بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

OPTIMUM LOCATION OF SALINE WATER INJECTION WELLS AND DISCHARGE ONES NEAR A DESALINATION PLANT, CASE STUDY: NABQ DESALINATION PLANT, SINAI

By

Basma Yehya Anter

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
IRRIGATION AND HYDRAULICS ENGINEERING

Faculty of Engineering - Cairo University
Giza - Egypt
2021

OPTIMUM LOCATION OF SALINE WATER INJECTION WELLS AND DISCHARGE ONES NEAR A DESALINATION PLANT, CASE STUDY: NABQ DESALINATION PLANT, SINAI

By

Basma Yehya Anter

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
IRRIGATION AND HYDRAULICS ENGINEERING

Under Supervision of

Prof. Dr Sherif M. A. El Didy

……..

Prof. of Hydrology and Water Resources Management
Irrigation & hydraulics Dept.
Faculty of Engineering, Cairo University

FACULTY OF ENGINEERING - CAIRO UNIVERSITY
GIZA - EGYPT
2021

OPTIMUM LOCATION OF SALINE WATER INJECTION WELLS AND DISCHARGE ONES NEAR A DESALINATION PLANT, CASE STUDY: NABQ DESALINATION PLANT, SINAI

By

Basma Yehya Anter

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
IRRIGATION AND HYDRAULICS ENGINEERING

Approved by the
Examining Committee

Prof. Dr Sherif M. A. El Didy,	**Thesis Main Advisor**
Prof. Dr. Sameh M. Abd El-Gawad,	**Internal Examiner**
Prof. Dr. Madiha Mustafa Hasan, National Water Research Center	**External Examiner**

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer's Name:	Basma Yehya Anter Atia
Date of Birth:	01/09/1991
Nationality:	Egyptian
E-mail:	Basma.Yehya@live.com
Phone:	01093110721
Address:	5 Abd El-Ghaffar st, El-Haram - Giza
Registration Date:	01/10/2014
Awarding Date:	/ /2021
Degree:	Master of Science
Department:	Irrigation and Hydraulics Engineering
Supervisors:	Prof. Dr Sherif M. A. El Didy

Examiners:	Prof. Dr Sherif M. A. El Didy	(Thesis main advisor)
	Prof. Dr. Sameh M. Abd El-Gawad	(Internal examiner)
	Prof. Dr. Madiha Mustafa Hasan	(External examiner)

National Water Research Center

Title of Thesis:	Optimum Location of saline water injection wells and discharge ones near a desalination plant, case study : NABQ desalination plant, Sinai.
Key Words:	Ground Water Recharge; Desalination plants; Groundwater contamination; Saltwater intrusion; Distance from polluting source.

Summary:

This study investigates the parameters affecting the spacing between suction and recharging wells in desalination plants. The depth of injection screen is an important parameter that defines suction wells. so, beside trying to reduce the distance between the injection / discharge wells, this study also includes the effects of other parameters like hydraulic conductivity and dispersivity. This objective is achieved by simulating the groundwater flow using a software package "MODFLOW" for several cases and using different parameters sets. The software solver processes the simulation as density dependent problem. Finally, the results are analyzed and graphed for better understanding of the effects of the nominated parameters.

Recommendations for design phase are introduced after the analysis is completed. The selected area of the case study is in "Nabq" ; Sinai Peninsula near Sharm-El Sheikh City – Egypt. It precisely located in east south of Sharm-El Sheikh airport. This area has been dedicated to build a new desalination plant as the area is owned by " National Organization for Portable Water and Sanitary Drainage (NOPWSD)" and it is developed mainly by "Arab Contractors". Nabq desalination plant location located 2700-meter east of the Gulf of Aqaba and has a capacity of 12000 m3/day.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Basma Yehya Anter Date: / /2021

Signature:

Acknowledgments

I would like to express my deep gratitude, appreciation, and thanks to my supervisor Prof. Dr. Prof. Dr Sherif M. A. El Didy for his guidance, encouragement, patience, understanding, and kindness during the course of study for the master degree. I have learned a lot from his knowledge and experience in science and engineering. His dedication, suggestions, and corrections throughout the study period are gratefully appreciated.

I also would like to extend my gratitude to my leaders at work, Eng. Hoda Hashem, Eng. Naglaa Ibrahem for their support, patience and understating along the study course.

I am deeply indebted to my family for their support and encouragement during my study towards my degree.