Universiti Teknologi MARA

Fuzzy Logic Water Quality Index (FWQI) Model in Determining the Water Quality Status of River in Penang Island

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

The determination of water quality status of a river or any other water sources is highly undetermined. Thus, it is essential to have a good model to determine the status of water quality. The conventional water quality used by Development of Environment (DOE) has some limitations, by which many researchers have developed and used varieties of water quality measurements, but the value of Water Quality Index (WQI) is still not accurate. In recent years, the fuzzy logic methods have been demonstrated to be appropriate in addressing uncertainty and subjectivity in environmental issues. Therefore, in this study, the development of a new index which is called the Fuzzy Logic Water Quality Index (FWQI) is proposed to determine the water quality status of rivers in Penang Island, which are at Juru River, Pinang River, and Dondang River by using six parameters namely Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solid (TSS), Ammoniacal Nitrogen (NH3-N), and pH value. FWQI is suitable model to be used in determining the status of water quality since the overall rate of accuracy is high. The results from this study shows that the status of the rivers for both stations at Juru River and Pinang River are polluted, while the status is slightly polluted for Dondang River.

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