

## **ABSTRACT**

*Changes in land use and processing practices watersheds (DAS) affects erosion and sedimentation of water quality. Water catchments (catchment area) is the upstream part of the watershed that serves to store water for the survival of living beings. The production value of the sediment at the Watershed is influenced by several factors such as peak flows and land use planning. ArcGIS 10.1 software application used to assist calculations sediment production. The purpose of this study is to calculate the value of sediment production using the model MUSLE (Modify Universal Soil Loss Equation) and the value of peak discharge that occurred and analyze the characteristics of sedimentation and influence land use planning.*

*Some of the data processing is done to obtain Watershed boundary, runoff factor (R), soil erodibility (K), the length of slope factor (LS), the factors of land use and tillage (CP), as well as the river length (L). The factors used to calculate the value of production of sedimentation. Data processing was performed using ArcGIS 10.1 software as well as Microsoft Excel.*

*Banjarnegara comprehensive DTA of  $\pm 68\ 858$  hectares with the main river length  $\pm 57.5$  km. Results of the analysis showed that the total peak discharge that occurs at  $292,105.73\ m^3 / s$ , the highest value of  $146,677.875$  runoff, soil type into the soil grade 2 that Latosol soil (rather sensitive) with a K value of 0.31, the mean kemirinan average slope obtained is 1064.535%, land use and cultivation of land dominated by rain gardens and fields are 41634.402 hectares or 60.46% of the total area. DTA sediment production in Banjarnegara of 8,034,369.383 tons / year with gardens and fields as the largest contributor of sediment that is 7,219,990.207 tons / year or 89.86% of the total sediment. From these results clearly visible effects of land use on sediment production.*

**Keywords:** *Watershed, Sedimentation, MUSLE, ArcGIS 10.1, Runoff, Erodibility Land, Long slope, Land Use and Soil Cultivation.*