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DEVELOPMENT OF A VERSATILE WATER QUALITY INDEX FOR WATER SUPPLY APPLICATIONS

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Abstract

Water quality index is an essential tool for water quality assessment. Considering the frequent use of automated water quality monitoring systems, their importance in generating data and information for the efficient management of water treatment plants, the design of such an index would allow the detection of point-pollution episodes, which otherwise would occur undetected and would have a significant impact on the water quality and its further treatment. In this study, a versatile weighted water quality index is presented. The proposed index is validated by using historical data recorded by the on-line monitoring system at the intake from Prut River during the period February - December 2012. The parameters selected for evaluation were: pH, temperature, turbidity, conductivity, dissolved oxygen, nitrates and total organic carbon. The weighted index is compared with the well-known Canadian water quality index. For the period under study, the scores for both indexes resulted in class IV of quality, corresponding to a medium water quality. The sensitivity analysis indicates a higher accuracy of the weighted index model as compared to the Canadian index model.

The proposed index may be used as a communication tool for water quality towards the general public and various other water stakeholders, and as an operational control instrument for comparing water quality to diverse uses requirements (drinking water use in this study).

Key words: automated monitoring system, surface water, water quality index

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