Non-revenue water reduction through pressure management in Kozani’s water distribution network: from theory to practice

V. Kanakoudis*, K. Gonelas

Department of Civil Engineering, University of Thessaly, 38334 Volos, Greece, Tel. +30 24210 74156; Fax: +30 24210 74135; emails: bkanakoud@civ.uth.gr (V. Kanakoudis), gonelas@uth.gr (K. Gonelas)

Received 14 February 2015; Accepted 6 May 2015

ABSTRACT

During the last few years, many water utilities are facing difficulties with the high non-revenue water (NRW) levels. Among the NRW management strategies, water pressure management (PM) is the most popular towards the goals of effective and efficient water use. In an effort to improve the level of services provided to consumers, minimize its operating expenses and reduce water leakage and pipes’ bursts, water utilities rely on water PM although it is one of the most expensive methods. This study analyses a methodology of calculating economic benefits and revenue losses caused due to the reduction of a system’s operating pressure. The reduction of System Input Volume causes direct benefits (e.g. reduced energy costs), while the reduced burst frequency causes direct (e.g. maintenance cost reduction) and indirect potential benefits (e.g. reduction in personnel, insurance and vehicle operation costs). The revenue losses are caused mainly due to the reduction of pressure-dependent water consumption. In the case of Kozani city in Greece, the economic impact of dividing its water network in District Metered Areas and applying 5 PM interventions based on installing Pressure Reducing Valves is calculated, using the system’s hydraulic model.

Keywords: District Metered Areas; Pressure management; Water savings; Non-revenue water

*Corresponding author.

Presented at the 12th International Conference on Protection and Restoration of the Environment (PRE XII) 29 June–3 July 2014, Skiathos Island, Greece

1944-3994/1944-3986 © 2015 Balaban Desalination Publications. All rights reserved.