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No. 1248

SML 356

ARKABA

**COMBINED FIRST PROGRESS / FINAL REPORT TO
LICENCE EXPIRY/SURRENDER FOR THE PERIOD
27/11/1969 TO 26/5/1970**

Submitted by
Carpentaria Exploration Co. Pty Ltd
1970

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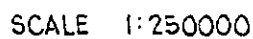
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Primary Industries and Resources SA



DOCKET D.M. 1206/69 AREA 51 SQ MILES
1:250000 PLANS . PARACHILNA .

S.M.L. No. 356

EXPIRY DATE 26.5.70.

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TENEMENT: S.M.L. 356

TENEMENT HOLDER: Carpentaria Exploration Pty. Ltd.

REPORT: Final Report

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PLANS: Locality Map

(Pg. 5)

Nickel

1248-1

Zinc

1248-2

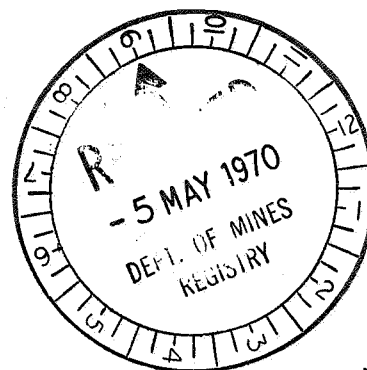
Lead

1248-3

Copper

1248-4

00003



CARPENTARIA EXPLORATION COMPANY PTY. LTD.

ENV. 1248

FINAL REPORT ON S.M.L. 356 "ARKABA" BY

B.R. PFLAUM

Distribution

1. Carpentaria Exploration Company Pty. Ltd. - Brisbane
2. Carpentaria Exploration Company Pty. Ltd. - Adelaide
3. Department of Mines - South Australia

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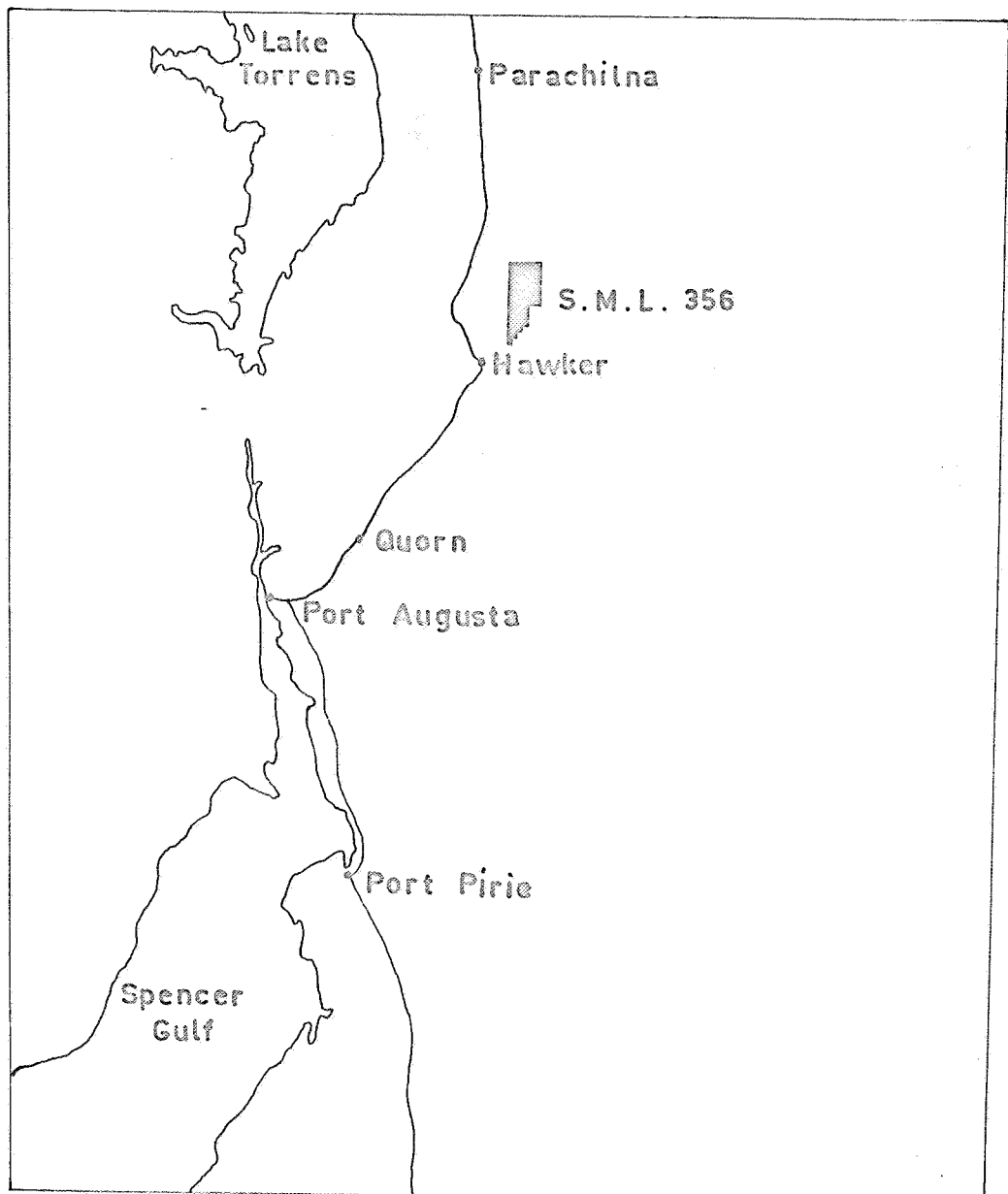
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00005

FIGURE 1. LOCATION OF S.M.L. 356. ARKABA.



SCALE 32 miles : 1 inch

ABSTRACT

Special Mining Lease 356 is centred over the Arkaba Diapir north-north-east of Hawker. Soil sampling on a grid pattern was carried out over the area to check for zinc mineralization within highly brecciated rocks of the diapir. The assay results were uniformly low except for those from rock units known to have base metal contents higher than average.

1. INTRODUCTION

The lease is located north-north-east of Hawker (see Fig. 1) and covers an area of 51 square miles.

Special Mining Lease 356 was acquired on the 27th November, 1969, for a term of six months. Results of 940 soil samples collected from the lease were very low and uniform and the surrender of the lease was applied for late in March 1970.

The area, except for the more southern portion, is of moderate to good relief with outcropping Willouran, Sturtian and Marinoan rocks. A piercement structure - the 'Arkaba Diapir' - falls mainly within the lease and consists of older brecciated Callana beds in the core of an antiform overlain by younger Sturtian and Marinoan rocks. A few small copper prospects occur near the edge of the diapir or on small faults.

The lease was selected to search for zinc mineralization in the highly disturbed and brecciated zones of the diapir. This piercement structure was formerly covered with Lower Cambrian rocks which are known to contain above average contents of base metals, and it was considered possible that enrichment may have taken place during erosion of these sediments.

During January and February, 1970, 940 soil samples were collected on a grid pattern over the lease by two students and two field assistants.

2. SOIL SAMPLING

Sample points were at 1000 foot intervals on east-west lines 1500 feet apart and were located from aerial photographs at an approximate scale of 1": $\frac{1}{4}$ mile.

SOIL SAMPLING (Cont.)

Samples were taken from a depth of 8 to 12 inches and sieved to -80 mesh size at the site of sampling.

Nine hundred and forty samples were assayed for Zn, Cu, Pb and Ni by atomic absorption spectrometry at Sampey Exploration Services, Midland, W.A. The limit of detection for these metals was 5 ppm with a precision of 5% relative standard deviation at the 200 ppm level.

The more alluviated portions of the lease such as the southern extremity were not sampled.

3. RESULTS

The results of the assays for Cu, Pb, Ni and Zn are plotted on plans of the lease given in figures 5,6,7 and 8 respectively. The results are generally low and uniform with a few isolated highs. The average metal contents of various rock units given in Table I and Figure 2, illustrate this uniformity with the exceptions of the Yudnamutana Sub-Group and the Tindelpina Shale Member which are slightly more metalliferous. No anomalous behaviour is shown by the average metal contents of the rocks of the diapir or edge of the diapir when compared with each other or with other units.

The frequency distributions of the metals of all the samples are given in Figures 3 and 4. The mean values for Zn, Pb, Ni and Cu are 48.5, 25.8, 24.3, and 23.1 ppm respectively. The bulk of the samples fall in a narrow range of concentrations with fairly symmetrical distributions. Zinc and Copper show a slight positive skew, their modes being 40 ppm and 20 ppm respectively. Nickel has the narrowest and most symmetrical distribution.

4. CONCLUSION

The existence of any enriched metalliferous zone of any economic size appears very remote. This conclusion confirms the results of an earlier geochemical drainage survey carried out by Arsarco (Australia) Pty. Ltd. in 1968.

5. RECOMMENDATION

Surrender the Lease.

B.R. Pflaum

6. TABLE I

S.M.L. 356 "ARKABA" METAL CONTENTS IN VARIOUS ROCK UNITS

Unit	No. of Samples	Average Cu Content ppm	Average Pb Content ppm	Average Zn Content ppm	Aver. Ni Cont. ppm
Upper Umberatana Gp.	230	20.8	24.7	48.4	23.8
Brachina Formation	290	25.8	26.0	50.2	27.0
Diapir	222	22.9	24.3	45.4	20.3
Alluvium	55	23.2	29.6	51.4	25.1
Bunyerroo Formation	67	21.8	26.4	49.3	26.7
Nuccaleena Formation	29	20.5	22.7	49.8	24.3
A.B.C. Quartzite	17	17.9	26.2	43.3	22.7
Yudnamutana Sub-Gp.	19	26.6	41.8	53.4	24.5
Edge of Diapir	43	23.7	22.3	50.7	23.8
Tindelpina Shale Member	32	27.3	35.9	81.0	28.3

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FIGURE 2.

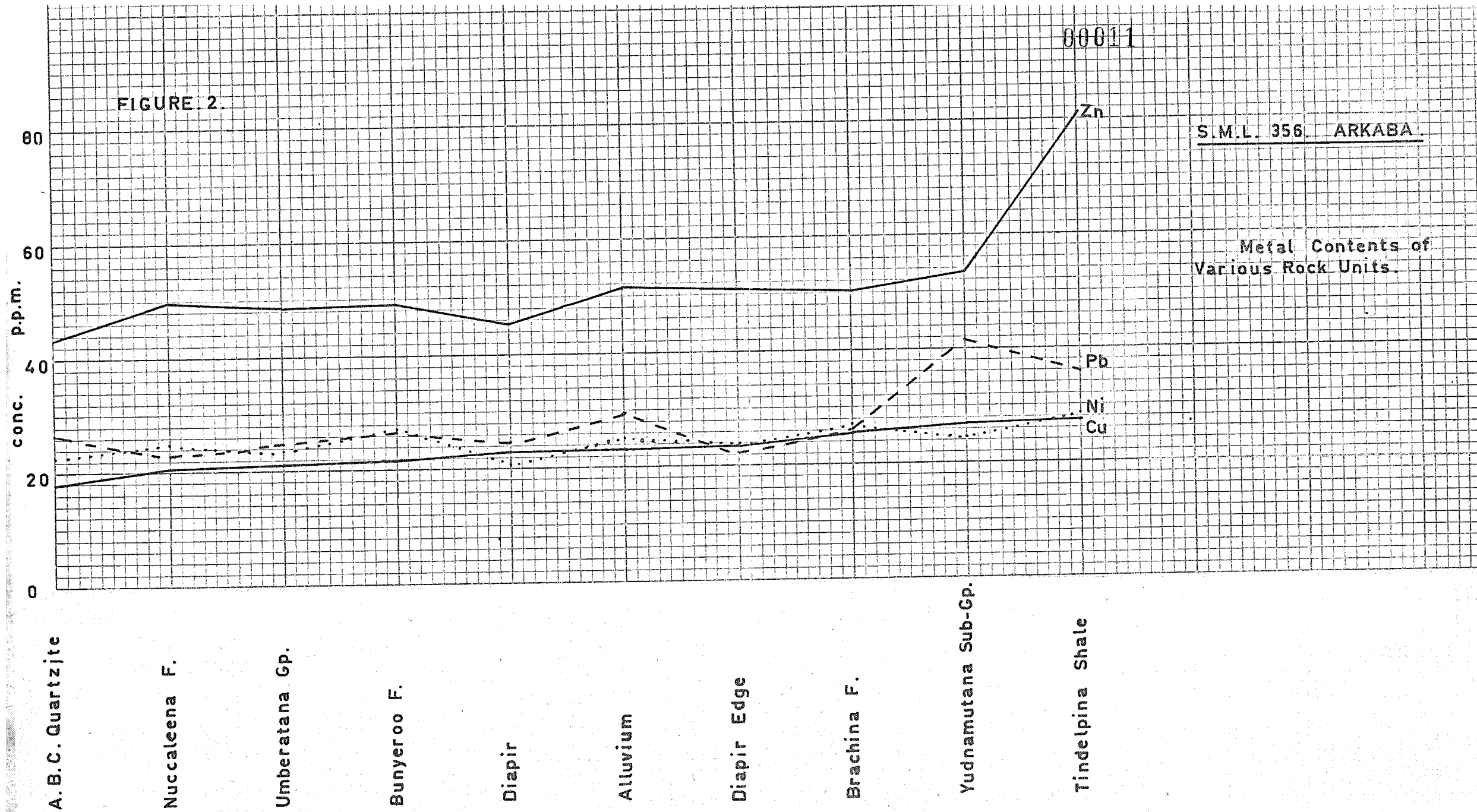


FIGURE 3.

00012

FREQUENCY DISTRIBUTION OF METALS IN SOIL SAMPLES FROM ARKABA S.M.L. 356.

COPPER

No. of samples : 940
Mean : 23.14 p.p.m.
Mode : 20 p.p.m.

LEAD

No. of samples : 940
Mean : 25.77 p.p.m.
Mode : 30 p.p.m.

300

250

200

150

100

50

frequ.

0

50

100

150

200

250

300

conc.

p.p.m.

0

50

100

150

conc. p.p.m.

FIGURE 4.

00013

FREQUENCY DISTRIBUTION OF METALS IN SOIL SAMPLES FROM ARKABA S.M.I., 356.

NICKEL

No. of samples : 940
Mean : 24.25 p.p.m.
Mode : 25 p.p.m.

ZINC

No. of samples : 940
Mean : 40.54 p.p.m.
Mode : 40 p.p.m.

300
250
200
150
100
50
0

freq.

0 50 100

conc. p.p.m.

0

50 100

conc.

150

p.p.m.

200

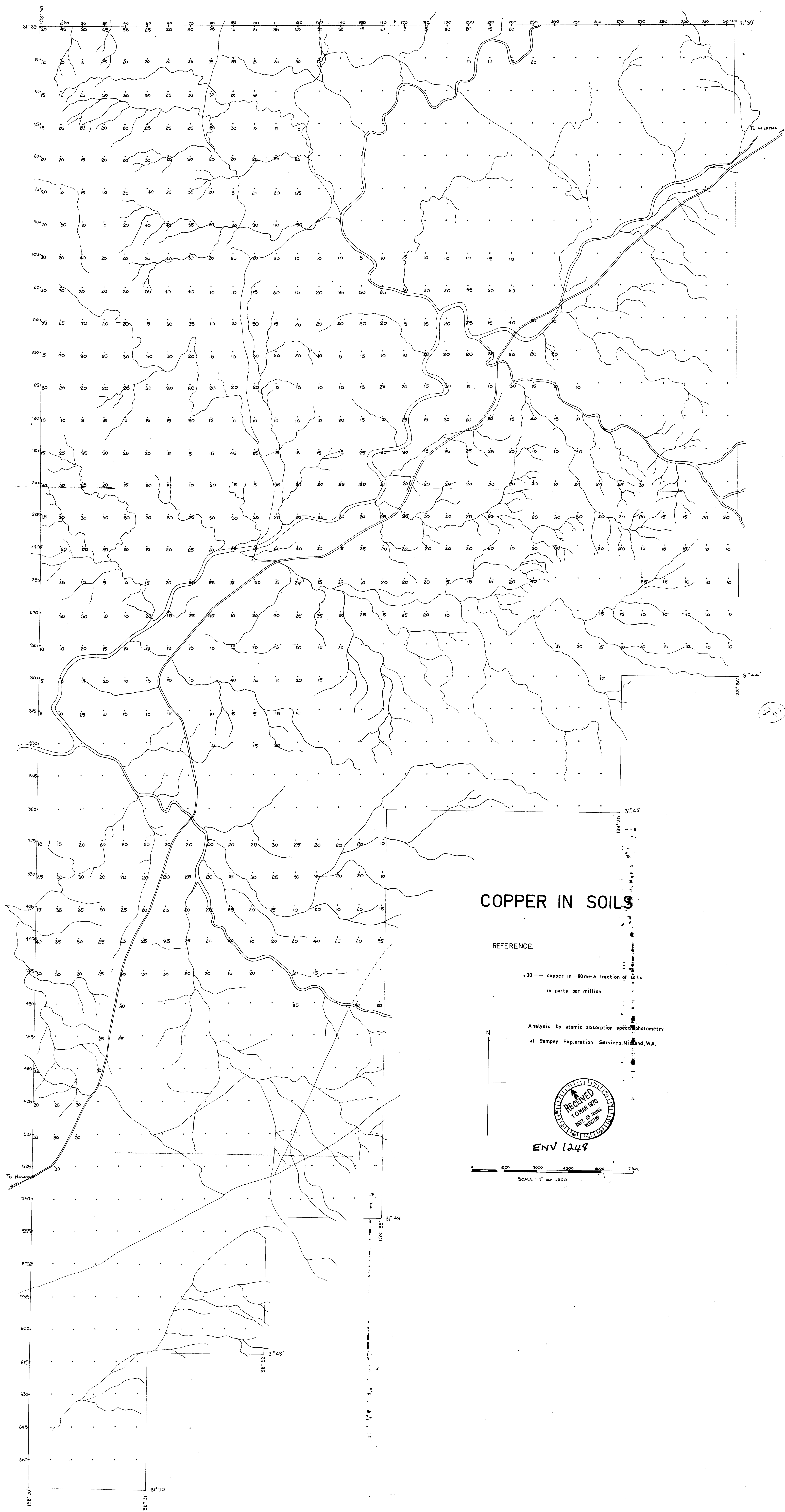
250

300

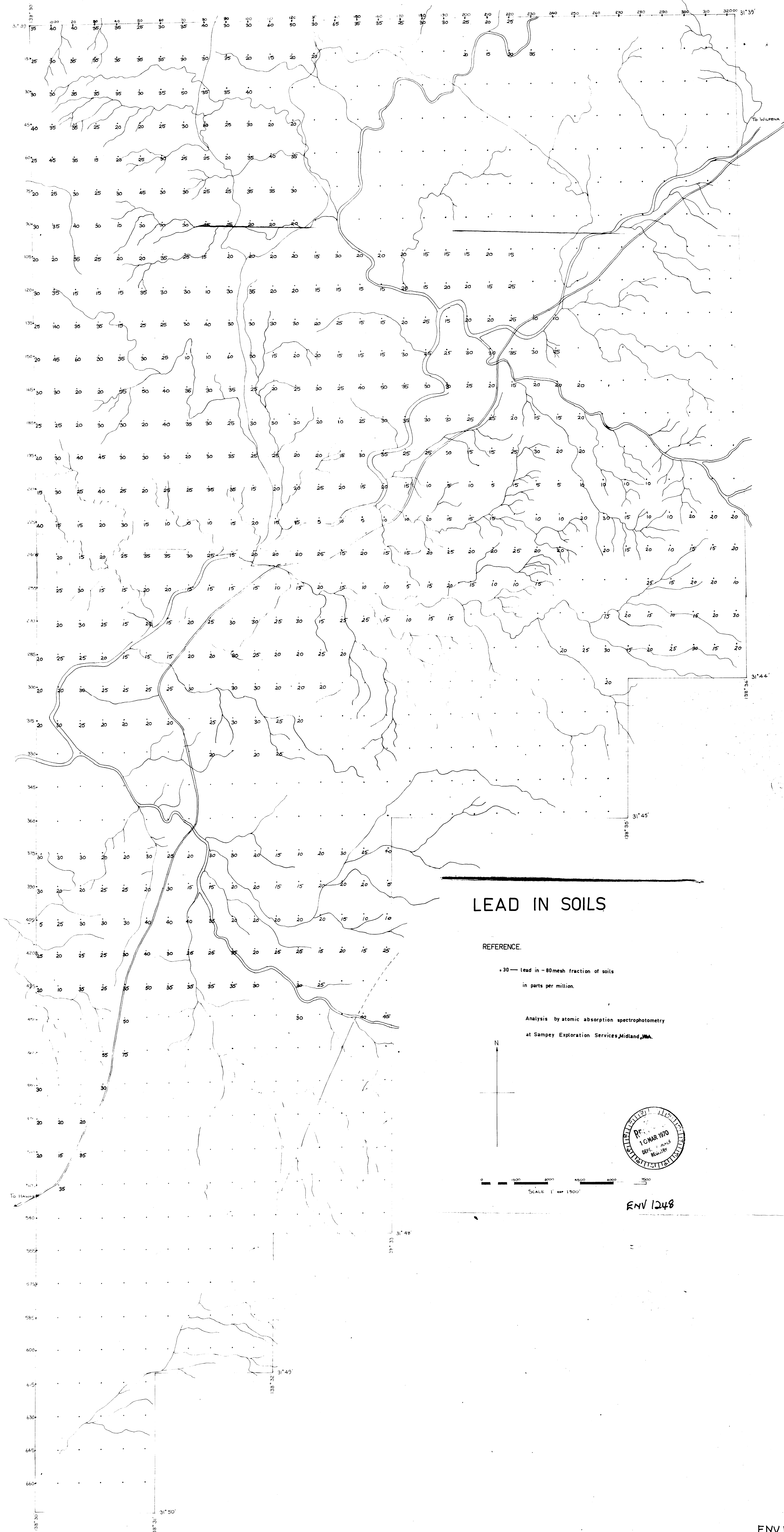
350

400

ARKABA - S.M.L. 356



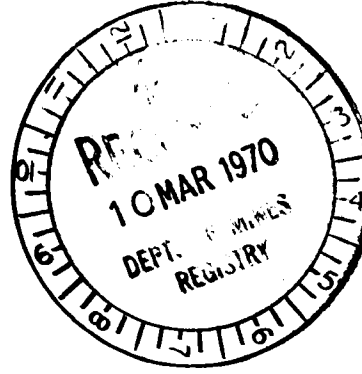
ARKABA - S.M.L. 356



LEAD IN SOILS

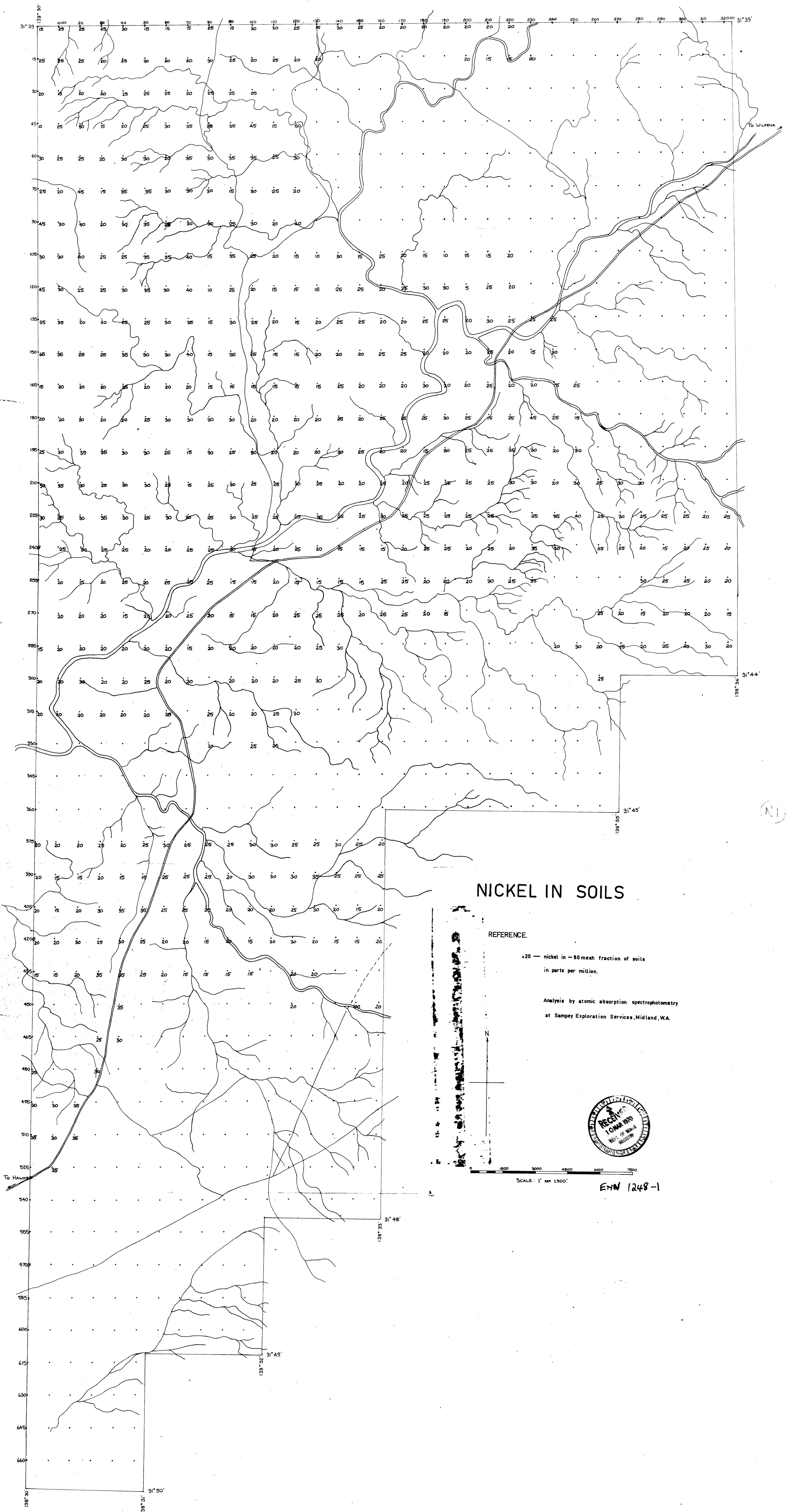
REFERENCE.
• 30 — lead in -80 mesh fraction of soils
in parts per million.

Analysis by atomic absorption spectrophotometry
at Sampey Exploration Services, Midland, N.M.



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