

INTERIM REPORT
 E.L. 24/85
 WILSON RIVER AREA
 NORTH-WESTERN TASMANIA
 OCTOBER 1988

CALLINA N.L.

88-2879

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1. INTRODUCTION

Exploration Licence 24/85 is located approximately ten kilometres west-north-west of Rosebery in north-western Tasmania and covers an area of twenty-two square kilometres. The lease is situated between the Wilson and Huskisson Rivers and includes Lake Pieman to the south. The chromite deposit is situated in the middle of the lease and comprises two small ridges of lateritic gravel and clay that overlie serpentinite bedrock. Access to the lease is via the sealed Lower Pieman Dam Road and access to the deposit area is via a dry weather four-wheel drive track.

2. WORK COMPLETED 1988

Exploration during the 1988 season was concentrated on Area C (figure 2) with minor activity on Area A to the north and the glacial plains to the south. Work consisted of gridding, auger drilling and treatment of bulk samples through a wet gravity plant.

2.1 GRIDDING

Approximately six kilometres of gridlines were marked and cleared over Area C (figure 3). Area A was cleared during 1987.

Lines were spaced at one hundred metre intervals, perpendicular to the baseline, and fifty metre intervals were marked. The grid covers the geological unit Tertiary Black Gravels marked as Tbg, on figure 1.

2.2 DRILLING

A total of 212m of 100mm auger core was taken from sixty-two drill holes during the 1988 exploration season. Holes were drilled to bedrock (serpentinite) except on the glacial plains where holes were drilled to approximately seven metre depth.

Fifty six sites were selected on Area C and 194m of core was removed from fifty three holes. The auger was unable to penetrate the hardcap at three sites in the north western corner of Area C and no samples were collected.

One site was drilled on Area A at coordinate 9800E, 9950N. Serpentinite was encountered at a depth of a half metre and the sample was taken from this interval.

Five holes were drilled to the south of Area C. Three shallow holes were drilled along the baseline (10000E) on the margin of the Tertiary lateritic gravels and the glacial sediments. Two deeper holes (9950E, 8350N and 10050E, 8450N) were drilled on the glacial plains to depths of eight and seven metres respectively.

Drill hole sites are shown in figure 3 and drill hole depths for Area C are shown in figure 4.

2.3 BULK SAMPLES

A total of 32 two cubic metre samples were taken for treatment and concentration in a wet gravity plant. Samples were taken from a cross-section comprising the surface to bedrock or a maximum depth of 6.5m (maximum reach of excavator). The samples were then washed into a trommel and screened at 3mm. The minus 3mm fraction was passed over a series of 3 primary jigs and the concentrate from hutch 1 and the concentrate from hutch 2 and 3 were collected as separate samples. The volumes of oversize and the two hutch products were estimated and recorded.

Figure 3b shows the location of the bulk samples. Five samples were repeats of samples from Area A and 4 samples were taken off the glacial material. 23 samples were taken from Area C. The costean (sample hole) logs and the bulk sample data is contained in Appendix 3. This information was recorded by the excavator contractor.

3. RESULTS

3.1 DRILLING

Figure 5 shows the contour plan of the deposit depth. As can be seen the thickness is negligible (<2m) to the west of the baseline but has a reasonable (>5m) to good (>8m) depth east of the baseline. At present there is insufficient data to define the eastern edge of the deposit.

Figure 6 shows the exaggerated cross-section of Area C. As shown the deposit is concave in shape and overlies a serpentinite ridge which trends grid east-west with its central axis about 9100N. In general, the thickest sections of the deposit overlie the highest points of the bedrock and as such the thickest parts of the deposit occur at topographic highs.

The samples taken during the auger programme were logged, sections of the core panned and the amount of heavy minerals recorded. Results for Area C are contained in Appendix 1 and the results from the glacial deposits are found in Appendix 2. All heavy minerals were recorded as chromite although magnetite was probably present also. Each hole was then graded as good, marginal or negligible based on the visual estimation of contained chromite. The estimated relative chromite abundance for Area C is shown in figure 7.

Comparing figures 5 and 7 shows that the estimated values of high chromite content correspond well with the deepest areas of the deposit.

3.2 BULK SAMPLES

Sample costean logs and an estimation of hutch product volumes is included in Appendix 3. At present, no estimation or description of chromite present has been carried out.

4. SUMMARY

Based on the available drill hole data and the visual estimates of chromite content, the tonnage potential of Area C appears reasonable.

A very rough tonnage calculation is given below.

The area bounded by lines 10000E (baseline), 9250N, 10600E and 9050N gives a surface area of 200 X 600m². Estimated average depth from figure 5 is 7m and the estimated chromite grade is good.

Thus there is 200 X 600 X 7 = 840000m³ of "good" chromite ore.

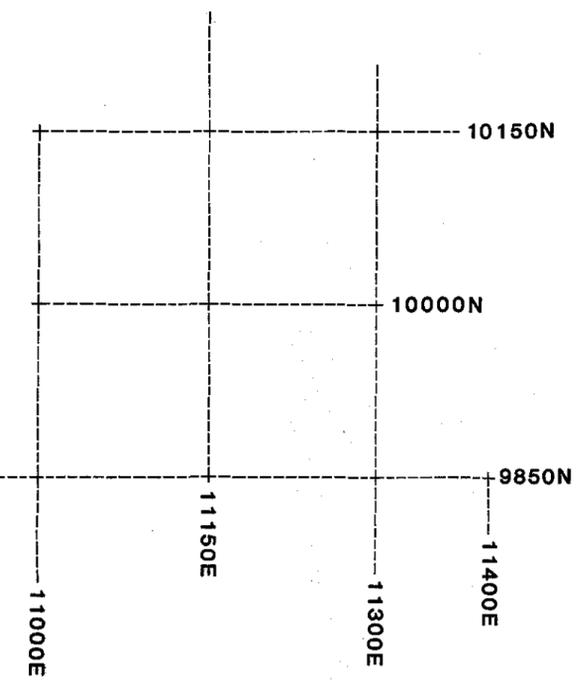
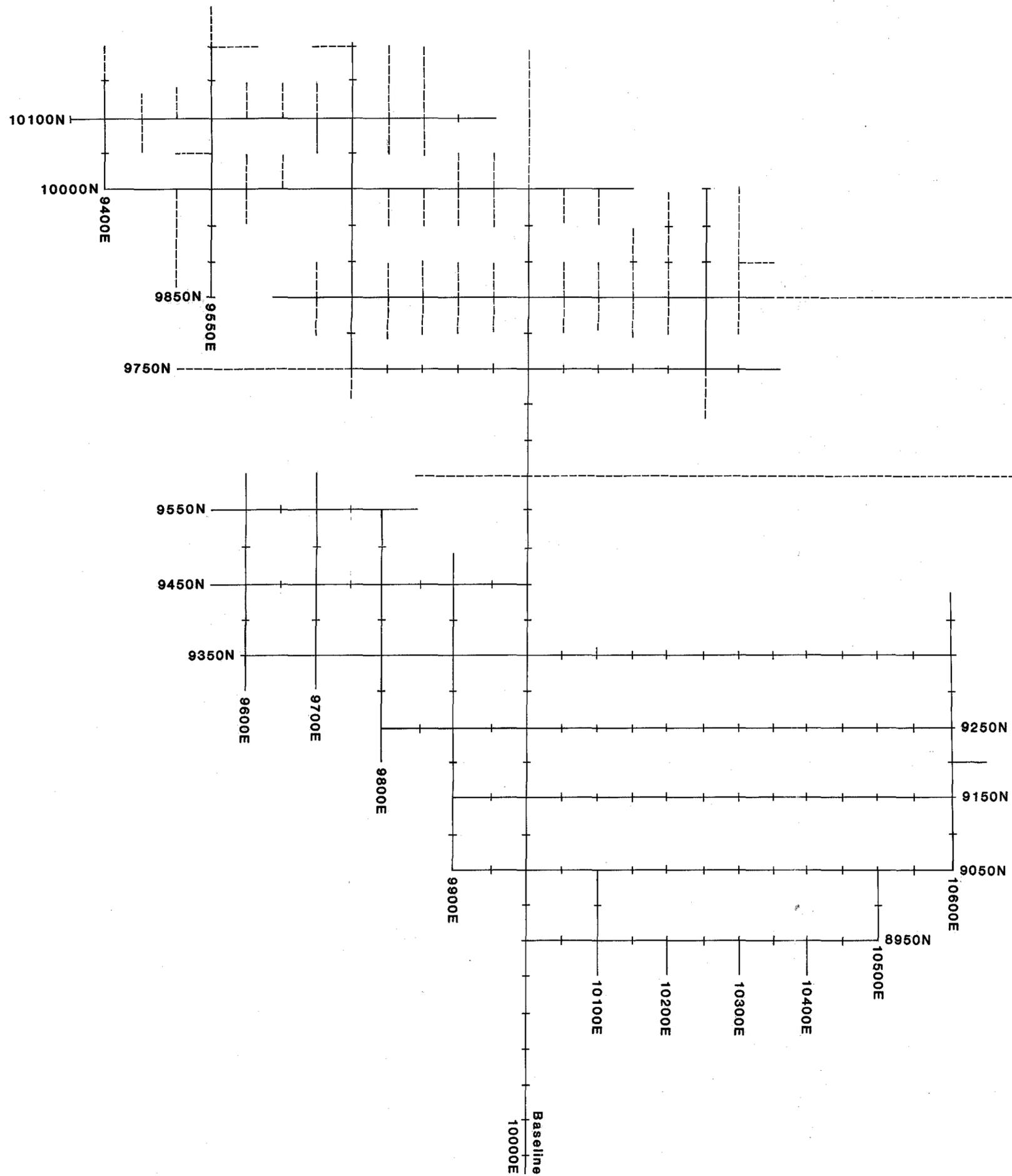
The smaller area to the south bounded by 10000E, 9050N, 10500E, 8950N has an estimated average depth of 5m.

Thus the volume is 100 X 500 X 5 = 250000m³ of "marginal" chromite ore.

Therefore, total ore reserves are estimated at greater than one million cubic metres for Area C.

This does not include the area to the east of 10600E which has not been drilled. This volume may be significant as depths of 8m are encountered on its western edge but the surface area may be small as it is known that serpentinite outcrops 200m further east.

Laboratory processing of the auger samples currently underway will determine if the chromite grade is viable as significant volumes of chromite bearing clay are present.



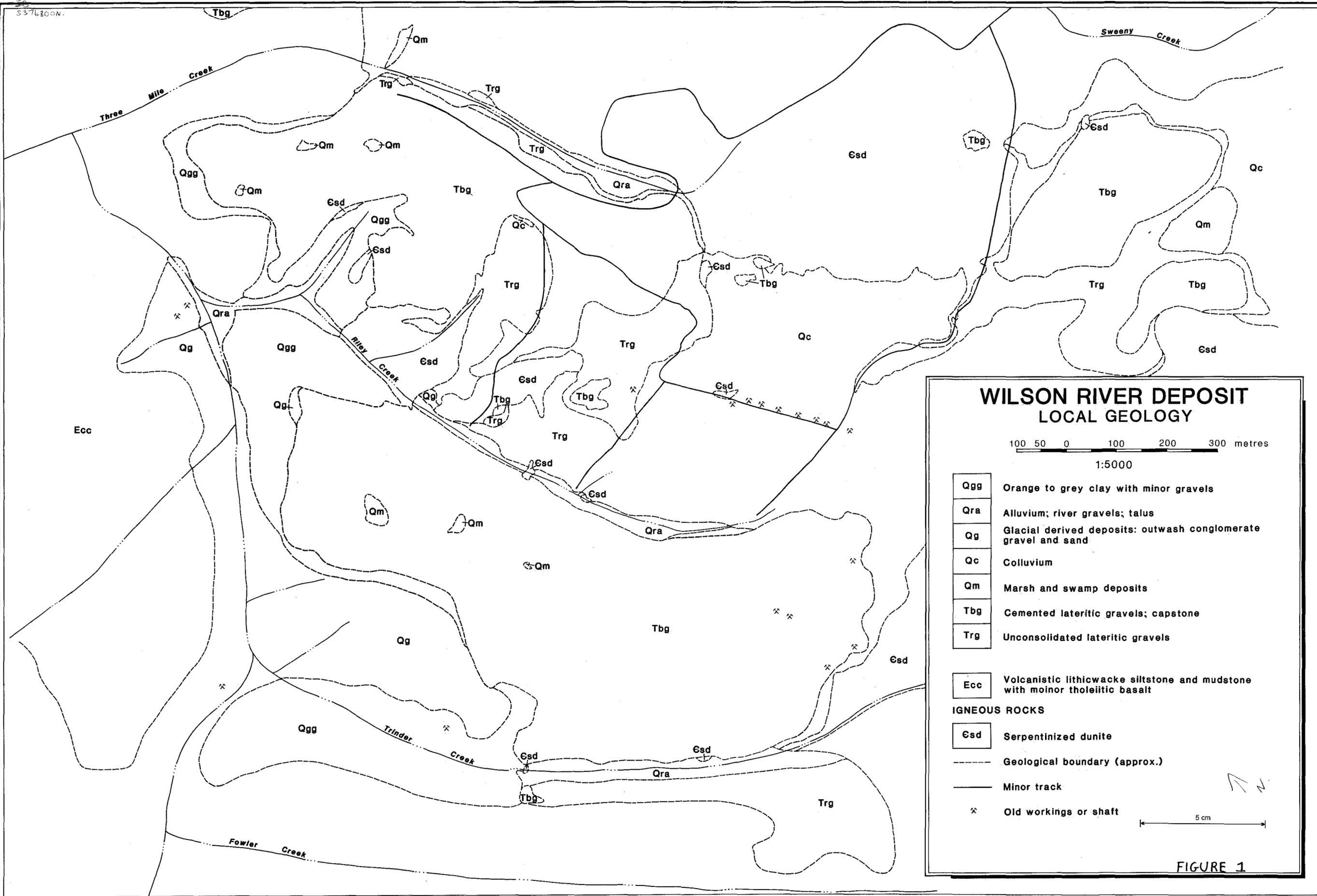
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EXPLORATION GRID

- +— Gridline with 50m interval
- - - Gridline. Not cleared
- Existing track (1985/86 season)

76800E
5376300N

368400E
5376200N



WILSON RIVER DEPOSIT LOCAL GEOLOGY

100 50 0 100 200 300 metres
1:5000

Qgg	Orange to grey clay with minor gravels
Qra	Alluvium; river gravels; talus
Qg	Glacial derived deposits: outwash conglomerate gravel and sand
Qc	Colluvium
Qm	Marsh and swamp deposits
Tbg	Cemented lateritic gravels; capstone
Trg	Unconsolidated lateritic gravels
Ecc	Volcanistic lithicwacke siltstone and mudstone with minor tholeiitic basalt

IGNEOUS ROCKS

Esd	Serpentinized dunite
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- - - - - Geological boundary (approx.)
 ——— Minor track
 x Old workings or shaft

5 cm

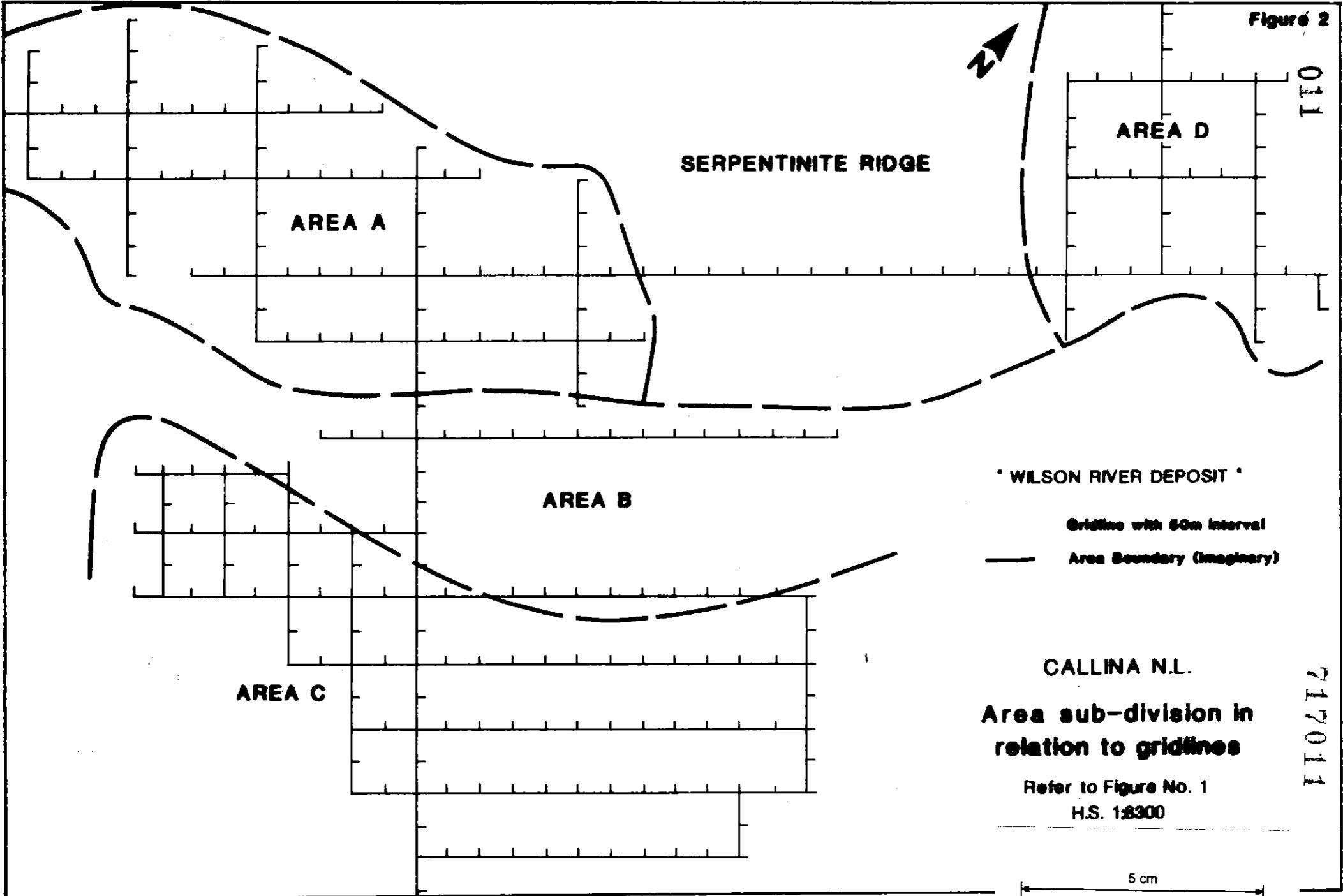
FIGURE 1

717010A
010

368400E
5376300N

368400E
5376200N

011
TTO



SERPENTINITE RIDGE

AREA A

AREA D

AREA B

' WILSON RIVER DEPOSIT '

Gridline with 50m interval

Area Boundary (imaginary)

AREA C

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Area sub-division in relation to gridlines

Refer to Figure No. 1

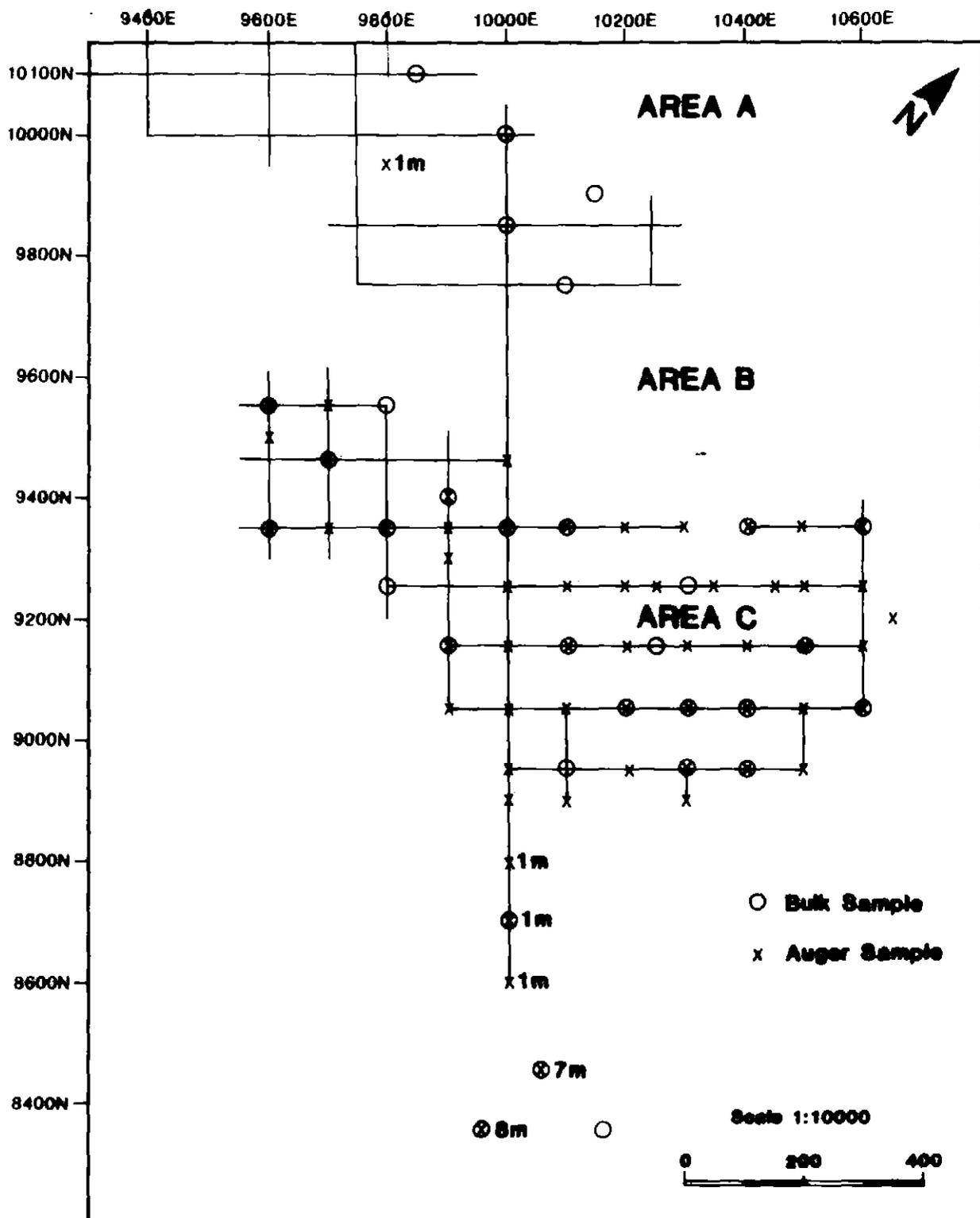
H.S. 1:6300

5 cm

717011

012

5 cm

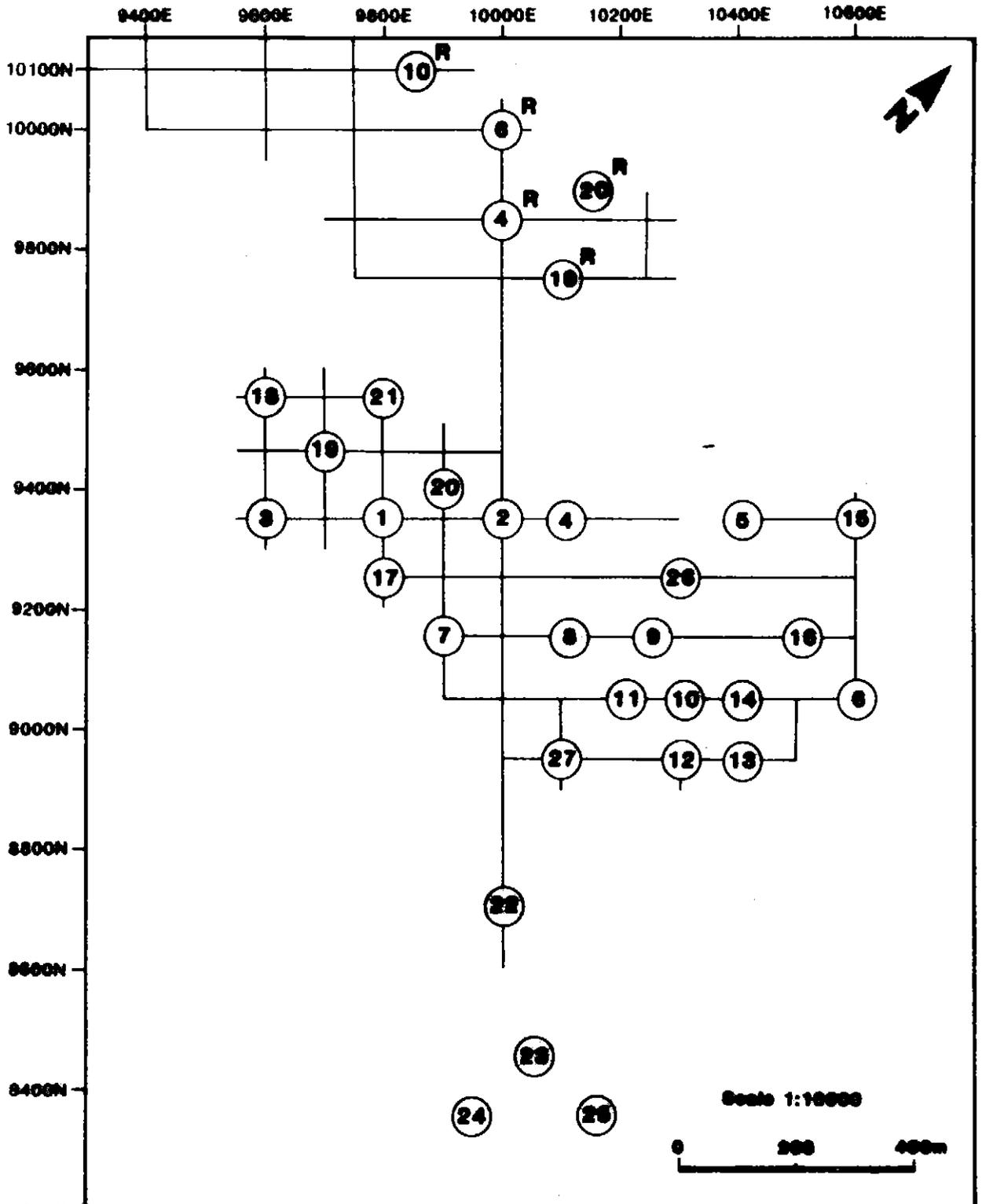


**CLEARED GRIDLINES SHOWING
SAMPLE SITES 1988**

See Figure 4 for enlargement of Area C

See Figure 3b for bulk sample site numbers

Figure 3



**CLEARED GRIDLINES SHOWING
BULK SAMPLE SITES 1988**

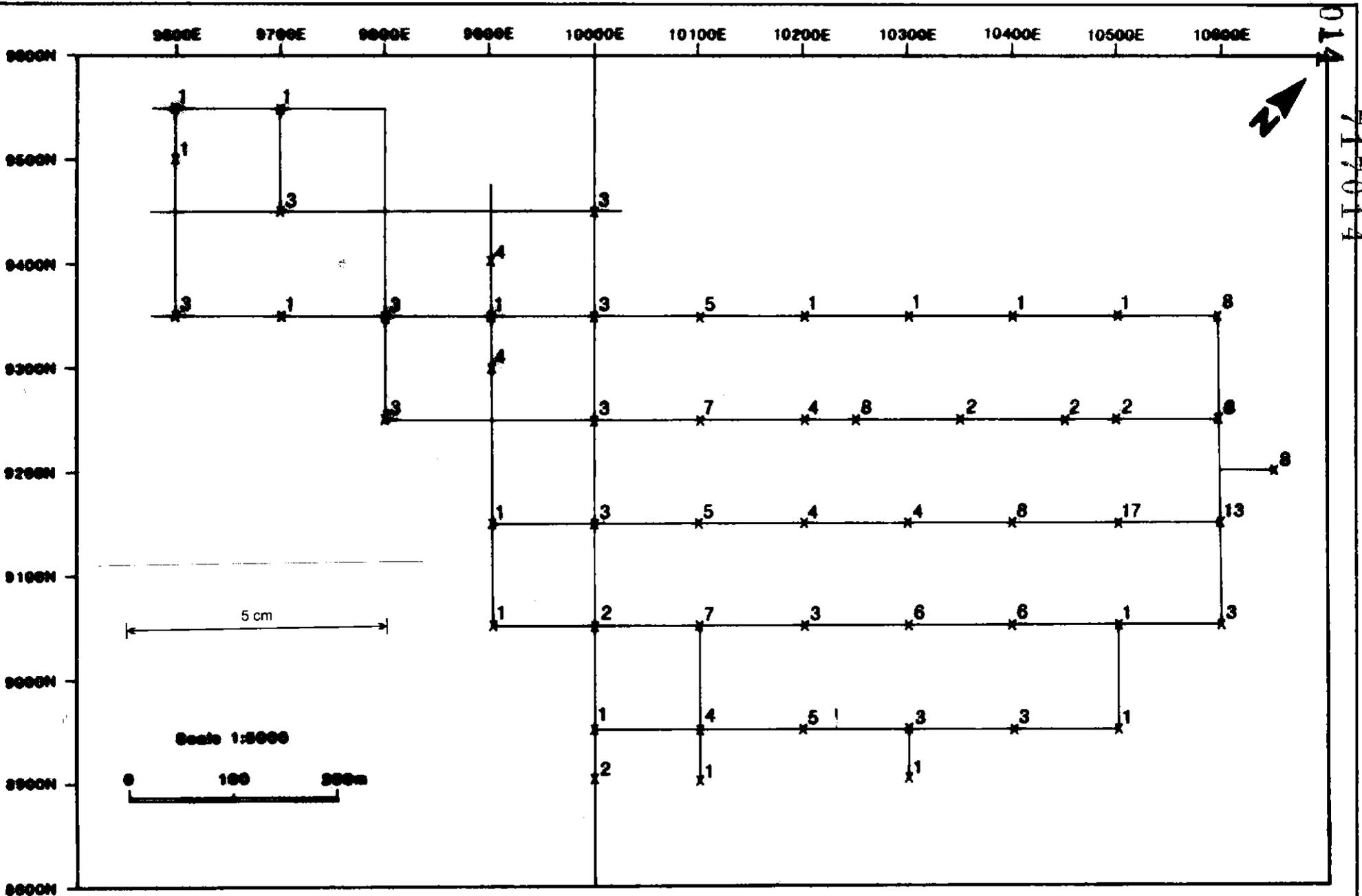
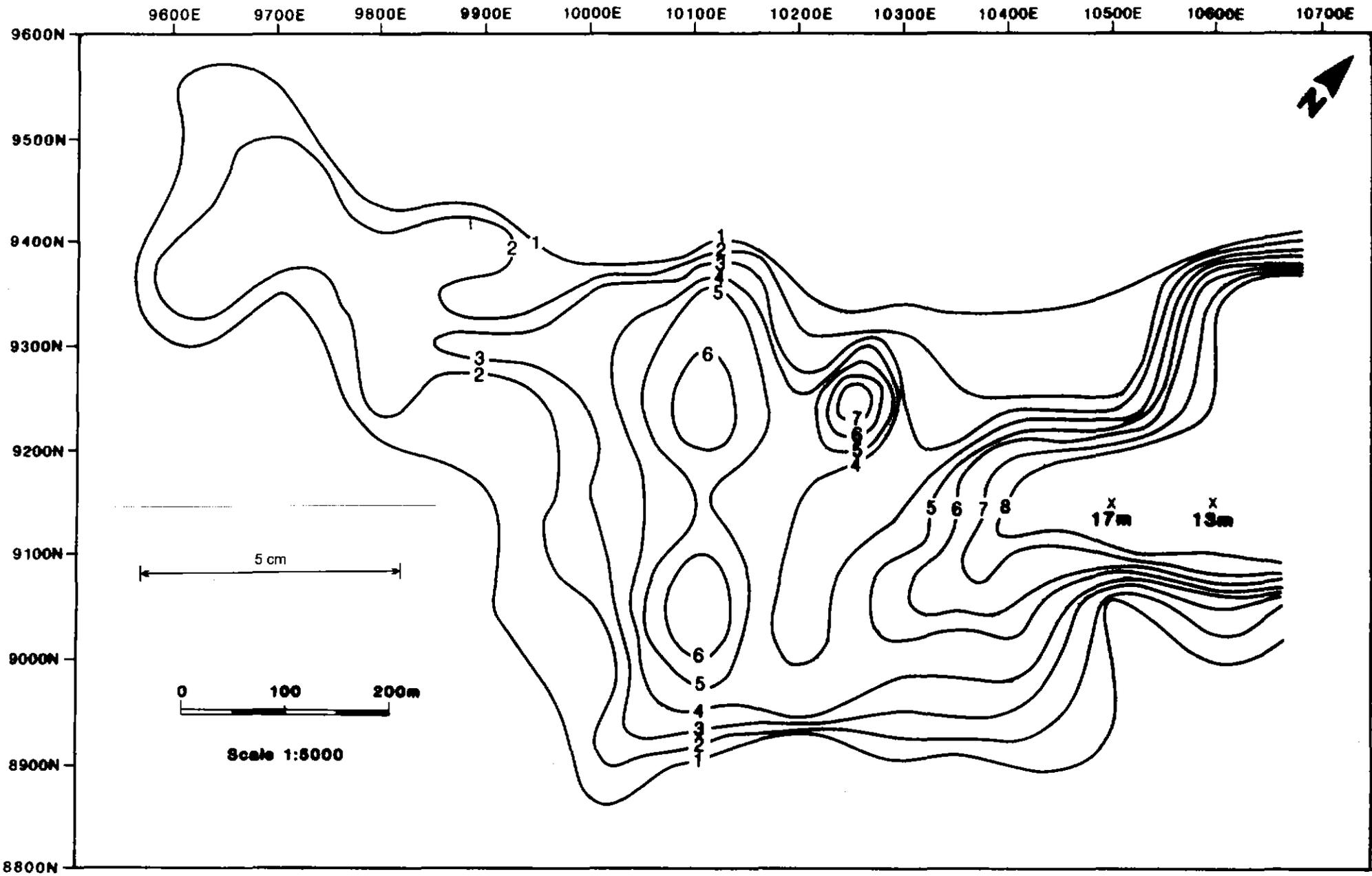


Figure 4

CLEARED GRIDLINES WITH DRILLHOLE DEPTHS(m) AREA C

CALIMA NL



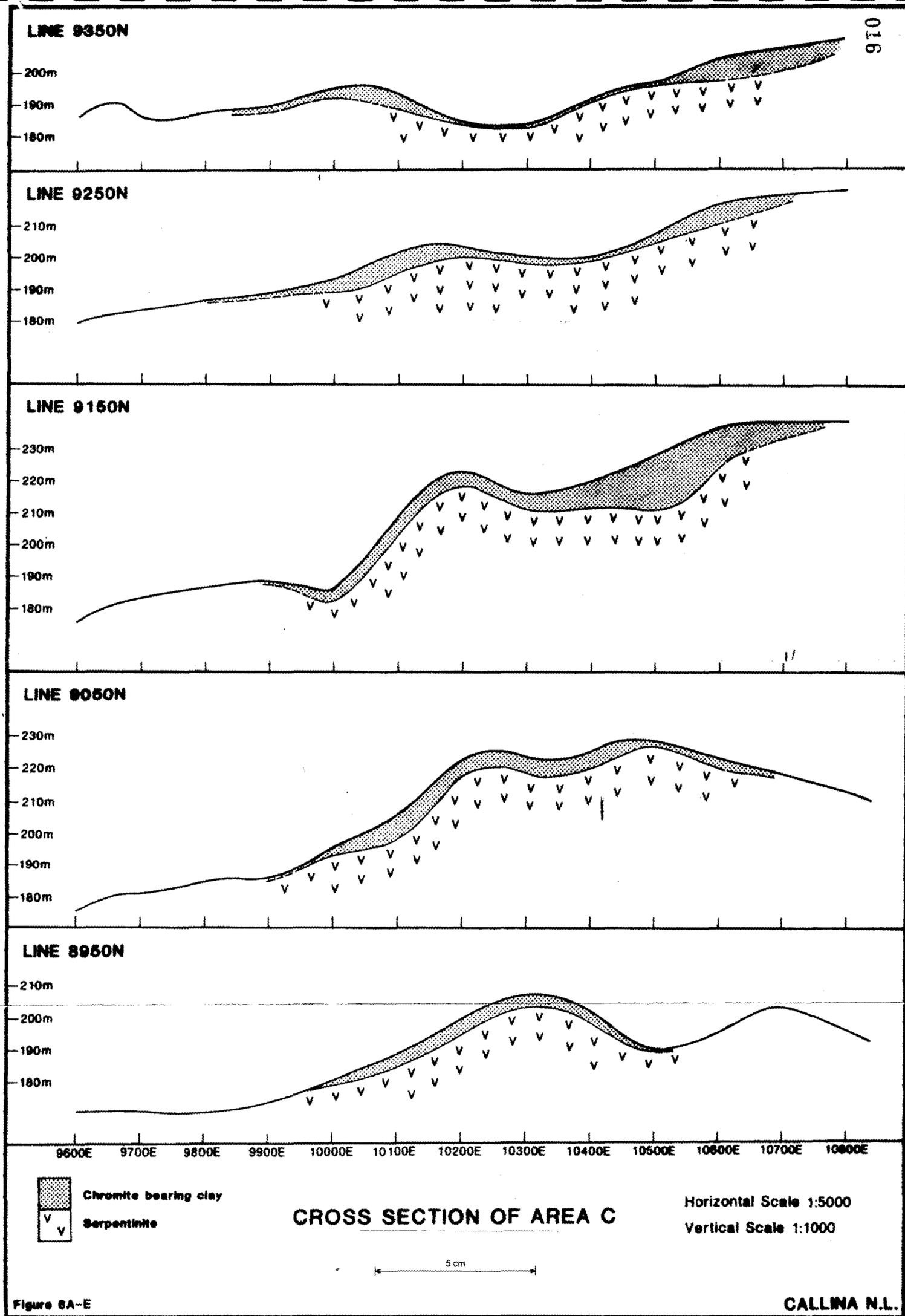
CONTOUR PLOT OF DEPOSIT DEPTH(m) AREA C

Figure 5

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DT5

917015



5 cm

LINE 10600E

230m
220m
210m
200m

LINE 10200E

220m
210m
200m
190m
180m

LINE 10500E

220m
210m
200m
190m

LINE 10100E

200m
190m
180m

LINE 10400E

220m
210m
200m
190m

LINE 10000E

190m
180m

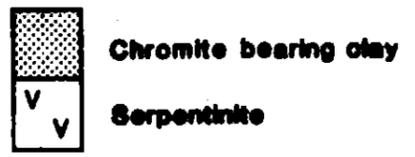
LINE 10300E

220m
210m
200m
190m
180m

LINE 9900E

190m
180m

9500N 9400N 9300N 9200N 9100N 9000N 8900N 8800N 8700N

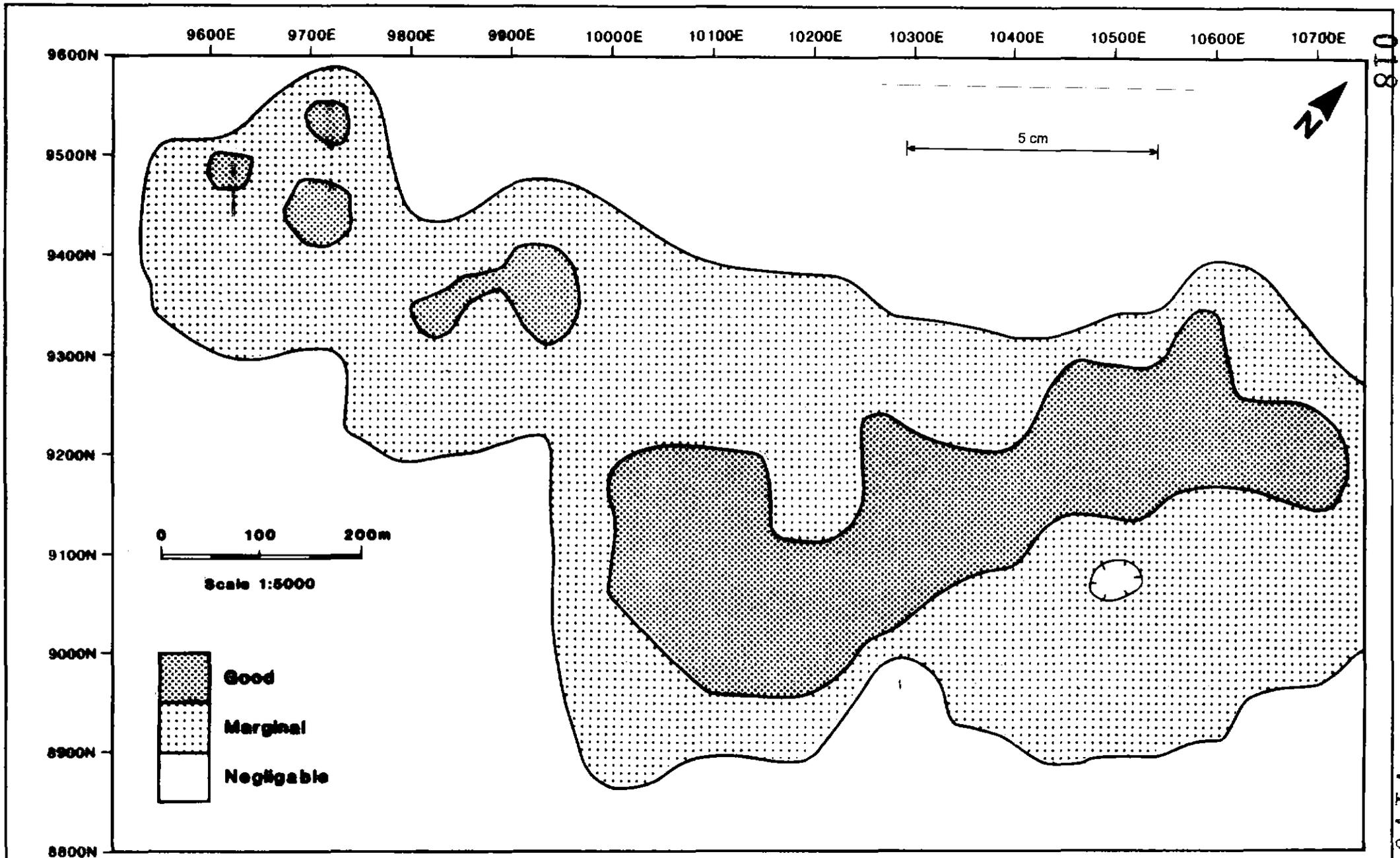


Horizontal Scale 1:5000
Vertical Scale 1:1000

CROSS SECTION OF AREA C

9500N 9400N 9300N 9200N 9100N 9000N 8900N 8800N 8700N

Figure 6F-M



ESTIMATED RELATIVE CHROMITE ABUNDANCE AREA C

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Figure 7

018

717018

APPENDIX 1

AREA C. DRILL LOGS.

APPENDIX 1
NILSON RIVER 1988.
AREA C. DRILL LOGS.

east	north	upper	lower	colour	chromite content	chromite size	comment
9600	9350	0	1	purple-brown	abundant		Slightly clayey with iron-rich gravel.
9600	9350	1	2	red-orange-brown	common	coarse	Moderately clayey with cemented red-green clay chips and white weathered serpentinite chips.
9600	9350	2	3	yellow-brown	common	coarse	Clayey with clay chips and white serpentinite chips.
9600	9500	0	1	dark grey	abundant		Iron rich gravel. (small sample.)
9600	9550	0	1	purple-brown	minor		Abundant iron-rich gravel
9700	9350	0	1	brown	minor		Lateritic gravel.
9700	9450	0	1	purple-brown	abundant	coarse sum	Moderately clayey with iron-rich gravel.
9700	9450	1	2	brown	minor		Moderately clayey with minor iron-rich grit.
9700	9450	2	3	brown	abundant		contains white weathered serpentinite chips(?) in iron-rich gravel.
9700	9550	0	1	dark purple-brown	abundant		Lateritic iron-rich gravel. Minor quartz.
9800	9250	0	1	brown-orange	yes		Moderately clayey with cemented ferruginized fragments.
9800	9250	1	2	orange-brown	yes		Clay with ferruginized rock fragments.
9800	9250	2	3	orange-green	minor		Orange clay with weathered serpentinite fragments.
9800	9350	0	1	purple-brown	abundant	fine	Cemented iron-rich gravel. Slightly clayey.
9800	9350	1	2	orange-brown	abundant		Slightly clayey with iron-rich gravel and occasional white weathered rock.
9800	9350	2	3	orange-brown	common		Quite clayey with inclusions of white-green weathered rock.
9800	9950	0	1	green	minor		Weathered serpentinite. This point is located towards the southern edge of Area A.
9900	9050	0	1	purple-brown	none		Cemented ferruginized gravel. Minor material <2mm.
9900	9150	0	1	light brown	minor		Iron-rich fragments and weathered serpentinite fragments. Slightly clayey.
9900	9300	0	1	dark brown	abundant	fine	Clayey with lateritic gravel. Gravel occasionally to 50mm.
9900	9300	1	2	brown	abundant		Very clayey with sand sized iron-rich grains.
9900	9300	2	3	purple-brown	abundant		Very clayey. Slightly gritty.
9900	9300	3	4	purple-brown	yes		Clayey with yellow clay chips and minor iron-rich gravel.
9900	9350	0	1	brown	yes		Orange-brown clay with lateritic clay fragments.
9900	9400	0	1	light brown-grey	common	fine	Cemented iron-rich gravel to 30mm.
9900	9400	1	2	orange-brown	common	fine	Moderately clayey, slightly sandy. No inclusions.
9900	9400	2	3	orange-brown	common	fine	Very clayey.
9900	9400	3	4	orange-brown-green	common	fine	Inclusions of green bedrock clay and orange sandy clay.
10000	8900	0	1	purple-brown	abundant		Abundant iron-rich sand. Some cemented to form gravel.
10000	8900	1	2	mottled orange-brown, green	abundant		Clay with light green chips of weathered serpentinite.
10000	8950	0	1	yellow-brown	minor		Clayey with weathered bedrock fragments.
10000	9050	0	1	purple-brown	common		Iron-rich gravel 5-20mm.
10000	9050	1	2	grey-brown	common	fine	Slightly clayey with weathered clayey chips of serpentinite.
10000	9150	0	1	purple-brown	minor		Lateritic gravel mostly >5mm.
10000	9150	1	2	orange-brown	abundant		Clay with minor inclusions.
10000	9150	2	3	grey	yes		Very clayey with sand fragments. Small white fine-grained inclusions. Possibly glacial. Co-ords unknown.
10000	9250	0	1	orange-brown	yes		Moderately clayey with lateritic gravel.
10000	9250	1	2	grey	minor		Glacial clay.
10000	9250	2	3	light grey brown	common		Moderately clayey and slightly gritty. Glacial.
10000	9350	0	1	brown	abundant		Ferruginized lateritized cemented sand.
10000	9350	1	2	orange-brown	yes		Clay with small inclusions as above.
10000	9350	2	3	orange-brown	common		Moderately clayey with clay chips and small white-green weathered bedrock chips.

east	north	upper	lower	colour	chromite content	chromite size	comment
10100	8900	0	1	purple-brown	minor		Lateritic gravel and minor lateritized serpentinite.
10100	8950	0	1	brown-black	minor		Iron-rich gravel 5-10mm.
10100	8950	1	2	dark orange-brown	common		Slightly clayey with very weathered soft rock chips.
10100	8950	2	3	mottled green-grey-orange	yes		Very clayey, slightly gritty.
10100	8950	3	4	mottled green-grey-orange-blak	yes		Very clayey, slightly gritty.
10100	9050	0	1	purple-brown	common		Abundant lateritic gravel.
10100	9050	1	2	orange-brown	yes		Very clayey with minor inclusions.
10100	9050	2	3	mottled orange-purple-black	yes		Very clayey. No inclusions.
10100	9050	3	4	mottled orange-purple-black	yes		Very clayey with soft yellow-orange clay inclusions.
10100	9050	4	5	orange	yes		Very clayey with minor ferruginized grit.
10100	9050	5	6	purple-brown	yes		Brown clay. No inclusions.
10100	9050	6	7	purple-brown	yes		Clay with grit. Possible weathered serpentinite fragments.
10100	9150	0	1	purple-brown	abundant	fine	Iron-rich gravel 5-20mm.
10100	9150	1	2	purple-brown	minor		Slightly clayey. Minor iron-rich gravel.
10100	9150	2	3	orange-brown	minor		Sandy, slightly clayey. Black coating on some clay chips. Some purple-brown clay chips.
10100	9150	3	4	red-purple-brown	trace		Moderately clayey. Minor clay chips.
10100	9150	4	5	brown-green	common	fine	Very clayey with green-black clay chips. Small black clay chips.
10100	9250	0	1	brown	yes		lateritic gravel to 20mm
10100	9250	1	2	brown	yes		lateritic gravel to 20mm
10100	9250	2	3	brown	minor		fragments of very weathered yellow green bedrock
10100	9250	3	4	green-yellow-brown	no		fine grained yellow weathered rock. Also green clay.
10100	9250	4	5	grey-brown	yes		clay with iron rich fragments to 20mm
10100	9250	6	7	green-grey-brown	yes		very clayey with iron rich grains to 5mm.
10100	9350	0	1	brown	moderate	fine	Slightly clayey. Minor iron-rich gravel.
10100	9350	1	2	brown	minor	very fine	Inclusions of moderately lithified sand particles.
10100	9350	2	3	brown	common	fine	Slightly clayey. No inclusions.
10100	9350	3	4	red/green/black/orange/yellow	common	fine	Clay with minor clay inclusions.
10100	9350	4	5	dark grey	common	sum coarse	Very clayey.
10200	8950	0	1	purple-brown	none		Iron-rich gravel to 10mm. No fine material.
10200	8950	1	2	brown	abundant		Clay with weathered rock chips.
10200	8950	2	3	black-brown	abundant		Clayey with sand sized iron-rich particles.
10200	8950	3	4	striated yllw/orng/red/grn/blk	abundant		Weathered clayey bedrock. No inclusions.
10200	8950	4	5	grey-brown	yes		Large pieces of weathered serpentinite.
10200	9050	0	1	dark purple-brown	minor		Abundant lateritic gravel.
10200	9050	1	2	orange-brown	abundant		Very clayey. Some iron-rich grit.
10200	9050	2	3	purple-brown	yes		Clayey with yellow-orange clayey fragments and dark green (serpentinite) chips.
10200	9150	0	1	purple-brown	common		Iron-rich gravel 5-20mm.
10200	9150	1	2	brown	yes		Slightly clayey with cemented ferruginized sand inclusions.
10200	9150	2	3	mottled green-grey-orange-brwn	minor	fine	Very clayey with minor dark green small inclusions.
10200	9150	3	4	brown-green	minor	fine	abundant mottled light green-dark green serpentinite chips.
10200	9250	0	1	brown	minor		lateritic gravel to 20mm. No clay.
10200	9250	1	2	brown	yes		Lateritic gravel to 20mm. No clay.
10200	9250	2	3	brown	yes		As above except gravel less than 8mm.
10200	9250	3	4	brown	yes		Clayey. Minor inclusions of yellow-white weathered bedrock.
10200	9350	0	1	purple-brown	minor		Cemented ferruginized grit.

CHROMITE CONTENT ORDER OF RELATIVE ABUNDANCE

None, trace, minor, common, abundant, very abundant.

Yes: chromite is present but the clayey nature of the sample makes an accurate estimate impossible

CHROMITE SIZE

Very fine: Majority 0.2mm Course: Majority 1mm
Fine : Majority 0.5mm Blank : Continuous range

east	north	upper	lower	colour	chromite content	chromite size	comment
10250	9250	0	1	purple-brown	minor		Lateritic gravel.
10250	9250	1	2	purple-brown	abundant	fine	Lateritic gravel.
10250	9250	2	3	light brown-green	common		Moderately clayey with lateritized rock.
10250	9250	3	4	brown	common	fine	Clayey with weathered lateritized rock.
10250	9250	4	5	brown	common	fine	As above except smaller inclusions.
10250	9250	5	6	yellow-brown	yes		Clayey with abundant sand sized iron-rich particles.
10250	9250	6	7	yellow-brown	common		As above with minor orange fine-grained chips.
10250	9250	7	8	yellow-brown	minor		Clayey with abundant chips of lateritized rock.
10300	8900	0	1	purple-brown	yes		Soil with iron rich gravel and calcretized rock fragments.
10300	8950	0	1	purple-black	minor		Iron-rich gravel with metallic lustre.
10300	8950	1	2	grey-green	trace		Very clayey, slightly gritty. Rare fragments of weathered serpentinite.
10300	8950	2	3	green-grey-black	common		Very clayey with weathered serpentinite fragments.
10300	9050	0	1	purple-brown	abundant		Lateritic gravel 5-20mm.
10300	9050	1	2	orange-brown	abundant	fine	Moderately clayey with large pieces of poorly developed laterite. Also small yellow-orange clay chips.
10300	9050	2	3	orange-red-brown	common		Sandy with iron cemented sand grained chips.
10300	9050	3	4	orange-brown	common		Sandy with sandy-clayey orange-brown chips.
10300	9050	4	5	yellow-brown	minor		Sandy and slightly clayey. Minor inclusion of cemented sand grains.
10300	9050	5	6	yellow-brown, dark brown	common	fine	As above. Rare small chips of weathered serpentinite.
10300	9150	0	1	brown	common		Clayey with moderate amount of iron-rich gravel.
10300	9150	1	2	dark brown	minor		Slightly clayey with ferruginized rock chips.
10300	9150	2	3	green-yellow-brown	common		Clayey. No inclusions.
10300	9150	3	4	mottled green/brown	common		Slightly clayey with ferruginized weathered bedrock chips.
10300	9350	0	1	purple-brown	minor		Brown clay fragments, slightly lateritized.
10350	9250	0	1	purple-brown	yes		Abundant lateritic gravel.
10350	9250	1	2	orange-brown	yes		Very clayey with minor grit.
10400	8950	0	1	purple-brown	common		Ferruginized grit. Minor quartz.
10400	8950	1	2	orange-brown	common		Very clayey with orange-yellow clay fragments.
10400	8950	2	3	orange-brown	common		Very clayey with yellow-orange clay fragments.
10400	9050	0	1	purple-brown	abundant		Lateritic iron-rich gravel 5-15mm.
10400	9050	1	2	orange-brown	minor		Slightly clayey with cemented chips of clay.
10400	9050	2	3	orange-brown	minor		Sandy with moderately lithified very weathered rock fragments.
10400	9050	3	4	purple-brown, yellow-brown	abundant		Quite clayey. No inclusions.
10400	9050	4	5	purple-brown	common		Clay with minor grit.
10400	9050	5	6	purple-brown, yellow-brown	abundant		Slightly clayey with abundant sandy clayey chips.
10400	9150	0	1	purple-brown	common		Iron-rich gravel.
10400	9150	1	2	brown	minor		Lateritic gravel 5-30mm.
10400	9150	2	3	yellow-purple-brown	common	fine	Sandy with poorly lithified yellow-orange chips of sand sized particles.
10400	9150	3	4	orange-brown	common	fine	As above.
10400	9150	4	5	purple-brown	abundant	very fine	Moderately clayey, slightly gritty.
10400	9150	5	6	grey-brown	abundant	very fine	Sand and slightly clayey. No inclusions.
10400	9150	6	7	purple-brown	yes		Very clayey, slightly gritty. Iron-rich particles <2mm.
10400	9150	7	8	purple-brown	abundant	fine	Very clayey, slightly gritty. No inclusions.
10400	9350	0	1	brown	minor		Soil with weathered serpentinite fragments.

CHROMITE CONTENT: ORDER OF RELATIVE ABUNDANCE

None, trace, minor, common, abundant, very abundant.

Yes: chromite is present but the clayey nature of the sample makes an accurate estimate impossible.

CHROMITE SIZE

Very fine: Majority 0.2mm Coarse: Majority 1mm
Fine: Majority 0.5mm Blank: Continuous range

east	north	upper	lower	colour	chromite content	chromite size	comment
10450	9250	0	1	brown	common		Very clayey with minor sand sized inclusions.
10450	9250	1	2	yellow-green-brown	minor		Minor ferruginized rock chips.
10500	8950	0	1	brown	common		Soil with calcretized serpentinite fragments.
10500	9050	0	1	purple-brown	none		Lateritized rock fragments and lateritic gravel.
10500	9150	0	1	brown	yes		Clayey gravel to 10mm.
10500	9150	1	2	brown	yes		Clayey gravel to 10mm.
10500	9150	2	3	brown	abundant		clayey.
10500	9150	3	4	brown	abundant		Clayey with grit <5mm.
10500	9150	4	5	brown	yes		Clayey with minor grit.
10500	9150	5	6	brown	abundant		Clayey with grit <5mm.
10500	9150	6	7	brown	abundant		Clayey with gravel to 10mm.
10500	9150	7	8	brown-red	yes		Large chunks of red-grey cemented sand.
10500	9150	8	9	brown	yes		Clayey ferruginized sandy fragments to 20mm.
10500	9150	9	10	brown	yes		As above but fragments generally flat.
10500	9150	10	11	red-brown	abundant		Clayey with abundant ferruginized fragments.
10500	9150	11	12	green-yellow-brown	yes		Very clayey with yellow-white soft clay fragments. Minor ferruginized grit.
10500	9150	12	13	grey-brown	abundant		Clayey with common ferruginized fragments to 10mm.
10500	9150	13	14	mottled yellow-brown-black	abundant		Very clayey with minor ferruginized and yellow-white soft clay fragments.
10500	9150	14	15	mottled yellow-brown black	very abundant		Core fragment striated yellow/orange/grey/black.
10500	9150	15	16	mottled yellow-brown-black	very abundant		As above. Minor sand fragments but no grit.
10500	9150	16	17	mottled yellow-green-brown	yes		Very clayey with sand sized iron particles. Minor soft yellow-white clay fragments.
10500	9250	0	1	purple-brown	common		Slightly clayey with minor iron-rich grit <2mm.
10500	9250	1	2	brown	common		Slightly clayey with inclusions of weathered serpentinite.
10500	9350	0	1	brown-green	none		Soil with weathered serpentinite rock fragments.
10600	9050	0	1	purple-brown	yes		Clayey with slightly lithified clay chips.
10600	9050	1	2	purple-brown	yes		Clay with slightly lithified clay fragments.
10600	9050	2	3	purple-brown	yes		Clay with clay chips. Minor weathered serpentinite chips.
10600	9150	0	1	brown	minor		Lateritic gravel with minor interstitial material.
10600	9150	1	2	purple-brown	abundant		Lateritic gravel slightly smaller than previous.
10600	9150	2	3	purple-brown	abundant		Moderately clayey with lateritic gravel <7mm.
10600	9150	3	4	purple-brown	abundant		Very clayey with iron-rich sand sized particles.
10600	9150	4	5	purple-brown	yes		Very clayey with sand sized iron-rich particles.
10600	9150	5	6	brown	yes		Very clayey with sand sized iron-rich particles.
10600	9150	6	7	brown	yes		Very clayey with sand sized iron-rich particles.
10600	9150	7	8	brown	yes		Very clayey with sand sized iron-rich particles.
10600	9150	8	9	mottled yellow-orange-grn-brn	abundant		Very clayey with rare inclusion of very weathered rock.
10600	9150	9	10	red-brown-green	abundant	coarse	Moderately clayey with clayey weathered bedrock chips.
10600	9150	10	11	purple-brown	abundant		Moderately clayey and quite gritty. Minor iron-rich gravels to 7mm.
10600	9150	11	12	mottled grey-orange-green	abundant		Very clayey with minor gritty inclusions.
10600	9150	12	13	grey-green-brown	abundant		Moderately clayey with weathered serpentinite fragments.
10600	9250	0	1	purple-brown	common		Lateritic gravel.
10600	9250	1	2	purple-brown	abundant		Slightly clayey. Lateritic gravel to 20mm.
10600	9250	2	3	purple-brown	abundant		Moderately clayey with moderate amount of small lateritic gravel.

CHROMITE CONTENT: ORDER OF RELATIVE ABUNDANCE

None, trace, minor, common, abundant, very abundant.

Yes: chromite is present but the clayey nature of the sample makes an accurate estimate impossible

CHROMITE SIZE

Very fine: Majority 0.2mm
Fine: Majority 0.5mm
Coarse: Majority 1mm
Blank: Continuous range

east	north	upper	lower	colour	chromite content	chromite size	comment
10600	9250	3	4	dark grey-brown	yes		Very clayey with rare inclusions of laterite.
10600	9250	4	5	dark grey brown	abundant		Very clayey. Slightly gritty.
10600	9250	5	6	mottled orange/brn/blk/grn	abundant	coarse	Very clayey. Slightly gritty.
10600	9250	6	7	mottled orange/brn/blk/grn	abundant	coarse	Very clayey. Slightly gritty.
10600	9250	7	8	mottled orange/brn/blk/grn	abundant	coarse	Very clayey. Slightly gritty.
10600	9350	0	1	purple-brown	abundant	fine	Abundant lateritic gravel.
10600	9350	1	2	purple-brown	common		Clay with some lateritic gravel.
10600	9350	2	3	purple-brown	yes		Clayey with abundant iron-rich gravel.
10600	9350	3	4	orange-brown	common		Minor iron-rich gravel.
10600	9350	5	6	striated yllw/orng/red/grn/blk	yes		Very clayey. Slightly gritty.
10600	9350	6	7	as above	abundant		Very clayey. Slightly gritty.
10600	9350	7	8	as above	abundant	coarse	Clayey bedrock.
10700	9200	0	1	purple-brown	common		Iron-rich gravel. Minor interstitial material <2mm.
10700	9200	1	2	brown	common		Slightly clayey with minor lateritic chips.
10700	9200	2	3	purple-brown	common		Slightly clayey with hard clay chips.
10700	9200	3	4	yellow-purple-brown	yes		Very clayey, slightly gritty. Grit to 2mm.
10700	9200	4	5	red-grey-brown	yes		Very clayey, slightly gritty. Grit to 2mm.
10700	9200	5	6	mottled red-brown-black	common		Very clayey, slightly gritty.
10700	9200	6	7	grey-brown	yes		Very clayey with minor grit < 1mm.
10700	9200	7	8	mottled green-brown-black	common	fine	Very clayey, very minor grit < 1mm.

CHROMITE CONTENT: ORDER OF RELATIVE ABUNDANCE

None, trace, minor, common, abundant, very abundant.

Yes: chromite is present but the clayey nature of the sample makes an accurate estimate impossible

CHROMITE SIZEVery fine: Majority 0.2mm Coarse: Majority 1mm
Fine: Majority 0.5mm Blank: Continuous range

APPENDIX 2

SOUTHERN GLACIAL DEPOSITS

DRILL LOGS

APPENDIX 2
WILSON RIVER 1988.
SOUTHERN GLACIAL DEPOSITS. DRILL LOGS.

east	north	upper	lower	colour	chromite content	chromite size	comment
9950	8350	0	1	black	none		Abundant organics. Quartz sand and grit.
9950	8350	1	2	black-brown	minor		Glacial gravel and grit with quartz sand.
9950	8350	2	3	grey-green	minor		Clayey with inclusions of same.
9950	8350	4	5	grey	common		Clayey with inclusions of same. Minor yellow-white clay fragments.
9950	8350	5	6	grey	minor		Clay with minor quartz sand.
9950	8350	6	7	grey	minor		Clay with minor quartz sand.
9950	8350	7	8	grey	trace		Clay with minor quartz sand.
10000	8600	0	1	brown	common		Soil with yellow-green serpentinite fragments.
10000	8700	0	1	grey	common	coarse	Glacial sediments.
10000	8800	0	1	dark brown-green	abundant		Slightly clayey with abundant serpentinite rock fragments.
10050	8450	0	1	black	minor		Abundant organics. Sand sized quartz particles.
10050	8450	1	2	brown-black	minor		Clayey with glacial cobbles. Abundant sand sized quartz.
10050	8450	2	3	grey-green	trace		Abundant quartz sand. Clayey sand fragments. —
10050	8450	3	4	grey-brown	trace		Very clayey with minor quartz inclusions.
10050	8450	4	5	grey-brown	none		Very clayey with minor quartz inclusions.
10050	8450	5	6	grey-brown	trace		Glacial grit. Very clayey.
10050	8450	6	7	grey-brown	none		Very clayey with cemented inclusions of same. Quartz fragments to 3mm.

CHROMITE CONTENT: ORDER OF RELATIVE ABUNDANCE

None, trace, minor, common, abundant, very abundant.

Yes: chromite is present but the clayey nature of the sample makes an accurate estimate impossible

CHROMITE SIZE

Very fine: Majority 0.2mm Coarse: Majority 1mm
Fine: Majority 0.5mm Blank: Continuous range

APPENDIX 3.

BULK SAMPLES. COSTEAN LOGS
AND HUTCH PRODUCT VOLUMES.

SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
A10R	0-2.4m	ironstone gravel	0.013	0.025	0.25 ^{2/3}	
9850E	2.4-5.8m	clay				No hutch products
10100N	Not at Bedrock					
A6R	0-0.6m	ironstone gravel	0.013	0.025	0.25	80% ironstone 5-50mm
10000E	0.6-1.8m	ironstone capping				20% mudstone 5.25mm
10000N	1.8-5.8m Not at bedrock	clay				
A19R	0-2.1m	ironstone gravel	0.07	0.10	0.33	5% serpentinite 12-100mm
10100E	2.1-6m	clay				15% mudstone 3.25mm
9750N	Not at bedrock					80% ironstone 3.75mm
A20R	0-0.6m	ironstone gravel	0.025	0.07	0.33	10% serpentinite 3-50mm
10150E	0.6-3.6m	ironstone capping				90% ironstone 3-100mm
9900N	3.6-6m Not at bedrock	clay				

028

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SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
A4R	0-0.15m	ironstone gravel	0.025	0.025	0.33	100% ironstone 3-50mm
10000E	0.15-5.5m	clay				
9850N	Not at bedrock					
1	0-0.9m	ironstone gravel	0.07	0.13	0.75	100% clean gravel 20-75mm
9800E	0.9-2.4m	orange clay				
9350N	2.3-3.0m bottom of hole	glacial sediments				
2	0-0.6	ironstone gravel	0.05	0.07	0.50	10% capping 3-6mm
10000E	0.6-3.0m	orange clay				90% mudstone 3-12mm
9350N	bottom of hole					
3	0-0.9m	ironstone capping	0.05	0.07	0.33	20% capping to 150mm
9600E	0.9-2.1m	orange clay				5% glacials 3-50mm
9350N	2.1-3.6m	glacial sediments				10% ironstone 3-8mm

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SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
4	0-0.6m	ironstone gravel	0.07	0.13	0.15	0.5% clay balls
10100E	0.6-3.6m	orange clay				3% serpentinite 3-50mm
9350N	bottom of hole					96.5% mudstone 3-6mm
5	0-1.2m	weathered serpentinite	0.025	0.07	0.33	20% serpentinite 3-12mm
10400E	bottom of hole					80% serpeninite to 150mm
6	0-0.6m	ironstone fragments	0.025	0.10	0.13	95% mudstone 3-6mm
10600E	0.6-3.9m	clay				5% ironstone 3-12mm
9050N	bottom of hole					
7	0-0.3m	ironstone gravel	0.025	0.07	0.33	10% serpentinite to 150mm
9900E	0.3-0.9m	ironstone capping				10% ironstone to 150mm
9150N	0.9-1.8m	yellow clay				60% ironstone to 12mm 20% serpentinite to 12mm
8	0-0.3m	ironstone gravel	0.025	0.1	0.13	40% serpentinite 3-50mm
10100E	0.3-0.6m	ironstone capping				40% ironstone 3-12mm
9150N	0.6-4.5m bottom of hole	orange clay				1% clay balls 19% mudstone 3-10mm

030

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SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
9	0-0.6m	ironstone gravel				
10250E	0.6-1.2m	broken capping	0.025	0.07	0.13	80% ironstone 6-50mm
9150N	1.2-4.5m	orange clay				18% mudstone 12-18mm
	not at bedrock					2% serpentinite 12-50mm
10	0-0.6m	ironstone gravel	0.025	0.07	0.25	80% ironstone 3-50mm
10300E	0.6-4.0m	orange clay				20% mudstone 3-12mm
9050N	not at bedrock					
11	0-0.3	ironstone gravel	0.025	0.07	0.13	100% ironstone 3-100mm
10200E	0.3-1.2m	ironstone capping				
9050E	1.2-3.3m	dark brown clay				
	not at bedrock					
12	0-1.2m	ironstone capping	0.07	0.20	0.33	40% serpentinite 3-150mm
10300E	1.2-3.3m	yellow clay				30% ironstone 3-50mm
8950N	on bedrock					28% mudstone 3-50mm
						2% clay balls

031

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SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
13	0-0.6m	ironstone gravel				
10400E	0.6-3.6m	orange clay	0.025	0.07	0.25	60% mudstone 3-50mm
8950N	not at bedrock					40% ironstone 3-25mm
14	0-0.75m	ironstone gravels	0.025	0.05	0.13	80% ironstone 3-50mm
10400E	0.75-6.3m	clay				18% mudstone 3-15mm
9050N	not at bedrock					2% clay
15	0-0.3m	ironstone gravels	0.015	0.03	0.25	78% ironstone 3-50mm
10600E	0.3-0.6m	ironstone capping				16% mudstone 3-25mm
9350N	0.6-6.0m	clay				4% serpentinite 25-150mm
	not at bedrock					2% clay
16	0-0.3m	ironstone gravels	0.015	0.03	?	95% ironstone 6-75mm
10500E	0.3-5.1m	clay				5% mudstone 6-15mm
9150N	not at bedrock					

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SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
17	0-0.3m	ironstone gravels	0.013	0.025	0.33	25% glacials 25-100mm
9800E	0.3-5.7m	clay				70% ironstone 6-100mm 5% mudstone 6-25mm
9250N	5.7-6.0m on bedrock	alluvial wash?				
18	0-0.9m	ironstone gravels	0.025	0.025	0.33	80% ironstone 3-100mm
9600E	finished	ironstone capping				10% serpentinite 25-75mm
9550N	at ironstone capping					10% mudstone 3-25mm
19	0-0.9	ironstone gravels	0.013	0.025	0.33	95% ironstone 3.50mm
9700E	0.9-1.5	ironstone capping				3% serpentinite 25-50mm
9450N	1.5-5.7 not at bedrock	clay and mudstone				2% mudstone 3-25mm
20	0-0.6m	ironstone gravels	0.025	0.025	0.25	80% ironstone 6-50mm
9900E	0.6-1.5m	ironstone capping				20% serpeninite 6-100mm
	1.5-6.3m not at bedrock	clay				

SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
21	0-0.3m	ironstone gravel	0.013	0.013	0.25	70% ironstone 3-20mm
9800E	0.3-1.5m	weathered serpentinite				30% serpentinite 12-100mm
9550N	bedrock					
22	0-0.8	white alluvial wash	0.025	0.025	0.33	60% glacial gravels 6-100mm
10000E	0.8-6.0m	orange clay with				35% mudstone 6-50mm
8700N	end of hole	alluvial wash				5% quartz 6-15mm
23	0-0.6m	peat with glacial gravels	0.025	0.025	?	90% glacial gravels 3-75mm
10050E	0.6-6.0m					10% quartz 3-20mm
8450N	still in glacials					
24	0-0.6m	peat with glacial gravels	0.025	0.025	0.5	80% glacial gravels 3-100mm
9950E	0.6-6.6m	glacial gravels				17% quartz 3-25mm
8350N	still in glacials					3% clay
25	0-0.3m	peat	0.05	0.07	0.33	77% glacial gravels 3-25mm
10150E	0.3-0.9m	glacial gravels				20% serpentinite 6-150mm
8350N	0.9-1.5m 1.5-6.6m	clay, silt glacial gravels				3% clay

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035

SAMPLE	INTERVAL	DESCRIPTION	HUTCH 1	HUTCH 2/3	OVERSIZE VOLUME	OVERSIZE DESCRIPTION
26	0-0.3m	ironstone gravel	0.025	0.07	0.25	80% ironstone 2-25mm
10300E	0.3-0.6m	ironstone capping				10% serpentinite
9250N	0.6-5.4m not at bottom	clay				
27	0-0.3m	ironstone gravel	0.025	0.025	0.33	80% ironstone 3-75mm
10100E	0.3-6.3m	clay				10% serpentinite 3-25mm
8950N	on serpentinite					10% mudstone 3-25mm

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