Rept. Bk. No. 53/173
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DEPARTMENT OF MINES
SOUTH AUSTRALIA

RB 53/173

REPORT ON GROUNDWATER PROSPECTS

SECTION 5, 6 and PT. 7,

HD. PETHERICK

- T.L. HART -

PLAN: 61-904

This inspection was made on the 27th November, 1961 in the company of Assistant Senior Geologist C. Bleys, and again on the 4th December, 1961.

REQUIREMENTS:

Advice on the possibilities of obtaining supplies of water for cattle and sheep and the chances of improving the groundwater quality of the existing bores. Also the likelihood of obtaining good quality water for domestic use.

LOCATION AND TOPOGRAPHY:

Situated approximately 25 miles south of Tintinara and about 15 miles West of South of Keith township, the property is on flat country with low sand dunes. The dunes are prevelant on the Western portion. After heavy rains run off accumulates in low lying areas and in the past saline swamps have been established. During the summer some of the swampy ground becomes dry and due to the recently constructed drain it is less likely that the swamps are flooded again. Coola Coola swamp is the largest; part of which is already under grass cover.

An extensive area in the SW corner has been cleared for pastures, the remainder of the property is virgin. Annual rainfall is expected to be as high as at Keith being 18 inches.

GEOLOGY AND HYDROLOGY:

Granites are exposed at Mt. Monster and at Old Didigoolum Homestead where they are overlain by the Kanmantoo

Rock. The basement rocks are overlain by Tertiary sands and possibly limestones. These sediments, however, are not exposed in the immediate vicinity of the property and the reports of the deep bores which may have penetrated them, are not at hand. To the northward the Knightsand of the lower Tertiary have been penetrated at about 200 feet while only a thin horizon of the Gambier limestone overly them.

A sequence of sands and clays in places capped by kunkar and being of recent age are overlying the Tertiary rock and may be over 70 feet thick.

In the immediate vicinity of the basement rocks the recent sediment overly them directly, and sand dunes have been formed on the leeward side of the bed rock highs.

The Kanmantoo rocks are not good aquifers and therefore drilling into these for obtaining good groundwater supplies cannot be recommended. As no records of the groundwater quality in the Tertiary sediments are available it is unknown whether they contain usable waters but it is believed that at about 300 feet Knightsands will be encountered which may contain stock quality water.

Usable waters are obtained from the recent sediments. The salinity, however, increases rapidly with depth. On the day of inspection six bores had been drilled and since the waters obtained were of a salinity higher than that in the shallow water holes the dionic probe was used for testing the expected increase of salinity with depth. The results are shown on the attached graph. It must be borne in mind that the salinities obtained from Hermitage bore without casing are probably too high as this bore had to be pumped in order to ensure the availability of clean water in the bore. By pumping, saline water may have been drawn upwards, and thus the top waters of low salinity being contaminated. The samples taken before the testing with the probe and thus well below the upper limit of the groundwater level are shown in the table below:

Bore	Grains Per Gallon
Hermitage	515
Dead Frog Hole	1200+
Tapscott's	768
Pigeon Box	410
Boomerang	1100

Comparing the results with the ~~with~~ the analysis made with the probe as shown on the attached graph it is clear that only the upper portion of the groundwater should be used. Since the water level may vary in summer and winter time it is considered that on the bore sites wells should be constructed and equipped with a floating footvalve to ascertain the drawing of the upper waters only. In addition rise and fall in water level are thus followed by the foot valve without manual adjustment.

It is considered that the chances of obtaining good quality water for house hold and drinking are not good.

North and south of the road to Hermitage on the eastern part of applicant's property are low rises capped with kunkar and it is just possible that close to these some better quality equally good as the water in Pigeon Box may be found. Further test drilling on the site as shown on the attached map can be recommended. It must be borne in mind that on these sites similar conditions, as in the other bores, will be encountered, and that only the upper horizon of the groundwater should be used.

CONCLUSIONS:

Good quality water for domestic purposes is probably not obtainable on applicant's property, but near the eastern boundary waters of about 200 grains per gallon may be encountered on the suggested site, test drilling can be recommended.

Since saline waters underlie the fresh waters above, only the upper horizons of the groundwater should be used, and therefore, wells are probably a better proposition than bores. They have a larger storage capacity and in addition floating of valves can be used to reduce the danger of drawing upwards the saline groundwaters.

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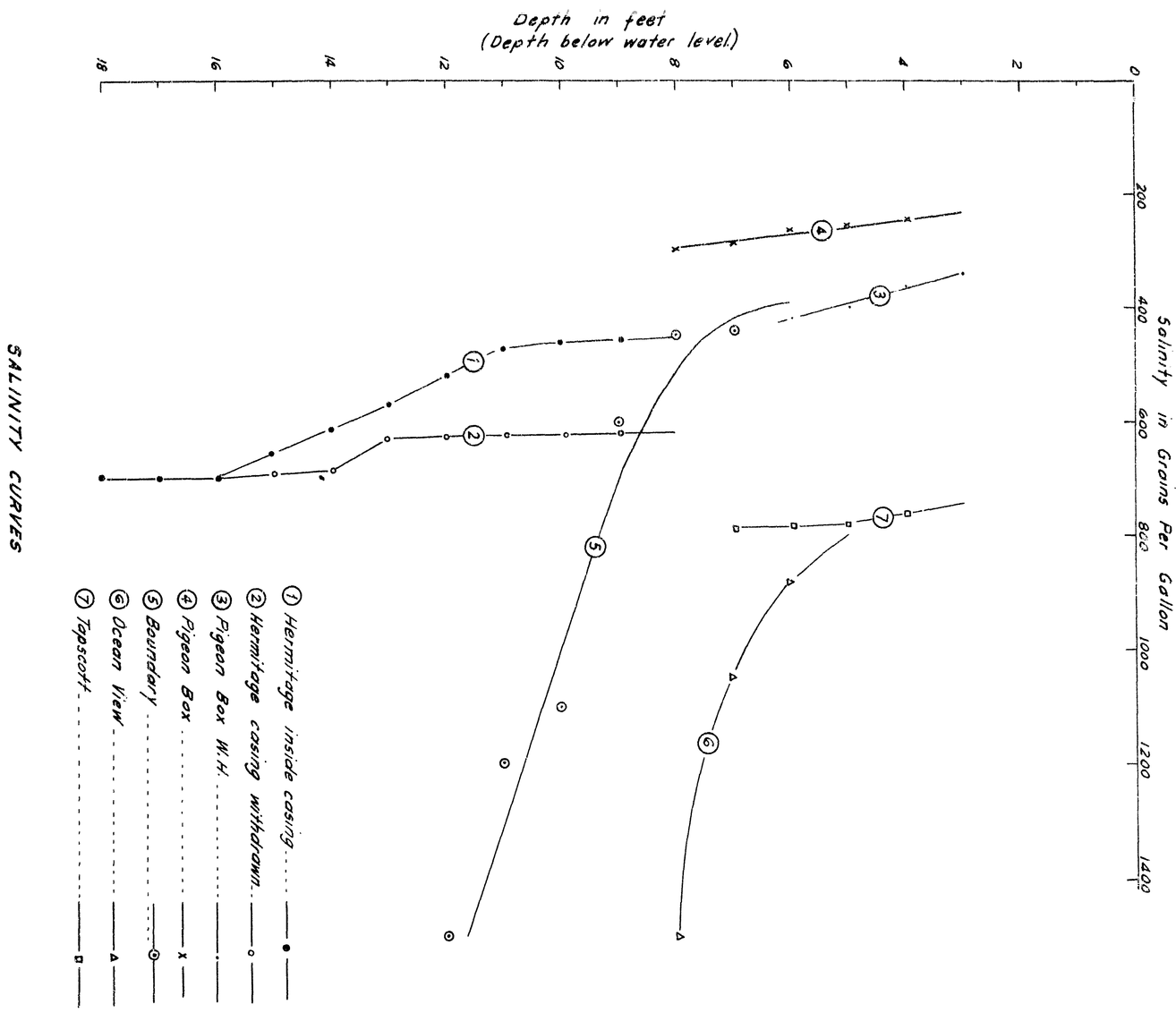
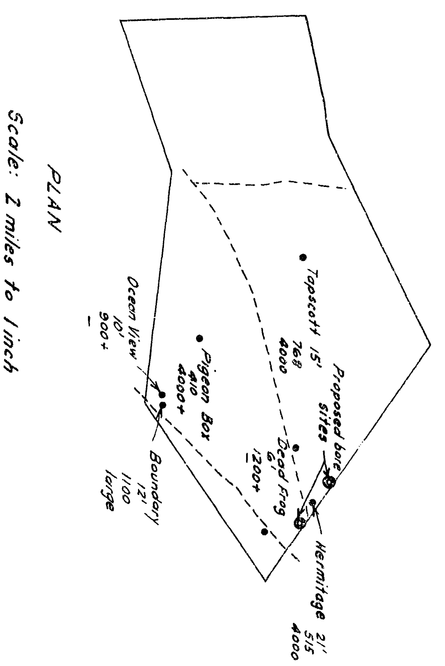
CB:MGM:AMK:MIP
19.12.61





To accompany report by C. Bleys and M.G. Mason

S.A. DEPARTMENT OF MINES

No.	Amendment	Exd.	Date

UNDERGROUND WATER SURVEY
SECS. 5, 6 & Pt. 7. HD. PETHERICK
PLAN & SALINITY CURVES
L.T. MORT

Approved	Passed		Scale :
		Drn.	61-904
		Tcd. A.W	Ka 10
		Ckd.	
Director		Exd.	Date 14-12-61

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