81-#743 -#9501

ASSESSMENT REPORT

GEOCHEMICAL AND GEOLOGICAL REPORT ON THE OJ-ARG CLAIM GROUP (54 UNITS)

OMINECA MINING DIVISION

by

SHEILA A. CRAWFORD and JOAN F. CARNE

LOCATION: N.T.S. 94E/7W
57°16' N to 57°19' N Latitude
126°54' W to 127°01' W Longitude

OWNER/OPERATOR: SEREM LTD.

DATES WORK PERFORMED: August 16-18, 1980
June 14, 17, 20; July 17, 18, 1981

DATE OF REPORT: August 20, 1981

ABSTRACT

Geochemical silt and soil sampling, and geological mapping and prospecting, were carried out on the Arg 1 and 2 and OJ 1 to 4 claim groups during the 1980 and 1981 field seasons. The claims are located in the Toodoggone River area (N.T.S. 94E/7W), 280 kilometres north of Smithers, B.C. A total of 56 silts, 123 soils and 4 rock samples were analysed for gold, silver, copper, lead and zinc.

The area is underlain by feldspar porphyritic flows, tuffs and breccias and associated sediments, intruded by quartz monzonite, monzonite and syenite. Gossans mark an extensive zone of disseminated pyrite and propylitic alteration. Locally, rocks are completely altered to silica and pyrite. Chalcopyrite mineralization and quartz veining occur in the intrusion, and a zone of chalcocite veins occurs on the OJ 4 claim.

Streams draining the gossanous areas are anomalous in all five elements, particularly in gold. Soils outline an anomalous area on and east of the OJ 2 and Arg 2 claims correlating with a zone of intense alteration.

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INTRODUCTION

The OJ 1, 2, 3 and 4 and Arg 1 and 2 claims are located between 57°16' N and 57°19' N latitude and 126°54' W and 127°01' W longitude in the Toodoggone River map sheet area, N.T.S. 94E/7W, Omineca Mining Division (see Figures 1 and 2). Elevation ranges from about 1300 metres (4300') to 2050 metres (6700') above sea level. Half the property lies above tree-line and topography is moderately rugged. Outcrop is well exposed on the mountain tops and in canyons, but the slopes are extensively covered by talus, and glacial till blankets most of the valleys.

Access to the property is by plane from Smithers to Sturdee Airstrip, a distance of 280 kilometres, and from Sturdee Airstrip to the property by helicopter, a distance of 15 kilometres.

The number of units in each claim are as follows:

Claim Name	Number of Units
OJ 1	15
OJ 2	12
OJ 3	6
OJ 4	8
ARG 1	9
ARG 2	4
Total	54

They are owned and operated by Serem Ltd.

The claims were staked on the basis of anomalous silt samples in streams draining the claims area. Cominco previously held a portion of the OJ 2 claims (Theban claims, Assessment Report No. 2082).

Work performed in 1980 by Serem Ltd. includes detailed silt sampling of streams draining the property, soil sampling along contour traverses and on a grid, and preliminary mapping and prospecting. Further mapping, prospecting and soil contouring were carried out in 1981. Samples were analysed for gold, silver, copper, lead and zinc. Table 1 details the number of samples taken in each claim group. The purpose of this work was to define sources of the stream anomalies.

Table 1.

Detailed list of samples taken in each claim group

Claim Group	OJ 1	OJ 2	OJ 3	OJ 4	ARG 1	ARG 2	Total
Silts, streams	18	14	3		7	14	56
Soil, contours	71		3			44	118
grid		110					110
Rock and gossan grab samples		9					9

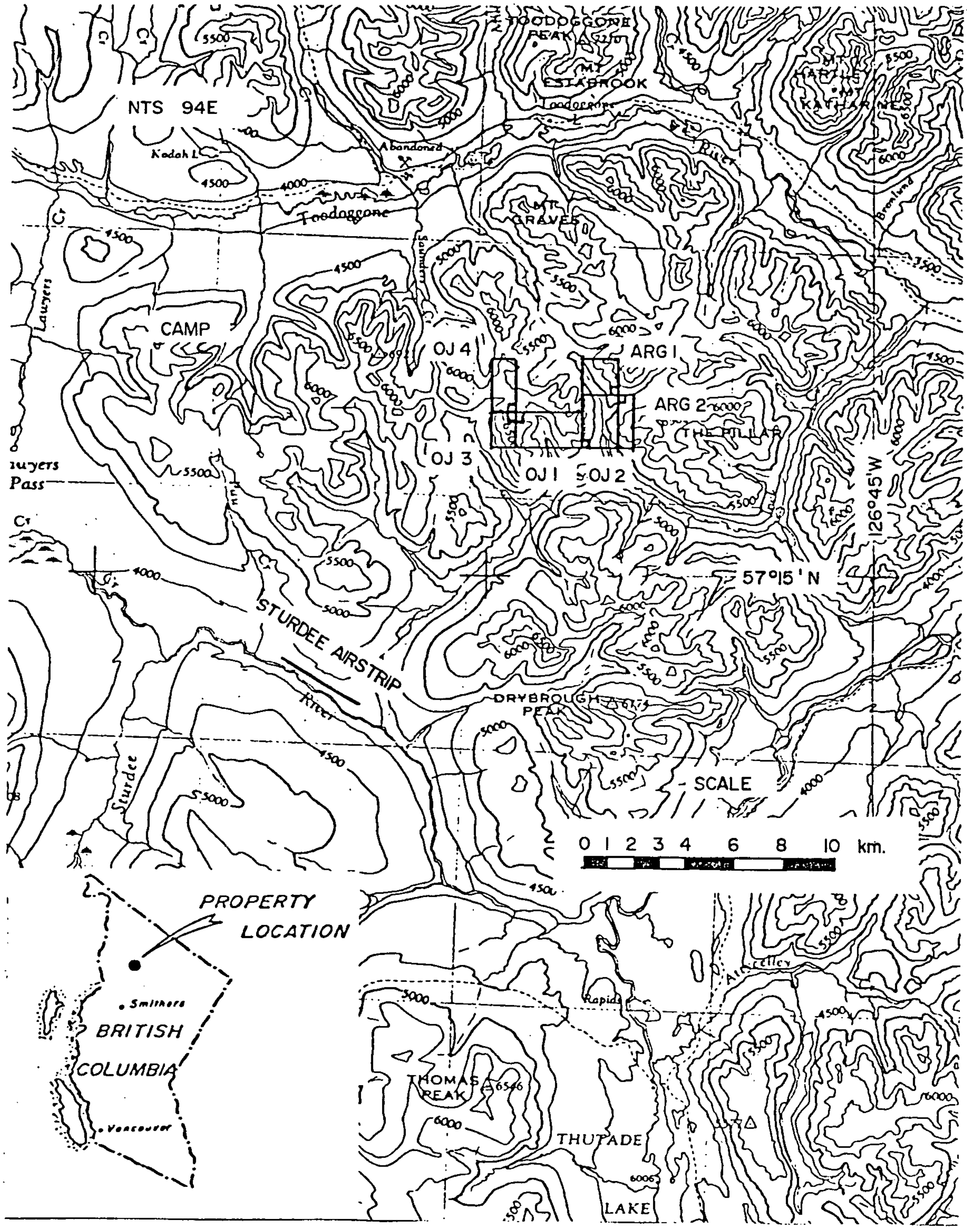


Fig. 1. Location of OJ 1, 2, 3 and 4 and ARG 1 and 2 claim groups.

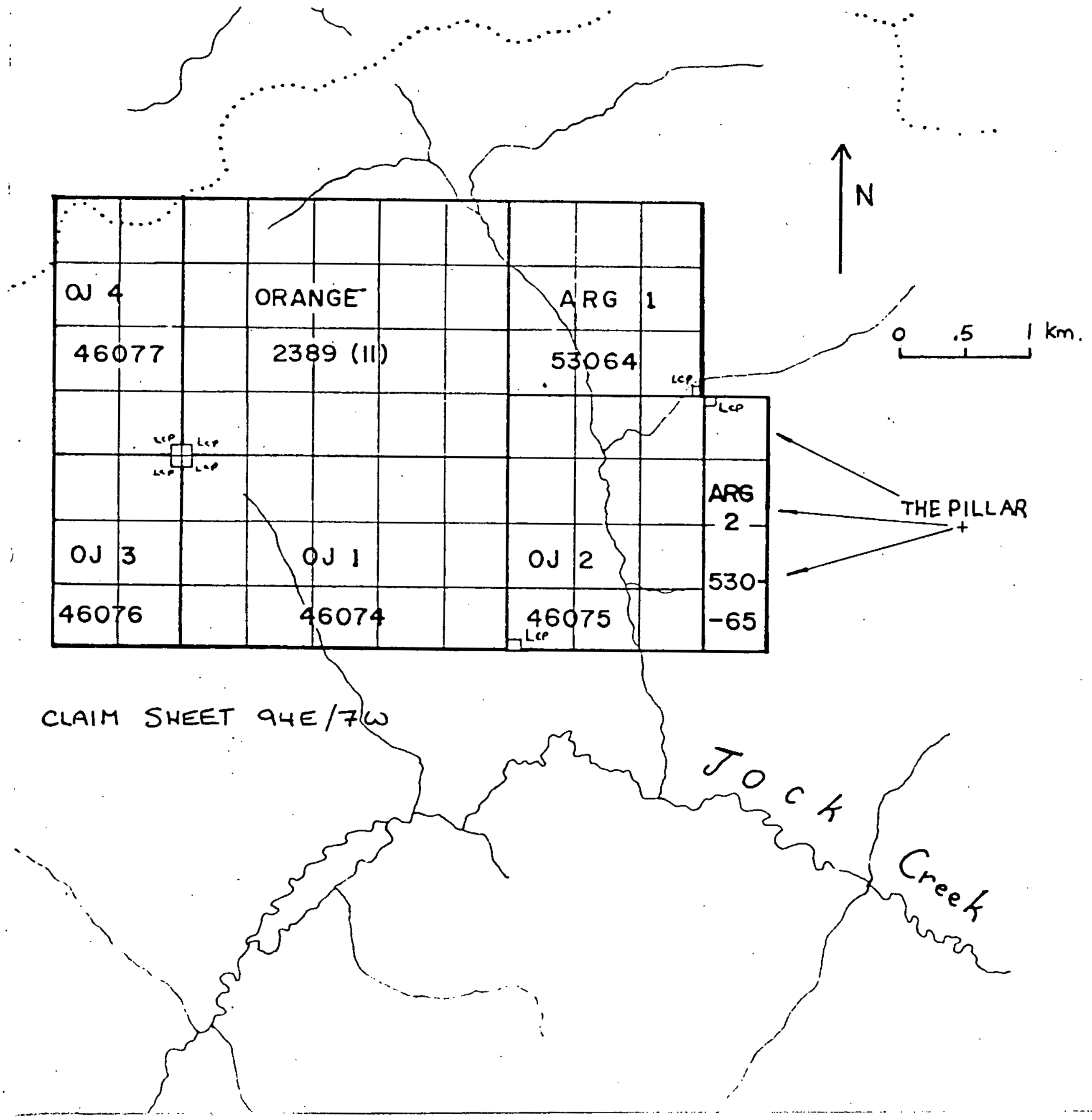


Fig. 2. Claims map: OJ 1, 2, 3 and 4
and ARG 1 and 2 claim groups.

GEOLOGY

The claims are underlain by feldspar porphyritic volcanics, intruded by a multiple phase pluton (Figure 3a). The volcanics include pyroclastic breccias, crystal and lapilli tuffs, subvolcanic domes and volcaniclastic sediments of andesitic, trachyandesitic and dacitic compositions. These can be divided into two major groups on the basis of phenocryst composition - one characterized by feldspar and hornblende phenocrysts and the other by feldspar and quartz phenocrysts. Most of the feldspars are plagioclase. Potassic feldspar is a major constituent in the groundmass of the subvolcanic domes.

The main pluton consists of coarse to medium grained, equigranular quartz monzonite intruded by plagioclase-porphyritic monzonite similar to the subvolcanic porphyries. Numerous dikes cut both these phases.

The area is faulted along several trends. A certain amount of extensional movement is indicated by the prevalence of open-space crystal growths in fractures. Oblique shearing occurs along roughly north-south and east-west trends.

ALTERATION AND MINERALIZATION

Gossans on the OJ 2, Arg 1 and 2 claims mark an extensive zone of disseminated pyrite and intense propylitic (chlorite-epidote) alteration (Figure 3b). Locally, the rocks are altered to silica, clay and pyrite: these areas roughly correspond to geochemical anomalies. To date, no economic mineralization has been found. Gossans at the south end of the claims consist of limonite and sulphate transported along faults. Zeolite (laumontite ?) alteration is common in fractures.

In the main intrusion, the older quartz monzonite phase is commonly altered to potassic feldspar along fractures and locally to quartz and sericite. Chalcopyrite is associated with both types of alteration, but only occurs in significant quantities next to contacts with the younger monzonitic phases. Some quartz-chlorite veins in the older phase carry minor amounts of chalcopyrite and galena. The porphyritic monzonite is altered to epidote on fractures.

In the western portion of the claim group, propylitic alteration is common in the volcanics and is particularly intense in pyroclastic centres. Clay (kaolinite ?) alteration is common in the finer grained tuffs. Zeolite alteration occurs in some of the fault zones. A zone of intense, fracture-controlled epidote and iron carbonate alteration is associated with the intrusion of aplite dikes along a major structure. Some chalcocite veins occur in this zone.

GEOCHEMICAL SILT AND SOIL SAMPLING

Silt samples were collected along streams at 150 to 250 metre intervals, depending on where suitable silt could be found. Samples were taken from active material, that is, under flowing water, and placed in brown paper envelopes. The sample site and number were plotted on a map with a scale of 1 centimetre to 500 metres. Stream gradient and flow rate were noted.

Soil samples were taken at 100 to 150 metre intervals on traverses at approximately constant elevation. Pacing or Topofil was used to control distance and the locations were plotted at a scale of 1 centimetre to

500 metres. The grid was set using Topofil and compass. Samples were taken at 100 metre intervals along lines approximately 100 metres apart, with follow-up sampling at 50 metre spacing.

The soil was placed in brown paper envelopes and the locality, depth of sampling, horizon, colour, grain size and amount of organic material were noted. All sample sites were marked with surveyor's flagging. Soil horizons are poorly developed in the area.

ASSAYS AND GEOCHEMICAL ROCK ANALYSES

Grab samples were selected from outcrops with favourable geology. Results are listed in Table 2 and sample localities plotted on Figure 3a.

Table 2a.

Assays

Sample No.	Description	Gold Oz/ton	Silver Oz/ton
SC-39-81-10	Quart breccia in sub-volcanic intrusion	$<.01$	$<.1$
SC-39-81-11	"	$<.01$	.1

Table 2b

Geochemical analyses of gossan soil and rock grab samples.

Sample No.	Description	Au ppb	Ag	Cu	Pb	Zn
			ppm			
GP-12-80- 4	Gossan soil	700	2.7	152	429	1220
7	" "	35	1.7	182	306	1730
13	" "	15	1.8	20	110	375
5	Propylitic-altered volcanic with disseminated pyrite	15	2.0	102	410	1625
8	Leached, clay-altered volcanic with disseminated pyrite	5	1.7	32	60	80
SC- 7-81- 2	Leached, clay-altered sub-volcanic intrusion with disseminated pyrite and manganese oxides	25	1.0		72	155
3	"	130	0.8		325	960
4	Vuggy quartz vein with manganese oxides	10	0.7			
SC- 5-81-14	Clay-silica altered volcanic with pyrolusite	5	0.6			

GEOCHEMICAL ANALYSIS

Samples were sent to Min-En Laboratories and were analysed for gold, silver, lead, zinc and copper. The analytical procedure for each element is briefly described below:

> The samples are dried at 95° C. Soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

For gold, a suitable sample, weight 5 or 10 grams, is pretreated with HNO_3 and $HClO_4$ mixture.

After pretreatment, the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

Sample solutions are prepared with Methyl Iso-Butyl Ketone for the extraction of gold.

With a set of suitable standard solutions, gold is analysed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

For silver, lead, zinc, copper and molybdenum, samples weighing 1.0 gram are digested for 6 hours with HNO_3 and $HClO_4$ mixture.

After cooling, the samples are diluted to standard volume. The solutions are analysed by Atomic Absorption Spectrophotometers using the CH_2H_2-Air Flame combination for silver, copper, lead and zinc. The C_2H_2-NO_2 mixture is used for molybdenum.

INTERPRETATION

Gold, silver, and copper, lead and zinc analyses for stream silt and contour soil samples are plotted on Figures 4a and 4b respectively. Threshold values are underlined with a light line and anomalous values with a heavy line.

In the streams, gold is highly anomalous (up to 1550 ppb) in the southern half of OJ 2 and anomalous (up to 290 ppb) in the northern half of OJ 1. Elsewhere, values are background to marginally anomalous. Marginal to moderate silver anomalies occur within the main gold anomalies. Lead and zinc are anomalous on OJ 2; high lead values are confined to the southern half. Copper is marginally anomalous on OJ 2 and in the background range elsewhere.

Contour traverse samples on Arg 2 indicate one anomalous zone of gold and silver values. None of the contours on the western claims were anomalous.

Gold, silver, copper, lead and zinc analyses for the soil grid are plotted on Figures 5a to 5e respectively. Values are contoured. Anomalies in all five elements are related to two gossanous areas along the creek. These are open to the north and south of the grid. The remainder of the grid is covered by glacial overburden, which would account for the relatively low values in silver, copper, lead and zinc. However, gold anomalies are widely distributed over the grid: in particular, a 2000 ppb sample occurs on the eastern border. Close-spaced follow-up sampling around this sample did not indicate any extent of the anomaly.

CONCLUSIONS AND RECOMMENDATIONS

High gold and silver occur on and east of the OJ 2 and Arg 2 claims, correlating with a zone of intense, fracture-controlled alteration.

Close-spaced soil sampling, intensive prospecting and VLF should be used to delineate trenching targets.

STATEMENT OF EXPENDITURES

Analyses

Soils and silts:					
1980:	154 analysed for	Au, Ag, Cu, Pb, Zn	@ $ 8.85	$1,362.90	
1981:	135 " "	Au, Ag, Cu, Pb, Zn	@ $10.55	1,424.25	
Rocks:					
1980:	2 " "	Au, Ag, Cu, Pb, Zn	@ $10.25	20.50	
1981:	2 " "	Au, Ag	@ $ 9.00	18.00	
	2 " "	Au, Ag, Pb	@ $ 9.85	19.70	
	2 " "	Au, Ag, Pb, Zn	@ $10.70	21.40	
Shipping cost from Smithers to Vancouver Laboratory	297 samples		@ $ .30	89.00	
					$2,955.75

Wages

1980 Field Season				
Geochemical Sampling: August 16, 17, 18, 1980				
J. Rushton	2 days @	$ 50/day	$ 100.00	
R. MacRae	1 day @	$ 40/day	40.00	
R. Stowe	1 day @	$ 40/day	40.00	
G. Price	1 day @	$ 55/day	55.00	
Supervision and Evaluation: August 16, 1980				
S. Crawford	1 day @	$ 70/day	70.00	
1981 Field Season				
Geochemical Sampling: June 20, July 18, 1981				
C. Greig	2 days @	$ 50/day	100.00	
R. Lane	2 days @	$ 56/day	112.00	
C. Chisholm	1 day @	$ 58/day	58.00	
G. Dawson	1 day @	$ 58/day	58.00	
Mapping and Evaluation: June 14, 17; July 17, 18, 1981				
S. Crawford	4 days @	$ 92/day	368.00	
J. Carne	1½ days @	$106/day	159.00	
Report Preparation:				
S. Crawford	4 days @	$ 92/day	368.00	
Drafting:	2 days @	$ 80/day	160.00	
				$1,688.00

STATEMENT OF EXPENDITURES (Continued)

Board, Lodging and Field Expenses	Per Man Day		
Food	$10.80		
Expediting	3.00		
Equipment (lumber, hardware, generator, radio telephone)	10.43		
Fixed wing support (does not include mob ilization or JP-4 fuel hauls)	13.19		
Helicopter support "	5.50		
Fuel (propane, oil stoves)	4.12		
	$47.04		
1980: $47.04 x 6 man days		$ 282.24	
1981: $52.00 (estimated) x 11.5 mandays		598.00	
			$ 880.24
Transportation			
Helicopter 1980: $310/hr + $102/hr fuel 2 hrs. 30 min.		$1,030.00	
1981: $475/hr (estimated) 3 hrs. 50 min.		1,821.00	
			$2,851.00
Topographic Map 1:10,000, 20 m contour interval (Burnett Resources)			648.00
TOTAL			$9,022.99 =
			$9,023.00

CERTIFICATE OF QUALIFICATIONS

I, SHEILA A. CRAWFORD, of Vancouver, B.C., hereby certify that:

1. I hold an Honours B.Sc. degree in geology from Carleton University, Ottawa, Ontario.

2. I am a geologist, employed by SEREM Ltd. of 300 - 535 Thurlow Street, Vancouver, B.C. V6E 3L2.

3. I have worked in geological field work or mineral exploration since 1976.

4. The field work described in this report was carried out under my supervision.

5. I have no financial interest in the claims covered by this report or in SEREM Ltd.

Dated this 20th day of August, 1981
at Vancouver, B.C.

Sheila A. Crawford,
Geologist.

CERTIFICATE OF QUALIFICATIONS

I, JOAN F. CARNE, of Vancouver, B.C., hereby certify that:

1. I hold a B.A. degree in geology from Middlebury College, Middlebury, Vermont, and an M.Sc. degree in geology from the University of British Columbia.

2. I am a geologist, employed by SEREM Ltd. of 300 - 535 Thurlow Street, Vancouver, B.C. V6E 3L2.

3. I have worked in geology and mineral exploration for five years.

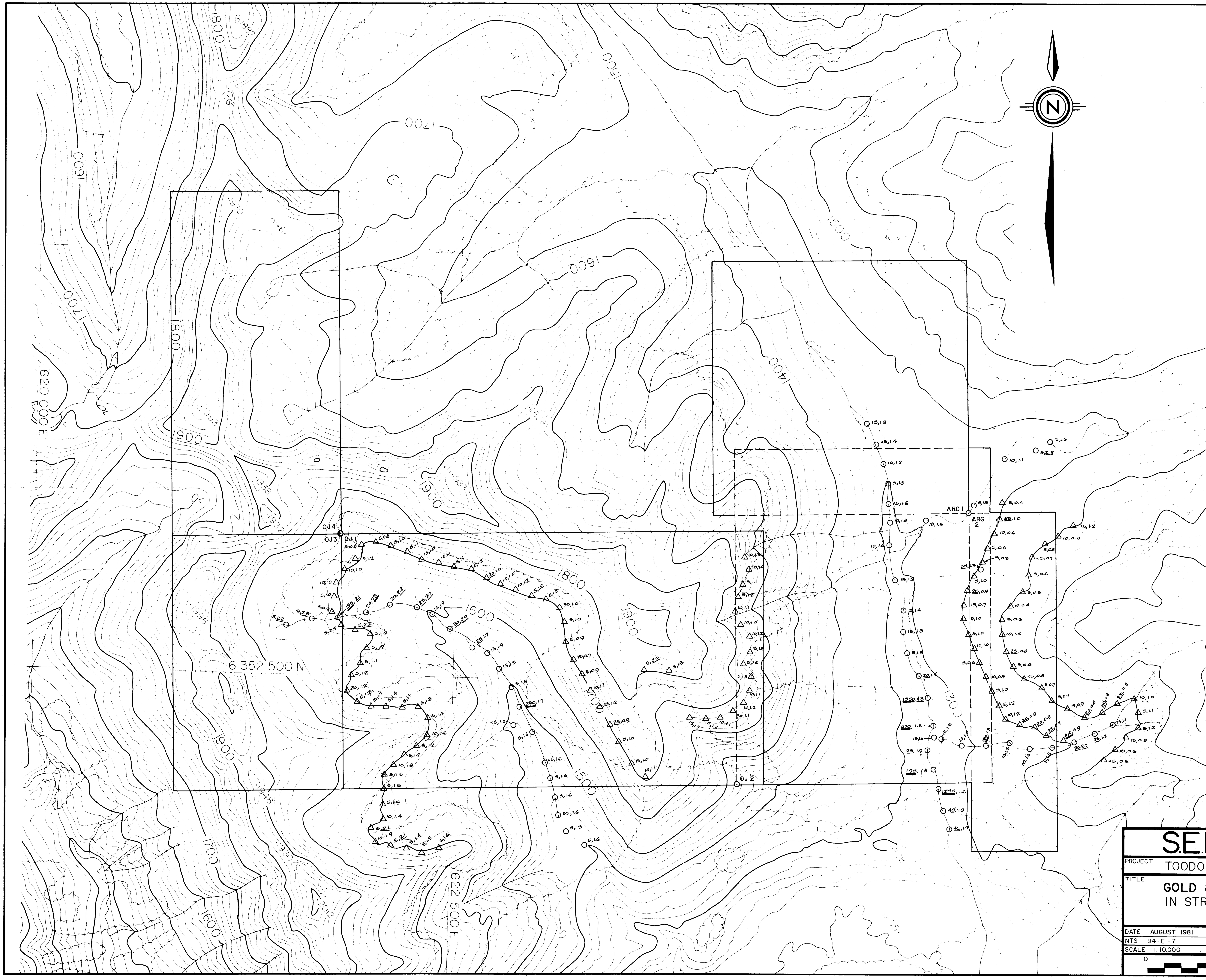
4. I have no financial interest in the claims covered by this report or in SEREM Ltd.

Dated this 20th day of August, 1981
at Vancouver, B.C.

Joan F. Carne,
Geologist.


N
9501
LEGEND
COMPOSITIONS
7 - quartz-feldspar, porphyritic andesite to dacite
6 - feldspar-hornblende, porphyritic andesite to trachyte
5 - white, bladed plagioclase porphyritic andesite
4 - aphanitic to fine grained andesite
3 - aplite, syenite dykes
2 - monzonite
1 - quartz monzonite
TEXTURES
- pyroclastic rocks, breccias to tuffs
- epiclastic rocks: interbedded tuff, graywacke, conglomerate
- coarse grained equigranular intrusive
- porphyritic intrusive, intrusive to subvolcanic textures
- aphanitic to fine grained felsic dykes
15 - bedding plane and dip
- fracture plane and dip
35 - slickenside lineation and plunge
- shear plane and dip
- fault
- isolated outcrop
- approximate geological contact
SC 7-81-13 - rock sample
S.E.R.E.M. LTD.
PROJECT TOODOGGONE - OJ & ARG CLAIMS
TITLE
GEOLOGICAL MAP
DATE AUGUST 1981
NTS 94-E-7
SCALE 1:10,000
DATA S. CRAWFORD
DRAWN r.w.r.
CHECKED
FIGURE 3a
0
500
1000
620 000 E
622 500 E
6 352 500 N
OJ 1
OJ 2
OJ 3
OJ 4
ARG 1
ARG 2
1800
1700
1600
1500
1400
1300
1900


N
LEGEND
- chlorite and epidote on fractures; moderate epidote alteration of feldspars
- intense, pervasive chlorite-epidote alteration
- siderite or ankerite alteration
- clay alteration
- zeolite alteration
- pyritic gossans
- potassic alteration
Chalcocite
Chalcocite
Minor malachite, pyrite
6 352 500 N
620 000 E
622 500 E
OJ 4
OJ 3
OJ 1
OJ 2
ARG 1
ARG 2
Quartz breccia
Quartz chlorite veins minor pyrite, galena
Chalcopyrite
Quartz veins
Locally quartz sericite alteration.
Quartz veins
Quartz magnetite veins
Highly leached sulphate-clay zones along faults, little or no indigenous pyrite
1900
1800
1700
1600
1500
1400
1300
9501
S.E.R.E.M. LTD.
PROJECT TOODOGGONE - OJ & ARG CLAIMS
TITLE
ALTERATION & MINERALIZATION MAP
DATE AUGUST 1981
NTS 94-E-7
SCALE 1:10,000
DATA S. CRAWFORD
DRAWN r.w.r.
CHECKED
FIGURE 3b
0
500
1000



LEGEND:

○ - silt sample site

△ - soil sample site

5,0.6 Gold value (ppb) & Silver value (ppm)

	THRESHOLD VALUES	ANOMALOUS VALUES
GOLD	≥ 20 ppb	≥ 95 ppb
SILVER	≥ 2 ppm	≥ 3 ppm
COPPER	≥ 120 ppm	≥ 240 ppm
LEAD	≥ 55 ppm	≥ 110 ppm
ZINC	≥ 300 ppm	≥ 600 ppm

9501
NO.

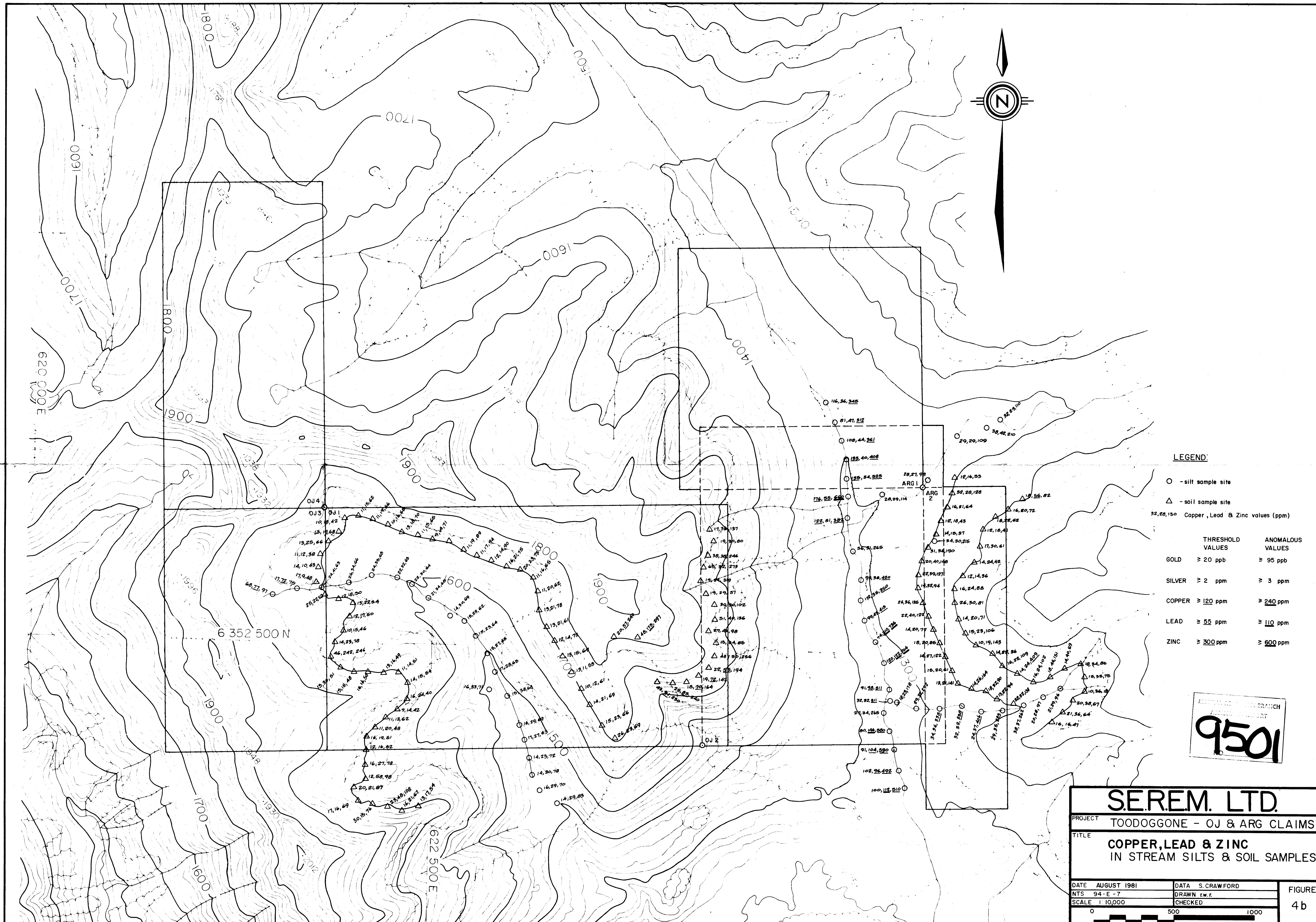
S.E.R.E.M. LTD.

PROJECT TOODOGGONE - OJ & ARG CLAIMS

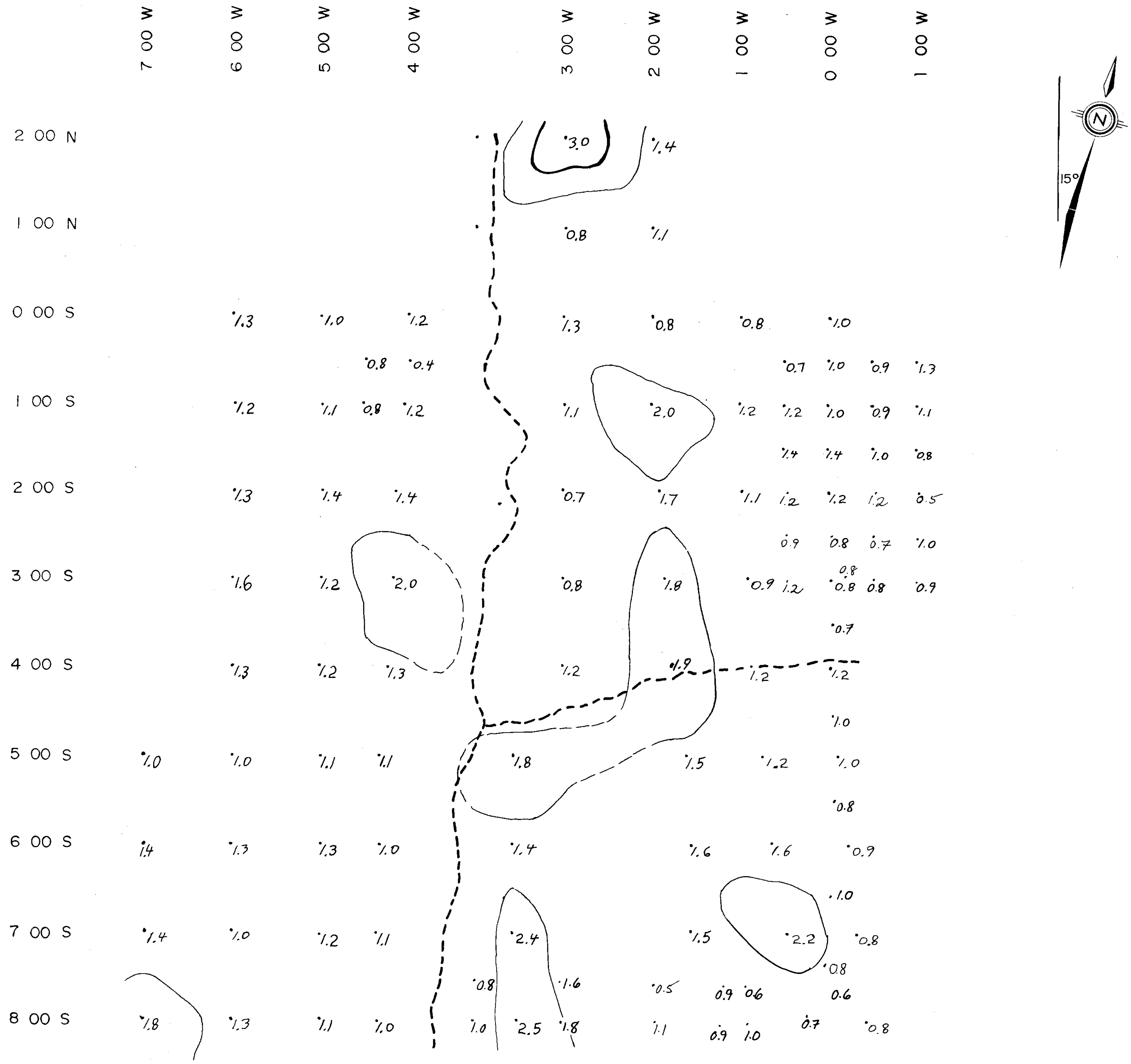
TITLE **GOLD & SILVER**
IN STREAM SILTS & SOIL SAMPLES

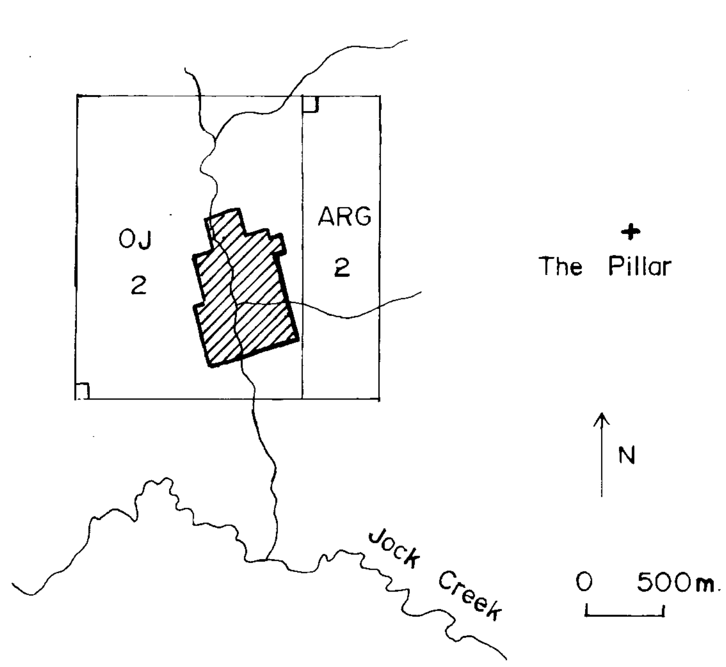
DATE AUGUST 1981	DATA S. CRAWFORD	FIGURE 4a
NTS 94-E-7	DRAWN r.w.r.	
SCALE 1:10,000	CHECKED	

0 500 1000



S.E.R.E.M. LTD.
PROJECT TOODOGGONE - OJ & ARG CLAIMS
TITLE COPPER, LEAD & ZINC IN STREAM SILTS & SOIL SAMPLES
DATE AUGUST 1981
NTS 94-E-7
SCALE 1:10,000
DATA S. CRAWFORD
DRAWN E.W.F.
CHECKED
FIGURE 4b
0 500 1000
LEGEND:
○ - silt sample site
△ - soil sample site
32,28,130 Copper, Lead & Zinc values (ppm)
THRESHOLD VALUES
ANOMALOUS VALUES
GOLD ≥ 20 ppb ≥ 95 ppb
SILVER ≥ 2 ppm ≥ 3 ppm
COPPER ≥ 120 ppm ≥ 240 ppm
LEAD ≥ 55 ppm ≥ 110 ppm
ZINC ≥ 300 ppm ≥ 600 ppm
9501
N
620 000 E
622 500 E
6 352 500 N
OJ 1
OJ 2
OJ 3
OJ 4
ARG 1
ARG 2
1400
1500
1600
1700
1800
1900





LEGEND

1.6 soil sample site, ppm Ag

≥ 1.8 ppm

≥ 3.0 ppm

≥ 4.0 ppm

S.E.R.E.M. LTD.

PROJECT TOODOGGONE

TITLE

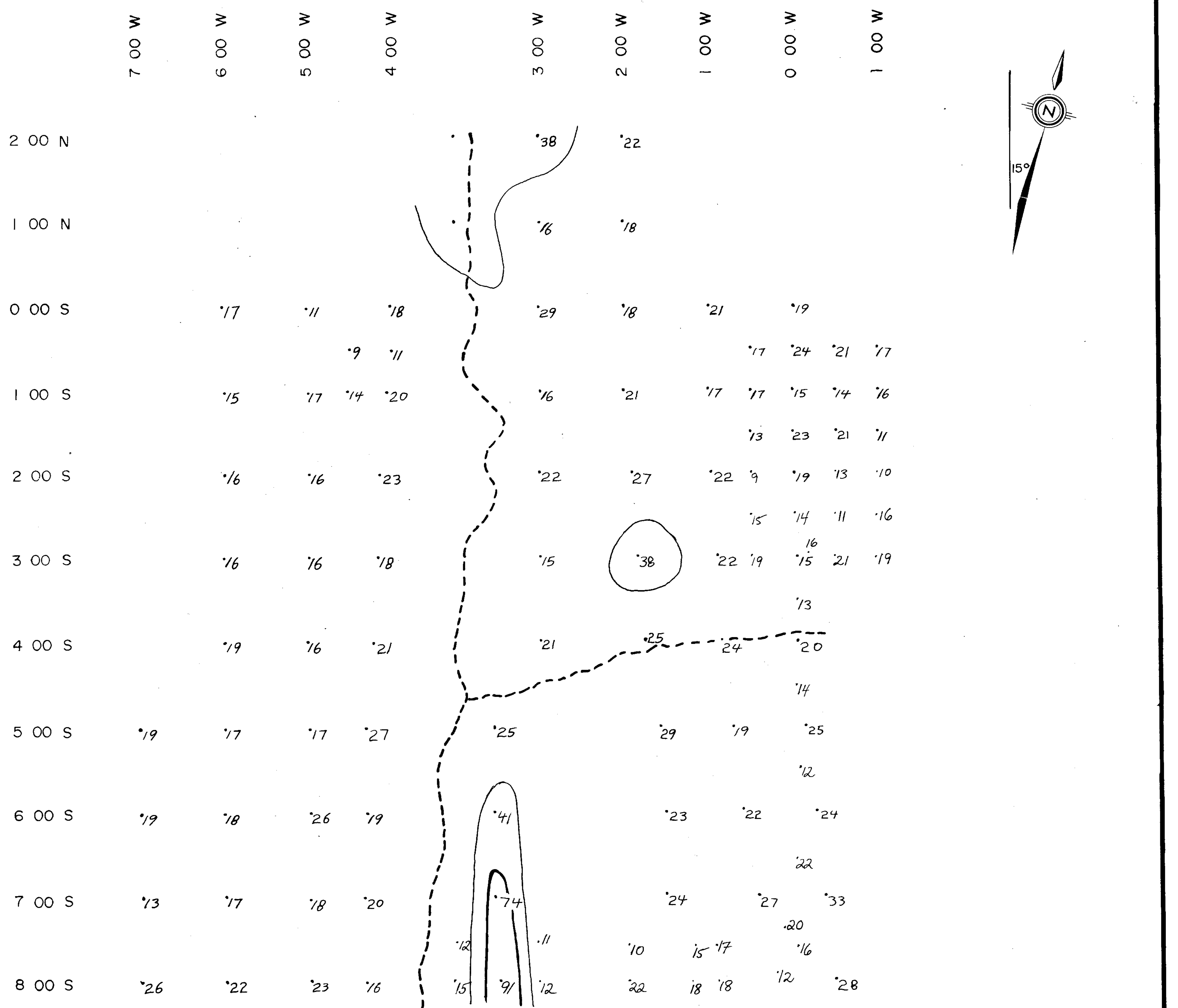
SILVER IN SOIL

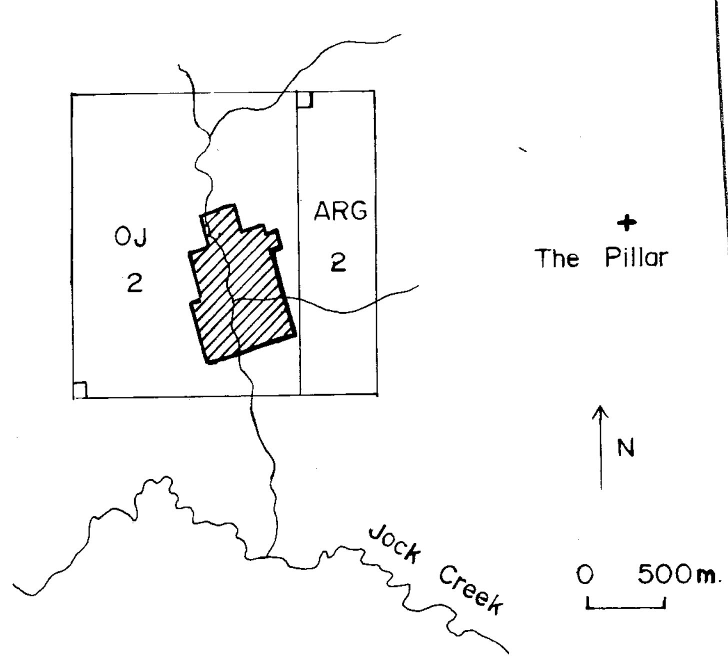
OJ-1 SOIL GRID

OJ, ARG CLAIMS

DATE: AUG. 81	DATA: S. CRAWFORD	
N.T.S.: 94E/7W	DRAWN: S.C.	FIGURE
SCALE: 1:5000	CHECKED: S.C.	5b

0 50 100 150 200 metres





LEGEND

29 soil sample site, ppm Cu

≥ 35 ppm

≥ 70 ppm

≥ 140 ppm

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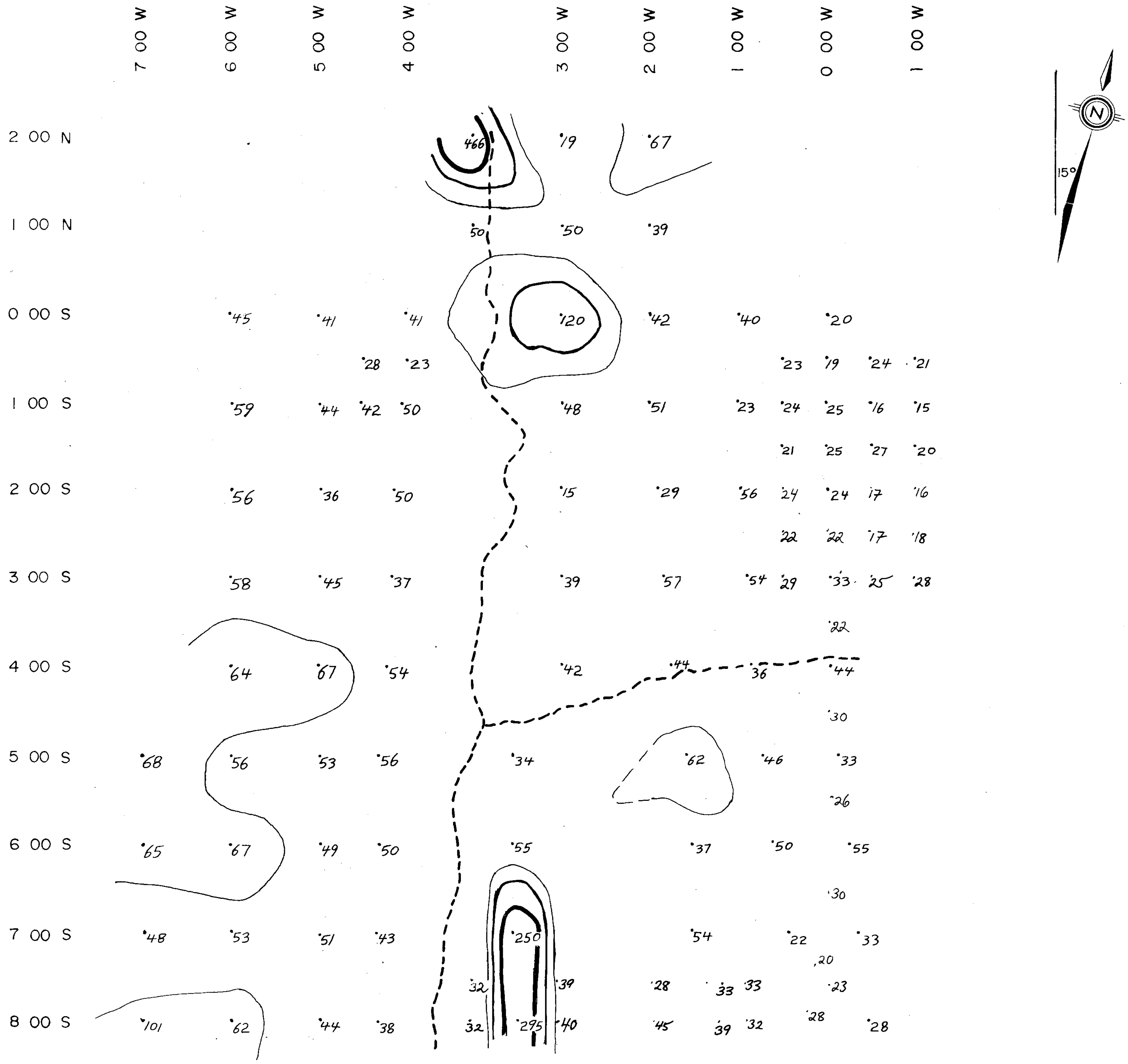
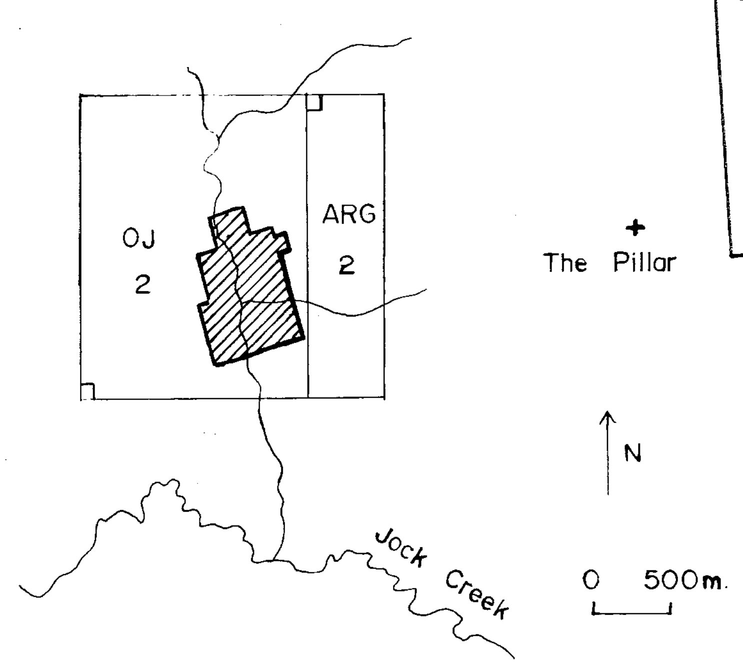
PROJECT TOODOGGONE

TITLE
COPPER IN SOIL
OJ-1 SOIL GRID
OJ, ARG CLAIMS

DATE: Aug 81	DATA: S. CRAWFORD	FIGURE
N.T.S.: 94E/7W	DRAWN: S.C.	5c
SCALE: 1:5000	CHECKED: SC	

0 50 100 150 200 metres





LEGEND

62 soil sample site, ppm Pb

≥ 55 ppm

≥ 110 ppm

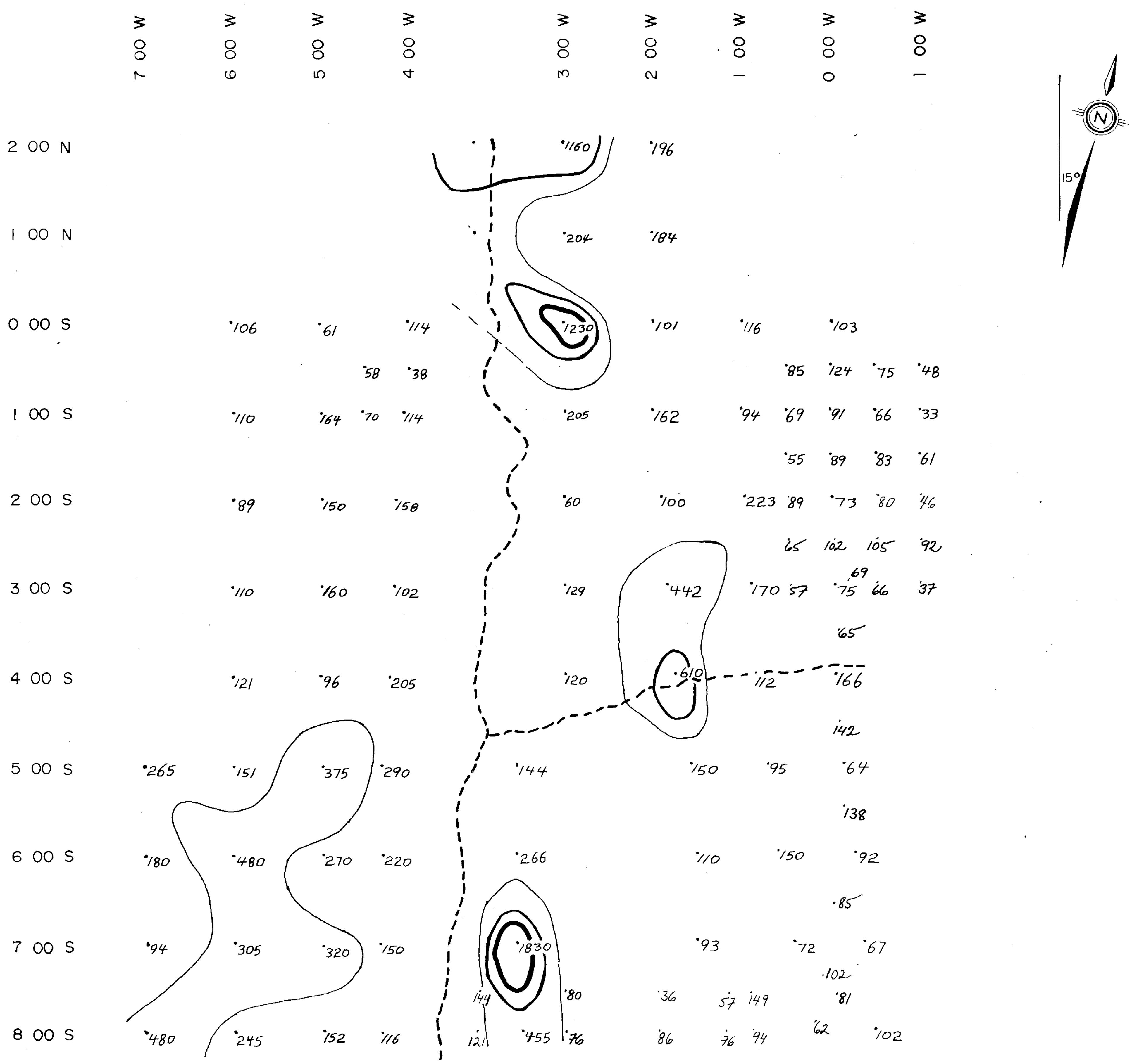
≥ 220ppm

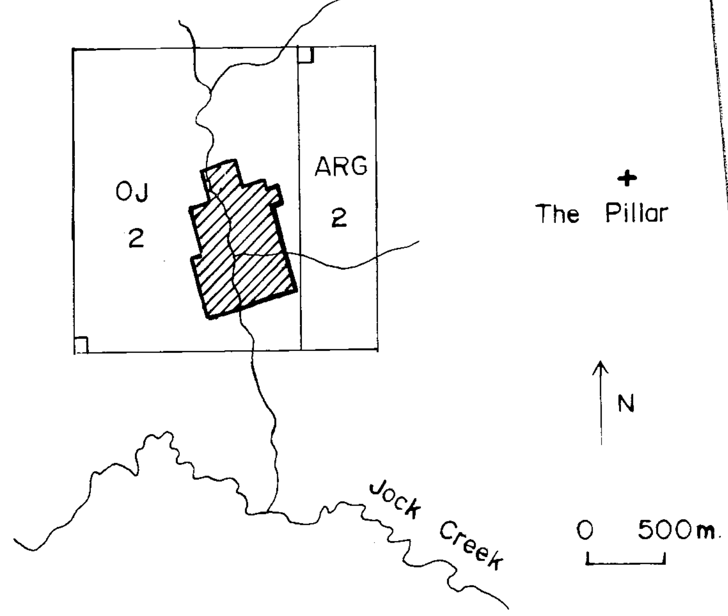
S.E.R.E.M. LTD.

PROJECT TOODOGGONE

TITLE LEAD IN SOIL
OJ - I SOIL GRID
OJ, ARG CLAIMS

DATE: AUG. 81	DATA: S. CRAWFORD	
N.T.S.: 94E/7W	DRAWN: S.C.	FIGURE
SCALE: 1:5000	CHECKED: SC	5d
0 50 100 150 200 metres		





LEGEND

120 soil sample site, ppm Zn

≥ 300 ppm

≥ 600 ppm

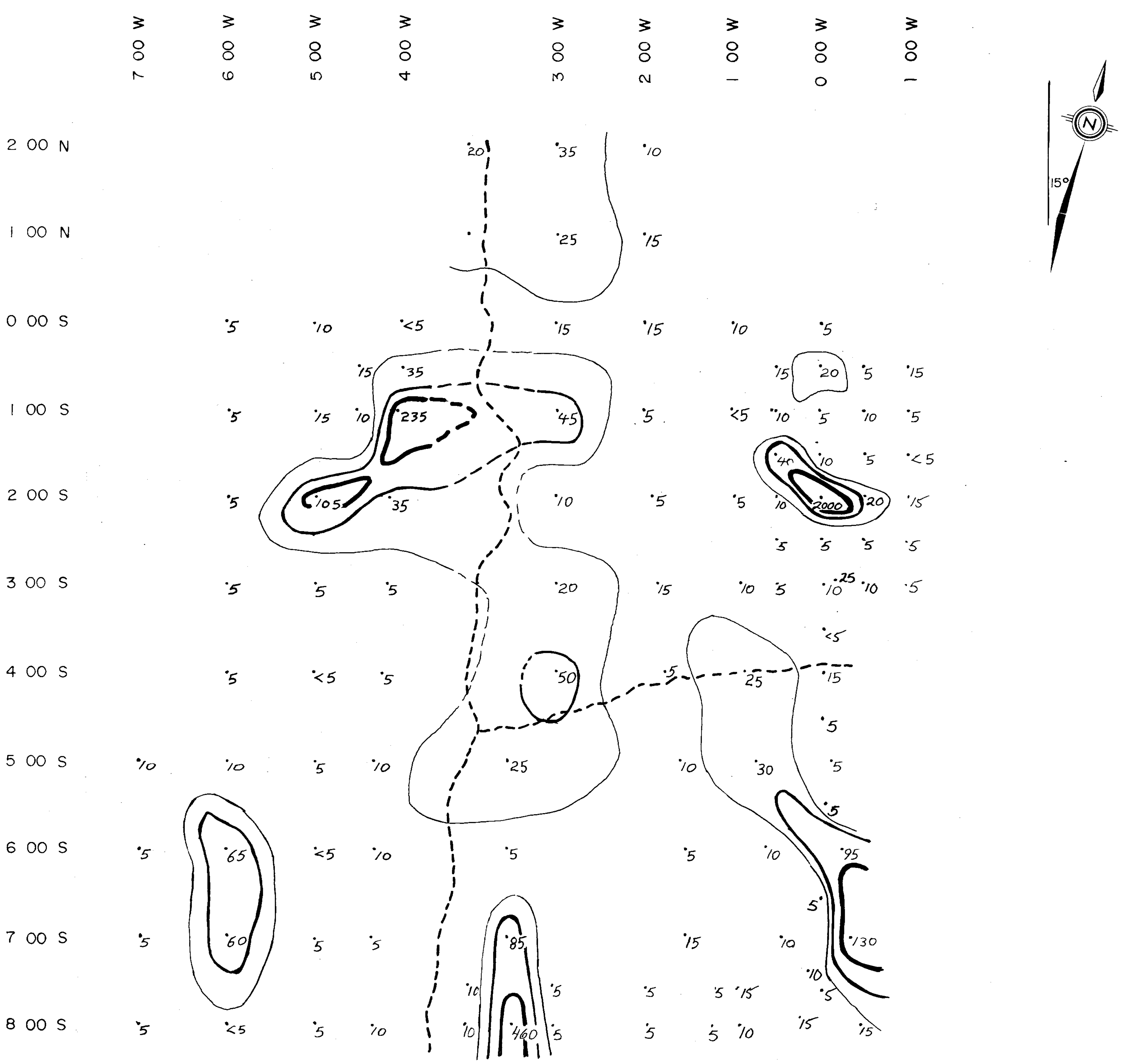
≥ 1200 ppm

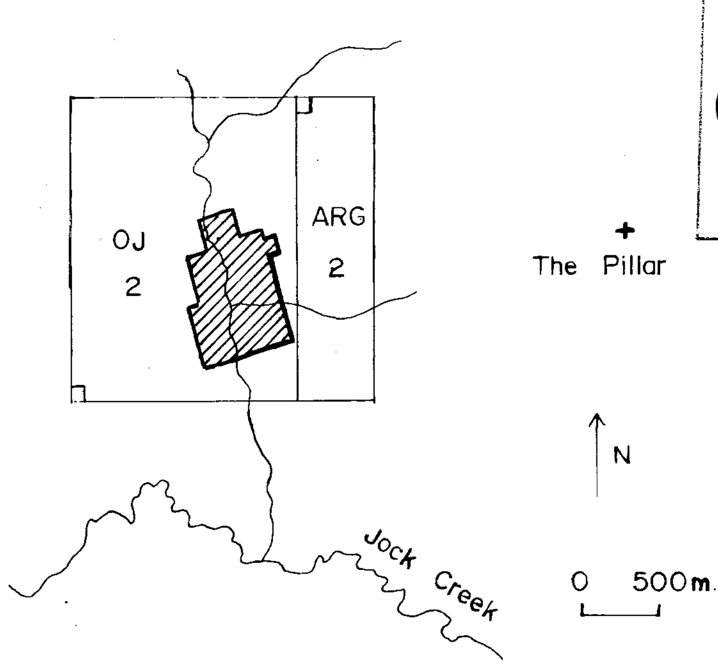
S.E.R.E.M. LTD.

PROJECT TOODOGGONE

TITLE
ZINC IN SOIL
OJ-1 SOIL GRID
OJ, ARG CLAIMS

DATE: Aug. 81	DATA: S. CRAWFORD	FIGURE
N.T.S.: 94E/7W	DRAWN: S.C.	5e
SCALE: 1:5000	CHECKED: SC	
0 50 100 150 200 metres		





LEGEND

20 soil sample site, ppb Au

≥ 20 ppb

≥ 40 ppb

≥ 100 ppb

S.E.R.E.M. LTD.

PROJECT TOODOGGONE

TITLE
GOLD IN SOIL
OJ-1 SOIL GRID
OJ, ARG CLAIMS

DATE: AUG 81	DATA: S. CRAWFORD	FIG.
N.T.S.: 94E/7W	DRAWN: S.C.	5
SCALE: 1:5000	CHECKED: SC	

0 50 100 150 200 metres