

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

SUSTAINABLE GROUNDWATER MANAGEMENT IN SOUTH EASTERN DELTA FRINGES

By
Eng. Enass Ahmed Elimy Emam
B.Sc. Civil Engineering 2004
M.Sc. Civil Engineering 2014

A Thesis
Submitted In Partial Fulfillment of The
Requirements for the Doctor of Philosophy (Ph.D.) Degree
In Civil Engineering
(Irrigation and Hydraulics)
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Cairo, 2021

Approval Sheet

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Statement

This dissertation is submitted to the Faculty of Engineering-Ain Shams University for the degree of Doctor of Philosophy in Civil Engineering "Irrigation and Hydraulics "

The work presented in this thesis was carried out by the author in the Department of Irrigation and Hydraulic Department, Ain Shams University, Cairo, Egypt.

No part of this thesis has been submitted for a degree or a qualification at any other University or Institution.

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List of abbreviations

FAO	Food and Agriculture Organization
GIS	Geographic Information Systems
RS	Remote Sensing
IWACO	International Consultants for Water and Environment
MMOC	Modified Method of Characteristics
MOC	Method of Characteristics
MWRI	Ministry of Water Resources and Irrigation
DRI	Drainage Research Institute
MSL	Mean Sea Level
NWRP	National Water Resources Plan
PPM	Part Per Million
RIGW	Research Institute for Groundwater
TDS	Total Dissolved Solids
WHO	World Health Organization
AHD	Aswan High Dam
GERD	Grand Ethiopian Renaissance Dam

