

USING GIS TO CHARACTERIZE THE VULNERABILITY AND SENSITIVITY TO POLLUTION OF GROUNDWATER. APPLICATION TO THE ALLUVIUM OF THE RIVER DJENDJEN, W. JIJEL

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Abstract:

A new methodology is proposed for characterizing the vulnerability and sensitivity to pollution of groundwater free. This methodology represents an improvement of the DRASTIC method, universally used. Unlike the DRASTIC method which involves the parameters relating to both recharge in the unsaturated zone and saturated aquifer, the methodology we propose here is based solely on parameters related to recharge ground (slope and lithology) and the unsaturated zone (type and thickness). Indeed, we consider only the parameters involved in the transfer of pollution to the water from the soil surface.

The characterization of the vulnerability of groundwater to the horizontal transfer of the pollution has reached (also called sensitivity to pollution) is based solely on the specific parameters for the saturated zone: groundwater flow velocity of water quality and productivity of the water.

The vulnerability sensitivity (or vulnerability overall) is based on parameters relating to both the unsaturated area and saturated area of the aquifer.

This methodology has been applied to the alluvial aquifer of the river Djendjen (Jijel) containing one of the most significant areas of the region of Jijel.

The results showed that the aquifer is characterized by vulnerability and sensitivity to higher overall average. Fields capturing potable water (producing about 150 l / s) cons are located in areas of vulnerability and sensitivity to pollution (along the river and the downstream portion of the plain, their protection perimeters Remote and close protection is recommended as soon as possible.

Applying the methodology developed has necessitated the establishment of a Geographic Information System with MapInfo. This GIS, summarizing a mass of data (geological, hydrogeological, geophysical, etc...) Effect, is a real tool for decision support for managers of water resources in the region of Jijel.

Keywords: Pollution; mapping; vulnerability; sensitivity; GIS.

