'78 - #241.

WEIR MOUNTAIN REPORT NO. 2

GEOLOGY AND GEOCHEMISTRY

CY1 to 8, ENG 1 to 3 CLAIMS

RECORD NUMBERS 224 to 231 and 221 to 223

WEIR MOUNTAIN, ATLIN MINING DISTRICT

BRITISH COLUMBIA

NTS 104N

59°39'N, 132°59'N

Owner: Mattagami Lake Mines Limited
Exploration Division

Author; F. Morra, M.Sc.

Part 3 of 3

6898

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SUMMARY

1. An anomalously radioactive area has been delineated by Mattagami during the reconnaissance helicopter-borne radiometric survey. This area is located approximately 64 km east of Atlin, B.C., and it has been mapped as alaskite , by the G.S.C.

2. Eleven claims (187 units) have been staked in the area by Mattagami during the 1977 field season.

3. Geochemical sampling and radon detection in water and in soil have been carried out to cover most of the staked area. Results indicate three anomalous areas: the Caribou Creek valley, the Blue Sky Creek valley and the Grizzly Creek valley.

4. Ground scintillometer survey resulted in the discovery of two "pods", just a short distance from Weir Mountain, mineralized in U_3O_8, Pb, Zn and possibly W. The highest uranium value obtained from a rock grab sample was 4lb/ton U_3O_8.

Very high radiometric response (10 times background) was also obtained over a swamp, in Blue Sky Creek valley.

INTRODUCTION

General

During the field season of 1977 Mattagami Lake Mines Limited acquired eleven metric claims (187 B.C. claim units) in the Weir Mountain area (Fig. 1), northern British Columbia, as a result of a uranium geophysical and geochemical survey conducted in the area on a regional scale.

The claims staked are namely CY-1 to CY-8 and Eng 1, 2 and 3 (see Fig. 2) covering approximately 46 square kilometers.

Location and Access

The Weir Mountain properties are situated within the "Surprise Lake batholith", N.T.S. 104-N, approximately 65 km N60°E of Atlin, B.C. The area is comprised between Surprise Lake, Gladys Lake, Trout Lake and Terrahina River.

Access to the properties is possible via helicopter from Atlin. A gravel road connects Atlin to the east shore of Surprise Lake, 15 km from Weir Mountain.

Physiography

The elevation is 4000 to 6500 feet (1200 to 2000 meters) above sea level. The relief is dominated by mountains with gently sloping, vegetation-covered, SE flanks and precipitous cliffs on the NW flanks.

Vegetation is a dense short willow bush up to 5500 feet elevation (1700 m). Above this elevation there is a very immature alpine-type of soil, 10 to 50 cm thick, and vegetation constitutes grass and lichens. Moraine and fluvial deposits cover extensive areas at valley bottoms.

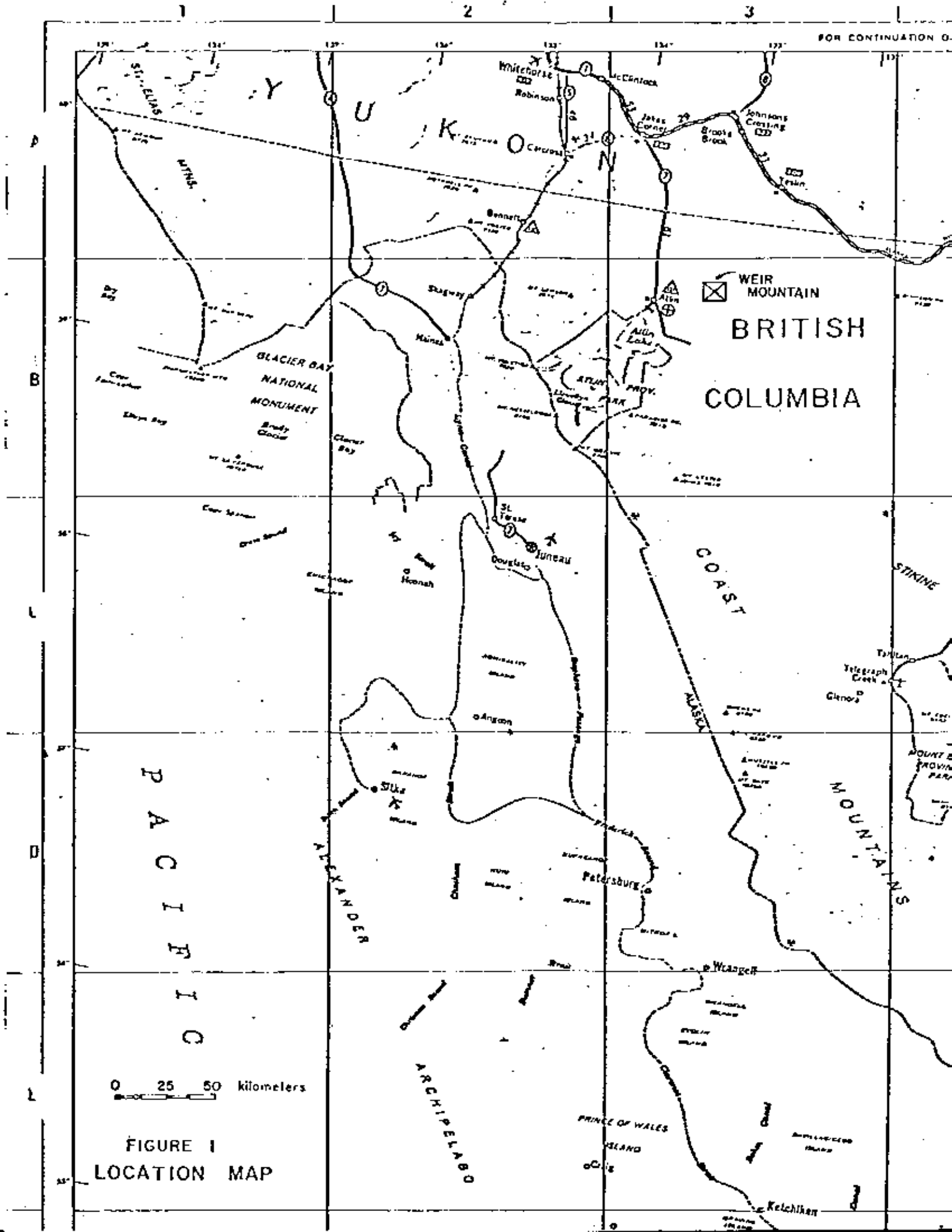
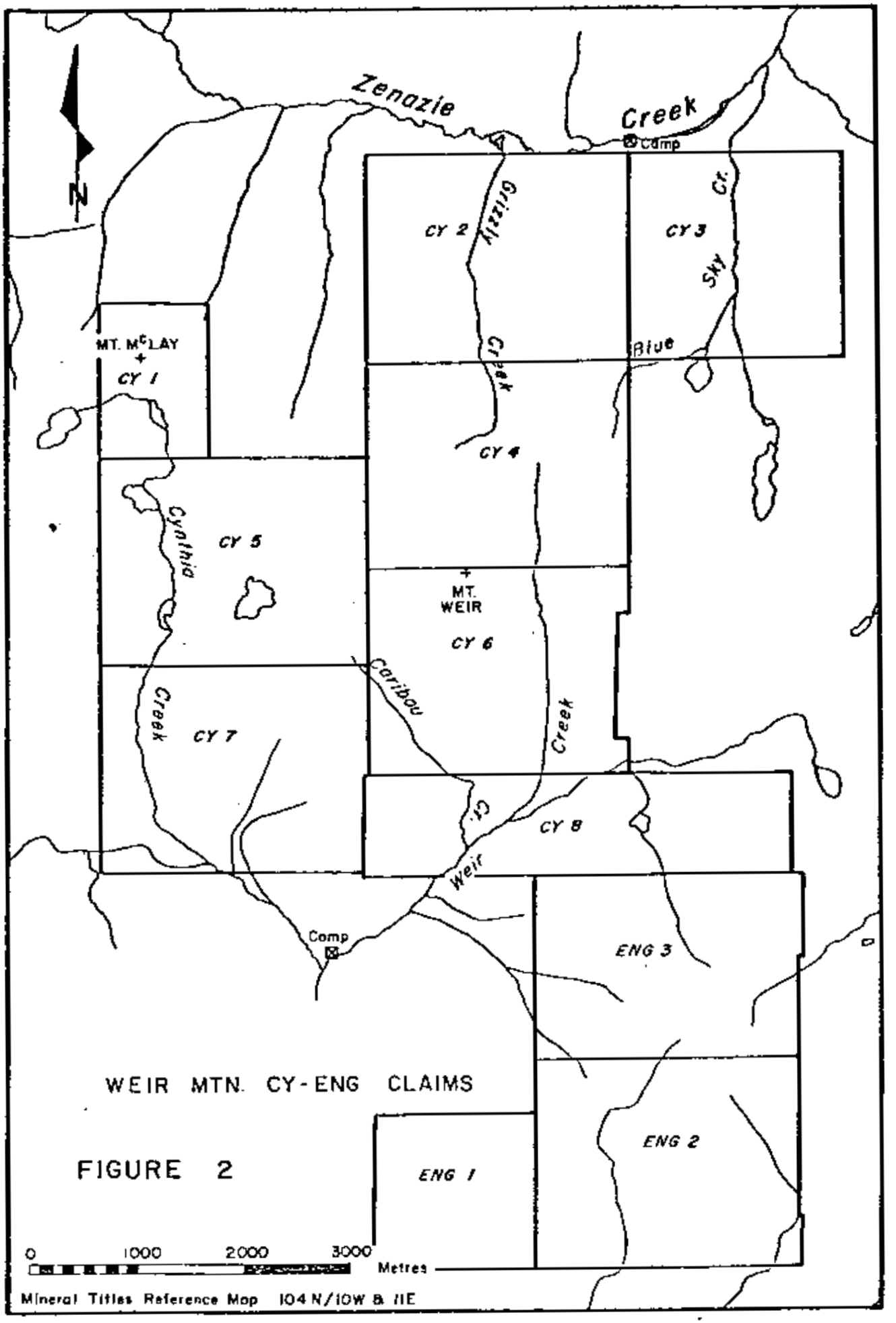


FIGURE 1
LOCATION MAP


Zenazie
Creek
Camp
N
CY 2
Grizzly
CY 3
Cr.
SKY
MT. McLAY
CY 1
Blue
Creek
CY 4
Cynthia
CY 5
MT.
WEIR
CY 6
Caribou
Creek
Creek
CY 7
Cr.
CY 8
Weir
Comp
ENG 3
ENG 2
ENG 1
WEIR MTN. CY-ENG CLAIMS
FIGURE 2
0
1000
2000
3000
Metres
Mineral Titles Reference Map 104 N/10W & 11E

Rainfall was very heavy during the summer 1977 and drainage is variable with two major creeks, Zenazie and Terrahina, and several minor streams.

Snow on ground is expected to be present from beginning or middle of September until end of May or beginning of June.

Work Program

The personnel during the first reconnaissance part of the program (July, see Report No. 1) consisted of five geologists and the helicopter pilot:

Party chief	F. Morra
Senior assistant	L. Withers
Junior assistant	W. Howard
Junior assistant	N. Ball
Junior assistant	K. Berndt
Pilot	W. Eng

The exploration approach which led to the decision of staking the properties is described on the Report on Wier Mountain, Trout Lake area, B.C., No. I. This report No. 2 is primarily intended to present the follow-up geological work performed on the claims by this writer and W. Howard during the period 26 August - 2 September 1977. The work consisted of detailed geochemical sampling and ground radiometric survey on every claim except for CY-1 and Eng 1, 2 and 3. The first camp was established at the junction of Weir Creek and Cynthia Creek. The second camp was established on Zenazie Creek, close by corner post No. 2 of CY-3 claim (Fig. 2).

Instrumentation

Ground radiometrics were performed by Exploranium GRS 101A scintillometers, routinely carried on all traverses.

Geochemical survey consisted of stream sediment sampling and radon measurements as follows. Radon emanometry (RD 200 radon emanometer from EDA, Toronto) was performed on soil. Radon in water was carried out during the regional reconnaissance part of the program and it proved to be a quick, inexpensive and fairly reliable method in this part of the country.

Radon in soils is instead more applicable where uranium anomalous areas have already been delineated and where surface radiometric measurements with scintillometers or spectrometers cannot successfully be taken because of the presence of overburden. Consequently one of the most useful near-surface methods for detecting buried uranium anomalies is the radon detector, because radon, a radioactive decay product of uranium, being a noble gas, can migrate in the ground for the useful duration of its half-life. Incidentally, anomalously high radon emanations have often been observed over uranium ore bodies that are buried as deep as a few hundred meters (Chi-Yu-King, 1976).

The principle of operation of the radon in soil method is simple: a 50 cm deep hole, 3/4" diameter, was made in the ground at the sample station, using a soil auger. By a probe and a bulb-pump the gas in the hole is circulated through a scintillation cell mounted in the detector and three consecutive one-minute counts taken. Due to the presence of boulders, an average of three holes were tentatively drilled on each sampling site, before reaching the depth of 50 cm. In some instances the soil

was so impregnated with water, especially in low ground, that counts could not be taken. A total of 63 sampling stations were marked on the ground. Sample location and results are presented in Figures 12 and 13.

GEOLOGICAL SETTING

The Weir Mountain properties are almost entirely located within igneous intrusive rocks that form a portion of a regional batholith (Surprise Lake Batholith) that extends eastward from Atlin, B.C., as a lobe of the Coast Range Batholith.

The rocks underlying most of the Mattagami properties have been mapped and designated as alaskite of Cretaceous age by the Geological Survey of Canada (Map 1082 A, Atlin, B.C.). The rock is not textually uniform, at least three types of alaskite having been determined in the field.

(a) very coarse crystalline alaskite.

(b) uniformly medium-grained alaskite.

(c) fine-grained porphyritic alaskite.

The special relationship between (a), (b) and (c) has not been determined yet.

In addition to these main types of alaskite, intermediate textures are found, suggesting gradational contacts.

The mineralogical composition is limited to quartz (20-40%), orthoclase (20-50%), plagioclase (10-40%) and minor amounts of biotite (<2%). Alaskite is generally defined as a mafic-deficient quartz-alkali-soda-feldspar granite, and the rocks present in the area fall in this category.

In the porphyritic alaskite the phenocrysts are subhedral or euhedral orthoclase crystals up to 1.5 cm in diameter. This phase of alaskite is most common on the northern claims, towards Zenazie Creek.

In general no alteration is present in the alaskite: quartz is smoky and the feldspars are relatively fresh. In only two outcrops fine-grained alaskite was found to be very altered and weathered, and U, Pb, Zn mineralization was also present. Numerous boulders of weathered fine-grained alaskite, hematite coated and mineralized with sphalerite are present along Caribou Creek (Fig. 2), from elevation 5800 feet (1760 m), downstream.

The two southernmost claims, Eng 1 and 2, cover the contact between the alaskite and Unit 6 of the Cache Creek Group, that according to the G.S.C. map is composed by chert, argillite, chert-pebble conglomerate and chert breccia, derived schist and quartzite. No work has been carried out on these claims yet.

MINERALIZATION

The whole Surprise Lake Batholith presents anomalous radioactive response. Assay results of some fresh, nonaltered alaskite rock samples vary from 3.6 ppm to 38 ppm U_3O_8, with background values of the order of 8 ppm U_3O_8 (corresponding to 350 cps on outcrop, using GRS 101 scintillometers).

The normal U_3O_8 content in similar rock types elsewhere is 3.0 ppm. It appears that average uranium content detected in the

rocks of the Weir Mountain area is at least twice as great as the average content of the same element in corresponding average rock types, in other nonmineralized areas. Figures 3 and 4 show the general radiometric response obtained with the airborne system on anomalies in the Weir Mountain area, during the reconnaissance part of the program.

Zones of weathering and iron-oxidation are common and presence of a very red, argillaceous soil noticed. This soil often occupies zones which are supposedly structural lineaments (faults or fractures), generally striking N60°E.

Radiometric response is high on the soil, with readings up to 1500 cps using GRS 101 scintillometers. Assay values up to 280 ppm U_3O_8 (sample #110 R 164) have been obtained.

As described on Report No. I, two interesting areas have been found, which present a very unique mineralogical assemblage: uranium mineral (uraninite ?), galena in well developed cubic crystals, sphalerite, possibly a W mineral (scheelite ?).

The zones have a very limited lateral extent, and they most likely do not have any or a limited extent at depth. They resemble pods or small veins, the rock is a fine-grained alaskite, much altered and weathered, with very smoky quartz and numerous small pores, partially filled with iron oxides. The original mineral occupying the pores is completely destroyed. Counts up to 6500-7000 per second have been registered on these "pods". Assay results of some grab samples are listed below:

Sample No.	U_3O_8 ppm (lb/ton)	Pb%	Zn%
110R-95	40 (0.08)	1.65	not analyzed
-96	142 (0.31)	0.15	3.4
-97	320 (0.70)	0.64	0.37
-98	1800 (3.96)	0.11	4.0

FIGURE 3

HELICOPTER-BORNE RADIOMETRIC SURVEY

TOTAL COUNTS

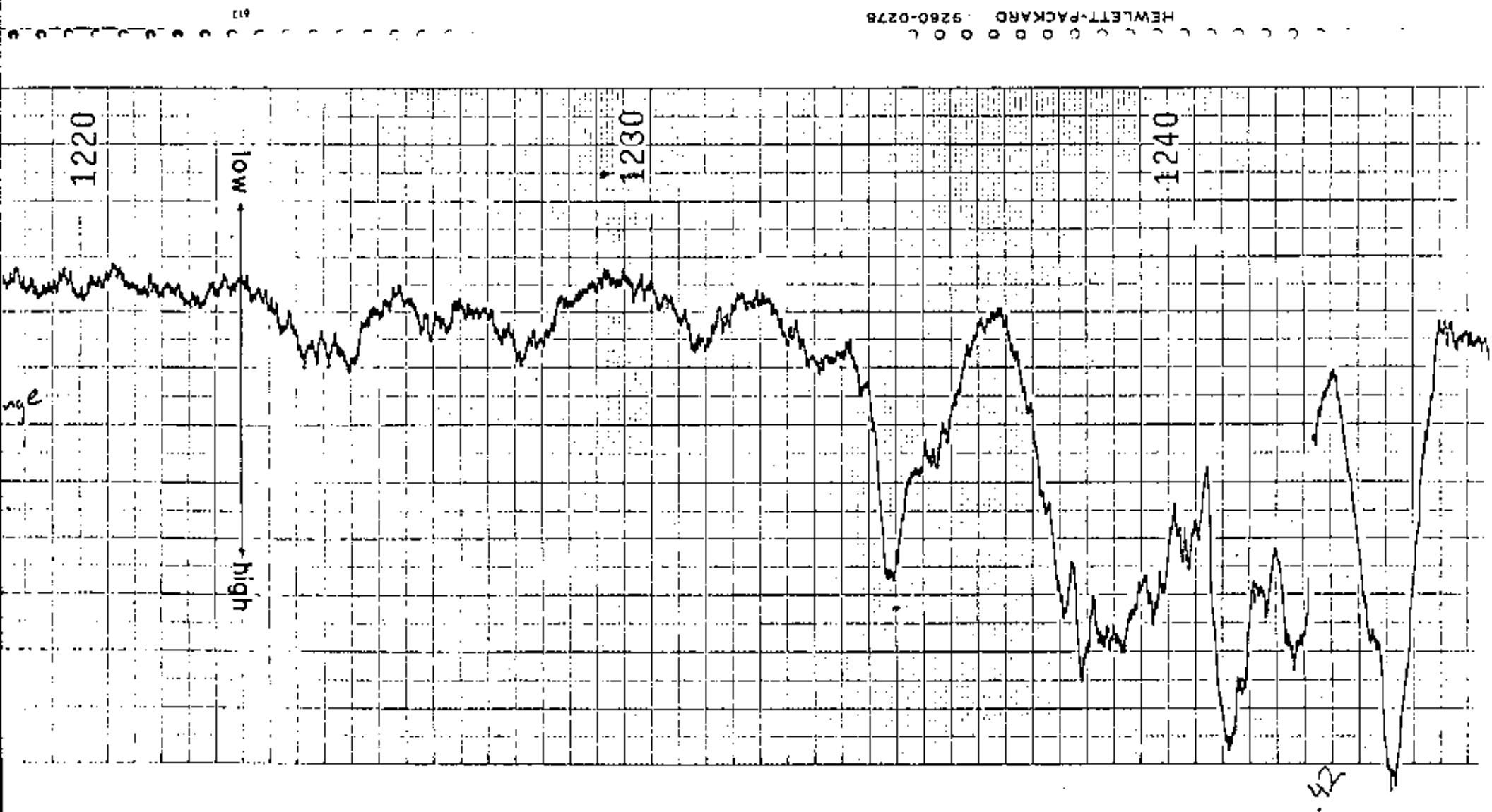
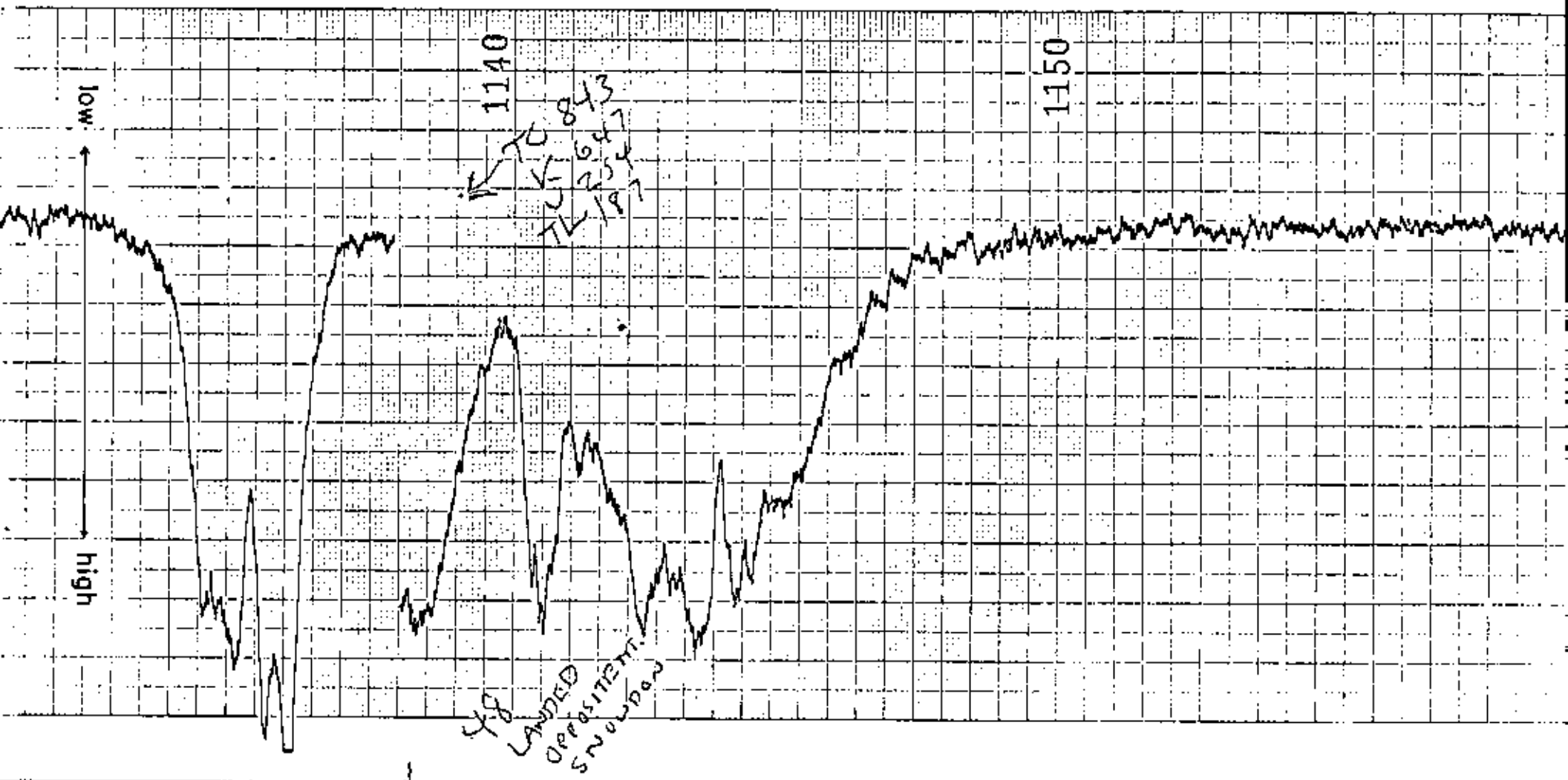


FIGURE 4

HELICOPTER - BORNE RADIOMETRIC SURVEY

TOTAL COUNTS



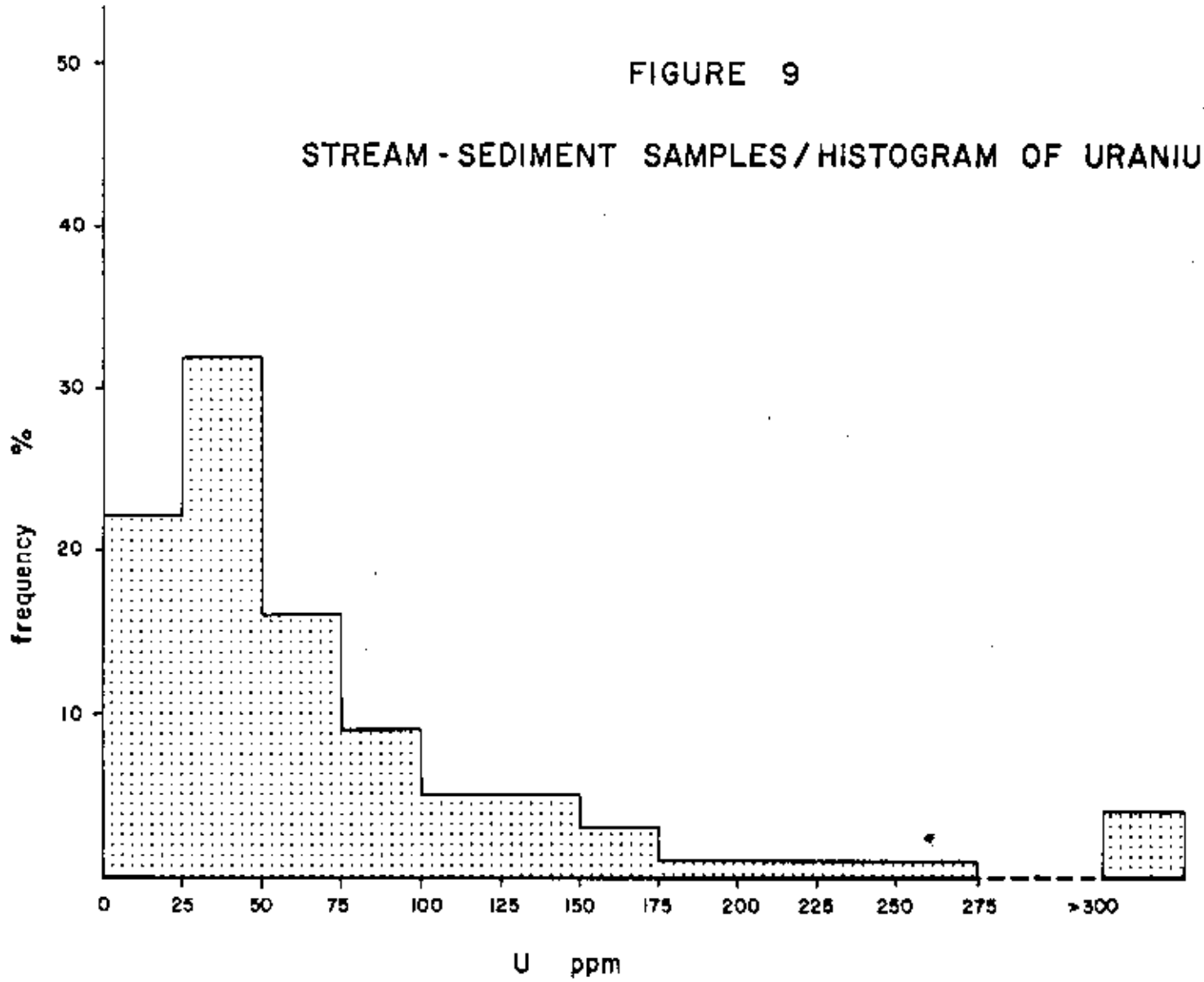
All the rock samples collected from the two pods will be studied in thin sections and polished sections under the microscope and a petrographic report with results of this investigation will be subsequently presented.

At present stage of knowledge (geological and structural mapping of the area has not been done in detail) any conclusion regarding the genesis and the type of occurrence would be very speculative.

The only U minerals identified in this area are the hydrated arsenate of Cu and U, zeunerite and metazeunerite. It is general opinion that U mineralization is structurally controlled in the area. It is of interest to mention that several different mineral occurrences are located within the Surprise Lake batholith: the most important is the Adanac Mo deposit; one small, high grade W deposit at the headwaters of Boulder Creek; and numerous Mo, W, Pb, Zn and Ni occurrences found all throughout the batholith. None of these "finds" seems to have any economic potential, at present, except perhaps for the Adanac Mo deposit. It is also worth mentioning that the area has been very actively mined for placer gold since 1898 and a few placer operations are still active (the most important being the Goldrun Co. on Pine Creek). A W occurrence is present within Mattagami's CY-2 claim, according to G.S.C. geology map, but the showing has not been visited by the crew, due to time limitations. CY-4 and CY-6 have been previously staked in 1969 by Canadian Johns-Manville Co. Ltd. for molybdenum exploration: geological, geochemical and I.P. surveys were done during 1971, which resulted in the acquisition of

FIGURE 9

STREAM - SEDIMENT SAMPLES / HISTOGRAM OF URANIUM



some more ground to the east (Candy claims 9 to 34, 50 to 60, 62 and 66 inclusive; WHl claims). Molybdenite was reported to occur in quartz-filled fractures in porphyritic alaskite.

EVALUATION OF RESULTS

Geochemical Samples

A set of 23 stream-water samples and 100 stream-sediment samples was collected on Grizzly, Blue Sky, Weir, Caribou and Cynthia creeks, at 500 meters interval or less. All these samples have been analyzed for U_3O_8 and results are shown in Tables I and II.

Histograms showing the distributions of values are given in Figures 6 and 9. Sample locations and relative uranium results are shown in Figures 5, 7 and 8.

From Tables I and II, it appears that the average U_3O_8 content (median) in the stream-water samples and in the stream-sediment samples is 0.70 ppb and 46.5 ppm respectively.

The data from the sediment samples plotted in Fig. 8 indicate the presence of an extensive anomaly in the Caribou Creek area. The highest value obtained in this area was 550 ppm U_3O_8 from sample 110 S 447, which is 12 times higher than the median.

Another very interesting anomaly is located within CY-3 claim, along Blue Sky Creek (see Fig. 8), at approximately 4500' elevation (1350 m), in a swampy area. Scintillometer readings up to 2000 cps have been recorded over an area of approximately 20 m by 30 m and this is of particular interest, considering the absence of outcrops and the presence of at

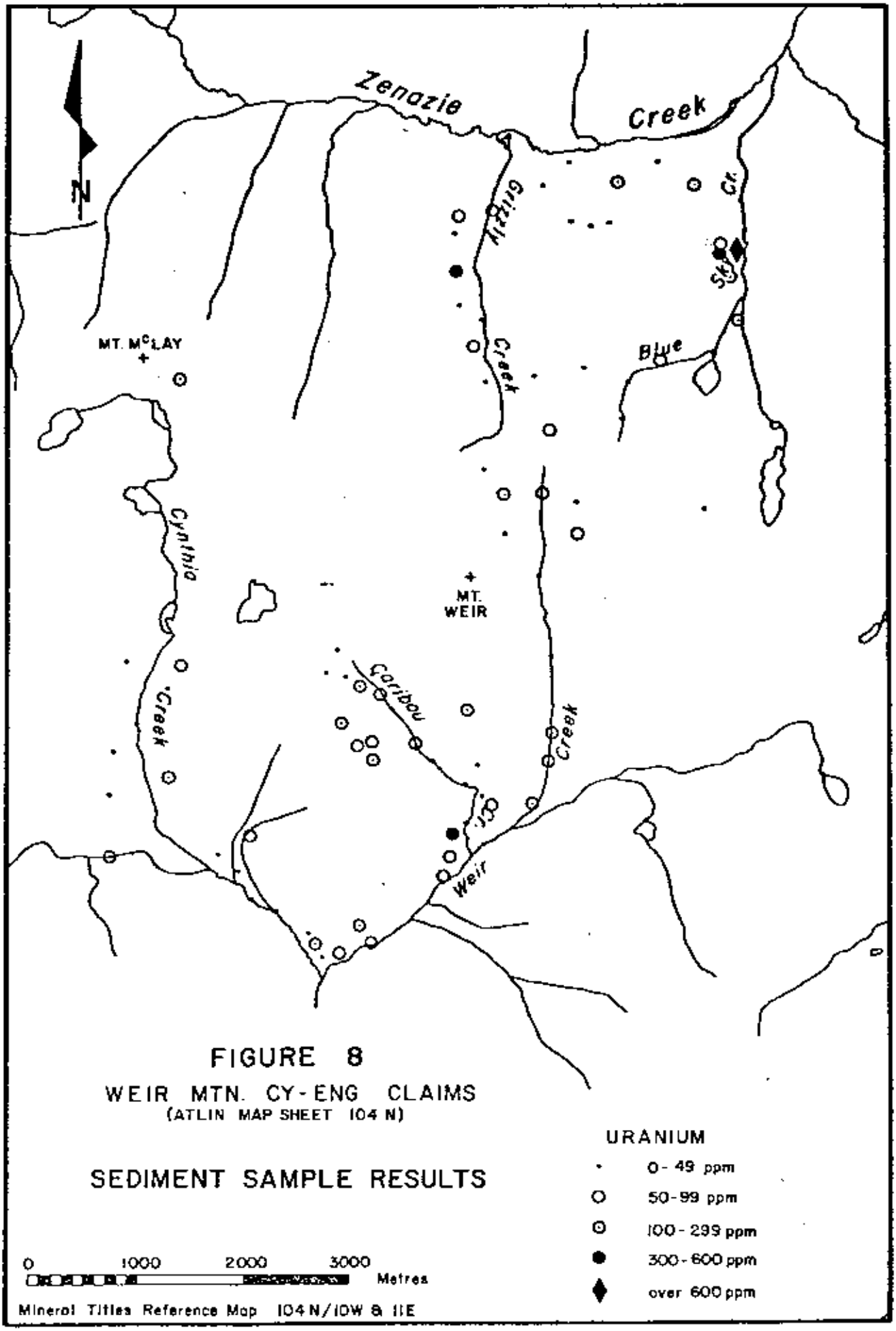


FIGURE 8

WEIR MTN. CY-ENG CLAIMS
(ATLIN MAP SHEET 104 N)

SEDIMENT SAMPLE RESULTS

URANIUM
- 0 - 49 ppm
- 50 - 99 ppm
- 100 - 299 ppm
- 300 - 600 ppm
- over 600 ppm

0 1000 2000 3000 Metres

Mineral Titles Reference Map 104 N/10W & 11E

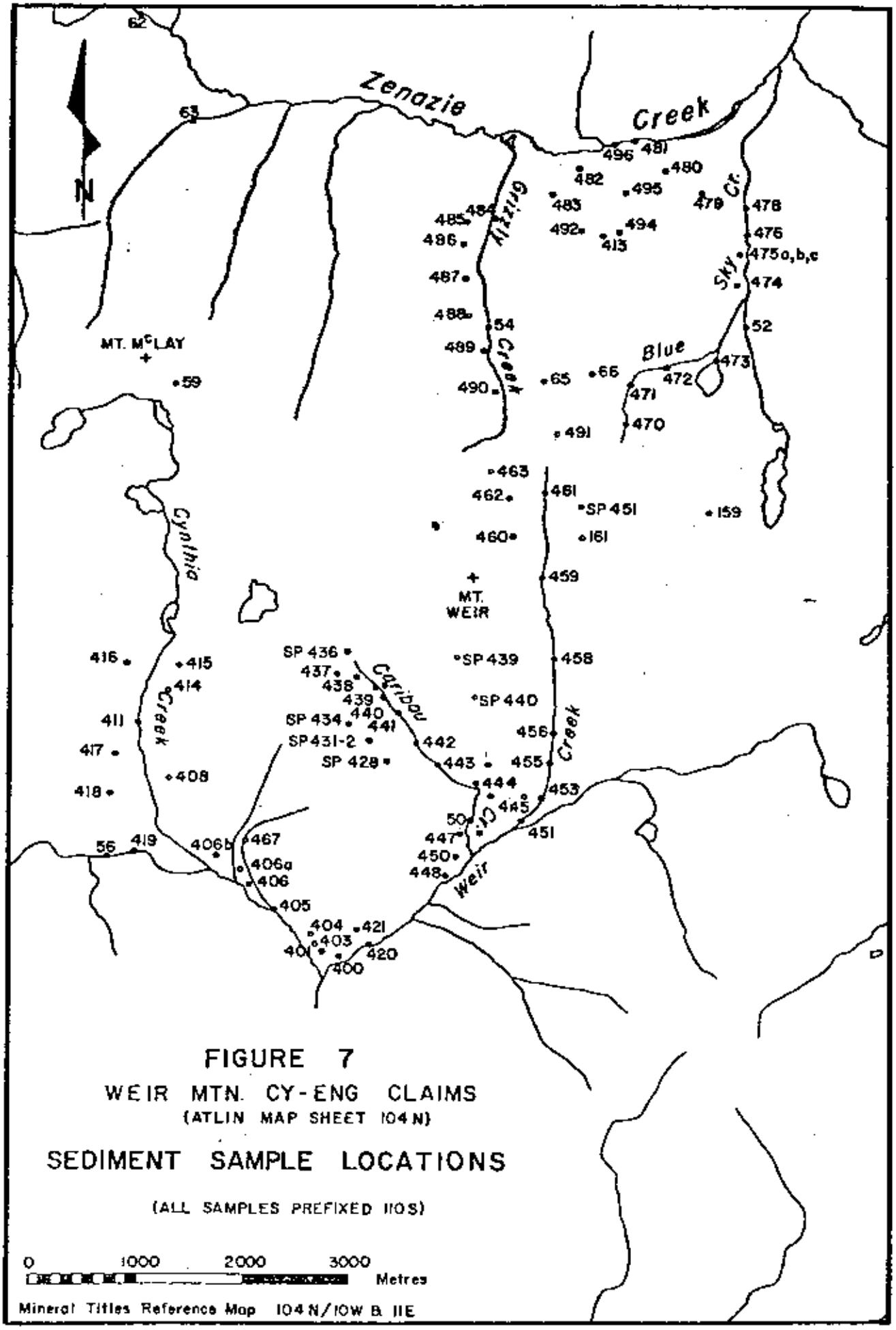


FIGURE 7

WEIR MTN. CY-ENG CLAIMS

(ATLIN MAP SHEET 104 N)

SEDIMENT SAMPLE LOCATIONS

(ALL SAMPLES PREFIXED 110S)

0 1000 2000 3000 Metres

Mineral Titles Reference Map 104 N/10W & 11E

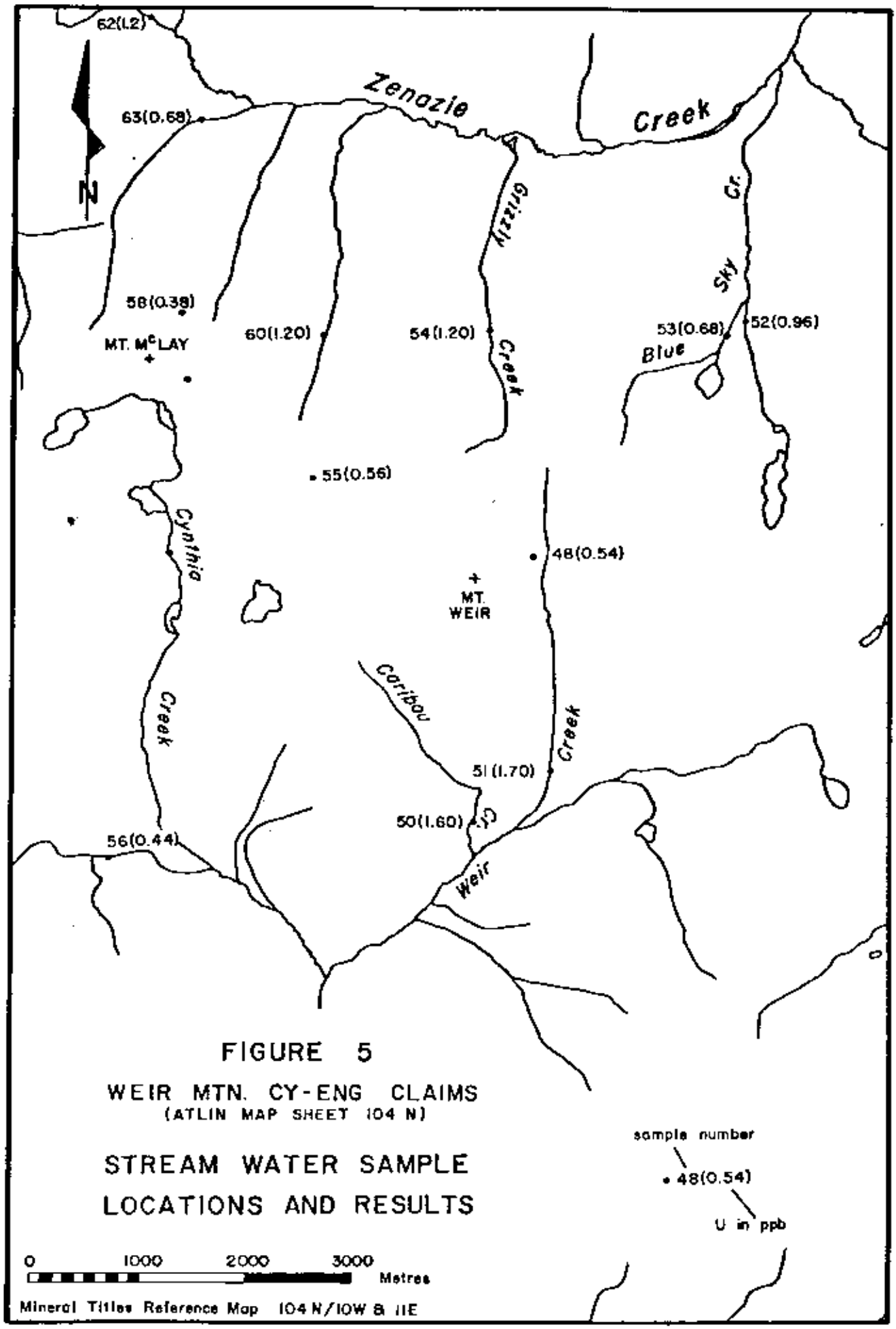


FIGURE 5

WEIR MTN. CY-ENG CLAIMS
(ATLIN MAP SHEET 104 N)

STREAM WATER SAMPLE
LOCATIONS AND RESULTS

least 50 cm of overburden. The highest sediment sample result obtained was 1100 ppm U_3O_8 (sample no. 110 S 475 B); 270 ppm and 480 ppm have also been obtained from the same area (sample nos. 110 S 475A and C, respectively).

A third possibly anomalous area is located on Grizzly Creek, at 5202' elevation (1600 m), in an area covered by moraine and fluvial deposits.

Stream-water analyses gave 1.20 ppb U_3O_8 (sample no. 110 W-54) and stream-sediment analyses 310 ppm U_3O_8 (sample no. 110 S-487).

This third anomaly is rather isolated, no other significant high values having been obtained in the immediate vicinities, nor did the radon detection results confirm the presence of high radioactivity in the valley.

Radon Gas Survey

A total of 63 radon-in-soil and 19 radon-in-water determinations have been taken in the Weir Mountain area. Tables III and IV show the results obtained, expressed in counts per minute.

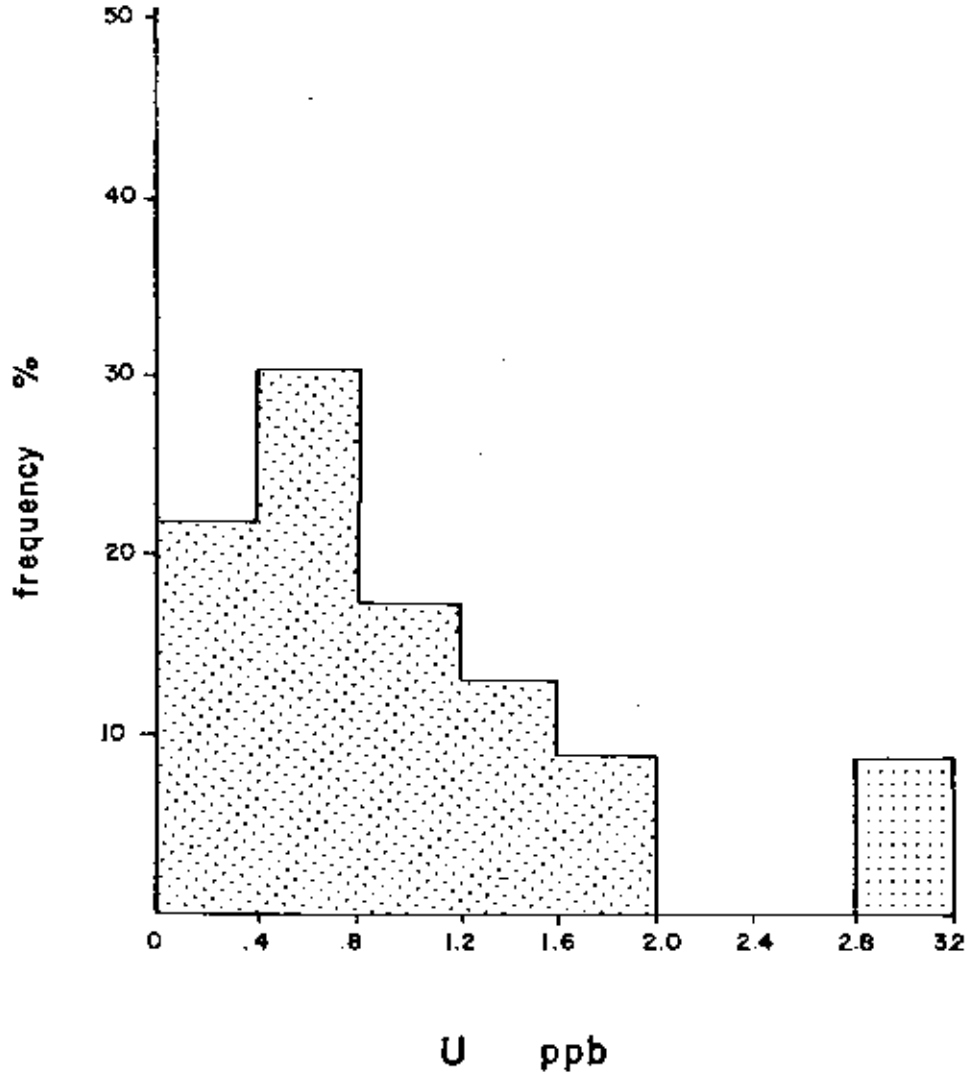
Histograms showing the distribution of values are given in Figures 11 and 14. Sample locations and relative results are shown in Figures 10, 12 and 13.

Results are fairly consistent with those obtained from the stream-water and sediment samples, except for the Grizzly Creek valley.

The Caribou Creek and the Blue Sky Creek areas show some high values. The Caribou Creek valley, in particular, presents

FIGURE 6

STREAM - WATER SAMPLES / HISTOGRAM OF URANIUM



five radon-in-soil results above 200 cpm: the highest radon in soil value obtained was 7291 cpm (sample no. 110 P-458, Figure 12), which is also the highest value every reported with the RD 200 detector, according to the company which supplied the radon unit (R. Morse, EDA, 1977, personal communication).

The highest radon in water results obtained in the Caribou Creek valley was 1118.7 cpm (sample no. 110 G-51, Fig. 10), which is the highest value obtained by a Mattagami crew. The radon in soil results show a NW-SE trending radioactivity anomalous zone, immediately SW of the top of Weir Mountain, almost entirely located within CY-6 claim (see Fig. 13).

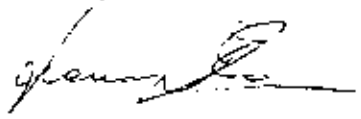
Background values have been obtained from Cynthia Creek (CY-5 and CY-7 claims). Slightly higher than background values have been recorded in Weir, Grizzly and Zenazie Creeks.

CONCLUSIONS

1. The results of the geochemical survey carried out on the Weir Mountain area indicate the presence of a very favourable environment for a uranium deposit.
2. The radon detection survey presents anomalies which are coincident with the stream-sediment and stream-water anomalies.
3. The limited number of ground scintillometric data (due to lack of outcrops below 1700 m elevation) also confirm the presence of uranium anomalies in altered alaskite.

4. Lead and zinc are associated with U mineralization in the two mineralized outcrops found.
5. From previous work done in the area, it seems that Weir Mountain has also potential for W and Mo deposits.
6. From this summer's experience, the best exploration technique during the reconnaissance phase of the survey was revealed to be the helicopter-borne radiometric system. For the detailed type of survey, radon in soil associated to stream-sediment sampling was probably the best tool to delineate anomalous areas (stream-water results and radon in water are subject to sudden and great variations, due to weather conditions).

Respectfully submitted,



Franco Morra
Exploration Geologist

REFERENCES

Chi-Yu King, 1977. A possible mechanism for anomalously high radon emanation over deeply buried U ore bodies. 47th Annual International Meeting- S.E.G., Calgary, 1977.

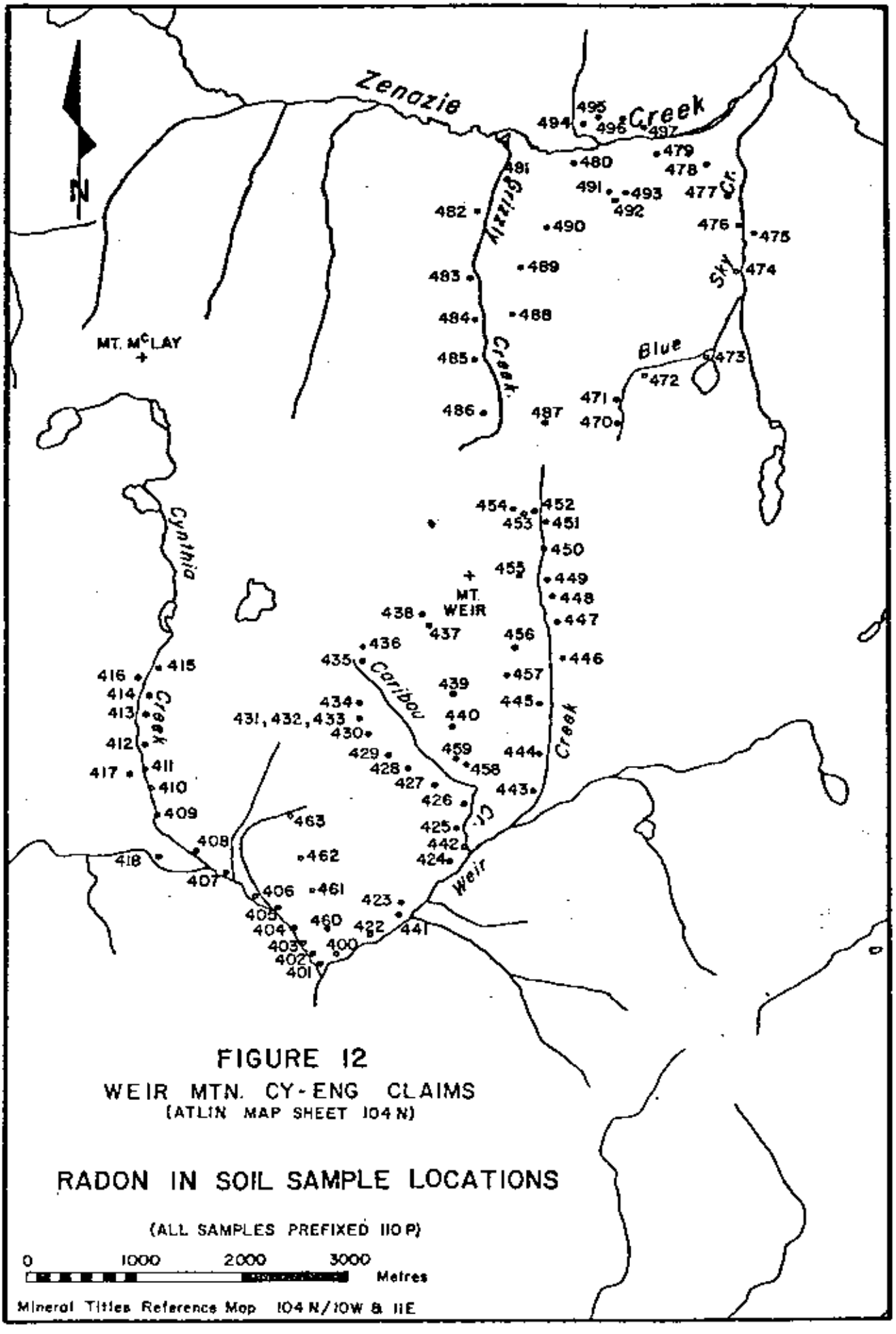


FIGURE 12

WEIR MTN. CY-ENG CLAIMS

(ATLIN MAP SHEET 104 N)

RADON IN SOIL SAMPLE LOCATIONS

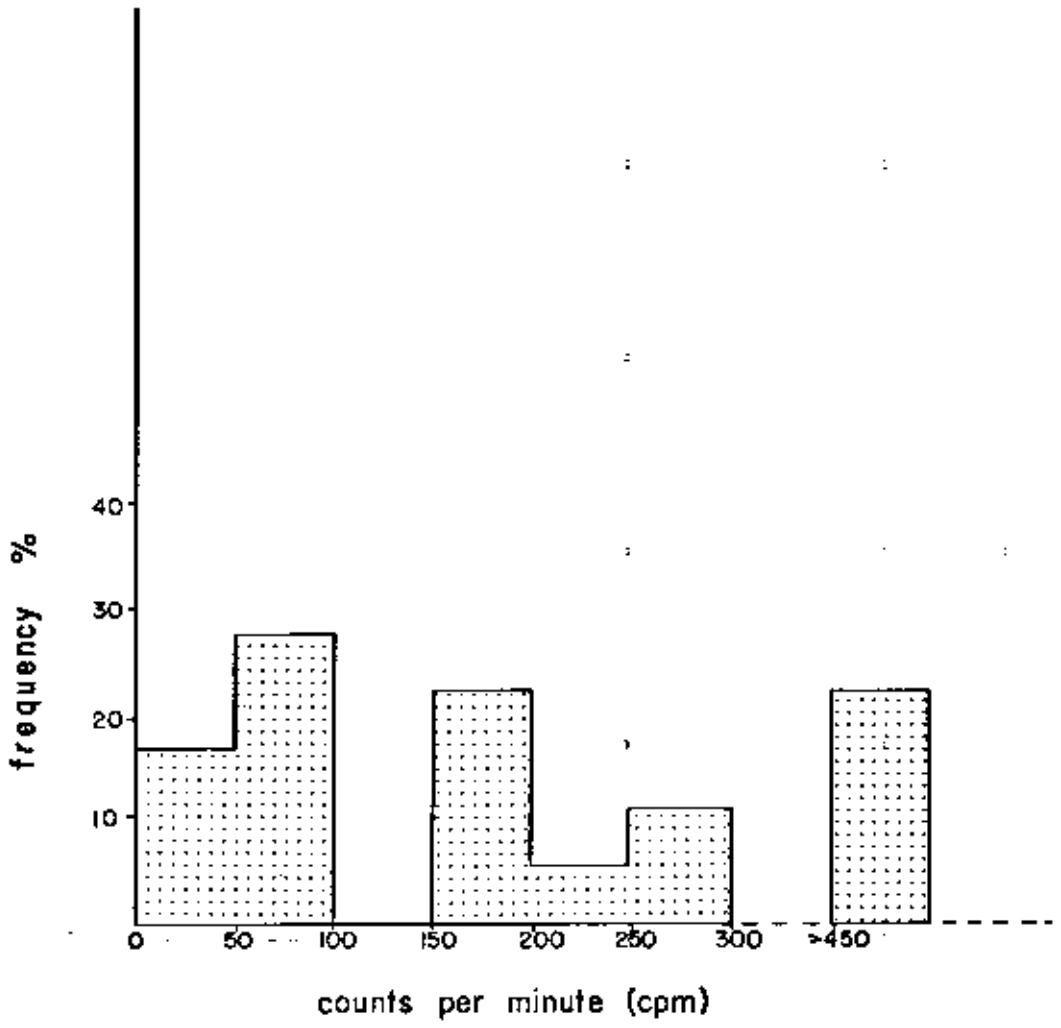
(ALL SAMPLES PREFIXED 110 P)

0 1000 2000 3000 Metres

Mineral Titles Reference Map 104 N/10W & 11E

FIGURE II

RADON-IN-WATER DETERMINATIONS HISTOGRAM



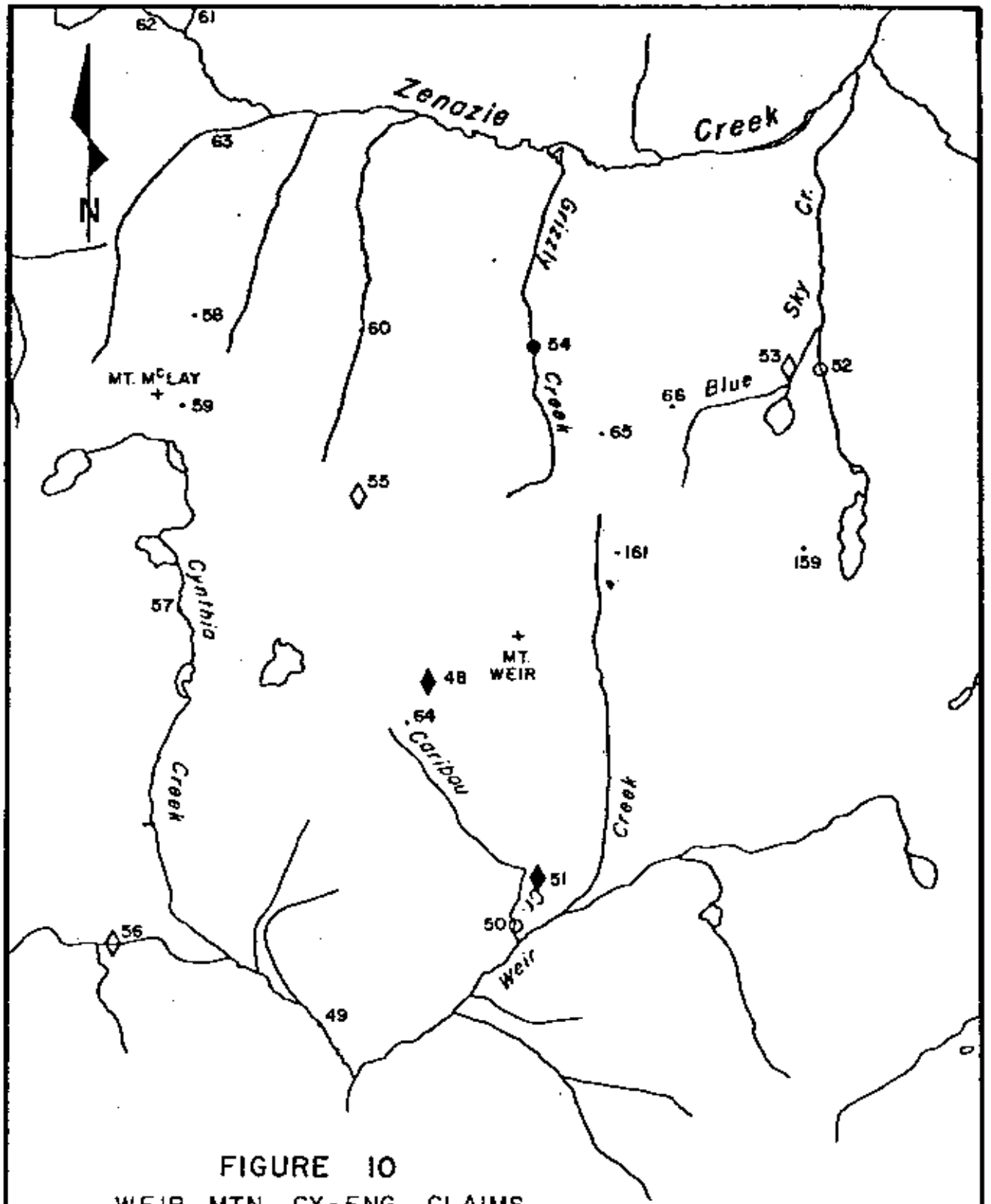


FIGURE 10

WEIR MTN. CY-ENG CLAIMS
(ATLIN MAP SHEET 104N)

RADON IN WATER RESULTS AND SAMPLE LOCATIONS

· 66 Sample Number (all samples prefixed 110G-)

- · 0-30 cpm
- O 30-100 cpm
- ◇ 100-200 cpm
- ⊙ 200-400 cpm
- ● 400-800 cpm
- ♦ over 800 cpm

0 1000 2000 3000 Metres

Mineral Titles Reference Map 104N/10W & 11E

APPENDIX

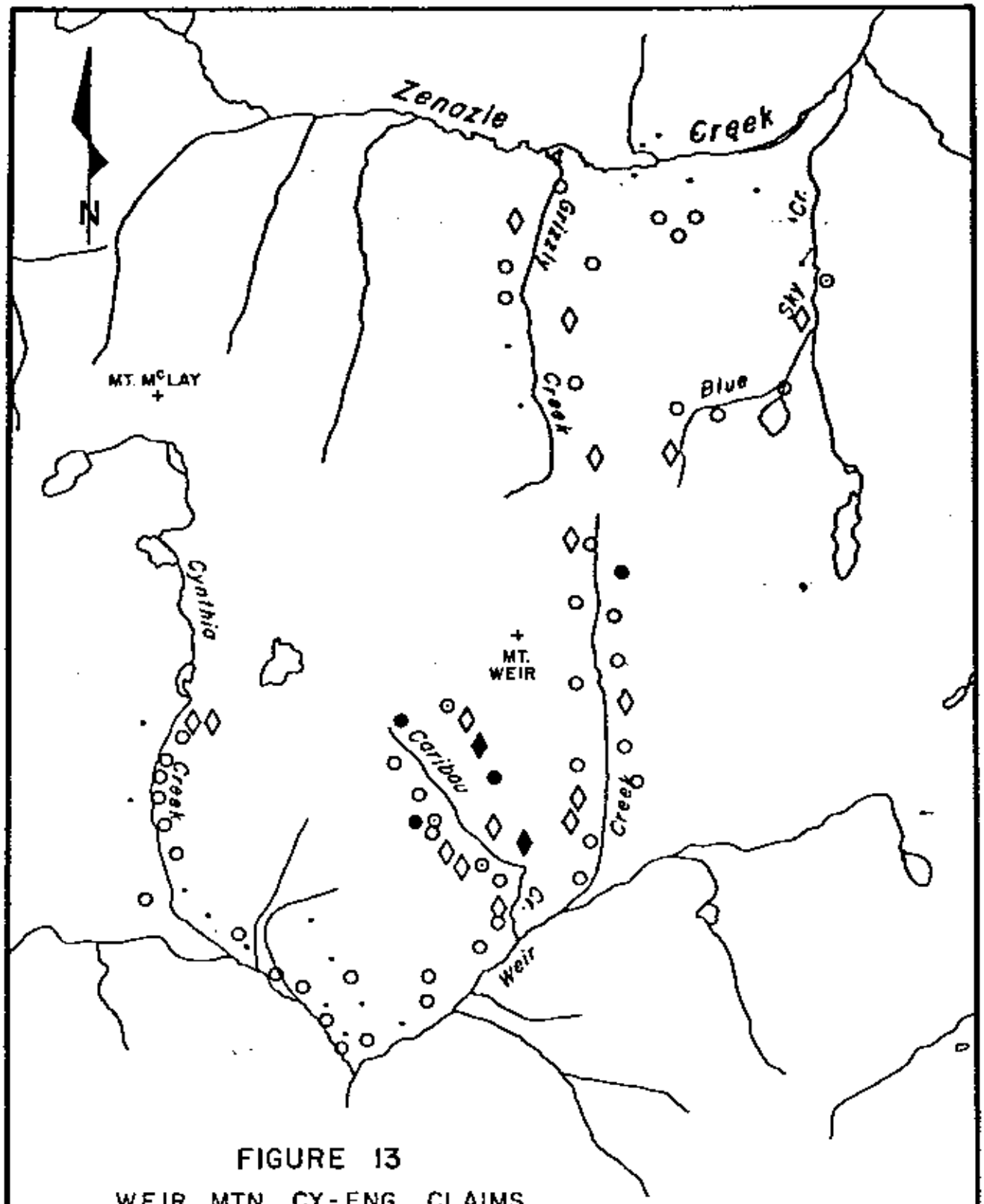


FIGURE 13

WEIR MTN. CY-ENG CLAIMS
(ATLIN MAP SHEET 104N)

RADON IN SOIL RESULTS

FIGURE 14

RADON - IN - SOIL DETERMINATIONS HISTOGRAM

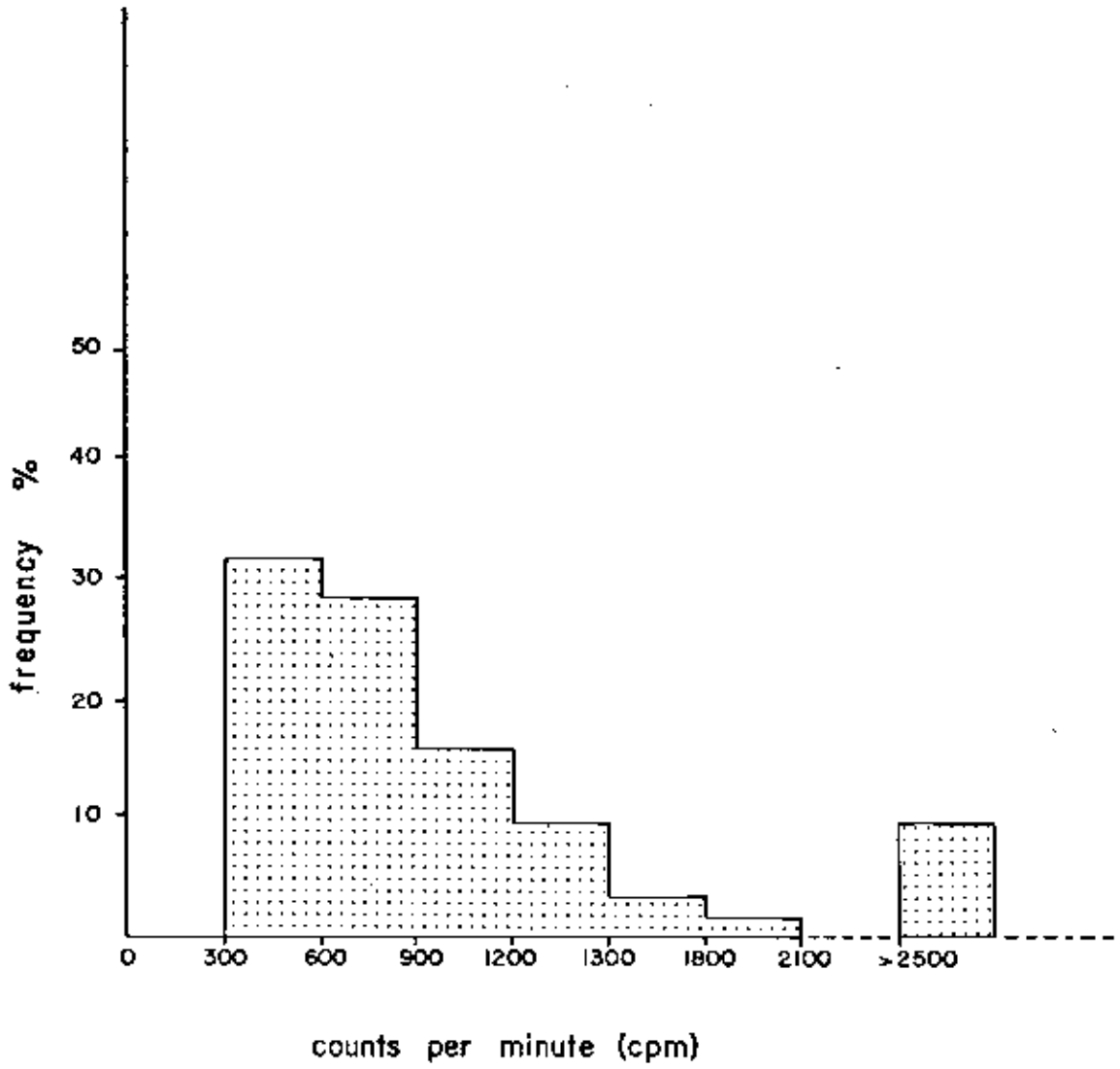


TABLE I: Stream-Water Analyses for U_3O_8 Determination (Bondar-Clegg)

Sample No.	U_3O_8 ppb
110-W-36	1.0
37	.94
38	.36
39	.38
40	1.10
41	2.80
43	3.0
46	.58
48	.54
50	1.6
51	1.70
52	.96
53	.68
54	1.20
55	.56
56	.4
58	.38
59	.36
60	1.20
61	.78
62	1.20
63	.68
64	.32
Arithmetic mean	0.99
Standard deviation	0.72
Median	0.78

TABLE II: Stream-Sediment Samples Analyses for U_3O_8 Determination (Bondar-Clegg)

Sample No.	U_3O_8 ppm
110-S-36	52.6
39	32.0
42	42.0
43	132.0
46	19.0
47	13.0
50	32.0
51	15.0
52	128.0
54	40.5
56	5.6
59	250.0
62	6.6
63	11.0
64	32.0
65	36.0
66	24.0
110-S-402	55
401	10
403	190
404	20
405	22
406	80
406A	25
406B	40
408	170
411	34
414	24
415	56
416	35
417	14
418	22
419	49
420	56
421	132
437	48
438	40
439	100
440	84
441	46
442	50
443	43
444	40
445	95
446	47
447	550
448	85
450	83

TABLE II: (cont'd)

Sample No.	U_3O_8 ppm
110-S-451	41
453	108
454	63
455	59
456	105
457	40
458	24
459	41
460	22
461	53
462	148
463	29
464	69
465	85
467	51
470	16
471	31
472	75
473	31
474	200
475A	270
475B	1100
475C	480
476	45
478	47
479	146
480	25
481	42
482	12
483	54
484	78
485	58
486	42
487	310
488	50
489	94
110-S-490	15
491	50
492	21
493	13
494	46
495	150
496	25
110-SP428	155
431	57
432	55
434	108
436	32
439	43
440	105

TABLE II: (cont'd)

Sample No.	U_3O_8 ppm
110-SP451	16
466	18
Arithmetic mean	83.35
Standard mean	133.88
Median	46.5

TABLE III: Radon Emanometry in Stream-Water

Sample No.	Counts ppm
110-G-41	37.6
42	17.3
43	220.0
48	948.0
50	62.8
51	1118.7
52	69.6
53	153
54	467
55	190
56	165
57	14.5
58	266
59	276
60	641
61	95
62	96.7
63	52.8
161	187
Arithmetic mean	267.2
Standard deviation	313.6
Median	183

TABLE IV: Radon-Emanometry Determinations in Soil (Mattagami's Properties)

	Sample No.	Net cpm
Cynthia Ck. Watershed	110-P-400	596
	401	806
	402	400
	403	512
	404	426
	405	709
	406	678
	407a	419
	407b	811
	408	431
	409	378
	410	759
	411	618
	412	636
	413	650
	414	524
	415a	1349
	415b	1369
	416	319
	417	430
	418	514
	460	362
	461	750
	462	464
	463	365
Weir Ck. - Caribou Ck.	110-P-422	469
	423	853
	424	948
	425	976
	426	801
	427	1859
	428	1224
	429	1108
	430	843
	431	1418
	432	3022
	433	1662
	434	501
	435	622
	436	2580
	437	1209
	438	1762
	439	6574
	440	5588

TABLE IV: (cont'd)

	Sample No.	Net cpm
Weir Ck.	110-P-441	722
	442	572
	443	997
	444	771
	445	1032
	446	966
	447	903
	448	1088
	449	644
	450	883
	451	2803
	452	509
	453	560
	454	1084
	455	584
	456	819
	457	1101
	458	7291
	459	1265
	Arithmetic mean	1179.29
	Standard deviation	1336.83
	Median	810

CERTIFICATION

I, Franco Morra, residing at 11234 - 72 Avenue, Edmonton, Alberta, do hereby certify that:

1. I graduated with a degree in geology from the University of Milan, Italy (BSc, Hon., 1972) and from the University of Alberta, Edmonton (MSc, 1977).

2. I have practiced my profession since 1972 and I am presently employed by Mattagami Lake Mines Limited as an exploration geologist.

3. To the best of my knowledge and experience all information contained within the scope of this report is believed to be accurate.

F. Morra, B.Sc., M.Sc.
Exploration Geologist

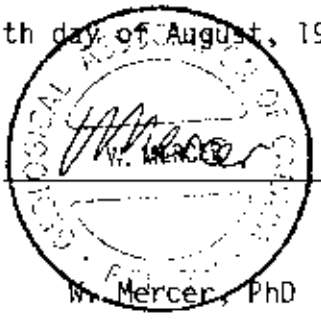
Dated: 11 August, 1978

CERTIFICATE

I, William Mercer, of the City of Edmonton, Province of Alberta, do hereby certify that:

1. I am a geologist risiding at 11515 - 75 Avenue, Edmonton.
2. I am a graduate of Edinburgh University, Scotland, with a BSc Hons (1968) in geology.
4. I have been practicing my profession for 4 years and am at present District Geologist for Mattagami Lake Mines Ltd. in Edmonton.
5. I am a fellow of the Geological Association of Canada and a member of the Society of Economic Geologists and the Canadian Institute of Mining and Metallurgy.
6. I supervised the work that is described in this report.

Dated this 9th day of August, 1978



W. Mercer, PhD