

Underground water prospects at Pontville.

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The prospects of underground water for stock purposes on Mr D.P. Munn-
ing's property of 'Shene', Pontville, have been investigated. Refraction
seismic, resistivity and magnetometer traverses were carried out in an at-
tempt to ascertain the subsurface geology in the vicinity of the proposed bore
hole, which was sited by the owner.

The area is of rugged relief and Jurassic dolerite is the predominant
rock type. At lower elevations, notably in the valley floors, Triassic sand-
stone crops out. The sediments dip to the west at low angles, and are ex-
posed on the valley floor and flanks near the proposed bore hole, which is
sited in the upper reaches of a small valley.

GEOPHYSICAL RESULTS

A single 280 ft refraction hammer seismic traverse with geophone spac-
ing varying from 10-20 ft was orientated along the valley over the proposed
site. The results indicate that at least three layers are present.

<i>Layer</i>	<i>Seismic Velocity (ft/s)</i>	<i>Approx. Average Thickness (ft)</i>
1	1 200	12
2	5 150	65
3	10 200	At least 70

The low velocity encountered in the upper layer is typical of uncon-
solidated topsoil and subsoil, which in this case probably contains loose
dolerite talus derived from the surrounding hills. The velocity of the middle
layer is suggestive of weathered sandstone to a depth of about 75 ft. The
higher velocity is not diagnostic and may represent consolidated, unweathered
sandstone or weathered dolerite. The latter alternative appears unlikely
however, in view of the fact that in a youthful topography such as is encount-
ered near the proposed bore hole. Any dolerite present would probably be
compact and unweathered, with closed joints, which would result in signific-
antly higher seismic velocities than those observed. In support of this, a
magnetometer survey at right angles to the seismic traverse revealed a smooth
profile across the valley floor (indicative of a blanket of sandstone), but
yielded irregular and fluctuating readings (typical of dolerite) on the ad-
jacent hills.

A 200 ft resistivity traverse laid parallel to the seismic line has
shown that up to depths of about 50 ft, apparent resistivity increases sharp-
ly with depth. These high values suggest the following alternatives. Either
the sandstone becomes increasingly compact with depth and is dry to at least
50 ft, in which case it is unlikely that water will be encountered at greater
depths; or water is present in small amounts and is fresh and of high quality.
The latter alternative appears unlikely.

In conclusion, the seismic and magnetometer results are consistent in
that they both suggest that sandstone is present to a depth of about 150 ft.
The resistivity results are discouraging however, in that they indicate that
the rock is probably dry to this depth.

RECOMMENDATIONS

In the light of the above comments, the proposed bore hole site appears

o/d

unfavourable and will probably not yield the required amount of water for stock purposes.

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