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**EXPLORATION LICENCE 40/88**

**SAVAGE RIVER**

**TASMANIA**

**REPORT ON EXPLORATION**

**TO 4th NOVEMBER 1989**

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SEPTEMBER 1989.

**89-3026**

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SR 3/4	Savage River EL 40/88	Outcrop Geology
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1. SUMMARY

This Report summarises exploration activity on EL 40/88 Savage River by Aberfoyle Resources Limited for the 12 months to the 4th of November, 1989.

The main aim of exploration was to assess the potential of the volcanic horizons within the Arthur Lineament Complex for exhalative base metal mineralization. A stream sediment program was planned as a follow-up to anomalous zones generated by Savage Resources and also to assess the potential of areas not covered by previous explorers.

Exploration was generally restricted to the anomalous drainage systems accessible by foot or 4 wheel drive vehicle with the exception of Bounds Creek which was helicopter supported.

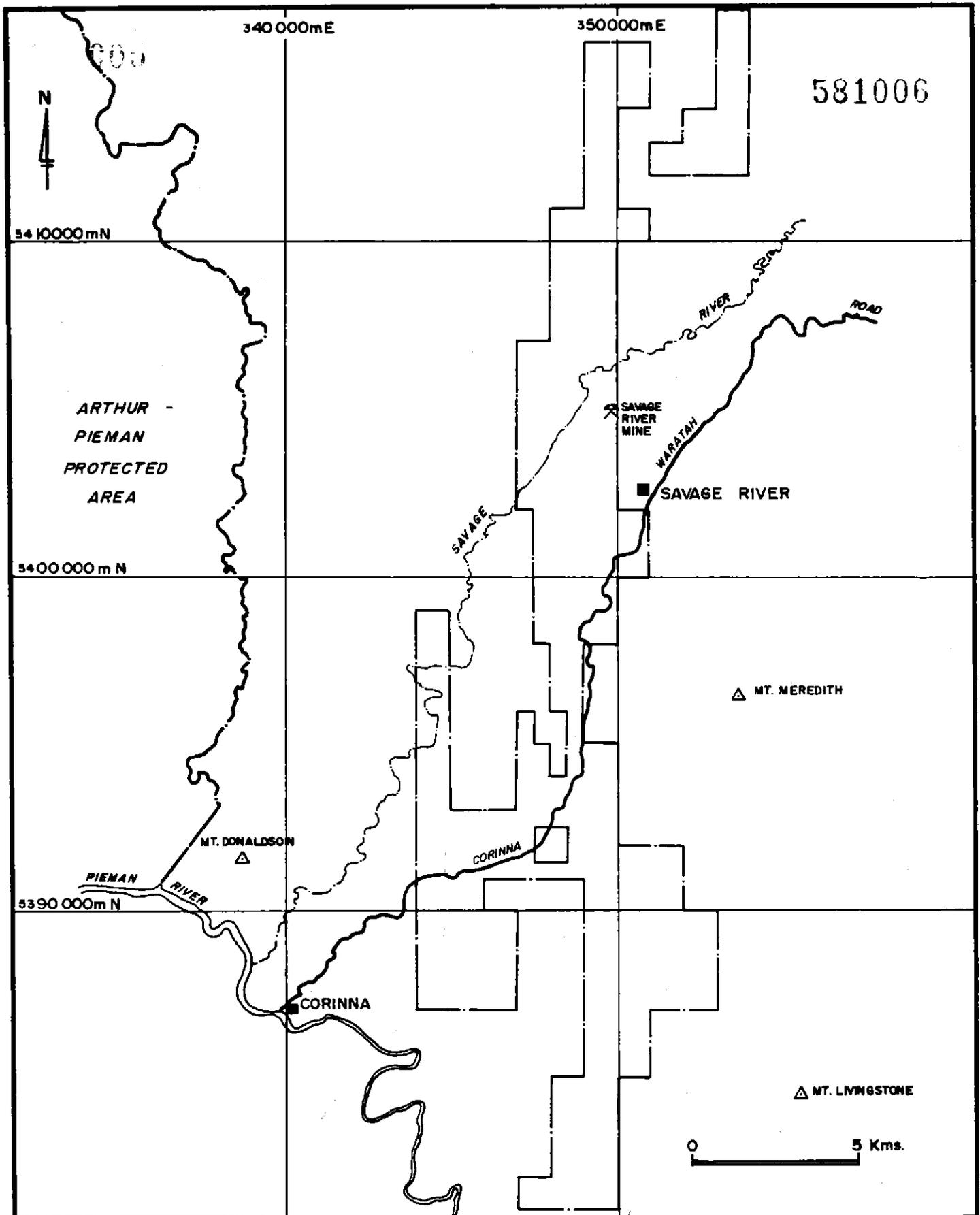
Results from this program were generally disappointing with the exception of anomalous Au and Ag in a number of the -80 mesh stream sediment samples from the Bowry Creek watershed at the Pistol Range Prospect.

## 2. INTRODUCTION

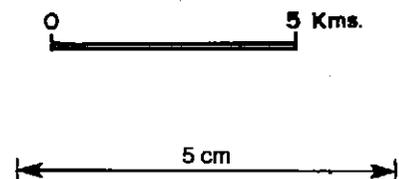
Exploration Licence 40/88 (Savage River) of 108 square kilometres lies between Pieman River to the south and the Donaldson River to the north and west of the Meredith Range. The licence is comprised of parts 1 and 2 of 100 and 8 square kilometres respectively (see Plate SR 6). The majority of the licence is steep and covered by a wide range of typical West Coast vegetation.

Exploration undertaken in 1989 was conducted in the central portion of the licence where access was serviced by the Corinna Road and a number of forestry tracks. Helicopter support was required for exploration in the Bounds Creek area.

Since the 4th November, 1988 exploration has been conducted by Aberfoyle Resources Limited.



**Aberfoyle Resources Ltd**  
EXPLORATION DIVISION



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NORTH WEST TASMANIA  
**SAVAGE RIVER E.L. 40/88**  
**LOCATION PLAN**

Compiled : RJH  
Drawn : RJE  
Traced : RJE  
Checked : RJH

Location Code :

Scale : As shown

Date : Sept. 1989

Plate No. : SR 6

### 3. EXPLORATION HISTORY

#### 3.1 Rio Tinto Exploration (pre 1961)

Regional airborne magnetics delineated a number of anomalies derived from massive magnetite-pyrite mineralization within the amphibolitic Bowry Member of the Precambrian Arthur Lineament Complex.

Subsequent drill testing at the Long Plains South led to the conclusion that this prospect and others further south were of no interest.

#### 3.2 Industrial Mining Investigations Pty. Ltd. (1961-1978)

Initial exploration was targetted at follow-up of magnetic anomalies generated by Rio Tinto.

Following the discovery of the Savage River Magnetite-Pyrite Deposit, exploration was almost solely dedicated to outline similar deposits within the Bowry Member. A number of existing Prospects generated by Rio Tinto were re-examined and drill tested. Possible resources of 30mt at 28% Fe and 4mt at 10-15% Fe were generated for the Long Plains South and Rocky River Prospects respectively.

#### 3.3 Savage Resources & Industrial Mining Investigations Pty. Ltd. (1979-1988)

Since 1978 exploration has been directed in search of a wide range of commodities.

Two of the Au prospects generated from traditional stream sediment and soil sampling and geophysical surveys reached the stage of drill testing at Specimen Creek and Golden Ridge, but results were disappointing.

The remainder of EL 4/61 is held over the Specimen Reef Prospect. Examination of this prospect by Aberfoyle indicates the gold mineralization is contained within thin flat-lying carbonate/magnetite/pyrite veins. The only zone of ore-grade Au mineralization intersected appeared to be related to the presence of magnetite. Mineralization of this size and style is not amenable to modern mining techniques and does not present a favourable exploration target.

No significant base metal prospects reached the stage of drill testing.

Exploration for heavy minerals including diamonds was also conducted throughout the licence with no significant results.

The industrial mineral prospects of the Main Creek Magnesite and Browns Plains Clay Formation are currently held under retention licence and have been drill tested. The magnesite is the considered most prospective but high levels of contaminants have downgraded the economics of the deposit. The Browns Plains Clay Formation, thought to be of value for its white firing properties, lacks continuity and quality and is unlikely to be developed further.

#### 4. REGIONAL GEOLOGY

##### 4.1 Precambrian

Precambrian rocks dominate almost the entire licence and exist as essentially north-south trending units with what would appear to be generally conformable contacts.

Age relationships are poorly understood between the various units of the Precambrian. At best, most of the package of Precambrian rocks can be subdivided into two subgroups in which both display a younging direction to the east. These two subgroups are divided by an essentially strike slip fault and their relative ages are undetermined at this stage.

##### 4.1.1 Sigma Group

The western-most of these two subgroups is known as the Sigma Group and outcrops in Tunnelrace Creek northeast of Corinna and in the Little Savage River region northwest of the Savage River Mine.

The oldest rocks of the Sigma Group are known as the Savage Dolomite which outcrop in Little Savage River and consist of locally silicified impure dolomites with rare stromatolites. These are conformably overlain by a younger unit of basic volcanics ranging from semi-intrusive dolerites to basaltic and andesitic lavas in the vicinity of Savage River west of the Savage Dolomite. Known as the Bernafai Volcanics these rocks are flanked by locally derived volcanogenic and pelitic siltstones and shales. A repeated sequence of these same dolomite/volcanic lithologies occurs further west of Savage River and in Tunnelrace Creek. This repeated succession is known as the Corinna Dolomite and Upper Bernafai or Tunnelrace Volcanics.

Unfortunately the recessive weathering characteristics coupled with the massive nature of the volcanics and their associated sediments almost entirely precludes the measurements of geological facing. For this reason structural relationships between the repeated sequences of the Sigma Group are poorly understood. Distinct petrographic and geochemical similarities between the two units of the Bernafai Volcanics and the Corinna and Savage Dolomites give rise to the theory of a folded repetition of the same sequence.

##### 4.1.2 The Arthur Lineament Complex

The eastern-most subgroup known as the Arthur Lineament Complex consists of western and eastern sequences which dominate the central portion of the licence as a north-south trending body of pelitic schists metaquartzites and amphibolites. The contact with the Sigma Group is essentially strike slip faulted.

The eastern sequence of the Arthur Lineament Complex consists of predominantly quartz-mica rocks including mica and graphitic schists, micaceous quartzites, turbiditic sediments and occasional amphibolites, whereas the western sequence is characterized by amphibolites, chlorite and albite schist or

quartz-muscovite schist (Turner, 1984). Throughout the entire complex, lithological boundaries strike north-south and are essentially parallel, suggesting the sequences are conformable.

The range of metamorphism throughout the complex reaches upper greenschist facies and in some cases possibly amphibolite facies.

The amphibolites of the eastern sequence have significant economic potential hosting major pyrite-magnetite deposits at Savage River, Long Plains South and Rocky River and the magnesite deposit at Main Creek.

#### 4.1.3 Oonah Formation

East of the Arthur Lineament Complex, outcropping over almost the entire eastern boundary of the licence, the Oonah Formation is composed of essentially pelitic sediments ranging in grain size from coarse quartzose sandstones to siltstones and shales. Bedding orientations are generally north-south with facings to the east indicating the formation is both younger and most likely conformable to rocks of the Arthur Lineament.

### 4.2 Devonian

#### 4.2.1 Meredith Granite

Outcropping in the extreme east of the licence in the headwaters of the Rocky River the Meredith granite is composed almost entirely of adamellite and has a narrow contact aureole (Groves, et. al., 1973).

### 4.3 Tertiary

#### 4.3.1 Tertiary Basalt

Unconformable sheet flows of glassy basaltic lavas outcrop in the central portion of the licence, west of Savage River and in the north in the vicinity of Pineapple Creek.

#### 4.3.2 Tertiary Gravels

Overlying the Precambrian throughout the licence are lead systems of quartz sands and gravels with interbedded layer of siliceous conglomerate. Occasionally lead systems contain abundant Ordovician conglomerate and Devonian granite cobbles, and these would appear to predate the larger quartz rich systems. In places evidence of reworking of the two systems is evident.

## 5. EXPLORATION ACTIVITY 1989

### 5.1 Introduction

The most significant mineralisation known in the licence occurs within the Bowry Member, a sequence of tholeiitic volcanics and shallow intrusives with minor serpentinites and carbonates, and comprises the Savage River type magnetite-pyrite deposits and the magnesite deposits of Main Creek.

Current evidence suggests the Savage River iron-ore deposits to be of marine volcanogenic exhalative origin. The presence of stratiform, sheetlike ore horizons associated with carbonate sediments and pillow lavas, as well as the absence of large-scale wall rock alteration support this theory.

On this basis, exploration by Aberfoyle Resources has been specifically targetted for volcanogenic base metal sulphides in the Bowry Member, and to a lesser extent other volcanic sequences within the Arthur Lineament Complex.

Detailed examination of base metal stream sediment anomalies generated by Savage Resources was undertaken. Selection criteria was based on the metal content of the samples taken and their proximity to the Bowry Member. A number of areas were selected for re-sampling using standard -80 mesh stream sediment techniques as well as detailed creek traverse mapping where possible. Of the areas selected, only those accessible by either foot or 4-wheel drive vehicle were investigated, with the exception of Bounds Creek which was helicopter supported. Some of the areas not covered by the Savage Resources regional program were also investigated by the above mentioned techniques.

A total of eight areas were sampled between the months of January and September, 1989 (see Plate SR 7). Comments on field observations and results of sampling are detailed in the following sections.

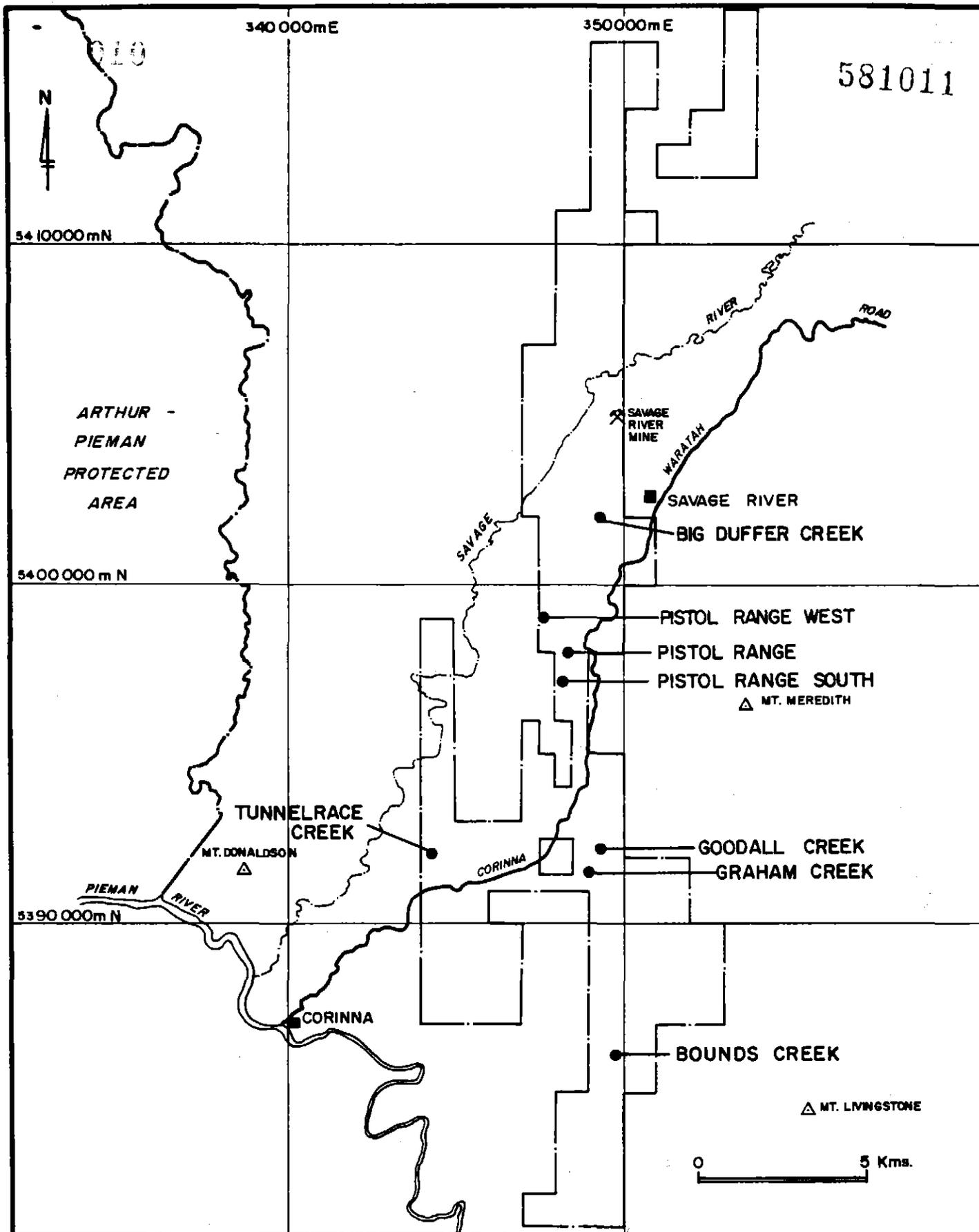
### 5.2 Regional Stream Sediment Survey - Prospects Investigated

#### 5.2.1 Big Duffer Creek (see Plates SR 3/3, 4/3 & 5/3)

A total of 16 -80 mesh stream sediment and 3 rockchip samples were taken as a follow up to a 755 ppm and 195 ppm Zn anomaly generated by Savage Resources' stream sediment program.

The area sampled covers the southern portion of the Golden Ridge goldfield worked during the late 1800's for vein style Au mineralisation. Records of mine geology and production from these underground workings do not appear to have been kept. Old mining records do however, indicate the presence of a "formation in which zinc blende was found" upstream from the junction of Little Duffer and Big Duffer Creeks. This location corresponds with the position of the anomalous stream sediment samples.

Outcrop in the creeks traversed is dominated by micaceous and graphitic schists typical of the eastern sequence of the Arthur Lineament Complex. Cleavage measurements are steeply dipping and



**Aberfoyle Resources L**  
EXPLORATION DIVISION

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Init.	Date	Init.	Date

NORTH WEST TASMANIA  
**SAVAGE RIVER E.L. 40/88**  
**PROSPECT LOCATIONS**

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Drawn : RJE  
Traced : RJE  
Checked : RJH

Location Code :

Scale : As shown

Date : Sept. 1989

Plate No. : SR 7

strike essentially north-south. The rockchip samples were taken from outcrop which was either strongly oxidised, indicating the possibility of sulphide mineralization, or had strong quartz veining. Results were disappointing with none of the elements tested considered anomalous. No fresh sulphide mineralisation was detected.

Results from the stream sediment program also proved to be disappointing. The 755 ppm Zn anomaly generated by Savage Resources was repeated at 225 ppm Cu and 335 ppm Zn. Other weak anomalies were generated for Cu (max. 200 ppm), Zn (max. 290 ppm) and Au (max. 24 ppb).

#### 5.2.2 Goodall Creek (see Plates SR 3/4, 4/4 & 5/4)

A total of 18 -80 mesh stream sediment and 8 rockchip samples were taken from the Goodall Creek drainage system. The same creek system was sampled by Savage Resources and yielded a weak Zn anomaly of 230 ppm in stream sediments.

Creek traverse mapping indicates the prospect lies on the contact between the Bowry Member, a sequence of schistose to massive shallow intrusives of broadly doleritic composition which have been metamorphosed to upper greenschist facies in places, and the Timbs Formation, a unit of essentially quartz-mica schist. Both lithologies represent part of the western sequence of the Arthur Lineament Complex. Cleavage measurements throughout the sequence were steeply dipping with a generally north-south strike.

Of interest was a large deposit of magnetite-pyrite mineralisation approx 20-30 metres in width within the Bowry Member close to the contact with the Timbs Formation. This previously undiscovered mineralisation is in a similar stratigraphic position to the Savage River Deposit and most probably a product of the same mineralisation event. A sample of gossan taken from this outcrop was weakly anomalous for Cu only (195 ppm) which is not surprising given the Savage River Deposit does contain some chalcopyrite.

Results from other rockchip samples were generally disappointing. A sample of weakly sericitic, strongly oxidised metadolerite was anomalous in Cu (500 ppm) and Au (14 ppb).

Results from the stream sediment samples were equally unexciting with the 230 ppm Zn generated by Savage Resources repeated at 135 ppm Cu and 365 ppm Zn. A sample taken from another tributary to the same weakly anomalous drainage system returned a similar value of 140 ppm Cu, 280 ppm Zn and 55 ppm As.

The only other anomalism detected in stream sediment was a sample taken in the vicinity of the abovementioned Cu/Au rockchip anomaly returning a value of 105 ppm Cu, 195 ppm Zn and 23 ppb Au.

#### 5.2.3 Bounds Creek (see Plates SR 3/5, 4/5 & 5/5)

Weak Zn anomalism of 245 ppm and 215 ppm encountered by Savage Resources was followed up with a program of 9 -80 mesh stream sediment and 1 rockchip sample. An elaborate water-race system

running from the Rocky River to a hydraulic sluicing operation at the headwaters of Bounds Creek indicates large scale alluvial Au mining operations in the past.

Previous geological mapping by Savage Resources indicated the outcrop present in creek sections from the Bounds Creek area to be part of the Bowry Member. Mapping undertaken during the stream sediment program by Aberfoyle encountered micaceous and graphitic schists and mica rich quartzose sandstones with occasional cross-cutting quartz veins. This would indicate the Bounds Creek drainage system occurs over rocks from the eastern sequence of the Arthur Lineament Complex. The only mineralisation detected was a stratabound, weakly disseminated zone of pyrite within mica schist. Close proximity to the contact with the Bowry Member however, gives some merit to follow up on any base metal anomalism in stream sediments.

Results from the stream sediments coincided with previous work by Savage Resources. The weak 215 ppm Zn anomaly was repeated at 250 ppm Cu, 280 ppm Zn and 55 ppm As. Only one other sample was considered weakly anomalous with results of 125 ppm Pb, 290 ppm Zn and 12 ppb Au.

Results for the 1 rockchip sample taken were not anomalous.

#### 5.2.4 Tunnelrace Creek (see Plates SR 4/3, 4/4 & 4/5)

Two samples containing weak Cu anomalism of 210 ppm and 185 ppm were taken by Savage Resources. The Tunnelrace Creek system drains a unit of metamorphosed basaltic lavas and shallow dolerite intrusives in the north and micaceous and graphitic schists in the south. These two units represent the Tunnelrace Volcanics of the Sigma Group and the western sequence of the Arthur Lineament Complex respectively.

The Tunnelrace Volcanics are highly magnetic, a feature easily explained by the presence of disseminated magnetite which occurs throughout the unit. The 1 rockchip sample taken, which was of metadolerite containing an abundance of disseminated magnetite returned values well below those considered anomalous.

Results from the stream sediments taken did nothing else other than repeat known anomalism, with the result of 210 ppm Cu generated by Savage Resources repeated at 190 ppm Cu. The other existing anomaly of 185 ppm Cu was not resampled. Other results of 195 ppm Cu and 200 ppm Cu drain the same anomalous region. Weakly anomalous Ag (max. 1.5 ppm) was also present in the area.

#### 5.2.5 Pistol Range West (see Plates SR 3/3, 4/3 & 5/3)

Follow up to a low-order Cu/Zn stream sediment anomaly (max. 275 ppm Cu, 170 ppm Zn) generated by Savage Resources resulted in a total of 13 -80 mesh stream sediment and 9 rockchip samples being taken. One of the anomalous samples (270 ppm Cu) appears to have been taken from Main Creek, the main drainage system from the Savage River Mine, and is most likely a result of contamination from mine tailings.

Creek traverse mapping indicates the dominant lithology to be

basaltic lavas and dolerites of the Bowry Member, which may be locally brecciated and contain abundant disseminated pyrite. Occasional interbeds of pelitic sediments can be found close to the contact with the western sequence of the Arthur Lineament Complex. Only one of the rock chip samples, a schistose carbonaceous mudstone, was considered anomalous containing 260 ppm Zn.

The abovementioned anomaly of 275 ppm Cu and 170 ppm Zn was repeated at 100 ppm Cu and 210 ppm Zn. One other weak anomaly exists at 105 ppm Cu and 225 ppm Zn.

#### 5.2.6 Pistol Range (see Plates SR 3/3, 4/3 & 5/3)

A limited stream sediment program concentrating on base metal potential of the area has been undertaken by Savage Resources with little success.

This prospect was selected for further investigation on the basis of a similar stratigraphic position to the Golden Ridge goldfields further north. The proximity to the Main Creek magnesite deposit, approximately 1 km to the west, is also considered a positive indicator for the possibility of hydrothermal Au mineralisation. Stream sediment load in the creek systems sampled, appears to be totally derived from local bedrock eliminating the possibility of contamination by alluvial Au from the Tertiary gravels. No record of previous investigation for Au mineralisation exists.

The majority of outcrop exposed in creek sections is from the western sequence of the Arthur Lineament Complex and comprises micaceous and graphitic schists with sporadic cross-cutting quartz veins.

A total of 16 -80 mesh stream sediment and 6 rockchip samples were taken. 4 of the rockchip samples, taken from schistose material with quartz veining, were above the limits of detection for Au (max. 12 ppb) and were also weakly anomalous in Ag (max. 1.5 ppm). Of the stream sediments, 2 samples returned significant Au anomalies of 814 ppb and 183 ppb. Both samples drain the same catchment, and are supported by a number of low-order Ag anomalies (max. 1.5 ppm).

#### 5.2.7 Pistol Range South (see Plates SR 3/4, 4/4 & 5/4)

This region has not been explored for base metal mineralisation in modern times. The area is considered prospective as it lies immediately south and along strike from the Main Creek magnesite deposit within the Bowry Member. Small lenses of magnetite-pyrite mineralisation occur in close proximity to the area sampled.

Unfortunately, only 2 -80 mesh stream sediment and 1 rockchip sample were taken due to access difficulties and high volumes of creek flow at the time.

Although analysis from the stream sediments were disappointing, a result of 1020 ppm Zn from a sample of apparently unmineralised metadolerite was considered interesting.

5.2.8 Graham Creek (see Plates 3/4, 4/4 & 5/4)

A stream sediment sample containing 185 ppm Zn was taken from the Graham Creek drainage system by Savage Resources. Outcrop exposed in creek sections is similar to that at Goodall Creek, and is considered to be close to the contact between the eastern and western sequences of the Arthur Lineament Complex.

A total of 10 -80 mesh stream sediment and 3 rockchip samples were taken. The weakly anomalous sample of 185 ppm Zn was repeated at 170 ppm Zn. This area may be considered interesting as it lies directly south of the anomalous drainage sampled in Goodall Creek. The 3 rockchip samples taken were not considered anomalous for the elements tested.

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## 6. CONCLUSIONS

1. The base-metal potential of the volcanic horizons of the Arthur Lineament Complex and Sigma Group has not been fully assessed. Only the anomalous areas generated by previous sampling which were readily accessible by foot or 4 wheel drive vehicle have been explored to date.

It can be said however, that sampling to date has not upgraded the prospectivity of the Bowry Member or other volcanic rocks within the licence, with the exception of anomalous Zn at Pistol Range South. Indications are, that the mineralisation at the Savage River Mine and elsewhere throughout the licence, although exhalative in origin, does not contain economic concentrations of base metals.

2. Anomalous Au has been detected at the Pistol Range Prospect in -80 mesh sieved samples of stream sediment. The similarities between this anomalism and the occurrence of vein style Au at Golden Ridge are striking. Mining records of production from Golden Ridge indicate the quartz lode systems to be erratic in both continuity and grade. This style of mineralisation is not considered amenable to modern underground mining techniques but may offer some potential as a possible open cut resource.

Formation of the Main Creek magnesite deposit, thought to be a result of hydrothermal alteration of serpentinite and dolomite horizons within the Bowry Member, is seen as the event most likely to have introduced Au rich solutions into the surrounding country rocks.

3. The dolomite/mudstone units of the Sigma Group, northwest of the Savage River Mine, may have some potential for Brookside style Au mineralisation. To date these horizons have not been explored, except for limited stream sediment coverage. Lack of exploration is most probably a reflection of restricted access to the area.
4. Weakly anomalous Au was detected in a number of samples throughout the total program.

At Big Duffer Creek the source of Au is most likely due to contamination from Tertiary gravels which dominate the sediment load in some areas of the drainage system.

The low-order Au anomaly in the upper reaches of Goodall Creek is supported somewhat by rockchip samples taken from the same area, indicating the possibility of a bedrock source.

Other samples were at best, just above detection for Au, and are most likely a result of contamination by Tertiary gravels or quartz veining containing low concentrations of Au.

## 7. RECOMMENDATIONS

1. A number of base-metal anomalies generated by Savage Resources and EZ at Cataract Creek, West Plain, Eight Mile Creek, Timbs Creek, Paradise Junction, Lucy Spur and the Owen Meredith River have not been resampled.

Given that sampling to date has not significantly enhanced the anomalies generated by previous explorers, it would appear the potential of the volcanics of the Arthur Lineament Complex and Sigma Group for economic base-metal deposits is low.

Future exploration for volcanogenic base-metal sulphides is not recommended.

2. The strong Au anomalies of 814 ppb and 183 ppb should be followed up with a program of 50 metre spaced -80 mesh and pan concentrate stream sediment sampling techniques. The crystal habit of any gold detected in pan concentrate should be examined to determine its source. Detailed creek traverse mapping and rockchip sampling should be undertaken in conjunction with the stream sediment program.
3. Current exploration at the Brookside Prospect in ML's 98-102M/84 should determine the potential of the dolomite/mudstone units of the Sigma Group for Au mineralisation. Exploration of similar units present in the Savage River licence is somewhat dependant on the outcome of this work.

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**APPENDIX A**  
**ASSAY RESULTS**

APPENDIX A1

ROCKCHIPS

PROJECT  
Savage Rnkr  
LA 40198

BSS SIEVE SIZE CODE MESH NUMBER  
A 200 D 80 G 30  
B 150 E 40 H 20  
C 100 F 20  
T = TOTAL

SAMPLE TYPE CODE  
 OXIDIZED PRODUCTS O  
 FRESH ROCK R  
 STREAM SEDIMENTS S

WEATHERED BEDROCK W  
 SURFACE TRANSPORTED T  
 RESIDUAL SOIL E  
 MINE DUMP M

CARD PUNCT PRINT  
YES  NO  YES  NO

DATE 10/1/1989  
SHEET #1

EASTINGS		NORTHINGS		SAMPLE NUMBER	DEPTH IN CMS	SIZE FRACTION	Sample Typ	METAL VALUES PPM												GEOLOGICAL LOG											
1-15	16-30	1-15	16-30					1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30						
3494705401660		431		400			R/c	Cu, Pb, Zn, Au, Ag, As, Ba, Zr, Ti, Cr, Y												gy. Mic. Sch.											
3492605401610		491		491			R/c													ylt-br. Mic. Sch./OxS ± cVQ											
3499005401280		492		492			R/c													cr-br. mic. Slt/OxS ± stn Q.											
3489205392350		431		402			R/c *													cr-br. Mn/Lim. Gossan (Amb. host)											
3487305392450		494		494			R/c *													bk-gy. Qtz. ± cVQ											
3490105392360		495		495			R/c *													gn. A-B Amb											
3492505392520		496		496			R/c *													" " " "											
3492005392750		497		497			R/c													br. mic Ss/OxS											
3490105393070		498		498			R/c													gn. A-B Amb. /Se 2											
3489505393120		499		499			R/c *													gn-br. mic Amb ± cVQ											
3486705393240		326		326			fl. *													rd-br. vcl/OxS											
3496805386900		431		327			R/c													cr-br Slt ± Lim. stn/OxS											

\* Detailed Petrological Description Available

531022

# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.05930

24/01/89

5350

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1	431490	5	10	40	<0.5	<0.008	260	6	45	380
2	431491	130	140	125	<0.5	<0.008	230	16	80	160
3	431492	20	10	55	<0.5	<0.008	190	4	60	230
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	309	401	114	401	401

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



581023

023

# ANALABS

A Division of Macdonald-Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.05930

24/01/89

5350

2 OF 2

TUBE No.	SAMPLE No.	Ti							
1	431490	3850							
2	431491	2400							
3	431492	3000							
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	50							
24	UNITS	PPM							
25	METHOD	401							

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 

581024

# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.05965

08/02/89

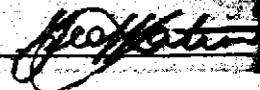
5389

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1	431326	10	15	100	<0.5	<0.008	10	6	25	5
2	431327	10	40	25	<0.5	<0.008	25	34	140	20
3	431493	195	20	100	<0.5	<0.008	35	4	50	9
4	431494	5	5	15	<0.5	<0.008	<10	2	45	240
5	431495	55	10	85	<0.5	<0.008	75	1	160	60
6	431496	95	10	220	<0.5	<0.008	95	2	180	95
7	431497	40	15	120	<0.5	<0.008	35	1	75	<5
8	431498	500	35	160	<0.5	0.014	75	3	170	80
9	431499	100	20	195	<0.5	0.009	50	1	70	100
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	309	401	114	401	401

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



581025

# ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No

PAGE

23.3.08.05965

08/02/89

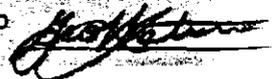
5389

2 OF 2

TUBE No.	SAMPLE No.	Ti	Y							
1	431326	150	6							
2	431327	360	<5							
3	431493	2700	10							
4	431494	1350	9							
5	431495	6050	20							
6	431496	7900	35							
7	431497	4700	9							
8	431498	9950	30							
9	431499	10600	45							
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	50	5							
24	UNITS	PPM	PPM							
25	METHOD	401	401							

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



SAVAGE RIVER  
CL 40/80

D55 SIEVE SIZE RANGE  
A 200 D 80 G 30  
B 150 E 60 H 20  
C 100 F 40  
T = TOTAL

SAMPLE TYPE CODE  
 OXIDIZED PRODUCTS 0  
 FRESH ROCK 8  
 STREAM SEDIMENTS 5

WEATHERED BEDROCK W  
 SURFACE TRANSPORTED T  
 RESIDUAL SOIL E  
 MINE DUMP M

LEAD SOURCE (VEHICLE)  
YES NO YES NO

VEINITY

DATE  
11/5/80

SHEET  
#2

EASTINGS		NORTHINGS		SAMPLE NUMBER	DEPTH IN CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM										GEOLOGICAL LOG																																																													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
2443305392230431 224																					TUNNARACK CK		dc *	Cu, Pb, Zn, Au, Ag, As, Ba, Sr, Ti, Cr, Y										gn-gy A-BI ± diss Mt.																																													
2474005398595431 325																						FI *											gn Dolomite ± vQ/cl. & diss Py																																														
2474105398590431 37A																						FI											th gn Dolomite Blaccia ± cl. matrix																																														
2474655398560431 71B																						FI *											" " "																																														
2475105398530431 83D																						FI											" " "																																														
2475255398520431 84F																					PISCAL RANGE WEST		FI											or-br Q/Kim Cassan																																													
- " - - - 51602B																						FI *											gn Dol? ± vQ																																														
247600539851051602D																						FI											gn Dol ± vQ/Sc																																														
247655539855051603A																						FI *											gy-ltk charred vesicular R.																																														
2477005398560516041																						FI *											gy-gn quartzphyric volc.?																																														

\* Douglas Petrological Description Available

000

581027

# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.06187

30/05/89

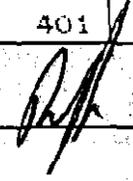
7563

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1	431324	35	20	35	<0.5	<0.008	<10	1	120	170
2	431325	40	20	35	<0.5	<0.008	<10	1	40	220
3	431374	65	25	30	<0.5	<0.008	<10	10	50	90
4	431718	10	25	35	<0.5	<0.008	<10	1	60	100
5	431839	75	20	150	<0.5	<0.008	<10	2	55	50
6	431847	80	20	125	<0.5	<0.008	<10	<1	55	35
7	516028	70	20	120	<0.5	<0.008	<10	<1	75	150
8	516029	40	20	105	<0.5	<0.008	<10	<1	65	120
9	516030	5	20	90	<0.5	<0.008	90	1	95	210
10	516047	10	30	260	<0.5	0.008	280	8	60	150
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	309	401	114	401	401

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



581028

**ANALYTICAL DATA**

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.06187

30/05/89

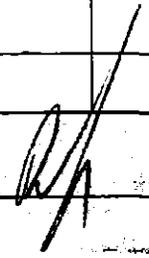
7563

2 OF 2

TUBE No.	SAMPLE No.	T1	Y						
1	431324	14200	30						
2	431325	11950	65						
3	431374	4500	25						
4	431718	4300	30						
5	431839	4250	15						
6	431847	3550	20						
7	516028	14600	40						
8	516029	9350	40						
9	516030	4200	30						
10	516047	14950	15						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	50	5						
24	UNITS	PPM	PPM						
25	METHOD	401	401						

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



PROJECT  
Savage River  
CL 40180

RSS SIEVE SIZE CODE - MESH NUMBER  
A 200 D 80 E 30  
B 150 F 60 H 20  
C 100 F 40  
E - TOTAL

SAMPLE TYPE CODE  
 OXIDIZED ROCK  
 FRESH ROCK  
 STREAM SEDIMENTS

RECLAIMED TRACK  
 SURFACE TRANSPORTED  
 RESIDUAL SOIL  
 MINE DUMP

CARD PUNCH PRINT  
YES NO YES NO

DATE  
15/5/89

SHEET  
#3

EASTINGS					NORTHINGS					SAMPLE NUMBER					DEPTH IN CMS					SIZE FRACTION					METAL VALUES PPM																				GEOLOGICAL LOG																														
1	2	3	4	5	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
(NAME)																				Cu, Pb, Zn, Au, Ag, As, Ba, Zr, Ti, Cr, F																																																							
3484205391					350431377										alc																									alc-br Mic Sch																																			
3487705391					430431384					Graham Creek					fl																									Mic Sch.																																			
34908553909					45431385										alc																									shaded mat. Dol = abundant disc. Py.																																			
3486505396					375431344					Pistol Range Sta					alc																									gn mat. Dol.																																			
3484555397					440516048										fl																									gn foliated mat. Dol.																																			
- " -					- " -					516049					fl																									v. mic Sch host.																																			
3485155398					460516050					Pistol Range					alc																									Mic/Gt Sch.																																			
3482905398					045516051										alc																									Mic Sch.																																			
3482055398					020516052										alc																									v. mic/Gt Sch host.																																			
3480505397					630516053										alc																									Mic. Sch. = Q curvls																																			

009

581030

# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.06220

14/06/89

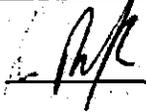
7599

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1	431344	10	10	1020	1.0	<0.008	<10	4	290	110
2	431377	<5	<5	35	<0.5	0.008	260	4	110	290
3	431384	<5	<5	30	<0.5	0.008	620	4	120	290
4	431385	20	<5	100	1.0	<0.008	<10	3	40	140
5	516048	70	<5	105	0.5	0.010	<10	6	65	250
6	516049	15	<5	80	<0.5	0.012	<10	3	25	120
7	516050	20	<5	55	<0.5	0.008	760	9	100	240
8	516051	15	<5	95	0.5	0.009	190	6	70	240
9	516052	5	<5	35	<0.5	<0.008	<10	3	60	<5
10	516053	65	<5	100	1.0	<0.008	85	6	100	70
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	309	401	114	401	401

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



581031

# ANALABS

A Division of Macdonald Hamilton & Co. Pty Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.06220

14/06/89

7599

2 OF 2

TUBE No.	SAMPLE No.	T1	Y						
1	431344	10800	35						
2	431377	5100	25						
3	431384	5350	35						
4	431385	6600	25						
5	516048	1700	10						
6	516049	970	7						
7	516050	3900	30						
8	516051	3600	30						
9	516052	55	45						
10	516053	6250	20						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	50	5						
24	UNITS	PPM	PPM						
25	METHOD	401	401						

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



581032

032

581033

**APPENDIX A2**  
**STREAM SEDIMENTS**

PROJECT <b>Savage River EL 40188</b>	BSS SIEVE SIZE CODE - MESH NUMBER A 200 D 60 G 30 B 150 E 40 H 20 C 100 F 40 T - TOTAL	SAMPLE TYPE CODE <input type="checkbox"/> OXIDIZED PRODUCTS O <input type="checkbox"/> FRESH ROCK R <input checked="" type="checkbox"/> STREAM SEDIMENTS S	<input type="checkbox"/> WEATHERED BEDROCK W <input type="checkbox"/> SURFACE TRANSPORTED T <input type="checkbox"/> RESIDUAL SOIL E <input type="checkbox"/> MINE DUMP M	CARD PUNCH PRINT YES <input type="checkbox"/> NO <input type="checkbox"/>	VERIFY YES <input type="checkbox"/> NO <input type="checkbox"/>	DATE <b>9/1/1989</b>	SHEET <b>#1</b>
---	--	---	--	--	--	-------------------------	--------------------

EASTINGS															NORTHINGS															SAMPLE NUMBER		DEPTH in CMS		SIZE FRACTION		Sample Type		METAL VALUES PPM																												ROCK DESCRIPTIONS																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80														
<u>BIG Duffin Creek</u>																																		<u>-200</u>				<u>Cu, Pb, Zn, Au, Ag, As, Ba</u>																												<u>Flow</u> <u>Inclusion</u> <u>Major</u> <u>Fluct</u>																											
3490705401640431428																																		✓																																M.    M.    Mic. Sch. (Q, minor)																											
3490405401620431429																																		✓																																W.    W.    Q, Sch.																											
3492805401540431430																																		✓																																W.    W.    Q, Sch.																											
3493505401520431431																																		✓																																W.    W.    Q, Sch.																											
3495205401650431432																																		✓																																S.    M.    Q, Mic. Sch.																											
3495005401700431433																																		✓																																M.    M.    Q, mic. Sch.																											
3497505401420431434																																		✓																																S.    M.    Q, Mic. Sch.																											
3497705401400431435															(4M 311)																			✓																																S.    M.    Mic. Sch. (Q, minor)																											
3495505401970421436																																		✓																																S.    W.    Q, Mic. Sch.																											
3495805401950421437																																		✓																																W.    M.    Q, Mic. Sch.																											
3497005401480431439																																		✓																																S.    S.    Q, Mic. Sch.																											
3496905401540431440																																		✓																																W.    W.    Mic. Sch.																											
3495505401780431441																																		✓																																W.    W.    Q, Mic. Sch.																											
3499205401160431443																																		✓																																M.    M.    Q, Sch. minor. si. Gg																											
3498905401140431444																																		✓																																M.    M.    " " "																											
3491305402420431446																																		✓																																W.    W.    Q, Mic. Sch. Gt. Sch.																											

W: Weak  
M: Moderate  
S: Strong

033

551034

# ANALABS

A Division of Macdonald Hamilton & Co Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
	03.									
				23.3.08.05929		20/01/89	5349		1	OF 1
1	431428	140	15	290	<0.5	<0.008	260	6		
2	431429	65	<5	60	<0.5	0.014	95	1		
3	431430	70	20	90	<0.5	<0.008	370	5		
4	431431	115	<5	95	<0.5	<0.008	300	7		
5	431432	225	25	335	<0.5	<0.008	250	7		
6	431433	45	60	140	<0.5	<0.008	320	10		
7	431434	175	20	125	<0.5	<0.008	240	12		
8	431435	95	10	100	<0.5	<0.008	270	5		
9	431436	210	15	150	<0.5	<0.008	330	10		
10	431437	125	10	100	<0.5	0.008	300	10		
11	431439	200	5	145	<0.5	<0.008	250	5		
12	431440	35	<5	45	<0.5	<0.008	130	3		
13	431441	195	15	150	<0.5	<0.008	200	11		
14	431443	110	20	115	<0.5	0.024	270	4		
15	431444	85	10	90	<0.5	<0.008	230	10		
16	431446	15	5	105	<0.5	<0.008	95	2		
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	401	114		

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

581035

PROJECT: SAVAGE RIVER CA 40188

BSS SIEVE SIZE CODE - MESH NUMBER:  
 A 200 D 80 G 30  
 B 150 E 60 H 20  
 C 100 F 40 T TOTAL

SAMPLE TYPE CODE:  
 OXIDIZED PRODUCTS O  
 FRESH ROCK R  
 STREAM SEDIMENTS S

WEATHERED BEDROCK W  
 SURFACE TRANSPORTED T  
 RESIDUAL SOIL E  
 MINE DUMP M

CARD PUNCH PRINT: YES  NO

VERIFY: YES  NO

DATE: 10/1/88

SHEET: #2

EASTINGS										NORTHINGS										SAMPLE NUMBER		DEPTH IN CMS		SIZE FRACTION		Sample Type		METAL VALUES PPM																				TRAP SITE		DESCRIPTIONS																																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	Flow	Incision	Major Flood									
Goodall creek																								-bank		Cu, Pb, Zn, Au, Ag, As, Ba																				Flow		Major Flood																																											
																				3488105393230431438				✓																						M		mic. St.																																											
																				3488205393260431442				✓																						W		mic. St.																																											
																				3489305393140431445				✓																						M		mic. St.																																											
																				3489105393120431447				✓																						W		mic. St., & minor Q.																																											
																				3490305393090431448				✓																						W		Mic. Sch.																																											
																				3490305393060431449				✓																						M		Amb., Q., & Stk.																																											
																				3490705393020431450				✓																						M		Q., Mic. Sch., & Amb.																																											
																				3492A05392250431451				✓																						M		Amb. & minor Q.																																											
																				3492105392250431452				✓																						M		— " —																																											
																				3482405392390431453				✓																						S		Amb. & Q.																																											
																				3492305392350431454				✓																						W		— " —																																											
																				3486205392480431455				✓																						W		Q., Mic. Sch.																																											
																				3490505393010431456				✓																						M		Q., Mic. Sch., & Amb.																																											
																				3485705392470431457				✓																						M		Q., Mic. Sch.																																											
																				3487405392450431459				✓																						M		Q., Mic. Sch., & Amb.																																											
																				3489605392350431460				✓																						M		Ch. Q., & Mt/Lim.																																											
																				3489805392320431461				✓																						W		Q. & Amb.																																											
																				3490305392350431462				✓																						W		Q. & Amb.																																											

42430 = 431410 (Split & used for std.)

033

581036



# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

581038

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

23.3.08.05981

17/02/89

5391

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	As	Ba		
1	431389	90	125	290	<0.5	0.012	30	230		
2	431390	50	<5	50	<0.5	<0.008	3	95		
3	431391	50	10	105	<0.5	<0.008	2	55		
4	431392	35	10	75	<0.5	<0.008	1	<10		
5	431393	70	20	115	<0.5	<0.008	9	170		
6	431394	25	5	50	<0.5	<0.008	6	55		
7	431395	70	10	110	<0.5	<0.008	11	220		
8	431396	75	20	115	<0.5	<0.008	10	190		
9	431397	250	95	280	<0.5	<0.008	55	290		
10	431438	15	10	55	<0.5	<0.008	3	<10		
11	431442	95	5	195	<0.5	<0.008	7	90		
12	431445	40	5	105	<0.5	<0.008	4	30		
13	431447	15	<5	55	<0.5	<0.008	3	35		
14	431448	35	<5	115	<0.5	<0.008	1	80		
15	431449	105	5	195	<0.5	0.023	6	130		
16	431450	50	<5	160	<0.5	<0.008	3	55		
17	431451	45	<5	145	<0.5	<0.008	3	55		
18	431452	95	10	200	<0.5	<0.008	6	130		
19	431453	35	<5	100	<0.5	<0.008	2	45		
20	431454	140	<5	280	<0.5	<0.008	1	90		
21	431455	35	<5	40	<0.5	<0.008	5	55		
22	431456	40	5	165	<0.5	<0.008	11	95		
23	431457	20	<5	30	<0.5	<0.008	1	160		
24	431459	35	<5	40	<0.5	<0.008	5	150		
25	431460	45	5	80	<0.5	<0.008	3	100		

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



# ANALABS

A Division of Macdonald Henderson & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

581039

23.3.08.05981

17/02/89

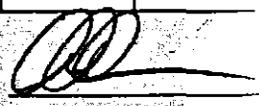
5391

2 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	As	Ba		
1	431461	65	5	105	<0.5	<0.008	8	60		
2	431462	135	<5	365	<0.5	<0.008	3	55		
3	431470	15	<5	50	<0.5	<0.008	2	<10		
4										
5										
6										
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8										
9										
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12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	1	10		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	114	401		

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



581039

PROJECT  
SANDER RIVER  
LA 4018B

BSS SIEVE SIZE CODE - MESH NUMBER  
A 200 D 90 G 30  
B 150 E 60 H 20  
C 100 F 40  
T - TOTAL

SAMPLE TYPE CODE  
 OXIDIZED PRODUCTS O  
 FRESH ROCK R  
 STREAM SEDIMENTS S

WEATHERED BEDROCK W  
 SURFACE TRANSPORTED T  
 RESIDUAL SOIL E  
 MINE DUMP M

CARD PUNCH PRINT  
YES NO YES NO

VERIFY DATE SHEET  
26/1/09 #4

EASTINGS															NORTHINGS															SAMPLE NUMBER			DEPTH (CMS)			SIZE FRACTION		Sample Type		METAL VALUES PPM																														TRAPSTONE DESCRIPTIONS																																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																																	
UNWEAWEED AREA															3118			-			-20#		Cu, Pb, Zn, Au, Ag, As, Ba																														Flow Inclusion Major Fluct																																																											
3443005392915A															318						✓		M																														W																														R-Al (Amphib.), Mic Sch																													
3443205392960															319						✓		M																														W																														" " "																													
3442805392460															320						✓		M																														M																														R-Al, Mic Sch & Q.																													
3443605392120															321						✓		M																														M																														R-Al, Mic Sch.																													
3442255391620															322						✓		M																														M																														Mic/Gt Sch																													
3443455391600															323						✓		M																														M																														" " "																													

039

581040

# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No

PAGE

23.3.08.06181

29/05/89

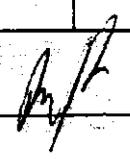
7547

1 OF 1

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
1	431318	80	10	105	0.5	<0.008	400	8		
2	431319	55	5	50	<0.5	<0.008	180	6		
3	431320	100	10	110	1.0	<0.008	290	7		
4	431321	190	10	130	1.0	<0.008	440	10		
5	431322	200	10	140	1.5	<0.008	400	9		
6	431323	195	5	80	1.0	0.023	310	15		
7										
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12										
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14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	401	114		

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



581041



# ANALABS

A Division of Macdonald Petroleum & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

04

23.3.08.06196

30/05/89

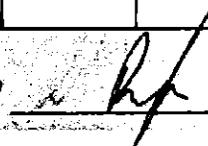
7565

1 OF 1

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
1	431346	40	20	100	<0.5	<0.008	100	4		
2	431347	35	25	100	<0.5	<0.008	100	4		
3	431348	35	20	115	<0.5	<0.008	40	2		
4	431349	50	25	140	<0.5	<0.008	60	3		
5	431350	60	25	140	<0.5	<0.008	50	5		
6	431367	100	30	210	<0.5	<0.008	110	4		
7	431368	70	25	180	<0.5	<0.008	160	6		
8	431369	105	20	225	<0.5	<0.008	170	3		
9	431370	55	30	135	<0.5	<0.008	110	9		
10	431371	90	25	170	<0.5	<0.008	190	7		
11	431372	30	25	70	<0.5	<0.008	130	4		
12	431373	60	30	140	<0.5	0.012	200	6		
13	431375	35	20	60	<0.5	<0.008	280	8		
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	401	114		

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



581043

Savage River  
in 40lbs

BSS GIEVE SIZE CODE - MESH NUMBER  
 A 200 0.075 0.30  
 B 150 0.106 0.425  
 C 100 0.149 0.600  
 T - TOTAL

SAMPLE TYPE CODE  
 OXIDIZED PRODUCTS O  
 FRESH ROCK R  
 STREAM SEDIMENTS S

WEATHERED ROCK W  
 SURFACE TRANSPORTED T  
 RESIDUAL SOIL E  
 MINE DUMP M

CARD PUNCH PRINT  
 YES NO YES NO

VERIFY DATE SHEET  
 1/15/68 #6

EASTINGS										NORTHINGS										SAMPLE NUMBER		DEPTH (CMS)		SIZE FRACTION		Camp Type	METAL VALUES PPM										GEOLOGICAL LOG																																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Pistol Range																- BOX	Cu, Pb, Zn, Au, Ag, As, Ba																																																														
34880053980504										31		316				✓																																																															
34834053974004										31		330				✓																																																															
34837053974304										31		331				✓																																																															
34850053974904										31		332				✓																																																															
34850553974604										31		333				✓																																																															
34862053977504										31		334				✓																																																															
34862053977204										31		335				✓																																																															
34807053976804										31		336				✓																																																															
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34805053976204										31		338				✓																																																															
34820553980004										31		339				✓																																																															
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34835553982104										31		341				✓																																																															
34851053984304										31		342				✓																																																															
34852053984004										31		343				✓																																																															
34872053985204										31		345				✓																																																															
GRAHAM Creek																																																																															
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34910053916104										31		365				✓																																																															
34801553913804										31		376				✓																																																															
34860053914254										31		378				✓																																																															
34874553914304										31		379				✓																																																															
34877053914204										31		380				✓																																																															
34872053913504										31		381				✓																																																															

023

531044



# ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
	045									
				23.3.08.06230		19/06/89	7811		1	OF 2
1	431316	15	<5	25	<0.5	<0.008	<10	1		
2	431328	15	<5	35	<0.5	<0.008	<10	2		
3	431329	95	20	160	1.5	<0.008	11	4		
4	431330	65	15	150	1.5	<0.008	120	5		
5	431331	120	15	115	1.0	0.183	90	6		
6	431332	20	<5	30	<0.5	<0.008	60	4		
7	431333	20	<5	40	<0.5	<0.008	70	3		
8	431334	30	5	45	<0.5	<0.008	90	3		
9	431335	30	<5	35	<0.5	<0.008	85	4		
10	431336	80	10	115	1.0	0.814	130	5		
11	431337	60	10	105	0.5	<0.008	110	3		
12	431338	40	5	75	0.5	<0.008	85	2		
13	431339	105	15	135	1.0	<0.008	15	2		
14	431340	60	15	85	<0.5	<0.008	130	4		
15	431341	25	<5	35	<0.5	<0.008	110	<1		
16	431342	40	15	60	<0.5	<0.008	300	4		
17	431343	30	<5	55	<0.5	<0.008	300	3		
18	431345	<5	20	10	<0.5	<0.008	<10	1		
19	431364	10	5	20	<0.5	<0.008	110	1		
20	431365	50	10	170	1.0	<0.008	<10	1		
21	431376	30	<5	30	<0.5	<0.008	440	1		
22	431378	25	<5	40	<0.5	<0.008	320	1		
23	431379	5	<5	15	<0.5	<0.008	120	1		
24	431380	25	<5	45	<0.5	<0.008	230	1		
25	431381	60	10	70	0.5	<0.008	490	3		

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



581040

# ANALABS

A Division of Macdonald, Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

046

23.3.08.06230

19/06/89

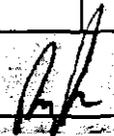
7811

2 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
1	431382	45	<5	60	<0.5	<0.008	350	3		
2	431383	50	<5	60	<0.5	<0.008	300	3		
3	431386	45	<5	60	<0.5	<0.008	220	2		
4										
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17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	401	114		

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



581047

581048

APPENDIX B  
PETROLOGICAL REPORTS - Dr. A. CRAWFORD

046

581049

**SAMPLE NUMBER:** 431324 (overtop) (392230 ml) 341400 ml

**SUMMARY:**

This rock is a medium- to upper greenschist facies coarse-grained metabasalt or fine-grained metadolerite

**HAND SPECIMEN:**

This is a dark grey-green massive fine-grained metabasic volcanic rock.

**THIN SECTION DESCRIPTION:**

This is a texturally well-preserved, aphyric fine-grained metadolerite or coarse-grained metabasalt from the interior of a thick flow. Rare microphenocrysts of albitized plagioclase are subhedral and flecked by sericite. The remainder of the rock is a doleritic textured intergrowth of subhedral plagioclase laths that have been albitized, and anhedral plates of augite that have been replaced by actinolite and leucoxenized equigranular FeTi oxide grains. Besides replacing augite, fibrous actinolite occurs as bundles of pale green pleochroic needles growing in albite and narrow meandering quartz veinlets. Epidote occurs as small pale yellow anhedral grains scattered throughout the rock, but also occurring as small grains intergrown with secondary quartz along several very narrow fractures along which the dolerite has been granulated and recrystallized as epidote-quartz-albite. The metamorphic assemblage actinolite-epidote-albite-leucoxene-quartz and very minor chlorite is characteristic of the medium- to upper greenschist facies of metamorphism of basic rocks.

SAMPLE NUMBER: 431325 (flow) 5308505 MN 347400 MK

#### SUMMARY:

This rock is a former fine-grained dolerite or basalt that underwent a carbonate alteration that produced extensive carbonate replacement and pods of pyrite, and subsequently was metamorphosed under relatively high pressure conditions to an epidote-crossitic hornblende-albite assemblage. Some retrogression is indicated by chloritization of bluish-green hornblende.

#### HAND SPECIMEN:

This is a massive dark grey fine-grained dolerite with quite large clots of pyrite cubes scattered in a few places.

#### THIN SECTION DESCRIPTION:

This is a fairly thoroughly recrystallized former fine-grained doleritic intrusive or rather coarse-grained basaltic rock, although the overall texture is still rather 'igneous', and the rock lacks a foliation or mineral layering. It is now composed of an unusual intergrowth of amorphous patchy epidote and more prismatic idiomorphic hornblende, with minor interstitial quartz, albite, pleochroic green chlorite and fine-grained leucoxenized FeTi oxides. The hornblende in this sample is strongly pleochroic from almost colourless to deep blue-green, indicative of relatively high pressure crystallization conditions and a composition in the sodic hornblende-crossite range. It is intergrown with colourless massive and patchy epidote, that in a few places can be seen to have replaced former plagioclase laths. The distribution and overall appearance of the abundant epidote in this sample are strongly reminiscent of former hydrothermal calcite alteration that has been epidotized during a later prograde metamorphic event. The chlorite in this rock is apparently replacing the hornblende, and has deep purple-blue anomalous interference colours.

The single large pyrite grain in this section contains epidote inclusions and has well-developed chlorite pressure shadows. It also suggests that the pyrite may have been produced during a carbonate

581051

alteration event, and that the pyrite (with small calcite inclusions) has been preserved and its inclusions recrystallized as epidote during a subsequent metamorphic event.

581052

051

SAMPLE: 431326 (KOD)

LOCATION: Aberfoyle EL40/88, S of Savage River 539324N 348670E

(1013240)

**SUMMARY:** This sample is an oxidized and brecciated former quartzose sediment or pelitic metamorphic, now composed entirely of secondary recrystallized quartz and limonite/hematite.

**HAND SPECIMEN:**

This highly weathered, porous and oxidized sample varies from rusty brown through cream and pink to deep red in colour, and appears to be brecciated, with several cream coloured lithic fragments being discernible in the dirty matrix.

**DESCRIPTION:**

This sample is truly disgusting and probably the rottenest I have ever had to look at (congratulations Rod!). It is composed essentially entirely of recrystallized secondary quartz and hematite or limonite. Quartz has clearly recrystallized from detrital quartz; some recrystallized quartz is in slightly flattened and foliated, whereas other areas of the rock may be almost ribbon fibre quartz, due to more intense deformation. There is vague evidence of individual fragments in this rock, suggesting a mechanical breccia origin; this is best shown by domains of the rock showing clearly different foliation directions in the quartz.

The hematite/limonite occurs as a variably intense meshwork of redbrown material occurring randomly interspersed through the rock as an amorphous network, or occasionally as rosettes of needle-like crystals. There is no evidence that the Fe oxide-hydroxide material in this rock has pseudomorphed pyrite. It may have replaced a white mica component of this rock during brecciation and weathering. I think the precursor to this shocker was probably a quartz-mica schist or quartz sandstone with a small clay component.



531053

05  
SAMPLE: 431493 (outcrop)

LOCATION: Aberfoyle EL40/88, S of Savage River ~~539235N~~ 348920E  
S302350N

**SUMMARY:** This is a martitized magnetite-dominated gossan sample in which further oxidation and fluid passage has generated colliform hematite (now altering to hematite-goethite intergrowths). There appears to have been no pyrite in the sample.

**HAND SPECIMEN:** This is a partially oxidized magnetite-rich gossan with a minor soft, rusty cream gangue component

**DESCRIPTION:**

This sample in reflected light is seen to be largely constituted by martitized magnetite (ie. magnetite altered to hematite but retaining the crystal shape of magnetite) grains generally less than 0.5mm across, but occasionally reaching about 1mm diameter. These are present as massed adjacent grains as well as packets and trains of discrete crystals separated by subordinate gangue, which appears to be largely calcite and fibrous quartz and mica. 'Tartan' patterns indicative of martitized magnetite are well shown under crossed polars in reflected light. Seams and veins of altered magnetite cut the sample, in which the martitized magnetite has broken down, and recrystallized as colliform hematite, which in turn has altered extensively to reddish translucent goethite. These trails of hematite-goethite probably define fluid pathways through the brittle-fractured martitized magnetite.

I can see no evidence for the presence or former presence of pyrite in this sample.

053

581054

**SAMPLE: 431494 (OUTCROP)**

**LOCATION: Aberfoyle EL40/88, S of Savage River 539245N 348730E**

5392450 N

**SUMMARY:**

This is a weakly foliated quartzite showing evidence of at least two periods of deformation, the earlier stronger event manifested in a strong flattening of detrital quartz grains, the second weaker event shown by recovery grain growth in flattened quartz and by quartz veins growing parallel to the latter.

**HAND SPECIMEN:**

This rock is a dense, massive dark grey siliceous sandstone or quartzite

**DESCRIPTION:**

This is a foliated quartzite with foliation defined by both orientated aggregates of recrystallized white mica (sericite?) and flattened quartz grains. The latter reach a maximum length of about 0.3mm and show a subgrain recovery texture with subgrain boundaries almost perpendicular to the flattening direction. Quartz grains are beginning to develop fairly tightly and intimately sutured boundaries with adjacent grains. The flattening reflects an earlier deformation event, and the recovery subgrain development reflects a later, weaker deformation. A structural freak could extract useful information from this rock in outcrop and thin section.

Ragged, fine-grained white mica aggregates may represent recrystallized clay matrix to the former quartz sandstone from which this sample was derived, or perhaps, less likely but alternatively, they may represent recrystallized detrital fine-grained pelitic rock fragments which were subordinate to the quartz grains in the original sediment. Green and brown detrital tourmaline is an abundant accessory phase, and zircon and sphene (?) grains were also noted. Several quartz veins cut across the rock at an angle essentially parallel to the recovery recrystallization grain direction, and are probably related to the later deformation event. A Precambrian pelitic metamorphic or granitic source is indicated.

581055

SAMPLE: 431495 (outcrop)

LOCATION: Aberfoyle EL40/88, S of Savage River ~~539236N~~ 349010E  
(3072400 N)

SUMMARY: This sample is mineralogically identical to 431499 and 431496, but shows more intense deformation and recrystallization. It is a foliated evolved metadolerite with a high greenschist facies metamorphic assemblage.

HAND SPECIMEN: This is a weathered grey-green weakly foliated metabasic rock.

**DESCRIPTION:**

This sample in thin section shows a stronger foliation than is apparent in the hand specimen. Mineralogically, it is identical to 431496 and 431499, but it has suffered more intense recrystallization in a higher stress field than the latter two samples. Actinolitic hornblende, strongly pleochroic from pale yellowish green to green with occasional blueish overtones, occurs as almost interlocking felted plates and trains defining the clear foliation in this rock. Interspersed through this network of amphibole are abundant anhedral quartz grains, always full of tiny white mica inclusions, and with generally straight grain boundaries, and minor albite, epidote and chlorite.

I would argue that samples 431496, 431499 and 431495 could come from the same lithological unit (ie. have approximately the same composition, probably an evolved dolerite of tholeiitic affinities), but that 496 represents the least deformed and recrystallized, 495 represents the most deformed and recrystallized and 499 in between. Could they come from increasingly close to a major shear zone?

055

581050

**SAMPLE: 431496 (OXCLDP)**

**LOCATION: Aberfoyle EL40/88, S of Savage River ~~509252N~~ 349250E**  
**(302520N)**

**SUMMARY: This sample is a recrystallized, evolved tholeiitic metadolerite, probably from the upper part of a sill or layered body. Its metamorphic grade is probably at the high end of the greenschist facies (~5-6Kbar?).**

**HAND SPECIMEN: This sample is a grey-green massive, non-foliated and fairly coarse-grained metadolerite**

**DESCRIPTION:**

In thin section, this sample is seen to have a partially preserved igneous texture, defined by large plates of actinolitic hornblende replacing augite, and large, blocky former FeTi oxide grains now altered to leucoxene. These are embedded in a thoroughly recrystallized matrix composed of actinolite, chlorite and abundant quartz, with subordinate albite and epidote.

The former augite phenocrysts (?) were up to 3mm long and sometimes twinned; twin planes are occasionally preserved in the replacing amphibole. No fresh augite is preserved. It has been entirely pseudomorphed by pale apple green pleochroic amphibole (actinolitic hornblende) intergrown with colourless chlorite. The amphibole is bluish-green in places, indicating a relative high pressure of metamorphism, certainly higher than average for greenschist facies. The former Fe-Ti oxide crystals are entirely replaced by a high-birefringent mixture of calcite, and very fine-grained epidote, sphene and chlorite.

The matrix of this rock is intimately intergrown quartz+albite+epidote, with subordinate chlorite and actinolite. The groundmass texture suggests that the quartz-albite-dominated groundmass is recrystallized, as many grains show near approach to typical 'annealed equilibrium' 120° grain boundaries.

The abundance of former augite indicates a precursor lithology of broadly basaltic composition. However, the abundance of quartz in the groundmass is anomalous, as it

581057

075

should be only a minor constituent of basalt/dolerite/gabbro groundmass, whether or not the rock is recrystallized. The answer to this paradox is fairly straightforward, I think. This rock represents an upper part of a doleritic/gabbroic sill or dyke. In the upper part of tholeiitic sills, pyroxenes become more Fe-rich and quartz-feldspar granophyre forms abundantly in the groundmass from evolved residual magmas left after crystallization of most of the basalt to form the main basal part of the body. Recrystallization and albitization of the granophyre produced the quartz+albite-rich groundmass.

581058

057

**SAMPLE: 431499 (Outcrop)**

**LOCATION: Aberfoyle EL40/88, S of Savage River ~~530312N~~ 348950E**  
**5303120N**

**SUMMARY: This is a weakly foliated and slightly more recrystallized version of evolved metadolerite 431496.**

**HAND SPECIMEN:**

**This is a dull greenish-brown, finely foliated metabasic rock, with no macroscopic minerals.**

**DESCRIPTION:**

In thin section, this sample can be seen to be weakly foliated, and composed of dominantly of colourless, pale green to almost blueish amphibole, abundant quartz and minor albite, leucoxene and epidote. The texture is granular, with an average grainsize around 0.1 mm, and the weak foliation is defined by stretched trains and aggregates of amphibole, and by Fe-stained fractures paralleling the foliation. Amphibole crystals, probably actinolitic hornblende to hornblende compositionally, are subhedral to anhedral and are intergrown with anhedral plates of quartz and 'dirty' epidote; the latter may have been reacting out of this rock as pressure of recrystallization increased. The occasional blueish colour of the amphibole suggests quite high pressure relative to typical W Tasmanian metabasic rocks. Disrupted grains of leucoxene after quite large Fe-Ti oxides are not uncommon.

Several narrow retrograde shears transect this sample, and are characterized mineralogically by an increase in epidote crystallinity and abundance, and a decrease in the modal abundance of amphibole.

I have little doubt that this sample is compositionally very close to 431496, and simply represents a more tectonized and recrystallized variety of exactly the same rock. Large amphiboles after augite in 431496 have been crushed and recrystallized in this sample, and the abundance of quartz in this sample has the same implications as discussed for 431496.

581059

000

**SAMPLE NUMBER:** 431718 (FLOAT) 53098560 MN 347465 MG

**SUMMARY:**

This rock is a former basaltic hyaloclastite with palagonitized glass fragments that have been completely replaced by granular epidote; interfragment material has recrystallized as quartz-albite-crossitic hornblende and epidote.

**HAND SPECIMEN:**

This is a most unusual rock in hand specimen, composed of angular to slightly rounded pale grey-green fragments of a very fine-grained volcanic (?) rock, up to around 1cm across, in a dark chloritic (?) matrix. It most resembles an altered hyaloclastite or lava breccia.

**THIN SECTION DESCRIPTION:**

This sample is even more unusual in thin section than in hand specimen; however, there is little doubt as to its identification. It is composed of mainly angular fragments of pale brown former basaltic glass that show curved perlitic cracks, and excellent concentric zoning parallel to fragment boundaries that suggests former palagonitization and limited devitrification of the glass before metamorphism. The concentric zoning of fragments is clearly shown in plane polarized light, but disappears under crossed polars, since the fragments have been totally replaced by coarse granular intergrowths of epidote. Matrix between fragments has recrystallized entirely to an epidote-quartz-hornblende-albite assemblage, in which the amphibole occurs as strongly colour-zoned clear to bluish-green pleochroic elongate prisms and needles. Limited replacement of the amphibole by dull green chlorite indicates minor retrogression of the primary metamorphic assemblage. As for the previous sample containing bluish-green amphibole, this assemblage indicates a fairly high greenschist facies of metamorphism.

SAMPLE NUMBER: 516028 (FLOAT) 3298520 MN 341625 ME

#### SUMMARY:

This rock is a recrystallized and weakly foliated sandstone containing a quartz-rich component from a pelitic source, and a recrystallized (now epidote-chlorite) component possibly from a mafic volcanic source.

#### HAND SPECIMEN:

This is a grey green metasediment that consists of a bed of fine micaceous sandstone about 1.5cm wide enclosed by almost black shale beds or bands, of which only a very small amount is preserved in the hand specimen.

#### THIN SECTION DESCRIPTION:

This rock is a dirty formerly clayey or micaceous sandstone that consists of around 50 modal% of angular, inclusion-filled detrital quartz grains in an epidote-chlorite matrix. The quartz grains are probably recrystallized to some extent, since they occasionally occur welded together in polycrystalline clots and tiny layers or veinlets, and the abundant tiny inclusions are the same mineralogy (epidote-chlorite) as the matrix of the quartz grains. Average grain size of the quartz grains is probably around 0.1-0.2mm.

The matrix of the sample is slightly oxidized and foliated, and composed of chlorite and granular epidote. The chlorite has a habit indicative of replacement of former elongate to acicular amphibole grains, and this is supported by the occasional preservation of blue-green to clear pleochroic hornblende prisms intergrown in the chlorite and epidote. The chlorite-epidote domains form poorly defined layers, probably a metamorphic layering, that wraps around quartz grains, and contains abundant oxidized reddish-brown former Fe- or FeTi oxide dust.

The shale bands that occur on either side of the sandstone bed are very strongly foliated and consist entirely of pale green chlorite. At least one quartz vein (>2mm thick) cuts the section, and shows a strongly subgrain recrystallized texture indicating that it predates the metamorphic event responsible for the deformation and recrystallization of this sample.

The relatively high proportion of chlorite and epidote in this

581061

sample suggest that it was an impure sandstone, probably volcanogenic, composed of a component from a pelitic metamorphic source (quartz grains) and a more mafic (volcanogenic?) component now recrystallized.

Sample 516030 (float) (200550 MN 341655 m6)

Summary: A chlorite albite phyllite from in of or near a fault zone with a strong rotational fabric and probably metasomatic growth of chlorite.

Hand specimen description: Felsic rock with a strong cleavage (phyllite) and along one surface there is a strong lineation suggesting this sample comes from a fault zone. Porphyroblasts of plagioclase give the rock a spotted texture which the chloritic foliation wraps around.

Thin section: The rock is composed of albite(50%), chlorite(20%), quartz(10%), white mica(10%), with minor amounts of epidote, sphene and Fe oxides due to weathering of an Fe - rich phase which is no longer present.

The strong slaty cleavage is overprinted by a crenulation which locally has new chlorite and white mica crystallised along it. The large albite porphyroblasts have overgrown the early cleavage but predate the crenulation. The chlorite and white mica crystallised during the early cleavage formation and were stable during the later event but there is evidence of late alteration of white mica to chlorite perhaps indicating movement continued to very low temperature. Sphene and epidote are largely preserved as inclusions within the the albite. The lack of these minerals outside the albite cannot be unambiguously explained. (Post - cleavage metasomatism or the albite may have originally been more calcic.) The early cleavage is also represented within the albite porphyroblasts by ultrafine grained opaque inclusions. This internal foliation suggests a very strong early deformation and the earliest foliation recognised outside the grains may not be the first one in the rock.

The quartz appears to be in an early vein. The quartz is now strongly recrystallised with subgrains and strongly sutured grain boundaries implying syn-tectonic recrystallisation.

The texture and mineralogy of this rock is entirely metamorphic in origin. The rock is best referred to as an albite-chlorite-white mica phyllite. The mineralogy is not definitive but generally fits a lower greenschist facies assemblage. Albite porphyroblasts are common in Penguin age rocks but have not been reported in younger sequences. This sample probably comes from the Whyte Schists.

064

Sample 516047 (Floor) S398560 MN 34100MK

Summary: An albite chlorite phyllite with a strong mylonitic foliation and relicts of an early upper greenschist facies metamorphism. The chlorite and sphene indicate substantial open system behaviour during faulting.

Hand specimen: Albite chlorite phyllite with an early strong clayage and crosscutting extensional crenulation (possibly a shear band if this comes from a fault zone).

Thin section: The rock is composed of chlorite (50%), albite (30%), quartz (10%) with minor amounts of biotite, ilmenite, sphene and Fe oxides after an opaque phase. The textures of the rock are closest to low temperature mylonites. The quartz is intensely recrystallised to fine grain size or is crystallised in asymmetric pressure shadows around albite. The chlorite is largely aligned in the main foliation but also in shear bands which consistently cut across the foliation with a right-lateral sense (in the slide; the geographic orientation is unknown). The biotite occurs as scattered relicts of an earlier metamorphic event. The albite is syn-kinematic as the foliation only partly wraps around these porphyroblasts. There is an internal foliation in the albite similar to that in albite of 516030 but this rock is much more deformed than the previous one. The high quartz, low albite composition may be partly controlling this difference in strain

Small opaque phases, probably ilmenite, in the chloritic matrix are altered around the margin to a high relief mineral which is probably sphene and suggesting an introduction of Ca during the deformation. The precursor mineralogy to the deformation was probably quartz-albite-biotite-ilmenite which suggests a pelitic origin. The lack of epidote in this rock supports a relatively low Ca composition. The metamorphic rock was crystallised above the biotite isograd (approx. 400°C). The intense deformation introduced a lot of chlorite and probably a higher Ca to form the sphene and apparently occurred at low greenschist facies to slightly lower conditions.

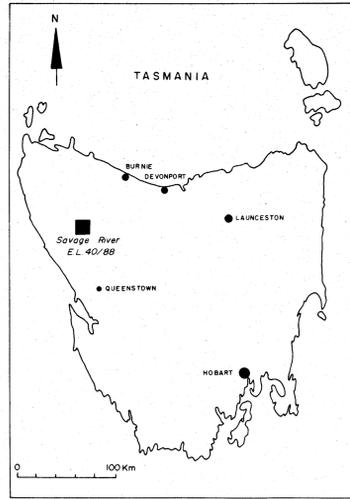
The sample is best referred to as a chlorite albite phyllite but could also be called a chlorite mylonite. As in 516030 this is probably a sample of Whyte Schists. The shear zone is probably a Penguin age structure.

581064

APPENDIX C  
TABLE OF GEOLOGICAL ABBREVIATIONS

Abundant	abn	Dolomite	Dol	Mudstone	Mst	Pumice	Pu
Adularia	Adl	Dyke	Dm	Node	nd	Trachyte	Tr
Agglomerate	agg	Elongated	dy	Off white	ow	Tuff	Tf
Albite	Ab	Emphasised	el	Olivine	Ol	Tuffaceous	tf
Alkali feldspar	Afd	Epiclastic (adj.)	emp	Oolitic	oo	Variable	var
Altered	alt	Epiclastic (noun)	e	Orange	or	Variolitic	vr
Amphibolitic	amb	Epidote	E	Ordovician	O	Vein	vn
Amphibole	Amb	Euhedral	Ep	Oxidised	ox	Vein concordant to bedd	cv
Amygdaloidal	amg	Eutaxitic	eu	Patchy	pat	Vein discordant to bedd	dV
Andalusite	An	Fabric	euh	Peperitic	pep	Very	v
Andesite	A	Fault	eux	Perlitic	pri	Vesicular	ves
Angular	ang	Fault zone	fab	Persasive	per	Vitric	vtr
Aplite	Ap	Feldspar	F	Phenocrysts	phn	Volcanic	vlc
Approximate	apx	Feldspar phyric	FZ	Phyllite	phyl	Volcaniclastic	vcl
Arcuate	ar	Felspathic	Fd	Picrite	p	Weak	wk
Arenaceous	arn	Ferruginous	fp	Pillow lava	pic	Weathered	wth
Argillaceous	arg	Fibrous	fel	Pink	pl	White	wh
Argillite	Arg	Fine	fer	Polymict	pk	Yellow	yw
Arkose	Ak	Fine grained	fb	Porphyritic	Y		
Arkosic	ak	Fissile	f	Predominantly	por		
Arsenopyrite	Ap	Flowbanded	fg	Pumice	pred		
Ash volcanoclastic	av	Foliated	fis	Pumiceous	Pu		
Autobrecciated	aub	Fragments	fbn	Purple	pu		
Average	ave	Fuchsite	fo	Pyrite	pp		
Banded	bnd	Galena	fr	Pyritic	Py		
Barite	Ba	Glass	Fu	Pyroxene	py		
Basalt	B	Glassy	Gn	Pyrrhotite	Px		
Bedded	bd	Gossan	G1	Quartz	Po		
Biotite	Bio	Granular	Gos	Quartzite	Q		
Black	bk	Graphite	glr	Quellite	Qtz		
Black shale	Bsh	Graphitic	Gt	Questionable	Qll		
Blue	bl	Green	gt	Recrystallised	?		
Boulder	bl	Grey	gn	Red	rx		
Breccia	bld	Greywacke	GY	Rehealed	rd		
Breccia volcanoclastic	b	Haematite	Gw	Reworked	rhd		
Bright	bv	Hornblende	Hmt	Rhyodacite	rw		
Brown	brt	Ignimbrite	Hb	Rhyolite	RD		
Calcareous	br	illite	Ig	Ripple marks	R		
Calcite	cc	Interbedded	Ill	Round	rnk		
Carbonaceous	Cc	Intercalated	ibd	Rubble	rnd		
Carbonate	carb	Intrusive	icl	Sandstone	rbb		
Cavernous	Co	Jurassic	int	Schist	Ss		
Chalcopyrite	cav	K-Feldspar	Ju	Schistose	Sch		
Chert	Cp	Khaki	Kfd	Sediment	sch		
Chlorite	Ch	Laminated	kh	Selected fragments	sed		
Chlorite	Cl	Lapilli volcanoclastic	lm	Sericite	sfr		
Chromite	Cr	Lava	lv	Serpentine	Se		
Chromiferous	cr	Lava breccia	l	Shale	Srp		
Clay	cy	Leached	lb	Sheared	Sh		
Coarse	c	Limonitic	lch	Sheeted	shd		
Coarse grained	cg	Light	Lim	Siderite	sht		
Colloform	coll	Limestone	lgt	Silica	Sid		
Colour	col	Lithic	Lst	Siliceous	Si		
Common	com	Magnetite	lh	Siltstone	sil		
Conglomerate	Cg	Massive	Mt	Slickenside	Slt		
Conglomeratic	cg	Matrix	mas	Sphalerite	slk		
Crystal	x	Matrix dominated	mtx	Spotted	Sp		
Crystal volcanoclastic	xv	Medium	md	Spotty	spt		
Dacite	D	Medium grained	med	Stockwork	spt		
Dark	dk	Metamorphosed	mg	Strong	stw		
Dense	dns	Mica	meta	Structure controlled	str		
Devitrification	dv	Micaceous	Mic	Talc	stc		
Diorite	Di	Mineralised	mic	Tertiary	Tc		
Disseminated	dis	Minor	min	Tourmaline	T		
		Mixed	mnr		Tm		
			mx				

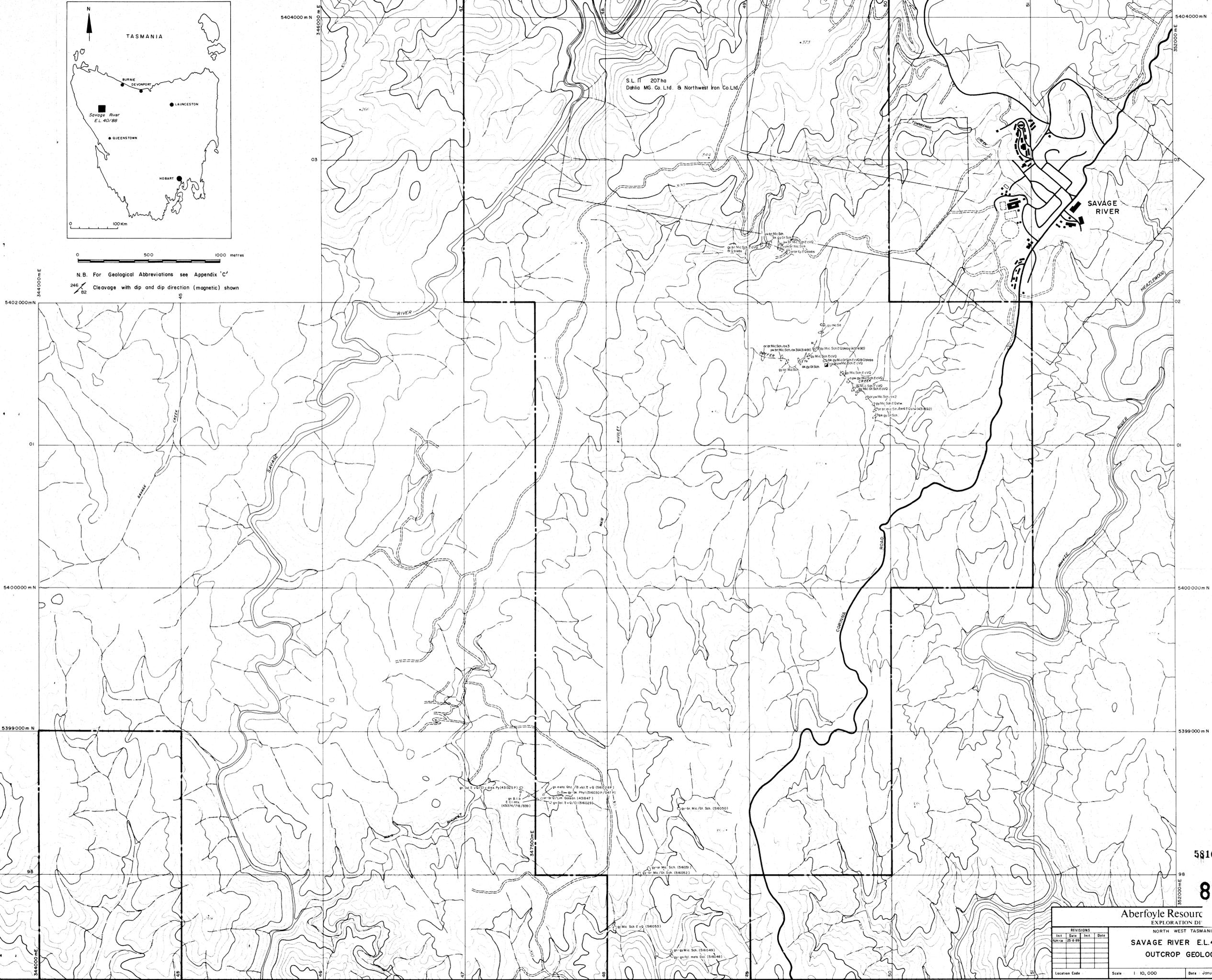
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N.B. For Geological Abbreviations see Appendix 'C'

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B2 Cleavage with dip and dip direction (magnetic) shown



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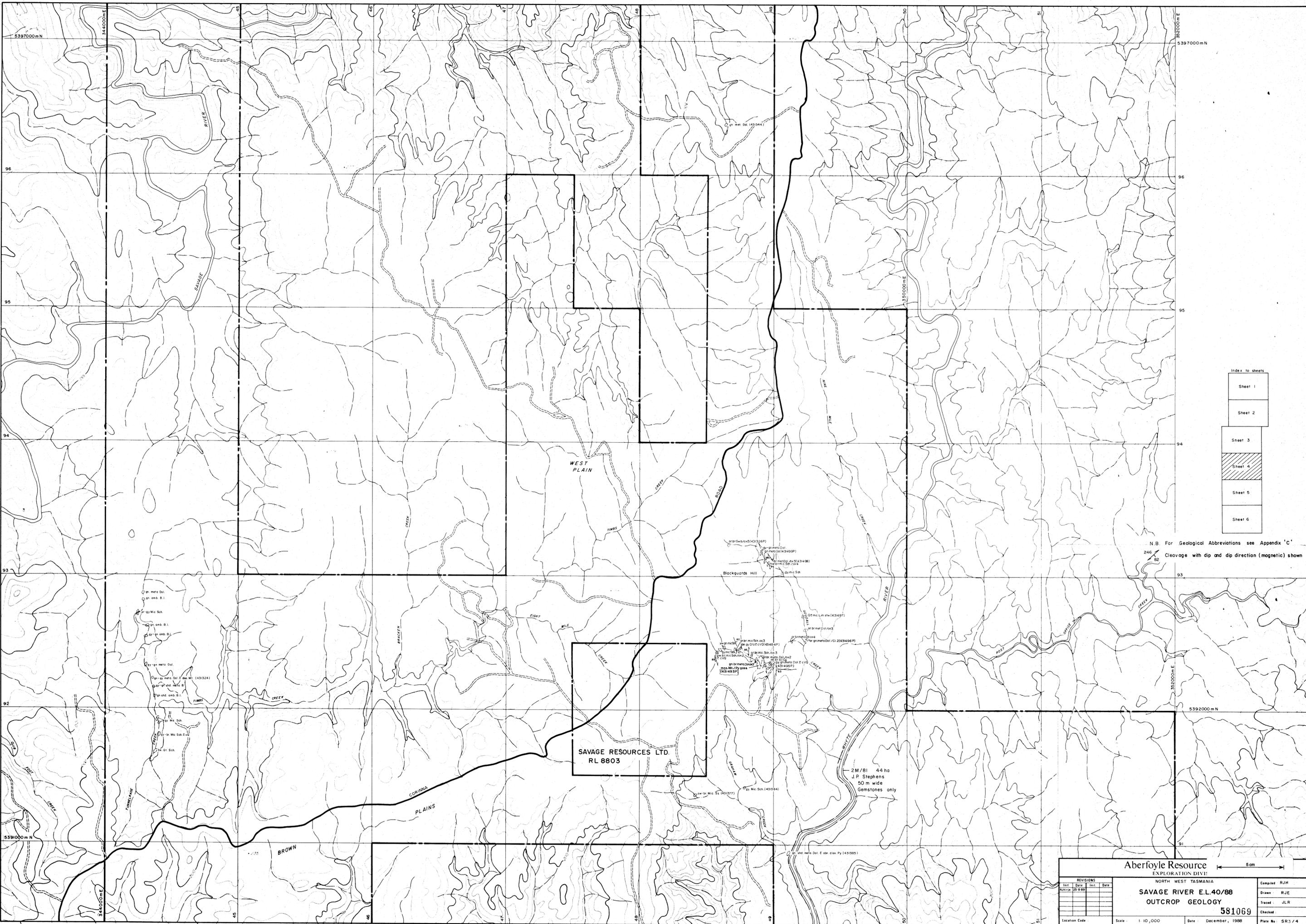
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89-30261

Aberfoyle Resource  
EXPLORATION DISTRICT  
NORTH WEST TASMANIA  
SAVAGE RIVER E.L. 40/88  
OUTCROP GEOLOGY

Scale 1:10,000 Date January, 1989

Compiled: RJH  
Drawn: RJE  
Traced: JLR  
Checked:  
Plate No: SR3/3

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N.B. For Geological Abbreviations see Appendix 'C'  
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 82  
 Cleavage with dip and dip direction (magnetic) shown

**SAVAGE RESOURCES LTD.**  
**RL 8803**

2M/81 4.4 ha  
 J.P. Stephens  
 50 m wide  
 Gemstones only

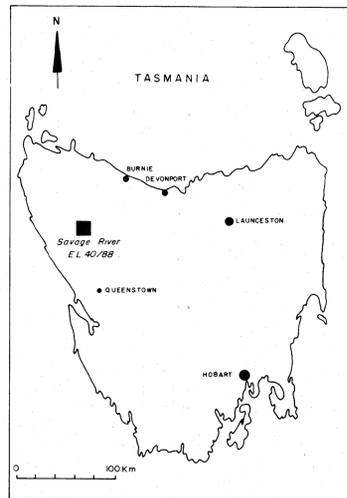
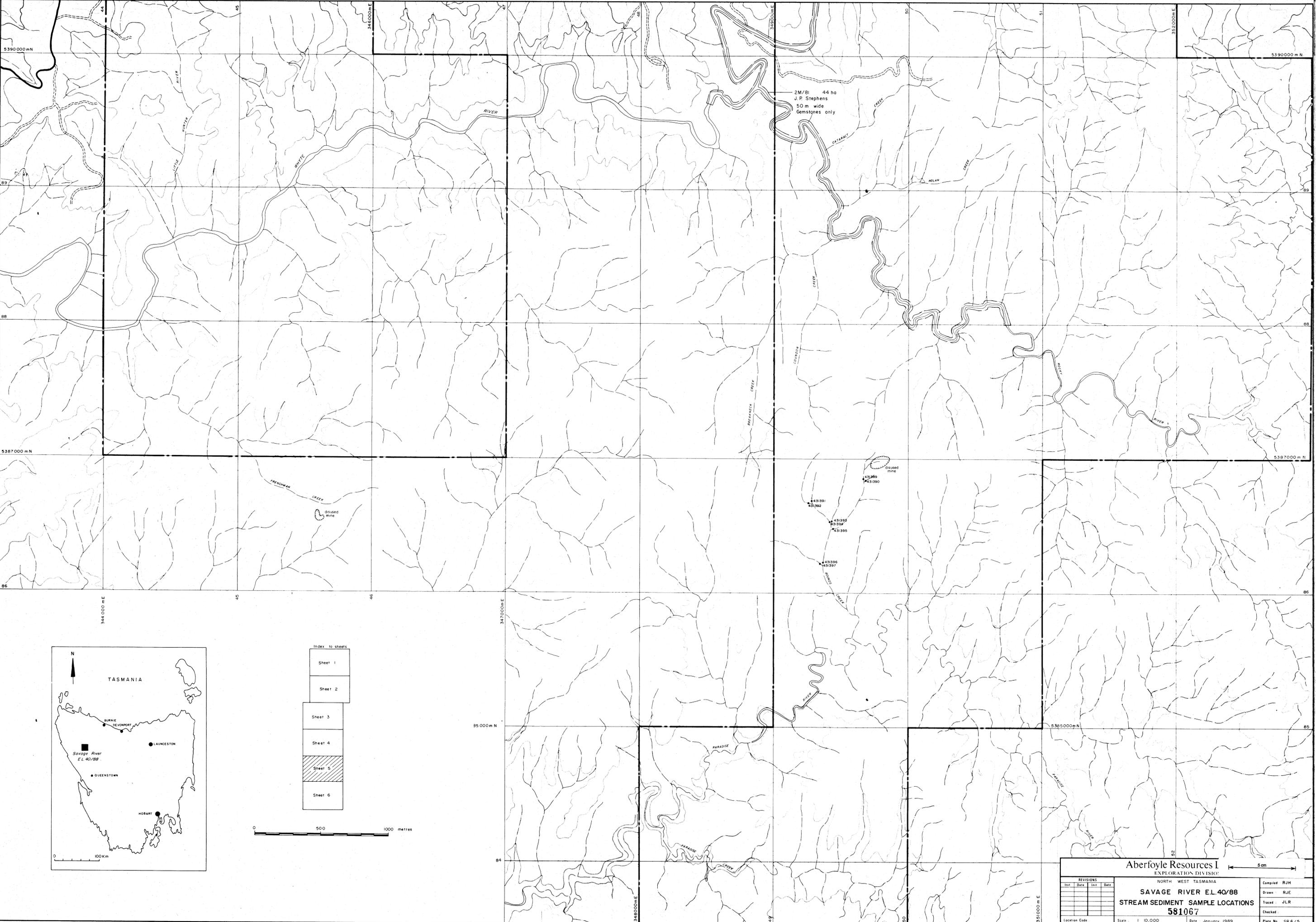
**Aberfoyle Resource**  
 EXPLORATION DIVISION

NORTH WEST TASMANIA  
**SAVAGE RIVER E.L.40/88**  
**OUTCROP GEOLOGY**  
**581069**

Scale: 1:10,000  
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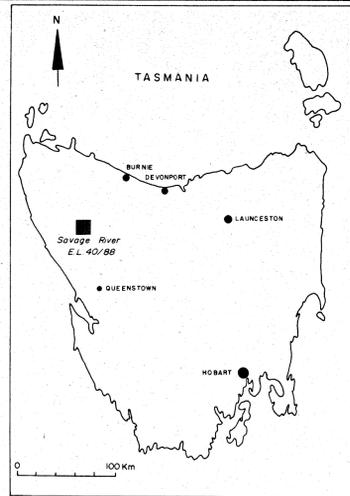
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NORTH WEST TASMANIA

**SAVAGE RIVER E.L. 40/88**  
**STREAM SEDIMENT SAMPLE LOCATIONS**  
**581067**

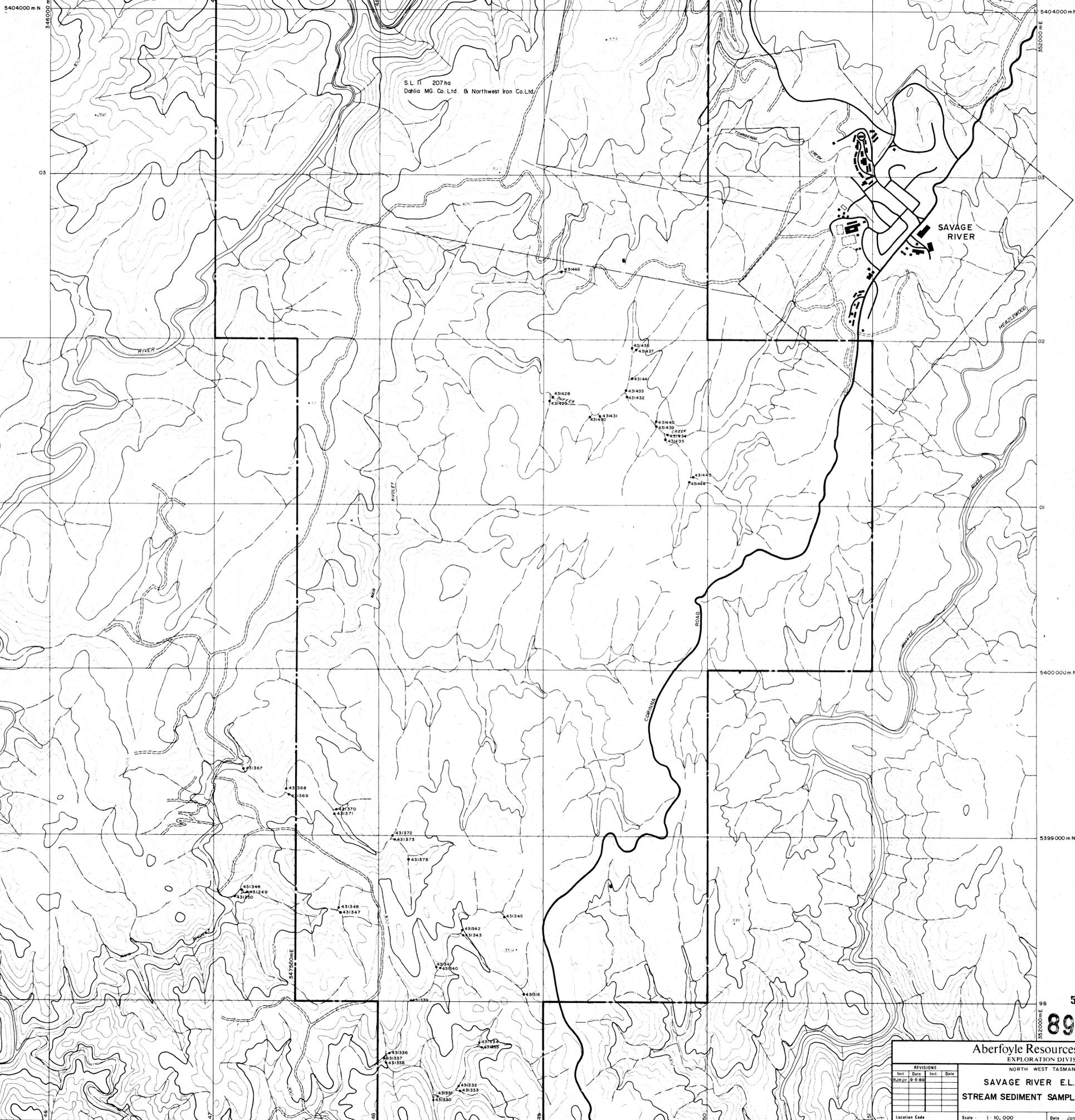
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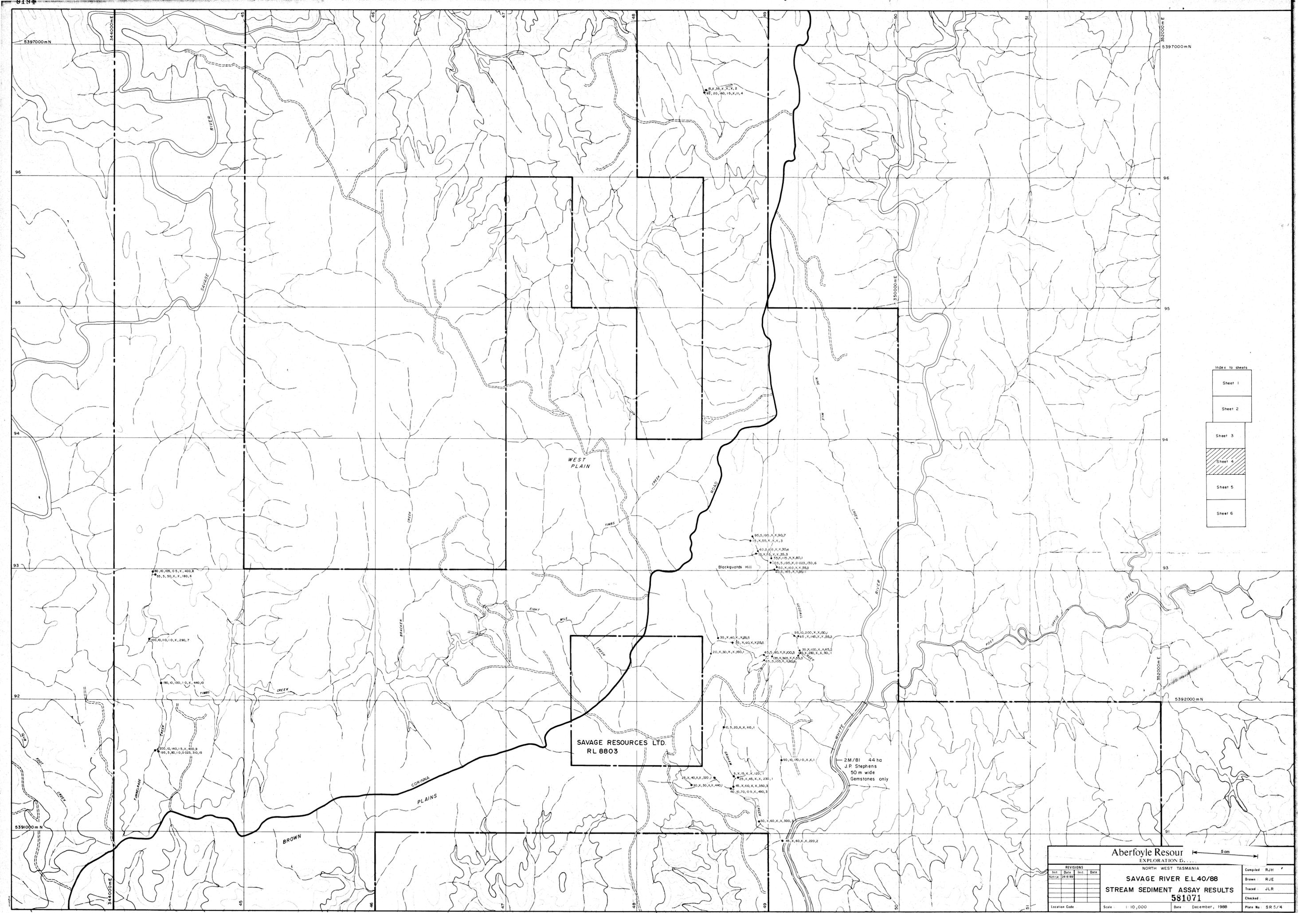
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SAVAGE RIVER E.L.40/88  
STREAM SEDIMENT SAMPLE LOCATIONS

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Traced: J.L.R.
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SAVAGE RESOURCES LTD.  
RL 8803

2M/81 44 ha  
J.P. Stephens  
50 m wide  
Gemstones only

Aberfoyle Resour  
EXPLORATION D.

NORTH WEST TASMANIA

SAVAGE RIVER E.L. 40/88  
STREAM SEDIMENT ASSAY RESULTS  
581071

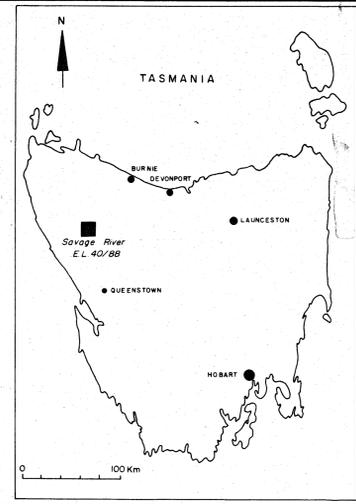
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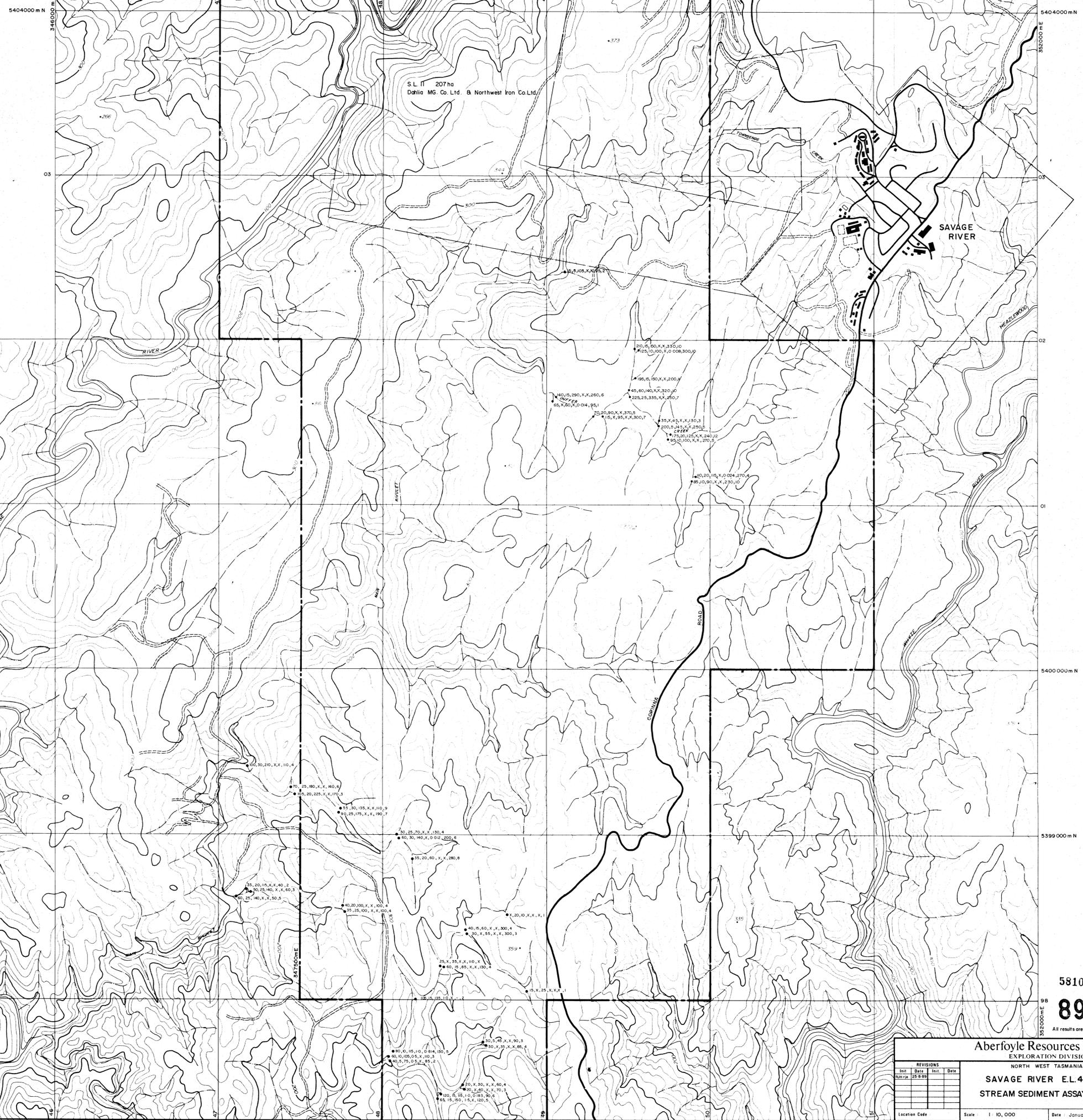
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Plate No.	SR 5/4





0 500 1000 metres



S.L. 11 207 ha  
Dahila MG. Co. Ltd. & Northwest Iron Co. Ltd.

SAVAGE RIVER

581074  
**89-3026**

All results are in ppm Cu, Pb, Zn, Ag, Au, Ba, As.

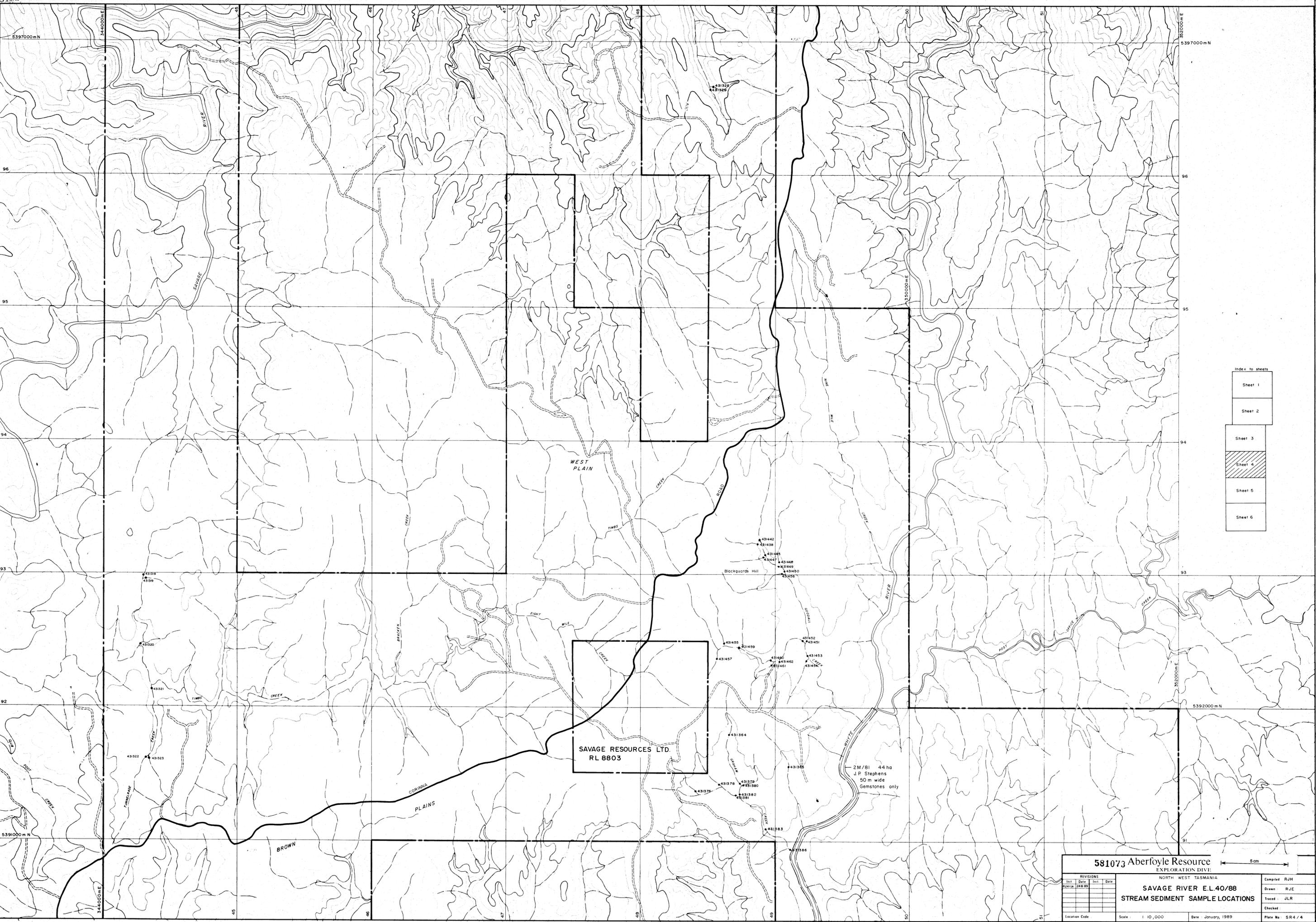
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EXPLORATION DIVISION  
NORTH WEST TASMANIA

SAVAGE RIVER E.L. 40/88  
STREAM SEDIMENT ASSAY RESULTS

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Compiled: RJH  
Drawn: RJE  
Traced: JLR  
Checked:  
Location Code: Scale: 1:10,000 Date: January, 1989 Plate No: SR5/3



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Sheet 5
Sheet 6

SAVAGE RESOURCES LTD.  
RL 8803

2M/81 44 ha  
J.P. Stephens  
50 m wide  
Gemstones only

**581073 Aberfoyle Resource**  
EXPLORATION DIV.

NORTH WEST TASMANIA

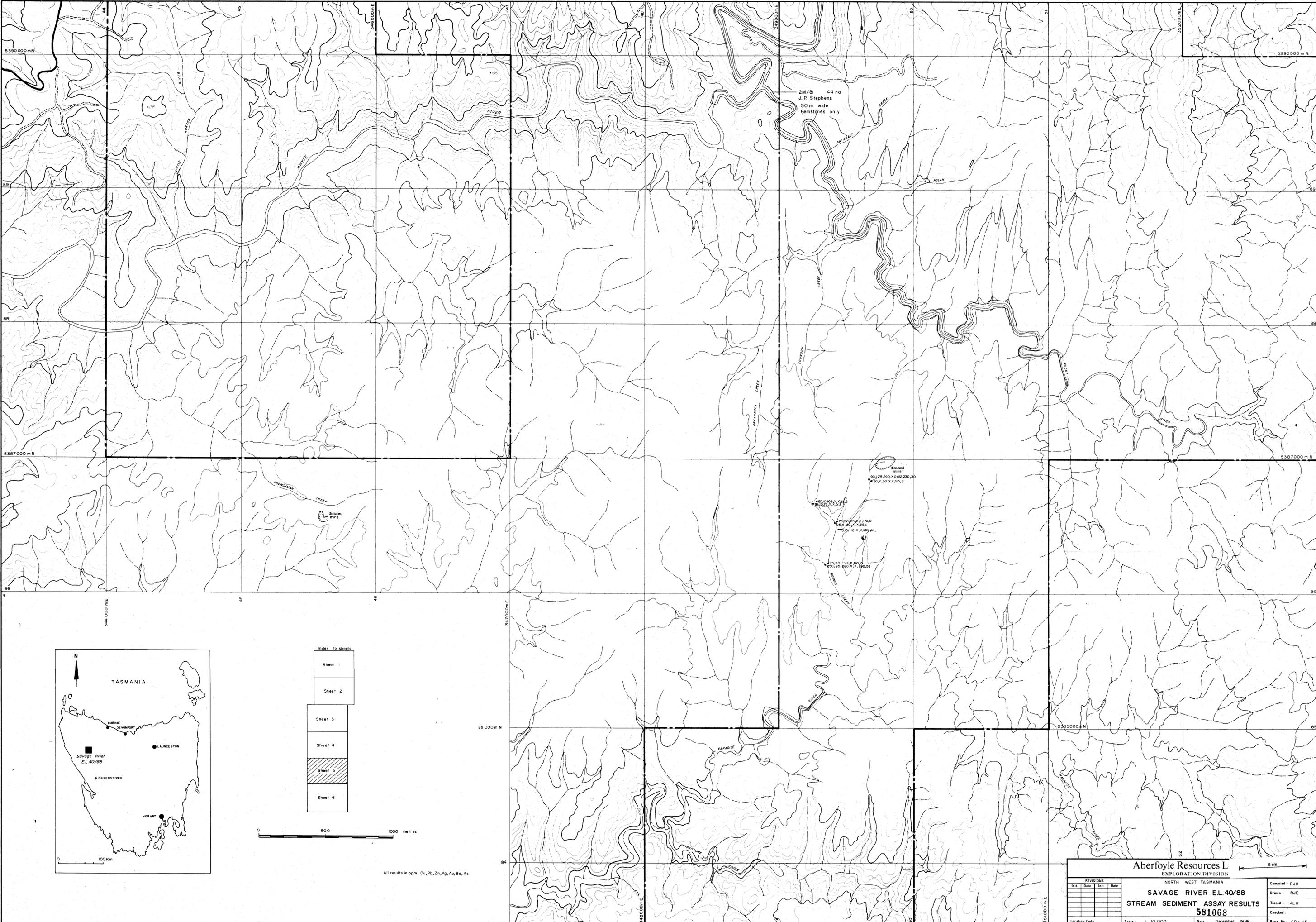
**SAVAGE RIVER E.L. 40/88**  
STREAM SEDIMENT SAMPLE LOCATIONS

Scale: 1:10,000 Date: January, 1989

REVISED	Init	Date	Init	Date

Location Code: \_\_\_\_\_

Compiled	RJH
Drawn	RJE
Traced	JLR
Checked	
Plate No	SR4 / 4



9195

5390 000 m N

5390 000 m N

89

89

88

88

5387 000 m N

5387 000 m N

86

86

344 000 m E

45

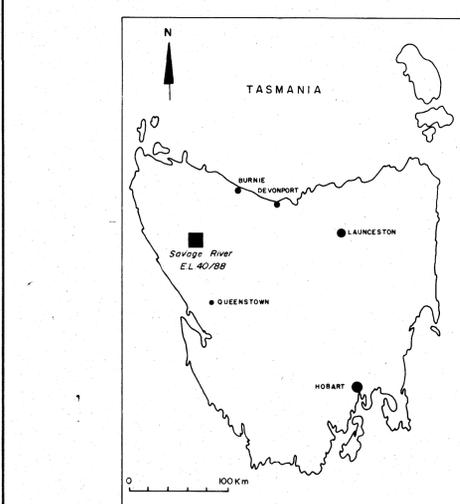
345 000 m E

347 000 m E

95 000 m N

5385 000 m N

85



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Sheet 2
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All results in ppm Cu, Pb, Zn, Ag, Au, Ba, As

2M/81 44 ha  
J.P. Stephens  
50 m wide  
Gemstones only

disused mine  
90,25,290, X 0 02,230,30  
\* 50, X, 50, X, X, 95, 3

40,10,105, X, X, 170,9  
\* 30, X, X, X, X, 170,9  
\* 70,30,110, X, X, 170,9  
\* 65,5,30, X, X, 256  
\* 70,50,110, X, X, 290,11

25,20,15, X, X, 180,0  
\* 25,15,15, X, X, 17,290,05

**Aberfoyle Resources L**  
EXPLORATION DIVISION  
NORTH WEST TASMANIA

**Savage River E.L. 40/88**  
STREAM SEDIMENT ASSAY RESULTS  
**581068**

Compiled: RJH  
Drawn: RJE  
Traced: JLR  
Checked: [ ]  
Plate No: SR 5 / 5

REVISIONS	
Int	Date

Location Code: [ ] Scale: 1:10,000 Date: December, 1988