

KAJIAN SEDIMENTASI WADUK BERDASARKAN KONDISI TATAGUNA LAHAN (STUDI KASUS WADUK SERMO KABUPATEN KULON PROGO PROPINSI DAERAH ISTIMEWA YOGYAKARTA)

Sigit Setiawan

NIM : 08/276018/PTK/5195

Telah dipertahankan di depan Dewan Penguji
Pada tanggal 15 Juni 2010

Pembimbing Utama

Dr. Ir. Bambang Yulistiyanto

Pembimbing Pendamping

Prof. Dr. Ir. Fatchan Nurrochmad, M.Agr

Anggota Dewan Penguji Lain

Dr. Ir. Rachmad Jayadi, M.Eng

ABSTRACT

50 years. It was designed to intercept 25 million cubic waters. The main function of the dam was to supply irrigation, domestic water, and maintainance river. The problem that was found in cathment area was the entry of high rate sediment to the resevoir due to land slide and land erosion, so it can reduce useful life. The con sevation efforts to decrease land erosion and sedimentation have been done by BPSDA Sermo Dam, surrounding community, and related institutions. Those are the making of canal surround the reservoir, the check dam in the rivers which enter the reservoir, green belt, reforestation in cathment area through community development, and training as a main of land conservation. This research aims to investigating and analyze sheet erosion and sediment delivery ratio (SDR) from land use in 1994 (RBI map) and in 2007 (Citra ALOS map), and investigating the capability of land use in 2007 in maintaining useful life and giving the possible conservation program.

The calculation sheet erosion was done by overlying rain erosivity, soil types, slope classes, and land use become land unit map. The USLE formula was applied estimate the average annual sheet erosion rate. The sheet erosion was compared with echosounding data in coresponding year to obtain SDR. Sheet erosion and SDR were used to predict useful life of resevoir with dead storage method and the empirical area reduction method.

The research finding showed that according to the map land use in 1994, the number of sheet erosion was 11,5 mm/year and land use in 2007 was 3,6 mm/year. SDR in 1998 was 0,42 and SDR in 2007 was 0,79. The useful life with dead storage method according to the condition in 2007 up till year of thirtyninth or up till 2035. Based on the empirical area reduction method in the year of thirty -ninth reservoir base in the elevation of +102,06 MSL and the year of fifth reservoir base in the elevation of +106 MSL or below intake of +113,7MSL. The conservation effort to extend reservoir useful life such as terrace rehabilitation, changes of plants composition in slope class III, and change open land with crop become mix crop garden for slope class IV and V. Routine scraping to the existing check dam is still needed in order to maintenance sediment no more than 39.000 m³/year.

Keyword :

land use, land erosion, USLE formula, reservoir sedimentation