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# Physical Properties of Soil and Its Correlation with River Bank Erosion and Soil Erodibility: Sungai Pusu Case Study

[Lecture Notes in Civil Engineering](#) • Conference Paper • 2024 •

DOI: 10.1007/978-981-99-6026-2\_11

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## Abstract

Riverbank erosion is a complex process where the extent of riverbank erosion is influenced by many factors including soil properties. In this study, soil samples were collected from different sections of riverbanks at Sungai Pusu. Several physical soil properties such as the median grain size, percentage of sand, silt and clay, plasticity index, and specific gravity were measured for each soil samples.

Riverbank erosion rates were measured at the site periodically using erosion pin method. Linear regression was conducted to identify the correlation between the erosion rate and the physical soil properties using the Statistical Package for the Social Science (SPSS) software. It was found that the percentage of sand content had significantly influenced the erosion rate, while the other parameters showed weak correlation and no correlation with the erosion rate. Soil erodibility coefficient,  $k_d$ , was calculated using empirical equation, and the value ranged between 0.0553 and 0.1023 cm<sup>3</sup>/N s. The

erodibility of the soil samples can be categorized as “Moderately resistant” based on the  $\tau_c$  versus  $k_d$  plot produced by previous study. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd 2024.

Author keywords

Bank erosion; Soil erodibility; Soil properties; Sungai Pusu

Indexed keywords

Engineering controlled terms

Density (specific gravity); Erosion; Social sciences computing; Soil surveys

Engineering uncontrolled terms

Bank erosion; Case-studies; Complex Processes; Erosion rates; Physical soil properties; Riverbank erosion; Soil erodibility; Soil property; Soil sample; Sungai pusu

Engineering main heading

Soils

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia <a href="#">See opportunities by IIUM</a> ↗	IRAGS18-025-0026	IIUM

Funding text

Acknowledgements This research was financially supported by IIUM Research Acculturation Grant Scheme (IRAGS) Research Project IRAGS18-025-0026 entitled “River Meander Migration Prediction: Evaluation of Existing Techniques and Establishment of New Empirical Model”.

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