

RINGKASAN

Penelitian dilakukan di PT Ulma Nitra Tbk Site Kasih Karya Agung Kecamatan Merapi Barat Kabupaten Lahat Provinsi Sumatra Selatan yang berfokus kepada geologi teknik tambang batubara terbuka. Daerah penelitian berada di Cekungan Sumatra Selatan pada Sub-Cekungan Jambi Selatan dengan Formasi Muaraenim (Tm_{pm}) yang berumur Miosen Tengah-Pliosen. Tujuan dari penelitian ini yakni mengetahui kondisi geomorfologi, stratigrafi, struktur geologi dan sejarah geologi di daerah penelitian, mengetahui kondisi geometri lereng, sifat fisik dan mekanik tanah maupun batuan daerah penelitian. mengkaji nilai faktor keamanan lereng daerah penelitian, mengkaji rekomendasi geometri lereng desain akhir penambangan yang aman pada daerah penelitian. Metode penelitian dengan pengambilan data seperti pemetaan geologi permukaan, analisis laboratorium pengujian sifat fisik dan mekanik tanah dan analisis petrografi. Kondisi geologi pada daerah penelitian untuk pola pengaliran termasuk kedalam pola pengaliran Sub-dendritik. Secara stratigrafi, daerah penelitian termasuk kedalam Formasi Muaraenim dengan urutan litologi satuan batuan yang lebih tua ke muda yaitu Satuan Batulempung, Satuan Batulanau dan Satuan Batupasir. Struktur geologi yang dijumpai yakni struktur kekar dengan arah dominan Timur Laut-Barat Daya. Hasil analisis geometri lereng *low wall* dalam keadaan statis lereng aktual pada periode Juli 2023, penampang A-A' didapatkan nilai faktor keamanan 1.33. Penampang B-B' didapatkan faktor keamanan 0.98. pengaruh faktor keamanan terhadap geometri lereng yakni semakin besar geometri lereng (tinggi lereng dan sudut kemiringan lereng), maka nilai faktor keamanan semakin kecil. Nilai faktor keamanan dari hasil rekomendasi geometri lereng yang aman pada daerah penelitian yakni, penampang A-A' didapatkan 1.49, penampang B-B' didapatkan 1,32. Oleh karena itu peneliti merekomendasikan lebar jenjang dan sudut jenjang, dengan angka yang lebih rendah dari sebelumnya, dengan demikian lereng dalam keadaan stabil.

Kata kunci : Geologi Teknik, Analisis Kestabilan Lereng, Batubara Tambang Terbuka

SUMMARY

The research was conducted at PT Ulima Nitra Tbk Site Kasih Karya Agung, West Merapi District, Lahat Regency, South Sumatra Province, focusing on the technical geology of open-pit coal mining. The research area is in the South Sumatra Basin in the South Jambi Sub-Basin with the Muaraenim Formation (Tm_{pm}) which is Middle Miocene-Pliocene in age. The aim of this research is to determine the geomorphological, stratigraphic, geological structure and geological history conditions in the research area, to determine the geometric conditions of the slopes, physical and mechanical properties of soil and rocks in the research area, assess the value of the slope safety factor in the research area, review recommendations for safe final mining design slope geometry in the research area. Research methods using data collection such as surface geological mapping, laboratory analysis testing soil physical and mechanical properties and petrographic analysis. The geological conditions in the research area for the drainage pattern include sub-dendritic drainage patterns. Stratigraphically, the research area is included in the Muaraenim Formation with a lithological sequence of rock units from older to younger, namely the Claystone Unit, Siltstone Unit and Sandstone Unit. The geological structure found is a solid structure with a dominant direction of North East-South West. The results of the low wall slope geometry analysis in the static condition of the actual slope in the July 2023 period, the A-A' cross section obtained a safety factor value of 1.33. Cross section B-B' obtained a safety factor of 0.98. The effect of the safety factor on slope geometry is that the greater the slope geometry (slope height and slope angle), the smaller the value of the safety factor. Of course, it is not only based on geometry, there are several other influences that make the value of the safety factor smaller, the value of the safety factor from the recommendations for safe slope geometry in the research area, namely, cross section A-A' was found to be 1.49, cross section B-B' was obtained as 1.32. Therefore, researchers recommend the width of the bench and single slope, with a lower number than before, so that the slope is in a stable condition.

Keywords: Engineering Geology, Slope Stability Analysis, Open Mine Coal