

**EVALUASI KAPASITAS *SEDIMENT POND*
DI PIT X PT X, KABUPATEN KUTAI KARTANEGARA,
PROVINSI KALIMANTAN TIMUR**

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INTISARI

Salah satu dampak utama dari kegiatan pertambangan ini adalah tingginya volume air limbah yang mengandung padatan tersuspensi, sehingga diperlukan pengelolaan untuk menjaga keluaran air agar memenuhi standar yang ditetapkan. Penelitian ini bertujuan menganalisis sumber dan karakteristik air limbah, mengetahui volume sedimen yang terendapkan, dan menganalisis kinerja pengendapan sedimen di *sediment pond* dan kapasitas sistem pengelolaan limbah menampung volume air limbah maksimum, serta memberikan arahan rekomendasi pada sistem pengelolaan air limbah.

Penelitian ini merupakan penelitian kuantitatif deskriptif dengan analisis komparatif terhadap standar desain. Pengumpulan data berupa survei, perhitungan, dan uji laboratorium. Pengambilan sampel dilakukan secara *purposive sampling* yaitu saat curah hujan tinggi. Dari data yang telah didapatkan kemudian dianalisis berdasarkan kinerja pengendapan sedimen SNI 6774:2008 dan kapasitas sistem pengelolaan air limbah Keputusan Menteri ESDM Nomor 1827 K/30MEM/2018.

Air limbah yang diteliti pada penelitian ini memiliki karakteristik rata-rata kadar TSS 2.680 mg/L yang belum memenuhi baku mutu, dengan debit air limbah yang masuk ke *sediment pond* sebesar 1,45 m³/detik. Air limbah tersebut berasal dari air hujan yang melimpas di permukaan. Berdasarkan hasil evaluasi kinerja *sediment pond* terhadap SNI 6774:2008 beberapa parameter belum memenuhi kriteria, yaitu kedalaman, waktu detensi, dan bilangan reynold. Kapasitas sistem pengelolaan air limbah belum memenuhi 1,25 kali volume air tambang yang dapat ditampung 51.970 m³, yang seharusnya adalah 150.858 m³. Rekomendasi arahan pengelolaan dilakukan dengan pendekatan teknis, yaitu perancangan desain *sump*, *sediment pond*, dan, *settling pond*, waktu perawatan *sediment pond*, dan penanaman *covercrop* untuk mengurangi kadar TSS.

Kata Kunci: Pertambangan Batubara, Air Limbah Tambang, *Sediment Pond*, Air Limpasan, Sedimentasi

**EVALUATION OF SEDIMENT POND CAPACITY
AT PIT X PT X, KUTAI KARTANEGARA REGENCY,
EAST KALIMANTAN REGION**

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ABSTRACT

One of the main impacts of this mining activity is the high volume of wastewater containing suspended solids, necessitating effective management to ensure that the effluent meets established standards. This study aims to analyze the characteristics of wastewater sources and the wastewater itself, determine the volume of sediment deposited, and evaluate the sedimentation performance of the sediment pond as well as the capacity of the wastewater management system to accommodate the maximum wastewater volume. Furthermore, recommendations for improving the wastewater management system are provided.

This research employs a descriptive quantitative approach with comparative analysis against design standards. Data collection involved surveys, calculations, and laboratory testing. Sampling was conducted purposively during periods of high rainfall intensity. The obtained data were analyzed based on sedimentation performance criteria outlined in SNI 6774:2008 and the wastewater management system capacity standards specified in the Regulation of the Minister of Energy and Mineral Resources No. 1827 K/30/MEM/2018.

The wastewater studied exhibited an average total suspended solids (TSS) concentration of 2680 mg/L, which does not comply with the quality standards, with a wastewater inflow rate to the sediment pond of 1.45 m³/s. This wastewater originates from surface runoff caused by rainfall. Based on the analysis according to SNI 6774:2008, the sediment pond performance has not met several parameters, including pond depth, detention time, and Reynolds number. The capacity of the wastewater management system is currently insufficient to accommodate 1.25 times the mine water volume; it can hold 51.970 m³, whereas the required capacity should be 150.858 m³. Therefore, technical management recommendations include redesigning the sump, sediment pond, and settling pond, scheduling sediment pond maintenance, and planting cover crops to reduce TSS levels.

Keywords: Coal Mining, Mining Waste Water, Sediment Pond, Runoff Water, Sedimentation