



Problems and Alternatives of Settlement Lagoons for Mine Water Treatment System

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A field test and computational flow analysis were conducted to identify the structural problems with existing settlement lagoons and to propose effective alternatives. When it comes to existing settlement lagoons without any specifically designed internal structure, mine water flows along a specific route while other regions remained stagnant. Such a flow pattern along a specific region causes a significant reduction in retention time as well as the ineffective use of the space in a settlement lagoon. When applying the modified settlement lagoon design proposed in this study, the flow distribution of mine drainage became uniform and the time taken for mine drainage to reach the outlet was improved by as much as 360 times and the exchange efficiency was significantly enhanced from 14.5% to 82.7%.