

## **Assessment and mapping of the water quality of the Terminal Complex groundwater using GIS interpolation techniques (Oued Souf, Southeast Algeria)**

Mohammed Ouarekh<sup>\*</sup>, Boualem Bouselsal, Mohamed Salah Belksier

*Laboratory of gas and oil aquifers underground reservoirs. University Kasdi Merbah, BP 30000  
Ouargla, Algeria*

\*E-mail: ouarekh.mohammed@univ-ouargla.dz ; Ouarekh88@gmail.com

This study was designed to evaluate the groundwater quality of the Terminal Complex (TC) for drinking purpose, in a rural area (Oued Souf Valley: part of the Northern Sahara Aquifer System (SASS)), and the production of their spatial distribution maps. For this reason, twenty-four groundwater samples were collected and analyzed. Various assessment tools have been used to quantify water quality status, The WQI is one of the most effective tools for obtaining a more complete and accurate picture of water quality. Spatial variation maps have been derived and integrated using ARCGIS10.5 software. The groundwater quality values observed are minimum and maximum values of pH (7.00-7.69), electrical conductivity (3390-4470 S/cm), bicarbonate (143.96-207.4 mg/l), chloride (414.80-985.59 mg/l), nitrate (0.95-23.79 mg/l), calcium (220.44-316.63 mg/l), magnesium (58.33-199.30 mg/l), sodium (320- 420 mg/l), potassium (27-42 mg/l), sulfate (494.3-1334.4 mg/l). The Hydrochemical mapping indicates a gradual increase in the mineralization northwards and northeastwards and designates Taghzoute as a very mineralized zone. The calculated WQI values can be divided into two categories: overall, 41.67% of the measuring points sampled in the study area had "poor water quality", while 58.33% of the samples indicate "very poor water quality".

**Keywords:** Oued Souf Valley, Terminal Complex, groundwater quality, IQE, GIS