

ABSTRACT

PT. Bukit Asam (Persero), Tbk is a company that focus on coal mining, located at Tanjung Enim, Lawang Kidul district, Muata Enim, the Province of South Sumatera. The mining operation in the northern Pit 1 is done by surface mining system with strip mine method. One of the supporting operations in mining is water drainage to prevent water inflow (mine drainage) or to expell water that has succeeded in infiltrated the pit (mine dewatering).

Water that is not dealt with properly, can interfere in the mining operation itself. The Mining pushback also causes the dimension of the water drainage to change, therefore an analysis of the mine drainage system is needed.

Based on the analysis of rainfall in the region during the years of 2007 – 2016 using Gumbell's distribution, the calculated planned rainfall is 158,552 mm/day, with a rainfall intensity of 22,22 mm/hour and rainfall return period of 5 years and a hydrological risk of 89,26%. The rainfall catchment area (RCA) in the region can be divided into 3 catchment areas which are, RCA I = 1,69 km², RCA II = 0,23 km², and RCA III = 0,14 km². The debit of water flowing into the open mine is 9,98 m³/second.

There are a total of 2 trapezium shaped open drainage within the region. The dimension of the first open drain (OD 1) has a surface width of 4,5 m, a base width of 2,75 m, a depth of 1,2 m, and a drainage wall length of 1,5 m. The dimension of the second open drain (OD 2) has a surface width of 5 m, base width of 3,7 m, a depth of 1,2 m, and a drainage wall length of 1,5 m. The water accumulated within the overdraft is pumped out towards OD 1 using a single DND-200 pumping unit with a total debit of 301,8 m³/hour. The pipes used are HDPE (High Density Polyethylene) pipes with a diameter of 250 mm and 200 mm. The settling pond which is rectangular shapes, has the diameters 117 m in length, 27 m wide, and 4 m deep. Settling pond dredging is done every 817 days for each compartments.