Review of Hydraulic Analysis Methods and Advanced Modeling Techniques Using the EPANET Water Distribution System Model

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Water hours and low delivery pressure have long been a part of the daily lives of the people in the islands of the Western Pacific. In Saipan, Commonwealth of the Northern Mariana Islands (CNMI), large investments have been made in system improvements, but delivery problems still exist. A stated goal of the CNMI government is to provide 24-hour water to all residents served by the Commonwealth Utilities Corporation (CUC) water system.

Hydraulic modeling of water systems has proven to be a valuable tool used by water system engineers to maintain and improve the delivery systems for which they are responsible. Various water system models have been developed for the CUC system. What is needed now is to develop the expertise of the CUC engineering staff in applying these models to the CUC system. Providing a training course on basic hydraulics and hydraulic modeling was identified as one of the education and professional needs for the CNMI during the CNMI research advisory meeting of October 9, 2014.

Previously, WERI Engineers carried out training programs in the application of water system modeling to the Saipan water system. New personnel at CUC have not had the benefit of the original training and some of those originally taking the course have not had the opportunity to apply these models and maintain the skills required to use the model effectively. Therefore, what is needed is another training course in the use of water system modeling so that all the employees will be "Up To Speed" in the use of water system modeling to improve the CUC system. The proposed training will consists of the following topics: 1) Review of hydraulics fundamentals, 2) Pipe flow and network hydraulics, 3) Pump performance, 4) Anatomy of a water distribution system, 5) Water distribution system modeling, and 6) Hands on modeling.

Production Well in Saipan