

ASSESSMENT OF FRESHWATER QUALITY IN ENDAU AREA

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ABSTRACT

Water Quality Index (WQI) uses as a basis for the assessment of a watercourse in relation to pollution load categorization. It designs the classes of beneficial uses of river as stipulated in Intern National Water Quality Standards for Malaysia (INQWS). In this study, the current status of fresh water in the Endau area (Sungai Anak Endau, Sungai Mok and well) was determined by measuring the physicochemical parameters (chemical oxygen demand, total suspended solid, biochemical oxygen demand, ammoniacal nitrogen, pH and dissolved oxygen). The finding of this study shows that all sampling stations for fresh water at Endau were in class II which has read in the range of 76.5% to 92.7%. According to INQWS River Classification indicates that water class II can be used for public consumption but conventional treatment required. Therefore, the application of WQI can be an effective guideline to the residents on assessing the overall quality of freshwater.

Keywords: Water Quality Index, fresh water

INTRODUCTION

Water is the most important resources in human life. It is necessary for all aspects of human ecosystem, survival and health. The water resources of our planet are most threatened aspects in life existence (Ashikin, 2010). Most freshwater occurs in the form of permanent ice or snow, locked up in Antarctica and Greenland, or in deep groundwater aquifers. The principal sources of water for human use are lakes, rivers, soil moisture and relatively shallow groundwater basins. The most valuable freshwater for human is rivers. The availability and distribution of freshwater in riverine systems may give effect on social, economic and political development.

In Malaysia, rainfall is the only source of fresh water, especially during the wet monsoon seasons. Annual downpour amounts to above 900 billion m^3 , of which 566 billion m^3 is in form of surface runoff, 360 billion m^3 is lost through evaporation, and 64 billion m^3 is trapped in aquifers (Government of Malaysia, 1992). The volume of groundwater resources stored in aquifers is estimated at 5000 billion m^3 . Even though groundwater accounts for 90% percent of total freshwater resources, 97% of the national water supply for domestic, agricultural, and industrial use originates from surface run-off. A national demand for water use is expected to grow at a rate of about 4% annually, and projected to be almost 20 billion m^3 by 2020. Of this, 5.8 billion m^3 is for annual domestic and industrial water demand and the remainder for irrigation purposes. On a per day basis, consumption of water has been increased from 7.6mn m^3 in 1995 to 10.4mn m^3 in 2000 (Mak, 2002).

Water quality refers to the physical, chemical and biological status of the water body. Typically, rivers are diverse and biologically productive environments in their natural form. The presence, abundance, diversity and distribution of aquatic species in surface waters are dependent upon of physical and chemical factors such as temperature, pH, suspended solids, nutrients, and chemicals and in-stream. Water qualities reflect the composition of water as affected by natural causes and human cultural activities. It is expressed in measurable quantities and relates to intended water use (Vladimir, 2004).

The Interim National Water Quality Standard for Malaysia adopted by the Department of Environment is used to assess the river water quality and to classify the river into the number of classes. These classes are matched with their beneficial uses by using a Water Quality Index (WQI), which is in turn based on a number of water quality parameters. According to Davis and McCuen (2005) water quality index combines several important water quality parameters that give an overall index of the water quality for a specific use. The WQI was derived by using Dissolved Oxygen (DO), Biochemcial Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH_3-N), Suspended Solids (SS) and pH.