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نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها
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لم ترد بالأصل

CHEMICAL AND ISOTOPIC INVESTIGATION OF GROUNDWATER AQUIFERS IN IDFU REGION ON THE FRINGES OF QENA GOVERNORATE

A THESIS

Submitted in Partial Fulfillment for the Degree of Master of Science in Geology

By

Wafaa Fathey Mohammad Abdel Kreem

B. Sc. In Geology

To
Geology Department
Faculty of Science, Cairo University

2000

Prof.Dr. Y.M. Issa
Vice Dean For Post Graduate Studies
Faculty Of Science
Cairo University

APPROVAL SHEET

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Wafaa Fathey Mohammad Abdel Kreem

Submitted to

Faculty of Science, Cairo University

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NOTE

The present thesis is submitted from Wafaa Fathey Mohammad Abdel Kreem to Cairo University in partial fulfillment of requirement for the degree of Master of Science in geology.

Beside the research work materialized in this thesis, the candidate has attended graduate courses for one year in the following topics:

1- Structure and Field Geology.

2- Advanced Hydrogeology.

3- Geophysical Exploration and Water.

4- Hydrological Isotope and Water Distillation.

5- Computer Science.

6- German language.

She has successfully passed the final examination of these courses in October 1993.

Prof. Dr. M.A. Takla

Head of Geology Department

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To

My Dear Family

and

My Son

ACKNOWLEDGEMENT

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ABSTRACT

Due to the continuous growth of population and the urgent need for food security, expanding the reclamation projects within the unlimited desert of Egypt, has started with the desert fringes of the Nile valley and Delta. In the desert fringes of the study area, Idfu, private reclamation farms has been established since the beginning of the nineties. The groundwater extraction is the only source for irrigation and drinking. The development and the continuous pumping may affect the groundater potential (quantity and quality). Therefore, this study was carried out to define the groundwater aquifer system in the area and the interaction between the shallow and the deep aquifers.

The geophysical survey determined the thickness and the resistivity values of the various formation of the shallow aquifer and the boundaries of this aquifer (base of aquifer), in addition to the geological survey.

The study also defined the sources of groundwater recharge for the Nile aquifer system (Quaternary and Plio-Pleistocene) using the geochemistry and isotopes techniques. Samples are gathered from the different locations representing the concerned aquifer systems (deep and shallow) and the Nile water.

The results of the geochemistry and isotopes analysis confirm mixing between the Nile water and Paleowater from deep aquifer as recharging source of the desert fringes aquifers of Idfu area. The groundwater development projects in this area should follow the national water resources plan and policy to prevent the degradation of groundwater quality due to the over pumping from the aquifer system by the private sector. More investigations such as pumping tests and drilling deep borholes and observation wells for leveling and quality monitoring which are urgently required to assess the available potential and its furture potentiality under different scenarios for groundwater development.

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