COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

NTS: 82E/13E

GEOCHEMICAL AND GEOLOGICAL

ASSESSMENT REPORT

NOGAN MINERAL CLAIMS

VERNON MINING DIVISION

Latitude: 49°58'N Longitude: 119°44'W

OWNER AND OPERATOR: Cominco Ltd.

Work Performed: June 20, July 2, 3 and 15
August 11, 13, 14 and 17
September 1 and October 11

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9186
NO.

JUNE 1981

R.J. NICHOLSON

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COMINCO LTD.

EXPLORATION | WESTERN DISTRICT

NTS: 82E/13E | 15 June 1981

GEOCHEMICAL AND GEOLOGICAL ASSESSMENT REPORT NOGAN MINERAL CLAIMS VERNON MINING DIVISION

I. INTRODUCTION

This report is a compilation of progress and final reports submitted by M. Morrison, geologist, during a period exploration work carried out by him while under contract with Cominco Ltd. in 1980. The Nogan No. 1 and No. 2 Mineral Claims were located by him on behalf of Cominco Ltd. to cover a skarnified and hornfelsic sequence of Cache Creek sediments exhibiting indications of anomalous gold mineralization about 18 kilometers northwest of Kelowna. Subsequent geochemical sampling and some geological mapping was carried out by Morrison.

II. SUMMARY

Work in 1980 on the property totalled twelve man-days during the period June 20 to October 11, of which five days work were performed before, and seven days were performed after the staking of Nogan No. 2 Mineral Claim.

Geological mapping was carried out on Scale 1:50, mainly within the area of target interest having restricted outcrop exposure in the southeastern portion of Nogan No. 1 claim. A 500 by 500 meter grid of 50 meter line spacing and 50 meter station interval was established in the area of geological or target interest, with a total of 450 meters of base line and 4500 meters of picket line chained and flagged. Eleven rock-chip, one water, and 95 soil samples were collected and analysed geochemically.

III. PROPERTY

Two claims:

Nogan No. 1 Mineral Claim (6 units) - recorded May 16, 1980.
Nogan No. 2 Mineral Claim (2 units) - recorded September 2, 1980.

Both claims 100% Cominco Ltd., through staking.

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IV. LOCATION

Latitude N:	49°58'	NTS:	82E/13E
Longitude W:	119°44'	Mining Division:	Vernon
Elevation:	1300 meters		

The property lies 18 kilometers northwest of Kelowna, about one kilometer northwest of Lambley Lake. Access is gained from Kelowna via the Bear Creek logging road, a total distance of about 30 kilometers. The North Lambly Creek road leaves Bear Creek road at kilometer 23, passing through the property one kilometer from the junction.

The claims are in an area of gentle topographical relief having an average elevation of 1300 meters. Underbrush is thick in an old burn near the southeastern corner of the property. The remainder of the property has been partially strip-logged, with some logging activity as recent as 1980.

V. HISTORY

There is evidence of prior staking, linecutting and minor bulldozer trenching in the general area of the property, perhaps having occurred in the 1960's, with no apparent record of assessment work having been filed. The Scot claims, staked in June 1967, covered ground now occupied by the Nogan claims.

The 1980 discovery was made during the course of conducting a more encompassing exploration program designed to search for large-tonnage/low-grade precious metal deposits.

VI. GEOLOGY

Minimal geological mapping was carried out on the property, as the area felt to hold most promise - the southeastern corner - contains only few rock exposures. An abundance of outcroppings exist on the western and northern parts of the property, but little potential is envisioned for these areas. Mapping control was gained primarily through pace and compass traverses from existing roads.

The claims cover a sequence of Cache Creek Group limy argillites and argillites, in part skarnified and hornfelsic. Small Nelson plutons or dykes appear to have intruded the Cache Creek rocks within the claim group.

The dominant rock type within the property boundaries is a limy argillite of Cache Creek Group. An approximate 20 percent limy portion of the rock occurs as white recrystallized calcite in 2 to 15 centimeter wide and 30 to 100 centimeter long lenses. The lenses conform to bedding, and are discontinuous. The calcite has been partially dissolved on weathered surface. The apparent effect of contact metamorphism on the limy argillite has been to form epidote and garnet from the limy portion, and fine grained hornfels from the argillitic portion. Contact metamorphism appears to increase toward the southeast on the property, and fades

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toward the northwest. The belt of limy argillite strike N80°W, dipping vertically. The top of the sequence may be toward the north.

A mafic rich diorite and hornblendite intrusive occurs to the northeast of the argillite belt, within the northeastern portion of the property. A tongue of quartz monzonite of Valhalla batholith lies one kilometer southwesterly from the property.

The few outcroppings located within the southeastern portion of the property, exposed as a result of caterpillar tractor work related to logging, appear as well fractured, bleached, and stained hornfels. Scant amounts of pyrite, and one barren three-centimeter quartz vein, occur in the hornfels. Limonitic and manganiferous products constitute the staining.

VII. GEOCHEMISTRY

a) Prior to staking Nogan No. 2 claim.

Five rock-chip samples were initially collected within the bleached and stained hornfels area of interest in the southeastern part of Nogan No. 1 claim. Analyses indicated anomlaous amounts of gold and silver, with values ranging from less than 10 ppb to 1044 ppb gold, and from less than 0.4 ppm to 10.6 ppm silver.

One water sample was collected from a spring in an area later to become part of Nogan No1 2 claim, on the good probability that the water emanates from Nogan No. 1 claim,and was analysed for copper, molybdenum, lead, and zinc.

b) After staking Nogan No. 2 claim.

Ninety-five soil samples were collected at 50 meter spacing in a 500 by 500 meter grid located over the area of geological or target interest. The grid lies in an area of widespread overburden. All samples were analysed for gold, silver, lead, and arsenic.

A further six rock-chip samples were collected within the area of interest, and were anlaysed for gold, silver, and arsenic. Four of the five initial rock-chip samples were also analysed for arsenic.

See Appendix "D" for tabulated geochemical results and analytical procedures.

VIII. CONCLUSIONS

1) The original rock-chip geochemical sampling indicates an anomalous zone of undetermined size in gold and silver. Later rock-chip sampling lend only modest support, and help to define the zone as being likely small.

2) Soil samples collected from a grid in the area of the anomalous zone apparently have no relationship to the rock-chip sampling results.

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It is apparent that the overburden masks any expression of potential bedrock values.

Report by:

R.J. Nicholson, P.Eng.

Endorsed by:

G. Harden, Manager
Exploration
Western District

Reference:

Morrison, M., 1980, Progress and Final Project reports on several areas in British Columbia regarding Geological and Geochemical work done while under contract to Cominco Ltd.

Distribution:

Mining Recorder (2)
Western District (1)
RJN

RJN/vmk

APPENDIX A

STATEMENT OF EXPENDITURE

NOGAN MINERAL CLAIMS

A. Prior to staking Nogan No. 2 Claim

1) Contracted Work - contractor M. Morrison, Geologist

Prospecting and rock-chip sampling - June 20 Geological mapping - July 2, 3 and 15 Grid preparation - August 11 5 days at $190.00 per day all inclusive	$ 950.00	

2) Salaries

R.J. Nicholson - July 15 1 day field supervision at $195.00/day	195.00	

3) Geochemical Analyses

5 rock-chip analyses for Ag and Au @ $7.00/sample 1 water analyses for Cu, Pb, Zn and Mo @ $7.00/sample	42.00	$1,187.00

B. After staking Nogan No. 2 Claim

1) Contracted Work - contractor M. Morrison

Soil sampling - August 13 and 14 Drafting and report preparation - August 17 Rock-chip sampling and geochemical evaulation - September 1 and October 11 Report preparation - two days 7 days of $190.00/day all inclusive	$1,130.00	

2) Geochemical Analyses

95 soil analyses for Ag, Au, Pb, and As @ $9.35/sample	888.25	
6 rock-chip analyses for Ag, Au and As @ $10.00/sample	60.00	
4 rock-chip analyses for As @ $3.00/sample	12.00	

3) Report Preparation

R.J. Nicholson - 3 days at $180.00/day	540.00	
P.D. Leriche - 1 day drafting at $70.00/day	90.00	$2,920.35
Total Expenditures		$4,107.25

APPENDIX B

IN THE MATTER OF THE B.C. MINERAL ACT AND IN THE MATTER OF A GEOCHEMICAL AND GEOLOGICAL PROGRAM CARRIED OUT ON THE NOGAN NO. 1 AND NOGAN NO. 2 MINERAL CLAIMS LOCATED IN THE VERNON MINING DIVISION OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY N.T.S. 82E/13E.

S T A T E M E N T

I, ROBERT JOHN NICHOLSON OF THE DISTRICT OF NORTH VANCOUVER IN THE PROVINCE OF BRITISH COLUMBIA, HEREBY DECLARE:

1. THAT I am employed as a Project Geologist by Cominco Ltd. and, as such, have a personal knowledge of the facts to which I hereinafter depose;

2. THAT annexed hereto and marked as Appendix "A" to this statement is a true copy of expenditures incurred on a geological and geochemical program carried out on the Nogan mineral claims;

3. THAT the said expenditures were incurred between the twentieth day of June and the eleventh day of October, 1980, for the purpose of mineral exploration on the above noted mineral claims.

Signed: 

R.J. Nicholson, P.Eng.

RJN/vmk

APPENDIX C

STATEMENT OF QUALIFICATIONS

I, ROBERT JOHN NICHOLSON, OF THE DISTRICT OF NORTH VANCOUVER, BRITISH COLUMBIA, DO HEREBY CERTIFY:

1. THAT I am a Graduate in Geological Engineering of the University of British Columbia and have been granted the degree of Bachelor of Applied Science in 1953.

2. THAT since 1954 I have been employed by Cominco Ltd. and have been engaged in various aspects of mine geology and exploration.

3. THAT I am a member of the Association of the Professional Engineers of the Province of British Columbia with Certificate of Registration No. 7167.

Dated this 15th day of June, 1981
at Vancouver, British Columbia.

R.J. Nicholson, P.Eng.

APPENDIX D

1. All water, soil and rock chip analyses performed by Cominco Ltd. Laboratory in Vancouver.

2. Water sample was analysed for:

   a) Cu, Pb, and Zn by direct aspiration and flame atomic absorption.

   b) Mo by direct aspiration and electrothermal (flameless) atomic absorption.

3. Soil samples were screened, and the (-)80 mesh fractions were analysed for:

   a) Ag and Pb by hot 20% HNO_3 digestion and flame atomic absorption.

   b) Au by hot Aqua Regia digestion, solvent extraction, and flame atomic absorption.

   c) As by Potassium Pyrosulphate fusion, hot Hydrochloric Acid digestion, Arsene evolution, and colorimetry.

4. Rock chip samples were crushed and milled in stainless steel pots from 100 to 200 mesh and were analysed for:

   a) Ag by hot Aqua Regia digestion and flame atomic absorption.

   b) Au by hot Aqua Regia digestion, solvent extraction, and flame atomic absorption.

   c) As by Potassium Pyrosulphate fusion, hot Hydrochloric Acid digestion, Arsene evolution, and colorimetry.

Geochemical Results

a) Prior to staking Hogan No. 2 claim.

Rock Chip Samples

Sample No.	Ag (ppm)	Au (ppb)
G28	0.7	70
G29	1.0	100
G30	10.6	1044
G31	<0.4	26
G32	<0.4	<10

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Water Sample

Sample No.	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppb)
GW No. 1	<5	<25	12	5

b) After staking Nogan No. 2 claim.

Rock Chip Samples

Sample No.	Ag (ppm)	Au (ppb)	As (ppm)
G28			16
G29			3
G30			58
G31			101
G68	0.6	<10	3
G69	9.6	140	142
G70	0.5	<10	275
G87	<0.4	<10	5
G88	<0.4	<10	4
G89	<0.4	<10	5

Soil Samples

Sample No.	Ag (ppm)	Au (ppb)	As (ppm)	Pb (ppm)
25N 0E	0.7	<50	9	8
25N 50E	<.4	24	18	<4
25N 100E	<.4	<10	8	4
25N 150E	<.4	<10	6	<4
25N 200E	<.4	<10	5	<4
25N 250E	<.4	<10	5	<4
25N 300E	<.4	<10	6	<4
2450N 0E	<.4	<10	6	<4
2450N 50E	<.4	<10	5	<4
2450N 100E	<.4	<10	5	<4
2450N 150E	<.4	<10	4	<4
2450N 200E	<.4	<10	6	<4
2450N 250E	<.4	<10	8	<4
2450N 300E	<.4	<10	5	<4
24N 0E	.4	<10	6	<4
24N 50E	<.4	<10	6	<4
24N 100E	<.4	<10	6	<4
24N 150E	<.4	<10	6	<4
24N 200E	<.4	<10	5	<4
24N 250E	<.4	<10	6	<4
24N 300E	<.4	<10	6	<4
24N 350E	<.4	<10	8	<4
24N 400E	<.4	<10	11	<4
24N 450E	<.4	<10	12	<4
24N 500E	<.4	<10	14	4

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Soil Samples

Sample No.	Ag (ppm)	Au (ppb)	As (ppm)	Pb (ppm)
2350N 0E	<.4	<10	8	<4
2350N 50E	<.4	<10	6	<4
2350N 100E	<.4	<10	7	<4
2350N 150E	.4	<20	7	5
2350N 200E	<.4	<10	6	<4
2350N 250E	<.4	<10	8	<4
2350N 300E	<.4	<10	5	<4
2350N 350E	<.4	<10	7	<4
2350N 400E	<.4	<10	9	<4
2350N 450E	<.4	<10	14	4
2350N 500E	<.4	<10	15	4
23N 0E	<.4	20	6	<4
23N 50E	<.4	20	6	4
23N 100E	<.4	<10	6	<4
23N 150E	<.4	<10	5	<4
23N 200E	<.4	24	6	<4
23N 250E	<.4	<10	14	<4
23N 300E	<.4	<10	8	4
23N 350E	<.4	20	8	<4
23N 400E	<.4	20	10	4
23N 450E	.4	<10	8	<4
23N 500E	<.4	<10	9	4
2250N 0E	<.4	<10	5	<4
2250N 50E	<.4	24	5	4
2250N 100E	<.4	<10	7	<4
2250N 150E	<.4	<10	7	<4
2250N 200E	<.4	<10	8	<4
2250N 250E	<.4	20	9	<4
2250N 300E	<.4	<10	12	<4
2250N 350E	.4	<50	10	<4
2250N 400E	<.4	<10	8	<4
2250N 450E	<.4	<10	8	4
2250N 500E	<.4	<10	7	<4
22N 0E	<.4	<10	6	<4
22N 50E	<.4	<10	6	4
22N 100E	<.4	<10	6	<4
22N 150E	<.4	36	10	<4
22N 200E	<.4	<10	8	<4
22N 250E	<.4	<10	8	<4
22N 300E	<.4	<10	8	<4
22N 350E	<.4	<10	8	<4
22N 400E	<.4	<10	7	<4
22N 450E	<.4	<10	7	<4
22N 500E	<.4	<10	7	<4
2150N 0E	<.4	<10	7	<4
2150N 50E	<.4	<10	9	4
2150N 100E	<.4	<10	8	7
2150N 150E	<.4	<10	5	<4
2150N 200E	<.4	<10	14	4
2150N 250E	<.4	<10	9	5
2150N 300E	<.4	120	8	4

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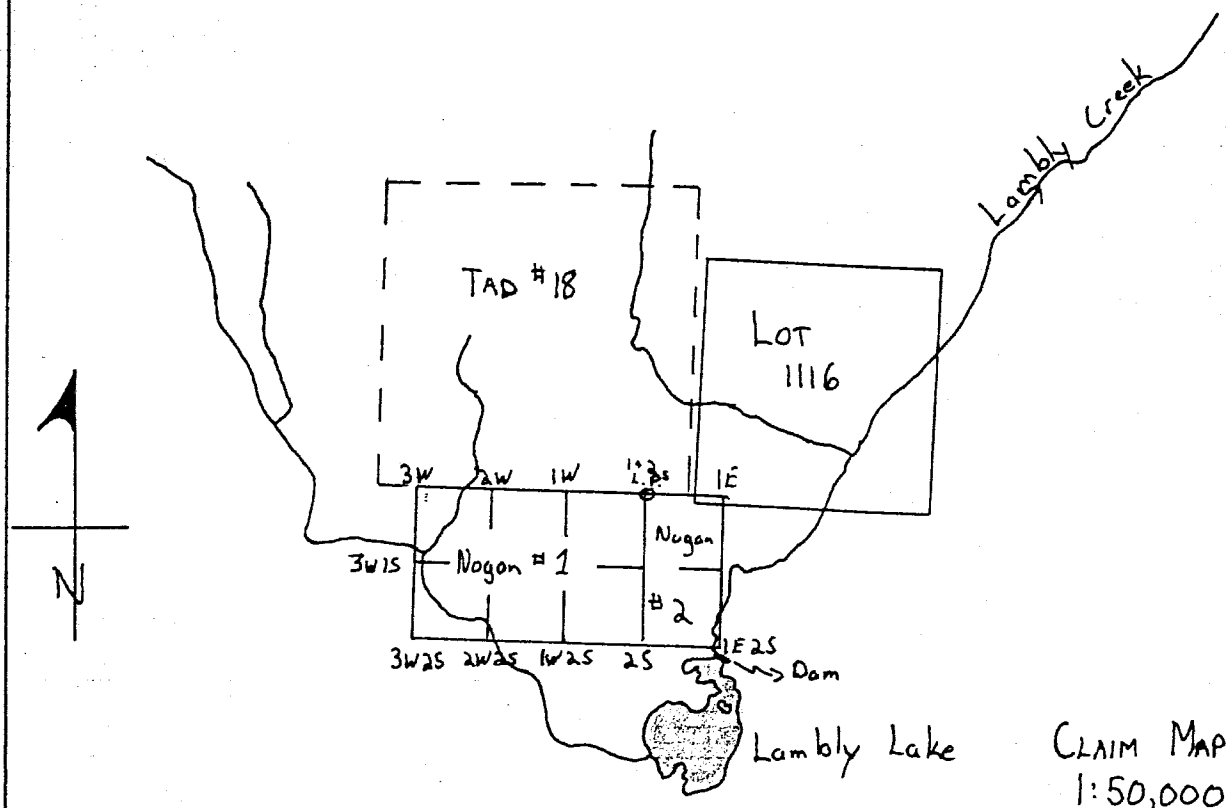
Soil Samples

Sample No.	Ag (ppm)	Au (ppb)	As (ppm)	Pb (ppm)
2150N 350E	<.4	<10	7	<4
2150N 400E	<.4	<10	4	<4
2150N 450E	<.4	<10	6	<4
2150N 500E	<.4	<10	5	<4
21N 0E	<.4	<10	4	<4
21N 50E	<.4	<10	7	11
21N 100E	<.4	<10	7	4
21N 150E	<.4	<10	4	<4
21N 200E	<.4	<10	7	<4
21N 250E	<.4	<10	8	4
21N 300E	<.4	<10	5	<4
21N 350E	.5	<10	3	4
21N 400E	<.4	<10	7	<4
21N 450E	<.4	<10	6	<4
21N 500E	<.4	<10	5	<4
2050N 0E	<.4	<10	4	<4
2050N 50E	.4	<10	5	<4
2050N 100E	<.4	<10	4	<4
20N BL	<.4	<10	4	<4



CLAIM MAP
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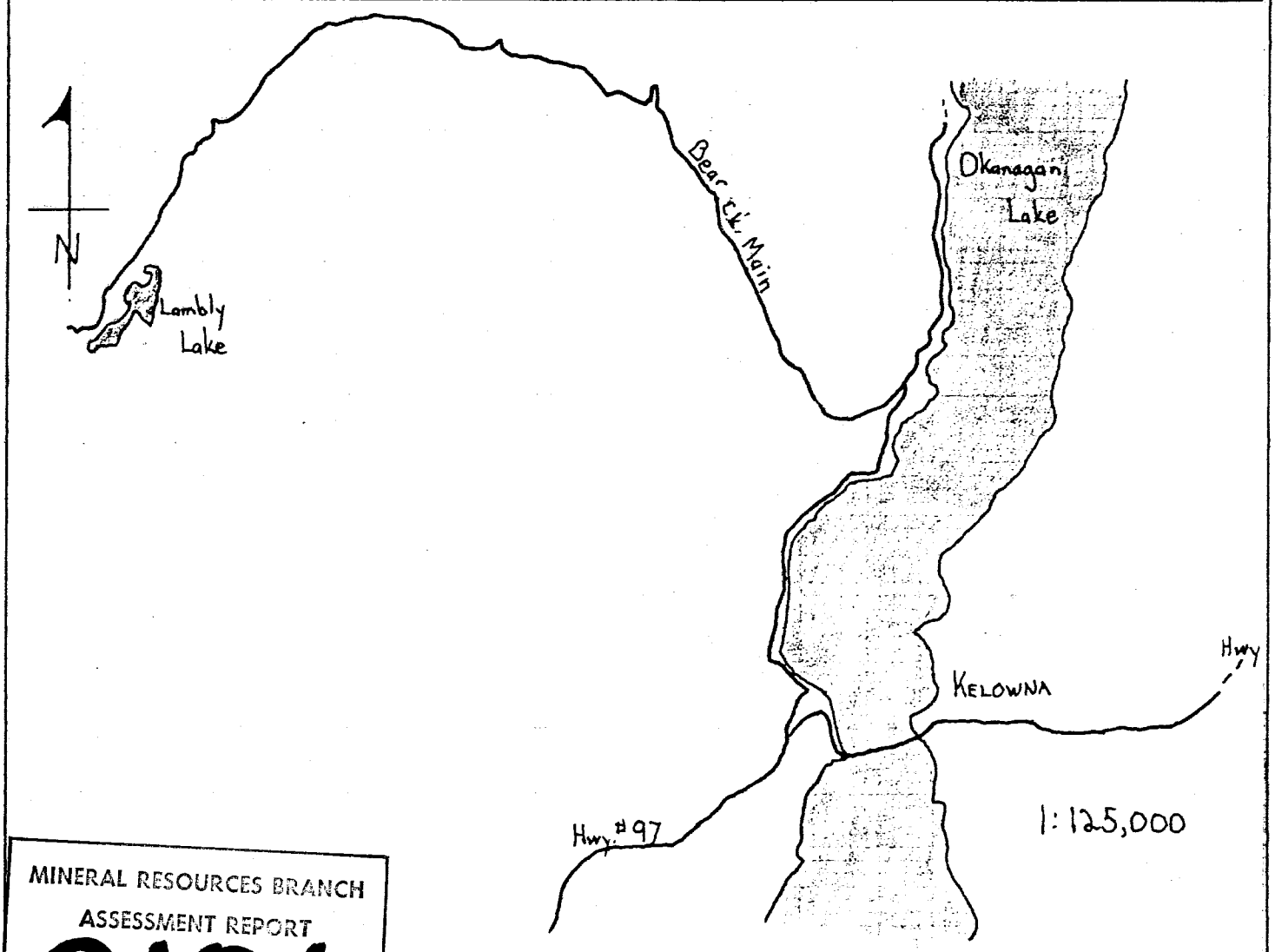

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MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 9186

Drawn by:		Traced by: P.D.L.	
Revised by	Date	Revised by	Date

NOGAN PROPERTY
VERNON MINING DISTRICT
LOCATION MAP

Scale: 1:125,000	Date: JUNE 11/81	Plate: 1

NCI 112A · CL

210-0610

Legal Posts
Nogan #1 6 units
Nogan #2 2 units

Baseline -1E- -2E- 3E -4E- -5E-

L25N
L24N
L23N
L22N
L21N
L20N

#1

N

NOGAN GEOCHEM.
As(ppm)/Ag(ppm)
Pb(ppm)

SOIL SAMPLED GRID
S.E. AREA NOGAN CLAIM NO. 1

Nogan #1

unmapped

org.
sli. limy org.
limy org.
limy org.
Ravine

Nogan 2

mafic-rich diorite
Legal Posts
Nogan #1
Nogan #2
magnetite hornblendite
hfs.
hfs. org
669 < 40/0.6/3
Creek
#2
N
6wm1 <5/5/<25/12
628 x 70/0.7/16
631 26/<.4/101
670 <10/0.5/275 Spring
669 x 110/9.6/142
sli. sil. limy hfs tr. py.
630 1044/10.6/88
629 100/1.0/3
morainal gravel
3 to 7 metres of morainal gravel
gravel
Lambly Ck. North Road
632 <10/2.4 x
angular float felds. porphyry (diorite)
50
limy-argillite
Overburden
Bear Lake Main

-LEGEND-

arg.	argillite
hfs.	hornfels
py.	pyrite
tr.	trace
sl.	slightly
sil.	silicified
sh.	shear zone
60	bedding
60	jointing
628 Au(ppb)/Ag(ppm)/As(ppm)	rock geochem.
6wm1 <Au(ppm)/<Ag(ppm)/Pb(ppm)/Zn(ppm)	water geochem.
	outcrop

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9186

Drawn by: M.M.	Traced by: P.O.L.
Revised by / Date	Revised by / Date

NOGAN PROPERTY
VERNON MINING DIVISION
GEOLOGY and GEOCHEMISTRY 82E 13

Scale: 1:50 | Date: JUNE 11/81 | Plate: 2