

The dam site was previously examined geologically in 1967 (Leaman, 1968) as part of a survey of potential dam sites on the Jordan River by the Rivers and Water Supply Commission. The following drilling results are part of a more detailed feasibility study required for dam design.

All holes have been drilled in dolerite, Holes 1 and 6 being near an igneous boundary and therefore very disrupted.

Drill hole locations were as follows:

1. South abutment (vertical);
2. Valley centre (vertical);
3. North abutment (vertical);
4. North abutment, lower slope (vertical);
5. South abutment (inclined, 60°).

Hole 1 contains the most weathered material (principally along the joints). The joints contain iron oxides, calcite and green clays. The joints show no evidence of movement. The joint frequency varies but is typically about 7-20 per metre with local zones of 65-160 per metre (e.g. at depths of 7, 10, 13, 15 and 18 m). Joint dips occur mainly at angles of 0-20°, 40-60°, 75-90° to the horizontal.

Hole 2 contains fresh, solid dolerite to 7.2 m with the joints bearing little trace of weathering. It should be noted that this hole is far from being of an adequate depth. Two adjacent auger holes (1 and 2) proved 90 cm and 1.1 m of alluvial fill whereas Hole 2 contained 1.8 m.

Hole 3 also contains fresh, massive dolerite with calcite-filled hair-line fractures, predominantly at 45-80° to the horizontal. No iron oxide coatings occur below 3.6 m. The massive, closed nature of the rock in this hole is reflected in the low water test figures. Total depth 18.2 m.

Hole 4 contains very weathered dolerite to a depth of 5.2 m with a very shattered zone from 5 m. Below that depth (to 7.9 m) the joints are predominantly vertical and sealed with calcite and the dolerite is quite solid.

Hole 5 contains shattered and weathered dolerite to a depth of 2.3 m. All joints are thickly coated with iron oxide and clays. To 6.6 m the rock is fresh, firm and solid and all joints are sealed with calcite. Joints angles of 45-60° predominate.

Hole 6 situated on the spillway, contains very weathered and shattered dolerite to a depth of 9 m. All joints have fillings of calcite or are coated with iron oxides.

Many of the holes drilled are of inadequate depth to prove that no deep leakage paths exist. However in the material recovered that near Holes 1 and 6 expected to be much jointed was badly weathered and the only high permeabilities measured are in Hole 1. Otherwise, the other holes reveal short lengths of good rock, with a few joints closed or sealed with calcite.

#### REFERENCE

- LEAMAN, D.E. 1968. Geological Survey, Kempton dam site. *Tech.Rep.Dep.Mines Tasm.* 12:83-85.