

MANAGEMENT AND PROTECTION OF GROUNDWATER RESOURCES USING GIS TO ASSESS THE ENVIRONMENTAL VULNERABILITY OF GROUNDWATER AQUIFERS: THE CASE OF ALLUVIAL AQUIFER OF RIVER DJENDJEN - JIJEL (NORTH-EASTERN ALGERIA)

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Abstract:

The pollution of groundwater is a limiting factor for groundwater resources. In this vein, the small alluvial coastal aquifer of Wadi Djendjen (Jijel) is currently overexploited and simultaneously exposed to a serious pollution problem induced by wastewater discharges and various industrial waste ... Faced with this situation, the establishment of a strict management program to protect groundwater, should be subject to full attention. It is in this context that the present work, whose objective is to develop a tool to delineate areas where groundwater is particularly vulnerable.

Cartographic developed in this study can accurately identify areas at greater risk of pollution. In particular, the vulnerability map drawn on the basis of three vulnerability classes: low, high and very strong, shows that the region is dominated by the class to very high vulnerability (49%) followed by one to high vulnerability (33%) then the vulnerability to low (18%). It is the northern sector and the axial part along the river Djendjen which corresponds to the class of high vulnerability. Comparing this map to the sources of pollution, helps to clarify areas of high risk of contamination of groundwater. The combination of the two documents also shows the coincidence between the areas most vulnerable and those already affected by pollution worsened, requiring urgent action to protect the resource.

Keywords : Cartography ; GIS, pollution ; vulnerability ; Drastic ; protection ; management.