (unit F) about 400' across. It is pyrite bearing and has induced a strong pyrite halo in the surrounding volcanics. It does not appear, however, to be accompanied by significant amounts of sulphides of economic interest. Rock-geochemical samples gave only 140 ppm Cu in the pyrite halo and 38 ppm Cu in the intrusion.

North of the baseline between lines 188 and 196 east, outcrop indicates the presence of an intrusion (unit F) at least 800' in width which also is accompanied by a strong pyrite halo in the surrounding volcanics. Near the contact at 34/17 biotite/magnetite veins and small amounts of chalcopyrite are found in the volcanics. In the intrusion are found magnetite veins, a little secondary biotite in the matrix of the rock and minor malachite staining on the fractures. These introduced minerals appear to be persistent, though weaker, away from the contact. Rock-geochemical assays give values ranging from 190 ppm Cu to 560 ppm Cu. These are low values; nevertheless the writer feels that the geological environment is encouraging and that further work in this area would be worthwhile.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "G.E. Dirom".

G.E. Dirom, P.Eng.

A handwritten signature in cursive script, appearing to read "A. Bentzen".

A. Bentzen, Geologist.

STATEMENT OF QUALIFICATIONS

ASGER BENTZEN, of the City of Vancouver, Province of British Columbia is a geologist residing at 3715 West 12th Avenue, Vancouver, B.C.

He is a graduate of the University of British Columbia with a B.Sc. Degree (1968), Major in Geology.

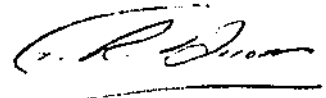
He has been employed as a geologist for Noranda Exploration Company, Limited for the summers of 1969, 1970, 1971 and 1972.

CERTIFICATE

I, GAVIN EVAN DIROM, of the Town of Smithers, Province of British Columbia, do certify that:

1. I am a Geological Engineer residing at 3889 14th Avenue, Smithers, B.C.
2. I am a graduate of the University of British Columbia with a B.A.Sc. Degree (1962) in Geological Engineering and a M.A.Sc. Degree (1965) in Geophysics.
3. I am a Member of the Canadian Institute of Mining and Metallurgy.
4. I am a registered Professional Engineer in the Provinces of British Columbia and Ontario.
5. I have been employed as a geologist for Noranda Exploration Company, Limited since June, 1962.

Dated at Smithers this 20th day of December, 1972.



GAVIN E. DIROM, M.A.Sc., P.Eng.

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of

I,

of

in the Province of British Columbia, do solemnly declare that

4. TRANSPORTATION

a) For all surveys and line preparation including fixed wing and charter helicopter from Germansen Landing		
-Total Invoices this project	\$ <u>1,159.02</u>	\$ 1,159.02

5. <u>REPORT, SUPERVISION AND DRAUGHTING</u>	n	\$ <u>500.00</u>
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Total Costs		\$ <u>5,101.30</u>
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Of this amount \$ 4600.00 is claimed for assessment credit.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared, before me at the *town*
of *Amieson*, in the
Province of British Columbia, this *3rd*
day of *January* 1975, A.D.

John Harrison

John Lusk
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

In the Matter of

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Statutory Declaration
(CANADA EVIDENCE ACT)

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA:

In the Matter of

To WIT:

a statement of exploration expenses on 36 contiguous mineral claims in the Omineca Mining Division having record numbers 106124 -106159 (Dingle Claims)

I, John E. Harrison (F.M.C. 109121, issued April 28, 1972 at Vancouver) of P.O. Box 2169, Smithers, B.C., agent for Noranda Mines Limited (F.M.C. 109101, issued April 28, 1972 at Vancouver) of 1050 Davie Street, Vancouver 5, B.C.
of

in the Province of British Columbia, do solemnly declare that the cost of line preparation and geological and geochemical surveys on the above claims between December 10, 1971 and December 9, 1972 was :-

1. LINE PREPARATION

- a) Costs from contract; P. Bland and F. Bland \$ 1,049.00
11.93 miles --August 6 to August 18, 1972
- b) Field Costs:- Room, Board, Supplies, and Equipment \$ 260.00
26 man days at \$ 10.00 per man day \$ 1309.00

2. GEOCHEMICAL SURVEY

- a) Labour:- M. Vetterli and J. Sobkowicz ; August 17 - 22, 1972
12 man days at \$ 25.31 per man day average \$ 303.72
- b) Field Costs:- Room, Board, Supplies, and Equipment \$ 120.00
12 man days at \$ 10.00 per man day
- c) Laboratory Costs and Transportation of Samples \$ 539.56
574 samples with 3 determinations each. \$ 963.28
Average cost per sample \$.95

3. Geological Survey

- a) Labour:- Asgar Bentzen and S.S. Wong, August 6 -18,1972 \$ 910.00
26 man days @ \$ 35.00 average per man day
- b) Field Costs:- 26 man days at \$10.00 per man day \$ 260.00 \$ 1170.00

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the
of , in the
Province of British Columbia, this
day of , A.D.

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

In the Matter of

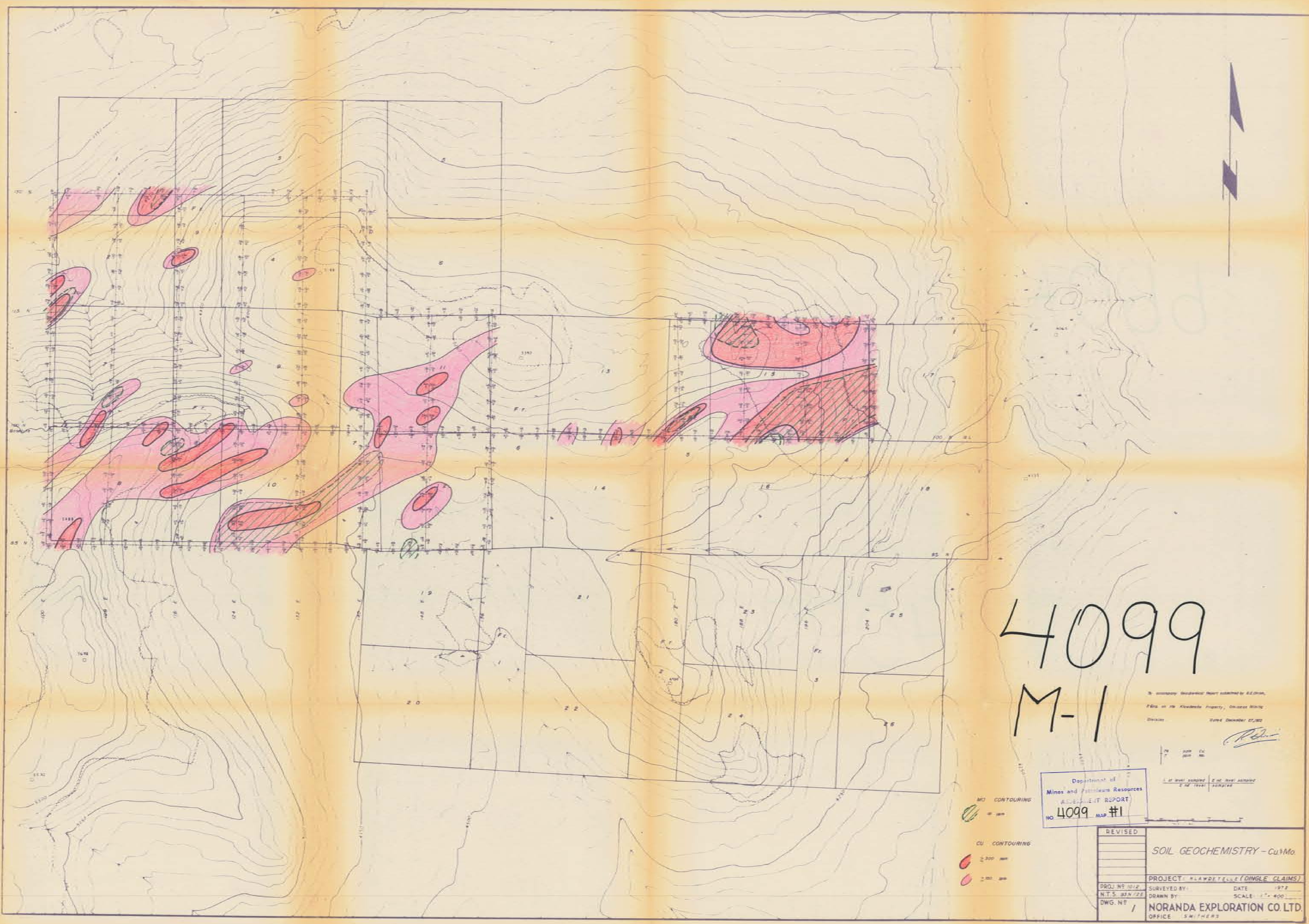
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Statutory Declaration
(CANADA EVIDENCE ACT)

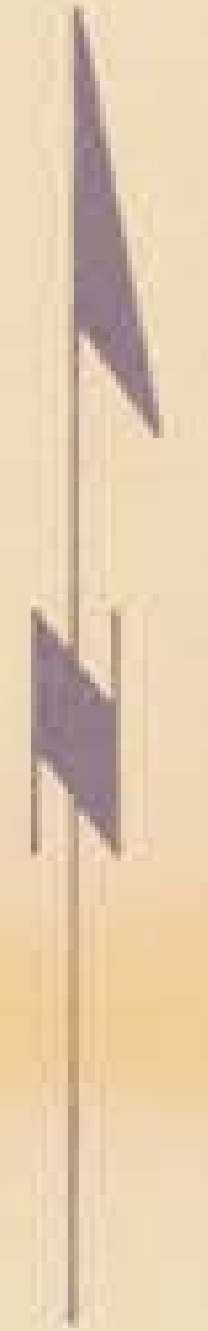
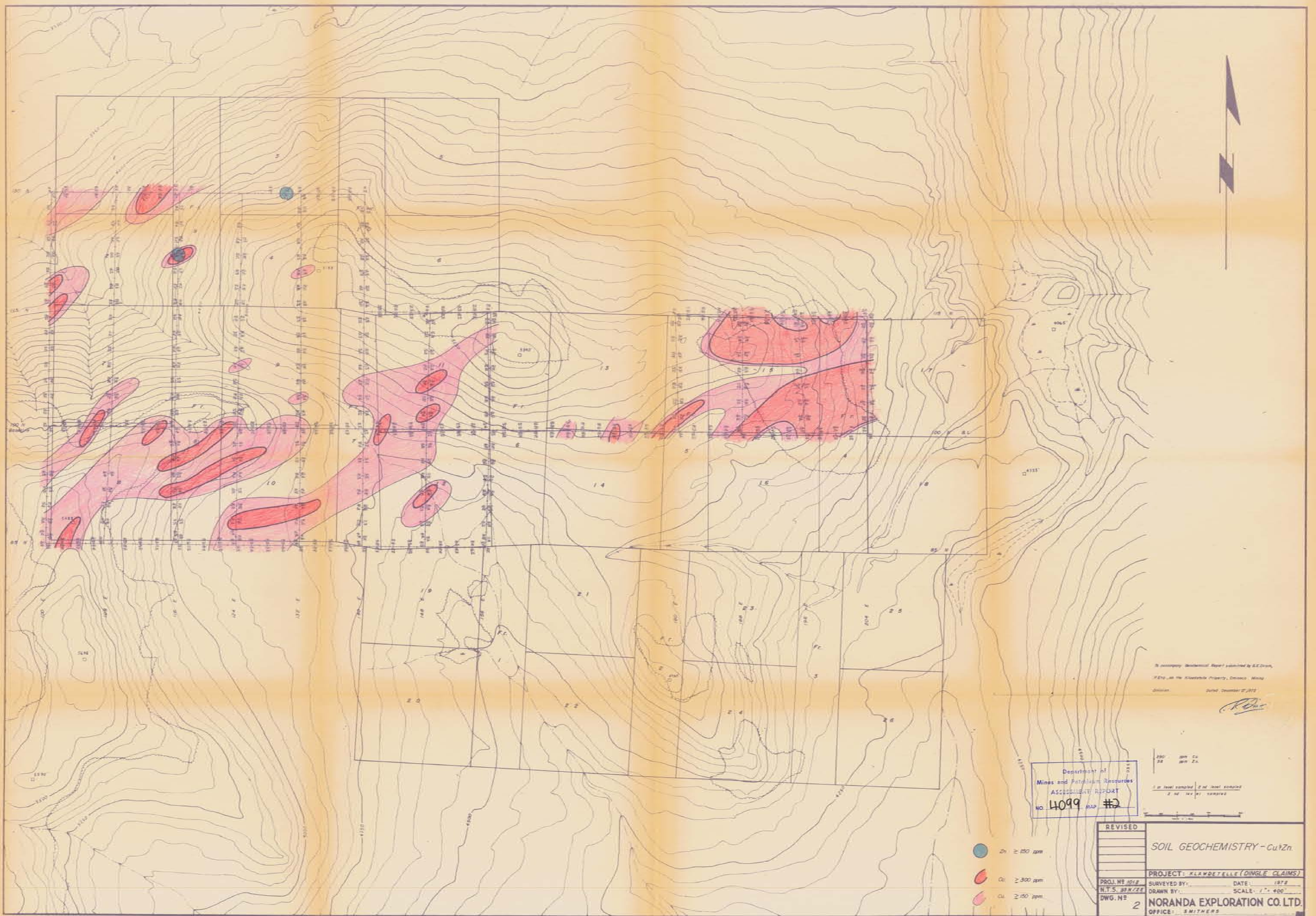


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M-1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4099 MAP #1

MO CONTOURING
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CU CONTOURING
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REVISED	SOIL GEOCHEMISTRY - Cu & Mo	
PROJECT: PLAWATELLE (DINGLE CLAIMS)		
PROJ. NO. 1012	SURVEYED BY:	DATE 1972
N.T.S. 32N/2E	DRAWN BY:	SCALE 1" = 400'
DWG. NO. /	NORANDA EXPLORATION CO. LTD. OFFICE SWITZER	



Revisory Worksheet Report submitted by G.E. Dixon,
 #219 on the Klondike Property, District of Yukon
 dated December 17, 1972

R. Dixon

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4099 #2

230' 30" Cu
 30' 30" Zn
 1/2" level sampled 2' 10" level sampled
 2' 10" level sampled

- Zn ≥ 150 ppm
- Cu ≥ 300 ppm
- Cu ≥ 150 ppm

REVISED	SOIL GEOCHEMISTRY - Cu & Zn	
	PROJECT: KLONDIKE (DINGLE CLAIMS)	
PROJ. NO. 4099	SURVEYED BY:	DATE: 1972
N.T.S. 25/1/72	DRAWN BY:	SCALE: 1" = 400'
DWG. NO. 2	NORANDA EXPLORATION CO. LTD.	
	OFFICE: SMITHERS	

