Ain Shams University
Faculty of Engineering
Irrigation & Hydraulics Department

Investigating the encroachments impact on Nile River Hydrodynamic and Morphology

A THESIS
SUBMITTED FOR THE MASTER DEGREE OF
IRRIGATION AND HYDRAULICS FROM,
Irrigation & Hydraulics Department- Faculty of Engineering-Ain Shams University

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Date 21/1/2018

To

My beloved parents, My Husband Tamer , My mother'in law ,My Daughters' Trinty and Trivya , my sisters(Isis , Jacklen &Abeer)And my brother (Amir)

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ABSTRACT

In terms of the importance of protecting the Nile River in Egypt to satisfy the social and economic developments, this research was commenced with the ***main objective*** of investigating the encroachment impacts on the flow characteristics and river morphology along the fourth reach which start in D.S Assuit barrages and ended at U.S Delta barrages

This research compared the changes of water level and morphology before and after encroachment during 2004-2014 for different floods scenario.

One dimensional mathematical model; "GSTARS3" which is considered the most suitable model to simulate the water surface profile and the sediment transport was used in this research. The model was calibrated for flow mode in 2004 and takes the result of calibration for sediment mode from previous studies which made from 1982 to 1997 and was verified from 1997 to 2004 using different sediment equations. The model results showed good agreements compared with actual measured data. The model was used also to simulate the flow in the future, and the results were analyzed and discussed

There was a general conclusion that deposition has more frequent occurrence than erosion on the bed for the whole reach during the past decades and also in the future. For the case of high flows in the future; especially in the places where the encroachment occurred will the water level raise and seeking the land on the sides also the bed will deposit more than now by 30%

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