GEOCHEMICAL AND GEOPHYSICAL

Report on the

BM 1,2,3,4,5,6,7,8, Nook 1 and Nook 2

Mineral Claims located in the

KAMLOOPS MINING DIVISION

At Co-ordinates

51°18'N and 120°6'W

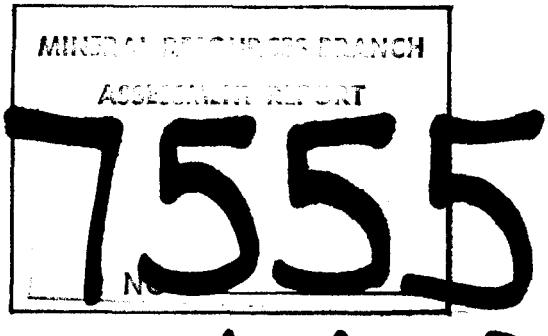
BY

B.B. Hughes and L.C. Bradish

NORANDA EXPLORATION COMPANY, LIMITED
(No Personal Liability)

July 1979

May 1, 1979 to June 30, 1979



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part 1 of 2

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LIST OF FIGURES & DRAWINGS

INTRODUCTION

The Newhykulston Creek Property is comprised of the BM 1 to 8 and Nook 1 and 2 mineral claims. These claims were staked by or as agent for Marston Fennell between June and November 1978. The claims cover a narrow band of copper mineralization within andesites of the Fennell Formation.

Interest in Newhykulston Creek, also known as Coal Creek dates back to the turn of the century when the coal seams along the North Thompson River valley were being evaluated for the railway. The coal in the area of the valley and the immediate geology adjacent to the valley was mapped and described by W.L. Uglow of the G.S.C. in 1921.

More recent interest has been in massive sulphides within the Fennell Formation east of the North Thompson River valley. The most recent mapping in the area was done by R.B. Campbell and H.W. Tipper of the G.S.C. in 1971.

In the Newhykulston Creek area a gossan was uncovered in the 1950's and subsequent trenching followed the gossan for several hundred meters. According to Noranda Exploration Company, Limited files, the property has had some small diameter drilling done on it sometime pre 1970. This drilling evidently intersected a two foot band of massive sulfides which was later exposed by further trenching.

During 1970 some trenching and approximately 1200 feet of diamond drilling in three holes were done by Rio Tinto Canadian under an option agreement from Kel Glen Mines. Some other diamond drill core has been found on the property but no information was found pertaining to it.

Noranda Exploration Company, Limited acquired the Newhykulston Creek Property from Marston Fennell under terms of an option agreement dated December 1, 1978.

The property consists of a 2 foot wide massive sulfide showing in sheared cherty rhyolites within andesites of the Fennell Formation. Shearing is prolific in several trenches and is evident as a lineament on airphotos several hundred meters wide and striking approximately S15^{o}E from the showing across the property. See Figure 2.

During May and June 1979 a control grid was established with 75m, 100m, and 200m line spacings over separate parts of the property. See Drawing 2. Soil samples were taken every 50 meters and silt samples taken whenever creeks were encountered over the entire grid. A CEM and magnetometer survey was also run over the grid. All work on the property was done by Noranda Exploration personnel under the supervision of B.B. Hughes.

LOCATION AND ACCESS

The Newhykulston Creek Property is centered on co-ordinates 51^{o}18'N and 120^{o}6'W on NTS map sheet 92P/8. This point is 13.5Km. at 5^{o} (true) from the village of Barriere, B.C. The claims cover the ridge east of the North Thompson River from Skowootum Creek north to Kikwilli Creek including Newhykulston Creek.

.../2

NTS 92/P

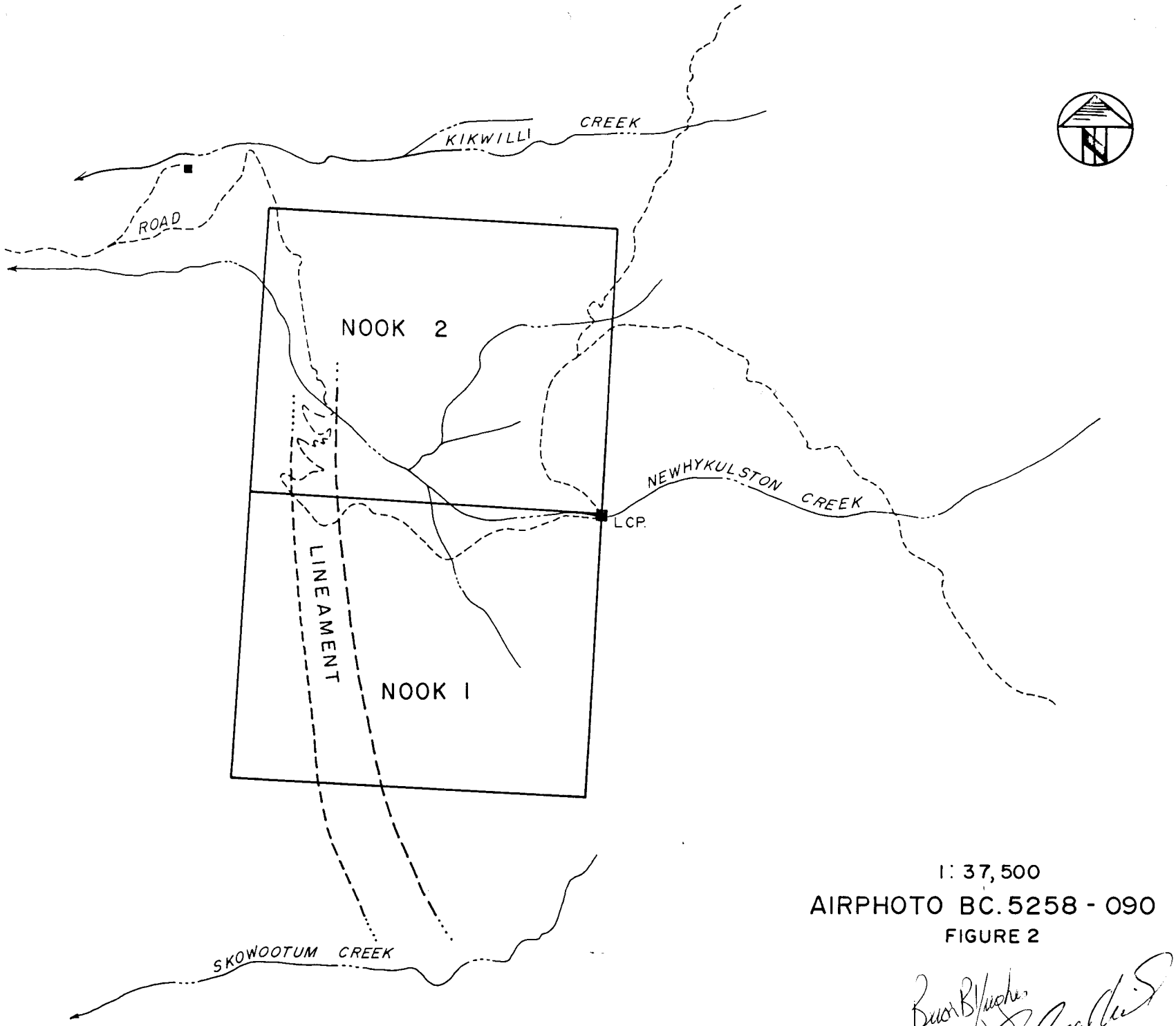
INDEX MAP
Showing General Location
of
BM 1 - 8 and Nook 1 and 2 Mineral Claims
Newhykulston Creek Area, B.C.
Noranda Exploration Company, Limited

Scale 1:250,000

5 0 5 10 Km.

FIG. 1

Kamloops
Mining Division
July 1979



1: 37,500

AIRPHOTO BC. 5258 - 090

FIGURE 2

Bruce B. Hughes

Elevations vary from 610m (A.S.L.) in the creek bottoms to 1585m (A.S.L.) in the eastern part of the property.

Access is by good gravel road from Barriere north to the Chu Chua Indian Reserve then by old logging road up Newhykulston Creek through the center of the property.

CLAIM STATISTICS

All claims are in the Kamloops Mining Division and have been transferred to Noranda Exploration Company, Limited (No Personal Liability) from Marston Fennell by Bill of Sale recorded January 29, 1979.

Claim Name	Record Number	Units	Record Date
BM 1	1291	1	July 18, 1978
BM 2	1292	1	"
BM 3	1293	1	"
BM 4	1294	1	"
BM 5	1477	1	October 24, 1978
BM 6	1478	1	"
BM 7	1479	1	"
BM 8	1480	1	"
Nook 1	1609	20	November 30, 1978
Nook 2	1610	20	"

See Figure 1 and Drawing 1 for claim locations.

CONTROL GRID

The Newhykulston Creek Property control grid was established during May and June of 1979 using a metric chain and Silva compass.

The 104+00E base line was established using the north-south (true) BM claims location line from Newhykulston Creek at 101+50S to the end of the claim line at 115+75S. Lines were run perpendicular to the 104+00E base line every 75m west to the Nook claim line at approximately 100+00E and east from the 104+00E base line to Newhykulston Creek.

The 104+00E base line was then extended to the north from 101+50 to 95+00S and lines run perpendicular to it every 100 meters west to the Nook claim line at approximately 100+00E.

.../3

Another base line was established from the point L115+75S and 112+00E running south (true) to 128+00S. From this base line, lines were run perpendicular west to the Nook claim boundary at approximately 100+00E and run east to the Nook claim boundary at approximately 124+00E. Lines 115+75S to 118+00S have 75m spacing, lines 118+00S to 120+00S have 100 meter spacing and lines 120+00S to 128+00S have 200 meter spacings.

All lines have been flagged and stations established every 25 meters using felt pen on teflon tags. A total of 53.9 line kilometer have been flagged and stations established on the Newhykulston Creek Property.

GEOCHEMICAL SURVEY

On the Newhykulston Creek Property a total of 1021 soil and silt samples were taken. Soil samples were taken every 50 meters along grid lines and silt samples were taken whenever a creek was encountered. Soil and silt samples were also taken along 500 foot contour line traverses to the north and east of the established grid.

All samples were analyzed for ppm copper, zinc, lead and molybdenum in the Noranda Exploration Company, Limited laboratory located at 1050 Davie Street, Vancouver 5, B.C. Analysts were R. Fenton and E. van Leeuwen.

Soil samples were obtained by digging holes with a maddock to a depth of 15 to 30cm where the visible B horizon, whenever possible, was exposed. Silt samples were taken from the active part of the streams where ever possible. The samples were placed in "Hi Wet Strength Kraft $3\frac{1}{2}$ x 6 1/8" Open End" envelopes and the grid station or sample number was marked on the envelope with indelible felt pen.

The samples are first placed in a drying cabinet for a period of 24 to 48 hours. The sample material is then screened and sifted to obtain a -80 mesh fraction.

The determination procedure for total copper, zinc, lead and molybdenum is as follows:

0.200 grams of the -80 mesh material is digested in 2ml. of HC1 04 and 0.5ml of HNO_3 for approximately four hours. Following digestion, each samples is diluted to 5ml. with demineralized H_2O. A Varian Techtron Model AA-5 Atomic Absorption Spectrophotometer was used to determine the parts per million (ppm) copper, zinc, lead and molybdenum content in each sample.

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

DISCUSSION OF RESULTS

Copper

A plot of copper values in soils in ppm indicates background values in the 10 to 40ppm range and a threshold value of approximately 70ppm. There are several sporadically distributed high copper values on the property but the majority of

values above threshold form a vague zone across the property, becoming weaker to the south, coincident with the airphoto lineament. On the northern part of the grid high values for copper in soils are often associated with road building and trenching in the area of known copper showings.

Zinc

There appears to be two populations of zinc values in soils on the Newhykulston Creek Property. To the east of the airphoto lineament background zinc values in soil appear to be slightly lower than values within the lineament and to the west.

Background values to the east of the lineament are in the 30 to 70ppm range and within the lineament and to the west the background is higher, in the 50 to 90ppm range. The majority of anomalous zinc values above the threshold value of approximately 150ppm occur within the airphoto lineament.

Lead and Molybdenum

No anomalous patterns were noted for lead or molybdenum. Values of lead and molybdenum in soil on the Newhykulston Creek Property fall within background levels.

Contour Traversing (See Drawing 2)

Several high copper in soils from the area surveyed by contouring were taken in a talus area where it was noted that some of the andesites carried minor amounts of disseminated pyrrhotite and locally intergrown chalcopyrite.

Soil Profiles

Several anomalous samples within the lineament on the Newhykulston grid were further tested with soil profiles. Pits were dug by hand to a depth of one meter, or as deep as could be done, and sampled at several depths on the pit wall. Appendix III.

A pit was dug at station 108E on line 119+00S to check a 460ppm zinc samples. Zinc values decreased with depth from seven times background to background. Copper in soil increased from average background to high background. Lead and molybdenum remained constant at background levels.

A soil pit was dug at station 108E on line 120+00S to test a 540ppm copper anomaly. Copper values decreased with depth, zinc increased and lead and molybdenum remained within background levels.

Two pits were dug in the area of several above threshold copper values. Pits were dug at stations 108+75E and 108+00E on line 116+50S. In both pits there was a slight increase in copper values and a decrease in zinc values with depth. Lead and molybdenum remained within background levels.

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Another pit was dug at station 107+50E on line 115+00S to test another above threshold copper value. Copper values increased with depth as did zinc to a lesser extent and lead and molybdenum remained constant within background levels.

Several more pits will be dug later this year to further delineate the soil anomalies and attempt to explain the source of the copper and zinc. A probable source is other small lenses of massive sulfides within the shear zone or lineament similar to the known showing.

GEOPHYSICAL SURVEYS

A Vertical Shootback E.M. Survey and Magnetic Survey were carried out over sections of the BM 1 - 8 and Nook 1 and 2 Mineral Claims. The Survey operators were G. Fenton, Geophysics Crew Chief, I. Saunders and T. Lewis.

C.E.M. - VERTICAL SHOOTBACK SURVEY

C.E.M. Transievers, manufactured by Crone Geophysics, of Ontario, were utilized for this survey. Approximately 48Km. of line were surveyed with readings recorded every 25m. The coil spacing was maintained at 75m. with an operating frequency of 1830Hz.

Method

The two operators, in turn, transmit and receive at each set up. To obtain a reading, operator #1 transmits with his coil in the vertical plane, perpendicular to the line direction. Operator #2 first aligns his coil with the field direction and then detects the dip angle of the null. The two operators then reverse procedures (operator #2 transmits, operator #1 receives). The two dip angle null readings are then added together algebraicaly. This Resultant Dip Angle constitutes a reading for the set-up and is plotted mid point between the two operator locations on the survey line.

Presentation of Results

The C.E.M. results are plotted in profile form on grid plan map (dwg. No. 4) at a scale of 1:5,000. The vertical scale of the profiles is 1cm equals 20 degrees.

MAGNETOMETER SURVEY

The Magnetic Survey utilized a Scintrix MF-2 vertical Field Fluxgate Magnetometer. Approximately 40.3Km. of line were surveyed with readings recorded every 25m.

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Method

Initially readings were recorded along the base line in order to establish a series of base stations. During the course of the survey, readings were recorded at these base stations and differences plotted against time to obtain the diurnal variations. Reduced data was obtained by "removing" the diurnal and day to day variations of the magnetic intensity.

Presentation of Results

The Survey results are plotted and contoured at 100 gamma intervals on a grid plan map at a scale of 1:5,000 (dwg. No. 5).

A short profile section is shown directly above the title block with a horizontal scale of 1:5,000 and vertical scale of 1cm. equals 200 gammas.

DISCUSSION OF RESULTS

The contoured magnetic field map shows two note worthy features:

1) Two distinct background are evident

   a) Over the Andesites the average value of the magnetic field is approximately 550 gammas and shows very little magnetic relief. Values within the Andesite vary between 485 and 755 gammas (excluding the area in close proximity to the showing).

   b) Higher values occur over the intrusive stock (East ends of lines 116+50S to 122+00S), varying between 550 gammas (?) to a high of 815 gammas with an average of 650 gammas.

2) At stations 105+25E and 105+50E on Line 107+50S a strong dipole feature is evident with a peak to peak amplitude of 940 gammas. This response is coincident with a small lens of magnetite just south of the main showing. This feature is shown in profile form on the map (dwg. No. 5) just above the title block. A spot value of 16,000 gammas was observed directly over the showing.

The Vertical Shootback E.M. shows no significant response. An extremely weak response does occur on Line 119+00S, station 107+50E. This is coincident with an Airphoto lineament as described elsewhere in this report.

B.B. Hughes

L.C. Bradish

APPENDIX I

Statement of Qualifications

STATEMENT OF QUALIFICATIONS

I, Lyndon C. Bradish of the City of Vancouver, Province of British Columbia, do certify that:

1. I have been an employee of Noranda Exploration Company, Limited since May 1973.

2. I am a graduate of the University of British Columbia with a Bachelor of Science Degree in Geophysics.

3. I am a member of the Canadian Institute of Mining and Metallurgy.

4. I am a member of the British Columbia Geophysical Society.

5. I have held the position of Geophysicist for Noranda Exploration Company, Limited since May 1973.

L.C. Bradish
Geophysicist
Noranda Exploration Company, Limited
(No Personal Liability)

STATEMENT OF QUALIFICATIONS

I, Brian B. Hughes of the City of Vancouver, Province of British Columbia, do certify that:

1. I have been employed as a geologist by Noranda Exploration Company, Limited since April 1976.

2. I am a graduate of the University of British Columbia with a Bachelor of Science Degree in Geology (1974).

3. I am a member of the Canadian Institute of Mining and Metallurgy.

Brian B. Hughes
Geologist
Noranda Exploration Company, Limited
(No Personal Liability)

APPENDIX II

Statement of Costs

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT Newhykulston - Fennell Option DATE July 1979

TYPE OF REPORT Combined Geology, Geophysics and Geochem

a) Wages:

No. of Days 238

Rate per Day $ 73.228655

Dates: from Nov. 28, 1978 to June 30, 1979

Total Wages 238 x $ 73,227655 17,428.42

b) Food and Accomodation:

No of days 238

Rate per day $ 17.316302

Dates: from Nov. 28, 1978 to June 30, 1979

Total Cost 238 x $ 17.316302 4,121.28

c) Transportation:

No of days 238

Rate per day $ 9.6663865

Dates: from Nov. 20, 1978 to June 30, 1979

Total Cost 238 X $ 9.6663865 2,300.60

d) Instrument Rental:

Type of Instrument EM

No of days 28

Rate per day $ 8.00

Dates: from Nov. 20, 1978 to June 30, 1979

Total Cost 28 X $ 8.00 224.00

Type of Instrument Mag

No of days 7

Rate per day $ 5.00

Dates: from Nov. 20, 1978 to June 30, 1979

Total Cost 7 X $ 5.00 35.00

Type of System Airborne

No. of days 20

Rate per day $35.00

Total Cost 20 x 35.00 700.00

f)	Analysis (See attached schedule)		3,016.30
g)	Cost of preparation of Report		
	Author 7 MD	737.44	
	Drafting 9	1,523.80	
	Typing 4 @ 100	400.00	2,661.24
h)	Other:		
	B.C. Tel	107.07	
	Supervision: R.C. Heim PhD, P.Eng. 44 days @ 226	9,944.00	10,051.07

Total Cost 40,537.91

e) Unit costs for Geology

No of days 94 Dates: from Nov. 20. 1978 to June 30, 1979

No of units 94 MD

Unit costs $153.2057 / MD

Total Cost 94 x $153.2057 N.A. at this time 14,401.34

Unit Cost for EM Survey

No. of Units 48 Km.

Unit Costs $94.6222/Km.

Total Cost 48 x $94,6222 4,541.87

Unit Cost for Mag Survey

No. of units 40.3 Km.

Unit Cost $30.6441/Km

Total Cost 40.3 x $30.6441 1,234.96

Unit Cost for	Airborne Survey	
No. of Units	85.4 Km.	
Unit Cost	48.68138 / Km.	
Total Cost	85.4 x $48.68138	$ 4,157.39
Unit Cost for	Geochem Survey	
No. of Units	1021 Samples	
Unit Costs	$7.420195 / Sample	
Tota Cost	1021 x $7.420195	7,576.02
Unit Cost for	Line Preparation	
No. of Units	53.9 Km.	
Unit Costs	$160.0432 / Km.	
Total Cost	53.9 x $160.0432	8,626.33
		$40,537.91

NORANDA EXPLORATION COMPANY, LIMITED

(WESTERN DIVISION)

DETAILS OF ANALYSES COSTS

PROJECT: Newhykulston - Fennell Option July 1979

ELEMENT	NO. OF DETERMINATIONS	COST PER DETERMINATION	TOTAL
Cu	1021	1.00	1,021.00
Zn	1021	.60	612.60
Pb	1021	.60	612.60
Mo	1021	.60	612.60
Au	11	2.50	27.50
Assays			
Au	7	8.50	59.50
Ag			
Cu	7	4.50	31.50
Mo	1	6.00	6.00
Pb	6	5.50	33.00

3,016.30

APPENDIX III

Soil Profile Data

APPENDIX 3

SOIL PROFILES

LOCATION	SAMPLE NUMBER	INTERVAL	COLOUR
L119+00S	A	5cm - 20cm	Brown
108+00E	B	20cm - 40cm	Black
	C	40cm - 70cm	Grey
L120+00S	A	0 - 20cm	Organic B - Black
108+00E	B	20cm - 40cm	Gravel and Water
L116+50S	A	0 - 10cm	Organic - Black
108+75E	B	10cm - 60cm	Brown
	C	60cm - 100cm	Grey - Green
L116+50S	A	0 - 10cm	Organic B - Black
108+00E	B	10cm - 50cm	Brown
	C	50cm - 80cm	Broken Rod - Grey Green
L115+00S	A	0 - 20cm	Sand & Gravel & Mud - Grey Green
107+50E	B	20cm - 50cm	Rusty - Sand & Gravel - Water
		50cm - 80cm	Brown Sand & Clay dry

5000
4500
4000
3500
3000
2500
2000

NOOK 2
NOOK 1
SKOWOOTUM CK
CREEK
NEWHYKULSTON
CHINOOK MNT.

BM 7 | BM 1 | BM 3 | BM 5
BM 8 | BM 2 | BM 4 | BM 6

TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE BM1-8, NOOK 1, 2 M.C. KAMLOOPS M.D. B.C., BY BB.HUGHES AND L. BRADISH
DATED: JULY 1979

200 100 0 100 200 300 400 500
METERS

REVISED	NEWHYKULSTON CK.-FENNELL OPTION
	CLAIM MAP
PROJ. No. 41	SURVEY BY: B.B. HUGHES DATE: MAY 1979
N.T.S. 92P/8E	DRAWN BY: JAN VAN VOORST SCALE: 1:5000
DWG. No. 1	NORANDA EXPLORATION
	OFFICE: VANCOUVER

VANCAL

NOOK 2

NOOK 1

NEWHYKULSTON CREEK

BM 7

BM 8

BM 1

BM 2

BM 3

BM 4

BM 5

BM 6

124+00 E

122+00 E

120+00 E

118+00 E

116+00 E

114+00 E

BL 112+00 E

110+00 E

108+00 E

106+00 E

BL 104+00 E

102+00 E

100+00 E

96+00 S

98+00 S

100+00 S

101+50 S

102+00 S

103+75 S

105+25 S

106+75 S

108+25 S

109+75 S

111+25 S

112+75 S

114+25 S

115+75 S

117+25 S

119+00 S

120+00 S

122+00 S

124+00 S

126+00 S

128+00 S

130+00 S

200 100 0 100 200 300 400 500
METERS

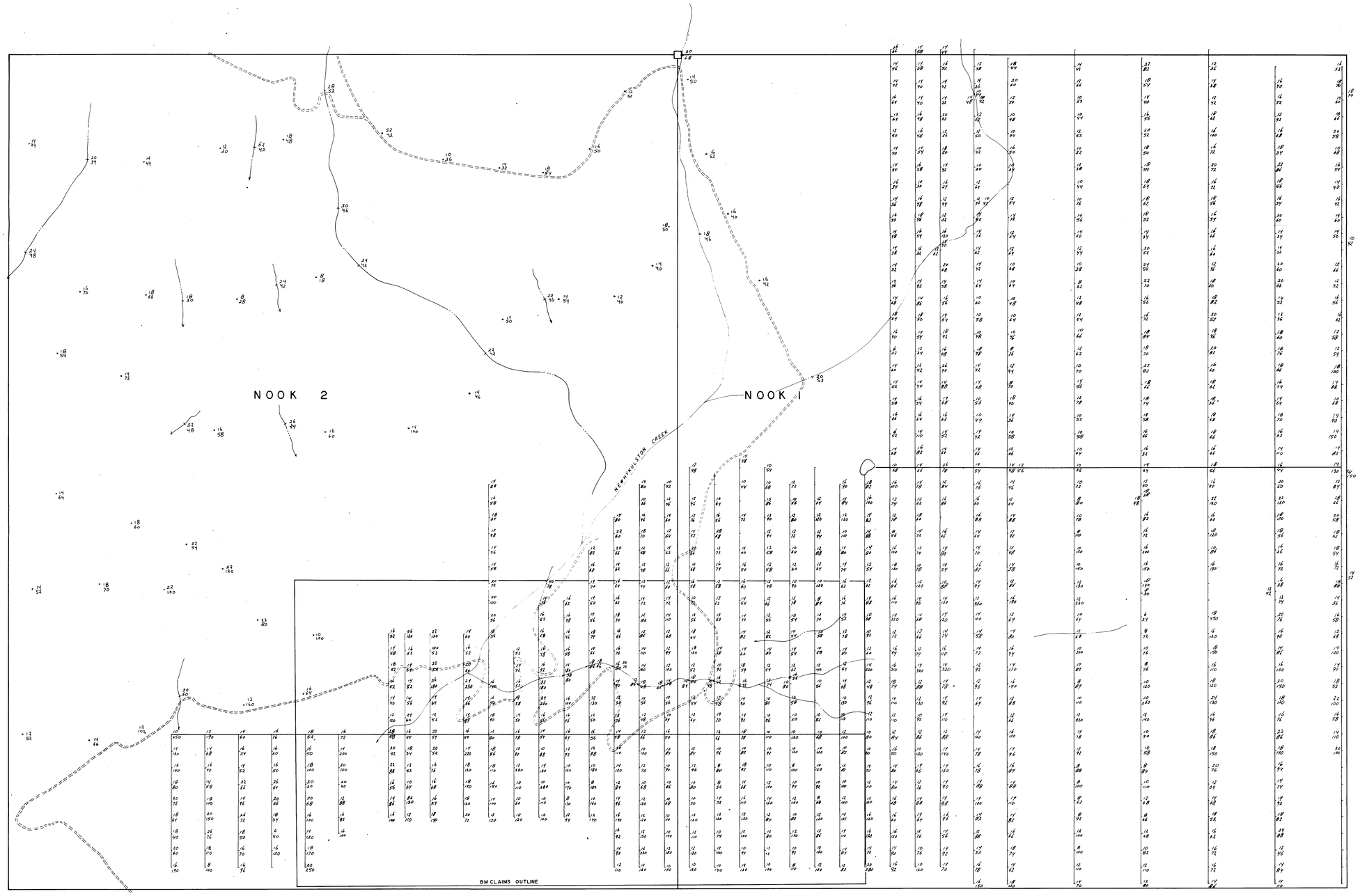
Bruce B. Hughes
L. Bradish

REVISED	NEWHYKULSTON CK. – FENNELL OPTION
	GEOCHEMICAL SOIL SURVEY Cu & Mo in P.P.M.
PROJ. No. 41	SURVEY BY:
N.T.S. 92 P	DATE: JULY 1979
DWG. No. 2	DRAWN BY: JAN VAN VOORST SCALE: 1:5000
	NORANDA EXPLORATION OFFICE: VANCOUVER

TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE BM 1-8, NOOK 1, 2 M.C. KAMLOOPS M.D., B.C. BY B.B.HUGHES AND L.BRADISH.
DATED: JULY 1979

Cu
Mo

VANCAL



124 + 00 E

122 + 00 E

120 + 00 E

118 + 00 E

116 + 00 E

114 + 00 E

BL 112 + 00 E

110 + 00 E

108 + 00 E

106 + 00 E

BL 104 + 00 E

102 + 00 E

100 + 00 E

96 + 00 S | 98 + 00 S | 100 + 00 S | 101 + 50 S | 102 + 00 S | 103 + 75 S | 105 + 25 S | 106 + 75 S | 108 + 25 S | 109 + 75 S | 111 + 25 S | 112 + 75 S | 114 + 25 S | 115 + 75 S | 117 + 25 S | 119 + 00 S | 120 + 00 S | 122 + 00 S | 124 + 00 S | 126 + 00 S | 128 + 00 S | 130 + 00 S

200 100 0 100 200 300 400 500
METERS

7555 part 1 of 2

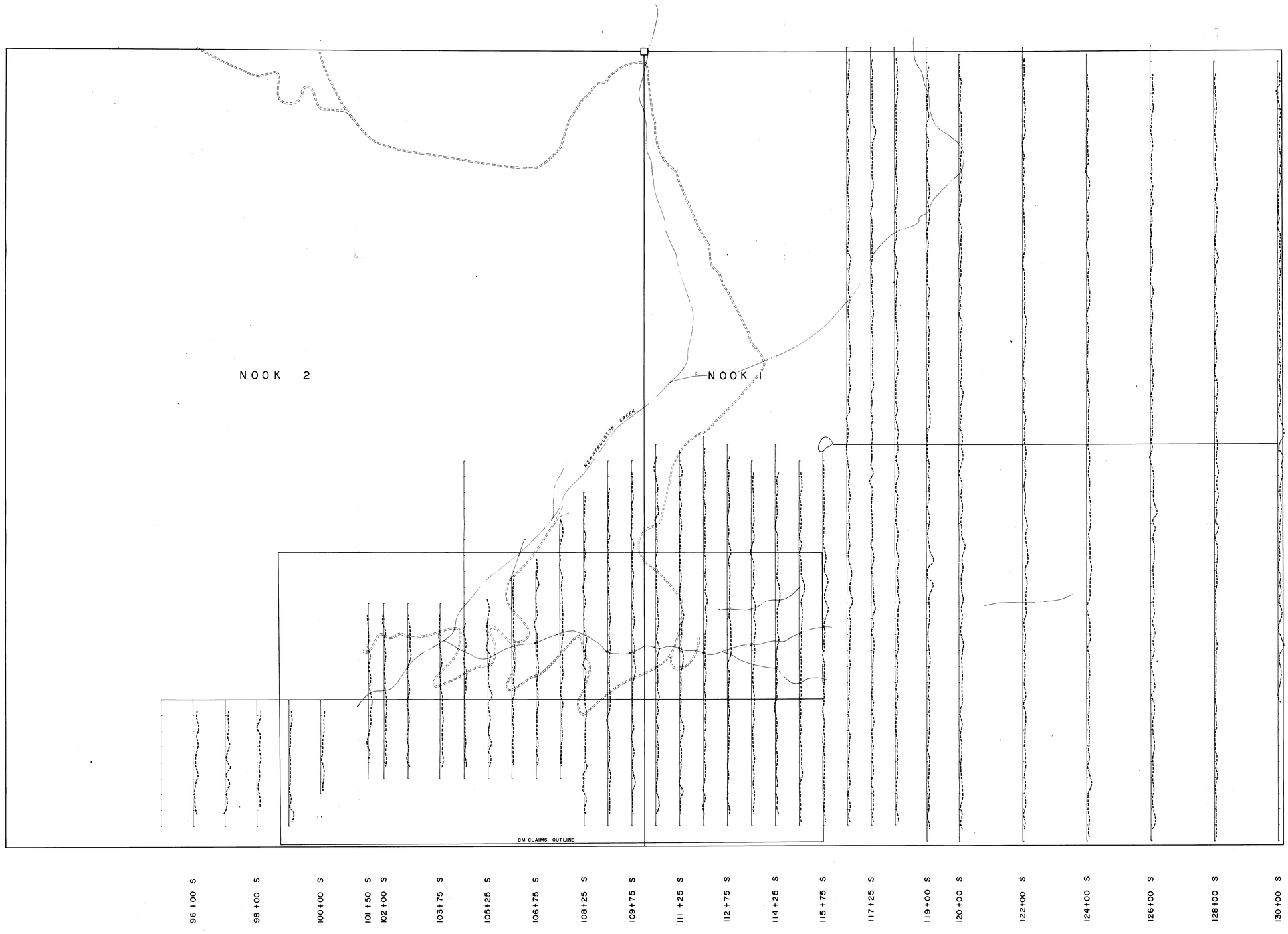
TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE BM 1-8, NOOK 1, 2 M.C. KAMLOOPS M.D., B.C. BY B.B. HUGHES AND L. BRADISH

DATED: JULY 1979

Pb
Zn

REVISED	NEWHYKULSTON CK. – FENNELL OPTION
	GEOCHEMICAL SOIL SURVEY Pb & Zn in P.P.M.
PROJ. No. 41	SURVEY BY: ..... DATE: JULY 1979
N.T.S. 92 P	DRAWN BY: JAN VAN VOORST SCALE: 1:5000
DWG. No. 3	NORANDA EXPLORATION
	OFFICE: VANCOUVER

VanCal



200 100 0 100 200 300 400 500
METERS

TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE BM 1-8, NOOK 1,2 M.C. KAMLOOPS M.D. B.C., BY B.B. HUGHES AND L.BRADISH.

DATED: JULY 1979

REVISED	NEWHYKULSTON CK. – FENNELL OPTION
	CEM SURVEY VERTICAL SHOOTBACK RESULTANT NULL ANGLE PROFILES VERTICAL SCALE 1 cm = 20° COIL SPACING 75m FREQUENCY 1830 Hz
PROJ. No. 41	SURVEY BY: G.FENTON, I. SAUNDERS DATE: JULY 1979
N.T.S. 92P	DRAWN BY: JAN VAN VOORST SCALE: 1:5000
DWG. No. 4	NORANDA EXPLORATION OFFICE: VANCOUVER

VanCal

NOOK 2

NOOK 1

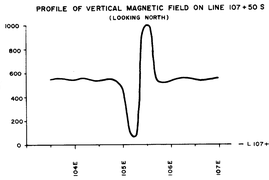
NEWHYKULSTON CREEK

BM CLAIMS OUTLINE

96 + 00 S
98 + 00 S
100+00 S
101 + 50 S
102 + 00 S
103+75 S
105+25 S
106+75 S
108+25 S
109+75 S
111 +25 S
112 + 75 S
114+25 S
115 + 75 S
117+25 S
119+00 S
120 +00 S
122100 S
124+00 S
126+00 S
128+00 S
130 +00 S

124 + 00 E
122 +00 E
120 + 00 E
118 +00 E
116 + 00 E
114 + 00 E
BL 112 +00 E
110 + 00 E
108+00 E
106+00 E
BL 104+00 E
102 + 00 E
100+00 E

PROFILE OF VERTICAL MAGNETIC FIELD ON LINE 107+50 S
(LOOKING NORTH)



200 100 0 100 200 300 400 500
METERS

TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE BM 1-8, AND NOOK 1, 2 M.C., KAMLOOPS M.D., B.C. BY B.B. HUGHES, L. BRADISH.

DATED: JULY 1979

REVISED	NEWHYKULSTON CK. – FENNELL OPTION
	MAGNETOMETER SURVEY (VERTICAL FIELD)
	CONTOUR INTERVAL : 100γ
PROJ. No. 41	SURVEY BY: G.L.F., T.L. DATE: JULY 1979
N.T.S. 92P	DRAWN BY: JAN VAN VOORST SCALE: 1:5000
DWG. No. 5	NORANDA EXPLORATION
	OFFICE: VANCOUVER

VANCAL