

Groundwater Vulnerability of Halabja-Khormal Sub-Basin

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Abstract : Evolving groundwater vulnerability from DRASTIC to modified DRASTIC methods helps choose the most accurate areas that are most delicate toward pollution. This study aims to modify DRASTIC with land use and water quality index for groundwater vulnerability assessment in the Halabja-Khormal sub-basin, NE/Iraq. The Halabja- Khormal sub-basin groundwater vulnerability index is calculated from nine hydrogeological parameters by the overlay weighting method. As a result, 1.3 % of the total area has a very high vulnerability value and 46.1 % with high vulnerability. The regions with high groundwater vulnerability have a high water table and groundwater recharge. Nitrate concentration was used to validate the result, and the Pearson correlation and recession analysis between the modified DRASTIC index and nitrate concentration depicted a strong relation with 0.76 and 0.7, respectively.

Keywords : groundwater vulnerability, modified DRASTIC, land-use, nitrate pollution, water quality index

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