RIVER MODELING USING HEC-RAS
FOR SUNGAI JUNJUNG

By

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MEI 2006

DECLARATION BY THE CANDITATE

I Muhammad Radzi bin A Rashid, UiTM no. 2002611600 confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

Signature : ……………………………

Date : …………………………….

ACKNOWLEDGEMENT

From the deep of our heart, I express our thanks to Allah, The Almighty who is the most praise worthy. Nothing may take place without His leave. I also want to express my heartiest indebtedness to my families for the tender care and affection.

I would like to dedicate our special compliments to my lecturer, Dr Shanker Kumar Sinnakaudan for his guidance and teaching the subject hydrology.

I am also would like to take this opportunity to express of my greatest gratitude and appreciation to my supervisor, Cik Nur Shazwani Mohammad for advises, guidance, patience, encouragement in the duration of proposal preparation until completed.

I want also to thanks to our beloved father and mother whose never-ending support especially in financial, great understanding and enthusiastic support through out the years that has contributed to success of our academics.

I also would like to take this opportunity to deliver our thanks to all friends who had give us co operations, moral supports and encouragement during the preparation of this report until its complete.

May Allah, The Almighty One shower His blessing upon all of us and make this small effort useful and beneficial for others for future reference. Thank you.

ABSTRACT

Sungai Junjung is located in the district of Seberang Perai Tengah, Pulau Pinang and has catchment area of approximately 127 km² comprising of the main river and its tributes, Sg Macang Bubuk, Sg Cempedak, Sg Junjung Mati, Sg Batu Tiga ,Sg. Perangin and Sg. Tok Subuh. Despite being surrounded by an environment conducive to its development, the area is currently facing a setback arising mainly from lack of flood mitigation master plan. As a result, incidences of flash floods and water logging have become major prevalent problem affecting several areas. This study are to model the river by using HEC-RAS software for the flood mitigation along the course of Sg Junjung.. HEC-RAS model was used to perform one-dimensional (1D) hydraulic calculations for a full network of natural and constructed channels. To perform the hydraulic model using HEC-RAS, the required data were geometric data, flow data and the boundary conditions of the stream. All these data were needed to perform the calculation of hydraulic water surface. As a result, HEC-RAS model showed that the possibility of flood to occur the duration rainfall of 30 minutes for ARI 2,5,20,50, 100 years. Besides that the comparison between different Manning's N also was made. Lastly the new proposed level that obtained hopefully will give to responsible party as a alternative way to solving this problem.

CHAPTER 1

INTRODUCTION

Sungai Junjung is located in the district of Seberang Perai Tengah, Pulau Pinang and has a catchment area of approximately 127 km² comprising of the main river and its tributaries namely Sg Macang Bubuk, Sg Cempedak, Sg Junjung Mati, Sg Batu Tiga ,Sg. Perangin and Sg. Tok Subuh. In recent years, the catchment area of Sg. Junjung and its tributaries have been developed, converting agricultural lands to housing estates. As a result, it has created a severe impact on the hydrological conditions of the area which include the loss of depression storage which has been provided by paddy fields and riverine swamps as well as in giving higher runoff coefficient arising from development.

1.1   River Systems

Sg Junjung is one of the major tributaries of Sg. Jejawi that origins from the mountains area of Bukit Batu Belah located at the eastern sider of the state of Pulau Pinang. It has a total length of about 21 km.