

ANALISIS DEBIT INFLOW DAN KUALITAS AIR LIMBAH DOMESTIK PADA RUAS TIMUR SUNGAI WINONGO (Studi Kasus dari Jembatan Serangan – Jembatan Tamansari di Kelurahan Notoprajan Yogyakarta)

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ABSTRAK

Sungai Winongo merupakan salah satu sungai yang berada di Kota Yogyakarta yang mengalami pencemaran dari air limbah domestik. Air limbah domestik berasal dari kegiatan rumah tangga seperti mandi, cuci, dan kakus pada bantaran sungai yang langsung dialirkan menuju saluran drainase atau langsung dibuang ke badan sungai Winongo. Penelitian ini dilakukan dengan tujuan untuk mengetahui debit limbah dan kualitas air limbah pada setiap titik pembuangan limbah domestik serta upaya mengurangi pencemaran air limbah domestik terhadap kualitas air parameter BOD.

Metode pengukuran debit yang digunakan pada penelitian di ruas timur Sungai Winongo dari Jembatan Serangan – Jembatan Tamansari Kelurahan Notoprajan Yogyakarta, menggunakan metode volumetrik dengan cara mengukur lama pengisian tampungan dalam waktu tertentu. Parameter yang diteliti meliputi suhu, pH dan BOD. Penentuan pengambilan sampel setiap titik lokasi dilakukan pada pagi hari jam 07.00 - 08.00 dengan menggunakan metode integrated sample berdasarkan SNI 6989.59:2008 dan Pengujian parameter BOD menggunakan metode Winkler/Iodometri berdasarkan SNI 6989.72:2009.

Hasil perhitungan debit air limbah yang diperoleh, pada waktu sibuk titik 1 = 0,216 l/d, titik 2 = 0,462 l/d, titik 3 = 0,385 l/d, titik 4 = 0,167 l/d, titik 5 = 0,837 l/d, titik 6 = 0,262 l/d, titik 7 = 0,122 l/d, dan titik 8 = 0,078 l/d dengan total debit keseluruhan sebesar 2,529 l/d. Sedangkan waktu luang titik 1 = 0,182 l/d, titik 2 = 0,44 l/d, titik 3 = 0,318 l/d, titik 4 = 0,034 l/d, titik 5 = 0,59 l/d, titik 6 = 0,042 l/d, titik 7 = 0,015 l/d, dan titik 8 = 0,012 l/d, dengan total debit keseluruhan sebesar 1,632 l/d. Parameter BOD yang tidak melebihi baku mutu air limbah menurut PERDA DIY No. 7 Tahun 2016 meliputi titik 2 = 11,12 mg/l, titik 3 = 60,36 mg/l, titik 4 = 28,02 mg/l, dan titik 5 = 27,21 mg/l, sedangkan nilai BOD yang melebihi baku mutu air limbah meliputi titik 1 = 154,4 mg/l, titik 6 = 134,85 mg/l, titik 7 = 134,74 mg/l, dan titik 8 = 113,57 mg/l.

Kata Kunci : Air Limbah Domestik, BOD, Debit Air Limbah, Kualitas Air.

ANALYSIS OF INFLOW DEBIT AND DOMESTIC WASTEWATER QUALITY IN THE EAST SEGMENT OF THE WINONGO RIVER (Case Study of Serangan Bridge – Tamansari Bridge In Notoprajan Village, Yogyakarta)

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ABSTRACT

Winongo River is one of the rivers in Yogyakarta City which is polluted from domestic wastewater. Domestic waste water comes from household activities such as bathing, washing, and latrines on riverbanks which are directly channeled into drainage channels or directly discharged into the Winongo river body. This research was conducted with the aim of knowing the discharge and quality of wastewater at each point of domestic waste disposal as well as efforts to reduce domestic wastewater pollution to the water quality parameter BOD.

The discharge measurement method used in the study on the east section of the Winongo River from Serangan Bridge - Tamansari Bridge, Notoprajan Village, Yogyakarta, uses the volumetric method by measuring the filling time of the reservoir in a certain time. The parameters studied included temperature, pH and BOD. Determination of sampling for each location point is carried out in the morning at 07.00 - 08.00 using the integrated sample method based on SNI 6989.59:2008 and BOD parameter testing using the Winkler/Iodometry method based on SNI 6989.72:2009.

The results of the calculation of wastewater discharge obtained, at busy times point 1 = 0.216 l/s, point 2 = 0.462 l/s, point 3 = 0.385 l/s, point 4 = 0.167 l/s, point 5 = 0.837 l/s, point 6 = 0.262 l/s, point 7 = 0.122 l/s, and point 8 = 0.078 l/s with a total overall discharge of 2.529 l/s. While the free time is point 1 = 0.182 l/s, point 2 = 0.44 l/s, point 3 = 0.318 l/s, point 4 = 0.034 l/s, point 5 = 0.59 l/s, point 6 = 0.042 l/s, point 7 = 0.015 l/s, and point 8 = 0.012 l/s, with a total overall discharge of 1.632 l/s. BOD parameters that do not exceed the waste water quality standard according to PERDA DIY No. 7 of 2016 includes point 2 = 11.12 mg/l, point 3 = 60.36 mg/l, point 4 = 28.02 mg/l, and point 5 = 27.21 mg/l, while the BOD value that exceeds wastewater quality standards include point 1 = 154.4 mg/l, point 6 = 134.85 mg/l, point 7 = 134.74 mg/l, and point 8 = 113.57 mg/l.

Keywords : Domestic Wastewater, BOD, Wastewater Discharge, Water Quality.