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PROJECT NAME: COMSTAFF PTY. LTD.

EL 5/63

TITLE: ARTHUR RIVER AREA

REGIONAL AND DETAILED EXPLORATION

1973/74 SUMMER FIELD SEASON

AREA NAME/S, STATE 1:250,000 SHEET NO/S & COORDINATES:

Arthur River Tasmania, K-55-3

COMMODITY/IES:

TEXT PAGES NO: 34

PLAN NOS: TAS/2/690, 442, 611, 620, 624, 625, 622, 623, 626, 634, 627, 631, 632, 629, 630, 628

TABLE NOS:

APPENDICES:

AUTHOR/S: C. Cammell

DATE: 11 June 1974

AUSTRALIAN ANGLO AMERICAN LIMITED

Melbourne

Incorporated in the State of Victoria

AUSTRALIAN ANGLO AMERICAN LIMITED

COMSTAFF PROPRIETARY LIMITED

ARTHUR RIVER AREA
EXPLORATION LICENCE 5/63
REGIONAL AND DETAILED EXPLORATION
1973/74 SUMMER FIELD SEASON

1. INTRODUCTION

1.1. Location

The section of the Arthur River drainage system covered during the summer exploration programme is located about four miles north of Waratah in the north central sector of Exploration Licence 5/63.

1.2. Access

Access during the season was provided by helicopter, using the road near the Wandle River bridge and camp site as a helipad. A helipad was also cut on the base line of Grid E for access to that grid.

Permission was obtained from Associated Forest Holdings to use the access road from the Waratah Highway to the Arthur and Wandle Rivers, and to use their huts at the Wandle River bridge for messing.

1.3. Physiography

All the grid areas explored are relatively thickly forested. Grid E is covered by open myrtle country for the major part. Other grids are thickly forested with horizontal vegetation. Geological outcrop is very poor. Most outcrop is located in creek beds.

1.4. Previous Work

During the 1972/73 summer field season all rivers and creeks in the area were stream sediment sampled at 500 feet intervals and 100 feet upstream of confluences. In this way anomalous sections of the Arthur River drainage area were delineated for further exploration.

Rivers and creeks in the northern half of the area and the northern part of the Wandle Road were mapped geologically during that season.

.... 2

From this phase of exploration five parts of the total area were found to be geochemically anomalous and hence worthy of further exploration. These parts are referred in this report as Grids A, B, C, D, and E.

2. WORK DONE DURING CURRENT PROGRAMME

2.1. Geology

The geology of rivers and creeks in the southern part of the Arthur River was mapped. The Wandle Road, extended approximately 2500m south, was surveyed and the geology mapped. A new logging access road, Munday's Road, follows the Wandle River to the east. It was surveyed and the geology mapped. All the regional geology was plotted at scale 1:10 000. All cut lines on the five grids sited over geochemically anomalous areas were geologically mapped.

2.2. Soil Sampling and Grid Cutting

Over each of the five geochemically anomalous areas a metric soil sample grid was cut. Base lines were cut on magnetic north-south bearing. East-west (magnetic) grid lines were cut every 100m along the north-south base line. Soil samples were taken every 20m along the grid lines. Soil samples were dried and sieved at Waratah to obtain the minus 80 mesh fraction. They were then despatched to the Australian Mineral Development Laboratories in Adelaide for analysis by A.A.S. for copper, lead, zinc, nickel and barium.

3. RESULTS OF WORK DONE

3.1. Regional Geology

Cambrian sediments (and basaltic lavas of suspected Cambrian age - Grid E) form the greater portion of rocks of the Arthur River area. Folding of these rocks is complex although the general strike trend is north-south with an easterly dip.

In the northern portion a number of north-east and north-west trending joints are hosts for dolerite dykes. Ultrabasic intrusives, ranging from gabbros and serpentinites to norites, crop out through the area.

To the north-east of the Arthur River area suspected flat lying Permian sediments unconformably overlie the Cambrian rocks.

A flat lying dissected Tertiary basalt plateau unconformably overlies rocks to the east of the Arthur River.

.... 3

3.1.1. Cambrian Sediments

These sediments form the major rock type of the area. They consist of chocolate and grey coloured mudstones, micaceous sandstones and greywackes, brown siltstones, coarse grained quartzites, argillaceous cherts, with minor shales and minor pebble conglomerates in a mudstone matrix. These rocks are believed to have been deposited during the initial stages of formation of a geosyncline.

3.1.2. Permian Sediments

These were not encountered during the current phase of exploration. For a description refer to Section 2.3. of the 1972/73 summer field season report.

3.1.3. Igneous Activity

Basic and ultrabasic rocks intrude the older sediments in the Arthur River area. Tertiary basalt lavas overlie much of the country east of the Arthur River.

3.1.3.1. Cambrian Basalt Lavas

These are seen in the Cambrian sediments of Grid E. Outcrop is too poor to determine their relationship to the sediments but they are considered basaltic lavas extruded during sediment deposition. For further comments refer Geology, under section on Grid E.

3.1.3.2. Peridotites, Serpentinite

Serpentinites are exposed in the north-east of the Arthur River area along Munday's Road and in the central part along the Wandle Road in the Deep Gully Creek area.

The serpentinites in the central Wandle Road region are complexly interlensed and folded with sediments. Varying degrees of serpentinisation are evident, ranging from virtually unaltered coarse grained gabbros and peridotites interlaced with chrysolite veinlets, to serpentinites consisting almost entirely of secondary chlorites, the result of weathering and alteration of non-aluminous magnesium silicates. Manganese showing is seen on joints along with much slickensiding and shearing.

.... 4

Weathering results in ovoid spheroidal "pods". The serpentinites range from massive plug-like intrusives to thin sill-like lenses. Adjacent chocolate mudstones show intense shearing and contortion on the contact with the ultrabasics. Chill hardening of the mudstone has produced a flint-like cherty rock.

3.1.3.3. Dolerite Dykes

In the north-east section of the Arthur River area a series of sub-parallel north-east trending dolerite dykes are seen. They appear to be emplaced along old joint fracture zones.

Air photo interpretation suggests the period of intrusion of these coarse grained dolerite dykes to post date the intricate folding of the sediments, but predate the Tertiary basalt lava extrusions. They extend south-west to the Arthur River.

Minor outcrops of dolerite are seen in the Deep Gully Creek area but lack of "in situ" outcrop precludes comment on their character of intrusion.

3.1.3.4. Gabbro/Norite

In the southern portion of the area centred at Robinson Creek an outcrop of a massive basic coarse grained intrusive rock occurs, referred to as a gabbro/norite. The homogeneous rock has a high percentage of feldspar, no visible quartz, and abundant ferromagnesium minerals. It lies in an area shown to contain nickel anomalies. Minor jointing is seen throughout the rock. In one location, in Horizontal Creek, a hornfelsed mudstone contact with the norite is seen.

3.1.3.5. Tertiary Basalt Cover

The high country to the east of the Arthur River is capped with a sheet of Tertiary basalt. On the southern portion of Grid E, basalt outlier remnants of the basalt sheet are seen.

.... 5

3.1.4. Metamorphism

Metamorphism in the areas mapped is of a low order. Load metamorphism during burial and subsequent diagenesis is shown by the mica flakes in the shales and siltstones. Contact metamorphic oreoles are seen between serpentinites and the gabbro/norite complex with the intruded sediments.

3.1.5. Structure

The overall general structure of the Arthur River area consists of sediments striking north to north-east, and dipping 45-60° to the east. However, minor folding is abundant resulting in a complex pattern of synclines and anticlines.

3.1.6. Mineralization

During both the regional and detailed geological mapping, exposures indicative of possible economic mineralization have been observed.

A number of carbonaceous shale samples from Grids A and E were sent for assay. On field examination they contained fine disseminations of pyrite. However, the assay results for elements such as copper, lead and zinc were disappointing.

Minor pyrite crystals were seen in the gabbro/norite and also in dolerite.

3.2. Detailed Geology and Geochemistry of Grids

3.2.1. Grid A

3.2.1.1. Geology

Miogeosynclinal sediments strike north to north-west and dip to the east. They are intruded by north-east trending dolerite dykes.

1.1. Sediments

The sediments consist of conglomeratic mudstone to the west, overlain by micaceous sandy siltstones, mudstones, fractured brecciated pyritic chert, medium grained sand-stone, tuffaceous siltstone, and finely laminated shales. The sandstone shows muscovite flakes along the bedding plane resulting from low grade metamorphism.

.... 6

1.2. Igneous Rocks

Medium grained dolerite dykes are discordant to the sediments. They appear to have intruded the sediments prior to folding as the dolerite trends vary from north-west in the north-west of the grid to north-east elsewhere. Topographic highs are attributable to dolerite.

3.2.1.2. Geochemistry

Copper, nickel, barium and zinc values have been plotted on a grid layout and contoured according to natural populations established from cumulative frequency plots. Lead values were too erratic to be of assistance. Rock sample assays are shown in Table A3.

3.2.1.3. Mineralization

No mineralization approaching possible ore grade was seen. Pyrite filled fracture zones in a brecciated black chert (TB 205). A very heavy graphitic shale (TB 207) was assayed showing 80 ppm lead. No sulphides were visible.

3.2.1.4. Conclusions

The geochemical copper, nickel and, to a lesser degree, zinc anomalies are attributable to dolerite dykes intruded into sediments. A very minor proportion of the copper in the anomaly may be attributable to sediments.

3.2.1.5. Recommendations

No further work should be done on the grid; the anomaly is explained by the dolerite intrusive dykes.

.... 7

TABLE A1 - GEOCHEMICAL ANOMALIES - GRID A

Element	Geochemical range ppm	Cumulative Frequency Plots		Correlation with Other Elements	Correlation with Interpretative Geology
		Populations	Definition of Population		
Copper	2 - 140	A. >66 ppm B. <66 ppm	Good Good	Nickel - very good Zinc - where anomalous, very good. Barium - poor to absent.	Excellent - suggests the copper anomaly attributed to dolerite dykes.
Nickel	5 - 240	A. >140 ppm B. 85-140 "	Good Good	Copper - very good. Zinc - where anomalous, very good. Barium - poor to absent.	Excellent - suggests the nickel anomaly attributed to dolerite dykes.
Zinc	2 - 120	A. 100 ppm B. 80-100 " C. 40-80 " (not contoured)	Poor Poor Good	Copper - where zinc anomalous, correlation good. Nickel - correlation good. Barium - absent.	Average - correlation present using populations at cut off grades 80, 100 ppm - suggests zinc attributed to dolerite dykes.
Barium	12 - 210	A. > 85 ppm B. < 85 ppm	Good Good	No correlation with other elements.	Poor - absent - suggests distribution very erratic, both from sediments and dolerite.

TABLE A2 - CORRELATION TABLE - GRID A

	Copper	Nickel	Zinc	Barium	Interpretative Geology
Copper	-	B	B	C	A
Nickel	B	-	(B) C	D	A
Zinc	B	(B) C	-	D	B - C
Barium	C	D	D	-	C - D
Interpretative Geology	A	A	B - C	C - D	-

REFERENCE - CORRELATION TABLE

A	90 - 100%	Excellent
B	60 - 90%	Above average
C	30 - 60%	Slight correlation only
D	0 - 30%	Absent to slight

TABLE A3 - ROCK SAMPLE ASSAYS - GRID A

Reference No.	Co-ordinates	Rock Type	Element Content - ppm										
			Co	Ni	Cr	V	Mn	Cu	Pb	Zn	Sn	Ag	Ga
TB 205	0.8W/0.0N	Black fractured pyritic chert	30	50	120	10	200	10	5	-	-	0.1	-
TB 207	0.4W/0.0N	Very heavy black graphitic shale	10	20	20	20	30	50	80	-	3	0.3	10

3.2.2. Grid B

3.2.2.1. Geology

1.1. General: Topography and Outcrop

A break between photo runs prohibits air photo interpretation of any major structures or lineaments. The topography to the west is very flat, consisting of deep swampy humus and very thick horizontal vegetation. To the east and south of the grid outcrop is better although logging debris covers much of the ground.

1.2. Sediments

Sheared sediments occur to the east and south of the grid. They include argillites, quartzites, metasiltstones and graphitic shales.

1.3. Igneous Rocks

Serpentinite float occurs to the south of the grid. The float is believed to originate from small serpentinite lenses trending northeast, intruded into sediments and adjacent to a dolerite dyke. To the north on line 3.0N a serpentinite contact may be present but poor outcrop prevents confirmation. A suspected Tertiary basalt feeder (or contact) is seen in the quarry beside the Wandle bridge. It is in contact with very sheared graphitic shales, metasiltstones and brown argillites. The Tertiary basalt feeder may contribute to the geochemical anomaly in the immediate vicinity. The boundary of this Tertiary basalt feeder remains indistinct due to logging and quarry debris.

A dolerite dyke is believed to crop out on either side of the most westerly southern serpentinite lens. The outcrop area or trend cannot be delineated due to thick humus and swamp.

.... 11

3.2.2.2. Geochemistry

Copper, nickel, zinc and barium values have been plotted on a grid layout and contoured according to natural populations established from cumulative frequency plots. Lead values are too erratic to be of assistance. Results are summarised in Tables B1 and B2. Rock sample assays are shown in Table B3.

TABLE B1 (next page)

.... 12

TABLE B1 - GEOCHEMICAL ANOMALIES - GRID B

Element	Geochemical range ppm	Cumulative Frequency Plots		Correlation with Other Elements	Correlation with Interpretative Geology
		Populations	Definition of Population		
Copper	5 - 440	A. > 240 B. 190-240 C. 80-190	Average - good.	Nickel - general correlation only. No specific correlation between populations. Zinc - very good correlation especially Pop.A zinc with Pop.A copper. Barium - poor, if any. Suggests the Pop.A and B of copper directly attributable to intrusives.	GOOD - approximate generalisation Pop.A correlates with dolerite dykes or basalt feeders, Pop.B correlates with sediments on contact of basic intrusives.
Nickel	5 - 170	A. ≥ 145 B. 60-145	Very good.	Copper - general correlation only. Suggests both from intrusives. Zinc - poor correlation. Very general only. Barium - B-C correlation. Unusual relationship. Suggest one affects the other in soil geochemistry.	GOOD - correlates with approximate locations serpentinite lenses and dolerite dykes.
Zinc	5 - 340	A. 220 B. 180-220	Good. Unusual curve.	Copper - very good correlation especially Pop.A copper with Pop.A zinc. Nickel - poor correlation. Barium - poor correlation.	GOOD - correlates with both intrusives and adjacent sediments on contact (Pops.A and B).
Barium	18 - 200	A. 190 B. 95-190	Good. Unusual curve.	Copper - poor. Suggests majority of copper attributable to intrusives. Nickel - B-C correlation. Unusual relationship. Zinc - poor correlation.	POOR - virtually no correlation except general NE trend. Suggests logging activity disturbed anomaly.

TABLE B2 - CORRELATION TABLE - GRID B

	Copper	Nickel	Zinc	Barium	Interpretative Geology
Copper	-	B - C	A - B	C	B
Nickel	B - C	-	D	B - C	B
Zinc	A - B	D	-	C - D	B
Barium	C	B - C	C - D	-	C - D
Interpretative Geology	B	B	B	C - D	-

REFERENCE - CORRELATION TABLE

A	90 - 100%	Excellent
B	60 - 90%	Above average
C	30 - 60%	Slight only
D	0 - 30%	Absent to slight

.... 14

TABLE B3 - ROCK SAMPLE ASSAYS - GRID B

Reference No.	Co-ordinates	Rock Type	Element content - ppm (important ones only)				
			Cu	Pb	Zn	Ni	Ba
TB 244	Quarry-Wandle Rd.	Limonite stained "gossanous" sheared ultrabasic?	750	15	400	42	170
TB 245	as above	Basalt on sediment contact.	200	38	190	60	50
TB 246	as above	Highly sheared graphitic shale.	110	22	150	35	42

3.2.2.3. Mineralization

An isolated sample of pyrite in graphitic sheared shale was seen in the quarry.

3.2.2.4. Conclusions

The geochemical trends appear erratic in correlation among elements. Too many unresolved factors remain in the correlation. Logging and roading activity (e.g. serpentinite rocks as base road packing material) appear the major factor of contamination. Logging activity has also obscured base rock outcrop and spread existing rock float out of situ.

There appears no clear cut trend in the anomalies of the four elements contoured. For example, the copper, zinc, and nickel could be attributed to one of four rock types, namely:

a) sediments
b) serpentinite lense
c) dolerite dyke
d) Tertiary (?) basalt intrusive as in quarry.

It appears that dolerite dykes cut northeast across serpentinite and sediments. A Tertiary basalt "feeder"(?) causes severe structural distortion (shearing etc.) in the region surrounding the quarry. If economic mineralization is present in the area covered by the grid it will be:

a) very small (C 600m) in linear extent and likely to be on a contact zone only.

b) very difficult to find, delineate (due to surface and geochemical contamination) and very difficult to determine its character.

3.2.2.5. Recommendations

The anomalous sample TB 244 indicates the geochemical anomalies to be due to basalt. Additional work on the grid will be dependent on work done on Grid E and the Heazlewood area.

.... 16

3.2.3. Grid C

3.2.3.1. Geology

1.1. General; Topography

To the north-east and south-west the country is relatively steep with a humus and Tertiary basalt float cover. In the central zone, south-east to north-west the country is flat but with thick horizontal vegetation.

Much logging activity has caused contamination in soil samples. Logging debris and road construction has obscured rock outcrop and float cover and introduced and dispersed foreign material in the area (for example, the serpentinite road base material under the Munday's Road).

Air photo inspection reveals little about structure except for the presence of north-east trending dolerite dykes.

Interpretative geology is based mainly on float evidence and extrapolation of the general northern trend of sediments.

1.2. Sediments

The sediments include quartzites, brecciated cherts, coarse grained siltstone, quartzitic conglomerates and chocolate mudstones. They generally strike north and dip steeply to the east.

1.3. Igneous Rocks

A series of dolerite dykes is believed to trend north-east, but the only field exposure consists of isolated patches of dolerite float. As mentioned above, air photo interpretation suggests the presence of the dykes.

The contact of sediments with serpentinite in the extreme north-west of the grid is suggested by siliceous chocolate mudstones and correspondingly high nickel values. However, the rocks were float in the swamp amid thick horizontal vegetation.

.... 17

Tertiary basalt float covers a large portion of the grid and is believed to add further confusion to the geochemical anomaly pattern.

3.2.3.2. Geochemistry

Copper, nickel, zinc and barium values have been plotted on a grid layout and contoured according to natural populations established from cumulative frequency plots. Lead values are too erratic to be of assistance. Results are summarized in Tables C1 and C2.
Rock sample assays are shown in Table C3.

(Tables on following pages)

TABLE 6 - GEOCHEMICAL ANOMALIES - GRID C

Element	Geochemical range ppm	Cumulative Frequency Plots: Populations	Cumulative Frequency Plots: Definition of Population	Correlation with other elements	Correlation with Interpretative Geology
Copper	8 - 290	A. > 200 B. 100-200	Average	Barium - No correlation - suggests copper not from sediments. Nickel - very poor, except to the west on lines 2S and 3S. Unusual lack of correlation even though suspected dolerite dykes. Zinc - A to west on lines 3S and 2S. B-C overall - suggests attributed to sediments.	INDISTINCT - in NE portion of grid, the copper has no corresponding nickel anomaly therefore attributed to Pop.B sediments. In south and west of grid Pop.A attributed to dolerite dykes and possibly Pop.B to sediments.
Nickel	5 - 200	A. > 160 B. 110-160	Average	Copper - comments as above. Zinc - D - no correlation. Barium - B-C correlation. Unusual relationship - see Section 4, Conclusions.	GOOD - suspect both populations attributed to dolerite dykes (air photo interpretation only) - not attributed to sediments.
Zinc	15 - 300	A. > 200 B. 95-200	Good	Copper - comments as above. Nickel - D - no correlation. Barium - C - poor correlation.	POOR - possibly due to poor rock exposure.
Barium	18 - 470	A. > 85	Very poor	Copper - no correlation. Zinc - C - poor. Nickel - B-C see comments above.	POOR - anomaly occurs with both sediments and dolerite dykes (may be due to sedimentary float over dyke ?) - indistinct in distinguishin sediments and dykes.

TABLE C2 - CORRELATION TABLE - GRID C

	Copper	Nickel	Zinc	Barium	Interpretative Geology
Copper	-	C	A - C	D	C
Nickel	C	-	D	B - C	B
Zinc	A - C	D	-	C	C
Barium	D	B - C	C	-	C
Interpretative Geology	C	B	C	C	-

REFERENCE - CORRELATION TABLE

A	90 - 100%	Excellent
B	60 - 90%	Above average
C	30 - 60%	Slight only
D	0 - 30%	Absent, slight

.... 20

TABLE C3 - ROCK SAMPLE ASSAYS - GRID C

Reference No.	Co-ordinates	Rock Type	Element Content - ppm				
			Cu	Pb	Zn	Ni	Ba
TB 242	3.0S/0.9W	Limonite stained chert (feeder from dolerite or serpentinite?)	28	10	30	20	38
TB 243	1.0S/0.2W	Tertiary basalt float - for comparison with soil geochemistry	48	12	55	130	10

3.2.3.3. Mineralization

No mineralization was seen during the mapping of the grid.

3.2.3.4. Conclusions

Poor exposure of rock outcrop and the dispersion of float by logging operations is disappointing. Consequently, geochemical correlation is not clear and can be attributed to a combination of four sources, namely:

1. Tertiary basalt float,

2. Sediments (predominantly chocolate mudstones and quartzites),

3. North east trending dolerite dykes,

4. Serpentinites (road base material).

The cumulative frequency plots should indicate four distinct populations but due to mixing of the populations they are indistinguishable.

As for Grid B, if economic mineralization is present in sediments it will be small in linear extent (C 200m for the western lines 2S and 3S anomaly) and likely to be confined to a contact zone.

3.2.3.5. Recommendations

A 100m long east-west costean should be dozed on line 2S between baseline and 1.0W, to determine the character of the rocks causing the high copper and zinc anomalies. Should this show no encouraging mineralization no further work should be done on the area.

3.2.4. Grid D

3.2.4.1. Geology

Miogeosynclinal sediments, striking NNE to NE and dipping east are obscured to the south and north east by Tertiary basalt float and outcrop.

1.1. Sediments

Two types of sediment were noted during grid mapping, namely a jointed chert and a micaceous

.... 22

siltstone. It is believed the sediments continue north east and south under the basalt float. Outcrop is poor and the interpretation is based on mapping residual(?) float.

1.2. Igneous Rocks

A Tertiary basalt plateau obscures sediments to the east. Float from this plateau obscures sediments to the south of the grid.

3.2.4.2. Geochemistry

Copper, nickel, zinc and barium values have been plotted on a grid layout and contoured according to natural populations established from cumulative frequency plots. Lead values were too erratic to be of assistance.

Results are summarized in Tables D1 and D2. Rock sample assays are shown in Table D3.

.... 23

TABLE D1 - GEOCHEMICAL ANOMALIES - GRID D

Element	Geochemical range ppm	Cumulative Frequency Plots		Correlation with other elements	Correlation with Interpretative Geology
		Populations	Definition of Population		
Copper	5 - 90	A. > 41 B. 41- 54	Average	Zinc - very good in basalt float - absent in sediments. Nickel - very good in basalt float - absent in sediments. Barium - very good in basalt float - poor in sediments.	POOR - no obvious pattern with contacts, possibly enriched bands within chert beds. Possible trend under basalt float discordant to trend of sediments.
		C. 30- 41	Average		
Nickel	5 - 290	A. > 150 B. 70-150 C. 40- 70	Good	Copper - very good in basalt float - absent in sediments. Zinc - very good in basalt float - absent in sediments. Barium - very good in basalt float - poor in sediments.	POOR - same comments as above.
Zinc	5 - 170	A. > 120 B. 50-120	Good	Copper - very good in basalt float - absent in sediments. Nickel - very good in basalt float - absent in sediments. Barium - very good in both sediments and basalts.	POOR - no obvious pattern with contacts. Possible trend under basalt float discordant to trend of sediments.
Barium	0 - 200	A. 80 B. 40- 80	Average	Copper - very good in basalt float - poor in sediments. Nickel - very good in basalt float - poor in sediments. Zinc - very good in both sediments and basalts.	INDISTINCT - with both sediments and basalts. No clear trends indicated. Possible correlation with two chert bands in north west of grid.

TABLE D2 - CORRELATION TABLE - GRID D

	Copper	Nickel	Zinc	Barium	Interpretative Geology
Copper	-	B - basalt D - sediments	B - basalt D - sediments	B - basalt C - sediments	C - D
Nickel	B - basalt D - sediments	-	B - basalt D - sediments	B - basalt C - sediments	C - D
Zinc	B - basalt D - sediments	B - basalt D - sediments	-	A - B basalt/ sediments	C - D
Barium	B - basalt C - sediments	B - basalt C - sediments	A - B basalt/ sediments	-	C - D
Interpretative Geology	C - D	C - D	C - D	C - D	-

REFERENCE - CORRELATION TABLE

A	90 - 100%	Excellent
B	60 - 90%	Above average
C	30 - 60%	Slight correlation only
D	0 - 30%	Absent to slight

TABLE D3 - ROCK SAMPLE ASSAYS - GRID D

Reference No.	Co-ordinates	Rock Type	Element content - ppm				
			Cu	Pb	Zn	Ni	Ba
TB 240	1.0E/0.0N	Tertiary basalt float - assay to be compared to soil geochemistry	50	5	100	260	100
TB 241	1.0S/1.4E	Micaceous siltstone	28	10	90	90	55

3.2.4.3. Mineralization

No mineralization was seen during the mapping of the grid.

3.2.4.4. Conclusions

4.1. Northern NE trending indistinct Cu, Zn, Ni, Ba anomaly

This geochemical anomaly showing indistinct correlation between elements and interpreted geological boundaries is attributed to slightly enriched (?) chert bands within the sediments and to remnant basalt boulder float amid sediment scree.

4.2. Southern NW trending Cu, Zn, Ni, Ba anomaly

This anomaly occurring over an area composed predominantly of basalt boulder float, lies in a natural flood plain on a topographic low. The accumulated basalt boulders are believed to cause this anomaly. Excellent correlation is seen between all elements.

The soil geochemistry should be compared to the assay for rock sample TB 240, a Tertiary basalt boulder, for confirmation of the cause of the anomaly.

3.2.4.5. Recommendations

No further work is recommended.

3.2.5. Grid E

3.2.5.1. Geology

1.1. General; Topography

The majority of the grid covers open myrtle/manfern type country along a generally north-east/south-west aligned ridge. The highest point on the grid, the helipad, at the intersection of the baseline and line 6.0S, is at 1500 feet (accordant summit levels), with the lowest point on tributaries to the

.... 27

Arthur River at 600 feet (accordant summit levels). A walking track to the helipad has been cut from the Arthur River, west of Tobacco Road. A steeply incised drainage pattern predominates with the roughest terrain occurring north of line 4.0S and south of line 9.0S.

Outcrop ranged from the extreme in the south (massive steep rock faces in the headwaters of creeks) to poor or non-existent over the central and northern parts. Tertiary basalt float cover in the southern portion obscured what may have been sediment.

1.2. Sediments

Sediments represent a miogeosynclinal sequence including laminated mudstone/siltstone, medium grained sandstone, cherts (including an unusual jaspilitic variety), quartzites, micaceous sandstones, ferruginous mudstones, micaceous greywackes, and brown shales.

From the very small number of outcrops seen on grid lines that exhibited bedding, the sediments are interpreted as striking generally north, and dipping steeply to the east.

1.3. Igneous Rocks

i) Cambrian(?) basalt lava

A large percentage of rock outcrop encountered on Grid E consisted of "an aphanitic grey porphyritic basalt" (AMDEL petrography, 23/1/74). The rock (TB 210) is stated to contain 75% groundmass of pyroxene, plagioclase, opaques and a little dark volcanic glass. Phenocrysts consist of mildly seriticised plagioclase laths, and altered olivine grains. No flow textures were observed.

Geochemical assays (semi-quantitative spectrographic analysis) show the rock (TB 210) contains low nickel (30 ppm); high copper

.... 28.

(200 ppm); and high zinc (150 ppm). (For assay values of other elements refer Table E3). The copper and zinc values are higher than for a normal basalt and the nickel is lower than normal.

ii) Dolerite Dykes

A swarm of dolerite dykes is believed to trend north-east, across the northern part of the grid. Exposure of dolerite is very poor, and the presence of dykes is interpreted from lineations on air photos.

iii) Tertiary Basalt

Tertiary basalt float covers a large portion of the southern part of the grid. This basalt represents the remnant of the extensive Tertiary basalt plateau seen to the east and west.

The basalt is distinguished from the suspected Cambrian (?) basalt by the fresh olivine phenocrysts, round weathering character, and general medium grained texture.

1.4. Structure

Air photo interpretation reveals a number of sets of subparallel joints in the northern part of the grid - one set trends north-west, and another, believed to be the location of dolerite dykes, trends north-east.

3.2.5.2. Geochemistry

Copper, zinc, barium, lead, nickel and nickel/copper values have been plotted on a grid layout. The values for copper, zinc, lead and barium have been contoured according to natural population established from cumulative frequency plots. Results are summarized in Tables E1 and E2. Rock sample assays are shown on Table E3.

TABLE E1 - GEOCHEMICAL ANOMALIES - GRID E

Element	Geochemical range ppm	Cumulative Frequency Plots		Correlation with Other Elements	Correlation with Interpretative Geology
		Populations	Definition of Population		
Copper	20 - 370	A. > 320 B. 180-320 C. 100-180	Average	Zinc - very good correlation of all grid - grade A-B - suggest same source.	POOR - NON-EXISTENT (See Conclusions).
		D. 60-100	Good	Lead - good - grade B - suggests same source. Good over all grid.	
				Barium - good, grade B, for northern section of interpreted sediments - non-existent over TB 210 Cambrian(?) basalt outcrop. Non-existent over Tertiary basalt area in the south.	
				Nickel - very poor, grade C-D, over all the grid area; especially poor over TB 210 basalt. Suggests not from the same source.	
Zinc	8 - 670	A. > 250 B. 135-250	Poor	Copper - comments as above.	POOR - NON-EXISTENT (see Conclusions).
		B. 135-250 C. 23-135	Very good.	Lead - good over north section, interpreted as sediment, grade B. Average over TB 210 basalt C. Poor over Tertiary basalt C-D. Therefore suggests Pb, Zn, same source.	
				Barium - good over sediments B. Poor over TB 210 basalt C-D. Average/poor Tertiary basalt C.	
				Nickel - Very poor D over basalts. Average/poor over sediments C.	
Lead	5 - 300	A. > 115 B. 75-115	Excellent/ average inflection	Copper - Comments as above.	POOR - NON-EXISTENT (see Conclusions).
				Zinc - comments as above.	
		B. 75-115 C. 57- 75	Good	Barium - Poor/non-existent, grade D over TB 210 basalt. Grade B, very good to sediments in northern section of grid. Non existent Tertiary basalt grade D.	
				Nickel - very poor/non existent, grade D over basalts. Average/ poor over sediments, grade C.	
Barium	10 - 480	A. > 175 B. 70-175	Very poor	Copper - as above.	POOR - NON-EXISTENT (See Conclusions).
		C. 15- 70	Good	Zinc - as above.	
				Lead - as above.	
				Nickel - poor over sediment areas, Grade C. Very good, grade A-B over TB 210 basalt and Tertiary basalt.	
Nickel	5 - 260	A. > 118 B. 75-118	Poor	All elements - comments as above.	POOR - NON-EXISTENT (see Conclusions).
		C. 46- 75	Good		

TABLE E2 - CORRELATION TABLE - GRID E

	Copper	Nickel	Lead	Zinc	Barium	Interp-retative Geology
SEDIMENTS						
Copper	-	C - D	B	A - B	B	D
Nickel	C - D	-	C	C	C	D
Lead	B	C	-	B	B	D
Zinc	A - B	C	B	-	B	D
Barium	B	C	B	B	-	D
Interpretative Geology	D	D	D	D	D	-
BASALTS						
Copper	-	C - D	B	A - B	D	D
Nickel	C - D	-	D	C - D	A - B	D
Lead	B	D	-	C	D	D
Zinc	A - B	C - D	C	-	C - D	D
Barium	D	A - B	D	C - D	-	D
Interpretative Geology	D	D	D	D	D	-

REFERENCE - CORRELATION TABLE

A	90 - 100%	Excellent
B	60 - 90%	Above average
C	30 - 60%	Slight correlation only
D	0 - 30%	Absent to slight

.... 31

TABLE E3 - ROCK SAMPLE ASSAYS - GRID E

Reference No.	Co-ordinates	Rock Type	Element Content - ppm				
			Cu	Pb	Zn	Ni	Ba
TB 201	7N 0.65E	Pyritic quartzite	50	20	20	30	-
TB 202	10.0S 0.2E	Coarse grained granite float	10	10	<20	10	-
TB 208	15.0S 4.4E	Jaspilitic chert	10	3	<20	10	-
TB 210	5.0S 4.6E	Porphyritic Cambrian basalt	200	5	150	30	-
TB 232			120	15	300	42	160
TB 233	4.0S 1.8E	Basalt - to ascertain whether Cambrian or Tertiary	48	5	75	180	55
TB 235	4.0S 1.2E	Basalt - to ascertain whether Cambrian or Tertiary	220	10	110	50	55
TB 234	4.0S 2.2E	Tertiary olivine basalt	45	5	75	200	22
TB 236	4.0S 0.3E	Flinty "hornfelsed" chocolate mudstone on contact with TB 210 basalt (therefore suggests basaltic lava?)	42	22	80	45	170
TB 239	6.0S 1.8W	Coarse grained dolerite	150	18	48	180	250

3.2.5.3. Mineralization

Pyritic quartzite was seen immediately to the west of the base line on the northern three lines. No other occurrence of sulphide or other economically indicative mineralization was seen.

3.2.5.4. Conclusions

The geochemistry illustrates a very complex and little understood picture with respect to two factors:-

1) Complete lack of correlation with interpreted and outcrop geology.

2) Complex correlation between elements.

Nickel

The Cambrian basalt TB 210 showed a nickel content of 30 ppm yet soil values for the grid range to 260 ppm. There are two explanations:

i) The nickel forms a "laterite type" deposit containing a natural enrichment of nickel from the fresh rock.

ii) The nickel is being contributed by some other non exposed source.

This second hypothesis is supported by the relatively nickel rich Tertiary basalt (TB234) and dolerite (TB 239). The very good correlation of nickel to barium supports the hypothesis that nickel is derived from the basalt and dolerite since both have high barium contents.

Barium

Barium shows excellent correlations with copper, lead and zinc, although these latter three elements show a poor to antipathetic correlation with nickel. This might support a hypothesis that barium originates from two sources, i.e., igneous rock (correlation with nickel) and sediments (correlation with copper, lead and zinc).

Copper

Although the rock content of copper is high in the TB 210 basalt (C 200 ppm),

the copper-nickel correlation is very poor. This would further suggest the source of nickel is NOT the TB 210 basalt.

Lead

The lead-copper correlation is very good, although the lead content of TB 210 basalt is very low (5 ppm) and lead soil values range up to 300 ppm. The origin of the lead mineralization is unknown since none of the rock samples show anomalous lead content. Due to excellent correlation between all three elements, copper, lead and zinc, a portion of the copper anomaly is accordingly, with some zinc, attributed to a common source.

Zinc

Normal TB 210 basalt content of zinc is 150 ppm and the soil values range up to 670 ppm. Some of the copper-zinc correlation must be attributed to TB 210 basalt, but some also, for reasons explained under Lead, must be attributed to an unknown source.

The correlation of element contours with geology is disappointing. The copper and zinc anomalies in the north trend north-east following the line of the dolerite dykes and approximately 30° to the strike of sediments.

There is much information yet to be learned from the Grid E geology and geochemistry - the picture at present is confusing and warrants further work.

Additional work is required to trace the origin of the lead with its corresponding copper nickel and barium values. Since the geochemical anomalies do not appear to correspond with trends in the sediments but more to the photo lineations, it is possible that a shear control is present. This would be in keeping with known mineralization along the West Coast of Tasmania.

3.2.5.5. Recommendations

Detailed auger drilling or costeaning across the peaks of anomalies is required to relate the geochemical anomalies with the underlying geology.

.... 34

4. CONCLUSIONS

The stream sediment anomalies have been adequately explained by the results of the five grids which were cut and sampled.

Grid E is the most intriguing area and additional work is required. The anomalous area in Heazlewood is probably a similar situation where the high stream sediment results are derived from a Cambrian basalt.

Generally, basalts are known to give anomalous copper and zinc values but a comparison of their content in Tertiary and Cambrian basalts from this area shows a much higher content in the Cambrian basalt:

	Co	Ni	Cr	V	Mn	Cu	Pb	Zn	Sn
Cambrian basalt (Heazlewood)	30	50	100	200	1000	250	5	200	3
Tertiary basalt (Murchison Highway)	100	200	300	300	1000	100	1	50	<1

There is thus a depletion in nickel, chrome and cobalt and an increase in copper, lead and zinc. It is possible that the Cambrian basalt could be similar to that associated with the Cyprus Copper Deposit although its geosynclinal environment is against this. However, if mobilization along shears occurred viable mineral deposits may be found.

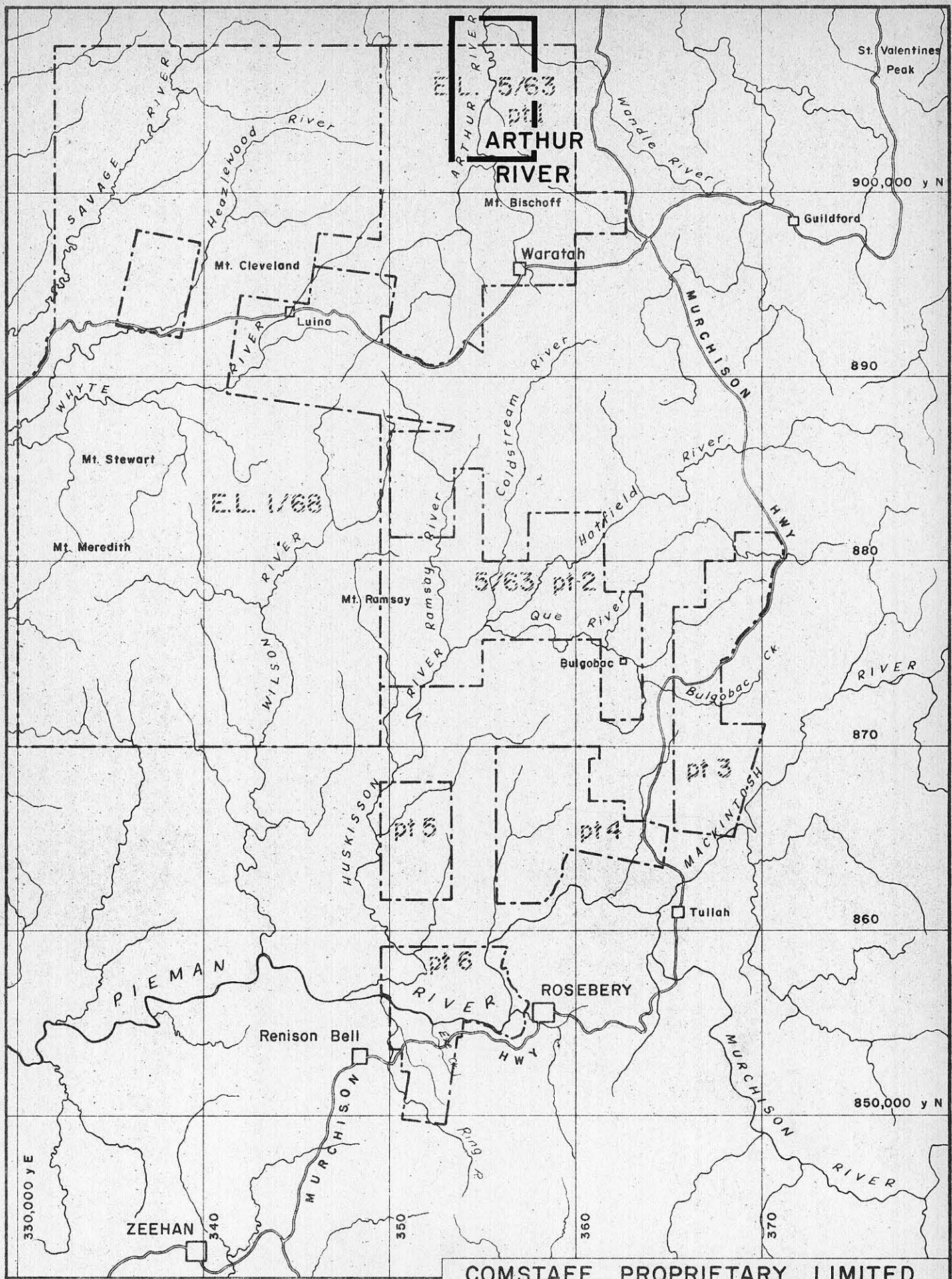
5. RECOMMENDATIONS

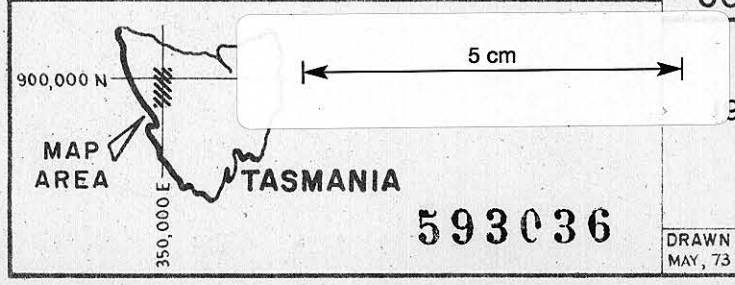
A literature search should be instigated to determine the characteristics of copper deposits associated with basalts. These characteristics should then form the basis for remapping Grid E and mapping the Heazlewood anomalies.

Author: G.Cammell (Geologist)

Approved: D.B.Orr (Senior Geologist - Tasmania)

11th June 1974.





593036

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ARTHUR RIVER

1973/74 SUMMER SEASON REPORT

LOCATION MAP

DRAWN	COMPILED	SCALE	DWG.
MAY, 73 R. Bottomley		1 : 250,000	TAS-2-690

910,000 y N

EL 1/68

EL 5/63

Cowan Ck.

RIVER

Friday Ck.

Monday Ck.

HEAZLEWOOD

Karilyn Ck.

Julie Ck.

Pete Ck.

Happy Day Ck.

ARTHUR R.

WANDLE RIVER

Dalco Ck.

Rollins Ck.

Robinson Ck.

RIVER

ARTHUR

Deep Gully Ck.

WARATAH RIVER

Persic

Silver Cliffs

Fawkners

MT. BISCHOFF

A

B

C

D

E

900,000 y N

340,000 y E

350,000 y E

360,000 y E

LEGEND

qz	Quartzite	ls	Dolomitic limestone
sa	Sandstone, quartzite	tu	Tuff
cg	Conglomerate	sp	Serpentinite
ss	Siltstone, chert	bs	Basalt
mt	Mudstone	do	Dolerite
sh	Shale	gb	Gabbro
sg	Graphitic shale	nr	Norite
gw	Greywacke	g	Granite
ch	Chert		

D — Grid area (1973-74)

Unconformity / disconformity, inferred

Outcrop boundary, inferred

Fault, inferred

Anticline, inferred

Syncline, inferred

160/75 — Strike and dip of bedding

Sa gw sh mt — Stream and track, rock outcrops

5 cm

593037

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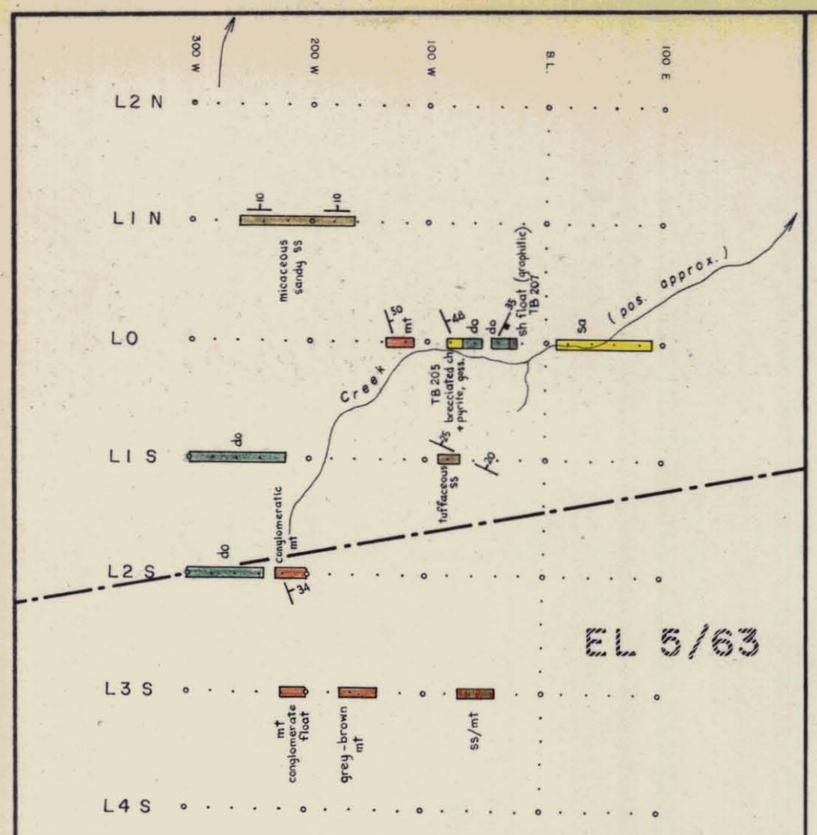
HEAZLEWOOD R. & ARTHUR R. AREAS

1973/74 SUMMER SEASON REPORT

(SHOWN COLOURED)

GEOLOGY AND GRID LOCATIONS

DRAWN	COMPILED	SCALE	DWG. No.
May 74 R. Butterworth	G.C. & W.H.	1:50,000	TAS-2-442



LEGEND

- sh — Shale
- ss — Siltstone
- mt — Mudstone
- sa — Sandstone
- ch — Chert

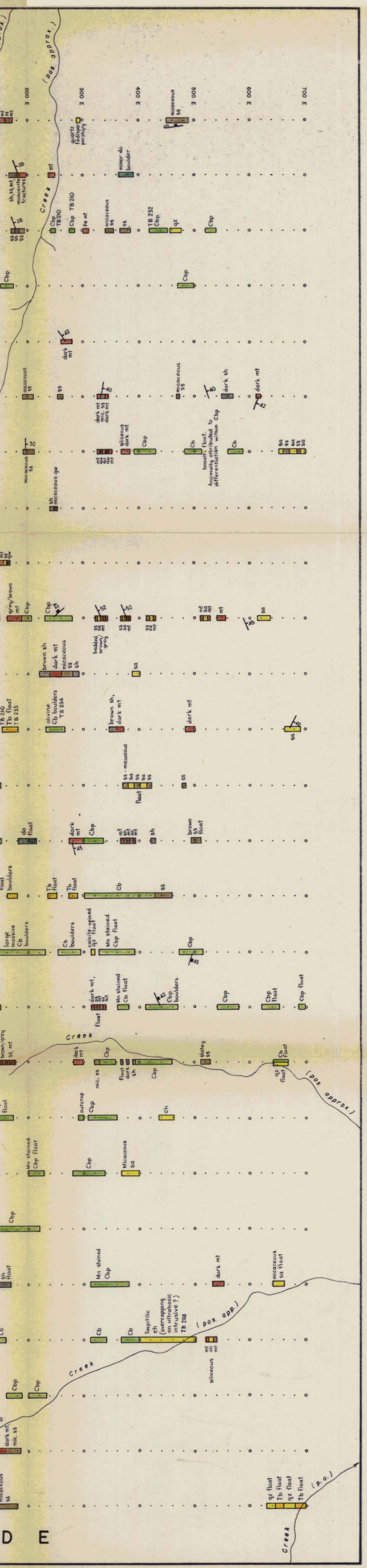
IGNEOUS

- do — Dolerite

TB 205 — Petrographic rock description available
Strike and dip of bedding
Strike and dip of jointing
Rock exposure on grid line

— -·- — Northern boundary of E.L. 5/63

INSET MAP - GRID A



LEGEND

- qz — Quartzite
- sh — Shale
- ss — Siltstone
- mt — Mudstone
- sa — Sandstone
- gw — Greywacke
- ch — Chert

IGNEOUS

- Tb — Tertiary basalt
- Cb(p) — Cambrian basalt ? (porphyritic)
- do — Dolerite

TB 202 — Petrographic rock description available
Strike and dip of bedding
Strike and dip of jointing
Rock exposure on grid line

· · · · 20 m grid — see note below
→ Drainage

NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm

TN MN

GRID E

593038

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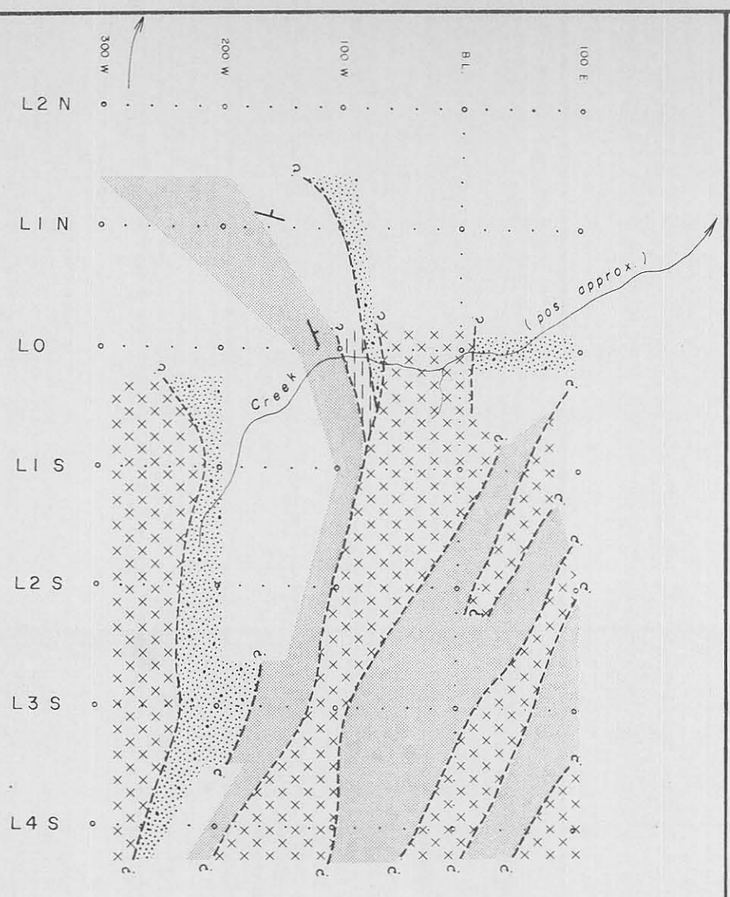
ARTHUR RIVER GRIDS A AND E

1973/74 SUMMER SEASON REPORT

DETAIL GEOLOGY

DRAWN 4-74 | COMPILED G.C. | SCALE 1 : 5,000 | TAS-2-611



LEGEND

- Sediments
- Quartzites
- Shales
- Dolerite

- Geological boundary, approx.
- Strike and dip of bedding

INSET MAP - GRID A

LEGEND

- Sediments
- Quartzites
- Tertiary basalt
- Cambrian basalt ? (porphyritic)

- Geological boundary, approx.

TN MN

- . . . . 20 m grid — see note below
- Drainage

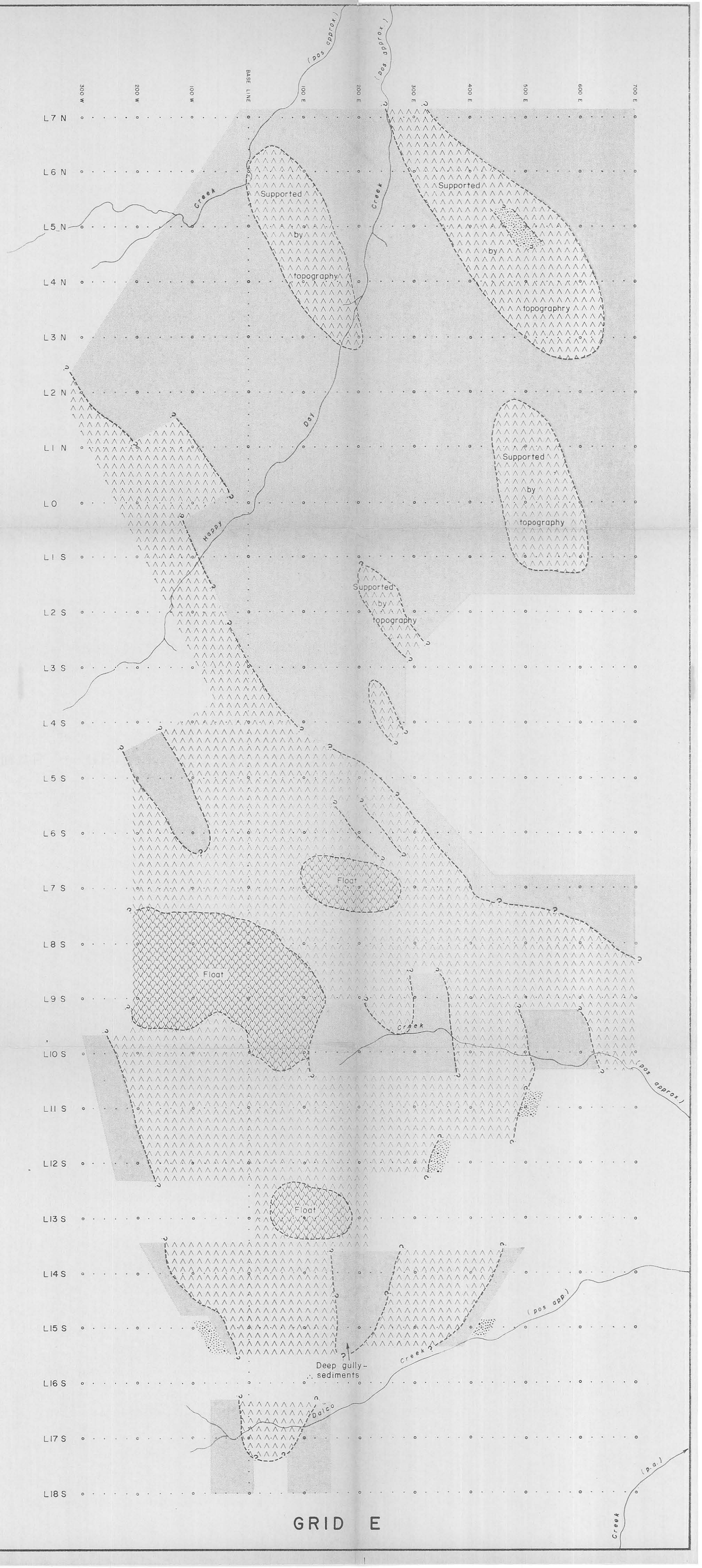
NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie, they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm



GRID E

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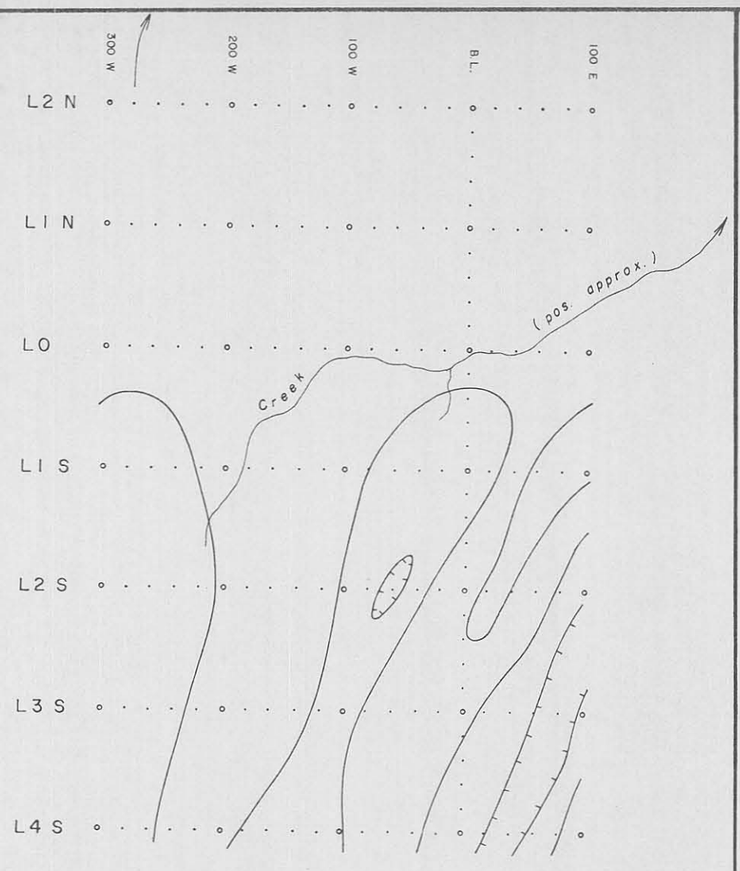
ARTHUR RIVER GRIDS A AND E

1973/74 SUMMER SEASON REPORT

INTERPRETATION GEOLOGY

DRAWN	COMPILED	SCALE	TAS-2-620
4-74 R. Battersby	G.C.	1 : 5,000	

593039

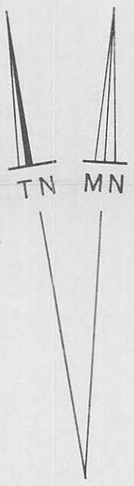


LEGEND

Pop. A, >66 ppm contour

Geochemical low

INSET MAP - GRID A



LEGEND

Pop. A, 320 ppm contour

Pop. B, 180 ppm "

Pop. C, 100 ppm "

Pop. D, 60 ppm "

Geochemical low

20 m grid — see note below

Drainage

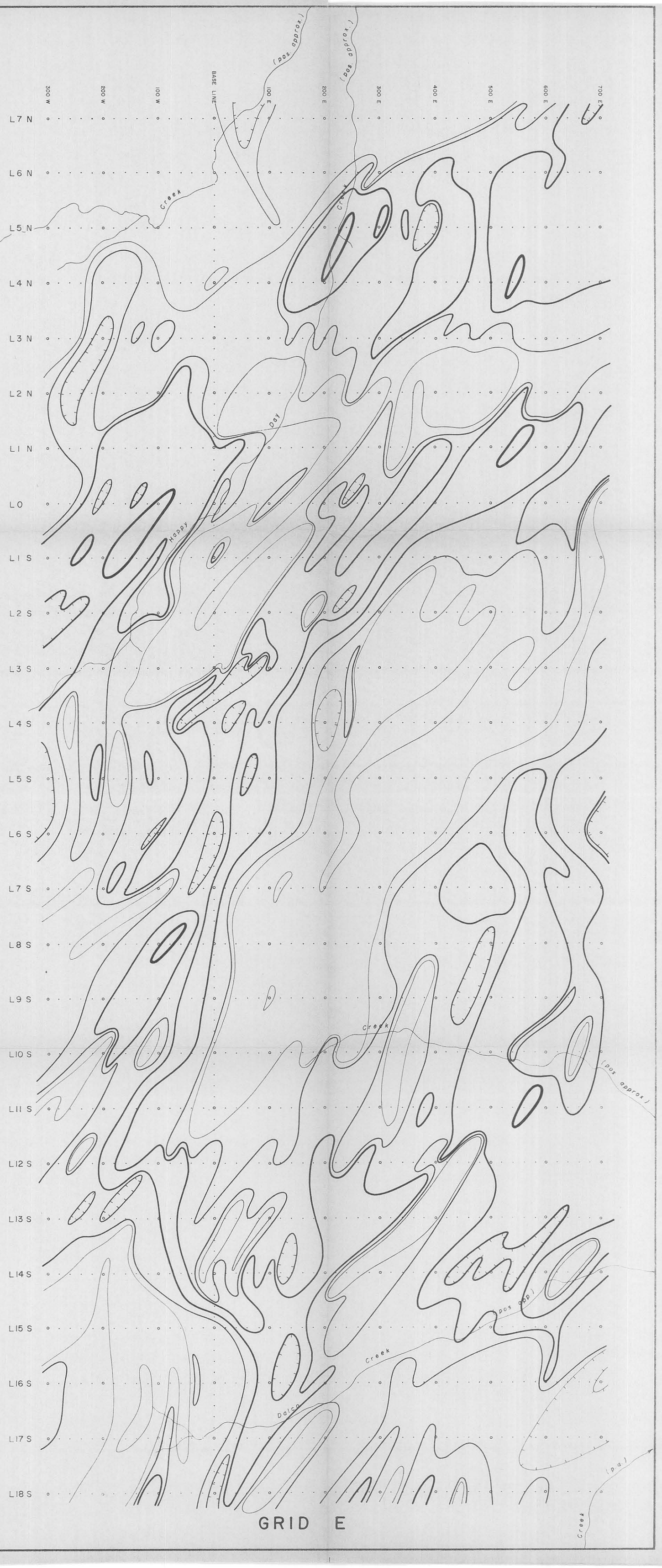
NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm



GRID E

593040

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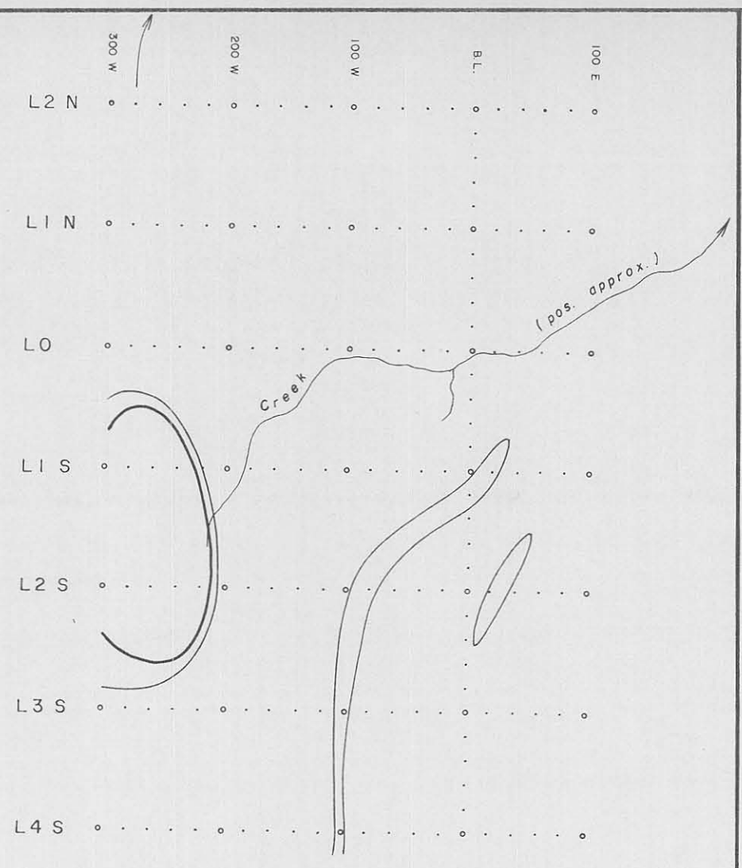
ARTHUR RIVER GRIDS A AND E

1973/74 SUMMER SEASON REPORT

COPPER - SOIL GEOCHEMISTRY

DRAWN	COMPILED	SCALE	TAS - 2 - 624
4-74	G.C.	1 : 5,000	



LEGEND

Pop. A, 140 ppm contour

Pop. B, 85 ppm "

INSET MAP - GRID A

LEGEND

Pop. A, 118 ppm contour

Pop. B, 75 ppm "

Pop C, 46 ppm "

Geochemical low

TN MN

· · · · 20 m grid – see note below

Drainage

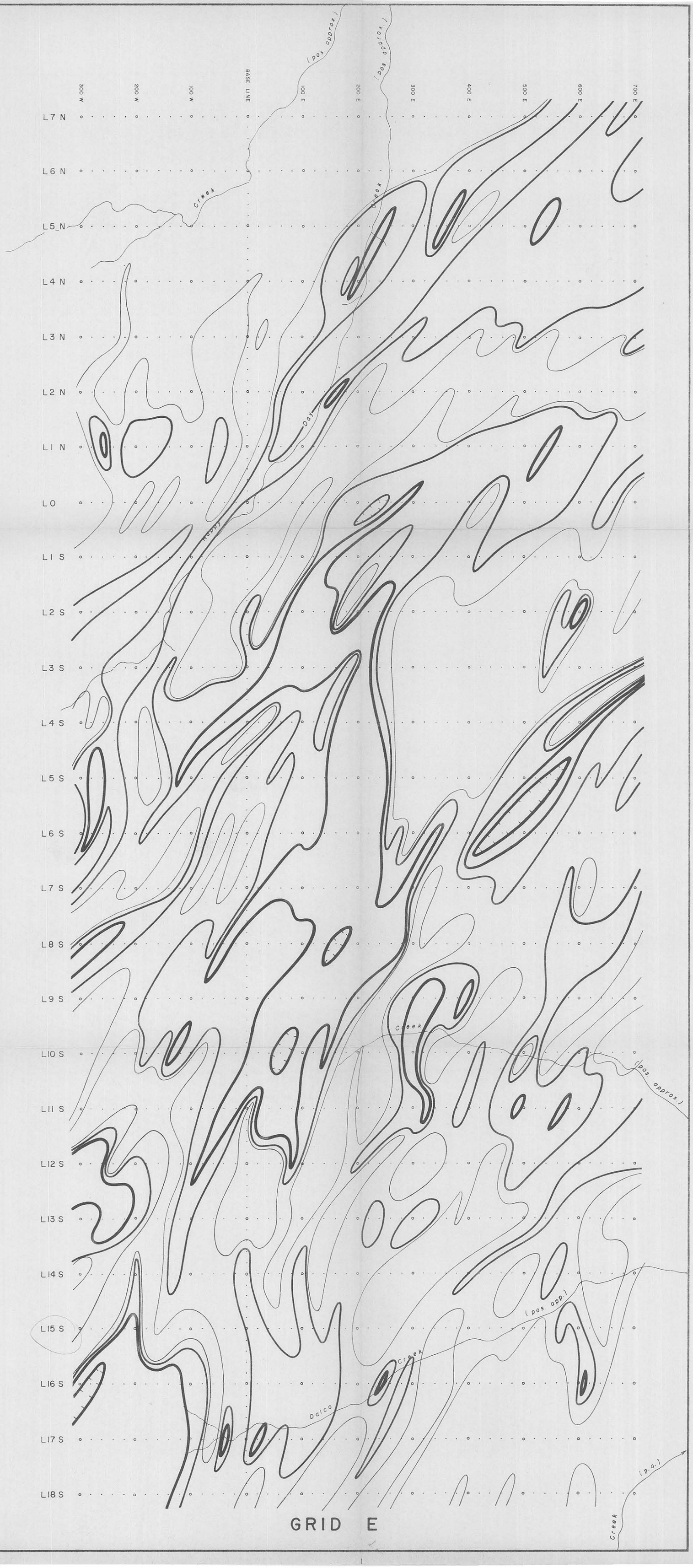
NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm



GRID E

COMSTAFF PROPRIETARY LIMITED

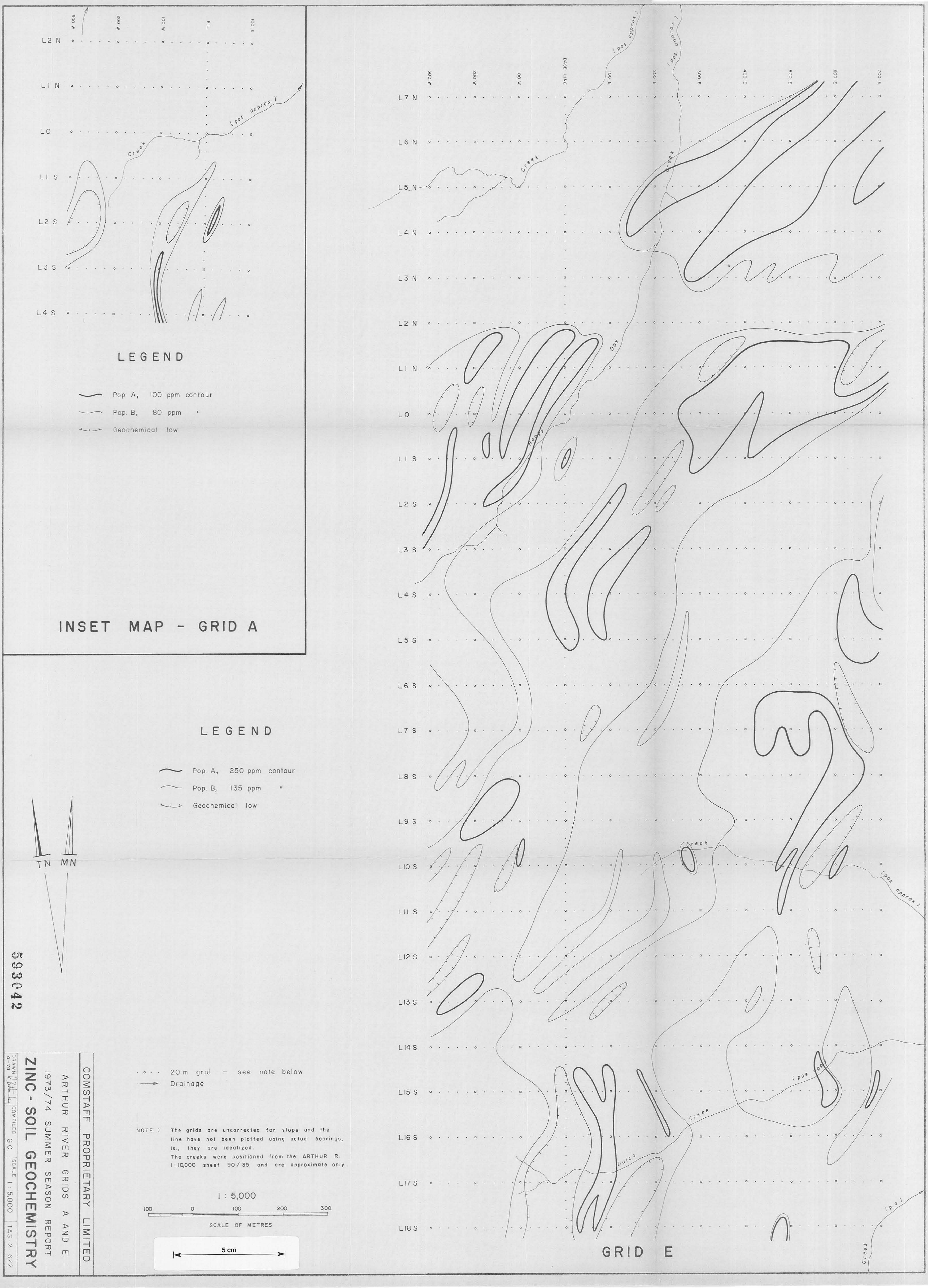
ARTHUR RIVER GRIDS A AND E

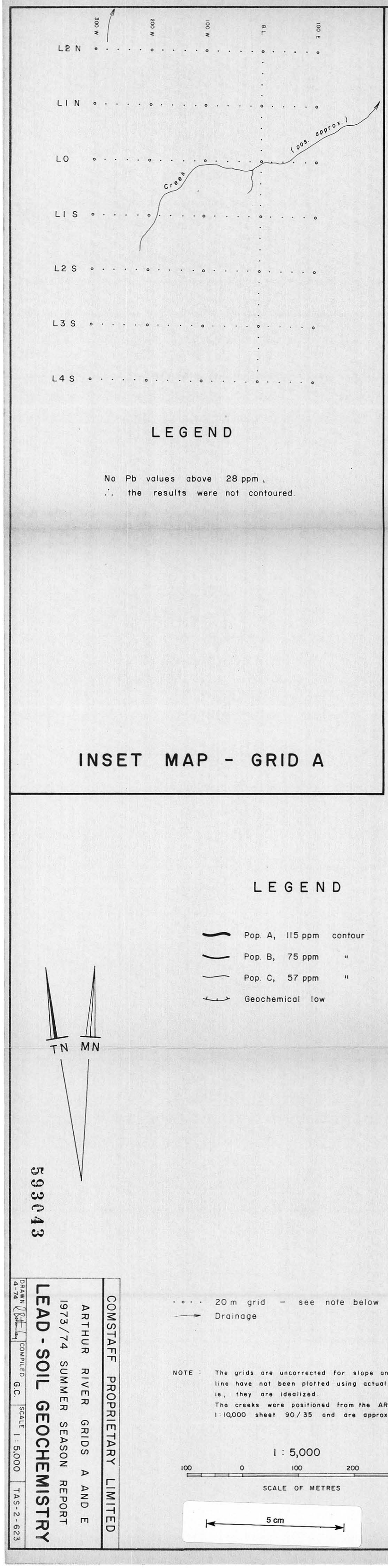
1973/74 SUMMER SEASON REPORT

NICKEL - SOIL GEOCHEMISTRY

DRAWN	COMPILED	SCALE	TAS - 2 - 625
4-74	G.C.	1 : 5,000	

593041


INSET MAP - GRID A
300 W
200 W
100 W
B.L.
100 E
L2 N
L1 N
L0
L1 S
L2 S
L3 S
L4 S
Creek
(pos. approx.)
LEGEND
Pop. A, 100 ppm contour
Pop. B, 80 ppm "
Geochemical low
LEGEND
Pop. A, 250 ppm contour
Pop. B, 135 ppm "
Geochemical low
TN
MN
20 m grid - see note below
Drainage
NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.
1 : 5,000
100
0
100
200
300
SCALE OF METRES
5 cm
GRID E
300 W
200 W
100 W
BASE LINE
100 E
200 E
300 E
400 E
500 E
600 E
700 E
L7 N
L6 N
L5 N
L4 N
L3 N
L2 N
L1 N
L0
L1 S
L2 S
L3 S
L4 S
L5 S
L6 S
L7 S
L8 S
L9 S
L10 S
L11 S
L12 S
L13 S
L14 S
L15 S
L16 S
L17 S
L18 S
Creek
Harvey
Day
Dalco
Creek
(pos approx.)
(p.a.)
COMSTAFF PROPRIETARY LIMITED
ARTHUR RIVER GRIDS A AND E
1973/74 SUMMER SEASON REPORT
ZINC - SOIL GEOCHEMISTRY
DRAWN 4-74
COMPILED G.C.
SCALE 1:5,000
TAS-2-622



LEGEND

No Pb values above 28 ppm,
∴ the results were not contoured.

INSET MAP - GRID A

LEGEND

- Pop. A, 115 ppm contour
- Pop. B, 75 ppm "
- Pop. C, 57 ppm "
- Geochemical low

TN MN

20 m grid – see note below

Drainage

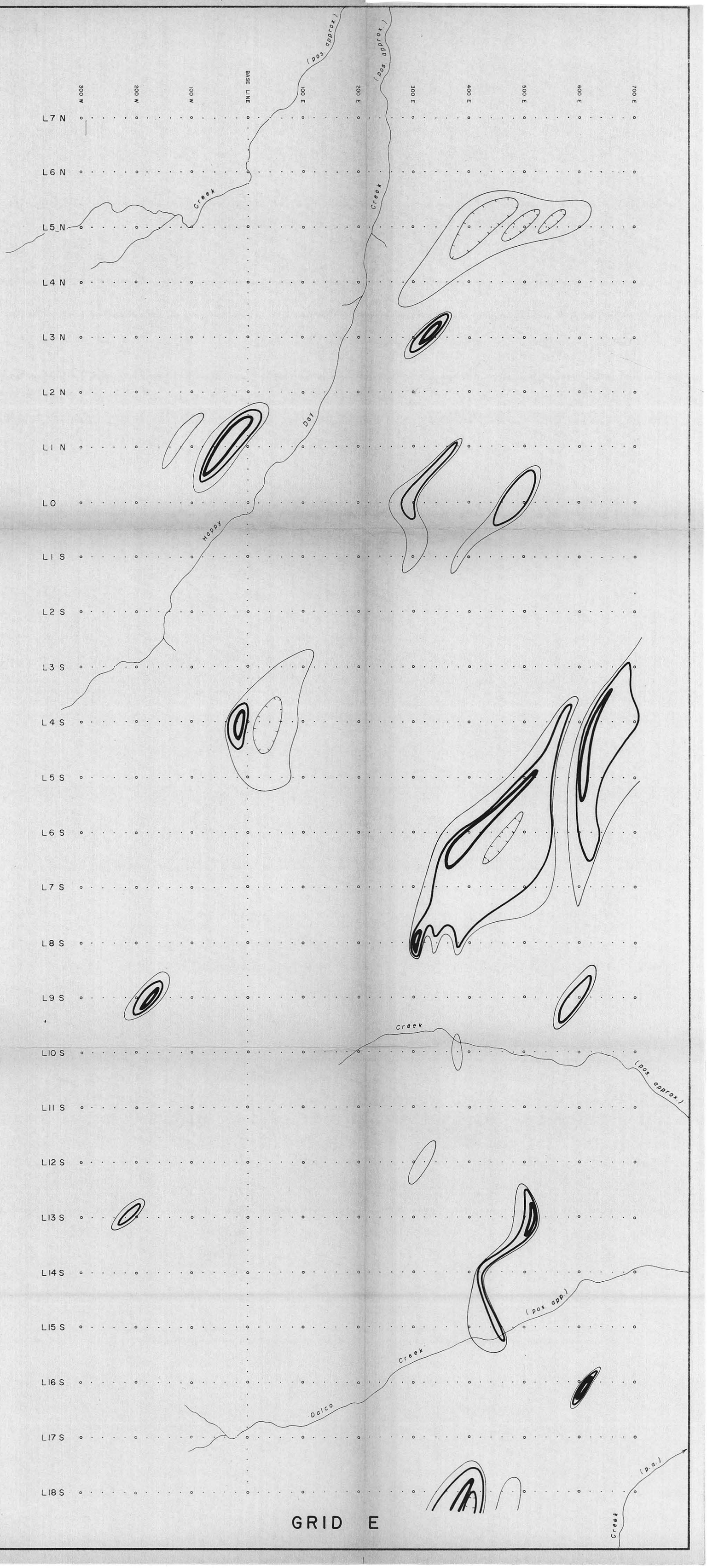
NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm



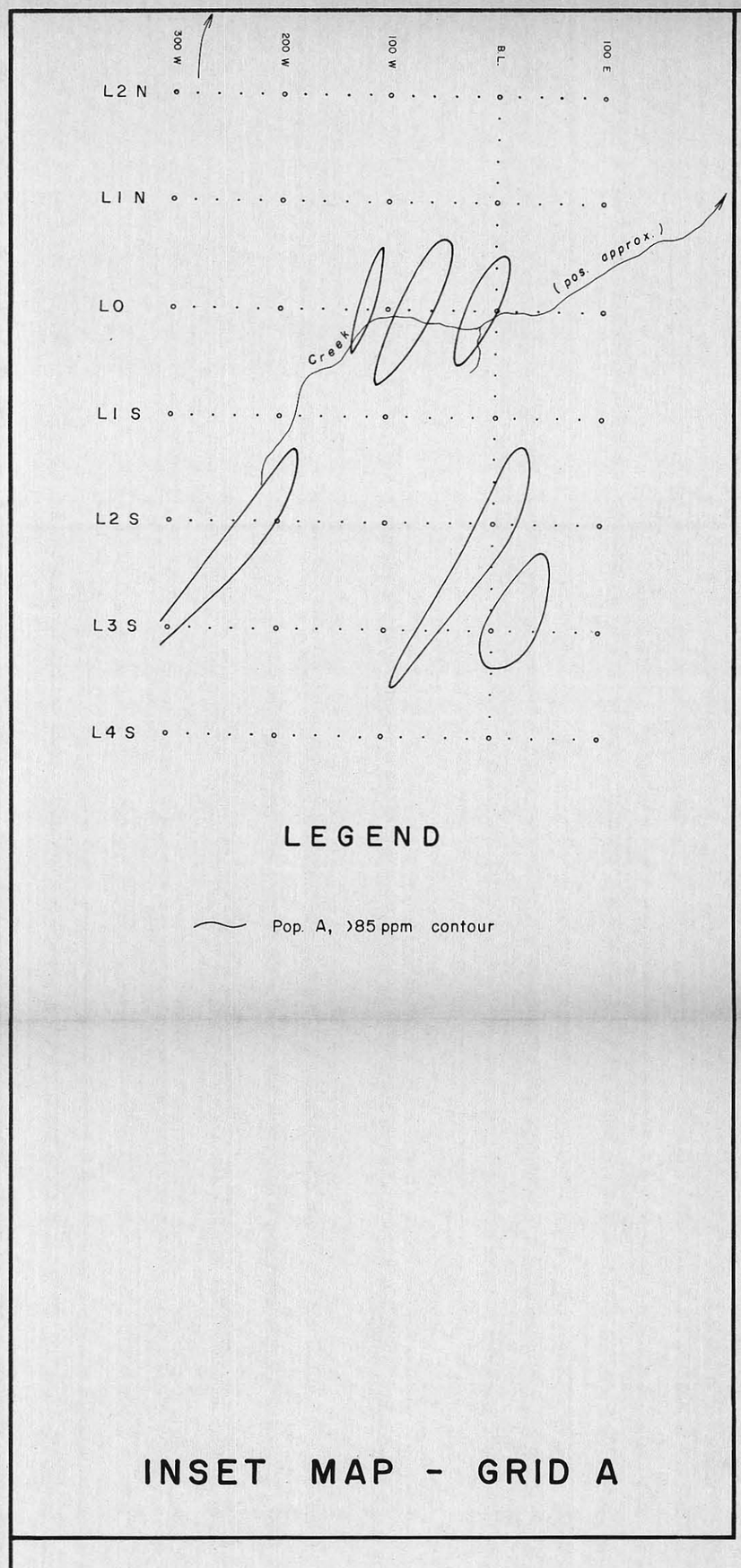
COMSTAFF PROPRIETARY LIMITED

ARTHUR RIVER GRIDS A AND E
1973/74 SUMMER SEASON REPORT

LEAD - SOIL GEOCHEMISTRY

593043

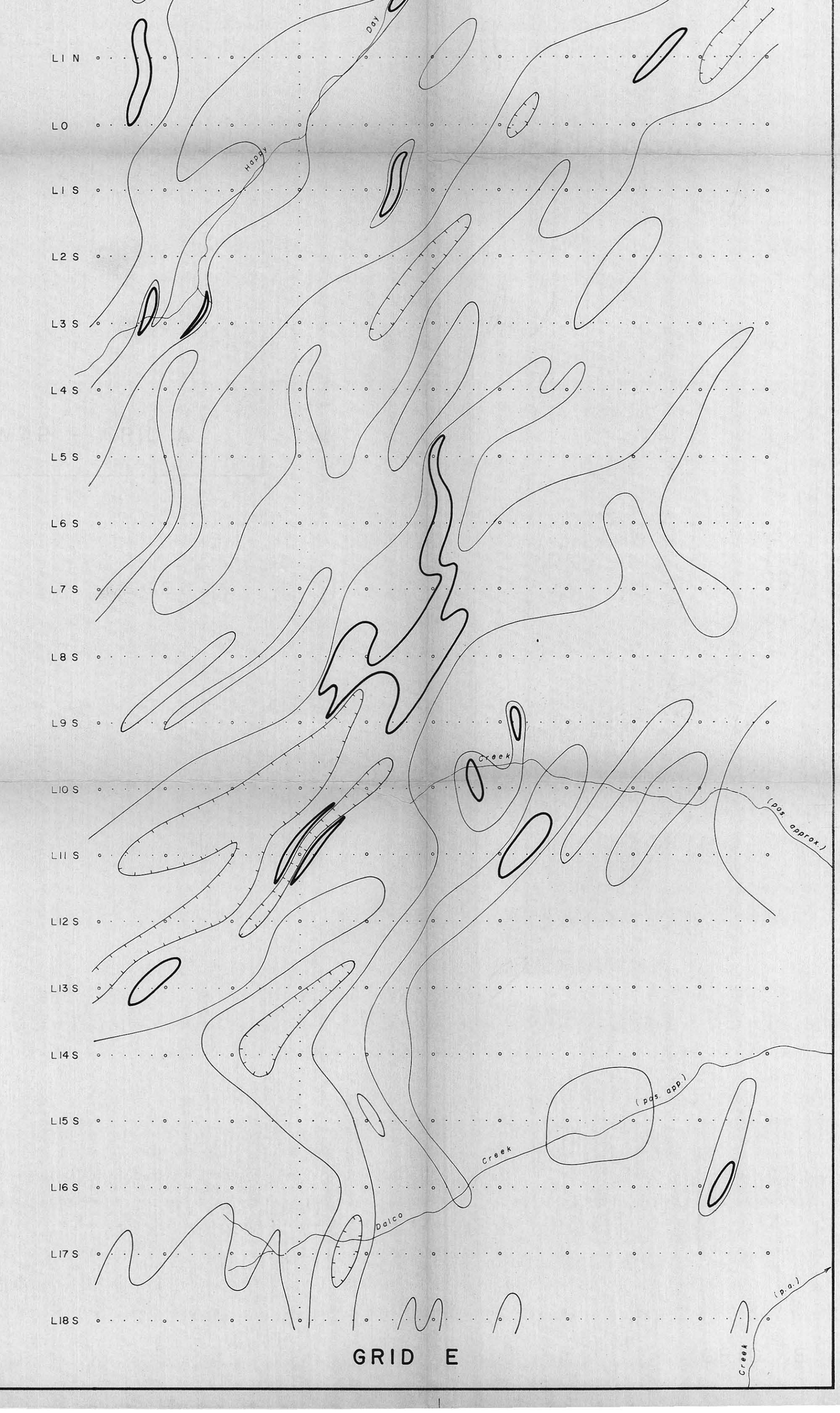
DRAWN	COMPILED	SCALE	
4-74	G.C.	1 : 5,000	TAS-2-623



LEGEND

Pop. A, >85 ppm contour

INSET MAP - GRID A



LEGEND

Pop. A, 175 ppm contour

Pop. B, 70 ppm "

Geochemical low

TN MN

20 m grid — see note below

Drainage

NOTE : The grids are uncorrected for slope and the line have not been plotted using actual bearings, ie., they are idealized.
The creeks were positioned from the ARTHUR R. 1:10,000 sheet 90/35 and are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm

GRID E

593044

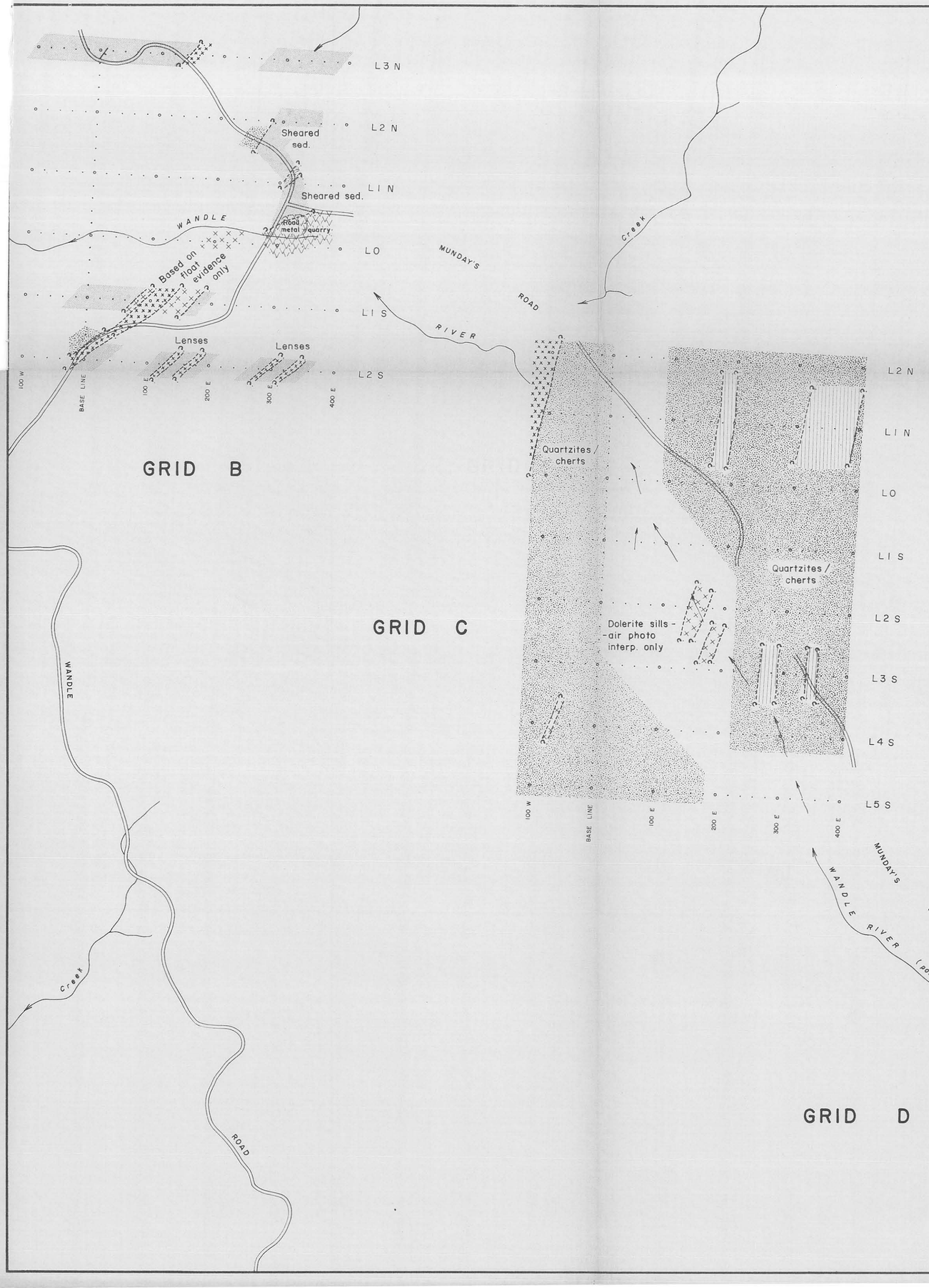
COMSTAFF PROPRIETARY LIMITED

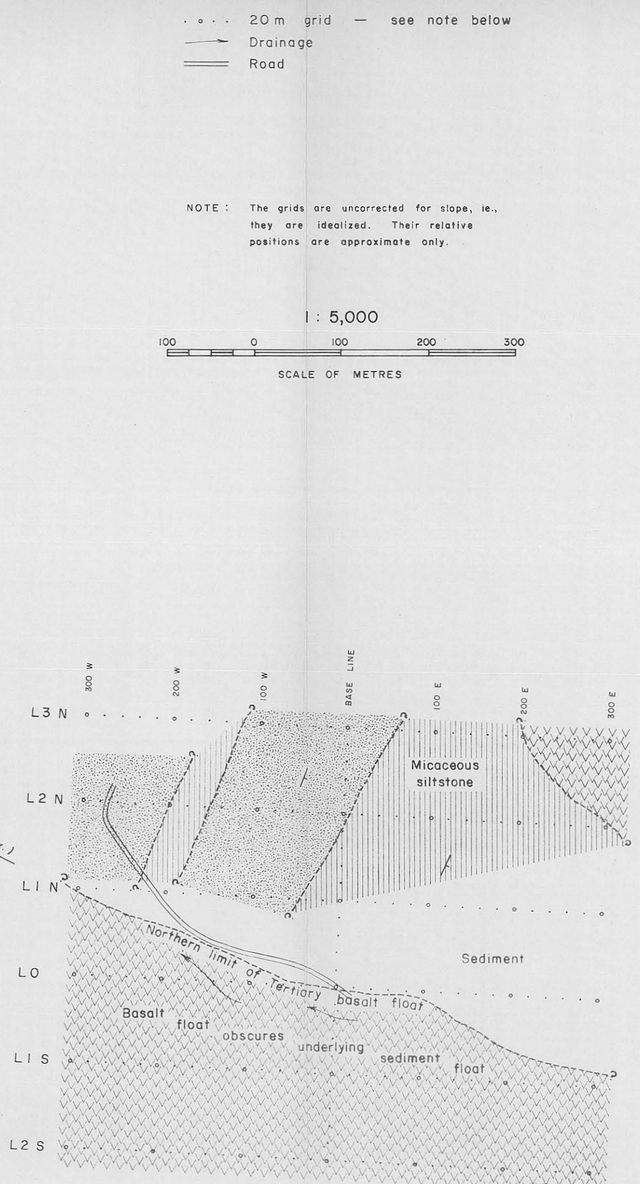
ARTHUR RIVER GRIDS A AND E

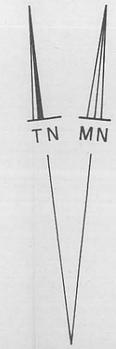
1973/74 SUMMER SEASON REPORT

BARIUM - SOIL GEOCHEMISTRY

DRAWN	COMPILED	SCALE	
4-74	G.C.	1 : 5,000	TAS-2-626







LEGEND

- Sediments
- Siltstone
- Chert
- Serpentinite
- Tertiary basalt
- Dolerite
- Geological boundary, approx.
- Strike and dip of bedding

. . . . 20 m grid — see note below
Drainage
Road

NOTE: The grids are uncorrected for slope, ie., they are idealized. Their relative positions are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm

593045

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ARTHUR RIVER GRIDS B, C AND D

1973/74 SUMMER SEASON REPORT

INTERPRETATION GEOLOGY

DRAWN 4-74	COMPILED G.C.	SCALE 1 : 5,000	TAS-2-634

GRID B

GRID C

GRID D

EL 5/63

WANDLE RIVER

MUNDAY'S ROAD

Creek

ROAD

BASE LINE

100 W 100 E 200 E 300 E 400 E

L3 N L2 N L1 N L0 L1 S L2 S L3 S L4 S L5 S

TB 244 – sheared ultrabasic ?
TB 245 – basalt on sediment contact
TB 246 – highly sheared graphitic sh

Road metal quarry

Highly silicified mt float. Contact with sp

TB 243 – Tertiary ba boulder

TB 241
TB 240

TN MN

LEGEND

- qz Quartzite
- ms Metasediments
- sh Shale
- ss Siltstone
- mt Mudstone
- gw Greywacke
- ch Chert
- sp Serpentinite
- bs Basalt
- do Dolerite
- g Granite

TB 241 Petrographic rock description available

Strike and dip of bedding

Rock exposure on grid line or road

Northern boundary of E.L. 5/63

20 m grid — see note below

Drainage

Road

NOTE : The grids are uncorrected for slope, ie., they are idealized. Their relative positions are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

5 cm

593046

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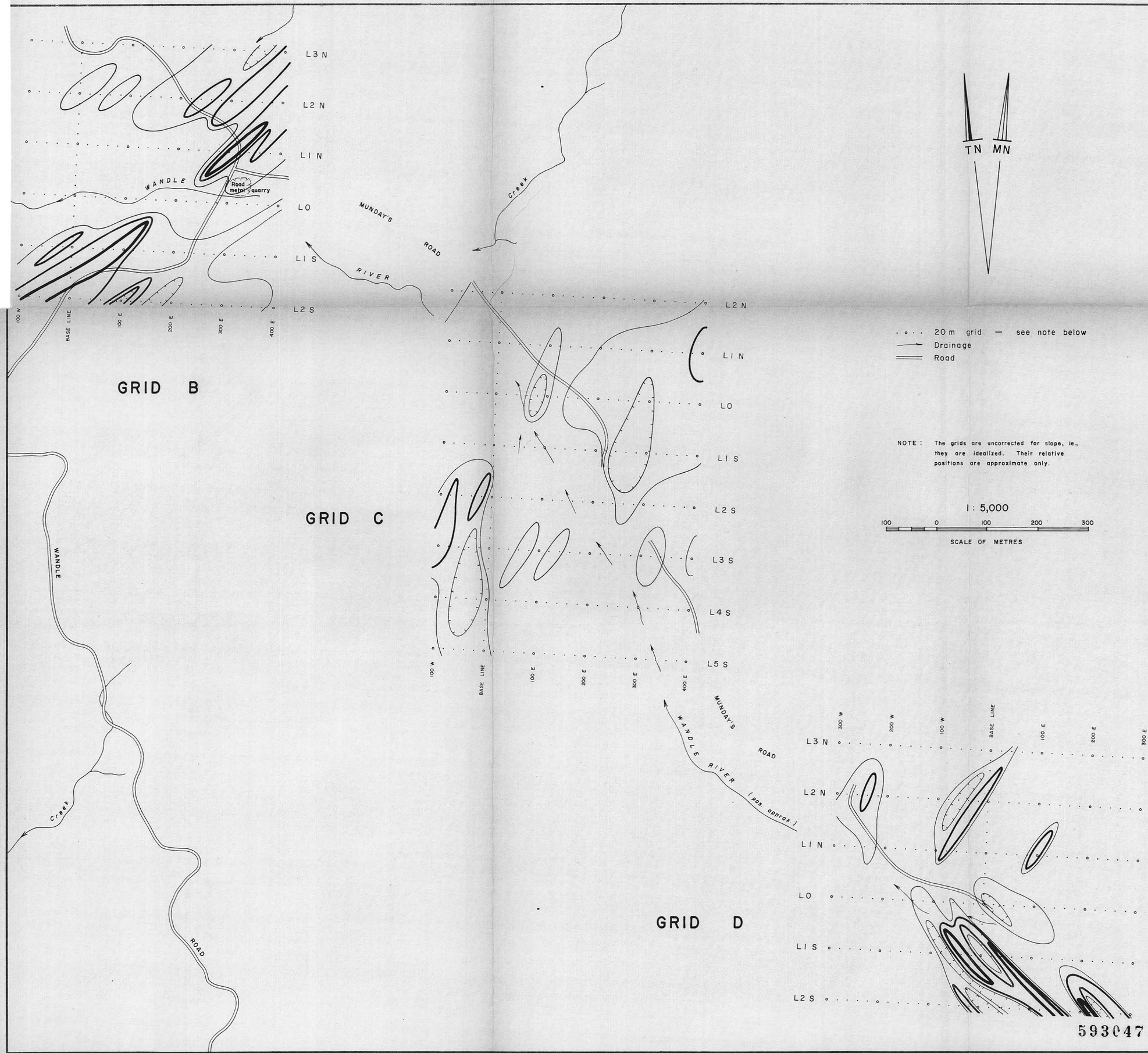
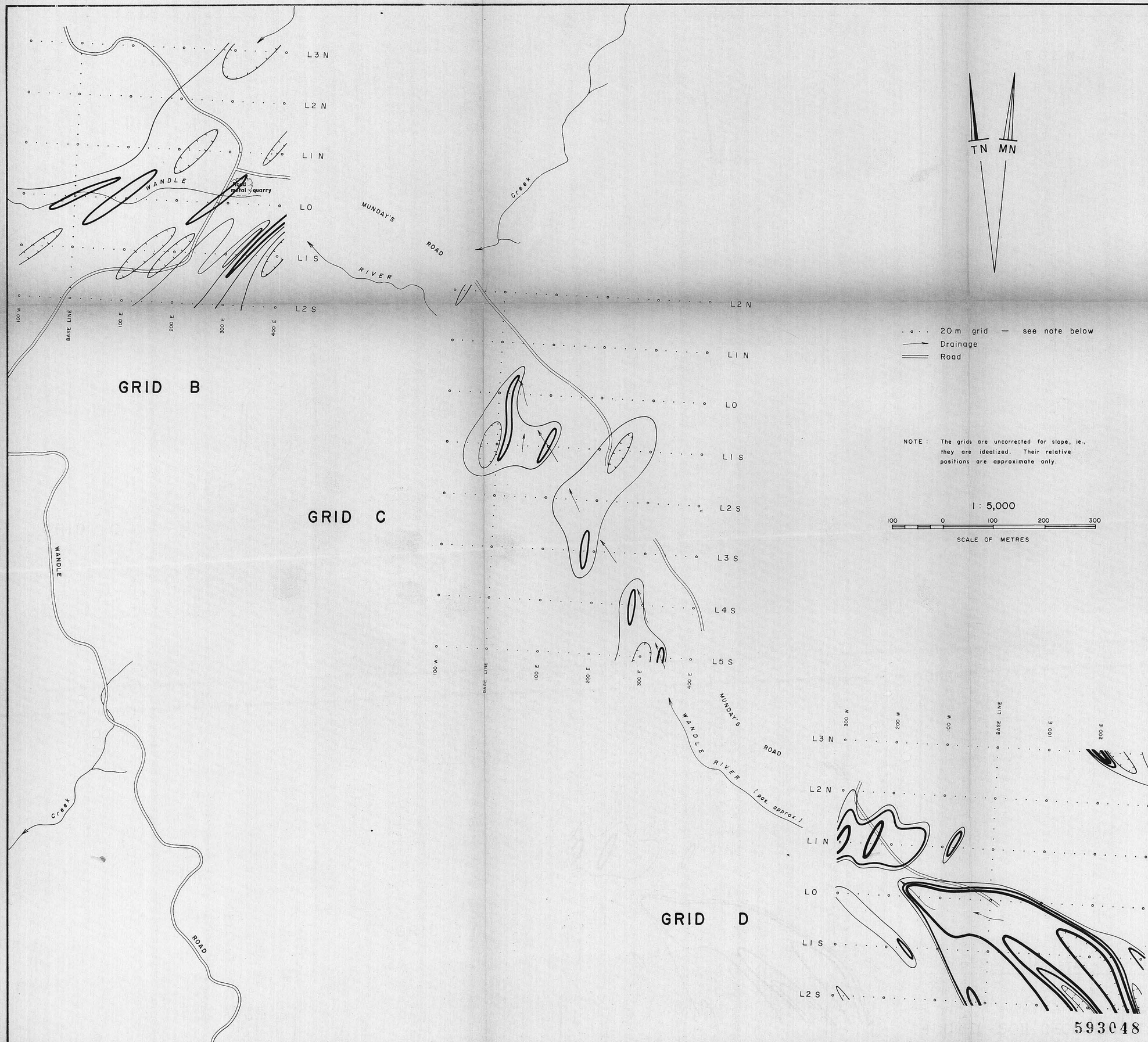
ARTHUR RIVER GRIDS B, C AND D

1973/74 SUMMER SEASON REPORT

DETAIL GEOLOGY

DRAWN	COMPILED	SCALE	
4-74 R. Batterham	G.C.	1 : 5,000	TAS-2-627


L3 N
L2 N
L1 N
L0
L1 S
L2 S
WANDLE
Road metal quarry
MUNDAY'S
ROAD
RIVER
Creek
100 W
BASE LINE
100 E
200 E
300 E
400 E
GRID B
GRID C
WANDLE
Creek
ROAD
L2 N
L1 N
L0
L1 S
L2 S
L3 S
L4 S
L5 S
100 W
BASE LINE
100 E
200 E
300 E
400 E
MUNDAY'S
WANDLE RIVER
ROAD
(pos. approx.)
GRID D
300 W
200 W
100 W
BASE LINE
100 E
200 E
300 E
L3 N
L2 N
L1 N
L0
L1 S
L2 S
TN
MN
LEGEND
GRID B
Pop. A, 240 ppm contour
Pop. B, 190 ppm "
Pop. C, 80 ppm "
Geochemical low
20 m grid — see note below
Drainage
Road
GRID C
Pop. A, 200 ppm contour
Pop. B, 100 ppm "
Geochemical low
NOTE : The grids are uncorrected for slope, ie., they are idealized. Their relative positions are approximate only.
1 : 5,000
100 0 100 200 300
SCALE OF METRES
GRID D
Pop. A, 54 ppm contour
Pop. B, 41 ppm "
Pop. C, 30 ppm "
Geochemical low
5 cm
COMSTAFF PROPRIETARY LIMITED
ARTHUR RIVER GRIDS B, C AND D
1973/74 SUMMER SEASON REPORT
COPPER - SOIL GEOCHEMISTRY
DRAWN 4-74 R. Butterley
COMPILED G.C.
SCALE 1 : 5,000
TAS-2-631
593047



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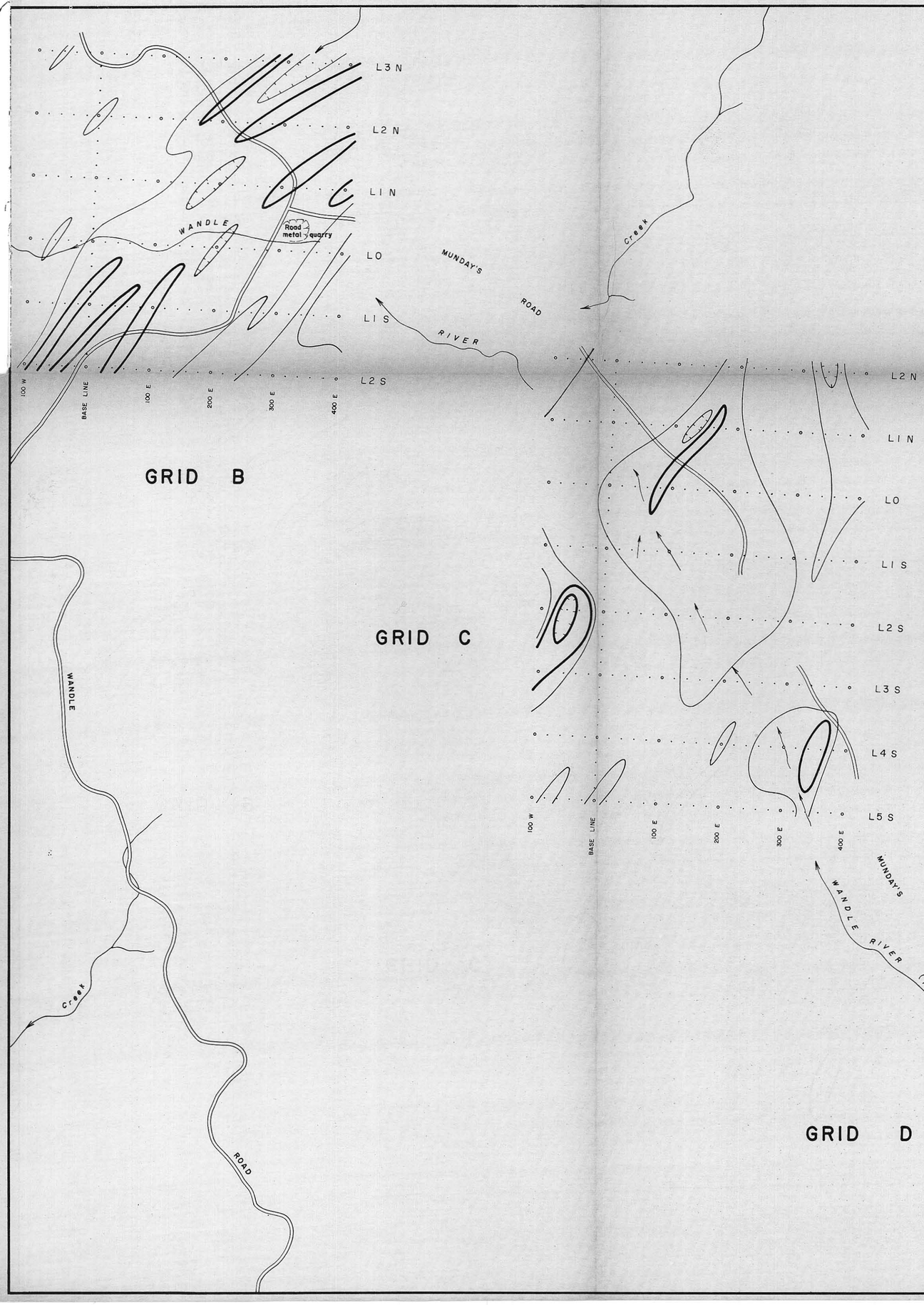
1973/74 SUMMER SEASON REPORT

NICKEL-SOIL GEOCHEMISTRY

DRAWN 4-74 R. Butterley	COMPILED G.C.	SCALE 1 : 5,000	TAS-2-632



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ARTHUR RIVER GRIDS B, C AND D

1973/74 SUMMER SEASON REPORT

ZINC - SOIL GEOCHEMISTRY

DRAWN 4-74	COMPILED G.C.	SCALE 1 : 5,000	TAS-2-629

L3 N
L2 N
L1 N
WANDLE
Road metal quarry
L0
MUNDAY'S
ROAD
L1 S
RIVER
L2 S
100 W
BASE LINE
100 E
200 E
300 E
400 E

GRID B

L2 N
L1 N
L0
L1 S
L2 S

GRID C

WANDLE
Creek
ROAD

L3 S
L4 S
L5 S
100 W
BASE LINE
100 E
200 E
300 E
400 E
MUNDAY'S
ROAD
WANDLE RIVER (pos. approx.)

GRID D

300 W
200 W
100 W
BASE LINE
100 E
200 E
300 E
L3 N
L2 N
L1 N
L0
L1 S
L2 S

TN MN

. . . . 20 m grid — see note below
Drainage
Road

NOTE : The grids are uncorrected for slope, ie., they are idealized. Their relative positions are approximate only.

1 : 5,000

100 0 100 200 300
SCALE OF METRES

LEGEND

GRID B

Pop. A, 72 ppm contour
Pop. B, 46 ppm "
Geochemical low

GRID C

No significant values

GRID D

No significant values

5 cm

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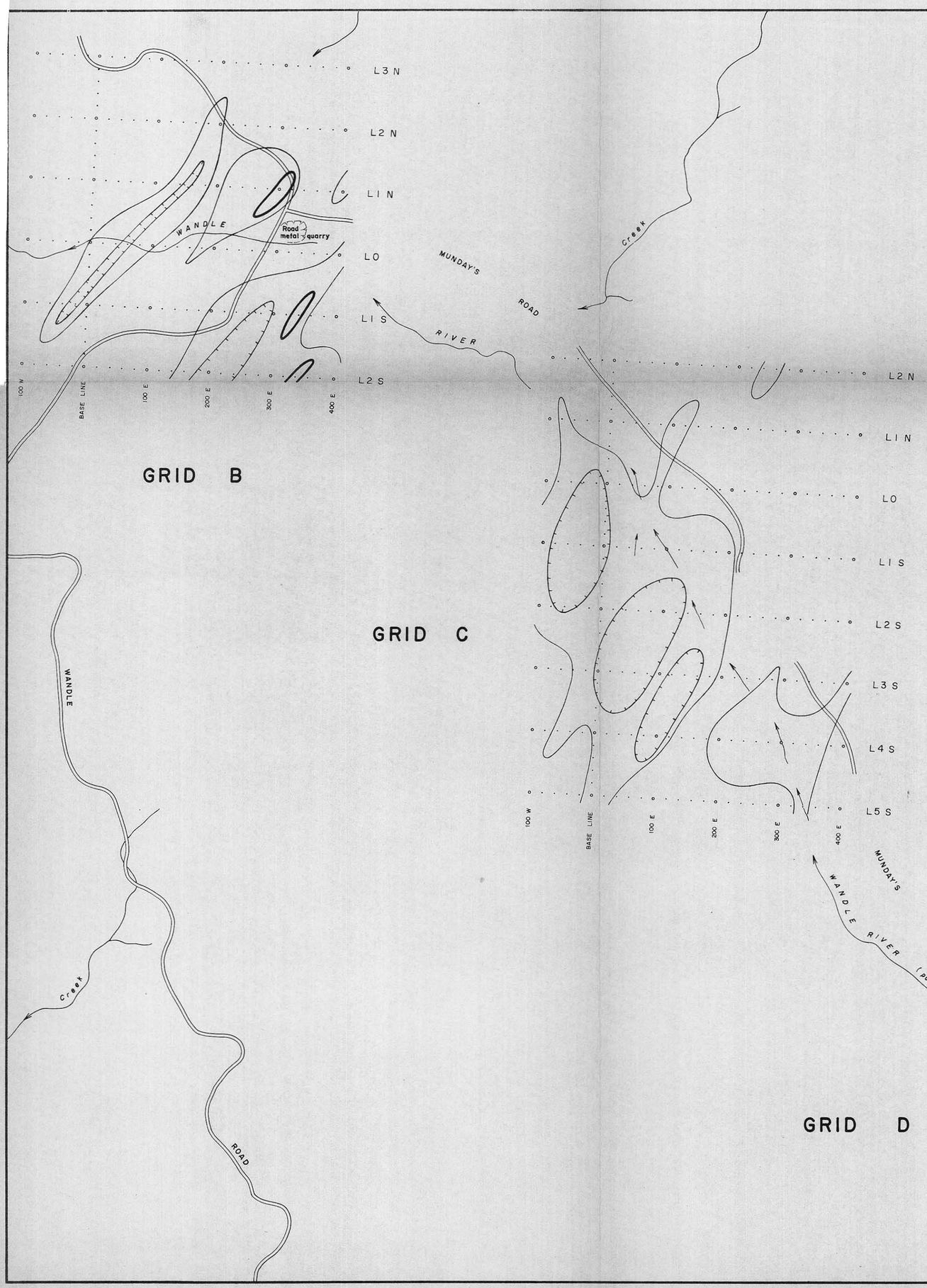
ARTHUR RIVER GRIDS B, C AND D

1973/74 SUMMER SEASON REPORT

LEAD - SOIL GEOCHEMISTRY

DRAWN	COMPILED	SCALE	
4-74 R. Batterley	G.C.	1 : 5,000	TAS-2-630

593050



TN MN

. . . 20 m grid — see note below
Drainage
Road

NOTE : The grids are uncorrected for slope, ie., they are idealized. Their relative positions are approximate only.

1 : 5,000

100 0 100 200 300

SCALE OF METRES

LEGEND

GRID B

Pop. A, 190 ppm contour
Pop. B, 95 ppm "
Geochemical low

GRID C

Pop. A, 85 ppm contour
Geochemical low

GRID D

Pop. A, 80 ppm contour
Pop. B, 40 ppm "
Geochemical low

5 cm

593051

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ARTHUR RIVER GRIDS B, C AND D

1973/74 SUMMER SEASON REPORT

BARIUM - SOIL GEOCHEMISTRY

DRAWN 4-74 R. Batterley	COMPILED G.C.	SCALE 1 : 5,000	TAS-2-628