

RINGKASAN

Sungai Batang Tembesi merupakan salah satu sungai yang terletak di Kabupaten Sarolangun, Provinsi Jambi. Sungai Batang Tembesi berhulu di Kecamatan Pauh dan bermuara di Sungai Batang Hari. Panjang Sungai Batang Tembesi mencapai 36 km, Sungai Batang Tembesi merupakan sungai yang menerima sumber pencemar seperti limbah pertanian, perusahaan, anak sungai dan limbah domestik yang mengakibatkan perubahan pada kualitas air Sungai Batang Tembesi. Penelitian ini bertujuan untuk menganalisis kualitas air Sungai Batang Tembesi parameter *Biochemical Oxygen Demand*, *Chemical Oxygen Demand* dan *Dissolved Oxygen*. Serta menghitung daya tampung beban pencemaran Sungai Batang Tembesi, dan mengetahui penerapan Qual2Kw dalam menentukan daya tampung Sungai Batang Tembesi. Metode yang digunakan dalam pengambilan sampel adalah *grab sampling* dengan 10 titik lokasi penelitian di Sungai Batang Tembesi, sedangkan data sekunder yang diperlukan meliputi data meteorologi, data hidrolik dan data kualitas sungai.

Hasil pengukuran dan pengujian kualitas air Sungai Batang Tembesi parameter *Biochemical Oxygen Demand*, *Chemical Oxygen Demand* dan *Dissolved Oxygen* di 9 segmen masih ada dibawah baku mutu air kelas dan ada beberapa segmen yang melebihi baku mutu air kelas II PP No 5 Tahun 2021. Hasil penelitian parameter BOD pada segmen 1 sampai segmen 9 masih memenuhi baku mutu yang berkisar antara 2,721 mg/l. sedangkan untuk parameter COD pada segmen 1 sampai segmen 9 masih memenuhi baku mutu yang berkisar antara 18,71 mg/l. dan untuk parameter DO pada segmen 1 sampai segmen 9 masih memenuhi baku mutu minimum 4 dengan berkisar antara 5,882 mg/l. dalam pemodelan Qual2Kw dilakukan 3 teknik simulasi yaitu skenario 1 yang menggambarkan kualitas eksisting, skenario 2 yang menggambarkan kualitas sungai tanpa adanya beban pencemar, dan skenario 3 menggambarkan kualitas sungai yang memenuhi baku mutu. Setelah semua data didapatkan maka akan diinput ke dalam Qual2Kw dan model dijalankan. Berdasarkan penelitian dan analisis model yang dilakukan, didapatkan nilai daya tampung beban pencemar parameter *Biochemical Oxygen Demand*, *Chemical Oxygen Demand* dan *Dissolved Oxygen* pada segmen 1 sebesar (BOD 9,270 kg/l, COD 47,046 kg/l, DO 7,162 kg/l), segmen 2 sebesar (BOD 9,481 kg/l, COD 31,661 kg/l, DO 13,262 kg/l), segmen 3 sebesar (BOD 5,456 kg/l, COD 45,853 kg/l, DO 21,640 kg/l), segmen 4 sebesar (BOD 11,509 kg/l, COD 58,510 kg/l, DO 16,328 kg/l), segmen 5 sebesar (BOD 12,531 kg/l, COD 196,671, DO 942,3 kg/l), segmen 6 sebesar (BOD 11,636 kg/l, COD 185,067 kg/l, DO 931,8 kg/l), segmen 7 sebesar (BOD 309,9 kg/l, COD 200,538 kg/l, DO 13,648 kg/l), segmen 8 sebesar (BOD 229,2 kg/l, COD 117,470 kg/l, DO 10,731 kg/l), segmen 9 sebesar (BOD 213,7 kg/l, COD 126,691 kg/l, DO 11,250 kg/l).

SUMMARY

The Batang Tembesi River is a river located in Sarolangun Regency, Jambi Province. The Batang Tembesi River has its headwaters in Pauh District and empties into the Batang Hari River. The length of the Batang Tembesi River reaches 36 km. The Batang Tembesi River is a river that receives sources of pollution such as agricultural waste, companies, tributaries and domestic waste which results in changes to the water quality of the Batang Tembesi River. This research aims to analyze the water quality of the Batang Tembesi River for Biochemical Oxygen Demand, Chemical Oxygen Demand and Dissolved Oxygen parameters. As well as calculating the capacity to carry the pollution load of the Batang Tembesi River, and knowing the application of Qual2Kw in determining the capacity of the Batang Tembesi River. The method used in sampling was grab sampling with 10 research location points on the Batang Tembesi River, while the data secondary required included meteorological data, hydraulic data and river quality data.

The results of measuring and testing the air quality of the Batang Tembesi River, the Biochemical Oxygen Demand, Chemical Oxygen Demand and Dissolved Oxygen parameters in 9 segments are still below class water quality standards and there are several segments that exceed class II water quality standards. PP No. 5 year 2021. The results of research on BOD parameters in segments 1 to segment 9 still meet quality standards ranging from 2,721 mg/l. Meanwhile, the COD parameters in segments 1 to segment 9 still meet the quality standards ranging from 18.71 mg/l. and for DO parameters in segments 1 to segment 9 it still meets the minimum quality standard 4 with a range of 5.882 mg/l. In Qual2Kw modeling, 3 simulation techniques are carried out, namely scenario 1 which describes the existing quality, scenario 2 which describes the quality of the river without any pollutant load, and scenario 3 which describes the quality of the river which meets quality standards. After all the data is obtained it will be input into Qual2Kw and the model will be run. Based on the research and model analysis carried out, the pollutant load capacity values obtained for the parameters Biochemical Oxygen Demand, Chemical Oxygen Demand and Dissolved Oxygen in segment 1 are (BOD 9,270 kg/l, COD 47,046 kg /l, DO 7,162 kg/l), segment 2 is (BOD 9,481 kg/l, COD 31,661 kg/l, DO 13,262 kg/l), segment 3 is (BOD 5,456 kg/l, COD 45,853 kg/l, DO 21,640 kg/l), segment 4 is (BOD 11,509 kg/l, COD 58,510 kg/l, DO 16,328 kg/l), segment 5 is (BOD 12,531 kg/l, COD 196,671, DO 942.3 kg/l) , segment 6 is (BOD 11,636 kg/l, COD 185,067 kg/l, DO 931.8 kg/l), segment 7 is (BOD 309.9 kg/l, COD 200,538 kg/l, DO 13,648 kg/l) , segment 8 is (BOD 229.2 kg/l, COD 117,470 kg,l, DO 10,731 kg/l), segment 9 is (BOD 213.7 kg/l, COD 126,691 kg/l, DO 11,250 kg/l) .