Hyd Sect.

Rept. Bk. 54/135
G.S. 2347
D.M. 2027/61
Hyd. 1318

RB 54/135.

DEPARTMENT OF MINES
SOUTH AUSTRALIA

PROGRESS REPORT ON GROUNDWATER PROSPECTS

SECTION T 144-5, HUNDRED OF HAINES

- E. & W. S. Department -

GENERAL:

In a previous report, Hydrology 1225, dated 15th December 1961, 25 test holes were recommended for investigation of shallow groundwaters occurring on the late Mr. Hammat's property. Approval for the same was obtained and drilling of 27 holes varying from 5 to 10 feet in depth was started on 31st March, 1962, and was completed on 7th April, 1962. A Gemco Auger Drill was used for the work but, owing to the heavy scrub and the inexperience with the fine sands which occur in this district, six of the holes were dug by hand.

Since the western portion of the area considered suitable for test drilling was sold to a land agent, it was considered that the drilling should be done only on the remaining, now owned by Mrs. Hammat.

GEOLOGY & HYDROLOGY:

The sediments in which good quality groundwater was previously found consists of fine sands and shell beds and the recent drilling has proved that they continue over the whole area investigated. Nine of the holes drilled encountered saline water before fresh water was obtained, while in the remainder good quality water was found. One hole, No. 35, was continued below the first water struck, and although this hole collapsed before saline waters were obtained, apparently an increase of salt occurred within one foot of the fresh water level. The saline bores shown on the attached map indicate that they occur in the direction south-west north-east being the seaward continuation of a saline swamp. Since there is no known horizon which would obstruct the movement of the saline waters, it is believed that

the saline swamp is the origin of the salt in the bores 30-34, 8 and 5. Similarly it is considered that saline waters struck in the bores 32, 10, 7, 2 and 1 are related to a creek which rises on the escarpment to the south. It should be mentioned that all these bores drilled were discontinued immediately after groundwater was struck, thus eliminating the chances of contaminating the fresh waters with the saline water below.

Previously it was thought that all the shallow waters were of good quality, but the attached bore detail sheet shows that only a few bores obtained domestic quality water.

Although it is reported that local farmers have pumped as much as 30,000 gallons per day from the shallow pits just west of the area investigated, there is no assurance that extracting such large quantities from this fresh water horizon is not followed up by a drop in the water level or else a rise of the saline waters below. Since the occurrence of fresh water is of a limited extent and intake local, it is notexpected that the limited fresh water bores in this area would be capable of supplying continually large quantities of good quality water. If the shallow groundwater was developed for a town water supply, then there is a likelihood that in a short period of time, the shallow basins would be depleted and sea waters drawn inland, contaminating the fresh water horizons. Therefore the plans to obtain a town water supply from this district should be abandoned.

FURTHER OCCURRENCES OF GROUNDWATER SUPPLIES:

It is understood that the Engineering and Water Supply Department at Kingscote requires new pumps for their pumping station four miles west of the township. Before these pumps are bought, it may be advisable to investigate an alternative.

Recent drilling in the Cygnet River valley has shown that good quality water occurs in bores penetrating the Tertiary sediments at about 60 feet depth. The extent of the Tertiary sediments is not known but since they occur in a somewhat similar basin as that near Myponga, it is quite possible that they underlie the whole of the Cygnet River valley and could be found at depth close to Kingscote township. There is a possibility that

the brackish water in Cygnet River may have some effect upon the fresher water stored in the Tertiary sediments at depth as the sediments overlying the bryozoal limestone and ferruginous sands are fairly permeable. Thus it could be more advisable to investigate the possibility of establishing a water supply for Kingscote further westwards. Since, however, the drilling of a 100 feet deep bore in this area is inexpensive, construction of a water bore in the immediate vicinity of the pumping station is recommended. It may be possible to either develop a town water supply at this site or else augment the existing supply with some good quality water reducing the high saline content of the present water supply.

CONCLUSIONS & RECOMMENDATIONS:

Test drilling in the areas south of Nepean Bay has shown that there is a thin horizon of fresh water overlying saline water below. This fresh water body is not continuous over the whole of the area. Although large quantities of waters have been obtained by local farmers, it is considered that a town water supply would deplete the fresh western areas in a short time as the fresh water is derived from local intake only. Plans to establish a Kingscote town water supply from this area should therefore be abolished.

It is just possible that a good quality groundwater occurs in Tertiary sediments underlying the Cygnet River Valley and investigation by means of drilling a 100-150 feet deep bore in the immediate vicinity of the present pumping station at Cygnet River is recommended.

C. BLEYS,
ASSISTANT SENIOR GEOLOGIST
HYDROLOGY.

CB:AWK:CERF:EMD
1.5.62.

DM-C8

Table No. 1

S.A. DEPARTMENT OF MINES

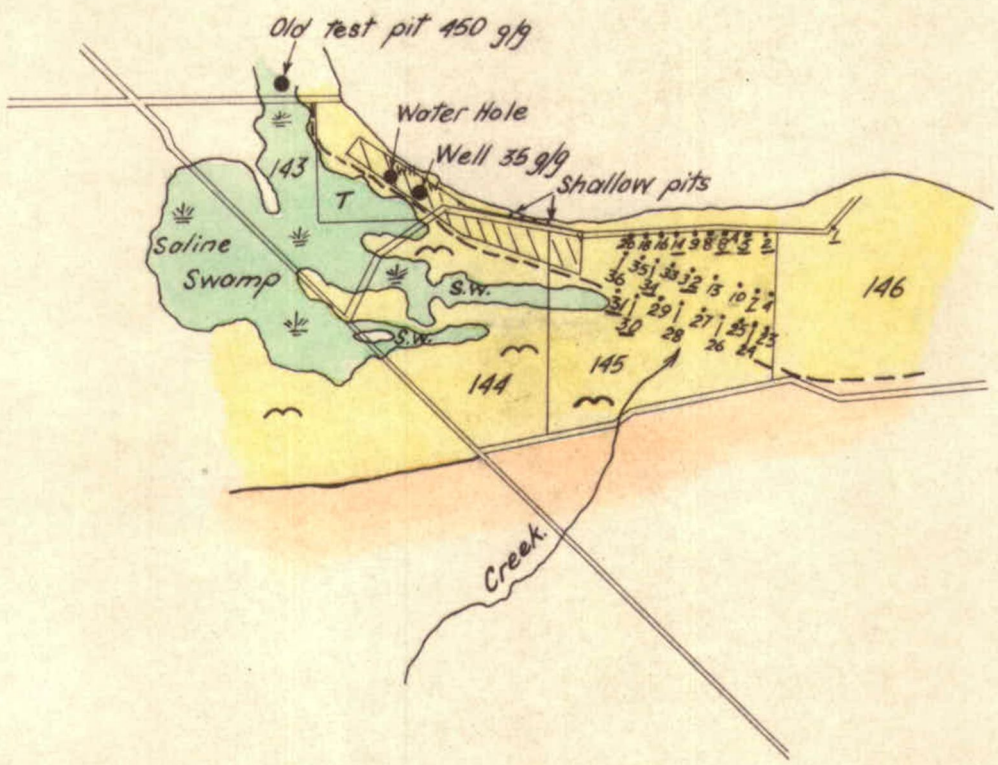
SUMMARY OF BORE RECORDS

Hundred HAINES

Ground Water Survey

County CARNARVON

BORE	SECTION	DEPTH *in feet below surface*			SUPPLY	SALINITY		HEIGHT *above sea level*	*Strata passed through*	*Remarks*
		Total	Water cut	Static level	*Gallons per hour*	*Grains per gallon*	*Analysis No.*			
1	T	8	7	7	-	1200 + ✓	1175		Recent sand and shell grit	
2	T	8	7	7	-	1200 + ✓	1173		" " " " "	
4	146	9	8	7	-	181 ✓	1164		" " " " "	
5	T	8	8	8	-	1800 + ✓	1170		" " " " "	
7	146	8½	8	8	-	570 ✓	1162		" " " " "	
8	T	9	8	7	-	52 ✓	1168		" " " " "	
8A	T	10	8	8	-	1200 + ✓	1172		" " " " "	
10	145	10	9	9	-	90 ✓	1161		" " " " "	
11	T				-	88 ✓	1152		" " " " "	
13	145	9	8	8	-	340 ✓	1160		" " " " "	
14	T	10	8	8	-	1200 + ✓	1171		" " " " "	
16	T	8	7	7	-	720 ✓	1167		" " " " "	
18	T	6½	6	6	-	48 ✓	1169		" " " " "	
20	T	5	5	5	-	56 ✓	1159		Mainly Shell grit	
23	145	9	8	8	-	100 ✓	1174		Recent sand and shell grit	
24	145	8	7	6	-	432 ✓	1156		" " " " "	
25	145	9	8	8	-	269 ✓	1178		" " " " "	
26	145	9	8	8	-	88 ✓	1177		" " " " "	
27	145	9	8	7	-	90 ✓	1176		" " " " "	
29	145	9½	8	8	-	940 ✓	1163		" " " " "	
31	145	9	8	8	-	1250 ✓	1165		" " " " "	
32	145	10	9	9	-	598 ✓	1158		" " " " "	
33	145	10	9	9½	-	208 ✓	1157		" " " " "	
34	145	8	8	8	-	598 ✓	1153		" " " " "	
35	145	9	9	8½	-	162 ✓	1154		" " " " "	
36	145	9	9	9	-	158 ✓	1155		" " " " "	



Observation bores 20

Alluvium .....

Shellgritt and fine sand .....

Saline swamp .....

Kanmantoo arkose

Salt 2

Area sold to land agent .....

To accompany report by C. Bleys.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	UNDERGROUND WATER SURVEY	D.M.	Scale 1" = 60 Chns.
		Tcd. B.G.	Hd. HAINES SEC. 144/5 + T.	Req.	S 3145
		Ckd. R.R.	E. & W. S. Dept. KINGSCOTE		L.9.
Director		Exd.			Date 1-5-62.

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