

**PROCEEDINGS**  
**OF**  
**INTERNATIONAL CONFERENCE ON WATER**  
**RESOURCES ENGINEERING & MANAGEMENT**

**(LAHORE PAKISTAN, 7-8 MARCH 2011)**



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## PREFACE

Symposia, seminars, and conferences are tools to bring the researchers together for identifying the challenging issues; proposing and experimenting the solutions for these issues, and learning from mutual experiences. Advancement in distance learning tools have reduced the need of large scale frequent physical gatherings, yet there is no denial to the fact that face to face talks & discussions are the best and most accurate way of communications, resulting in spontaneous response of audience.

Water resource is the basic necessity of socio-economic development of a nation, and survival of the nations hinges on its sufficient availability. Despite the advancements in information and allied technologies, and despite the fact that we are far ahead of our ancestors in understanding physical phenomena, we as human being are far from ideal state of fulfilling the basic needs; namely water, food, and living, for inhabitants of this world. Enhanced fresh water needs due to better living standards, and growing population, with limited quantity of water resources, require that the essential natural resources like water, must be better managed than ever before. There is dire need that academia, decision makers, entrepreneurs, and the users must join hands to come up with comprehensive solution(s) of the sufferings of mankind while taking care of our environment.

The prime objectives of this conference are to promote the research activities in the field of Water Resources Engineering and to bridge the gap between theoretical knowledge and field practices for Pakistani and international researchers. It will be an excellent opportunity to engineers, hydrologists, geo-scientists and other professionals engaged in the field of water resources engineering, management, planning, operation and construction to share their expertise and experiences. The Department of Civil Engineering, University of Engineering and Technology (UET) Lahore is pleased to organize this International Conference on Water Resources Engineering & Management on March 07-08, 2011. The conference was overdue as the last international conference on water issues by the department was held about three decades back in eighties.

The members of the conference technical committee consisting of numerous national and international academicians, researchers, engineers, and water managers have carefully inspected the papers published in this proceedings. Several abstract and research papers were reject. Out of these, some papers might be selected for publication in Pakistan Journal of Engineering & Applied Sciences, UET Lahore.

We wish to thank all academic members, students, experts, and the organizations for their invaluable contribution at the conference and wishing a fruitful occasion for all the participants which will hopefully enjoy our hospitality. In the end we gratefully appreciate the encouragement and cooperation of the Vice Chancellor of the University of Engineering and Technology, Lahore, General (R) Muhammad Akram Khan, for his support to make this event successful. We are also thankful to Higher Education Commission, Islamabad and other donors for their generous and timely sponsorships.

It is pertinent to mention that views presented/published in the research papers are of the respective authors, and the conference organizing committee, the Department and the University are not responsible for their accuracy/authenticity.

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