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UTAH BAY HOLDINGS PTY LTD

# DIAMOND AND RARE EARTH PROSPECTS IN WESTERN AUSTRALIA

Mt Josephine
E80/1123

9/89
SE5213 (Mt Bannerman 25K

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# DIAMOND PROSPECT LOCATION MAP

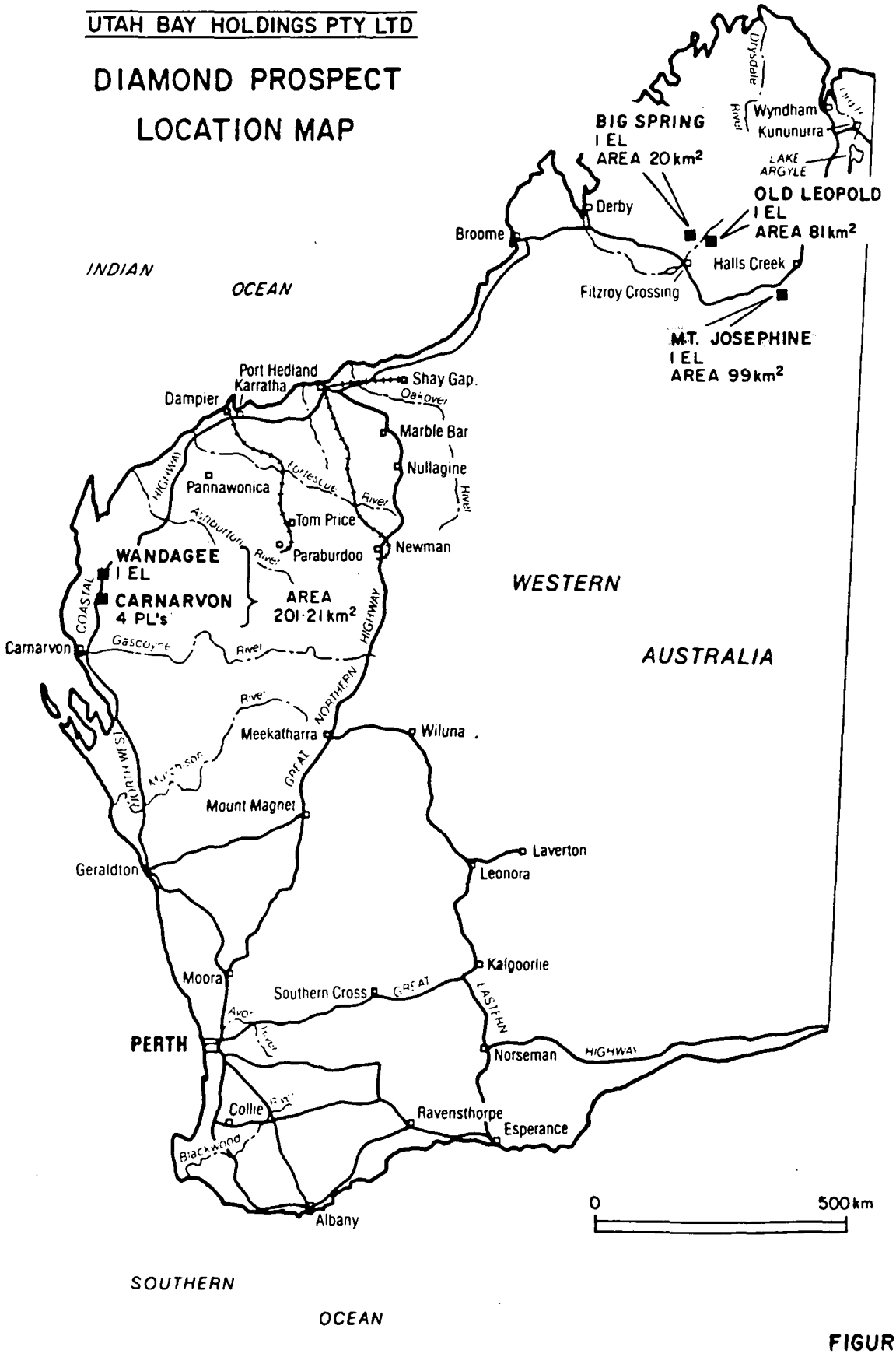
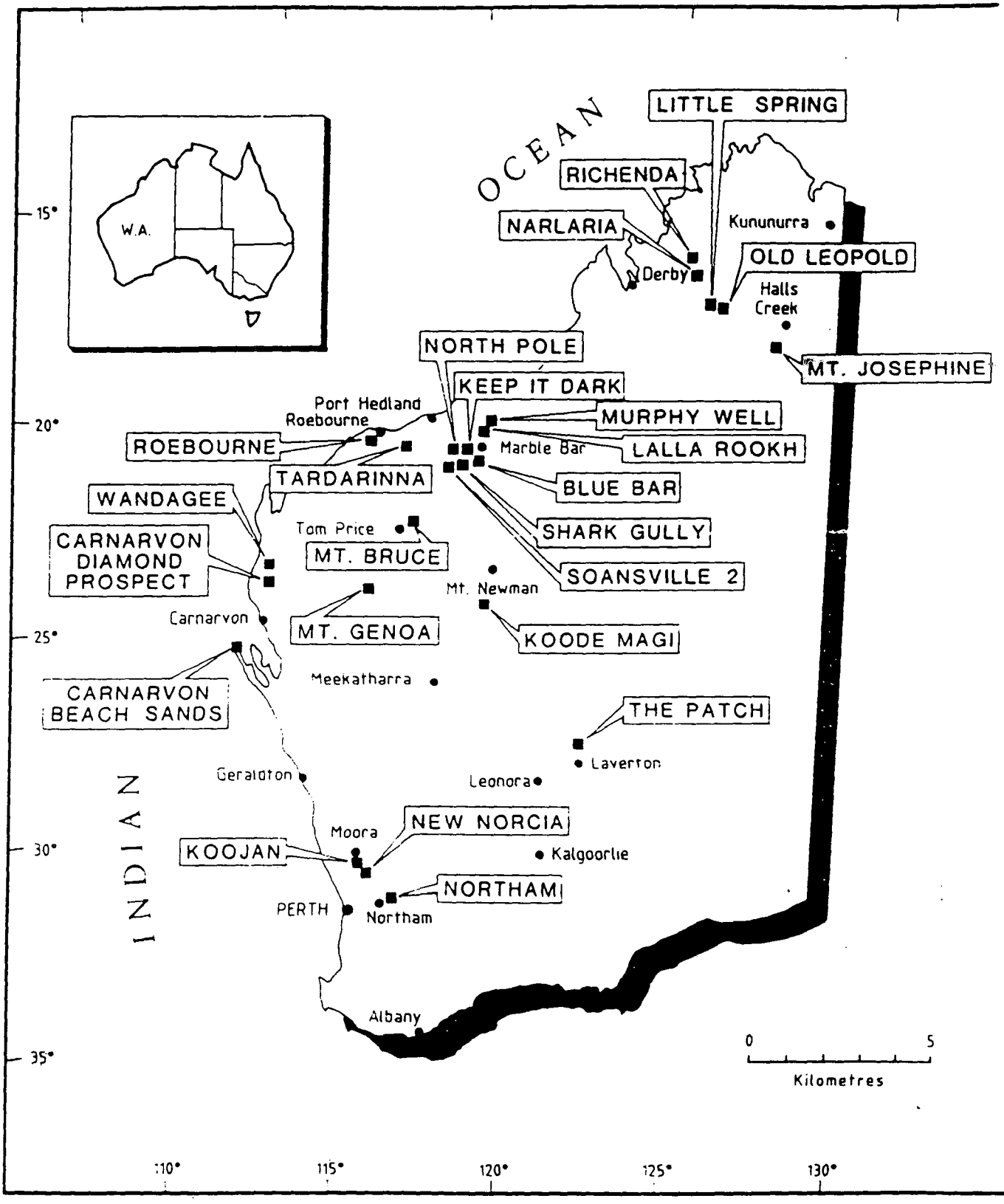



FIGURE 1

# FIRE HILLS GOLD N.L.
# PROSPECT LOCATION MAP




This figure has been prepared by G.B.Barnes & Associates for inclusion in this Prospectus.

FIGURE 1.

diopside and leucite. Towards the top of the hill is a finer grained phase consisting of olivine - leucite - lamproite lacking diopside and phlogopite but contains apatite, priderite and secondary barite.

The third pipe occurs some 200 metres north-east of the main pipe. Here an oval photofeature occurs about 100 metres across. This largely blind pipe is represented on the surface by extreme brecciation and some green staining typical of lamproite metasomatism.

The Prairie Hill lamproites have an outcrop extent of about 500 metres of further blind occurrences and pipes covered by alluvium would be expected along the strike of the associated fault.

5. MOUNT JOSEPHINE PROSPECT

The Mt Josephine Rare Earth prospect is located some 120 kilometres south from Halls Creek in the Kimberlies of wEstern Australia on the Mt Bannerman 1:250,000 sheet. Except for the middle Proterozoic sandstone which form the impressive Cummings Range, the area is completley featureless. An Exploration Licence of 99km2 covers this prospect. (Figure 6)

The carbonatites on this licence have been exposed by some costeaning and have proven to be anomalous in copper, barite, niobium and especially anomalous in rare earths. In particular the element europium appears to be enhanced. A mining lease belonging to CRA lies within the exploration licence covering a carbonatite intrusion.

With such a large potential for the future, a rare earth deposit, especially one so rich, is a potential major asset. The area requires a new access road (from more accessible Christmas Creek and not as at present from Balgo Mission) before the prospects are mapped and costeaned in detail.

MT JOSEPHINE

# MT. JOSEPHINE RARE EARTH PROSPECT

## Introduction

The Mt Josephine Rare Earth prospect is located some 120 kilometres south from Halls Creek in the Kimberlies of Western Australia on the Mt Bannerman 1:250,000 sheet. Except for the Middle Proterozoic sandstones which form the impressive Cummings Range, the area is completely featureless.

## Past Exploration

The Cumming's Range area due to it's extreme isolation and complex series of access roads (which recently lead to 2 deaths) has not been adequately explored. Gold was mined from a quartz vein by an Afghan called Essau in the 1930's (M Gordon perr Comm). These workings are to the east of the exploration licence. Gold was also mined to the north at Christmas Creek and has been reported in the conglomerate at the base of the Mount Parker sandstone (Welcome Stranger Mining Company N.L. 1982)

Tin and columbite have also been mined from the area from Donkey Creek and further northwards at Mt Heartbreak and Mt Dockrell.

A series of carbonatite intrusion were discovered by C.R.A.E. in the early eighties and this company has carried out extensive exploration on some of these including some within this exploration licence.

## Geology

The Cumming's Range area consists of Proterozoic sediments of the Mount Parker sandstone which overlay the Archean metasediments and metavolcanics of the Halls Creek group. Much of the outcrop of the Halls Creek is obscured by a thin vaneer of aeolian sands, Tertiary laterites and limited amounts of Ordovician and Permian marine sediments (see Map 5).

The area is structurally extremely complex with the two major mobile zones of the King Leopold mobile zone and Halls Creek mobile zone intersecting beneath the Cummings Range.

The carbonatites have intruded as a swarm of pipe like intrusions at this contact zone. Individual units range up to 100 hectares and are easily distinguished because of the extremely green and different nature of the vegetation. For example the carbonatites contain tall grass, native pear trees and eucalyptus as compared to the low spinifex of the dune sands due to the carbonatites purched water table and high phosphate content.

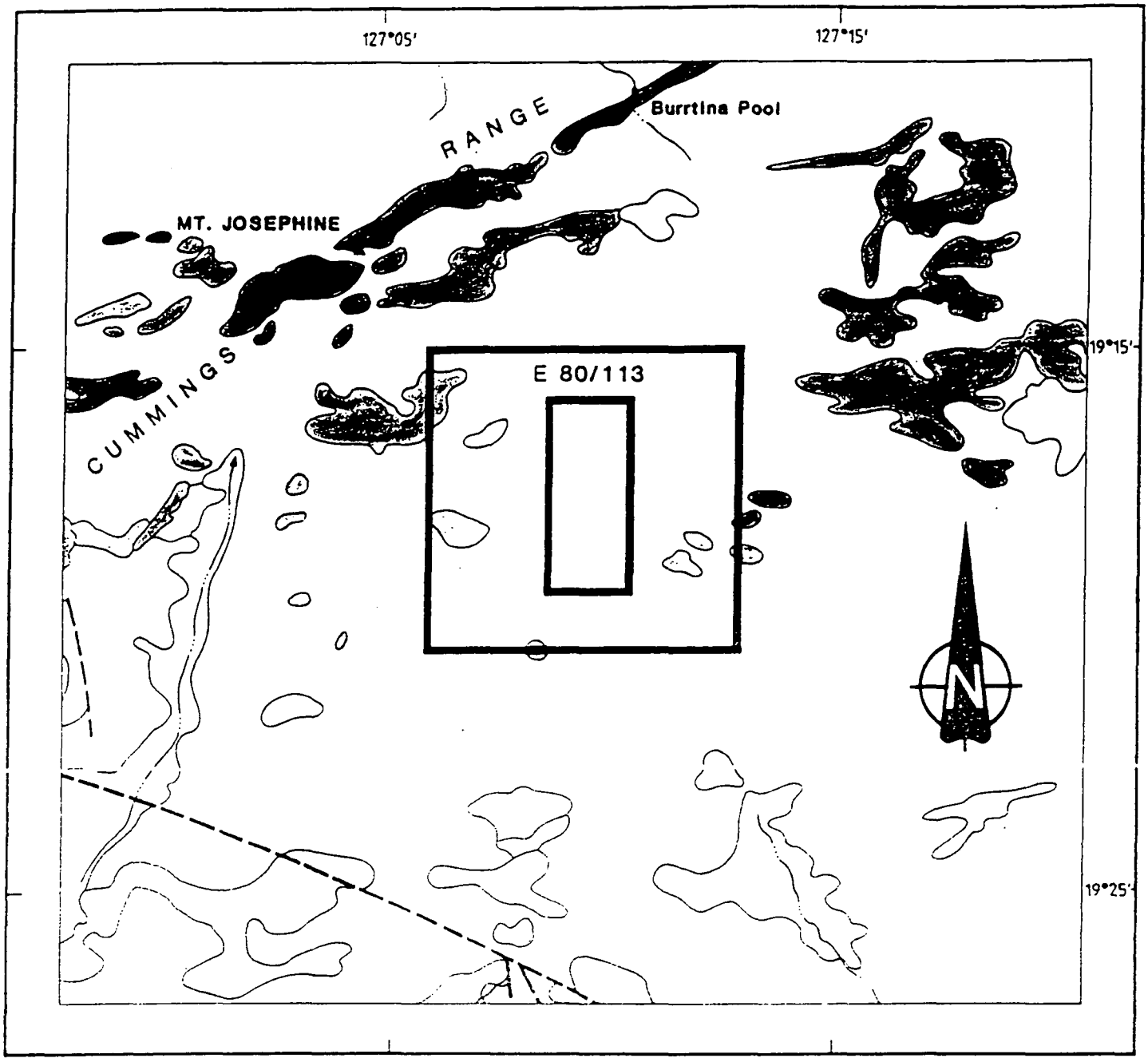
A carbonatite as defined by Bates and Jackson (1980) is a "carbonate" rock of apparent magmatic origin, generally associated with Kimberlites and alkalic rocks. The worlds two best known examples of commercial carbonatites are the

Mountain Pass deposit in USA which is mined for it's rare earths and Paraboro in South Africa which is mined for copper, phosphate, niobium and magnetite.

The carbonatites on this licence have been exposed by some costeaning and have proven to be anomalous in copper, barite, niobium and especially anomalous in rare earths. In particular the element europium appears to be enhanced. One kimberlite has also been detected amongst this swarm of carbonatites. It lies north west of the licence.

**Conclusion**

With such a large potential for the future, a rare earth deposit, especially one so rich, is a potential major asset. The area requires a new access road (from more accessible Christmas Creek and not as at present from Balga mission) before the prospects are mapped and costeaned in detail. Mapping through the thin vaneer of aeolian that covers most of the prospecting could be done using a combination of geophysics and costeaning.




LEGEND

| | | |
|---|---|---|
| QUATERNARY | | Quartzose sand; aeolian |
| | | Sand, silt alluvial & aeolian. |
| CAINOZOIC | | Vein quartz rubble |
| | | Laterite |
| PERMIAN | | Quartzose sandstone & siltstone |
| ORDOVICIAN | | CARRANYA BEDS |
| MIDDLE PROTEROZOIC | | WADE CREEK SANDSTONE |
| | | MOUNT PARKER SANDSTONE |

LOWER PROTEROZOIC

- Granite, adamellite
- HALLS CREEK GROUP: Quartz greywacke, siltstone, shale minor dolomite, quartz muscovite schist, phyllite quartzite
- Fault
- Tenement boundary
- Drainage

0 5 10

Kilometres

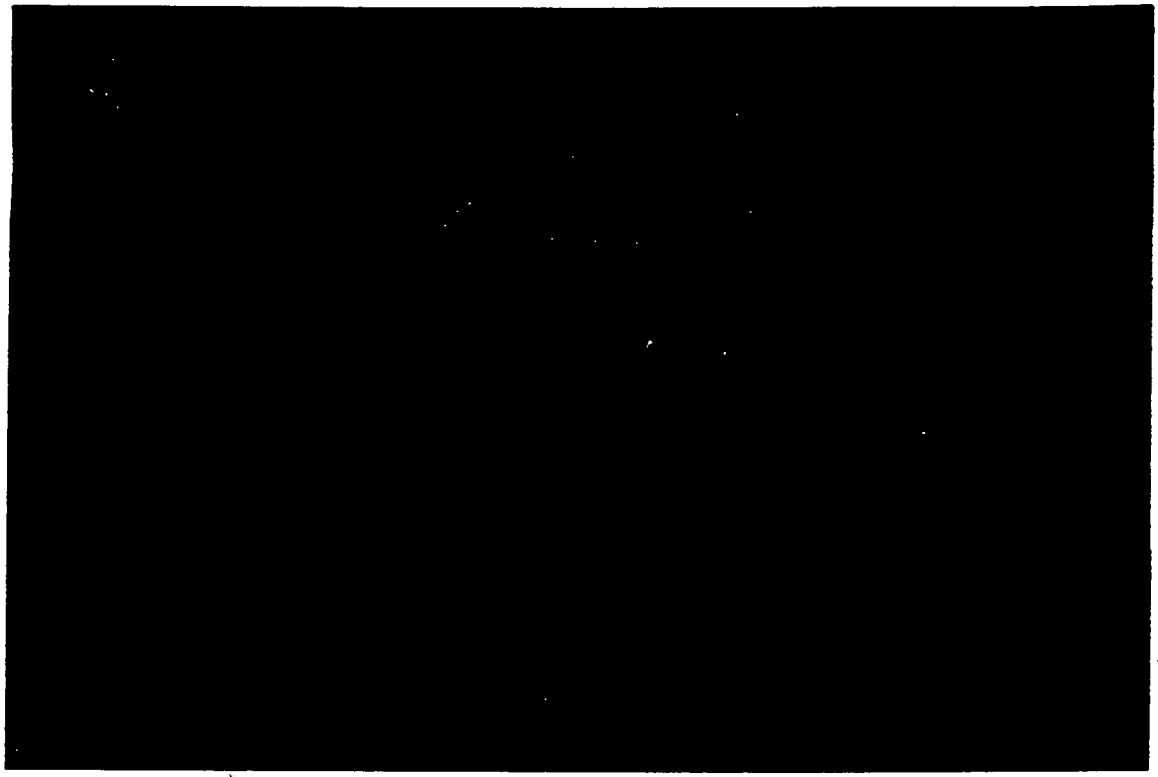
FIRE HILLS GOLD N.L.

# MT. JOSEPHINE PROSPECT

GEOLOGY MAP

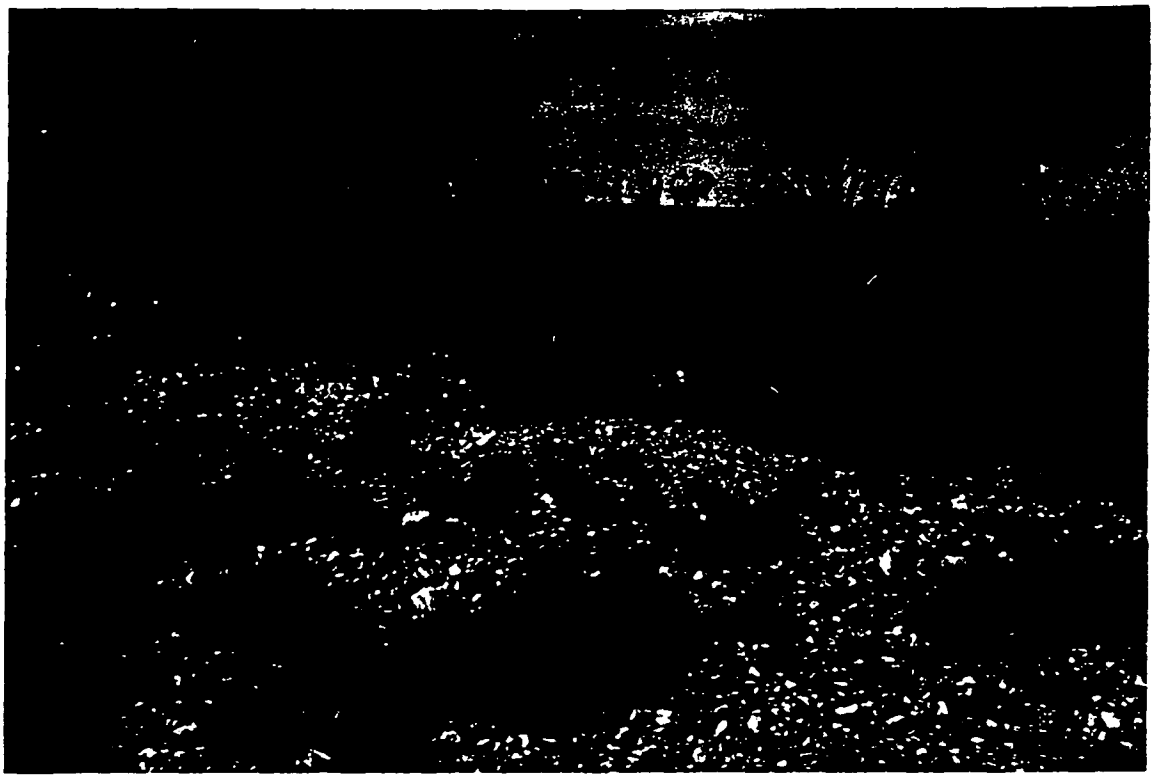
MT JOSEPHINE

Outcrop of kimberlite.

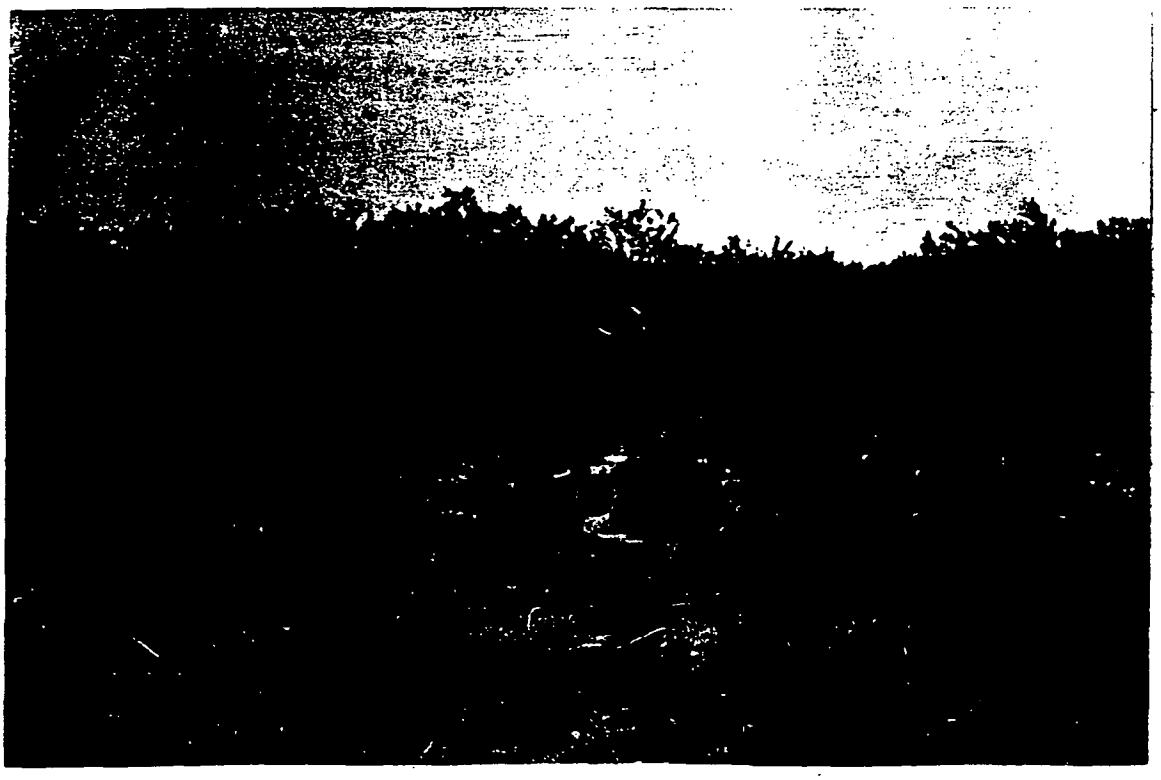


MT JOSEPHINE

Dry blowing heaps around quartz vein.



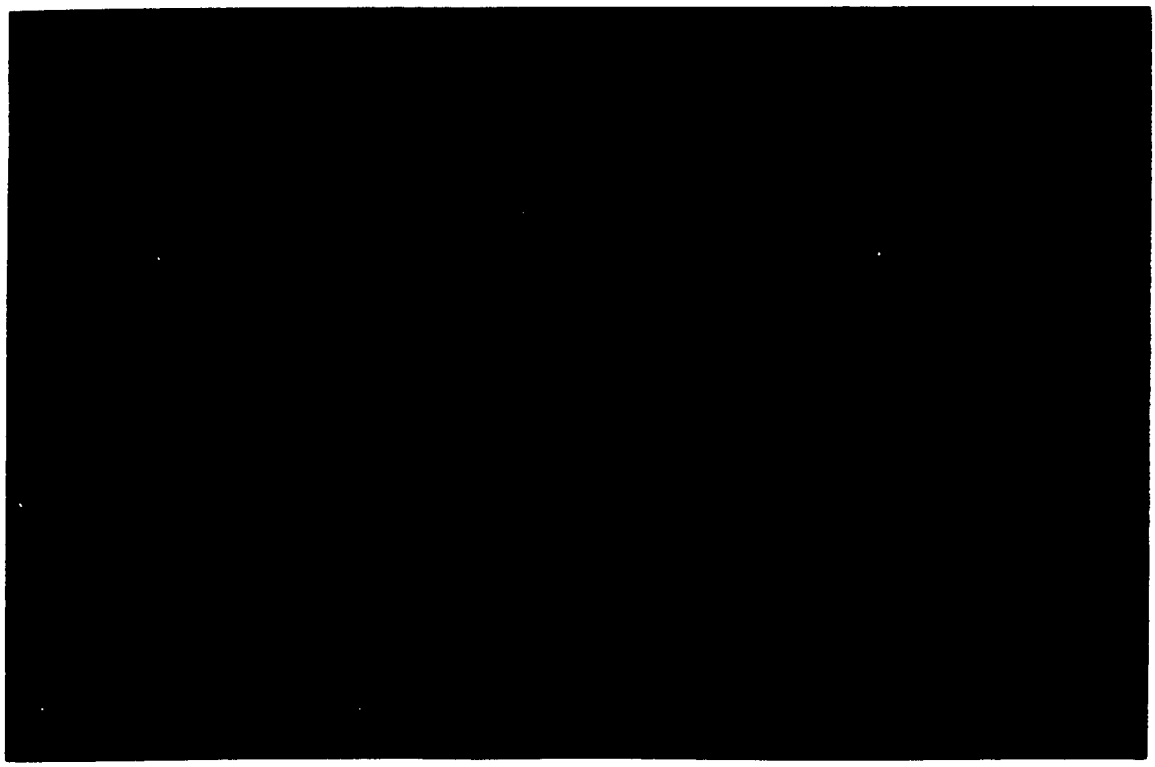
Difference in vegetation between phosphate rich kimberlite (with a perched water table) and barren country rock.



MT JOSEPHINE

Carbonatite.

Cleared area on top of carbonatite.



MT JOSEPHINE

Photo No. 693
Proterozoic sedimentary rocks.

Photo No. 694
Proterozoic sedimentary rocks.

MT JOSEPHINE

Photo No. 695
Folded proterozoic sediments.

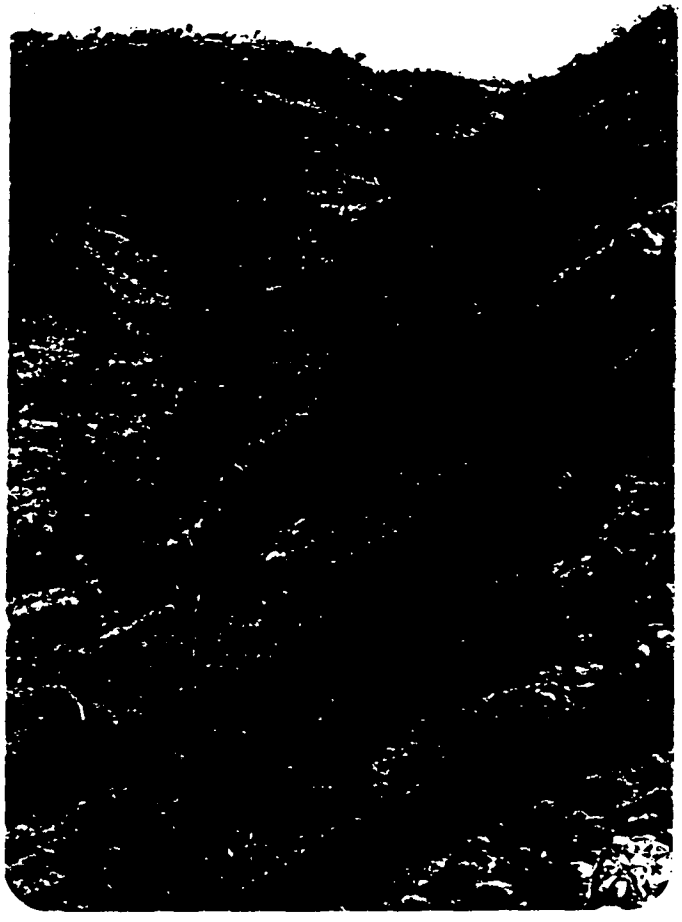
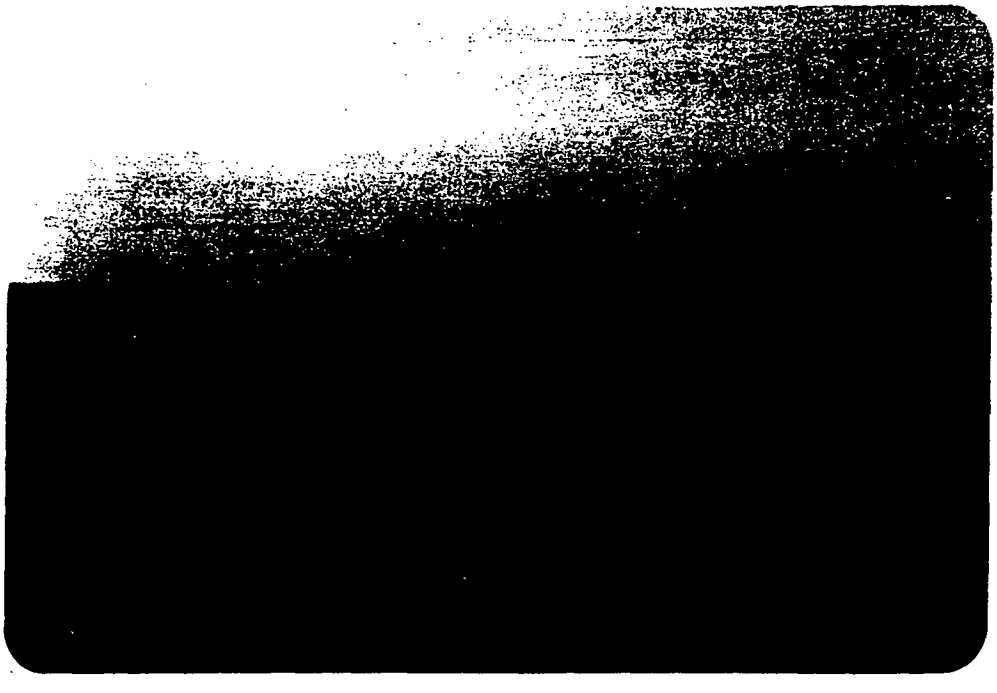


Photo No. 696
General view.



MT JOSEPHINE

Photo No. 697
General view.

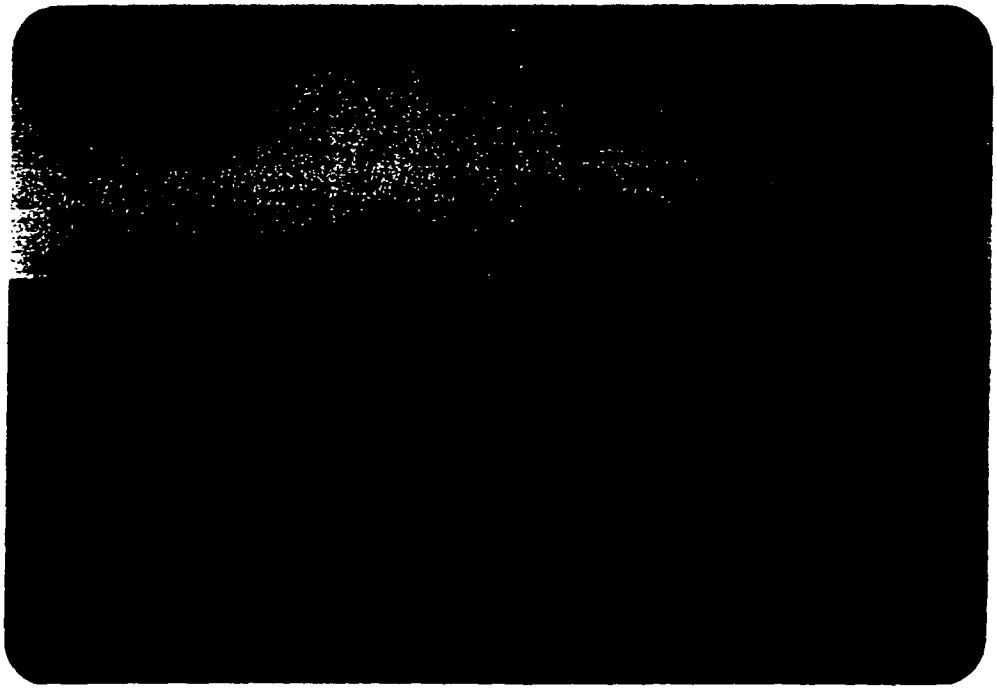
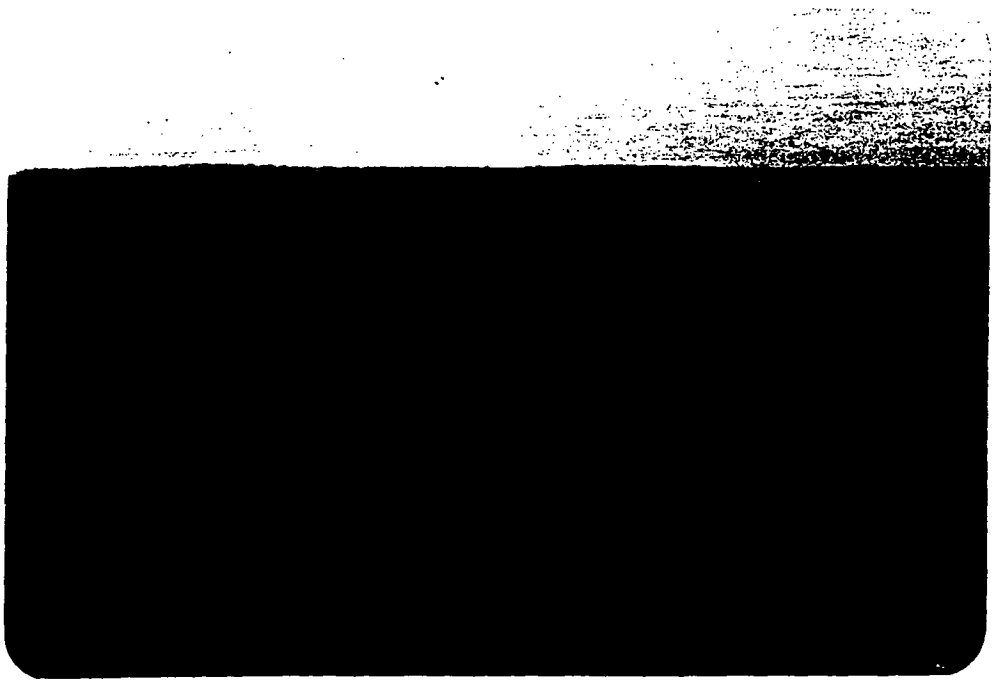


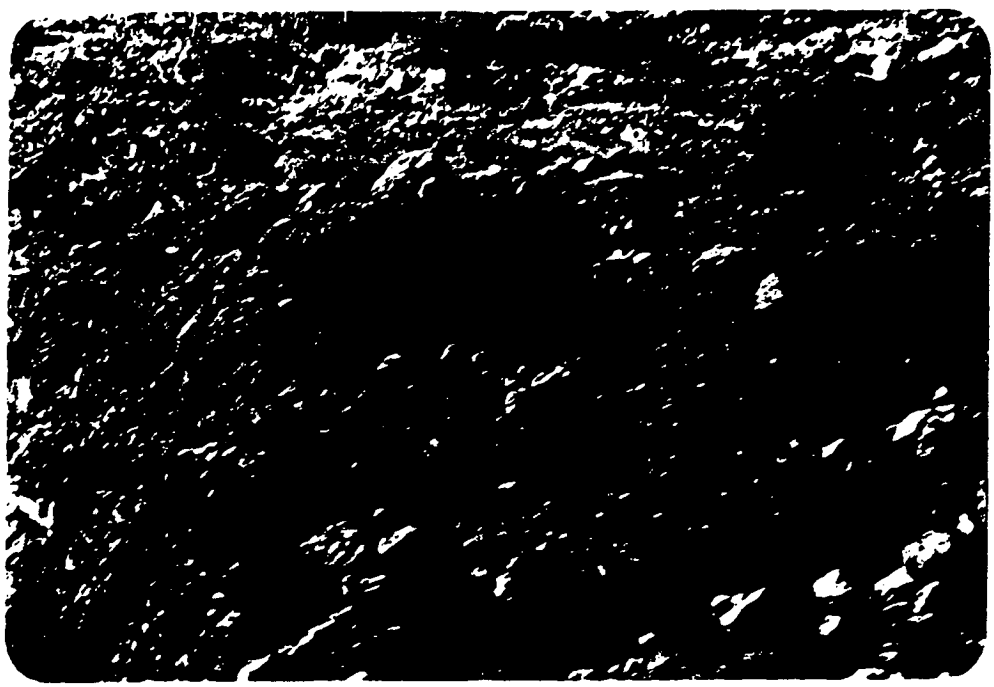
Photo No. 698
General view.



MT JOSEPHINE

Photo No. 699
General view.

Photo No. 700
? Prospector's hole in Proterozoic sediments.



MT JOSEPHINE

Photo No. 701
Outcrop patch ? gossan.

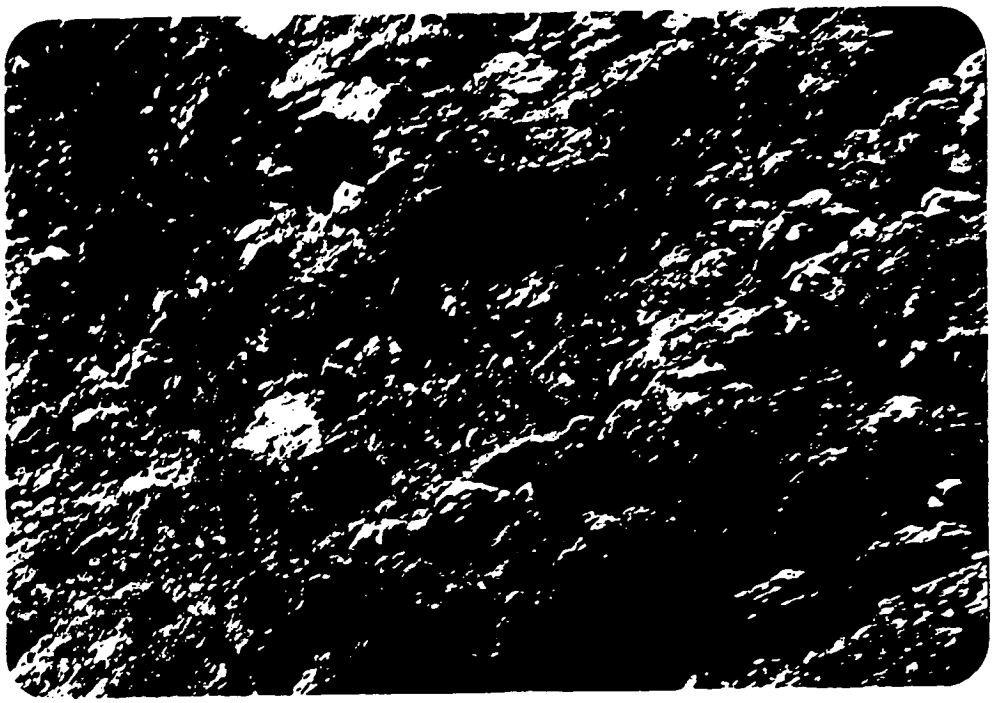


Photo No. 702
Outcrop of Proterozoic sediments.

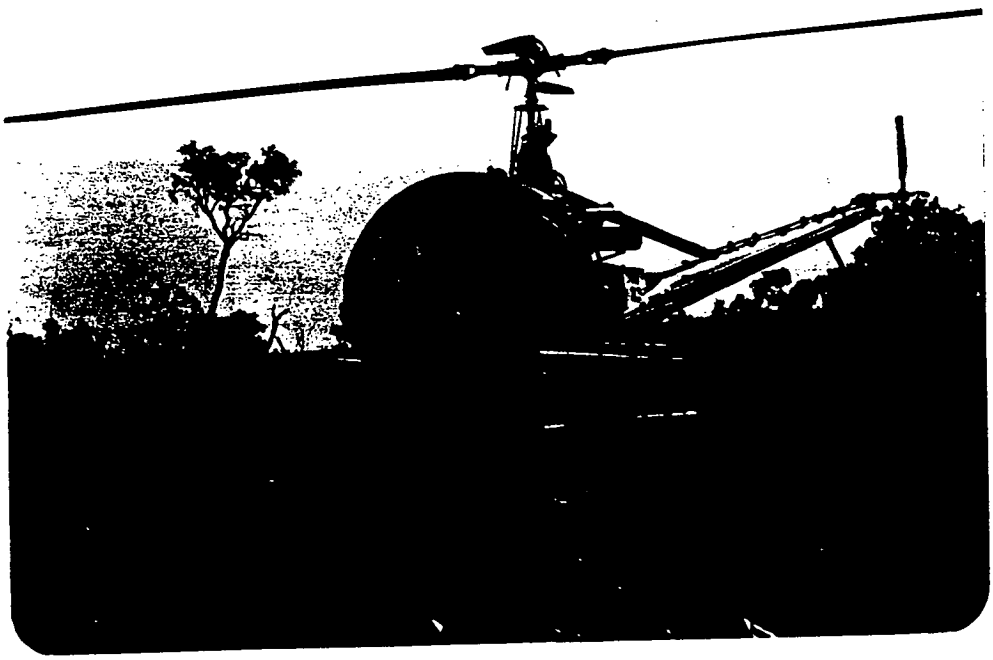


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Photo No. 703
Gossan outcrop.

MT JOSEPHINE

Photo No. 1447
Drillhole facing north - gum tree now in hole - also road off to the north.

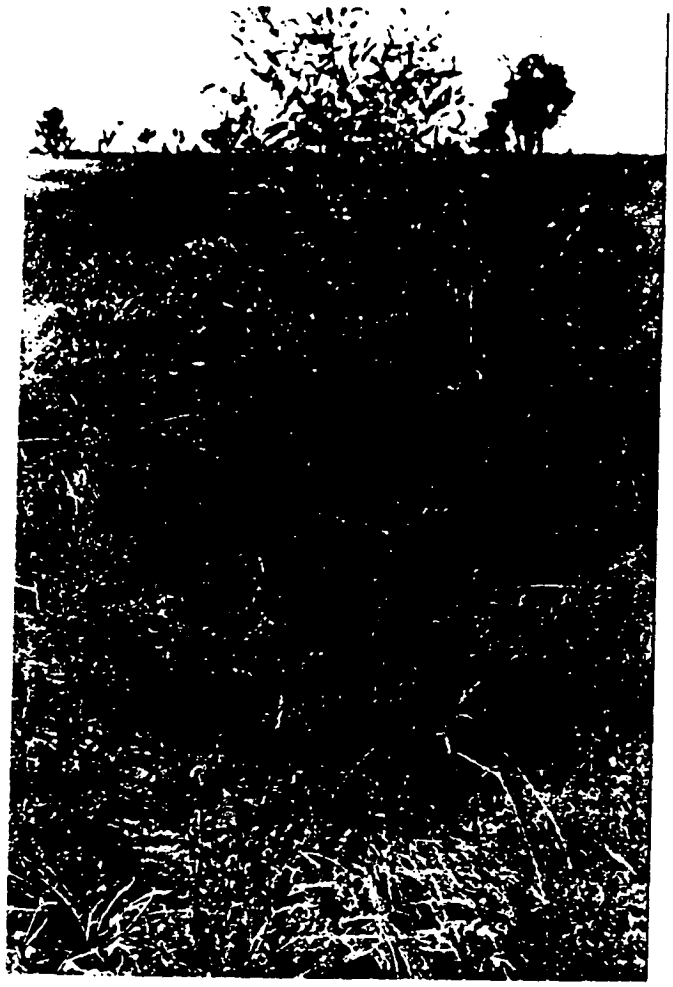
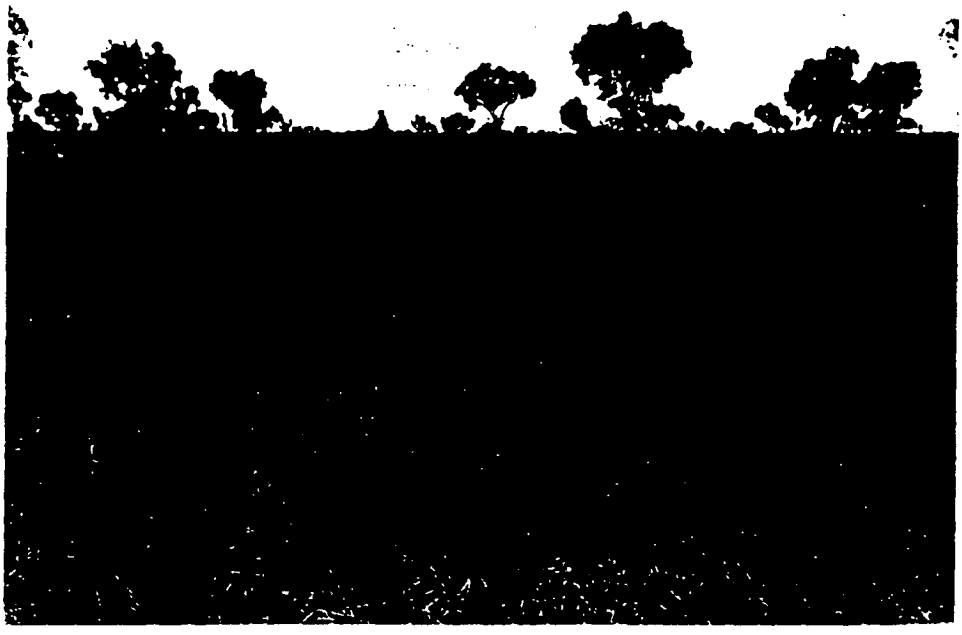


Photo No. 1446
Drillhole at 5000N, 5000E - overgrown road.



MT JOSEPHINE

Photo No. 1450
CRA's leases - main base line - this has been heavily drilled and cleared by a dozer - heavily overgrown which is unique amongst the CRA grids.

MT JOSEPHINE

Photo No. 1453
Temporary Reserve - Bettina Pool.

Photo No. 1454
Bettina Pool - cemented wash on each side.

MT JOSEPHINE

Photo No. 1449
Overlying sand ridges.

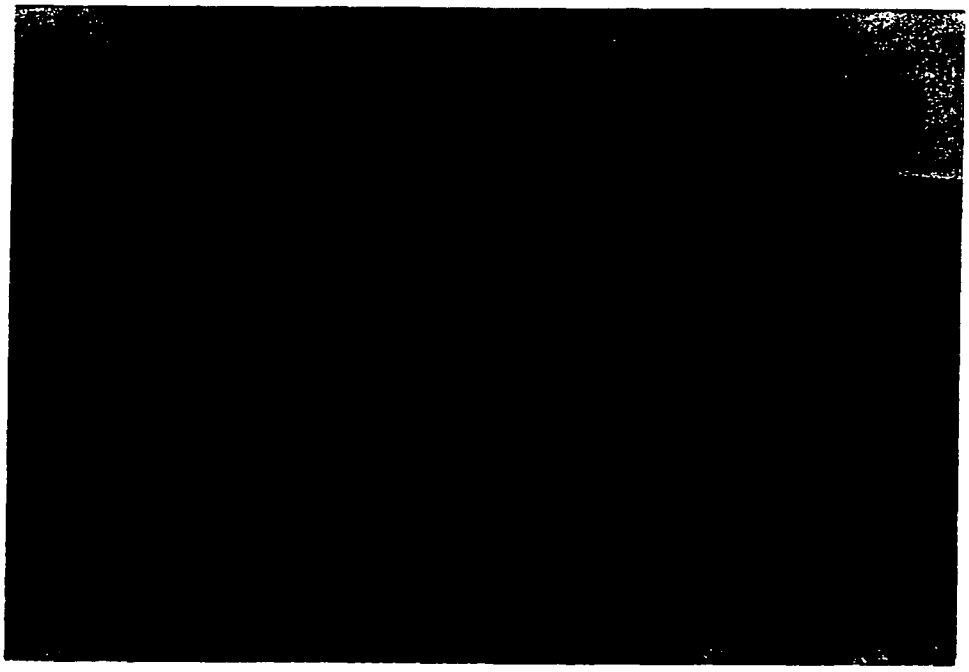
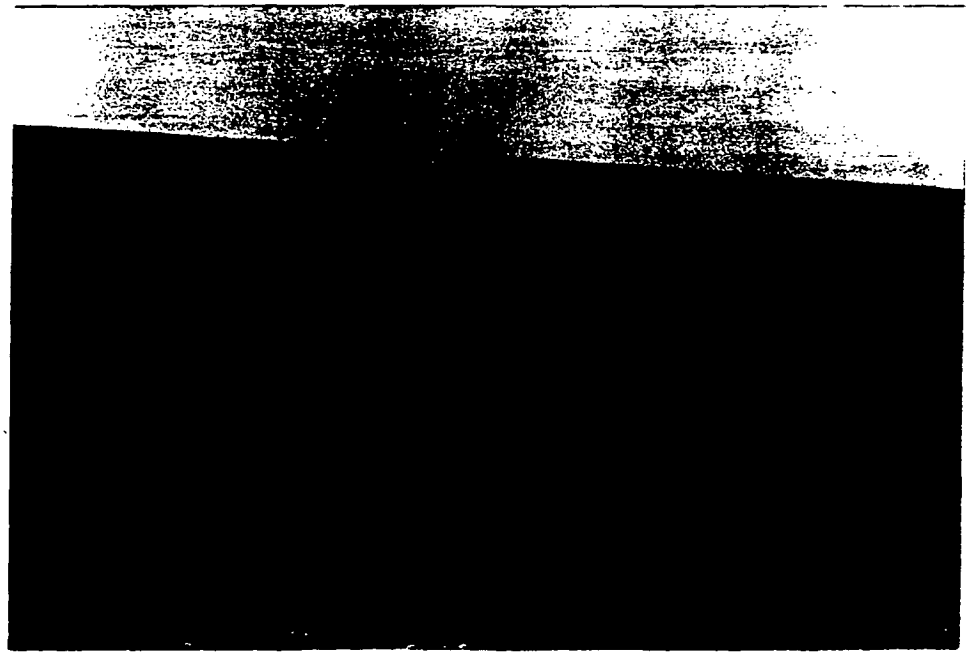


photo No. 1456
Overlying latiturized Permian sediments to the south.



MT JOSEPHINE

Photo No. 1455
Laterite outcrop just south of the range.

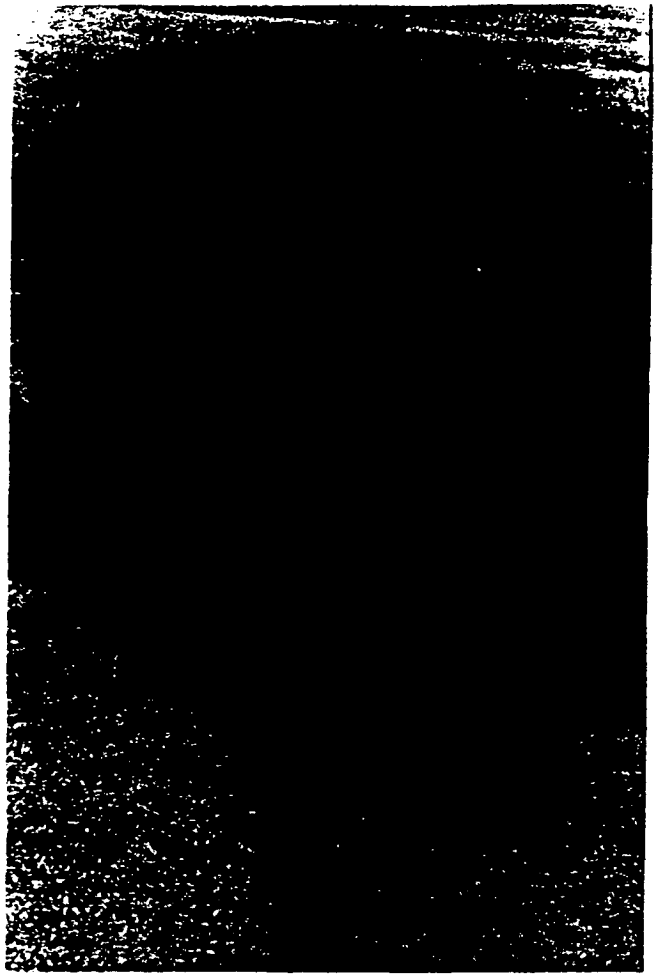
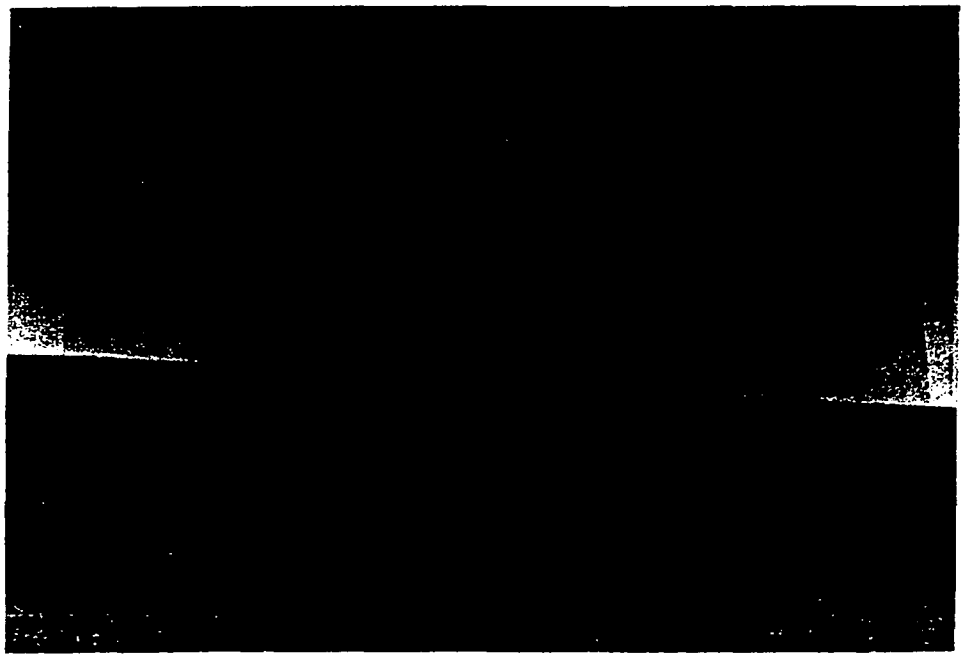


Photo No. 1448
Overlying sand ridges.



MT JOSEPHINE

Photo No. 1452
Outcrop of granite.

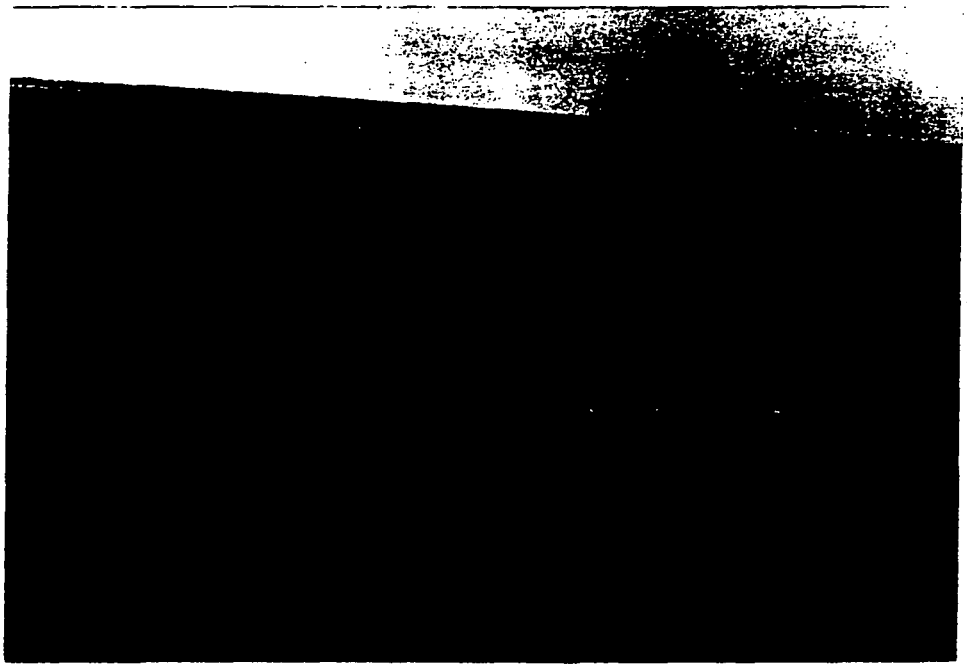
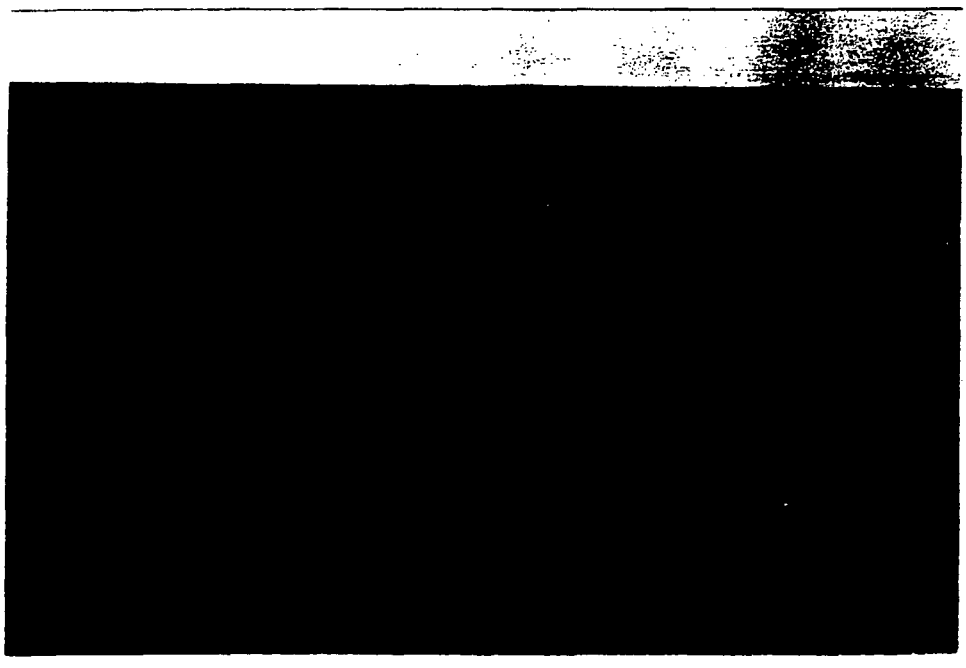
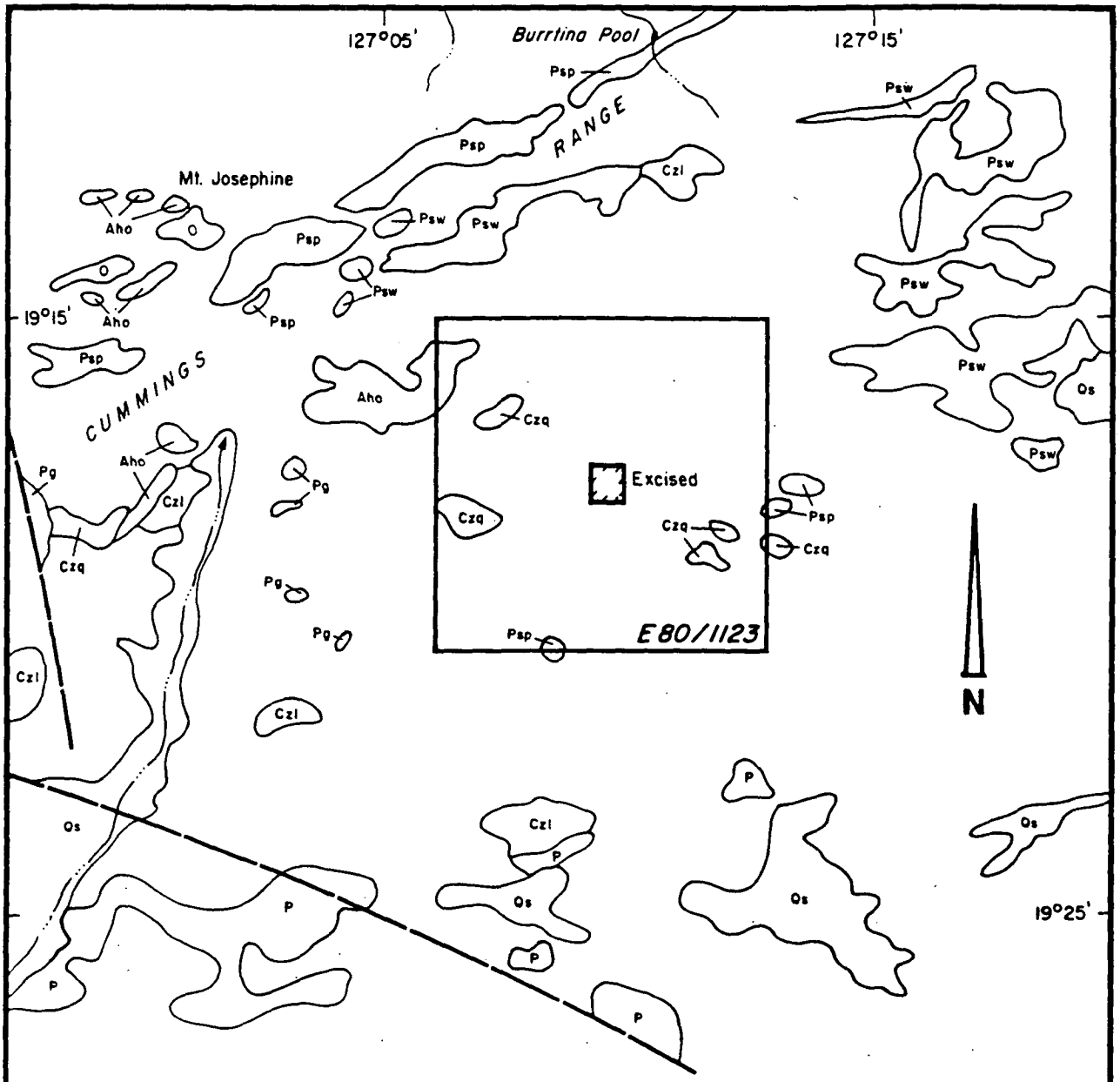


Photo No. 1451
Laterite ? outcrop.



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# MT. JOSEPHINE PROSPECT
# GEOLOGY MAP

FIGURE 6

SHEET SE 52-13

127°00' 15' 127° 30'

E80/807 File 989/88 29 30 31 32 33 340000mE 19° 00'

E 80/807

Creek Minneroo Pool Marrie Creek

E 80/1135

P80/163 P80/162 P80/161 P80/1051 E80/1067

3114 1109 LAMBOO

3114 1112 RUBY PLAINS

File 792/85

7890000mN

YURABI L.D. BULARA L.D.

RANGE

CUMMINS

NMF 215 △Mt. Josephine

RANGE Burrtina Pool

A40948 78 Use & Benefit of Aboriginal Inhabitants

88

P80/664 E80/1113 Released 9:00a.m. 9-7-87

E 80/1123 M80/266 E80/1113 E 80/1104 E 80/887 E 80/860

87

Tanami Desert

3114 1155

CARRANYA

E 80/836 E 80/841

86

F 214 △

●BANNERMAN File 785/87

Shiddi Pool Creek Shiddi Mt Bannerman Rockhole

85

BULARA L.D.

E80/840 E 80/839 E 80/834 E80/838

TN GN 00° 30' 03"

30'

Rockhole (P.D.)

84

83