

Geochemical Report

on the

NL 1-24 CLAIM

FILMED

Located at Co-ordinates <sup>124°44.5'</sup> ~~022°02' 35" W~~ 55 deg. 58' N

Ontario Mining Division  
**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**14,994**

by: Mike Savell & Robert J. Baerg

Owner/Operator: NORANDA EXPLORATION COMPANY, LIMITED  
(NO PERSONAL LIABILITY)

N.T.S. 093N/15E, 93N/15W

July, 1986

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(in pocket)

FIGURE 5	---	GRID SOIL RESULTS	1:5,000	(Pb/Zn)
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FIGURE 7	---	GRID SOIL RESULTS	1:5,000	(Ba)

**SUMMARY:**

The NL claims are located in north central British Columbia within a belt of Pennsylvanian-Permian Cache Creek Group limestones. The property was staked to cover a high Pb-Zn-Ag silt anomaly which was part of the government geochem release of the 93N map sheet.

Prospecting and reconnaissance silt-soil sampling during July, 1985 located an area on NL 6 and 8 which is strongly anomalous in Pb-Zn, +/- Ag, +/- As. A grid was surveyed and soil samples collected over the anomalous area in September, 1985, in order to define the source, however, the proposed grid was not fully completed due to early snowfalls.

This work has partially outlined a strong coincident Pb and Zn soil anomaly approximately 200 meters wide, 300 meters long and open to both the north and south. Values of up to 1100 ppm Pb and 1300 ppm Zn have been obtained. Nearby exposures consist of grey crystalline limestone. No mineralization has been observed to date.

It is recommended the grid be extended and sampled at least 500 meters further to the north and south and the highest anomalies hand trenched.

INTRODUCTION:

The NL 1-24 claims were staked in June 1984 to cover a high Pb-Zn-Ag silt anomaly. The silt sample had been collected for the B. C. Government as part of a regional sampling program, the results of which were released on June 27, 1984. No mineral showings are known to occur in the immediate vicinity of the silt anomaly although there are several Pb-Zn occurrences several kilometers to the west and south.

LOCATION AND ACCESS:

The property is located approximately 20 kilometers north of Germansen Landing (Figure 1). Access to the property is via the Omineca Mining Road from Germansen Landing. From Germansen Landing, travel 9 km west to where a round 4x4 heads north. Follow this road for approximately 20 km until you come to two small lakes. From there it is a 1 km hike to the east on to the property.

PHYSIOGRAPHY & VEGETATION:

Elevations on the property range from 1350 m to 1700 m. The property is dominated by E-W-SE trending ridges.

Vegetation on the property consists of equal amounts of spruce and fir with only minor undergrowth. The amount of vegetation decreases uphill until it becomes alpine meadows, at approximately 1650 m.

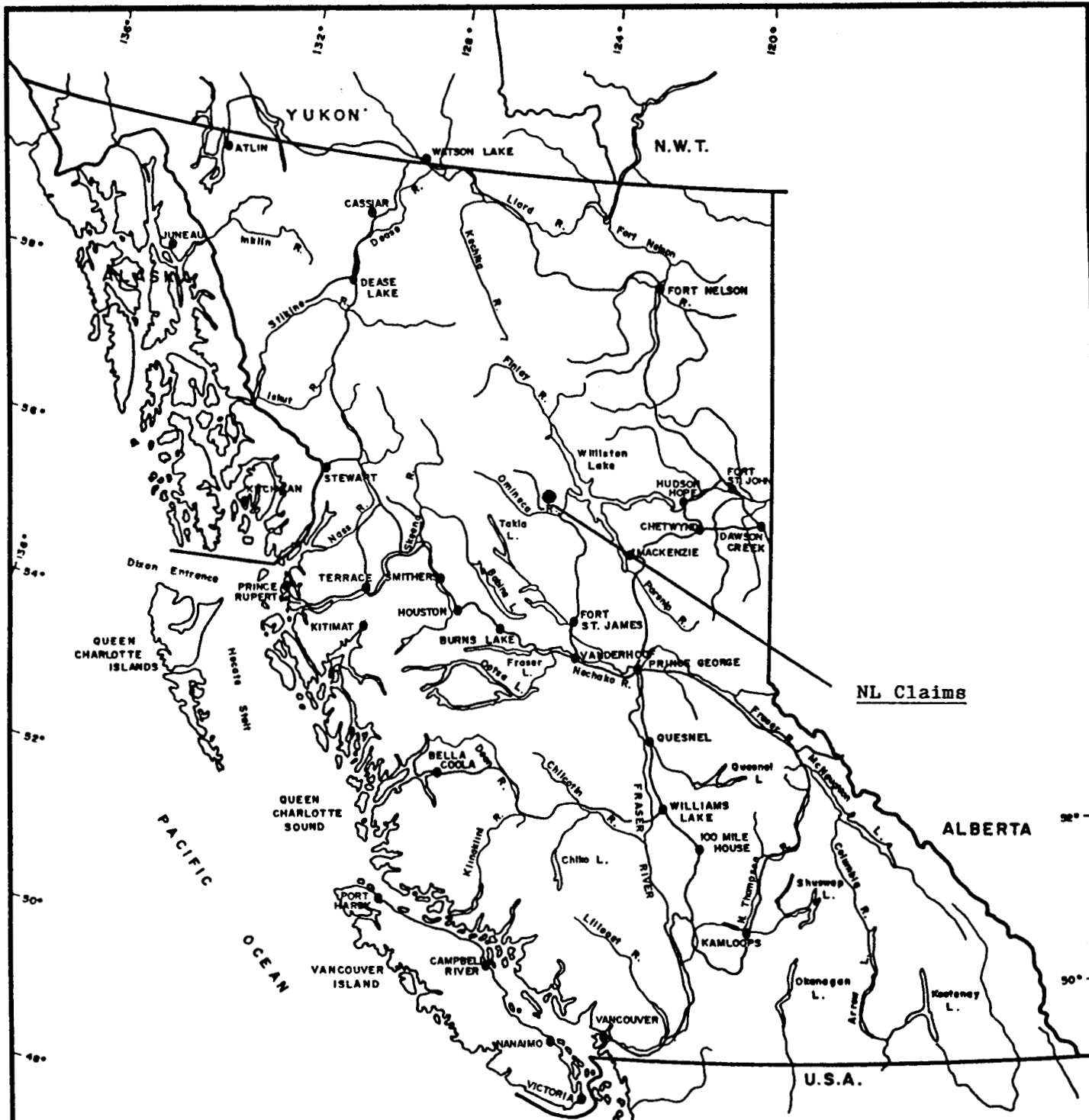
CLAIM STATISTICS:

The property is comprised of twenty-four (24) wholly Noranda owned 2-post claims as listed below (Figure 2). Upon acceptance of this report, the claims will be in good standing until the expiry date below.

<u>Name</u>	<u>Record #'s</u>	<u>Record Date</u>	<u>Units</u>	<u>Expiry Date</u>
NL 1-24	6507-6530	July 26/85	24	July 26/87

PREVIOUS WORK:

There is no previous recorded work on the property prior to staking by Noranda, although there are signs of previous activity. The results of the July, 1985 stream sediment and soil sampling program have been reported in "Geochemical Report on the NL 1-24 claims", by Robert J. Baerg, submitted for assessment credit.

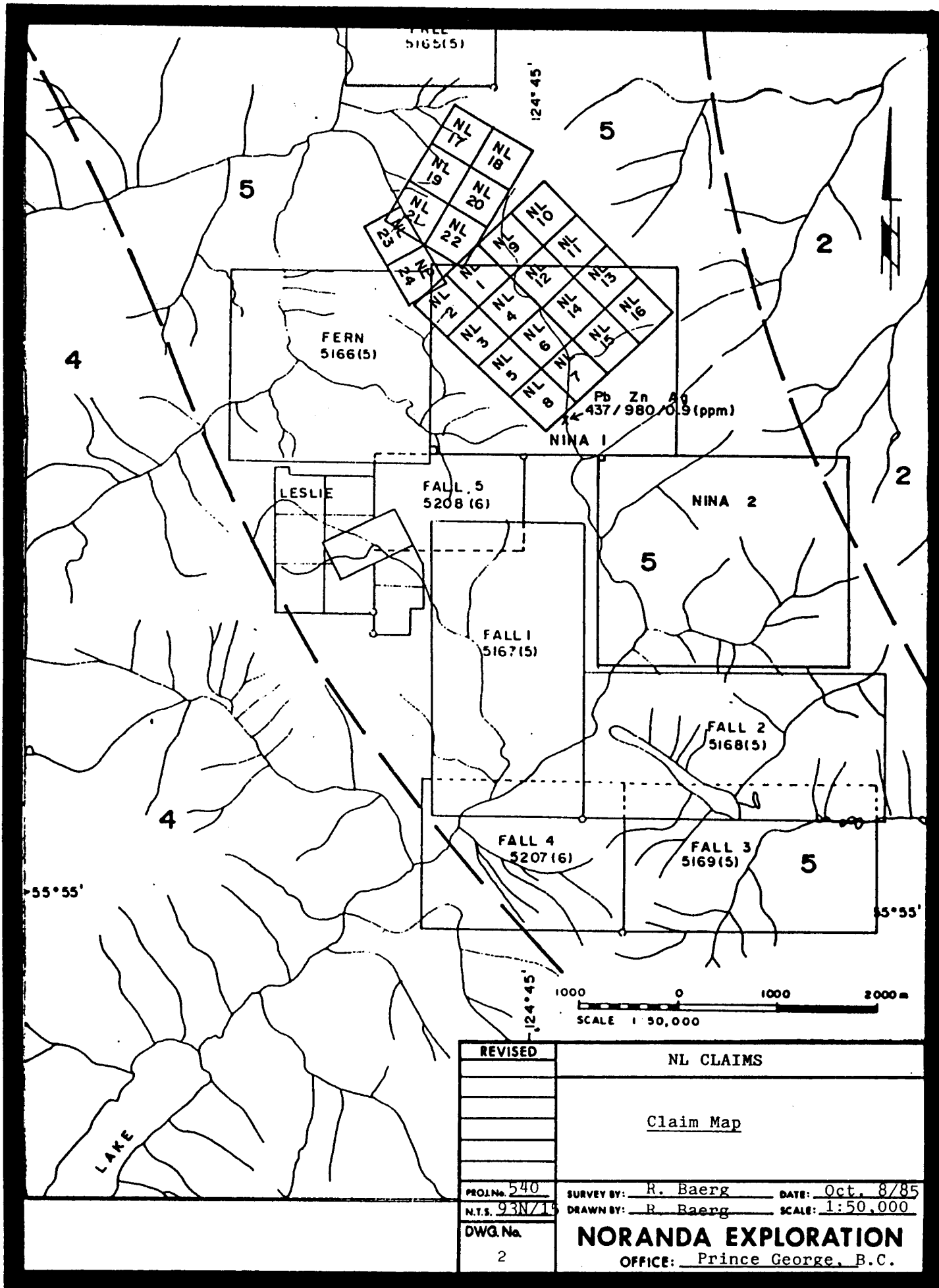


NL Claims

0 100 200 KILOMETRES  
SCALE: 1:8,000,000

REVISED	NL Claims	
	Location Map	
PROJ. No. 540	SURVEY BY: R. Baerg	DATE: Oct. 8/85
N.T.S. 93N/15	DRAWN BY: S.K.B.	SCALE: 1:8,000,000
DWG. No. 1	<b>NORANDA EXPLORATION</b>	
	OFFICE: PRINCE GEORGE, B.C.	

VANCAL 11927



FERN 5165(5)

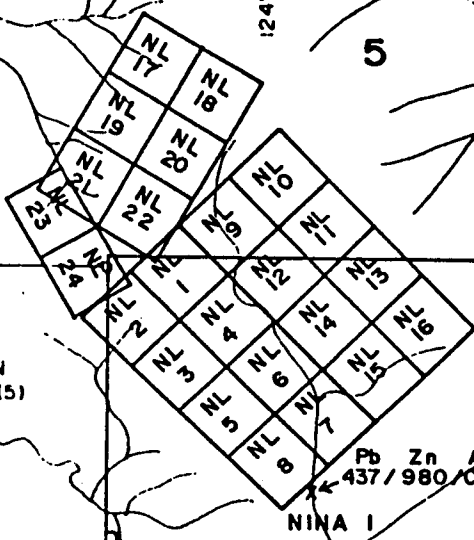
124°45'

FERN 5166(5)

5

2

4



Pb Zn Ag  
437 / 980 / 0.9 (ppm)

NINA 1

LESLIE

FALL 5  
5208 (6)

NINA 2

5

2

FALL 1  
5167(5)

FALL 2  
5168(5)

4

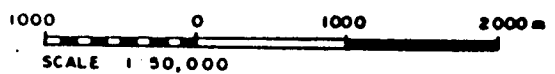
FALL 4  
5207(6)

FALL 3  
5169(5)

5

55°55'

55°55'



124°45'

REVISED	NL CLAIMS	
	Claim Map	
PROJ. No. 540	SURVEY BY: R. Baerg	DATE: Oct. 8/85
N.T.S. 93N/13	DRAWN BY: R. Baerg	SCALE: 1:50,000
DWG. No.	<b>NORANDA EXPLORATION</b>	
2	OFFICE: Prince George, B.C.	

LAKE

### REGIONAL GEOLOGY:

The area is underlain by a 10-15 km wide slice of Permian-Pennsylvanian Cache Creek Group rocks (Figure 3). These consist of andesitic to basaltic volcanics, deep to shallow marine clastics and limestone. The Cache Creek Group rocks are in fault contact with the Wolverine metamorphic complex to the east and are in a fault or conformable contact with Triassic-Jurassic Takla Group rocks to the west. They are also locally intruded by Jurassic granitic rocks, Topley intrusives.

### LOCAL GEOLOGY:

The western 2/3 of the NL claims are underlain by a thick sequence of white-light grey bedded limestone, limestone breccia and local dolomite. Bedding attitudes trend in many directions but overall the general trend is north with moderate to steep westerly dips. The eastern ridge is underlain by dark green-grey interbedded quartzite, phyllite and black limestone.

### GEOCHEMICAL SURVEY:

For control purposes, a grid was surveyed by hip chain and compass and stations marked with fluorescent surveyors ribbon. The baseline was designated 10,000 E and run at an azimuth of 350 degrees. Lines were spaced at 100 meters and samples collected at 25 meter intervals. Gaps in sample coverage are due to bedrock exposures.

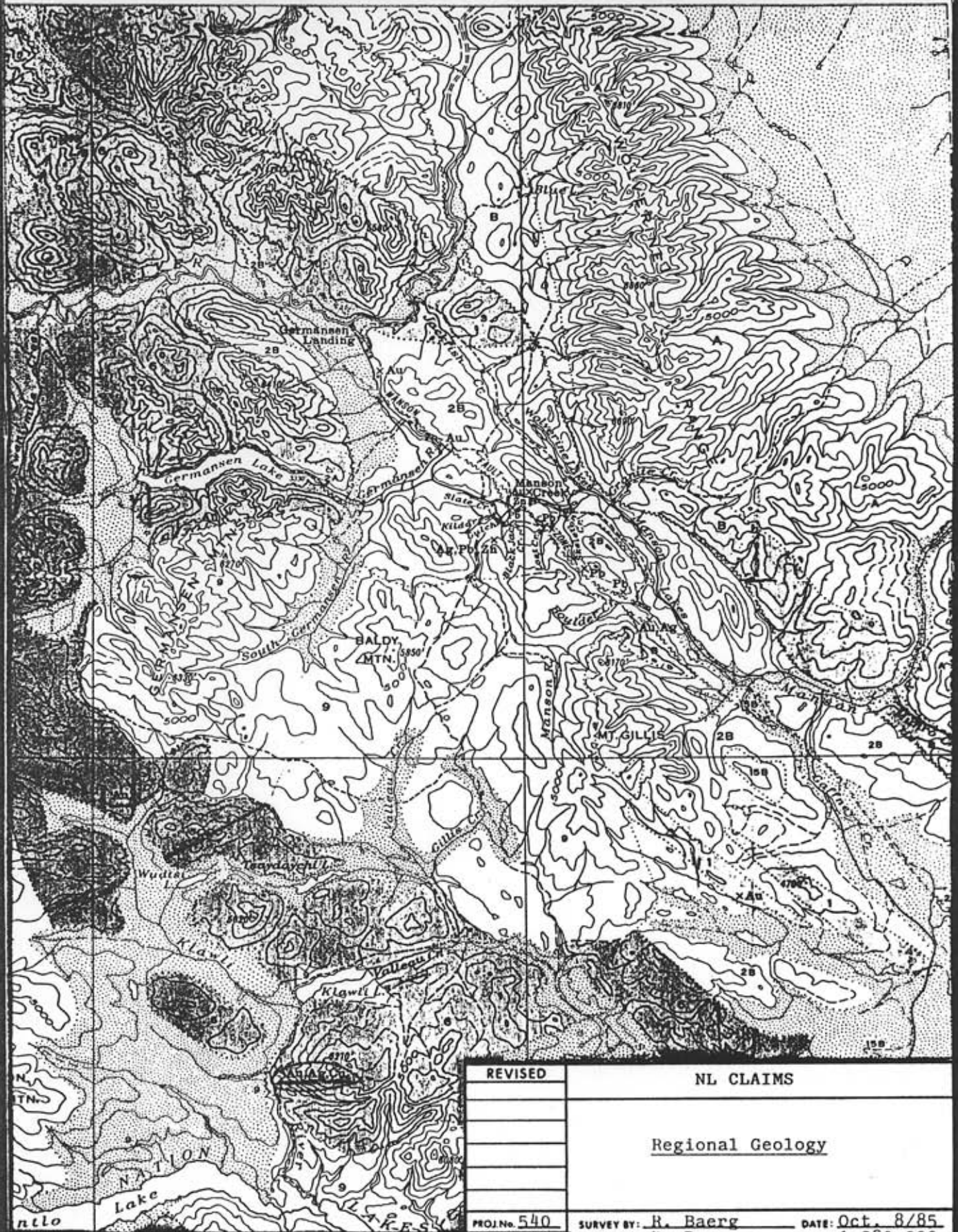
A total of 121 soil samples were collected from the B-horizon, by digging a 20 - 40 cm deep hole with a grub hoe. The sample was placed in kraft wet strength paper envelopes, dried and shipped to the Noranda Exploration Laboratory at 1050 Davie St., Vancouver, B.C., for analysis. The analytical procedure is described in Appendix III.

### PRESENTATION OF RESULTS:

The analytical results of the survey are presented on Figures 5, 6 and 7.

### DISCUSSION OF RESULTS:

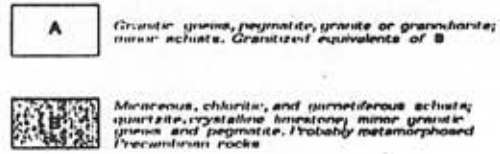
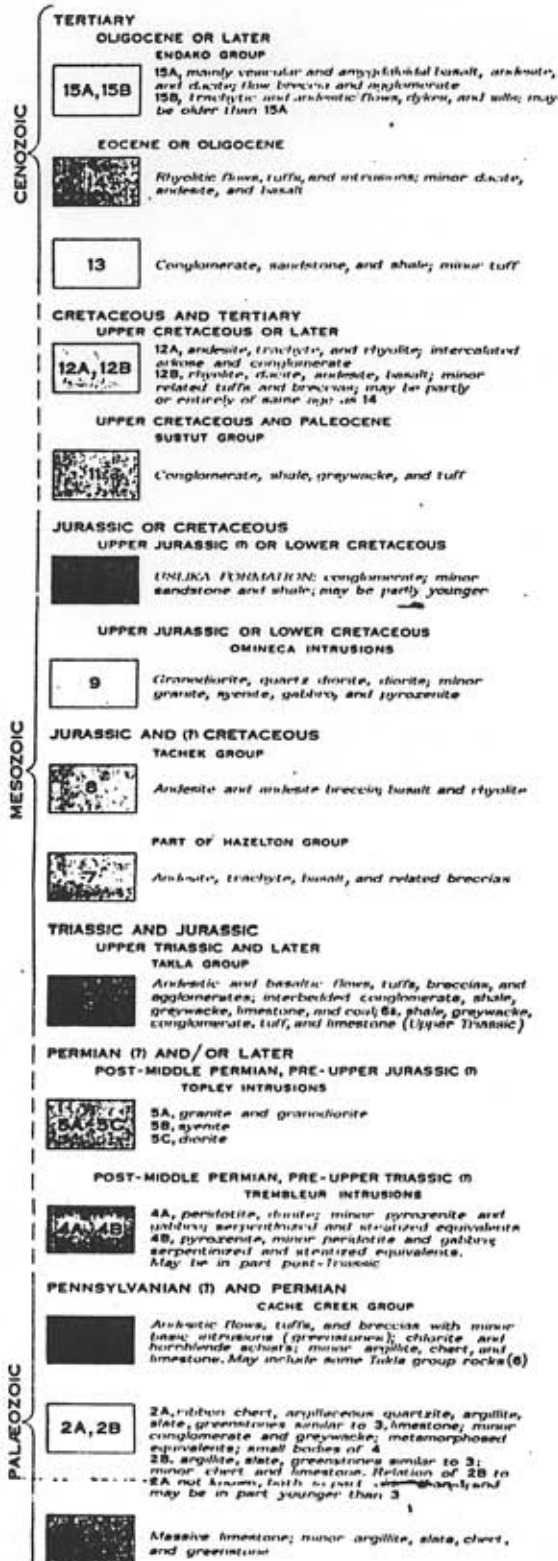
The soil sampling survey has partially outlined a strong coincident Pb and Zn soil anomaly approximately 200 meters wide and at least 300 meters long and open to both grid north and south. Values of up to 1100 ppm Pb and 1300 ppm Zn have been obtained, but over narrower widths. The zone roughly trends at



REVISED	NL CLAIMS	
	Regional Geology	
PROJ. No. 540	SURVEY BY: R. Baerg	DATE: Oct. 8/85
N.T.S. 93N/1	DRAWN BY: R. Baerg	SCALE: 1:380,000
DWG. No. 3	<b>NORANDA EXPLORATION</b>	
	OFFICE: Prince George, B.C.	



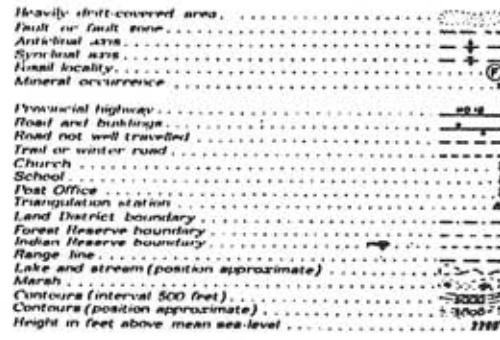
LEGEND



**PRODUCTIVE PLACER GOLD CREEKS**  
Quartz Creek, Vidal Creek, Silver Creek, Harrison Creek, Kinky Creek, Ten Creek, Dwyer Creek, Kwakwa Creek, Twenty-mile Creek, Gossamer's River, Slate Creek, Kikuyu Gulch, Mission River, Skelton Creek, Lost Creek, Black Jack Creek, Boulder Creek, Snowflake Creek, Day Creek.

**MINERAL OCCURRENCES**

Chromium	Cr	Antimony	Sb
Cobalt	Co	Pyrophyllite	P
Copper	Cu	Nickel	Ni
Gold	As	Zinc	Zn
Lead	Pb	Tungsten	W
Aluminum	Al	Vanadium	V
Manganese	Mn	Zirconium	Zr
Mercury	Hg		



Geology by J.L. Armstrong, 1936, 1947, and 1948 to 1944; J.G. Gray, 1946 and 1947; A.H. Lang, 1940 and 1941; H.W. Little, 1942, and J.B. Thurber, 1944. Geological compilation by J.L. Armstrong, 1946.

Base map compiled from surveys and topography by the Topographical Survey, and from information supplied by Federal Government Departments and the British Columbia Department of Lands and Forests. Cartography by the Drafting and Reproducing Division, 1947.

340 degrees and follows the east side of the main creek cutting the NL Claims.

The Ra results are generally inconclusive, however, there are localized 1 1/2 to 2 - fold increases in background values associated with the Pb-Zn anomaly. There are no significant As or Ag responses.

#### CONCLUSIONS:

The grid soil sampling program has located the most probable source area of the Pb and Zn anomalies in silts collected earlier on the NL Claims. However, the small grid has not fully outlined this area and the source of the high As and Ag values found in silts south of the grid has not been located.

#### RECOMMENDATIONS:

The grid should be extended and soil sampled for at least another 500 meters in both north and south grid directions. Chip samples of the crystalline limestones outcropping in the grid area up slope of the Pb-Zn anomaly should be collected and analyzed to determine background values. A possible source is elevated background levels of Pb-Zn in these rocks, as no mineralization has been observed in the area, even in the bedrock exposures very close to the anomaly. The strongest part of the anomaly should be hand trenched.

#### REFERENCES:

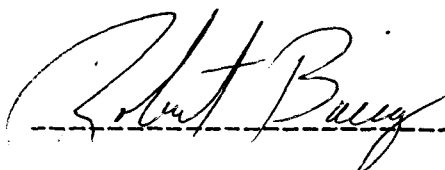
Armstrong, J.E. Geology of Fort St. James, G.S.C. Map 907A, 1948.

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, Robert J. Baerg of the City of Prince George, Province of British Columbia, do certify that:

1. I have been employed as a geologist by Noranda Exploration Company, Limited since May, 1984.
2. I am a graduate of the University of British Columbia with a Bachelor of Science (Honors) in Geology (1984).
3. I supervised and assisted with the work described in this report.



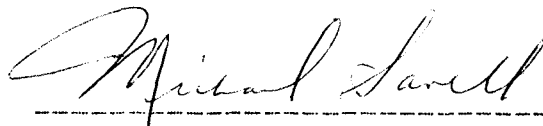
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Robert J. Baerg  
Geologist  
Noranda Exploration Company, Limited  
(No Personal Liability)

STATEMENT OF QUALIFICATIONS

I, Michael J. Savell of the City of Prince George, Province of British Columbia, do certify that:

1. I am a geologist residing at 6982 Gladstone Drive, Prince George, British Columbia.
2. I am a graduate of Dalhousie University with a Bachelor of Science (Honors) in Geology.
3. I am a member in good standing of the Geological Association of Canada, Canadian Institute of Mining, Prospector's and Developer's Association and the B.C.-Yukon Chamber of Mines.
4. I presently hold the position of Project Geologist with Noranda Exploration Company, Limited and have been in their employ since 1980.



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Michael J. Savell  
Geologist  
Noranda Exploration Company, Limited  
(No Personal Liability)

APPENDIX II

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COSTS

DATE: July 17, 1986

PROJECT: NL CLAIM

REPORT TYPE: GEOCHEMICAL

a) **WAGES:**

No. of Days - 6  
Rate per day - \$101.37  
Dates from - July 26/85 - July 26/86 \$ 608.22

b) **FOOD & ACCOMMODATION & TRANSPORTATION:**

No. of Days - 6  
Rate per day - \$25.00  
Dates from - July 26/85 - July 26/86 \$ 150.00

c) **Transportation:**

No. of Days - 6  
Rate per day - \$50.00  
Dates from - July 26/85 - July 26/86 \$ 300.00

d) **Analysis:**

121 silt/soil samples for Pb, Zn, Ag, As, Ba  
at \$ 7.80/sample \$ 943.80

e) **COST OF PREPARATION OF REPORT:**

Author	\$ 200.00	
Drafting	\$ 150.00	
Typing	\$ 150.00	
	-----	\$ 500.00

**TOTAL COST:** \$ 2502.02

### APPENDIX III

#### ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

#### Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples \* from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

#### Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

#### Elements Requiring Specific Decomposition Method:

**Antimony - Sb:** 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

**Arsenic - As:** 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

**Barium - Ba:** 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

**Bismuth - Bi:** 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

**Gold - Au:** 10.0 g sample is digested with aqua regia (1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

**Magnesium - Mg:** 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the

range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

**Tungsten - W:** 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

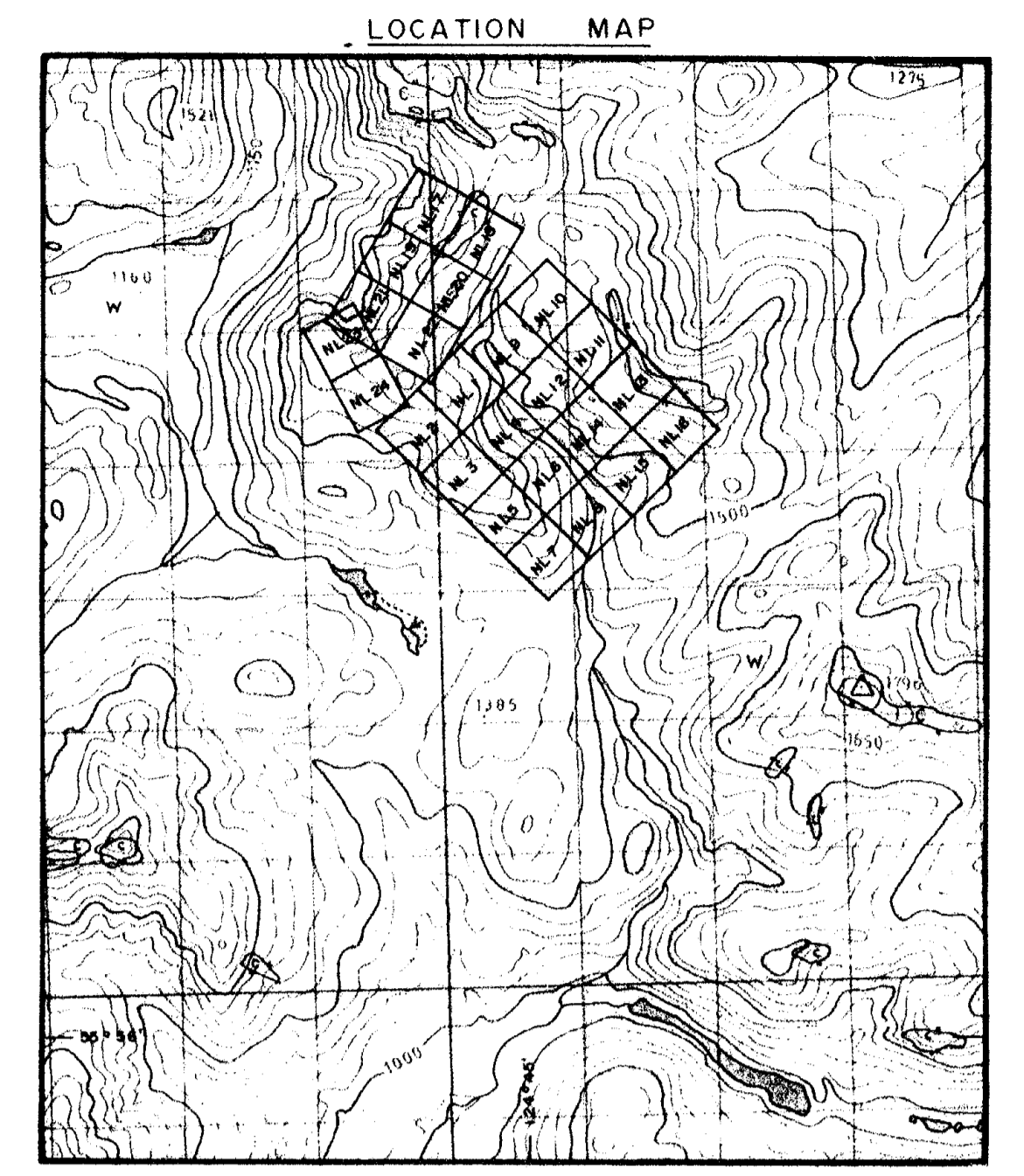
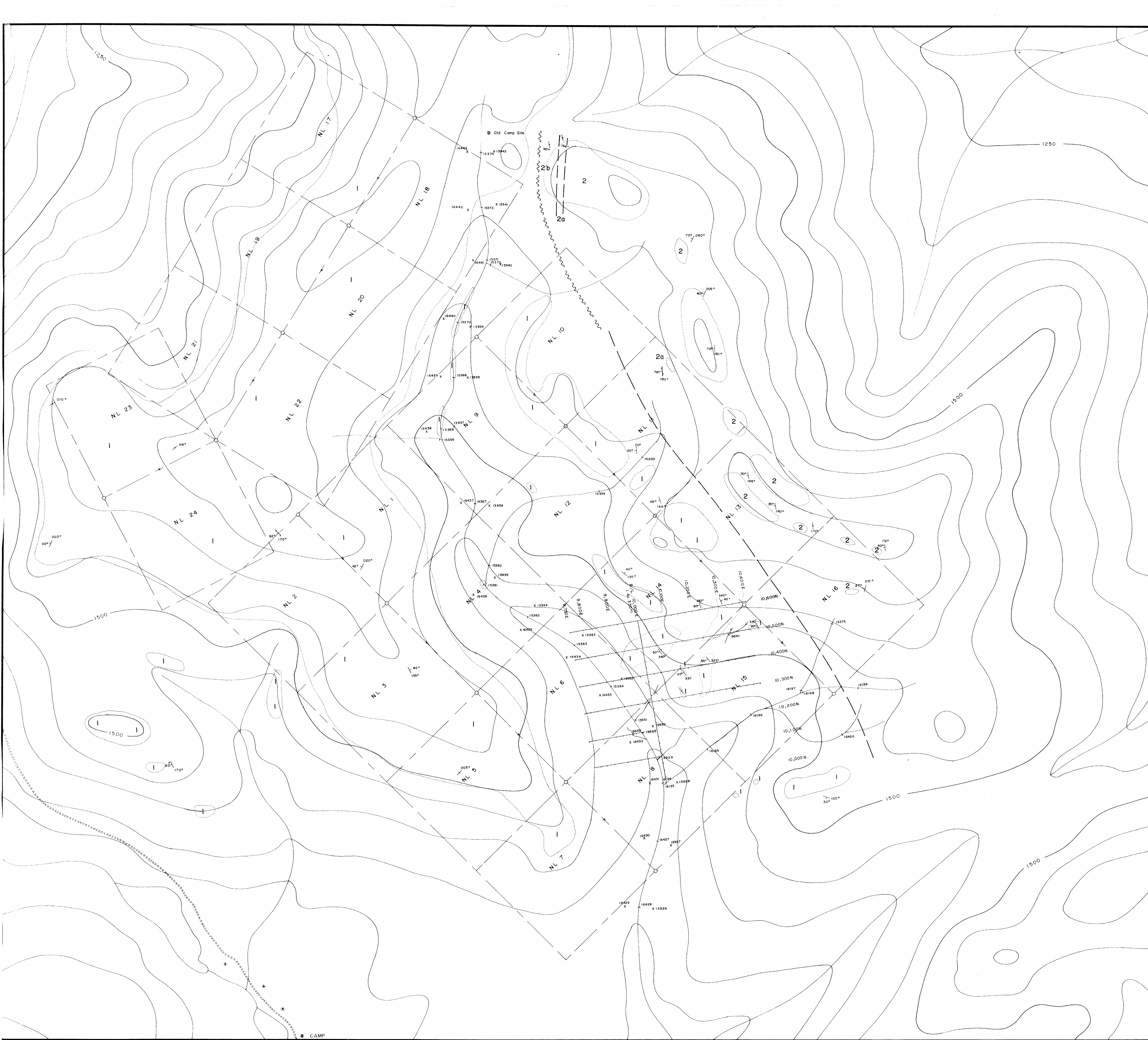
**Uranium - U:** An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

\* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

#### LOWEST VALUES REPORTED IN PPM

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

EJvL/1e  
March 14, 1984



**LEGEND**

- ROCK TYPES**
- 1 LIMESTONE - White gray bedded; local breccia; locally dolomitic
  - 2 QUARTZITE - gray-green, with interbedded siltstone; local limy horizons
  - 2a PHYLLITE - pale green-brown, locally limy
  - 2b LIMESTONE - black-gray, thinly bedded and/or massive
- SYMBOLS**
- Outcrop
  - Inferred contact
  - - - - - Inferred fault
  - ~ ~ ~ ~ ~ Silt - sample location
  - X Soil sample location
  - Bedding (strike/dip)
  - Foliation (strike/dip)

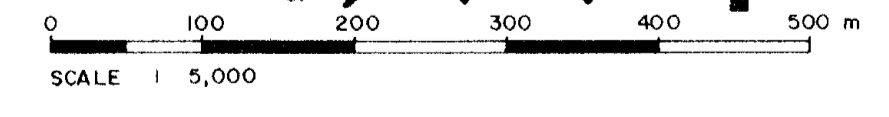
**TABLE OF GEOCHEM ANALYSES**

Values in ppm, except where noted.

SAMPLE No.	Zn	Pb	Cd	As	Hg
SOIL 13926	120	62	3.2	100	560
" 27	500	74	1.2	40	600
" 28	300	65	0.2	24	750
SILT 13929	670	400	0.4	18	730
SOIL 13930	420	650	0.8	18	200
SILT 13931	500	420	0.2	20	800
SOIL 13932	650	320	0.6	10	740
" 33	24	52	0.2	3	540
" 34	310	54	0.4	12	940
" 35	330	48	0.4	10	800
" 36	370	36	0.2	16	800
" 37	260	36	0.6	6	600
" 38	310	38	0.4	20	740
" 39	350	42	0.4	16	840
" 40	310	24	0.2	16	640
" 41	330	36	0.2	16	680
SOIL 13943	300	24	0.2	16	440
" 13944	380	38	0.2	16	540
" 67	200	22	0.2	14	440
" 68	190	22	0.2	14	240
SILT 15553	250	14	0.2	10	280
" 70	210	56	0.2	10	190
SOIL 15571	150	14	0.2	10	200
" 72	620	64	0.2	20	660
" 73	250	25	0.2	18	200
" 74	410	30	0.2	10	550
" 15375	110	28	0.2	18	340
SILT 16426	140	22	0.2	6	600
" 27	240	64	0.2	16	480
SOIL 16428	340	140	0.2	6	540
" 30	350	50	0.2	16	1000
" 31	190	48	0.2	6	620
" 32	540	60	0.4	10	760
" 33	380	64	0.2	14	620
" 34	370	50	0.2	10	700
" 35	400	48	0.2	16	760
" 36	280	46	0.2	16	760
" 37	410	54	0.2	16	760
" 38	340	56	0.2	14	680
" 39	410	24	0.2	12	720
" 40	170	18	0.2	6	280
" 41	440	24	0.2	16	640
" 42	350	42	0.2	16	520
" 16433	200	30	0.4	20	300
SILT 16193	230	64	0.2	14	780
" 74	200	50	0.2	14	780
" 16195	210	64	0.2	16	780
" 16196	270	80	0.2	18	800
" 97	280	90	0.2	16	960
" 78	230	32	0.2	16	460
" 16199	160	40	0.2	20	740
SOIL 16200	260	24	0.2	20	480
" 15359	280	64	0.2	30	700
" 60	280	48	0.2	20	480
SILT 15361	340	46	0.2	28	480
SOIL 15362	210	22	0.2	20	360
" 63	210	22	0.2	18	340
SILT 15364	310	36	0.2	10	360
" 15365	660	380	0.4	24	460
" 1601	180	40	0.4	8	480
" 1602	18	18	0.2	8	400

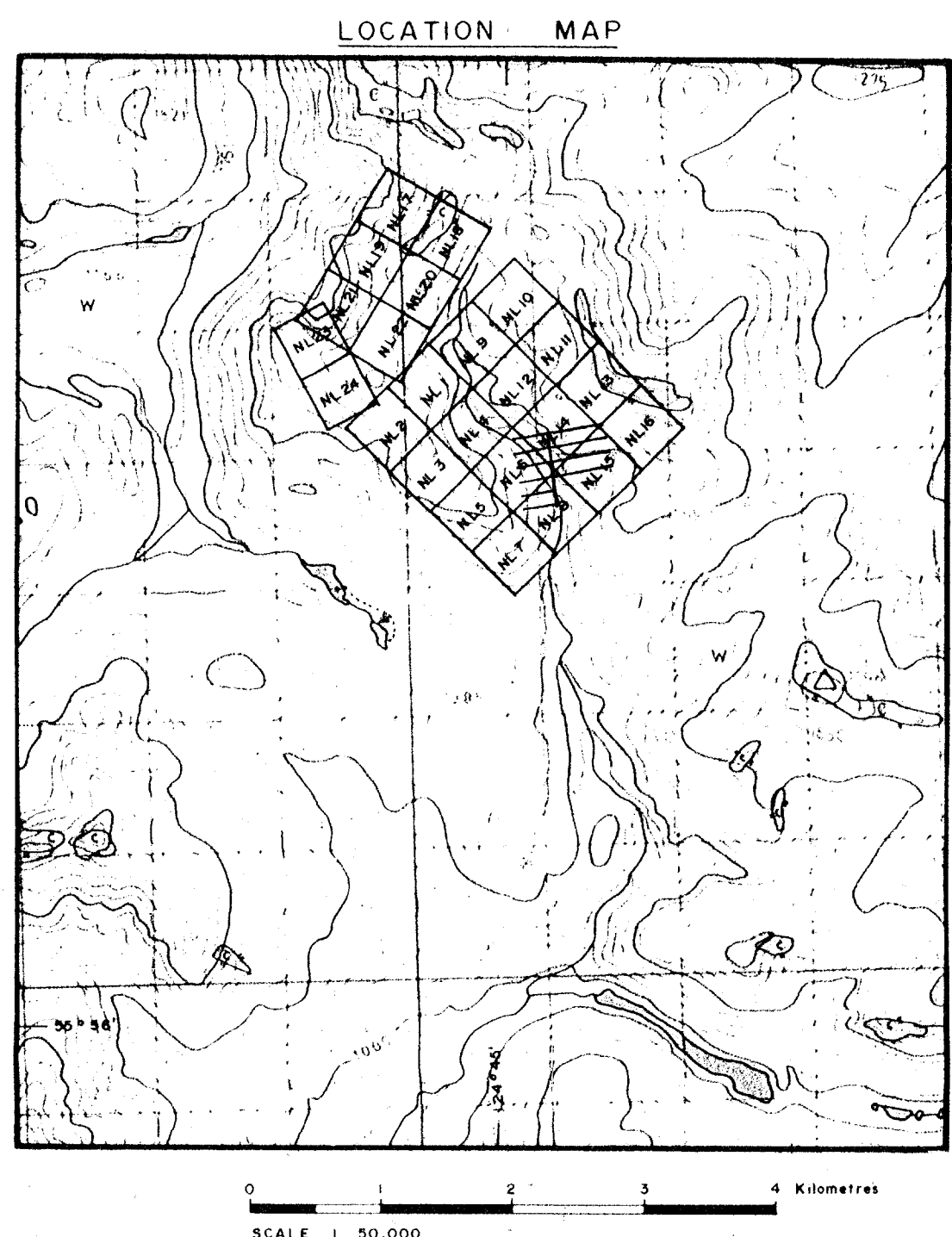
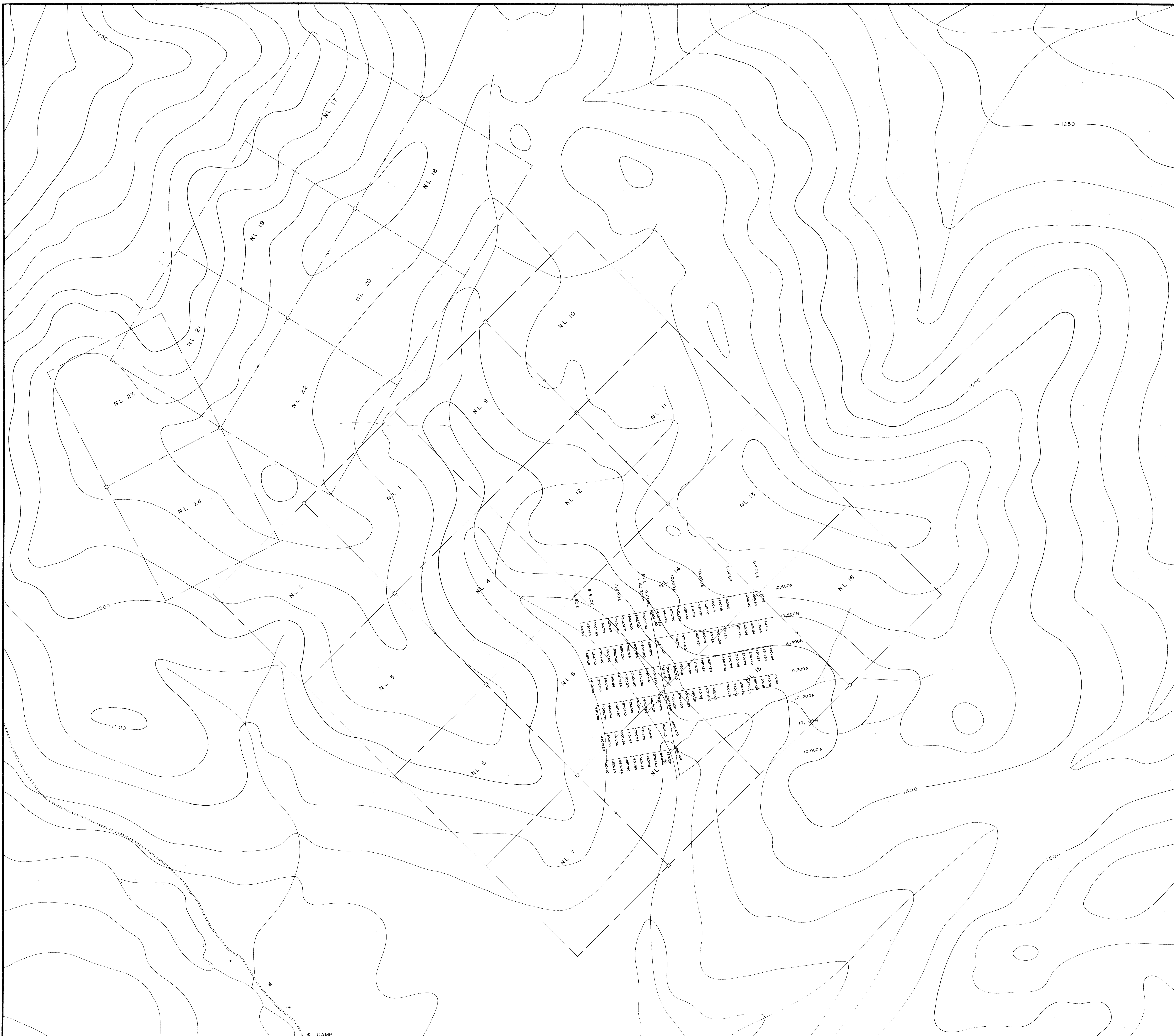
**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**14,994**



REVISED	NL CLAIMS	
JAN, 1986, R.B.	GEOLOGY	
	SOIL AND SILT GEOCHEM MAP	
PROJ. No. 2-65	SURVEY BY: R. BAERG	DATE: JUNE, 1985
N.T.S. 9.5N/15	DRAWN BY: S.K.B.	SCALE: 1:5000
DWG. No.	<b>NORANDA EXPLORATION</b>	
FIG. 4	OFFICE: PRINCE GEORGE, B.C.	



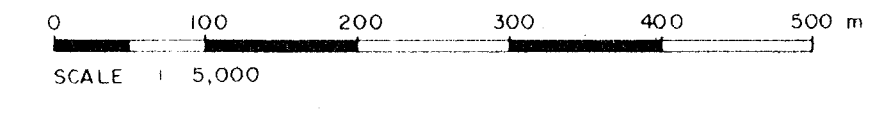


**LEGEND**

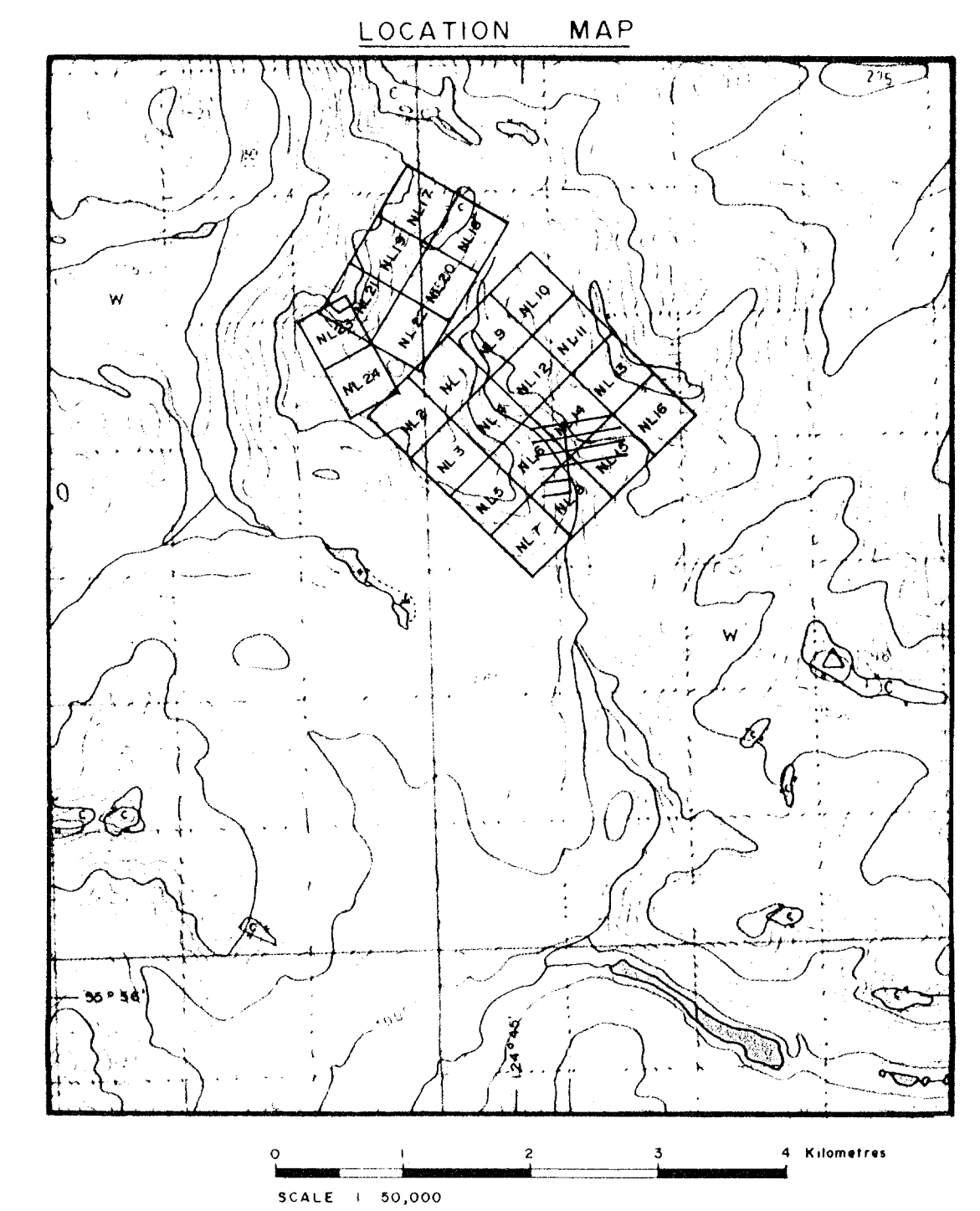
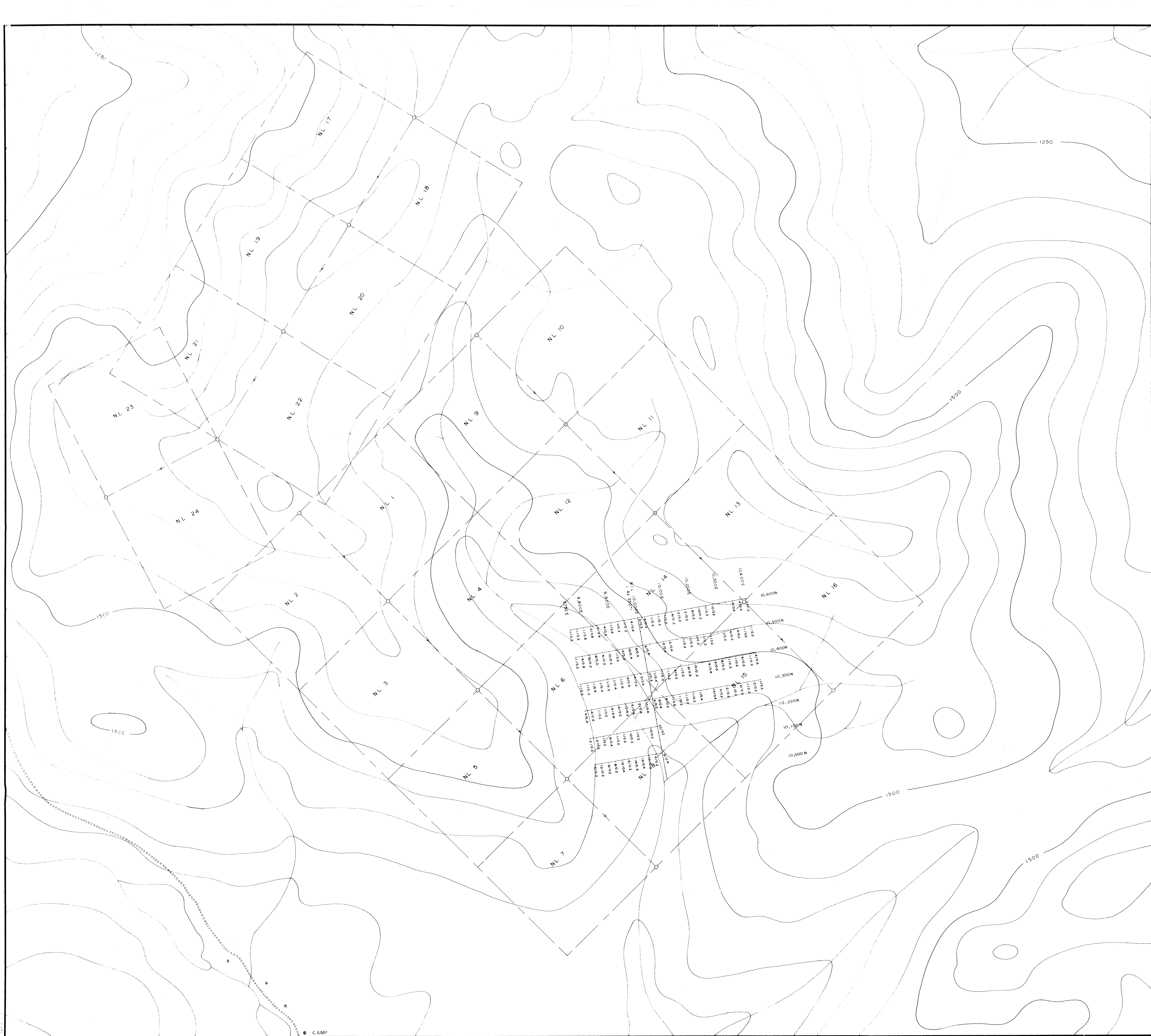
140/30 Soil Geochem Survey Zn/Pb (ppm)

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**14,994**



REVISED	NL CLAIMS	
	GEOCHEM SURVEY	
	Zn / Pb (ppm)	
PROJ. No. 5-98	SURVEY BY: A.D., A.R.	DATE: SEPT., 1995
N.T.S. 9.5 N/15	DRAWN BY: S.K.B.	SCALE: 1:5,000
DWG. No.	<b>NORANDA EXPLORATION</b>	
FIG. 5	OFFICE: PRINCE GEORGE, B.C.	



**LEGEND**

2/0.2 Soil Geochem Survey As/Ag (ppm)

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**14,994**

SCALE 1:5,000

REVISED	NL CLAIMS	
	GEOCHEM SURVEY	
	As /Ag (ppm)	
PROJ. No. 5-68	SURVEY BY: A.D., A.R.	DATE: SEPT., 1980
N.T.S. 93N/15	DRAWN BY: S.K.B.	SCALE: 1:5,000
DWG. No.	<b>NORANDA EXPLORATION</b>	
FIG. 6	OFFICE: PRINCE GEORGE, B.C.	



