UPAYA STABILISASI KADAR pH DAN *TOTAL SUSPENDED SOLID* (TSS) AIR LIMBAH TAMBANG BATUBARA DI AREA *SETTLING POND* 8 PT MADHANI TALATAH NUSANTARA WEST PIT PROJECT

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INTISARI

Permasalahan yang masih terjadi di area *settling pond* 8 PT Madhani Talatah Nusantara West Pit Project yaitu belum stabilnya parameter *Total Suspended Solid* (TSS) yang akan berdampak pada penurunan kadar oksigen terlarut dan indeks keanekaragaman hayati. Hal tersebut diindikasikan dengan keruhnya air pada *settling pond* 8 saat dilakukan pengamatan dan pengecekan langsung di lapangan. Pada pengelolaan kadar TSS menggunakan tawas juga perlu memperhatikan kadar pH pada kolam pengendapan. Oleh karena itu, tujuan dari penelitian ini untuk mengetahui karakteristik air limbah tambang batubara, menganalisis efektivitas pengelolaan kadar pH dan TSS, mengetahui dosis optimum penggunaan tawas dan kapur, serta memberikan rekomendasi arahan pengelolaan untuk mengoptimalisasi pengelolaan air limbah tambang batubara terhadap parameter pH dan TSS.

Metode pengumpulan data dilakukan dengan survei dan pemetaan terhadap rona lingkungan, pengambilan sampel dengan teknik *purposive sampling*. Uji laboratorium dilakukan pengujian kadar pH dengan pH meter sesuai dengan SNI 06-6989 11-2004 serta pengujian TSS menggunakan metode gravimetri sesuai SNI 06-69893-2004. Penelitian ini juga menggunakan metode *jar test* untuk mengetahui dosis optimum yang mengacu pada SNI 19 6449 2000. Metode analisis deskriptif digunakan untuk mengetahui kualitas air limbah tambang batubara sesuai Pergub Kalimantan Selatan Nomor 36 Tahun 2008. Analisis kuantitatif dan korelasi pearson dilakukan untuk mengetahui kuantitas serta hubungan antara debit aliran dengan kadar pH dan TSS.

Hasil penelitian menunjukkan kadar TSS area *inlet*, segmen 1, dan segmen 2 belum memenuhi baku mutu, sedangkan kadar TSS area segmen 3, 4 dan *outlet* sudah memenuhi baku mutu. Kadar pH yang telah diukur pada keseluruhan titik sampling diketahui sudah memenuhi baku mutu. Efektivitas kenaikan kadar pH dan penurunan kadar TSS masing – masing sebesar 4,83% dan 69,91%. Dosis optimum tawas dan kapur masing – masing didapatkan 250 mg/l serta waktu pengendapan optimal selama 180 menit. Arahan pengelolaan yang direncakan berupa perhitungan kebutuhan tawas dan kapur, penambahan perencanaan bangunan injeksi bahan kimia, penambahan tanggul di antara kolam pengendapan dan lereng untuk mengantisipasi peningkatan kadar TSS akibat debit limpasan akibat peristiwa erosi.

Kata Kunci: *pH*, TSS, Dosis Optimum

EFFORTS TO STABILIZE PH LEVELS AND TOTAL SUSPENDED SOLID (TSS) COAL MINING WASTEWATER IN THE SETTLING POND 8 AREA OF PT MADHANI TALATAH NUSANTARA WEST PIT PROJECT

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ABSTRACT

Problem that still occurs in the settling pond 8 area of PT Madhani Talatah Nusantara West Pit Project is the unstable Total Suspended Solid (TSS) parameter which will have an impact on reducing dissolved oxygen levels and biodiversity indices. This is indicated by the murky water in settling pond 8 during direct observation and checking in the field. In managing TSS levels using alum, it is also necessary to pay attention to the pH level in the settling pond. Therefore, the purpose of this study is to determine the characteristics of coal mine wastewater, analyze the effectiveness of managing pH and TSS levels, determine the optimum dose of alum and lime use, and provide recommendations for management directions to optimize coal mine wastewater management of pH and TSS parameters.

Method of data collection was carried out by surveying and mapping the environmental baseline, and taking samples using technique purposive *sampling*. Laboratory tests were carried out by testing the pH level with a pH meter according to SNI 06-6989 11-2004 and TSS testing using the gravimetric method according to SNI 06-69893-2004. This study also used the *jar test* method to find out the optimum dose referring to SNI 19 6449 2000. The descriptive analysis method was used to determine the quality of coal mine wastewater according to South Kalimantan Governor Regulation No. 36 of 2008. Quantitative analysis and pearson correlation were carried out to determine quantity and relationship between flow rate and pH and TSS levels.

The results of the study showed the level of area TSS *inlet*, segment 1, and segment 2 have not met the quality standards, while the TSS content of segments 3, 4, and outlet already met the quality standard. The pH levels that have been measured at all sampling points are known to have met the quality standards. The effectiveness of increasing pH levels and decreasing TSS levels was 4.83% and 69.91%, respectively. The optimum dose of alum and lime each obtained was 250 mg/l and the optimal settling time was 180 minutes. The planned management directives are in the form of calculating the need for alum and lime, adding chemical injection building plans, adding embankments between settling ponds and slopes to anticipate increasing TSS levels due to runoff discharge due to erosion events.

Keywords: *pH*, TSS, Optimum Dose