

ABSTRACT

PT. Bukit Asam (persero) is located in Tanjung Enim, District of Lawang Kidul, South Sumatera Province. Mining Operations on Pit 3 East PT. Bukit Asam (Persero), Tbk is conducted using surface mining system with strip mine method. One of the supporting activity in mining is mine drainage to prevent water from entering the Pit or mine dewatering to remove water that has inside in mining area.

Water that is not well managed can negative affect the mining operations. Mining progress cause changes in the dewatering system, so it is necessary to study the mine drainage system.

Based on the analysis of rainfall data from 2007 – 2016 using Gumbell distribution, the rainfall plan 177.03 mm/day, rainfall intensity 30.14 mm/hour with 8-years rainfall return period, and hydrological risks 86.5%. There are two catchment areas: Catchment Area I = 88 Ha and Catchment Area II = 47 Ha. The discharge of runoff water which is entering the mine area is 6.64 m³/sec.

Water that accumulates in the sump is pumped out into the open channel using three units of Sulzer Pumps WPP53-200 with a total discharge of 1,242.16 m³/hour. Using Manning formula, open channel dimension is as follow:

1. Width of the top (b) : 2.55 m
2. Bottom width (B) : 1.27 m
3. Water depth (d) : 1.1 m
4. Channel depth (h) : 1.27 m
5. Length of channel wall (a) : 1.27 m

There are two settling pond area: settling pond 1 = 3 (35 x 20 x 4) m and settling pond II = 5 (45 x 20 x 4) m. Settling ponds maintenance every 30 days in settling pond I and 53 days in settling pond II.

Key words : rainfall intensity, sump, pump, open channel, settling pond.