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GEOPEKO

A DIVISION OF PEKO EXPLORATION

EL 52/89 BALFOUR

REPORT ON

EXPLORATION ACTIIVTY

MARCH 1990 TO FEBRUARY 1991

RELINQUISHMENT REPORT

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Katrina Virgoe
Ian Mathison
February , 1991

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1.0 INTRODUCTION

1.1 Location and Access (Fig. 1)

EL 52/89 Balfour is located in NW Tasmania approximately 30 km south-west of the coastal town of Smithton.

Access within the northern half of the EL is good and is provided by a network of unsealed forestry roads. However, the southern half of the EL is largely inaccessible by road and requires the cutting of walking tracks.

1.2 Tenure and Land Usage

EL 52/89 of 177 skm was granted to Peko Exploration Ltd in January 1990. The EL schedule is outline in Appendix 1.

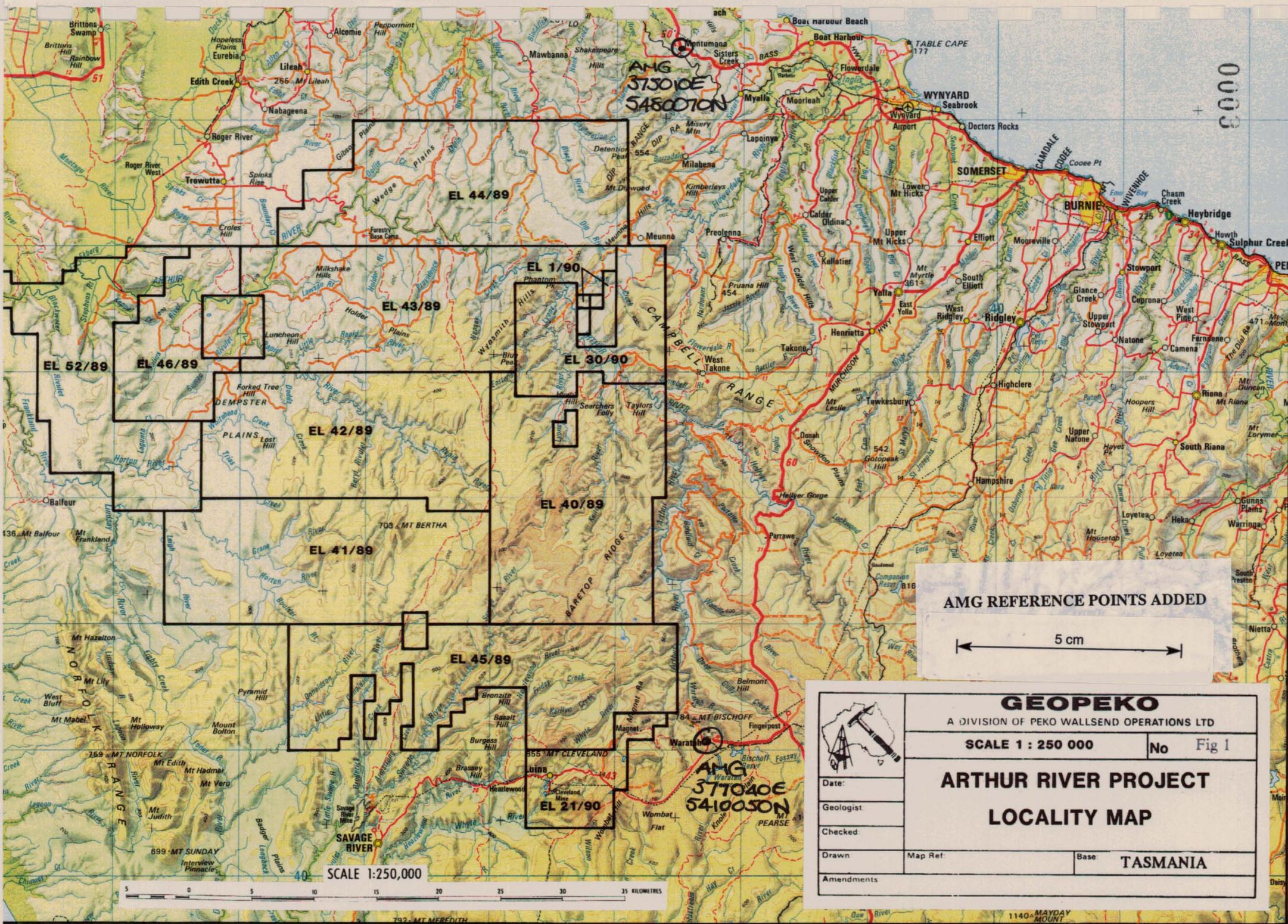
EL 52/89 consists predominantly of State Forest with approximately 6 km² of Private Property and 7 km² of Uncommitted Crown Land. The EL encloses the Balfour Track Forest Reserve and includes part of the Sumac Rivulet and Norfolk Range Australian Heritage Commission Act, Registered Entries.

Large tracts of wet eucalypt forest in the northern half of the EL have been intensively logged over the past 10 years. These areas now either lie devoid of vegetation or support thick regrowth. Buttongrass-tea tree plains occur in the south eastern corner of the EL. Vegetation over the rest of the EL is generally comprised of relatively open mixed eucalypt and rainforest.

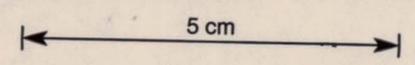
1.3 Regional Geology (Fig. 2 and Table 1)

Geopeko's block of Arthur River ELs lie within the Rocky Cape Region of NW Tasmania. The oldest rocks in the area are those of the Precambrian Arthur Lineament. The Arthur Lineament is a north-east trending metamorphic belt consisting of highly deformed sediments, basic volcanics and dolomite. To the west of this belt lies the Rocky Cape Group, a thick shallow marine shelf sequence and to the east lies the Oonah Formation, a deeper water turbidite sandstone sequence. The Rocky Cape Group contains Precambrian dolerite/gabbro dykes which have been emplaced into north-north west trending faults.

The north western area is underlain by the Eo Cambrian-Cambrian Smithton Trough which lies with a faulted or unconformable contact on the Rocky Cape Group. The Smithton Trough sequence consists of the basal Forest Conglomerate and Black River Dolomite (Success Creek Group Correlate), volcaniclastic sediments and basalt (Crimson Creek Formation Correlate), the Smithton Dolomite and fossiliferous sediments (Dundas Group Correlate).



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A DIVISION OF PEKO WALLSEND OPERATIONS LTD

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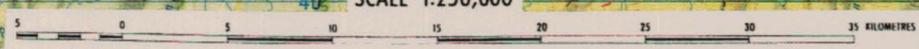
**ARTHUR RIVER PROJECT
LOCALITY MAP**

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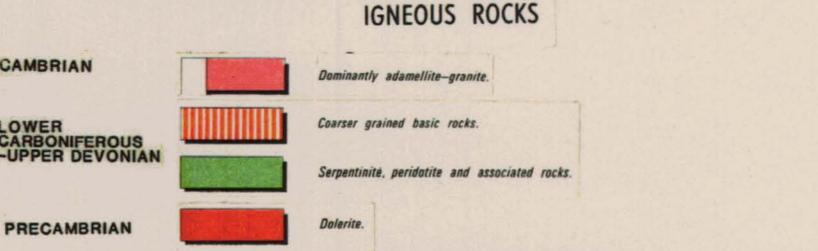
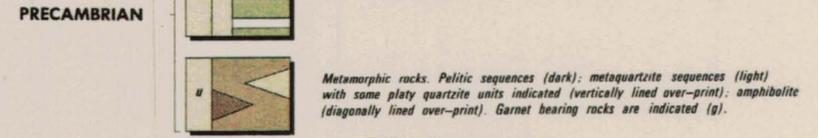
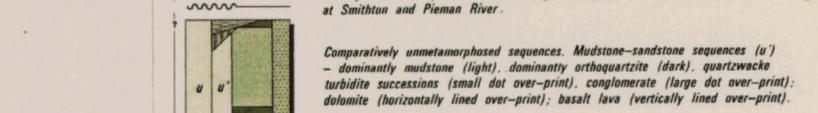
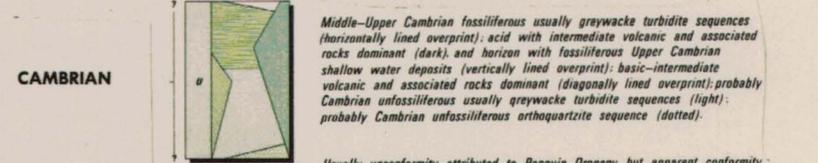
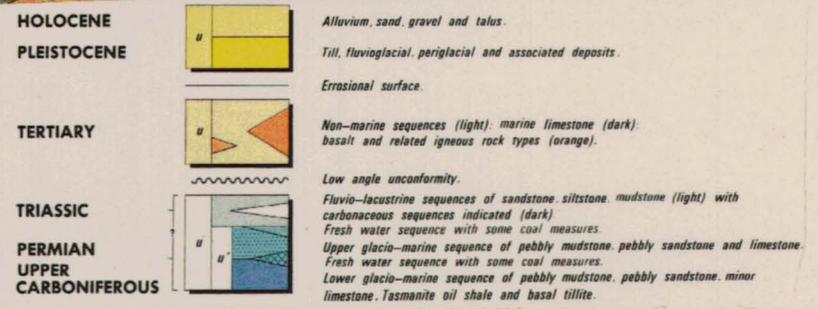
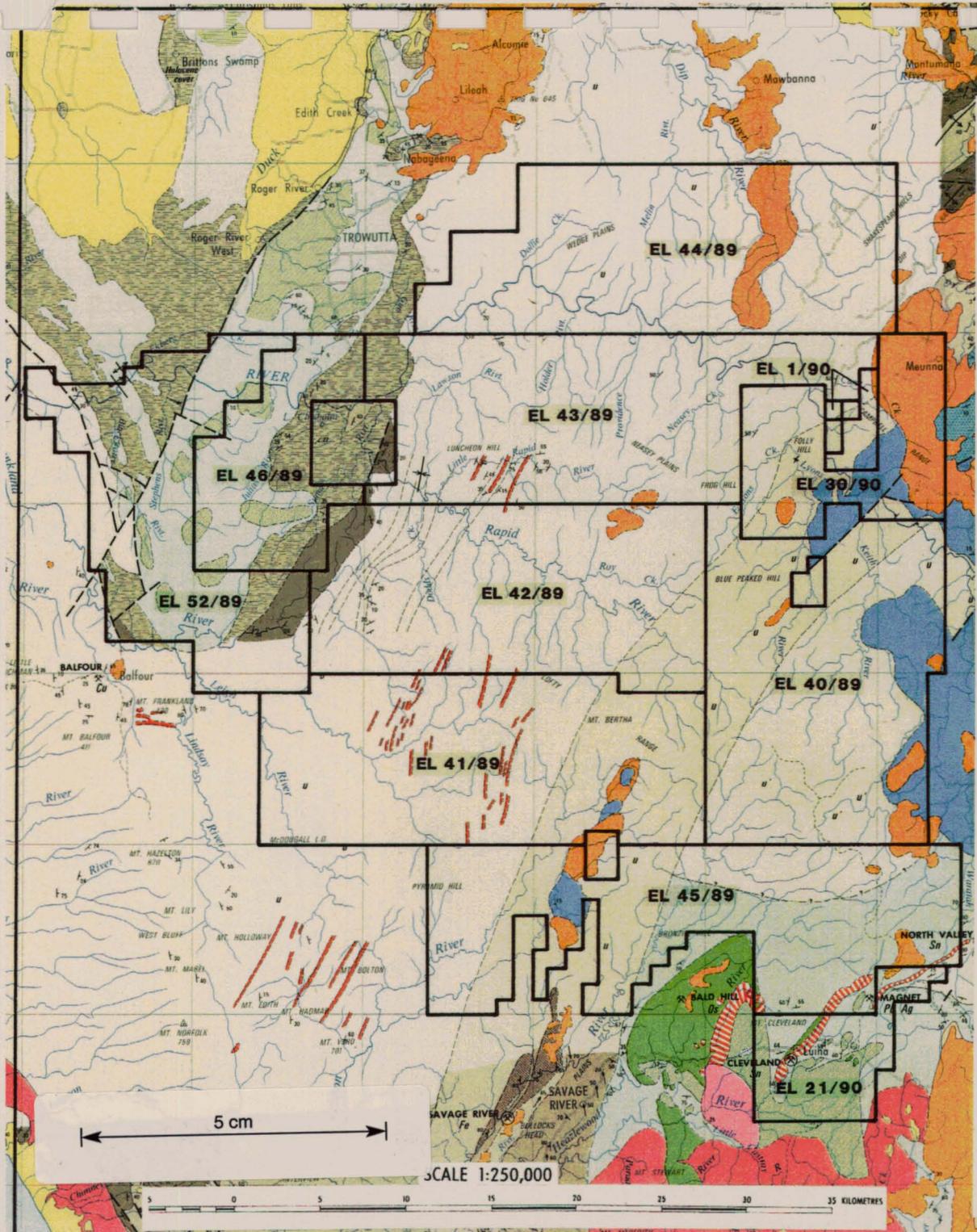
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REGIONAL GEOLOGY	
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STRATIGRAPHIC CORRELATION ADOPTED FOR THIS REPORT

	ROCKY CAPE BLOCK	LYONS RIVER (Arthur Lineament)	CLEVELAND - WARATAH	CORIOWA	ZEEHAN (Ord - Dev seds omitted)
TERTIARY	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravels	Tb - Tertiary Basalt Tc - Tertiary gravels
PERMO-CARB		P - Permian Supergroup Fluvial sandstone, coal measures, lacustrine & glacial deposits			
DEVONIAN			Intrusion of Cleveland Granite	Intrusion of Fisman Granite	Intrusion of Renison Hill & Heemskirk Granite
CAMBRIAN	Cc - Unnamed Quartzwacke, siltstone, mudstone, conglomerate				Dundas Group
			Intrusion/emplacement of Ultramafic bodies		Intrusion/emplacement of Ultramafic bodies
EO-CAMBRIAN	Ed - Smithton Dolomite Em - Smithton Basalt Mafic volcanoclastics and tholeiitic basalts Eb - Black River Dolomite Dolomite, silicified dolomite, chert Ef - Forest Conglomerate and Quartzite		Ev - Unnamed mafic voics, volcanoclastics and turbidites with some carbonates	?? Sed - Corinna Dolomite Ebv - Bernafai Volcanics Esd - Savage Dolomite	Crimson Creek Formation Success Creek Group
PRE-CAMBRIAN			Pb - Burnie Formation Interbedded quartzose quartzwacke & siltstone with minor mafic voics	Pd - Donaldson Formation Quartzose turbidites	Gonah Formation Interbedded quartzwacke and siltstone with some carbonates & mafic voics
	Pry - Jacobs Quartzite Quartzarenite Pri - Irby Siltstone Black mudstone, minor siltstone, sandstone, & dolomite Prd - Detention Quartzite Quartzarenite & siltstone Pre - Cowrie Siltstone Laminated siltstone, pyritic mudstone	??? Prn - Neasy Formation Quartzite+siltstone, minor dolomite and basic voics		Pi - Interview Slate and Quartzite	
		Pa - Keith Metamorphics Pelitic & quartzose schist -some calcic & mafic schist (magnesite & amphibolite)		Timms Group Pelitic & quartzose schist -some calcic & mafic schist (magnesite & amphibolite) - magnetite	

The south eastern corner of the area is underlain by rocks of the Cleveland-Waratah Association that lie within the Dundas Trough. These rocks are thought to be younger than the Crimson Creek Formation and consist of basaltic, andesitic and tholeiitic lavas.

The Precambrian-Cambrian rocks along the eastern edge of the area are in places overlain by Permian fluvio-glacial sediments and/or Tertiary basalt.

1.4 Known Mineral Deposits/Occurrences

There are a number of metallic mineral occurrences adjacent to the western, eastern and southern EL boundaries of Geopeko's Arthur River Project. (Green et Al 1988).

These are listed in Table (2) and Figure (3) shows their locations.

The deposits range from small, relatively insignificant workings, e.g. Victory Mine, Atlas Leases to large world class ore bodies e.g. Mt Bischoff, Savage River. In most cases, extensions of the prospective host formations can be continued into Geopeko's Arthur River EL's.

1.5 Previous Exploration

The northwest of Tasmania has seen regional company exploration activity since the mid 1960's. Techniques applied include stream sampling, gridding, soil and rock chip sampling, geological mapping, photogeology, diamond drilling and geophysical surveys. Generally this work has been concentrated in areas within a few kilometres walking distance of vehicular access. As much of the central northwest is remote and inaccessible, this has resulted in many areas having not yet seen intensive modern exploration.

1.6 Exploration Philosophy

Geopeko consider this portion of Tasmania to have been inadequately explored for base metals and gold mineralization. Since the early prospecting stage, systematic exploration by several companies has relied on airborne geophysics (Aeromagnetics and INPUT) and conventional stream sediment geochemistry with limited ground follow up. These techniques will give readily detectable responses from, "ideal" orebodies under "ideal" conditions. However, the combination of rugged topography and intense leaching of soil profiles; the superimposed effects of Tertiary weathering and surficial deposits; the complications of pyritic black shales and manganiferous deposits; and the contamination of several river systems by tailings and slimes from old mining operations would have masked many good responses and obscured any subtle responses.

TABLE (2) METALLIC MINERAL OCCURRENCES/DEPOSITS

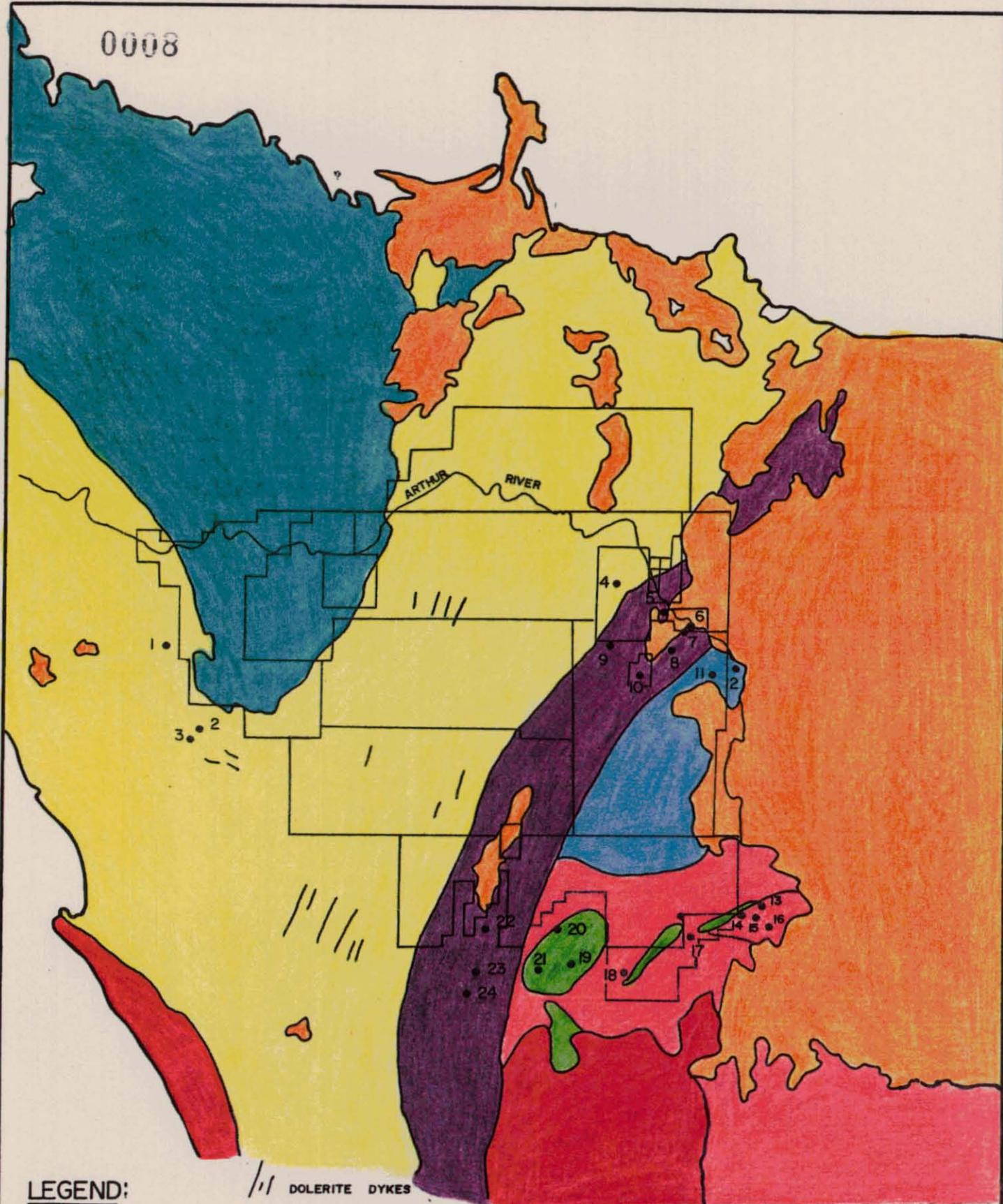
Map No.	Name	Commodity	Geology & Mineral Style	
1	The Clump	Cu	Rocky Cape Group	V
2	Murrays Reward	Cu	Rocky Cape Group	V
3	Specimen Hill	Sn Cu	Rocky Cape Group	V
4	Folly Hill	Au	Rocky Cape Group	A
5	Campbell Hydraulic	Au	Arthur Lineament	A
6	Victory	Cu	Arthur Lineament	V
7	Arthur River	Magnesite	Arthur Lineament	S
8	Keith River Gossan	Magnesite Py (Cu)	Arthur Lineament	MS
9	Pike's	Au	Arthur Lineament	A
10	Lyons River	Magnesite	Arthur Lineament	S
11	Atlas Leases	Ag Pb	Arthur Lineament	V?
12	Kay's	Au	Arthur Lineament	A
13	North Valley	Sn	Oonah Formation	A
14	Silver Cliffs	Pb Ag	Oonah Formation	V
15	Mt Bischoff	Sn	Oonah Formation	SCR
16	Fooks Load	Sn Pb Zn Ag Sb	Oonah Formation	V
17	Magnet	Pb Ag Zn	Crimson Ck Equiv.	V
18	Cleveland	Sn (Cu W Bi Mo)	Crimson Ck Equiv.	SCR
19	Lord Brassey	Ni	Cambrian Ultramafic	M
20	Bald Hill	Os Ir Au	Cambrian Ultramafic	A
21	Caudry's	Os Ir	Cambrian Ultramafic	?
22	Specimen Reef	Au	Arthur Lineament	V
23	Savage River Nth	Magnetite (Py)	Arthur Lineament	MS
24	Savage River Cent.	Magnetite (Py)	Arthur Lineament	MS

Mineralization Styles

A - Alluvial Deposit
 V - Vein Deposit
 M - Magmatic Deposit

S - Stratiform
 MS - Massive Stratiform
 SCR - Stratiform Carbonate Replacement

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LEGEND:

- HOLOCENE - CARBONIFEROUS COVER
- DEVONIAN GRANITE
- SMITHTON BASIN
- DUNDAS TROUGH SEDIMENTS
- BASIC INTRUSIVES
- OONAH FORMATION
- ROCKY CAPE GROUP
- ARTHUR LINEAMENT

DOLERITE DYKES

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Date: SEPT. 1990.	1:500,000	No Fig. 3
Geologist: K.J.V.	MINERAL OCCURRENCES.	
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Geopeko consider that the geochemical prospecting method developed by Dr. Baker of the Tasmanian Mines Department whereby the humate content of stream water is analysed for its content of leached metals provides a rapid and inexpensive method of screening large areas of ground.

Selected areas with a combination of suitable geological environment and geochemical characteristics could subsequently be further explored using expensive and slow techniques such as detailed geological mapping, grid based geochemistry and modern geophysical techniques.

As the proposed technique is both rapid and relatively cheap, it should be possible to define prospective areas at an early stage. Consequently Geopeko anticipate that it will be possible to relinquish a large proportion of the area applied for during the first year of tenure.

1.7 Target Models

Geopeko consider the Precambrian rocks of NW Tasmania to be prospective for stratiform Pb, Zn, Ag deposits of the Mt Isa-McArthur River type and for stratiform Cu-Zn (Au) deposits of the Besshi Type. The mineralization at the Atlas Leases can be assigned to the first group while the Keith River Gossan can be compared to the Besshi Type.

Several occurrences of alluvial gold along the Arthur River highlight the potential of the area for gold only mineralization. Applicable models for gold mineralization include shear related gold deposits and volcanogenic gold deposits associated with basic volcanics.

The Cambrian and Eo Cambrian rocks of the Smithton Trough have a potential for carbonate hosted zinc-lead-silver deposits, for carbonate hosted disseminated gold deposits and for shear related gold deposits. While no mineral occurrences are known from the Smithton Trough, anomalous base metal and gold geochemistry has been reported by previous explorers.

2.0 EXPLORATION ACTIVITY

2.1 Aims

Exploration during 1990 was aimed at delineating through grass root techniques, prospective and geochemically anomalous areas within the EL. Areas worthy of follow up would undergo more intensive exploration in the 1991 field season.

Work included huminex water sampling, rock chip sampling, geological mapping, regional geochemical compilation and a geophysical review.

2.2 Geochemistry

Work Completed

Thirty one (31) two litre huminex water samples were collected from EL 52/89 at a sample density of 2-3 km². At this stage only one third of the EL has been stream sampled. This is a result of poor access in the south-west corner of the EL as well as company commitments to other licences in the area.

At each sample location water colour, water level, rate of flow, vegetation type and rock float were recorded for statistical purposes. The sample location was marked with an aluminium tag, a sample tag and orange flagging tape.

Water samples were analysed for gold and total organic carbon by the Huminex method. Selected samples were also assayed by NAA following adsorption on activated charcoal or by a cyanide/MIBK concentration followed by graphite furnace AAS (ANALABS). Base metals were determined by graphite furnace AAS on raw water and arsenic by hydride generation AAS.

Any mineralized, altered or interesting rock outcrop or float encountered during creek and road traverses was sampled for assay or hand specimen purposes. Six samples from the Lagunta Creek area were analysed for Cu, Pb, Zn, Fe, Mn and Au.

Regional stream sediment data obtained by previous exploration companies in the area was compiled. This allowed delineation of anomalous areas recognized by traditional stream sampling methods as well as providing a comparison for the Huminex technique.

Stream Sediment Compilation

A compilation of stream sediment base metal data within EL 52/89 was undertaken.

At least seventy two samples were collected by CRAE in EL 1/77 and 13 samples by ANZECO in EL 6/72.

All samples were sieved to -80# and the base metals were analysed by AAS techniques.

Overall the base metal values tended to be low, though CRAE's sampling programme highlighted two main areas. One area drains the tributaries of Stephens Rivulet to the east of the Balfour Track Forest Reserve and has values of 120-180 ppm Cu, 9-440 ppm Pb and 210-1000 ppm Zn (samples 934623, 626, 627 and 628). The other area occurs north of Horton River and east of Lagunta Creek with values of 41-180 ppm Cu, 7-10 ppm Pb and 153-340 ppm Zn (samples 1055085, 105, 106 and 108). Both areas are underlain by basic volcanics of the Smithton Trough sequence.

ANZECO's samples drain tributaries north of the Arthur River near Sumac Road. Four anomalous samples with assays in the

range of 530-620 ppm Cu, 390-480 ppm Pb and 590-690 ppm Zn (samples NRK/1, NRK/3, NRK/4 and NRK/11) were reported. However, these anomalous values are probably the results of contamination by tailings in the Arthur River. Samples taken further up these tributaries had assay values in the range of 25-160 ppm Cu, <20-100 ppm Pb and 65-220 ppm Zn (samples NRK/2, 5, 6, 7, 8, 9).

Gold in Water (Appendix 4)

Statistical analysis of 325 water samples taken regionally by Geopeko in the 1989-90 field season indicates that Au values >30 ng/l and Au:C > 4 are possibly anomalous and that Au values >50 ng/l and Au:C > 8 are probably anomalous. (Mathison, 1990) The results of four of the 27 samples so far taken in this EL are anomalous.

These samples 20636 (8.4 ng/l Au, ratio 3.82), 20637 (17.5 ng/l Au, ratio 9.21), 20639 (12.5 ng/l Au, ratio 5.21) and 20640 (9.4 ng/l Au, ratio 4.48) appear to drain a north-easterly trending faulted dolomite and turbidite greywacke contact.

The other 23 samples taken had gold ranges from 1.3-17.5 ng/l Au and Au:C ratios of 0.29-3.16.

Base Metals in Water (Appendix 4)

Statistical analysis of the 325 water samples taken regionally by Geopeko in the 1989-90 field season indicates that samples with values of Cu >3.8 ug/l, Pb >7 ug/l and Zn > 27 ug/l are possibly anomalous and samples with Pb >13 ug/l, Cu >7 ug/l and Zn >47 ug/l are probably anomalous.

Overall the base metal results were very low with only two of the 31 samples taken receiving anomalous results, ie sample 20643 (9.0 ug/l Pb) and 20165 (5.9 ug/l Cu).

Sample 20643 drains rocks of the Smithton Trough sequence and sample 20165 drains the contact between the Smithton Trough and the underlying Cowrie Siltstone.

Rock Chip Geochemistry (Appendix 4)

Three of the six samples analysed had elevated Cu (5-120 ppm), Fe and Mn. As these samples were of ironstone developed on dolomite, these results are not considered significant.

2.3 Geology

EL 52/89 is predominantly underlain by rocks of the Eocambrian-Cambrian Smithton Basin. The basin stratigraphy is as follows:

Fossiliferous Dundas Group Correlate	----- conformable?
Smithton Dolomite	----- unknown
Volcaniclastic lithic wacke, basalt and mudstone	----- conformable
Black River Dolomite & Forest Conglomerate & Quartzite	----- unconformity
Precambrian Rocky Cape Group (Cowrie Siltstone)	

Regional field mapping of creeks and roads within this EL has not yet been undertaken. However, limited creek mapping during water sampling traverses indicates the presence of crystalline dolomite along parts of Blackwater Rivulet and Lagunta Creek and a sequence of sediments, dolomite and basalt along Stephens Rivulet.

No significant alteration or mineralization was encountered during the sampling programme.

2.4 Geophysical Review

A geophysical review of EL 52/89 using regional gravity and magnetic data was undertaken by D.E. Leaman. This work is detailed in a separate report. (Leaman, 1990). Discussions specific to this EL are appended as Appendix 3 and summarized in figures 4 and 5.

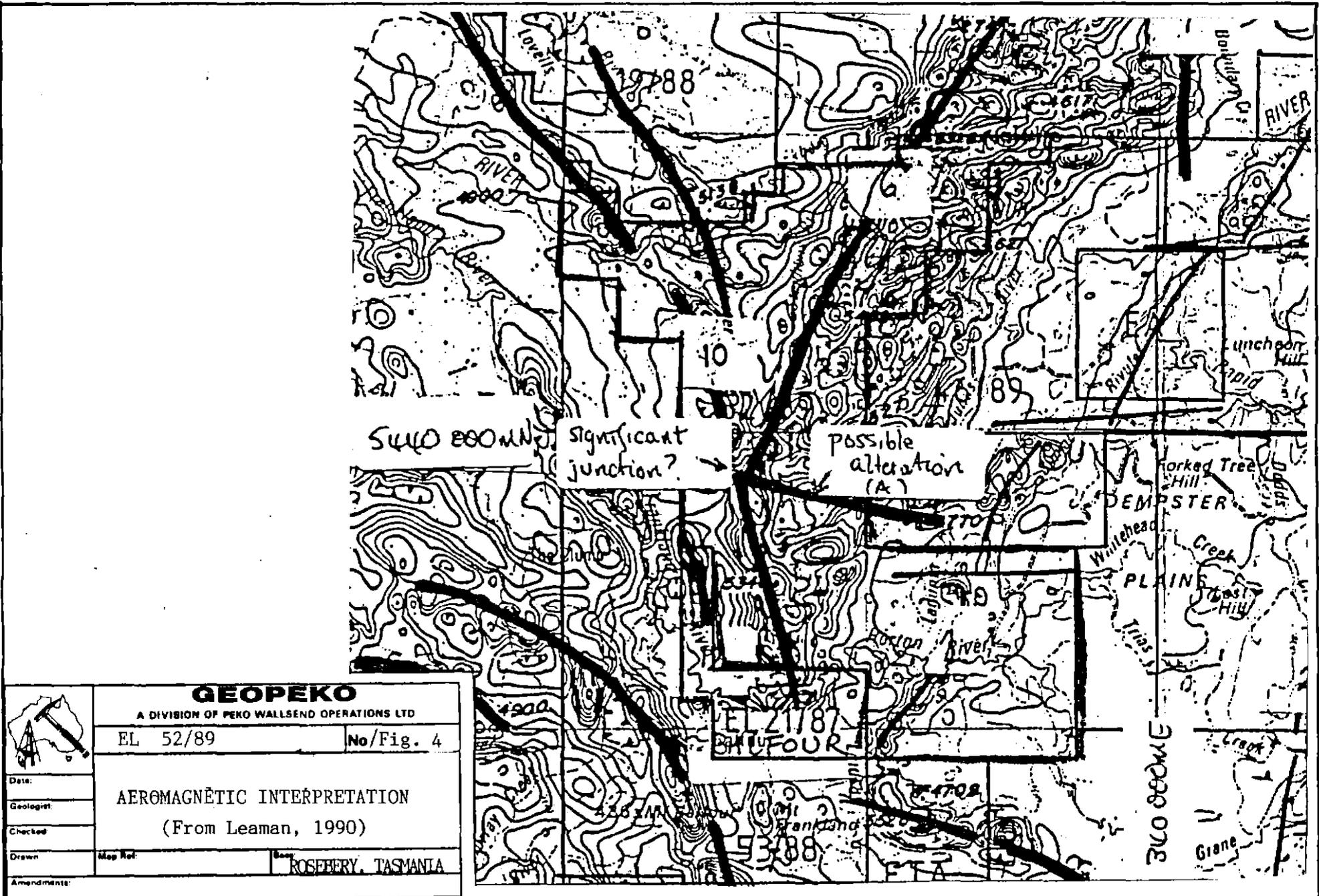
The magnetic data has indicated four main anomalous features.

Feature 1 is a north-east trending regional structure that cuts the south-east corner of the EL. Changes in amplitude observed along this structure may reflect source depth or areas of alteration.

The intersection of feature 10 and 16 and a north-west trending structure is possibly a significant junction and appears to be associated with alteration.

Regional analysis indicates burial of the Smithton Trough sequence to the west of feature 10 beneath the Temma thrust. The disruption of magnetic anomalies in this area may indicate alteration or oxidation.

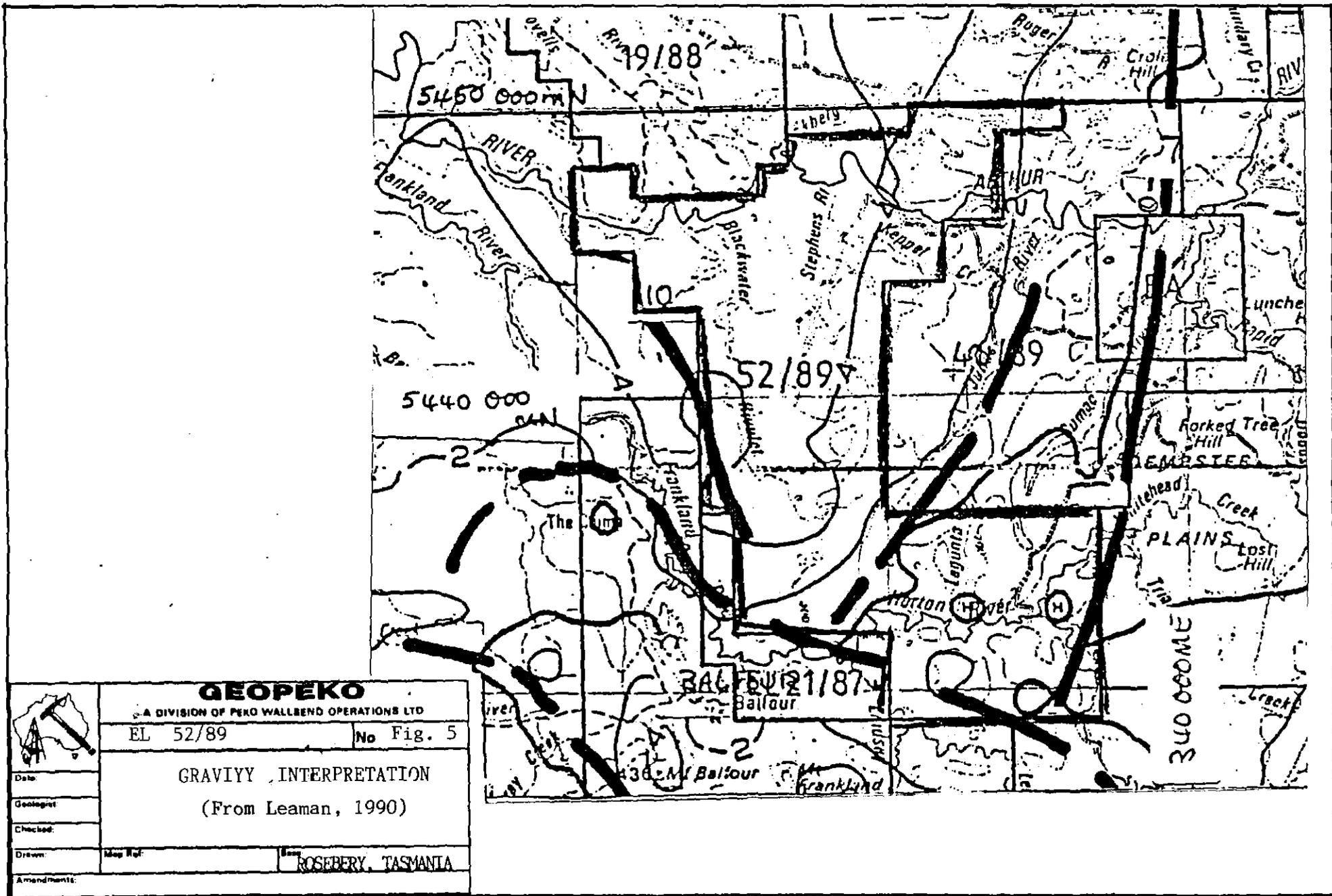
Zone 15, just to the south of EL 52/89, represents a relatively shallow depth (1-2 km) to the underlying Pieman Granite. If the granite has intruded rocks of the Smithton Sequence under the Temma thrust, there is potential for tin and copper mineralization.



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Any trace geochemistry associated with these four magnetically anomalous areas is worthy of follow up with more detailed work.

3.0 CONCLUSIONS

- * One third of EL 52/89 has been adequately covered by the regional 1989-90 water sampling programme.
- * The water sample gold results have highlighted anomalism along a north-east trending faulted contact between dolomite and turbidite greywackes. However, gold values are rather low.
- * The water sample base metal results were very low.
- * The compilation of base metal stream sediment data has delineated two anomalous areas, one east of Lagunta Creek and the other on Stephens Rivulet. The anomalism of Stephens Rivulet is supported by Geopeko's water sample gold results.
- * No mineralization was encountered or anomalous rocks sampled.
- * Four anomalous magnetic structures pass through EL 52/89. Two of these structures appear to be associated with anomalous geochemistry. Linear 6 runs parallel to the anomalous gold belt and Linear 2 (a deep crustal feature) cuts the base metal anomalism east of Lagunta Creek.

4.0 RECOMMENDATIONS

No further exploration should be attempted in this area and EL 52/89 should be relinquished. Water sampling to date has tested only one third of the EL. However, sampling of similar rock units in adjacent ELs 46/89 and 42/89 has indicated that these rock units do not respond well to the water sampling technique.

Interesting aeromagnetic and gravity features in this EL have not been explained. Further exploration in this area should be considered when sufficient funds are available to allow systematic exploration in this difficult area.

5.0 ENVIRONMENTAL DISTURBANCE AND REHABILITATION

Exploration conducted by Geopeko during 1990 has caused no environmental disturbance. Semi permanent samples markers left at sample sites are considered to be valuable reference points for future exploration. No rehabilitation has been necessary.

REFERENCES

- BROWN, A.V. (1989), "Geological Survey Explanatory Report, 1:50 000 series Sheet 21 - Smithton". Tas. DMMR.
- BURRETT, C.F., Martin E.L. (1989) "Geology & Mineral Resources of Tasmania" Geological Society of Australia 15 (Burrett et al 1989)
- GREEN, G.R., BOTTRILL, R.S., BACON, C.A., TURNER, N.J. (1988) - Mineral Deposits and Metallogenic Map of Tasmania 1:50 000, Tas. DMMR.
- LEAMAN, D.E., (1990) - Geophysical - Structural Review - Rocky Cape Block NW Tasmania. Unpublished report for Geopeko.
- MATHISON, I.J. (1990) - Arthur River Project - 1990 Summer Field Season Water Sampling.

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APPENDIX 1
EL SCHEDULE

TASMANIA

No. EL 52/89

(Regulation 6A)

The Mining Act 1929**EXPLORATION LICENCE**

Issued to PEKO EXPLORATION LTD of PO BOX 180 ROSEBERY

in respect of 177 square kilometres of land in the Land District of WELLINGTON & RUSSELL vicinity of BALFOUR as described in the schedule hereto.

This licence shall remain in force until the Twenty Third day of March 1991.

This licence is subject to the following conditions:-

1. That the licensee shall immediately on the issue of this licence take steps to commence preliminary works necessary for the investigation of the area.
2. That the licensee shall carry out investigations as may be necessary to determine the mineral potential of the area, and in particular will fulfil the proposals set out in the exploration programme and approved by the Director of Mines.
3. That the licensee shall employ such technical and other staff and equipment as may be necessary effectively to carry out such investigations.
4. The licensee shall satisfy a minimum expenditure commitment of \$100,000 during the first two years of the licence.
5. This licence shall apply to all minerals.
6. The licensee shall notify the owner and occupier of private land, in writing, at least three days before entering such land.
7. That the security (Private Land Deposit) provided by Section 15E (1) (a) & (b) of the Mining Act, 1929, (see below) shall be lodged with the Director of Mines before entering private land.
8. The licensee shall observe, perform and fulfil the conditions as set forth in Schedule 'A' (Revised) attached hereto.

9. The licensee shall be liable to pay the cost of any work carried out to remedy any damage arising from any breach of the conditions of this licence.
10. The licensee shall deposit an amount of \$5,000 (Performance Deposit) and \$2,000 (Private Land Deposit) as security that the conditions contained herein shall be observed. Upon expiry or sooner determination of the licence, if the licensee satisfies the Director of Mines that such conditions have been complied with, the Director of Mines shall refund such deposit or such portion thereof, as he may determine.
11. If it is found, that the operations hereby authorised, are causing any undue damage to, or erosion of, the subject land or other land in the vicinity thereof or are unnecessarily disturbing the environment, the Minister may cancel the licence without compensation to the licensee by giving seven days' notice in writing of his intention so to do.
12. The licensee shall obtain the written permission of the Director of Mines before carrying out any work in a Forest Reserve.
13. The licensee shall arrange and keep in good standing public liability insurance to the minimum of \$1,000,000. Evidence of currency shall be produced on demand.

SCHEDULE

Commencing at a north west corner of the area whose grid co-ordinates are 320 000 metres E. 5 448 000 metres N. thence grid east to 322 000 metres E. grid south to 5 447 000 metres N. again grid east to 326 000 metres E. grid north to 5 448 000 metres N. aforesaid again grid east to 327 000 metres E. again grid north to 5 449 000 metres N. again grid east to 331 000 metres E. again grid north to 5 450 000 metres N. again grid east to 336 000 metres E. again grid south to 5 449 000 metres N. aforesaid grid west to 334 000 metres E. again grid south to 5 446 000 metres N. again grid west to 332 000 metres E. again grid south to 5 444 000 metres N. again grid west to 330 000 metres E. again grid south to 5 436 000 metres N. again grid east to 337 000 metres E. again grid south to 5 429 000 metres N. again grid west to 330 000 metres E. aforesaid again grid north to 5 432 000 metres N. again grid west to 325 000 metres E. again grid north to 5 436 000 metres N. aforesaid again grid west to 324 000 metres E. again grid north to 5 443 000 metres N. again grid west to 322 000 metres E. aforesaid again grid north to 5 445 000 metres N. again grid west to 320 000 metres E. aforesaid thence again grid north to the point of commencement.

Land Tenure:

The area comprises: State Forest, Private Property, Crown Land, Crown Land (Subject to Department of Environment and Planning approval).

The area includes: part of 'Sumac Rivulet' and 'Norfolk Range' Australian Heritage Commission Act Registered Entries.

NOTE: This land tenure table is a guide only.

EXCLUSIONS

The area embraced by this licence includes State Forests but does not include:

- (a) All other public reserves or municipal reserves or roadways.
- (b) All forms of mining tenements and water licences including leases, water licences, easement licences, special and exploration licences, prospectors licences, miners rights, permits to enter, owners consents and owners rights which were in lawful possession or marked out prior to the date of marking out of this licence.
- (c) Land exempt from the provisions of the Mining Act, 1929.
- (d) Land under the National Parks and Wildlife Act, 1970, not subject to the Mining Act, 1929.
- (e) All Crown reservations or other land set apart or dedicated for any public purposes.

MINISTER FOR RESOURCES AND ENERGY

Date

APPENDIX 2

REVIEW OF PREVIOUS EXPLORATION

APPENDIX 2

REVIEW OF PREVIOUS EXPLORATIONA2.1 EL 12/65 Pieman Project

During the mid 1960s Pickands Mather & Co International held EL 12/65 over a large part of northwest Tasmania. An extensive regional stream geochemical survey was conducted and although a number of geochemical anomalies were detected, and some resampling occurred later, no further work was undertaken. (Anon. 1966 in Cromer, 1988a). Unfortunately records of this sampling program are no longer held by the Tasmanian DMMR.

A2.2 EL 48/70 and EL 49/70

Two exploration licences to the southwest of Geopeko's Arthur River Project were granted as a joint venture to Australian Consolidated Industries Ltd and Consolidated Goldfields Australia Ltd. Field investigations included an aeromagnetic survey, stream sediment sampling, geological mapping and soil and rock chip sampling. This was designed to detect any tin mineralization that may be associated with the three Devonian granites in the two licence areas. Detailed evaluation was carried out in areas of geochemical and geomagnetic anomalies and known mineralization.

Results were not encouraging enough to justify further exploration and the two ELs were dropped in 1972. (Bell, 1972)

A2.3 EL 6/72 North West Tasmania

Australian and New Zealand Exploration Company was granted EL 6/72 in January 1972. This EL covered an area of the Smithton Trough to the north of the Arthur River. It was considered by ANZECO to be prospective for tungsten due to the similarity of the dolomites to those hosting the King Island Scheelite ore body. A panned concentrate and stream sediment sampling programme was completed over the EL with 94 samples taken and analysed for W, Cu, Pb, Zn, Mo, Sn and Cr. ANZECO received a number of anomalous assays for all the elements tested but found it difficult to interpret the results. Though some follow up was recommended, no further exploration was attempted. (Kinnane, 1972).

A2.4 EL 2/73

Following a study of the mineral potential of Australia during 1971, ESSO took out EL 2/73 in the northwest of Tasmania and conducted an airborne geophysical survey (INPUT) over the licence area. Sixty two anomalies were detected, however, dense vegetation restricted examination to thirty six targets and only thirteen had outcrop. Most of the anomalies were attributed to black slates and lithological contacts. ESSO

considered that no further exploration was warranted and the EL was relinquished in 1974. (Neale, 1973)

A2.5 EL 43/70 Keith River

Magnesite was first discovered in the Lyons River-Keith River area in 1925 by P.B. Nye. Since Mineral Holdings Australia was granted EL 43/70 over the area, numerous companies have explored the licence under joint venture agreements. A joint venture between Mineral Holdings Australia and CRAE Pty Ltd in 1982 delineated two deposits of moderate-high grade magnesite. These are known as the Lyons River and the Keith-Arthur River Prospects. (Mackenzie, 1984). Retention Licences 8717 and 8718 cover these two magnesite reserves.

A2.6 EL 1/77 Rocky Cape

EL 1/77 was initially taken up by CRAE Pty Ltd to investigate the possible tin potential of the area. Following a joint venture with Geopeko in 1979 and recommendations by P. Legge in 1980 that the Rocky Cape rocks showed similarities to the Selwyn Basin, Canada, the target was extended to shale hosted lead zinc deposits.

Statistical evaluation of regional drainage data indicated that the Trowutta Dempster plains district showed elevated values of Cu, Pb, Zn and Co. (Weir, 1982). Follow up of this area included stream sediment sampling, geological mapping and rock chip sampling. A photogeological interpretation (by Carey, 1981) covered the whole EL. The stream sediment sampling revealed lead anomalies from the Julius River, the Meryanna area, Wents Creek and Stephens Rivulet and an arsenic anomaly from Sumac Rivulet.

Follow up in the Julius River and Meryanna area included detailed stream sampling, gridding, soil sampling and ground geophysics. It was concluded that the Julius River anomaly was derived from a disseminated source or shears within the dolomite and that the Meryanna anomaly was the results of erosional basaltic remnants on topographic highs.

Resampling of the other 3 anomalous areas failed to repeat the initial high values.

CRA Exploration relinquished the northern part of EL 1/77 in 1983 concluding that the black shale sequences exposed at the eastern margin of the trough were too thin to have produced economic mineralization from brines (Weir, 1983).

Exploration continued in the western coastal parts of the EL including diamond drilling at the Alpine and Red prospects for tin before total EL relinquishment in 1985.

A2.7 EL 1/79 Rapid River

A detailed program of exploration was carried out over the Rapid River EL by Geopeko and/or CRAE Pty Ltd from 1979 to 1987. Commodities searched for included gold, platinum, shale hosted base metals and Mittershill type tungsten as well as extensions to the Lyons River magnesite trend. The work included airborne magnetic and radiometric surveys, ground follow up of all major magnetic anomalies, geological mapping and stream sediment sampling in selected areas. No significant mineralization was located. (Dickson, 1987)

A2.8 EL 10/79

EL 10/79 was operated as a joint venture by CRAE and Mineral Holdings Australia Pty Ltd. The target was initially dolomite, but when some anomalous gold and platinum values were obtained, greater emphasis was given to the metals aspect of exploration. Grades of 3.09 g/t [410732] and 4.06 g/t Au with 0.46 g/t Pt [408726] were obtained from dolomite chip sampling and, although resampling returned results of only 0.04 g/t Pt, the partners concluded that there was a significant gold occurrence in the dolomites. However, EL 10/79 was relinquished in 1984 with no follow up work. (Anon 1985 in Cromer, 1988a)

A2.9 EL 12/80 Leigh River and EL 61/83

EL 12/80 was granted to CRAE Pty Ltd in order to investigate two tin stream sediment anomalies located during previous reconnaissance by CRAE in 1977. The EL was also considered for shale hosted lead zinc and gold mineralization and this was supported by the presence of a number of INPUT anomalies obtained by ESSO in 1973. Work carried out included a computer study of all previous stream sediment geochemistry, infill stream sediment sampling, regional scale mapping, follow up of nine aeromagnetic anomalies defined by the Mines Dept. West Coast survey and investigations into the gold potential of altered Cambrian basalts. No significant base or precious metals were detected and the EL was relinquished in 1985. (Dickson, 1985).

EL 61/83 was taken up by CRAE to cover a large aeromagnetic anomaly located on the eastern margin of EL 12/80. A grid was established over the anomaly and Genie EM traverses carried out. No base metal or gold anomalism was detected and the EM failed to locate any conductors. The aeromagnetic anomaly was attributed to unmineralized Precambrian basic volcanics and the EL was dropped in 1985. (Dickson, 1986)

A2.10 EL 18/80 Arthur River and EL 18/83 Lake Chisholm

EL 18/80 was taken up by BHP Co Ltd and thought to be prospective for a skarn or massive sulphide hosted tin tungsten deposit of the Renison/Cleveland style. Carlin style gold, diamonds, Mississippi Valley lead-zinc and sedimentary copper

deposits were secondary targets. Work completed includes stream sediment and pan concentrate sampling, rock chip sampling, petrology, a photogeological and Landsat Image study, geological mapping, and evaluation and follow up of existing INPUT and aeromagnetic data. In view of the disappointing results and difficult access, the EL was relinquished in 1983. (Anon, 1983).

EL 18/83 lies adjacent to EL 18/80 and was taken by BHP to cover a broadly coincident INPUT/Aeromagnetic anomaly. An extensive grid was cut over the main zone of interest at Lake Chisholm and soil sampling, geophysical surveys and geological mapping were carried out. Pan concentrate sampling was used to follow up anomalous tin geochemistry reported from earlier work. The INPUT/Aeromagnetic anomaly was attributed to a small amphibolite body and magnetically susceptible basalts. No indications of potentially economic mineralization were encountered. (Anon, 1984).

A2.11 EL 21/87 Balfour and EL 22/87 Trowutta

Aureole Resources took up ELs 21/87 and 22/87 to explore for platinum group metals, gold and base metals, hosted mainly by receptive rocks along the eastern and southern margins of the Smithton Trough. Work included a regional geophysical evaluation by D.E. Leaman and rock chip sampling for assay and petrological purposes. Despite upgrading the prospectivity of parts of the two ELs, 22/87 was relinquished and 21/87 reduced in 1989 as Aureole shifted their emphasis to other tenements. (Cromer, 1988a + b).

A2.12 EL 5/63

EL 5/63 was granted to Comstaff Proprietary Limited in 1963 and covered the area from Rosebery in the south to Wandle Creek in the north. Comstaff divided the EL in 6 areas, ie, Area 1 Arthur River, Area 2 Ramsay, Area 3 Mt Block, Area 4 Chester/Pinnacles, Area 5 Huskisson and Area 6 East Renison. Area 1 covers part of Geopeko's EL 45/89 and is the only area discussed in this summary.

Systematic and detailed exploration of Area 1 commenced in 1970-71 field season and little is reported of any exploration carried out before this time.

Exploration of Area 1 from 1970-75 was based around 2 stream sampling programmes and several widely spaced TURAM EM traverses. The stream sampling surveys produced anomalies in the Tinstone Creek area (Ag,Cu,Zn,Pb,Sn & Ba), Magnet Creek (Sn), Deep Gully (Sn), Rollins Creek (Sn), Dalcos Creek (Sn) and from the Happy Day Creek (Cu, Zn, Ni). Follow up included gridding and soil sampling of the Tinstone Creek area, Happy Day Creek and four other Cu-Zn anomalies. No anomalies indicative of the presence of mineralization were recorded.

The Turam EM survey reported 8 anomalies and 5 of them were gridded and subjected to EM and/or magnetic surveys. No significant results were obtained.

From 1975-78 work was centred on the Magnet-Bischoff grid which was subjected to geological mapping, soil sampling, ground magnetics and EM surveys. Three diamond holes were drilled in the grid area, one to test an EM anomaly and the other two to test the Magnet lode at depth. No mineralization was intersected and no further work on the grid was recommended. (Shaw & Everett, 1985).

In 1980 a programme to investigate the alluvial tin potential of the Arthur River commenced. Initial work was encouraging with a tin volume estimate of 6-8 million m³ of variable grade outlined. Though follow up work was recommended, no further exploration on this project was reported. (Washausen & Wilding, 1980).

In 1983-85 a DIGHEM survey was carried out over Area 1 using flight lines with a NW-SE direction. Five anomalies were recommended for follow up. Comstaff attributed them to Tertiary basalt cover.

In 1985 Comstaff was required to reduce EL 5/63 and most of Area 1 was relinquished. (Shaw & Everett, 1985).

A2.13 EL 1/68 Heazlewood

In 1968 EL 5/63, held by Comstaff Pty Ltd, was subdivided to form EL 1/68. EL 1/68 covered an area north of Luina which is drained principally by the Savage and Heazlewood Rivers.

Initially exploration of this licence focussed on the ultramafics and their potential for nickel mineralization. Gridding, soil sampling, geological mapping, geophysical surveys and some trenching failed to identify any new mineralization.

Regional reconnaissance projects were then implemented in the Savage, Whyte and Heazlewood drainages. The upper Heazlewood drainage basin emerged as the most prospective with anomalous values of zinc and copper. Two grids (HAB, HAC) were cut and geologically mapped and soil sampled. No mineralization was found and geochemical responses were weak.

In 1980, a DIGHEM survey over the total licence area was commissioned and exploration for the next 3 years centred around the follow up of 13 resultant anomalies. All anomalies were gridded, geologically mapped, soil sampled and subjected to ground magnetic and EM surveys. In all cases no mineralization was observed. In late 1983 two EM targets were selected for drill testing. Both holes failed to intersect mineralization and the EM responses were attributed to black graphitic slate and phyllite.

In 1984 Comstaff considered that all avenues for locating mineralization had been exhausted and the EL was relinquished. (Shaw, 1984).

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APPENDIX 3
GEOPHYSICAL REVIEW

EL 52/89 BALFOUR

The location of this area is shown in Figure 1. Figure 31 presents relevant gravity and magnetic data.

This EL covers a significant part of the intersecting structures near Balfour and the remainder of the eastern volcanic sequence not covered by EL 46/89.

Regional analysis indicates that magnetic feature (6) defines a steep fold limb, which may be faulted as well, in which the mafic volcanics are forced to moderate depth. There is no evidence that this structure represents a major growth fault or that the sequence is significantly thickened along it. This may be possible but more gravity data and a combined gravity-magnetic assessment would be needed to confirm it. Current work does not offer encouragement. Most of the volcanics present normal magnetic behaviour and there is no evidence of massive alteration.

Anomalous magnetic character is restricted to the 60 degree arc between (10) and the gradient from 326 000 mE, 5439 000 mN to 334 000, 5436 000 which truncates the volcanic sequence. This data should be examined in detail since there are suggestions that the sequence has been altered. The loss of response at 328 000 mE, 5437 500 mN is particularly interesting and this area should be inspected. Is it due to a window in the volcanics? If not, the volcanics should be sampled.

Feature (1) is also included in this EL and its anomalous character is re-inforced. Surface tests, using magnetometer or susceptibility meter, are advised. Any systematic or non systematic changes in the source of this feature, across several ELs, should be accounted for since its changes in character may reflect source depth or alteration index. Demonstration of the latter may be important.

Regional analysis indicates burial of the volcanics west of feature (10). The disruption of the anomalies and their alignments may indicate several structures; each anomaly representing alteration or fluid passage and oxidation. The entire magnetic field is elevated slightly and the volcanics and associated Smithton dolomites persist beneath what has been termed the Temma thrust. These anomalous zones should also be inspected magnetically and chemically, especially in the southern part of the EL.

The Pieman Granite reaches beneath Balfour, on the basis of current data, and this can be expected to have emplaced or remobilised mineralisation beneath the Temma thrust structure. The granite has probably intruded the volcanics and dolomites of the Smithton Trough (now concealed) and there is potential for both tin and copper replacement-exchange deposits. It is possible that this EL does not cover the best ground which may lie under adjacent ELs or vacant ground to the west. Note that the granite extends west of The Clump. Infill gravity coverage is recommended, perhaps with agreement of holders of EL 53/88, in order to define the marginal and roof forms and depth of the granite. This is essential to appraisal of both structure and origin of magnetic features. It may also explain the known mineral occurrences and enable prediction of primary targets.

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APPENDIX 4

WATER GEOCHEMISTRY -
SAMPLE DETAILS AND RESULTS

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

NUMBER	AU	C	AU_C	CU	PB	ZN	AS
21057	-1000.0	-1000.0	-1000.00	1.30	0.30	6	0.50
21058	-1000.0	-1000.0	-1000.00	0.90	0.20	4	-0.50

Note:- -1000 value in Au, C, Au_C => result not yet available from DMMR laboratory.

ARTHUR RIVER PROJECT 1990 SUMMER - WATER SAMPLES
ANALYTICAL METHODS, UNITS AND LABORATORIES

Element	Units	Laboratory	Method
Au	ng/l (ppt)	DMMR Hobart	Activated carbon extraction from water, Aqua regia digestion - AAS
AuRPT	ng/l (ppt)	DMMR Hobart	Organic solvent extraction from water, AAS determination
C	mg/l (ppm)	DMMR Hobart	Total Organic Carbon - carbon analyser
Au/C	-	DMMR Hobart	Au result in ppt divided by C result in ppm
Cu	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
Pb	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
Zn	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
As	ug/l (ppb)	ANALABS Mbne	Hydride generation AAS on raw water

ARTHUR RIVER PROJECT 1990 SUMMER - WATER SAMPLES
DMMR REPEAT ANALYSIS

EL	NUMBER	AU	AURPT
1/90	20071	3468.0	1.8
1/90	20072	82.8	18.0
1/90	20073	118.8	1.3
43/89	20052	47.2	6.5
43/89	20060	47.2	2.6
43/89	20076	596.4	1.6
43/89	20077	47.0	2.6
43/89	20087	67.1	3.6
43/89	20087	67.1	3.6
43/89	20089	35.6	2.6
43/89	20091	30.1	3.6
43/89	20657	30.7	2.3
44/89	20001	66.0	36.6
44/89	20012	36.8	5.1
44/89	20021	33.2	9.1
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20080	56.7	0.4
44/89	20080	56.7	0.4

AU :-by activated carbon extraction
AURPT :-by new organic extraction technique

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Database fields

06-02-199

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

NUMBER	AU	C	AU_C	CU	PB	ZN	AS
20152	4.5	2.4	1.88	0.60	1.00	3	-0.50
20153	2.3	7.9	0.29	2.90	8.50	8	-0.50
20154	1.8	3.7	0.49	1.10	0.00	6	-0.50
20156	1.3	1.5	0.87	1.30	0.00	2	-0.50
20157	1.5	28.4	0.05	1.70	3.00	5	-0.50
20158	3.8	8.8	1.00	0.90	0.00	2	-0.50
20164	4.8	17.8	0.27	0.70	4.00	8	0.50
20165	7.9	16.4	0.48	5.90	3.00	9	-0.50
20166	4.0	18.3	0.22	0.80	2.00	7	-0.50
20167	7.6	16.6	0.46	0.60	7.00	7	-0.50
20633	7.6	6.1	1.25	1.60	0.50	2	-0.50
20634	12.4	4.4	2.82	2.10	1.00	3	-0.50
20635	14.2	4.5	3.16	0.90	0.50	0	-0.50
20636	8.4	2.2	3.82	0.90	2.00	2	-0.50
20637	17.5	1.9	9.21	0.50	0.50	5	-0.50
20638	14.5	4.8	3.02	0.90	0.50	6	-0.50
20639	12.5	2.4	5.21	1.50	0.50	6	-0.50
20640	9.4	2.1	4.48	0.90	0.50	4	-0.50
20641	1.3	2.1	0.62	1.70	1.50	6	-0.50
20642	10.9	15.2	0.72	0.40	0.00	4	-0.50
20643	8.6	18.1	0.48	0.90	9.00	4	-0.50
20644	6.4	15.8	0.41	0.90	0.50	5	-0.50
20645	4.8	14.7	0.33	0.60	0.50	5	-0.50
20646	10.0	12.3	0.81	1.20	1.00	5	-0.50
20647	6.4	21.1	0.30	1.40	0.50	5	-0.50
20648	11.0	19.0	0.58	0.80	1.50	8	-0.50
20649	15.7	6.1	2.57	1.20	1.50	12	-0.50

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 02-05-1990 NUMBER 20152 MAP BALFOUR TYPE WATER

EL 52/89 NORTH 5432420 EAST 333120 SAMPLER KJV

WIDTH 2.0
DIRECTION 215
COLOUR clear
FLOW moderate

UNIT Smithton Trough
FLOAT_1 none
FLOAT_2
FLOAT_3

LEVEL low

CONTAM
VEGETATION rain forest

DRAINAGE AREA 1.5

DATE 02-05-1990 NUMBER 20153 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5433280 EAST 332380 SAMPLER IJM

WIDTH 5.0
DIRECTION 260
COLOUR very weak
FLOW slow

UNIT Smithton Trough
FLOAT_1 Sdol
FLOAT_2 bk Scht py
FLOAT_3

LEVEL low

CONTAM
VEGETATION rain forest

DRAINAGE AREA 16.0

DATE 02-05-1990 NUMBER 20154 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5434100 EAST 332700 SAMPLER IJM

WIDTH 0.5
DIRECTION 310
COLOUR very weak
FLOW slow

UNIT Smithton Trough
FLOAT_1 silty Sdol
FLOAT_2
FLOAT_3

LEVEL low

CONTAM
VEGETATION rain forest

DRAINAGE AREA 1.5

DATE 02-05-1990 NUMBER 20156 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5434620 EAST 332580 SAMPLER IJM

WIDTH 1.0
DIRECTION 270
COLOUR clear
FLOW slow

UNIT Smithton Trough
FLOAT_1 none
FLOAT_2
FLOAT_3

LEVEL low

CONTAM
VEGETATION rain forest

DRAINAGE AREA 1.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 02-05-1990 NUMBER 20157 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5435460 EAST 332600 SAMPLER IJM

WIDTH 2.0 UNIT Smithton Trough
 DIRECTION 190 FLOAT_1 Sdol
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 2.5

DATE 02-05-1990 NUMBER 20158 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5435580 EAST 332760 SAMPLER IJM

WIDTH 4.0 UNIT Smithton Trough
 DIRECTION 230 FLOAT_1 none
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 2.5

DATE 02-05-1990 NUMBER 20164 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5433060 EAST 335320 SAMPLER IJM

WIDTH 1.0 UNIT Prc
 DIRECTION 330 FLOAT_1 none
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM

VEGETATION button grass

DRAINAGE AREA 4.0

DATE 02-05-1990 NUMBER 20165 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5432600 EAST 335080 SAMPLER IJM

WIDTH 4.0 UNIT Prc
 DIRECTION 134 FLOAT_1 none
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM

VEGETATION button grass

DRAINAGE AREA 60.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 02-05-1990 NUMBER 20166 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5432140 EAST 335260 SAMPLER IJM

WIDTH 1.0 UNIT Prc
 DIRECTION 92 FLOAT_1 qt
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM
 VEGETATION button grass DRAINAGE AREA 3.0

DATE 02-05-1990 NUMBER 20167 MAP DEMPSTER TYPE WATER

EL 52/89 NORTH 5432440 EAST 334600 SAMPLER IJM

WIDTH 15.0 UNIT Prc
 DIRECTION 285 FLOAT_1 none
 COLOUR med brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL low

CONTAM
 VEGETATION button grass DRAINAGE AREA 100.0

DATE 30-04-1990 NUMBER 20633 MAP SUMAC TYPE WATER

EL 52/89 NORTH 5445300 EAST 328840 SAMPLER KJV

WIDTH 5.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Ssst
 COLOUR very weak FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION logged DRAINAGE AREA 15.0

DATE 30-04-1990 NUMBER 20634 MAP SUMAC TYPE WATER

EL 52/89 NORTH 5444660 EAST 328660 SAMPLER KJV

WIDTH 5.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Sdol
 COLOUR very weak FLOAT_2 Ssst
 FLOW moderate FLOAT_3 lam silty Sdol

LEVEL low

CONTAM
 VEGETATION logged DRAINAGE AREA 3.5

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE	30-04-1990	NUMBER	20635	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5443840	EAST	321840	SAMPLER	KJV
WIDTH	10.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		lam Sslt	
COLOUR	very weak			FLOAT_2		Sdol	
FLOW	moderate			FLOAT_3			
CONTAM							LEVEL low
VEGETATION	logged						DRAINAGE AREA 3.5
DATE	30-04-1990	NUMBER	20636	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5448740	EAST	330320	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	farming						LEVEL low
VEGETATION	farms						DRAINAGE AREA 3.0
DATE	30-04-1990	NUMBER	20637	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5450000	EAST	331420	SAMPLER	KJV
WIDTH	0.5			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	slow			FLOAT_3			
CONTAM	farming						LEVEL low
VEGETATION	farms						DRAINAGE AREA 4.0
DATE	30-04-1990	NUMBER	20638	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5443180	EAST	327820	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Bb	
COLOUR	very weak			FLOAT_2			
FLOW	moderate			FLOAT_3		no tag left	
CONTAM							LEVEL low
VEGETATION	rain forest						DRAINAGE AREA 2.5

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 30-04-1990	NUMBER 20639	MAP SUMAC	TYPE WATER
-----------------	--------------	-----------	------------

EL 52/89	NORTH 5443160	EAST 327940	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	10.0	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	Sdol
COLOUR	clear	FLOAT_2	Bb
FLOW	moderate	FLOAT_3	no tag left

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 8.0

DATE 30-04-1990	NUMBER 20640	MAP SUMAC	TYPE WATER
-----------------	--------------	-----------	------------

EL 52/89	NORTH 5442180	EAST 328300	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	5.0	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	Bb
COLOUR	clear	FLOAT_2	VSar
FLOW	moderate	FLOAT_3	

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 4.0

DATE 30-04-1990	NUMBER 20641	MAP SUMAC	TYPE WATER
-----------------	--------------	-----------	------------

EL 52/89	NORTH 5442360	EAST 328440	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	5.0	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	Bb
COLOUR	clear	FLOAT_2	
FLOW	moderate	FLOAT_3	

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 4.0

DATE 30-04-1990	NUMBER 20642	MAP SUMAC	TYPE WATER
-----------------	--------------	-----------	------------

EL 52/89	NORTH 5444940	EAST 324860	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	12.0	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	Sdol
COLOUR	very weak	FLOAT_2	wh Sdol
FLOW	moderate	FLOAT_3	vfg Ssst

LEVEL low

CONTAM

VEGETATION rain forest

DRAINAGE AREA 4.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 30-04-1990 NUMBER 20643 MAP SUMAC TYPE WATER
 EL 52/89 NORTH 5444780 EAST 325160 SAMPLER KJV

WIDTH 15.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Sdol
 COLOUR weak brown FLOAT_2 Bb
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION logged DRAINAGE AREA 3.0

DATE 30-04-1990 NUMBER 20644 MAP SUMAC TYPE WATER
 EL 52/89 NORTH 5444760 EAST 325300 SAMPLER KJV

WIDTH 1.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 wh Sdol
 COLOUR weak brown FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION logged DRAINAGE AREA 3.0

DATE 30-04-1990 NUMBER 20645 MAP SUMAC TYPE WATER
 EL 52/89 NORTH 5440420 EAST 326820 SAMPLER KJV

WIDTH 6.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Sdol
 COLOUR med brown FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION rain forest DRAINAGE AREA 5.0

DATE 30-04-1990 NUMBER 20646 MAP SUMAC TYPE WATER
 EL 52/89 NORTH 5440420 EAST 326820 SAMPLER KJV

WIDTH 6.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Sdol
 COLOUR med brown FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION rain forest DRAINAGE AREA 5.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE	30-04-1990	NUMBER	20647	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5439860	EAST	326060	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2		Bb	
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	low
VEGETATION	rain forest					DRAINAGE AREA	2.0
DATE	30-04-1990	NUMBER	20648	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5444460	EAST	324820	SAMPLER	KJV
WIDTH	10.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sslt	
COLOUR	med brown			FLOAT_2		Sdol	
FLOW	moderate			FLOAT_3		mic Ssst	
CONTAM						LEVEL	low
VEGETATION	rain forest					DRAINAGE AREA	13.0
DATE	30-04-1990	NUMBER	20649	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5446980	EAST	328460	SAMPLER	KJV
WIDTH	15.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2		mic Ssst	
FLOW	moderate			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	24.0
DATE	03-10-1990	NUMBER	21055	MAP	SUMAC	TYPE	WATER
EL	52/89	NORTH	5441040	EAST	328320	SAMPLER	MAT
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	360			FLOAT_1		Cb	
COLOUR	very weak			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	
VEGETATION	wet eucalypt					DRAINAGE AREA	5.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 52/89

DATE 03-10-1990 NUMBER 21056 MAP SUMAC TYPE WATER

EL 52/89 NORTH 5441080 EAST 328380 SAMPLER MAT

WIDTH	3.0	UNIT	Smithton Trough
DIRECTION	250	FLOAT_1	Cb
COLOUR	very weak	FLOAT_2	
FLOW	fast	FLOAT_3	

LEVEL 0.10

CONTAM old logging
VEGETATION wet eucalypt

DRAINAGE AREA 3.0

DATE 03-10-1990 NUMBER 21057 MAP SUMAC TYPE WATER

EL 52/89 NORTH 5443160 EAST 327920 SAMPLER MAT

WIDTH	10.0	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	Cb
COLOUR	clear	FLOAT_2	Sslt
FLOW	moderate	FLOAT_3	qz

LEVEL

CONTAM
VEGETATION rain forest

DRAINAGE AREA 10.0

DATE 03-10-1990 NUMBER 21058 MAP SUMAC TYPE WATER

EL 52/89 NORTH 5449980 EAST 331420 SAMPLER MAT

WIDTH	0.5	UNIT	Smithton Trough
DIRECTION	0	FLOAT_1	
COLOUR	clear	FLOAT_2	
FLOW		FLOAT_3	

LEVEL

CONTAM farming
VEGETATION

DRAINAGE AREA 3.0

004

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
52 Murray Road, Welshpool, W.A. 6106

Telex AA92560

Phone (09) 458 7999

FAX: 004 31 8890

ANALYTICAL REPORT No. 27.3.08.07212

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

ORDER No. PROJECT

Geopeko
P.O. Box 180
Rosebery
Tasmania 7470

50058

Arthur River

DATE RECEIVED

RESULTS REQUIRED

02/07/90

ASAP

No. OF PAGES OF RESULTS

DATE REPORTED

No. OF COPIES

TOTAL No. OF SAMPLES

1

10/07/90

1

10

PRE-TREATMENT

ANALYSIS

STATE OF SAMPLES	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
Various		RC	Prep: 006,010,011,012,013,014						Cu,Pb,Zn,Fe,Mn/101		
Various		RC							Au,AuChk/309		
Various		RC	Prep: 006,010,011,012,013,014						Fe/104		

REMARKS

K. Virgoe
Geopeko
P.O. Box 180
Rosebery
Tasmania 7470

RESULTS TO RESULTS TO

STATE OF SAMPLES	ANALYSIS	PREPARATION	ANALYSIS	METHOD
whole core	WC	perchloric acid	A1	atomic absorption
lit core	SC	hydrochloric acid	A2	X-ray fluorescence
slitting	CU	nitric acid	A3	spectrophotometry
rock	Ro	aqua regia	A4	colorimetry
soil	SO	nitric-perchloric	A5	chromatography
pulp	PU	HF mixture	A6	titration
water	WA	HF under pressure	A7	other chemicals means
sue	TI	fusion	A8	miscellaneous
beam sediment	SS			fluorescence
heavy mineral	HM			Inductively coupled plasma

AUTHORISED OFFICER

Gerkins

0045

ANALABS

397047

A Division of Incharge Inspection and Testing Services Australia Pty Ltd.

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

		27.3.08.07212				10/07/90		50058		1 OF 1	
TUBE No.	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Au	AuChk	EL	
1	20516	15	5	30	2.53	-	195	<0.008	-	52/89	
2	20518	5	<5	15	2.40	-	70	<0.008	-	52/89	
3	20520	120	<5	140	>5.00	19.90	4575	<0.008	-	52/89	
4	20521	55	<5	105	>5.00	7.06	1600	<0.008	-	52/89	
5	20522	90	<5	75	>5.00	7.75	1475	<0.008	-	52/89	
6	20532	20	<5	55	4.55	-	290	<0.008	-	52/89	
7	20315	15	20	65	2.52	-	465	<0.008	-	42/89	
8	20316	20	150	20	2.23	-	150	<0.008	-	42/89	
9	20317	25	<5	230	>5.00	18.90	5025	<0.008	-	42/89	
10	20318	40	15	50	2.90	-	90	<0.008	-	42/89	
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23	DETECTION	5	5	5	0.05	0.05	5	0.008	0.008		
24	UNITS	ppm	ppm	ppm	%	%	ppm	ppm	ppm		
25	METHOD	101	101	101	101	104	101	309	309		

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED
OFFICER

Jenkins

Page 1

22-04-19

ARTHUR RIVER PROJECT - ROCK CHIP SAMPLING
EL 52/89 - BALFOUR

NUMBER	20516	SAMPLER MAT	TYPE FLOAT	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK				FROM CREEK	TO
AMG COORDINATES	EAST 332360			NORTH 5433280		
LITHOLOGY	Sdlst leached si'd minor py bk Sct					
COMMENTS	AT W/S 20153					
PURPOSE	assay					
NUMBER	20517	SAMPLER MAT	TYPE RC	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK TRIB				FROM O/C	TO
AMG COORDINATES	EAST 332680			NORTH 5434080		
LITHOLOGY	dk gy dec'd silty Sdlst					
COMMENTS	AT W/S 20154					
PURPOSE	HAND SPEC					
NUMBER	20518	SAMPLER MAT	TYPE FLOAT	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK				FROM CREEK	TO
AMG COORDINATES	EAST 332540			NORTH 5434360		
LITHOLOGY	rd bn jaspery Sct py hte					
COMMENTS	Large blocks					
PURPOSE	HAND SPEC					
NUMBER	20520	SAMPLER MAT	TYPE FLOAT	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK TRIB AT W/S 20156				FROM CREEK	TO
AMG COORDINATES	EAST 332580			NORTH 5434620		
LITHOLOGY	Limonite					
COMMENTS	prob dec'd Sdlst					
PURPOSE	ASSAY					
NUMBER	20521	SAMPLER MAT	TYPE ROCK	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK				FROM O/C	TO
AMG COORDINATES	EAST 332540			NORTH 5434860		
LITHOLOGY	gn gy sandy Sdlst					
COMMENTS	NB green colour					
PURPOSE	ASSAY					
NUMBER	20522	SAMPLER MAT	TYPE ROCK	EL 52/89	DATE	03-04-19
LOCATION	LAGUNTA CK				FROM O/C	TO
AMG COORDINATES	EAST 332780			NORTH 5435580		
LITHOLOGY	dk gy recryst'd mg Sdlst					
COMMENTS	good o/c					
PURPOSE	ASSAY					
NUMBER	20529	SAMPLER MAT	TYPE ROCK	EL 52/89	DATE	03-04-19
LOCATION	TRIAS CK AT W/S 20165				FROM O/C	TO
AMG COORDINATES	EAST 335060			NORTH 5432620		
LITHOLOGY	fractured pl gy vfg MSsst (QZT)					
COMMENTS						
PURPOSE	HAND SPEC					
NUMBER	20530	SAMPLER MAT	TYPE ROCK	EL 52/89	DATE	03-04-19
LOCATION	HORTON R TRIB AT W/S 20166				FROM O/C	TO
AMG COORDINATES	EAST 335280			NORTH 5432220		
LITHOLOGY	pl gy fg MSsst (QZT)					
COMMENTS	sub o/c					
PURPOSE	HAND SPEC					

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397050

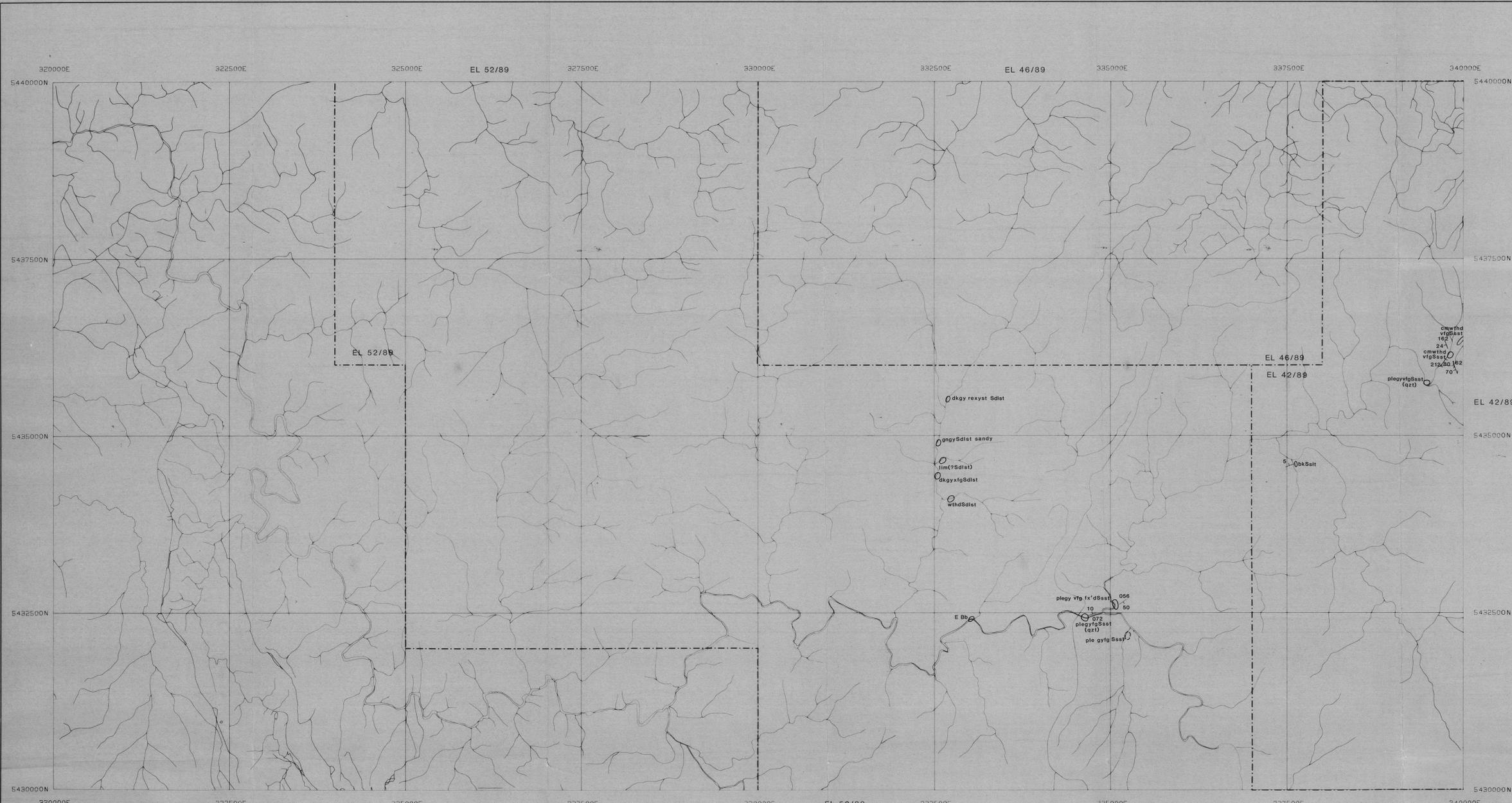
Page 2

22-04-19

ARTHUR RIVER PROJECT - ROCK CHIP SAMPLING
EL 52/89 - BALFOUR

NUMBER 20531 SAMPLER MAT TYPE ROCK EL 52/89 DATE 04-04-19
LOCATION HORTON R W/S 20167 FROM O/C TO
AMG COORDINATES EAST 334580 NORTH 5432420
LITHOLOGY pl gy fg Ssst (QZT)
COMMENTS
PURPOSE hand spec

NUMBER 20532 SAMPLER MAT TYPE FLOAT EL 42/89 DATE 05-04-19
LOCATION WHITEHEAD CK AT W/S 20169 FROM CREEK TO
AMG COORDINATES EAST 340880 NORTH 5436020
LITHOLOGY dk gy vfg Ssst tr py
COMMENTS 1% dissem py
PURPOSE ASSAY

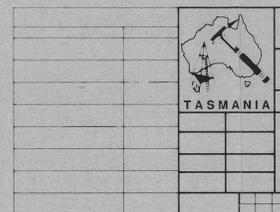


- ROCK TYPES**
- SEDIMENTS:**
- Ssst sandstone
 - Sqr quartz arenite
 - Swk graywacke
 - Ssilt siltstone
 - Sdol dolomite
 - Scon conglomerate
 - Sbx breccia
- IGNEOUS ROCKS:**
- Tert Bb tertiary basalt
 - C Bb cambrian basalt
 - Bd dolerite
- METAMORPHICS:**
- Mpyl phyllite
 - MSqr meta arenite
- SEDIMENT GRAIN SIZE**
- vfg very fine grained
 - fg fine grained
 - mg medium grained
 - cg coarse grained
- TEXTURES**
- vns veins
 - lbd interbedded
 - lam laminated
 - clvd cleaved
 - stn staining
 - gd graded
 - wthd weathered
- COLOURS**
- bk black
 - wh white
 - gn green
 - gy grey
 - pl pale
 - dk dark
 - or orange
 - cm cream
- MINERALOGY**
- py pyrite
 - qt quartz
 - Fe iron
 - Mn manganese
 - cbd carbonate
 - Tq turquoise
- STRUCTURAL SYMBOLS**
- bedding
 - facing
 - overturned bedding
 - cleavage
 - fault
 - rock outcrop
 - Hoat/subcrop
 - definite contact
 - approximate contact
 - interpreted contact

5 cm

91-3229.

3244	3444
3243	3443
3242	3442



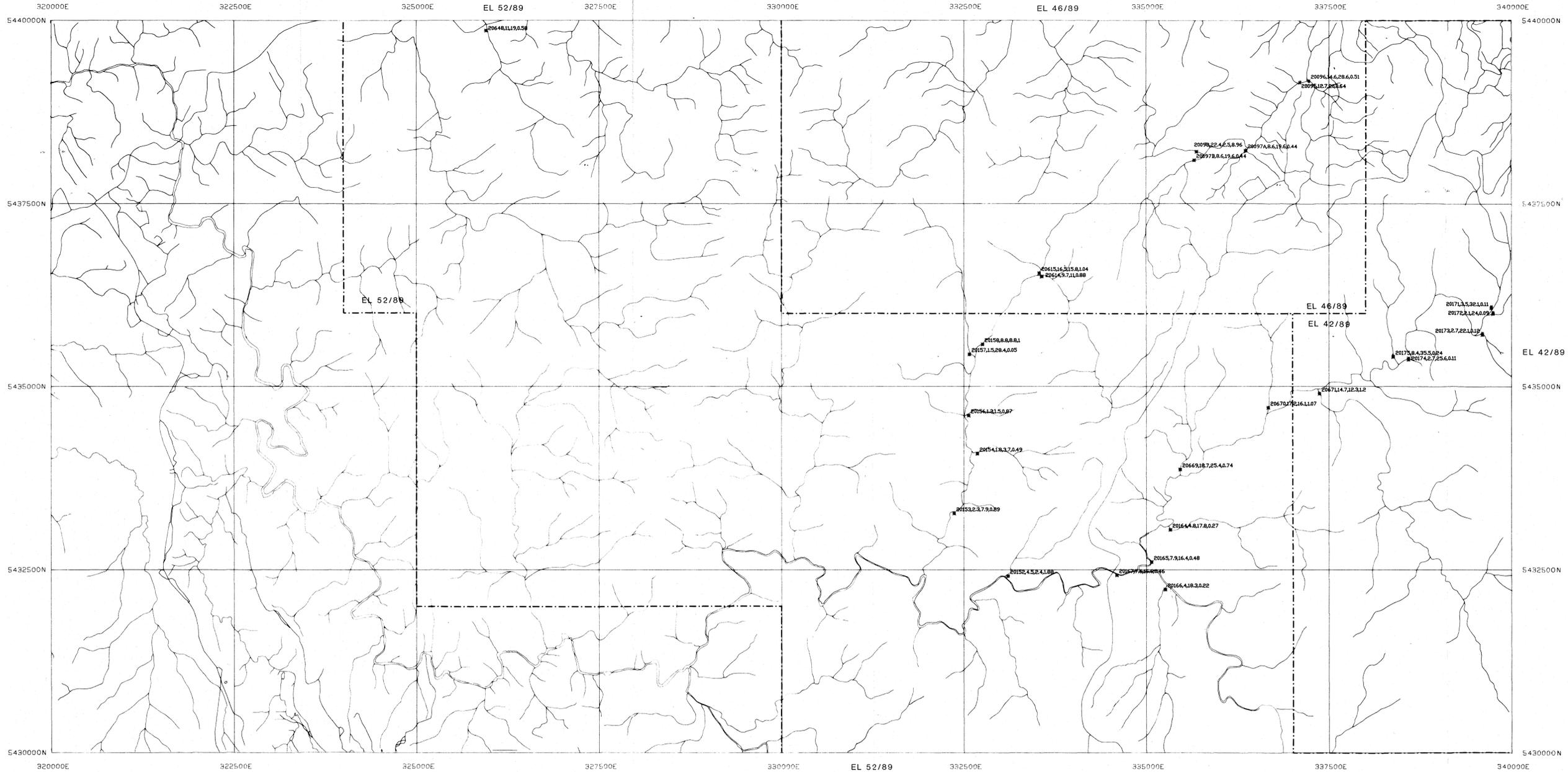
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AUSTRALIAN HEIGHT DATUM

3243 DEMPSTER

GEOLOGICAL FACT MAPPING
397052

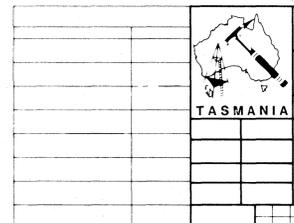
EL 52/89 PLATE 1B



5 cm

91-3229

	3244	3444
	3243	3443
	3242	3442



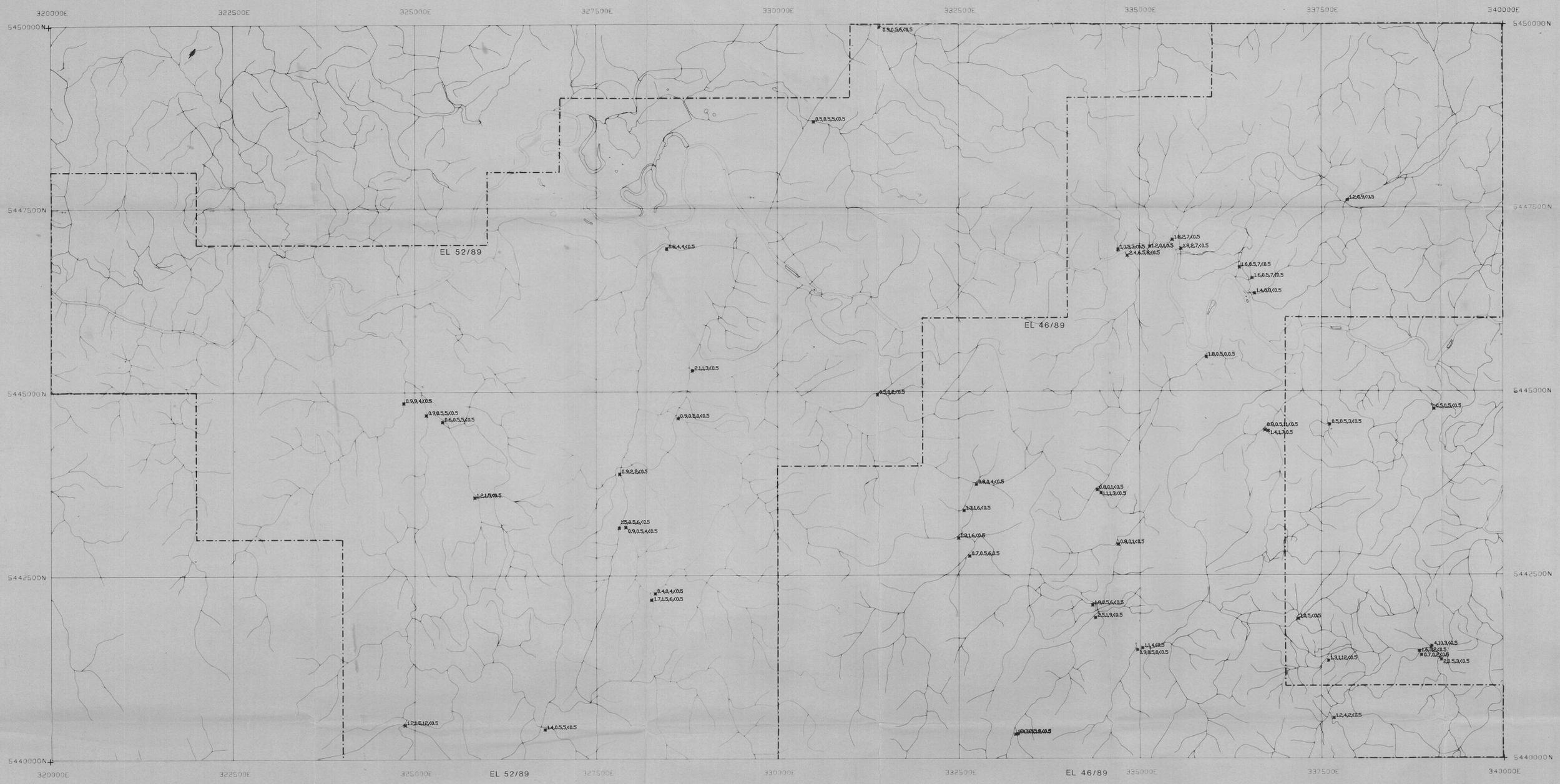
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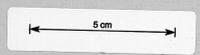
3243 DEMPSTER

WATER GEOCHEMISTRY
 Sample Number, Au, C, Au/C

EL 52/89 PLATE 2B



LEGEND
 Sample Location
 Copper (ppb)
 Lead (ppb)
 Zinc (ppb)
 Arsenic (ppb)
 BT - Below Detection

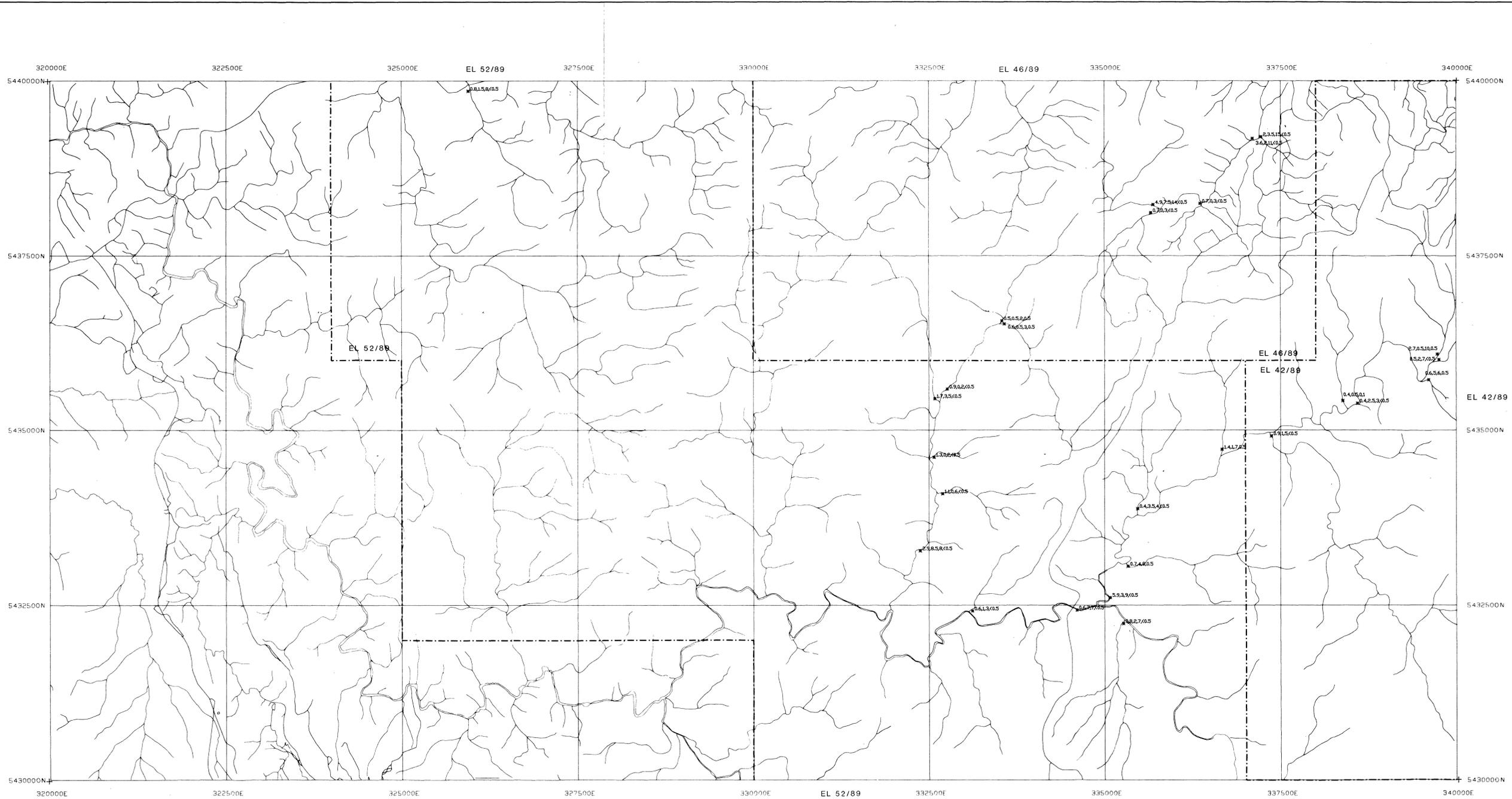


91-3229

		3445
3244		3444
3243		3443



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 SCALE - 1:25000
 AUSTRALIAN HEIGHT DATUM
3244 SUMAC
WATER GEOCHEMISTRY
 Cu, Pb, Zn, As
 EL 52/89 PLATE 3A

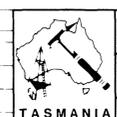


LEGEND
 =====
 Sample Location
 Copper (ppb)
 Lead (ppb)
 Zinc (ppb)
 Arsenic (ppb)
 38,6,5,23<0.5
 BT - Below Detection



91-3229.

3244	3444
3243	3443
3242	3442



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SCALE - 1:25000 AUSTRALIAN HEIGHT DATUM	
3243 DEMPSTER	
WATER GEOCHEMISTRY Cu, Pb, Zn, As	
EL 52/89 PLATE 3B	