# RINGKASAN

Penelitian dilakukan di *Pit* Mainridge dan CP-01 PT Samudera Mulia Abadi. Sistem penambangan yang digunakan adalah sistem tambang terbuka menggunakan metode *open pit*. Permasalahan di lokasi penelitian yaitu terdapatnya genangan air di *pit* mainridge akibat curah hujan yang tinggi. Selain itu, terjadi pendangkalan kolam pengendapan akibat penumpukan endapan. Kegiatan penambangan merupakan kegiatan yang berhubungan dengan alam, salah satu yang berpotensi mengganggu kegiatan ini yaitu air tambang. Oleh karena itu, untuk mengantisipasi kemajuan tambang ke arah yang lebih luas dan dalam, masalah sistem penyaliran tambang ini harus diperhatikan dengan baik sehingga perlu dilakukan evaluasi sistem penyaliran tambang. Penelitian ini menggunakan data curah hujan dari tahun 2014-2023. Rata-rata curah hujan harian maksimum sebesar 99 mm. Hasil uji metode distribusi curah hujan dengan uji chi-kuadrat, uji smirnov-kolmogorov, serta koefisien skewness dan kurtosis didapatkan metode gumbel sebagai data perhitungan curah hujan rencana yang paling sesuai. Didapatkan nilai curah hujan harian rencana sebesar 116 mm. Intensitas curah hujan sebesar 19 mm/jam dengan periode ulang hujan 3 tahun, serta resiko hidrologi 80%, dan rata-rata durasi hujan 3,12 jam/hari. Pada area penelitian didapatkan tujuh Daerah Tangkapan Hujan (DTH).

Pada lokasi penelitian terdapat 11 saluran terbuka dan 6 gorong-gorong dimana berdasarkan perhitungan diperlukan perluasan dimensi di saluran terbuka 1, saluran terbuka 2, dan saluran terbuka 3, serta penambahan jumlah *line* di gorong-gorong 4 agar mampu menampung debit air limpasan yang melaluinya. Selain itu, diperoleh hasil rekomendasi dimensi rancangan saluran terbuka dan gorong-gorong pada DTH I dan DTH II. Pompa yang dibutuhkan yaitu 2 buah Multiflo MF-420EXHV dengan total debit pemompaan 2376 $m^3$/jam dan waktu pemompaan 18 jam/hari dengan pipa yang digunakan yaitu pipa HDPE (*High Density Polyetyline)* berdiameter 12 inch dan panjang pipa 325 m. Sementara itu, didapatkan rekomendasi volume ceruk (*sump*) sebesar 55.153 $m^3$. Kolam pengendapan berjumlah 4 kolam dengan kolam 1 berjumlah 5 kompartemen, kolam 2 berjumlah 6 kompartemen, kolam 3 berjumlah 1 kompartemen, dan kolam 4 berjumlah 1 kompartemen dengan total luas 40.682 $m^2$. Sedangkan berdasarkan perhitungan didapatkan kebutuhan luas kolam pengendapan 29.931 $m^2$ maka sudah terpenuhi. Waktu pemeliharaan pada kolam 1 setiap 28 hari, kolam 2 setiap 305 hari, kolam 3 setiap 413 hari, dan kolam 4 setiap 1557 hari.

# *SUMMARY*

*The research was conducted at Pit Mainridge and CP-01 of PT Samudera Mulia Abadi. The mining system used is an open mining system using the open pit method. The problem at the research location is the presence of standing water in the mainridge pit due to high rainfall. In addition, there is siltation of the settling pond due to sediment accumulation. Mining activities are activities related to nature, one of which has the potential to disrupt this activity is mine water. Therefore, to anticipate the progress of the mine to a wider and deeper direction, the problem of the mine drainage system must be considered properly, so it is necessary to evaluate the mine drainage system. This study uses rainfall data from 2014-2023. The average maximum daily rainfall is 99 mm. The results of the rainfall distribution method test with the chi-squared test, smirnov-kolmogorov test, and the skewness and kurtosis coefficients obtained the Gumbel method as the most suitable rainfall calculation data. A daily rainfall value of 116 mm was obtained. The rainfall intensity is 19 mm/hour with a rainfall return period of 3 years, as well as a hydrological risk of 80%, and an average rainfall duration of 3.12 hours/day. In the research area, seven catchments were found.*

*At the research location there are 11 open channels and 6 culverts where based on calculations it is necessary to expand the dimensions in open channel 1, open channel 2, and open channel 3, as well as increase the number of lines in culvert 4 to be able to accommodate the runoff water discharge through it. In addition, the results of recommendations for the design dimensions of open channels and culverts at DTH I and DTH II were obtained. The pumps needed are 2 Multiflo MF-420EXHV with a total pumping discharge of 2376 $m^3$ / hour and a pumping time of 18 hours / day with the pipes used, namely HDPE (High Density Polyetyline) pipes with a diameter of 12 inches and a pipe length of 325m. Meanwhile, the recommended volume of the sump are 55.153 $m^3$. There are 4 settling ponds with pond 1 totaling 5 compartments, pond 2 totaling 6 compartments, pond 3 totaling 1 compartment, and pond 4 totaling 1 compartment with a total area of 40,682 $m^2$. Meanwhile, based on the calculation, the settling pond area requirement is 29,931 $m^2$, so it has been fulfilled. Maintenance time in pond 1 is every 28 days, pond 2 every 305 days, pond 3 every 413 days, and pond 4 every 1557 days.*