

Jittakorn Malisorn 2007: Development of Preliminary Hydraulic Model using MIKE11 Program Approach. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chatdanai Jiradecha, Ph.D. 206 pages.

In this study, a computer program with MATLAB was developed the water flow rate and water level for river in one dimensional for free-surface flows when the water flow rate or water level at the up stream and down stream is known. By using continuous equation, momentum equation and open channel theory were applied according to Abbott – Ionesco. A finite difference scheme was used to create the equation in matrix form and solved them with computation numerical method was also tested. Similar process has also used in MIKE11 program. The numerical stability was also tested

The hydraulic data and the geometry of Tha Chin river has been apply from Muang district, Supanburi Province to the river mouth, at Muang district, Samut Sakorn Province, with a total distance 202 km. was used in simulation in 42 the cross-sections There were Tha Chin river and the water flow rate at up stream boundary, the water level at down stream boundary at  $n+1$  time, the water flow rate and water level at  $n$  time in each point in the river net work was in put water flow rate Model Programming in MATLAB and MIKE11 for comparison. The analytical time step was set at 20 min.

Form the comparison between Model Programming MATLAB and MIKE11 it was found that the water flow rate and water level determined by both programs had similar trend and close to each other in long time period. Prediction provided that the step time condition was in numerical stability range. So this developed program can be applied to estimate the water flow rate and the water level in river or future developed to a more efficiency program in the future.

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Student's signature



Thesis Advisor's signature

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