

Monitoring of Hydrological Parameters in the Alexandra Jukskei Catchment in South Africa

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Abstract : It has been noted that technical programming for handling groundwater resources is not accessible. The lack of these systems hinders groundwater management processes necessary for decision-making through monitoring and evaluation regarding the Jukskei River of the Crocodile River (West) Basin in Johannesburg, South Africa. Several challenges have been identified in South Africa's Jukskei Catchment concerning groundwater management. Some of those challenges will include the following: Gaps in data records; there is a need for training and equipping of monitoring staff; formal accreditation of monitoring capacities and equipment; there is no access to regulation terms (e.g., meters). Taking into consideration necessities and human requirements as per typical densities in various regions of South Africa, there is a need to construct several groundwater level monitoring stations in a particular segment; the available raw data on groundwater level should be converted into consumable products for example, short reports on delicate areas (e.g., Dolomite compartments, wetlands, aquifers, and sole source) and considering the increasing civil unrest there has been vandalism and theft of groundwater monitoring infrastructure. GIS was employed at the catchment level to plot the relationship between those identified groundwater parameters in the catchment area and the identified borehole. GIS-based maps were designed for groundwater monitoring to be pretested on one borehole in the Jukskei catchment. This data will be used to establish changes in the borehole compared to changes in the catchment area according to identified parameters.

Keywords : GIS, monitoring, Jukskei, catchment

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