Hydrology of acidic mine pit lake: a case study of excopper mine Pit Lake, Mamut, Sabah Malaysia.

ABSTRACT

Hydrological study of pit lake was carried out in ex-Mamut Copper Mine (MCM), Ranau Sabah. Gauging stations were established to measure surface inflows and outflows of the pit lake. Each station was equipped with a continuous water level recorder to record water level data at 10−minutes intervals. Rainfall and evaporation were measured respectively using storage gauge and evaporation pan. Over the entire study period, surface inflow accounted for 32.11% of the water entering the lake, the rest being provided by direct precipitation on the lake surface. Surface outflow discharges 53.13% of the water from the lake. Evaporation from the lake contributed 30.10% of water loss to the atmosphere. Changes of storage ranged from 61.09 mm to 241.56 mm per month. Simple linear regression analysis showed that, changes in lake level can be explained through rainfall and resulting tributary inflows, rate of surface outflow and evaporation, which would allow projections of possible future levels to be made by analysis of these components.