

UNIVERSITI TEKNOLOGI MARA

**SCREENING SOIL EROSION RISK
POTENTIAL IN THE MUNICIPALITY OF
SUBANG JAYA WITH REGARDS TO
RAINFALL AND SOIL CHARACTERISTICS**

ADNAN BIN DERAHMAN

**Thesis submitted in fulfillment of the requirements
for the degree of
Master of Science**

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Candidate's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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Name of Candidate : Adnan bin Derahman

Candidate's ID No. : 2005704164

Programme : Master of Science in Civil Engineering

Faculty : Faculty of Civil Engineering

Thesis Title : Screening Soil Erosion Risk Potential in the Municipality of Subang Jaya With Regards to Rainfall and Soil Characteristics

Signature of Candidate



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ABSTRACT

The soil erosion risk potential study under the jurisdiction of Subang Jaya Municipal Council covers an area of 161.8 km². A total of 20 soil samples were collected from various slope locations within the council's area. Prior to the Bouyoucos hydrometer analysis, each sample was divided into 3 sub-samples with a total of 60 samples analyzed by the Bouyoucos hydrometer method which is totally different from the normal hydrometer method. The results obtained from the Bouyoucos hydrometer analysis provide the input in terms of sand, silt and clay percentages that were then substituted into the 'ROM' erodibility index (EI_{ROM}) equation. The 'ROM' Scale which has been established by local researchers, Roslan and Mazidah for determining the level of soil erosion risk were ranked accordingly and are the ultimate indicator in confirming the degree of soil erosion risk potential.

By determining the EI_{ROM} of the slopes and the time of the highest frequency of erosion occurrence, the possibility of erosion risk potential would be able to be predicted. It was found that the soil erodibility grading with regards to 'ROM' Scale doesn't shows any 'Low' scale but varies between 'Moderate' to 'Critical' with EI_{ROM} index values of 1.76 to 29.26 respectively. From the soil textural analysis according to the USDA Soil Classification System, the soil samples were classified under 'Sand', 'Loamy Sand', 'Sandy Loam' and 'Sandy Clay Loam'.

As for the first stage of the rainfall erosivity analysis, the overall results at respective rainfall station with regards to the maximum monthly rainfall, number of incidence of erosion risk frequency and the percentage of erosion risk potential per rainy day from year 2003 to 2006 were determined. The months of February, March, April and November can be considered as risky months for TTDI Jaya rainfall station whereas Puchong Drop rainfall station recorded the months of February, April, September, November and December while Seri Kembangan rainfall station recorded the most risky months in February, May and November. The final stage of the rainfall erosivity analysis in terms of the most risky month and the percentage of High, Very High and Critical Degree of rainfall erosivity index ('ROSE' Index) for each rainfall station at TTDI Jaya, Puchong Drop and Seri Kembangan rainfall station are in the months of February, March and October (7.67%), February, March and November (11.79%) and February, August and October (13.97%) respectively.

The result of this study provides important information on the susceptibility of the risk locations towards erosion and the time frame of critical month that would make way for erosion occurrence especially on bare sloping areas particularly at both critical values of 'ROM' Scale and 'ROSE' Index. The final outcome highlights the potential risk of soil erosion occurrence at Seri Kembangan rainfall station followed by the Puchong Drop and TTDI Jaya rainfall stations.

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