

A Wireless Sensor Network (WSN)–Based Water Quality Monitoring for the Characterization of Fishing Grounds Near the Mining Areas of Tubay, Agusan Del Norte, Philippines

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Abstract

Water quality has an impact on the fishing and aquaculture industry of a community. Tubay Bay is one of the main sources of coastal products of nearby cities like Butuan and Cabadbaran and also serves as the navigation routes of hauling ships of mining companies. Of the Water Quality Index (WQI), the Environmental Management Bureau (EMB) water quality data shows that the pH levels exceeded the limit. This paper presents the initial outputs in the development of a low-cost wireless sensor network (WSN) system using open-source hardware platforms to monitor the pH of the water bodies at Tubay, Agusan del Norte, Philippines. The proposed system is devised to be highly scalable in terms of the type of sensors, the number of sensor nodes, and the technology applied for each node. This is well suited for a wider coverage of monitoring the WQIs of Tubay Bay. Results of this study showed a good transmission performance of real-time water quality data in any areas where GSM signal is present. The established platform and database of this study could provide valuable information that could support or contradict claims by the local government units (LGUs) on the effects of mining activities to the agro-fishing activities in the area and provide insights on which water quality parameters or water condition that are highly correlated to pH must be closely monitored. This demonstrates the use of WSN in establishing a low cost but effective monitoring tool that can be replicated in other areas that need extensive monitoring.