

Thesis Title

Development of Water Quality Index of
Bangpakong River

Name

Kanate Apikamolkul

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Thesis Supervisory Committee

Usanee Uyasatian , M.Eng.

Linda Wongsanuput , M.S.

Saksit Tridej , Sc.D.

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ABSTRACT

This research aims to establish water quality index for the Bangpakong river . The index will be used as a tool to illustrate water quality where all sectors will be clearly understood . The model is developed by use of the Multivariate Analysis together with SPSS/PC+ . Ten water quality parameters from 16 sampling stations which were collected 17 times by Office of National Environment Board during Jun 1986 to May 1990 , are used in the model. They are Water Temperature , pH , Conductivity , Dissolved Oxygen Deficit in Percentage , Nitrate-Nitrogen , Nitrite Nitrogen , Ammonia-nitrogen , Total Phosphorus , and Faecal Coliform Bacteria .

The Model is formulated as

$$\begin{aligned} \text{INDEX} = & - 19.59189 + 0.10576 [1/\text{TEMP}] \\ & + 1.58819[1/\text{pH}] + 0.00001\log[\text{COND}] \\ & + 0.04393\log[\text{DODP}] + 0.71868\log[\text{BOD}] \\ & - 0.15870\log[\text{NO}_3\text{-N}] - 5.11982\log[\text{NO}_2\text{-N}] \\ & + 7.77345\log[\text{NH}_3\text{-N}] + 12.26305\log[\text{TPHOS}] \\ & + 0.00003\log[\text{COLI}] \end{aligned}$$

This Model gives an accurating output within 99.44 percent ($R^2 = 0.99442$)

When parameters inputs are used in the model , The Bangpakong River Water Quality Index falls between 21.48 - 52.16 . This illustrate the fair to low water quality of the river which conforms to the Surface Water Quality Classification that has been set up for the Bangpakong River by the Office of the National Environment Board .

However , it is observed that the water quality of the Bangpakong River has been found lower than the given standard in the lowe reach . therefore , Effective plans and mitigative measures are needed in order to conserve and improve the water quality . The another reccommends further developments in water quality index for other rivers .