PERENCANAAN JARINGAN PIPA AIR BERSIH PERUMAHAN GRAND PARITAN REGENCY DESA PUNDONG KEC. DIWEK KAB. JOMBANG

Nama : CHANDRA OKTABRI FERI ANDIKA

NIM : 212322201046

Program Studi : S-1 Teknik Sipil

Nama Lembaga : Universitas Darul 'Ulum Jombang

ABSTRAK

Clean water is a basic necessity that is vital for human life. Its provision must meet the aspects of quantity and quality to be safe for consumption. In Indonesia, the availability of clean water remains a challenge, especially in new residential areas such as the Grand Paritan Regency Housing Complex, Pundong Village, Diwek District, Jombang Regency. This study aims to design a clean water distribution network system using a quantitative approach and hydraulic simulation using WaterCAD V8i software. The planning is based on the clean water needs of 420 people in the base year 2025 with domestic consumption of 100 liters/person/day. The system is designed to be able to serve peak needs of up to 1.53 liters/second. The pipe network uses HDPE primary pipe material and HDPE with a diameter of 1.25 to 2 inches. Simulation results show that the pressure and flow rate are within ideal limits. Evaluation of a reservoir with an effective volume of 54 m^3 also shows that supply is maintained during critical periods. The system is designed to be flexible to the projected population increase of 2% per year for the next 10 years. Thus, this distribution system is considered technically feasible and reliable to ensure the availability of sustainable clean water in the residential area. The pipe network consists of 4 inch HDPE Main Line ±310 meters, 2 inch HDPE Branch Block ±190 meters, ¾ inch HDPE House Connection ±210 meters; additional components include 4" HDPE Gate Valve (4 points), 2" HDPE Gate Valve (10 points), House Water Meter (70 units), Control Tank (3 units), House Connection Set (70 sets), HDPE Compression Tee (66 units), HDPE Compression Elbow (14 units), and HDPE Threaded Compression Coupler (10 units), so it can be concluded that this system is flexible, meets technical standards, and is feasible to operate.

Kata Kunci: Clean Water, Distribution Network, Watercad, Water Needs, Grand Paritan Regency Housing.