

RB 43/33

DEPARTMENT OF MINES

SOUTH AUSTRALIA

ANDAMOOKA OPAL FIELD

UNDERGROUND WATER SUPPLY

As instructed a visit was made (on 26/7/56) to Andamooka Opal Field while returning from the Musgrave Ranges. The underground water supplies were inspected and the position discussed with the President of the Andamooka Progress Association, Mr. Frank Schulton.

Water supply for domestic use has caused great concern in the past and a number of reports (See earlier reports, this docket and DM 877/47) have been made by the officers of both the Engineering and Water Supply and the Mines Department. Action finally taken, and which alleviated the water supply position for some time, was the drilling of boreholes in Gougers' Nos. 1 and 2 Wells and of a separate bore in an alluvial flat on the creek  $1\frac{1}{2}$  to 2 miles below the settlement. When originally drilled these sources yielded a total supply of from 1200 to 1400 gallons a day (1948).

In 1953 it was reported that the supply was failing both in wells and bore and Mr. Barnes put forward a scheme for further augmenting the supplies by the deepening of Gougers' Nos. 1 & 2 wells and the sinking of a well on Barnes No. 2 bore. It was subsequently found that reports of water shortage had been exaggerated owing to insufficient use of Barnes No. 2 bore and action on further augmentation of supplies was deferred pending the results of the present investigation.

The position at present, as gathered from discussion with Mr. Schulton, is that the total water supply available is amply sufficient for the needs of the population (estimated at 100 whites, 100 to 120 natives) but, as in the past, because of their better quality, the water from Gougers' Nos. 1 & 2 wells is being drawn on most heavily and is not equal to the demand. This is despite an increase in supply due to good rainfall in the area in the previous 12 to 15 months. Better recharge of the underground

RECEIVED  
DEPT. OF MINES

water is also reflected in a slight decrease in the total salinity of water from the Wells as shown in the table below.

| <u>Well or Bore</u>    | <u>TOTAL SOLIDS</u><br>in grains per gallon. |                |                |
|------------------------|----------------------------------------------|----------------|----------------|
|                        | <u>7/5/48</u>                                | <u>16/7/54</u> | <u>13/8/56</u> |
| Gougers' No. 1<br>Well |                                              | 47.46          | 45.31          |
| Gougers' No. 2<br>Well | 26.85                                        | 23.70          | 25.91          |
| Barnes No. 2<br>Bore   | 60.17                                        | 79.31          | 73.33          |

Gougers' No. 1 Well has been deepened 3 to 4 feet with the object of providing both a better supply and a better pumping sump. The deepening was done by the gougers and is stated by Mr. Schulton to have been effective.

It was further gathered from Mr. Schulton that the Progress Association's main concern is not the possibility of failure of water supply but the distribution of it, and the use of it by natives. As the Secretary of the Aborigines Department, Mr. C. Bartlett, was present during the inspection of the Opal Field and is well aware of the problem, the matter need not be discussed further except to stress that the presence of the natives on the catchment area of the underground supplies increases the possibility of pollution. Check samples of water from the two wells and the bore taken during the recent visit have not revealed any nitrates but this does not mean that pollution is not existent and if possible samples for bacteriologic-al analyses should be obtained at regular intervals by the Engineering and Water Supply Department. The distribution of the water supply is also a matter for that Department rather than the Mines Department.

### SOFTENING THE WATER

With regard to possible softening treatment for the water from Barnes No. 2 bore it is pointed out that its total salinity is less than that of the town water supplies for Peterborough (110.4 grains per gallon), Burra (105/8), Naracoorte (96.6 and 108.9), Bordertown (88.6) and many others in South Australia including water from bores used to augment Adelaide's supply in times of shortage. The total hardness is high, varying from 29.9 to 42.0 English Degrees, but the upper limit is less than that of Burra (49.8) and is not much more than that of Peterborough (39.2). Many individuals in other parts of South Australia are forced to use harder water.

In view of these facts, and of the availability of limited supplies of softer water it is not thought that expenditure of Government funds on a water softening scheme is warranted at this stage.

However for future reference a cost estimate would be valuable. This could be obtained by sending a copy of the most recent full analysis of water from Barnes No. 2 Bore to a reliable firm of water softening consultants and requesting a quote for a scheme to treat up to 1200 gallons daily of this water.

### CONCLUSION AND RECOMMENDATIONS.

From information gathered during the recent inspection of the field it is apparent that no water shortage exists at Andamooka and it is recommended that no further action be taken by the Department of Mines at this stage.

If a water shortage is reported at a later date it should be first investigated to determine whether it is genuine or not and if genuine, action to increase supplies should be along the lines already recommended by Mr. Barnes in his report of 8/6/54 (these papers).

A scheme for softening the water from Barnes No. 2 bore is not thought to be justified at present.

The apprehensions of the Progress Association with regard to water supply appear to be centred on the method of usage of it by the relatively large native population on the field, a matter which is chiefly the concern of the Aborigines Department.

.....*W. Johnson*.....  
W. Johnson  
GEOLOGIST  
HYDROLOGY SECTION

WJ:AGK  
30/8/56