# ANALISIS DAN RENCANA PENGELOLAAN KESTABILAN LERENG DI DUSUN MOJO LEGI, KALURAHAN KARANGTENGAH, KAPANEWON IMOGIRI, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA

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## Abstrak

Kejadian tanah longsor di Indonesia cukup tinggi, terutama pada musim hujan dengan intensitas curah hujan yang besar. Penyebab longsor umumnya dipengaruhi oleh faktor pengontrol seperti kondisi morfologi, jenis batuan, struktur geologi, dan penggunaan lahan, serta faktor pemicu seperti curah hujan yang tinggi (Yassar, 2020). Salah satu kejadian tanah longsor terjadi di Dusun Mojo Legi, Kalurahan Karangtengah, Kecamatan Piyungan, Kabupaten Bantul, Daerah Istimewa Yogyakarta, yang menyebabkan beberapa rumah warga terdampak. Kondisi wilayah yang memiliki topografi beragam serta dipengaruhi struktur geologi dan curah hujan tinggi menunjukkan pentingnya kajian mengenai faktor penyebab serta tingkat kestabilan lereng untuk menentukan upaya pengelolaan dan mitigasi bencana yang tepat.

Metode penelitian yang digunakan adalah metode kuantitatif dan kualitatif. Metode kuantitatif digunakan untuk memperoleh data dari hasil pengukuran dan pengujian di lapangan maupun di laboratorium, sedangkan metode kualitatif dilakukan melalui survei, pengukuran lapangan, dan pemetaan yang kemudian dianalisis secara deskriptif sesuai kondisi lapangan. Data yang digunakan terdiri dari data primer yang diperoleh dari pengamatan langsung serta analisis laboratorium, dan data sekunder yang diperoleh dari instansi terkait.

Kondisi lereng di lokasi penelitian memiliki kemiringan 84° dan 85° dengan ketinggian 9,479 m dan 10,521 m serta karakteristik tanah dengan berat isi 13,55–13,77 kN/m³, kadar air sekitar 34%, dan kohesi 27,66 kN/m² serta 12,78 kN/m². Perhitungan faktor keamanan menggunakan metode Janbu Simplified Method menunjukkan lereng selatan stabil dengan FK 1,715, sedangkan lereng utara tidak stabil dengan FK 0,957 dan 0,958 menurut klasifikasi Joseph E. Bowles (1989). Upaya pengelolaan yang direkomendasikan berupa perubahan geometri lereng sehingga FK meningkat menjadi 2,372 dan 1,541 serta penanaman Vetiver grass untuk membantu meningkatkan kestabilan lereng.

Kata kunci: Faktor keamanan (FK), Karakteristik tanah, Kestabilan lereng, Metode Janbu, Tanah longsor

***SLOPE STABILITY ANALYSIS AND MANAGEMENT PLAN IN MOJO LEGI HAMLET, KARANGTENGAH VILLAGE, IMOGIRI SUBDISTRICT, BANTUL REGENCY, SPECIAL REGION OF YOGYAKARTA***

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## Abstract

*Landslide occurrences in Indonesia are relatively high, especially during the rainy season when rainfall intensity increases significantly. Landslides are generally influenced by controlling factors such as morphological conditions, rock types, geological structures, and land use, as well as triggering factors such as high rainfall intensity (Yassar, 2020). One of the landslide events occurred in Mojo Legi Hamlet, Karangtengah Village, Piyungan District, Bantul Regency, Special Region of Yogyakarta, which affected several houses belonging to local residents. The varied topography of the area, combined with geological structures and high rainfall, highlights the importance of studying the causal factors and slope stability conditions in order to determine appropriate management and disaster mitigation measures.*

*This research employed both quantitative and qualitative methods. The quantitative method was used to obtain data from field measurements and laboratory testing, while the qualitative method was conducted through field surveys, measurements, and mapping, which were then analyzed descriptively based on field conditions. The data used in this study consisted of primary and secondary data. Primary data were obtained through direct observations at the research site and laboratory analysis, while secondary data were collected from related institutions.*

*The slopes at the research site have inclinations of 84° and 85° with heights of 9.479 m and 10.521 m, respectively, and soil characteristics including unit weights of 13.55–13.77 kN/m³, water content of approximately 34%, and cohesion values of 27.66 kN/m² and 12.78 kN/m². The safety factor analysis using the Janbu Simplified Method indicates that the southern slope is stable with a safety factor (FS) of 1.715, while the northern slope is unstable with FS values of 0.957 and 0.958 according to the classification of Bowles (1989). The recommended management measures include modifying the slope geometry to increase the safety factor to 2.372 and 1.541, respectively, as well as planting vetiver grass to enhance slope stability.*

*Keywords: Factor of safety (FS), Soil characteristics, Slope stability, Janbu method, Landslide*