

ABSTRAK

Jaringan irigasi pasang surut Belanti II, dikembangkan sejak tahun 1980 di atas tanah asam sulfat dengan luas kurang lebih 3.976 ha. Belanti II memiliki satu saluran primer dan beberapa saluran sekunder dengan sistem irigasi terbuka, tidak ada struktur air yang mengatur arah aliran. Aliran dua arah terjadi di saluran, memasok air tawar pada saat air pasang dan mengeluarkan air pada saat air surut. Hingga saat ini proses reklamasi tanah asam sulfat masih belum selesai. Saluran primer, sekunder dan kolektor serta kolam pasang mengalami sedimentasi sehingga mencegah proses *leaching* tanah asam sulfat. Tanah sulfat masam masih ditemukan pada kedalaman 50 - 75 cm dengan pH 2,5 - 3,5. Pengelolaan air dengan sistem aliran satu arah akan meningkatkan sirkulasi air, antara lain normalisasi saluran, penambahan saluran kolektor dan bangunan pengendali air. Normalisasi saluran dilakukan untuk meningkatkan kemampuan *leaching*. Proses *leaching* pada irigasi Belanti II seluas 3.976 ha membutuhkan air tawar 500 m³/ha/hari, setara dengan 1.988.000 m³/hari. Struktur bendung pada saluran sekunder mengatur suplai pada saat air pasang dan pintu penutup di ujung saluran sekunder mengatur aliran air ke saluran kolektor pada saat surut. Analisis hidrolika dilakukan dengan pemodelan HEC-RAS. Hasil penelitian menunjukkan kemampuan jaringan dalam *supply* dan *flushing*. Efektivitas sistem aliran satu arah dan suplai air ditinjau pada saluran sekunder.

Kata kunci: Reklamasi, Pengelolaan Air, Tanah Sulfat Masam, Irigasi Pasang Surut

ABSTRACT

Belanti II tidal irrigation network, developed since 1980 on sulfuric acid soil with an area of approximately 3,976 ha. Belanti II has one primary channel and several secondary canals with an open irrigation system, there is no water structure that regulates the direction of flow. Bidirectional flow occurs in the channel, supplying fresh water at high tide and releasing water at low tide. Until now, the process of reclamation of sulfuric acid soil has not been completed. Primary, secondary and collector channels as well as tide pools undergo sedimentation so as to prevent the leaching process of sulfuric acid soil. Acid sulfate soils are still found at a depth of 50 - 75 cm with a pH of 2.5 - 3.5. Water management with a one-way flow system will increase water circulation, including channel normalization, addition of collector channels and water control buildings. Channel normalization is done to improve leaching capability. The leaching process in Belanti II irrigation covering an area of 3,976 ha requires 500 m³/ha/day of fresh water, equivalent to 1,988,000 m³/day. The weir structure in the secondary channel regulates the supply at high tide and the closing door at the end of the secondary channel regulates the flow of water to the collector channel at low tide. The hydraulics analysis was carried out using the HEC-RAS modeling. The result of the research shows the network capability in supply and flushing. The effectiveness of the one-way flow system and water supply is reviewed on the secondary channel.

Keywords: Reclamation, Water Management, Acid Sulfate Soil, Tidal Irrigation