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CSR LIMITED - MINERALS DIVISION
EXPLORATION GROUP

FINAL REPORT ON
RELINQUISHED AREAS OF E.L. 11/78
GEORGE RIVER, TASMANIA

15 JAN 1982

EMR 159/81

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KEYWORDS

TASMANIA
E L 11/78
GEOLOGY
GEOCHEMISTRY
GEOPHYSICS
HEAVY MINERALS
COPPER
LEAD
ZINC
SILVER
BISMUTH
CADIUM
MOLYBDENUM
TUNGSTEN
GOLD
ARSENIC
COBALT
SOIL
STREAM SEDIMENT
ROCK-CHIP
GEORGE RIVER
ST. HELENS
UPPER SCAMANDER
BLUE TIER GRANITE
MATHINA BEDS
MT. PIERSON GRANITE
TIN

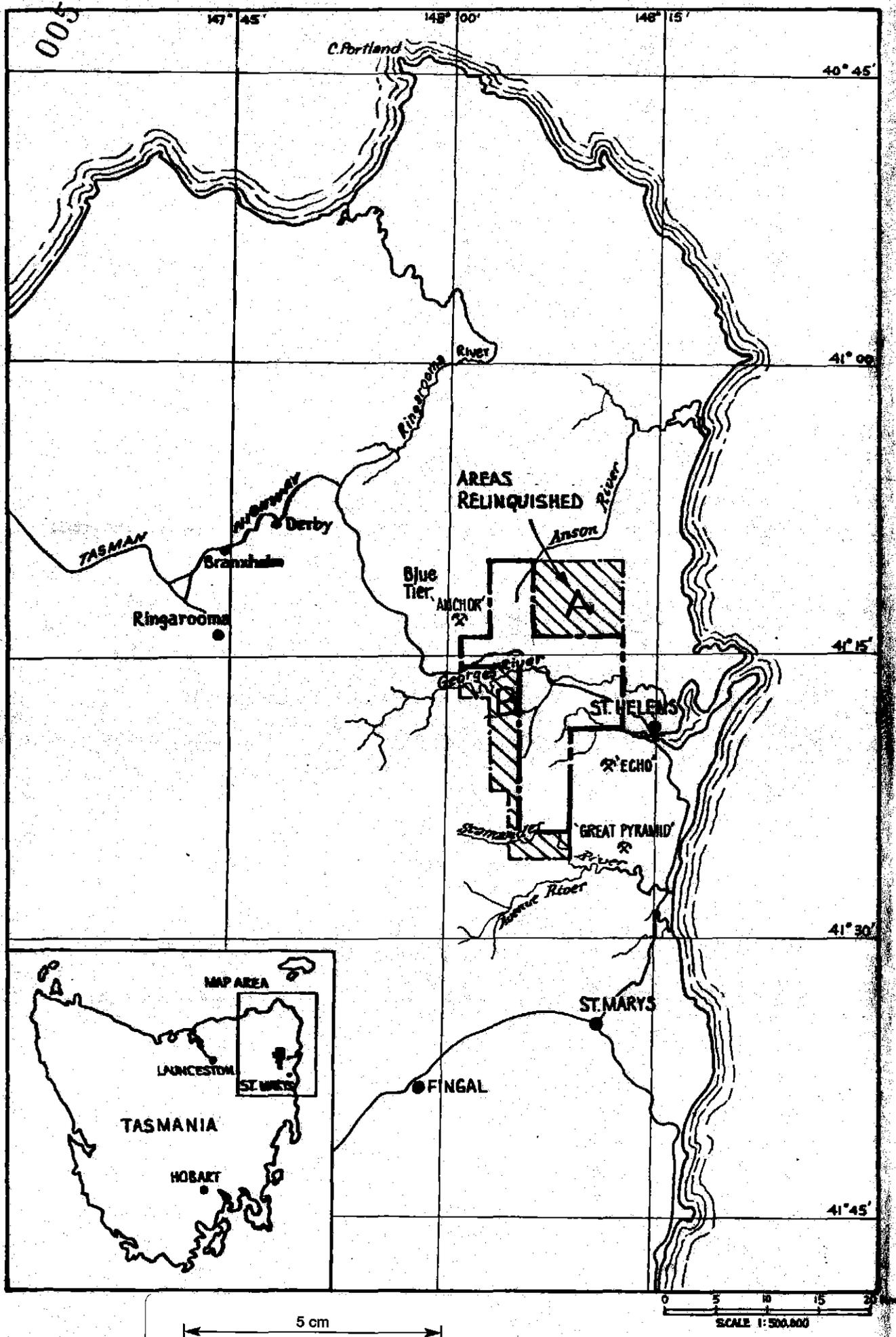


FIG. 1. LOCATION MAP-GEORGES RIVER E.L.11/78 TAS.

1. INTRODUCTION

Exploration Licence 11/78 (E.L. 11/78) was granted to CSR Limited on 15th September 1978. It originally covered an area of 303 square kilometres immediately west of St. Helens in the northeastern portion of Tasmania. The licence area stretched from St. Helens to Pyengana (east-west) and from Griffiths Marsh to Upper Scamander (north-south).

This area was considered prospective for tin in Tertiary alluvials and as disseminated and lode tin in both country rock and the mineralised granite.

Since 1978, CSR Limited has undertaken exploration to evaluate the Licence. Results of the 1978/79, 1979/80 and 1980/81 programmes have been documented by Hall (1979), Williams (1980) and Ellis (1981).

In September 1981 CSR Limited reduced the area of the Exploration Licence to 176 square kilometres. Areas of 63 and 64 square kilometres were relinquished from the north-eastern and southwestern quadrants.

This report summarises all CSR Limited data relating to the areas relinquished from E.L. 11/78 in September 1981.

2. LOCATION AND ACCESS

The area of E.L. 11/78 relinquished comprised an equidimensional area in the northeastern corner of the original licence and an irregular block in the southwestern portion of the area (Figure 1).

The northeastern relinquished portion (Area A) measured seven (north-south) by nine (east-west) kilometres between grid lines 5441000m N, 5434000m N, 592000m E and 601000m E. Access to this area is via the Anson Bay Road.

This northeastern area is relatively flat and situated in the swampy headwater region of the Anson Bay River system. The eastern part of the area is locally steep and is partly covered by thick forest. Elsewhere in the northeastern corner, the vegetation is swamp type (tussocks) or light open forest.

The southwestern relinquished area (Area B) comprises three (north-south) by five (east-west) kilometre southern portion (south of grid line 5415000m N) and an irregular block (varying from one to six kilometres wide) west of grid line 591000m E and south of grid line 5431000m N.

This southwestern area is much more rugged than the northeastern area, with elevation variations of over 300 metres. This locally very steep area is covered by an open eucalypt forest with small localised patches of thick undergrowth. Dense rainforest occurs along the steep northern banks of the George River. Access into this forested area is by several forestry tracks off Mogan's Road and from Pyengana.

3. EXPLORATION HISTORY

3.1 Prior to CSR Limited

Gold was discovered southwest of E.L. 11/78 in 1852 (Mangana-Mathinna area) and was worked until the 1920's. The decline in gold mining was followed by the discovery and working of alluvial tin deposits in several rivers of northeastern Tasmania. Several of these alluvial finds guided the discovery of hard rock tin deposits, particularly in the Blue Tier Granite (northwest of E.L. 11/78). Investigation of the Scamander mineral district accompanied the expansion of tin mining (south-east of E.L. 11/78). The main minerals found in this district were copper, silver, tungsten and tin.

Apart from the Mt. Lyell Mining and Railway Company (which investigated the Blue Tier Tinfield prior 1910) and the Tasmanian Department of Mines (which investigated the Blue Tier Tinfield and the St. Helens area) no detailed exploration was carried out in the area until 1956.

Since 1956 several large exploration companies and the Tasmanian Department of Mines have been active. The most notable of these companies have been :-

- (a) Rio Tinto Zinc Corporation (1956-58) - Scamander Mineral Field, alluvial tin area.
- (b) Electrolytic Zinc Co. (1959-63) - Scamander Mineral Field, Blue Tier granite.
- (c) Broken Hill Proprietary Co. Ltd. (1960's-80's) - Scamander Mineral Field.
- (d) Austminex (1960's) - Scamander Mineral Field, Blue Tier Granite.
- (e) Utah Development Co. (1963-66) - alluvial tin areas.

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- (f) Aberfoyle Development Co. (mid-1960's) - Scamander Mineral Field, Blue Tier Granite.
 - (g) Texins Development Pty. Ltd. [Geophoto Minerals] (1968-70) - Scamander to Mt. Cameron mineral areas.

A short summary of most of this work can be found in Mortimer (1974).

The above exploration consisted of a range of exploration techniques from "grass-roots" blanket geochemistry to detailed geological mapping, gravity, electromagnetic, induced polarisation, air photograph analysis and exploratory diamond drilling.

3.2 CSR Limited's Investigation of Relinquished Areas

3.2.1 Area A (northeast)

Initial work by CSR Limited comprised a compilation of previous work. This showed that although many stream sediment samples had been taken from the relinquished area there remained several streams which had not been sampled (DRG No. K554-8). These old samples were only analysed for Cu, Pb, Zn, Ag, Bi and Mo (Appendix I). This compilation of the previous work showed no geological, geochemical or geophysical anomalies within this northeastern relinquished area of E.L. 11/78.

CSR Limited's 1978/79 exploration programme thus included the stream sediment and heavy mineral sampling of streams not previously evaluated. All these stream sediment samples were analysed for Cu, Pb, Co and Bi by A.A.S. using perchloric/nitric acid digestion; for Mo and W by colorimetry; and for Au, Ag, As and Sn by emission spectroscopy. The results are compiled in Appendix II.

During this 1978/79 stream evaluation programme several rock-chip samples were collected.

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These were analysed by similar methods to the stream sediment sample analyses. The results are shown in Appendix III.

The heavy mineral samples collected during the 1978/79 programme represented only the -20 mesh size fraction. The samples were panned to a concentrate and then examined under a microscope. All heavy minerals were identified and recorded (Appendix IV).

During the 1979/80 programme further stream sediment samples were obtained from streams which had not been sampled by either CSR Limited or Geophoto Minerals and had not been worked for alluvial tin. These samples were analysed for Cu, Pb, Zn, Ag, Bi, Cd and Mo by A.A.S. using HClO_4 digestion at 220°C and for Sn and W by XRF. The results of these analyses are recorded in Appendix V.

The sample sites which showed anomalous analyses were resampled during 1980/81. Samples of both the stream sediments and the heavy minerals were obtained from the anomalous sites. Also further stream sediment samples were collected upstream of the anomalous samples. All of the samples taken from the vicinity of the anomalous samples were analysed in a similar manner to the original samples. The results of these analyses are recorded in Appendix VI.

Further work in the 1980/81 programme comprised sampling of streams previously evaluated only by Geophoto Minerals which did not analyse for tin. The 1980/81 samples from these streams were only analysed for Sn by X.R.F. The results of these analyses are shown in Appendix VII.

During 1980/81 the Tasmanian Department of Mines geologists have been updating and refining the geological mapping of the George River area of

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northeastern Tasmania (formerly mapped by Groves, Cocker and Jennings in 1977). DRG No. K554-6 shows the geology of this northeastern area of E.L. 11/78 as recently mapped by McClenaghan and Williams (1981). Only minor changes between the old (Groves, Cocker and Jennings, 1977) and more recent (McClenaghan and Williams, 1981) mapping are apparent.

3.2.2 Area B (southwest)

After the initial compilation of data available on previous work in the area it was obvious that many streams had not been investigated (DRG No. K554-8). Also, many of the old samples had only been analysed for Cu, Pb, Zn, Ag, Bi and Mo. A few samples had also been analysed for W and Sn (Appendix VIII). The compilation of previous work also highlighted several anomalies. A radiometric survey by Geophoto Minerals showed two anomalies in this southwest area (Anomalies "O" and "U"). Similarly, a computer generated structural analysis (also by Geophoto Minerals) showed two areas where the fracture patterns suggested a buried intrusion. No other geological, geochemical or geophysical anomalies were recorded in previous work on this southwestern area.

In 1978/79 emphasis was placed on evaluating the streams draining the known gold areas in the far southwest of E.L. 11/78. Stream sediment and heavy mineral samples were obtained mainly from the Brilliant Creek drainage system. These samples were evaluated in the same manner as those taken from the northeastern area during 1978/79 (see above). The results of the analyses of the stream sediment samples are shown in Appendix IX while the heavy mineral investigation results are shown in Appendix X.

During 1979/80 stream sediment samples were obtained from streams which had not previously been sampled by CSR Limited or Geophoto Minerals and had

not been worked for tin. The results of the analyses of these samples for Cu, Pb, Zn, Ag, Bi, Cd, Mo, Sn and W are shown in Appendix XI.

Further work during 1980 involved the investigation of the Geophoto Minerals radiometric anomalies ("O" and "U"). The areas of these anomalies (see Mortimer, 1974) were traversed using an Austral S.G.I. scintillometer. No anomalous readings were obtained. Geological mapping showed Anomaly U to be totally within the Mathinna Bed sedimentary sequence while Anomaly O was on the contact between the Mathinna Beds and the intruding Mt. Pierson Granite.

During the 1980/81 programme further stream sediment samples were taken from streams which had only been investigated by Geophoto Minerals. These samples were only analysed for Sn. The results of these analyses are shown in Appendix XII.

The 1980/81 programme also included a soil sampling traverse along the western slope (bank) of Treloggens Creek. This programme included the taking of six stream sediment samples and one rock sample. All samples were analysed for Cu, Pb, Zn, Bi and Mo by A.A.S. techniques and for Sn and W by X.R.F. methods. The results of these analyses are shown in Appendix XIII.

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4. CONCLUSIONS

Work conducted in the area prior to CSR Limited's involvement showed two areas of structural anomalies and two areas of radiometric anomalies. All of these anomalous areas were in the southwestern portion of the original E.L. 11/78.

Intensive geochemical investigation of E.L. 11/78 defined two areas within the original licence which have a very low economic potential. Area A is a 63 square kilometre area in the northeast of the licence and Area B is a 64 square kilometre area in the south and west of the licence.

Area A had several small non-repeatable geochemical (tin) anomalies.

Area B had no geochemical anomalies. Follow-up geochemical work in the areas of structural and radiometric anomalies showed no anomalies.

These areas were relinquished as no economic potential was established.

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5. REFERENCES

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- WILLIAMS, R.E. (1980) : Progress Report on Exploration of E.L. 11/78, George River Prospect, St. Helens District, Tasmania. Unpublished Report No. EMR 69/80 of CSR Limited.

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APPENDIX I

ANALYSES OF GEOPHOTO MINERALS

SAMPLES FROM AREA A

quoted from 74-995

Analyses p.p.m.

Sample No.	Cu	Pb	Zn	Ag	Mo	Bi
SH304	5	30	10	BLD	BLD	BLD
SH305	5	50	15	BLD	BLD	10
SH306	5	50	20	1	BLD	10
SH307	5	30	10	BLD	10	10
SH308	5	50	15	1	10	10
SH310	5	40	5	BLD	10	15
SH311	5	15	5	BLD	10	BLD
SH312	5	30	5	BLD	BLD	10
SH313	5	15	5	BLD	10	15
SH314	5	10	5	BLD	10	10
SH315	5	15	5	BLD	BLD	10
SH316	5	10	5	BLD	BLD	10
SH317	5	30	15	BLD	BLD	10
SH318	5	90	20	1	BLD	15
SH319	5	55	15	1	10	10
SH320	10	65	30	BLD	10	10
SH321	5	25	20	BLD	10	10
SH322	5	30	15	1	20	15
SH323	5	15	5	BLD	20	10
SH324	5	10	5	BLD	10	10
SH325	5	10	5	BLD	10	10
SH326	5	30	5	BLD	BLD	10
SH327	5	BLD	5	BLD	10	10
SH328	5	25	5	BLD	BLD	10
SH329	5	30	5	BLD	10	10
SH330	5	15	5	BLD	BLD	10
SH331	5	10	5	BLD	20	5
SH332	5	25	5	BLD	20	10
SH333	5	30	5	BLD	20	10
SH334	5	BLD	BLD	BLD	30	10
SH335	5	BLD	5	BLD	10	10

Analyses p.p.m.

quoted from 74-955

Sample No.	Cu	Pb	Zn	Ag	Mo	Bi
SH337	5	BLD	BLD	BLD	10	10
SH338	5	BLD	BLD	BLD	BLD	10
SH339	5	30	5	BLD	10	10
SH340	5	10	5	BLD	10	10
SH341	5	25	5	BLD	10	10
SH342	5	30	5	BLD	20	10
SH343	5	30	5	BLD	10	10
SH344	5	25	10	BLD	BLD	10
P144	5	35	20	4	BLD	4
P145	5	25	20	4	BLD	8
P146	5	15	15	4	BLD	4
P151	10	20	10	5	BLD	4

*quoted from
69-566*

BLD - Below Limited of Detection.

APPENDIX II

ANALYSES OF CSR LIMITED 1978/79
STREAM SEDIMENT SAMPLES FROM AREA A

quoted from report 79-1407

Sample No.	Cu	Pb	Zn	Co	Bi	W	Mo	Au	Ag	As	Sn
GRS41	10	<20	10	10	<20	<2	2	<3	<1	<50	<1
GRS42	10	<20	10	15	<20	<2	2	<3	<1	<50	1
GRS43	<2	<20	10	<5	<20	<2	2	<3	<1	<50	1
GRS44	10	<20	10	<5	<20	<2	2	<3	<1	<50	<1
GRS45	<2	<20	10	10	<20	<2	2	<3	<1	<50	1
GRS46	10	<20	20	<5	<20	<2	2	<3	<1	<50	1
GRS49	10	<20	10	10	<20	<2	5	<3	<1	<50	1
GRS50	<2	<20	20	<5	<20	2	5	<3	<1	<50	1
GRS51	<2	<20	20	<5	<20	2	2	<3	<1	<50	<1
GRS52	<2	<20	10	<5	<20	<2	5	<3	<1	<50	<1
GRS133	10	<20	20	<5	<20	<2	2	<3	<1	<50	<1
GRS134	10	<20	10	<5	<20	<2	2	<3	<1	<50	<1
GRS135	<2	<20	10	10	<20	<2	10	<3	<1	<50	1
GRS138	10	20	30	<5	<20	<2	10	<3	<1	<50	3
GRS139	<2	20	20	<5	<20	<2	5	<3	<1	<50	3
GRS140	10	20	20	<5	<20	<2	2	<3	<1	<50	3
GRS141	10	<20	20	<5	<20	<2	2	<3	<1	<50	3
GRS144	10	40	10	<5	<20	<2	5	<3	<1	<50	1
GRS145	<2	20	10	<5	<20	<2	2	<3	<1	<50	1
GRS146	10	20	20	<5	<20	10	5	<3	<1	<50	1
GRS147	10	20	10	<5	<20	<2	2	<3	<1	<50	1
GRS148	10	<20	10	10	<20	<2	2	<3	<1	<50	<1
GRS149	10	<20	<2	10	<20	<2	5	<2	<1	<50	3
GRS150	10	<20	10	10	<20	<2	10	<3	<1	<50	1
GRS151	<2	<20	10	<5	<20	<2	5	<3	<1	<50	<1
GRS152	10	<20	20	20	<20	<2	<2	<3	<1	<50	30
GRS153	10	40	10	20	<20	<2	2	<3	<1	<50	1
GRS154	10	<20	20	10	<20	<2	5	<3	<1	<50	1
GRS155	10	<20	10	<5	<20	<2	<2	<3	<1	<50	<1
GRS156	10	20	10	10	<20	<2	2	<3	<1	<50	1

020

APPENDIX III

ANALYSES OF CSR LIMITED 1978/79
ROCK CHIP SAMPLES FROM AREA A

Analyses p.p.m.

Sample No.	Cu	Pb	Zn	Co	Bi	W	Mo	Au	Ag	As	Sn
GRR123	<2	<20	60	10	<20	2	5	<3	<1	<50	3
GRR124	10	20	50	10	<20	<2	<2	<3	<1	<50	1
GRR125	10	40	40	<5	<20	2	<2	<3	<1	<50	<1
GRR146	10	20	10	10	20	2	5	<3	<1	<5	10

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APPENDIX IV

HEAVY MINERAL INVESTIGATIONAL^{DF} 1978/79
SAMPLES FROM AREA A

023

GRH41	Biotite and zircon with minor leucoxene
GRH42	Largley biotite, zircon and ilmenite. Traces of scheelite.
GRH43	Largley biotite and zircon. Traces of scheelite.
GRH44	Ilmenite and tourmaline and traces of scheelite
GRH45	Ilmenite and tourmaline and traces of scheelite
GRH46	Biotite, ilmenite and zircon. Minor epidote.
GRH49	Mainly ilmenite and zircon. Minor biotite and tourmaline.
GRH50	Zircon, ilmenite and magnetite.
GRH51	Zircon and elmenite - minor biotite.
GRH52	Major tourmaline and zircon. Minor ilmenite.
GRH133	Zircon and ilmenite.
GRH134	Zircon and actinolite. Minor biotite.
GRH135	Mainly ilmenite and zircon. Minor biotite.
GRH138	Largely biotite, ilmenite and zircon.
GRH139	Biotite, ilmenite and zircon. Minor epidote.
GRH140	Largley ilmenite and zircon. Minor rutile and biotite. Grains unworn.
GRH141	Abundant zircon and ilmenite.
GRH144	Largely biotite, ilmenite and zircon.
GRH145	Abundant biotite, ilmenite, zircon and epidote.
GRH146	Largely ilmenite, zircon and epidote.
GRH147	Biotite, ilmenite and zircon with minor cassiterite, tourmaline, ipidote and andalusite.
GRH148	Ilmenite, zircon and epidote with minor andalusite and tourmaline.
GRH149	Coarse angular cassiterite with traces of andalusite, tourmaline and zircon.
GRH150	Major coarse fragmentary cassiterite and minor zircon.
GRH151	Major cassiterite associated with tourmaline and abundant ilmenite.
GRH152	Major ilmenite and zircon with minor cassiterite, tourmaline and biotite.
GRH153	Coarse cassiterite with abundant zircon.
GRH154	Minor cassiterite with abundant ilmenite and calc-silicate minerals.
GRH155	Mainly ilmenite, zircon and epidote
GRH156	Mainly ilmenite, zircon and epidote.

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APPENDIX V

ANALYSES OF CSR LIMITED 1979/80
STREAM SEDIMENT SAMPLES FROM AREA A

025

31

not periodically reported?

846026

DATA BASE NOS

	Sample No.	Cu	Pb	Zn	Ag	Bi	Cd	Mo	Sn	W
5603	A80603	65	20	50	1	30	1	-	5	50
4	A80604	10	15	45	1	20	1		15	<10
5	A80605	25	20	60	1	35	2		<5	<10
6	A80606	5	15	20	1	20	1		5	<10
5607	A80607	<2	15	15	<1	25	1		15	<10
5807	A80807	2	20	2	<1	25	1	5	<5	<10
5810	A80810	5	40	20	1	20	1	5	<5	10
5816	A80816	10	45	20	1	30	2	5	<5	10
7	A80817	5	50	15	1	30	1	5	<5	20
8	A80818	2	20	2	<1	20	1	5	<5	<10
9	A80819	<2	20	2	<1	20	1	5	<5	<10
5820	A80820	2	20	5	<1	20	1	5	<5	10
1	A80821	2	20	10	<1	25	1	5	<5	10
2	A80822	2	25	10	1	40	<1	10	<5	<10
3	A80823	<2	15	5	1	30	<1	5	<5	<10
4	A80824	<2	20	5	<1	15	1	5	<5	<10
5	A80825	<2	15	5	1	25	1	5	<5	10
6	A80826	<2	20	5	<1	25	<1	2	<5	<10
7	A80827	<2	15	5	<1	30	1	5	<5	<10
8	A80828	2	15	10	1	25	<1	5	<5	<10
9	A80829	2	15	10	<1	20	<1	5	<5	<10
5830	A80830	2	10	10	1	25	<1	2	<5	30
1	A80831	2	10	5	1	25	1	2	<5	<10
2	A80832	2	15	5	1	20	<1	5	<5	<10
5841	A80841	2	10	5	<1	25	1	2	<5	<10
2	A80842	5	30	15	1	30	1	2	<5	10
3	A80843	2	10	10	<1	25	1	5	<5	<10
4	A80844	2	15	5	<1	25	1	2	<5	<10
5	A80845	2	15	5	<1	30	1	2	30	10
6	A80846	5	20	10	<1	30	1	2	10	10
7	A80847	2	15	5	<1	20	1	5	<5	<10

APPENDIX VI

ANALYSES OF RESAMPLED ANOMALOUS AREAS
IN AREA A

not previously reported?

DATA
PAGE
Nos

Sample No.	Sample Type	Cu	Pb	Zn	Ag	Bi	Mo	Sn	W
6155 A87155	Sediment	5	15	10	<1	5	2	5	<10
6156 A87156	Sediment	5	25	15	<1	10	5	5	10
6158 A87158	Sediment	15	30	40	1	20	5	5	10
6159 A87159	Sediment	15	30	40	1	20	5	5	<10
6160 A87160	Sediment	10	20	20	1	10	55	5	<10

Sample Locations

A87155 200 metres upstream of A80845
 A87156 Resample of A80845
 A87158 Resample of A89603)
 A87159 Resample of A80603 } Sheet wash area
 A87160 50 metres southwest of A80603

028

APPENDIX VII

ANALYSES OF CSR LIMITED 1980/81
STREAM SEDIMENT SAMPLES FROM AREA A

029

not previously reported?

DATA BASE NOS ↓	Sample No.	Sn
5848	A80848	6
5849	A80849	10
5850	A80850	8
6167	A87167	6
6168	A87168	8
6169	A87169	14

030

APPENDIX VIII

ANALYSES OF GEOPHOTO MINERALS SAMPLES
FROM AREA B

031

presumably quoted but can't find original source

846032

TCR
-69566

Sample No.	Cu	Pb	Zn	Ag	Bi	Mo
SH27	5	15	15	BLD	6	BLD
SH28	5	20	15	BLD	BLD	15
SH29	5	20	20	BLD	BLD	20
SH81	5	10	10	BLD	10	10
SH82	10	15	10	BLD	2	10
SH83	10	10	20	BLD	8	10
SH84	10	15	30	BLD	10	15
SH85	10	20	15	BLD	BLD	15
SH86	10	10	25	BLD	BLD	10
SH89	10	20	10	BLD	12	10
SH90	10	30	10	BLD	6	15
SH91	5	25	15	BLD	6	15
SH92	10	75	20	BLD	6	15
SH93	5	30	25	BLD	BLD	BLD
SH99	5	20	30	BLD	2	10
SH114	5	20	35	BLD		
SH115	5	20	45	BLD		
SH116	BLD	15	30	BLD		
SH117	5	10	15	BLD		
SH118	5	20	25	BLD		
SH119	5	15	10	BLD		
SH120	5	15	15	BLD		
SH121	5	10	20	BLD		
SH122	5	5	10	BLD		
SH123	10	10	135	BLD	6	10
SH124	5	10	40	BLD	8	10
SH125	25	10	20	BLD	4	10
SH126	20	10	75	BLD		
SH127	10	10	45	BLD	8	10
SH128	10	5	20	BLD	4	20
SH129	10	5	45	BLD	4	20
SH130	5	5	10	BLD	2	10

Sample No.	Cu	Pb	Zn	Ag	Bi	Mo
SH139	15	15	25	BLD	2	10
SH140	10	15	55	BLD	10	10
SH142	10	15	45	BLD	6	20
SH143	15	30	50	BLD	10	30
SH144	10	25	60	BLD	8	30
SH145	5	30	45	BLD	6	20
SH147	5	10	35	BLD		
SH148	5	10	40	BLD		
SH149	5	10	35	BLD		
SH150	5	10	35	BLD	6	10
SH151	10	10	45	BLD	6	20
SH156	5	10	25	BLD		
SH157	5	5	20	BLD		
SH158	10	10	120	BLD		
SH159	50	10	25	BLD		
SH180	5	5	5	BLD		
SH181	10	5	35	BLD		
SH182	10	10	40	BLD		
SH183	5	10	10	BLD		
SH184	5	5	20	BLD		
SH195	5	5	25	BLD		
SH196	5	10	20	BLD		
SH197	BLD	20	50	BLD		
SH198	BLD	20	65	BLD		
SH199	5	20	50	BLD		
PI50	10	25	10	5	BLD	BLD
AB1	10	10	50	BLD	BLD	BLD
AB2	10	20	80	BLD	BLD	BLD
AB3	15	25	75	BLD	BLD	BLD
AB4	15	25	75	BLD	BLD	BLD

Sample No.	Cu	Pb	Zn	Ag	Bi	Mo	W	Sn(%)
C19	5	40	25	1	5	20	BLD	BLD
C20	5	30	30	BLD	5	20	BLD	BLD
C21	5	30	15	BLD	BLD	10	BLD	BLD
C29	25	50	60	1	5	25	BLD	BLD
C30	BLD	30	10	BLD	BLD	10	BLD	BLD
C31	20	55	60	1	5	15	BLD	BLD
C34	10	40	40	1	BLD	20	BLD	BLD
C35	5	50	40	1	BLD	15	BLD	BLD
C36	5	40	35	1	5	15	BLD	BLD
C37	15	60	145	1	BLD	10	BLD	BLD
C38	10	50	35	1	5	15	BLD	BLD
C39	15	55	35	1	5	20	BLD	BLD
C40	15	50	40	1	5	20	BLD	BLD
C41	5	35	20	BLD	BLD	10	BLD	BLD
C42	5	35	25	BLD	5	15	BLD	BLD
C43	BLD	30	20	BLD	BLD	15	BLD	BLD
C44	BLD	25	20	BLD	BLD	10	BLD	BLD
C46	5	45	20	BLD	BLD	15	BLD	BLD
US32	35	50	30	BLD	5	10		
US66	5	-	30	BLD	BLD	BLD		
US74	25	20	15	BLD	BLD	BLD		
US75	30	25	45	BLD	BLD	BLD		
US76	30	20	45	BLD	BLD	BLD		
US77	40	30	65	BLD	BLD	BLD		
US102	40	40	60	BLD	BLD	BLD		
US108	55	30	55	BLD				
US113	45	30	50	BLD	BLD	BLD		
US114	70	30	50	BLD	BLD	BLD		
US117	40	40	20	BLD	BLD	BLD		
US118	40	30	20	BLD	BLD	BLD		
US119	35	30	20	BLD	5	BLD		
US120	10	25	35	BLD	5	BLD		

Sample No.	Cu	Pb	Zn	Ag	Bi	Mo
US121	15	20	35	BLD	BLD	BLD
US124		INSUFFICIENT SAMPLE				
US125	15	30	55	BLD	5	BLD
US126	10	25	50	BLD	5	BLD
US127	10	15	15	BLD	BLD	BLD
US128	10	40	15	BLD	BLD	BLD
US130	10	30	60	BLD	BLD	BLD
US131	15	30	65	BLD	BLD	BLD
US134	15	100	15	BLD	BLD	BLD
US136	10	20	15	BLD	5	BLD
US137						
US140	10	20	30	BLD	5	BLD
US170	5	20	15	BLD	5	BLD
US171	5	10	15	BLD	10	BLD
US172	5	15	35	BLD	10	30

APPENDIX IX

ANALYSES OF CSR LIMITED 1978/79
STREAM SEDIMENT SAMPLES FROM AREA B

036

quoted from 79-1407

Sample No.	Cu	PB	Zn	Co	Bi	W	Mo
GRS 34	10	<20	10	<5	<20	<2	<2
GRS 93	10	40	30	10	<20	<2	10
GRS 95	10	20	20	10	<20	<2	<2
GRS 96	20	40	20	20	<20	<2	<2
GRS 98	10	20	40	20	<20	<2	10
GRS 123	20	20	50	20	<20	<2	10
GRS 124	10	20	10	10	<20	<2	5
GRS 125	20	20	50	10	<20	<2	5
GRS 126	20	<20	30	20	<20	<2	5
GRS 127	10	<20	20	<5	<20	<2	2
GRS 166	10	20	20	<5	<20	20	5
GRR 95	10	<20	10	<5	<20	2	5

037

846038

APPENDIX X

HEAVY MINERAL INVESTIGATION OF 1978/79
SAMPLES FROM AREA B

038

GRR 34	Biotite, ilmenite and andalusite. Minor zircon and rutile.
GRR 93	Moderate cassiterite. Zircon is dominant.
GRR 95	Zircon is a minor mineral with anatase. Some calc-silicates.
GRR 96	A trace of gold. Anatase with minor zircon.
GRR 97	Anaatase with minor zircon with cacl-silicates.
GRR 98	Abundant tourmaline with minor zircon.
GRR 123	Abundant ferruginous siltstone. Minor zircon.
GRR 124	Abundant ferruginous siltstone. Minor zircon.
GRR 125	Appreciable zircon and tourmaline.
GRR 126	Appreciable zircon and tourmaline.
GRR 127	Calc-silicate metamorphic minerals.
GRR 166	Abundant tourmaline, zircon - minor monazite.

033

APPENDIX XI

ANALYSES OF CSR LIMITED 1979/80
STREAM SEDIMENT SAMPLES FROM AREA B

040

New?

846041

DATA
BASE
NO

	Sample No.	Cu	Pb	Zn	Ag	Bi	Cd	Mo	Sn	W
5611	A80611	2	15	30	1	15	1		<5	10
2	A80612	2	15	15	1	15	1		15	30
3	A80613	<2	15	35	1	25	1		10	<10
4	A80614	5	15	35	1	25	1		<5	10
5	A80615	2	15	25	1	25	1		15	<10
6	A80616	2	25	15	1	25	1		<5	<10
7	A80617	2	15	20	1	25	1		5	<10
5618	A80618	2	10	45	<1	20	1		10	10
5627	A80627	5	15	25	1	20	1		<5	20
8	A80628	5	15	45	1	25	2		10	10
9	A80629	<2	10	30	<1	15	1		<5	20
5630	A80630	<2	10	30	1	15	1		<5	10
1	A80631	5	15	35	1	15	1		10	10
2	A80632	5	15	35	1	20	1		5	20
3	A80633	2	15	35	1	15	1		15	20
4	A80634	<2	15	10	<1	15	1		10	30
5	A80635	5	25	10	<1	25	1		5	30
6	A80636	5	20	15	1	25	1		5	30
7	A80637	<2	10	15	<1	15	1		5	20
8	A80638	2	10	20	1	15	1		5	30
9	A80639	<2	15	30	<1	20	1		10	10
	A80639	<2	15	30	<1	20	1		10	10
5640	A80640	<2	20	45	1	20	1		5	10
1	A80641	2	15	45	1	20	1		<5	10
2	A80642	2	20	65	1	25	1		15	<10
3	A80643	2	10	20	<1	15	1		15	30
5646	A80646	5	20	45	1	25	1		10	<10
7	A80647	5	20	45	1	25	1		5	20
8	A80648	5	25	45	3	25	1		5	10
9	A80649	2	20	35	1	15	1		10	30
5650	A80650	5	25	45	1	25	1		5	10
5651	A80651	5	25	55	1	35	2		5	10

041

DATA
BASE
No.

5652

5656

7

8

9

5660

1

2

5672

3

4

5

6

7

8

9

5680

1

2

3

5694

5

6

7

8

5751

2

3

4

5

6

7

5837

5838

Sample No.	Cu	Pb	Zn	Ag	Bi	Cd	Mo	Sn	W
A80652	2	15	45	1	20	1		10	20
A80656	10	25	80	1	20	1		5	20
A80657	5	15	50	1	15	1		<5	20
A80658	5	20	70	1	25	1		<5	<10
A80659	5	25	95	1	25	1		10	10
A80660	5	20	50	1	15	1		10	<10
A80661	10	15	45	1	25	1		<5	20
A80662	15	25	85	1	20	1		<5	30
A80672	<2	20	10	<1	15	1		<5	<10
A80673	<2	20	5	1	20	1		<5	30
A80674	5	25	30	1	30	1		<5	20
A80675	5	25	15	1	25	1		<5	20
A80676	2	20	15	1	20	1		<5	20
A80677	<2	20	10	1	20	1		10	20
A80678	10	25	30	1	10	1	10	<5	10
A80679	10	35	30	1	10	1	10	<5	<10
A80680	2	15	20	1	15	<1	5	10	<10
A80681	2	20	25	1	5	1	10	<5	<10
A80682	10	45	45	1	10	2	5	35	10
A80683	15	50	45	1	20	1	10	<5	<10
A80694	2	10	15	<1	10	1	2	<5	<10
A80695	2	10	15	1	15	<1	2	<5	10
A80696	2	10	15	1	5	<1	<2	<5	<10
A80697	10	30	50	1	15	<1	2	<5	<10
A80698	15	40	55	1	10	1	2	<5	10
A80751	20	35	70	1	20	1	5	<5	<10
A80752	10	25	60	1	25	2	2	<5	<10
A80753	15	20	50	1	20	2	2	<5	20
A80754	10	20	65	1	20	1	2	<5	<10
A80755	10	25	50	1	25	1	2	<5	<10
A80756	15	30	50	1	25	1	5	<5	<10
A80757	10	25	30	1	20	1	5	<5	20
A80837	2	10	5	1	20	1	5	<5	10
A80838	2	25	20	1	35	1	5	<5	10

042

APPENDIX XII

ANALYSES OF CSR LIMITED 1980/81
STREAM SEDIMENT SAMPLES FROM AREA B

043

new?

DATA
BASE
140

	Sample No.	Sn	W	Cu	Pb	Zn	Bi	Mo
6171	A87171	<4						
2	A87172	4						
3	A87173	<4						
4	A87174	6						
5	A87175	8						
6	A87176	<4						
7	A87177	8						
8	A87178	6						
9	A87179	<4						
6180	A87180	4						
6181	A87181	6						
2	A87182	8						
3	A87183	4						
5924	A 119824	<5	<10	10	45	45	15	2

044

APPENDIX XIII

ANALYSES OF CSR LIMITED SAMPLES FROM
SOIL SAMPLING TRAVERSE FROM AREA B

Sample No.	Sn	W	Cu	Pb	Zn	Bi	Mo
All19759 Soil	5	<10	5	10	<2	5	<2
All19760 Soil	20	<10	5	10	2	10	2
All19761 Soil	<5	<10	2	10	2	15	2
All19762 Sediment	<5	<10	2	30	5	10	2
All19763 Soil	<5	<10	5	10	<2	10	5
All19764 Soil	<5	<10	5	10	10	15	2
All19765 Soil	<5	<10	2	5	5	5	<2
All19766 Sediment	<5	<10	2	50	10	20	5
All19767 Soil	<5	<10	5	10	5	10	2
All19768 Sediment	<5	<10	<2	50	10	20	2
All19769 Soil	<5	<10	2	15	2	10	<2
All19770 Soil	<5	<10	2	10	<2	10	<2
All19771 Sediment	<5	<10	<2	50	10	15	<2
All19772 Soil	<5	<10	2	20	10	20	2
All19773 Soil	<5	<10	5	25	15	20	2
All19774 Sediment	<5	<10	<2	20	5	20	5
All19775 Soil	15	<10	10	80	30	20	10
All19776 Rock	<5	<10	10	5	<2	10	<2
All19777 Soil	<5	<10	5	10	2	10	5
All19778 Soil	5	<10	2	10	<2	15	10
All19779 Soil	<5	<10	2	15	<2	10	2
All19780 Soil	10	<10	2	20	15	20	10
All19781 Sediment	<5	<10	10	25	20	20	2
All19782 Soil	<5	<10	2	15	2	20	2
All19783 Soil	<5	<10	5	25	10	15	2
All19784 Soil	<5	<10	2	20	10	20	<2
All19785 Soil	<5	<10	2	20	10	20	2

