CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

Based on the analysis that was done the conclusions that can be made are:

1. NRECA, HBV 96, and NAM model can simulate the observation discharge very well. NRECA low flow difference ranged from 4.84 to 55.98, HBV 96 low flow difference ranged from 5.94 to 19.94, NAM low flow difference ranged from 2.45 to 24.04;
2. NRECA duration curve shows that NRECA can do well in simulating high flow and low flow, because observed graph is perpendicular with simulated graph in several points. Furthermore, the difference in high flow and low flow is relatively small. However, since it tends to over-simulated then it is best to not use NRECA in dry season analysis;
3. HBV 96 parameter calibration shows that the watershed does not change significantly. There were changes in 2005 and 2006 capillary force and percolation in several years. However, the value returned to its original previous value in the next 2 years.
4. Based on the duration curve, HBV 96 model tend to simulate the discharge on the safe side. This conclusion was made since the simulation result for the 1st analysis is approximately average discharge, for high flow is a little over-simulated, and for low flow is a little under-simulated;
5. NAM can pictures whether the watershed is flat land or not. This condition is pictured in CQIF. The closer CQIF to 0, the flatter watershed is;

6. Duration curves of NAM model show that it can simulate 46% - 95% reliable discharge very well. This conclusion can be made since the difference between observed and simulated ranged from 2.45 to24.04;
7. In all three simulations, NRECA result is over-simulated. Which means, NRECA can be very well used for approximation need and flood need. However since its result is over-simulated, then any design that uses NRECA will not be as efficient as using HBV 96 or NAM model;
8. All of the models resulted that the watershed has high porosity. This result aligns with the geology map.

5.2. Recommendations

The following recommendations can be considered to be improved in order to achieve better result:

1. Use longer time series data in the analysis so that verification can be done by using observed discharge as well. Moreover, longer time series data means more detailed analysis;
2. Use the newest time series data so that the result can be used for newest needs;
3. Use better quality data. This recommendation is proposed since the analysis had to be done by using monthly data instead of daily data. Furthermore, there are movement differences between precipitations and observed discharge in some months;
4. Use the newest geological and landuse map.

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