

CHAPTER IX

RECOMMENDATIONS

9.1 CHALLENGING ISSUES

Quantifying the hydrologic responses to the frequent landuse change and rapid development within the catchment together with climate variation is crucial for integrated sustainable water resource management for the PIW. This modeling practice clearly highlighted the influence of deficiency of long-term and reliable timeseries data (i.e. level and discharge of both surface water and groundwater) and spatial field data mainly detailed topography survey. This situation has been further worsened by the significant lack of research in the field of hydrodynamic modelling in general and surface and subsurface flow interaction in particular in Malaysia.

The MIKE SHE could simulate the dynamics of channel water level and in the study catchment, but at the control, obviously the model showed large simulation fluctuations that labeled with poor statistical performance criteria due unavailability of the required scheduled flow operation. Thus, to further test the model accuracy in the study catchment, it is therefore, essential to steadily and continuously consider documentation of the flow strategy for the control gate(s) within the catchment. Furthermore, measurement of both

channel flow and water level at finer temporal scales would be required in the future to better understand the hydrologic processes of the catchment.

Understanding the coupling impacts of the peat conservation and climate variability and their quantitative linkages with different soil hydraulic parameters on the eco-hydrology regime of the watershed could further improve the application of MIKE SHE model in the region.

9.2 RECOMMENDATIONS

The efficient water resource management requires reliable information about all the components of the land phase part of the hydrologic cycle. Thus for sound sustainable development, a watershed-scale management is highly recommended. Furthermore, the following recommendations can, on one hand, improve the accuracy of the model predictability and on the other hand maintain the required balance between the eco-hydrology and rapid urban development:

- i. The physically based MIKE SHE model has a great potential to be used to evaluate the coupling effects of future soil conservation practices and climatic change and variability on watershed hydrology at multiple scales.
- ii. Detailed topographic survey for the Kuala Langat peat swampy forest.

- iii. Installation of an automatic/telemetric monitoring network across the catchment in order to establish a solid database for the different hydrologic components and parameters. These include climatic parameters (precipitation and evapotranspiration), water quality, streamflow and level, runoff plots, soil moisture profiling, groundwater table at both shallow and deep aquifers, and groundwater abstraction.
- iv. Groundwater level should be regularly monitored particularly across the influence zone of the Megasteel pumping, using the piezometers BH5, BH6, BH7 and BH8.
- v. Groundwater level in the peat layer should always be maintained above or close to the ground surface in order to avoid the periodic peat forest fires.
- vi. To sustain the water level of the Paya Indah lakes system and the peat swamp forest, it will be, necessary to store some of water volume at the Kuala Langat swampy forest by activating or reconstructing the control gates along the South-Inlet-Canal which flows across the forest.