Identifying and Understanding the Infrastructure Interdependencies in Water Systems

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ABSTRACT

The water infrastructure system is a complex collection of interconnected infrastructures. Its performance and functioning depends on the performance of its interdependent infrastructures. The interrelationship between these infrastructures gives rise to bi-directional relationships and a host of potential failure scenarios. Modeling the associated complex adaptive system requires to start with analyzing the infrastructures on which the water system depends. While the water infrastructure cannot be made invulnerable to a myriad of stresses and potential failures, understanding the interdependencies can aid in developing computer models that can assist decision makers to test various 'what if' scenarios. In this paper we review and analyze the infrastructure interdependencies associated with water systems. Recent water infrastructure interdependency failures that drew the attention of the national media are highlighted. Existing software that model infrastructure interdependencies in other systems and ideas on how they can be applied to water infrastructure interdependencies are presented.