

INTISARI

Daerah Irigasi Rawa Tahai merupakan bagian pengembangan kawasan rawa di Provinsi Kalimantan Tengah. Panjang saluran primer Tahai adalah 10.45 kilometer. Saluran sekunder ada di kedua sisinya tiap 200 meter. Saluran primer bermuara di Sungai Kahayan. Ujung saluran tersebut dahulunya dibuatkan kolam pasang. Luas Daerah Irigasi Rawa Tahai adalah 3517 ha. Penduduk memanfaatkan lahan untuk padi sawah (43.3%), perkebunan (41.4%), dan pemukiman (11.4%). Lahan yang tidak dimanfaatkan hanya 3.9% dari total lahan berupa semak belukar. Daerah Irigasi Rawa Tahai mengandalkan air hujan sebagai sumber air irigasi. Jaringan tata air di Tahai bertipe sisir. Ujung saluran primer tidak berhubungan lagi dengan aliran lain. Ujung-ujung saluran sekunder juga tidak berhubungan lagi dengan saluran kolektor. Situasi ini mengakibatkan sedimen mengendap di ujung-ujung saluran. Di sisi lain, personel lembaga pengelolaan pengairan saat ini terdiri dari satu pengamat, satu staf, dan tiga juru tanpa petugas pintu air. Hal ini menyebabkan terbatasnya operasi saluran.

Tujuan penelitian adalah mengetahui penyebaran sedimen yang berasal dari buangan air lahan pada tata air eksisting sebelum terjadi pengendapan. Penelitian ini menyediakan rekomendasi untuk mengurangi proses pendangkalan saluran. Sedimen suspensi diwakili dengan *dissolved solids*. Sistem tata air eksisting direncanakan menjadi sistem aliran satu arah dengan penambahan saluran kolektor kanan untuk melancarkan pembuangan air ke Sungai Kahayan. Rencana sistem tata air ini dimodelkan dan disimulasikan menggunakan HEC-RAS.

Simulasi hidraulik menunjukkan terjadinya perbaikan kemampuan pengaliran saluran. Di saluran sekunder, jumlah *dissolved solids* pada sistem aliran satu arah lebih sedikit daripada jumlah *dissolved solids* pada sistem tata air eksisting. Skenario pertama (dengan ambang dan pintu klep) dapat mengurangi jumlah *dissolved solids* hingga 84%. Skenario kedua (dengan ambang dan pintu sorong) dapat mengurangi *dissolved solids* hingga 99%. Terakhir, skenario ketiga (dengan pintu skot balok dan pintu sorong) dapat mengurangi *dissolved solids* hingga 98%. Skenario bangunan pintu dalam simulasi hidraulik dikaitkan dengan jumlah personel lembaga pengairan. Kajian jumlah personel kelembagaan mengacu kepada Peraturan Menteri PU nomor 11 tahun 2015. Hasilnya, lembaga pengairan membutuhkan tambahan dua orang staf untuk semua skenario dan tambahan sepuluh petugas pintu air untuk skenario kedua dan ketiga.

Keywords: Tata Air, Tahai, HEC-RAS, Personel Lembaga Pengairan

ABSTRACT

The ongoing lowland development project in Central Kalimantan Province includes the Tahai lowland irrigation area. The length of the primary channel of Tahai is 10.45 kilometers. There is secondary channel on both sides every 200 meters. The primary channel boils down into the Kahayan River. An upstream pond was once constructed at the channel's end. The total area of Lowland Irrigation Tahai is 3517 ha. Local people use land for paddy fields (43.3%), plantations (41.4%), and housing (11.4%). Unused land is only 3.9% of the total land in the form of shrubs. The Tahai Lowland Irrigation Area relies on rainwater as a source of irrigation water. The primary channel's end is not connected to any other flow sources in Tahai's comb-type channel system network. The end of the secondary channel is also no longer connected with the collector channel. This situation impacts sediment deposition at the end of the channels. On the other hand, the personnel of Tahai water management agencies currently consist of one observer, one staff, and three clerks a water gate officer. This leads to limited operation of the channel.

The goal of the study was to ascertain how sediment from fields was distributed in the Tahai channel network before deposition occurs. The study offers suggestions for slowing the channel's silting process as well. Dissolved solids served as a representation of suspension sediments. In order to hasten the drainage of water into the Kahayan River, the current water channel system could be changed into a one-way flow system with adding a right collector channel. HEC-RAS is used to build and simulate this water channel system plan.

Hydraulic simulation shows an improvement in the channel drainability. In the secondary channel, there were fewer dissolved solids of the one-way flow system than there were in the existing water channel system. In the first scenario (with weir and flap gate) dissolved solids could be reduced by up to 84%. In the second scenario (with a weir and sluice gate), dissolved solids could be reduced by up to 99%. The third scenario (with sluice gate and a stop log gate), dissolved solids could be reduced by up to 98%. The scenario of water gate in hydraulic simulations is associated with the number of personnel of Tahai water management agencies. The study of the number of institutional personnel refers to The Ministry of General Works and Public Houses Regulation number 11 in 2015. As a result, the Tahai water management agency requires additional two staff for all scenarios and additional ten water gate officers for the second and third scenarios.

Keywords: Water Management, Tahai, HEC-RAS , Personnel of Agencies