

UR1976-13

1976/13. Groundwater prospects at Opossum and Half Moon Bays, South Arm.

W.C. Cromer

The Department received requests, from a number of residents on the South Arm Peninsula, to investigate the groundwater potential of individual properties. In each case, water is required for gardens.

*R.L. Dineley, Half Moon Bay*

This small (0.1 ha) block is situated at 7 Saltair Crescent [338367]\*. It occupies the easterly facing rear slope of the stabilised aeolian sand dune system behind Half Moon Bay. The owner has augered a hole to a depth of about 3.5 m on the eastern boundary of the property.

Prospects for obtaining groundwater are excellent. The augered hole is ideally placed to tap the supply and the thickness of water-bearing sand is expected to easily sustain a yield suitable for gardens. The quality of the water is expected to be good. The Department investigated the groundwater potential of a neighbouring block [339366] in Saltair Crescent three years ago (Cromer, 1973), and a spear bore is now successfully used to obtain water. It is recommended that Mr Dineley employs the same method.

*E. Peterson, Opossum Bay*

This small (0.3 ha) site [330401] is at the junction of Marsh Street and Opossum Bay Road. It slopes gently west, but the land immediately west of the road steepens abruptly and falls to Opossum Bay beach. A hole was augered on the southern boundary of the site. It intersected the following:

<i>Depth (m)</i>	<i>Description</i>
0-0.2	Grey sandy top soil.
0.2-1.2	Brown medium-grained partly cemented aeolian sand.
1.2-4.0	Pale grey-yellow slightly clayey sand containing occasional calcareous patches. Sand damp below 3.3 m.
4.0-5.0	Orange-brown clayey sand.
5.0-5.5	Pale grey-yellow clayey sand.

No water was struck although the clayey sand remained damp from 3.3-5.5 m. The unconsolidated sediments are probably derived mainly from the weathering of underlying Permian sandstone and mudstone. Only the upper 1-1.5 m of material can confidently be ascribed to aeolian origin. Thus it can be expected that the sand becomes increasingly clay-rich with depth, increasingly consolidated, and eventually passes into relatively unweathered Permian bedrock. Prospects for obtaining groundwater from the clayey sand are considered poor.

*B. and J. Carter, Opossum Bay*

Two sites were investigated.

*Site 1.* The Opossum Bay Post Office and store [327396] is a small 0.1 ha block. It slopes gently west, and is covered by a thin veneer of brown aeolian sand and material derived from the underlying Permian sediments. The owner reports that a hole dug to 3.7 m in the south-west corner of the property passed through sand and clay, and that no water was struck. It is unlikely that water will be struck in the unconsolidated material.

\* All localities lie within the AMG 100 kilometre grid square EN.

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Site 2 [337399] is situated in Marsh Street, 100 m south of E. Peterson's block. About 0.3 ha in area, it slopes west and is covered by surface deposits of aeolian sand. Permian sediments are expected to occur at relatively shallow depth, the superficial sediments are likely to be similar to those intersected on E. Peterson's property, and groundwater prospects are poor.

#### GENERAL COMMENTS

Whereas the aeolian dune sands bordering Half Moon Bay offer favourable groundwater prospects, the superficial deposits at Opossum Bay contain appreciable amounts of clay, are derived mainly from the underlying Permian sediments and are poor suppliers of groundwater. The water table is deep, and in places is probably absent.

Furthermore, the Permian sandstone and mudstone underlying the area cannot be considered a likely source of useful amounts of groundwater. A number of bores were drilled by the Department in this rock type at Opossum Bay and South Arm in 1963. Of the two drilled at Opossum Bay, each passed through sand and clay and bottomed in mudstone. The maximum yield obtained was 4 l/min. The water in both cases was salty, and the bores must be considered failures. Of the remaining five bores drilled in the same material at South Arm, all but one were failures. Drilling for water in the Permian rocks is therefore not recommended.

#### REFERENCE

CROMER, W.C. 1973. Groundwater prospects at South Arm. *Unpubl.Rep.Dep.Mines Tasm.* 1973/69.

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