

UNIVERSITI TEKNOLOGI MARA

**EVALUATION OF LAND USE LAND COVER
CHANGES IMPACTS ON WATER QUALITY AT
NERUS RIVER USING GEOSPATIAL
TECHNIQUES**

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Dissertation submitted in partial fulfillment
of the requirements for the degree of
Bachelor of Surveying Science and Geomatics (Hons)

Faculty of Architecture, Planning and Surveying

August 2020

AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Remote sensing applications in water resources management are necessary in order to determine the water quality, which is very important in solving related problems in future such as risk illness that caused by polluted water. Over the last 10 years, Nerus River was rapidly changing with new development and affect the water quality along the river. Therefore, in this study geospatial techniques are used effectively because it is combining both Remote Sensing and Geographic Information System. This study was involving certain parameters which are total suspended solid (TSS), pH, dissolve oxygen (DO), ammoniacal nitrogen (NH₃-N), chemical oxygen demand (COD) and biochemical oxygen demand (BOD) that helps to obtain water quality index (WQI). In addition, it was carried out to assess the quality of Nerus River at Kuala Terengganu based on the average of two interval months (March and September) for 3 stations along the river. This sample will be used in WQI algorithm to determine the WQI of the Nerus River whether in excellent, good or poor condition. The software that involves to carry out the result is using Erdas Imagine 2014 and ArcMap 10.5. The image satellite that has been used are LANDSAT 7 ETM+ and SPOT 6 to process the data of Nerus River in 2000 and 2013 respectively. The method that used to do the classification for each year is supervised classification. While, method that applied in ArcMap 10.5 to carried out the result is using Inverse Density Weighted (IDW) interpolation. Other than that, Microsoft Excel also been used to calculate the WQI for each station using WQI algorithm. Overall, the result of this study carried out the relationship between Land use land cover (LULC) change and water quality index (WQI).

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