

**EVALUATION OF SETTLING POND SYSTEM APPLICATION IN ACID
MINE DRAINAGE MANAGEMENT AT PT INTERNASIONAL PRIMA
COAL, SAMARINDA, EAST KALIMANTAN**

*By: Muhammad Rafif Riefanto Subagja
Supervised by: Mohammad Nurcholis*

ABSTRACT

PT Internasional Prima Coal is a coal mining company utilizing open-pit mining methods, which has the potential to generate acid mine water that can be environmentally damaging if discharged directly into rivers. Hence, the necessity for management, one of which includes the use of settling ponds. The research aims to understand the application of the settling pond system in acid water management and determine the quality of acid mine water and sediment from the inlet to the outlet zones of settling ponds 01 and 08. The research employed survey and laboratory analysis methods. Sampling of acid mine water utilizes grab sampling techniques, while sediment sampling utilizes a core sampler. Parameters used for acid mine water and sediment samples included pH of water, sediment pH (H₂O, KCl), Eh, TSS, Fe, Mn, Pb, and Cd levels. Determination of acid mine water quality referred to the East Kalimantan Regional Regulation No. 2 of 2011 concerning the Quality Standards of Coal Industry Wastewater, specifically for pH, TSS, Fe, and Mn, and Minister of State for the Environment Decision No. KEP-51/MENLH/10/1995 for Pb and Cd. Sediment quality referenced the Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario.

The research results indicate that acid mine water and sediment generated by mining activities exhibit characteristics of Fe, Mn, Pb, Cd, and TSS meeting the quality standards but possess low pH values (acidic), especially in Settling Pond 01. Acid mine water that underwent treatment experienced an increase in quality, making it safe for discharge into water bodies. The water flow rate requiring treatment in Settling Pond 01 is 1.110 m³/s sourced from rainwater, runoff, while Settling Pond 08 is 0.704 m³/s from rainwater, runoff, and pumping from the mine's sump pit.

Keywords: *Acid Mine Water, Sediment, Heavy Metals, Settling Pond*