



Reconfiguration of Saipan's Water Distribution System Model



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Principal Investigators:
Shahram Khosrowpanah, Leroy F. Heitz, & Mariano R. Iglecias

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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.

Recently, Stipulated Orders have been filed in the US District Court for the Northern Mariana Islands to compel the utility company to adhere to federal regulations governing water, sewer, and power (Eaton, 2008). As part of this act, CUC should develop a hydraulic model of the water distribution system that will be used for system improvement, system operation, and future system expansion.

Researchers at the University of Guam Water and Environmental Research Institute of the Western Pacific (WERI) developed computerized models of each of the fifteen sub-regions of the CUC water system using the Haestad WaterCAD water system modeling program. Later on, they developed a source, transmission and storage model of the Saipan water system, and a GIS data base of the system. Recently CUC has been added many additional sources of water, new tanks and pipes have been added to the system, and system operation has been changed. To comply with the stipulated order and enable CUC to provide a 24-hour water service, there is a

need to reconfiguring the skeleton model of the water distribution system reflecting new changes in physical and operation of the system. The goal of this project is to:

1. Gather new data on the physical and hydraulic description of all the new water system development for the last three years.
2. Connecting the sub-region according to the new CUC water routing plans.
3. Input the water production to the model and run the model in steady state and time simulation modes.
4. Export the information from Saipan's Haestad model into the GIS layers.
5. Updating the GIS data base and develop the most efficient and cost effective means of transmitting water from water supply rich regions to those that have supply shortages.

The benefit to the CUC will be the ability to: a) determine the amount of water that is being lost through the system (un-accounted for), b) implement various operational systems for transferring water among the 15-sub region for providing 24-hour water service to the costumers, and 3) comply with stipulation order.