

ABSTRAK

Penelitian ini bertujuan untuk menganalisis neraca air di Desa Gandoang, yang direncanakan sebagai lokasi pembangunan obyek wisata air berupa kolam renang. Analisis neraca air dilakukan dengan membandingkan debit masuk dan debit keluar. Debit masuk berasal dari debit andalan sungai, sedangkan debit keluar mencakup kebutuhan air domestik, kebutuhan irigasi, dan kebutuhan air untuk wisata.

Debit sungai dihitung menggunakan metode F.J. Mock, yang diawali dengan penentuan luas Daerah Aliran Sungai (DAS) dan evapotranspirasi. Luas DAS diperoleh melalui delineasi menggunakan perangkat lunak HEC-HMS, sedangkan perhitungan poligon Thiessen dilakukan dengan bantuan QGIS. Evapotranspirasi dihitung menggunakan metode Thornthwaite, berdasarkan data suhu rata-rata bulanan dari Stasiun Klimatologi Malahayu.

Hasil perhitungan menunjukkan bahwa rata-rata evapotranspirasi bulanan sebesar 156 mm. Debit andalan bulanan yang dihasilkan dari metode Mock digunakan sebagai input (debit masuk) dalam perhitungan neraca air. Sementara itu, debit keluar meliputi: kebutuhan domestik sebesar 1,25 liter/detik, kebutuhan irigasi maksimum sebesar 8,153 liter/detik, dan kebutuhan air untuk wisata sebesar 12,023 liter/detik. Hasil perhitungan menunjukkan bahwa neraca air di Desa Gandoang berada dalam kondisi surplus setiap bulannya. Dengan demikian, pembangunan obyek wisata air di desa tersebut dinyatakan layak untuk dilaksanakan.

Kata Kunci: Neraca air, ketersediaan air, F.J Mock, Kebutuhan air irigasi, perhitungan wisata kolam renang.

ABSTRACT

This study aims to analyze the water balance in Gandoang Village, which is planned as the site for a water tourism development project in the form of a swimming pool. The water balance analysis was carried out by comparing the inflow and outflow discharges. The inflow is derived from the river's dependable flow, while the outflow includes domestic water demand, irrigation needs, and water requirements for tourism purposes.

The river discharge was calculated using the F.J. Mock method, which begins with determining the watershed area and evapotranspiration. The watershed area was delineated using HEC-HMS software, while the Thiessen polygon method was calculated with the help of QGIS. Evapotranspiration was estimated using the Thornthwaite method, based on monthly average temperature data from the Malahayu Climatology Station.

The calculation results show that the average monthly evapotranspiration is 156 mm. The monthly dependable flow obtained from the Mock method was used as the inflow component in the water balance analysis. Meanwhile, the outflow components consist of domestic water demand of 1.25 liters/second, maximum irrigation demand of 8.153 liters/second, and water demand for tourism of 12.023 liters/second. The results indicate that the water balance in Gandoang Village is in a surplus condition throughout the year. Therefore, the development of the water tourism facility in the village is considered feasible.

Keywords: Water balance, water availability, F.J Mock, irrigation water requirement, swimming pool tourism calculation.

