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DEPARTMENT OF MINES.

South Australia.

REPORT ON GROUNDWATER PROSPECTS.

Secs. 444, Pts. 443 & 442, Hd. Myponga.

A. HUMZY.

This property was inspected on 3rd February, 1954.

REQUIREMENTS:

Applicant requires water for stock purposes at or near a fairly central and rather elevated portion of the property. Total needs are estimated at 1,000 - 1,200 gallons per day.

LOCAL TOPOGRAPHY:

Situated approximately 2½ miles South East of Carrickalinga Head, the property covers the crest of a hill and extends southwards to Carrickalinga Creek, which forms one boundary. The highest point on Section 442 is between 650 and 700 feet above datum, the creek being at about 275 feet. The general drainage trend is W.S.W., creeks and gullies being parallel to the strike of the underlying rocks and having deeply incised valleys, the adjoining hillslopes being steep and in their virgin state well covered with wattle scrub, eucalypts and grasses. No definite information was obtained regarding rainfall incidence, but because of its elevation and proximity to the coast, the rainfall is probably fairly high. Because of the topographic relief, percentage runoff after heavy rains would be considerable.

GEOLOGY, HYDROLOGY:

The underlying rocks are the Belair quartzites and slates, which strike approximately 30° East of North, and dip steeply to the Southeast, their attitude governing the local topography. During Permian times glacial sands were deposited over the area, subsequent erosion having removed most of this, although a very thin remnant, possibly a few feet only in thickness, remains on the crest of the hill in some places. This thin sand covering cannot be regarded as a potential source of good stock water supplies, but in other areas it has been observed that localized perched water tables are sometimes found close to the surface on hill tops covered by the glacial sands. In such cases, the sand acts as a collector for rain falling on the hilltop, and small quantities of good quality groundwater occur at shallow depth on top of the underlying bedrock. Boring with a post-hole digger would reveal its existence or otherwise, and if found it can usually be developed by construction of a shallow well, the yields from these being mostly of the order of 100 to 200 gallons per day. A certain amount of exploratory work with a post-hole digger near the crest of the hill was suggested to Mr. Humzy, but it must be emphasized that even if water is found to occur, the supply may be expected to be much less than is needed for full stock requirements.

Stock water is commonly found to occur in the underlying Precambrian quartzites and slates, and should be obtainable on Mr. Humzy's property. The difficulty is that the block has already been sub-divided in such a manner that the watering point will have to be located

at or near the crest of the hill, some 400 feet or more above the creek. Because of the steep slopes, it is probable that drilling in such a location would have to be taken to 250 - 350 feet in order to obtain an assured supply, and the cost of such a bore would be £600 - £850, including 6" casing. This represents a considerable outlay, and there is the small but ever present possibility that the quantity obtained might be rather less than anticipated.

If a bore is constructed, it is suggested it be located as far downslope as possible, consistent with the fencing, and sites A. and B. are considered reasonable. These are some 50' - 75' below the hill crest and are both westward of and upslope from a rather prominant bar of very well silicified quartzite dipping to the east, which might possibly act as a sub-surface barrier to the downslope movement of the groundwater, and tend to pond it back on the westward side. Drilling at each site is anticipated to be in slates.

Alternative to drilling a bore, it is considered that Carrickalinga Creek could be utilized. Mr. Humzy has a "give and take" fence forming part of the boundary, and it should be possible to construct a shallow well (say 15 ft. in depth) in the alluvial fill close by the creek bed. One suggested site, approximately 400 feet west of the E. S. E. corner of the block (C. on plan) has been indicated to him. The creek is not a permanent one, but it has a considerable catchment area and there is thought to be a very good chance that such a well would yield sufficient permanent water from the underflow through the alluvial fill. The project also has the attraction

that construction of the well by personal labour would be relatively inexpensive, and the presence or otherwise of a permanent supply could be established before further expense on pump and piping was incurred. The well, if constructed, should be sunk at the end of Summer. If successful, approximately 30 chains of piping would be needed as a rising main, and the static lift would be 250 ft. - 300 ft., depending on where the storage tank was located. If at the house, the static lift would be a little over 350 feet.

SPRINGS:

At least two springs occur on the southern slope, 100 feet or more vertically above the creek. They are characterised by permanent weed growth, and water was seen lying about at each site. It is considered unlikely that anything more than a small supply would be obtainable from either, and indeed a current attempt to improve one spring by excavating has not given encouraging results. It is suggested, however, that at the more south easterly one a trench be cut along the contour just at the uphill margin of the damp ground, with the idea of intersecting the spring flow before it works downslope into the reeds. Enough water for a few head of stock might be obtainable in this manner.

CONCLUSIONS AND RECOMMENDATIONS:

(1) A very limited supply of good quality water might perhaps be obtained near the hill crest if the glacial sands occur to a depth of more than 10 ft. at any point. Trial holes with a post hole digger at several points where sandy soil occurs should serve to establish the point. A well would, however, yield not

enough for stock requirements.

(2) Drilling at sites A. or B. can be recommended as being reasonably certain of yielding a stock supply, but a bore is expected to be 250 - 350 feet and construction costs would exceed £600, exclusive of equipment.

(3) Development of existing springs should provide permanent water, but in small supply only, insufficient for needs.

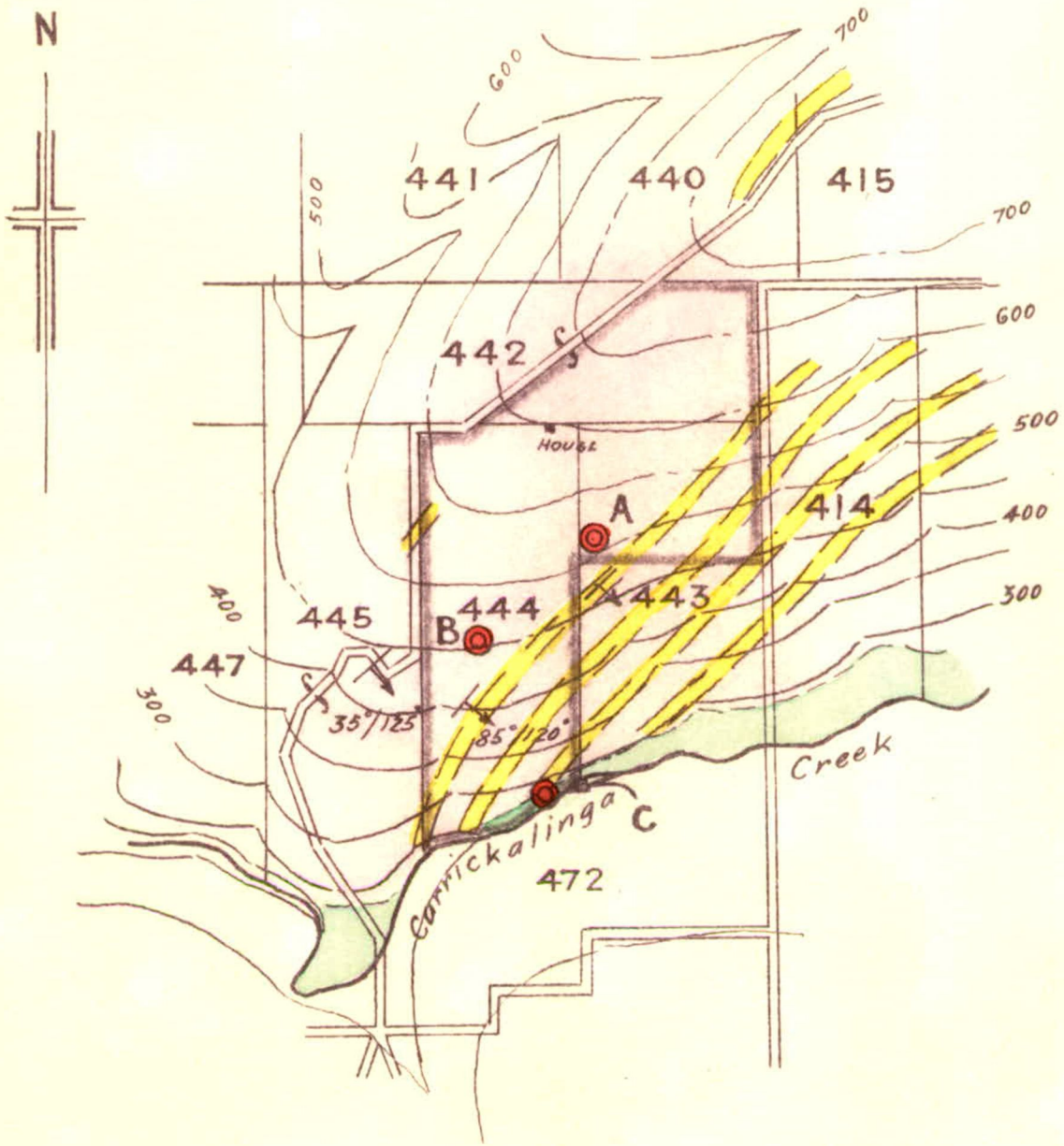
(4) A shallow well located as close as possible to the bed of Carrickalinga Creek, for the purpose of drawing on the underflow, is considered to be the best proposition at present, provided it can be established that such water is permanent. If so, the water could then be raised to the required watering point by a pump and rising main. It is recommended that this project be investigated first, by the construction of a well at site C.

S.W. O'Driscoll 8/2/54

SENIOR GEOLOGIST

HYDROLOGY.

8th February, 1954.
EPO'D:CO



LEGEND

Alluvium _____

Slates _____

Quartzite bands _____

Proposed Boresite ___

To accompany report by E. O Driscoll.
Senior Geologist.

S. A. DEPT. OF MINES

Approved	Passed	Drn. R.R.	UNDERGROUND WATER SURVEY Hd MYPONGA. Sec. 444, Pts 442/3 A. HUMZY	D.M.	Scale 20 Chns to 1 In. S 864 Hc 4 Date 9·2·54
Director	C.D.	Tr. Co. Bk.		Ref.	