

Alaa Aldin Tahir Naiem

Abstract

Shatt Al Arab River is suffering from shortage of fresh water resources which increased salinity wedge intrusion from the Arabian Gulf into it and subsequently increased its water salinity. In order to solve this problem, many studies suggested the idea of barrage establishment on Shatt Al Arab River. The scientific opinions of researchers and specialists in this field varied between supporting and rejecting this idea. To reach a conviction about the importance of establishing the barrage, there is an urgent need for studying the influence of barrage construction on Shatt Al Arab River flow.

In this study, a combined 1D/2D simulation model was applied to study Shatt Al Arab river flow using HEC-RAS 5.0.3 software. The study area extended from downstream of Qal'at Saleh Regulator in Maysan Governorate down to Abu Flus Harbor in Basrah Governorate. The model was calibrated and verified using 10-months (Feb. – Nov./2014) water levels records. The upstream boundary condition was the daily discharges of Tigris River at the downstream of Qal'at Saleh Regulator and the downstream boundary condition was the hourly water stages of a tidal station located near to Abu- Flus harbor.

The proposed barrage was located at Shatt Al Arab River in Abu Flus area and its influence on Shatt Al Arab River flow was studied applying two flow cases. These cases were the real flow of the year 2014 and suggested surge of 200 m³/s in the same year. Three cases were adopted for the status of barrage gates; fully opened gates (case B1), auto opened gates (case B2) and fully closed gates (case B3).

From the study results, it has been concluded that the barrage can increase the water levels of Shatt Al Arab River and flood the lands surrounding it during the cases B2 and B3. Thus, it is not suitable to construct the barrage with the present levels of Shatt Al Arab River banks.