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THE GEOLOGY AND MINERALIZATION

OF THE UPPER AVENUE RIVER AREA, SCAMANDER

NORTH EAST TASMANIA

BY

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INTRODUCTION

A regional geological survey and scout of mineralised areas inland from the coastal townships of Scamander and St. Helens, North East Tasmania was commenced on January. This is a follow up report covering work subsequent to that reported on in Geophoto Minerals Report 1969/4, and relates to more remote and less accessible areas inland from Scamander.

PURPOSE

The purpose of this work was to select restricted target areas on geologic grounds for detailed prospecting involving geochemistry, geophysics and drilling. This survey will also serve as a geological base to a concurrent geochemical sampling campaign to be reported on elsewhere. The following geological notes supplement the geological map (Figure 1). Appended are recommendations on previous aerophysical work and follow up.

GEOLOGY

The Mathinna beds, Silurian in age have been folded, faulted, sheared and intruded by Devonian Granitic rocks. These intrusives are probably responsible for the mineralization in the area. The Mathinna Beds and the granitic rocks are overlain by a sequence of flat-lying Permian

sediments which are now confined to the ridges. The area was then subjected to a diastrophic interlude with movement along pre-existing faults and shear planes, followed by intrusion of dolerite sills. Small remnants of these are found on the high peaks in the area. A small flow of Tertiary basalt also occurs in the mountain portions of the area.

Mathinna Beds

These beds consist of a sequence of shales, silicified mudstones, siltstones, and arenites. They outcrop as lithologically monotonous, thinly bedded sequences or as massive, structureless arenites interbedded with siltstones. They possess many similarities with geosynclinal, turbidite type deposits.

Quartz veining is common throughout the sequence. The quartz is not confined to the joints and shears but also occurs ramifying throughout the beds.

Permian Sediments

Remnants of the Permian sequence still exist on the higher ridges in the area. The sequence consists of conglomerates, mudstones and arenites, and is generally flat lying, and generally non-significant

for economic mineralization.

Devonian Granites

Three varieties of granitic rock are found in the area. To the east are porphyritic biotite adamellite and the fine-grained, leucocratic "tin granite" with associated griesens. To the west occurs a fine-grained, mafic rich "granite", which occasionally is porphyritic.

The different types of granite may have some associations with the different types of mineralization in the area.

Structure

The Mathinna Beds generally strike northerly and have been folded on axes which trend NNW to N, parallel to the bedding. Minor warping and folding also occurs on the flanks of the folds. They have been cut by conjugate sets of joints and also by shears and major faults. At least two periods of movement has occurred on most of these latter structures. The most important joint set has one member parallel to the bedding and the other at right angles to the bedding plane.

The sheared zones are also either parallel or at right angles to the bedding plane. They are commonly associated with close folding in the surrounding sediments. The absence of any prominent marker horizons makes it difficult to estimate the relative movement on the shears or faults in the area.

In adjoining areas to the immediate east and west of this area mineralization (on the east being tin, wolfram, copper; on the west being gold) has been concentrated in and about these sheared zones. Threader, Department of Mines Geologist, working in the area to the west concluded that gold mineralisation was generally associated with the sheared zones but not with the regional fold pattern.

Post-Permian movement on these shears makes it difficult to detect them from the geomorphic picture.

Mineralization

Several old shafts occur in the area, but no significant economic mineralization is recorded. Gold in small quantities was won from the Brilliant, Golden Ridge and Queen of the Earth Mines. Twelvetreets reports that gold occurs in the joint planes with minute veins of quartz in the Golden Ridge Mine. Only brief mention is made on the other mines

in published reports. A small vein of quartz in the north-west of the area discussed herein is reported to have assayed some gold.

CONCLUSIONS

Recorded economic mineralization is weak, but this may be due to the inaccessibility and remoteness of the district. The NW and NE trending shears appear to be the structures that control mineralization.

RECOMMENDATIONS

(i) Examination of the fracture pattern and geomorphology of the area using aerial photography, to assist in determining whether the zone of close folding extends to the known gold deposits in the area. Any other prominent fractures in the area, that may be of significance should be looked for in this study.

(ii) Special attention should be paid to the geochemical samples from Area A because of the similarity it has to the Mathinna Gold Field in respect to country rock, shearing, close folding and known gold mineralization.

(iii) The use of the Arsenic-Gold relationship with a soil geochemical survey may reveal concealed mineralized quartz lodes.

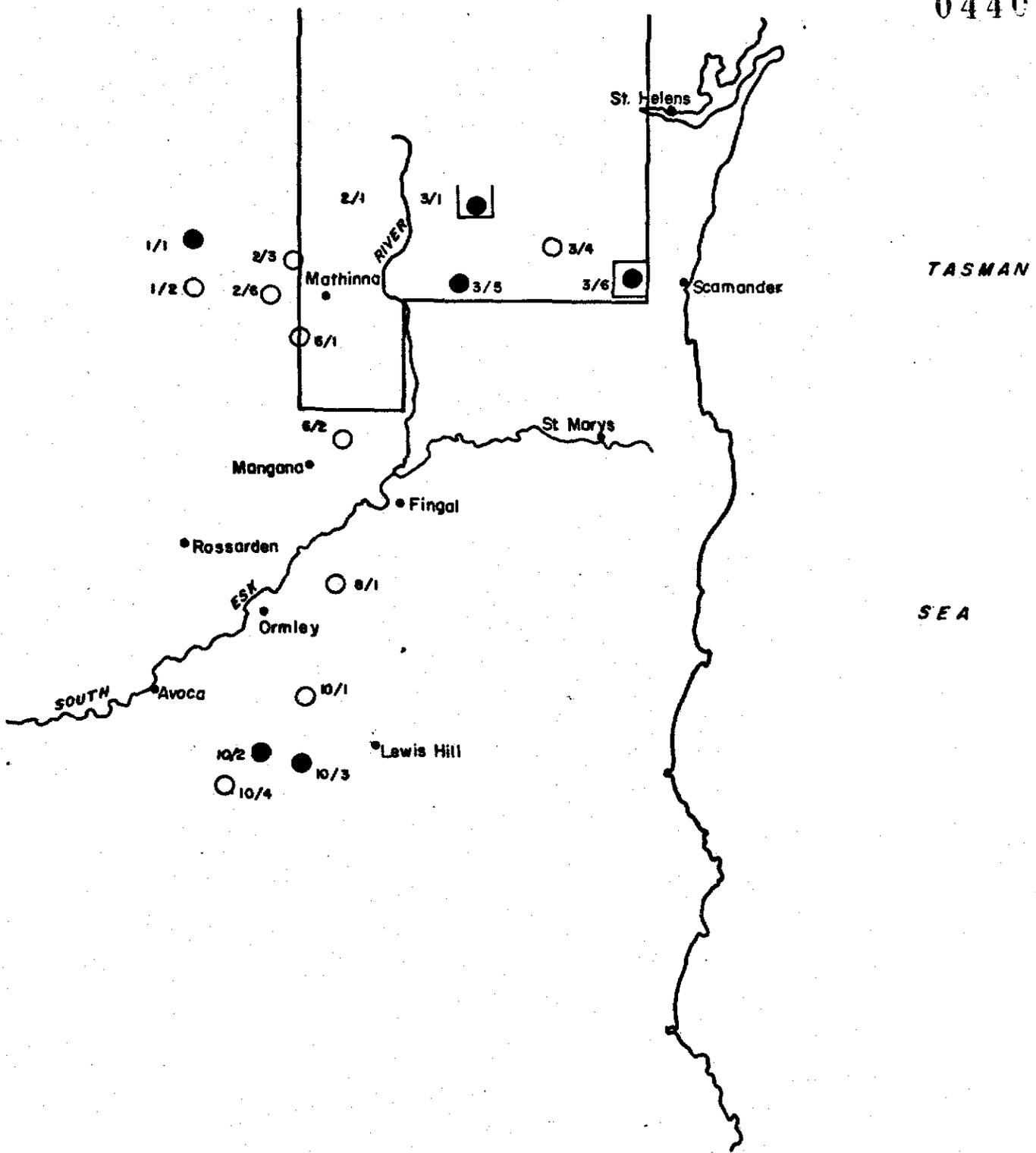
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(iv) Detailed mapping followed by a geophysical survey in the vicinity of the Queen of the Earth, Brilliant and Golden Ridge Mines may reveal a major controlling shear, if such exists, and give grounds for wildcat drilling to see whether lodes occur at depth.

IAN D. NEUSS

March 15, 1969.



E. Z. CO. AEROPHYSICAL ANOMALIES

- Location of Anomalies.
- Anomalies recovered.

SCALE : 1 : 500,000

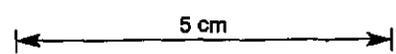


Figure 2.

Recommendations

The lateral extent, and the depth of mineralization in the shear zone have not been tested. Gridding with ground magnetics and further E.M. or I.P. work and soils geochemical surveying would give more grounds to consider further testing of the extent of mineralization.

It would be recommended that these geophysical and geochemical surveys be carried out were the E.Z. anomaly located within EL6/68.

Anomaly 3/1 Upper Scamander River Area

This anomaly was proved to be a density contrast between two rock units - Mathinna Beds and granite.

Other Anomalies near EL7/68 (See Figure 2)

The other airborne E.M. anomalies were concluded to be largely due to water along prominent structural features or bedding planes.

APPENDIX I

Recommendations following examination of results from
Electrolytic Zinc Company aerophysical records of the
Scamander Area.

3/6

North Scamander Anomaly

A drill hole was put down on a magnetic anomaly to intersect a fault at depth. Spasmodic mineralization occurred along the length of the drill hole; at 120½ - 126½ feet in a zone of shearing the main mineralization was encountered.

Samples Assayed	Pb	1.5%
	Zn	4.4%
	Cu	0.10%
	Ag	1 oz /ton
	Fe	35.4%

The minerals were principally pyrite, pyrrhotite and magnetite. A geophysical survey carried out was inconclusive because of the terrain.

Recommendations

The lateral extent, and the depth of mineralization in the shear zone have not been tested. Gridding with ground magnetics, E.M. or I.P. work and soils geochemical surveying would give more grounds to consider diamond drilling to prove up the extent of mineralization.

It is recommended that these geophysical and geochemical surveys be carried out.

Anomaly 3/1 Upper Scamander River Area

This anomaly was proved to be a density contrast between two rock units-Mathinna Beds and granite.

Other Anomalies near EL7/68 (See Figure 2)

The other airborne E.M. anomalies were concluded to be largely due to water along prominent structural features or bedding planes.

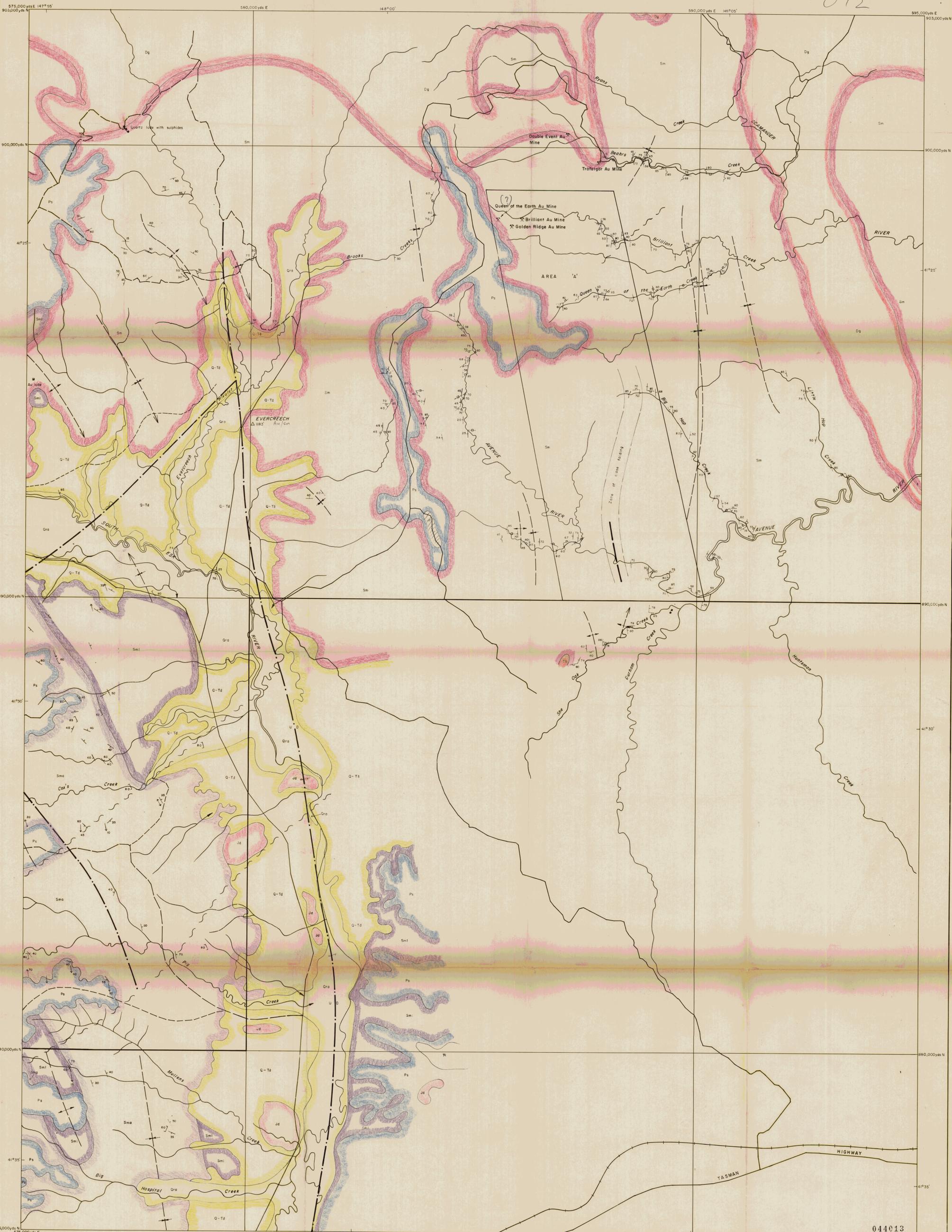
Below is a summary :

- Anomaly 1/1 Water at a lithological contact.
- Anomaly 1/2 Due to country. Tertiary basalt over granite.
- Anomaly 2/1 Parallel to the regional strike.
- Anomaly 2/3 Lady Mary Gold prospect - water made more conductive
by the presence of sulphides.
- Anomaly 2/6 Water laden clay lode in Permian sediments.
- Anomaly 3/5 Interbedded sandstones clays and conglomerates 200
feet thick. No work because of geological setting
(Permian).
- Anomaly 6/1 In Mathinna Beds - weak response, no follow up work
done.
- Anomaly 6/2 Poor conductivity, strike north no definite single
conductor.
- Anomaly 3/4 Ground result not recovered, no work was done.

Recommendations

Some of these may bear closer re-examination.

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575,000 yds E 147° 55' 903,000 yds N 580,000 yds E 148° 00' 590,000 yds E 148° 05' 905,000 yds E 903,000 yds N

890,000 yds N 41° 25' 890,000 yds N 41° 30' 890,000 yds N 41° 35'

876,000 yds N 575,000 yds E 580,000 yds E 148° 00' 590,000 yds E 876,000 yds N 895,000 yds N