

**Study of the Hydrological Interaction Effect between
Groundwater and El Salam Canal, West of Bir El Abd
, North Sinai , Egypt**

By

Mona Mohamed Mostafa Omar

B. Sc. of pure math. & computer sciences, Ain Shams University, 1990

A Master of science thesis

In

Environmental Science

Ain Shams University

Institute of Environmental Studies and Research

Department of Physical and Biological Science

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APPROVAL SHEET

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TO

My Mother, Husband, daughter and sons,

Asmaa, Ahmed and Hazem

ABSTRACT

Limited water resources in addition to soil types and vegetation resources are the most important economical and environmental parameters in the studied area as a strategic target.

The present study aims to study the hydrogeological interaction effects between groundwater and surface water in El Salam canal by applying two groundwater flow models, the first for conditions before construction of El Salam canal and the second for the conditions after construction of El Salam canal.

The obtained results indicate that the hydraulic conductivity varies between 5m/ day to 25m/ day, the diffusivity coefficient varies between 20000m² / day to 60000m² / day. The study before construction of El Salam canal indicates a drop of groundwater levels ranging from about 0.5m to 5m through five years of prediction. The applied model indicates changes estimates about 4.28 million cubic meters is reported for is the hydrological year 1998/1999. The southern boundary (Gilbana fault) contributes the groundwater storage by about 300000m³/year into the Quaternary aquifer in the studied area.

The obtained results of the second model (after construction of El Salam canal) indicate a rise of the groundwater level up to 6 m as well as an expected development of water logging phenomenon in the studied area. The water balance of the second model (after construction of El Salam canal) indicates in an increase of groundwater storage and a decrease of sea water encroachment and decrease of evaporation losses.

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