بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــســـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

DESIGN OF MONITORING NETWORKS FOR WATER QUALITY MANAGEMENT IN THE RIVER NILE

BY
AMAL MOHAMED HASSAN EL SHERBINI
(MS.C Civil Engineering-Southampton University)

A Thesis
Submitted for Fulfillment of the Requirements for the
DEGREE OF DOCTOR OF PHILOSOPHY
IN CIVIL ENGINEERING

Supervised By

Prof. Dr. Abd El Fattah E. El Fiky
Chairman of Irrigation & Hydraulics Dept., Faculty of Engineering, Ain Shams University.

Prof. Dr. M. El Moattassem M. El Kotb
Vice President of National Water Research Center & Director of Nile Research Institute.

Prof. Dr. Shaden T. Abd El Gawad
Director of Environment and Climate Changes Research Institute, National Water Research Center, Delta Barrage.

Dr. Mohmed M. Nour El Din
Associate Professor, Irrigation & Hydraulics Dept., Faculty of Engineering, Ain Shams University.

Cairo, Egypt
1996

DESIGN OF MONITORING NETWORKS FOR WATER QUALITY MANAGEMENT IN THE RIVER NILE

Ph.D. Degree Submitted by

Eng. Amal Mohamed Hassan El Sherbini

EXAMINERS

Signature

Prof. Dr. Mona Mostafa El Kady
Vice President of National Water
Research Center.

Prof. Dr. Abd El Mohsen E. El Mongy
Prof. of Harbors and Inland Navigation
Faculty of Engineering, Ain Shams University

Prof. Dr. Abd El Fattah El Biuomy El Fiky
Chairman of Irrigation & Hydraulics
Department, Ain Shams University.

Prof. Dr. Mohamed El Moattassem M. El Kotb
Vice President of National Water Research
Center & Director of Nile Research Institute.

STATEMENT

This Thesis is submitted to Ain Shams University, Faculty of Engineering for the degree of Doctor of Philosophy in Civil Engineering.

The work included in this thesis was carried out by the author in the Department of Irrigation and Hydraulics, Faculty of Engineering, Ain Shams University, from April 1992 to June 1996.

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

Name: Amal Mohamed Hassan El Sherbini

Date:

Signature: Amal El Sherbini

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ABSTRACT

Title: Design of Monitoring Networks for Water Quality Management in the River Nile.

Name: Amal Mohamed Hassan El Sherbini

The objective of this thesis is directed towards designing monitoring networks for water quality management in the River Nile.

Four levels of monitoring networks for water quality are presented in this thesis based on a sound scientific analysis of historical data to obtain as much data and information as needed. These levels are:

* Monthly sampling frequency for the primary network which includes 54 stations (basic and impact) and all point sources of pollution for baseline information;
* Biweekly sampling frequency for the second network which includes 26 basic stations and heavily polluted point sources for detecting trends;
* As required by inspection for law enforcement for the third network which includes 39 impact stations and inspected point sources; and
* Daily sampling frequency at Abu Simble sampling station (reference station) for early warning.

A group of specific parameters should be measured in each level of water quality monitoring networks.

In addition to that, 13 sampling stations are selected for monitoring the quality of the bottom and suspended sediments. These stations are chosen at the same locations of the designated water quality stations. Basic stations are used for baseline data and future comparisons. Impact stations are used to detect the impact and spatial distribution of contaminants from point sources of pollution inputs.

Sediment samples should be monthly collected in the period between May to October and bimonthly in the period between November to April. Another set of samples which is core samples of 20 cm are to be taken at the 13 sampling stations every 5 years for detecting contaminants accumulation. A group of specific substances are measured according to the monitoring objectives.

Key Words:

Water quality, management, monitoring, network design, data analysis.