

Penentuan Daya Tampung Beban Pencemar Dampak Penggunaan Lahan di Sungai Cirarab (Kajian pada Sungai Cirarab Segmen Kecamatan Curug) = Determination of Total Maximum Daily Load Impact of Land Use in Cirarab River (Study on Cirarab River, Curug Subdistrict segment).

Kus Indriyani, author

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Abstrak

Air bersih adalah kebutuhan dasar manusia, namun keberadaannya terancam karena limbah akibat aktivitas manusia di sempadan sungai. Sungai Cirarab adalah salah satu sungai yang melintasi Kabupaten Bogor, Kabupaten Tangerang, dan Kota Tangerang. Sungai ini mempunyai peran penting sebagai sumber air baku bagi masyarakat Kota Tangerang, namun status mutu sungai ini tercemar berat di bagian hilir dan muara.

Tujuan dari riset ini adalah (1) mengidentifikasi sumber pencemar dan menganalisis potensi beban pencemar Sungai Cirarab segmen Kecamatan Curug, (2) menganalisis kondisi sosial (penggunaan lahan dan partisipasi dalam mengolah limbah cair) masyarakat di Sempadan Sungai Cirarab, (3) menganalisis daya tampung beban pencemaran Sungai Cirarab, serta (4) membuat rekomendasi strategi pengelolaan Sungai Cirarab segmen Kecamatan Curug. Riset ini menggunakan pendekatan kuantitatif, dengan metode gabungan kuantitatif-kualitatif. Penggunaan lahan diperoleh dari interpretasi data citra satelit dan daya tampung beban pencemar sungai diperoleh dari permodelan kualitas air Qual2Kw.

Hasil riset menunjukkan sumber pencemar Sungai Cirarab segmen Kecamatan Curug berasal dari 154.399 jiwa penduduk dan 209 industri. Potensi beban pencemar dari limbah domestik adalah 2.615,78 kgBOD/hari dan 3.596,96 kgCOD/hari, dengan sub segmen Kadu Jaya memberikan beban paling besar. Potensi beban pencemar dari limbah industri adalah sebesar 105,86 kgBOD/hari dan 140,63 kgCOD/hari, dengan sub segmen Kadu Jaya memberikan beban paling besar. Penggunaan lahan di DAS Cirarab didominasi oleh pemukiman dan industri. Permukiman paling luas ditemukan pada sub segmen Curug Kulon sebesar 145,10 ha disisi barat dan 251,77 ha di sisi timur sungai. Industri paling luas ditemukan pada sub segmen Kadu Jaya sebesar 88,00 ha di sisi barat dan 436,59 ha disisi timur sungai. Partisipasi masyarakat dalam kepemilikan septictank tergolong sedang (53%) dan partisipasi industri dalam kepemilikan IPAL tergolong rendah (22%). Berdasarkan hasil perhitungan DTBP yang diperoleh melalui permodelan, beban pencemar eksisting yang masuk pada setiap sub segmen sudah melebihi DTBP sehingga harus direduksi. Reduksi beban pencemar paling tinggi adalah di sub segmen Curug Kulon dengan penurunan sebesar 6.951,99 kgBOD/hari (71%) dan 17.775,45 kgCOD/hari (59%). Strategi yang direkomendasikan adalah penataan ulang tata ruang, pembangunan septictank individual atau komunal, pengawasan terhadap operasional IPAL industri, pengecekan ulang IPLC, dan penegakan hukum.

.....Clean water is a basic human need, but its existence is threatened by waste due to human activity on the river watershed. The Cirarab River is one of the rivers that crosses Bogor Regency, Tangerang Regency, and Tangerang City. This river has an important role as a source of raw water for the people of Tangerang City, but the quality status of the river is heavily contaminated in downstream and estuary.

The purpose of this research is (1) to identify the source of polluters and to analyse the potential pollutant load of the river Cirarab, Curug subdistrict segment, (2) Analyzing social conditions (land use and participation in the processing of liquid waste) community in The watershed of the Cirarab River, (3) analyzes the total maximum daily load of the Cirarab River, and (4) make a recommendation strategy of the Cirarab River, Curug subdistrict segment. This research uses a quantitative approach, with a quantitative-qualitative method. Land use is derived from the interpretation of satellite imagery data and the load capacity of river pollutants obtained from the Qual2Kw.

The results of the research shows the source of contaminants of Cirarab River in Curug subdistrict, derived from 154,399 inhabitants and 209 industries. The potential for pollutants from domestic waste is 2,615.78 kgBOD/day and 3,596.96 kgCOD/day, with Kadu Jaya giving the most load. The potential pollutants from industrial waste is 105.86 kgBOD/day and 140.63 kgCOD/day, with Kadu Jaya giving the most load. Land use at Cirarab watershed is dominated by settlements and industry. The most widespread settlements were found in the Curug Kulon of 145.10 ha on the west side and 251.77 ha on the east side of the river. The most widespread industry was found at Kadu Jaya 88.00 ha on the west side and 436.59 ha on the east side of the river. Community participation in ownership of Septictank is medium (53%) and industry participation in ownership of wastewater treatment plant is low (22%). Based on the results of the calculation of total maximum daily load (TMDL) obtained through the modelling, the load of existing pollutants that enter on each sub-segment has exceeded the TMDL to be reduced. The highest pollutant load reduction is at Curug Kulon with a reduction of 6,951.99 kgBOD/day (71%) and 17,775.45 kgCOD/day (59%). The recommended strategy is spatial reordering, development of individual or communal septictanks, surveillance on wastewater treatment plant operations, re-checking wastewater discharge permit, and law enforcement.