

**PENDUGAAN EROSI DAN SEDIMENTASI
DENGAN MODEL WEPP (*Water Erosion Prediction Project*)
DAN USLE (*Universal Soil Loss Equation*)
(Studi kasus di Sub DAS Nagung, Kulon Progo, Yogyakarta)**

Oleh :

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INTISARI

Sub DAS Nagung yang terletak di DAS Serang Hulu Kabupaten Kulon Progo memiliki luas 1447,13 ha termasuk dalam ekosistem DAS hulu. Pertambahan jumlah penduduk yang semakin meningkat akan mendorong kebutuhan lahan, apabila penggunaan lahan tidak menggunakan kaidah konservasi mengakibatkan bahaya erosi. Kerugian akibat erosi berdampak sangat luas, karena tidak hanya menyebabkan kerusakan di daerah hulu saja, tetapi juga di daerah yang dialiri aliran endapan, dan di bagian hilir. Penelitian ini bertujuan memprediksi erosi dan sedimentasi di Sub DAS Nagung.

Model WEPP dan USLE digunakan untuk memprediksi erosi, sedangkan penghitungan sedimentasi dengan rumus SDR (*Sediment Delivery Ratio*) Penghitungan prediksi erosi dan sedimentasi menggunakan satuan unit lahan dari proses *overlay* peta penggunaan lahan dan peta lereng.

Overlay peta penggunaan lahan dan peta lereng menghasilkan 34 unit lahan. Hasil prediksi erosi dengan model WEPP menghasilkan nilai sebesar 12,43 ton/ha/th dan prediksi dengan model USLE menghasilkan nilai sebesar 169,37 ton/ha/th. Hasil prediksi sedimentasi dengan model WEPP menghasilkan nilai sebesar 0,62 ton/ha/th dan prediksi dengan model USLE menghasilkan nilai sebesar 8,47 ton/ha/th. Hasil prediksi erosi dan sedimentasi dengan model WEPP dan USLE dibandingkan menggunakan uji t-Test pada taraf signifikan 5 % dengan hasil menunjukkan adanya perbedaan nyata antara kedua model prediksi erosi dan sedimentasi.

Kata kunci : erosi, sedimentasi, WEPP, USLE

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**PREDICTION EROSION AND SEDIMENTATION
WITH WEPP MODEL (*Water Erosion Prediction Project*) AND USLE
(*Universal Soil Loss Equation*)
(Case Study in Nagung Sub Watershed, Kulon Progo, Yogyakarta)**

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ABSTRACT

Nagung Sub Watershed is located in Serang Hulu Watershed, Kulon Progo Regency, has an area of 1447,13 ha which is part of upstream watershed ecosystem. The increasing of population growth will drive the needs for land. If the using of land is not implementing the conservation principles, it will lead to erosion. Soil loss due to erosion impacts largely, not only causes damage in upstream areas, but also areas that passed by sediment flow and the downstream areas. This research aims to predict erosion and sedimentation in Nagung Sub Watershed.

The WEPP and USLE models were applied, whereas the SDR (*Sediment Delivery Ratio*) formula was used for sedimentation calculation. The calculation of erosion prediction and sedimentation were based on land unit from maps overlay of landuse and slope maps.

Maps overlay of land use and slope maps yields about 34 land unit. The result of erosion prediction using WEPP model is 12,43 ton/ha/th while USLE model prediction result is 169,37 ton/ha/th. Sedimentation prediction with WEPP model yields about 0,62 ton/ha/th whereas USLE model results in 8,47 ton/ha/th. After that, the results with WEPP and USLE models are compared by t-Test on 5% significance level which shows that there is a significance difference between both models on erosion and sedimentation prediction.

Keywords : erosion, sedimentation, WEPP, USLE

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