

## SARI

Desa Kasihan, Kecamatan Tegalombo, Kabupaten Pacitan, Provinsi Jawa Timur memiliki daerah yang merupakan bekas tambang tembaga. Pada saat ini, Desa Kasihan memiliki tata guna lahan yang sebagian besar digunakan sebagai sawah. Berdasarkan hasil studi pustaka dari peneliti terdahulu, lokasi penelitian telah mengalami proses alterasi hidrothermal yang cukup intensif, sehingga memicu terbentuknya batuan lapuk dan juga tanah yang cukup tebal di lokasi ini. Adanya lapisan tanah yang tebal di lokasi penelitian mengakibatkan terjadinya longsor di beberapa titik, terutama di lokasi yang memiliki nilai kemiringan lereng yang curam. Penelitian ini bertujuan untuk mengetahui karakteristik geologi teknik lokasi penelitian, melalui pemetaan geologi teknik dan analisis sifat keteknikan batuan dan tanah di laboratorium. Setelah dilakukan analisis sifat keteknikan batuan, hasil data tersebut akan dibandingkan dengan hasil perhitungan intensitas alterasi melalui metode *point counting*.

Dalam penelitian ini, pemetaan geologi teknik dilakukan dengan memperhatikan 5 parameter, yaitu batuan dan tanah, morfologi, struktur geologi, hidrogeologi, dan kebencanaan. Dalam pengamatan kondisi lapangan, pengambilan sampel juga dilakukan. Terdapat 2 jenis sampel yang diambil yaitu *disturbed* dan *undisturbed*. Kedua jenis sampel tersebut kemudian dibawa ke laboratorium untuk diuji sifat keteknikannya dan juga untuk mengetahui tingkat intensitas alterasinya. Sifat keteknikan yang diuji meliputi sifat indeks, sifat hidrolika, dan sifat mekanika. Sifat indeks meliputi *grain size*, *atterberg limit*, *specific gravity*, *water content*, dan densitas. Sifat hidrolika meliputi porositas dan permeabilitas. Sifat mekanika meliputi kekuatan batuan yang dilakukan dengan metode *direct shear*. Intensitas alterasi diketahui melalui pengamatan petrografi pada sayatan tipis, dengan menggunakan metode *point counting*.

Berdasarkan hasil pemetaan dan analisis, daerah penelitian memiliki 3 jenis morfologi, yaitu perbukitan berlereng landai, perbukitan berlereng sedang, dan perbukitan berlereng terjal. Satuan geologi teknik di lokasi penelitian dapat dibagi menjadi lima satuan, yaitu satuan breksi andesit, batugamping, lava dasit, intrusi andesit, dan intrusi dasit. Daerah penelitian memiliki struktur geologi berupa kekar. Kedalaman muka air tanah di lokasi penelitian bervariasi dengan kedalaman 2 hingga 15 meter dari permukaan tanah. Secara umum, lokasi penelitian memiliki potensi kebencanaan berupa longsor. Lokasi penelitian termasuk ke dalam kelas intensitas alterasi tinggi hingga intensif, dan mempengaruhi sifat keteknikan batuan.

**Kata kunci:** Geologi teknik, alterasi hidrothermal, sifat keteknikan batuan.

### *Abstract*

*Kasihan village, Tegalombo District, Pacitan Regency, East Java has an area that was used as a copper mine. Today, Currently Kasihan Village has almost of its area used for agriculture. Based on literature studies on earlier researches, this study area has experienced intense hydrothermal alteration process, triggering the formation of weathered rocks and also thick horizonz of soil. With the presence of thick soils in this research area, numerous landslides has occured in several spots, mostly in the areas that has steep slopes. This research is conducted to determine the engineering geology characteristics, by conducting engineering geology mapping and also analyzing the properties of rock and soil in the laboratorium. After knowing the results of rock and soil properties analysis, the data is compared with the final calculations of alteration intensity through point counting method.*

*In this research, engineering geology mapping is conducted by referring to 5 parameters, which are rocks and soil, morfology, geological structures, hydrogeology, and potential hazard. In field observation, sampling was also conducted. There are 2 types of samples which are disturbed samples and undisturbed samples. Both of these samples were brought into the laboratorium to determine the engineering properties and also to determine the level of alteration intensity. Engineering properties that were tested are index properties, hydrolics properties, and mechanical properties. Index properties consist of grain size, atterberg limit, specific gravity, water content, and density. Hydrolics properties consist of porosity and permeability. Mechanical properties consist of rock strength that is determine by conducting direct shear test. Alteration instensity was determined by petrography analysis on thin sections, using point counting method.*

*Based on mapping and analysis data, the research area has 3 types of morfology, which is gently sloped hills, moderately sloped hills, and steep hills. There are 5 engineering geology units, which are volcanic breccia, limestone, dacitic lava, andesite intrusion, and dasit intrusion. Numerous joints has been found in this research area. The groundwater elevation in this area varies from 2 to 15 metres under the surface. The most potential disaster in this area is landslide. This area has a high to intense class of hydrothermal alteration instensity and it is proven to affect the rocks and soil engineering properties.*

**Keywords:** *Engineering geology, hydrothermal alteration, rock engineering properties.*