

KAJIAN DISTRIBUSI SEDIMEN PADA WADUK SEMPOR DENGAN *EMPERICAL AREA REDUCTION METHOD* DAN *AREA INCREMENT METHOD*

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ABSTRAK

Sedimentasi merupakan suatu permasalahan yang hampir terjadi pada setiap waduk karena akan menimbulkan pendangkalan, sehingga umur waduk tidak sesuai dengan rencana. Perlunya program *monitoring* dan evaluasi untuk mengetahui perubahan karakteristik tampungan (kurva H-V) akibat adanya sedimen yang masuk ke waduk. Pengukuran *echosounding* akan menghasilkan data kontur waduk, kurva H-V, kapasitas tampungan dan laju endapan sedimen per tahun. Namun dalam praktik di lapangan, tidak semua pengelola waduk melakukan pengukuran *echosounding* secara periodik, karena pertimbangan biaya pelaksanaan yang cukup mahal, sehingga diperlukan dengan kurva H-V yang akurat.

Penelitian dilakukan dengan studi kasus Waduk Sempor. Data yang digunakan berupa data sekunder, meliputi: data *echosounding*, karakteristik sedimen dan data tipe Waduk Sempor. Distribusi sedimen menggunakan *Empericl Area Reduction Method* dan *Area Increment Method*. Analisis statistik berupa *Relative Mean Error* (RME) dan *Root of Mean Square Error* (RMSE) digunakan untuk melihat tingkat akurasi dari kedua metode tersebut.

Hasil analisis didapatkan kurva H-V dari distribusi sedimen dari kedua metode tersebut. Tingkat akurasi dari *Empericl Area Reduction Method*, didapatkan nilai *Relative Mean Error* (RME) 0.048 dan nilai *Root of Mean Square Error* (RMSE) 0.038. Tingkat akurasi dari *Area Increment Method* nilai *Relative Mean Error* (RME) 0.01 dan nilai *Root of Mean Square Error* (RMSE) 0.771. Hasil tingkat akurasi didapatkan bahwa metode yang cocok adalah *Empericl Area Reduction Method*.

Kata Kunci : Distribusi sedimen, tingkat akurasi, sedimen, waduk.

ABSTRACT

Sedimentation is a common problem which usually occurs in every reservoir/lake because it will surely cause siltation, so that the use span of the reservoir won't be long or maximum. The need of a program for monitoring and evaluation determines changes in the characteristics of the reservoir (H-V curve) because of the presence of sediment in the reservoir. The use of Echo sounding measurement will produce reservoir contour data, H-V curves, storage capacity and the average of sediment deposition per year. But in the real condition in the field, not all reservoir managers

apply echo sounding measurement periodically, because it is considered that the implementation costs is quite expensive, so it is necessary to have an accurate H-V curve. The study was conducted with a case study of the Sempor Reservoir. The data used in the form of secondary data, including: echo sounding data, sediment characteristics and data types of Sempor Reservoir. Sediment distribution using Empirical Area Reduction Method and Increment Area Method. Statistical analysis in the form of Relative Mean Error (RME) and Root of Mean Square Error (RMSE) were used to see the accuracy of the two methods. The results of the analysis obtained the H-V curve from the sediment distribution of the two methods. The accuracy of the Empirical Area Reduction Method, obtained the value of Relative Mean Error (RME) 0.048 and the value of Root of Mean Square Error (RMSE) 0.038. The accuracy of the Area Increment Method is the value of Relative Mean Error (RME) 0.01 and the value of Root of Mean Square Error (RMSE) 0.771. The results of the accuracy level found that the suitable method is Empirical Area Reduction Method.

Keywords: *Sediment distribution, level of accuracy, sediment, reservoir.*