UNIVERSITI PUTRA MALAYSIA

ADAPTATION OF DRASTIC MODEL FOR GROUNDWATER POLLUTION POTENTIAL IN SELANGOR, MALAYSIA

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By

HANIM FARHANA BT ABD RAHMAN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirement for the Degree of Master Science
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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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The problem of groundwater pollution can be expected to increase due to rapid development of urbanization, industrialization and intense agricultural activities. Hydrogeological environmental factors are important parameters to determine the groundwater pollution potential to predict the affected area caused by point source and non point sources of pollutant. In 1985 US Environmental Potential Agency published DRASTIC model to assess groundwater pollution potential. DRASTIC is corresponds to the initials of seven acronym standing for Depth to the water table, Recharge, Aquifer media, Soil media, Topography, Impact of the vadose zone and hydraulic Conductivity of the aquifer. This study describes the results of a groundwater pollution potential using DRASTIC model and GIS based on hydrogeological environmental of Selangor. The modification of ranges and ratings index in DRASTIC were done using Geostatistical Analyst to accommodate hydrogeological settings to implement and adopt data according to Selangor hydrogeological environmental parameters. Results show that DRASTIC Index ranges from 63 to 94. The map of groundwater pollution potential showed that the high risk groundwater pollution potential covered 17% of study area in west side of Selangor. However, only 27% of the east side of Selangor exposed to low risk groundwater pollution potential. Most of the affected area was considered in low land area along the coastal in shallow groundwater table alluvial aquifer. The Pesticide DRASTIC Index ranges from 57 to 110 with highest risk groundwater pollution potential for pesticide covered 5% of study area in northwest side of study area and the lowest risk located at the east side with 25% of study area. The groundwater pollution potential map was successfully developed using hydrogeological parameters for Selangor area. The Pesticide DRASTIC Index is higher than DRASTIC index, it can be concluded that the potential source of groundwater pollution derived from agricultural activities.
MENGADAPTA SI MODEL DRASTIC UNTUK POTENSI PENCEMARAN AIR BAWAH TANAH DI SELANGOR, MALAYSIA

Oleh
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Februari 2014

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I certify that a Thesis Examination Committee has met on 27th February 2014 to conduct the final examination of Hanim Farhana bt Abd Rahman on her thesis entitled Adaptation of DRASTIC Model for Groundwater Pollution Potential in Selangor, Malaysia in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U. (A) 106] 15 March 1998. The committee recommends that the student be awarded the Soil and Water Engineering.

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