Ain Shams University
Faculty of Science
Geology Department

Assessment of Groundwater Resources in the area east of Qattara Depression, North Western Desert, Egypt- using Hydrogeological and Isotope Techniques

A Thesis Submitted for Master degree of Science of Geology (Hydrogeology)

By

Moaz Mohamed Abd El Ghany Sayed

B. Sc. in Geology, Ain Shams University

Supervisors

Prof. Dr. / Ezzat Ali Korany
Professor of Hydrogeology
Faculty of Science
Ain Shams University

Dr. / Samah Mahmoud Morsy
Lecturer of Hydrogeology
Faculty of Science
Ain Shams University

Assoc. Prof/ Salah Abdel Wahab El Sayed
Assoc. professor of Hydrogeology
The Egyptian Nuclear and Radiological Regulatory authority
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Assoc. professor of Hydrogeology, The Egyptian Nuclear and Radiological Regulatory authority, ENRRA.

Prof.Dr. Ali Farrag
.....
Head of Geology Department
Faculty of Sciences
Ain Shams University

Note

The present thesis is submitted by Moaz Mohamed Abd El Ghany Sayed to Faculty of Science, Ain Shams University in partial fulfillment of the degree of Master of Science in Geology. Beside the research work materialized in this thesis, the candidate has attended postgraduate courses covering the following topics:

1. Field Geology.
2. Geostatistics.
3. Sedimentation.
4. Sedimentary Petrology.
5. Structural Geology.
6. Hydrogeology.
7. Hydrodynamics.
8. Lithostratigraphy.
9. Physical Properties of Rocks.
10. Formation Evaluation.
11. English Language.

He has successfully passed the final examination of these courses.

Head of Geology Department

Prof. Dr. Ali Farrag

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Abstract

The present work aims to assess the groundwater resources in the area lying east of Qattara Depression by using hydrogeological and isotopic techniques. The following geomorphic units are distinguished: Ridges, Depressions, Marmarica Tableland and Sand dunes.

The groundwater is available in the Moghra (Lower Miocene) aquifer. It exists under unconfined to semi confined conditions. The water bearing rocks are built of fluviomarine sandstones with intercalations of clays. The groundwater are recharged from different sources and flow in all directions. The structural framework greatly controls the recharge mechanism of the aquifer.

Using the hydrogeological, chemical and isotopic criteria, five sources of groundwater are distinguished: Sea water, Direct rainfall on the outcrops, Quaternary aquifer of Nile Delata from East, Nubia Sandstone Aquifer System by upward flow and Post Moghra aquifers by downward flow.

The groundwater has brackish to saline character. They are influenced by geochemical process and evaporation. They are suitable for few purposes.

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