Abstract

Lapindo hot mudflow located in Porong, Sidoarjo has entered the age of 5 years. A variety of physical events occur such as infrastructure and public facilities damages, as well as geological disasters. Various attempts have been made to tackle its spread. Damming done in the area of Lapindo mudflow has caused soil movement dynamically and create new bursts that emit flammable gases which contain water and mud that stuck below the sediment layer.

Global Positioning Systems (GPS) is used to conduct direct observations in the field to determine position of the bubble distribution and the impacted area. Then by utilizing the technology of Geographic Information Systems (GIS) and supported spatial topographic data of Porong Sidoarjo and non-spatial data which includes information of fracture and bubble distribution that had been done by previous observations. These data is used to create zoning impact area outside the boundaries of Sidoarjo mudfloe levee.

Result of zoning map, there are 7 district of Sidoarjo Regency which is disaster prone areas of Sidoarjo mudflow. Radius 0-500 distance meters from the levee limits, active bubble distribution is 30,94 % and non active bubble distribution is 45,30 %. Radius 500-1000 distance meters active bubble distribution is 2,21 % and non active bubble distribution is 17,13...
% . Radius 1000-2000 distance meters active bubble distribution is 0 % and non active bubble distribution is 4.42 %. The nearest zoning district from the outer limits of the levee is not always the presence of active bubble is always high and the use of this zoning map is facilitating the monitoring evaluation periodically.

**Keywords: Bubble, Geographic Information Systems, Zoning**