'79-#48-# 7160

REPORT ON THE
STREAM SEDIMENT AND SOIL SAMPLING
FOLLOW-UP SURVEY, ANOMALY 4B
KETTLE RIVER, BRITISH COLUMBIA
FOR KELVIN ENERGY LIMITED
CALGARY, ALBERTA

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REPORT ON THE STREAM SEDIMENT AND SOIL SAMPLING FOLLOW-UP SURVEY, ANOMALY 4B KETTLE RIVER, BRITISH COLUMBIA FOR KELVIN ENERGY LIMITED CALGARY, ALBERTA

CLAIMS: WIN 14, WIN 15 and WIN 16

LOCATION: Located on map NTS 82E/15E between longitudes 118° 38', 118° 40' and latitudes 49° 59' in the Vernon Mining District

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DECEMBER, 1978

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SUMMARY

A follow-up soil sample survey and a limited rock sample survey was completed in August, 1978 by a Barringer Magenta Limited field crew on the Win 14, Win 15 and Win 16 claims staked by Kelvin Energy Limited. These claims are located in the Vernon Mining Division along the Kettle River and can be reached by a four-wheel drive vehicle.

The follow-up soil survey was undertaken at Anomaly 4B, a uranium anomaly that was discovered during an earlier reconnaissance stream sediment survey. A total of 169 soil and rock chip samples were collected and analysed for uranium (fluorimetric), copper, lead, zinc, silver and nickel (atomic absorption).

Interpretation of the data was based on raw data maps of individual elements using threshold and anomalous levels which were determined empirically from frequency histograms of individual elements. Uranium target areas were outlined on the uranium raw data map and classified according to amplitude, size, continuity, geological setting and environmental factors.

Soil sampling identified two modest, lenticular uranium anomalies with a moderate to slight base metal association. It is recommended that uranium anomaly 1B be examined by a limited follow-up program which should include pitting and trenching to identify a concealed "plateau" type basalt or if the overburden is composed of material that could form an impervious capping. If these examinations prove positive then a detailed soil grid should be cut over the anomaly and soil samples collected every 20 metres. Anomaly 2B is not considered as important as 1B and further work is only recommended if the results from the above soil survey and pitting prove positive.

Anomalies 1B and 2B are not considered as important as other anomalies identified elsewhere in the original reconnaissance area.

1. INTRODUCTION

1.1 GENERAL STATEMENT

During August, 1978, a soil and rock chip sample survey was completed by Barringer Magenta Limited on the Win 14, Win 15 and Win 16 claims, staked by Kelvin Energy Limited during 1978. The claims are located in the Vernon Mining Division along the Kettle River. The claim statistics are given below in Table 1.

TABLE 1

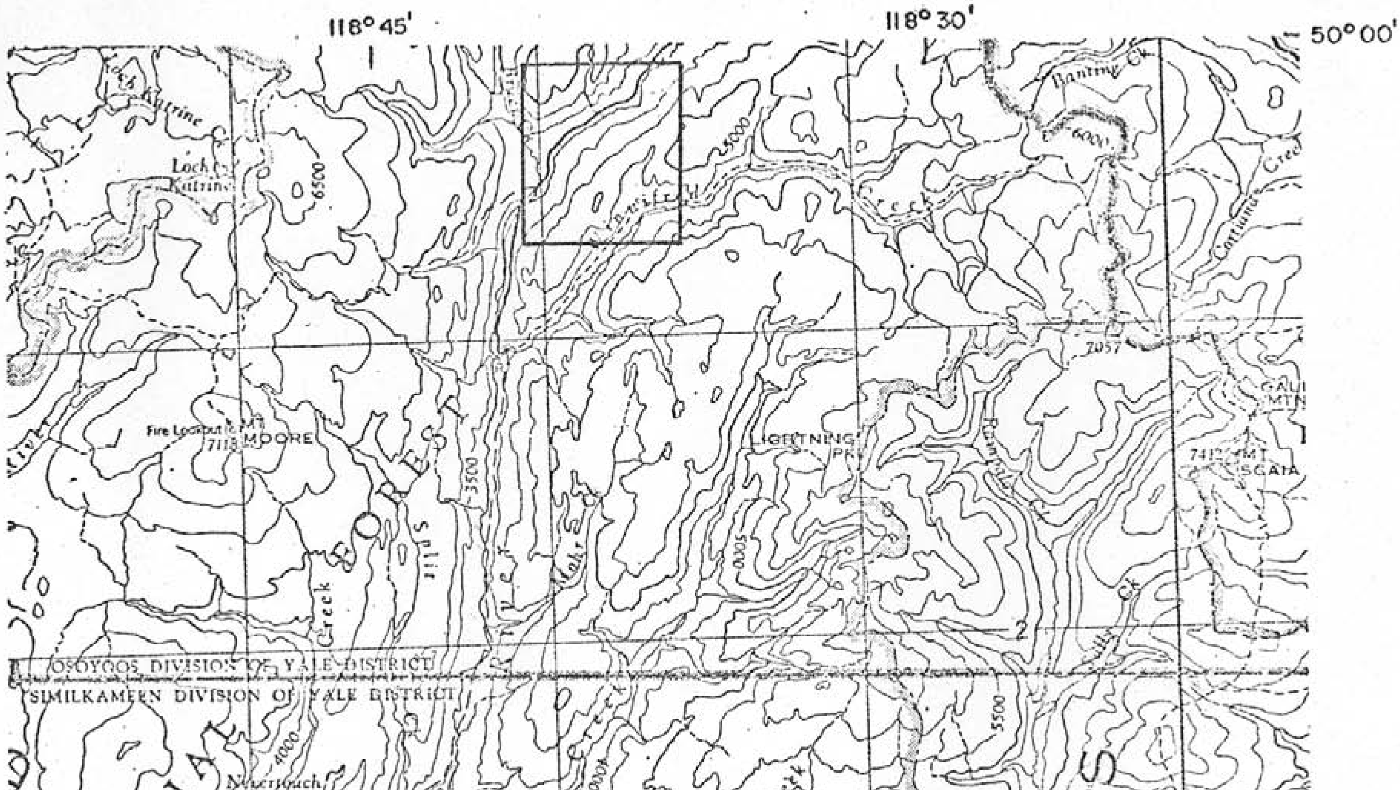
CLAIM STATISTICS

Claim Name	Units	Tag No.	Date of Record	Record Number	Mining Division
Win 14	20	37652	May 24/78	451	Vernon
Win 15	20	37653	May 24/78	452	Vernon
Win 16	20	37654	May 24/78	453	Vernon

A follow-up program was completed at Anomaly 4B, a uranium anomaly, discovered in a small tributary of the Kettle River during an earlier semi-detailed reconnaissance stream sediment program (Lahti, 1978). A total of 169 soil and rock chip samples were collected. The soil sampling identified two modest, lenticular uranium anomalies with a moderate to slight base metal association.

1.2 LOCATION AND ACCESS

The survey area is located on the east side of the Kettle River about 16 kilometres south of Highway 6 (Fig. 1). The survey area is bounded by longitudes 118° 38', 118° 40' and latitudes 49° 57', 49° 59'. The Christian Valley gravel road passes the survey area and can be reached by a forestry road leading off the Christian Valley road.



SCALE

5mi 0

5km 0

1:250,000

N.T.S. REF. 82 E

Location Map for Anomaly 4B

Fig. 1

2. GEOLOGY

The underlying rocks are Mesozoic Nelson Intrusions consisting predominantly of the non-porphyritic phase of the granodiorite (unit as mapped by Little, 1957). Other lesser amounts of prophyritic granite, diorite, monzonite and quartz monzonite form part of the Nelson intrusive complex. Small quartz-feldspar pegmatites are ubiquitous in this area.

Nine rock chip samples were collected within the survey area, 5 form granodiorite, 2 form pegmatites and 1 forms a dyke of intermediate composition. The analyses indicate a large variation in bedrock uranium content with pegmatites containing up to 26 ppm; in the dyke, 14.2 and the granodiorite generally from 0.2 to 2.4 ppm uranium.

Samples NLFR-128, 129 and 130 have high zinc association with high uranium. No visible mineralization was observed in sample NLFR-128 (2000 ppm zinc).

These data demonstrate the variable nature of the uranium and zinc concentration of different phases of the Nelson Intrusions.

TABLE 2

ROCK CHIP DATA FOR ANOMALY 4B

Sample Number (NLFR)	Location	U	Cu	Pb	Zn	Ag	Ni	Rock Description
101	NLFS 1014 Line 1	.2	3	16	28	.2	37	Biotite-hornblende granite (granodiorite) (gneiss)
102	NLFS 1016 Line 1	.2	3	20	74	.8	31	Granite with biotite (gneiss)
103	NLFS 1121 Line 1	.2	9	22	78	1.2	13	Granite with biotite (gneiss)
113	NLFS 1114 Line 3	.6	5	8	76	.6	4	Biotite-hornblende granite (granodiorite)
114	NLFS 1101 Line 3	26.0	4	15	15	.6	2	Pegmatite
115	NLFS 1139 Line 3	2.4	3	9	73	.6	4	Biotite granite (granodiorite)
128	NLFS 1493 Line 4	7.4	14	19	2000	1.3	18	Hornblende gneiss (granodiorite)
129	NLFS 1516 Line 4	14.2	15	15	360	.5	26	Intermediate to acidic dyke (porphyrite)
130	NLFS 1472 Line 4	14.4	8	34	185	.7	40	Quartz-feldspar (alkite) pegmatite plus potassic rich granite

3. TOPOGRAPHY, CLIMATE, DRAINAGE, VEGETATION, SOIL

3.1 TOPOGRAPHY

The topography is dominated by the northwest facing side of the Kettle River valley. The valley floor is at an elevation of 1097.28 metres above sea level while the top exceeds 1432.56 metres. A small tributary of the Kettle River has eroded into the valley side to a depth of 5 to 10 metres.

3.2 CLIMATE

The climate is, for the most part, wet and cool although not as severe as the coastal areas of British Columbia. Hail, snow and frost can occur during any month of the year. Snow can remain on the ground until June on the higher slopes. Occasionally for short periods in July and August, temperatures can exceed 30^{o}C.

3.3 DRAINAGE

The drainage consists of the Kettle River which forms the northern boundary of the survey area and three small streams which flow through the survey area. The stream with anomalous uranium values, a small tributary of the Kettle River, bifurcates into two smaller streams which originate near the centre of the soil grid. One other stream flows across the northeastern edge of the soil grid and exits into the Rendell Creek while a very small tributary of the later stream cuts across the eastern end of Line 3. All of the above streams have greatly reduced flow during July and August. Streams have moderate to fast flow but enough silt remains to provide an adequate sampling medium.

3.4 VEGETATION

The area has an excellent stand of original forest, consisting of fir, cedar, hemlock and larch that is presently being exploited by the clear-cutting technique. In areas cleared of trees for at least one year, the ground is covered by shrubs, raspberry bushes, grass and weeds. Recent reforestation of pure stands of fir has begun in parts of the cleared land.

3.5 SOIL

The soils are characterized by well developed A, B and C horizons. The A horizon varies in thickness, depending on the topography - e.g.; in stream valleys or swampy depressions, organic matter accumulates in larger amounts. The A_2 leached horizon can be well developed and from 5-15 cm. thick. The B horizon is well defined with a colour variation from bright yellow-brown to dark reddish brown. The soils over bedrock or talus slopes can have one or more of the above horizons absent.

The clear cutting has resulted in considerable land erosion with much of the soil being washed into the streams. Severe erosion can cause excess soil in the streams which can affect the original physico-chemical characteristics of the stream, possibly with adverse affects on the geochemical results.

4. GEOCHEMISTRY

4.1 GENERAL STATEMENT

A weak first order stream sediment anomaly was discovered in a small tributary of the Kettle River during an earlier survey (Lahti, 1978). This anomaly was followed-up by a soil survey consisting of 4 lines which total approximately 7-1/2 line kilometres.

A total of 160 and 9 soil and rock chip samples, respectively, were collected. The samples were analysed for uranium, copper, lead, zinc, silver and nickel. Details on Field Methods and Laboratory Techniques are found in Appendix III. (Note: there are no results for the 8 stream sediment samples due to the samples being lost during transit to the laboratory.) Gamma radiation was monitored during the collection of soil and stream sediment samples by the use of two Exploranium Model GR-101A scintillometers.

4.2 RESULTS

The soil and rock chip results for uranium, copper, lead, zinc, silver and nickel are listed in Appendix IV and are plotted on three maps: a uranium raw data interpretation map (Dwg. 208-42-702), a copper, lead, zinc raw data map (Dwg. 208-42-703) and a silver, nickel map (Dwg. 208-42-704). The sample location and number is plotted on a separate map (Dwg. 208-42-701). Claim boundaries and names are found on all maps.

The above base maps are at a scale of 1:10,000 and were prepared from enlargements of topographical map NTS 82E/15E at a scale of 1:50,000.

4.3 INTERPRETATION

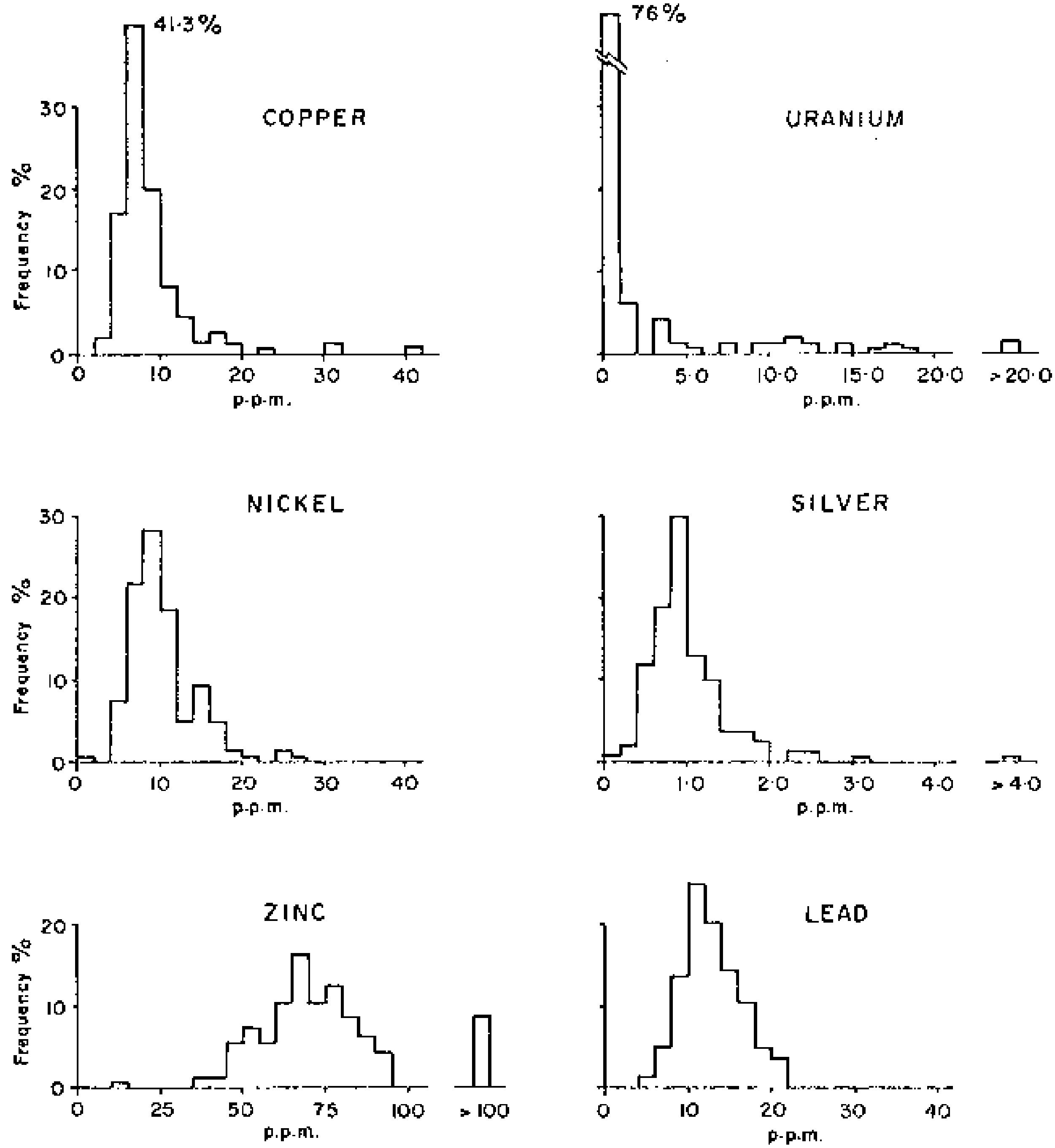
4.3.1 General Statement

To aid in the interpretation, frequency histograms of the soil data for all elements were made (there are too few rock data to warrant histograms). The threshold and anomalous levels were determined empirically with the aid of the histograms and are listed in Table 3 below.

TABLE 3

THRESHOLDS AND ANOMALOUS LEVELS FOR U, Cu, Pb, Zn, Ag and Ni in SOIL SAMPLES

Element	Threshold (ppm)	Third Order Anomalous (ppm)	Second Order Anomalous (ppm)	First Order Anomalous (ppm)
U	3.0	3.1 - 9.0	9.1 - 18.0	> 18
Cu	16	17 - 32	33 - 48	--
Pb	20	21 - 30	---	--
Zn	100	101 -150	151 - 200	>200
Ag	2.0	2.1 - 3.0	3.1 - 4.0	> 4.0
Ni	12	13 - 24	25 - 36	--



FREQUENCY DISTRIBUTION OF COPPER, URANIUM, NICKEL, SILVER, ZINC AND LEAD IN SOILS

ANOMALY 4B

FIG. 2

The interpretation of the uranium soil results is combined with the uranium raw data map (Dwg. 208-42-702). The base metal data were not considered to be of sufficient importance to warrant an interpretation map.

In addition to the empirically derived anomalous levels and raw data maps, geological information and data from the rock chip samples were used in the interpretation.

Uranium anomalies considered important are classified and identified on the raw data interpretation map by a number-letter label. The number indicates the priority for follow-up work and the letter signifies the relative importance of the anomaly with respect to amplitude, continuity, geology and environmental factors.

4.3.2 Uranium

Two class B anomalies, 1B and 2B, are indicated on the uranium raw data map (Dwg. 208-42-702). These anomalies are based on a few widely spaced points so the indicated trend must be considered tentative and subject to revision with the acquisition of any additional information. Both anomalies are downgraded to "B" class due to the low uranium concentration; i.e., second and third order anomalies (3-18 ppm) and the high organic content of the soil associated with some of the anomalous values. The weak erratic correlation of the anomalous uranium with copper, lead, zinc, silver and nickel is not considered important at this time.

The uranium concentration in the bedrock samples collected to date is quite sufficient to explain the observed soil anomalies, especially where seepage zones in organic rich soils could enhance these anomalies. However, this does not completely preclude the possibility of "pegmatite" or "granite" type mineralization. It is also possible that these soil anomalies do not indicate uranium mineralization in situ but are formed by hydromorphically transported uranium from a hidden up-slope source that is not reflected in the overburden. (Lahti, 1978B)

Nevertheless, anomaly 1B has one notable feature; it is located at an elevation of 4200-4300 feet, the same elevation at which important uranium deposits are found in the nearby Beaverdell area. However, plateau type basalt have not been noted in this area to date and without this or similar protective capping, it is unlikely economic mineralization would have been preserved.

Anomaly 2B lies at a lower elevation than 1B, and is thought to be due to accumulation of uranium at a break in slope following hydromorphic movement (Lahti, 1978B) away from high background rocks as pegmatites. These anomalies warrant limited additional work to confirm this interpretation but they are not considered as important as other uranium anomalies such as those located at Mount Arthurs (Lahti, 1978B), anomaly 1A:south (Lahti, 1978C)
and anomaly 3A (Lahti, 1978D).

4.3.3 Copper, Lead, Zinc, Silver and Nickel

No significant base metal geochemical features were identified along the traverse lines. As mentioned in Section 4.3.2, there is a weak erratic correlation of uranium with copper, lead, zinc, silver and nickel. The coincident second and third order base metal anomalies with the uranium is not considered important at this time. Also the slight enrichment of zinc at the top of the mountain on Lines 3 and 4 is not thought to be related to any important base metal mineralization and the association of high uranium and zinc noted in some rock samples is not repeated in the soils.

5. CONCLUSIONS

1. Two class "B" uranium soil anomalies were outlined. These anomalies can be adequately explained by the presence of high background pegmatites (up to 24 ppm uranium in the 9 rock chip samples collected to date) from which uranium is hydromorphically transported and accumulated in organic rich soils or at a break in slope. The weak correlation with the base metals is not considered important at this time.
2. Anomaly 1B warrants special consideration due to its similar elevation with uranium deposits in the nearby Beaverdell area. However, the presence of an impervious capping (such as a plateau basalt) is probably essential for preservation of economic mineralization, even if originally present. No indication of such a capping has been found to date.
3. Anomalies 1B and 2B are not considered as important as other anomalies identified elsewhere in the claim block.

6. RECOMMENDATIONS

1. Anomaly 1B should be evaluated by excavating several exploratory pits to a depth of at least one metre or well into the C horizon to see if the overburden is concealing a plateau type basalt or if portions of the surficial deposits could form an impervious capping that could preserve an old "paleo-channel". If the underlying bedrock is considered to be a possible host for economic uranium mineralization, then a soil grid should be cut and sampled. The grid should extend at least 250 metres to the north and south to close off the outlined anomaly and consist of 500 metre lines cut to have a spacing of 50 metres. The soil samples should be collected every 20 metres from the B horizon ($\pm$ 20 cm.). Rock chip samples should be collected along the line at 100 metre intervals depending on the availability of outcrop.
2. Anomaly 2B is not considered as important as 1B and additional work is only warranted if the results at 1B are positive and if additional funds and time are available.

REFERENCES

1. Lahti, H.R. (1978A): Report on the Semi-Detailed Reconnaissance Stream Sediment Survey, Kettle River Area, British Columbia. Private report for Kelvin Energy Limited, Calgary, Alberta.

2. Lahti, H.R. (1978B): Report on the Follow-up Stream Sediment and Soil Survey, Mount Arthurs Area, British Columbia. Private Report for Kelvin Energy Limited, Calgary, Alberta.

3. Lahti, H.R. (1978C): Report on the Stream Sediment and Soil Follow-up Survey, Anomaly 1A(South), Kettle River Area, British Columbia. Private report for Kelvin Energy Limited, Calgary, Alberta.

4. Lahti, H.R. (1978D): Report on the Stream Sediment and Soil Follow-up Survey, Anomaly 3A, Kettle River Area, British Columbia. Private report for Kelvin Energy Limited, Calgary, Alberta.

5. Little, H.W. (1957): Geology of Kettle River (East Half), Geological Survey of Canada, Map 6-1957.

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, Howard Reino Lahti of Toronto, do certify that:

1. I graduated from the University of New Brunswick, Fredericton, New Brunswick in May, 1978 with a Doctor of Philosophy in Geology (Applied Geochemistry).

2. I graduated from the University of New Brunswick with a B.Sc. in Geology in 1968 and M.Sc. in Geology (Applied Geochemistry) 1971.

3. I have worked with Barringer Magenta Limited of Toronto, Ontario since June 1975 as a geologist/geochemist.

4. I have worked as a geologist, geochemist or attended university since 1964.

5. I am a Member of the Association of Exploration Geochemists.

Howard Lahti

H.R. Lahti, Ph.D.
Geologist-Geochemist
Barringer Magenta Limited

APPENDIX II

ASSESSMENT REPORT

Statement of Costs:

a) Days Worked at Anomaly 4B

Supervisor, H. Lahti, August	3 days
Geochemical Technician, G. White, August	2 days
Senior Sampling Assistant, C. Shearer, August	2 days
Junior Sampling Assistant, R. Balford, August	4 days
Junior Sampling Assistant, K. Wisser, August	3 days
Junior Sampling Assistant, D. Pyke, August	3 days
Camp Guard, D. Moroko, August	1 day
Consultants, I. Thomson, August	2 days
P. Bradshaw, November	1 day

b) Cost of Wages

Supervisor, 3 days @ $220/day =	$ 660.00
Geochemical Technician, 2 days @ $119/day =	$ 238.00
Senior Sampling Assistant, 2 days @ $108/day =	$ 216.00
Junior Sampling Assistants, 10 days @ $96/day =	$ 960.00
Camp Guard, 1 day @ $25 =	$ 25.00
Consultant, 3 days @ $300/day =	$ 900.00
	$ 2,999.00

c) Food and Accommodation

Field Camp: Charges:

$ 7.00 per person per day for food

$13.00 per person per day for rental of tents, etc.

$20.00

18 days x $20 =	$	360.00

d) Instrument Rental

i)	2 Exploranium Model GR-101A =	$	43.56
ii)	GAD-6 Spectrometer =	$	169.21
iii)	Radio Telephone =	$	60.98
		$	273.75

e) Geochemical Analysis

i)	Rock Chip Samples @ $8.90/sample for U, Cu, Pb, Zn, Ag, Mo or Ni		
	9 x $8.90 =	$	80.10
ii)	Stream Sediment Samples @ $7.30/sample for U, Cu, Pb, Zn, Ag, Mo or Ni		
	8 x $7.30 =	$	58.40
iii)	Soil Samples @ $7.30/sample for U, Cu, Pb, Zn, Ag, Mo or Ni		
	160 x $7.30 =	$	1,168.00
		$	1,306.50

f) Transportation

i)	Truck Rental =	$	153.00
ii)	3/4 ton Truck =	$	19.17
iii)	Helicopter Support =	$	159.72
		$	331.89

g) Cost of Report Preparation

i) Drafting and Compilation	
Compilation, P. Lawrence =	$ 166.88
Drafting, R. Marcroft =	$ 166.88
Data Graphics, M. Herz =	$ 300.00
ii) Materials =	$ 20.86
iii) Report Writing, H. Lahti =	$ 1,020.11
	$ 1,674.73

h) Miscellaneous Costs

Telephone, telex, xerox, photos, maps, miscellaneous materials, shipping costs, etc. =	$ 519.91

TOTAL COSTS INCURRED	$ 7,465.78

APPENDIX III

1.1 Stream Sediment Sampling

All follow-up stream sediment samples were collected by hand from several locations (within 20 metres) to make a composite sample.

About 500 grams of material per sample was placed in high wet-strength Kraft sample packets (6 cm. x 9 cm.). To mark the location of the sample site, a water proof pen was used to print the sample number on a one metre length of fluorescent orange flagging tape. Samples were collected every 100 metres with the distance estimated by pacing. Airphotos and topographic maps at a scale of 1:50,000 were used to assist in locating sample sites.

1.2 Soil Sampling

The soil sample was collected using a grub-hoe. The soil sample was collected from the "B" horizon generally from a depth of ± 20 cm. Approximately 250-500 grams were placed in high wet-strength Kraft paper bags (6 cm. x 9 cm.). The sample traverses were placed 500 metres apart approximately perpendicular to the drainage and samples were taken every 40 metres. The traverses were surveyed by pace and compass using airphotos or topography maps at a scale of 1:50,000. The sample site was marked by a metre length of fluorescent orange flagging tape with the distance and/or sample number marked on with waterproof marking pen. The whole length of the traverse was blazed using orange flagging tape.

1.3 Rock Chip Sampling

In conjunction with the soil sampling, rock chip samples were occasionally taken along the soil traverses. The rock chip sample consists of 3 to 5 rock chips collected from an area of approximately 50 to 100 m^2. Approximately 250 grams of material was placed in high wet-strength Kraft paper packets (6 cm. x 9 cm.).

2. LABORATORY TECHNIQUES

Stream sediment analyses were done at the Barringer Magenta Limited laboratory, Rexdale, Ontario. The samples were first oven dried at a temperature of 45°C. The samples were then sieved through a 80 mesh nylon screen. A .500 gram portion of this was placed in a glass test tube and perchloric acid was added. The test tube was then placed in an aluminum heating jacket and heated for 4 hours. After cooling and diluting to the final volume, the solution then was directly aspirated into a Varian Techtron atomic absorption spectrophotometer and the concentrations of copper, lead, zinc, silver and molybdenum were read directly in ppm.

The uranium was determined fluorimetrically by using the following procedure. A .250 gram sample was weighed into a glass test tube and 5 ml. of nitric acid was added. The samples were digested on a sand bath for 2-1/2 hours. After cooling and diluting to the final volume an aliquot of solution was pipetted onto a platinum dish and evaporated to dryness. Flux was added to the dish and fused with the sample. After cooling, the disc was then compared with fresh standards using a Jarrell-Ash Fluorometer.

The limit of detection for copper, lead, zinc, silver, molybdenum and uranium are 1, 1, 1, .2, 1 and .2, respectively.

Rock chip samples were first put through a jaw crusher, pulverizer, and a -200 mesh nylon sieve. A .500 gram portion of the sample was then subjected to the same procedure used to analyse the stream sediment samples.

APPENDIX IV

ANALYTICAL DATA

Geochemical Laboratory Report

Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm				
NLFS-203	12	20	70	1.2	15	17.2				
204	11	20	77	1.0	15	8.0				
205	11	19	76	1.2	16	14.2				
206	6	14	70	0.6	11	1.0				
207	5	13	76	0.6	8	0.2				
208	7	11	67	0.8	10	0.2				
209	3	11	52	0.6	7	0.4				
210	8	16	85	1.0	11	0.4				
211	3	11	50	0.2	6	0.4				
212	7	15	85	0.6	11	1.6				
213	7	15	65	0.8	9	0.8				
214	5	12	60	0.8	8	0.8				
215	8	17	70	1.0	10	0.4				
216	7	12	91	0.8	8	0.2				
217	8	11	72	0.8	8	0.2				
218	10	14	82	1.6	13	0.8				
219	18	22	91	2.4	18	16.8				
220	7	8	77	1	9	0.4				
221	5	10	79	1.2	7	0.4				
222	6	11	75	1	9	0.4				
223	5	7	65	.6	9	0.4				
224	10	11	68	1.0	13	19.0				
225	13	15	73	1.8	15	56.0				
226	7	15	75	.6	11	0.4				
227	10	14	66	.8	13	1.6				
228	17	18	68	1.4	15	22.0				
229	7	11	74	.6	11	0.4				

Geochemical Laboratory Report

Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm				
NLFS-230	5	10	46	.4	7	0.2				
231	6	12	49	.6	6	0.2				
232	7	10	60	1.0	11	0.2				
233	9	10	53	.8	15	0.4				
234	19	15	70	1.4	17	4.0				
235	10	15	67	1.2	9	1.0				
236	7	14	64	.6	12	0.2				
237	10	15	89	.8	7	0.2				
238	10	16	91	1.2	11	0.2				
239	10	14	52	1.0	11	1.0				
240	9	12	63	.8	12	0.4				

Geochemical Laboratory Report /

Sample Number	U ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Ag ppm				
NLFS- 1001	.2	5	13	47	7	.6				
1002	.5	6	14	37	9	.9				
1003	-	-	-	-	-	-				
1004	.2	7	18	76	12	.8				
1005	.2	6	11	47	9	.7				
1006	.4	7	16	65	9	.7				
1007	.3	5	14	51	8	.8				
1008	.5	10	21	92	11	1.0				
1009	.5	6	15	55	8	.7				
1010	.9	8	17	92	10	.9				
1011	.2	7	17	56	8	.7				
1012	.2	6	15	65	9	.8				
1013	.2	6	17	67	11	.7				
1014	.2	11	15	86	16	.9				
1015	10.0	24	22	81	19	1.4				
1016	.8	9	16	53	7	.4				
1017	.3	9	15	66	9	.9				
1018	.8	10	18	78	17	1.0				
1019	.4	9	14	56	10	.8				
1020	.5	11	17	71	16	.9				
1021	.3	12	17	50	16	.7				

Geochemical Laboratory Report

Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm				
NLFS-1101	8	31	135	1.4	6	0.2				
1102	14	22	150	2.0	15	4.0				
1103	9	11	78	1.0	9	1.4				
1104	8	13	81	1.0	10	0.2				
1105	9	12	67	1.0	10	0.6				
1106	9	13	64	1.4	9	0.6				
1107	10	13	130	1.2	9	0.4				
1108	10	13	70	1.0	8	0.6				
1109	11	21	85	1.8	10	11.2				
1110	12	20	76	1.6	11	7.4				
1111	10	14	84	1.2	9	0.6				
1112	6	8	52	1.0	5	0.2				
1113	12	16	150	1.8	10	11.2				
1114	12	17	63	2.0	11	17.4				
1115	10	13	60	1.4	9	3.4				
1116	17	20	90	1.8	15	12.4				
1117	32	19	88	2.4	26	12.6				
1118	40	21	87	3.2	27	14.2				
1119	10	12	80	1.4	10	3.8				
1120	6	6	38	.8	7	0.6				
1121	8	10	55	1.0	12	1.6				
1122	17	19	81	2.6	21	11.0				
1123	8	10	80	1.4	13	0.8				
1124	8	10	80	1.6	11	0.6				
1125	8	10	69	1.4	8	1.8				
1126	8	10	68	1.0	7	0.4				
1127	7	11	92	1.0	9	0.4				

Geochemical Laboratory Report

Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm				
NLFS-1128	5	12	68	.6	5	0.2				
1129	7	13	70	.6	8	0.2				
1130	7	8	62	.6	6	0.4				
1131	7	10	62	1.0	5	0.4				
1132	14	15	130	1.6	16	1.6				
1133	13	12	125	1.4	13	1.6				
1134	3	6	49	.6	6	0.2				
1135	7	10	79	1.0	6	0.2				
1136	7	8	51	.8	8	1.2				
1137	8	9	71	1.2	10	0.4				
1138	7	9	55	.8	8	0.2				
1139	7	8	40	1.2	7	0.6				
1140	9	9	69	1.0	9	0.6				
1141	8	10	50	.8	7	0.8				
1142	7	9	60	.6	6	0.4				
1143	7	8	59	.6	7	0.4				
1144	14	12	130	1.0	11	1.0				
1145	8	11	120	.8	6	0.4				
1146	6	9	145	.8	7	0.4				
1147	5	8	53	.6	6	0.4				
1148	8	12	155	1.0	7	0.6				
1149	10	14	89	1.0	8	0.8				
1150	7	12	84	1.0	7	0.6				

Geochemical Laboratory Report /

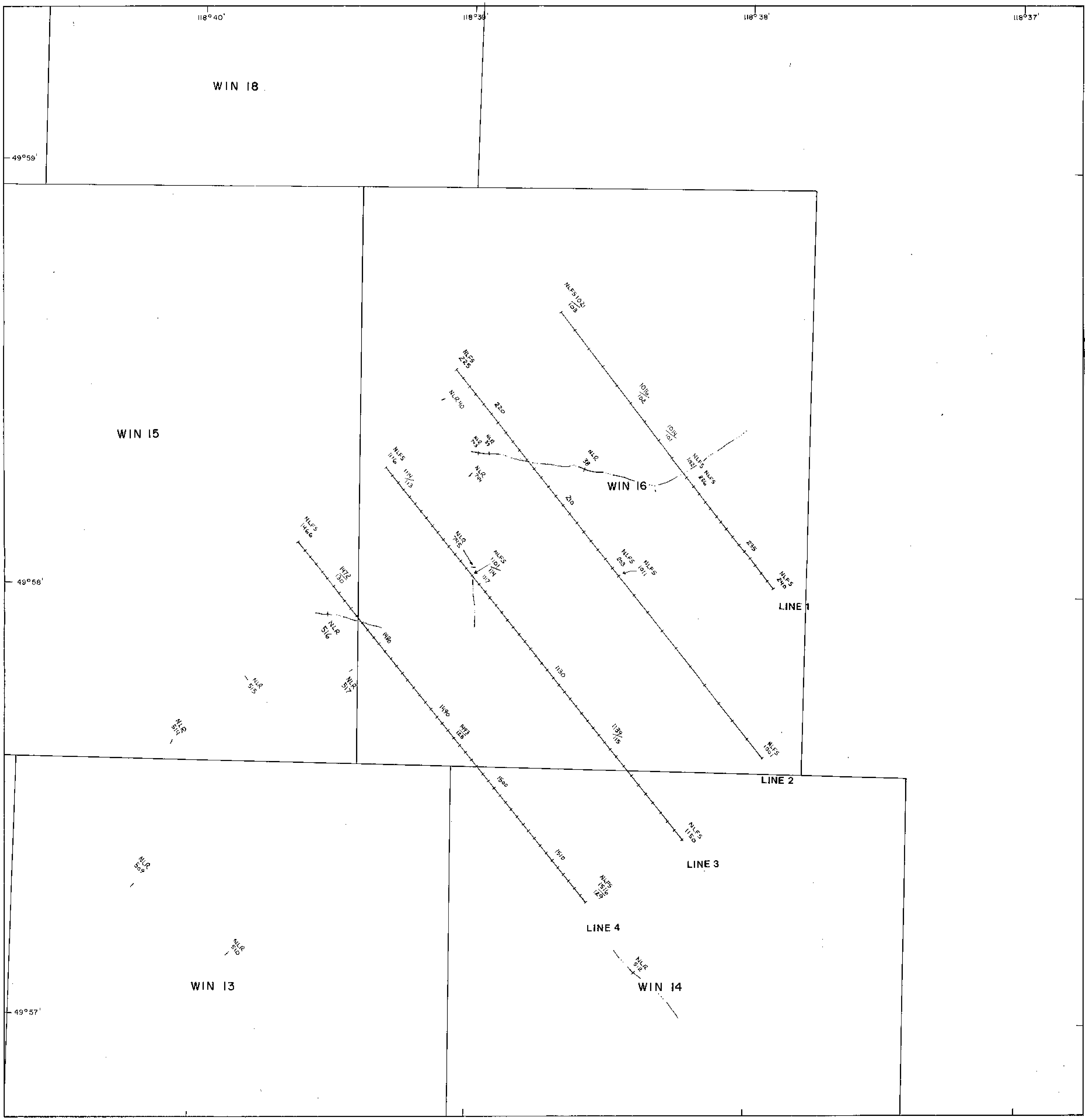
Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm
NLFS-1466	9	11	45	1.6	9	0.2
1467	15	17	67	1.8	18	9.6
1468	9	15	75	1.4	9	0.8
1469	19	19	68	2.0	25	4.6
1470	12	12	62	1.2	16	3.4
1471	7	12	81	0.8	11	0.2
1472	5	11	51	0.6	12	0.2
1473	6	14	90	1.0	11	0.8
1474	10	17	115	1.2	11	0.2
1475	9	13	60	1.0	14	0.8
1476	10	13	70	1.4	18	0.8
1477	15	15	83	1.4	17	4.4
1478	5	11	61	0.4	10	0.2
1479	8	13	65	0.8	11	0.6
1480	9	14	71	1.2	11	0.2
1481	8	13	72	1.0	12	0.4
1482	7	11	85	1.2	9	0.2
1483	7	13	86	1.0	11	0.2
1484	8	13	75	1.2	14	5.6
1485	11	18	77	1.4	15	0.4
1486	7	13	71	1.2	12	1.8
1487	12	18	71	1.4	16	11.6
1488	6	16	66	1.2	10	3.2
1489	8	15	80	1.0	10	0.4
1490	6	17	75	6.4	7	0.8
1491	7	13	63	1.0	9	0.4
1492	7	13	76	1.0	10	0.4

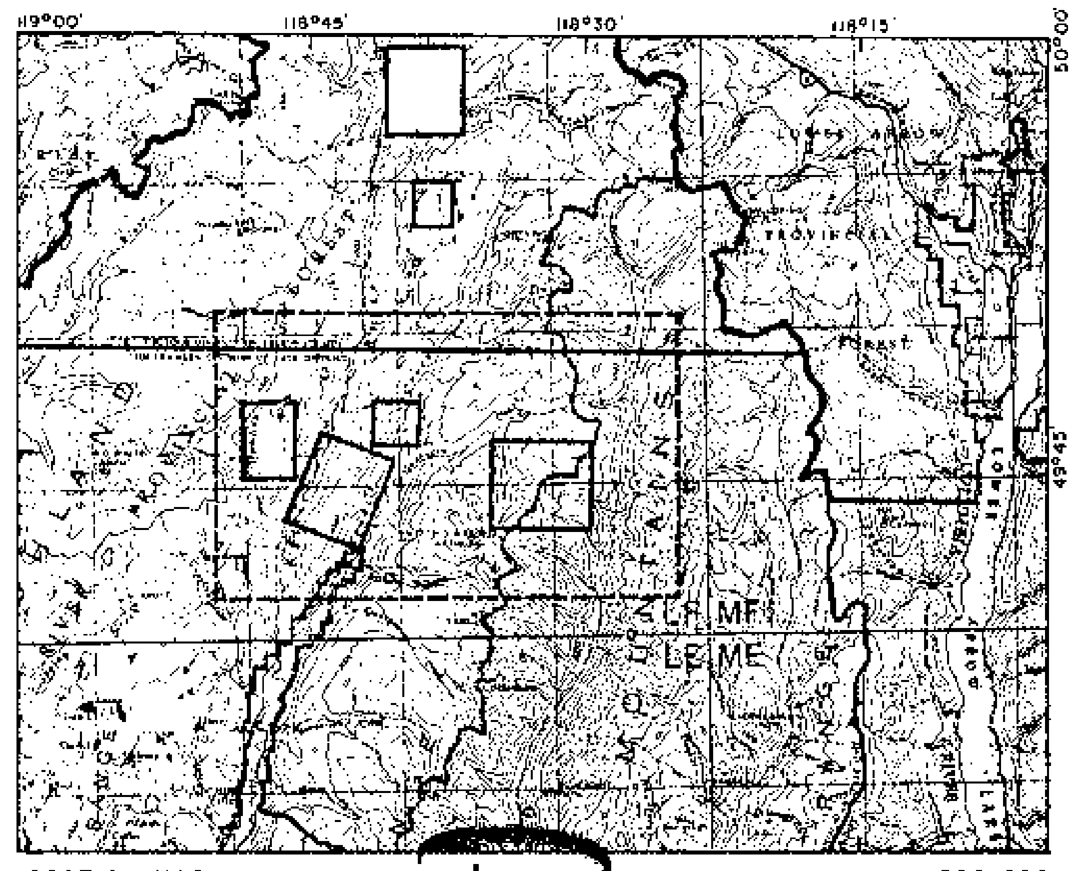
Geochemical Laboratory Report

Sample Number	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	U ppm				
NLFS-1493	6	12	70	1.0	7	0.2				
1494	9	16	87	1.2	13	1.2				
1495	7	13	62	1.0	9	0.4				
1496	7	14	80	1.0	11	0.6				
1497	6	10	82	1.0	7	0.2				
1498	8	12	42	1.0	7	0.2				
1499	8	10	78	0.8	9	0.8				
1500	11	12	48	1.8	12	0.8				
1501	7	11	64	1.2	9	0.6				
1502	8	11	110	1.2	8	0.2				
1503	8	11	79	1.4	9	0.2				
1504	7	8	60	0.6	9	0.4				
1505	7	12	70	1.0	9	0.4				
1506	14	17	89	2.0	18	4.0				
1507	8	12	78	0.8	8	0.8				
1508	32	17	72	2.6	20	10.4				
1509	9	12	160	1.0	8	0.8				
1510	9	14	91	1.2	10	0.4				
1511	10	12	140	1.0	9	0.4				
1512	5	10	63	1.6	17	0.6				
1513	8	14	140	1.0	11	0.2				
1514	4	9	72	1.2	8	0.2				
1515	8	12	70	1.0	10	0.2				
1516	7	12	66	1.0	9	0.2				

ROCK CHIP DATA FOR ANOMALY 4B

Sample Number (NLFR)	Location	U	Cu	Pb	Zn	Ag	Ni	Rock Description
101	NLFS 1014 Line 1	.2	3	16	28	.2	37	Biotite-hornblende granite (granodiorite) (gneiss)
102	NLFS 1016 Line 1	.2	3	20	74	.8	31	Granite with biotite (gneiss)
103	NLFS 1121 Line 1	.2	9	22	78	1.2	13	Granite with biotite (gneiss)
113	NLFS 1114 Line 3	.6	5	8	76	.6	4	Biotite-hornblende granite (granodiorite)
114	NLFS 1101 Line 3	26.0	4	15	15	.6	2	Pegmatite
115	NLFS 1139 Line 3	2.4	3	9	73	.6	4	Biotite granite (granodiorite)
128	NLFS 1493 Line 4	7.4	14	19	2000	1.3	18	Hornblende gneiss (granodiorite)
129	NLFS 1516 Line 4	14.2	15	15	360	.5	26	Intermediate to acidic dyke (porphyrite)
130	NLFS 1472 Line 4	14.4	8	34	185	.7	40	Quartz-feldspar (alkite) pegmatite plus potassic rich granite





LOCATION MAP 1:500,000

7160

PART 5 OF 9

N

A

Surveyed and compiled by
BARRINGER MAGENTA LTD.
Toronto, Canada

LEGEND

SOIL – 6/12, ROCK – Line or sampled stream with Sample number

SOIL – 18/25, ROCK – element value in p.p.m.

JIM 8 – Claim boundary with name and number

KELVIN ENERGY LIMITED
KETTLE RIVER AREA, B.C.

GEOCHEMICAL SURVEY
ANOMALY 4B
SOIL TRAVERSE FOLLOW-UP

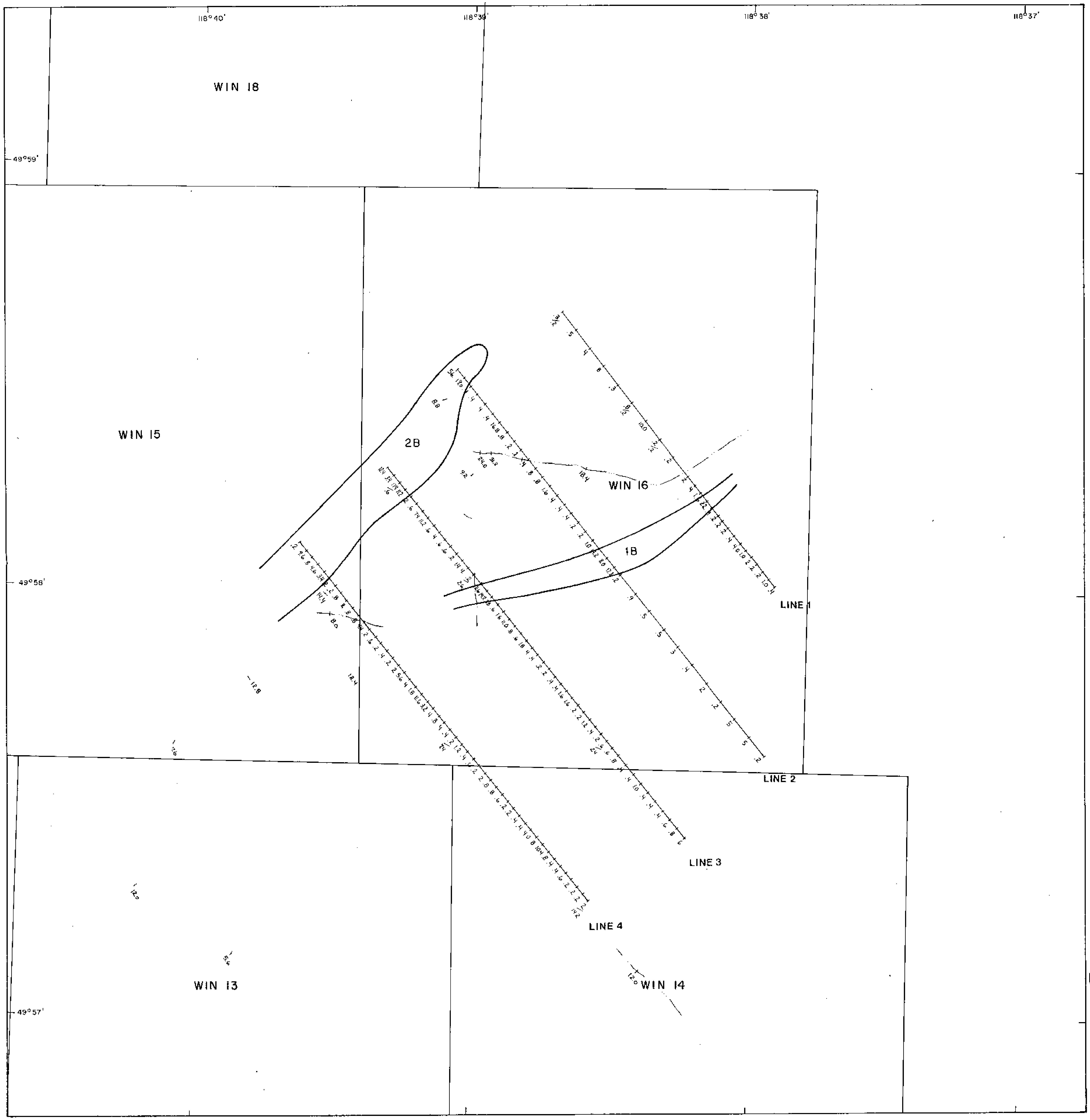
SAMPLE LOCATION AND NUMBER
(STREAM AND SOIL)

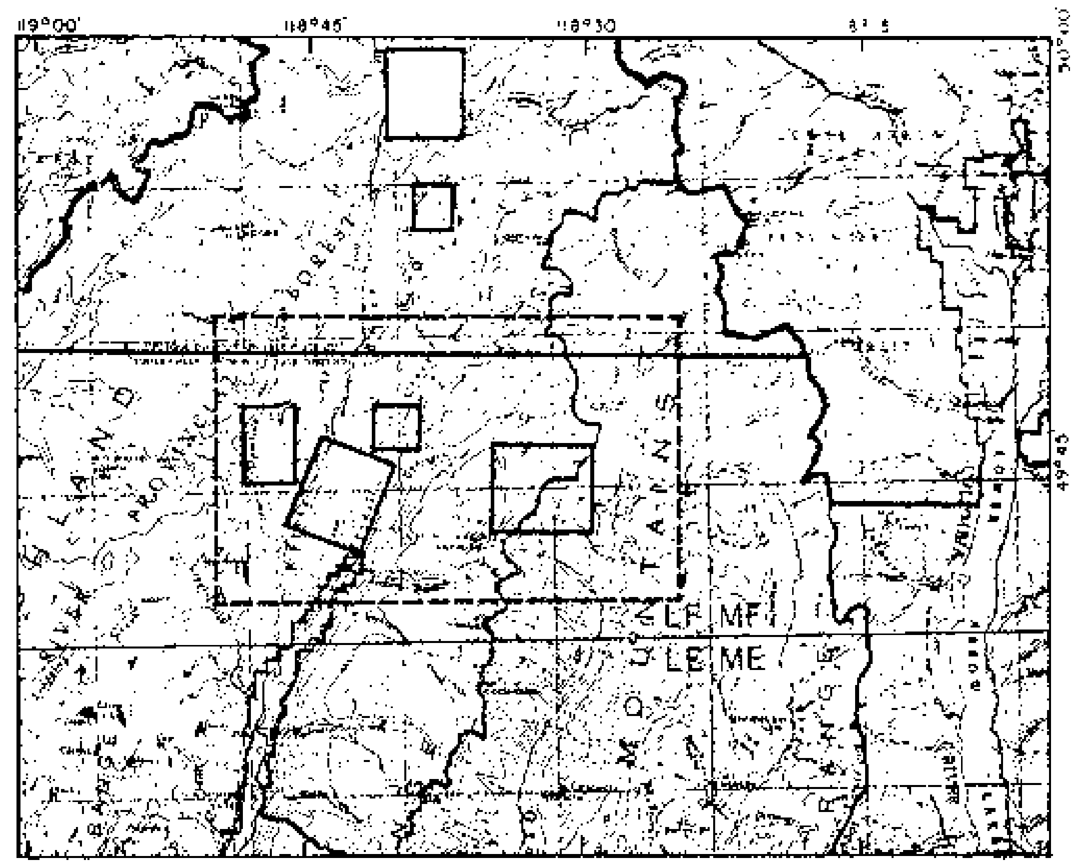
SCALE 1:10,000

FEET 0 1000 2000 3000

METRES 0 250 500 750 1000

AUGUST-SEPTEMBER 1978
N.T.S. REF. 82-E15





PART 5 OF 9

7160

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LEGEND

SOIL-8 / ROCK-12 — Line or sampled stream with Sample number
SOIL-16/ROCK-25 — element value in p.p.m.

JIM 8 — Claim boundary with name and number

3B — Strong anomaly with designation

3B — Weak anomaly with designation

KELVIN ENERGY LIMITED
KETTLE RIVER AREA, B.C.

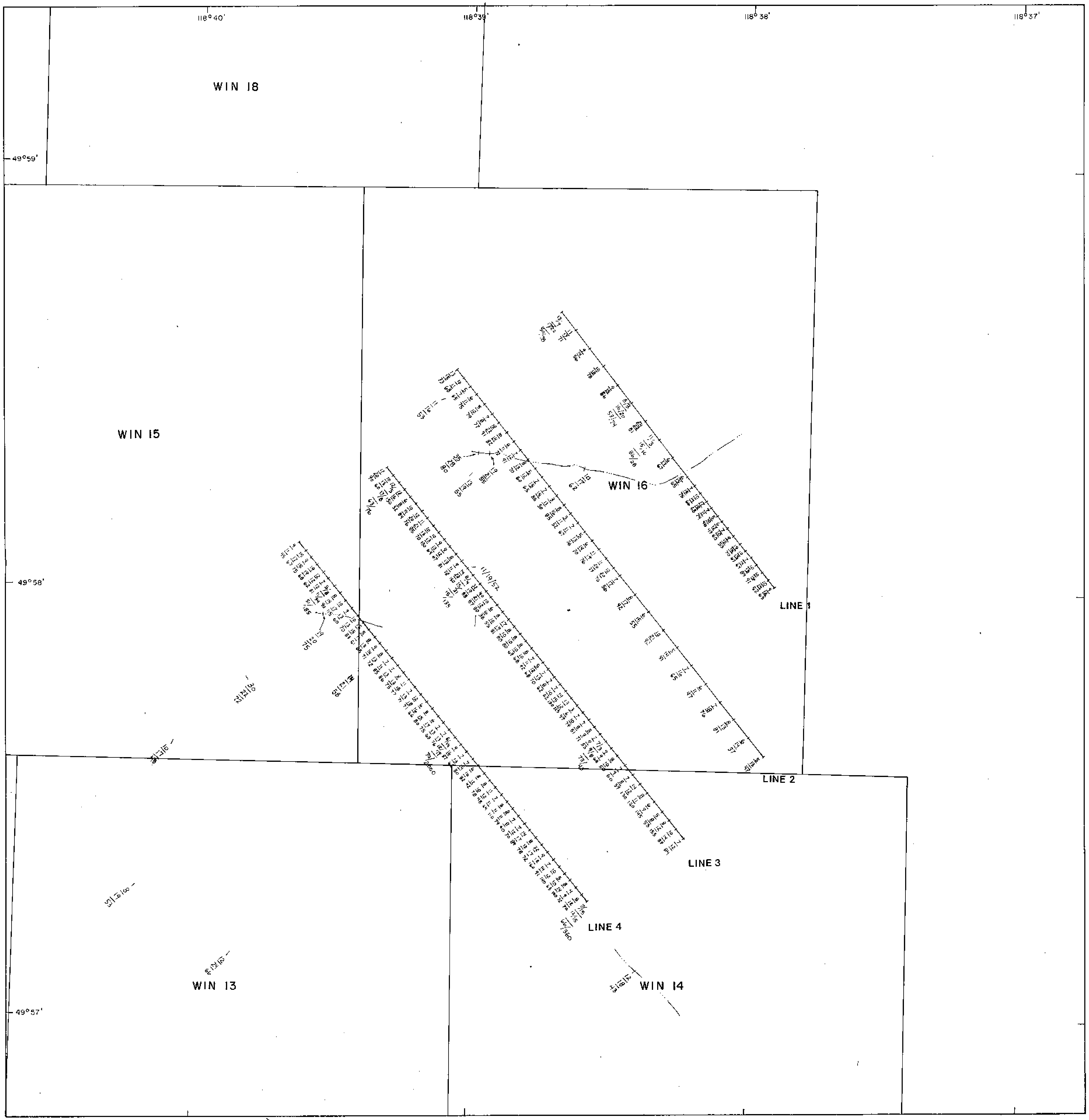
GEOCHEMICAL SURVEY
ANOMALY 4B
SOIL TRAVERSE FOLLOW-UP

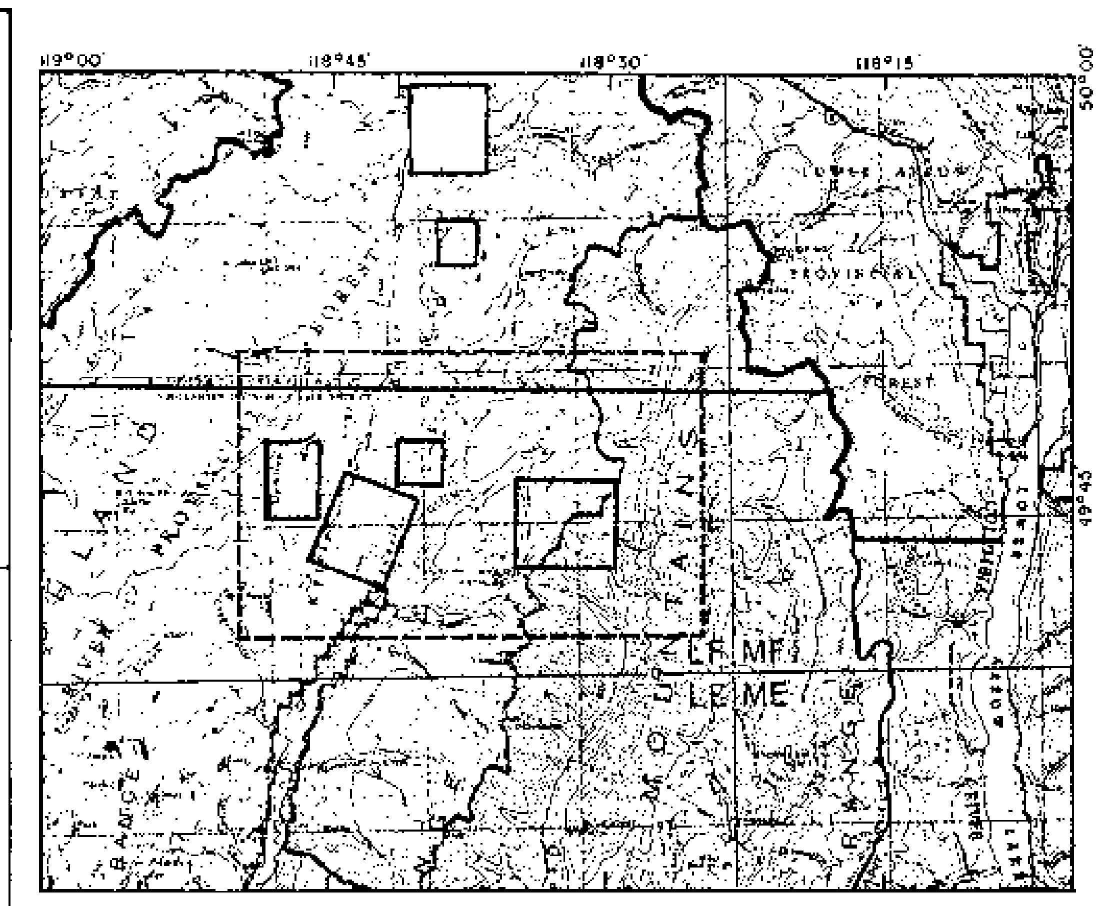
URANIUM DATA & INTERPRETATION MAP
(STREAM AND SOIL)

SCALE 1:10,000

FEET 0 1000 2000 3000
METRES 0 250 500 750 1000

AUGUST-SEPTEMBER 1978
N.T.S. REF. 82-E15





N

A

Surveyed and compiled by
BARRINGER MAGENTA LTD.
Toronto, Canada

LEGEND

SOIL–8 / ROCK–12 — Line or sampled stream with Sample number

SOIL–18/25 ROCK — element value in p.p.m. (Cu / Pb / Zn)

JIM 8 — Claim boundary with name and number

PART 5 OF 9

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KELVIN ENERGY LIMITED
KETTLE RIVER AREA, B.C.

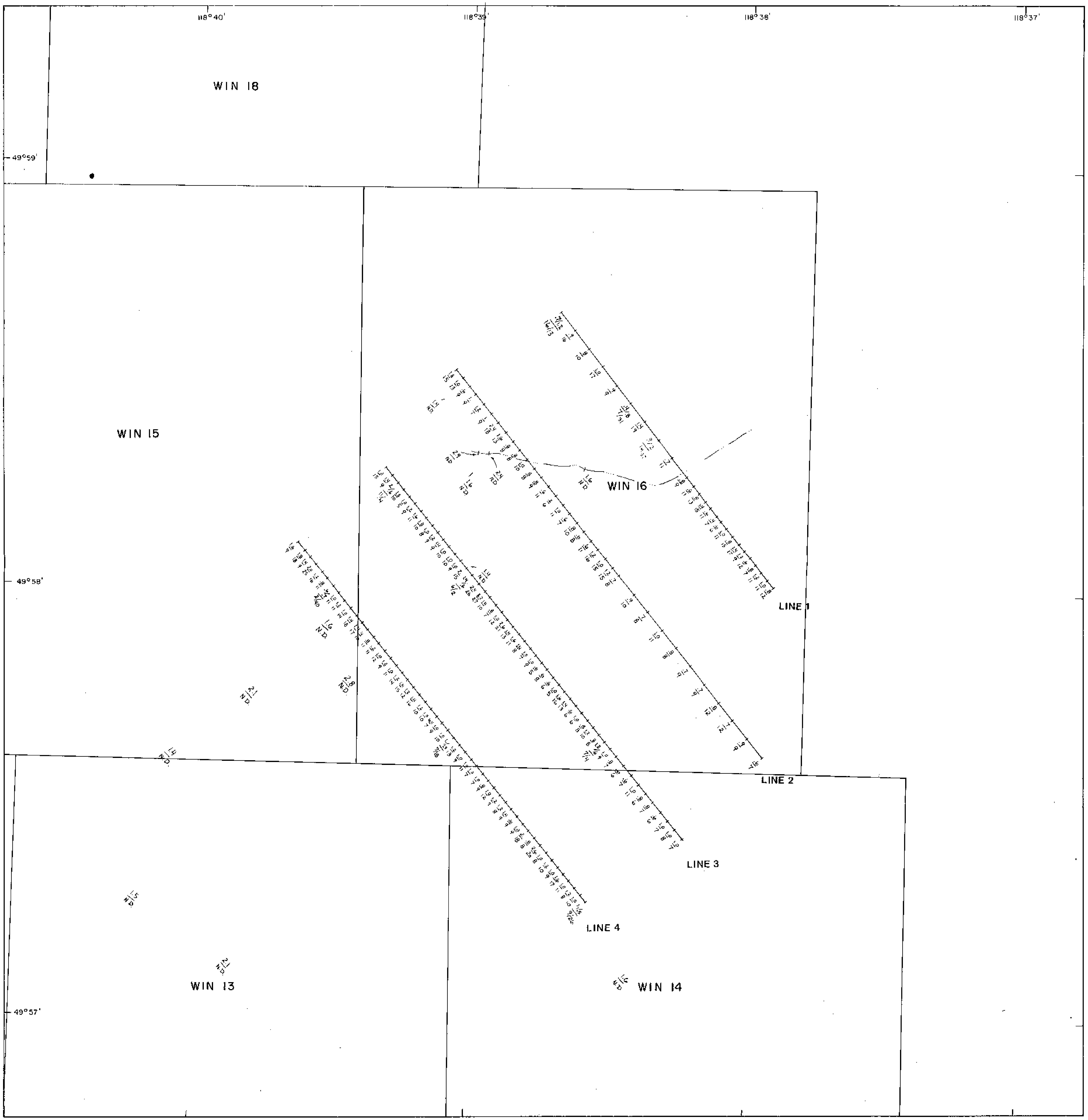
GEOCHEMICAL SURVEY
ANOMALY 4B
SOIL TRAVERSE FOLLOW-UP
COPPER/LEAD/ZINC
(STREAM AND SOIL)

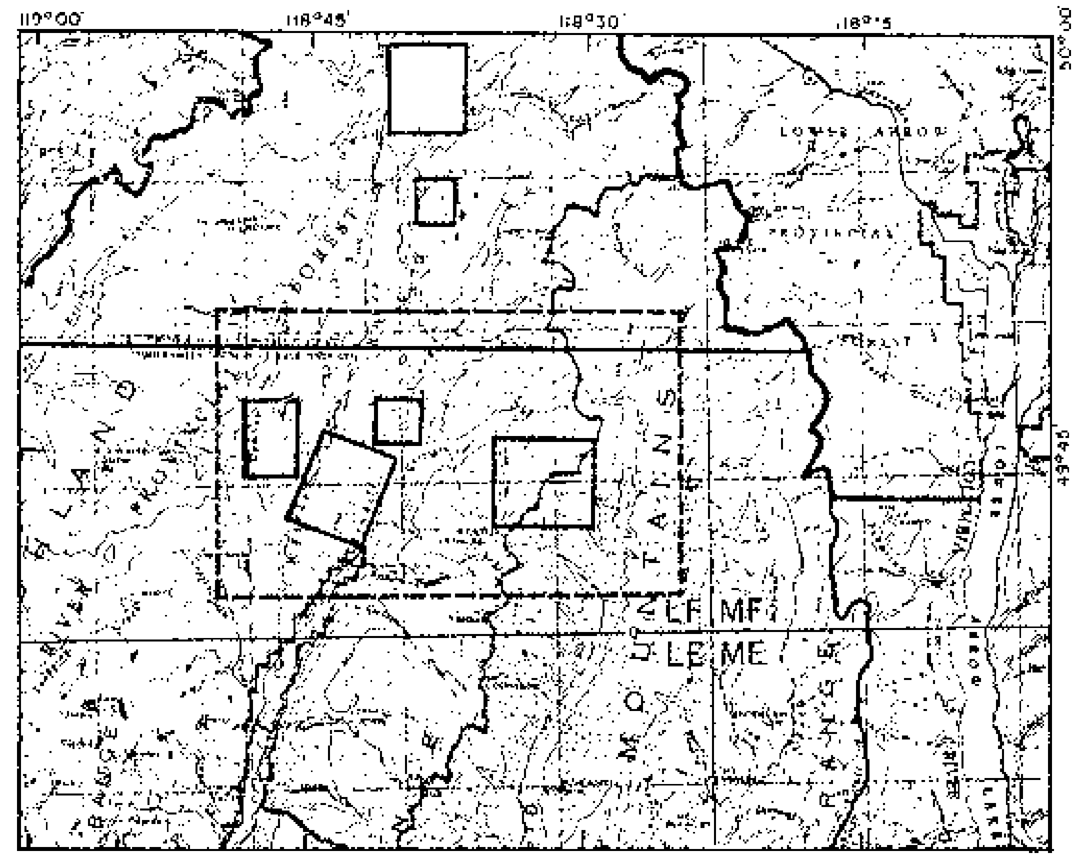
SCALE 1:10,000

FEET
METRES

AUGUST-SEPTEMBER 1978
N.T.S. REF. 82-E15

DRG 208-42-704





LOCATION MAP 1:500,000

N

Surveyed and compiled by
BARRINGER MAGENTA LTD.
Toronto, Canada

LEGEND

SOIL– 8 / ROCK– 12 — Line or sampled stream with Sample number

SOIL– 18/25 ROCK– — element value in p.p.m. (Ag / Ni)

JIM 8 — Claim boundary with name and number

PART 5 OF 9

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KELVIN ENERGY LIMITED
KETTLE RIVER AREA, B.C.

GEOCHEMICAL SURVEY
ANOMALY 4B
SOIL TRAVERSE FOLLOW-UP
SILVER/NICKEL
(STREAM AND SOIL)

SCALE 1:10,000

FEET 0 1000 2000 3000
METRES 0 250 500 750 1000

AUGUST-SEPTEMBER 1978
N.T.S. REF. 82-E15

DRG 208-42-704