



بسم الله الرحمن الرحيم

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DEVELOPMENT OF EXISTING WATER TREATMENT PLANT USING DYNAMIC UP FLOW SAND FILTER

A Thesis

Submitted to the Faculty of Engineering
Ain Shams University for the Fulfillment
of the Requirement of M.Sc. Degree
In Civil Engineering

Prepared by

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B.Sc. in Civil Engineering, June 2018
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(SANITARY ENGINEERING)**

by
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in Civil Engineering, June 2018
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DEDICATION

I wish to dedicate this work to whom suffered to educate, prepare,
build capacity and help myself to be as I am,

TO MY FATHER SOUL & MY MOTHER

Also, thanks

TO MY BROTHERS

for their encouragement and support to complete this work.

STATEMENT

This dissertation is submitted to Ain Shams University, Faculty of Engineering for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the department of Public Works, Faculty of Engineering, Ain Shams University, from October 2013 to May 2018.

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

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others

Date:- ---/-- /2022

Signature:- -----

Name:- Esraa Mahmoud Ahmed El-Taher

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ABSTRACT

NAME :- ESRAA MAHMOUD AHMED EL-TAHER

Title :-“DEVELOPMENT OF EXISTING WATER TREATMENT PLANT USING DYNAMIC UP FLOW SAND FILTER”.

Faculty :- Faculty of Engineering, Ain Shams University.

Specialty :- Civil Eng., Public Works, Sanitary Eng..

Summary :-

This thesis discusses the Dyna-sand filter feasibility to be applied with water variable solids loads to check its applicability for both water and wastewater treatment plants also for agricultural drains water treatment plants and check its realability to be applied as direct filtration and Study the probability to development existing water treatment plants using dyna-sand filter to increase the plant productive capacity with minimum civil work and cost Lab scale pilot was applied under sensytic water with variable solid load to determine its maximum removal efficiency with different filtration rates. all measurement was made according to American standard methods for water and wastewater Examinations. All measurements made on equipment existing in sanitary engineering laboratory in faculty of engineering, Ain Shams University The study resulted the system applicability against all applied variable solid load between TSS (50-250ppm) with variable rate of filtration between (200-500m³/m²/d) with inversely proportional between them, with removal ratio variable between (85% up to 95%).

The feasibility of the system to be applied for up grading the existing water treatment plants by replacing the mechanical equipment of rapid sand filter with dyna sand mechanical equipment that increase the area production by (2-3) times the of existing plants and decrease the required cost for constructing new plants to 10%.

Supervisors

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KEY WORDS

Water supply Water treatment plant Filtration Dynamic sand filter

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