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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(B.Sc. GEOLOGY)

Geology Department

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Ain Shams University

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Approval sheet

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Note

In addition to the research work materlizied in this thesis the author successfully passed examinations in the following pre-master courses:

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

In the same time the author successfully passed the local Toefl test.

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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.

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