

## **Problem of Water Logging in Hard Rock Region of Deccan Basaltic Terrain**

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Deccan basalt is a major rock formation in the state of Maharashtra, India which comprises two major types of flows viz. 1. Compact basalt 2) Vesicular amygdaloidal basalt. Compact basalt flow is thick and extensive. Its top portion is always hydrothermally altered hard massive and has become amygdaloidal. It contains no free divisional planes. The minute, vesicles therein are filled with secondary minerals. Hence the top portion of this flow with its variable thickness from 2m. to 10m., acts as a watertight mass. But its middle and lower portion may show cooling joints which may be closely spaced and interconnected or broadly spaced. Highly weathered closely spaced interconnected jointing provides ideal shallow aquifer, which is also confined due to the underlying flow whose top portion is watertight. Vesicular amygdaloidal basalt, the second major type which is thin and thicker irregular piles of flows, is also called as compound flows. The individual flow has very limited thickness and lateral extent. These flows are free from divisional planes and hence also act as watertight mass.

Owing to the heterogeneity in the disposition of these varied piles of basalts along with their differing water bearing characters there is bound to be wide spread water scarcity in the Deccan basaltic province of India. To overcome the scarcity a large number of storage structures such as minor and medium irrigation tanks have been constructed so that the stored water would act as a main source of water for irrigation and drinking purposes. But unfortunately in many places such storage structures have been constructed without taking into account the sub surface Geohydrology. As a result the stored water, due to unfavourable Geohydrology may create water-logging problem in the surrounding area thereby degrading the fertile land and endangering the health of the people residing in the near by villages. In order to tackle this situation, Irrigation department of Government has asked Geoforum to investigate the Jalki minor irrigation tank district Aurangabad, Maharashtra state suffering from the same problem of water logging which was initiated only after construction of the tank. The detailed investigation of the storage tank of Jalki revealed that at the bottom of the tank highly weathered closely jointed compact basalt is occurring, overlain by highly permeable sheet jointed amygdaloidal basalt and underlain by hydrothermally altered water tight top portion of the underlying flow. Such unfavourable condition of the subsurface strata for the storage structure is the root cause of water logging problem.