ABSTRAK

Pembangunan Waduk Gondang merupakan upaya dalam pengembangan sumber daya air untuk memenuhi kebutuhan irigasi dan air baku masyarakat di daerah Kabupaten Karanganyar. Analisis hidraulika terhadap saluran pelimpah samping Waduk Gondang diperlukan untuk mengetahui profil aliran dan keamanan saluran pelimpah samping terhadap aliran tenggelam.

Penelitian bertujuan mengkaji desain Waduk Gondang dari segi hidraulika. Penelitian dilakukan dengan melakukan analisis profil aliran pada saluran samping dan transisi. Analisis profil aliran dilakukan menggunakan perangkat lunak *Microsoft Excel* pada debit banjir rencana kala ulang 1000 tahun dan debit banjir PMF (*probable maximum flood*).

Hasil penelitian menunjukkan bahwa kapasitas saluran masih dalam ambang keamanan. Aliran tenggelam tidak terjadi pada bangunan pelimpah ketika dialiri debit banjir rencana (Q_{1000}) dan debit banjir PMF (Q_{PMF}). Hasil analisis menunjukkan selisih elevasi tertinggi aliran terhadap elevasi *submerged flow* adalah 2,84 m untuk Q_{1000} dan 2,17 m untuk Q_{PMF}.

Kata kunci : pelimpah samping, profil aliran, aliran tenggelam

ABSTRACT

The construction of the Gondang Reservoir is an effort in the development of water resources to meets the irrigation and domestic water demand in the Karanganyar Regency area. The hydraulic analysis of the Gondang Reservoir's side channel spillway is necessary to understand the flow profiles and ascertain the safety of the structure against the submerged flow.

This study aims to review the design of Gondang Reservoir from the hydraulics aspect. The study was carried out by analyzing the flow profiles of the side channel and the transition channel. The analysis of flow profiles was conducted using software *Microsoft Excel* for the design flood discharge with a 1000-year return period and PMF (*probable maximum flood*) flood discharge.

The results of the study conclude that the channel's capacity is within the safety threshold. The submerged flow didn't occur in the spillway structure when the design flood discharge (Q_{1000}) and PMF flood discharge (Q_{PMF}) flows. The result of the analysis shows that the difference between the highest flow elevation and the submerged flow elevation is 2,84 m for Q_{1000} and 2,17 m for Q_{PMF}.

Keywords : side channel spillway, flow profiles, submerged flow