

Identification of Groundwater Potential Site in Taiwan Mountainous Region (H13B-1326)

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In recent years, ground-water resources from mountainous regions have been considered as an alternative water resource in Taiwan. Owing to the predominant bedrock terrain in mountainous areas, the availability of groundwater is rather unpredictable and often limited in quantity. Therefore, a guideline for successful well site selection is of importance. The objective of this study is to find possible factors affecting groundwater yields in identifying groundwater potential zones. A case study was conducted at 40 groundwater monitoring well sites in Mid-Taiwan Mountainous Region. To determine the influence on groundwater yield, geologic, hydrologic, hydrogeologic and geomorphic conditions of a given site have been analyzed by correlation and regression analysis. In this study, 14 influential factors, including drainage area, drainage density, lineament density, lithological characteristics, existence of fault, existence of fold, fracture network intensity, groundwater flow direction, the dip direction of the bedding plane and joint in the same direction to the slope, regolith thickness, distance from the river channel, slope, elevation, and stream frequency were selected. The correlation among the selected factors and well yields from pumping test results has been studied, and the results show the two most significant factors for predicting potential groundwater zones are lithological characteristics and the dip direction of the bedding plane and joint in the same direction to the slope. Therefore, this study demonstrates a practical method for locating potential well drilling areas.