ABSTRACT

AULDRY F. WALUKOW. Design of Lake Integrated Management by Environmental Concept – Case Study at Sentani Lake. Under the direction of DJOKOSETIYANTO, KHOLIL and DEDI SOEDHARMA.

Sentani Lake is one of potential natural resources. The water from it is used for household, fishery, transportation, irrigation and ecotourisme. Position of Sentani Lake is South of Sentani Citi that is capital city of Jayapura regency. Sentani Lake is arrounded by settlement. Livelyhood most of resident are aquaculture fisherman and farmers. Innerastronomy position Sentani Lake at 140° 23' LS - 140° 50' LS and 2° 31' BT – 2° 41' BT. The aims of this research are analyze Sentani Lake carrying capacity, develop model of management institution and design model of lake sustainable management using dynamic system. Analyze total of pollution source, pollution load and water quality in 2002 – 2032 period. Dynamic model method which is used is powersym tool 2.5d and Sentani Lake institution analyze by Interpretatif Structural Modelling (ISM) method. Assimilation capacity are TDS (12184,94 ton/month), BOD (11,31973 ton/month), COD (122,4184 ton/month), PO4 (1,401685 ton/month), NO3 (185,2202729 ton/month), Fe (0,226383192 ton/month), Cl (15286,18799 ton/month), SO4 (1276,118 ton/month), Zn (0,169118 ton/month), Cu (-0,06125 ton/month), Cr (0,769953052 ton/month), and NH3 (8,620493359 ton/month). Number of pollution load Cu, PO4, Zn and Fe were heigher than assimilation capacity value. Pollution load number (TDS, BOD and COD) were lower than assimilation capacity number. TDS parameter value is highest in 2007 and the value is 739,9296 ton. Increasing of pollution is leverage factor of waste increas, fish float net – that it is used to cultivate fish, human, cow, and pig feses and erotion. This result in Sentani Lake pollution cause. The effort to minimize total pollution ressources and pollution load are fungsional intervention by decrease of population grow rate. In other hand structural intervention are applied to fish float net number, settlement area, agriculture area, number of cow and pig.

Key words : assimilation capacity, pollution load, population increase, Sentani Lake.