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PIONEER RESOURCES NL
100 MILL POINT ROAD
SOUTH PERTH WA 6151

OPEN FILE

Alfred River Report, 1988 - 1989
for E.L. 9/86

89-2967

MINES	
File Ref. E.L. 9/86	
- 5 JUN 1989	
Doc. Ref.	
Action Officer	Initials
Refer to	
31.5.89	
Resubmit to	Date

by

Dr R F Blanks

Consulting Metallurgist

89-2967

ALFRED RIVER REPORT, 1988 - 1989

The stream sediment sampling conducted during February 1988 (see figure 4) and reported in the 27th June 1988 results indicated gold/osmiridium occurrences in Limestone Creek samples LC 3 - 5 inclusive. Follow up field assessment was carried out in September 1988 to define the area of potential eluvial/alluvial material and related data prior to further testing.

An existing cut track from the Lower Pieman Dam Road was used for access (figure 2). This survey showed that the area and depth of mineralized material was limited and although a small alluvial operation may be contemplated significant environmental factors could rule against further development.

Analysis of stream sediment samples was undertaken at Analabs Laboratories, Perth WA. This involved screening to remove coarse (plus 2mm) material followed by wet tabling to concentrate the heavy mineral components. Gravity concentrates were further processed by magnetic separation using a lift disc magnet to remove magnetite, chromite, and other paramagnetic minerals. The non magnetic fractions were further processed used tetra bromo ethane (TBE) to concentrate the mineral components via sink-float separation. The resulting heavy mineral concentrate was examined by optical microscope to indentify the components.

Results?!

Little Wilson River samples LW1-8 (figure4) processed in this way showed significant levels of bronzite with minor cassiterite and accessory levels of tourmaline, almandine, uvarovite, topaz, rutile, and zircon.

Samples from Tobin Creek (T1) showed significant levels of very fine zircon and rutile with accessory levels of cassiterite, leucoxene, bronzite

and rare spinel.

Alfred River stream sediments (A1-6) processed as outlined above were found to contain somewhat more cassiterite but were otherwise similar to the Tobin Creek assemblage.

Careful examination of the Tasmanian Lands Department colour aerial photographs for the lease area indicated that the most significant area of alluvials occurred at the southern boundary of the lease - Photo 1.

Previous exploration of this area by Renison/Goldfields involved gridding, augering, and pitting in this area. This indicated conclusively that the geochemistry and heavy mineral anomaly in the Alfred River drainage basin was attributable to heavy minerals shed from high level alluvial deposits from a former drainage or sheet-wash system now dissected into perched remnants by the present deeply incised youthful drainage. In the Alfred River area these high level alluvial deposits contained sub-economic indications of cassiterite, gold, and PGM's together with abundant chromite.

The anomalies previously located by Renison/Goldfields are within the axial part of the Huskisson Syncline where the bedrock is predominantly Devonian Bell Shale. Photo-interpretation of aerials for high level gravels in the southern part of the Alfred River basin suggests that they dip gently to the north-west and cover an upland area of approximately 1.3 square kilometres of which about half would be button grass swamps with a fringe of forest.

Follow up exploration of the high level gravels is planned for the 1989-90 field season.

A preliminary helicopter survey of the area was conducted in March 1989. A possible alternative track route to the high level gravels from

the logged area near the Callina basecamp at Merton Creek would provide a much shorter track than the former Renison track (see figure 2). Ground reconnaissance of the access is planned. A brief examination of the button grass plain and surrounding forest showed that helicopter access is relatively straightforward.

The prospective area is located partly in EL 9/86 and in EL 14/86 held by a sister company - Black Horse Mining NL/M.G. Creasy - photo 1.

A combined exploration programme will therefore be involved with mutual consent of both parties and sharing of expenses on an agreed basis.

Mineralogical examination of the chromite shed from this area shows that it consists of clean rounded grains and is not associated with magnetite. The high chrome content of the chromite (60 - 66% Cr₂O₃) in association with values from cassiterite and possibly gold, and osmiridium could contribute to the potential revenue from future operations provided an economically viable tonnage of alluvials can be proven.



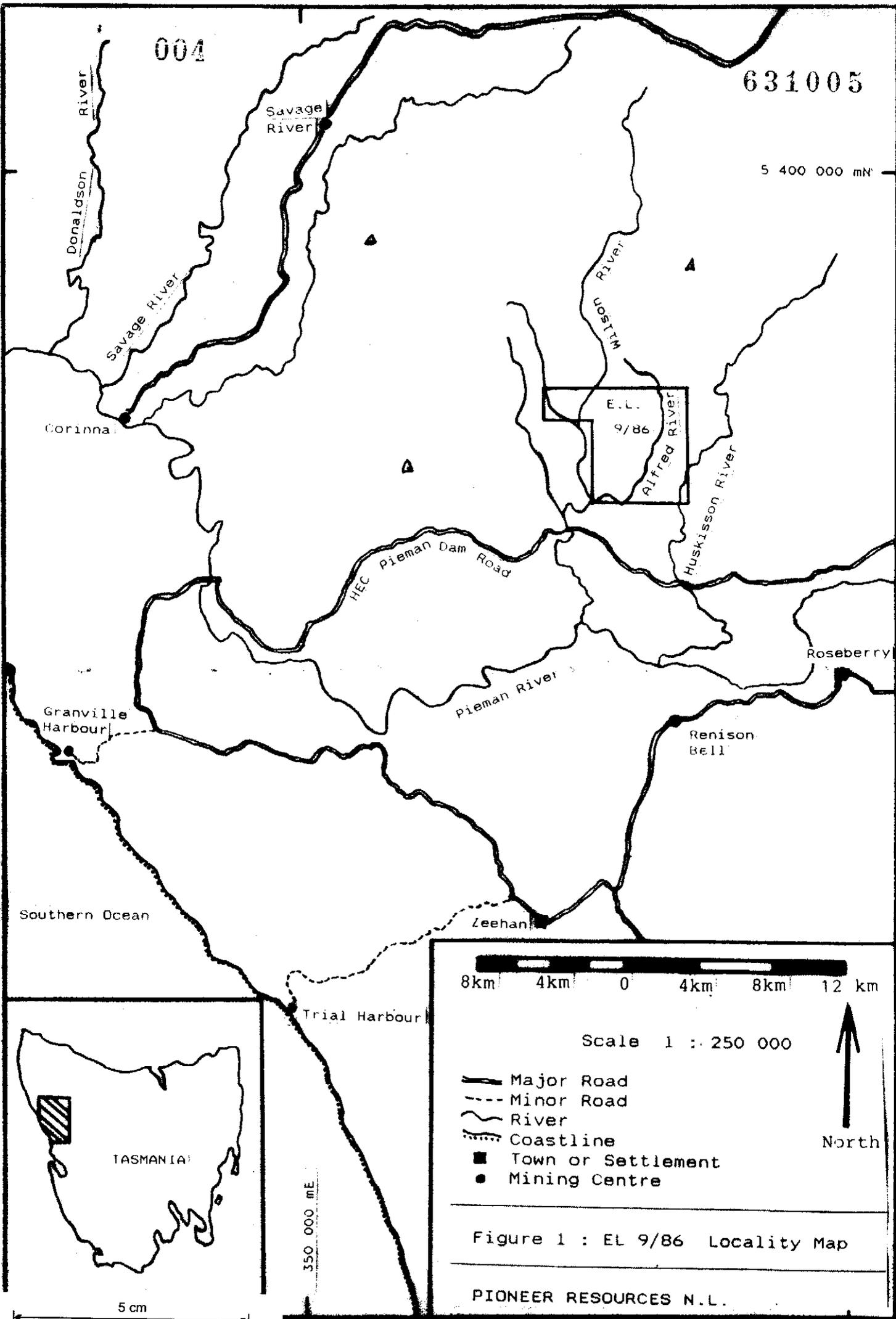
R F Blanks
Consulting Metallurgist
Perth 31st May 1989



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631005

S 400 000 mN



Corinna

Savage River

Donaldson River

Savage River

E.L.
9/86

Alfreed River

UOSTIM River

Huskisson River

HEC Pieman Dam Road

Pieman River

Roseberry

Granville Harbour

Renison Bell

Southern Ocean

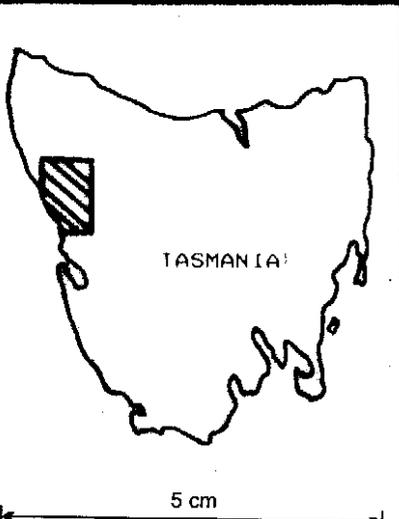
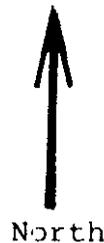
Zeehan

Trial Harbour

8km 4km 0 4km 8km 12 km

Scale 1 : 250 000

- Major Road
- Minor Road
- River
- Coastline
- Town or Settlement
- Mining Centre



350 000 mE

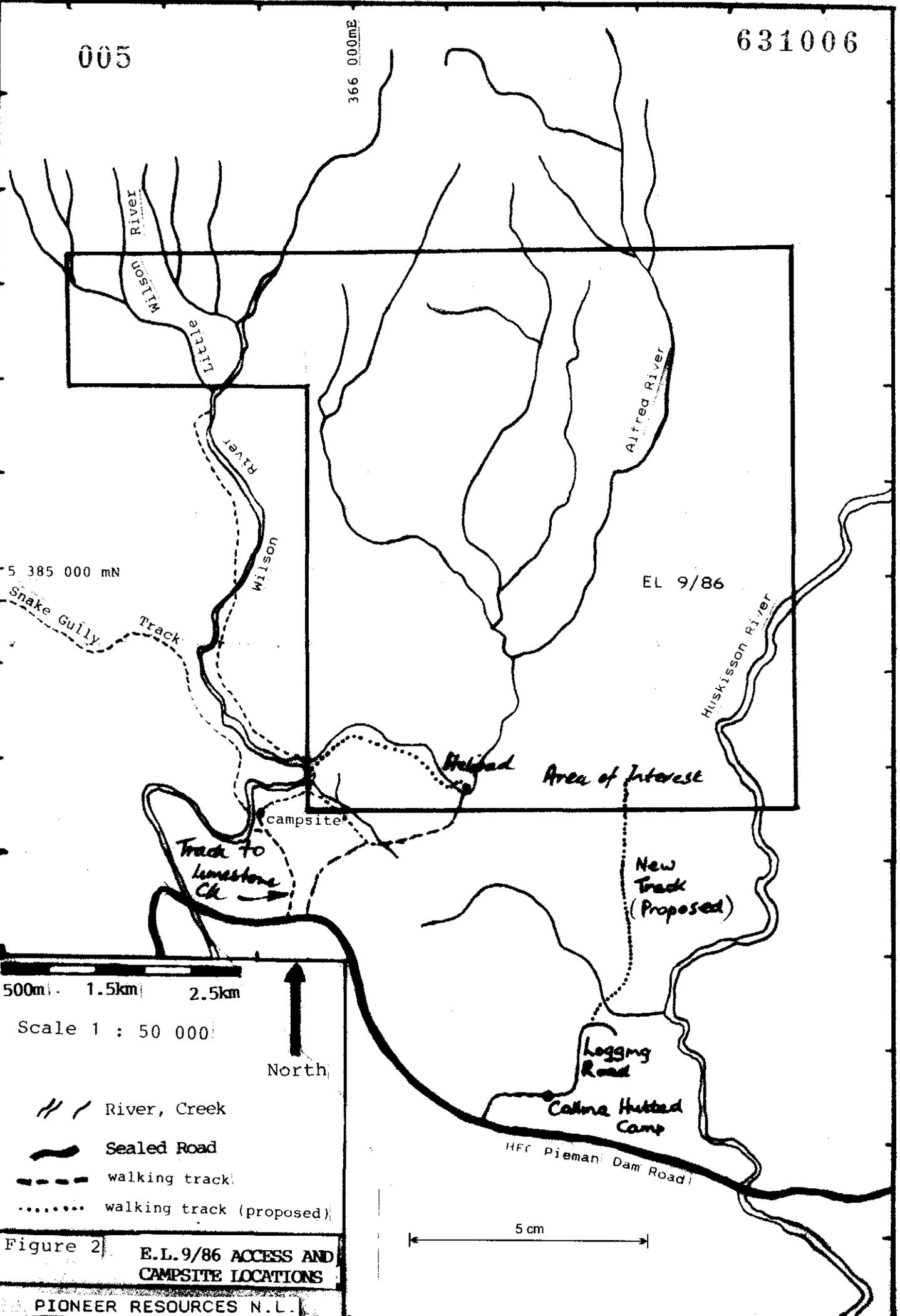
Figure 1 : EL 9/86 Locality Map

PIONEER RESOURCES N.L.

005

631006

366 000mE



500m | 1.5km | 2.5km

Scale 1 : 50 000

North

// / River, Creek

— Sealed Road

- - - walking track

..... walking track (proposed)

Figure 2 | E.L.9/86 ACCESS AND
CAMP SITE LOCATIONS

PIONEER RESOURCES N.L.

5 cm

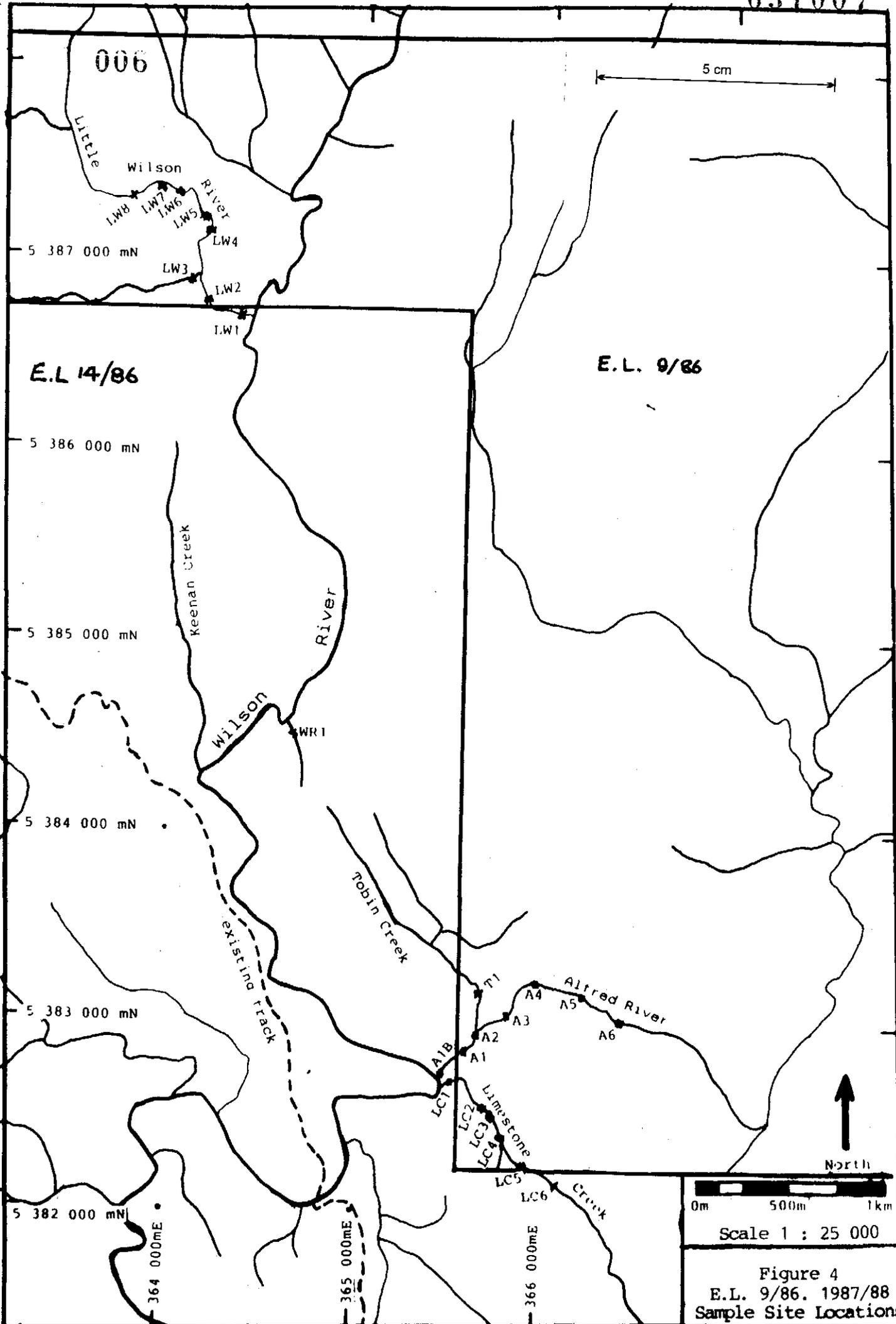
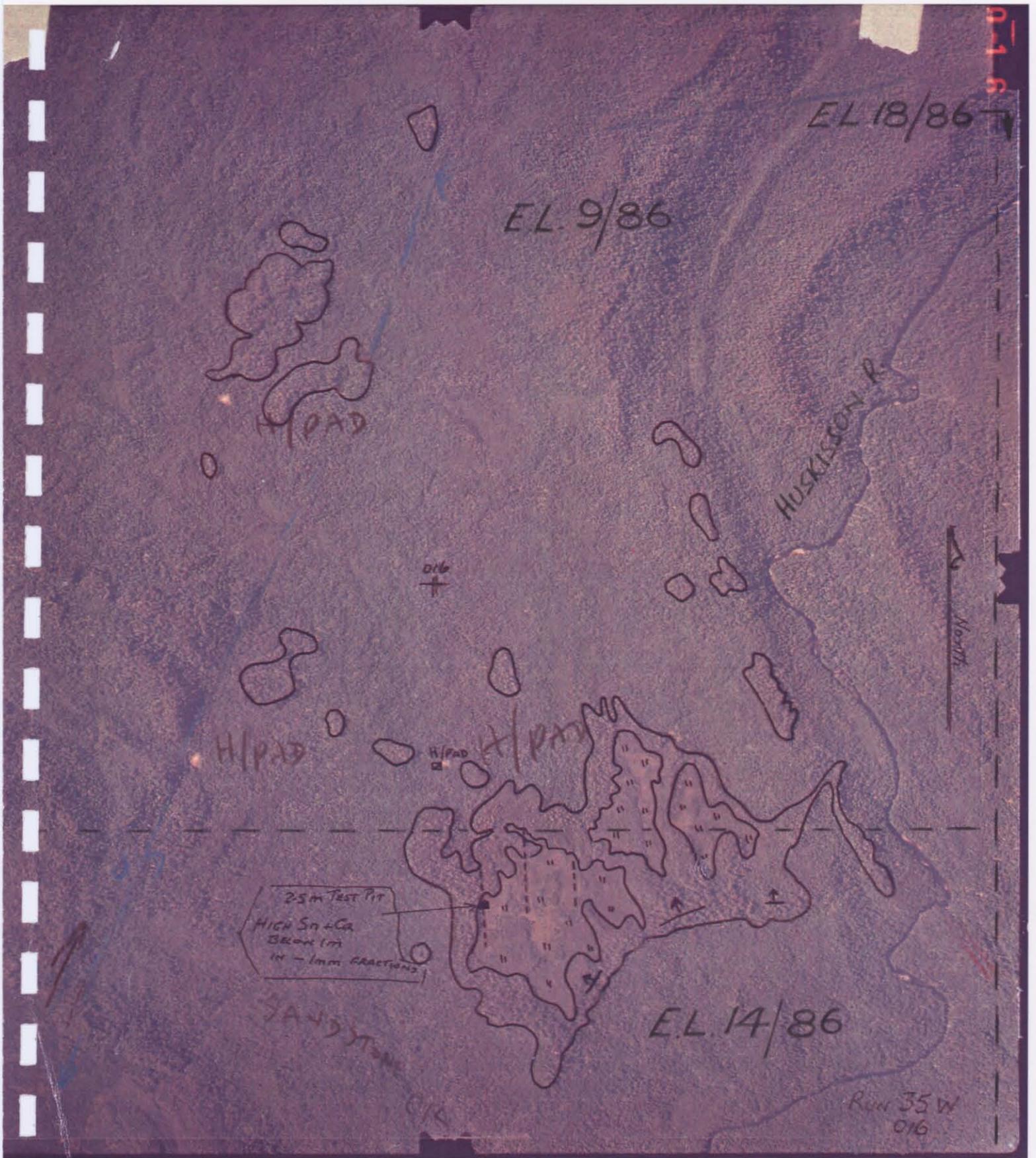


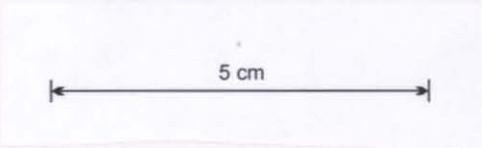
Figure 4
 E.L. 9/86, 1987/88
 Sample Site Locations

Photointerpretation of High Level Alluvial Gravels



E.L. Boundary ---, Scale 1:25000

PHOTO 1



FIRST FLOOR, 100 MILL POINT ROAD
SOUTH PERTH, WA 6151
TELEPHONE: (09) 474 1505 474 1644
FAX: (09) 368 2197

008



MINES	
File	E.L.9/86
19 DEC 1989	
Dec. Year 2008	
Action Officer	Initials
Pw	GO

15th December 1989

631009

Department of Mines
Post Office Box 56
Rosny Park Tas 7018

Attn: The Director

Mw. P.K. Wright

→ Enclosure with P.W.

Dear Pat,

EL 9/86 ALFRED RIVER REPORT 1988-1989

Your letter PKW(3):LD of 6th July '89 has been referred to me for reply.

The analysis referred to in para 3, page 1 of the report was qualitative and defined the mineralogical suite of the sediments.

Quantitative figures are considered inapplicable.

Such procedure can only be justified if a definite area of alluvium, or eluvium is involved. In this instance the stream sediment sampling did not justify follow up exploration except in the high gravels which merge into the adjacent Huskisson lease.

A joint exploration effort is to be developed to examine these gravels. The chromite shedding from these gravels was investigated and the attached assays and mineragraphic reports relate to those gravel sourced stream sediments.

Analabs mineragraphic results for the stream sediments are outlined in the text but a copy of the full report, which mainly relates to Huskisson River is included for completeness.

Yours faithfully

Ron Blanks

Ron Blanks
Consulting Metallurgist

*RB has noted his
revised acceptance
of this info. GO 26/2/90*

EL 9/86

16

631010

P.K. Wrigley
30 8362

PKW1(3):LD

-6 JUL 1989

Pioneer Resources NL
1st Floor, 100 Mill Point Road
SOUTH PERTH WA 6151

Attention: Dr R.F. Blanks

Dear Sir,

E.L. 9/86, ALFRED RIVER REPORT, 1988-1989

Thank you for the above report (our ref 89-2967).

During assessment of the report it was noted that the following data was not presented:

1. Analytical results for stream sediment samples discussed in paragraph 3 of page 1
2. Full details of the mineral processing investigation discussed in paragraph 3 of page 1 (e.g. initial sample size, weight of non-magnetics fraction etc)
3. Individual mineralogical descriptions for each heavy mineral concentrate examined
4. Supporting data for the estimate of chrome content of the chromite mentioned in the last paragraph of page 3.

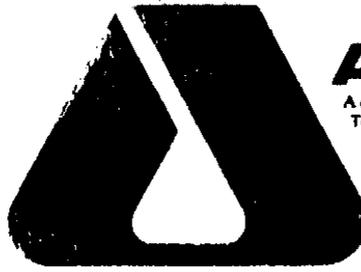
Please contact me on the above number if you have any queries.

Yours faithfully,



P.K. Wrigley
ADMINISTRATIVE GEOLOGIST

010

**ANALABS**A division of Inchcape Inspection and
Testing Services, Australia, Pty. Ltd

Perth Head Office

52 Murray Road, Welshpool, Western Australia 6106.

Tel: (09) 458 7999. Telex: AA92560. Fax: (09) 458 2922.

P.O. Box 210 Bentley, W.A. 6102.

Our ref: RGT001/kb

13 January 1989

Metskill
203 The Esplanade
MT. PLEASANT WA 6153

Dear Sir,

Re: 1000.0.07.651
O/N 30651Attached please find Mineralogical Examination of 18 Non-magnetic
Sand Concs.Yours faithfully,
ANALABS - A division of
Inchcape Inspection and Testing
Services Australia Pty Ltd
ROGER TOWNEND

0 011

INTRODUCTION

The concs. were completely examined by binocular microscope. A number of grains were checked by SEM/EDS.

**TOBIN PAN CON
MAJOR**

Zircon (v. fine)
Rutile

ACCESSORIES

Cassiterite
Quartz
Leucoxene
Bronzite
Chromite

RARE:

Spinel

LW-SS-3

MAJOR

Bronziet

MINOR

Cassiterite
Chromite

ACCESSORIES

Tourmaline
Almandine/grossular
Uvarovite
Cu mineral
Topaz
Rutile
Zircon

x
x

*Alfred Pan
Samples*

ALFRED PAN CONS

MAJOR

Cassiterite

MINOR

Chromite

ACCESSORIES

Leucoxene
Zircon
Bronzite
Kyanite
Rutiel

TRACE

Th monazite
Sillimanite
Anatase
Chlorite

013

TOBINI PAN CON

MAJOR: Zircon (v. fine)
Rutile

ACCESSORIES: Cassiterite
Quartz
Leucoxene
Bronzite
Chromite

RARE: Spinel

TC-SS-3

MAJORS: Rutile black
Chromite
Hematite
Limonite not so common

MINOR: Cassiterite

ACCESSORIES: Topaz
Amphibole
Kyanite
Leucoxene
Zircon
Tourmaline
Almandine/grossular
Bronzite
Monazite
Cu mineral

RARE: Epidote
Hornblende
Spinel

TC-TI-SS-4

MAJOR: Chromite
Cassiterite

MINOR: Monazite
Zircon
Quartz

ACCESSORIES: Rutile
Leucoxene
Tourmaline

TRACES: Kyanite
 Almandine/grossular
 Anatase
 Tremolite
 Zn spinel (plus 2 Mg Fe Al) X
 Bronzite

RARE: Gold flakes (2 grains)
 Topaz
 Sulphide (FeS₂)

BLU-SS-3

MAJOR: Cassiterite

MINOR: Chromite

ACCESSORIES: Leucoxene
 Zircon
 Bronzite
 Kyanite
 Rutile
 Th monazite
 Sillimanite

TRACE: Anatase
 Chlorite

TC-TI-SS-5 NON MAGNETIC

MAJOR: Cassiterite

MINOR: Opaques - Chromite
 - Limonite
 - Hematite
 Topaz

ACCESSORIES: Zircon
 Monazite and Th monazite
 Rutile
 Tourmaline
 Leucoxene
 Quartz (Fine)

TRACES: Bronzite
 Anthophyllite?
 Altered biotite
 Xenotime

RARE: Gold (two grains, rounded, flat)
Zn spinel

TC-SS-8

MAJOR: Opaques - Chromite

MINOR: Cassiterite

ACCESSORIES: Leucoxene
Zircon
Tourmaline
Bronzite
Rutile
Almandine/grossular
Monazite
Kyanite
Topaz

RARE: Gold (two massive grains)
Epidote
Ru bearing Osmiridium (one grain)

BCK-SS-3

MAJOR: Chromite

MINOR: Cassiterite
Bronzite

ACCESSORIES: Zircon
Rutile
Topaz
Th monazite
Leucoxene
Tourmaline

TRACES: Anatase

RARE: Gold (2 grains)

TC-SS-7

MAJOR: Cassiterite
Chromite
Quartz

ACCESSORIES: Topaz
Zircon
Kyanite
Rutile
Leucoxene

TRACES: Hornblende
Almandine/grossular
Epidote

BLY-SS-1

MAJOR: Topaz
Quartz
Chromite

MINOR: Cassiterite

ACCESSORIES: Rutile
Leucoxene
Zircon
Th monazite
Bronzite
Sapphire
Kyanite
Almandine/grossular
Tourmaline
Tremolite

TRACES: Anatase
Gold (3 grains flat) (2 v.v. small grains)
Uvarovite

PS-LW-3

MAJOR: Bronzite

MINOR: Cassiterite
Chromite

ACCESSORIES: Tourmaline
Almandine/grossular
Uvarovite
Cu mineral?
Topaz
Rutile
Zircon

BLU-SS-4

MAJOR: Opaques - Chromite

MINOR: Cassiterite
Topaz

ACCESSORIES: Leucoxene
Rutile
Zircon (some have Hf)
Monazite
Bronzite

The Chromite analysed were poor in Mg but very rich in Cr (6-7) to (1 Fe).

BCK-SS-1

MAJOR: Cassiterite

MINOR: Topaz

ACCESSORIES: Chromite
Zircon
Rutile
Leucoxene
Hornblende
Monazite
Tourmaline
Altered bostite ? *blotite?*
bronzite?

TRACES: Bronzite
Garnet
Anatase

RARE: Gold flake (1 grain)
Gold massive (1 grain)

TC-SS-6

MAJOR: Chromite

MINOR: Cassiterite
Topaz

ACCESSORIES: Leucoxene
Rutile
Tourmaline
Bronzite
Zircon
Kyanite
Garnet

RARE: Epidote
Ru bearing Osmiridium
Mica

BC-SS-4

(Barnes C - SS - 4)

MAJOR: Cassiterite

MINOR: Monazite and Th monazite
Topaz
Opaques - Chromite
- Hematite?

ACCESSORIES: Zircon
Rutile
Garnet
Bronzite
Leucoxene

RARE: Gold (flat)
Corundum (sapphire?)

BC-SS-2

MAJOR: Chromite
Cassiterite

MINOR: Bronzite
Monazite

ACCESSORIES: Zircon
Tourmaline
Leucoxene
Rutile
Hornblende
Zn > Fe spinel \times
Garnet
Andalusite
Topaz

019

TRACES: Kyanite

CHR-SS-7

MAJOR: Quartz

MINOR: Andalusite/Topaz
Cassiterite
Leucoxene
Chromite (octahedra, rounded and anhedral)

VERY MINOR: Zircon

ACCESSORIES: Bronzite

TRACES: Anatase
Magnetite

TC-SS-1

MAJOR: Quartz

MODERATE: Chromite

V. V. MINOR: Zircon
Hematite
Cassiterite

ACCESSORIES: Martite
Monazite
Andalusite

TRACES: Tourmaline
Bronzite
Garnet
Leucoxene
Tremolite
Muscovite
Anatase

ANALYSIS REPORT

020

Dr R Blanks,
Metskill,
203 The esplanade,
Mt Pleasant

2-11-88

1000 0 07 590

o/n 29732

Preparation of 6 polished sections and
Mineragraphic examinations of 6 non mags. (Wilson
River).

R Townend



021

Sample 23 N Mags.

*Buttergrass Plain**Hole 23
Hutch 1 Concentrate
Non Mag. (Minus 1.4 mm)*

Polished section

Chromite	major
Pyrite	major
Arsenopyrite	accessory
Marcasite	accessory
Chalcopyrite	accessory
Goethite	accessory
Galena	trace
Martite	trace
Leucoxene	trace
Sphalerite	trace
Pyrrhotite	trace
Cassiterite	trace
Bismuth.	trace

The section is dominantly composed of discrete Chromite and Pyrite. A little chromite also occurs in limonite. The chromites are fresh, subhedral, non porous and widely sized. Pyrite is fresh, single crystals and aggregates and uncommonly can be rounded.

Sphalerite, chalcopyrite and galena are inclusions in pyrite. Pyrrhotite and arsenopyrite are discrete and fresh, the latter to 0.4mm. Native Bi was included in the arsenic species. One cassiterite grain was confirmed by SEM.

022

Sample 24 N mags.

Buttergrass Plain Hole 24
 Hatch 2 Concentrate
 Non Mags (minus 1.4mm)

Polished section

Pyrite	major
Chromite	major
Limonite	minor
Marcasite	accessory
Sphalerite	accessory
Chalcopyrite	accessory
Leucosene	rare
Galena	rare
Arsenopyrite	rare
Pyrrhotite	rare
Ilmenite	rare

The sample is about 80% opaques. These are mainly chromite and pyrite. The chromite is mainly single discrete fresh non porous grains, rarely it is included in limonite/goethite. The fresh pyrite is either a single crystal or aggregates. Galena, pyrrhotite, and sphalerite can be inclusions in pyrite. Sphalerite also occurs composite with chalcopyrite, to 0.4mm. Chalcopyrite can be a discrete mass to 0.5mm.

Arsenopyrite may be a rhomb within gangue, and marcasite are separate aggregates.

Sample 25 N. Magg.

*Burroughs Main, Hole 25
Hutch 3 Concentrate
Non Magg (Minerals 1.4mm)*

Polished section

Chromite	major
Pyrite	major
Leucoxene	accessory
Arsenopyrite	accessory
Sphalerite	accessory
Chalcopyrite	trace
Limonite	accessory
Galena	trace

The ores are about 90% of the section. They are dominated by chromite almost always present as fresh single non porous crystals. Pyrite is also fresh and discrete. Sphalerite and chalcopyrite may be inclusions in pyrite, while the zinc mineral is also composite to 0.4mm with galena. Arsenopyrite is fresh in aggregates.

Sample H 4554

Huskum River Tributary 4

Polished section

*Stream Sediment Sample 4
(Refer Huskum River Report)*

Cassiterite	dominant
Leucoxene	accessory

The sample is about 90% ores of which the bulk appear to be Cassiterite. This occurs mostly as twinned crystals that are from 0.05 to 1mm sizes. Rare concentric "wood" tin is visible. Microcrystalline leucoxene is the main contaminant. There are some inclusions in the cassiterite, not identified, but possibly not tantalite columbite.

025

Sample H 4555

Hudson River Tributary 4

Polished section

*Stream Sediment Sample 5**Refr Hudson River Report*

Cassiterite	major
Chromite	major
Magnetite	trace
Rutile	trace
Leucoxene	trace

This sample is a concentrate of cassiterite and chromite. Both are essentially discrete. The cassiterite may be twinned, and crystal size is quite variable. The chromite is fresh non porous and as single crystals.

Sample H 5552

Hudson River Tributary 5

Polished section

*Stream Sediment Sample 2**Refr Hudson River Report*

Chromite	major
Cassiterite	major
Leucoxene	accessory

This is similar to sample H 4555, ie consists essentially of discrete cassiterite and chromite. The cassiterite varies in size and texture, some is possibly of a microcrystalline nature, rather like leucoxene? A few inclusions in cassiterite were not identified but may be iron oxide rather than tantalite gp.

026

PHOTO 1 T1 CHROMITE VARIATION. NIC UNC. F. WIDTH 0.54MM

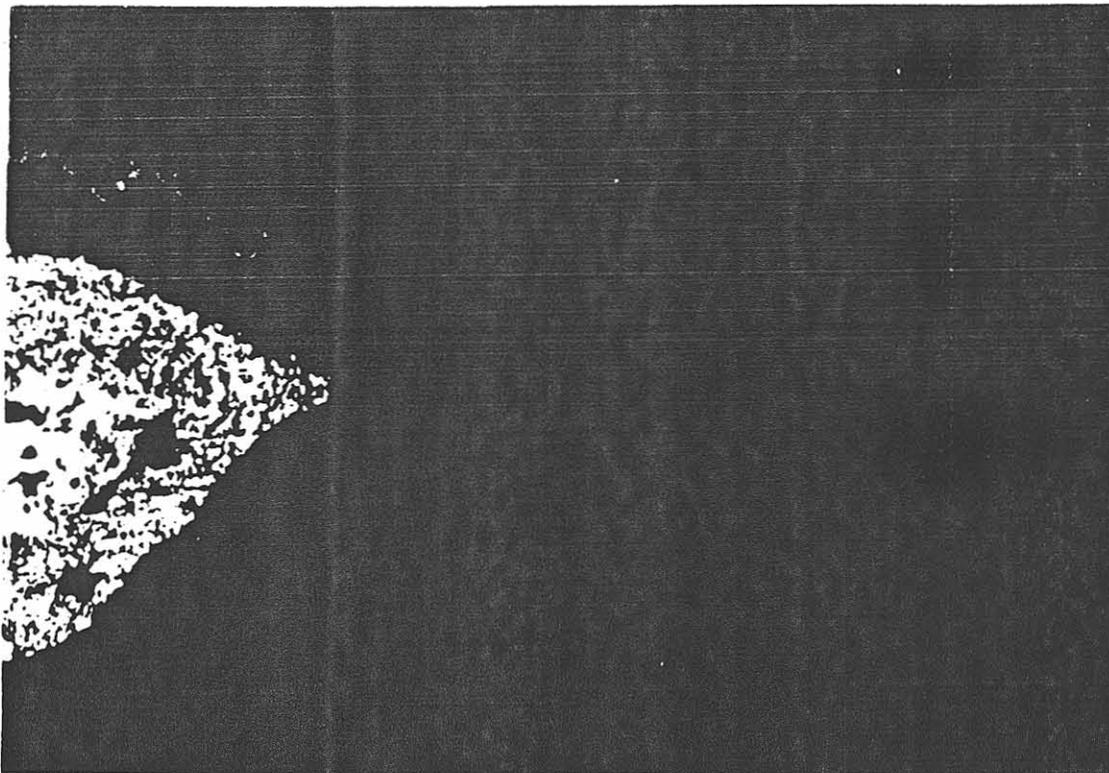
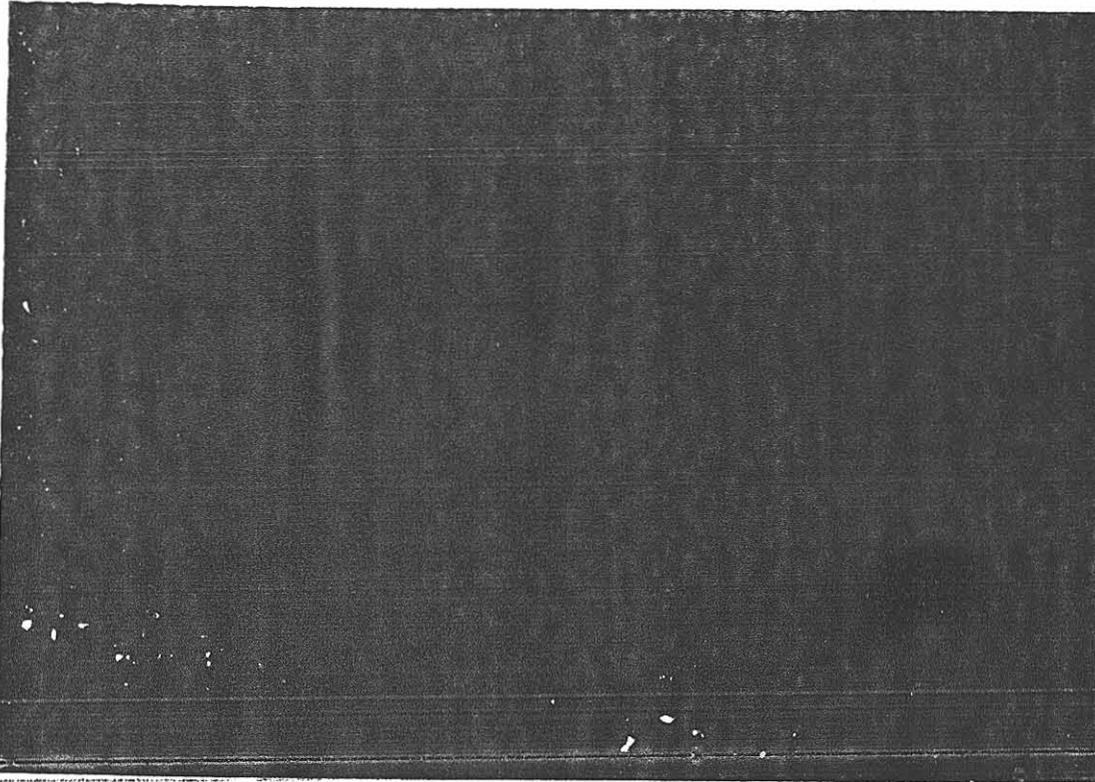


PHOTO 2 T2 CHROMITES PLUS MAGNETITE ALTERING TO MARTITE.
NIC UNC. FIELD WIDTH 0.54MM

027

PHOTO 3 T3 CHROMITES WITH LIMONITE RIM, MAGNETITE. NIC UNC.
FIELD WIDTH 0.54MM

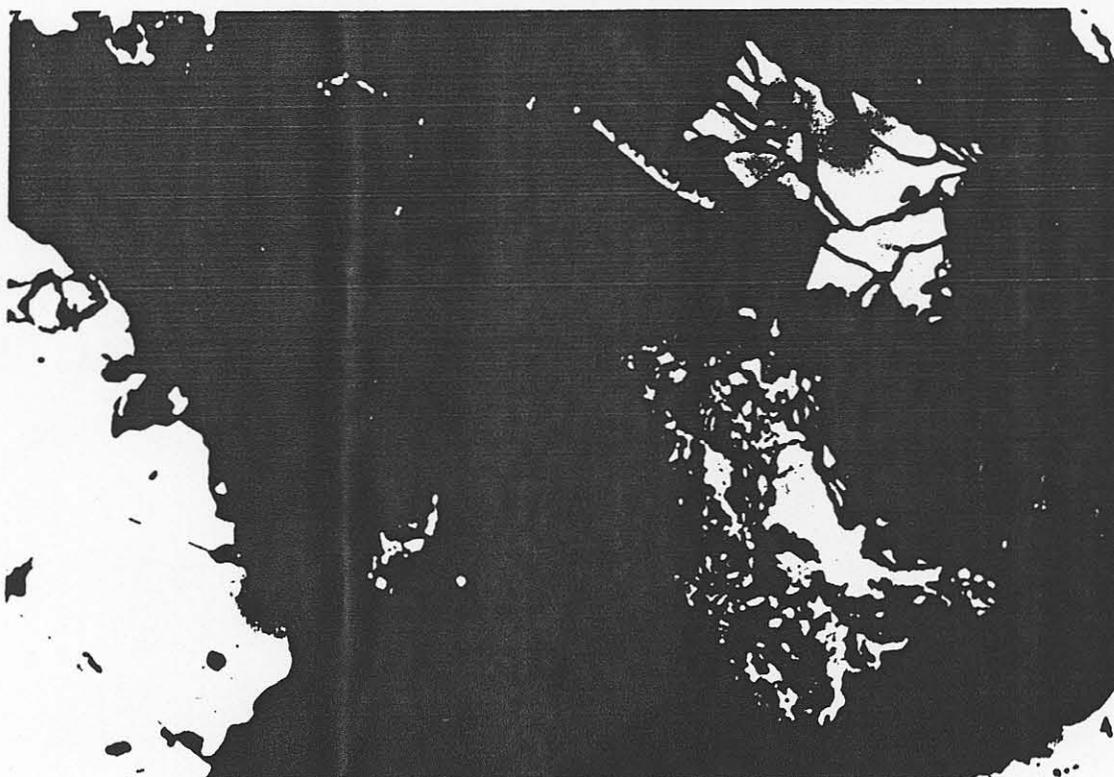
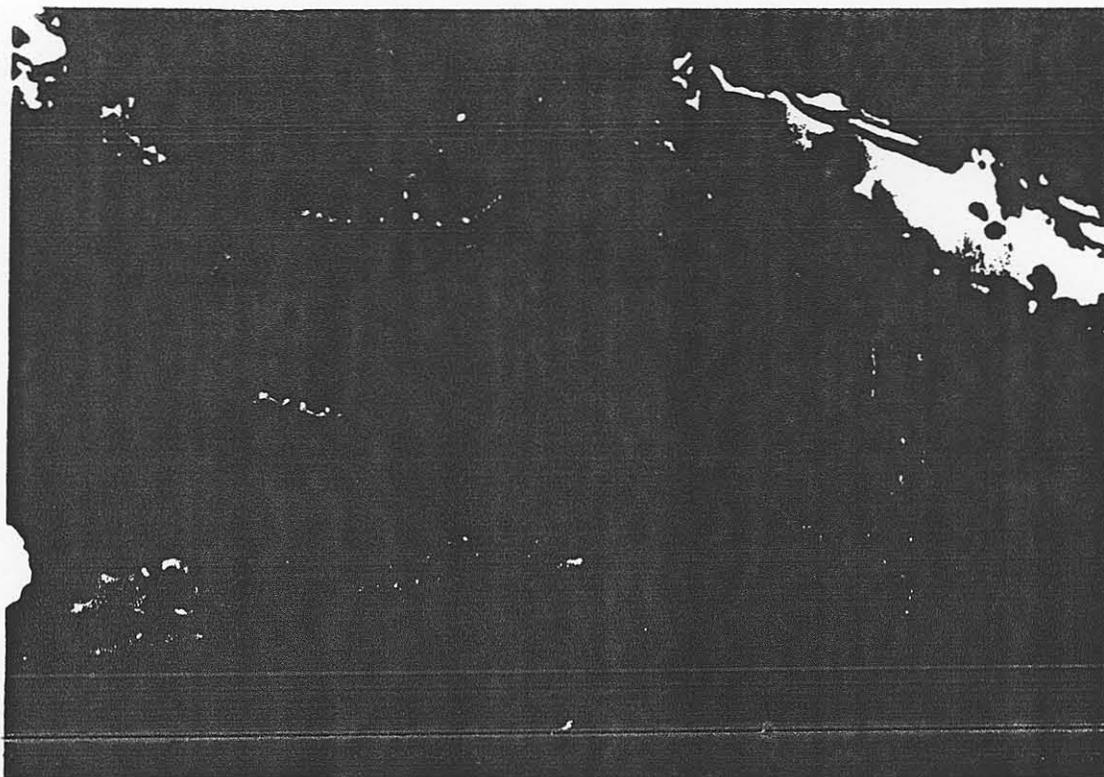


PHOTO 4 T 4 CHROMITE SUBORDINATE TO MAGNETITE.
NIC UNC. FIELD WIDTH 0.54MM

028

PHOTO 5 T5 CHROMITE WITH RIM OF HEMATITE, SEPARATE MARTITE.
NIC UNC. F. WIDTH 0.54MM

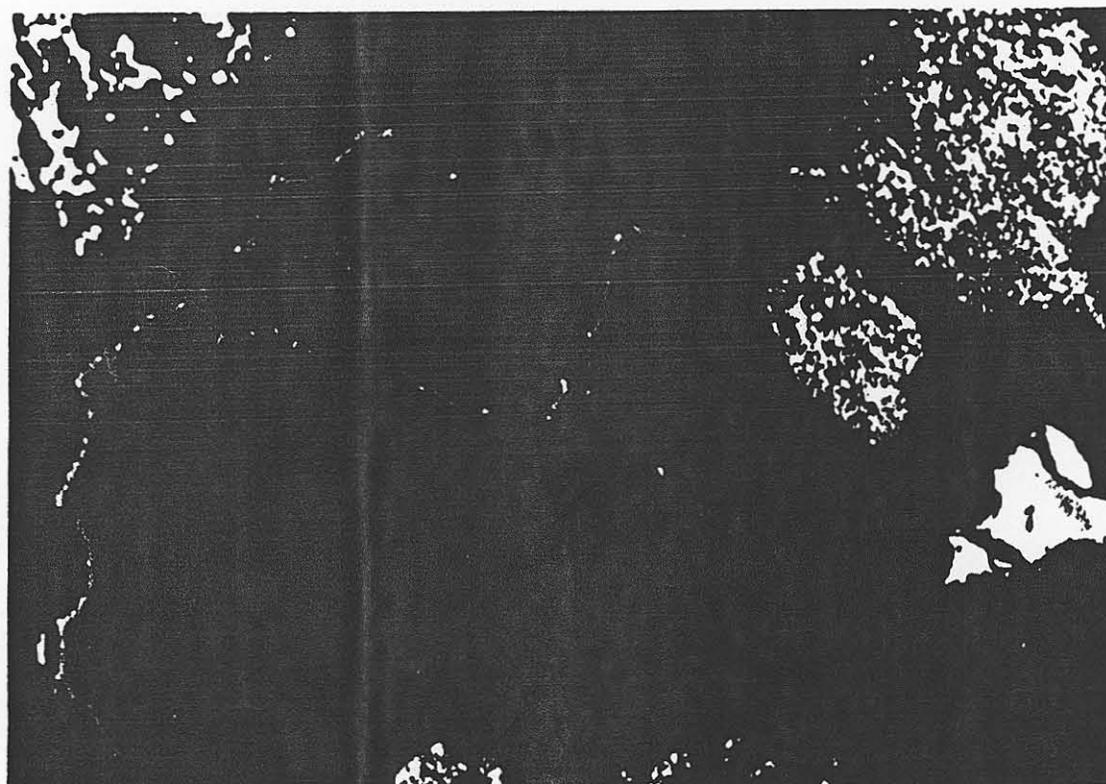
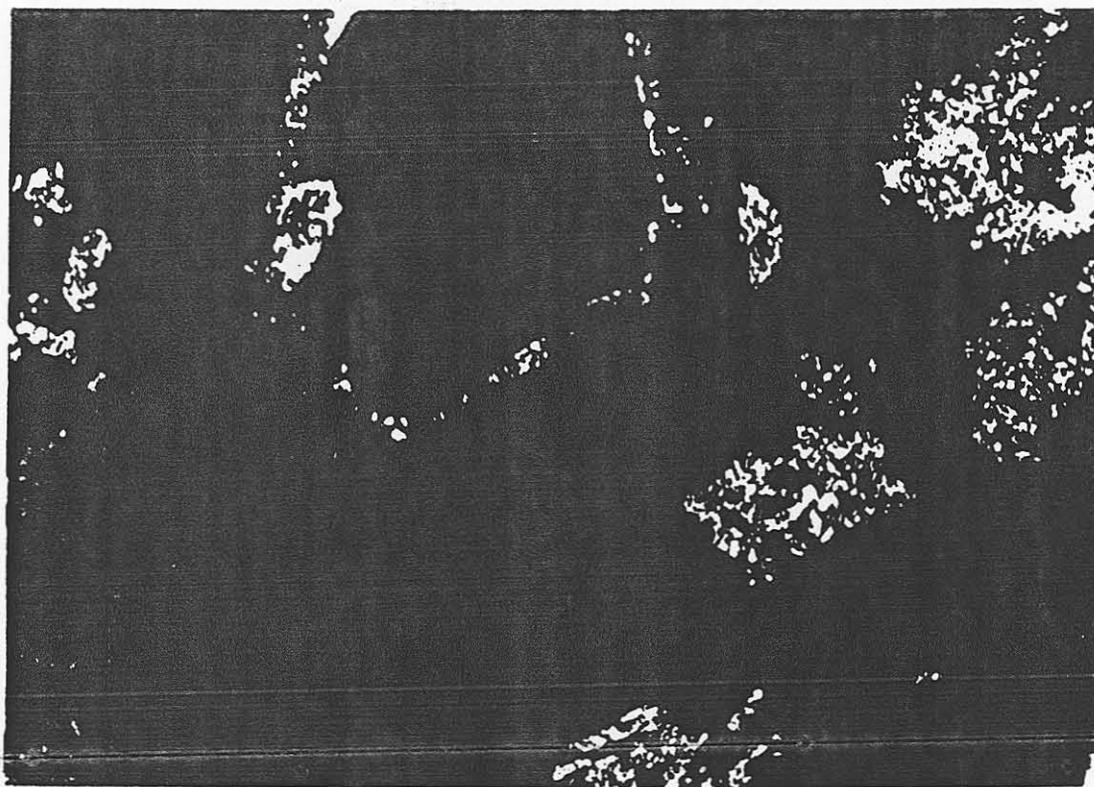


PHOTO 6 T 6 DISCRETE FRESH CHROMITE, SEPARATE MARTITE/MAGNETITE.
NIC UNC. FIELD WIDTH 0.54MM



029

ANALABS

631030

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

Phone (09) 4587999

52 Murray Road, Welshpool, W.A. 6106

Fax (09) 4582922

ANALYTICAL REPORT No. 198-0.01.62982

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

INVOICE TO:

METSKILL
203 THE ESPLANADE
MT PLEASANT WA 6153

ORDER No.

29730

PROJECT

Husk River

DATE RECEIVED

21/10/88

RESULTS REQUIRED

ABAF

No. OF PAGES
OF RESULTS

1

DATE
REPORTED

24/11/88

No.
OF COPIES

1

TOTAL No.
OF SAMPLES

5

SAMPLE NUMBERS

1202/3, 1205/6, 1209

202/3, 1205/6, 1209

1202/3, 1205/6, 1209

SAMPLE DESCRIPTION

Prep : 016

Prep :

Prep :

ELEMENT/METHOD

Cr203, Al203, Si02, Ti02/406

Fe203/406

Hg0/104

RESULTS

TO

METSKILL
203 THE ESPLANADE
MT PLEASANT WA 6153

RESULTS

TO

RESULTS

TO

REMARKS

AUTHORISED OFFICER

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER NO

PAGE

198.0.01.62982

24/11/88

29730

1 of 1

LINE	SAMPLE No.	Cr203	Al203	Ti02	Si02	Fe203	MgO	
1	1202	58.9	8.86	0.16	0.3	22.0	9.75	Button Grass Plain Hole 22. Chromite Cons
2	1203	63.4	5.14	0.08	0.4	20.7	8.51	Hookum R. Trib 4 Stream Sed Sp. 4 Chromite
3	1205	62.3	4.72	0.20	0.5	21.8	8.37	Hookum River Trib 4 S.S. 2 Chromite Cons.
4	1206	61.6	5.29	0.21	0.6	23.0	8.67	Hookum River Tributary S.S. 5 Chromite Cons
5	1209	54.9	9.07	0.56	0.5	26.4	9.07	Tributary Creek Chromite Concentrate.
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23	DETECTION	0.1	0.05	0.01	0.1	0.1	0.05	
24	UNITS	%	%	%	%	%	%	
25	METHOD	406	406	406	199	406	408	

Results in ppm unless otherwise specified
 I - element present, but concentration too low to measure
 X - element concentration below detection limit
 element not determined

AUTHORISED OFFICER J. Sims