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RELINQUISHMENT REPORT

EXPLORATION LICENCE E.L. 19/88

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MONTAGU RIVER - N.W. TASMANIA

90-3178 df

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E.L. 19/88	
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Cliff H. Whitehead
3rd September, 1990

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1. INTRODUCTION

E.L. 19/88 - Montagu River - was granted on the 8th August, 1988, the licence resulting from a Tender Application for Tenement Application E.T.A. 36 in April 1988.

This tender was to explore a part (70sqkms) of E.L. 12/86 (formerly held by B.H.P. Ltd) for possible chromite, platinum, tin and gold mineralisation.

The licence area located immediately north of the Arthur River is readily accessible from Smithton and was primarily considered to have potential for the possible development of chromite bearing alluvials/gravels within the Salmon River drainage area. Some of these alluvials had previously been examined by B.H.P. Ltd but considered to be too small for their exploration/development goals.

The objective of the current E.L. 19/88 exploration work was to further investigate the small scale development of the locations of chromite bearing alluvial ground previously examined by B.H.P. Ltd. It was also the intention to examine other known, but little investigated Tertiary alluvials, plus appraise on a regional level, the possible chromite potential of the more extensively developed Quaternary alluvials.

During regional investigations the alluvial ground of the Licence area would be simultaneously examined for their potential for platinum group elements, other heavy mineral sands (rutite, ilmenite, zircon and monzonite), plus gold and tin.

This report summarises the work completed within E.L. 19/88.

2. SUMMARY

Exploration of E.L. 19/88 commenced in September, 1988.

Initial work consisted of a general literature review of past geologic/exploration/metallurgical test work (B.H.P., C.R.A., ANZECCO, QUEST, DEPT. OF MINES) followed by photogeologic interpretations, regional reconnaissance geologic examinations, geochemical sampling, plus localised investigations of specific geological areas.

Preliminary geological work was successful in delineating the areas of chromite bearing alluvial ground. These were individually examined to provide a preliminary assessment of their grade and tonnage potential.

Three alluvial areas - namely Walkers Gravel Pit, Chromite Ridge and the Salmon River Gravel Pit, were considered to be of sufficient chromite potential to justify more detailed examinations, and this work was completed in the form of power and hand auger drilling, and test work on resultant samples. These investigations indicated that the Cr_2O_3 grades were overall too low and inconsistent in values and together with an evaluation of possible mining/milling methods, it was assessed that the initiation of even a small scale mining operation was not justified.

Geochemical studies on a regional aspect identified two locations of slightly anomalous platinum bearing material. However, the recognition of other "heavy mineral" assemblages or gold anomalism within the licence areas alluvials was negative.

In view of the above results, the decision was made not to reapply for the renewal of the exploration licence.

3. LOCATION/LAND TENURE

Exploration Licence 19/88 covers an area of 70km² within the vicinity of the Salmon and Montagu Rivers in the Municipality of Circular Head - District of Wellington and Russell - see Figure 1.

No private land occurs in the licence area, but is comprised of State Forest.

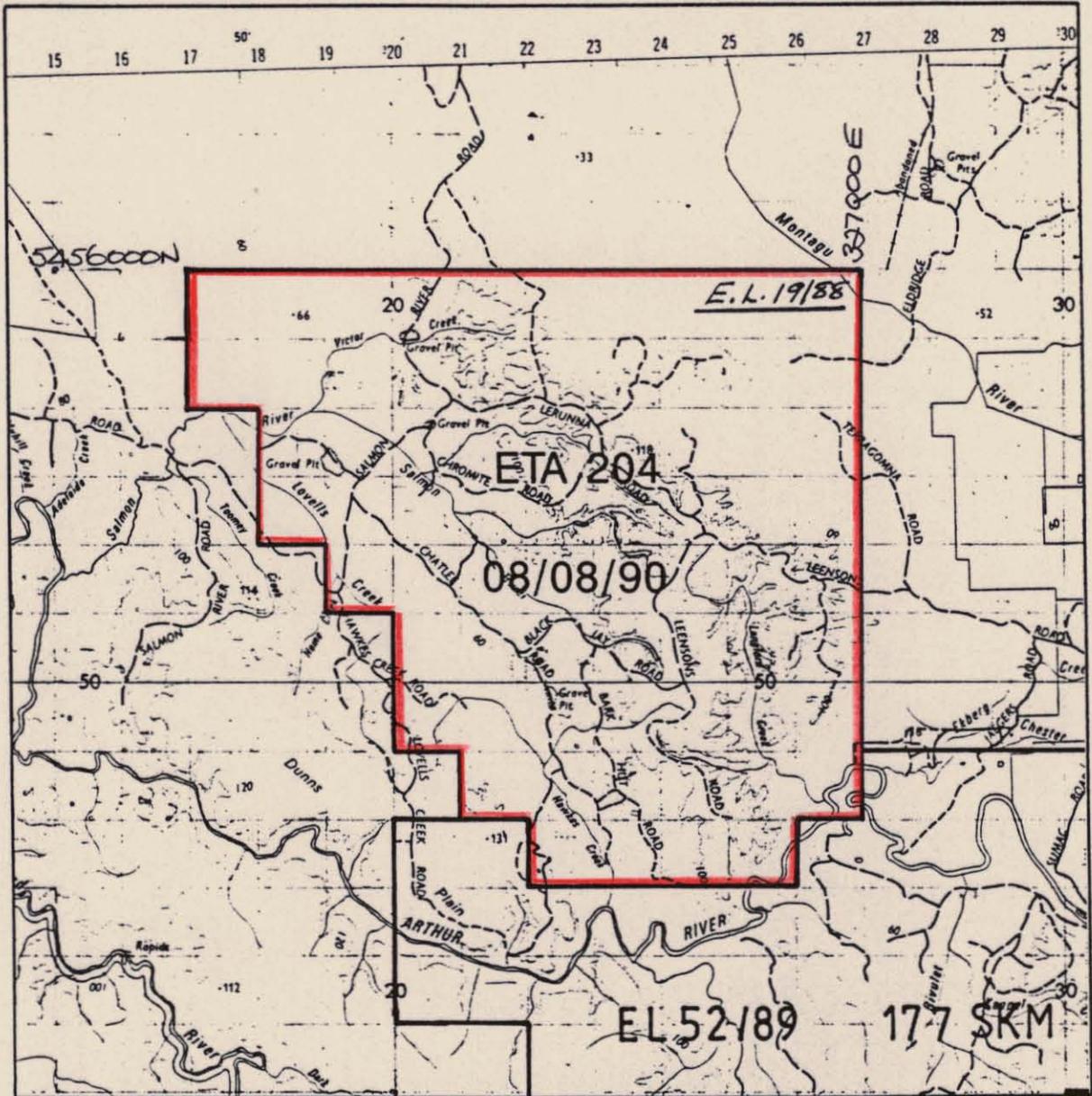
As shown in Figure 1, the E.L. area occurs immediately north of the Arthur River, and is easily accessible from Smithton, either via Togari (Salmon River Road), or Edith Creek (Roger River Road and Leensons Road).

The tenement itself is favourably transgressed by innumerable forestry tracks.

The licence area could be topographically described as gently undulating, with flat ridges separated by large areas of low-lying swampy ground furnishing thick dense scrub.

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E.L. 19/88



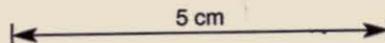
SALMON RIVER ETA ~ 70 SKM

FORMERLY EL. 19/88 (ALL MINERALS)

Scale 1:100000 0 4 8 km

DIVISION OF MINES AND MINERAL RESOURCES

P. 826



4. PREVIOUS EXPLORATION/INVESTIGATIONS

The tenement area in general appears to have received scant attention in the past, and been confined to the following:-

- Specific chromite bearing fluvial deposits at a location, now known as Walkers Gravel Pit, were investigated by the Department of Mines geologists and metallurgical laboratories (Launceston) both in 1956 and 1968.
- The chromite potential of specific areas of alluvial ground was likewise investigated by Quest Mining and Exploration N.L. (E.L. 5/68) and very briefly by Mineral Holdings (Australia) Pty Ltd.
- The area embraced by E.L. 19/88 formed part of much larger areas investigated regionally by ANZECO (1971-72), CRAE (E.L. 1/77, 1977 to 1983) and more recently by BHP (E.L. 12/86, 1987).

Overall, chromite has been the principal commodity of interest in the area in question. although other commodities investigated have been tungsten (ANZECO) and tin (CRAE). No metalliferous mining appears to have taken place in the area.

5. EXPLORATION OBJECTIVES/PHILOSOPHY

E.L. 19/88 was specifically demarcated to assess the possible potential of chromite, platinum group elements, heavy mineral sands (rutite, ilmenite, zircon, monzomite), gold and tin.

The prime objective of proposed E.L. work was to investigate the economic viability of known alluvial chromite deposits, the aim being to assess the feasibility of developing small scale mining operations (50,000 to 150,000 tpa) over these resources.

In addition to examining previous demarcated chromite bearing ground, other little investigated Tertiary alluvials were to be examined, and also it was proposed to regionally appraise the possible chromite potential of larger scale Quaternary alluvials.

6. CURRENT EXPLORATION

A. TECHNIQUES

Exploration work completed within E.L. 19/88 from September 1988 to current date consisted of:-

- A1 - Acquisition of available topographical plans, forestry maps and recent aerial photographs of the licence area with subsequent base-map preparation, scale 1:25,000.
- A2 - Preliminary photogeologic interpretation of the E.L. licence area and surrounding region.
- A3 - Literature review. Acquisition of previous open file exploration reports, review of past results, in particular, those related to investigations and metallurgical test work on chromite bearing alluvial ground.
- A4 - General field reconnaissance and examination of alluvial chromite bearing areas in the E.L. Regional surface sampling of alluvial ground and analytical work on possible Cr_2O_3 , Pt and Au anomalism.
- A5 - Preliminary surveying, examination and sampling of the "Walkers Quarry" alluvial chromite area. Detailed review of past BHP and Dept. of Mines metallurgical test work on the alluvials from this area.
- A6 - Systematic geochemical pan concentrate sampling of the E.L. 19/88 regional drainage. Samples were assayed for Cr_2O_3 , Pt and gold.
- A7 - Power auger and hand auger drilling, supplemented by surface sampling of chromite bearing alluvial ground at three areas evaluated to be of greatest potential, namely Walkers Gravel Pit, Chromite Ridge and the Salmon River Gravel Pit alluvials.

Screening and heavy mineral test work was completed on collected auger samples, as likewise was an evaluation of these alluvial areas for development of possible small scale mining operations.

- A8 - A preliminary market appraisal of high grade chromite sands (Cr_2O_3 50%, Cr:Fe ratio 3:1) was made.
- A9 - Reconnaissance geologic examinations of the PreCambrian-Cambrian calcareous sequences in and around the licence area were made with the objective of identifying prospective near-surface dolomite occurrences.
- A10 - The use of chromite as a potential brick and/or cement base pigment was briefly reviewed.

B. RESULTS

Exploration procedures NP A1-A6 itemised above were completed during the first year term of the exploration licence, and the results of that work were documented within the E.L. 19/88 Annual Report-88/89 (See 7 - References).

The main results achieved during the above exploration work showed that:-

- examinations of the main areas of chromite bearing alluvial showed that the "Walkers Pit" and "Chromite Ridge" deposit were the deposits of greatest potential for possible future development.
- regional geochemical work assisted in the identification and delineation of other chromite bearing alluvials, and the identification of two locations showing slight platinum anomalism.
- gold values in the drainage sampled were negative, and the other "heavy mineral" potential of the licence was downgraded. *less than nothing?!*

Exploration work during the 2nd year term of the E.L. consisted primarily of a more detailed assessment of chromite bearing alluvial ground at the three above mentioned locations in the central sections of the licence area. Work performed included hand auger drilling plus test work on acquired drill samples (i.e. screening, heavy mineral collection of screened fractions).

Table NO 1 itemises records of the auger holes completed; Table NO 2 documents the salient results of the sample test work. Plan N 1/89 shows areas of alluvial investigated, and Figure NO 2 drill sites at the Walkers Pit location.

Cr₂O₃ assay values, and overall chromite concentrations in alluvials sands and grits at all three locations were extremely disappointing.

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At the Walkers Pit, no localised high grade small tonnage pods or trends of mineralised ground were localised during this work, and the actual variations in depths of "mineralised" alluvial ground was an unexpected realisation, as was the high proportion (25-35%) of plus 1.0mm unmineralised material with the alluvials. Any future proposed mining of the deposits at this location would be a simple matter, with there being little or no overburden and the unconsolidated nature of the alluvials. However, considering Cr₂O₃ values, grade variations, and high percentages of unmineralised coarser (+1.0mm) fraction, the future of the locations potential to support even a small scale mining operation was downgraded.

Augering (hand) on a scout nature of both the Salmon River Road and Chromite Ridge alluvials proved the deposits of chromite bearing alluvial to be very shallow in depth (0.50m - 3.25m) and much more consolidated than expected. No further investigations were justified.

A preliminary market appraisal for chromite sands showed the actual chemical specifications (Cr_2O_3 50-55% and Cr:Fe ratio 3:1) and size fractions of chromite concentration achievable from the Walkers Pit alluvial could be acceptable as a marketable product. An initial enquiry to supply chromite sands to an Indonesian market was identified, but at tonnages (5-10,000 tonnes) completely in excess of the deposits potential, and possible extraction.

Follow up surface geologic examinations of the Precambrian and Cambrian sequences for possible dolomite sequences of a high grade nature proved fruitless, and no surface sampling on a systematic nature was completed. However, miscellaneous samples of silica sand were collected in the centra section of the E.L. and assayed for SiO_2 content (Table N^o 3).

7. REFERENCES

- E.L. 19/88 - Annual Report 1988/89 (1st Year)
3/7/89 - C.H. Whitehead

- E.L. 12/86 Combined Annual/Final Report for period ended
24th February, 1988.
B.H.P. - W.C. Kosseris (March 1988)

E.L. 19/88 - SALMON RIVER

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AUGER & SURFACE SAMPLES - DECEMBER 1989A. WALKERS QUARRY

- Eastern Digging - Grid Co-ordinates 5455262N - 320571E

Hole No WQ1 - Depth drilled 8.54m - 3 samples

" 2 - " " 7.89m - 3 samples

" 3 - " " 1.93m - 2 samples

" 4 - " " 5.20m - 2 samples

Face Sample WQ7 - 1 sample

" WQ8 - 1 sample

" WQ9 - 1 sample

" WQ10 - 1 sample

- Western Digging - Grid Co-ordinates 320337E - 5455095N

Hole No WQ5 - Depth drilled 5.15m - 2 samples

" WQ6 - " " 3.09m - 2 samples

Face Sample WQ11 - 1 sample

" " WQ12 - 1 sample

B. CHROMITE RIDGE ALLUVIALS

Grid Co-ordinates - 5453286N - 320762E

Hole No CR1 - Depth drilled 0.5m 1 sample

" CR2 - " " 1.8m 1 sample

" CR3 - " " 3.25m 1 sample

C. SALMON RIVER QUARRRY

Grid Co-ordinates - 5453952N - 320667E

Hole No SR1 - Depth drilled 3.45m 2 samples

" SR2 - Depth drilled 2.84m 1 sample

All above 26 samples sieved - minus 1/16" retained and split into two fractions, one retained, other half pan concentrated. No analytical work undertaken.

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E.L. 19/88 - SALMON RIVERCHROMITE RIDGE - BULK SAMPLE SCREEN TESTWORK

A. CHROMITE RIDGE BULK SAMPLE

Location Reference - 5453286N, 320762E

Total Weight of Sample - 43.5kg

Four screen fractions

Size:-

+1/16"	=	25.58%	of	total	weight
+1000u - 1/16"	=	5.75%	"	"	"
+ 400u - 1000u	=	6.60	"	"	"
- 400u	+	62.07%	"	"	"
		<u>100.00%</u>			

MINUS 400u fraction pan concentrated
 Sample No ARBC - Au - 0.999ppm

B. WALKERS QUARRY BULK SAMPLE

Location Reference - 5455262N, 320571E

Total Weight of Sample - 50.6kg

Four screen fractions

Size:-

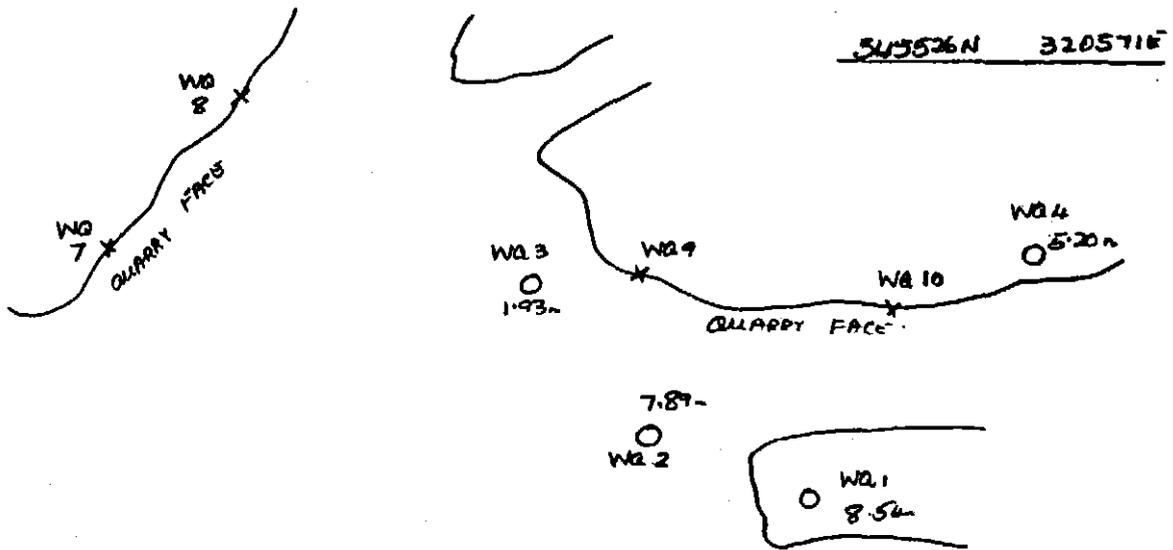
+1/16"	=	16.79
+1000u - 1/16"	=	6.92
+ 400u - 1000u	=	17.00
- 400u	=	59.29

MINUS 400u fraction pan concentrated
 Sample No ARCC - Au=0.009ppm, Pt=0.012ppm

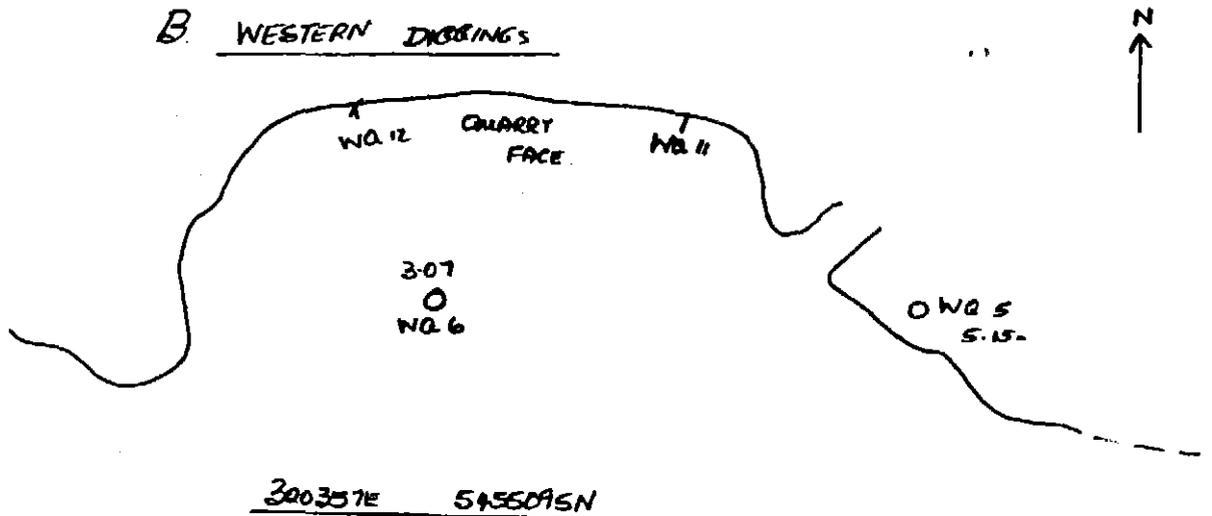
AUGER DRILLING / FACE SAMPLING.

WALKERS PIT - E.L. 19/88.

A EASTERN DIGBINGS



B WESTERN DIGBINGS



X = FACE SAMPLE

O AUGER N° / DEPTH

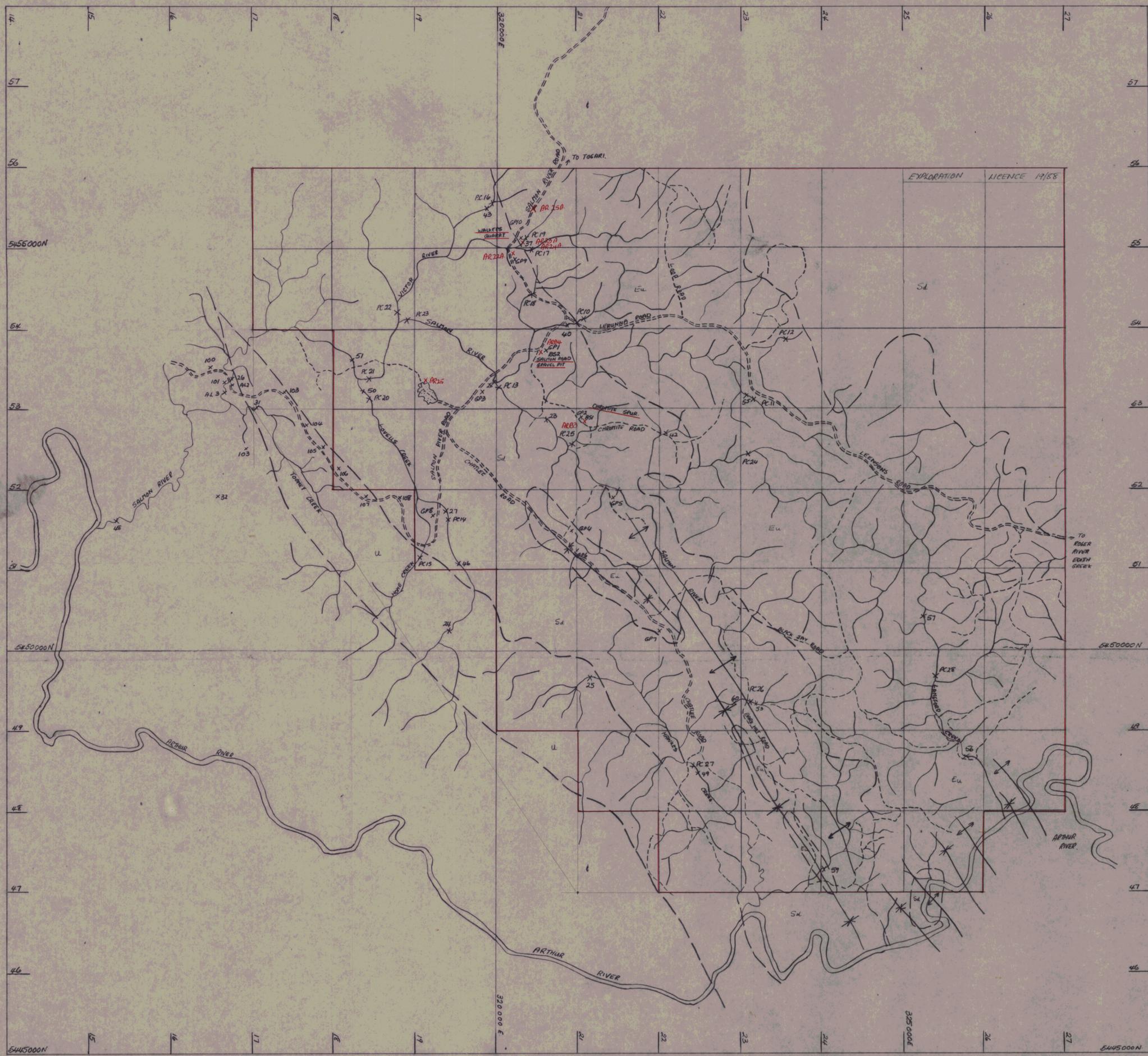
SAMPLES -

- SIEVED, FINUS 1/16 RETAINED
- 1/16 SAMPLE SPLIT INTO 2, 1 SAMPLE RETAINED
- OTHER SAMPLE PAN CONCENTRATED

E.L. 19/88 - SALMON RIVERSILICA SAND SAMPLES

(Please refer to plan in folder - 1/89)

<u>SAMPLE NO</u>	<u>GRID CO-ORDINATES</u>		<u>SiO₂</u>	<u>Au</u>
	<u>N</u>	<u>E</u>	%	ppm
AR.22A	5454857	320285	89.1	-
AR.23A	5455262	320571	84.5	-
AR.24A	5455264	320573	91.2	-
AR.25A	5455738	320619	90.7	-
AR.B3	5453286	320762	86.6	-
AR.B4	5453952	320667	91.7	-
AR.25	5453643	319143	90.7	0.128



- Eu = CAMBRIAN UNDIFFERENTIATED
- Sd = PRECAMBRIAN SPITH-TON DOLOMITE
- U = PRECAMBRIAN SILTSTONES, GREYWACKE, QUARTZITE

GEOCHEMICAL SAMPLES.

- PC 10-28 - PAN CONCENTRATE SAMPLES (1978)
- GP 1-10 - CHRONITE ALLUVIALS
- GS 1-2 - BULK SAMPLES
- X 23-61 - PAN CONCENTRATE SAMPLES
- X 100-107 - SOIL SAMPLES

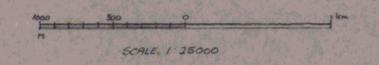
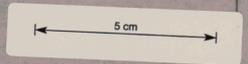
SAMPLE N°	CO ₂ VALUE % ppm	SAMPLE N°	CO ₂ VALUE % ppm
pc 10	5.4	23	25.0
pc 11	-0.1	24	4.3
pc 12	8.7	25	26.7
pc 13	10.2	26	30.2
pc 14	10.1	27	25.2
pc 15	9.3	28	23.4
pc 16	2.5	31	2.57
pc 17	39.6	32	480
pc 18	27.7	37	24.6
pc 19	2.3	40	21.6
pc 20	4.1	41	23.0
pc 21	28.4	42	19.6
pc 22	2.6	43	22.4
pc 23	13.1	46	27.2
pc 24	2.9	48	13.8
pc 25	3.2	49	14.8
pc 26	18.3	50	12.4
pc 27	2.4	51	29.7
pc 28	2.1	53	18.3
gp 1	41.60	54	1.29
gp 2	33.20	55	26.1
gp 3	13.90	56	20.0
gp 4	2.95	57	6.5
gp 5	3.19	59	62
gp 6	5.36	60	4.0 ppm
gp 7	0.75	100	80
gp 8	5.09	101	520
gp 9	16.30	102	280
gp 10	6.69	103	1300
		104	640
		105	2600
		106	880
		107	520

= E.L. MINE BOUNDARY.

= DRAINAGE

= MAIN TRACKS

= ROBERT TRACK



EXPLORATION LICENCE 19/88

C.H. WHITEHEAD

MONTAGU - SALMON RIVERS.

REGIONAL GEOLOGY AND GEOCHEMISTRY

DATE - MARCH 1980 SCALE 1:25,000 PLAN NO - 1189