**Infiltration rate assessment of some major soil types in Kota Bharu, Kelantan, Malaysia**

Nor Ashikin Binti Shaari, Mohammad Muqtada Ali Khan\*, Arham MuchtarAchmad Bahar and Dony Adriansyah bin Nazaruddin

Faculty of Earth Science, Universiti Malaysia Kelantan (UMK), Jeli Campus, Locked Bag No. 100, 17600 Jeli, Kelantan. Malaysia

[*\*muqtadakhan@gmail.com*](mailto:*muqtadakhan@gmail.com)

[*shaarinorashikin@gmail.com*](mailto:shaarinorashikin@gmail.com)

**Abstract**: Infiltration is the process by wich water on the ground surface enters the soil and the infiltartion rate is a measure of the rate at which soil is able to absorb rainfall or irrigation. The [soil texture](http://en.wikipedia.org/wiki/Soil_texture) and structure, vegetation types and cover, [water content of the soil](http://en.wikipedia.org/wiki/Antecedent_soil_moisture), soil [temperature](http://en.wikipedia.org/wiki/Temperature), and [rainfall](http://en.wikipedia.org/wiki/Rainfall) intensity play a significant role in controlling infiltration rate. Coarse grained soils having large pore spaces with stable structure allows water from rainfall to enter unimpeded throughout a rainfall event. Otherwise, soil that have reduced infiltration may cause flooding in the area (USDA, 1998). The study area is located in the eastern part of Peninsular Malaysia with latitude of 06˚10’N and longitude of 102˚20’E. The study area, Kota Bharu is one of the main districts in Kelantan and become the capital city of Kelantan which is the main location of commercial centre and state management office. The total land area of Kota Bharu is about 394 km². Geology of the area is mainly consisting of Quarternary alluvium having fluvial and marine origin which is constituted of mainly sand, gravel, silt and clay underlain by granite and meta-sedimentary rocks. From the soil classification map produced by Department of Agriculture (DOA), selected soil samples were tested using double ring method to identify the infiltration rate of the study area. This method consists of two metal cylinders of diameter 30 cm and 60 cm that is driven partially into the soil. The ring is filled with specific level of water and the time at which water moves into the soil is measured, thus the rate of infiltration were calculated in the field. An infiltration map will be produced at the end of the study and this study will be very useful for decision makers while dealing with flood management and also in agricultural field.

**Keywords**: Infiltration, double ring method, flood, Kota Bharu