بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

HYDROGEOLOGICAL AND ISOTOPE ASSESSMENT OF GROUNDWATER IN WADI EL-NATRUN AND SADAT CITY, EGYPT

A THESIS

Submitted In Partial Fulfillment For The Requirements Of The Degree Of Master Of Science In GEOLOGY "HYDROGEOLOGY"

By

SALAH ABDEL WAHAB EL-SAYED AHMED
(B.Sc., in Geology, 1983, Ain Shams University)

To

The Department of Geology
Faculty of Science
Ain Shams University

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A. A. Nada
AL-Gamal

1999

Ain Shams University
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Approval Sheet

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Note

The present thesis is submitted to the Faculty of Science, Ain Shams University in partial fulfillment for the requirements of the degree of Master of Sciences in Geology (Hydrogeology).

Beside the research work materialized in this thesis, the candidate Salah Abdel Wahab El-Sayed Ahmed has attended ten post-graduate courses for one year in the following topics:-

1] Field Geology and Statistical Geology.
2] Physical properties of rocks and Formation evaluation.
3] Hydrogeology and Hydrodynamics.
4] Sedimentary Petrology and Sedimentation.
5] Lithostratigraphy and Structural Geology.

He has successfully passed the final exam in the above mentioned courses, besides an English language courses.

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ACKNOWLEDGMENT

The author would like to express his deepest thanks and highest appreciation to Prof. Dr. Ezzat Ali Korany, Professor of Hydrogeology, Geology Department, Faculty of Science, Ain Shams University, for supervising , supporting, unfailing orientation, guidance, kind interest , valuable advice, discussions and completion of this work.

The author gratefully acknowledge Prof. Dr. Abdel Hamid Ali Nada, Professor of Isotope Hydrology, Siting and Environmental Department, NCNSRC, EAEA, for suggesting the point of study, supervising the work, unfailing help, discussions, pursuance and continuous encouragement.

Sincere thanks and deepest gratitude are due to Dr. Samir Anwar Al-Gamal, Assoc. Prof. of Hydrogeology ,Siting and Environmental Department, National Center for Nuclear Safety and Radiation Control (NCNSRC) ,Egyptian Atomic Energy Authority (EAEA), for supervising the work, continuous valuable suggestions, discussions, pursuance and helping in applying new hypothesis and techniques.

Warm thanks are due to Prof. Dr. Robert. L. Michel, Isotope Hydrology Department ,U.S. Geological Survey, Menlo Park, California for useful discussions and excellent cooperation during the period of my training course on Tritium measurements awarded by International Atomic Energy Authority (IAEA). Thanks are due to Dr. Mohmed Fahmy

Hussein, Faculty of Agriculture , Cairo University for his kind help and Sincere advice.

Appreciation are expressed to Prof. Dr. Ali Islam Ali, Head of Siting and Environmental Department , NCNSRC, EAEA, for the laboratory facilities and continuous care , to Dr. Mostafa Abdel Hamid Sadek , NCNSRC, EAEA, for useful discussion and suggestions on hydrochemistry presented in this work , and to Dr. Sawsan Abdel Sammei, NCNSRC, EAEA, for helping in chemical analyses.

Thanks are kindly extended to my colleagues in the Siting and Environmental Department, NCNSRC, EAEA, to the landowners who allowed me to measure the water levels inside their wells and to my family.

ABSTRACT

HYDROGEOLOGICAL AND ISOTOPE ASSESSMENT OF GROUNDWATER IN WADI EL-NATRUN AND SADAT CITY, EGYPT

By

Salah Abdel Wahab El- Sayed Ahmed

The present study aims to assess the groundwater resources on isotopic and chemical grounds in Wadi El-Natrun and Sadat City areas. The area of study is located in the northern corner of Western Desert between longitudes 30° 00′ and 30° 35′ E and latitudes 30° 15′ and 30° 30′ N. Three geomophologic units are distinguished in the studied area; old alluviall plain, Wadi El-Natrun structural depression and El -Hadid tableland.

Attentions are paid to the Pleistocene and the Pliocene aquifers where the majority of productive wells are tapping the two aquifers. The Pleistocene water- bearing formation is mainly formed of sand and gravel intercalated with clay lenses (deltaic deposits), while the Pliocene water-bearing formations are formed of alternating sand and clay layers with common occurrences of gypsum and limestone (brackish water and marine facies). The groundwater in the two aquifers is found under different hydrogeologic conditions; water table condition (the Pleistocene aquifer) and confined to semiconfined conditions (the Pliocene

aquifer). It is found that piezometric surface of the Pliocene aquifer is much lower than that of the Pleistocene one. The major component of flow in both aquifers was found from east to west direction. The structural framework has greatly affected the groundwater regime in the studied area and is reflected on the mixing of water of different origin. Mixing of water of different origin was confirmed using hydraulic, chemical and isotopic criteria. The groundwater quality of the investigated aquifers are found to suite most of the required domestic and irrigation purposes with some constrains. Calcite, dolomite, gypsum and halite are the main sources of mineralization in the groundwater of Wadi El-Natrun and Sadat City. Modeling of mean residence time and mixing ratio were achieved through applying the computer code of MULTIS and using the environmental isotope data.