

ABSTRAK

Penambangan dengan sistem terbuka dapat menyebabkan terjadinya banjir pada lokasi penambangan, sehingga mengganggu kegiatan penambangan terutama pada musim penghujan. Aktivitas penambangan memerlukan sistem penyaliran agar tidak mengganggu aktivitas produksi maupun tercemarnya air limbah ke lokasi lain. Tujuan dilakukan penelitian ini adalah untuk menanggulangi potensi air yang masuk ke dalam pit dan membuat rancangan dimensi saluran drainase dan kolam pengendapan. Kolam pengendapan yang berada di lokasi penelitian belum memenuhi KEPMEN 1827/K/MEM/2018 sehingga menyebabkan air merembes dari tanggul kolam ke badan jalan tambang. Lokasi penelitian memiliki 6 pit dengan masing-masing dimensi saluran drainase berdasarkan hasil perhitungan *Manning* yaitu Pit Bunaken Atas dengan didapat tinggi saluran basah (h) 0.4232m, tinggi saluran jagaan (w) 1.38m, tinggi saluran (H) 1.84m, lebar dasar saluran (b) 0.46m dan lebar saluran atas (B) 1,38m dengan volume 425.449 m³. Pit F6 $h=0.49m$, $w=23m$, $H=1.72m$, $b=0.49m$ dan $B=1,23m$. dengan volume 1440,848 m³. Pit bunaken bawah $h=0.46$, $w=1,38m$, $H= 1.84m$, $b=0.46m$ dan $B=1,38$ m dengan volume 1809,535 m³. Pit morotai $h=0.45m$, $w=1,35m$, $H=1.80m$, $b=0.45m$ dan $B=1,35$ m dengan volume 1577,998 m³. Pit F5C $h=0.46m$, $w=1,38m$, $H=1.84m$, $b=0.46m$ dan $B=1,38$ m. dengan volume 2696,867 m³. Pit raja ampat $h=0.50m$, $w=1,50m$, $H=2m$, $b=0.50m$ dan $B=1,50$ m dengan volume 982,272 m³. Sedangkan Dimensi kolam pengendapan yang ada saat ini yaitu berbentuk segi empat dengan dimenasi panjang 175,060m, lebar 137,105m dan tinggi 2m. Kolam pengendapan dibuat sesuai dengan Keputusan Menteri No.1827/K/MEM/30/2018 pada Lampiran II No. 7 Tentang Perencanaan Pengolahan dan atau Pemurnian, memiliki dimensi panjang 516,297m, lebar 319.081m, tinggi 10m. Volume kolam yang ada saat ini yaitu 48003,202 m³ hanya mampu menampung volume air limpasan yang masuk 16515.36 m³ berdasarkan curah hujan terendah dan belum mampu menampung volume air limpasan 71331,84 m³ berdasarkan perhitungan curah hujan tertinggi. Sehingga dibuat kolam pengendapan 549805,28m³ yang mampu menampung debit air limpasan selama periode 5 tahun.

Kata Kunci : Saluran Drainase, Kolam Pengendapan, Dimensi, Debit, Volume.

ABSTRACT

Mining with an open system can cause flooding at the mining site, thus disrupting mining activities, especially during the rainy season. Mining activities require a drainage system so as not to interfere with production activities or pollute wastewater to other locations. The purpose of this research is to overcome the potential of water entering the pit and to design the dimensions of the drainage channel and settling pond. The settling pond at the research location has not complied with KEPMEN 1827/K/MEM/2018, causing water to seep from the pond embankment into the mine road body. The research location has 6 pits with each drainage channel dimension based on the results of Manning's calculations, namely the Upper Bunaken Pit with wet channel height (h) 0.4232m, guard channel height (w) 1.38m, channel height (H) 1.84m, bottom width channel (b) 0.46m and the top channel width (B) 1.38m with a volume of 425,449 m³. Pit F6 $h=0.49m$, $w=23m$, $H=1.72m$, $b=0.49m$ and $B=1.23m$. with a volume of 1440,848 m³. The bottom bunaken pit is $h=0.46$, $w=1.38m$, $H=1.84m$, $b=0.46m$ and $B=1.38$ m with a volume of 1809.535 m³. Morotai pit $h=0.45m$, $w=1.35m$, $H=1.80m$, $b=0.45m$ and $B=1.35m$ with a volume of 1577,998 m³. Pit F5C $h=0.46m$, $w=1.38m$, $H=1.84m$, $b=0.46m$ and $B=1.38m$. with a volume of 2696,867 m³. The Raja Ampat pit $h=0.50m$, $w=1,50m$, $H=2m$, $b=0.50m$ and $B=1,50$ m with a volume of 982,272 m³. Meanwhile, the dimensions of the existing settling pond are rectangular in shape with dimensions of 175.060m long, 137.105m wide and 2m high. The settling pond is made in accordance with the Ministerial Decree No. 1827/K/MEM/30/2018 in Appendix II No. 7 Regarding Processing and/or Purification Planning, has dimensions of length 516,297m, width 319,081m, height 10m. The current volume of the pond, which is 4,8003,202 m³ is only able to accommodate the volume of runoff water that enters 16515.36 m³ based on the lowest rainfall and has not been able to accommodate the volume of runoff water 71331.84 m³ based on the calculation of the highest rainfall. So that a 549805.28m³ sedimentation pond was made which can accommodate runoff water discharge for a period of 5 years.

Keywords: Drainage Channels, Sedimentation Ponds, Dimensions, Discharge, Volume.