

# **GEOLOGY AND SLOPE STABILITY ANALYSIS IN SALAMAN DISTRICT, MAGELANG DISTRICT, CENTRAL JAVA PROVINCE**

## **ABSTRACT**

*The research location is administratively located in three areas, namely Samigaluh District, Kulon Progo Regency, Salaman District, Magelang Regency, and Purworejo Regency. Geographically, the research location is at the coordinates of UTM 49S 401887 –406887 mE and 9152600 - 9157600 mN. In this area is an area that has a high level of disaster prone to mass movement or landslides, the disaster is also controlled by geological factors that influence it. The research method used is in the form of literature study, surface geological mapping, outcrop profiles, observation and measurement of geological structures, undisturbed soil sampling, rock sampling, petrographic analysis, stereographic analysis, mass movement zoning analysis, and slope stability analysis. Geological conditions include geomorphology, stratigraphy, geological structures. From the geomorphological aspect, the research area is divided into 3 original form units and 7 land form units, structural origin forms: structural hills (S1), structural slopes (S2), gawir (S3), structural valleys (S4). Form of fluvial origin: unit of river body shape (F1) and undulating plain (F2). The stratigraphy at the research location consists of 3 rock units, from old to young, namely the Kaligesing Andesite Breccia Unit and Dukuh (Middle Oligocene-Early Miocene), and Alluvial Deposits. Stumps were found at the research location with a sigma 1 orientation towards the Northwest - Southeast and North South. The following are details of each research location: There are two faults in the study area, namely Normal Left Slip Fault and Left Slip Fault. Based on the results of the analysis of soil slope safety factors with the Janbu Method, from 7 locations of slope observation in the study area, all slopes have the potential for landslides in each of them are in Keseneng Hamlet, Benowo Hamlet, Pundung Hamlet, Ngargosari Hamlet, Nglinggo Timur Hamlet, and Kalipuncung Wetan Hamlet. . Based on the results of kinematic analysis on rock slopes with the Markland Method, from 2 observation locations the slopes in the study area have the potential for slope failure. The two slopes are in Tegal Ombo and Sejati Hamlet. The potential types of slope failure in the study area are wedge sliding and toppling. From the zoning results of soil and rock mass movements in the study area, the results are deterministically, the research area is divided into three zones, namely low, medium and high. If based on Permen PU No.2 of 2007 the research area is included in the medium and high Type B Zones. Management efforts that can be carried out to improve slope stability can be carried out using 3 methods, namely by socializing landslide-prone areas, using vegetation and implementing reforestation, and using engineering efforts.*

**Keywords:** *disaster, geology, slope stability analysis, mass movement zoning, Management*