

## The water interruption risk mitigation in a water distribution network using numerical simulation.

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### ABSTRACT

Natural disasters such as earthquakes and droughts have a big impact on the water supply system. The increased frequency of earthquake can cause the destruction of the urban water supply system, resulting in interruption of water supply and taking a long time to restore the pipeline to its normal state. Drought is also becoming serious global issue due to climate change. Although several researches have been under way to develop sustainable water supply in such a natural disaster, systematic approach is needed for optimal management solutions that can prevent water interruption risk in advance.

Ability for management priorities in case of natural disasters and water supply strategy during drought period require systematic method using a numerical simulation. We conducted a study by applying the concept of water supply risks for sustainability during natural disaster. Using DDA (Demand Driven Analysis) based simulation software, the predicted risks from natural disaster were predicted for the target water supply blocks of a city in South Korea. Risk analysis could be used as an indicator to determine the priority of replacing the aged water supply pipe. We will present the optimal risk management strategies to assess and compare risks using numerical simulation, and present alternatives for pipe networks, such as installation of duplicate pipe and emergency connections.

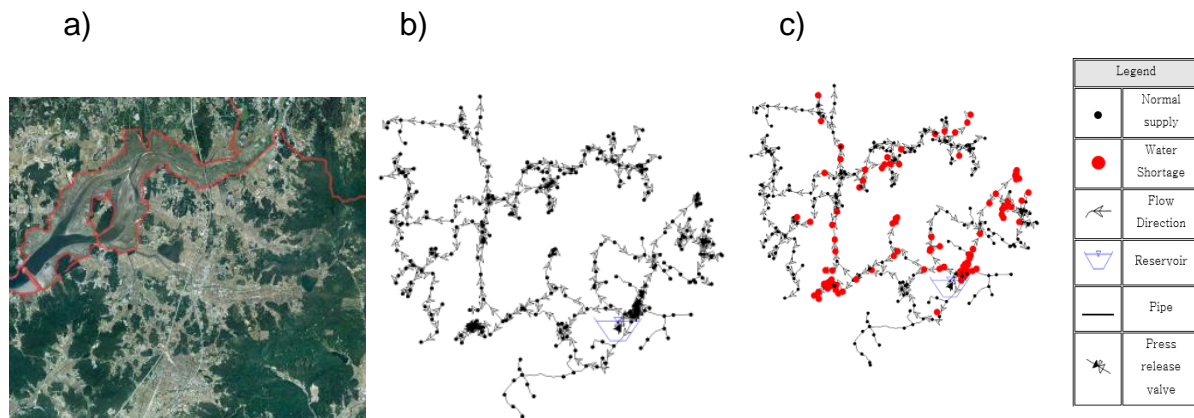


Fig. 1. a) Photo of CS DMA(Demand : 1,610 ton/day), b) CS DMA pipe network, c) representative water shortage risk diagram for CS DMA.