

81-580-9325

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE
RED - 1 CLAIM.

Liard Mining District
94 M/5E, 5W

Latitude 59° 29'N
Longitude 127° 44'W

Owner: Sulpetro Minerals Limited
Operator: Sulpetro Minerals Limited

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9325

PART
1 of 2

D.C. Miller
J.C. Harrison

August 13, 1981

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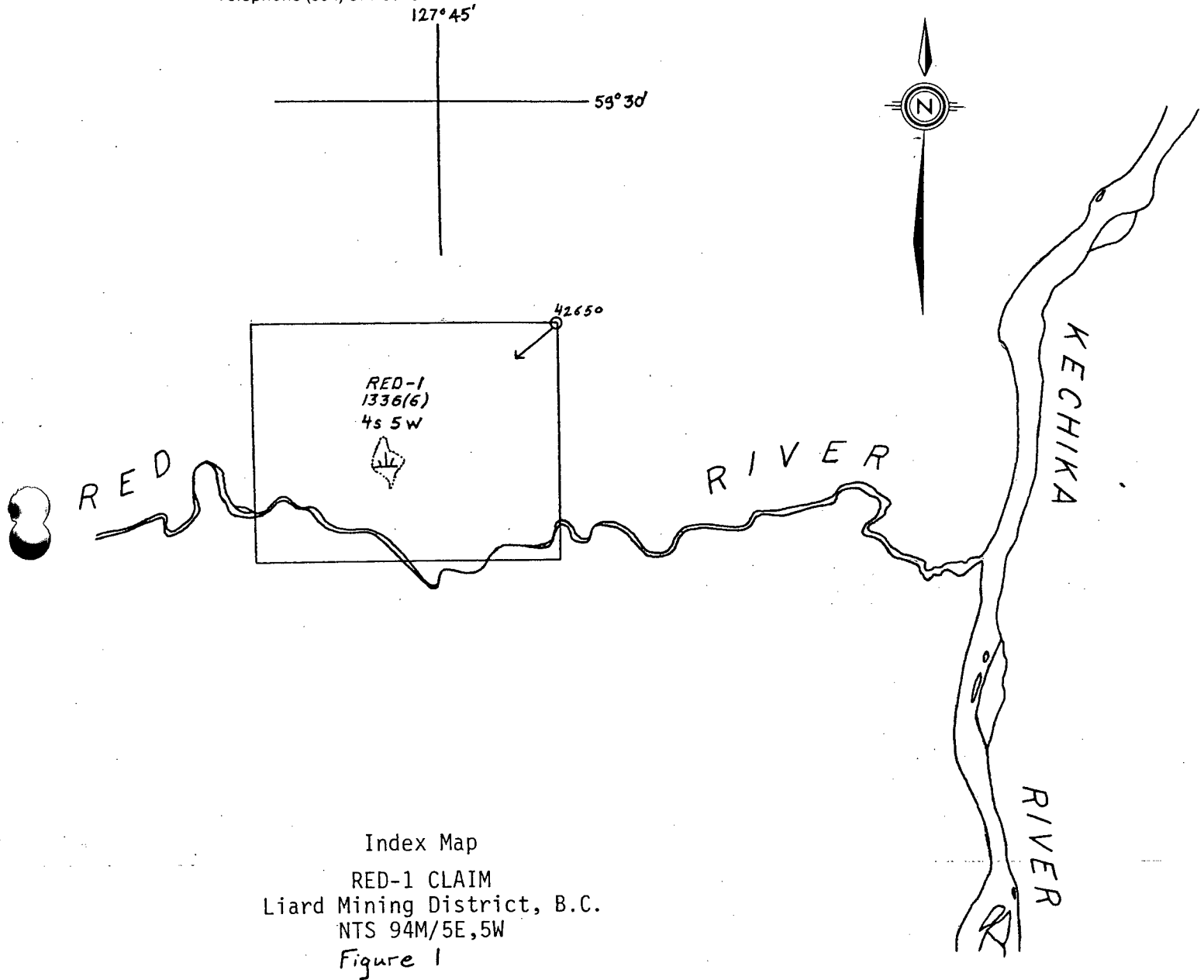
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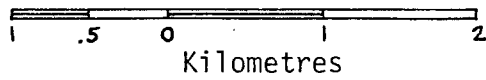


SULPETRO MINERALS LIMITED

Suite 5, 970 Laval Crescent
Kamloops, B.C. V2C 5P5
Telephone (604) 372-8348 Telex 048-8112



Index Map
RED-1 CLAIM
Liard Mining District, B.C.
NTS 94M/5E,5W
Figure 1



Scale: 1:50,000
Project: 5150.1
Drafting: JCH
Date: August 13, 1981

INTRODUCTION

Location and Access

The Red-1 Claim is located on the Red River, 90 kilometres southeast of Watson Lake, Yukon.

In 1980 a fly camp was established on the Red River within the claim, and access was made possible by 206 B helicopter from Watson Lake. In 1981, work on the claim was carried out from a base camp at Aeroplane Lake with a daily crew shuttle by helicopter.

Property - Claim Status

The following data describes the 20 unit claim staked by St. Joseph Explorations Limited on June 2, 1980.

<u>Claim</u>	<u>Units</u>	<u>Record #</u>	<u>Anniversary Date</u>
Red - 1	20	1336	June 20

As a result of a corporate takeover, St. Joseph Explorations Ltd. became Sulpetro Minerals Limited on June 26, 1981.

Physiography

The claim is located on a topographically subdued area of the Liard Plain. Relief on the plateau is less than fifteen metres. On the claim the Red River dissects the plateau resulting in continuous cliffs and scarp slopes up to 100 metres.

Outcrop on the plateau is masked by five or more metres of cobble till. Immediately west of the claim, older, possibly Tertiary clay deposits over 100 metres thick underlie the till.

Previous Work

The generalized geology of the Red River area has been completed by Gabrielse(1962) based on field work throughout the Rabbit River 94^M in 1958, 1960 and 1961.*

Due to a rarity of outcrop, mineral exploration has been subdued throughout the Rabbit River and Red River area. In recent years, regional exploration programmes by Texasgulf St. Joseph Explorations, and Cyprus Anvil Mines have been aimed at Selwyn Basin type Pb-Zn-Ba-targets.

In January 1981, Questor Surveys Limited was contracted to undertake 258 line kilometres of geophysical surveys in the vicinity of the claim. Results of this work have previously been submitted.

Summary of Present Work

Line flagging, geological and lithogeochemical surveys at 1:5000 scale were conducted on the property from August 13 to 22, 1980 by three company employees.

In 1981, twenty-one line kilometres of grid were cut out on the property. This work was contracted to Dick Eastman and Associates from June 3 to 12. The grid was then soil sampled by Sulpetro staff at 50 m intervals. Some additional geological mapping was conducted on the south bank of the Red River during June, 1981.

* GSC Map 46 - 1962

DETAILED TECHNICAL DATA AND INTERPRETATION

Geology

A. General

Sedimentary rocks exposed along the banks of the Red River within the Red - 1 claims include a variety of mudstones, siltstones, calciturbidites, and immature sandstones that are thought to range from Cambrian to Silurian in age. Three mappable units have been distinguished that are repeated by faulting and harmonic upright folding. Sparse galena, sphalerite, and chalcopyrite mineralization occurs in vein and fracture fillings and may be related to low temperature hydrothermal activity.

B. Unit 1

This unit forms the base of the sedimentary sequence as it is exposed. It includes in excess of 160 metres of lithic orthoquartzite, red weathering sandstone, sandstone with angular mudstone clasts and interbeds of minor grey or rusty shale and chert. Outcrops may be massive or thickly bedded, fine to medium banded. The massive variety contains irregular quartz stringers. The rocks appear to have experienced low grade metamorphism since muscovite flakes are apparent on fracture surfaces.

C. Unit 2

This unit includes 100 to 175 metres of rusty limonite stained slaty mudstone, carbonaceous mudstone, green to gray shale, and minor siltstone. Some limestone and limy mudstone members (unit 2a) are found near the base of the unit. The dominant characteristic of this unit is the development of slaty cleavage in the shales and mudstones

and the tendency toward limonite and native sulphur alteration on fracture surfaces.

D. Unit 3

This unit is well exposed in a synclinal structure in the centre of the property. Outcrops along the river include buff or black weathering carbonaceous mudstone and shale, limy mudstone and limy siltstone. The carbonaceous rocks make up 75 to 80% of the unit and are highly fractured and recessive weathering. The limy mudstone or limy siltstone beds makes up the remaining 15% and are well bedded, with horizons ranging from 3 to 30 centimetres. Total exposed thickness of the unit is about 125 metres.

Structure

Most rock units strike northwesterly with dips ranging from 30° to 60° in both directions. The stratigraphy has been repeated by a series of five or six open upright synclines and anticlines whose hinges are subparallel to bedding and whose limbs have been broken by steeply dipping minor faults. These fault planes may be more widespread in the sequence since mappable units appear to rapidly change thickness and direction across the grid.

Several intraformational breccia zones have been found and appear to be loci for galena and sphalerite mineralization.

Economic Geology

Two minor showings of galena and sphalerite have been found within the property. One showing is in a breccia zone near the base

of unit 3. Here sulphides and quartz occupy the matrix of the breccia. Lead and zinc with minor pyrite is exposed in a zone 2 to 3 metres in length. The second showing occurs in unit 1, sandstone, and is also associated with a zone of galena and sphalerite mineralization in irregular vuggy quartz veins.

The origin of the mineralization is not clear. It is possible that a low temperature hydrothermal system may have been active in the area. Zinc and lead occurring in above background levels in the shales and mudstones may then have migrated into gash veins or porous breccia zones in close proximity to areas of active faulting and fracturing.

Geochemistry

A. General

A total of 360 B horizon soil samples were collected along cut and picketed 200 metre spaced lines. Sample interval was 50 metres, and sample depth varied from 15 to 25 centimetres. Samples were shipped by truck freight to Bondar-Clegg and Co. Ltd. in Whitehorse. The -80 mesh fraction was analyzed for Cu, Pb, Zn, and Ag by atomic absorption. This followed extraction by the hot Lefort acid technique. Results have been plotted on histograms and % cumulative frequency graphs to determine the threshold and definitely anomalous limits. Contoured data has been plotted on property grid maps (see back pocket).

The following table gives the calculated thresholds and definitely anomalous (lower) limits for the four analyzed elements.

<u>Element</u>	<u>Threshold</u>	<u>Definitely Anomalous Limit</u>	
Cu	21	60	ppm
Pb	12	21	
Zn	100	200	
Ag	0.6	0.7	

Rock samples were also collected (in August 1980). Forty-two samples were crushed and analyzed by atomic absorption at Kamloops Research & Assay Laboratories in Kamloops. Results for Cu, Pb, Zn and Ag have been listed in appendix 1. Sample locations have been plotted on a property map at a scale of 1:5000.

B. Interpretation

The soil geochemistry on the property is remarkably flat. Anomalous values in all elements are not significantly elevated above background. Contouring of data suggests that close proximity to bedrock is important in fluctuations of soil geochemistry. Unit 3 carbonaceous limy siltstone outcrop corresponds closely to elevated copper, lead and zinc in the overlying soils within 150 metres of the escarpment edge. Single point, single element spot high values are scattered over the remainder of the grid. If economic mineralization underlies the Red property, it does not have a geochemical expression in the soils. This may be due to either thick glacial overburden or an impermeable clay horizon that prevents secondary dispersion of base metals to the surface.

Conclusions and Recommendations

Galena and sphalerite have been found in two small showings of gangue and sulphide cemented collapse or fault breccia within Pale-

ozoic carbonaceous limy siltstone and lithic orthoquartzite. A soil survey in overburden covered areas north of these showings on the Red River has failed to indicate any sizeable concentrations of base metal mineralization. This is undoubtedly due to the thick or impermeable overburden. An induced polarization survey or a program of overburden drilling and basal till sampling in these covered areas may yield more encouraging results.

Your respectfully,

D.C. Miller

D.C. Miller, P.Eng.

J.C. Harrison

J.C. Harrison, B.Sc.

RED-1 COST STATEMENTAugust 1, 1980 to June 15, 19811. LABOUR

(a) R. Shearing	Aug 11 - 25, 1980 15 days @ \$60/day.	\$ 900.00
(b) L. Groat	Aug 11 - 24, 1980 14 days @ \$54/day.	\$ 756.00
(c) P. DesRochers	Aug 11 - 24, 1980 14 days @ \$45/day.	\$ 630.00
(d) J.C. Harrison	Sept 9 & 10, 1980 2 days @ \$90/day.	\$ 180.00
(e) J. Marklund	May 26 - 31, June 1, 1981 7 days @ \$50/day.	\$ 350.00
(f) S. Lee	May 26 - 31, June 1, 1981 7 days @ \$50/day.	\$ 350.00
(g) K. MacDonald	May 26 - 31, June 1, 1981 7 days @ \$50/day.	\$ 350.00
(h) L. Groat	May 26 - 31, June 1, 1981 7 days @ \$60/day.	\$ 420.00
	SUBTOTAL.	<u>\$3936.00</u>
(i) Line Cutters	(C. Eastman Exploration Services, Box 4411, Whithorse, Yukon) June 3 - 13, 1981 18.8 km @ \$310/km	
	SUBTOTAL.	<u>\$5828.00</u>

Red-1 Cost Statement cont'd.2. FOOD & ACCOMODATION

(a) Sulpetro Crew

72 man days @ \$25/day. \$ 1800.00

(b) Eastman Crew

28 man days @ \$25/day. \$ 700.00

SUBTOTAL. \$ 2500.00

3. TRANSPORTATION

May 26, 1981 - J. Marklund, S. Lee, K. MacDonald

Airfare - Kamloops to Watson Lake

3 @ \$215.75. \$ 647.25

May 26, 1981 - L. Groat

Airfare - Vancouver to Watson Lake. \$ 181.45

Bell 206 B Helicopter - May 30 - June 13

12.1 Hr. @ 365. \$ 4416.50

Fuel 12.1 x 22 x \$2.10. \$ 559.02

(Northern Mountain Helicopters, Prince George, B.C.)

Single Otter - (B.C. Yukon Air Service, Watson Lake)

Aug 12, Aug 22, 1980, May 27, June 6, June 9, 1981. \$ 2125.24

SUBTOTAL. \$ 7929.46

4. ANALYSES

Bondar Clegg Whitehorse

Sept 12, 1980

26 analyses of silver, copper, lead, and zinc plus
preparation charges (rocks)

26 x \$5.65. SUBTOTAL \$ 146.90

STATEMENT OF QUALIFICATIONS

I, DAVID C. MILLER, of 970 Laval Crescent, #5, Kamloops, B.C., do hereby certify that:

1. I am a graduate of the University of British Columbia and obtained a B.A.Sc. degree in Geological Engineering in 1959.
2. I have had 22 years experience in mining geology and mineral exploration.
3. I am a registered Professional Engineer in the Province of British Columbia.
4. I have done field work on the property discussed in this report.

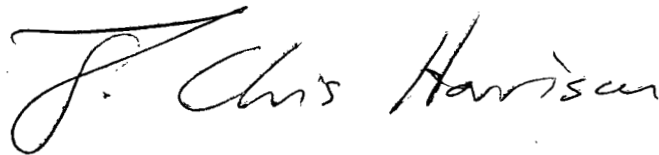
DC Miller
D.C. Miller, P.Eng.

August 13, 1981

STATEMENT OF QUALIFICATIONS

I, J. CHRIS HARRISON, of 970 Laval Crescent, #5, Kamloops, B.C., do hereby certify that:

1. I am a graduate of the University of Toronto and obtained a B.Sc. degree in geology in 1977.
2. I have had 3 year (8 summers) experience in mineral exploration.
3. I have examined the property discussed in this report, and the report dated August 13, 1981 is based on this examination.
4. I have no interest, directly or indirectly in the property.



J.C. Harrison, B.Sc.

August 13, 1981

APPENDIX 1

Lithogeochemistry

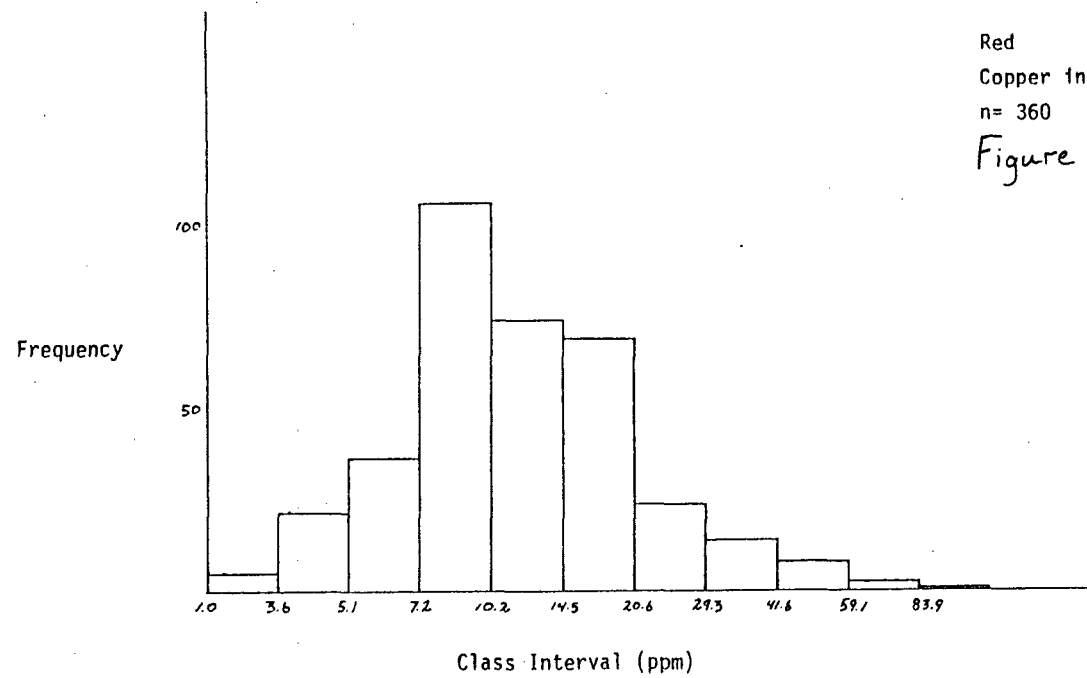
Number	Rock Description	Assay			
		Cu	Pb	Zn	Ag
R33081	light grey orthoquartzite	.6	10	8	0.2
R33082	siltstone and rusty phyllite	14	17	48	0.1
R33083	carbonaceous limy mudstone and carbonaceous shale	4	32	41	0.2
R33085	carbonaceous shale	45	13	42	0.5
R33086	fine grained limestone with calcite veinlets	5	6	10	0.1
R33088	jointed ligh grey orthoquartzite	8	32	31	0.1
R33089	buff weathering blue-grey orthoquartzite	10	9	8	0.1
R33090	rusty weathering, blue-grey siltstone	12	12	7	0.1
R33091	quartz veined orthoquartzite-possible sulphide mineralization	14	11	37	0.1
R33092	quartz veined orthoquartzite	7	11	10	0.1
R33093	orthoquartzite with mudstone clasts	12	18	33	0.1
R33094	orthoquartzite with red-sandstone and mudstone clasts	17	21	78	0.1
R33095	black carbonaceous phyllitic shale	21	18	62	0.1
R33097	interbedded sandstone and shale	4	3	8	0.1
R33098	interbedded grey siltstone and black mudstone	14	8	65	0.1
R33101	silicified mudstone with quartz veinlets	36	3	8	0.1
R33102	pyritic horizon in rusty carbonaceous shale	16	10	17	0.1
R33105	carbonaceous shale	40	17	221	0.1
R33106	interbedded limestone and limy mudstone	6	12	31	0.2
R33108	interbedded limestone and shale	17	15	74	0.2
R33109	carbonaceous and pyritic shale interbedded with limestone	51	10	79	0.2

APPENDIX 1 Cont'd.

R33110	carbonaceous shale and limy mudstone	14	8	37	0.2
R33111	rusty pyritic shale	50	11	74	0.2
R33112	brecciated limestone	31	10	60	0.2
R33113	grey blue orthoquartzite	74	10	141	0.9
R33116	limy mudstone and limestone	36	11	61	0.3

A P P E N D I X 2

HISTOGRAM & % CUMULATIVE FREQUENCY



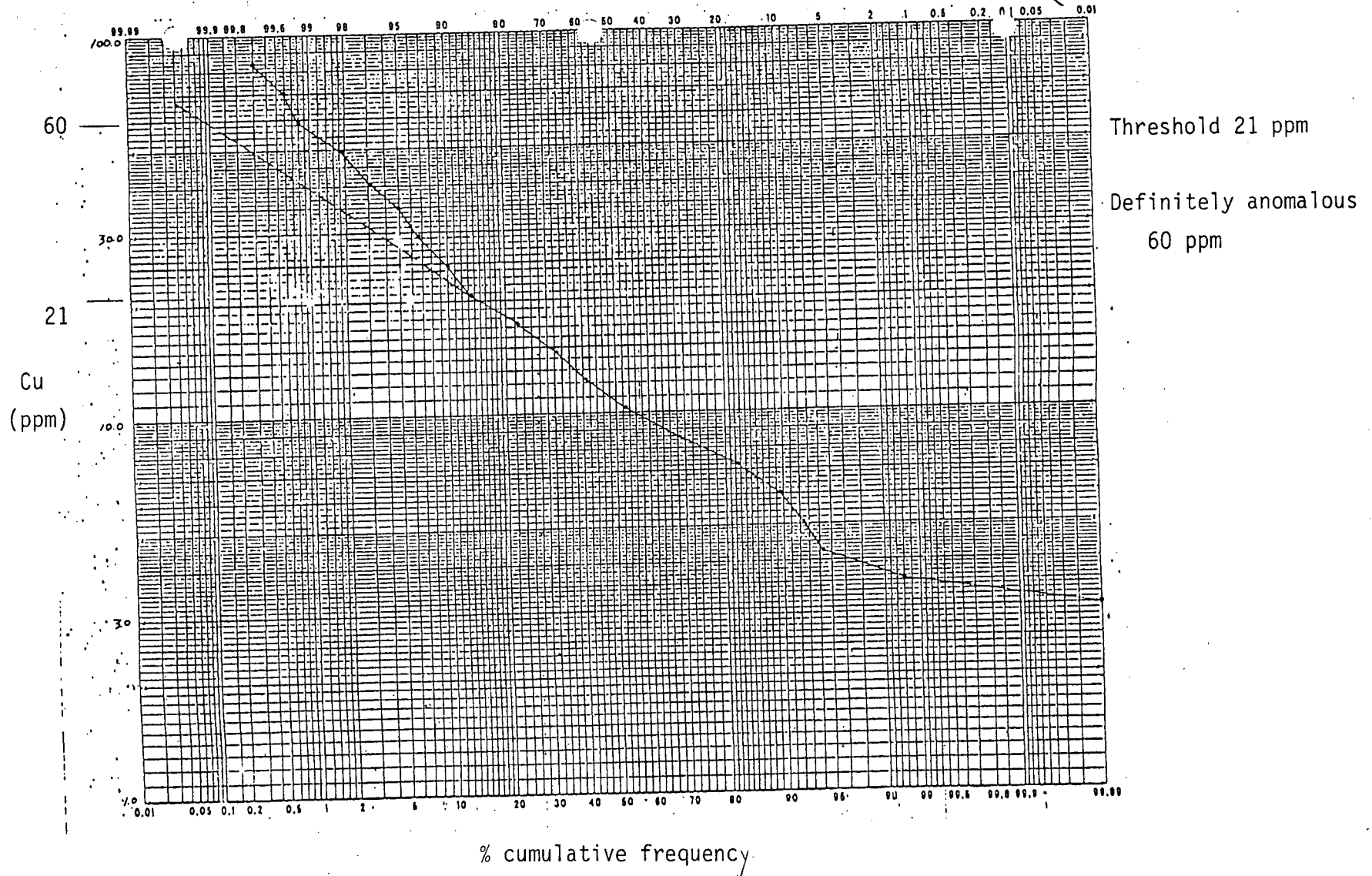
Red
Copper in Soils - Histogram
n= 360
Figure 2

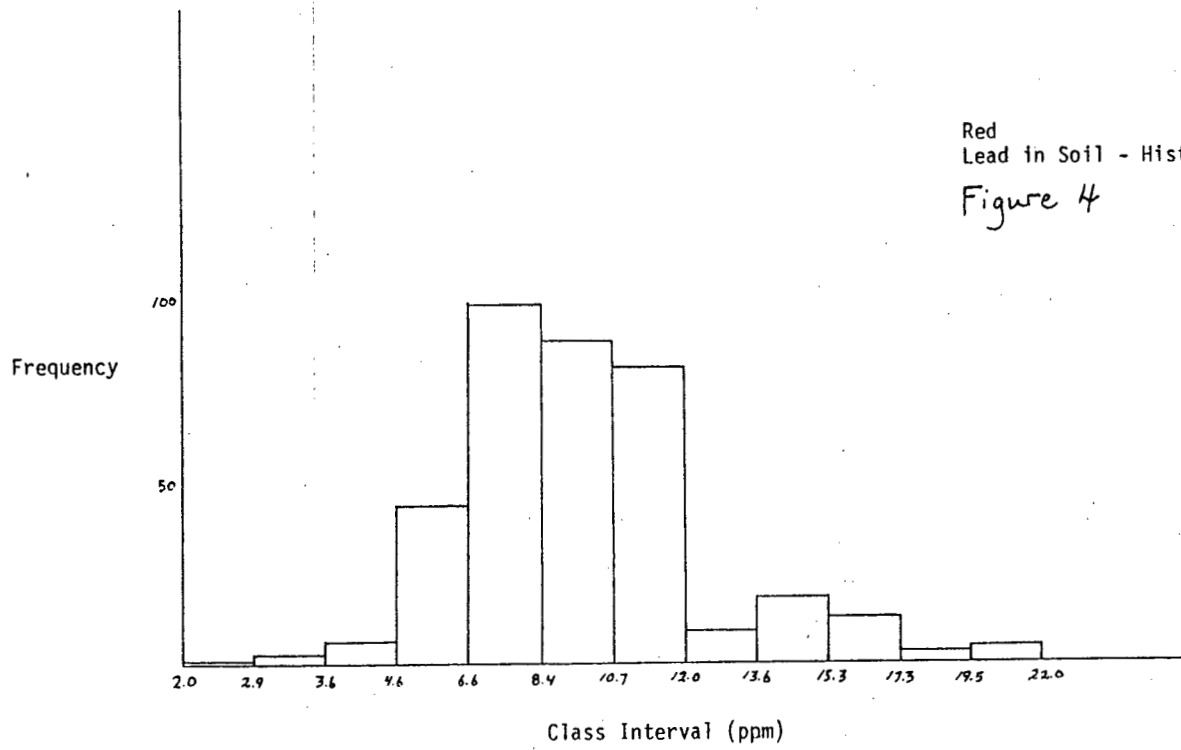
RED

Copper in soils - % cumulative frequency

n = 360

Figure 3





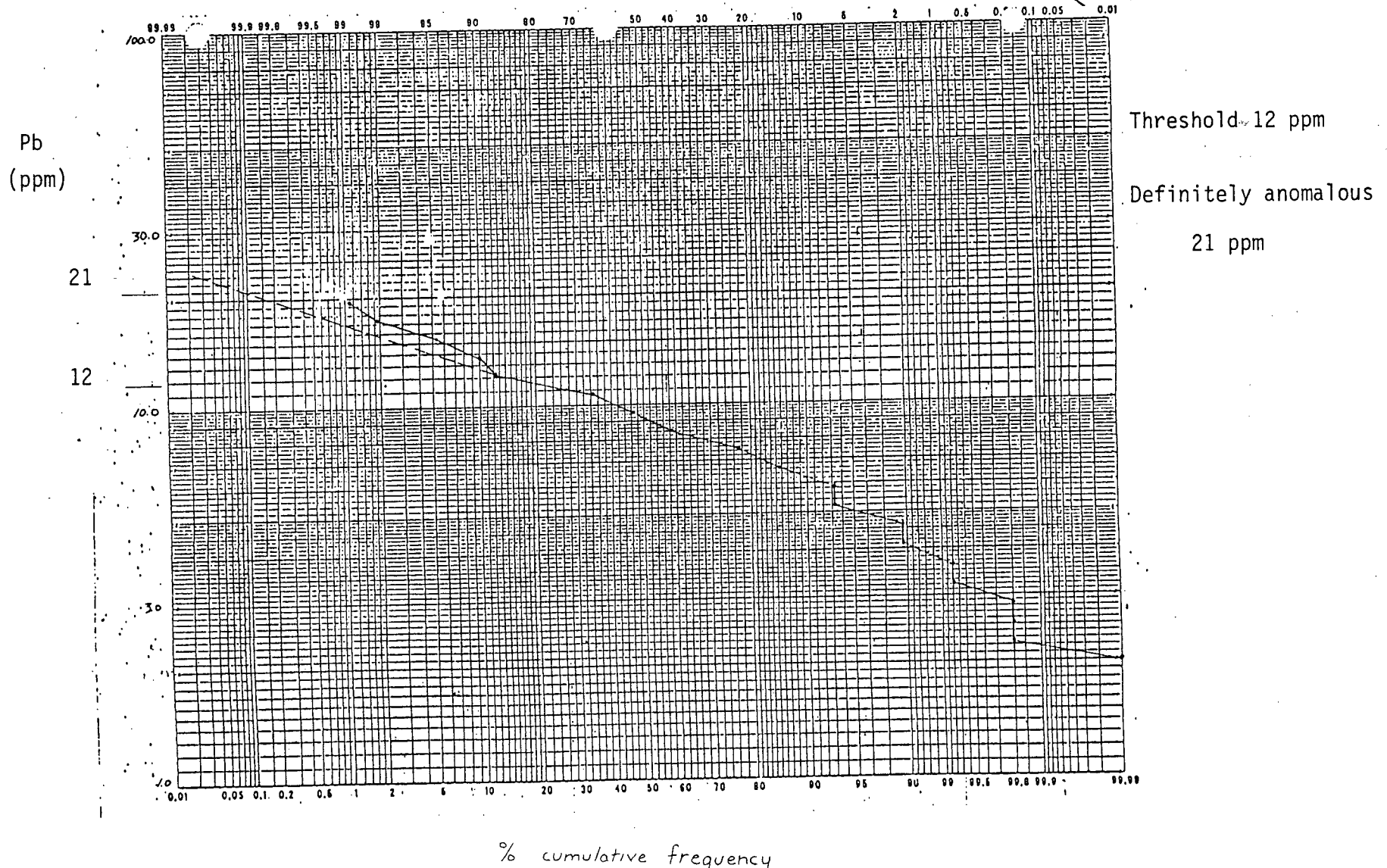
Red
Lead in Soil - Histogram
Figure 4

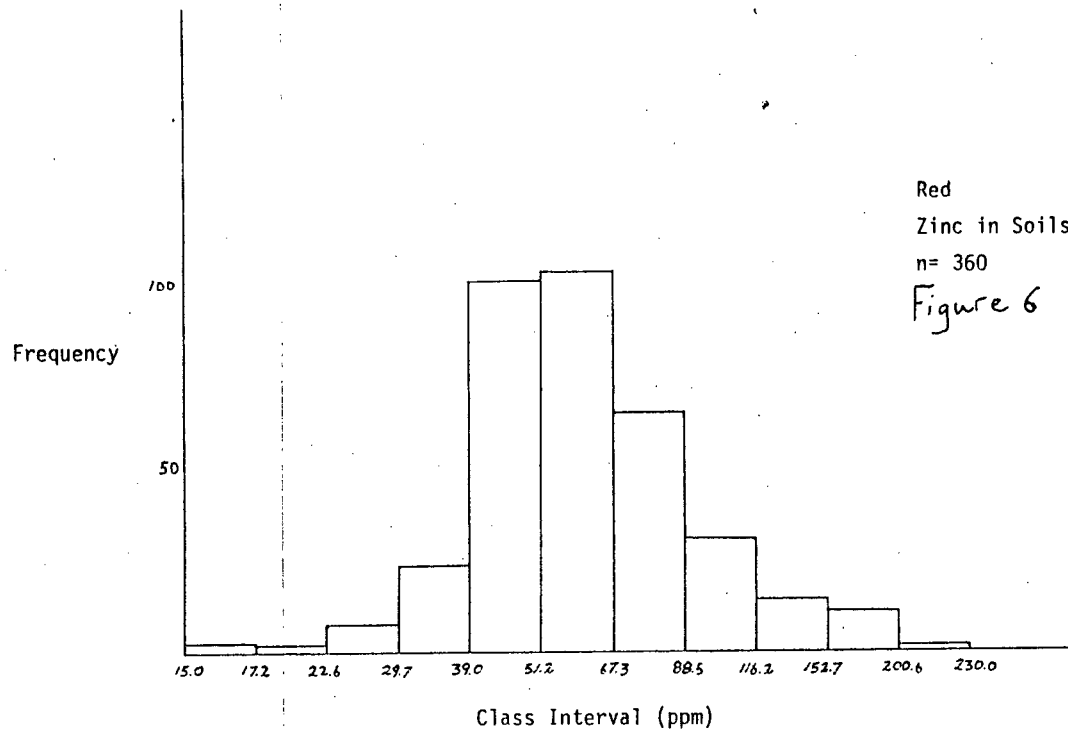
RED

Lead in soils - % cumulative frequency

n = 360

Figure 5





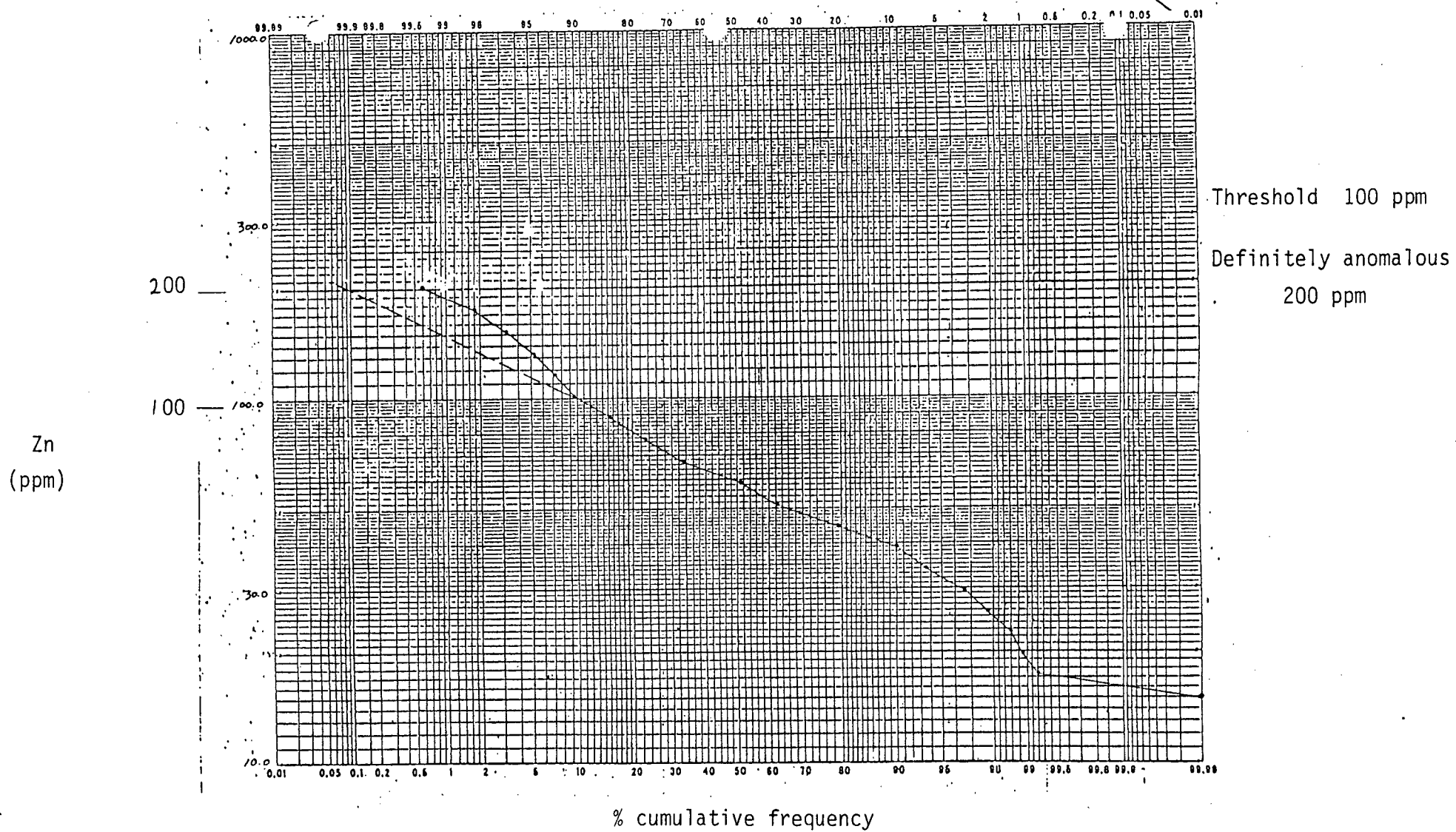
Red
Zinc in Soils - Histogram
n= 360
Figure 6

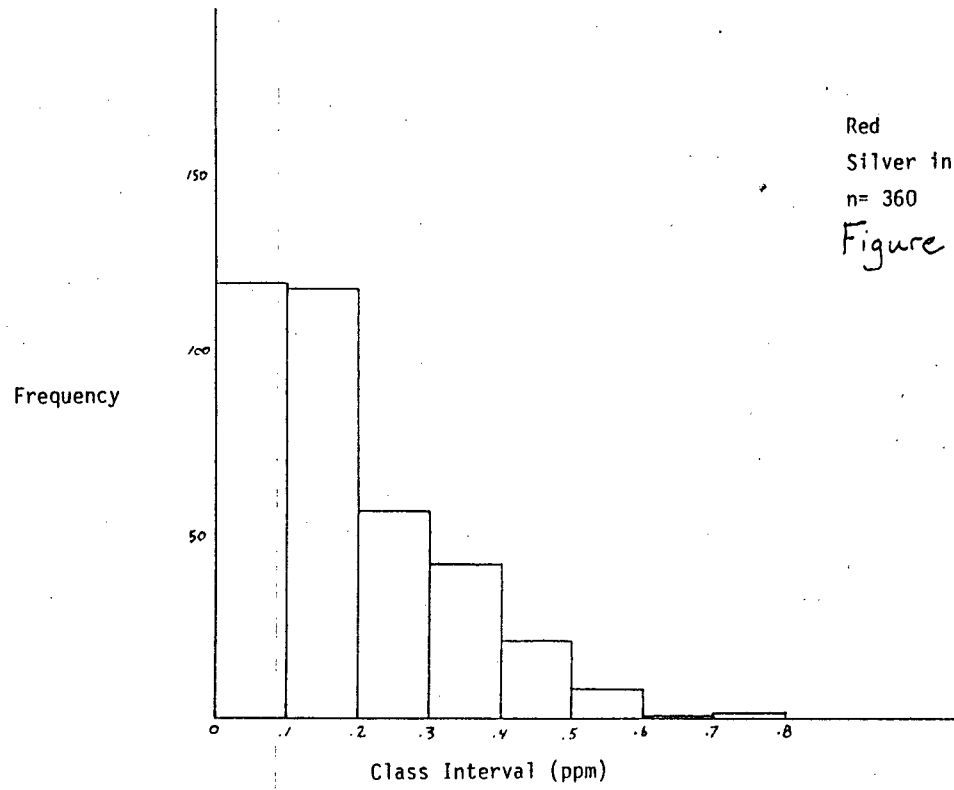
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Zinc in soils - % cumulative frequency

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Figure 7





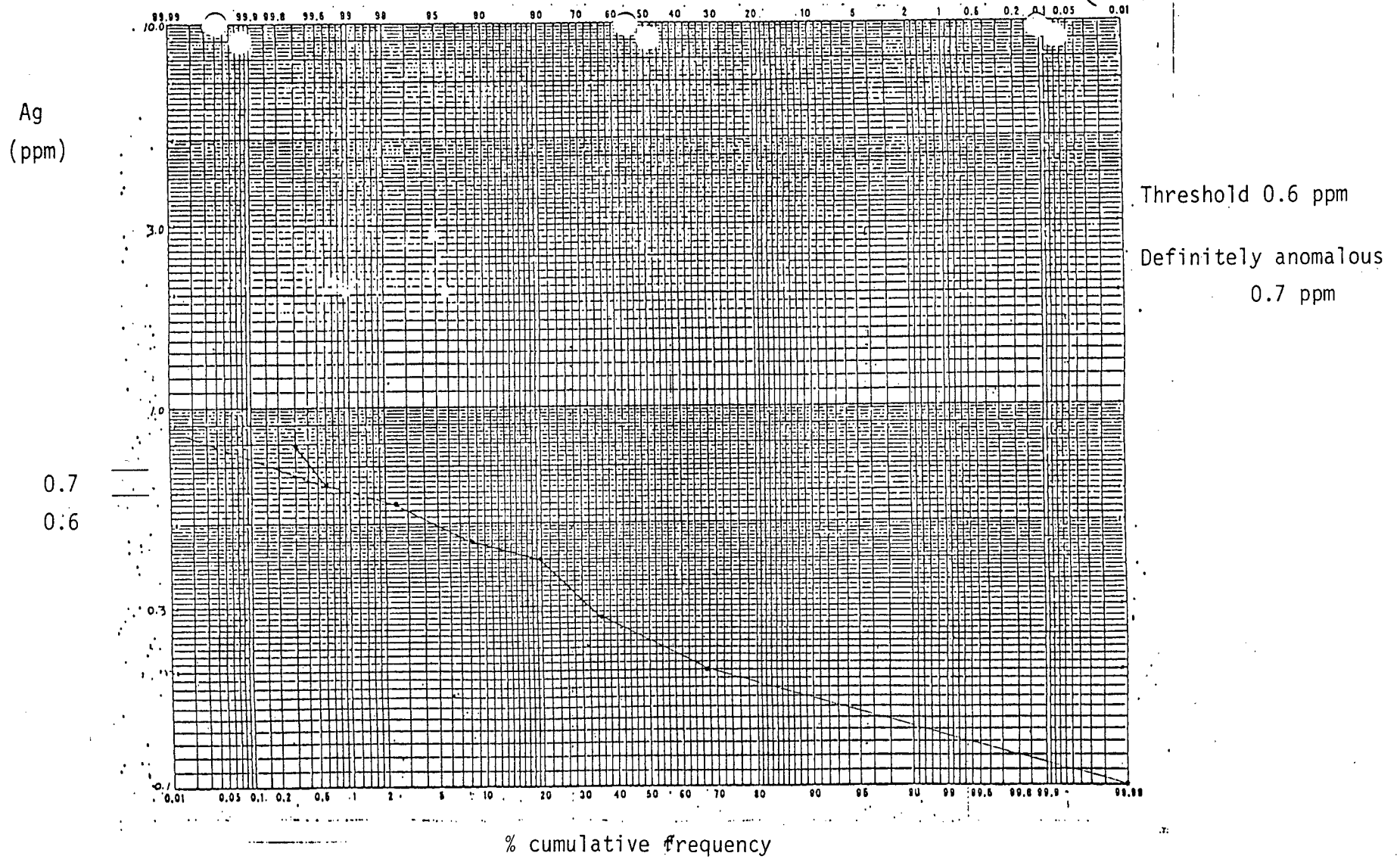
Red
Silver in Soils - Histogram
n= 360
Figure 8

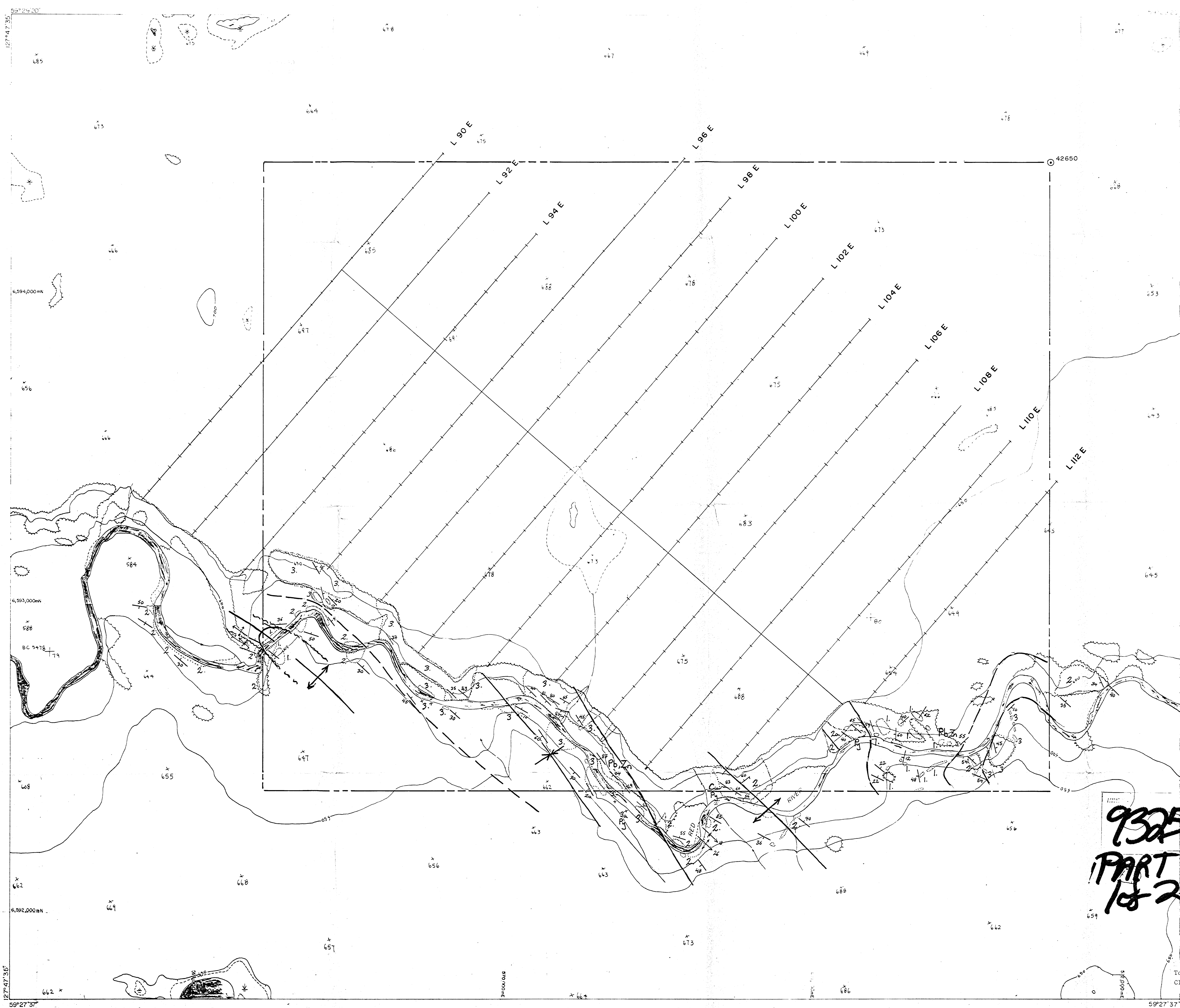
RED

Silver in soils - % cumulative frequency

n = 360

Figure 9

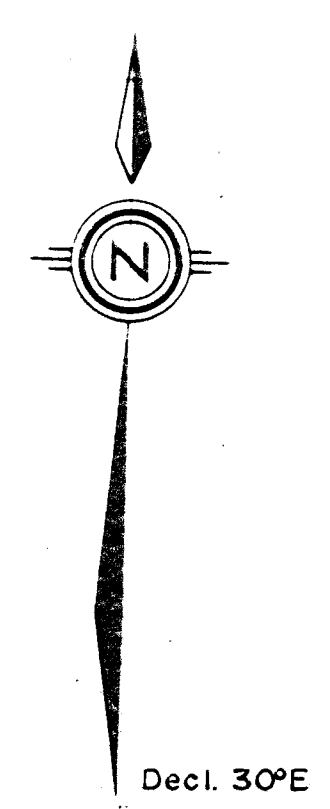
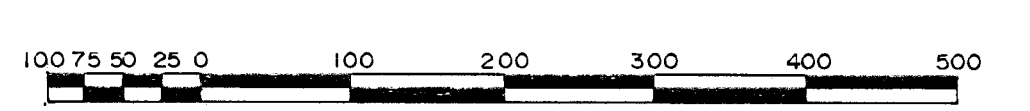




LEGEND

- 3 CARBONACEOUS LIMY SILTSTONE
LIMY MUDSTONE
3A. CHERT
- 2 RUSTY SLATE
SHALE, SLATY MUDSTONE
2A LIMY MUDSTONE
- 1 LITHIC ORTHOQUARTZITE
RED SANDSTONE, MUDSTONE, SHALE

- Geological contact
- Syncline
- Anticline
- Layering
- Foliation
- Outcrop
- Fault zone



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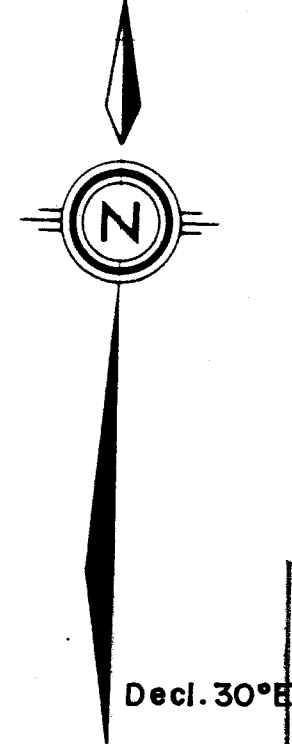
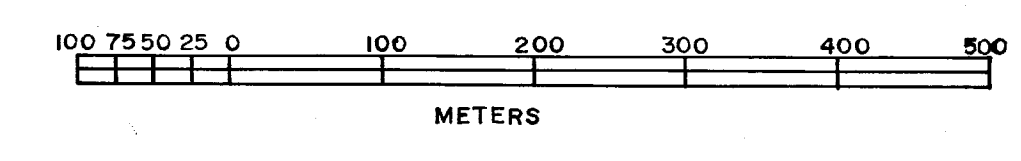
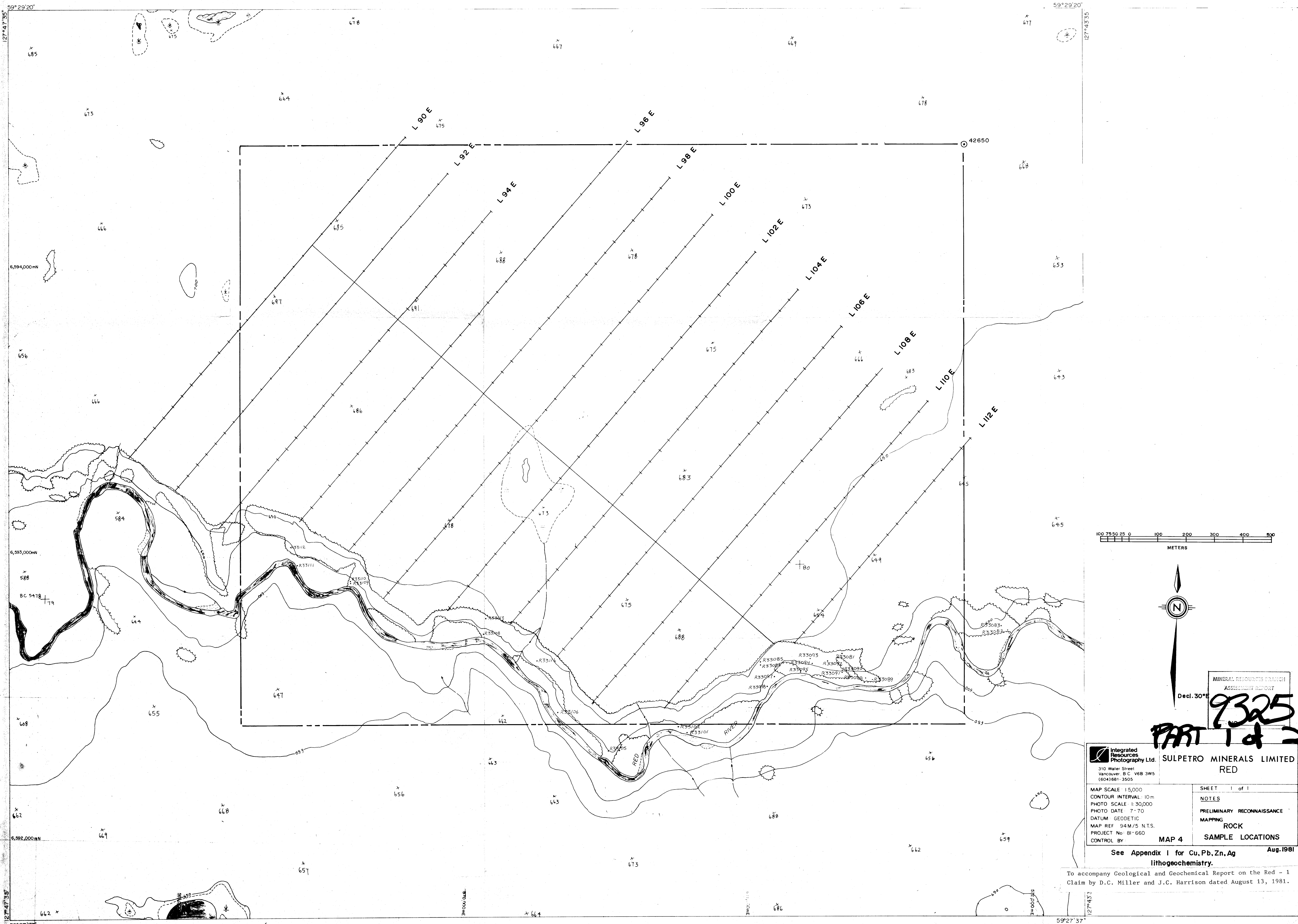
<p>Integrated Resources Photography Ltd. 310 Water Street Vancouver B.C. V6B 3W6 (604) 681-3505</p>	<p>SULPETRO MINERALS LIMITED RED</p>
<p>MAP SCALE 1:5,000 CONTOUR INTERVAL 10m PHOTO SCALE 1:30,000 PHOTO DATE 7-70 DATUM GEODETIC MAP REF S4M/5 N.T.S. PROJECT No 81-660 CONTROL BY Map 1</p>	<p>SHEET 1 of 1 NOTES PRELIMINARY RECONNAISSANCE MAPPING GEOLOGY</p>

GEOLOGY: R. Shearing, D. Miller Aug. 1980, June 1981
DRAFTING: C. Harrison Aug. 1981

To accompany Geological and Geochemical Report on the Red - 1 Claim by D.C. Miller and J.C. Harrison dated August 13, 1981.

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59°27'37"



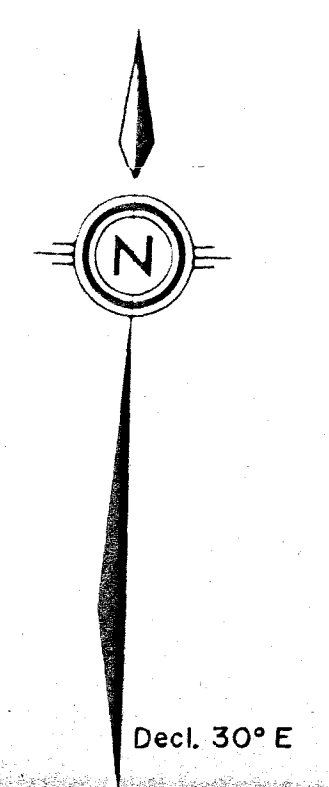
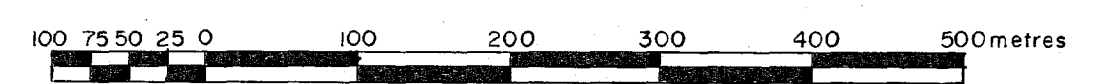
MINERAL RESOURCES BRANCH
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Integrated Resources Photography Ltd. 310 Water Street Vancouver, B.C. V6B 3W5 (604) 681-3505	SULPETRO MINERALS LIMITED RED	
	MAP SCALE 1:5,000 CONTOUR INTERVAL 10m PHOTO SCALE 1:30,000 PHOTO DATE 7-70 DATUM GEODETIC MAP REF 94M/5 N.T.S. PROJECT No 81-660 CONTROL BY	SHEET 1 of 1 NOTES PRELIMINARY RECONNAISSANCE MAPPING ROCK SAMPLE LOCATIONS MAP 4

To accompany Geological and Geochemical Report on the Red - 1 Claim by D.C. Miller and J.C. Harrison dated August 13, 1981.



LEGEND
 Silver \geq .6 ppm
 Copper \geq 30ppm



Integrated Resources Photography Ltd. 310 Water Street Vancouver, B.C. V6B 3W5 (604) 681-3505	SULPETRO MINERALS LIMITED RED	
	MAP SCALE 1:5,000 CONTOUR INTERVAL 10m PHOTO SCALE 1:30,000 PHOTO DATE 7-70 DATUM GEODETIC MAP REF 94M/5 N.T.S. PROJECT No 81-660 CONTROL BY <i>Map 2</i>	SHEET 1 of 1 NOTES PRELIMINARY RECONNAISSANCE MAPPING SOIL GEOCHEMISTRY PPM Silver, copper.
<i>Aug. 1981</i>		

To accompany Geological and Geochemical Report on the Red - 1 Claim by D.C. Miller and J.C. Harrison dated August 13, 1981.

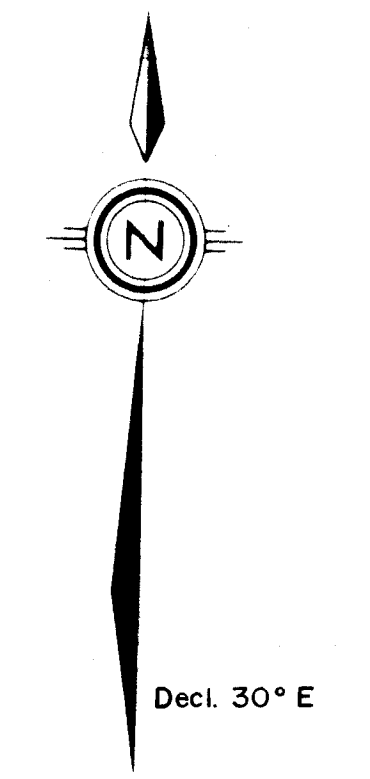
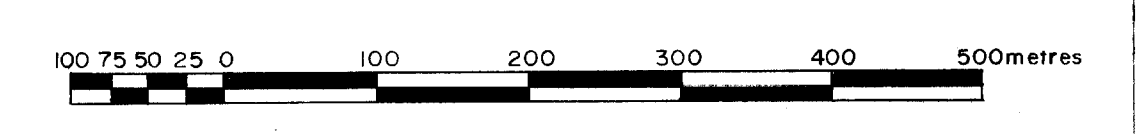
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LEGEND

Zinc ≥ 125 ppm.

Lead ≥ 15 ppm.



Integrated Resources Photography Ltd. 310 Water Street Vancouver, B.C. V6B 3W5 (604) 687-3505	SULPETRO MINERALS LIMITED	
	RED	
MAP SCALE 1:5,000 CONTOUR INTERVAL 10m PHOTO SCALE 1:30,000 PHOTO DATE 7-70 DATUM GEODETIC MAP REF. 94M/5 N.T.S. PROJECT No. BI-660 CONTROL BY Map 3 Aug. 1981	SHEET 1 of 1 NOTES PRELIMINARY RECONNAISSANCE MAPPING SOIL GEOCHEMISTRY PPM Lead, Zinc	

To accompany Geological and Geochemical Report on the Red - 1 Claim by D.C. Miller and J.C. Harrison dated August 13, 1981.

PART 9325 1 & 2