ABSTRAK

Pada penelitian ini digunakan dua metode logika fuzzy, yaitu metode Tsukamoto dan metode Mamdani dalam membuat sebuah model penentuan status mutu air Danau Maninjau. Variabel *input* yang digunakan meliputi suhu air, pH, DO *(Dissolved Oxygen)*, TSS *(Total Suspended Solid)*, TDS *(Total Dissolved Solid)*, BOD *(Biochemical Oxygen Demand)*, COD *(Chemical Oxygen Demand)*, NO_2, dan NO_3 yang dibagi ke dalam dua kategori himpunan fuzzy, yaitu AMAN dan TIDAK AMAN. Variabel *output* yaitu status mutu air yang dibagi ke dalam empat kategori himpunan fuzzy berdasarkan kriteria status mutu air, yaitu memenuhi baku mutu (MBM), cemar ringan (CR), cemar sedang (CS), dan cemar berat (CB). Hasil penelitian menunjukkan bahwa model status mutu air pada metode Tsukamoto menghasilkan nilai MAPE sebesar 40% dan nilai MSE 0,472, sedangkan pada metode Mamdani menghasilkan nilai MAPE sebesar 42% dan nilai MSE 0,678.

Kata Kunci : *Logika fuzzy, metode mamdani, metode tsukamoto, pemodelan, status mutu air*

ABSTRACT

In this research, two fuzzy logic methods are used, namely the Tsukamoto method and the Mamdani method in making a model for determining the water quality status of Lake Maninjau. The input variables used include water temperature, pH, DO (Dissolved Oxygen), TSS (Total Suspended Solid), TDS (Total Dissolved Solid), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), NO_2, and NO_3 which are divided into two fuzzy set categories, namely SAFE and UNSAFE. The output variable is water quality status which is divided into four categories of fuzzy sets based on water quality status criteria, namely meets quality standards (MMS), lightly polluted (LP), moderately polluted (MP), and heavily polluted (HP). The results showed that the water quality status model in the Tsukamoto method produced a MAPE value of 40% and an MSE value of 0.472, while the Mamdani method produced a MAPE value of 42% and an MSE value of 0.678.

Keywords : *Fuzzy logic, method mamdani, method tsukamoto, modelling, water quality status*