Rept. Bk. No. 60/129
G.S. No. 3176
Hyd. 1690
D.M. 798/64

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

HYDROLOGY SECTION

REPORT ON THE INVESTIGATIONS AND DEVELOPMENT OF GROUNDWATERS FOR PERIOD 1st NOVEMBER 1964 to 1st MAY 1965

by

C. Bleys
Senior Hydrogeologist

D.M. 798/64

25th June, 1965

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South Australia, showing areas discussed, and reference numbers. 65-77

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EYRE PENINSULA

County Musgrave and Polda Basin. Ref. No.1

The name Polda Basin is preferably confined to the portion of County Musgrave's water bearing basin which surrounds Polda H.S. and which is separated from the remaining area by relatively poorer quality water.

For the present the remaining area is designated County Musgrave.

Polda Basin

Test drilling in the area is complete and the pumping test boreholes have been relined with three feet diameter slotted steel pipe and in each case the annulus gravel packed. The boreholes 4 and 7 were repump tested respectively for 4 and 3 days. The results obtained were very similar to those of the original tests. Borehole Pt.5 was pump tested by means of a single rate and multiple step test. It appears that a yield of 0.66 cusecs can be obtained for a short period of time.

Co. Musgrave

Test drilling was undertaken mainly in the Kappawanta Station area and twenty one boreholes completed by the end of March, bringing the total to 290 of boreholes in Polda Basin and Co. Musgrave.

Very good quality water was obtained from aeolianites

containing as little as 450 parts per million.

In areas where no aeolianites occur the sediments consist of sands and sandy clays. Water stored in these is more saline rising rapidly from 815 to 3685 parts per million over about one mile distant.

Access into the area has been made possible by tracks prepared by the Engineering and Water Supply Department by means of a bulldozer. The eastwest tracks are now complete and work has commenced on north orientated lines at two mile intervals.

It is considered that the sandy and sandy clay aquifers are less permeable than the aeolianites and therefore the sandy clay aquifers could act as semi boundaries for the good quality water basins. The lower permeability will probably reduce the possibility of contamination whenever large supplies are withdrawn from the aeolianites.

Uley Basin Ref.2

No. 2 bore, being 0 feet deep and penetrating a 39 feet thick aquifer has been pump tested. It appears that as much as 4 cusecs can be obtained from this borehole without deterioration of the aquifer.

The sand screens required for No. 1 borehole have been installed and a preliminary pumping test carried out on this 160 feet deep borehole. Although the aquifer is considerably thicker than that of bore No. 2 it yields only one cusec. The final test will be done as soon as a pipeline is constructed which should take the water pumped well away from the area to prevent re-circulation.

SOUTHERN YORKE PENINSUIA Ref.3

No action owing to lack of funds.

NORTHERN ADELAIDE PLAINS Ref.6

One 360 feet deep borehole was completed to check the continuation of the saline wedge in the Upper (Pliocene) aquifer. Good quality water was encountered in both aquifers.

The saline zone may either occur further to the west or separate saline lenses or wedges possibly occur.

Samples from salinity observation bores have shown that there has been a general rise in salinity over the period. In occasional bores the salinity has risen by 100-200 parts per million but the average rise would be only 50 parts per million. The salinity pattern is expected to follow that of previous years when a slight rise occurs before each seasonal intake to the groundwater.

Water levels of observation bores continue to fluctuate seasonally by as much as 50 feet and also continue to show a general overall decline. For a number of bores the water levels for the summer of 1964-65 are the lowest yet recorded. For several bores in the Hd. Port Adelaide water levels have dropped to 20 feet or more below sea level from a high in September-October 1964 of up to 18 feet above sea level.

SOUTH-EAST

Kingston - Millicent Area Ref.7

Flow and pressure measurements of the boreholes in this district had to be deferred owing to absence on sick leave of staff. They will be made in late May or early June 1965.

Nangwarry District Ref.8

Only one of the three approximately 100 feet deep bore holes was drilled for the joint programme with the C.S.I.R.O. Soils Division, bringing the total of boreholes drilled this financial year to 14.

These 100 feet deep boreholes should penetrate the

perched water table and the underlying Tertiary aquifer. Casing and piping is installed in the completed borehole to enable waterlevel readings from both aquifers penetrated.

GREAT ARTESIAN BASIN Ref.9

Flow measurements

New valves have been installed on five boreholes on Anna Creek which occupies a portion of the western marginal area. Flow and pressure measurements are to be made as soon as a valve is installed on the sixth borehole.

WALLOWAY BASIN Ref.10

Locating bores and wells has been completed and they are plotted on a map. The approved borehole to investigate the feasibility of developing the fine sandy aquifer was deferred to the next financial year owing to lack of funds.

BASEMENT ROCK AREAS Ref.11

Location and plotting of bores in the Mt. Lofty Ranges was deferred owing to lack of staff.

CB:AGK:AWK
25.6.65

C. BLEYS
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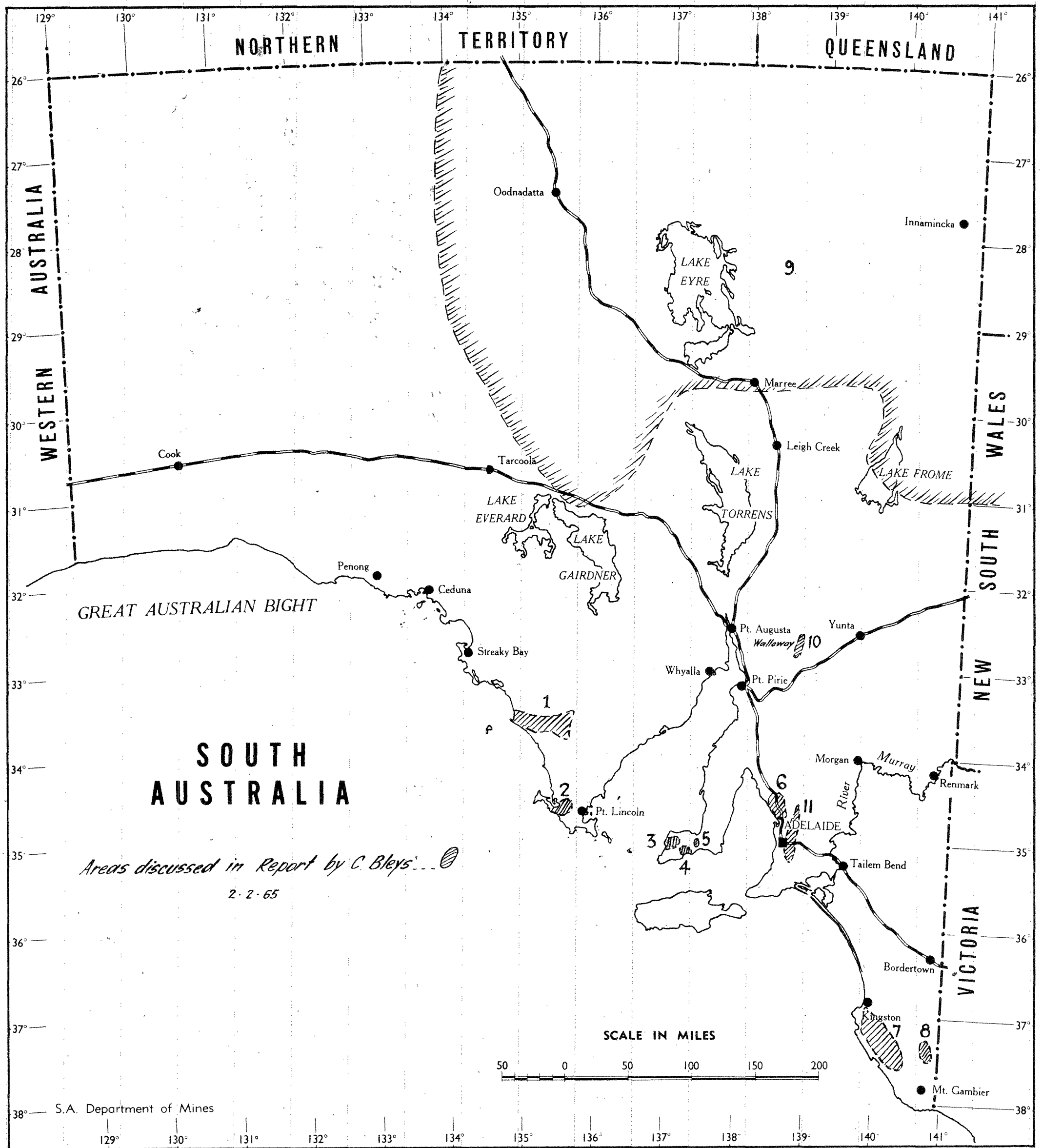
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
NEW SOUTH WALES
VICTORIA
SOUTH AUSTRALIA
GREAT AUSTRALIAN BIGHT
Oodnadatta
Innamincka
LAKE EYRE
9
Marree
Leigh Creek
LAKE TORRENS
LAKE FROME
Cook
Tarcoola
LAKE EVERARD
LAKE GAIRDNER
Penong
Ceduna
Streaky Bay
Pt. Augusta
Walloway
10
Yunta
Whyalla
Pt. Pirie
1
2
Pt. Lincoln
3
4
5
6
11
ADELAIDE
Morgan
Murray River
Renmark
Tailem Bend
Bordertown
Kingston
7
8
Mt. Gambier
Areas discussed in Report by C. Bleys... 0
2·2·65
SCALE IN MILES
50 0 50 100 150 200
S.A. Department of Mines
129° 130° 131° 132° 133° 134° 135° 136° 137° 138° 139° 140° 141°
26° 27° 28° 29° 30° 31° 32° 33° 34° 35° 36° 37° 38°

65-77

934.2