

BURRA

6630

REPT.BK.NO. 73/84

II



G R O U N D W A T E R S U R V E Y

Sections 405-407 (Apoinga), 500,501,508 (Hanson)
and 590,599 W (Stanley)

- I.R. Farley & Co. -

A.F. W I L L I A M S

Department of Mines
South Australia —

73/84

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GROUNDWATER SURVEY

Hundreds Apoinga, Hanson and Stanley

Sections 405-407 (Apoinga), 500, 501, 508 (Hanson) and
590, 599 W (Stanley)

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by

A.P. WILLIAMS
Geologist
HYDROGEOLOGY SECTION

27th March, 1973

Rept. Bk. No. 73/84
G.S. No. 5090
Hyd. No. 2517
D.M. No. 330/73

DEPARTMENT OF MINES
SOUTH AUSTRALIA

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GROUNDWATER SURVEY

Location

General: 22 km south of Burra
Region: 3 and 4
Counties: Burra and Stanley
Hundreds: Apoinga, Hanson and Stanley
Sections: 405-407 (Apoinga), 500,501,508 (Hanson)
and 590,599 W (Stanley)

Name of Property: Fishers

Owners: I.R. Farley & Co.

Postal Address: Box 17, ROBERTSTOWN

Telephone: Robertstown 11

Requirements

Water required for: Lucerne, vegetables, sheep and poultry.

Quantity: About 0.7 l/sec.

Quality: Varying - depending on use, i.e. for

vegetables - should be less than 1 000 mg/l

lucerne - " " " " 2 300 "

poultry - " " " " 4 300 "

sheep - " " " " 10 000 "

HYDROGEOLOGICAL REPORT

Physiography

The applicant's property lies in gently undulating country south of Burra at an elevation of about 450 m above sea level. A small north-south trending ridge divides the property. Drainage east of this ridge flows into Stoney Creek and eventually Burra Creek. On the west, however, it is endoreic, flowing into Porter Lagoon, a saline evaporation lake. Land is used for sheep and cattle grazing and some agricultural use.

Climate

Nearest rainfall station: Farrell's Flat.

Mean annual rainfall: 475 mm.

Remarks on rainfall pattern: Rainfall on the property is very similar to that recorded at Farrell's Flat, where over 50 mm per month falls between May and September. Bore water is required for drier periods during summer.

Surface Hydrology

Creek name: Unnamed.

Characteristics: Ephemeral - running only during heavy rain.

Springs: None on the property.

Surface storage: One dam has been constructed near the house.

Geology

Soil cover: Top soil is red to pale brown silty soil with red brown clays underlying this material on the lower slopes away from the ridge. Thickness varies from 0 to 2 m

Rock Units: Sturtian - Gilbert Range Quartzite with Mintaro Shale below and Appila Tillite above.

Lithology: Bedrock is composed of well fractured and jointed pink quartzite which is cross bedded in part and up to 80 m thick. Grey siltstones have been intersected in boreholes to the east of this quartzite bed.

Direction and Amount of dip: 50 to 60° to the west. Some overturning was noted at the south end of the ridge which may be due to faulting.

Structural Features: The Gilbert Range Quartzite is faulted at the southern end of the property.

Aquifer Assessment

Type: Free water table. Water is expected to occur in fractures, joints and pore spaces in the quartzite and siltstone bedrock. The quartzite is expected to have better supplies of purer quality water than the siltstones.

Extent: The quartzite bed underlies the central eastern side of the property whilst the rest is underlain by siltstone and shale.

Potential Recharge: Recharge should be provided from vertical and lateral seepage of rain water down to the water table. The quartzite would have better potential than the siltstone and shale on either side of it.

Borehole Site Location

General: A site was chosen down dip of the quartzite bed on the eastern portion of section 501, Hd. Hanson. The site was indicated to the owner at the intersection

of the extension of the north-south fence line west of the ridge and the base of a small gully running away from the ridge.

Reason for location: Here a borehole should penetrate sandstone and quartzite at the water table, hence obtaining better quality water in greater supply than that recorded in surrounding boreholes in the shales and siltstones.

Proposed Depth: Possibly up to 100 m.

Expected Yield: 0.7 - 1.3 l/sec.

Expected Quality: 1 000 - 3 000 mg/l.

Probable Log: 0 - 30 m Shale with a thin covering of alluvium.

30 m+ Quartzite and sandstone.

Drilling and Testing Recommendations

Drilling Hazards: Because of the hard brittle nature of the quartzite - it is suggested that only a rotary rig be used to drill this hole. Some casing will be needed for the upper portion of the hole to prevent caving.

Sampling: Samples of all waters cut should be brought into the Department for testing (free of charge). A geological log would be appreciated.

Pump Test: This service can be provided by the driller or pump distributor.

Summary

A site was chosen on part of section 501, halfway up the western side of the small ridge which partially bisects the property. Here a bore should penetrate sandstone and quartzite at the water table and produce better quality water in greater quantity than bores on adjacent land. A bore in this position would suit the owner's requirements since water could be gravitated to the house and other portions of the property.

27th March, 1973



A.F. WILLIAMS

Geologist

Survey Date: 21.3.73

