Palestinian National Authority
Palestinian Water Authority

السلطة الوطنية الفلسطينية
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Sustainable Management of the West Bank and Gaza Aquifers

UNIVERSITY OF NEWCASTLE

NERC British Geological Survey

Department for International Development
DFID

Hydrological Service

Yarkon – Taninim – Beer Sheva Basin

Setup and Calibration of the Flow and Salinity Models

By

Y. Guttman
H. Zukerman

Tel Aviv
October 1995
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Translated by:

SUSMAQ TEAM

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Disclaimer

This report is an output from the Flow Modelling and Hydrogeology Component, part of SUSMAQ project.

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The SUSMAQ Project

The aim of the project is to increase understanding of the sustainable yield of the West Bank and Gaza aquifers under a range of future economic, demographic and land use scenarios, and evaluate alternative groundwater management options. The project is interdisciplinary, bringing together hydrogeologists and groundwater modellers with economists and policy experts. In this way, hydrogeological understanding can inform, and be informed by, insights from the social sciences. The results of the study will provide support to decision-making at all levels in relation to the sustainable yield of the West Bank and Gaza aquifers.
The project runs from November 1999 to October 2004, and is a partnership between the Palestinian Water Authority, University of Newcastle and the British Geological Survey. The project is funded by the United Kingdom's Department for International Development (DFID).

The Flow Modelling and Hydrogeology Component is part of the SUSMAQ project

The Flow Modelling and Hydrogeology study focuses on the geology and hydrogeology of the Western Aquifer Basin (WAB), its inflows (recharge) and outflows (spring and well abstraction)
This is a direct Translation and Reproduction From Hebrew to English of the 1995 Tahal Report prepared by Y. Guttman and H. Zukerman.

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This is a direct Translation From Hebrew to English of the 1995 Tahal Report prepared by Y. **Guttman and H. Zukerman.**

Feedback

The SUSMAQ and PWA teams will appreciate any feedback on this report. Feedback should be sent to the above contacts.

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Hydrological Service

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Yarkon- Tanninim – Beer Sheva Basin

Setup and Calibration of Flow and Salinity Model

Terms of reference for project No. 3343 were:

1. Collection of Geological and Hydrogeological data

2. Setup and Calibration of a Flow Model for the Steady State and the Dynamic State (Mod flow)

3. Setup and Calibration of a Salinity Model for the Northern Yarkon-Tanninim Basin, for Steady and Dynamic States

4. Summary of the report

1. General Background:

The Yarkon-Taninim-Beer Sheva' Basin [WAB] is one of the 3 main water resources in the entire country. Its importance in comparison with the two other resources (the Coastal Aquifer and Lake Tiberias) stems from the fact that it is a source of water for domestic and irrigation purposes, and on the other hand that the Yarkon-Taninim Basin [WAB] is used as an effective seasonal storage of water for several years. In addition, it is of special importance due its ability to transmit natural water (from the Mountains to the Coast).

Many studies were conducted during the past 40-50 years regarding the hydrogeology of this aquifer and the risk of salinization. As a result, constraints on water pumpage management of the aquifer were imposed.

A research well (Menashe 3) was drilled. Salt water was found with a salinity as high as that of seawater. This well is about 6 km away from the Coast, towards the East and has changed the understanding about the salinity in the Northern regions of the Yarkon-Taninim Basin [WAB]. Also, this well has shown hat the risk of the salinization of the aquifer has increased, especially if the abstraction management is not sufficiently controlled and monitored.

Peace accords between Israel and the Palestinian National Authority (PNA) in these days could affect the hydrogeology of the aquifer and its water quality as well as the total abstractions from the basin.

In 1988, a comprehensive hydrogeological investigation was carried out for the Yarkon-Taninim Basin. This study contained a Setup and Calibration of a Steady State Flow Model (Guttman et. al., 1988).

The current work is an integration of that work. The flow model (one layer) was calibrated again with some adjustments for the Steady and Dynamic States. Also, a salinization model of the basin was performed.

The Setup and Calibration of those models were finished more than one year ago.

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