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## EXAMINATION AT NATONE AREA SCHOOL FOR UNDERGROUND WATER

The Public Works Department requested an examination of the Natone Area School property for possible areas suitable for drilling for underground water. Present supplies consist of rain water for drinking and water pumped from a creek for showers and toilet. This latter supply has become contaminated by stock drinking further up the creek, and an alternative supply is required.

This part of Natone is underlain by Tertiary basalt. At least two flows separated by a bed of light brown clay and possibly a thin band of quartz grit are represented. The basalt overlies older sedimentary rocks consisting of chert, quartzite and conglomerate which have been equated with the Owen Conglomerate of Ordovician age (Blake 19570). About 25 chains to the north west of the school, Upper Precambrian phyllite with iron mineralization, outcrops on a hill which represents a pre-basalt topographic high.

The school is situated on the northern edge of a basalt plateau, the basalt being about 80 feet thick westward and northward from the school. The basalt is probably thicker to the south east.

Topographically the conditions for underground water are not ideal although it is considered that there is a good chance of obtaining supplies since springs emit from the base of the basalt in a number of places to the west and north-east of the school. An average quantity of water from a successful bore in this type of country is 200-300 gallons per hour.

There is a possible risk of contamination of underground water from two septic tanks and a sheep dip which is only operated once a year. The contamination may be eliminated or minimized by casing the hole to the clay layer which is about 25-30 feet below school level. Contamination could still occur if the water table is low or if the cone of depression in the water table, formed during pumping, is deep, causing reverse drainage to occur.

The commonly used chemicals in sheep dip mixtures are of two types - soluble arsenic compounds and organic-phosphates which are in suspension. No danger is likely from the latter compounds as the suspended material would be filtered by soil and clay but if arsenicals are used and managed to get into the underground water supply, they could have adverse effects. It is suggested that either the phosphate type of insecticide be used or care in the disposal of arsenical dip solution be taken.

Although there seems little advantage topographically of any one area over another the area from the front gate to the water storage tank appears the most favourable. From the point of view of appearance, however, this area would be unsuitable. The most suitable area considering most aspects seems to be between the elevated water storage tanks and the vegetable garden.

### Reference

Blake F., 1957 - Rutherfords Iron Area, Natone.  
Tech. Reports No. 2.

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