Title: Natural Water Quality Challenges in Egypt

Bakenaz. A. Zeidan

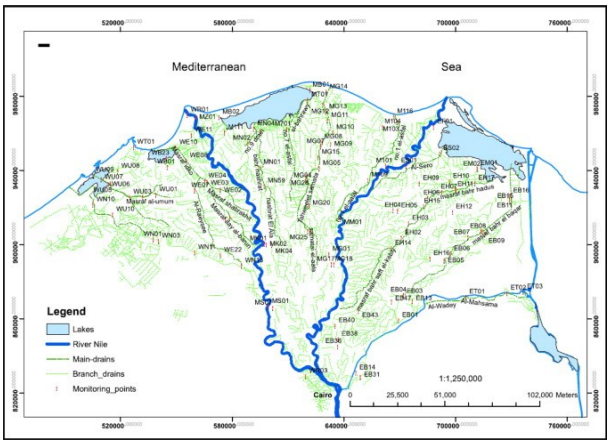
Department of Irrigation and Hydraulics, Faculty of Engineering, Tanta University, Egypt

b.zeidan@f-eng.tanta.edu.eg,

I. Abstract Body

Egypt is rich with a diversity of surface water bodies includes lakes, Red sea coastal zone, Mediterranean Sea coastal zone, Nile River and branches, canals and drains network and Suez Canal. The average water depth is 8-11 ms, the average width at Aswan is 2.80 Km, the widest part of the Nile is at Edfu with 7.5 Km width, the smallest part in width is at Silwa Gorge near Aswan being only 350 ms wide. The Nile Delta is 100 miles long and 155 miles wide, with a coastline facing open water of about 1500 km to west and North West, 500 km across to Turkey in the North and 250 to 500 km in northeasterly directions. Two branches of the Nile have formed the promontories at Rosetta and Damietta; Cape Burullus and the Port Said area are other protruding parts of the Delta coast. Egypt has five coastal lakes. Egyptian coastal lakes constitute about 25% of the total Mediterranean wet lands and 77% of fish production; Manzala Lake; Burullus Lake; Maryut Lake; Edko Lake and Bardwail Lake. The Nile Delta's coastal lagoons, or Lakes as they are sometimes referred to, are key ecosystems that act as a protective zone for inland economic activities. Lake Manzala, Burullus, Idku, and Maryut, however, are only separated from the Mediterranean by 0.5- 3km wide eroding and retreating sand belt and dune system. Rising seas would destroy parts of the protective offshore sand belt, which has already been weakened by reduced sediment flows after the construction of the Aswan Dam in 1964. The sediment belt protects the lagoons and low-lying reclaimed land. Without this sediment belt, water quality in coastal freshwater lagoons will be altered, groundwater will be salted and recreational tourism, and beach facilities will be inundated. The Egyptian coastal lakes have changes in the water bodies due to the severe anthropogenic activities. This increase in floating vegetation is mainly due to discharging of agriculture wastes and municipal wastes in the lake without adequate treatment. Egyptian coastline of the Mediterranean Sea and the Red Sea extends for approximately more than 3200 km, where the total length of the Mediterranean coast is about 1550 km and the length of the Red Sea coast is about 1705 kilometers. Most coastal areas are characterized by manifestations of aesthetic ecosystems and natural habitats represented in: coastal lagoons, salt marshes, mudflats, sand dunes and beaches extending along the coast of the Mediterranean, in addition to mangrove trees and coral reefs in the Red Sea coastal zone as well as biodiversity associated with these marine and coastal habitats (Coastal migratory birds - turtles - fish). This diversity of resources and environmental characteristics of each of the Mediterranean Sea, the Red Sea and the different environmental conditions and characteristics of each of them, and the coastal region suffering from severe and increasing pressure are from the challenges facing the integrated coastal management. The increasing population growth rates and economic growth are considered the most important social and environmental challenges facing the integrated management of coastal zones, in addition to climate change, which has become the most important issue because of its clear impact on most of the coastal territory, especially low parts. The present study discusses the Egyptian surface water quality challenges. Scenarios for water quality management and restoration are presented.

II. Image:



III. References:

M. Elshemy, **Bakenaz. A. Zeidan**, W. Assar (2018). "Water Quality Mitigation Scenarios for Burullus Coastal Lake, Egypt". Proceedings of the "Sixth International Conference on Estuaries and Coasts" (ICEC-2018), August 20 - 23, 2018, Caen, France.

Ahmed Mohsen, Mohamed Elshemy**, Bakenaz A. Zeidan** (2016)," Change detection for Lake Burullus, Egypt using remote sensing and GIS approaches, Environmental Science and Pollution Research, 10.1007/s11356-016-8167-y, Dec. 2016

Bakenaz A. Zeidan (2016) "Chapter: Groundwater Degradation and Remediation in the Nile Delta Aquifer" Volume title: The Nile Delta, Springer Project Coordinator: Andrea Schlitz Berger Springer, 10.1007/698_2016_128, Dec. 2016.

Bakenaz A. Zeidan, (2016) "Mathematical Modeling of Environmental Problems" Ch.17, and Vol. (7)"Instrument, Modeling, and Analysis" of the Series "Environmental Science and Engineering" Stadium Press LLC, USA, Vol.7, and pp: 422-461

M. Elshemy, **B. A. Zeidan**, W. Assar. "Water Quality Mitigation Scenarios for Burullus Coastal Lake, Egypt". Proceedings of the "Sixth International Conference on Estuaries and Coasts" (ICEC-2018), August 20 - 23, 2018, Caen, France.

A. Shalby, M. Elshemy, **B. A. Zeidan.** (2018) "Climate Change Impacts on Lake Burullus, Coastal Lagoon (Egypt)". Proceedings of the "Sixth International Conference on

Estuaries and Coasts" (ICEC-2018), August 20-23, 2018, Caen, France.

A. A. Hassan, A. Nada, M. Elshemy, and B**. A. Zeidan** (2018). "Water Quality Management Scenarios for Rosetta Nile Branch, Egypt". Water Security and Climate Change Conference (WSCC2018), December 3–5, 2018, Nairobi, Kenya.

A. A. Hassan, A. Nada, M. Elshemy, and **B. A. Zeidan** (2018) . "Water Quality Management Scenarios for Rosetta Nile Branch, Egypt". Water Security and Climate Change Conference (WSCC2018), December 3–5, 2018, Nairobi, Kenya.

IV. Biography:

Bakenaz A. Zeidan has completed her PhD at the age of 32 years from IIT Bombay, India and Postdoctoral Studies from School of civil engineering, IIT Bombay, India. She is Prof. of water resources engineering and the head of irrigation and hydraulic engineering department, Faculty of Engineering, Tanta University, Egypt. Papers in reputed journals and book chapters and has been serving as an editorial board member of Elsevier. She has supervised many MSc and PhD in water resources and water. Peer Reviewer and Editorial Board member of water international journals. Focal research joint with Zeweil University, Egypt. Focal expert joint with Authority of Fish development. Conducting and organizing scientific seminars and workshops. She has more than 80 international scientific publications. Supervising more than 35 dissertations. Author of scientific chapters and books. Active Member of ECOLD and Delta Alliances. Member of USSD and NGWA. Visiting scholar at UC Berkeley, CA, USA.

Presenting author details

