

WATER ENVIRONMENT
FEDERATION 2019

STORMWATER AND GREEN INFRASTRUCTURE SYMPOSIUM

May 7–10, 2019 | Fort Lauderdale, Florida

CONFERENCE PROGRAM



This symposium is held by the Water Environment Federation (WEF) in affiliation with the WEF Stormwater Institute and the National Green Infrastructure Certification Program and in cooperation with the Florida Water Environment Association, The Water Research Foundation, and the University of the District of Columbia.



YOUR SOURCE FOR **STORMWATER** SOLUTIONS



Thank you to these subscribers for taking a leadership role in developing stormwater solutions for the Stormwater Institute.

With the support of dedicated industry leaders, the Water Environment Federation (WEF) has the stormwater sector covered through access to stormwater news, education, and training opportunities, as well as policy support and advocacy. Building on these efforts, the WEF Stormwater Institute fills the vacuum of national stormwater leadership and advanced support of professionals in a water sector poised for major growth.

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**For questions or
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WEF
Stormwater and Green Infrastructure
Symposium 2019
Integrated Stormwater Management

May 8-10, 2019

Greater Fort Lauderdale-Broward County
Convention Center

Fort Lauderdale, Florida, USA



THE
Water
Research
FOUNDATION

UNIVERSITY OF THE
DISTRICT OF COLUMBIA
COLLEGE OF AGRICULTURE, URBAN SUSTAINABILITY
AND ENVIRONMENTAL SCIENCES

This symposium is held by the Water Environment Federation (WEF) in affiliation with the WEF Stormwater Institute and the National Green Infrastructure Certification Program and in cooperation with the Florida Water Environment Association, The Water Research Foundation and The University of the District of Columbia CAUSES.

May 8, 2019

Dear Colleagues:

On behalf of the Water Environment Federation, WEF Stormwater Institute, the National Green Infrastructure Certification Program, the Florida Water Environment Association and The Water Research Foundation, we welcome you to Fort Lauderdale, Florida for the inaugural Stormwater and Green Infrastructure Symposium.

We are pleased to have worked alongside the Symposium Steering Committee, WEF staff, and all the volunteers who have dedicated their time and effort over the past 9 months to ensure that the inaugural event will be one to remember. We would also like to thank the generous support of our sponsors, exhibitors, speakers, and you the attendees for supporting this event and for being the voice for clean water, cutting-edge research, and innovative resiliency strategies.

We are excited to bring to you this inaugural event, which features sessions for the academic and the practitioner with topics ranging from coastal resiliency strategies to green infrastructure operation and maintenance. Speakers presenting at the event come from a wide variety of backgrounds including regulatory, research, design, and operations. We are pleased to welcome attendees from across the Country, and we have provided numerous events for you to network and discuss emerging issues with your peers.

For those arriving early to Fort Lauderdale, Tuesday and Wednesday offer a pre-conference seminar and several pre-conference workshops. On Thursday morning, the Opening General Session will allow us the opportunity to welcome all in person, as we begin the technical session portion of the program. Thursday and Friday offer a diverse blend of technical sessions covering the science of green infrastructure, financing opportunities, program management topics, and much more.

Thank you for joining in this journey to learn, develop, and work together as professionals to advance the science of stormwater and green infrastructure. We hope you find the educational opportunities valuable, and we hope that you bring this knowledge to your local communities to educate them, and to enlist them as partners in our journey.

We look forward to sharing this experience with you, and we look forward to meeting you over the next several days. We hope that you enjoy your stay in Fort Lauderdale.

Sincerely,



Michael D. DeVuono
Symposium Co-Chair



Leigh Padgitt
Symposium Co-Chair

TABLE OF CONTENTS

| | |
|--|-----------|
| Symposium Steering and Program Committee..... | 1 |
| Registration | 3 |
| Presenter and Moderator Information | 3 |
| Committee Meetings | 4 |
| Mobile App | 5 |
| Reception and Meal Functions | 6 |
| Continuing Education | 7 |
| Online Proceedings | 9 |
| Technical Publications | 9 |
| Sponsors | 10 |
| WEF Policies & Positions | 11 |
| WEF Social Media Policy | 11 |
| Conference Safety and Security | 12 |
| Pre-Conference Special Seminar | 13 |
| Pre-Conference Workshops | 14 |
| Opening General Session | 17 |
| Technical Program | 18 |
| Presentations-at-a-Glance | 33 |
| Sessions-at-a-Glance | 38 |
| The Exhibition | 39 |
| Exhibitor Directory | 39 |
| Exhibition Floor Plan | 42 |
| Presenter and Moderator Directory | 43 |
| Conference Schedule-at-a-Glance | 47 |
| Green Initiatives at WEF SWGI 2019 | 48 |
| Upcoming Education and Training Events | 50 |

STORMWATER & GREEN INFRASTRUCTURE SYMPOSIUM COMMITTEE

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Michael D. DeVuono
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| |
|--|
| <p align="center">STORMWATER & GREEN INFRASTRUCTURE SYMPOSIUM COMMITTEE</p> |
|--|

**STORMWATER & GREEN INFRASTRUCTURE SYMPOSIUM
PROGRAM COMMITTEE**

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REGISTRATION

All events are held in the Greater Fort Lauderdale-Broward County Convention Center.

The Registration Desk is located in Hall A Lobby and will be open at the following times:

Hours:

| | |
|------------------|-------------------|
| Wednesday, May 8 | 7:30 AM – 5:00 PM |
| Thursday, May 9 | 7:30 AM – 5:00 PM |
| Friday, May 10 | 8:00 AM – 4:30 PM |

PRESENTER AND MODERATOR INFORMATION

All presenters, alternates, and moderators should sign in at the conference Registration Desk and attend their assigned briefing.

Presenters, alternates, poster presenters, and session moderators, participating Thursday and Friday should attend their assigned briefing. Please attend only once unless speaking on multiple days. Please add them to your calendar via the App. The Speaker Briefing and room schedule is as follows:

| | |
|-----------------------------|-------------------|
| Thursday, May 9 — Room: 221 | 7:45 AM – 8:15 AM |
| *Sessions 1 through 6 | |

| | |
|----------------------------|-------------------|
| Friday, May 10 — Room: 221 | 7:45 AM – 8:15 AM |
| *Sessions 7 through 15 | |

COMMITTEE MEETINGS

Wednesday, May 8

US EPA Stormwater Financing Task Force; Opportunities and Challenges to Address Stormwater Financing Needs

1:30 PM – 4:00 PM

Room 203/204

The US Environmental Protection Agency will host a panel discussion and listening session for the Stormwater Financing Task Force recently created by Congress. The first half will be a panel discussion and presentation from members of the Stormwater Financing Task Force. During the second half, participants will be lead through a facilitated discussion on challenges they have experienced with long term funding for stormwater projects. This will include the affordability of stormwater infrastructure from various funding sources. This is an open meeting for all Symposium attendees.

Thursday, May 9

Stormwater Committee Meeting

(Open to everyone)

1:00 PM – 1:30 PM

Room 222

Friday, May 10

Watershed Management Committee Meeting

(Open to everyone)

12:30 PM – 1:00 PM

Room 222

Have you been thinking about getting more involved with WEF or the industry in general? Join the Stormwater Committee and the Watershed Management Committee Meetings to learn more. Everyone is welcome whether you are a member or not. Please eat your lunch and then come join us.

MOBILE APP

New Mobile App Launching for #StormwaterGI



WEF is pleased to offer the **WEF Events Connect Mobile App** which gives you access to all current and future WEF events, including Stormwater and Green Infrastructure.

View full program details and the exhibitor list, then start building your #StormwaterGI agenda.

Download "**WEF Events Connect**" now from the Google Play OR Apple App Store. All other web-enabled devices can access the app via the web at <https://bit.ly/2V70RDL>.

We want your feedback! Please provide feedback on individual presentations, sessions, workshops, and more!

RECEPTION AND MEAL FUNCTIONS

Networking Reception

207-210 Pre-Function Area

Come grab a beer while they last! Join us in the exhibit area to mingle with your fellow attendees while you view the exhibits, renew acquaintances, and make new contacts. Light hors d'oeuvres and refreshments will be served. Beer will be available first come, first served with a cash bar to follow. Don't miss out!

Thursday, May 9

5:15 PM – 6:45 PM

Luncheons

Floridian B/C, 3rd Floor

Lunch will be provided for all full conference, daily registrants, exhibitors, and students. Please advise staff as soon as possible if you have any special dietary requirements. The luncheons will be held in Floridian B/C on the 3rd Floor.

Thursday, May 9

12:15 PM – 1:30 PM

Friday, May 10

12:00 PM – 1:00 PM

Networking Breaks

The Networking Breaks will be held:

Wednesday, May 8

2nd Floor Pre- Function Area

10:00 AM – 10:30 AM and 3:00 PM – 3:30 PM

Thursday, May 9

Exhibit Area/ 2nd Floor Pre- Function Area

10:00 AM – 10:45 AM and 3:00 PM – 3:45 PM

Friday, May 10

2nd Floor Pre- Function Area

10:00 AM – 10:30 AM and 2:30 PM – 3:00 PM

CONTINUING EDUCATION

NEW for the Stormwater and Green Infrastructure Symposium™ 2019 - Continuing Education files available online immediately after event!

You will be able to view your participation details and access your Continuing Education Credits for Workshops and Technical Sessions online. Attendees will have immediate access to their certificates and transcripts through an online portal for 1 year after this event. After that time CE files will have to be requested by email through WEF's customer service group. **These details will be posted on the Continuing Education page of WEF.org and emailed to event participants after the conference.**

How Do I Receive Credit For this Conference?

To receive credit for all technical sessions and pre-conference workshops, please scan your badge when entering and exiting that activity.

If an attendee fails to scan in/out of a session(s) they must email detailed information regarding the unscanned session(s)/times to CE@wef.org.

Pre-Conference Workshops:

WEF offers Continuing Education Units (CEUs) for participation in workshops. **One CEU is the equivalent to 10 hours** of training or formal instruction. These are distributed for structured, relevant professional training above and beyond that of initial certification or employment in a particular field.

Technical Sessions:

WEF offers Professional Development Hours (PDHs) for participation in technical sessions. **A PDH is defined as one hour** spent engaged in an activity that contributes to the advancement or enhancement of professional skills or scientific knowledge of a professional engineer or operator.

When Will I Receive Credits For this Conference?

Certificates will be available immediately upon receiving the website link after the conference.

Please keep in mind that although WEF does provide these files, most states will require the individual licensee to report continuing education credits.

Note: *Educational Credits will not be recorded, and documentation will not be distributed unless the attendee is a confirmed registrant of this event and the proper steps are completed as indicated in the directions provided.*

CONTINUING EDUCATION

Are WEF Continuing Education Credits Approved in My State?

WEF applies for approval in many states and will be happy to work with individuals and Member Associations for additional state or agency approvals upon request. In addition, WEF has been approved as a Training Provider through the following:

The Florida Board of Professional Engineers, the New York State Department of Education, and the Ohio EPA. Several states typically accept WEF PDH and CEU credits without issue. For example: California (CWEA), Florida and New Jersey.

What Else Do I Need to Know?

WEF follows the International Association of Continuing Education and Training (IACET) guidelines along with state-specific regulations to achieve strict policies and procedures regarding its Continuing Education Program. WEF calculates education credits following a standardized method that is the most widely accepted by certification and licensing agencies. However, many states differ in the type and/or number of credits they will approve for educational events. Because of this, participants are responsible for exploring their state requirements and for ensuring that WEF conference credits are accepted.

Service and Support...

In keeping with IACET guidelines, WEF maintains a database of all continuing education files for a minimum of 7 years. You may contact WEF's Customer Service Team between the hours of 8:30am and 5:00pm EST, Monday through Friday to request these files. Please call 1-800-666-0206 or submit an email request to csc@wef.org.

State Credit Calculations:

*Some state licensing boards will accept CEUs for session under 3 hours in length. Some use different acronyms for training credits. In most instances the credits issued by WEF can be converted to meet state specific requirements that vary from the system used by WEF. This is usually managed at the state level using the following conversion:

1.0 CEU = 10 Hours of session time

1.0 PDH = 1 Hour of session time

1.0 Contact Hour = 1 Hour of session time

For example: **1.7 CEU Credits = 17.0 PDH** depending on individual state regulations.

**CEU & PDH credits are available for Workshops to Professional Engineers licensed in the state of New York (NYSED).*

**For more information regarding WEF's Continuing Education Program,
please visit www.wef.org/StormwaterGI**

ONLINE PROCEEDINGS

Conference proceedings, consisting of manuscripts for each presentation, have been made available through an online portal. Advance registrants within Full Conference, Daily, Student, and Exhibiting categories will receive access to the SWGI 2019 online proceedings on the day prior to the conference. Onsite registrants will receive an access link following the event's conclusion.

Copies of proceedings may be ordered after the conference at the member rate of \$100 USD/nonmember rate of \$150 USD. All orders will be processed after conclusion of the conference. You may call 1-800-666-0206 or visit www.wef.org/ShopWEF and ask for Stock Number – CPSW1902

TECHNICAL PUBLICATIONS



User-Fee-Funded Stormwater Programs

Member: \$50.88

Non-member: \$63.60

A must-read for agencies and public works departments interested in developing charge systems for stormwater programs based on fee structures. User-Fee-Funded Stormwater Programs will specify the drivers for stormwater user-fee formation and explore the responsibilities, costs, and entire implementation process.



Green Infrastructure Implementation

Member: \$88.19

Non-member: \$110.24

Green Infrastructure Implementation provides actionable information that promotes the implementation of green infrastructure. This book tackles topics that relate directly to the ability to implement green infrastructure. The collection of programmatic and planning topics is unique in current literature, and covers a range of issues from stormwater to public education.

**** Conference attendees save 20%.*

Pricing above includes Florida Sales Tax and discount.

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WEF POLICIES & POSITIONS

WEF's Vision

A community of empowered professionals creating a healthy global water environment.

Core Values

Leadership, Passion, Scholarship, and Collaboration, and Service

WEF Policies

WEF respects and takes the broadest view of human diversity and inclusion and is committed to providing a professional, safe, and welcoming environment at its events for all water professionals and their guests. WEF expects all sponsors, speakers, attendees, media, exhibitors and other participants to uphold our commitment to diversity and inclusion by helping us provide a positive conference environment for everyone.

For more information, please see WEF's Diversity and Inclusivity Policy, as well as WEF's Non-Discrimination and Harassment Policy at www.wef.org/about/about-wef.

Reporting Concerns

If you have any concerns during this conference, please stop by the conference registration desk in the Lobby of the Greater Fort Lauderdale-Broward County Convention Center or you may email the WEF Executive Director Dr. Eileen O'Neill at eoneill@wef.org.

WEF SOCIAL MEDIA POLICY

WEF strongly encourages the use of social media to share your experiences at our event. This includes sharing interesting quotes or information, taking pictures with colleagues, and using the event hashtag. However, to protect intellectual property, videotaping, filming, or live-streaming of any workshop or technical session presentation, or exhibit booth is prohibited. Any participant violating this policy must relinquish the media and may be removed from the conference. Also, promotional or commercial use of photographs taken at WEFTEC and other WEF conferences is strictly prohibited. If you are interested in content, materials, or products, please consider talking to the speaker or exhibitor, who may provide the information or grant permission.

CONFERENCE SAFETY AND SECURITY

WEF works hard to provide a comfortable and safe environment during our meetings and events, including contracting with private security firms and off-duty police officers when required. Your help also is needed to provide a safe and secure environment. WEF recommends that you follow these safety guidelines:

1. **Share your plans.** Advise a family member or friend of your travel plans, including the dates you will be gone, how you will travel to the meeting or event, and where you are staying;
2. **Protect your identity.** Wear your name badge only inside the meeting or event venue; remove and secure your name badge when going to and from the venue; when disposing of your name badge, scratch out or destroy your name and/or the QR code to protect your personal information;
3. **Plan for an emergency.** Be aware of your surroundings. Know where the nearest exits are located. Use the buddy system. Exchange contact information with another event attendee. In case of a venue evacuation, agree where you will meet up. Call for help if your buddy doesn't meet up at the agreed location within a reasonable amount of time.
4. **See something, say something.** If you see something that raises a safety or security concern, please follow the instructions printed on the back of your name badge to alert security personnel.

Greater Fort Lauderdale - Broward County Convention Center **Emergency Plan:**

Emergencies:

When an emergency occurs, we ask that (when possible) notify The Convention Center Security Office at (954) 765-5931 which is manned 24/7 by security. We do not encourage anyone to call 911 in every emergency case, unless it is priority 1. This will delay in dispatching the officers. In a need of Evacuation, Security has been trained to safely escort everyone out of the building using our Emergency Evacuation Routes to our designated areas. Our rally points are the "D" Lot (located behind Hall D) and on the East side of the fountain.

Medical Emergencies:

When an emergency occurs, we ask that (when possible) notify any nearby BCCC (Broward County Convention Center) staff who can notify the EMT on site (during staffed hours) or our Central Security Staff who will call Fire/Rescue immediately. We do not encourage to call 911 directly to avoid delay in dispatch, unless it is priority 1.

PRE- CONFERENCE SPECIAL SEMINAR

Special Seminar: Advancing Green Infrastructure Practice through Life Cycle Cost and Co-Benefits Analysis

Tuesday, May 7

1:30 PM – 5:00 PM

(Separate registration applies)

- | | |
|----------------|---|
| 1:30 PM | Overview of Stormwater Life Cycle Analysis and Green Infrastructure Co-Benefits Projects <u>Harry Zhang</u> , The Water Research Foundation (WRF) |
| 1:40 PM | An Overview of Life Cycle Cost Framework for Stormwater Infrastructure <u>Jennifer Egan</u> , <u>Jennifer Cotting</u> , University of Maryland |
| 2:00 PM | Cost Equations and Collection of Life Cycle Cost Data Christine Pomeroy , University of Utah |
| 2:15 PM | Framework and Tool for Quantifying Green Infrastructure Co-Benefits <u>Janet Clements</u> , Corona Environmental Consulting |
| 2:45 PM | Community Engagement and Summary of User Stories <u>Jennifer Cotting</u> , University of Maryland; <u>Michele Pugh</u> , Wichita State University |
| 3:00 PM | Break |
| 3:30 PM | CLASIC Tool Features, User Interface and Demo <u>Tyler Dell</u> , <u>Sybil Sharvelle</u> , Colorado State University |
| 4:15 PM | Users Feedback on Tool Application with Case Studies <u>Tyler Dell</u> , <u>Sybil Sharvelle</u> , Colorado State University |
| 4:55 PM | Summary and Closing Remarks <u>Harry Zhang</u> , WRF |
| 5:00 PM | Seminar Adjourns |

PRE- CONFERENCE WORKSHOPS

Workshop A: Watershed Management Optimization Support Tool (WMOST): Cost-Effective Integrated Water Management

Wednesday, May 8

8:30 AM-5:00 PM

(Separate registration fees apply)

| | |
|-----------------|--|
| 8:30 AM | Welcome, Introductions and Software Installation <u>Amy Piscopo</u> , U.S. EPA |
| 9:00 AM | Integrated Water Management and WMOST Overview <u>Ryan Sullivan</u> , U.S. EPA |
| 9:30 AM | Land Use and Baseline Hydrology and Pollutant Loads <u>Naomi Detenbeck</u> , <u>Ryan Sullivan</u> , U.S. EPA |
| 10:00 AM | Networking Break |
| 10:30 AM | Stormwater Module <u>Amy Piscopo</u> , U.S. EPA |
| 11:00 AM | Water Demand, Supply, and Infrastructure Modules <u>Ryan Sullivan</u> , U.S. EPA |
| 12:00 PM | Lunch |
| 1:30 PM | Calibration and Validation <u>Naomi Detenbeck</u> , U.S. EPA |
| 2:00 PM | Optimization <u>Amy Piscopo</u> , U.S. EPA |
| 2:30 PM | Scenarios <u>Naomi Detenbeck</u> , U.S. EPA |
| 3:00 PM | Networking Break |
| 3:30 PM | Example Applications <u>Naomi Detenbeck</u> , U.S. EPA |
| 4:00 PM | Robust Decision-Making and Multi-Objective Optimization <u>Amy Piscopo</u> , U.S. EPA |
| 4:30 PM | Future Directions and Discussion <u>Naomi Detenbeck</u> , U.S. EPA |
| 5:00 PM | Workshop Adjourns |

PRE- CONFERENCE WORKSHOPS

Workshop B: Redrawing Grey Cities to Climate Resilient Sponge Cities

Wednesday, May 8

8:30 AM-12:00 PM

(Separate registration fees apply)

| | |
|----------|--|
| 8:30 AM | Welcome and Workshop Outlines <u>Nian She</u> , Shenzhen University |
| 8:35 AM | Introduction: Problems Caused by Urbanization; Problems Caused and Potential Risk of Climate Change |
| 8:55 AM | Sponge City Approach |
| 9:05 AM | Case Study: Zhenjiang City |
| 9:15 AM | Projects Overview |
| 9:20 AM | Retrofit High Density Neighborhoods Using GSI Step by Step |
| 10:00 AM | Networking Break |
| 10:30 AM | Q&A |
| 10:50 AM | CSO Treatment Using GSI <ul style="list-style-type: none">• Sponge City Park (Innovative Regional Facility)• Water Quality Channel• Watershed WQ management (Jiangsu University Campus) |
| 11:45 AM | Q&A |
| 12:00 PM | Workshop Adjourns |

PRE- CONFERENCE WORKSHOPS

Workshop C: The Water Quality Workforce: Building Real-World Pathways into Sustainable Infrastructure Careers

Wednesday, May 8

1:30 PM-5:00 PM

(Separate registration fees apply)

- | | |
|----------------|--|
| 1:30 PM | Welcome and Introduction <u>Drew Lehman</u> , Environment and Education; <u>Steven Currie</u> , BAYWORK |
| 1:35 PM | Facilitated Panel Discussion: Municipal/Institutional/Private Industry <u>Andrada Butler</u> , Atlanta Dept. of Watershed Management; <u>Joe Kane</u> , Brookings Institute; <u>Trinh Nguyen</u> , Boston Mayor's Office of Workforce Development; <u>Ifetayo Venner</u> , Arcadis |
| 3:00 PM | Networking Break |
| 3:30 PM | Facilitated Panel Discussion: Hands on Workforce Development Programs <u>Patrick Barnes</u> , Limitless Vistas, Inc.; <u>Colleen Murphy Dunning</u> , Yale Hixon Urban Center for Urban Ecology; <u>Diana Francois</u> , Jacobs Engineering; <u>Kimberly Grove</u> , Baltimore City Department of Public Works |
| 5:00 PM | Workshop Adjourns |

OPENING GENERAL SESSION

Opening General Session

Thursday, May 9

8:30 AM – 10:00 AM

Room Floridian A

- | | |
|-----------------|--|
| 8:30 AM | Welcome to the 2019 Symposium! Leigh Padgitt, Arizona Department of Environmental Quality, 2019 Co-Chair Mike DeVuono, Arcadis, 2019 Co-Chair |
| 8:40 AM | WEF Welcome Joan Hawley, WEF Board of Trustees, President Superior Engineering |
| 8:45 AM | Florida Water Environment Association Welcome Kristiana Dragash, FWEA President, Carollo |
| 8:50 AM | A Resilient Fort Lauderdale: Present and Future Flood Management Nancy Gassman, City of Fort Lauderdale |
| 9:15 AM | An Update from EPA Jeananne Gettle, Environmental Protection Agency |
| 9:40 AM | WEF Stormwater Institute Update Sandra K. Ralston, SWI Advisory Committee Chair, Consensus LLC. |
| 10:00 AM | Session Adjourns for Networking Break |

TECHNICAL PROGRAM

Session 01: National Green Infrastructure Certification Program: Raising the Bar in the Green Infrastructure Construction and Maintenance Industry

Thursday, May 9

10:45 AM – 12:15 PM

Room 207/208

Moderator: J. Douglas Fritz, GKY & Associates, Inc.

- | | |
|-----------------|---|
| 10:45 AM | The Need for National Green Infrastructure Training and Certification Seth Brown, WEF |
| 11:10 AM | The Value of the NGICP Program Adrianna Caldarelli, WEF |
| 11:35 AM | The NGICP Certification Process and Beyond J. Douglas Fritz, GKY & Associates, Inc. |
| 12:00 PM | Roundtable Questions and Answers |
| 12:15 PM | Session Adjourns for Lunch |

TECHNICAL PROGRAM

Session 02: Market-Based Delivery, Funding, and Finance Options

Thursday, May 9

10:45 AM - 12:15 PM

Room 209/210

Moderators: Sanjiv Sinha, Environmental Consulting & Technology, Inc.; Thierry Boveri, Public Resources Management Group, Inc.

- 10:45 AM** **Delivering Performance-Based Partnerships by Leveraging Private Investment and Accountability to Unlock Public Capital at Scale**
Sean Agid, Troy Hunt, Corvias
- 11:15 AM** **Carrots and Sticks: Motivating Private Investment in Meeting NYC Stormwater Goals**
Melissa Enoch, Pinar Balci, NYC DEP
- 11:45 AM** **A Fresh Look at Infrastructure Investments: Green Infrastructure and the ALCOSAN GROW Program**
Timothy Prevost, Julia Spicher, Alcosan
- 12:15 PM** **Session Adjourns for Luncheon in Exhibit Area**
- Alternate** **The Evolution of Stormwater Utilities in Pennsylvania**
Anthony Dill, Fernando Pasquel, Arcadis

TECHNICAL PROGRAM

Session 03: Stormwater Treatment Technologies

Thursday, May 9

10:45 AM - 12:15 PM

Room 203/204

Moderators: Fernando Pasquel, Arcadis; Leigh Padgitt, Arizona Department of Environmental Quality

- 10:45 AM** **Nutrient Removal from Stormwater Runoff and Wastewater**
Rakesh Govind, Water Warriors, Inc.; Panos Athanasiou,
University of Cincinnati; Mallikarjuna Nadagouda, U.S.
Environmental Protection Agency
- 11:15 AM** **Efficacy of Biochar Amended Bioretention for E. coli and Nitrogen Removal from Urban Runoff**
Md Yeasir Rahman, Sarina Ergas, Mahmood Nachabe,
University of South Florida
- 11:45 AM** **Development of an Improved Bioretention Soil Media for Use in Washington State**
John Lenth, Curtis Hinman, Herrera Environmental
Consultants; Douglas Howie, Washington Dept of Ecology
- 12:15 PM** **Session Adjourns for Luncheon in Exhibit Area**

TECHNICAL PROGRAM

Session 04: Construction, Inspection and Maintenance Cautions and Tips

Thursday, May 9
1:30 PM - 5:15 PM
Room 207/208

Moderators: Brenda Macke, Burns & McDonnell; Cynthia Baumann, CDM Smith

- 1:30 PM** **Challenges of Constructing Urban Green Infrastructure**
Patrick DiNicola, RK&K; Seth Charde, DC Water
- 2:00 PM** **Stormwater Asset Management in the Heartland - Implementing Asset Renewal into a Successful Flood Reduction Program**
Matthew Scott, CDM Smith; Sarah Smith, Johnson County
- 2:30 PM** **Eastgate Park - Unseen Stormwater Management in an Active Park**
Mark Bassingthwaite, Resilient Consulting; Vivek Sharma, ADS Canada
- 3:00 PM** **Networking Break in Exhibit Area**
- 3:45 PM** **Planning and Prioritization for Effective Flood Control Channel Management in Urban Los Angeles County**
Jonathan Abelson, Stantec; Josh Svensson, Abdu Haikal, Venu Kolli, Los Angeles County Department of Public Works; Allison Ribachonek, Stantec
- 4:15 PM** **It's All In The Cards: Communicating The Maintenance History and Goals of Enhanced Extended Detention (EED) Facilities**
John Burke, Fairfax County Stormwater Management; J. Douglas Fritz, GKY & Associates, Inc.; Ryan O'Banion, Hazen and Sawyer
- 4:45 PM** **A Holistic Approach to Green Stormwater Infrastructure Maintenance**
Regan Brotherton, Taliaferro and Browne; Lisa Treese, City of Kansas City Missouri Water
- 5:15 PM** **Session Adjourns for Networking Reception in Exhibit Area**

TECHNICAL PROGRAM

Session 05: Innovative Funding Ideas for Stormwater Infrastructure

Thursday, May 9
1:30 PM - 5:15 PM
Room 209/210

Moderators: Steve Dye, WEF; Seth Brown, Storm & Stream Solutions

- | | |
|----------------|--|
| 1:30 PM | Welcome <u>Steve Dye</u> , WEF |
| 1:35 PM | Camden's Use of SRF Funding to Create Jobs, Build Green Infrastructure, Fix CSOs, and Become More Resilient <u>Andy Kricun</u> , Camden County Municipal Utilities Authority |
| 1:50 PM | Stormwater Financing Update from the US EPA <u>Sonia Brubaker</u> , US Environmental Protection Agency |
| 2:05 PM | Baltimore Funds Stormwater Management Through Traditional and Innovative Financing Tools <u>Kimberly Grove</u> , Baltimore City Public Works |
| 2:20 PM | Ways Environmental Impact Bonds Are Being Used to Address Local Stormwater Funding Challenges <u>Eric Letsinger</u> , Quantified Ventures |
| 2:40 PM | Facilitated Discussion and Q&A |
| 3:00 PM | Networking Break in Exhibit Hall |
| 3:45 PM | Introduction to Panel <u>Seth Brown</u> , Storm & Stream Solutions |
| 3:55 PM | How to Structure a Stormwater Utility for Market-Based Options <u>Fernando Pasquel</u> , Arcadis |
| 4:10 PM | Stormwater Currency: Incentivizing Private Investment in Green Infrastructure <u>Janet Clements</u> , Corona Environmental Consulting |
| 4:30 PM | Buying Different Things Means Buying Things Differently: Innovative Approaches to Procurement and Partnership for Stormwater <u>Elle Hempen</u> , The Atlas |
| 4:45 PM | Facilitated Q&A |
| 5:15 PM | Session Adjourns for Networking Reception in Exhibit Hall |

TECHNICAL PROGRAM

Session 06: Advancing the Science of Green Infrastructure

Thursday, May 9
1:30 PM - 5:15 PM
Room 203/204

Moderators: Kyle Logue, Brown and Caldwell; Swarna Muthukrishnan, Clean Ocean Action

- 1:30 PM** **Innovating Infrastructure for Management of Nitrogen Found in Stormwater: Long-Term Field Performance of a Full-Scale Modified Bioretention System**
Emma Lopez-Ponnada, Sarina Ergas, Mahmood Nachabe, James Mihelcic, University of South Florida; Karl Payne
- 2:00 PM** **Demonstrating BMP Effectiveness With Microbial Source Tracking & Host Fecal Score**
Daron Stein, Source Molecular Corporation; Yiping Cao
- 2:30 PM** **Assessment of Microbial Community Composition and Activity in Green Infrastructure Sites**
John McLaughlin, Miki Urisaka, New York City Department of Environmental Protection; Theodore Muth, City University of New York; Franco Montalto, eDesign Dynamics; Jerry Kleymann, Arcadis
- 3:00 PM** **Networking Break in Exhibit Area**
- 3:45 PM** **Removal of f2 Coliphage in a Vertically Configured Subsurface Flow (SSF) Constructed Wetland**
Yawei Wang, Research Center for Eco-Environmental Sciences, Chinese Academy of Science; Xiang Zheng, Renmin University; Yuansong Wei, Research Center for Eco-Environmental Sciences, Chinese Academy of Science
- 4:15 PM** **Utilizing In-Situ Ultraviolet-Visual Spectroscopy to Measure Nutrients and Sediment Concentrations in Stormwater Runoff**
James Houle, Tom Ballestero, Daniel Macadam, UNH Stormwater Center
- 4:45 PM** **A Decision-Making Tool for Holistic Stormwater Management in Los Angeles: What Does That Look Like?**
Khaled Abdo, Mark Van Auken, Arcadis
- 5:15 PM** **Session Adjourns for Networking Reception in Exhibit Area**

TECHNICAL PROGRAM

Session 07: Sustainability, Regional Collaboration and Getting the Most Out of your System. All Roads Lead to Resiliency

Friday, May 10
8:30 AM - 12:00 PM
Room 207/208

Moderators: Henry Manguerra, Atkins; David Bedoya, Dewberry

- | | |
|-----------------|---|
| 8:30 AM | Resilient Cities and Stormwater Utilities Are Shifting from Reactive Solutions to Cost Effective and Equitable Prevention via Future-Proofing: Thrive Indianapolis Case Study <u>Keren Bolter</u> , Arcadis |
| 9:00 AM | Water Knows No Political Boundaries: Living with the Bay Resiliency Program <u>Michael Bomar</u> , Jake Oldenburger, Tetra Tech |
| 9:30 AM | Keeping Pace with Mother Nature with Real-time Stormwater Management <u>Tommy Strowd</u> , Lake Worth Drainage District; Glen Hill, Greg Quist, Smartcover Systems |
| 10:00 AM | Networking Break |
| 10:30 AM | Community Adaptation: Integrating GI at Multiple Scales for Climate Adaptation <u>Dana Brown</u> , Dana Brown & Associates, Inc. |
| 11:00 AM | Regional Green Infrastructure (GI) Stormwater BMPs <u>Larry Tortuya</u> , GHD; Dave Sorem, Mike Bubalo Construction Inc. |
| 11:30 AM | Assessment of Multiple Benefits of Green Infrastructure Opportunity Mapping: Case Studies from the UK <u>Neil Breton</u> , Zorica Todorovic, Henry Manguerra, Atkins Ltd. |
| 12:00 PM | Session Adjourns for Luncheon |

TECHNICAL PROGRAM

Session 08: Municipal Program Management from Coast to Coast

Friday, May 10

8:30 AM - 12:00 PM

Room 209/210

Moderators: Nancy Ellwood, CDM Smith; Douglas Howie, Washington Department of Ecology

- 8:30 AM** **Framework for a Performance-Based Green Roof Incentive in New York City**
Melissa Enoch, NYC Environmental Protection; Tyler Carson, Arcadis; Franco Montalto, eDesign Dynamics
- 9:00 AM** **Richmond, Virginia's RVAH2O Clean Water Plan - Integrating Permitting and Program Implementation**
Grace LeRose, City of Richmond DPU; Heather Bourne, Limnotech
- 9:30 AM** **Tacoma's Statistically Proven Approach to Stormwater Management, Tacoma, Washington**
Dana de Leon, Mary Henley, Jessica Knickerbocker, City of Tacoma
- 10:00 AM** **Networking Break**
- 10:30 AM** **Evaluation of Natural Green Infrastructure for Watershed Planning in the City of Atlanta**
Amanda Medori Hallauer, City of Atlanta Department of Watershed Management; Lori Visone, Brown and Caldwell
- 11:00 AM** **Pollinating Green Stormwater Infrastructure in Detroit, Michigan**
Palencia Mobley, Syed Ali, Detroit Water and Sewerage Department; Patrick Droze, OHM Advisors; Lisa Wallick, Detroit Wastewater
- 11:30 AM** **NYC Green Infrastructure Program: Implementation Status and Adaptive Management**
Melissa Enoch, Pinar Balci, NYC DEP
- 12:00 PM** **Session Adjourns for Luncheon**

TECHNICAL PROGRAM

Session 09: Green Infrastructure for CSO Management, and other Post-Construction Control Measures

Friday, May 10
8:30 AM - 12:00 PM
Room 203/204

Moderators: Jeffrey Wright, Atkins; Leigh Padgitt, Arizona Department of Environmental Quality

- | | |
|------------------|---|
| 8:30 AM | Post-Construction Monitoring to Confirm Green Infrastructure Performance in Philadelphia <u>Dwayne Myers</u> , CDM Smith; Stephen White, Taylor Heffernan, Christopher Bergerson, Philadelphia Water Department |
| 9:00 AM | Developing a Stormwater Control Measure Sizing Credit for the Infiltration Improvements Attributable to Plants <u>Scott B Dierks</u> , GEI Consultants, Inc. |
| 9:30 AM | Atlanta's Green Infrastructure Standards for Single Family Infill and Commercial Development <u>Cory Rayburn</u> , City of Atlanta Department of Watershed Management |
| 10:00 AM | Networking Break |
| 10:30 AM | Keeping Louisville Green: Louisville MSD and Churchill Downs' Green Infrastructure Partnership <u>David Mulloy</u> , <u>Jordan Basham</u> , Louisville & Jefferson County MSD |
| 11:00 AM | Stormwater Enhancements to Northwood Lake and the Surrounding Watershed <u>Tyler Johnson</u> , Stantec |
| 11:30 AM | Institutionalizing Stormwater Management and Green Stormwater Infrastructure in Detroit, MI <u>Dan Christian</u> , Tetra Tech; Palencia Mobley, <u>Lisa Wallick</u> , Detroit Water & Sewerage Department; Christy Williams |
| 12:00 PM | Session Adjourns for Luncheon |
| Alternate | The Mason-Dixon Differential: Regional Wetland Policies Create Obstacles and Opportunities for Stormwater Retrofitting <u>Zach Henderson</u> , Woodard & Curran; Bradley Hayes |

TECHNICAL PROGRAM

Session 10: Advancing Climate Resilient and Equitable Water Systems through Partnership and Practice

Friday, May 10
1:00 PM - 2:30 PM
Room 207/208

Moderator: Jalonne L. White-Newsome, The Kresge Foundation

Panelists: Jalonne L. White-Newsome, The Kresge Foundation; Nicole Chavas, GreenPrint Partners; Harriet Festing, Anthropocene Alliance; Hardeep Anand, Miami-Dade Water & Sewage Department; Paula Connolly, Green Infrastructure Exchange; Beverly Wright, Deep South Center for Environmental Justice

1:00 PM **Introduction to the Session**

1:10 PM **Flash Talks by Speakers**

- Financing GSI
- Climate Resiliency and the Decision-making process
- Community Engagement
- Water Utility Practice

1:40 PM **Fishbowl**

Five to eight people are seated in a circle, having a conversation in full view of a larger group of listeners. One or more chairs are open to members of the audience who want to ask questions or make comments. The facilitator will provide questions to ignite the conversation or the conversation will be stimulated organically from the 'flash talks'.

2:10 PM **Summary of Fishbowl**

2:15 PM **Closing Thoughts and Questions**

2:30 PM **Session Adjourns for Networking Break**

TECHNICAL PROGRAM

Session 11: Program Management Technologies

Friday, May 10
1:00 PM - 2:30 PM
Room 209/210

Moderators: Bob Backman, AbTech Industries; Carol Hufnagel, Tetra Tech

- 1:00 PM** **Framework and Tool for Quantifying and Monetizing the Co-Benefits of Green Infrastructure and Linking with Triple Bottom Line Analysis**
Janet Clements, Corona Environmental Consulting; Harry Zhang, The Water Research Foundation; Jim Henderson, Bob Raucher, Corona Environmental Consulting
- 1:30 PM** **Kansas City, Missouri Green Stormwater Infrastructure Manual - Building the Tools**
Lauren Grubbs, Andrew Sauer, Brenda Macke, Madison Gibler, Burns & McDonnell
- 2:00 PM** **A Model-Based Watershed Implementation Planning Tool for TMDL and Municipal Stormwater Permit Compliance in Orange County, California**
Jian Peng, OC Environmental Resources; Andrea Zimmer, Steven Wolosoff, CDM Smith; Tony Howze, PACE Water
- 2:30 PM** **Session Adjourns for Networking Break**
- Alternate** **Recovery after Houston's Hurricane Harvey & the Future of Resiliency in Houston - How a CIP Planning Prioritization Tool Determines Stormwater Needs-Based Areas**
Philip Bullock, Carollo
- Alternate** **Triple Bottom Line Cost Benefit Analysis of Mirabeau Water Garden**
Eric Bill, Impact Infrastructure (makers of Autocase); Tyler Antrup, City of New Orleans

TECHNICAL PROGRAM

Session 12: Integrative Strategies and Practical Applications

Friday, May 10

1:00 PM - 2:30 PM

Room 203/204

Moderators: Jason Garder, Burns & McDonnell; Kamran Zendehdel, University of DC

- 1:00 PM** **Two Converging Paths Lead to Greener Infrastructure in the Unified Government of Wyandotte County and Kansas City, Kansas**
Brenda Macke, Madison Gibley; Lauren Grubbs, Kylie Wyatt, Burns & McDonnell
- 1:30 PM** **Clinton River Habitat Restoration**
Prasad Gullapalli, Hubbell, Roth & Clark
- 2:00 PM** **The Spatial Approach: Enhancing Green Infrastructure and Stormwater Strategies through Use of Spatial Analysis**
Ryan Brotchie, Larry Tortuya, Katherine Williams, GHD
- 2:30 PM** **Session Adjourns for Networking Break**

TECHNICAL PROGRAM

Session 13: Innovation/Technology – Planning Thru Implementation

Friday, May 10

3:00 PM - 4:30 PM

Room 207/208

Moderators: Bob Backman, AbTech Industries; Leigh Padgitt, Arizona Department of Environmental Quality

- | | |
|----------------|---|
| 3:00 PM | Simulating Green Infrastructure in Hydrologic and Hydraulic Models <u>Jean Malafronte</u> , Marcus Mathieson, Ted R. Bluver, <u>Tatiana Proctor</u> , Michael Hope, Greeley and Hansen |
| 3:30 PM | Where'd all that Stormwater go? Using Real Time Controls to Reduce CSOs <u>Jason Garder</u> , Andrew Sauer, Madison Gibler, Burns & McDonnell; Viktor Hlas, Optirtc Inc |
| 4:00 PM | Real-Time Control of Brooklyn Botanic Garden's Water Features for Combined Sewer Overflow Mitigation and Water Conservation <u>Dayton Marchese</u> , Scott Simpson, OptiRTC, Inc.; Matthew Bird, Michael Van Valkenburgh Associates, Inc. |
| 4:30 PM | Symposium Adjourns |

TECHNICAL PROGRAM

Session 14: Implementing Green Infrastructure for Results: Using Data to Plan, Evaluate, and Build

Friday, May 10
3:00 PM - 4:30 PM
Room 209/210

Moderators: Carol Hufnagel, Tetra Tech; Jeffrey Wright, Atkins

- | | |
|------------------|--|
| 3:00 PM | Making the Grade: A Proven Approach to Meet MS4 TMDL Requirements <u>Karen Nichols</u> , Ronald Geiger, HDR |
| 3:30 PM | Monitoring Storm Sewers for Flow and Water Quality in Areas of Urban Redevelopment <u>Kyle Gustafson</u> , Kimberly Slinski, John McCray, Colorado School of Mines |
| 4:00 PM | Putting Stormwater into Context in the Merrimack River Watershed: Modeling of Bacteria Standards Attainment in the Future with CSO Reductions and Potential Basin Scale Stormwater BMP Implementation <u>Zachary Eichenwald</u> , Constantine Karos, Gary Mercer, Lauren Klonsky, Steven Wolosoff, CDM Smith |
| 4:30 PM | Symposium Adjourns |
| Alternate | WEF's Stormwater Institute National MS4 Needs Assessment Survey Results Adriana Caldarelli, <u>Rebecca Arvin-Colon</u> , WEF; Seth Brown, Storm and Stream Solutions, LLC; Janet Clements, James Henderson, Corona Environmental Consulting |

TECHNICAL PROGRAM

Session 15: Tools for Community Engagement and Implementation

Friday, May 10
3:00 PM - 4:30 PM
Room 203/204

Moderators: Swarna Muthukrishnan, Clean Ocean Action; Harris Trobman, University of DC

- 3:00 PM** **DC Water's Mobile Data Collection Program for Downspout Disconnection**
Amanda Zander, Delon Hampton & Associates; Seth Charde, DC Water; Steven Skripnik, Limnotech
- 3:30 PM** **Online Framework for Evaluating the Multiple Benefits of GSI projects**
Serda Ozbenian, Kevin Brady, National Recreation and Park Association
- 4:00 PM** **Using Community Engagement and Partnerships to Cultivate Strong Roots for Green Stormwater Infrastructure (GSI) in Detroit, MI**
Palencia Mobley, Lisa Wallick, Bryan Peckinpugh, Detroit Water & Sewerage Department; Carol Hufnagel, Kellie DuBay, Marianne Gutknecht, Tetra Tech
- 4:30 PM** **Symposium Adjourns**

PRESENTATIONS AT-A-GLANCE

We encourage attendees to participate in presentations from among all sessions. To better plan your learning, see below and on the following pages a list of presentations offered during each time block.

| Thursday, May 9 Morning | | | |
|-------------------------|---|--|--|
| Room | Room 207/208 | Room 209/210 | Room 203/204 |
| Session | Session 01: National Green Infrastructure Certification Program: Raising the Bar in the Green Infrastructure Construction and Maintenance Industry | Session 02: Market-Based Delivery, Funding, and Finance Options | Session 03: Stormwater Treatment Technologies |
| 10:45 AM | | Delivering Performance-Based Partnerships by Leveraging Private Investment and Accountability to Unlock Public Capital at Scale | Nutrient Removal from Stormwater Runoff and Wastewater |
| 11:15 AM | | Carrots and Sticks: Motivating Private Investment in Meeting NYC Stormwater Goals | Efficacy of Biochar Amended Bioretention for E. coli and Nitrogen Removal from Urban Runoff |
| 11:45 AM | | A Fresh Look at Infrastructure Investments: Green Infrastructure and the ALCOSAN GROW Program | Development of an Improved Bioretention Soil Media for Use in Washington State |
| ALT | | The Evolution of Stormwater Utilities in Pennsylvania | |

PRESENTATIONS AT-A-GLANCE

| Thursday, May 9 Afternoon | | | |
|---------------------------|--|---|--|
| Room | Room 207/208 | Room 209/210 | Room 203/204 |
| Session | Session 04: Construction, Inspection and Maintenance Cautions and Tips | Session 05: Innovative Funding Ideas for Stormwater Infrastructure | Session 06: Advancing the Science of Green Infrastructure |
| 1:30 PM | Challenges of Constructing Urban Green Infrastructure | | Innovating Infrastructure for Management of Nitrogen Found in Stormwater: Long- Term Field Performance of a Full- Scale Modified Bioretention System |
| 2:00 PM | Stormwater Asset Management in the Heartland - Implementing Asset Renewal into a Successful Flood Reduction Program | | Demonstrating BMP Effectiveness with Microbial Source Tracking & Host Fecal Score |
| 2:30 PM | Eastgate Park - Unseen Stormwater Management in an Active Park | | Assessment of Microbial Community Composition and Activity in Green Infrastructure Sites |
| 3:45 PM | Planning and Prioritization for Effective Flood Control Channel Management in Urban Los Angeles County | | Removal of f2 Coliphage in a Vertically Configured Subsurface Flow (SSF) Constructed Wetland |
| 4:15 PM | It's All In The Cards: Communicating The Maintenance History and Goals of Enhanced Extended Detention (EED) Facilities | | Utilizing In-Situ Ultraviolet-Visual Spectroscopy to Measure Nutrients and Sediment Concentrations in Stormwater Runoff |
| 4:45 PM | A Holistic Approach to Green Stormwater Infrastructure Maintenance | | A Decision-Making Tool for Holistic Stormwater Management in Los Angeles: What Does That Look Like? |

PRESENTATIONS AT-A-GLANCE

| Friday, May 10 Morning | | | |
|------------------------|---|--|--|
| Room | Room 207/208 | Room 209/210 | Room 203/204 |
| Session | Session 07: Sustainability, Regional Collaboration and Getting the Most Out of your System. All Roads Lead to Resiliency | Session 08: Municipal Program Management from Coast to Coast | Session 09: Green Infrastructure for CSO Management, and other Post-Construction Control Measures |
| 8:30 AM | Resilient Cities and Stormwater Utilities Are Shifting from Reactive Solutions to Cost Effective and Equitable Prevention via Future-Proofing: Thrive Indianapolis Case Study | Framework for a Performance-Based Green Roof Incentive in New York City | Post-Construction Monitoring to Confirm Green Infrastructure Performance in Philadelphia |
| 9:00 AM | Water Knows No Political Boundaries: Living with the Bay Resiliency Program | Richmond, Virginia's RVAH2O Clean Water Plan - Integrating Permitting and Program Implementation | Developing a Stormwater Control Measure Sizing Credit for the Infiltration Improvements Attributable to Plants |
| 9:30 AM | Keeping Pace with Mother Nature with Real-time Stormwater Management | Tacoma's Statistically Proven Approach to Stormwater Management, Tacoma, Washington | Atlanta's Green Infrastructure Standards for Single Family Infill and Commercial Development |
| 10:30 AM | Community Adaptation: Integrating GI at Multiple Scales for Climate Adaptation | Evaluation of Natural Green Infrastructure for Watershed Planning in the City of Atlanta | Keeping Louisville Green: Louisville MSD and Churchill Downs' Green Infrastructure Partnership |
| 11:00 AM | Regional Green Infrastructure (GI) Stormwater BMPs | Pollinating Green Stormwater Infrastructure in Detroit, Michigan | Stormwater Enhancements to Northwood Lake and the Surrounding Watershed |
| 11:30 AM | Assessment of Multiple Benefits of Green Infrastructure Opportunity Mapping: Case Studies from the UK | NYC Green Infrastructure Program: Implementation Status and Adaptive Management | Institutionalizing Stormwater Management and Green Stormwater Infrastructure in Detroit, MI |
| ALT | | | The Mason-Dixon Differential: Regional Wetland Policies Create Obstacles and Opportunities for Stormwater Retrofitting |

PRESENTATIONS AT-A-GLANCE

| Friday, May 10 Afternoon | | | |
|--------------------------|---|--|---|
| Room | Room 207/208 | Room 209/210 | Room 203/204 |
| Session | Session 10: Advancing Climate Resilient and Equitable Water Systems through Partnership and Practice | Session 11: Program Management Technologies | Session 12: Integrative Strategies and Practical Applications |
| 1:00 PM | | Framework and Tool for Quantifying and Monetizing the Co-Benefits of Green Infrastructure and Linking with Triple Bottom Line Analysis | Two Converging Paths Lead to Greener Infrastructure in the Unified Government of Wyandotte County and Kansas City, Kansas |
| 1:30 PM | | Kansas City, Missouri Green Stormwater Infrastructure Manual - Building the Tools | Clinton River Habitat Restoration |
| 2:00 PM | | A Model-Based Watershed Implementation Planning Tool for TMDL and Municipal Stormwater Permit Compliance in Orange County, California | The Spatial Approach: Enhancing Green Infrastructure and Stormwater Strategies through Use of Spatial Analysis |
| ALT | | Recovery after Houston's Hurricane Harvey & the Future of Resiliency in Houston - How a CIP Planning Prioritization Tool Determines Stormwater Needs-Based Areas | |
| ALT | | Triple Bottom Line Cost Benefit Analysis of Mirabeau Water Garden | |

PRESENTATIONS AT-A-GLANCE

| Friday, May 10 Afternoon | | | |
|--------------------------|---|---|--|
| Room | Room 207/208 | Room 209/210 | Room 203/204 |
| Session | Session 13: Innovation/Technology – Planning Thru Implementation | Session 14: Implementing Green Infrastructure for Results: Using Data to Plan, Evaluate, and Build | Session 15: Tools for Community Engagement and Implementation |
| 3:00 PM | Simulating Green Infrastructure in Hydrologic and Hydraulic Models | Making the Grade: A Proven Approach to Meet MS4 TMDL Requirements | DC Water's Mobile Data Collection Program for Downspout Disconnection |
| 3:30 PM | Where'd all that Stormwater go? Using Real Time Controls to Reduce CSOs | Monitoring Storm Sewers for Flow and Water Quality in Areas of Urban Redevelopment | Online Framework for Evaluating the Multiple Benefits of GSI projects |
| 4:00 PM | Real-Time Control of Brooklyn Botanic Garden's Water Features for Combined Sewer Overflow Mitigation and Water Conservation | Putting Stormwater into Context in the Merrimack River Watershed: Modeling of Bacteria Standards Attainment in the Future with CSO Reductions and Potential Basin Scale Stormwater BMP Implementation | Using Community Engagement and Partnerships to Cultivate Strong Roots for Green Stormwater Infrastructure (GSI) in Detroit, MI |
| ALT | | WEF's Stormwater Institute National MS4 Needs Assessment Survey Results | |

SESSIONS AT A GLANCE

| Session Number | Session Title | Time | Credits | Room |
|--------------------------------------|--|-----------------|-----------------|--------------------|
| Tuesday, May 7th | | | | |
| Special Session | Advancing Green Infrastructure Practice through Life Cycle Cost and Co-Benefits Analysis | 1:30pm–5:00pm | 3.0 GCHs | 209/210 |
| Wednesday, May 8th | | | | |
| Workshop A | Watershed Management Optimization Support Tool (WMOST): Cost-Effective Integrated Water Management | 8:30pm–5:00pm | 6.0 PDHs | 207/208 |
| Workshop B | Redrawing Grey Cities to Climate Resilient Sponge Cities | 8:30am–12:00pm | 3.0 PDHs | 209/210 |
| Workshop C | Leading the Way: Building Real-World Pathways into Sustainable Infrastructure Careers | 1:30pm–5:00pm | 3.0 PDHs | 209/210 |
| Thursday, May 9th | | | | |
| OGS | Opening General Session | 8:30am–10:00am | 1.5 GCHs | Floridian A |
| Session 1 | National Green Infrastructure Certification Program: Raising the Bar in the Green Infrastructure Construction and Maintenance Industry | 10:45am–12:15pm | 1.5 PDHs | 207/208 |
| Session 2 | Market-Based Delivery, Funding, and Finance Options | 10:45am–12:15pm | 1.5 PDHs | 209/210 |
| Session 3 | Stormwater Treatment Technologies | 10:45am–12:15pm | 1.5 PDHs | 203/204 |
| Session 4 | Construction, Inspection and Maintenance Cautions and Tips | 1:30pm–5:15pm | 3.0 PDHs | 207/208 |
| Session 5 | Innovative Funding Ideas for Stormwater Infrastructure | 1:30pm–5:15pm | 3.0 PDHs | 209/210 |
| Session 6 | Advancing the Science of Green Infrastructure | 1:30pm–5:15pm | 3.0 PDHs | 203/204 |
| Friday, May 10th | | | | |
| Session 7 | Sustainability, Regional Collaboration and Getting the Most Out of your System. All Roads Lead to Resiliency | 8:30am–12:00pm | 3.0 PDHs | 207/208 |
| Session 8 | Municipal Program Management from Coast to Coast | 8:30am–12:00pm | 3.0 PDHs | 209/210 |
| Session 9 | Green Infrastructure for CSO Management, and other Post-Construction Control Measures | 8:30am–12:00pm | 3.0 PDHs | 203/204 |
| Session 10 | Advancing Climate Resilient and Equitable Water Systems through Partnership and Practice | 1:00pm–2:30pm | 1.5 PDHs | 207/208 |
| Session 11 | Program Management Technologies | 1:00pm–2:30pm | 1.5 PDHs | 209/210 |
| Session 12 | Integrative Strategies and Practical Applications | 1:00pm–2:30pm | 1.5 PDHs | 203/204 |
| Session 13 | Innovation/Technology – Planning Thru Implementation | 3:00pm–4:30pm | 1.5 PDHs | 207/208 |
| Session 14 | Implementing Green Infrastructure for Results: Using Data to Plan, Evaluate, and Build | 3:00pm–4:30pm | 1.5 PDHs | 209/210 |
| Session 15 | Tools for Community Engagement and Implementation | 3:00pm–4:30pm | 1.5 PDHs | 203/204 |

THE EXHIBITION

Exhibition Schedule

| | | |
|------------------------|---------------------------------|------------------------|
| Thursday, May 9 | 10:00 am – 6:45 pm | Exhibition Open |
| | 10:00 am – 10:45 am | Networking Break |
| | 12:15 pm – 1:30 pm | Networking Luncheon |
| | 3:00 pm – 3:45 pm | Networking Break |

Children under 18 entering the Exhibition must be accompanied by a parent or guardian at all times. The parent or guardian must obtain a child badge at registration, and assumes all risk and responsibility for the child's safety.

Due to the proprietary nature of the displays, photography of displays and materials is forbidden without exhibitors' express permission.

EXHIBITOR DIRECTORY

As of 4/18/2019

ACF Environmental..... Booth 104

www.acfenvironmental.com

Phone: 800-448-3636

2831 Cardwell Rd

Richmond, VA 23234

Ferguson Waterworks Booth 103

www.ferguson.com/waterworks

Phone: 800-721-2590

1950 NW 18th St

Pompano Beach, FL 33069-1618

Oldcastle Infrastructure..... Booth 102

www.oldcastleinfrastructure.com

Phone: 470-774-2782

7000 Central Pkwy, Ste 800

Atlanta, GA 30328

Stormwater conveyance, storage and treatment solutions.

EXHIBITOR DIRECTORY

Opti Booth 203

<https://optirtc.com>

Phone: 617-366-7585

356 Boylston St

Boston, MA 02116

Opti provides a cloud-based platform for Continuous Monitoring and Adaptive Control (CMAC) of distributed stormwater infrastructure, enabling communities and businesses to continuously improve stormwater management. Learn more at <https://optirtc.com>.

ParkUSA Booth 105

www.parkusa.com

Phone: 713-937-7602

7015 Fairbanks N Houston Rd

Houston, TX 77040

At ParkUSA, as demands and regulations on water, stormwater and wastewater infrastructure have evolved, so have we. Our innovative design capabilities enable us to provide sustainable solutions for today's water issues.

PaverGuide, Inc Booth 106

www.paverguide.com

Phone: 410-417-7185

24030 Kinnairds Point Dr

Worton, MD 21678

PaverGuide produces and sells a 100% recycled plastic stormwater infiltration chamber installed under permeable pavements. PaverGuide treats runoff at the source promoting infiltration and minimizing compaction of subbase soils.

Smartcover Systems..... Booth 200

www.smartcoversystems.com

Phone: 803-553-9234

2067 Wineridge Pl, Ste E

Escondido, CA 92029

SmartCover Systems provides a real-time solution – seamlessly connecting field to headquarters – to monitor sewer system flows to detect and alert agency staff to potential damaging overflows.

EXHIBITOR DIRECTORY

StormTrap Booth 107

www.stormtrap.com

Phone: 815-941-4549

1287 Windham Pkwy

Romeoville, IL 60446

StormTrap offers solutions for managing runoff, protecting waterways and improving the use of property. It is committed to providing cost-effective, customized water management solutions to engineers, owners, and municipalities.

Water Warriors | PRD Tech Booth 201

www.waterwarriorsbiomedia.com

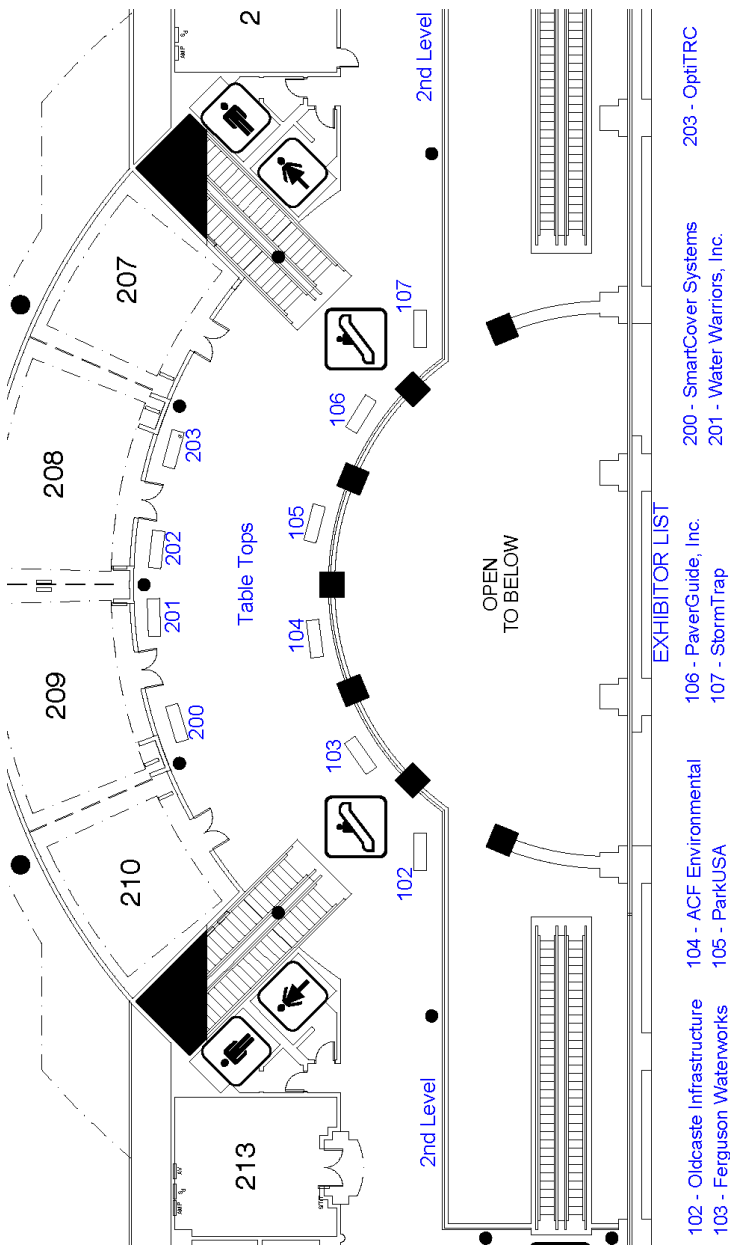
Phone: 513-673-3583

1776 Mentor Ave, Ste 400A

Cincinnati, OH 45212

PRD Tech, Inc. has developed the Ammonia and Phosphorus Recovery Process (A+RU) for wastewater streams and anaerobic digestates. The company also markets an advanced biomedia that accelerates biological treatment in aerated basins (activated sludge plants).

EXHIBITION FLOOR PLAN



PRESENTER AND MODERATOR DIRECTORY

Jonathan Abelson
Stantec Consulting
Services **Speaker**
Session 04

Sean Agid Corvias
Speaker Session 02

Hardeep Anand
Miami-Dade Water and
Sewer Department
Speaker Session 10

Rebecca Arvin-Colon
Water Environment
Federation **Speaker**
Session 14

Robert Backman
Abtech Industries
Moderator Session
11, 13

Pinar Balci NYC DEP
Speaker Session 02,
08

Patrick Barnes BFA
Environmental
Consultants **Speaker**
WKSP C

Jordan Basham
Louisville & Jefferson
County MSD **Speaker**
Session 09

Mark Bassingthwaite
Resilient Consulting
Speaker Session 04

Cynthia Baumann
CDM Smith **Moderator**
Session 04

David Bedoya
Dewberry **Moderator**
Session 07

Eric Bill Impact
Infrastructure **Speaker**
Session 11

Keren Bolter Arcadis
Speaker Session 07

Michael Bomar Tetra
Tech **Speaker**
Session 07

Heather Bourne
Limnotech **Speaker**
Session 08

Thierry Boveri Public
Resources
Management Group,
Inc. **Moderator**
Session 02

Kevin Brady National
Recreation and Park
Association **Speaker**
Session 15

Neil Breton Atkins Ltd
Speaker Session 07

Seth Brown Storm and
Stream Solutions, LLC
Speaker Session 01

Dana Brown Dana
Brown & Associates,
Inc. **Speaker Session**
07

Sonia Brubaker U.S.
EPA **Speaker Session**
05

Phil Bullock Carollo
Engineers, Inc.
Speaker Session 11

John Burke Fairfax
County Stormwater
Management **Speaker**
Session 04

Adriana Caldarelli
Water Environment
Federation
Coordinator WKSP C,
Speaker Session 01

Seth Charde DC
Water **Speaker**
Session 04

Nicole Chavas
Greenprint Partners
Speaker Session 10

Dan Christian Tetra
Tech **Speaker**
Session 09

Janet Clements
Corona Environmental
Consulting **Speaker**
Special Seminar,
Session 05, 11

Paula Conolly Green
Infrastructure
Leadership Exchange
Speaker Session 10

Jennifer Cotting
Environmental Finance
Center **Speaker**
Special Seminar

Steven Currie
BAYWORK **Speaker**
WKSP C

Dana de Leon City of
Tacoma **Speaker**
Session 08

Tyler Dell Colorado
State University
Speaker Special
Seminar

Naomi Detenbeck US
EPA Atlantic Ecology
Division **Coordinator**
WKSP A

Scott Dierks GEI
Consultants, Inc.
Speaker Session 09

Patrick DiNicola
RK&K **Speaker**
Session 04

PRESENTER AND MODERATOR DIRECTORY

Patrick Droze OHM
Advisors **Speaker**
Session 08

Steve Dye Water
Environment
Federation
Coordinator Session
05

Zachary Eichenwald
CDM Smith **Speaker**
Session 14

Nancy Ellwood CDM
Smith **Moderator**
Session 08

Melissa Enoch NYC
Environmental
Protection **Speaker**
Session 08

Harriet Festing
Anthropocene Alliance
Speaker Session 10

Diana Francois
Jacobs Engineering
Group **Speaker WKSP**
C

J. Douglas Fritz GKY
& Associates, Inc.
Coordinator Session
01

Jason Garder Burns &
McDonnell **Moderator**
Session 12, Speaker
Session 13

Rakesh Govind Water
Warriors, Inc. **Speaker**
Session 03

Kimberly Grove EA
Engineering Science
and Technology, Inc.
Speaker WKSP C,
Session 05

Lauren Grubbs Burns
& McDonnell **Speaker**
Session 11

Prasad Gullapalli
Hubbell, Roth & Clark
Speaker Session 12

Kyle Gustafson
Colorado School of
Mines **Speaker**
Session 14

Amanda Hallauer City
of Atlanta Department
of Watershed
Management **Speaker**
Session 08

Elle Hempen The
Atlas **Speaker**
Session 05

Zachary Henderson
Woodard & Curran Inc
Speaker Session 09

James Houle UNH
Stormwater Center
Speaker Session 06

Douglas Howie
Washington Dept of
Ecology **Moderator**
Session 08

Carol Hufnagel Tetra
Tech **Moderator**
Session 11, 14,
Speaker Session 15

Troy Hunt Corvias
Speaker Session 02

Tyler Johnson
Stantec **Speaker**
Session 09

Joseph Kane The
Brookings Institution
Speaker WKSP C

Andy Kricun Camden
County Municipal
Utilities Authority
Speaker Session 05

Drew Lehman
Environment and
Education **Coordinator**
WKSP C

John Lenth Herrera
Environmental Cons
Speaker Session 03

Grace LeRose City of
Richmond DPU
Speaker Session 08

Eric Letsinger
Quantified Ventures
Speaker Session 05

Barry Liner Water
Environment
Federation **Speaker**
Special Seminar

Kyle Logue Brown &
Caldwell **Moderator**
Session 06

Emma Lopez-
Ponnada University of
South Florida **Speaker**
Session 06

Brenda Macke Burns
& McDonnell
Moderator Session
04, Speaker Session
12

Jean Malafronte
Greeley and Hansen
Speaker Session 13

Henry Manguerra
Atkins, a Member of
SNC-Lavalin
Moderator Session 07

PRESENTER AND MODERATOR DIRECTORY

Dayton Marchese
OptiRTC, Inc. **Speaker**
Session 13

Palencia Mobley, PE
Detroit Water &
Sewerage Department
Speaker Session 08,
15

David Mulloy
Louisville & Jefferson
County MSD **Speaker**
Session 09

Colleen Murphy-
Dunning Yale F&ES
Hixon Center for Urban
Ecology **Speaker**
WKSP C

Theodore Muth CITY
UNIVERSITY OF NEW
YORK **Speaker**
Session 06

Swarna
Muthukrishnan Clean
Ocean Action
Moderator Session
06, 15

Dwayne Myers CDM
Smith **Speaker**
Session 09

Trinh Nguyen Mayor's
Office of Workforce
Development **Speaker**
WKSP C

Karen Nichols HDR
Speaker Session 14

Leigh Padgitt
CPMSM, NGICP
Moderator Session
03, 09, 13

Fernando Pasquel
Arcadis **Speaker**
Session 02, 05,
Moderator Session 03

Amy Piscopo US
Environmental
Protection Agency
Speaker WKSP A

Christine Pomeroy
University of Utah
Speaker Special
Seminar

Timothy Prevost
Allegheny County
Sanitary Authority
Speaker Session 02

Tatiana Proctor
Greeley and Hansen
Speaker Session 13

Michele Pugh Wichita
State University
Speaker Special
Seminar

Md Yeasir Rahman
University of South
Florida **Speaker**
Session 03

Cory Rayburn City of
Atlanta Department of
Watershed
Management **Speaker**
Session 09

Matthew Scott CDM
Smith **Speaker**
Session 04

Sybil Sharvelle
Colorado State
University **Speaker**
Special Seminar

Nian She Shenzhen
University **Coordinator**
WKSP B

Sanjiv Sinha
Environmental
Consulting &
Technology **Moderator**
Session 02

Steven Skripnik
LimnoTech **Speaker**
Session 15

Daron Stein Source
Molecular Corporation
Speaker Session 06

Tommy Strowd Lake
Worth Drainage District
Speaker Session 07

Ryan Sullivan
Environmental
Protection Agency
Speaker WKSP A

Larry Tortuya GHD
Speaker Session 07,
12

Lisa Treese City of
Kansas City Missouri
Water **Speaker**
Session 04

Harris Trobman
University of DC
Moderator Session 15

Mark Van Auken
Arcadis **Speaker**
Session 06

Ifetayo Venner
Arcadis **Speaker**
WKSP C

Lori Visone Brown
and Caldwell **Speaker**
Session 08

Lisa Wallick Detroit
Water and Sewerage
Department **Speaker**
Session 09

Yawei Wang Research
Center for Eco-
Environmental
Sciences, Chinese
Academy of Science
Speaker Session 06

PRESENTER AND MODERATOR DIRECTORY

Jalonne White-Newsome The Kresge Foundation
Coordinator Session 10

Jeffrey Wright Atkins
Moderator Session 09, 14

Beverly Wright Deep South Center For Environmental Justice, Inc.
Speaker Session 10

Amanda Zander Delon Hampton & Associates
Speaker Session 15

Kamran Zendeheel University of the District of Columbia
Moderator Session 12

Harry Zhang The Water Research Foundation
Coordinator Special Seminar

Andrea Zimmer CDM Smith
Speaker Session 11

CONFERENCE SCHEDULE AT-A-GLANCE

Tuesday, May 7

1:30 PM – 5:00 PM

Special Seminar

Wednesday, May 8

7:30 AM – 5:00 PM

Registration

8:30 AM – 5:00 PM

Workshops A

8:30 AM – 12:00 PM

Workshop B

1:30 PM – 5:00 PM

Workshop C

Thursday, May 9

7:30 AM – 5:00 PM

Registration

8:30 AM – 10:00 PM

Opening General Session

10:00 AM – 6:45 PM

Exhibition Open

10:45 AM – 12:15 PM

Technical Sessions 1, 2, 3

12:15 PM – 1:30 PM

Luncheon in Exhibit Area

1:30 PM – 5:15 PM

Technical Sessions 4, 5, 6

5:15 PM – 6:45 PM

Networking Reception

Friday, May 10

8:00 AM – 4:30 PM

Registration

8:30 AM – 12:00 PM

Technical Sessions 7, 8, 9

12:00 PM – 1:00 PM

Luncheon

1:00 PM – 2:30 PM

Technical Sessions 10, 11, 12

3:00 PM – 4:30 PM

Technical Sessions 13, 14, 15



GREATER FORT LAUDERDALE ♦ BROWARD COUNTY
CONVENTION CENTER



LEED® Gold for Existing Buildings 2012 & 2017

LEED GOLD

In July 2012, of 12 Convention and Conference Centers in the US, BCCC was the 3rd to achieve LEED Gold Certification for Existing Buildings and was the FIRST convention center in the State of Florida to have received LEED certification (at any level). Our 2nd LEED for Existing Buildings GOLD recertification was achieved in December 2017.

Green Guide Food Service: Organic Waste Recycling

In pursuit of our original LEED® Existing Building Gold Certification, in the Center invested in an Organic Waste Decomposition System: Eco-Safe Digester™, in December 2010. The Eco-Safe Digester™ uses micro-organisms to breakdown organic waste into a liquid which can be safely flushed down the drain. By turning the waste into water, to date the Center has diverted a total of 342,843 pounds or **more than 171 Tons** of organic food waste through December 2017 which would otherwise have been sent to a local landfill.

For more information go to: <https://bit.ly/2GtZtl7>

Hilton Fort Lauderdale Marina Receives Florida Green Lodging Programs “Three Palm” Designation

Environmentally-Friendly Hotel Conserves Resources, Saves Money and Attracts Customers

August 25, 2015 Americas

FORT LAUDERDALE, Fla. - The Florida Department of Environmental Protection (DEP) has awarded Hilton Fort Lauderdale Marina the coveted "Three Palm" designation as part of the Florida *Green Lodging* Program. The prestigious designation signifies the commitment the 589-room property on the Intracoastal Waterway in Fort Lauderdale, Florida has made to conserve and protect Florida's natural resources.

The Florida *Green Lodging* Program is a voluntary initiative of the Florida Department of Environmental Protection (DEP) that designates and recognizes lodging facilities that make a commitment to conserve and protect Florida's natural resources. To become designated, facilities must conduct a thorough property assessment and implement a specified number of environmental practices in five areas of sustainable operations:

GREEN INITIATIVES AT WEF SWGI 2019

- Communication and Education (Customers, Employees, Public)
- Waste Reduction, Reuse and Recycling
- Water Conservation
- Energy Efficiency
- Indoor Air Quality

"We recognize that *Green Lodging* practices bring added value to our brand, enhance our customer experience and contribute positively to our local environment, directly impacting the community in which our team members and their families live and work," said Kevin Speidel, area managing director, Hilton Worldwide. Hilton Fort Lauderdale Marina has several initiatives instituted at the property to help protect natural resources. The hotel participates in the Clean the World program, a soap reuse program as well as other community sustainable events and is currently working on managing their irrigation on a weather predictive program. In addition to retrofitting lighting systems to compact fluorescent or LED saving energy, the hotel also measures and records power usage in real time.

"It is wonderful to see businesses implement green practices such as water conservation, recycling and energy reduction because they are not only good for business, they are good for Florida's environment," said Deas Bohn, sustainable initiatives director, DEP.

Recently, Hilton Worldwide advanced its proprietary "LightStay 4.0" taking sustainability measurement and reporting to a new level, increasing hotel awareness, employee engagement and overall performance. Some of the new features include simplified metrics and reporting, energy and water normalization as well as data alerts to keep the hotel up-to-date on progress and energy reduction.

Launched in March 2004, the Florida Green Lodging Program establishes environmental guidelines for hotels and motels to conserve natural resources and prevent pollution. In 2007, Governor Crist signed three executive orders initiating state energy-use policies, including one that requires state agencies and departments to hold meetings and conferences only at hotels with the Florida Green Lodging Program designation as of January 1, 2008, whenever possible. For more information about the Florida Green Lodging Program, visit www.dep.state.fl.us/greenlodging.

DEP's Office of Sustainable Initiatives is comprised of three voluntary, non-regulatory programs that assist Florida industry and citizens in protecting the environment. The *Clean Marina* Program, the *Florida Green Lodging* Program and the *Florida Pollution Prevention* Program offer a variety of services including on-site assessments, consultations, speakers and workshops, all at no cost to citizens or organizations. The goal of the Sustainable Initiatives programs is to meet the needs of the present population without compromising resources for future generations.

To learn more about DEP's Sustainable Initiatives, visit www.dep.state.fl.us/green/.

Information from <https://newsroom.hilton.com/hhr/news/hilton-fort-lauderdale-marina-receives-florida-green-lodging-programs-three-palm-designation>

UPCOMING WEF EDUCATION AND TRAINING EVENTS

Collection Systems Conference 2019

June 4-7, 2019

Indianapolis, Indiana

www.wef.org/CollectionSystems

Nutrient Removal and Recovery Symposium 2019

July 23-25, 2019

Minneapolis, MN

www.wef.org/Nutrients

WEF/AWWA Transformative Issues Symposium 2019

August 7-9, 2019

Washington, D.C.

www.wef.org/TISWorkforce

WEFTEC 2019

September 22 – 25, 2019

Chicago, Illinois

www.weftec.org

WEF Education and Training 2020 Events

Mark your calendars for our upcoming events.

More information coming soon.

WEF/AWWA The Utility Management Conference 2020

Call for Abstracts Open Now

February 25-28, 2020

Anaheim, California

www.wef.org/UtilityManagement

Odors and Air Pollutants Conference 2020

March 15-18, 2020

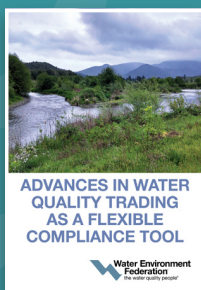
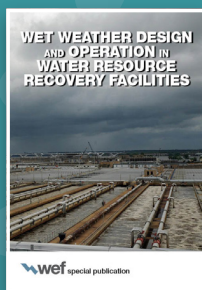
Cincinnati, Ohio

www.wef.org/OdorsAir

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| NOTES |
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Members Save on **STORMWATER AND GREEN INFRASTRUCTURE** Books from the Water Environment Federation



Wet Weather Design and Operations in Water Resource Recovery Facilities

Member: \$104 | List: \$130

Advances in Water Quality Trading as a Flexible Compliance Tool

Member: \$104 | List: \$130

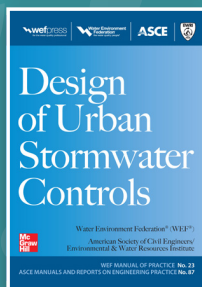


Green Infrastructure Implementation

Member: \$104 | List: \$130

User-Fee-Funded Stormwater Programs

Member: \$60 | List: \$75



Design of Urban Stormwater Controls

Member: \$112 | List: \$140

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through www.wef.org/ShopWEF.





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