

CHALLENGES AND INNOVATION IN CIVIL AND ENVIRONMENTAL ENGINEERING

Integrating Water and Resource Management for Improved Sustainability: Cities of the Future

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129 DeBartolo Hall

4:30pm

Urban water management has traditionally focused on independently supplying water, managing stormwater, and collecting and managing water-borne wastes, resulting in superior provision of these services to the great benefit of modern society. Thus, one may question why this practice should not continue. The answer is that our current approach to urban water management is not sustainable given changed circumstances. Table 1 contrasts the historical context within which current urban water management systems evolved with the future context for such systems. Said simply, population growth, increased affluence, and resource limitations are increasingly creating water stress around the planet.

Table 1. Comparison of Historical and Future Context for Urban Water Management Systems.

Item	Historical Context	Future Context
Global Population	< 1 Billion	+/- 10 Billion
Urban Population	< 15 percent	Two-thirds or More
Life Style	Simple	Affluent
Water Resources	Abundant	Severely Limited
Natural Resources	Abundant	Severely Limited
Technology	Basic	Advanced

Fortunately, new technologies and practices are available which allow new, more water efficient approaches to urban water management. A key element of these new approaches is integrated management of stormwater, drinking water, and urban wastes. Integrated management also offers the potential to significantly reduce the net energy and resource requirements for urban water management, and to facilitate nutrient recovery rather than removal. The evolving toolkit of technologies and practices upon which successful systems are built will be presented., along with approaches for integrating the appropriate elements into an integrated system and approaches for their

successful implementation.

A recognized expert in wastewater treatment, especially the use of biological processes, Dr. Daigger is currently a Senior Vice President and Chief Technology Officer for CH2M HILL where he has been employed for 29 years. He also served as Professor and Chair of the Environmental Systems Engineering Department at Clemson University. He has authored or co-authored more than 100 technical papers, four books, and several technical manuals. He is Senior Vice President and President-Elect of the International Water Association (IWA). For the Water Environment Federation (WEF) he has served as Chair of several committees, including the task force that developed the most recent edition of the WEF MOP No. 8, Design of Municipal Wastewater Treatment Plants, Board of Editorial Review of Water Environment Research, the Technical Practice Committee, and the Committee Leadership Council (CLC). He has also served as in the House of Delegates and the Board of Trustees. For the Water Environment Research Foundation (WERF) he served on the Board of Directors and Research Council where he served as its chair. He is the recipient of numerous awards, including the Kappe and Freese lectures and the Harrison Prescott Eddy, Morgan, and the Gascoigne Awards from WEF. A member of a number of professional societies, Dr. Daigger is also a member of the National Academy of Engineers.

A reception and an opportunity to meet the speaker will take place at 4:00pm in the CE/GEOS office conference room, Fitzpatrick 156, before the seminar

Dramatic Urbanization is Occurring

