

2015 CLARKE PRIZE CONFERENCE

Research and Innovations in Urban Water Sustainability

October 30, 2015 • Waterfront Beach Resort • Huntington Beach, California USA

Presented By:

National Water Research Institute

Conference Program

Supported By:

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Welcome

Thank you for attending the **2015 NWRI Clarke Prize Conference**, organized by the National Water Research Institute to highlight “Research and Innovations in Urban Water Sustainability.” The conference will feature presentations from our NWRI Clarke Prize Laureates, academics from research universities across the nation, and representatives from local water and wastewater utilities that focus on identifying, developing, and managing sustainable water supplies in the urban setting.

Following the conference will be the NWRI Clarke Prize Award Ceremony and Lecture, where we will honor environmental engineer **Dr. John C. Crittenden**, Director of the Brook Byers Institute for Sustainable Systems at the Georgia Institute of Technology, with the 2015 NWRI Athalie Richardson Irvine Clarke Prize for excellence in water research. Dr. Crittenden was selected as the 2015 recipient because of his outstanding contributions to treating chemical contaminants in water and his leadership in addressing water demand for transportation, energy production, and domestic use in a holistic, sustainable manner. The prize consists of \$50,000 and a medallion. He will be the twenty-second Clarke Prize recipient.



Coordinating these events required dedication and teamwork. We would like to acknowledge all those who were instrumental in making the conference and award ceremony a success.

First and foremost, we would like to express our deepest and most sincere appreciation to our conference sponsors, whose support was invaluable. They include the NWRI Member Agencies (Inland Empire Utilities Agency, Irvine Ranch Water District, Los Angeles Department of Water and Power, Orange County Sanitation District, Orange County Water District, and West Basin Municipal Water District) and Clarke Prize Sponsors (ARCADIS, Black & Veatch, Carollo Engineers, Inc., CH2M, DUDEK, Hazen and Sawyer, Kennedy/Jenks Consultants, RMC Water and Environment, Trussell Technologies, Inc., Water Planet, Inc., and Xylem).

In particular, we would like to thank the Joan Irvine Smith & Athalie R. Clarke Prize Foundation for supporting the Clarke Prize these past 22 years. We are also indebted to the Clarke Prize Executive Committee, who selected Dr. Crittenden as the 2015 Clarke Prize recipient from among a number of impressive and accomplished candidates. The committee members include: Dr. George Tchobanoglous of the University of California, Davis (Chair of the committee), Dr. Menachem Elimelech of Yale University, Dr. Joan Rose of Michigan State University, Dr. Jerald Schnoor of the University of Iowa, and Mr. Michael Wehner of the Orange County Water District.

We are also grateful to Ms. Brandi Caskey, Ms. Suzanne Faubl, Ms. Jaime Lumia, and Ms. Gina Vartanian of the National Water Research Institute for their help in planning and managing all aspects of the conference and award ceremony. In addition, we appreciate the services of Tim and Kim Hogan of Tim Hogan Graphics and Ken Lanxner of Simple Lives Orange County Web Design.

Special thanks are also extended to the moderators and speakers whose knowledge and insight are the foundation of this conference.

And, finally, we would like to once again thank you, our guest, for attending the 2015 NWRI Clarke Prize Conference. We hope that you enjoy this unique event and find it to be a source of inspiration and understanding.

Conference Administrator

Jeffrey J. Mosher

Executive Director

National Water Research Institute

Fountain Valley, California



Friday • October 30, 2015

Conference Program

8:30 am – 9:30 am	Registration Opens	Grand Ballroom Foyer
9:30 am	Conference Begins	Grand Ballroom
9:30 am	Welcome	Jeffrey J. Mosher National Water Research Institute (Fountain Valley, CA)
9:40 am	Morning Keynote Presentation	
	Introduction	John C. Crittenden, Ph.D., P.E., NAE, CAE Georgia Institute of Technology (Atlanta, GA)
	Water Treatment and Sanitation for the Developing World	Joseph B. Hughes, Ph.D., P.E., DEE Drexel University (Philadelphia, PA)
10:30 am – 12:00 pm	Session 1: Planning for Sustainable Water Supplies and Water Resources Moderated by Joan B. Rose, Ph.D., Michigan State University (East Lansing, MI)	
10:30 am	Sustainable Groundwater Management Act (SGMA) and the Orange County Groundwater Basin	Roy Herndon, P.G. Orange County Water District (Fountain Valley, CA)
11:00 am	Pure Water San Diego: Surface Water Augmentation	Jeffery Pasek City of San Diego Public Utilities Department (San Diego, CA)
11:30 am	Update on Climate Change and Water	Jerald L. Schnoor, Ph.D., P.E., BCEE, NAE University of Iowa (Iowa City, IA)
12:00 pm – 1:00 pm	Lunch	Poolside
1:00 pm	Afternoon Keynote Presentation	
	Introduction	Jeffrey J. Mosher National Water Research Institute (Fountain Valley, CA)
	The Future of California Water	Karen Larsen California State Water Resources Control Board (Sacramento, CA)
1:30 pm – 2:30 pm	Session 2: Addressing the Challenges of Urban Water Sustainability Moderated by Bruce E. Rittmann, Ph.D., NAE, Arizona State University (Tempe, AZ)	
1:30 pm	Direct Potable Reuse Framework	George Tchobanoglous, Ph.D., P.E., NAE, BCEE University of California, Davis (Davis, CA)
2:00 pm	Stormwater Capture, Treatment, and Recharge for Urban Water Supply	Richard G. Luthy, Ph.D., P.E., BCEE, NAE Stanford University (Stanford, CA)
2:30 pm – 2:45 pm	Break	Grand Ballroom Foyer
2:45 pm – 4:15 pm	Session 3: New and Innovative Sustainable Technologies Moderated by Pedro J.J. Alvarez, Ph.D., P.E., Rice University (Houston, TX)	
2:45 pm	Anaerobic Fluidized Bed Membrane Bioreactor Treatment of Domestic Wastewater for Potential Reuse	Perry L. McCarty, Sc.D. Stanford University (Stanford, CA)
3:15 pm	Granular Activated Sludge: The Future of Biological Nutrient Removal	James L. Barnard, Ph.D., Pr. Eng., BCEE Black & Veatch Corporation (Kansas City, MO)
3:45 pm	Detoxifying Oxidized Contaminants	Bruce E. Rittmann, Ph.D., NAE Arizona State University (Tempe, AZ)
4:15 pm	Wrap-Up	
4:30 pm	Adjourn Conference	

Friday Evening • October 30, 2015

Twenty-Second Annual NWRI Clarke Prize Award Ceremony and Dinner

5:00 pm	Clarke Prize Award Ceremony Reception	Pacific Terrace
6:30 pm	Clarke Prize Dinner	Pacific Room
8:00 pm	Clarke Prize Award Ceremony Honoring Dr. John C. Crittenden	
	Welcome	Jeffrey J. Mosher National Water Research Institute (Fountain Valley, CA)
	Introduction of the 2015 Clarke Prize Recipient	Joseph B. Hughes, Ph.D., P.E., DEE Drexel University (Philadelphia, PA)
	Presentation of the 2015 Clarke Prize	James Irvine Swinden Joan Irvine Smith & Athalie R. Clarke Foundation (Irvine, CA)
	2015 Clarke Prize Lecture: Water for Everything and the Transformative Technologies to Improve Water Sustainability	John C. Crittenden, Ph.D., P.E., NAE, CAE Georgia Institute of Technology (Atlanta, GA)
10:00 pm	Closing Remarks	

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