

1983/65. Water supply in the Huntsmans Cap area, Nicholas Range

W.L. Matthews

Abstract

Small surface streams flowing down the north side of the Nicholas Range are probably large enough to supply the proposed coal mining operation, provided a dam is built. Water bores in the lower lying areas may also be capable of supplying significant quantities of water. Dam sites would require investigation before construction commences, and test drilling and pump testing would need to be undertaken if groundwater is to be considered as a possible water source.

INTRODUCTION

The Shell Company of Australia Ltd is examining the prospect of entering their coal deposit in the Huntsmans Cap area (marked X on Figure 1) as an alternative to developing a mine on the south side of the Nicholas Range. A request was made to examine briefly possible water sources to supply the mining operation. The Company estimates that 219 million litres per year would be required [about 415 l/min (5500 gallons per hour) continuously].

GEOLOGY

The general area is underlain by a variety of rock types. Jurassic dolerite occurs on the higher levels with talus derived from dolerite weathering draped over the slopes. Triassic sediments, Triassic basalt, Permian sediments and Devonian to Ordovician? mudstone and sandstone occur at successively lower levels, there being little large-scale faulting to alter the relationship between rock age and elevation.

The Triassic rocks consist of lithic sandstone and mudstone beds with carbonaceous horizons at the top of the sequence, while basalt and quartz sandstone occur towards the base. The Permian sediments comprise conglomerate, pebbly mudstone with occasional thin carbonaceous bands at the base followed by coarse and fine-grained quartz sandstone, bryozoan-rich mudstone, limestone and pebbly mudstone. Devonian to Ordovician? sediments (Mathinna Beds) consist of mudstone and sandstone and are folded and strongly cleaved, as opposed to the Permian and Triassic rocks which are generally flat bedded or have only a shallow dip.

GROUNDWATER PROSPECTS

All of the rock types in the area are known from bores in other parts of the State to deliver the amount of water required over short periods, but it is not known whether the amount could be obtained on a continuous basis. Dolerite has a lower success rate than the other rock types, and in the Mt Nicholas area dolerite occupies elevated positions which makes it unfavourable to drill for water. The dolerite talus, Triassic basalt and Triassic sediments are also in topographically unfavourable situations for drilling for large supplies of water. Permian sediments and Mathinna Beds appear the only reasonable prospects with any chance of supplying the required water. Test drilling would need to be undertaken and the best locations appear to be the valley of Slab Hut Creek and Huntsmans Creek near where they are crossed by Catos Road.

SURFACE WATER

Streams running off the Nicholas Range-Huntsmans Cap area are relatively small, but the two streams mentioned above probably have enough water flowing in them to supply the mine operation, provided some storage is available to guarantee supplies over drier months. Areas where worthwhile storage could be established are also near where Catos Road crosses the two streams. At these locations the stream bed has flattened a little and at some points a narrow flood plain has developed.

Possible dam sites are at points A and B on Slab Hut Creek (fig. 1). At A, basal Permian sandstone crops out in the creek bed, while Mathinna Beds occur at B. On Huntsmans Creek, the most favourable dam sites are at C and D (fig. 1), both sites being in Mathinna Beds.

Barriers up to about 10 m high should impound a worthwhile volume of water, with the lower sites having the larger storage in each stream. The foundation of any site selected for dam construction would need to be tested for leakage, and suitable construction materials would need to be found.

Sites further upstream from the areas outlined above have smaller storage areas because of the generally steep gradient on the stream beds.

CONCLUSIONS

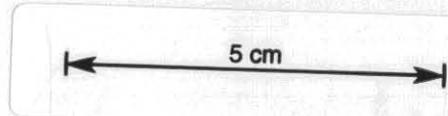
Huntsmans Creek and/or Slab Hut Creek are likely to be capable of supplying enough water for the mine operation, provided a dam is installed to ensure supplies over the summer months. Site investigations would be needed to determine any problems with any selected site.

Groundwater is a possible source of supply for the mine operation. Because of topography, Mathinna Beds or Permian rocks are most likely to be capable of supplying large quantities of water in the area examined. Test drilling would be needed to determine the groundwater potential of the area. Dependence on long term high outputs from a groundwater source alone may be too risky, and if bores are used, it would be safer to use them in combination with a surface source.

The preferred dam sites and groundwater areas are at the same locations i.e. near Catos Road in the valleys of Slab Hut and Huntsmans Creeks.

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GEOLOGY OF THE HUNTSMAN CAP AREA

Geology after C.A. Calver and P.W. Baillie

-  Quaternary dolerite talus
-  Jurassic dolerite
-  Triassic sediments
-  Triassic basalt
-  Permian sediments
-  Devonian-Ordovician (?) Mathinna Beds
-  Geological boundary
-  Possible dam site
-  Proposed mine entrance



Figure 1.