UR1973_79

Groundwater prospects at Orielton.

W.C. Cromer

An investigation into groundwater prospects on 'Leprena' near Orielton was made at the request of G.B. Davis. The 305 ha property extends across the floor of a southward-draining gently undulating valley, and becomes more elevated to the east. Stock loads are light at present, and water is obtained from several small dams supplied by surface run-off and seepage. Larger supplies are likely to be required in future.

GEOLOGY

The valley floor is underlain by a thin veneer of Tertiary(?) gravel, sand and clay, probably overlying Triassic sediments. The Triassic rocks crop out at the eastern and western boundaries of the property, where they have been intruded by Jurassic dolerite.

EXISTING BORES

Two bores and a well have been sunk at the western end of the property. All three penetrated, and obtained water from, Triassic sandstones and clays. None has been used for some years.

Bore 1. This was sited near the present farmhouse, about 50 m uphill from the dams. Records show that it was drilled in February 1968 to a depth of 20 m, passing through sandstone and clay. Brackish water was struck at 18 m, and the water level rose to 14.6 m. It was pump-tested for one hour at 19 *l*/min for a drawdown of 3 m. Present standing water level (SWL) is 15.5 m. The bore is cased to 10 m, but no screen was used.

Bore 2. This is a shallow (7 m) bore which was drilled near the old farmsheds 200 m east of Bore 1. Originally it may have been deeper, but no records are available. At present, the SWL is 4.5 m.

A well 100 m east of Bore 2 supplied water to the old farmhouse that was burned down in 1967. It is sandstone-lined, 2 m in diameter and 11.5 m deep. The SWL is now 2.2 m and the well thus contains 30 000 *l*. The aquifer is Triassic sandstone.

DISCUSSION AND RECOMMENDATIONS

It is recommended that no additional drilling be attempted, and that the existing bores and wells should be fully utilised. However, maximum yields will not be realised unless each is fully developed. Years of disuse and natural fluctuations in the water table will have resulted in sections of the bores and well being intermittently exposed to both water and the atmosphere. This causes decomposition of the wall rocks (producing rock fragments and silt), the formation of insoluble chemical precipitates and the growth of algae and bacteria, all of which effectively seal water-bearing fractures and drastically reduce available yield.

Development commonly involves the use of surging, jetting, detergents and pumping techniques, in an attempt to restore the aquifer to its original condition. In some instances, yields may be considerably increased.

Vigorous agitation of the water, either by surging with a plunger, or horizontally jetting water or compressed air, forcibly dislodges rock fragments, encrustations or organic material from the water-producing fractures supplying the bore. Detergents added to the water assist in dispersing clay,

silt and chemical precipitates so that they can be readily pumped from the hole during agitation.

Following development, the bore or well should be pump-tested to determine its safe yield, and a water sample collected for analysis. Triassic rocks in south-eastern Tasmania commonly yield water of moderate quality (1000-3000 ppm) which may be unsuitable for irrigation purposes. If this is the case, it may be necessary to dilute the bore water by pumping it into surface dams.

[8 October 1973]