

CENTRAL PACIFIC MINERALS N.L.

PROGRESS REPORT ON AUTHORITY TO PROSPECT

1959

PINE CREEK

THE JAR COPPER PROSPECT N.T. 11-12

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SUMMARY

Routine prospecting, four miles south-west of Grove Hill siding in 1970 located a series of unrecorded workings for gold and copper. The prospect was named The Jar following the discovery of a large Chinese artifact adjacent to the workings.

The mineralization, up to 5 feet wide and discontinuously exposed over 2000 feet consists of quartz-limonite and minor box-works containing malachite, azurite and rare (?) cuprite within a host rock of silicified and ironstained Burrell Creek siltstone.

Geological mapping followed by soil and weathered bedrock sampling have delineated a number of anomalous zones which will require further work.

INTRODUCTION

During prospecting of Authority to Prospect 1959 in 1970, silicified siltstone and vein quartz carrying malachite and azurite over 250 feet in length and up to 5 feet wide was discovered. Alluvium and rubble concealed the southern extension of the vein although two occurrences, less than two feet wide, were found 2000 feet further south.

A grid with lines 400 feet apart was laid over the area and soil samples collected from eight inches below the surface were collected. This was followed by auger drilling to penetrate rubble and alluvium and sample underlying weathered rock. Geological mapping of the area was completed.

Analytical work was performed by Geochemical and Mineralogical Laboratories B29 Ltd. of Sydney, while auger drilling was carried out by Mines and Water Resources Branch of Northern Territory Administration.

SITUATION AND ACCESS

This prospect is approximately four miles south-west of Grove Hill siding on the North Australian Railway. Grove Hill, 120 miles from Darwin, can be reached by all-weather road, thence by bush track which is negotiable only during the dry season, from April to December. Both Grove Hill and the prospect are within the area bounded by the Burrundie 1:63,360 sheet which is part of the Pine Creek 1:250,000 sheet.

HISTORY AND PREVIOUS INVESTIGATIONS

There is no known record of any previous investigations. Workings over the copper prospect were evidently made by Chinese prospectors in the 19th or early 20th century, when numerous gold lodes in surrounding areas were exploited.

GEOLOGY

The Lower Proterozoic Burrell Creek Formation is the host rock to the mineralization. Walpole et al (1968) describe this Formation: "It consists mainly of medium to fine-grained greywacke and quartz-greywacke, greywacke siltstone, and siltstone; with minor lenses of claystone, quartz sandstone, quartz siltstone and conglomerate in places".

Outcrop is sparse in the area of the mineralization as alluviated areas and scree covered rises tend to conceal the geology.

MINERALIZATION

The mineralization consists of a three foot wide

zone of malachite, minor azurite, hematite, limonite, quartz and possibly cuprite within a host of silicified siltstone striking northerly for a distance of about 300 feet. Trenching and pitting occur along this zone which is apparently parallel to the strike of the enclosing shale. To the south the mineralization passes beneath rubble and alluvium. Approximately 2000 feet south, two silicified siltstone, quartz-limonite, malachite occurrences showed through a "window" in the rubble (Map 38).

Two composite samples of this mineralization were dispatched to the Australian Mineral Development Laboratories for semi-quantitative spectrographic analyses.

Results in ppm as follows:

Co	30, 100	Ni	150, 250	V	x, 10
W	x, x	Mo	3, x	Mn	400, 400
Be	1, 3	Cu	2000, 5000	Pb	200, 30
Zn	30, 30	Sn	4, 4	Cd	x, x
Bi	15, 1	Ag	1, 014	Au	x, x
Ga	x, 10	Ge	x, x.	As	400, x
Sb	x, x	Te	x, x	Tl	x, x
Y	50, 20	La	x, x	Ce	x, x
Sc	x, x	Eu	x, x	Hg	x, x

x = not detected.

MINE WORKINGS

Meridionally trending trenches, pits and shafts have been excavated over a discontinuous distance of 250 feet. The workings are apparently shallow, the deepest being a shaft about 30 feet deep, although one shaft now filled in by spoil, could have been deeper. No unweathered sulphides were found on the dumps or in the excavations. (Map 39)

GEOCHEMISTRY

Soil sampling was carried out by Central Pacific Minerals during 1970. A total of 540 mattock samples was collected from a depth of about eight inches at 50 foot intervals along lines four hundred feet apart. The samples were analysed by Geochemical and Mineralogical Laboratories of Sydney for copper, lead and zinc using perchloric acid digestion and atomic absorption techniques.

Auger drilling was used to further delineate the soil anomalies by deeper sampling to weathered bedrock. This programme involved 128 holes totalling 1370 feet. Samples were analysed for copper, lead and zinc using the same analytical technique as was used on the soil samples. Results of this work are shown on Maps 40, 41 and 42.

Copper: Map 40 shows the 80 ppm copper isopleths for soil and weathered rock. In general, the areal extent of the copper anomalies are smaller for weathered rock samples than for soil samples. This is probably due to spread of the metal values from the source in weathered rock through the soil cover. However, it could be due to the wider sampling interval used in the collection of weathered rock samples.

Spread of copper in soil is very apparent in the vicinity of line 31,000N where the copper lode was opened up (See Map 40). Spoil heaps around the workings are the most likely source of the copper anomaly which is 350 feet wide in this vicinity. The weathered rock copper anomaly continues southward from the exposed mineralization for a distance of at least 800 feet.

Malachite is exposed at the surface between lines 28600N and 29000N. Both a soil and a weathered rock copper anomaly surround these outcrops and once again the soil anomaly covers a larger area than the weathered rock anomaly.

A soil copper anomaly extending from 26200N to 27800N is reflected in the weathered rock by an anomaly, smaller in extent from 27000N to 27800N.

A number of weathered rock copper anomalies found by auger drilling through alluvium were not found by the original soil sampling over the alluviated areas. In the southern part of the area surveyed there is a possible copper anomaly 3200 feet long in the weathered rock extending from 25800N to 27400N. However, this anomaly is based on only three values, and the sample lines are 800 feet apart. More closely spaced auger holes would have to be drilled and sampled to confirm this anomaly.

Lead: The sampling technique failed to detect a significant lead anomaly. A low order soil anomaly (up to 70 ppm Pb) 1200 feet long (Map 39) is reflected in the weathered rock as a 200 foot long anomaly (64 ppm Pb) and is not considered to be of further interest. Several anomalies with higher values (250 ppm highest) have limited extent both in weathered rock and soil and as such are not considered to be important.

Zinc: Only small areas have anomalous zinc values (See Map 42) and are of no interest.

COSTEANING

Two costeans were excavated by bulldozer across the vein between lines 28800N and 29000N (See Map 40).

The southern costean is 70 feet long in an east-west direction and encountered a four foot wide massive silicified limonite with malachite as partings and encrustations.

The northern costean is 200 feet long and extends to the quartz vein (See Map 38). A six foot wide massive limonite vein within silicified siltstone areas was exposed carrying minor boxworks and malachite partings. The country rock exposed by the costeaning are weakly iron-stained, grey siltstones containing quartz veins less than one foot wide.

Chip-channel samples were collected over intervals 20 feet across the strike unless otherwise indicated. Analytical results are as follows:

Northern Costean (From east to west)

<u>Interval (')</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ag (in ppm)</u>	
0.- 20	400	56	28	0.6	vein quartz rubble
20 - 40	360	42	24	0.6	leached siltstone
40 - 60	310	36	16	0.6	" "
60 - 80	360	54	20	0.4	" "
80 - 100	260	52	14	0.8	" "
100 - 120	220	60	20	0.9	" "
120 - 140	180	70	14	1.1	" "
140 - 156	600	42	10	0.6	slightly ironstained siltstone
156 - 164	>1%	56	26	4.0	ironstone and silicified siltstone - malachite partings
164 - 180	1300	120	28	0.9	slightly ironstained siltstone
180 - 200	1100	230	64	1.0	" "

Southern Costean (From east to west)

<u>Interval (')</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ag (in ppm)</u>	
0 - 20	640	38	18	0.4	leached siltstone
20 - 23	700	42	34	0.6	slightly ironstained siltstone
23 - 27	>1%	130	62	3.2	ironstone with malachite partings
27 - 40	1850	42	20	0.8	slightly ironstained siltstone
40 - 56	410	68	24	0.8	leached siltstone

POTENTIAL

The geochemical results for copper suggest that there could be five zones of mineralization varying between 600 feet and 1800 feet in length.

Mineralization exposed at the surface between lines 31000N and 31400N appears to consist of discontinuous shoots and lenses, the widest being about five feet.

THE JAR COPPER PROSPECT N.T. 11-12

CONCLUSIONS AND RECOMMENDATIONS

Prospecting and subsequent geological mapping has delineated a zone of silicified siltstone within the Burrell Creek Formation containing vein quartz, malachite, azurite and possibly cuprite, averaging three feet in width over a discontinuous distance of 2000 feet.

Follow-up geochemical work outlined five zones of copper enrichment greater than 600 feet in length. Further geochemical sampling of weathered rock under alluvium is necessary to confirm the continuity of these zones along their length (the existence of some anomalies are postulated on only three results, due to the initial wide spacing of drill holes).

The results of the geochemical surveys suggest that five copper-quartz veins with lengths varying between 600 and 1800 feet could be present. If further work confirms the continuity of these veins along these lengths and if the veins average 3 feet in width and extend in depth for a distance of half their length, then about 800,000 tons of copper bearing material could be present.

Further work is recommended to determine the continuity, width and grade of the copper mineralization. This would involve detailed weathered rock geochemistry using an auger drill, followed by bulldozing across the veins so that information on thickness and grade could be established.

CENTRAL PACIFIC MINERALS N.L.

PROGRESS REPORT ON AUTHORITY TO PROSPECT

A.P. 1959

HEATLEY'S PROSPECT N.T.11-2

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Scale 1" = 400'

J.W. Shields
1971.

SUMMARY

Reconnaissance and detailed geochemical surveys were completed over portions of Authority to Prospect 1959 containing exposures of Golden Dyke Formation which is a known host to base metal and uranium mineralization. Zones of copper and lead enrichment was located within these rocks and one of these zones was opened up with a bulldozer.

The resulting costean on Heatley's Grid was about 350' long and exposed black shales down the side of a 40° slope. The black shales were ironstained while joints and fractures were filled with limonite and hematite. No sign of massive sulphide mineralization was observed but the shales did contain minute limonite filled voids possibly after a sulphide.

Anomalous surface lead values over the black shales were of the order of 1,000 to 2,000 ppm and values over a strike length of 2500 feet.

Similar geochemical results for lead in the Rum Jungle locality would be considered significant where the Golden Dyke Formation is a host to previously exploited galena concentrations.

However, the Rum Jungle area is very deeply weathered with thick residual soils overlying the rocks. At Heatleys area, the topography is fairly rugged with scree covered slopes and restricted soil development. Hence, ratios of weathered rock metal values to unweathered rock metal values could not be expected to be the same in each area.

INTRODUCTION

Systematic prospecting within the Authority by Mr. J. Heatley during 1969 led to the discovery of shallow trenches containing malachite and azurite. As these occurrences are not recorded in the literature examined to date, the general area has been named after the individual responsible for prospecting with this region.

Chip sampling of iron rich portions of the black slates of the Golden Dyke Formation in this area reported values of up to 2000 ppm copper as well as anomalous lead and zinc values.

The black slate, host rock to Heatleys prospect, was gridded along meridionally strike and soil samples collected for geochemical analysis.

The area was geologically mapped at photo-scale (approximately 1:350' to 1") and a reconnaissance geochemical survey carried out over black slates exposed about two miles east of Heatleys Prospect. Analytical work was carried out by Geochemical and Mineralogical Laboratories Pty. Ltd. of Sydney.

SITUATION AND ACCESS

The area is located about 90 miles south-west of Darwin and occurs within the boundaries of the Pine Creek 1:250,000 sheet. The Stuart Highway crosses the southern part of the area from east to west. A formed gravel road traverses the area from north to south, connecting Grove Hill to the Stuart Highway. Various bush tracks traverse the area and are suitable for four wheel drive vehicles during the dry season.

TOPOGRAPHY

The relief is about 300 feet, from the alluvial plain of the Margaret River in the north to the mesas occurring in the central and southern part of the area. Steep sided scree covered hills and youthful V-shaped valleys form the catchment and headwaters of the Margaret River which flows north to the Arafura Sea.

GEOLOGY

The geology of the area is described in a separate report by Pietsch (1970).

Rocks of the Lower Proterozoic Golden Dyke Formation are extensively exposed as a sedimentary sequence of dolomite and carbonaceous siltstone, quartz siltstone and micaceous siltstone intruded by dolerite sills. The Cullen Granite intrudes the rocks. Flat lying cretaceous sandstones and siltstones overlie the older rocks as mesas.

The older rocks are gently folded with north-south trending axes and are warped in an east-west direction to give closed, plunging structures.

MINERALIZATION

The Mt. Bonnie Mine is located in the north of the Heatleys area and is held under Mineral Lease 127B by a Mr. W. Lester. A gossanous outcrop containing pyromorphite trends north and is about 200 feet in length and 20 to 30 feet in width. From previous mining activity the gossan pitches north and dips west as an ore shoot of unknown dimensions. Mine workings tested this ore shoot above the water table at intervals between 1903 and 1916 but no records of production are available. The ore has low gold and copper values, moderate lead and zinc and locally high silver (Walpole et al 1968).

Two diamond drill holes were drilled 1916 to test the sulphide lode beneath the water table (Annual Report for Administrator of the Northern Territory 1917).

Diamond Drill Hole No. 1

At 365 feet, 34 feet of lode, true width assayed:

Ag	4 ozs/ton
Au	2 dwts/ton
Cu	trace
Pb	trace

Diamond Drill Hole No. 2

At 370 feet, 29 feet of lode, true width assayed:

Ag	13 ozs/ton
Au	20 grains/ton
Cu	0.5%
Pb	3.7%

A recent assessment of this area indicates that 250,000 tons of ore could be present in this shoot and that it pitches into P.R. 1959.

Small copper workings have been located in the area of the detailed geochemical survey. These are quartz vein-type mineralization, the largest (Heatleys) being less than 100 feet in length and up to 3 feet in width. Malachite

and azurite in a limonite-hematite-quartz lode are exposed in the shallow pits along the vein.

GEOCHEMISTRY

Regional Geochemical Survey

Chip sampling and broadly spaced soil sampling was carried out in the centre of Heatleys area where carbonaceous shales crop out (See Maps 13-15). Map 13 shows geochemical contouring of the copper values. Most of the rock types mapped at the surface in the area of this geochemical survey probably represents carbonaceous shales at depth. Hawkes and Webb (1926) quote an average value of copper for black shale as 20-200 ppm. Thus values lower than 300 ppm copper in this area may not be anomalous, unless leaching of surface values has taken place. Values greater than 100 ppm copper are prevalent, covering about one quarter of the area sampled.

One zone about 2000 feet in length is considered anomalous in copper (centred on 10,000 N 108,500E Map 13). Two chip samples in this area gave copper values of 2250 and 1100 ppm. Detailed sampling to define the limits and shape of the anomaly, followed by shallow drilling to compare unweathered rock copper values with weathered rock and soil values would determine the amount of copper leaching taking place in this environment. Results of this work would enable interpretation of other, lower copper values found in surrounding areas.

Map 14 shows lead values and corresponding 100 ppm and 200 ppm contours. Once again, values of over 100 ppm lead are wide spread. Hawkes and Webb (1962) quote an average value of lead for black shale as 20-400 ppm. Very few values higher than 400 ppm were recorded in the survey. The higher values are not concentrated in a single zone but are scattered. Hence, it would appear that lead mineralization is present in the carbonaceous shale, but a large high grade body of lead ore is unlikely to be found. However, some low grade anomalies are 10,000 feet in length and closer spaced sampling may define higher grade anomalies within these low anomalies. A lead anomaly occurs with the copper anomaly centred on 10,000N 108,500E and testing of both these anomalies could be carried out at the same time. The highest lead value occurring with the copper anomaly is 1400 ppm which comes from a chip sample (See Map 14).

Zinc values are low over the area sampled when it is considered that average zinc values are 100-1000 ppm in black shales (Hawkes and Webb (1962)). However, zinc is highly mobile element in the weathered zone and the relationship of the unweathered rock and surface zinc values has yet to be established in the area. (See Map 14)

In general, copper, lead and zinc are coprecipitated with limonite in the weathered zone, which tends to limit their mobility (Hawkes and Webb, 1963). Thus as

limonite is locally a common mineral, it is possible that geochemical weathered rock values may be of the same order of magnitude as the unweathered rocks. If this is the case, there seems little hope of an economic ore body occurring in the sampled area. However, if geochemical values at the surface are related to much higher values in the unweathered rock, then further detailed work is necessary. It is recommended that the relationship of the geochemical values above and below the water table be established so that an assessment of the economic potential of the area can be made.

Survey of Carbonaceous Shale

A detailed geochemical soil survey was carried out over the carbonaceous shale unit (Map 12/2) east of Heatleys copper prospect. Soil samples were collected on east-west lines, 400 feet apart while sample interval varied between 50 and 200 feet. (see Maps 17 and 19).

Analytical results delineated a lead anomaly 1700' x 200' containing values greater than 400 ppm, the highest value being 1400 ppm.

A costean to bedrock along line 96000N from 99600E to 100,000E was excavated (see Maps 16 to 19). Weathered bedrock consists of black slates with minor quartz veins and limonite-hematite partings. In places the slate is ironstained and contains limonite pseudo-morphs after pyrite.

Representative chip samples over 20 feet slope distance were collected along the costean and geochemically analysed. Following are analytical results from 99,500E to 100,150E.

	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ag</u>
99500E	430	76	105	1.3
	90	78	36	0.7
	1000	56	50	1.0
	115	72	220	1.1
	180	64	800	1.3
	330	130	150	1.3
	140	110	86	0.8
	140	130	115	0.7
	110	430	50	0.5
	130	680	44	0.3
	88	1550	150	1.7
	160	1800	250	1.3
	220	1500	300	1.7
	150	1100	82	1.0
	110	1700	70	1.1
	150	950	58	1.2
	310	740	64	0.7
	390	820	145	1.6
	230	700	130	1.3
	300	600	250	1.6
	180	500	200	1.4
	190	950	150	1.4

There is no evidence, in the costean of massive

gossan or of widespread sulphide pseudomorphs but it is not possible for a massive sulphide orebody to lie beneath the anomaly. Fine grained uneconomic mineralization could be present beneath the water table.

HEATLEYS AREA N.T. 11-2

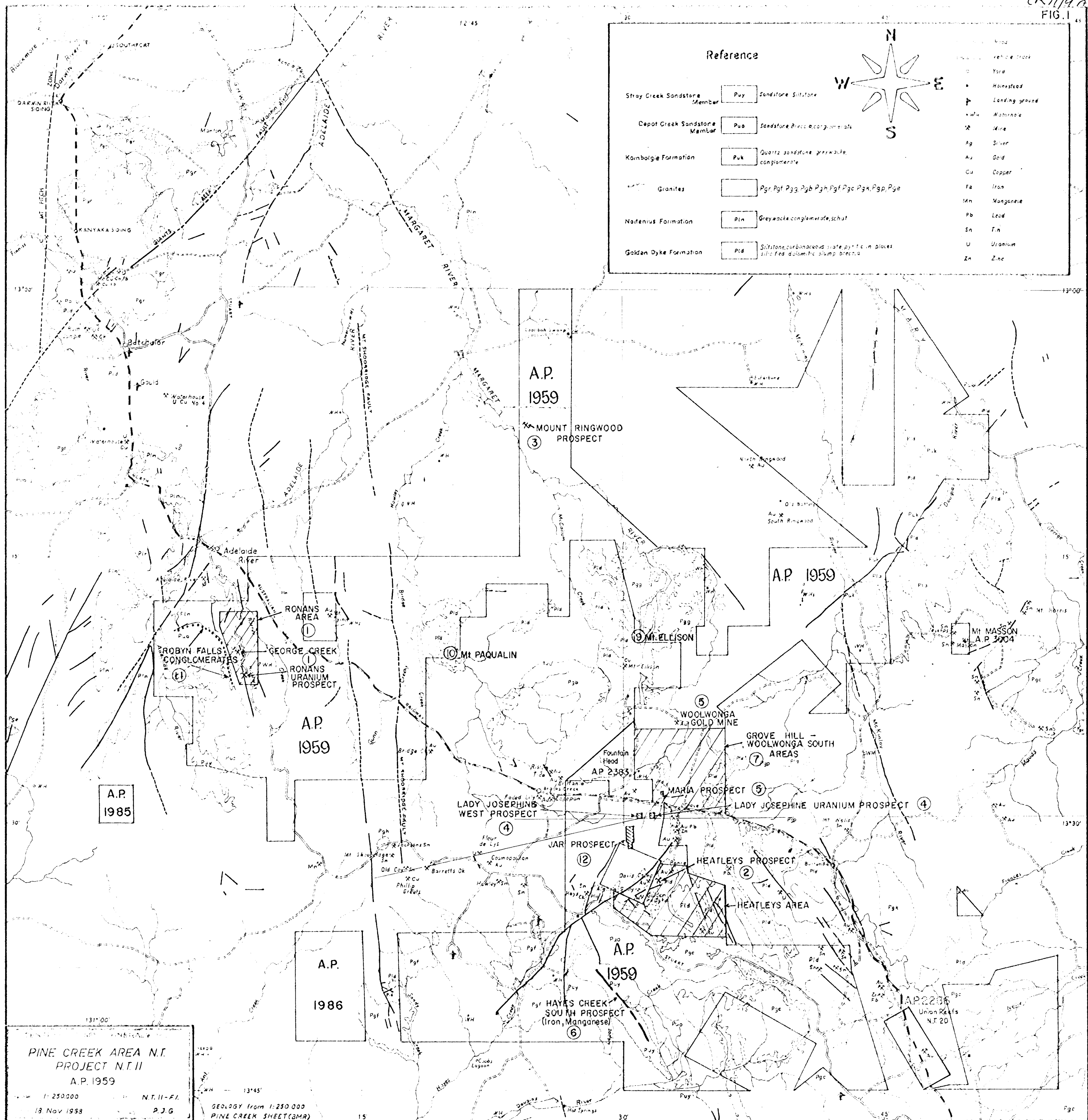
CONCLUSIONS AND RECOMMENDATIONS

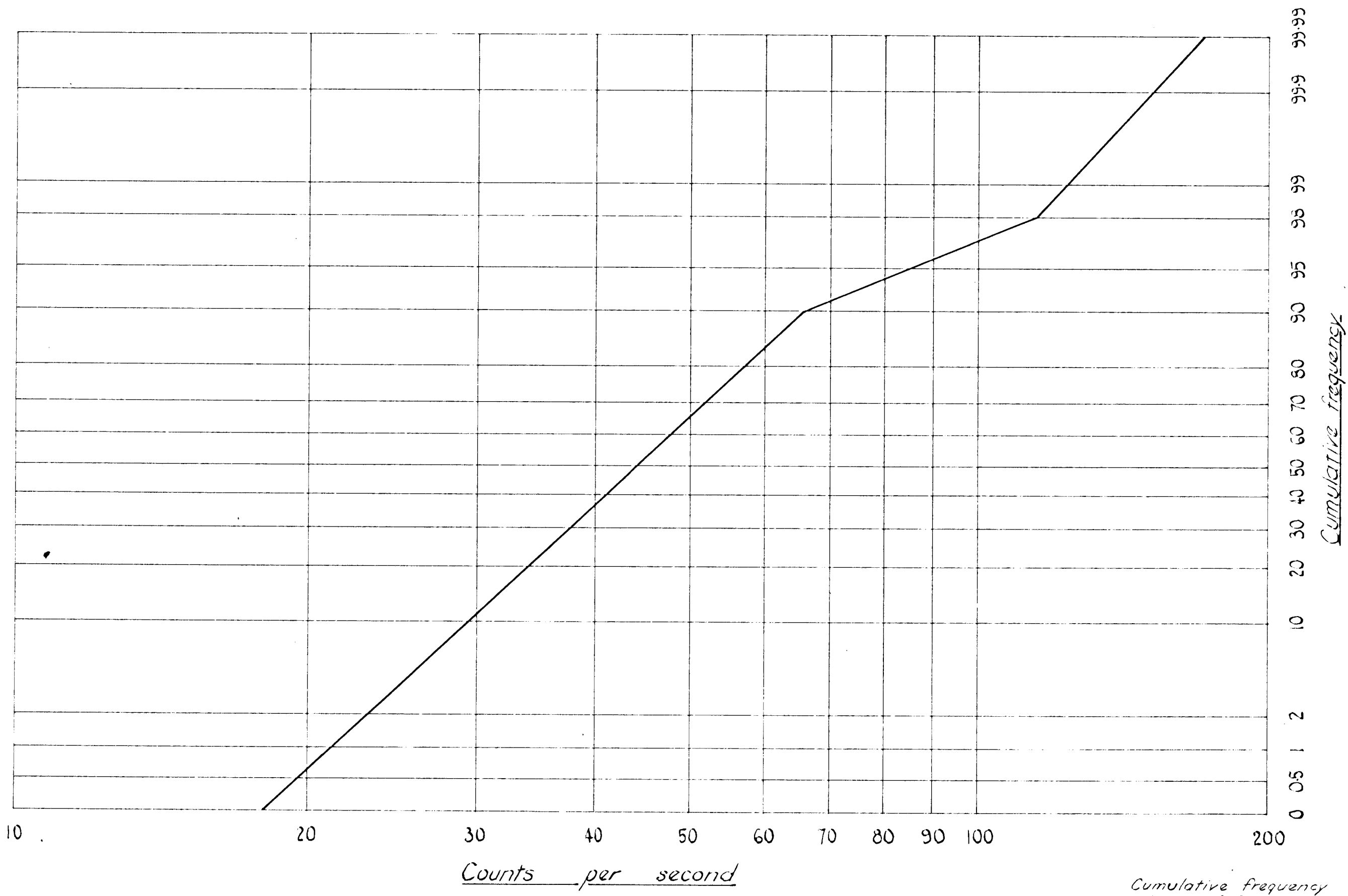
From a study of the previous workings and abandoned mines in the region, it has been found that base metal, gold and silver mineralization occurs in the Golden Dyke Formation. This study along with detailed mapping has revealed a sequence of sedimentary rocks which has better defined the regional controls to the mineralization.

Geological investigations have suggested a succession of Basal Siltstones. Quartzite beds and lenses begin to occur with increasing frequency in the middle units, although they become less common toward the upper most siltstone beds. Mineralization is mainly associated with sheared black pyritic shales, showing low grade thermal metamorphism. The Golden Dyke Mine occurs in this environment and it would appear that these beds are the most susceptible to mineralization. The Bureau of Mineral Resources believe that the quartzites lenses within the black shales are altered interbedded dolomite horizons.

The Cullen Granite has produced an 8000 foot wide metamorphic aureole. It is not known however if mineralization is due to the granite or the intrusive dolerite (amphibolite). Disseminated galena has been found in the white bearing quartz vein about two feet wide intrusive into amphibolite. However several occurrences including Iron Blow and Mt. Bonnie appear to have no close association with dolerite. It could be either the granite or the basic intrusive that is responsible for mineralization in the area, either by direct addition of base metals or by remobilisation of metals within the enclosing sediments by heat and pressure.

It is recommended that further investigations be carried out over lead anomaly on Heatleys Grid and that one of the zones of lead enrichment within the domal structure be examined in more detail.



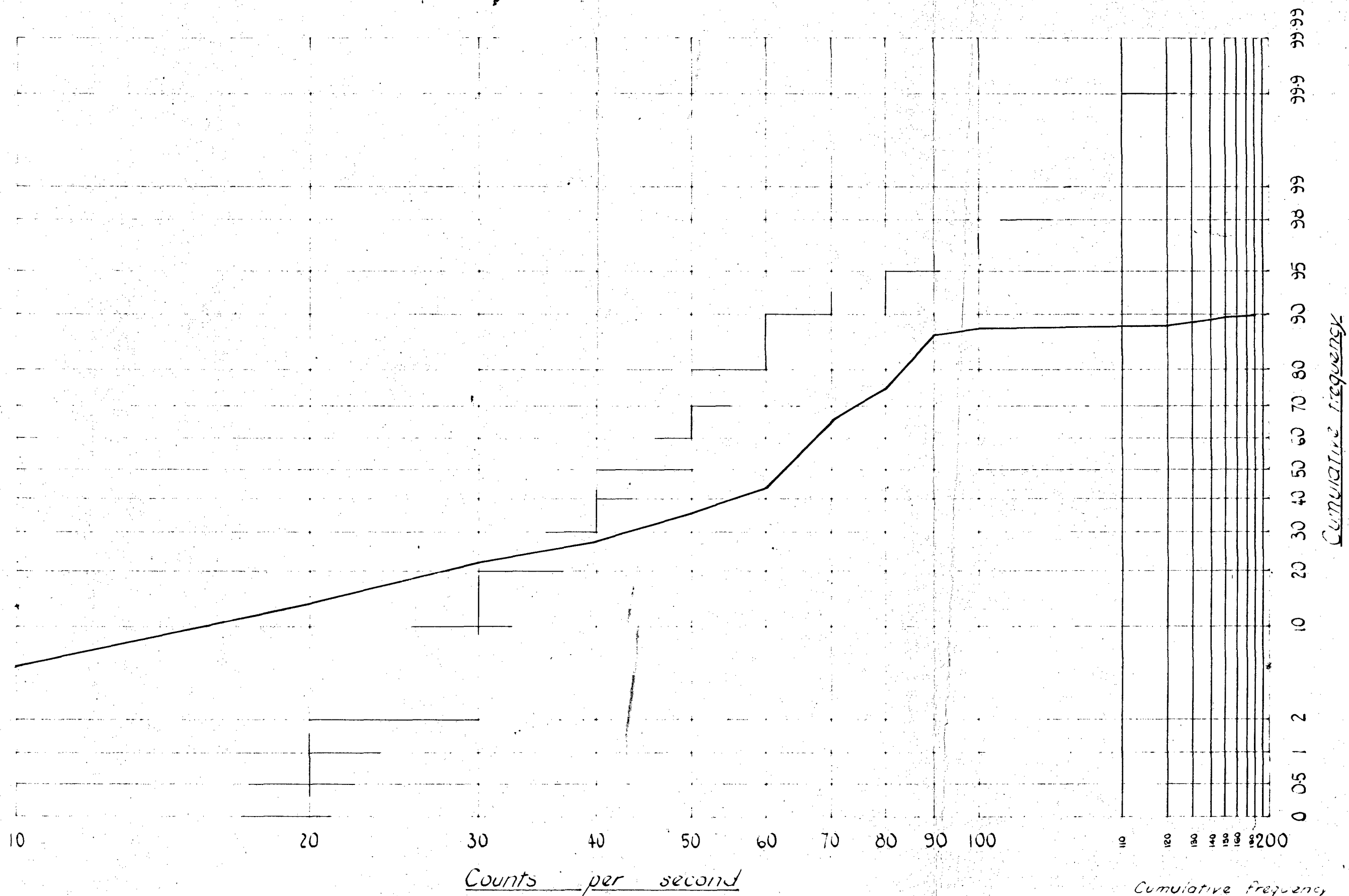


*Cumulative frequency
distribution of Scintillometer readings*

CENTRAL PACIFIC MINERALS N.L.

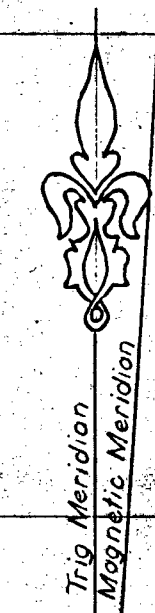
PINE CREEK A.P. 1959 (Pt.)
RONANS AREA N.T. II.I.

Scale: _____	Plan No: NT1111-F2
Date 18-1-71	Drawn by: M.F.S.



Cumulative frequency
distribution of Scintometer readings

PINE CREEK A.P. 1959 (Pt)	
HEATLEYS AREA NT. 11-2.	
DATE 21-4-71	PLAT No NT 11-2 F4
	Drawn by J.H.H.



A.P. 1959

183/22
143

121/101
135

65/54
65/52
47
55/80

5/22
12

10/3
13

7/144
131

A.P. 1959

300/380
1253

300/350
1241

54/19
112

245/70
1100

106/19
164

145/55
34

530/5300
1500

173/360
14

188/220
1510

324/1943
143

780/1360
431450

675/1790
1275

190/680

745/746
300/330

747A
1300

743, 744
1300

350/1400
1140

746
740, 160/72

250/720
12500

760/320
11400

50/130
13200

Cu/Pb
Zn
eg. 250/720
12500 in ppm

Results of Geochemical Analyses
for Copper, Lead and Zinc in ppm

CENTRAL PACIFIC MINERALS N.L.

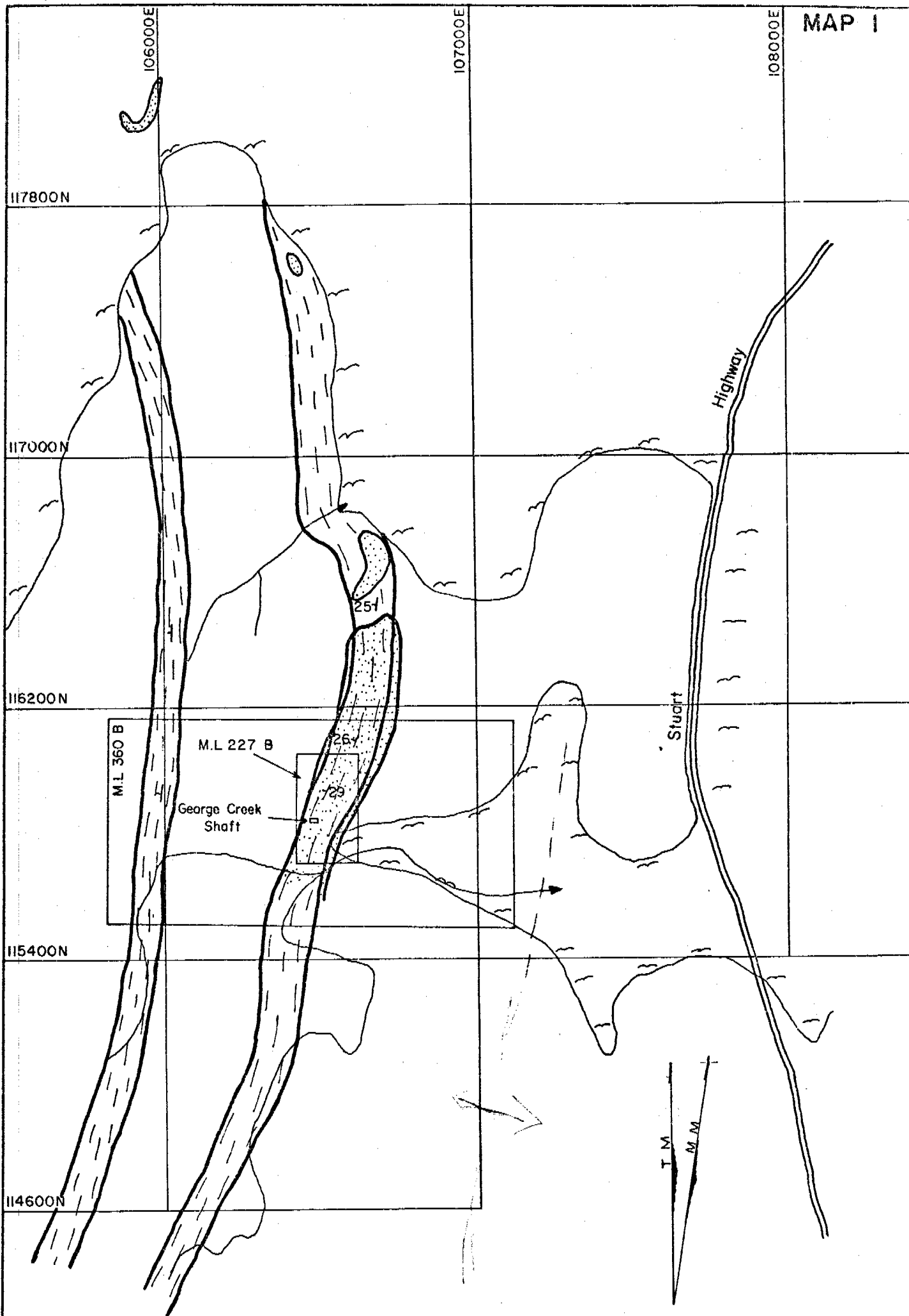
PINE CREEK NT-11

AP 1959

North-east sheet (1 of 4)

Scale: 1" = 1 mile
Date: July 1970

Drawn by: R.S.C.

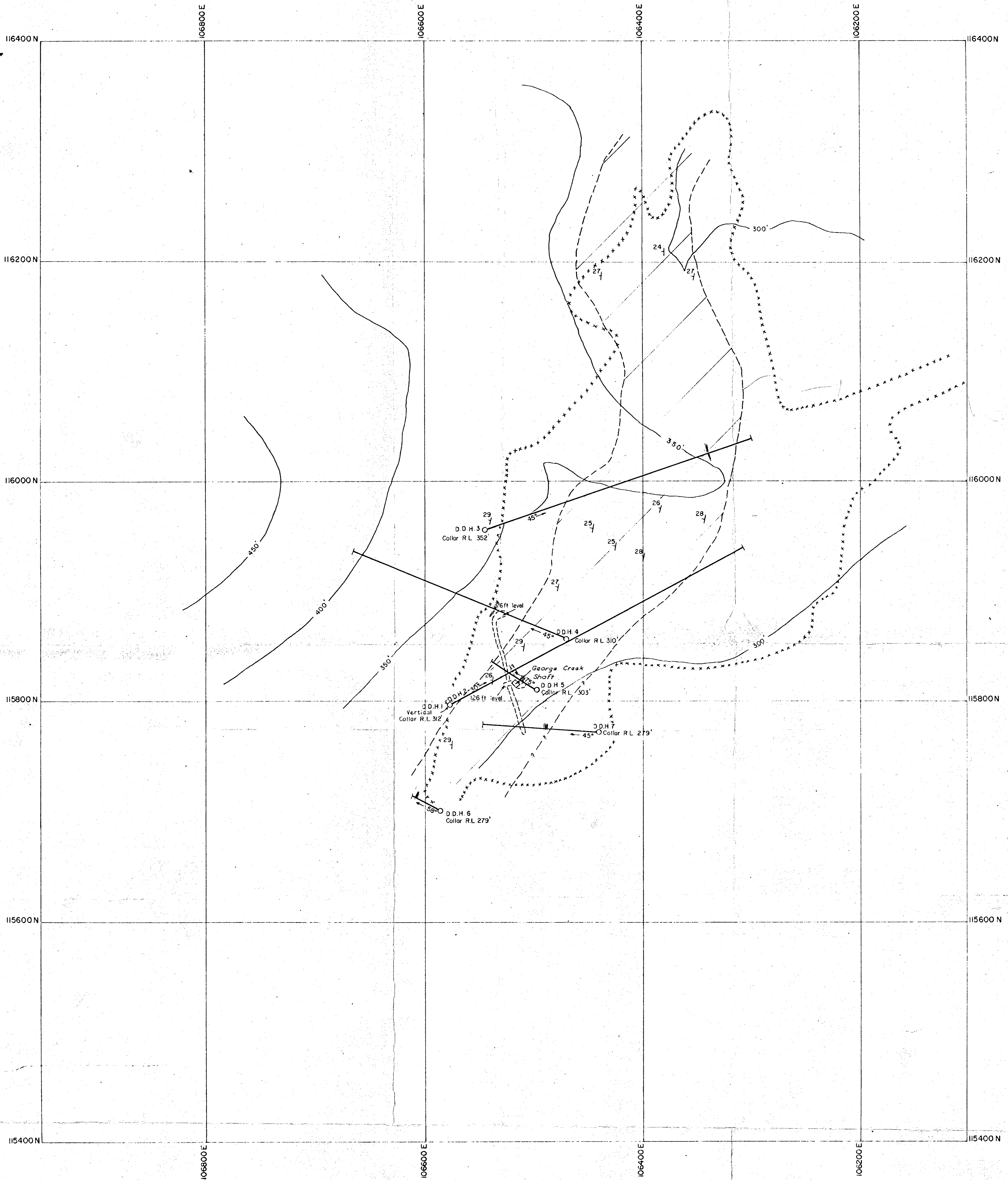


-  Banded Siltstone
-  Greywacke & Siltstone
-  Alluvium
-  Areas showing Radioactivity greater than x2 (=180 c.p.s) using scintrex B.G.S.1 Scintillometer.

Compiled from enlarged uncontrolled air photos
CENTRAL PACIFIC MINERALS N.L.

PINE CREEK A.P. 1959 (Pt)
George Creek N.T. 11-1
Lease positions, geology & radiometry

Scale: 1" = 400' Map No: N.T. 11-1-1
Date: 11-1-71 Drawn by: L.A.B



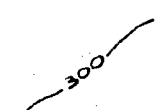
Banded grey siltstone



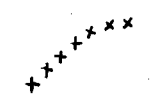
Greywacke with siltstone bands



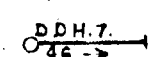
Dip & strike



Topographic contour height above mean sea level, Darwin N.T.



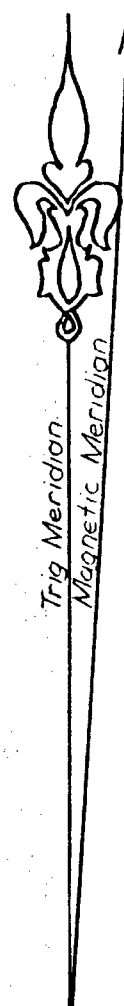
Radiometric contour 3x background (as determined by B.M.R.)



D.D.H. showing number & inclination

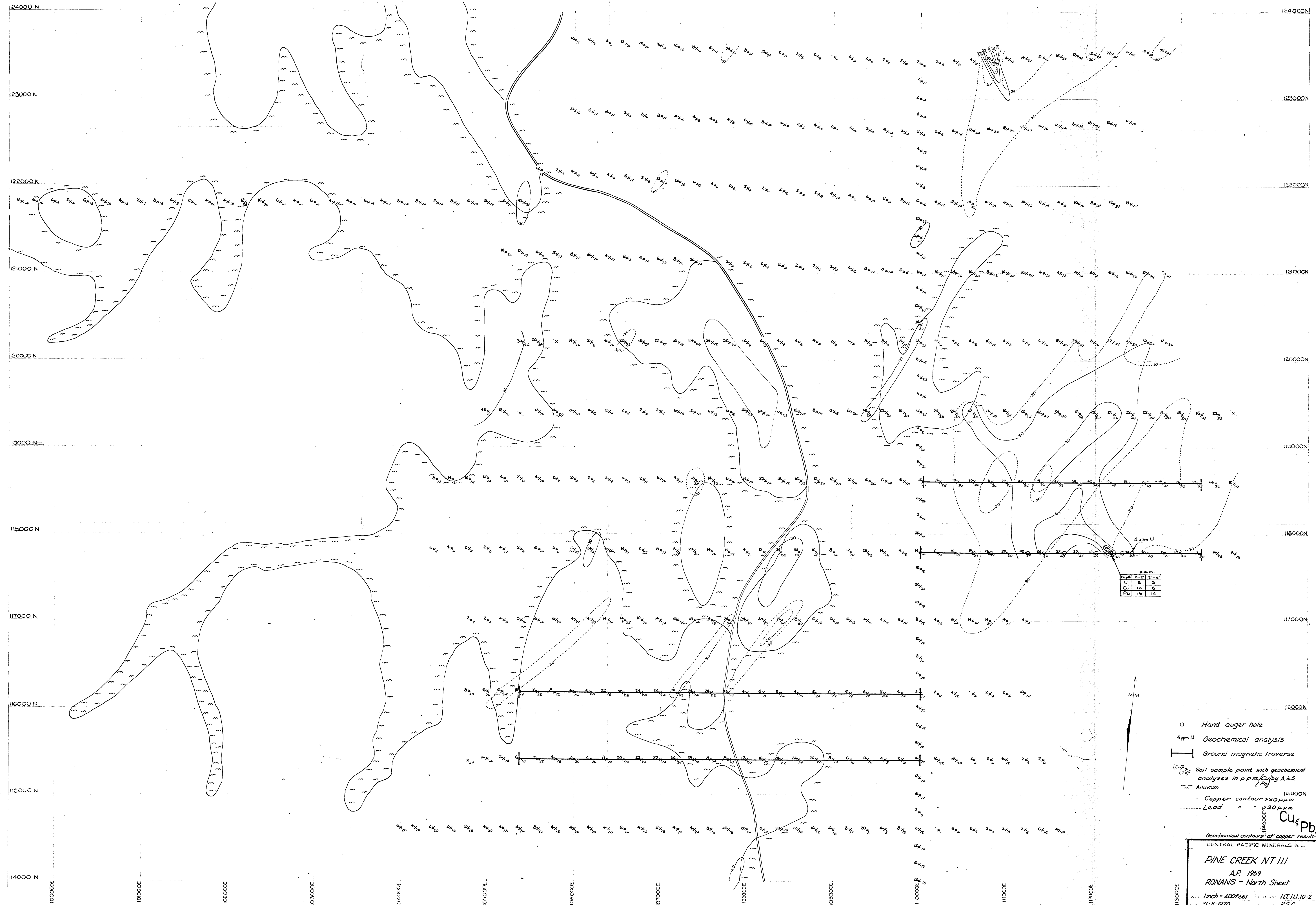


Underground workings



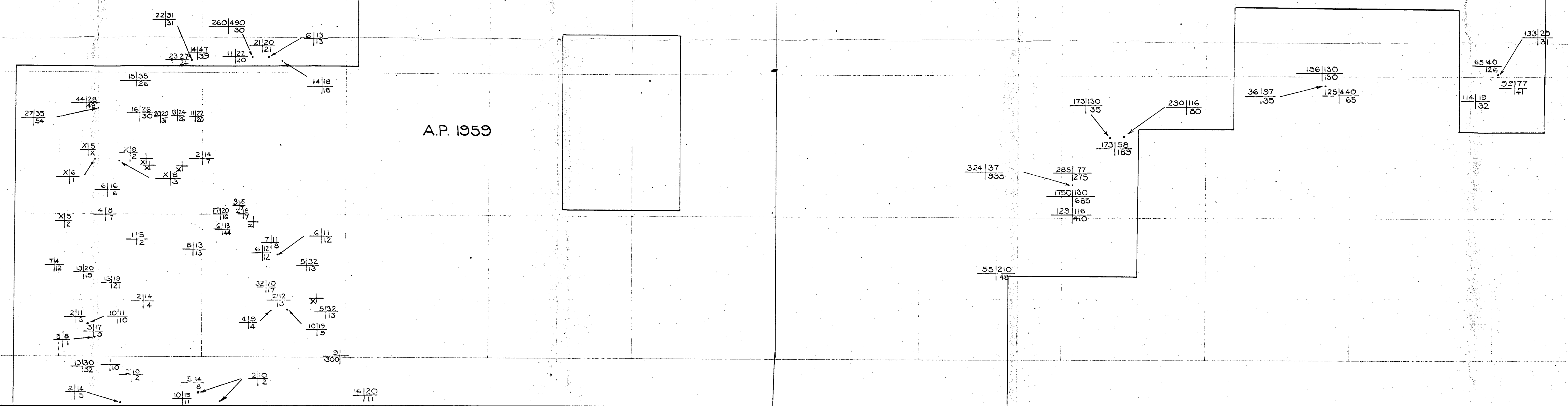
CENTRAL PACIFIC MINERALS N.L.	
PINE CREEK A.P. 1959 (Pt)	
George Creek Uranium Prospect N.T. 11-1	
Geology & D.D.H. locations	
Scale 1" = 50'	Plan No. N.T. 11-1-2
Date 15.1.71	Drawn by L.A.B.

CR 71/9A.



Maps 2(1) and 2(2)

On microfiche 6 of 6



Trig Meridian
Magnetic Meridian

A.P. 1959

A.P. 1959

99 77
41

Cu Pb
Zn

*Results of Geochemical Analyses
for Copper, Lead and Zinc in p.p.m.*

CENTRAL PACIFIC MINERALS N.L.

PINE CREEK NT-11

A P 1959

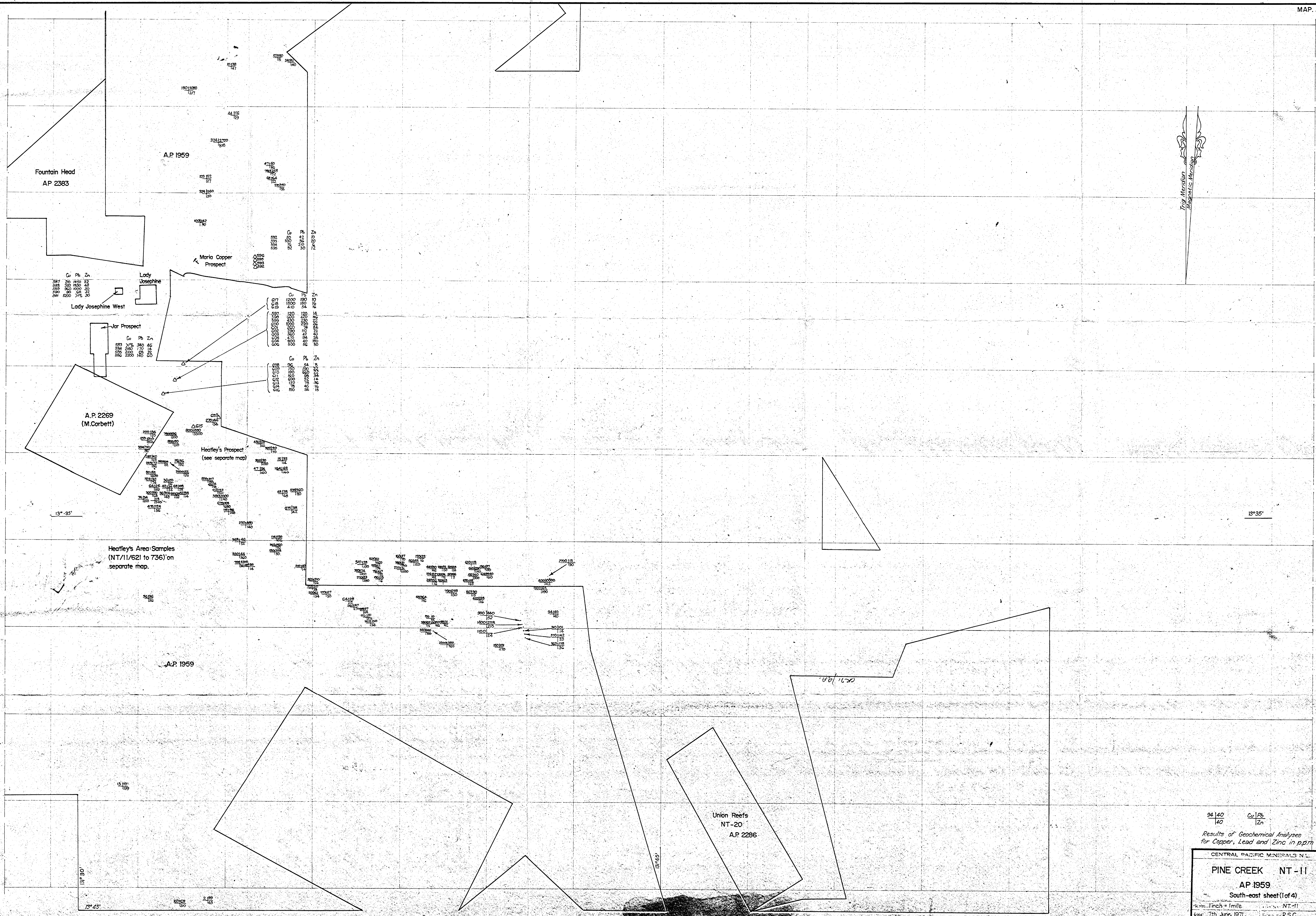
North-west sheet (1 of 4)

1 inch = 1 mile

July, 1970

NT-11

R.S.C.



Trig Meriden
Magnetic Meridian

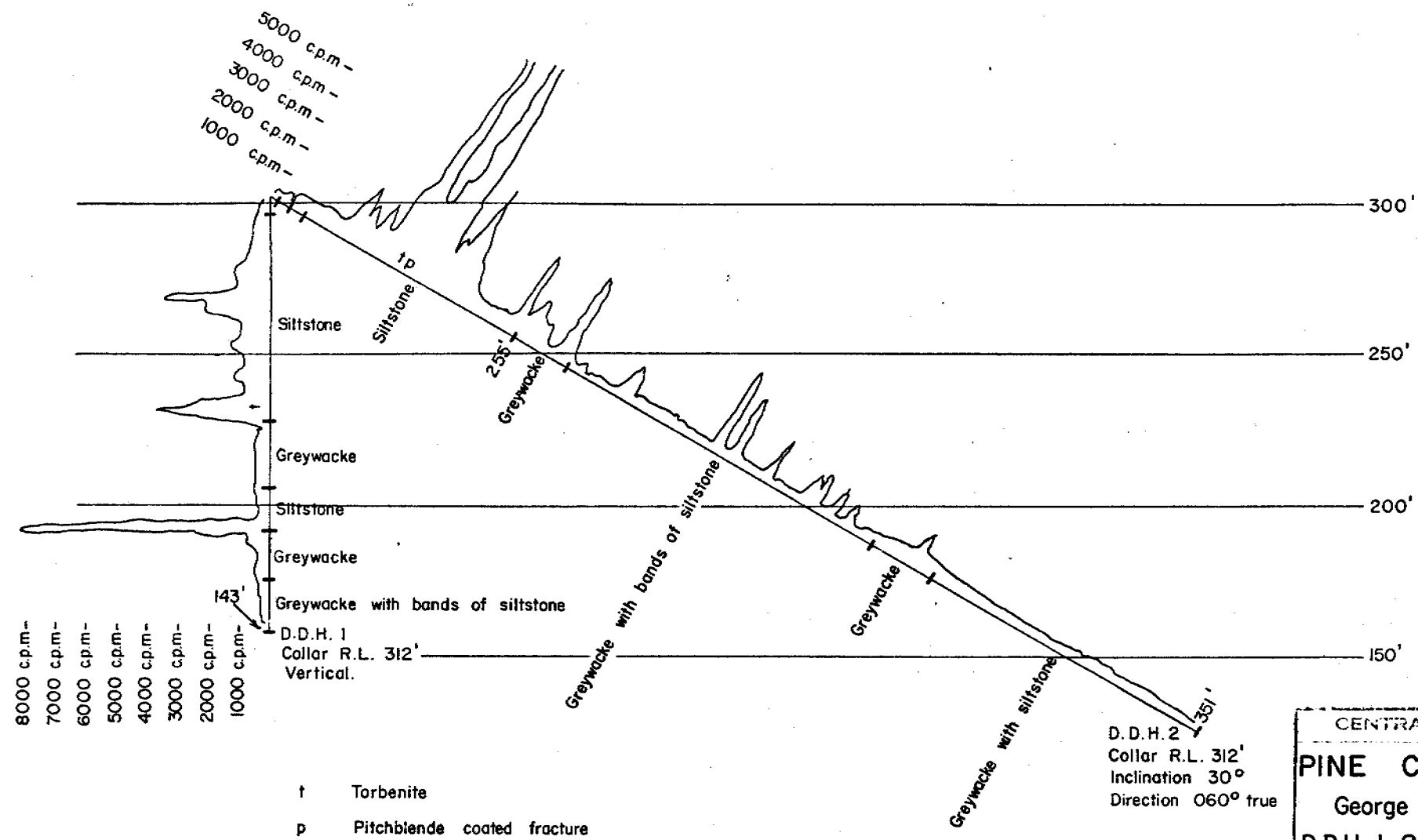
94 140 Cu/Pb
140 Zn

Results of Geochemical Analyses
for Copper, Lead and Zinc in p.p.m.

CENTRAL PACIFIC MINERALS N.L.

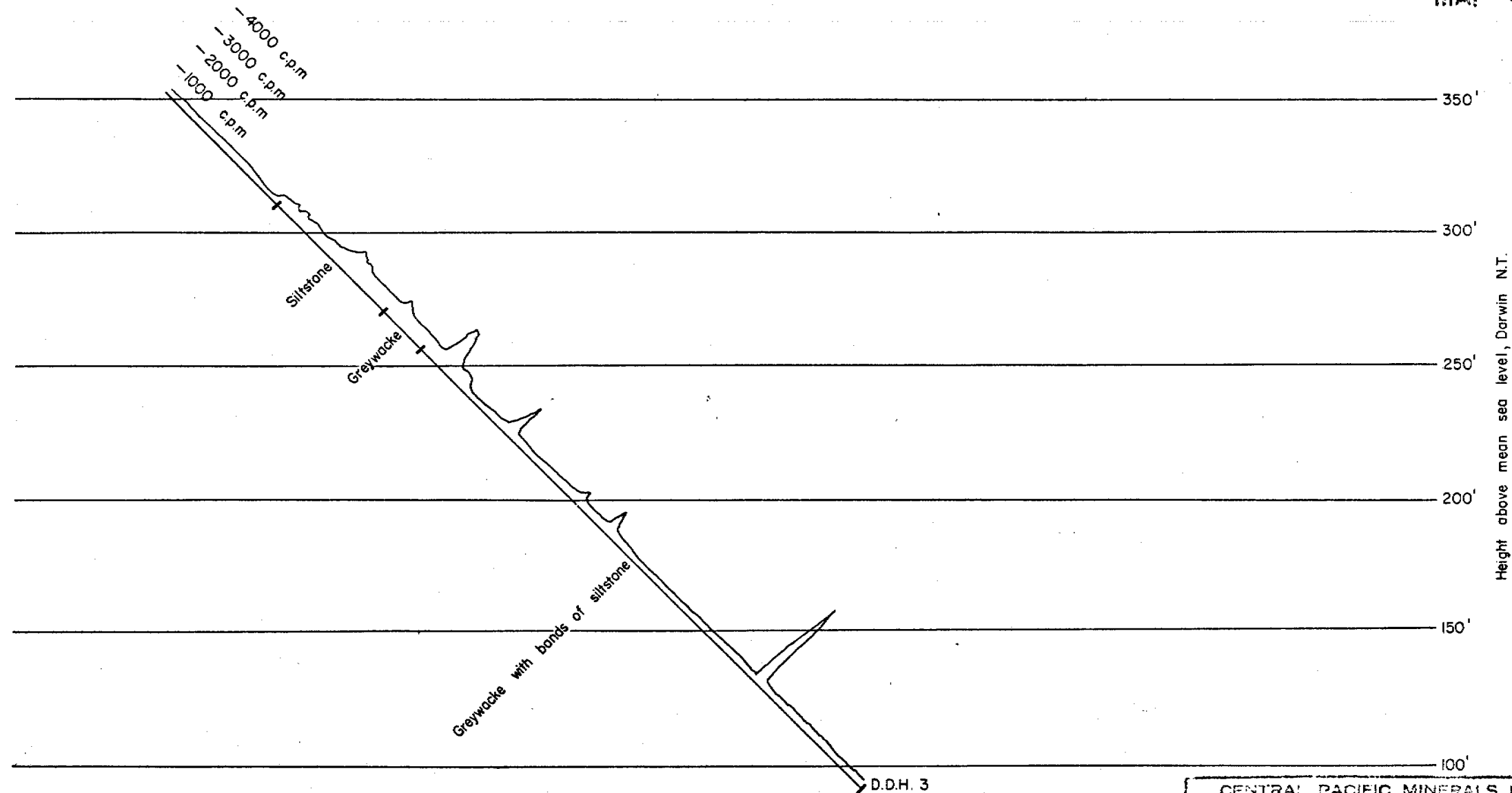
PINE CREEK NT-11
AP 1959
South-east sheet (1 of 4)

Scale: 1 inch = 1 mile
Date: 7th June, 1971
Drawn by: R.S.C.



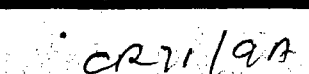
(B.M.R. Records 1955/83)

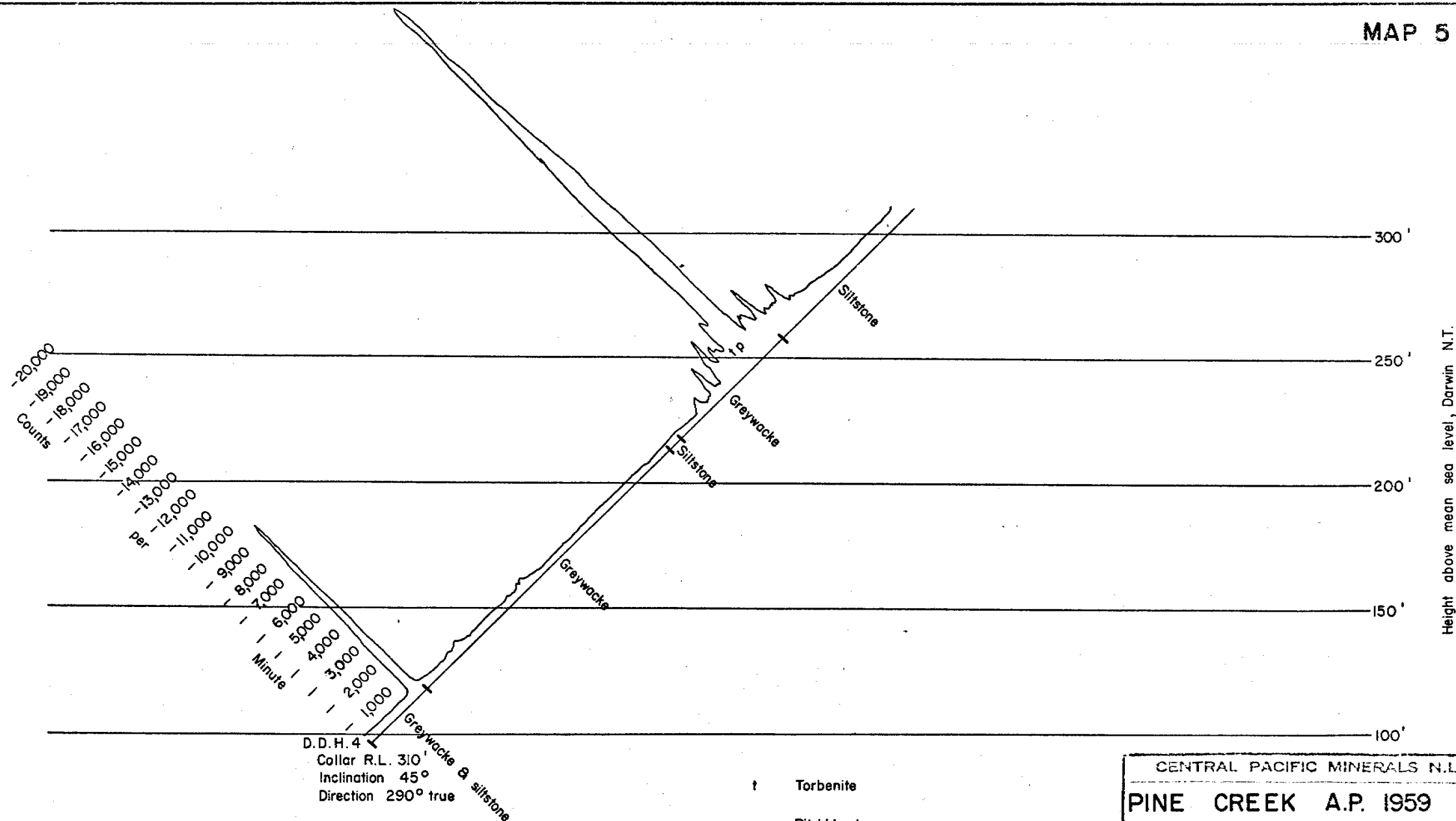
CENTRAL PACIFIC MINERALS N.L.	
PINE CREEK A.P. 1959 (Pt.)	
George Creek Uranium N.T. II-1	
D.D.H. 1 & 2 Geology & Radiometry	
Scale: 1" = 50'	Plan No.: N.T. II-1-3
Date 20-1-71	Drawn by: L.A.B.

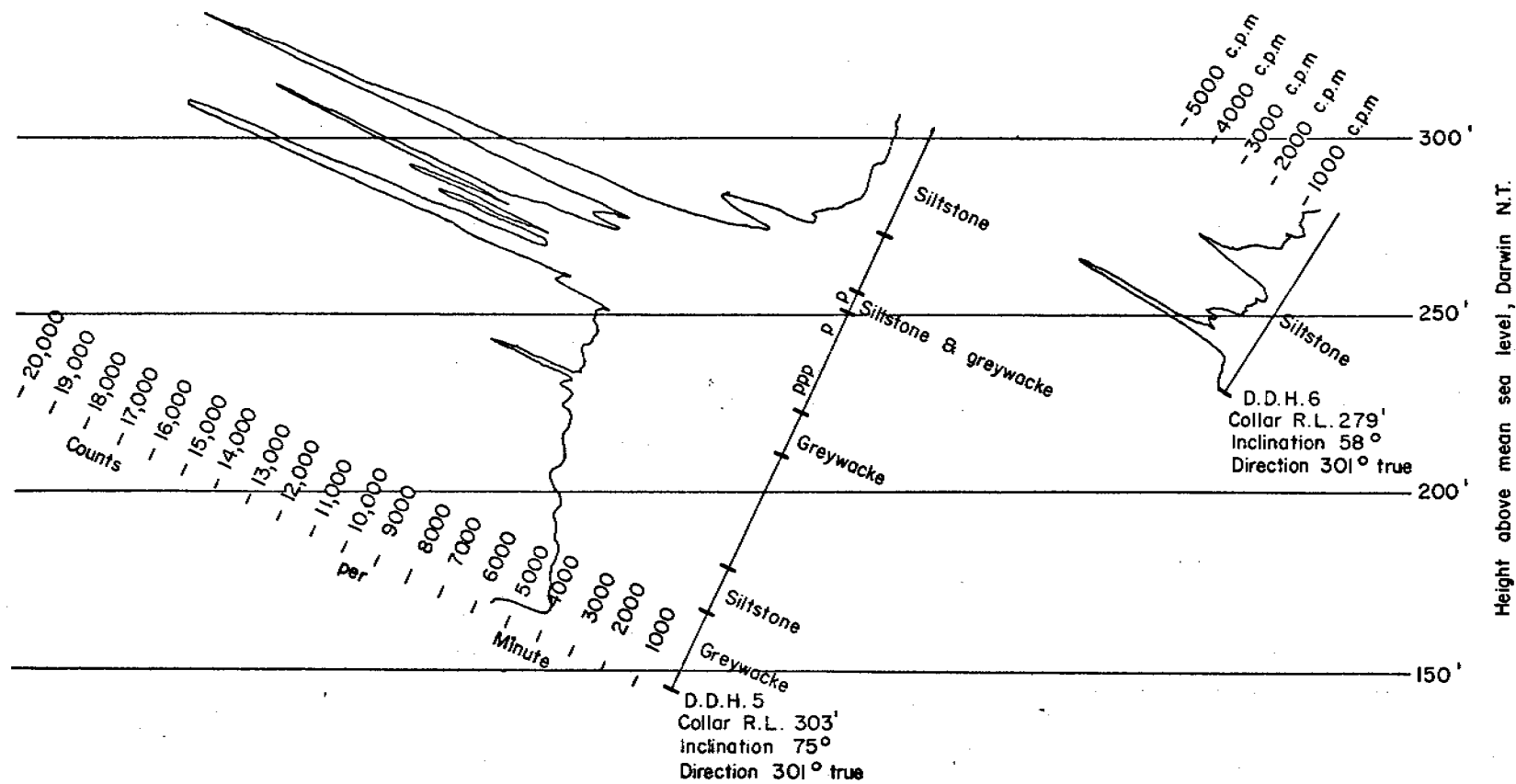


D.D.H. 3
 Collar R.L. 352'
 Inclination 45°
 Direction 070° true

CENTRAL PACIFIC MINERALS N.L.	
PINE CREEK A.P. 1959 (Pt)	
George Creek Uranium N.T. 11-1	
D.D.H. 3 Geology & Radiometry	
Scale: 1" = 50'	Plan No.: N.T. 11-1-4
Date 19-1-71	Drawn by: L.A.B



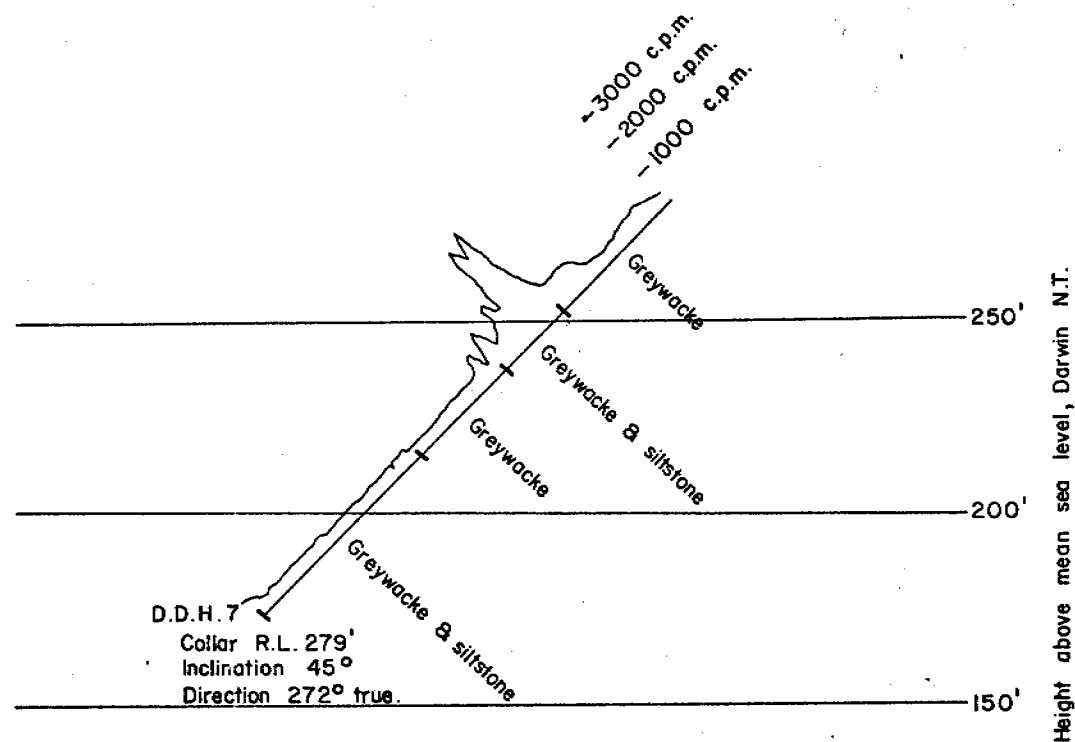




p Pitchblende

(B.M.R. Records 1956/87)

CENTRAL PACIFIC MINERALS N.L.	
PINE CREEK A.P. 1959 (Pt)	
George Creek Uranium N.T. II-1	
D.D.H. 5 & 6 Geology & Radiometry	
Scale: 1" = 50'	Plan No.: N.T. II-1-6
Date 20-1-71	Drawn by: L.A.B



(B.M.R. Records 1956/87)

CENTRAL PACIFIC MINERALS N.L.

PINE CREEK A.P. 1959 (Pt.)

George Creek Uranium N.T. 11-1

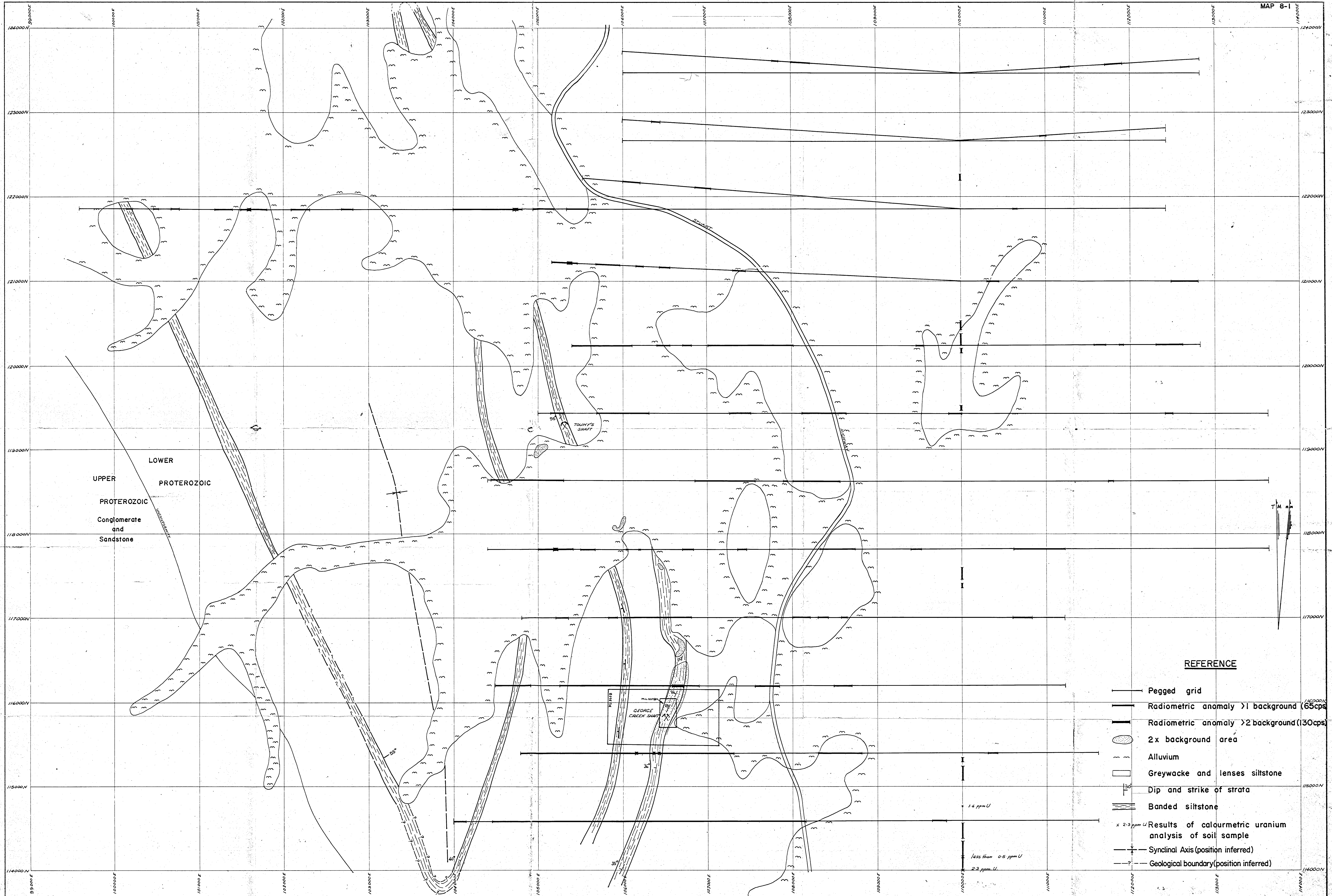
D.D.H. 7 Geology & Radiometry

Scale: 1" = 50'

Plan No.: NT.11.1.7

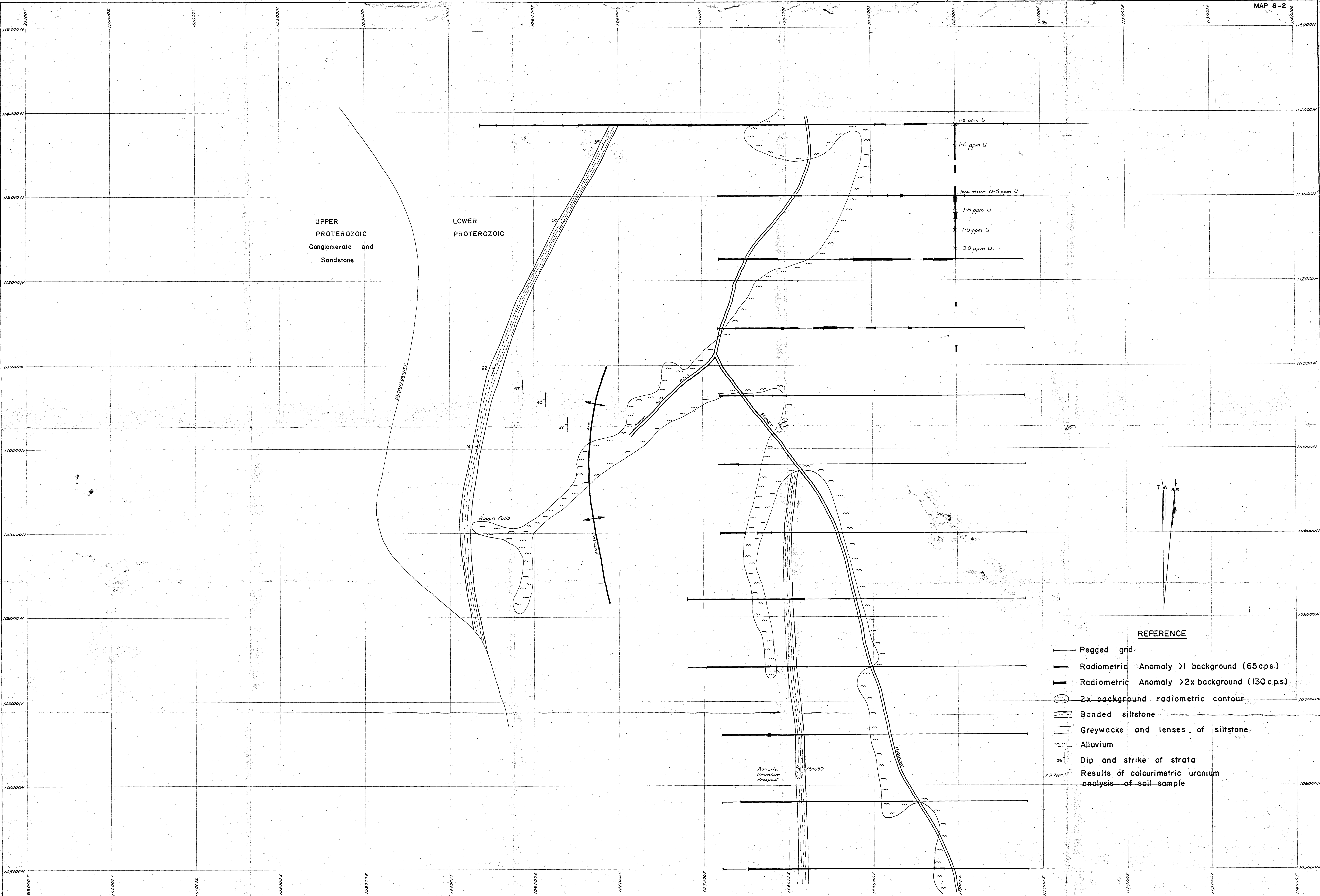
Date 18-1-71

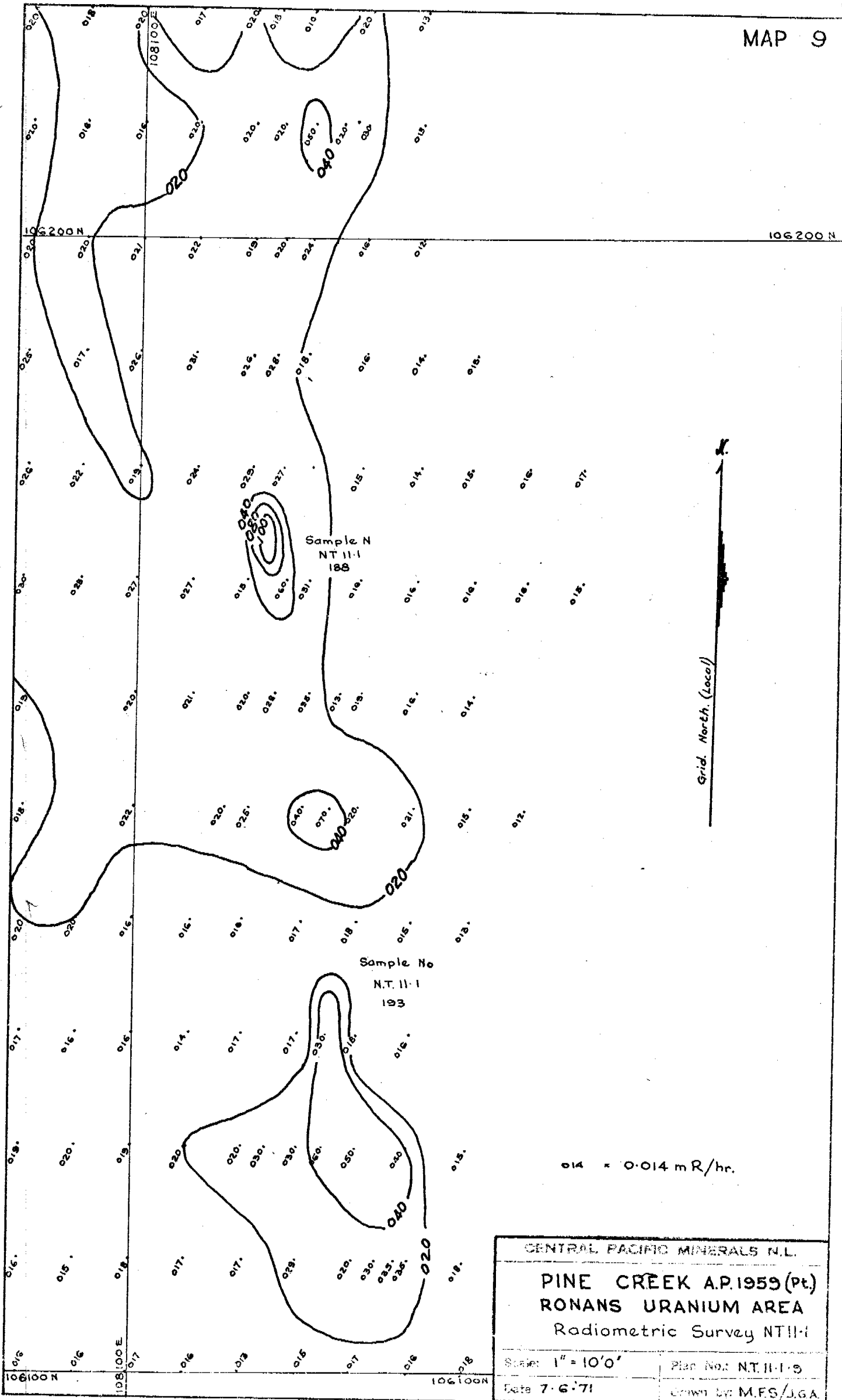
Drawn by: L.A.B



REFERENCE

- Pegged grid
- Radiometric anomaly >1 background (65cps)
- Radiometric anomaly >2 background (130cps)
- 2x background area
- Alluvium
- Greywacke and lenses siltstone
- Dip and strike of strata
- Banded siltstone
- x 2-3 ppm U Results of calourmetric uranium analysis of soil sample
- Synclinal Axis (position inferred)
- Geological boundary (position inferred)





CENTRAL PACIFIC MINERALS N.L.

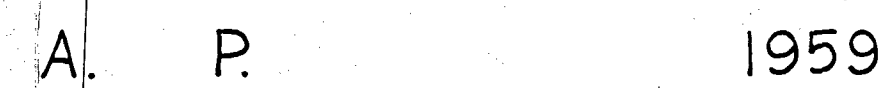
PINE CREEK A.P. 1959 (Pt.)
RONANS URANIUM AREA
Radiometric Survey NT 11-1

Scale: 1" = 10' 0"

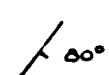
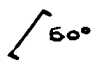
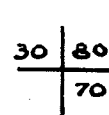
Plan No.: NT 11-1-9

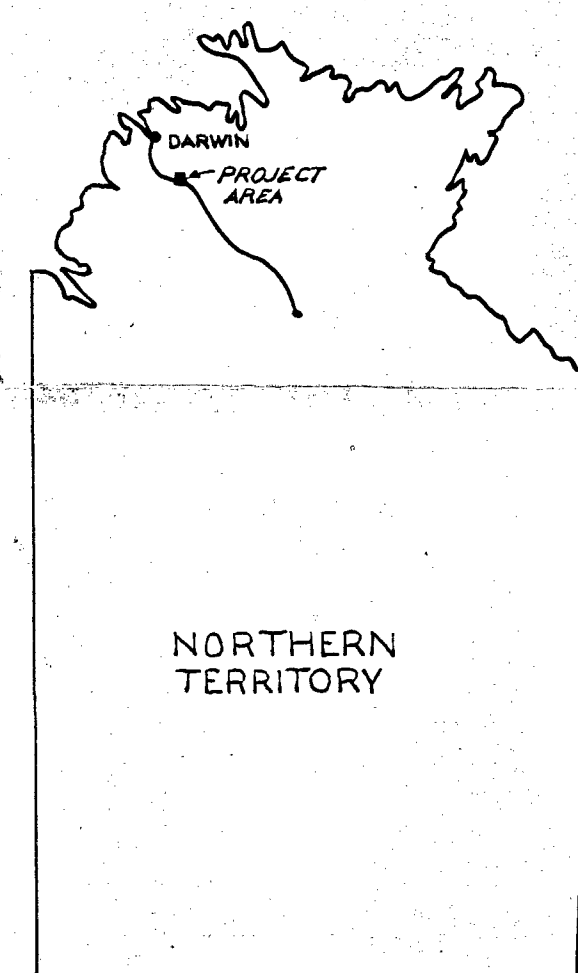
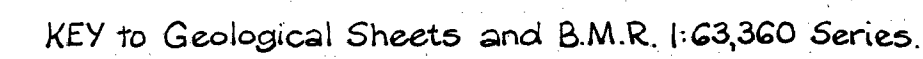
Date: 7-6-71

Drawn by: M.F.S./J.G.A.



LEGEND

	Geological boundaries
	Dyke or vein
	Fault
	Strike and dip of foliation : measured
	Strike and dip of cleavage : "
	Chip sample location and number
	Tourmaline
	Mineral workings
	Opencut or quarrying
	Roads
	Railway track
	Geochemical analysis results in p.p.m.
	Airborne detected radiometric anomaly (from B.M.R. map G156-2 Ban-Ban)



LOCALITY MAP
Scale: 1" = 200 miles

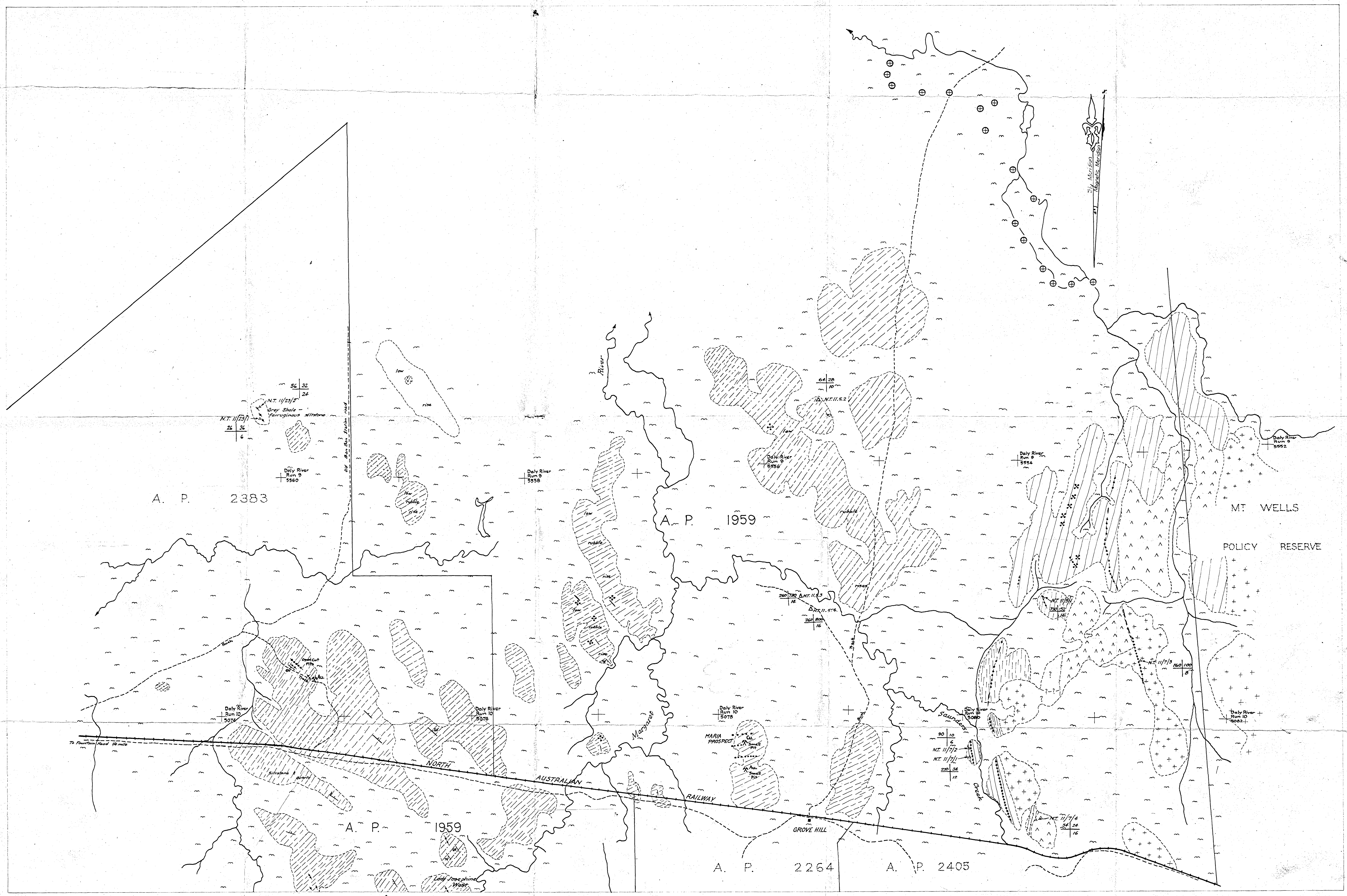


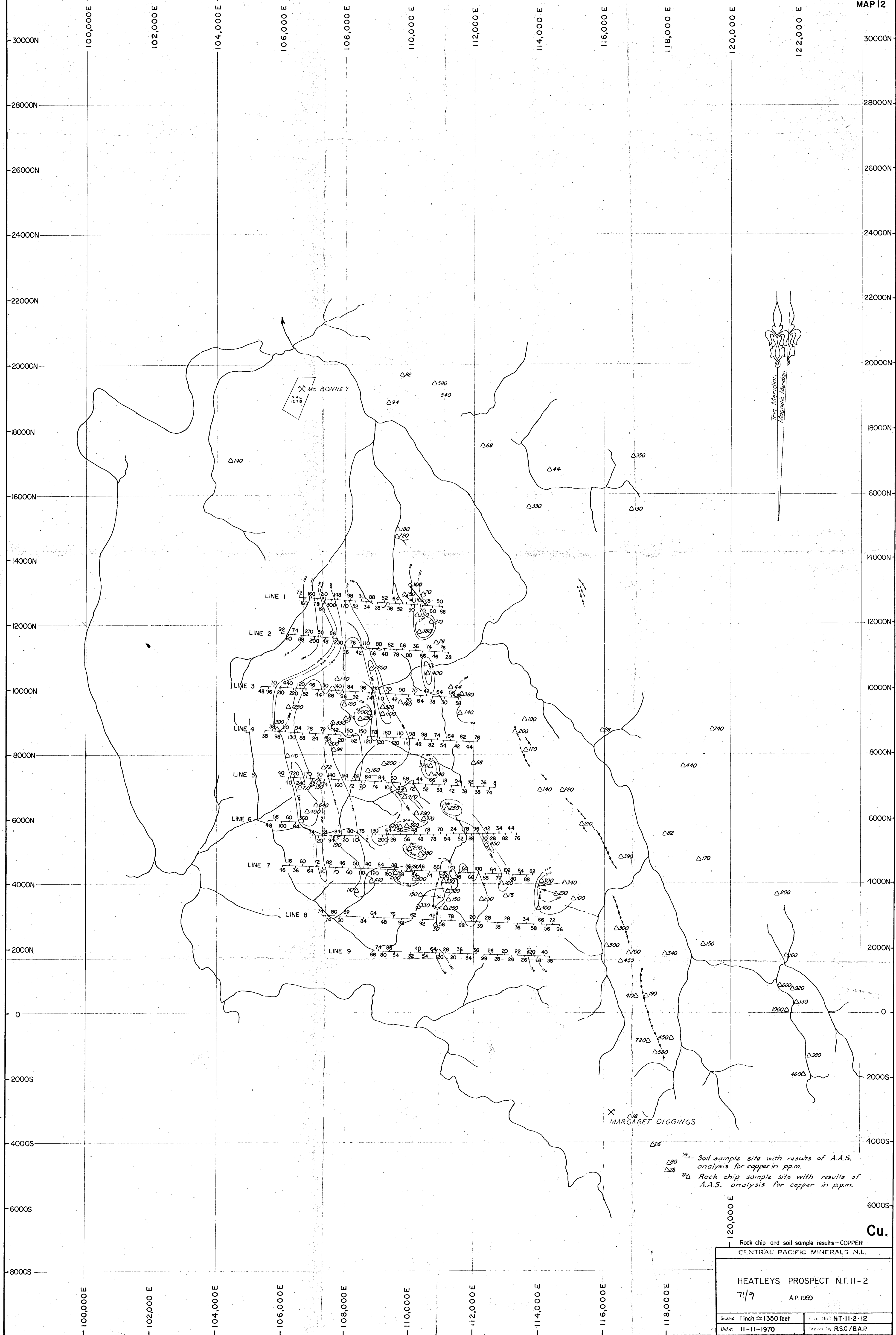
MAPS 8(1) and 8(2)
on microfiche 6 of 6

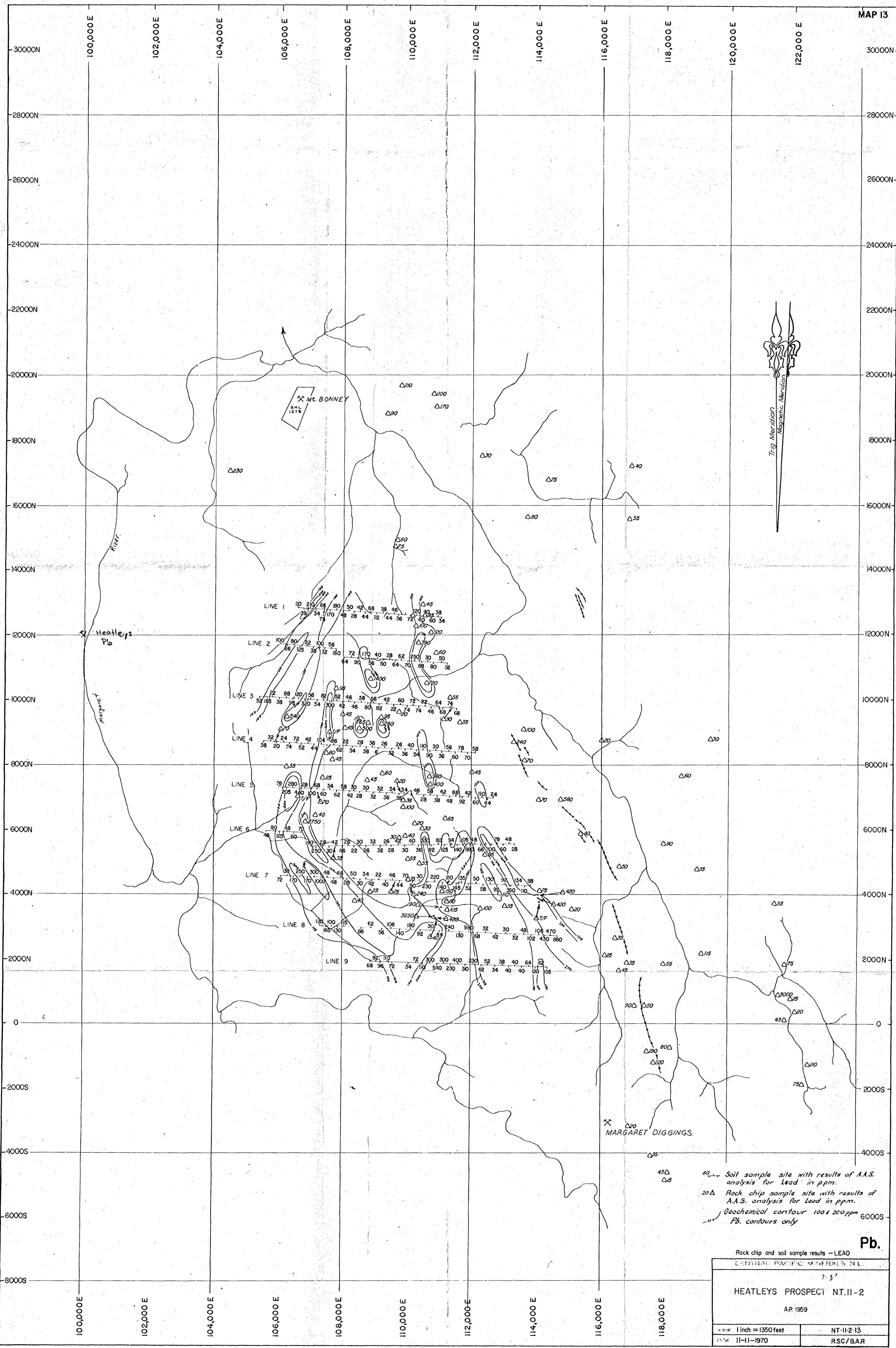
PLEASE NOTE

Map Nō's 10 and 35 were not in the
report.

ie they have probably been lost







40 Soil sample site with results of A.A.S. analysis for lead in ppm.
20 Rock chip sample site with results of A.A.S. analysis for lead in ppm.
Geochemical contour 100 & 200 ppm Pb. contours only

Pb.

Rock chip and soil sample results - LEAD

CENTRAL PACIFIC MINERALS N.L.

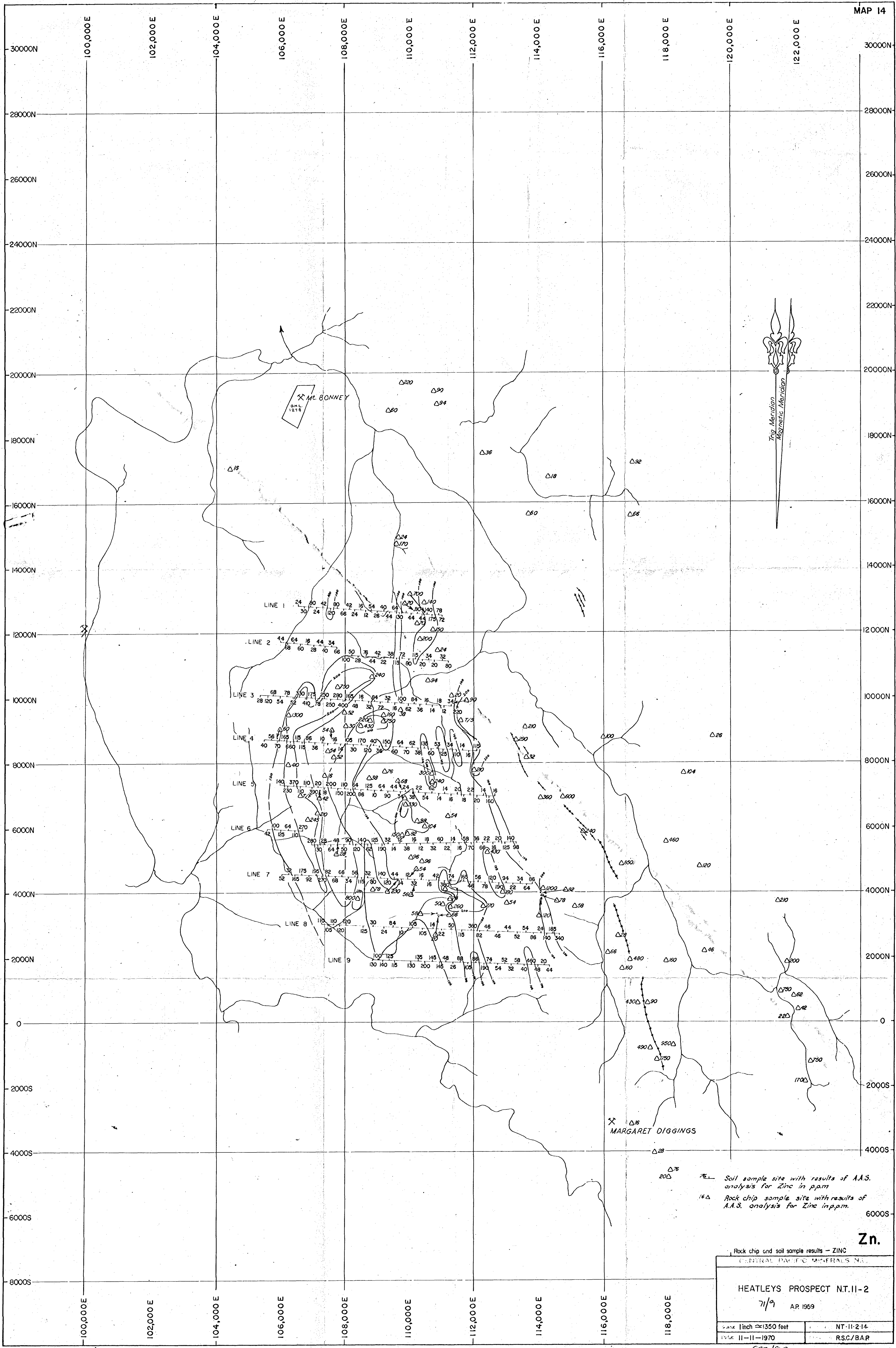
7-3'

HEATLEYS PROSPECT NT-11-2

AP. 1969

1 inch = 1350 feet	NT-11-2-13
11-11-1970	RSC/BAR

CR71/913



Rock chip and soil sample results - ZINC	
CENTRAL PACIFIC MINERALS INC.	
HEATLEYS PROSPECT N.T.11-2	
7/1/9 AP. 1959	
Scale 1 inch = 1350 feet	NT-11-2-14
Drawn 11-11-1970	R.S.C./B.A.P.

CR71/913



NOTE: Radiometric survey results are in Counts/Second.

CENTRAL PACIFIC MINERALS, INC.
 PINE CREEK A.P. 1959 (P1)
 HEATLEYS PROSPECT NT11-2
 RADIOMETRIC SURVEY
 1" = 1350'
 Date: 21-4-1971
 Drawn by: J.G.A.

CR11/98.



LEGEND

- | | | | |
|----------|----------------------------------|-------------|---|
| A | Alluvium | L | Indurated shale, some micaceous and spotted (Fe) containing some quartz and quartzite |
| B | Granite | M | Spotted shale |
| C | Amphibolite | N | Mottled micaceous siltstone and quartzite, some ferruginous bands |
| D | Quartzite and Fe. shale horizon | O | Rubble — Quartz, quartzite, shale (Fe). |
| E | Black chistolite shale | P | Micaceous siltstone |
| F | Black shale, Fe shale, etc. | T. | Tourmaline and Fe rich horizons. |
| G | Siliceous shale | ---- | Quartz veins |
| H | Buff to maroon siltstone | — | Road (gravel). |
| I | Lenses of pink to buff greywacke | ↘ | Dip and strike |
| J | Grey and buff shale | X | Prospect — little or no production |
| K | Grey shale containing voids | | |

Geology of Heatley's Golden Dyke Mine Area
Compiled from uncontrolled aerial
Photographs
Reconnaissance and several traverses

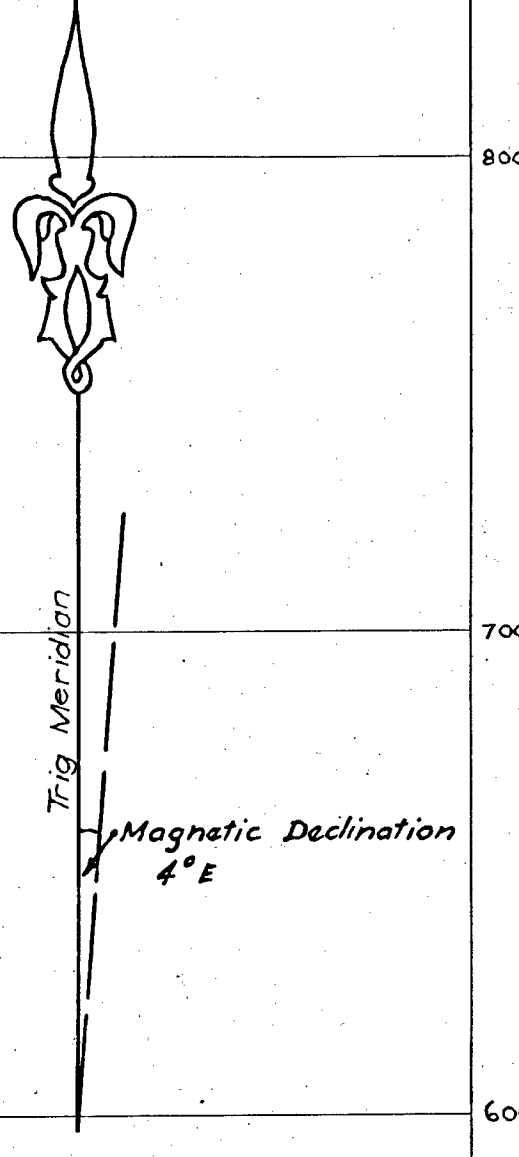
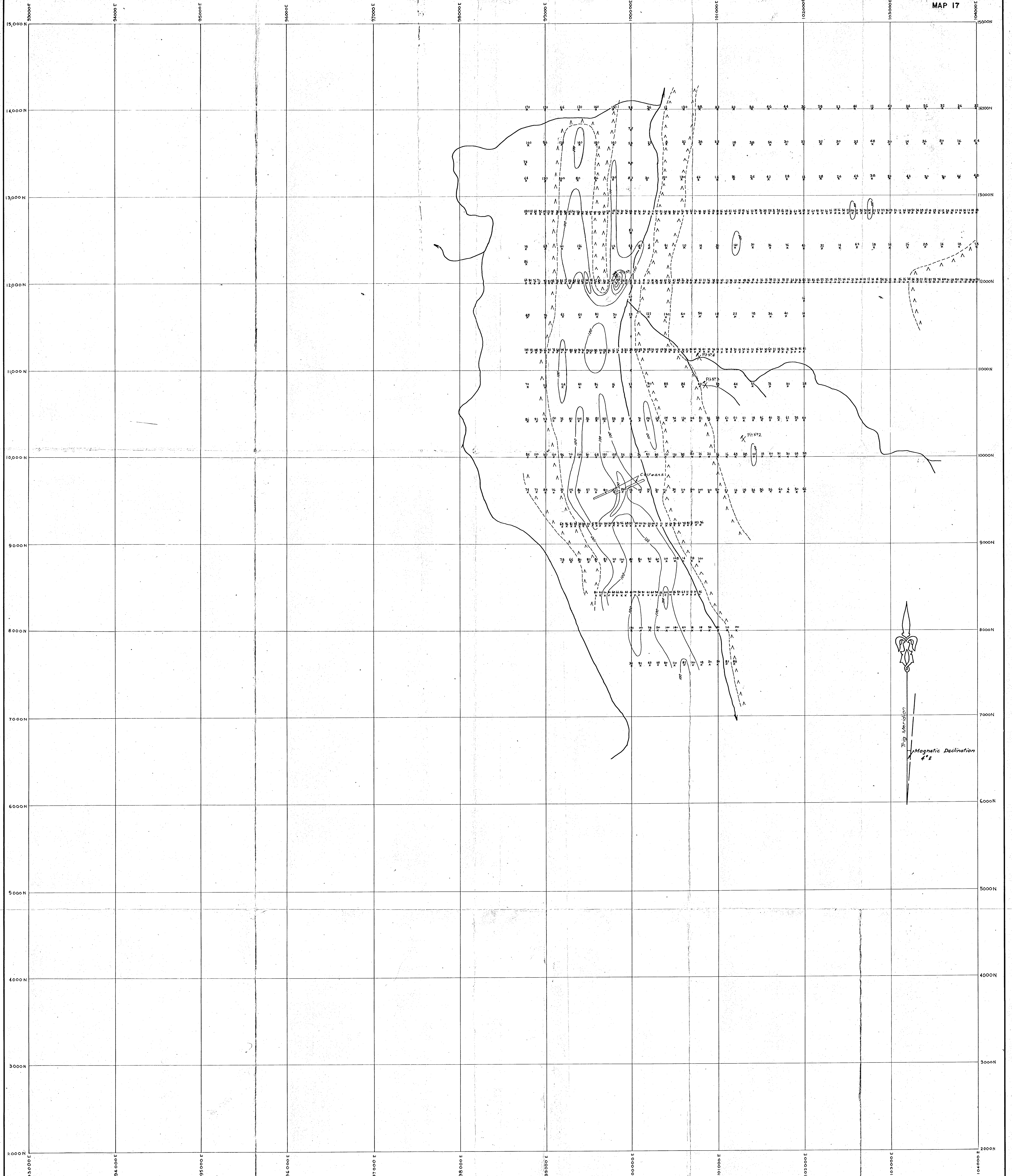
CENTRAL PACIFIC MINERALS, INC.

PINE CREEK A.P. 1959 (PT.)

HEATLEY'S AREA N.T.11.2

Scale 1" = 400' NT. 11-2-16
DATE 22-1-71 DRAWN BY M.F.S.

Copy X made at 10:00 AM 22/1/71



REFERENCE

- Sample point with copper geochemical analysis in p.p.m. by A.A.S.
- Geochemical contour copper contour values 100, 200, 400, 800 p.p.m.
-  Amphibolite

Cu.

CENTRAL PACIFIC MINERALS N.L.

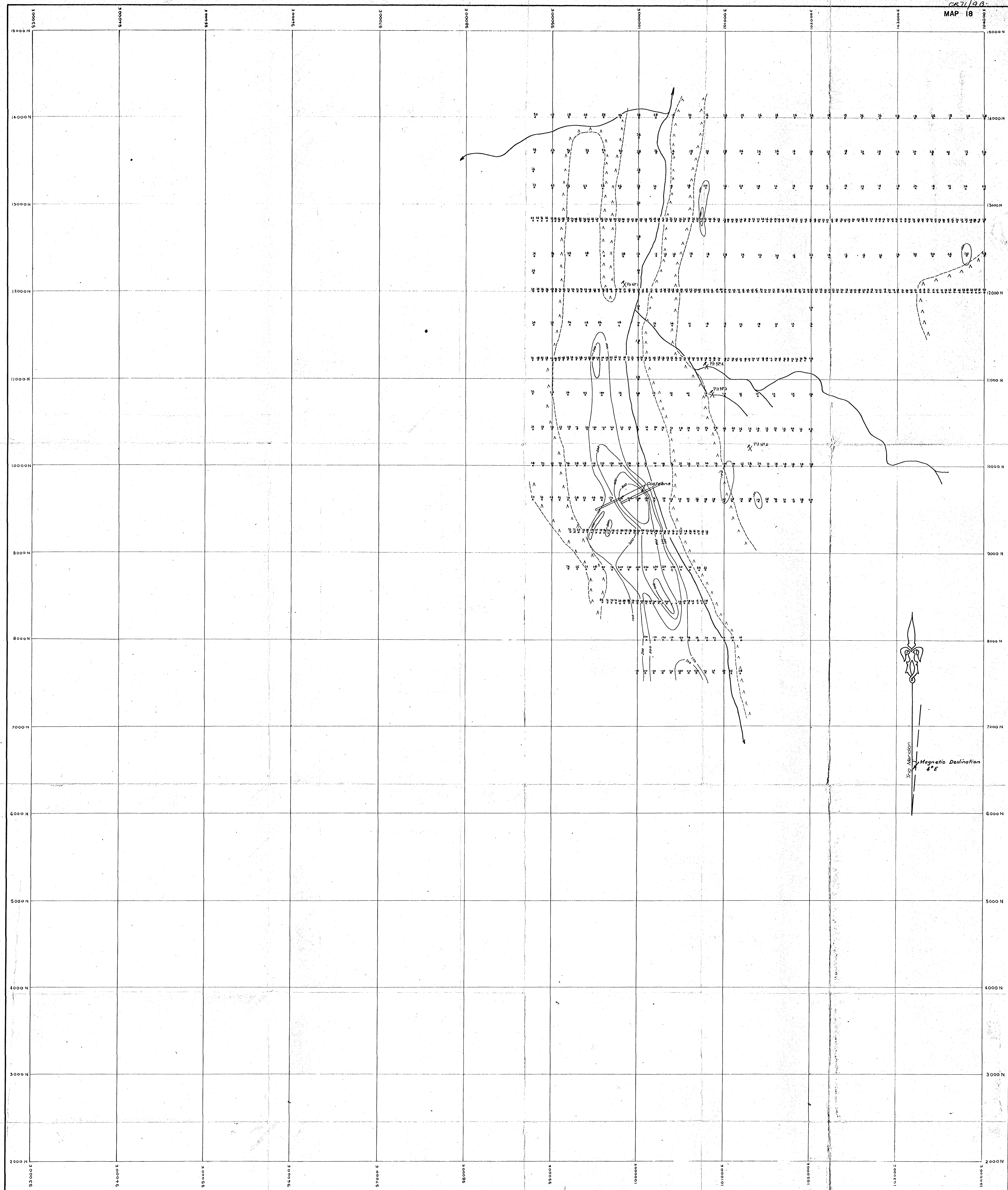
PINE CREEK A.P. 1959 (PI)

HEATLEYS PROSPECT NT.II.2

Copper Geochemistry Contours

Scale 400' = 1"	Map No. NT. II-2-17
Sheet 25-1-71	Drawn by M.F.S.

Notes are in blue ink X and not in Sand 02/1/98 W



REFERENCE

- Sample point with Lead analysis in p.p.m. by A.A.S.
- Geochemical contour lead contour values 100, 200, 400, 800 p.p.m.
- Amphibolite

Pb.

CENTRAL PACIFIC MINERALS N.L.

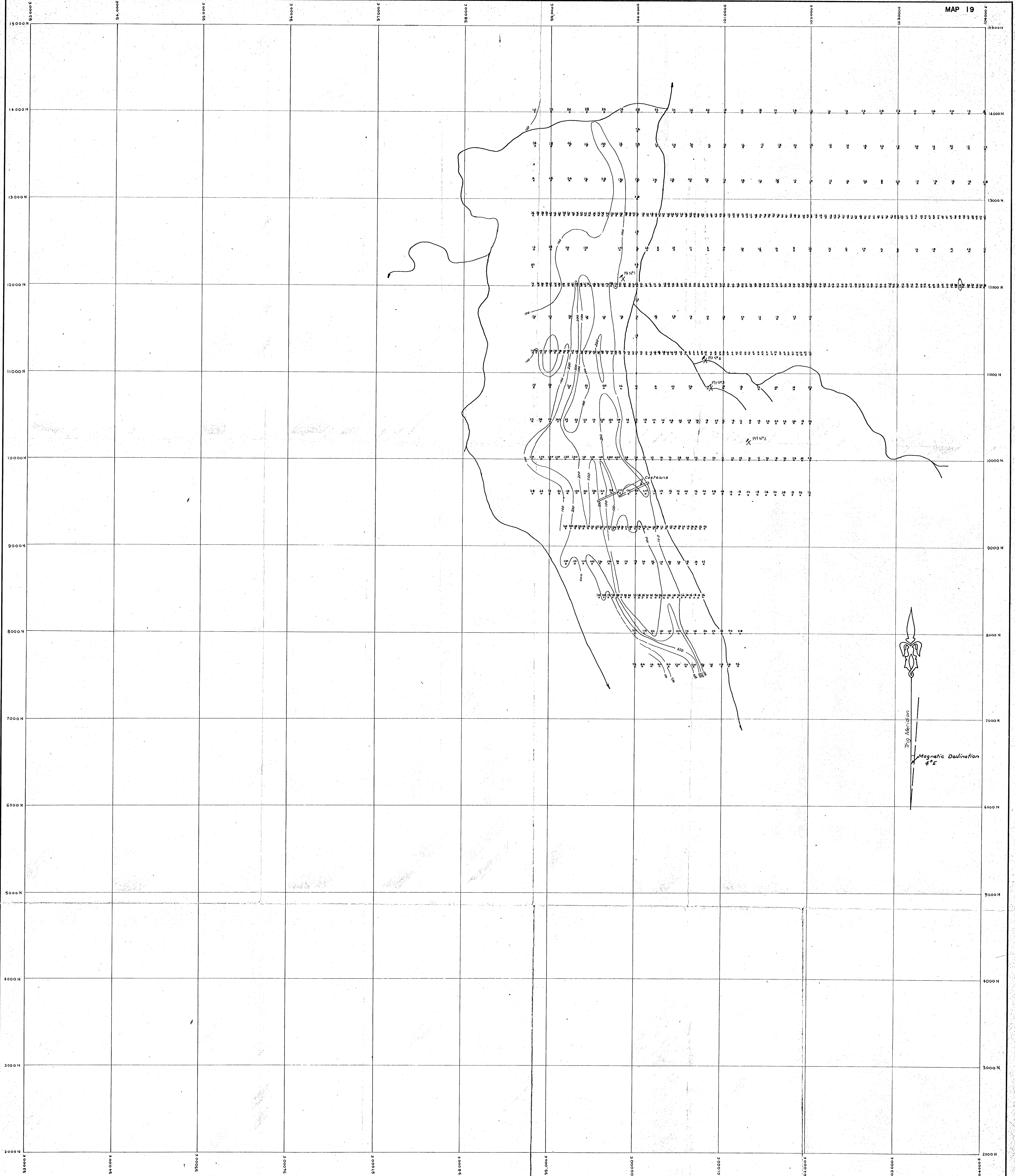
PINE CREEK A.P. 1959 (Pt.)

HEATLEYS PROSPECT NT.II.2

Lead Geochemistry Contours

Scale: 400' = 1" Map No.: NT.II.2-16

Date: 27-1-71 Drawn by: M.F.S.



REFERENCE

- X Sample point with zinc geochemical analysis in p.p.m. by A.A.S.
- 100 — Geochemical contour zinc contour values 100, 200, 400 p.p.m.

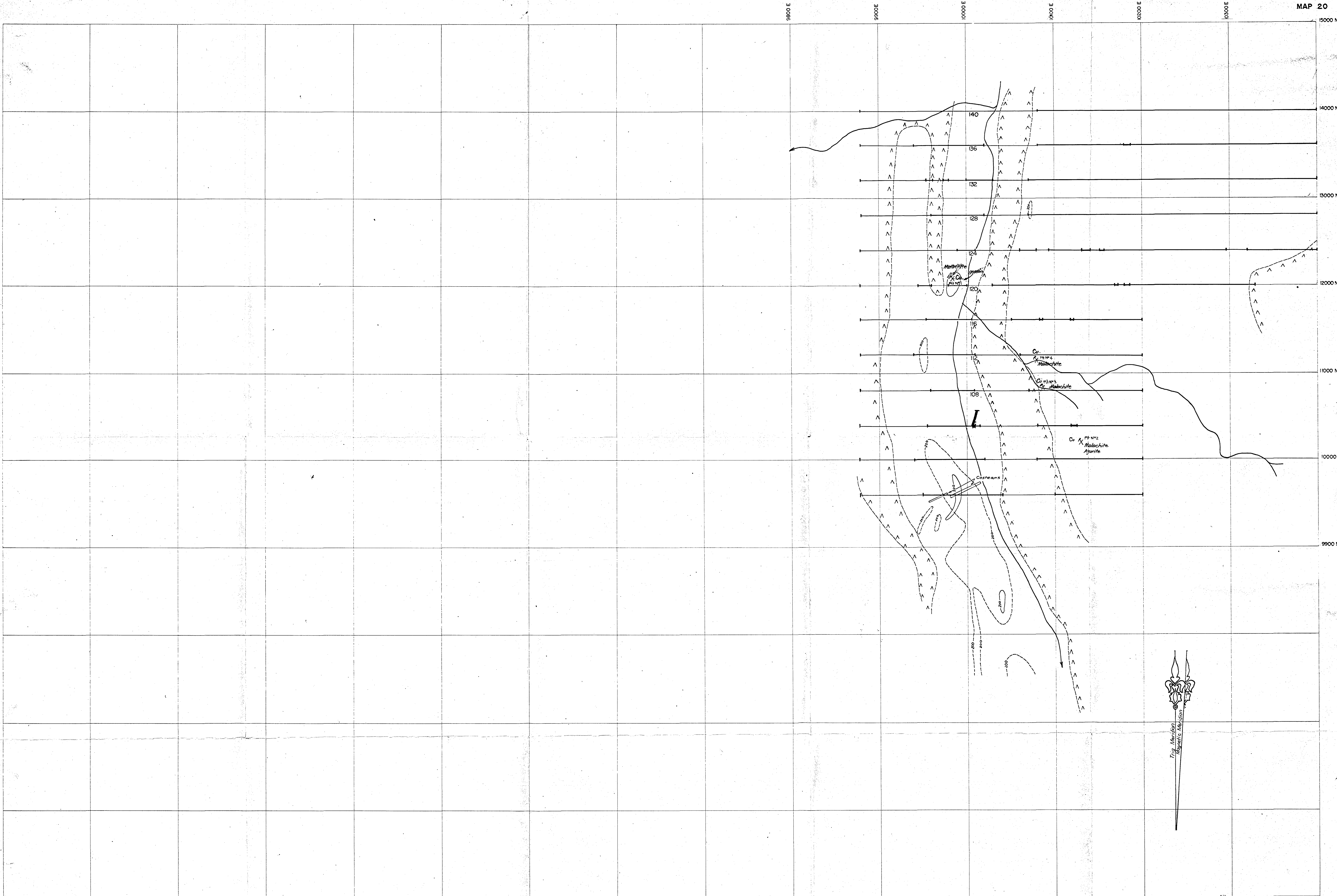
Zn.

CENTRAL PACIFIC MINERALS N.L.

PINE CREEK A.P.1959 (PI)
HEATLEYS PROSPECT N.T.11.2
Zinc Geochemistry Contours

Scale: 400' = 1" Plot No. N.T.11-2-19
Date: 25-1-71 Drawn by: M.F.S.

CR-71/18

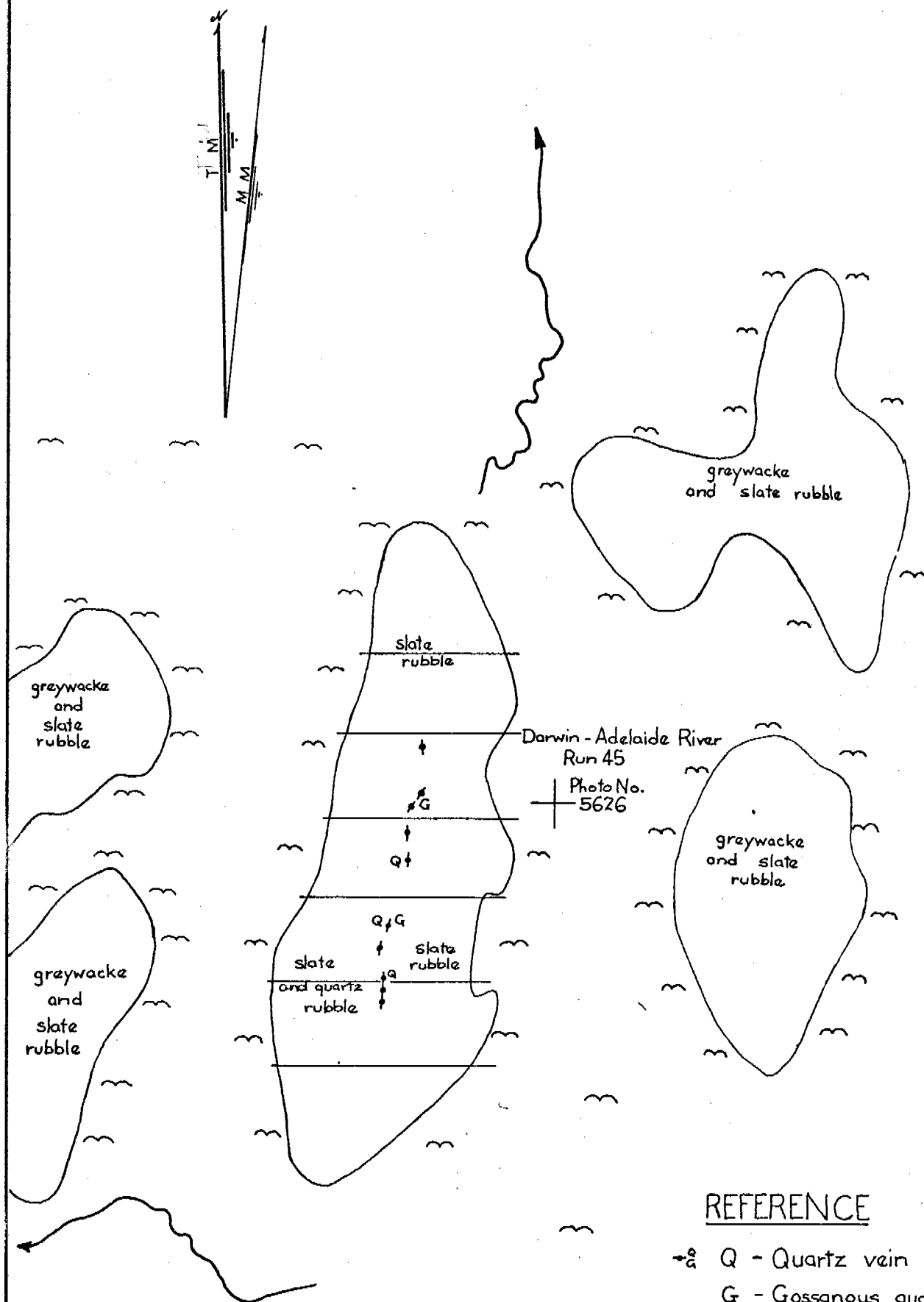


Cu 200 p.p.m.
 Pb 200 p.p.m.
 Background 70 cps
 Grid line
 Radiometry
 > 1x background
 > 2x background
 Scintrex Scintillometer Model B.G.S. 1
 used in this survey

CENTRAL PACIFIC MINERALS N.L.	
HEATLEYS PROSPECT	
N.T. 11' A.P. 1986	
Radiometric	Results
Scale 1"=400'	Plan No. NT 11-2-20
Date 4-11-70	Drawn by B.A.P./LAB

W.L. X 1/2 1/2

CR7/198



REFERENCE

- Q - Quartz vein
- G - Gossanous quartz vein
- ~ Soil and alluvium
- Slate and greywacke
- Proposed soil geochemistry lines

CENTRAL PACIFIC MINERALS M.L.

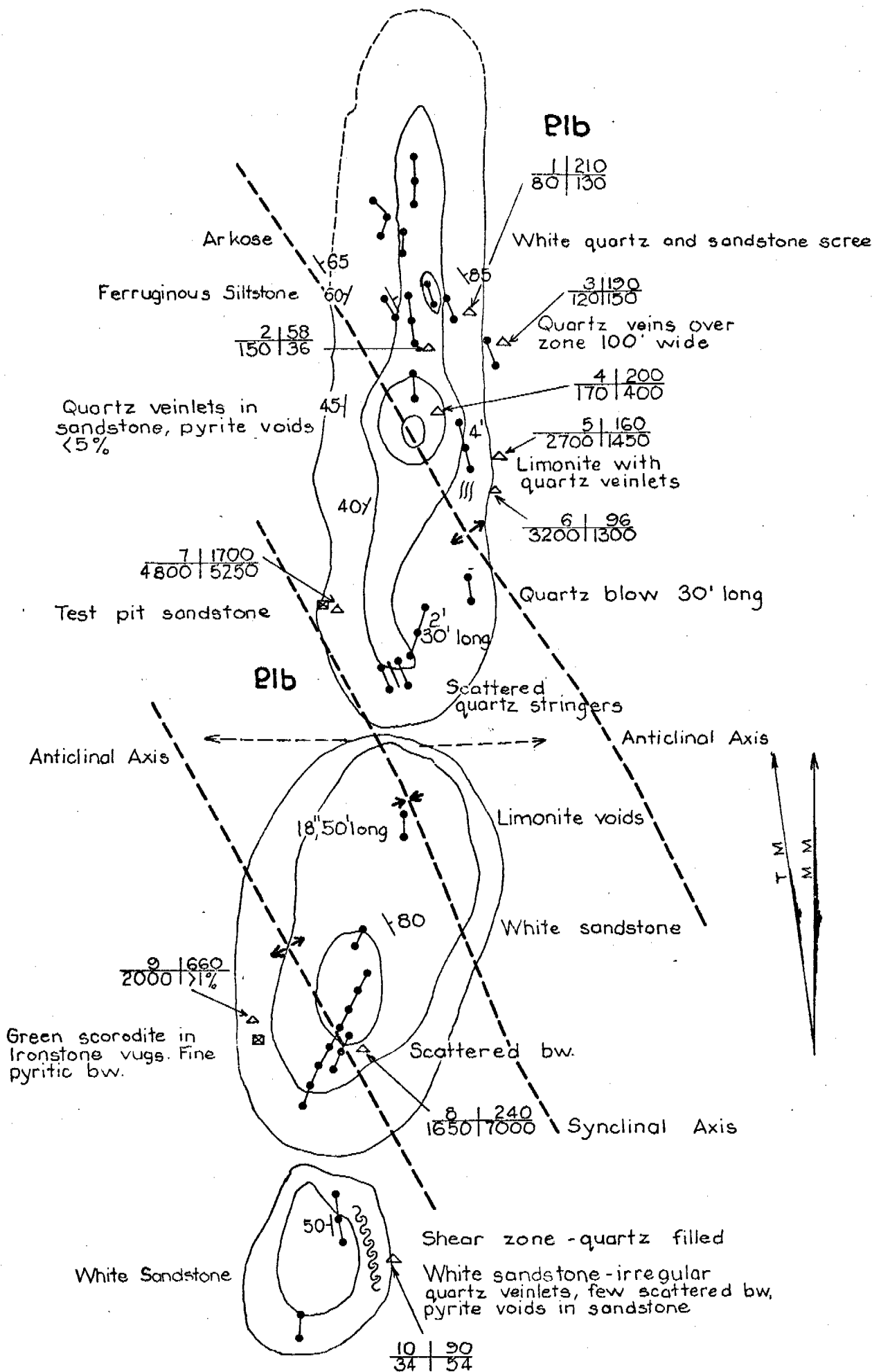
MOUNT RINGWOOD PROSPECT
N.T. 11-3
(Pt. A.P. 1959)

Scale: 1" to 1390'

Plan No.: 11-3-21

Date 11-1-71

Drawn by: M.F.S.



Sample No.	Cu	Eg.	4	200
Zn	Pb		170	400

in p.p.m

Geochemical Analysis by A.A.S

Geological & Geochemical Analysis

CENTRAL PACIFIC MINERALS N.L.

PINE CREEK A.P. 1959 (Pt.)

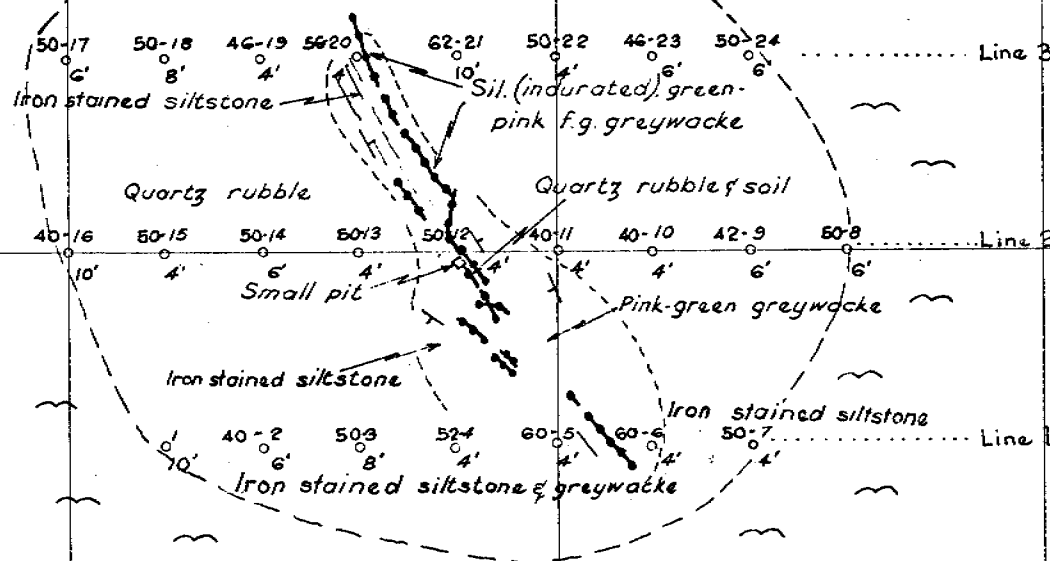
Mt. RINGWOOD N.T. 11-3

Scale: 1" = 400'

Date: 12.3.71

Plan No.:

Drawn by: L.A.B



Counts per second
 50-13
 4' Sample Locations
 Depth of Hole

CENTRAL PACIFIC MINERALS N.L.

LADY JOSEPHINE WEST NT II-4

A.P. 1959

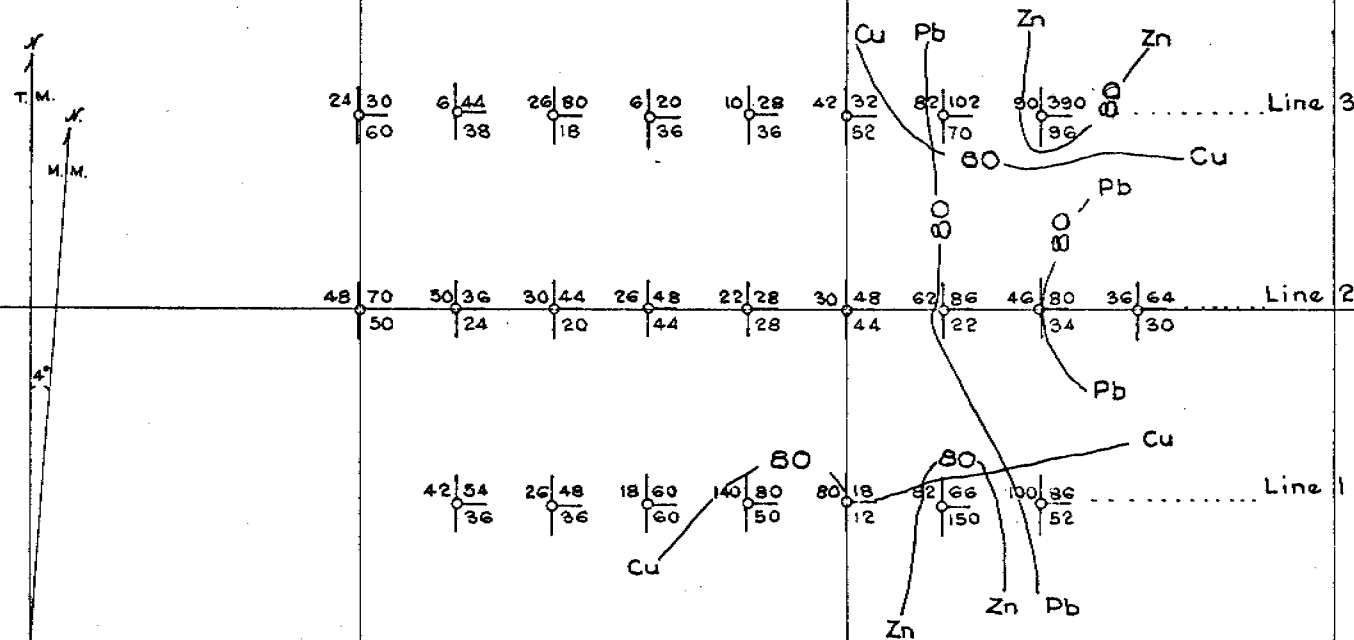
Geology, Sample Locations
 Auger Drilling and Radiometrics

Scale: 1" = 400'

Plan No. NT II-4-24

Date 11-11-1970

Drawn by: J.G.A.



26 | 48
36 | 36 p.p.m. of Copper | Lead
Zinc.

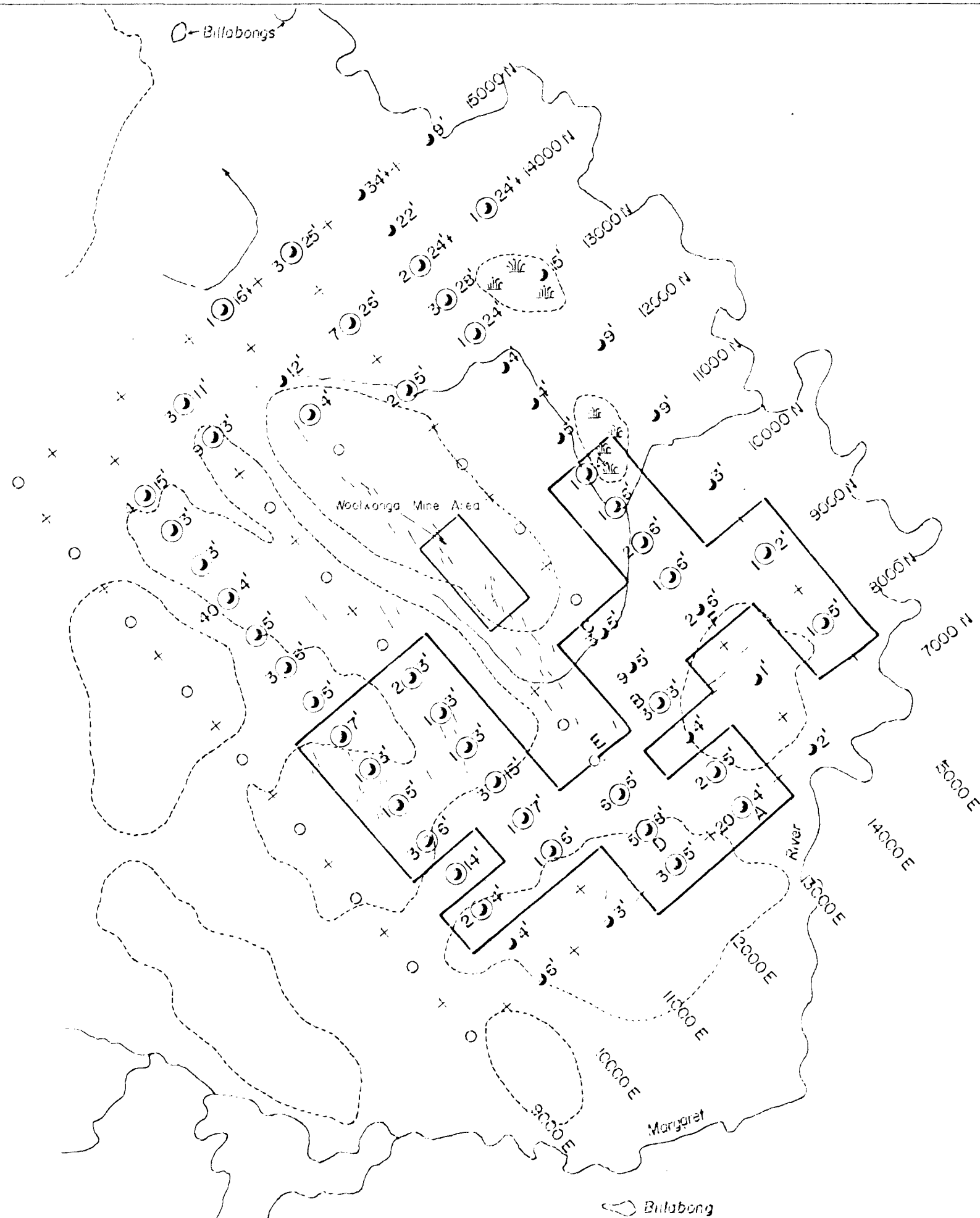
80 Contour values of Cu, Pb, Zn.

CENTRAL PACIFIC MINERALS N.L.

LADY JOSEPHINE WEST NT II-4
A.P. 1959

Geochemical Analyses - Auger Drilling.

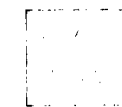
Scale: 1" = 400'	Plan No: NT II-4-25
Date: 11-11-1970	Drawn by: J.G.A.



Swamp



Hills or rises above alluvium plain



Old workings



Auger drill hole showing depth to bedrock
No gold panned from this hole

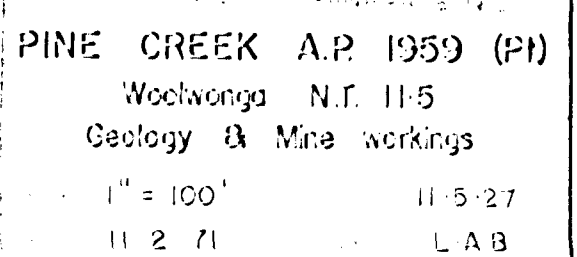


Auger drill hole showing depth to bedrock &
number of colours of gold panned from hole



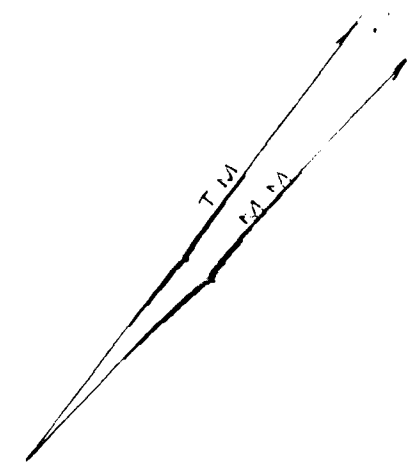
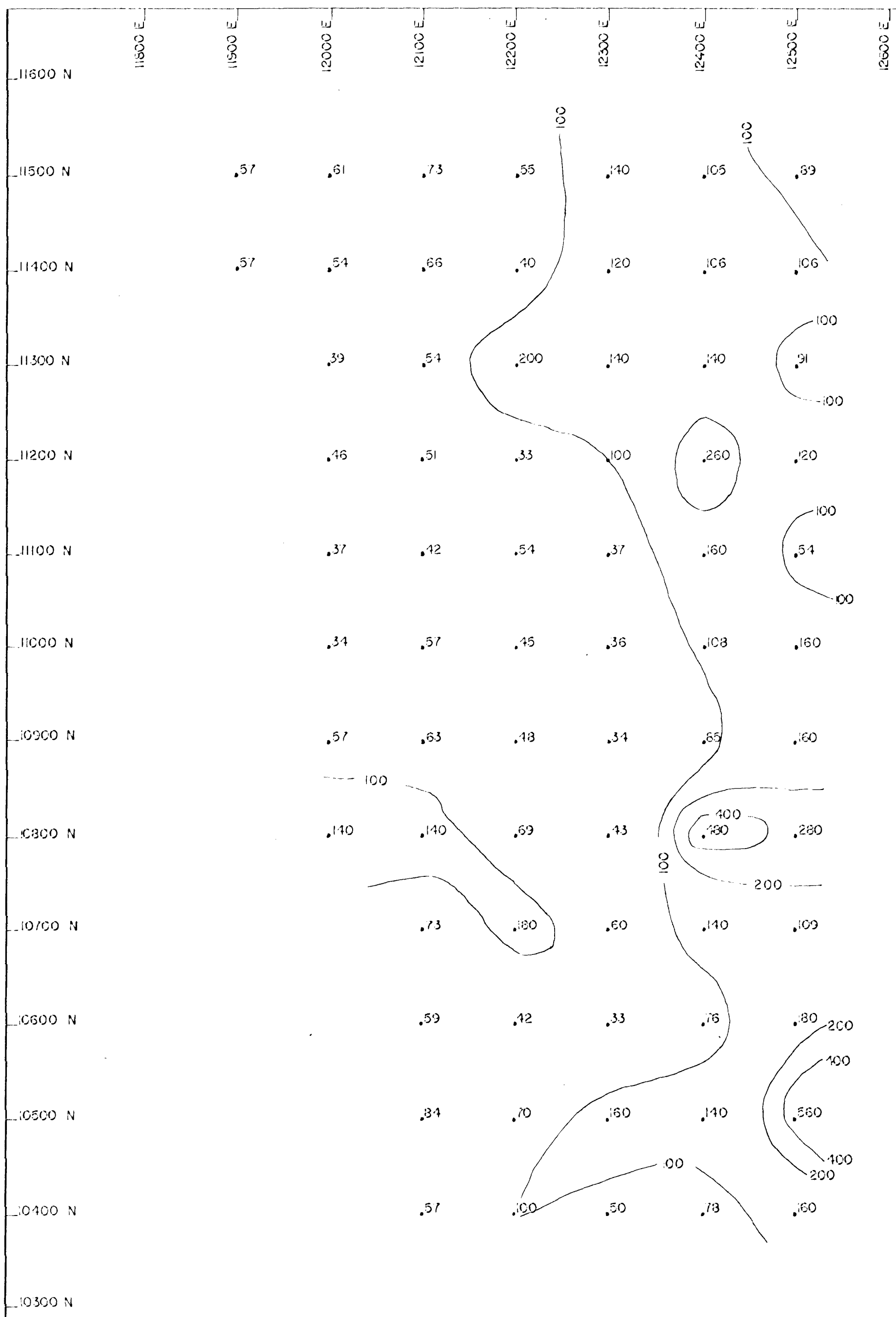
Position of hand auger hole

11/7



CR71/9B.

MAP 23



Geochemical contours



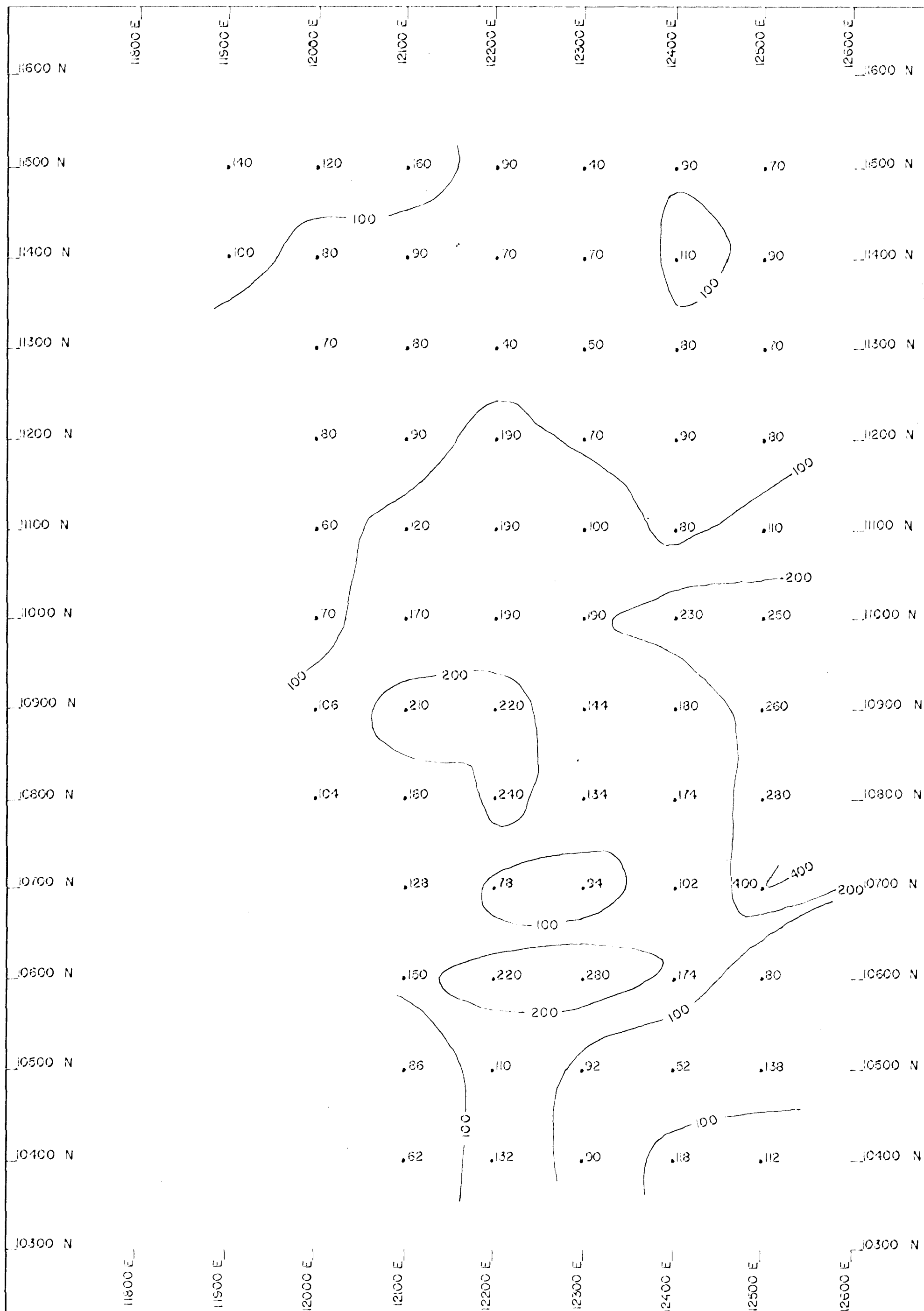
Soil sample point, Geochemical analyses in ppm. Lead

Pb.

PINE CREEK A.P. 1959 (PI)
Woolwonga N.T. 11-5
Soil sample Geochemistry (Lead)
1" = 100' 11-5-28
9-2-71 L A B

CR 71/93

MAP 29



Zn.

PINE CREEK A.P. 1959 (PI)
Woolwonga N.T. 11-5
Soil Sample Geochemistry (Zinc)
1" = 100' 11-5-23
9 2 71 L.A.B



28 Geochemical Analyses -
Auger drilling in ppm Lead

1" = 1387' 11-5-30
4 2 71 L A 3



Zn

PINE CREEK A.P. 1959 (Pt.)

Woolwonga N.T. 11-5

Weathered Rock Geochemistry (Zinc)

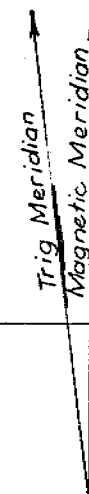
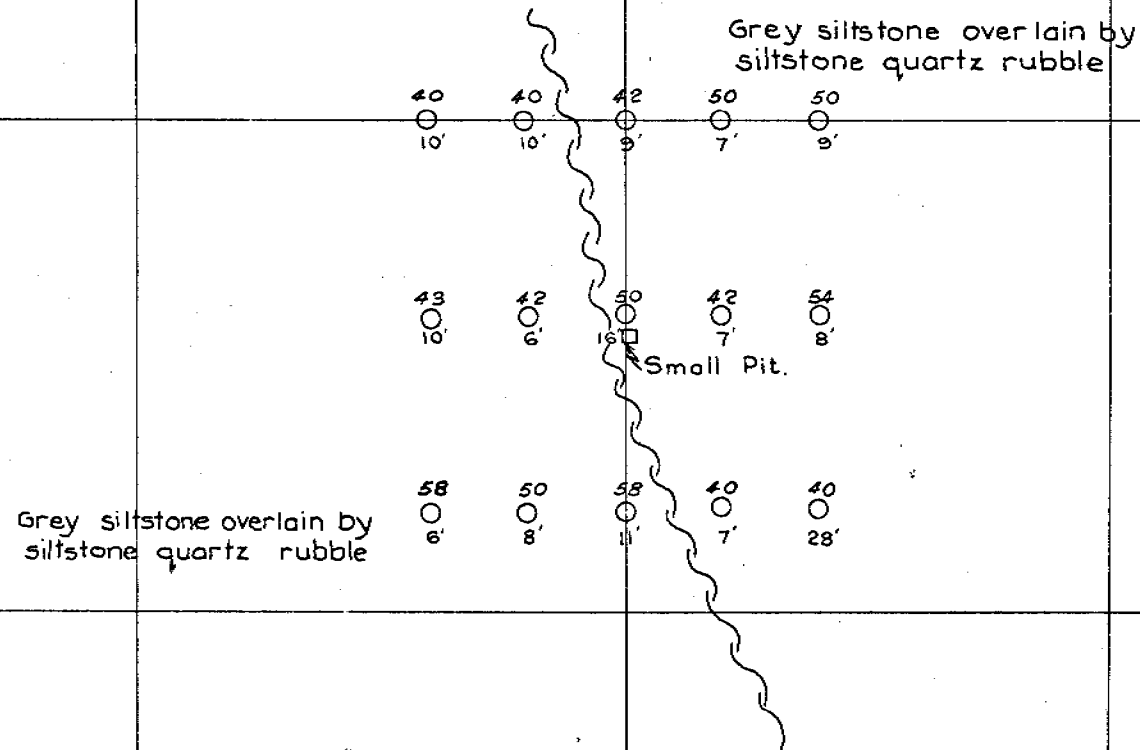
1" = 1387'

11-5-31

4 2 71

L.A.B

MAP 32



CENTRAL PACIFIC MINERALS N.L.

WOOLWONGA SOUTH-MARIA
PROSPECT · NT11-5 · A.P. 1959

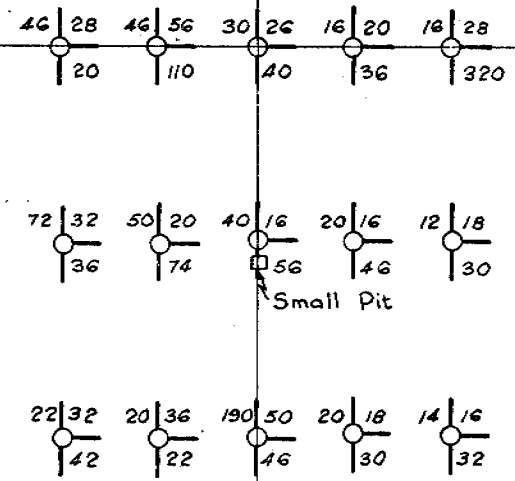
Auger Drilling & Radiometrics.

Scale: 1" = 400'

Plan No: NT11-5-32

Date: 30-11-1970

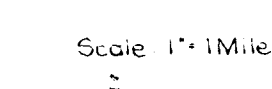
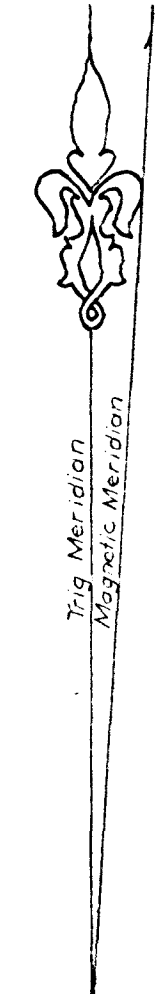
Drawn by: J.G.A.



Trig Meridian
Magnetic Meridian

14 16 Cu Pb
32 Zn in p.p.m.

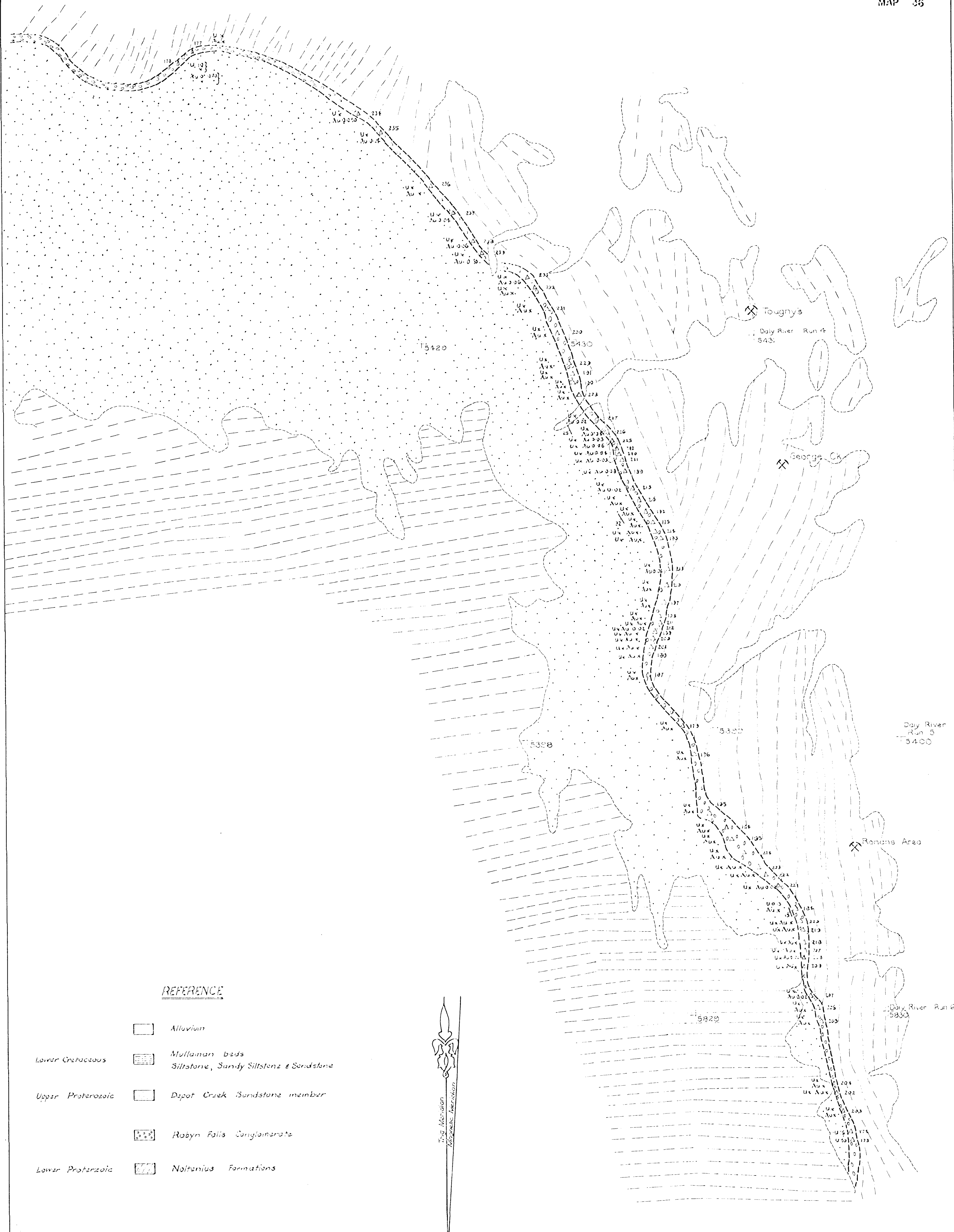
CENTRAL PACIFIC MINERALS N.L.	
WOOLWONGA SOUTH-MARIA PROSPECT - NT11-5 - AP. 1959	
Geochemical Analyses - Auger Drilling.	
Scale: 1" = 400'	Plan No. NT11-5-33
Date 30-11-1970	Drawn by J.G.A.



PLEASE NOTE

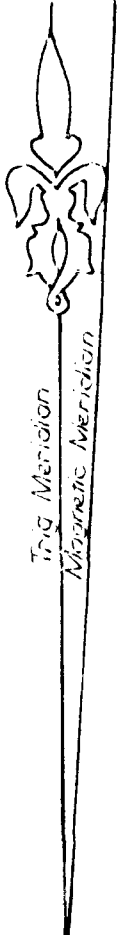
Map N $\bar{O}$'s 10 and 35 were not in the
report.

ie they have probably been lost

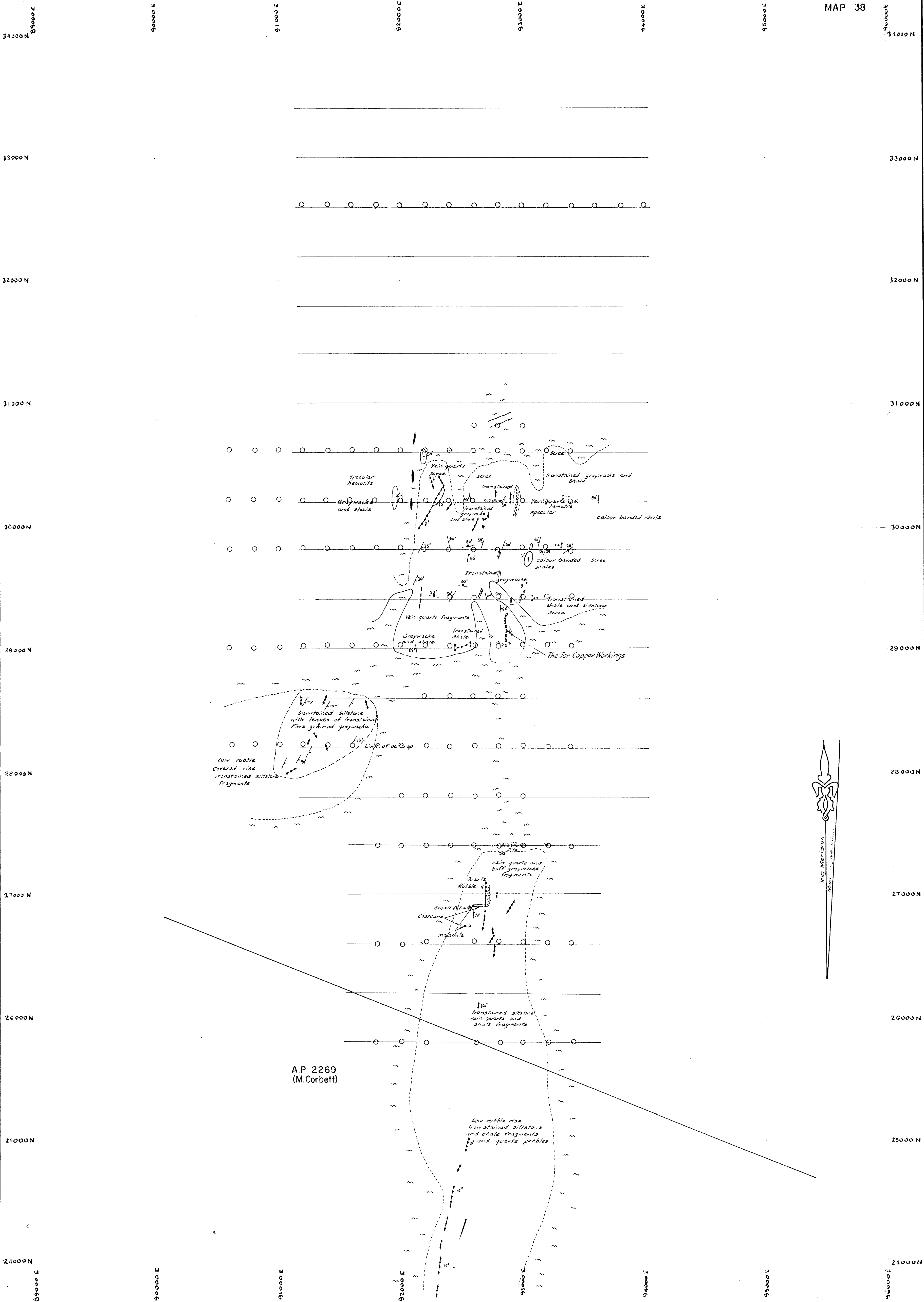


REFERENCE

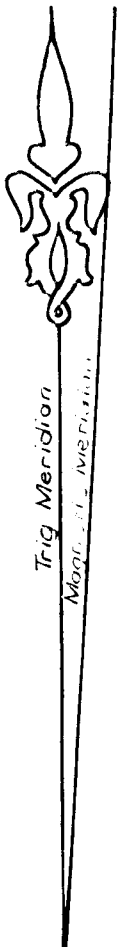
- Alluvium
- Lower Cretaceous Mullamby beds Siltstone, Sandy Siltstone & Sandstone
- Upper Proterozoic Depot Creek Sandstone member
- Robyn Falls Conglomerate
- Lower Proterozoic Noltunius Formations



PINE CREEK A.P. 1959 (PI.)
ROBYN FALLS CONGLOMERATE
Geology
1" = 1331'
15-2-71
11-11-33
M.F.S.



A.P. 2269
(M. Corbett)



REFERENCE

- Quartz vein
- Alluvium
- Siltstone (pink)
- Joint
- Dip and strike
- Trend lines
- Shear zone
- Fault, concealed
- Grid lines
- Auger drilling
- Alluvium

CENTRAL PACIFIC MINERALS, INC.	
PINE CREEK A.P. 1959 (Pt.)	
JAR COPPER PROSPECT N.T. 11-12	
Geology	
Scale 1" = 400'	Drawn by M.F.S.
Date 9-2-71	Drawn by M.F.S.

928E

85
10
20
50

True Meridian
Magnetic Meridian

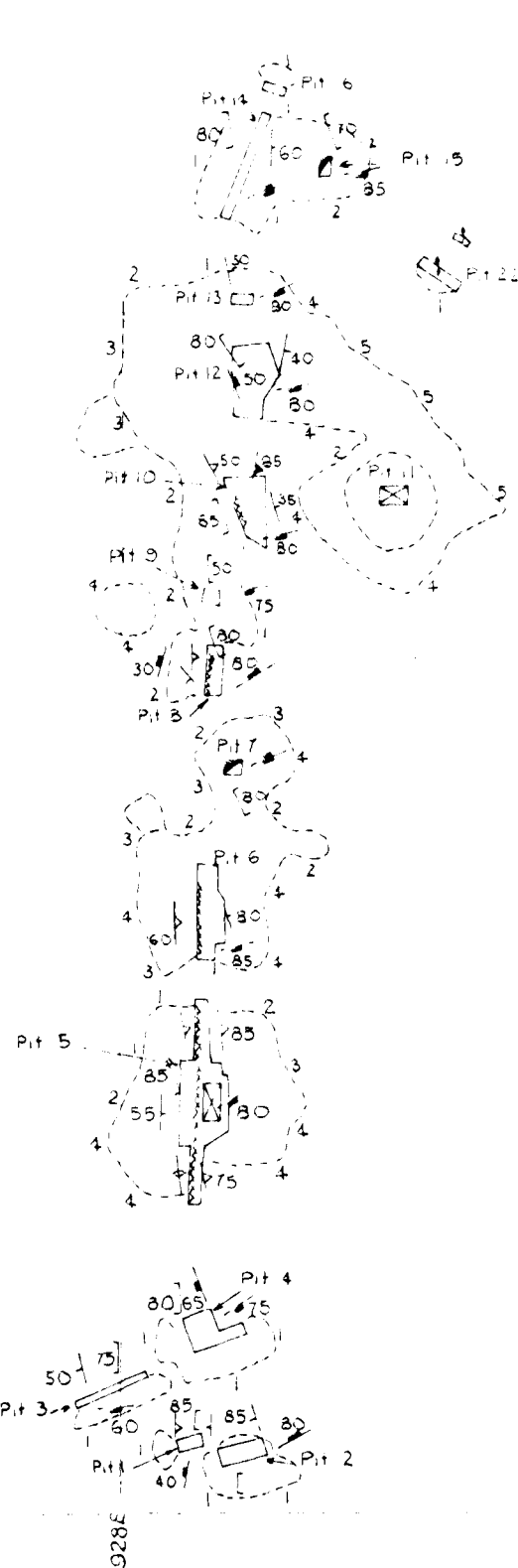
A hand-drawn sketch of a pit. It consists of a dashed oval shape. A line with an arrow points to the top of the oval, labeled '35'. Another line with an arrow points to the right side of the oval, labeled 'Pit 11'.

1-7-77 P. 11
85

10/16/88

3/4N

... 314 N



Fit 22

P. 11

Shaft

Mullock dump height

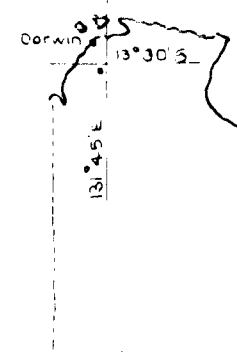
Boxworks - gossan - Massive Limonite

 λ -cutting

Reading

Cleavage

Fertilization



LOCALITY PLAN

85]
Pit 21
45

- 310N

PINE CREEK API959 (P+)

JAR COPPER PROSPECT NT1112

310N

11:40

NT-112-39

20 5 71

LAB

33000N

32000N

31000N

30000N

29000N

28000N

27000N

26000N

25000N

33000N

32000N

31000N

30000N

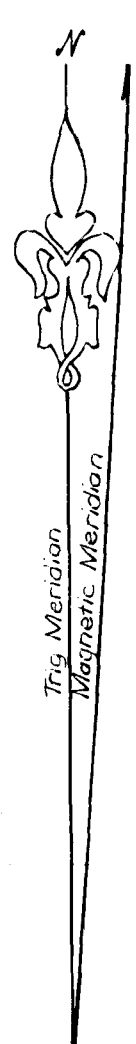
29000N

28000N

27000N

26000N

25000N



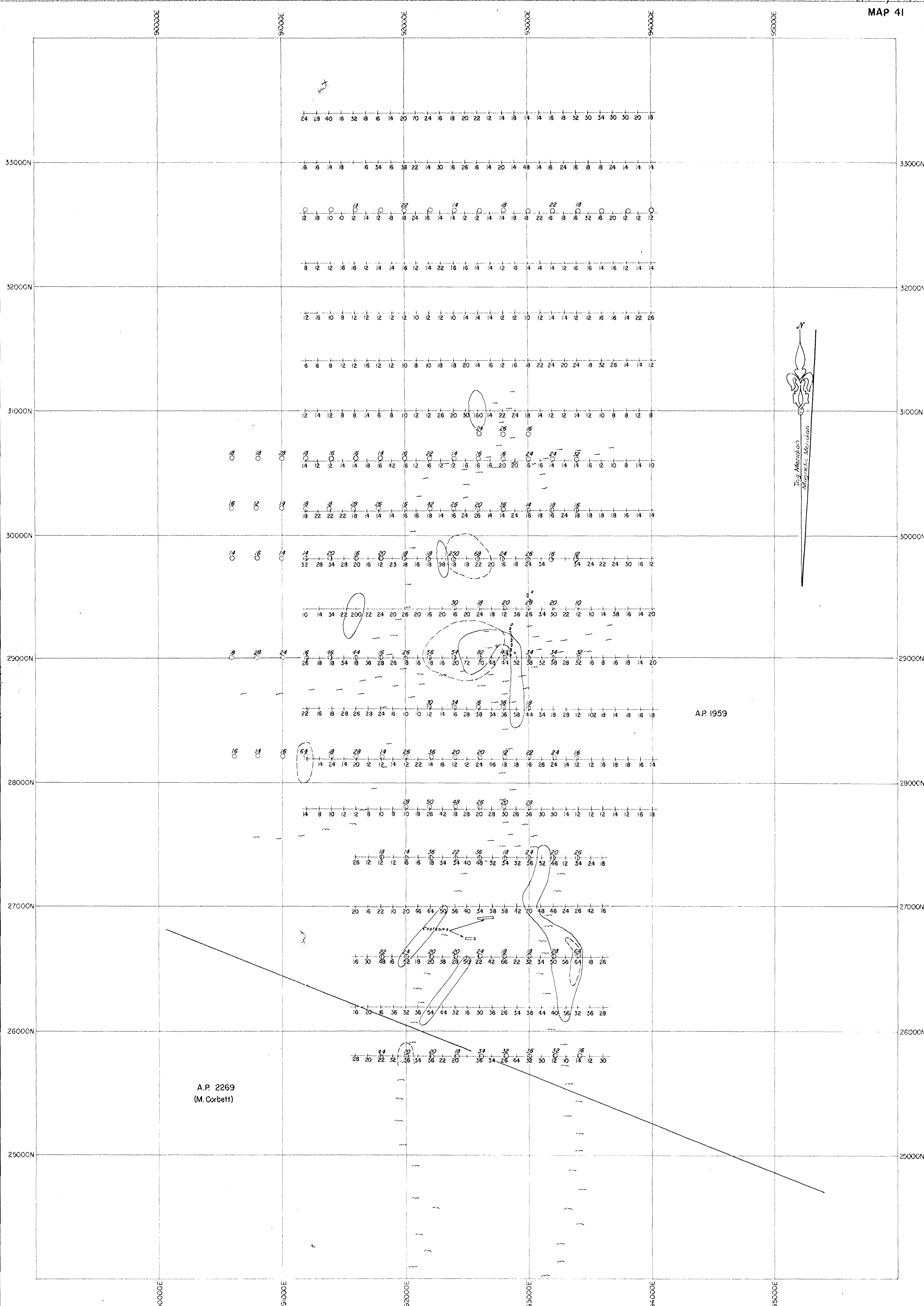
A.P. 1959

A.P. 2269
(M. Corbett)

- Soil geochemical contour 80 ppm Cu
- Weathered rock geochemical contour 80 ppm Cu
- Auger drilling results
- ++ Soil sample results
- Alluvium

Cu.

Geochemical Results-COPPER	
CENTRAL PACIFIC MINERALS, INC.	
JAR COPPER PROSPECT	N.T.11-12
A.P. 1959	
Scale 1 inch = 400 feet	Sheet No. NT.11-12-40
Date 16th November, 1970	Drawn by R.S.C.



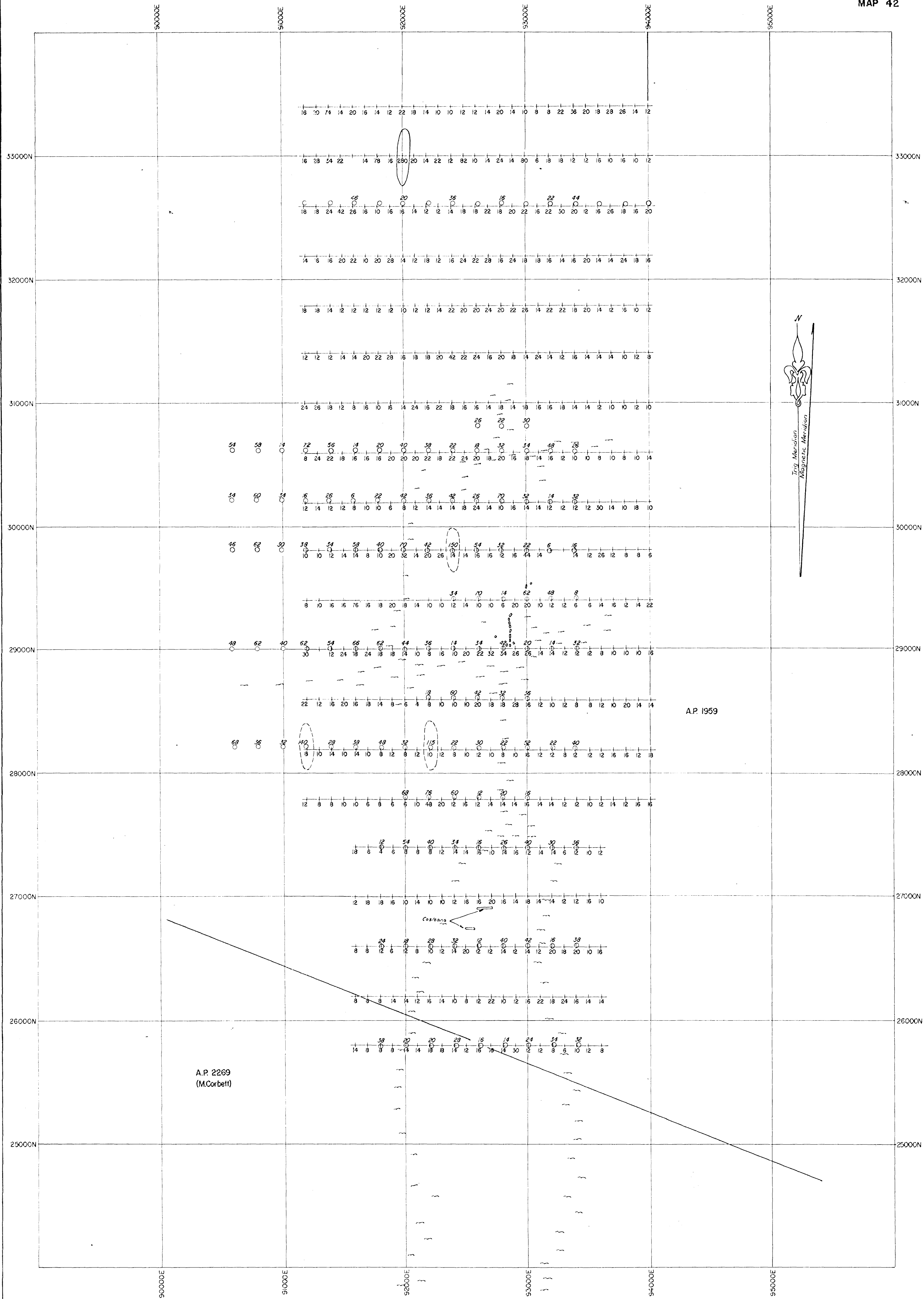
A.P. 2269
(M. Corbett)

A.P. 1959

- Soil geochemical contours 50ppm Pb
- Weathered rock geochemical contour 50ppm Pb
- Auger drilling results
- ++ Soil sample results
- Alluvium

Pb.

Geochanical Results-LEAD	
CENTRAL PACIFIC MINERALS, INC.	
JAR COPPER PROSPECT	N.T.11-12
A.P. 1959	
Scale 1 inch = 100 feet	Drawn by N.T.11-41
Date 16th November, 1970	Checked by R.S.C.



- Soil geochemical contours 80 ppm Zn
- Weathered rock geochemical contours 80 ppm Zn
- Auger drilling results
- +— Soil sample results
- ~ Alluvium

Zn.

Geochemical Results-ZINC	
CENTRAL PACIFIC MINERALS, INC.	
JAR COPPER PROSPECT	N.T. 11-12
A.P. 1959	
Scale: 1 inch = 400 feet	Map No. NT-11-12-42
Date: 16th November, 1970	Drawn by: RSC