DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON A SALINITY SURVEY NORTHEAST OF THE TOWNSHIP OF ROBE FOR THE E. & W.S. DEPARTMENT

HD WATERHOUSE

by

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Rept.Bk.No. 73/121
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Hyd. No. 2537
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INTRODUCTION

During the 1972-73 holiday season, a shortage of water was experienced in the township of Robe due to the influx of a large number of tourists.

In response to a request from the Engineering and Water Supply Department, the Mines Department carried out a brief salinity survey in an area approximately 5 to 7 km northeast of the town.

The object of the survey was to determine the areal extent of good quality groundwater in the Gambier Limestone in an area surrounded by a series of salt lakes. Good quality water was encountered in bore S.E.B. 1 to a depth of about 38 metres, drilled by the Mines Department in April, 1970. This bore is located adjacent to the Kingston road and approximately 1.6 km northeast of the intersection of the Robe-Kingston and Robe-Millicent roads.

SALINITY SURVEY

Water samples were collected from bores in the vicinity of S.E.B. 1 in the Hundred of Waterhouse on 5th and 6th April, 1973. The area in which the survey was carried out

was chosen because good quality water was encountered to a depth of 38 metres in bore S.E.B. 1 which was drilled as part of an investigation of the salt/fresh interface in a coastal area of the South East.

The bores were equipped as follows:

centrifugal pumps	4
windmills	19
unequipped	1

All samples were taken from pumping bores with one exception (299-01) in which case a tank sample was collected. It can be considered therefore that all samples, with one possible exception, are representative of formation water. Salinity determinations were carried out in the Naracoorte office using an E.S. MC-1 Mark 5 electrolytic conductivity meter.

RESULTS

The isohalsine map is shown in Figure 1. The groundwater salinity is less than 1000 milligrams per litre throughout most of the area covered by the survey. The area of best quality groundwater appears to exist along Guichen Bay between the Robe-Kingston road and the beach and extends eastwards in the central part of the area. This easterly projecting "tongue" of good quality water is bounded by two zones of higher salinity water projecting upwards from the south and downwards from the north.

The reason for the high value of 1337 milligrams per litre at bore 458-01 is not known. If this value were to be ignored, the picture in the northern half of the surveyed area would be changed radically. Similarly bore 444-01 has an anomalously low value of 275 mg/l and may indicate a possible area of recharge. This, however, would not be recommended as a site for a town supply as it is of limited areal extent and surrounded by water of higher salinity.

The isohalsine map suggests that the northern, eastern and southern sections of the surveyed area would be unsuitable for the town water supply from salinity considerations. These areas are in the vicinity of Lakes Hawdon, Eliza and Robe all of which are water table lakes of salt water.

The suggested location is shown on Figure 1. It is in the area of lowest salinity adjacent to the Robe-Kingston road, approximately 2.5 km north east of the intersection with the Robe-Millicent road. Should this location prove too expensive with regard to pipe line costs, an alternative location could be in the vicinity of bore 193-01, approximately 1.6 km to the southwest. This location is less favourable due to its proximity to Lake Bartye, a saline water table lake.

CONCLUSIONS AND RECOMMENDATIONS

(i) The most favourable location for an additional water supply for the township of Robe is adjacent to the Robe-

Kingston road approximately 2.5 km north-east of the intersection with the Robe-Millicent road.

(ii) It is not recommended that this bore location be considered as a suitable one for a large supply similar to that of the existing town water supply bore, although it is possible that low to moderate supplies could be obtained on a full time pumping basis.

(iii) This bore could only be used to augment the existing town water supply during periods of peak demand.

(iv) Large scale pumping at this location could possibly cause saline intrusion into the aquifer from the surrounding saline lakes and an upcoming of more saline water (1300 - 6000 mg/l) expected from 40 m to 70 m.

(v) It is recommended that bacterial sampling be carried out by the client in the vicinity of the suggested location.

(vi) It is recommended that a pump test be carried out at the suggested location to determine available supply and that salinity sampling be carried out during the pump test.

O J W Bowering per [illegible]

22nd May, 1973
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IM-2.70 A1811

TO KINGSTON

GUICHEN BAY

SUGGESTED SITE FOR TEST BORE

S.E.B.I

TO ROBE

TO MILLICENT

DRAINAGE RESERVE

LAKE BATTYE

581 461-01
718 201-01
475 461-02
453 201-02
1337 458-01
1200
718 246-01
788 198-01
856 246-02
406 197-02
406 440-01
719 433-01
305 193-01
420 430-02
443 310-01
310 299-01
465 99-03
950 310-02
570 208-01
275 444-01
850 14-01
520 428-01
570 50-01
1125 187-02
2450 188-01

500 600 700 800 900 1000 1100 1200 300 400

LEGEND

570 ● 208-01 — SALINITY VALUES IN mg/l. / BORE LOCATION NO.

500 — SALINITY CONTOUR

SCALE IN CHAINS
30 0 40 80 120
500 0 1000 2000
SCALE IN METRES

LOCALITY PLAN

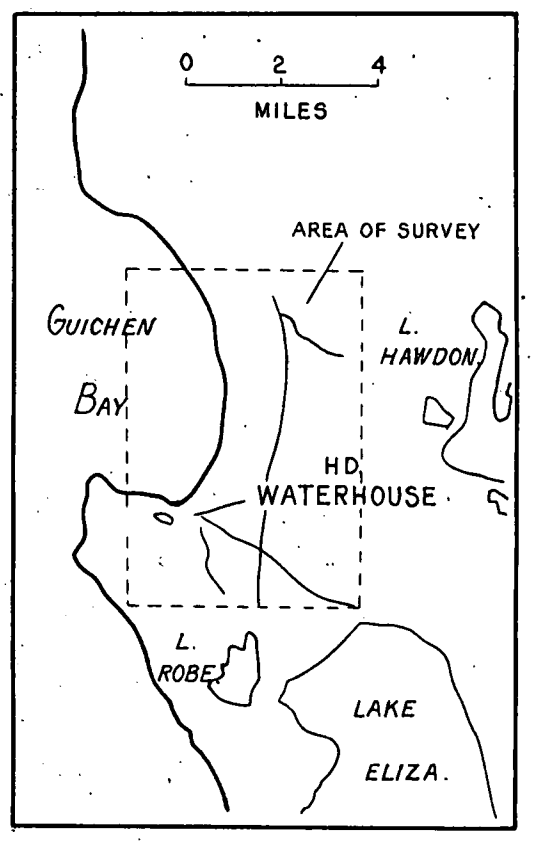

FIG. 1

DEPARTMENT OF MINES — SOUTH AUSTRALIA

STH. EASTERN WATER RESOURCES
SALINITY SURVEY OF THE ROBE AREA

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