ABSTRAK

BACK ANALYSIS PARAMETER KUAT GESER TANAH PASCA LONGSOR DI DAERAH CIMENTENG, CURUGKEMBAR, KABUPATEN SUKABUMI, JAWA BARAT

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Desa Cimenteng, Kecamatan Curugkembar, Kabupaten Sukabumi merupakan kawasan dengan kerawanan longsor tinggi. Kejadian longsor tahun 2016 menyebabkan 429 bangunan terdampak dan berulang pada 2020 dan 2024. Kondisi geologi berupa batuan sedimen Formasi Bentang dengan pelapukan intensif, topografi curam, dan curah hujan tinggi menjadi faktor utama ketidakstabilan lereng. Penelitian ini bertujuan menganalisis kestabilan lereng kondisi saat ini, menentukan parameter kuat geser tanah kritis melalui *back analysis*, serta menginterpretasi kondisi lereng sebelum longsor. Analisis menggunakan data pemetaan geologi, DTM dari foto udara drone, dan data geolistrik. Kestabilan lereng dianalisis menggunakan *software* Slide2 dengan metode Morgenstern-Price pada pendekatan deterministik dan *Latin Hypercube Sampling* (LHS) pada pendekatan probabilistik. Hasil analisis lereng menunjukkan lereng stabil dengan faktor keamanan deterministik 1,472–1,665 dan probabilitas kelongsoran 1,500%–5,500%. Hasil *back analysis* menghasilkan faktor keamanan kurang dari satu pada ketiga sayatan yaitu 0,769, 0,824, dan 0,861, membuktikan parameter *back analysis* berhasil merepresentasikan kondisi kritis lereng saat longsoran terjadi.

Kata kunci: *Back Analysis*, Faktor Keamanan, Kestabilan Lereng, Metode Morgenstern-Price, Probabilitas Longsoran

ABSTRACT

BACK ANALYSIS OF POST-LANDSLIDE SOIL SHEAR STRENGTH PARAMETERS IN THE CIMENTENG, CURUGKEMBAR AREA, SUKABUMI REGENCY, WEST JAVA

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Cimenteng Village, Curugkembar District, Sukabumi Regency is an area with high landslide vulnerability. The 2016 landslide affected 429 buildings and was repeated in 2020 and 2024. Geological conditions in the form of Bentang Formation sedimentary rocks with intensive weathering, steep topography, and high rainfall are the main factors of slope instability. This study aims to analyze the current slope stability, determine critical soil shear strength parameters through back analysis, and interpret the slope conditions before the landslide. The analysis uses geological mapping data, DTM from drone aerial photos, and geoelectric data. Slope stability was analyzed using Slide2 software with the Morgenstern-Price method in the deterministic approach and Latin Hypercube Sampling (LHS) in the probabilistic approach. The results of the slope analysis indicate a stable slope with a deterministic safety factor of 1.472–1.665 and a landslide probability of 1.500%–5.500%. The backanalysis results yielded safety factors of less than one for all three sections, namely 0.769, 0.824, and 0.861, proving that the backanalysis parameters successfully represent the critical slope conditions during a landslide.

Keywords: Backanalysis, Safety Factor, Slope Stability, Morgenstern-Price Method, Landslide Probability