ABSTRACT

CV. Gunung Mulia is one of the Andesite mining company in Purworejo Regency, operating in Somorejo Village, Bagelen District. Mining system implemented by CV. Gunung Mulia is surface mining called Quarry.

Quarry is likely affected by weather condition, especially during raining condition. During heavy rainfall, the run off can potentially enter to the mine working area. It may cause several harm like damaged on mine road and stagnant water on the mine working area if not properly handled.

Based on the analysis of rainfall data from 2008 – 2017, the scheduled precipitation value is 194,92 mm/day, with rainfall intensity 67,57 mm/hour during 5 year rainfall period and hidrology risk 96,48%. Rain in the catchment area is divided into four (4) catchment areas, as follows: Catchment Area 1 = 0,01 km^2, Catchment Area 2 = 0,02 km^2, Catchment Area 3 = 0,03 km^2, and Catchment Area 4 = 0,001 km^2. Discharge of rain = 0,73 m^3/sec. Discharge of the run off in each catchment as follows: QCatchment Area 1 = 0,04 m^3/sec, QCatchment Area 2 = 0,28 m^3/sec, QCatchment Area 3 = 0,30 m^3/sec, and QCatchment Area 4 = 0,01 m^3/sec.

It is necessary to develop open channel around the perimeter mine site to restrain rainwater from entering the mining area and canalize the run off from disturbing the mine roads. There are three (3) open channels with each dimension:

1. *Open Channel I : B = 1,30m; b = 2,00m; h = 0,70m; a = 0,80m; d = 0,90m; L = 215,80m; a = 60°.*
2. *Open Channel II : B = 1,20m; b = 2,00m; h = 0,70m; a = 0,80m; d = 0,90m; L = 192,60m; a = 60°.*
3. *Open Channel III : B = 1,60m; b = 2,60m; h = 0,90m; a = 1,10m; d = 1,00m; L = 73,50m; a = 60°.*

Culverts are made to drain water from the mine which cut the haul roads. Vertical section of the culvert made from concrete with diameter, G1 = 0,70 m, G2 = 0,70 m, and G3 = 0,90 m.

Before the run off water from the open channels streamed into the river, it has to be cleared in the settling pond. Settling pond designs consist of three (3) compartments with each area of 511 m^2 and 8.664 m^3 of volume. The maintenance the sediment from settling pond is required every 10 months.