

Preliminary Assessment of Groundwater Contamination Hazard in Open Pit Coal Mine, Barito Timur, Central Kalimantan, Indonesia

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ABSTRACT

Coal mining industry is an important sector in the regional economic of Indonesia. Many mining companies are widespread in Indonesia, especially in Kalimantan Island. It is recognized that environmental impacts of open pit mines are not only natural landscape changing, but also human health hazards. The most significant of them is the probability of groundwater contamination. According to environmental regulations in Indonesia, each mining company is obliged to have Environmental Impact Assessment (EIA) document, before starting production. The purpose of this study is to assess groundwater contamination hazard caused by mining activities, as a part of EIA. Groundwater contamination hazard is evaluated by combining the intrinsic groundwater vulnerability and the contaminants loading in the mine area. DRASTIC method is applied to obtain the groundwater vulnerability, while contaminant loading potential is evaluated based on stepwise procedure application. The results of this study are groundwater contamination hazard maps. Based on the hazard of contaminants, it can be concluded that the highest groundwater hazard area will be occurred at the North of study area. Therefore, the mitigation for the document of EIA will be concerned there. Further research may need to complete this preliminary study.

Keywords: EIA, Loading Contaminant, Groundwater Vulnerability, Open Pit Coal Mine, DRASTIC.

INTRODUCTION

Coal mining industry is important sector to Indonesia. It is a substantial provider of export earnings, economic activity and employment, and supports regional development. Many mining companies are widespread in Indonesia. One area in Indonesian where there are many coal mining activities is Kalimantan Island. Study area is one of the coal mining concessions located in Barito Timur, Central Kalimantan (see Figure 1). The company has a concession covering an area of 2000 Ha. The coal target of its company is about 500,000 ton per month with open pit system. Open pit coal mining is recognized as an activity that causes the environmental degradation. The

environmental impacts of open pit mines are not only the changing of the natural landscape but also human health hazards. The most significant of them is the groundwater contamination.

Based on environmental law in Indonesia number 32, 2009 about protection and management of the environment and also several environmental regulations of Indonesia, each mining company in Indonesia is obliged to have the EIA document. The EIA document must be assessed by committee first, before the company is allowed to start the coal production. The purpose of this study is to assess groundwater contamination hazard, caused by mining activity, as a part of EIA.

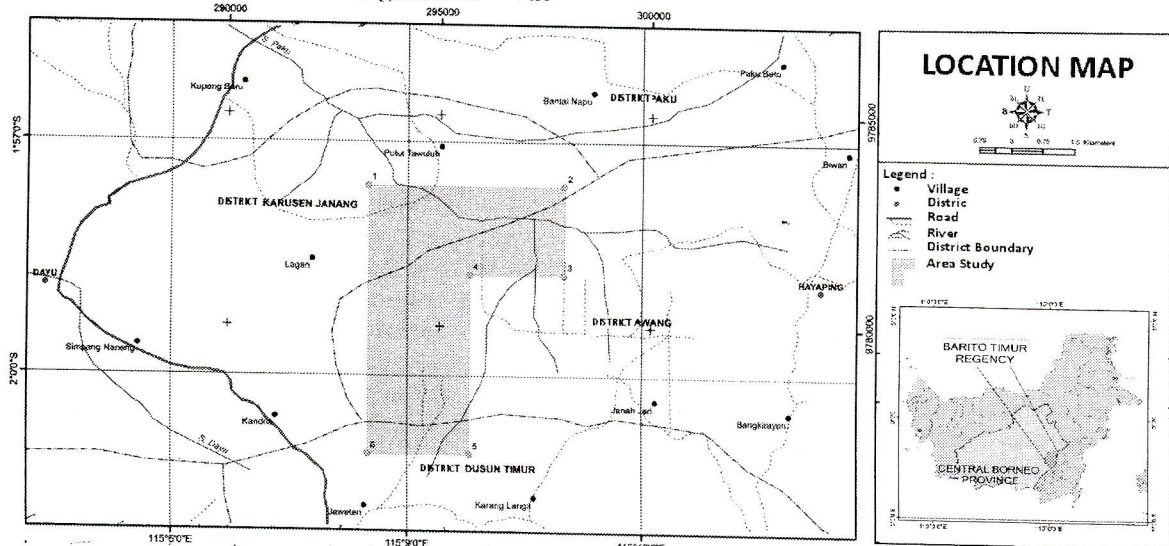


Figure 1. Location of Area Study