

**STRATIGRAPHICAL AND
PETROGRAPHICAL STUDIES ON THE
WATER BEARING FORMATIONS IN WADI
WATIR BASIN, SOUTHEASTERN
PORTION OF SINAI, EGYPT**

A Thesis
Submitted for the partial fulfillment for the Degree
of Master of Science (Geology)

By
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2010

Approval sheet

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Note

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- 1- Micropaleontology.
- 2- Biostratigraphy.
- 3- Lithostratigraphy.
- 4- Paleoecology.
- 5- Field geology and mapping.
- 6- Geostatics.
- 7- Sedimentology.
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- 10- Geotectonics.

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ABSTRACT

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The present study deals with the stratigraphic and petrographic analysis for the water bearing formations in Wadi Watir basin, eastern Sinai. The stratigraphic studies recognized several formations of different ages by using the foraminiferal and macrofaunal content. These formations are: Araba (Cambrian), Naqus (Late Ordovician-Early Silurian), Raqaba (Early Jurassic), Malha (Early Cretaceous), Galala (Late Cenomanian), Abu Qada (Early Turonian), Buttum (Early Turonian), Wata (Late Turonian), Matulla (Coniacian-Santonian), Brown limestone (Late Campanian to Early Maastrichtian), Sudr (Early to Middle Maastrichtian), Esna (Early to Middle Paleocene), Egma (Early Eocene) formations and Quaternary sediments.

The microfacies analysis revealed thirteen types of microfacies associations; quartz arenites, phosphatic calcareous sandstone, dolomitic sandstone, siltstones, sandy dolostone, sucrosic dolostone, dolostone, dolomitized micrite, lime-mudstone, fossiliferous micrite, oosparite, biomicrite, peloidal biomicrite, phosphatic pelbiomicrite and foraminiferal biomicrite. Furthermore, the hydrogeological studies comprise three parts; the groundwater occurrences, the hydrochemical characteristics of the groundwater and the impact of the geomorphologic and geologic conditions on the groundwater occurrences. Furthermore, four water bearing units were recognized; Basement aquifer, Cambrian aquifer, Cenomanian-Turonian aquifer and Quaternary aquifer, which is widely distributed in the study area. The amount of groundwater stored in the Quaternary deposits was controlled by various factors such as climate changes and rainfall.

ACKNOWLEDGMENT

First, thanks to *God* for the continuous and persistent patience and effort to complete this thesis.

A special thanks to ***Prof. Dr. Ahmed Ali Ismail*** (Head of Geology Department, Faculty of Science, Ain Shams University) for continuous support and encouragement.

I would like to express my deep gratitude to ***Prof. Dr. Sanaa Hussein Attia*** (Prof. of Geology, Desert Research Center), ***Prof. Dr. Ahmed Ali Ismail*** and ***Assoc. Prof. Dr. Ashraf Ramadan Shabana*** (Assoc. Prof. of Geology Department, Desert research Center) for suggesting, planning the point of research, fruitful discussions, generous guideline, scientific support and encouragement during their direct supervisions throughout this work.

I wish to express my deep gratitude and thanks to ***Prof. Dr. Tarek Aggour*** (Head of Geology Department, Desert Research Center) for his continuous help and encouragement during the progress of this work.

Many thanks are also for all the staff members and colleagues of ***Desert Research Center*** for their limitless help throughout this work.

Special thanks to ***Dr. Adel Akarish*** (Geology department, National Research Centre) for his great help in examination the microfacies, ***Mr. Hussein Mohammed*** for his help in the field and office works.

A special thanks to ***the spirit of my father, my mother, my wife and all my family members*** for their kind help and encouragement during the progress of this work.

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