Identification of suitable locations for artificial groundwater recharge in a mining area of India by using remote sensing and GIS techniques

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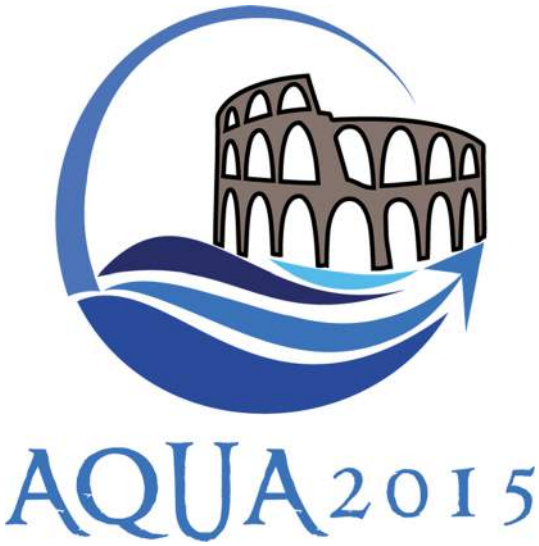

HYDROGEOLOGY: BACK TO THE FUTURE!

42nd IAH Congress - ROME
Sapienza University of Rome - 13/18 September 2015

ABSTRACT BOOK

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987 - IDENTIFICATION OF SUITABLE LOCATIONS FOR ARTIFICIAL GROUNDWATER RECHARGE IN A MINING AREA OF INDIA BY USING REMOTE SENSING AND GIS TECHNIQUES

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Mining is one of the major activities causing water pollution and threating the quality and quantity of surface and groundwater resources in many parts of the world. Mining and related activities also damage the aquifer and decrease the water availability in the area. Groundwater may be considered as one of the most precious and basic needs for human existence and the survival of people providing the luxuries and comforts in addition to fulfilling the basic necessities of life. In India, more than 90% of the rural and nearly 30% of the urban populations depend on groundwater for drinking and domestic requirements. Historically, the overexploitation of groundwater resources is a major issue in Indian country. In fact in the last decades annual water demand has increased for agricultural and industrial activities. The hydrogeological system characterization and the artificial recharging of aquifers might help to solve the problem of the groundwater level decreasing. For this purpose, six important hydrogeological factors such as slope, infiltration, drainage, depth to groundwater, land use and geology have been considered to define the most suitable locations for artificial groundwater recharge in mining area. Different thematic maps were prepared from existing maps and data sets, remote-sensing images, and field investigations for identification of suitable locations for artificial recharge. Thematic layers for these parameters were organized as raster data, classified, weighted and integrated in a GIS environment using of Boolean and Fuzzy logic. The main objective of the present study is identifying artificial recharge site in West Bokaro coalfield of Jharkhand state using remote sensing and GIS applications, in order to make a proper planning and sustainable management of groundwater resources.