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Water Reuse: Creating New Sources of Water Supply

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Communities in the United States and across the world face water supply challenges due to increasing demand, drought, depletion and contamination of groundwater, and dependence on single sources of supply. These communities are increasingly turning to water reuse as a solution to water scarcity by providing new sources of high quality water supplies. Although water reuse is practiced in the United States and many countries around the world, the growth potential for reclaiming treated wastewater effluent for beneficial use is considerable. In addition, communities are considering other nontraditional sources of water for reuse such as concentrate, brackish groundwater, and storm water.

Potable and non-potable water reuse will play a larger role in sustainable water management role in next century. Water reuse is already widely practiced in a number of semiarid western states and Florida, but the practice is expanding to many other states. Drivers of water reuse include: rapidly growing populations, lack of new water supplies, environmental water quality regulations, pervasive drought, and other alternatives such as seawater desalination may be too costly.

Water reuse is one of a few alternative sources of supply that represents a viable, long-term solution to the challenges presented by growing municipal, industrial, and agricultural demands for water. Water reuse, however, faces a number of issues, barriers and impediments to widespread implementation, including public acceptance, understanding the full range of benefits, addressing emerging contaminants such as pharmaceuticals and personal care products and other xenobiotics, and the need for better and cheaper technologies.

This paper provides a discussion of current water reuse practices and outlines a number of trends and issues facing the water reuse industry. The paper will examine the benefits of water reuse (i.e., produces a reliable water supply; produces a sustainable supply of water; uses less energy than importing water; provides local control; enhances water quality; costs less than other alternatives; and protects sensitive habitats) as well as trends in the water reuse industry such as indirect potable reuse, use of aquifer storage and recovery, evaluating alternative water sources, understanding the value of water, and managing water as a resource through integrated water planning. Lastly, the paper will enumerate several “key factors of success” that would support the future development of water reuse including: public acceptance, need for uniform standards, new and innovative technologies, and ensuring chemical and microbiological safety.