

TREATMENT EFFICIENCY AND COMPRESSIBILITY BEHAVIOR OF SOIL MODIFIED WITH POWDERED ACTIVATED CARBON

*Mohd Yuhyi Mohd Tadza¹, and Fauzi Baharudin²

¹Faculty of Civil Engineering and Earth Resources, Universiti Malaysia Pahang, Malaysia ²Faculty of Civil Engineering, Universiti Teknologi MARA, Malaysia

* Mohd Yuhyi, Received: 00June 2016, Revised: 00 June 2016, Accepted: 00 0000 2016

ABSTRACT: Riverbank filtration (RBF) systems are often used to treat surface water near rivers. The effectiveness of such systems depends heavily on the properties of the riverbank material that is used for filtering and treating the water. To improve the system's treatment efficiency, modifications may be conducted to the riverbank soil. Altering the properties of the soil might, however, affect the stability of the riverbank. In this study, soil and water samples near Lake Chini were collected and characterized. Filtration test was conducted to evaluate the efficiency of the soil in treating the water. The soil was modified by mixing it with powdered activated carbon (PAC) at varying percentage of 5 and 10%. In addition, compressibility test was carried out using a standard oedometer. Test results indicated that the soil alone was insufficient to treat the water to drinking water quality standards. Modification with activated carbon improved the water quality from Class II to Class I. However, compressibility test revealed that there were some changes to the pressure - void ratio relationship, indicating that the alteration of soil properties with the addition of activated carbon filters might affect the stability of the riverbank.

Keywords: Riverbank Filtration, Water Treatment, Compressibility, Activated Carbon, Oedometer, Lake Chini