



Sustainable Water Resources

Complex Challenges, Integrated Solutions



Nutrient Dynamics, Policy and Management in Watersheds

Photo courtesy of Larry Kohnak

J. Wayne Reitz Union, University of Florida Campus
February 15-16, 2012, Gainesville, FL



Progress Energy

UF | UNIVERSITY of
FLORIDA

Table of Contents

Welcome	3
Reitz Union 2nd Floor Plan	4
Agenda	5
List of Poster Presentations by Session	15
Poster Session Layout	20
Alphabetic List of Poster Presenters	21
Alphabetic List of Speakers and Panelists	25
Sponsors	28

Acknowledgements

We gratefully acknowledge the contribution of the following people who helped make this Symposium a success.

Symposium Program Committee

- Drew Bartlett, *Florida Department of Environmental Protection*
- Tatiana Borisova, *Food and Resource Economics, University of Florida*
- Treavor Boyer, *Environmental Engineering Sciences, University of Florida*
- Mark Brown, *Environmental Engineering Sciences, University of Florida*
- Rich Budell, *Florida Department of Agricultural and Consumer Services*
- Mark Clark, *Soil and Water Sciences, University of Florida*
- Matthew Cohen, *School of Forest Resources and Conservation, University of Florida*
- Joe Delfino, *Environmental Engineering Sciences, University of Florida*
- Michael Dukes, *Agricultural and Biological Engineering, University of Florida*
- Carl Fitz, *Ft. Lauderdale Research and Education Center, University of Florida*
- Kathryn Frank, *Urban and Regional Planning, University of Florida*
- Peter Frederick, *Wildlife Ecology and Conservation, University of Florida*
- Richard Hamann, *College of Law, University of Florida*
- Rick Hutton, *Gainesville Regional Utilities*
- Tracy Irani, *Agricultural Education and Communication, University of Florida*
- Pierce Jones, *Program for Resource Efficient Communities, University of Florida*
- Ed Lowe, *St. Johns River Water Management District*
- Amy Mangan, *Progress Energy Florida, Inc.*
- Kati Migliaccio, *Tropical Research and Education Center, University of Florida*
- Chris Pettit, *Sociology and Criminology & Law, University of Florida*

Water Institute Staff

- Mary Garvin, *Administrative Assistant, Water Institute, University of Florida*
- Kathleen McKee, *Research Coordinator, Water Institute, University of Florida*
- Lisette Staal, *Research Coordinator, Water Institute, University of Florida*
- Danny Ennis, *Intern, Water Institute, University of Florida*

Volunteers

Over 30 graduate and undergraduate UF students from the following departments, and several local residents, volunteered their time in support of the Symposium:

- Agricultural and Biological Engineering Department
- Environmental Engineering Sciences Department
- Food and Resource Economics Department
- Soil and Water Science Department
- Levin College of Law
- School of Forest Resources and Conservation
- Landscape Architecture
- Geology
- Agricultural Education & Communication
- School of Natural Resources and Environment

Welcome

from University of Florida
President **Bernie Machen**



Dear Faculty, Students and Special Guests:

I am pleased to welcome you to the University of Florida's third Water Institute Symposium.

We have read much in the news in recent months about the battle over the quality and cleanup of Florida's rivers, lakes and streams. As the Florida Legislature and the courts sort through the competing claims, it falls to scientists, managers and educators to provide the knowledge that will inform decision-makers. With a focus on nutrient management - and more than 350 experts from UF, state agencies, NGOs, utilities and consulting firms - this symposium will help achieve that goal at a key juncture for Florida's freshwater ecosystems.

The Water Institute celebrated its 5th anniversary in 2011. Since it was founded, the Institute has actively nurtured and supported interdisciplinary research and collaborations between faculty and graduate students with different water specialties. Through research and events such as this symposium, the Institute makes the university's intellectual capital available to policy makers and water users alike. The Water Institute is a dynamic organization that should help to guarantee the protection of a resource both fundamental to Florida's history and key to its future.

Thank you for joining us for this timely and meaningful conference.

Sincerely,

J. Bernard Machen
President
University of Florida

Welcome

from UF Water Institute
Director **Wendy Graham**



Dear Colleagues,

Thank you for joining us for the 3rd UF Water Institute Symposium.

This symposium provides an unparalleled venue that links leading researchers, educators and students with resource managers, policymakers, industry, non-governmental organizations, and artists interested in nutrient issues. Throughout the symposium participants will explore the science of nutrient dynamics, as well as challenges to, and creative solutions for, protecting and restoring Florida's waterways. The symposium theme is especially timely, considering the significant challenges Florida is currently facing with regards to nutrient management and regulation.

Over the course of the next two days 150 contributed oral and posters presentations and twelve panel discussions will focus on new research, education, policy and technology developments in six interdisciplinary areas:

- Understanding natural, anthropogenic and legacy sources of nutrients
- Nutrient dynamics and enrichment impacts in aquatic ecosystems
- Efficacy of nutrient source control strategies
- Innovative biological, physical and chemical nutrient reduction and recovery technologies
- Social, behavioral, and economic aspects of nutrient management
- Governance approaches to nutrient management

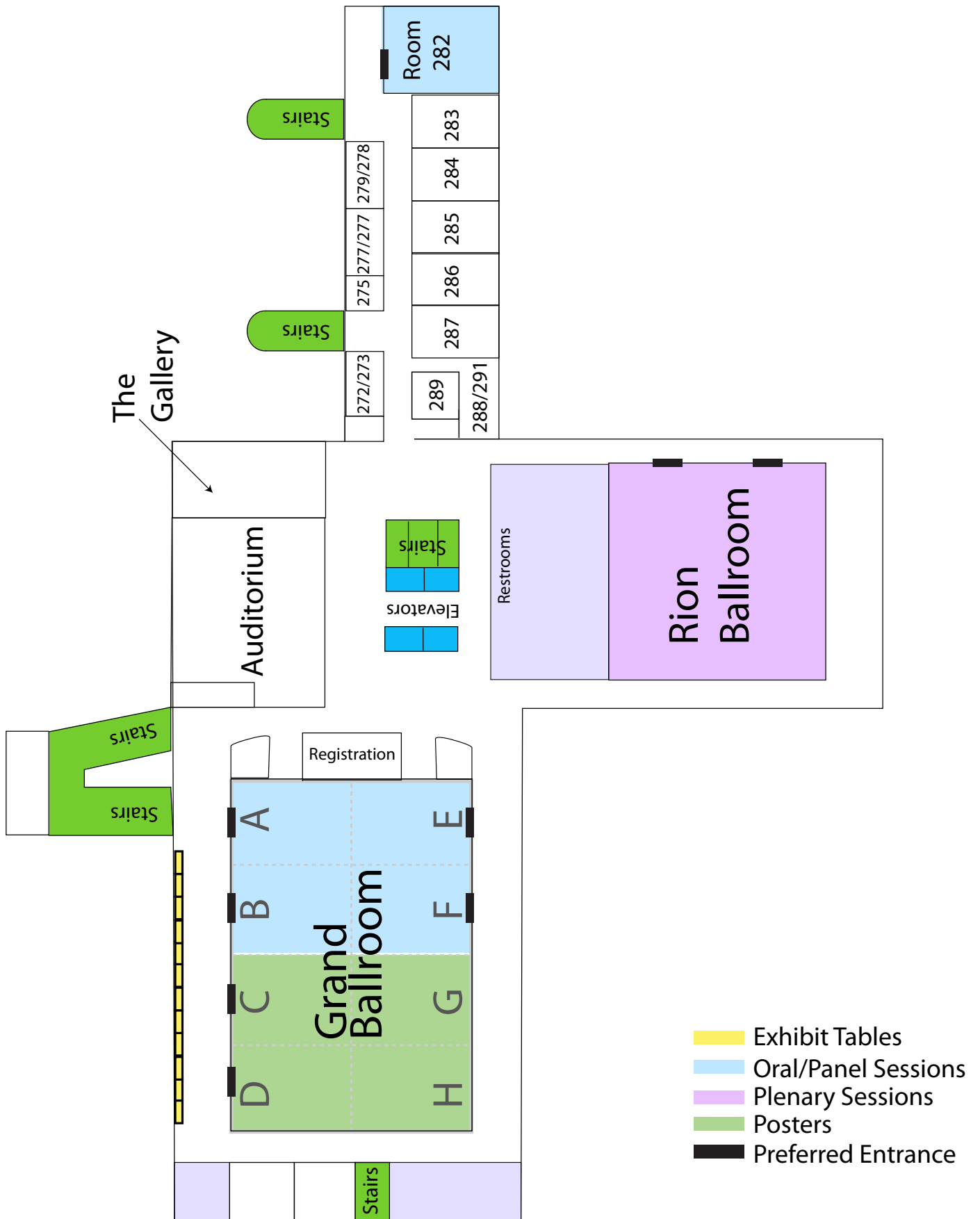
In addition an art exhibition, Just Add Water, is being held at the Reitz Union Gallery in conjunction with the Symposium. Please stop by the Gallery to view works by local and regional artists with the common purpose of exploring, advocating, and educating the public on water issues particular to Florida.

Thanks again for attending the 3rd UF Water Institute Symposium. We value your contributions and encourage your active participation.

Wendy Graham
Carl S. Swisher Chair in Water Resources
Director UF Water Institute



Event Floor Plan - 2nd Floor J. Wayne Reitz Union



Agenda

Wednesday, February 15, 2012

7:30 AM - 5:00 PM

Symposium Check-In

Registration Desk

8:30 AM - 10:00 AM

Plenary Session 1

Rion Ballroom

(moderator: Wendy Graham, Water Institute, University of Florida)

- Wendy Graham, Professor and Director, University of Florida Water Institute
- Winfred Phillips, Senior Vice President and Chief Operating Officer, University of Florida
- Ellen Gilinsky, Senior Policy Advisor, Office of Water, Environmental Protection Agency
"State Development and Implementation of Nutrient Standards: Putting Florida into the National Context"
- Larry Band, Professor, Voit Gilmore Distinguished Professor, University of North Carolina
"Sources, Cycling and Control of Carbon and Nutrients in Urban Watersheds"

Sponsored By: Progress Energy

10:00 AM - 10:30 AM

Refreshment Break

Grand Ballrooms CDGH

10:30 AM - 12:00 PM

Plenary Session 2

Rion Ballroom

(moderator: Wendy Graham, Water Institute, University of Florida)

- Andrew N. Sharpley, Professor, University of Arkansas
Fate and Management of Phosphorus in Agricultural Systems
- Daniel L. Childers, Professor, Arizona State University
"Is Phosphorus the Rodney Dangerfield of Sustainability Challenges?"

Sponsored By: The Mosaic Company

12:00 PM - 1:30 PM

Lunch (pick up box lunch in Ballrooms CDGH)

Rion Ballroom

1:30 PM - 3:00 PM

Governance Approaches to Nutrient Management 1

Ballroom B

(moderator: Joseph Delfino, University of Florida)

- Kiera S. Fitzgerald, Vice President - Engineering, TSG Technologies, Inc.
City of Miami Beach's Implementation of a MBR Scalping Plant
- Danielle Honour, Principal, CDM Smith
Putting Together the Pieces of Lake Tohopekaliga Puzzle
- Kirk Martin, Vice President, CDM Smith
Public Private Partnerships: A Better Way to Manage Water in Florida?
- Roger W. Sims, Partner, Holland & Knight LLP
Reclaimed Water - A Key Strategy for Nutrient Management and Water Conservation

Sponsored By: Tampa Bay Water

1:30 PM - 3:00 PM

Innovative Biological, Physical, and Chemical Nutrient Reduction & Recovery Technologies 1

Ballroom A

(moderator: Kati Migliaccio, University of Florida)

- David K. Ammerman, Project Manager, AECOM
Appropriate Treatment for Intended Use
- Treavor H. Boyer, Assistant Professor, University of Florida
Potential for Phosphorus Recovery and Beneficial Reuse
- John Sansalone, Professor, University of Florida
The Role of Computational Fluid Dynamics and Continuous Simulation to Optimize BMPs
- Arnold Schumann, Associate Professor, University of Florida
Open Hydroponics - Implications for Water and Nutrient Efficiencies and Groundwater Protection under Citrus Production

Sponsored By: St. Johns River Water Management District



1:30 PM - 3:00 PM

Efficacy of Nutrient Source Control Strategies 1

Ballroom F

(moderator: Darrell Smith, Florida Department of Agriculture and Consumer Services)

- Debashish Goswami, Post-Doctoral Research Associate, University of Florida, IFAS
Effect of Wetland Water Retention on Phosphorus Dynamics in Two Wetlands in the Lake Okeechobee Basin
- Ernie Barnett, Director, Everglades Policy and Coordination, South Florida Water Management District
"Stormwater Treatment Areas – The Water-Cleaning Workhorses of Everglades Restoration"
- Max J. Millstein, Economist, US Army Corps of Engineers
Reduction of Cattail Expansion in the Everglades: A Performance Measure Application
- Michael Frank Schmidt, Vice President, CDM Smith
The Lake Okeechobee Fast Track (LOFT) Project

Sponsored By: JEA

1:30 PM - 3:00 PM

Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems 1

Ballroom E

(moderator: H. Carl Fitz, University of Florida)

- Michael S. Flannery, Chief Environmental Scientist, Southwest Florida Water Management District
Relationships of Water Age with Chlorophyll a Concentrations in the Eutrophic Lower Alafia River Estuary
- Douglas K. Gilbert, Environmental Manager, Florida Department of Environmental Protection
Lake Munson: Spatial and Temporal Changes in Nutrient Characteristics of Sediments During a Drawdown Event
- David Tomasko, Sr. Group manager, Atkins
A Water Quality Management Plan for the City of Winter Haven Interior Lakes
- William Tucker, Senior Principal Scientist, AMEC
Effects of Fertilizer Use on Groundwater Quality in a Residential Area

Sponsored By: CH2MHILL

1:30 PM - 3:00 PM

Panel: Using the Arts and Humanities to Convey the Science of Water Quality Issues to Public Audiences

Room 282

(moderator: Annie Pais, Florida's Eden)

Florida and the southeast face increasingly critical water issues. One of the major issues is water quality and how it is impacted by nitrates, run-off, land use decisions and water withdrawals. Communication of scientifically based information and facilitation of informed discussion in the public realm is imperative to the broad-based societal changes in behavior and policy that will be required to remedy the current water situation. This panel will focus on the use of visual arts, film, performance and literature to convey issues of water quality to public audiences. The panel will take the form of a moderated question and answer session with the audience. Members have been selected for their scientific training/careers and success of using the arts to convey scientific concepts and information; or, artists who have been drawn by the subject of their art into scientifically informed communication.

- Eric Flagg, Documentary Filmmaker and College Instructor, Jellyfish Smack Productions
- Lesley Gamble, Adjunct Assistant Professor, UF
- Kathleen McKee, Research Coordinator, University of Florida Water Institute
- Margaret Tolbert, Artist

Sponsored by: UF Water Institute

3:00 PM - 3:30 PM

Refreshment Break

The Gallery

3:30 PM - 5:00 PM

"Just Add Water" - Art Exhibition

The Gallery

A special art exhibit curated by faculty from the College of Fine Arts, "Just Add Water," is the confluence of local and regional artists working in a wide range of media with the common purpose of exploring, advocating, and educating the public on water issues particular to Florida. The exhibition includes work by Doug Barrett, Charlie Cummings, Jerry Cutler, Katerie Gladdys, Kate Helms, John Moran, Annie Pais, Bethany Taylor, and Margaret Ross Tolbert. This session will provide an opportunity to meet with the artists.

The exhibition has been on display at the Reitz Union Gallery since January 31 and will close February 17, 2012.

Sponsored by: UF School of Art and Art History

3:30 PM - 5:00 PM

Governance Approaches to Nutrient Management 2

Ballroom B

(moderator: Kathryn Frank, University of Florida)

- Mohammad O. Jazil, Attorney, Hopping, Green & Sams, P.A.
EPA's Numeric Nutrient Criteria for Florida Waters: Background, Fault-Lines and Implications
- Doug MacNair, Principal, Cardno ENTRIX
Numeric Nutrient Criteria in Florida: Costs of Compliance and Uncertainty
- J. Walter Milon, Professor, University of Central Florida
Assessing the Economic Benefits of Water Quality Regulations: Are All Criteria Measures the Same?
- Paul K. Steinbrecher, President, Florida Water Environment Association Utility Council
Effects of EPA's NNC Rule on Utility Customers

Sponsored By: Tampa Bay Water

3:30 PM - 5:00 PM

Innovative Biological, Physical, and Chemical Nutrient Reduction & Recovery Technologies 2

Ballroom A

(moderator: Treavor Boyer, University of Florida)

- Damann L. Anderson, Vice President, Hazen and Sawyer, P.C.
Passive, Two-stage Nitrogen Reduction Systems for Onsite Wastewater Treatment
- James S. Bays, Technology Fellow, CH2MHILL
Natural Treatment Recharge Strategies for Water Conservation, Nutrient Load Reduction, and Aquatic Ecosystem Protection
- Chris Keller, Engineer, Wetland Solutions, Inc.
Groundwater Recharge Wetlands for Enhanced Nitrate Removal and Aquifer Recharge
- Patrick J. Minogue, Assistant Professor, University of Florida
Use of Bioenergy Tree Crops for Nitrogen and Phosphorus Removal at the Tallahassee Municipal Wastewater Sprayfield

Sponsored By: St. Johns River Water Management District

3:30 PM - 5:00 PM

Efficacy of Nutrient Source Control Strategies 2

Ballroom F

(moderator: Rick Hutton, Gainesville Regional Utilities)

- Karl Hankin, Manager of Water/Sewer System Planning, JEA
Reducing Nutrient Loading to the St Johns River - A Utility's Perspective
- Robert John Northrop, Extension Forester, University of Florida IFAS
A Rapid GIS-based Assessment of the Potential for Riparian Buffers to Influence Water Quality within Hillsborough County, Florida.
- Masato Miwa, Assistant Scientist, University of Florida
Effectiveness of Silvicultural BMPs in Pine Straw Production to Protect Groundwater – Third Year Results
- John Sansalone, Professor, University of Florida
Can BMPs Compete With Florida-based Economic and Nutrient Load Reduction Benefits Provided by Current MS4 Sustainability Operations?

Sponsored By: JEA

3:30 PM - 5:00 PM

Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems 2

Ballroom E

(moderator: Peter Frederick, University of Florida)

- Matthew Cohen, Associate Professor, School of Forest Resources and Conservation, University of Florida
Decoupling Riverine Nitrogen Uptake and Denitrification from the Geometry of Diel Nitrate Variation
- Rachel L. Douglass, Ph.D. Student, University of Florida
Impacts of Stoichiometric Homeostasis by Algal and Vascular Plant Species Across an N:P Gradient
- Sean King, Graduate Assistant, Environmental Engineering Sciences, University of Florida
Effects of Flow and Nitrate Concentrations on Filamentous Algae in Florida Springs and Rivers: Implications for Numeric Nutrient Criteria
- Robert Knight, Director, Howard T. Odum Florida Springs Institute
Nitrate Effects in Spring Ecosystems - A Working Hypothesis

Sponsored By: CH2MHILL



5:00 PM - 7:30 PM

Reception with hot appetizers and cash bar

5:10 PM - 5:25 PM

Judges Meeting

Ballroom F

5:30 PM - 7:30 PM

Poster Sessions including Best Student Poster Competition

Grand Ballrooms CDGH

(moderator: Kathleen McKee, Research Coordinator, UF Water Institute)

Poster Session 1 - 5:30 pm - 6:30 pm (See page 15 for presenters)

Poster Session 2 - 6:30 pm - 7:30 pm (See page 17 for presenters)

Students were invited to present posters on any subject related to water. Three student posters will each be awarded a \$1,000 prize to be used to reimburse travel expenses to attend a research conference to present their work. Winners will be announced during the Thursday luncheon.

Poster Sections

- Governance Approaches to Nutrient Management
- Innovative Biological, Physical, and Chemical Nutrient Reduction & Recovery Technologies
- Efficacy of Nutrient Source Control Strategies
- Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems
- Social, Behavioral, and Economic Aspects of Nutrient Management
- Hydroecology
- Water Conservation and Use 1
- Water and Climate
- Hydrology
- Understanding Natural, Anthropogenic and Legacy Sources of Nutrients
- Water Treatment and Aquatic Chemistry

See page 21 For alphabetic listing of posters by author

Sponsored By: Progress Energy & The Mosaic Company

Agenda

Thursday, February 16, 2012

7:30 AM - 3 PM

Symposium Check-In

Registration Desk

8:30 AM - 10:00 AM

**Panel: Implementation of Creative Solutions to Nutrient Issues in Florida:
Experiences and Progress through the TMDL Program 1**

Ballroom B

(moderator: Alan Foley, Jones Edmunds)

This is the first in a series of two sessions.

Significant efforts for reducing nutrients are underway in Florida through the TMDL and other programs. This session will look at experiences across multiple watersheds in different parts of the state. Effective solutions require a marriage of science, community support, public policy and funding. Case studies in which creative solutions to nutrient issues have been developed through collaborative efforts will be presented. Discussion topics will include the development of comprehensive basin-wide solutions; experiences through the TMDL/BMAP process; scientific, community support, public policy and funding perspectives; and progress to date.

- Tiffany L. Busby, President, Wildwood Consulting Inc.
- Tom Frick, Bureau Chief, Watershed Restoration, Florida Department of Environmental Protection
- Rick Hutton, Supervising Engineer, Gainesville Regional Utilities
- Jon Perry, Environmental Specialist III, Sarasota County

Sponsored By: GRU & Jones Edmunds

8:30 AM - 10:00 AM

Understanding Natural, Anthropogenic and Legacy Sources of Nutrients 1

Ballroom A

(moderator: Michael Dukes, University of Florida)

- Jim Heffernan, Assistant Professor, Florida International University
Denitrification and N Source Inference in the Karstic Upper Floridan Aquifer
- Gregg W. Jones, Water Resources Technical Director, Cardno ENTRIX
Florida's Nitrate + Nitrite Criterion for Springs – A Methodology for Predicting What it Would Take to Achieve it at an Impaired Spring
- Robert Mattson, Environmental Scientist V, St. Johns River Water Management District
Relationships between Discharge and Nutrient Concentrations in Florida Springs
- Joan Oppenheimer, Vice President, MWH
Efficacy of Selected Organic Microconstituents as Markers for Nitrogen and Phosphorus Loading from Reclaimed Water Plants in Florida

Sponsored By: Intera Incorporated

8:30 AM - 10:00 AM

Social, Behavioral, and Economic Aspects of Nutrient Management 1

Ballroom F

(moderator: Tracy Irani, University of Florida)

- Tatiana Borisova, Assistant Professor, University of Florida
Public Attitudes and Perceptions about Water Issues in Southern US
- Diana Alenicheva, Graduate Student, University of Florida
Public Perceptions of North-Central Florida Springs
- Melissa Kreye, Graduate student, School of Forest Resources and Conservation, University of Florida
Willingness to Pay to Protect Well-Conserved Aquatic Systems: A Meta-Analysis
- Bo Zhang, PhD Candidate, LEED AP, University of Florida
How Does Land Meet Water in Sustainable Ways? An Evaluation of Contemporary Urban Waterfront Park Designs

Sponsored By: Yara



8:30 AM - 10:00 AM

Panel: Adventures in Ecological Restoration:

Ballroom E

Case Studies of Nutrient Control in Florida 1

(moderator: Matthew Cohen, School of Forest Resources and Conservation, University of Florida)

This is the first in a series of two sessions.

This panel will explore the progress of and constraints on nutrient control at the regional scale as part of ecological restoration programs. Panelists will represent the many facets of this problem, with examples drawn from phosphorus contamination in the Everglades and Lake Apopka, and nitrogen contamination in Tampa Bay and the many Floridan Aquifer springs. Our goal is to search for commonalities and consensus about the role of science in restoration, identify mistakes and breakthroughs, and discuss the trajectories and barriers to progress.

- Holly Greening, Executive Director, Tampa Bay Estuary Program
- Robert Knight, Director, Howard T. Odum Florida Springs Institute
- Andrew LoSchiavo, Adaptive Management Coordinator, U.S. Army Corps of Engineers
- Ed Lowe, Division Director, Environmental Sciences, St. Johns River Water Management District

Sponsored By: South Florida Water Management District

8:30 AM - 10:00 AM

Panel: Managing Nutrient Dynamics:

Room 282

Estimating Values and Designing Payments for Environmental Services 1

(moderator: Mark Brown, Environmental Engineering Sciences, University of Florida)

This is the first in a series of three sessions focusing on innovative ways of reaching nutrient reduction goals through adaptive incentive-based systems that leave individual entities the freedom to choose the most cost-effective projects to achieve pollution reduction goals.

Session 1: Valuing Environmental Services: Biophysical and Economic Approaches

This session will deal with the theory of estimating values for ecosystem services, including both biophysical and economic valuation methods, exploring the potential integration of these two approaches. We will also compare alternative policy mechanisms to stimulate nutrient removal (Payment for Ecosystem Services (PES), cost-shares for best management practices, mandatory requirements to implement pollution abatement projects, etc.). What can these different valuation (biophysical and economic) approaches contribute to the design of PES policies and markets? What are the various roles of different valuation approaches? In what ways can biophysical and economic valuation methods be integrated to inform policy for environmental service provision? What are the alternative approaches to designing PES?

- Mark Brown, Professor, Environmental Engineering Sciences, University of Florida
- Damian Adams, Assistant Professor, University of Florida
- Tatiana Borisova, Assistant Professor, University of Florida
- Laila Racevskis, Assistant Professor, University of Florida

Sponsored By: AMEC

10:00 AM - 10:30 AM

Refreshment Break

Grand Ballrooms CDGH

10:30 AM - 12:00 PM

Panel: Implementation of Creative Solutions to Nutrient Issues in Florida: Experiences and Progress through the TMDL Program 2

Ballroom B

(moderator: Alan Foley, Jones Edmunds)

This is the second in a series of two sessions.

Significant efforts for reducing nutrients are underway in Florida through the TMDL and other programs. This session will look at experiences across multiple watersheds in different parts of the state. Effective solutions require a marriage of science, community support, public policy and funding. Case studies in which creative solutions to nutrient issues have been developed through collaborative efforts will be presented. Discussion topics will include the development of comprehensive basin-wide solutions; experiences through the TMDL/BMAP process; scientific, community support, public policy and funding perspectives; and progress to date.

- Tiffany L. Busby, President, Wildwood Consulting Inc.
- Tom Frick, Bureau Chief, Watershed Restoration, Florida Department of Environmental Protection
- Rick Hutton, Supervising Engineer, Gainesville Regional Utilities
- Jon Perry, Environmental Specialist III, Sarasota County

Sponsored By: OUC - The Reliable One

10:30 AM - 12:00 PM

Understanding Natural, Anthropogenic and Legacy Sources of Nutrients 2

Ballroom A

(moderator: Pierce Jones, Program for Resource Efficient Communities, University of Florida)

- Del Bottcher, President, Soil & Water Engineering Technology, Inc.
Modeling Anthropogenic Impacts in Florida Watersheds
- Flavio M. Hazan, Research Assistant, Program for Resource Efficient Communities, University of Florida
Evaluating Master Planned Communities Design Impacts on Water Quality with the Watershed Assessment Model: The Restoration Project Case Study
- Mary Lusk, PhD Student, University of Florida
Nitrogen Transport Across an Urbanization Gradient in a Coastal Watershed
- Vimala Nair, Research Professor, Soil and Water Science Department, University of Florida
A Quantitative Approach to Soil Phosphorus Loss Risk Assessment

Sponsored By: CDM Smith

10:30 AM - 12:00 PM

Social, Behavioral, and Economic Aspects of Nutrient Management 2

Ballroom F

(moderator: Amy Mangan, Progress Energy Florida, Inc.)

- Stacie Greco, Water Conservation Coordinator, Alachua County Environmental Protection Department
Using Research to Create a Social Marketing Campaign: Alachua County Landscaping Debris Case Study
- Paul F. Monaghan, Assistant Professor, University of Florida
Targeting Specific Audiences with Community Based Social Marketing to Improve Neighborhood Stormwater Ponds
- Ondine Wells, Planning, Outreach and Public Coordination, Normandeau Associates, Inc.
What Does "2 mg/L of Nitrate" Mean to You?

Sponsored By: Yara



10:30 AM - 12:00 PM

Panel: Adventures in Ecological Restoration: Case Studies of Nutrient Control in Florida 2

Ballroom E

(moderator: Matthew Cohen, School of Forest Resources and Conservation, University of Florida)

This is the second in a series of two sessions.

This panel will explore the progress of and constraints on nutrient control at the regional scale as part of ecological restoration programs. Panelists will represent the many facets of this problem, with examples drawn from phosphorus contamination in the Everglades and Lake Apopka, and nitrogen contamination in Tampa Bay and the many Floridan Aquifer springs. Our goal is to search for commonalities and consensus about the role of science in restoration, identify mistakes and breakthroughs, and discuss the trajectories and barriers to progress.

- Holly Greening, Executive Director, Tampa Bay Estuary Program
- Robert Knight, Director, Howard T. Odum Florida Springs Institute
- Andrew LoSchiavo, Adaptive Management Coordinator, U.S. Army Corps of Engineers
- Ed Lowe, Division Director, Environmental Sciences, St. Johns River Water Management District

Sponsored By: South Florida Water Management District

10:30 AM - 12:00 PM

Panel: Managing Nutrient Dynamics: Estimating Values and Designing Payments for Environmental Services 2

Room 282

(moderator: Tatiana Borisova, Assistant Professor, University of Florida)

This is the second in a series of three sessions.

Session 2: Overview of PES Markets and Policy Applications of Valuation: Examples from Maryland and Florida (90 min)

The second session will focus on application and lessons learned, exploring case studies from Florida and other states where PES policies and markets are actively operating for the management of nutrient dynamics.

- Daryll Joyner, Bureau Chief, Assessment & Restoration Support, Florida Department of Environmental Protection
- Beth McGee, Senior Regional Water Quality Scientist, Chesapeake Bay Foundation
- Len Shabman, Resident Scholar, Resources for the Future
- Benita Whalen, Agricultural Water Programs Director, South Florida Water Management District

Sponsored By: UF Center for Environmental Policy

12:00 PM - 1:30 PM

Buffet Luncheon (Presentation of Best Student Poster Awards)

Rion Ballroom

1:30 PM - 3:00 PM

Panel: Numeric Nutrient Criteria: Where do we go from here?

Ballroom B

(moderator: Richard Hamann, Associate in Law, College of Law, University of Florida)

The regulation of nutrient pollution has been a subject of great controversy in Florida, a state with warm waters, extensive fertilization and naturally occurring sources. Federal and state efforts to develop numeric nutrient criteria over the last ten years have culminated in competing rules and multiple lawsuits. A diverse panel of stakeholders will review the status of rulemaking, implementation and litigation, then discuss a path forward to achieving water quality protection and restoration.

- Mohammad O. Jazil, Attorney, Hopping, Green & Sams, P.A.
- Daryll Joyner, Bureau Chief, Assessment & Restoration Support, Florida Department of Environmental Protection
- Chris Pettit, Office of Counsel, Southwest Florida Water Management District

1:30 PM - 3:00 PM

Panel: Innovative Land Development/Community Design Practices

Ballroom A

(moderator: Pierce Jones, Program for Resource Efficient Communities, University of Florida)

This panel will look at innovative methods to reduce the magnitude of nutrient loading resulting from changes in land use. It will also consider how changes in community design and on-going performance based monitoring linked to protective load targets and adaptive management can increase assurance that load levels are being maintained. The use of simulation modeling and monitoring will be discussed in the context of two projects (Restoration and Oak Tree Landing). The panel will also consider changes in growth management legislation, the proposed unified stormwater regulation and understanding risk management from the developers' perspective.

- Del Bottcher, President, Soil & Water Engineering Technology, Inc.
- Mark Clark, Associate Professor, University of Florida
- Samuel Poole, Attorney - Partner, Berger Singerman

1:30 PM - 3:00 PM

Panel: Managing Nutrient Dynamics: Estimating Values and Designing Payments for Environmental Services 3

Room 282

(moderator: Laila Racevskis, Assistant Professor, University of Florida)

This is the third in a series of three sessions.

Session 3: The evolution of Florida Ranchlands Ecosystems Services Project (FRESP) into Northern Everglades-Payment for Ecosystem Services (NE-PES) and the role and potential of PES in addressing nutrient management in the Florida landscape: A Stakeholder Discussion (90 min)

A facilitated integrative discussion involving panelists from the first two sessions, stakeholders involved in NE-PES in Florida, and audience participation in a round table exploration of the current role and future potential of PES in addressing nutrient management in the Florida landscape. The discussion will allow panelists from the first two sessions and stakeholders directly involved with the NE-PES program to have a discussion about the current status, role, and future potential of NE-PES to address nutrient management in Florida. Participants will share lessons learned, current challenges, and ideas for future opportunities in a round-table discussion including audience participants.

- Paul N. Gray, Science Coordinator, Audubon of Florida
- Len Shabman, Resident Scholar, Resources for the Future
- Hilary M. Swain, Executive Director, Archbold Biological Station
- Benita Whalen, Agricultural Water Programs Director, South Florida Water Management District
- James Wohl, Owner, Rafter T Ranch

Sponsored by: UF/IFAS National Resources Leadership Institute

3:00 PM - 3:30 PM

Refreshment Break

Grand Ballrooms CDGH



3:30 PM - 5:00 PM

Final Plenary Session

Rion Ballroom

Panel: Nutrient Dynamics, Management and Policy in Watersheds: Recent Progress, New Challenges and Future Needs

(moderator : Wendy Graham, Water Institute, University of Florida)

This panel consists of a diverse group of scientists, engineers, managers and policy makers representing agriculture, public water supply, non-governmental organization, public agency and academic interests. Panel members will discuss major challenges to understanding and managing nutrient dynamics in watersheds from a variety of personal and institutional perspectives. Policies and programs that are currently working well, as well as new research, education, policies and programs that should be developed to ensure successful nutrient management for the coming decades will be discussed. Panelists include:

- Drew Bartlett, Director, Florida Department of Environmental Protection
- Rich Budell, Director, Florida Department of Agriculture and Consumer Services
- Mark Clark, Associate Professor, University of Florida
- Eric Draper, Executive Director, Audubon of Florida
- Len Shabman, Resident Scholar, Resources for the Future
- Paul K. Steinbrecher, President, Florida Water Environment Association Utility Council

Poster Presentations by Session

See Poster Layout Map Pg. 20

Poster Session 1 5:30 PM-6:30 PM Grand Ballrooms CDGH

Efficacy of Nutrient Source Control Strategies 1

Bolques, Alejandro # 1
Gadsden County Extension

Application of a bioretention/rain garden system to mitigate irrigation runoff from a container plant nursery production bed

Gautam, Rajendra #5
Soil and Water Science Department

Is St. Augustine grass Environment Friendly From Nitrate Leaching Perspective?

Qin, Zhixuan #3
University of Florida

Evaluation of Nutrient Leaching from Simulated Residential Mixed Landscapes

Rainey, Donald #4
UF/IFAS Extension Florida-Friendly Landscaping (TM)

Florida-Friendly Landscaping™ Green Industries Best Management Practices (FFL/GI-BMP)

Reyes-Cabrera, Joel #2
University of Florida

Drip Irrigation as an Alternative Strategy to Increase Water Saving for Potato Production in Northeast Florida.

Governance Approaches to Nutrient Management

Blair, Susanna #13
University of Florida

Outstanding Florida Waters: Water Quality Analyses

Hall, Hollie #13
University of Florida

Outstanding Florida Waters: Water Quality Analyses

Lenhardt, Matthew #11
UF/IFAS Citrus County Extension

Balancing Florida's agricultural future with the proposed numeric nutrient criteria water quality standards

Pawlit, Rachel #12
University of Florida

Beyond Uncertainty: Designing Tools for Adaptive Water Governance

Zhuang, Yilin #10
University of South Florida

A System Dynamics Approach to Municipal Water and Energy Resources Management in Hillsborough County

Hydroecology

Delesantro, Joseph #17
University of Florida, SFRC

The Effects of Hydrologic Mean Condition and Variation on Wetland Structure and Function

Liebowitz, Dina #16
University of Florida

Experimental Evidence of Environmentally Mediated Top-Down Control of Algal Proliferation in Florida's Springs

Szafraniec, Mary #14
University of Florida

Light Availability in Florida Spring Ecosystems

Yuan, Jing #15
SNRE, UF

Detecting Pattern and Pattern Loss in the Everglades Ridge and Slough Landscape

Innovative Biological, Physical, and Chemical Nutrient Reduction & Recovery Technologies

Aponte, Veronica #22
University of South Florida

A Novel Physical-Chemical-Biological Treatment Process for Swine

Bhadha, Jehangir #26
Everglades Research and Education Center, UF

Evaluating the role of Aquatic Vegetation on Phosphorus Loads in the Everglades Agricultural Area



Bhomia, Rupesh #23
University of Florida

Accretion and Storage of Phosphorus in Recently Accreted Soils (RAS) in the Stormwater Treatment Areas (STAs) of the Everglades Basin

Demorest, Nichelle #29
UF/IFAS Columbia County Extension

Providing for natural bio-filtering processes in an existing stormwater detention basin

Qiao, Yu #27
Florida State University

Ozone Pre-Treatment to Enhance Anaerobic Degradation of Refractory Landfill Leachate Organics.

Sindelar, Hugo #25
University of Florida

Evaluating Advanced Oxidation Processes for the Transformation of Organic Phosphorus into Biologically Labile Compounds

Tripathi, Rahul #28
Banaras Hindu University

Polyacrylamide Grafted Hydrogel Balls of Sodium Alginate-Psyllium for Water Restoration

Yao, Ying #24
UF

Adsorption of Sulfamethoxazole on Biochar and its Impact on Reclaimed Water Irrigation

Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems 1

Bae, Hee-Sung #34
University of Florida

Nitrogen Fixation along a Nutrient Gradient in the Florida Everglades: Distribution and Concentrations of Nifh Genotypes and Nitrogenase Activities

Brown, Amy #36
University of Florida

The Impact of River Water Intrusion on Nutrient and Trace Metal Concentrations in the Floridan Aquifer System at Madison Blue Spring, Florida

Chakraborty, Debolina #35
University of Florida

Phosphorus Dynamics in the Kissimmee River Sediment and Floodplain

Hu, Jing #32
University of Florida

Hydrological and Biogeochemical Controls on the Nitrous Oxide (N₂O) Production and Consumption in Subtropical Isolated Wetlands

Jin, Jin #37
Department of Geological Sciences, University of Florida

The Influence of DOM and Microbial Processes on Arsenic Release from Karst during ASR Operations in the Floridan Aquifer

Liao, Xiaolin #31
Soil and Water Science

Seasonal patterns of periphyton nitrogen fixation in seasonally-flooded calcareous wetlands of the Florida Everglades

Smith, Adrienne #33
University of Florida

Influence of Initial Soil Nutrients and Seedbank on Ruellia Simplex Control and Resulting Native Species Establishment

VanZomerem, Christine #30
UF SWSD

Comparison of Extracellular Enzyme Activities in an Everglades Stormwater Treatment Area

Social, Behavioral, and Economic Aspects of Nutrient Management

Asci, Serhat #49
University of Florida

Costs, Returns, and Nitrogen Application Decisions in Florida Potato Production

Chevasco, Daniela #46
University of Florida

Can Fertilization in Pine Straw Production Threaten Water Quality?

Delgado, Annelena #54
CH2M HILL

Water for People - FLOW a Measurement Tool

Jacobson, Dianne #53
University of Florida Extension Service

Volunteer Mobile Irrigation Lab ...Model lab for SWFWD

Jarvis, BobbiJo #50
UF/IFAS Pasco County Extension

Educating certified property managers of landscape management practices that influence water quality

Ott, Emily #52

University of Florida, Agricultural Education and Communication Social Research for Water Conservation: Solutions for a Water-Wise

Penniman, Daniel #48
SNRE program

Cost Analysis of Low Impact Development Stormwater Treatment Methods in Florida

Post, Annemarie #47
UF/IFAS Sarasota County Extension

Community efforts to improve water flow and filtration through natural area restoration

Singleton, Lloyd #51
UF/IFAS Sumter County Extension

Florida-Friendly stormwater ponds

Water Conservation and Use 1

Boyer, Mackenzie #73
UF Agricultural and Biological Engineering

Do Florida Friendly Landscaping Homes Reduce Irrigation?

Friedman, Kenneth #72
University of Florida

Data Validation Methodologies for Water Audits in Florida

Morales, Miguel #71
University of Florida

Analysis of Non-Residential Urban Water Use Through Water Billing and Property Appraiser Databases

Thompson, Joshua #75
UF Agronomy

The Use of Primed Acclimation and Reduced Tillage to Increase Water Use Efficiency in Peanut and Cotton Production Systems

Zamora Re, Maria #74
University of Florida

Optimizing Water Use for Frost Protection

Poster Session 2 6:30 PM-7:30 PM Grand Ballrooms CDGH

Efficacy of Nutrient Source Control Strategies 2

Duan, Runbin #8
Soil and Water Science Department

Long-Term Nitrate-Nitrogen Trends in Groundwater and Soil at a Dairy Farm in the Suwannee River Basin

Fan, Jinghua #7
University of Florida

Effects of Different Soil and Water Treatments with Reclaimed Water Irrigation on Growth of Turfgrass

Gazula, Aparna #9
UF/IFAS Alachua County Extension

The Blue Dye Doesn't Lie: On Farm Demonstration of Water Movement in Plastic Mulched Beds.

Hydrology

Acharya, Subodh #20
University of Florida

Estimation of Evapotranspiration from Diurnal Water Table Fluctuation Using a new Expression for Drainable Porosity

Henson, Wesley #21
Water Institute/USGS

Evaluating the Effects of Horizontal Spatial Discretization on Interflow in the Soil Zone Using the Richards and Groundwater Flow Equations

Vibhava, Fnu #19
University of Florida

Effect of Geologic Heterogeneity on River-Aquifer Interactions: Lesson Learned From the Application of an Integrated Surface-Subsurface Model in a Complex Karst Watershed

Watts, Adam #18
University of Florida

Does a Hydrologic "Switch" Affect Microclimate in Wetland Forest



Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems 2

- Amit, Michelle #44
University of Florida
Syntrophic Acetate-Oxidizing Bacteria along a Nutrient Gradient in the Florida Everglades
- Colli-Dula, Reyna #45
University of Florida
Understanding of Benzene and Trichloroethylene Effects in Largemouth Bass Using Microarrays
- Gioeli, Kenneth #40
UF/IFAS St. Lucie County Extension
Hydrilla IPM RAMP- Starting a Statewide Project
- Hensley, Robert #43
University of Florida
New Methods for Estimating Riverine N Removal Rates
- Kurz, Marie #41
University of Florida
Influence of Autotrophic Assimilation on Diel Elemental Cycling in a Spring-Fed River
- Reijo, Courtney #38
University of Florida
Characterization of Nutrient Kinetics in a Spring-Fed North Florida Stream
- Roberts, John #39
SFRC
Denitrification Potential within Riparian Zones of Urban Impacted Forests in the Tampa Bay Watershed
- Rodriguez-Jorquera, Ignacio #42
University of Florida
Linkages between pollutants and physiological processes in fish exposed to urban effluents.

Understanding Natural, Anthropogenic and Legacy Sources of Nutrients

- Andreu, Michael #61
UF School of Forest Resources & Conservation
The Ecosystem Services from Forests of the Tampa Bay Watershed Building a Collaborative Research and Extension Program
- Dari, Biswanath #60
University of Florida
Soil Phosphorus Dynamics in a Dairy Farm during a Seven-year Period

- Dobbs, Nicole #57
University of Florida
Interactive Tool for Simulating Water and Nutrient Management in a Virtual Turfgrasses System
- Hellmuth, Rebecca #59
University of Florida
Use of Drainage Lysimeters to Quantify Leaching for a Nitrogen Mass Budget
- Helms, Katherine #64
Sculpture, SAAH, University of Florida
Urban Watershed Project
- Irick, Daniel #56
University of Florida
Distribution of Soil Phosphorus Forms in Everglades Tree Islands
- Mitchell, Jennifer #63
Alachua County EPD
The Influence of Stormwater Pond Substrate on Surface Water Phosphorus Dynamics across Alachua County
- Palacio, Darina #65
University of Florida
Water Resource Management Challenges in Florida: Geospatial Assessment of Stream Impairment
- Prasad, Rishi #58
Soil and Water Science Department
Nitrogen Budgeting and Cycling for an Integrated Farm: A Step towards Improved Nitrogen Management in the Suwannee River Watershed
- Van Dam, Bryce #61
University of Florida
Soil subsidence in a impacted Florida wetland
- Watts, Danielle #55
University of Florida
Carbon Accounting and Alternative Peat Accretion Equilibria in the Ridge Slough Everglades

Water and Climate

- Hwang, Syewoon #69
Water Institute, University of Florida
Hydrologic Importance of Spatial Variability in Statistically Downscaled Precipitation Predictions from Global Circulation Models for West-Central Florida
- Khare, Yogesh #68
University of Florida
Global Sensitivity Analysis of a Drought Index Model – ‘Agricultural Reference Index for Drought (ARID)’

Maleski, Jerome #66
University of Florida

Climate Trends in ACF-ACT River Basins

Rooney, Robert #70
University Of Florida

Implementation of Analog Forecast Technique In Tampa Bay Waters Operational Hydraulic Models

Tian, Di #67
University of Florida

Evaluation of reference evapotranspiration forecast analogs in Southeastern United States

Water Conservation and Use 2

Byrd, Seth #80
University of Florida - Agronomy Dept.

Optimizing Irrigation of Florida Potato

Davis, Stacia #79
University of Florida

Finding the Right Customer: Will Smart Irrigation Controllers Increase Irrigation?

Kadiyala, Dakshina Murthy #81
University of Florida

Study of Spatial Water Requirement of Rice under Various Crop Establishment Methods Using GIS and Crop Models

Kiser, Kristine #78
UF Art History Student

"Effect" - An artist's message to save local springs

Muketha, Josh #77
University of Miami; Abess Center for Ecosystem Science & Policy

A GIS-based Spatial and Temporal Analysis of Factors Influencing Water Use in the ACF Basin

Poudel, Bishow #76
University of Florida

A Study on Root Morphological and Physiological Characteristics of Warm Season Turf Grass Species for Their Field Drought Performance

Water Treatment and Aquatic Chemistry

Indarawis, Katrina #83
University of Florida

Combined Ion Exchange Pretreatment to Reduce Membrane Fouling: Understanding Fundamental Chemistry During Ion Exchange Reactions

Ishii, Stephanie #82
University of Florida

Behavior of Reoccurring PARAFAC Components in Fluorescent Dissolved Organic Matter in Natural and Engineered Systems: A Critical Review

Mirsaeid Ghazi, Niloufar #86
FSU

Study on the Degradation of Nitrobenzene Utilizing Ultraviolet (UV) Radiation Process and the UV/ Hydrogen Peroxide Advanced Oxidation Process (AOP)

Rokicki, Christopher #84
University of Florida

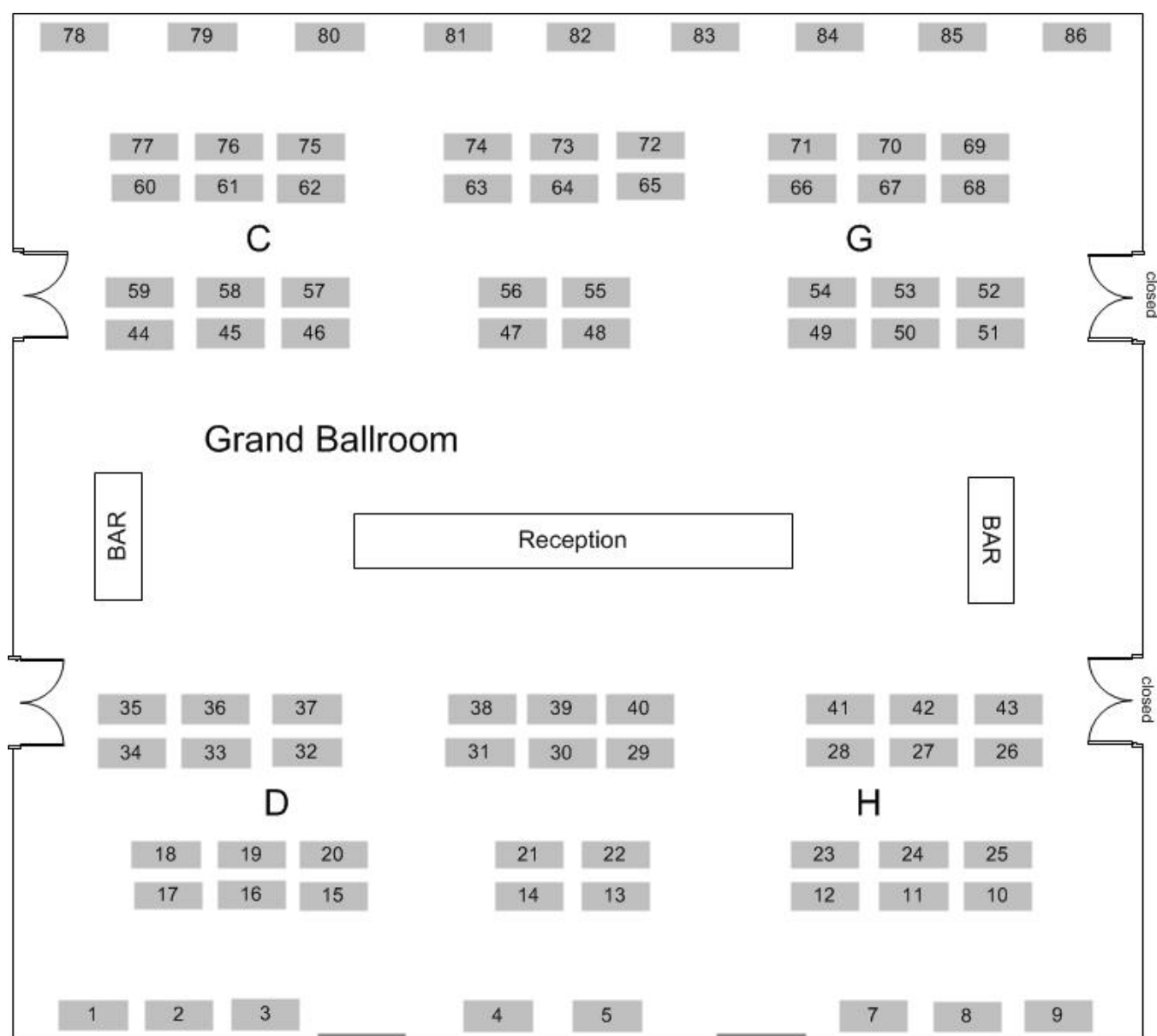
Does Inorganic Fouling Limit the Uses of Ecologically Friendly Anion Exchange?

Wu, Lei #85
University of Florida

Experimental Analysis of Colloid Capture by a Cylindrical Collector in Laminar Overland Flow



Poster Session Layout



Efficacy of Nutrient Source Control Strategies	1 - 9
Governance Approaches to Nutrient Management	10 - 13
Hydroecology	14 - 17
Hydrology	18 - 21
Innovative Biological, Physical, and Chemical Nutrient Reduction & Recovery Technologies	22 - 29
Nutrient Dynamics and Enrichment Impacts in Aquatic Ecosystems	30 - 45
Social, Behavioral, and Economic Aspects of Nutrient Management	46 - 54
Understanding Natural, Anthropogenic and Legacy Sources of Nutrients	55 - 65
Water and Climate	66 - 70
Water Conservation and Use	71 - 81
Water Treatment and Aquatic Chemistry	82 - 86

Alphabetic List of Poster Presenters

See Poster Layout Map Pg. 20

Author	Title	Poster #	Session
Acharya, Subodh	<i>Estimation of Evapotranspiration from Diurnal Water Table Fluctuation Using a new Expression for Drainable Porosity</i>	20	2
Amit, Michelle	<i>Syntrophic Acetate-Oxidizing Bacteria along a Nutrient Gradient in the Florida Everglades</i>	44	2
Andreu, Michael	<i>The Ecosystem Services from Forests of the Tampa Bay Watershed Building a Collaborative Research and Extension Program</i>	61	2
Aponte, Veronica	<i>A Novel Physical-Chemical-Biological Treatment Process for Swine Wastes</i>	22	1
Asci, Serhat	<i>Costs, Returns, and Nitrogen Application Decisions in Florida Potato Production</i>	49	1
Bae, Hee-Sung	<i>Nitrogen Fixation along a Nutrient Gradient in the Florida Everglades: Distribution and Concentrations of Nifh Genotypes and Nitrogenase Activities</i>	34	1
Bhadha, Jehangir	<i>Evaluating the role of Aquatic Vegetation on Phosphorus Loads in the Everglades Agricultural Area</i>	26	1
Bhomia, Rupesh	<i>Accretion and Storage of Phosphorus in Recently Accreted Soils (RAS) in the Stormwater Treatment Areas (STAs) of the Everglades Basin</i>	23	1
Blair, Susanna	<i>Outstanding Florida Waters: Water Quality Analyses</i>	13	1
Bolques, Alejandro	<i>Application of a bioretention/rain garden system to mitigate irrigation runoff from a container plant nursery production bed</i>	1	1
Boyer, Mackenzie	<i>Do Florida Friendly Landscaping Homes Reduce Irrigation?</i>	73	1
Brown, Amy	<i>The Impact of River Water Intrusion on Nutrient and Trace Metal Concentrations in the Floridan Aquifer System at Madison Blue Spring, Florida</i>	36	1
Byrd, Seth	<i>Optimizing Irrigation of Florida Potato</i>	80	2
Chakraborty, Debolina	<i>Phosphorus Dynamics in the Kissimmee River Sediment and Floodplain Soils</i>	35	1
Chevasco, Daniela	<i>Can Fertilization in Pine Straw Production Threaten Water Quality?</i>	46	1
Colli-Dula, Reyna	<i>Understanding of Benzene and Trichloroethylene Effects in Largemouth Bass Using Microarrays</i>	45	2
Dari, Biswanath	<i>Soil Phosphorus Dynamics in a Dairy Farm during a Seven-year Period</i>	60	2
Davis, Stacia	<i>Finding the Right Customer: Will Smart Irrigation Controllers Increase Irrigation?</i>	79	2
Delesantro, Joseph	<i>The Effects of Hydrologic Mean Condition and Variation on Wetland Structure and Function</i>	17	1
Delgado, Annelena	<i>Water for People - FLOW a Measurement Tool</i>	54	1
Demorest, Nichelle	<i>Providing for natural bio-filtering processes in an existing stormwater detention basin</i>	29	1
Dobbs, Nicole	<i>Interactive Tool for Simulating Water and Nutrient Management in a Virtual Turfgrass System</i>	57	2
Duan, Runbin	<i>Long-Term Nitrate-Nitrogen Trends in Groundwater and Soil at a Dairy Farm in the Suwannee River Basin</i>	8	2
Fan, Jinghua	<i>Effects of Different Soil and Water Treatments with Reclaimed Water Irrigation on Growth of Turfgrass</i>	7	2
Friedman, Kenneth	<i>Data Validation Methodologies for Water Audits in Florida</i>	72	1
Gautam, Rajendra	<i>Is St. Augustine grass Environment Friendly From Nitrate Leaching Perspective?</i>	5	1



Alphabetic List of Poster Presenters

See Poster Layout Map Pg. 20

Author	Title	Poster #	Session
Gazula, Aparna	<i>The Blue Dye Doesn't Lie: On Farm Demonstration of Water Movement in Plastic Mulched Beds.</i>	9	2
Gioeli, Kenneth	<i>Hydrilla IPM RAMP- Starting a Statewide Project</i>	40	2
Hall, Hollie	<i>Outstanding Florida Waters: Water Quality Analyses</i>	13	1
Hellmuth, Rebecca	<i>Use of Drainage Lysimeters to Quantify Leaching for a Nitrogen Mass Budget</i>	59	2
Helms, Katherine	<i>Urban Watershed Project</i>	64	2
Hensley, Robert	<i>New Methods for Estimating Riverine N Removal Rates</i>	43	2
Henson, Wesley	<i>Evaluating the Effects of Horizontal Spatial Discretization on Interflow in the Soil Zone Using the Richards and Groundwater Flow Equations</i>	21	2
Hu, Jing	<i>Hydrological and Biogeochemical Controls on the Nitrous Oxide (N₂O) Production and Consumption in Subtropical Isolated Wetlands</i>	32	1
Hwang, Syewoon	<i>Hydrologic Importance of Spatial Variability in Statistically Downscaled Precipitation Predictions from Global Circulation Models for West-Central Florida</i>	69	2
Indarawis, Katrina	<i>Combined Ion Exchange Pretreatment to Reduce Membrane Fouling: Understanding Fundamental Chemistry During Ion Exchange Reactions</i>	83	2
Irick, Daniel	<i>Distribution of Soil Phosphorus Forms in Everglades Tree Islands</i>	56	2
Ishii, Stephanie	<i>Behavior of Reoccurring PARAFAC Components in Fluorescent Dissolved Organic Matter in Natural and Engineered Systems: A Critical Review</i>	82	2
Jacobson, Dianne	<i>Volunteer Mobile Irrigation Lab ...Model lab for SWFWD</i>	53	1
Jarvis, BobbiJo	<i>Educating certified property managers of landscape management practices that influence water quality</i>	50	1
Jin, Jin	<i>The Influence of DOM and Microbial Processes on Arsenic Release from Karst during ASR Operations in the Floridan Aquifer</i>	37	1
Kadiyala, Dakshina Murthy	<i>Study of Spatial Water Requirement of Rice under Various Crop Establishment Methods Using GIS and Crop Models</i>	81	2
Khare, Yogesh	<i>Global Sensitivity Analysis of a Drought Index Model – 'Agricultural Reference Index for Drought (ARID)'</i>	68	2
Kiser, Kristine	<i>"Effect" - An artist's message to save local springs</i>	78	2
Kurz, Marie	<i>Influence of Autotrophic Assimilation on Diel Elemental Cycling in a Spring-Fed River</i>	41	2
Lenhardt, Matthew	<i>Balancing Florida's agricultural future with the proposed numeric nutrient criteria water quality standards</i>	11	1
Liao, Xiaolin	<i>Seasonal patterns of periphyton nitrogen fixation in seasonally-flooded calcareous wetlands of the Florida Everglades</i>	31	1
Liebowitz, Dina	<i>Experimental Evidence of Environmentally Mediated Top-Down Control of Algal Proliferation in Florida's Springs</i>	16	1
Maleski, Jerome	<i>Climate Trends in ACF-ACT River Basins</i>	66	2
Mirsaeid Ghazi, Niloufar	<i>Study on the Degradation of Nitrobenzene Utilizing Ultraviolet (UV) Radiation Process and the UV/ Hydrogen Peroxide Advanced Oxidation Process (AOP)</i>	86	2
Mitchell, Jennifer	<i>The Influence of Stormwater Pond Substrate on Surface Water Phosphorus Dynamics across Alachua County</i>	63	2
Morales, Miguel	<i>Analysis of Non-Residential Urban Water Use Through Water Billing and Property Appraiser Databases</i>	71	1

Alphabetic List of Poster Presenters

See Poster Layout Map Pg. 20

Author	Title	Poster #	Session
Muketha, Josh	<i>A GIS-based Spatial and Temporal Analysis of Factors Influencing Water Use in the ACF Basin</i>	77	2
Ott, Emily	<i>Social Research for Water Conservation: Solutions for a Water-Wise Future</i>	52	1
Palacio, Darina	<i>Water Resource Management Challenges in Florida: Geospatial Assessment of Stream Impairment</i>	65	2
Pawlitz, Rachel	<i>Beyond Uncertainty: Designing Tools for Adaptive Water Governance</i>	12	1
Penniman, Daniel	<i>Cost Analysis of Low Impact Development Stormwater Treatment Methods in Florida</i>	48	1
Post, Annemarie	<i>Community efforts to improve water flow and filtration through natural area restoration</i>	47	1
Poudel, Bishow	<i>A Study on Root Morphological and Physiological Characteristics of Warm Season Turf Grass Species for Their Field Drought Performance</i>	76	2
Prasad, Rishi	<i>Nitrogen Budgeting and Cycling for an Integrated Farm: A Step towards Improved Nitrogen Management in the Suwannee River Watershed</i>	58	2
Qiao, Yu	<i>Ozone Pre-Treatment to Enhance Anaerobic Degradation of Refractory Landfill Leachate Organics.</i>	27	1
Qin, Zhixuan	<i>Evaluation of Nutrient Leaching from Simulated Residential Mixed Landscapes</i>	3	1
Rainey, Donald	<i>Florida-Friendly Landscaping™ Green Industries Best Management Practices (FFL/GI-BMP)</i>	4	1
Reijo, Courtney	<i>Characterization of Nutrient Kinetics in a Spring-Fed North Florida Stream</i>	38	2
Reyes-Cabrera, Joel	<i>Drip Irrigation as an Alternative Strategy to Increase Water Saving for Potato Production in Northeast Florida.</i>	2	1
Roberts, John	<i>Denitrification Potential within Riparian Zones of Urban Impacted Forests in the Tampa Bay Watershed</i>	39	2
Rodriguez-Jorquera, Ignacio	<i>Linkages between pollutants and physiological processes in fish exposed to urban effluents.</i>	42	2
Rokicki, Christopher	<i>Does Inorganic Fouling Limit the Uses of Ecologically Friendly Anion Exchange?</i>	84	2
Rooney, Robert	<i>Implementation of Analog Forecast Technique In Tampa Bay Waters Operational Hydraulic Models</i>	70	2
Sindelar, Hugo	<i>Evaluating Advanced Oxidation Processes for the Transformation of Organic Phosphorus into Biologically Labile Compounds</i>	25	1
Singleton, Lloyd	<i>Florida-Friendly stormwater ponds</i>	51	1
Smith, Adrienne	<i>Influence of Initial Soil Nutrients and Seedbank on Ruellia Simplex Control and Resulting Native Species Establishment</i>	33	1
Szafraniec, Mary	<i>Light Availability in Florida Spring Ecosystems</i>	14	1
Thompson, Joshua	<i>The Use of Primed Acclimation and Reduced Tillage to Increase Water Use Efficiency in Peanut and Cotton Production Systems</i>	75	1
Tian, Di	<i>Evaluation of reference evapotranspiration forecast analogs in Southeastern United States</i>	67	2
Tripathi, Rahul	<i>Polyacrylamide Grafted Hydrogel Balls of Sodium Alginate-Psyllium for Water Restoration</i>	28	1
Van Dam, Bryce	<i>Soil subsidence in a impacted Florida wetland</i>	61	2



Alphabetic List of Poster Presenters

See Poster Layout Map Pg. 20

Author	Title	Poster #	Session
VanZomerem, Christine	<i>Comparison of Extracellular Enzyme Activities in an Everglades Stormwater Treatment Area</i>	30	1
Vibhava, Fnu	<i>Effect of Geologic Heterogeneity on River-Aquifer Interactions: Lesson Learned From the Application of an Integrated Surface-Subsurface Model in a Complex Karst Watershed</i>	19	2
Watts, Adam	<i>Does a Hydrologic "Switch" Affect Microclimate in Wetland Forest Patches?</i>	18	2
Watts, Danielle	<i>Carbon Accounting and Alternative Peat Accretion Equilibria in the Ridge Slough Everglades</i>	55	2
Wu, Lei	<i>Experimental Analysis of Colloid Capture by a Cylindrical Collector in Laminar Overland Flow</i>	85	2
Yao, Ying	<i>Adsorption of Sulfamethoxazole on Biochar and its Impact on Reclaimed Water Irrigation</i>	24	1
Yuan, Jing	<i>Detecting Pattern and Pattern Loss in the Everglades Ridge and Slough Landscape</i>	15	1
Zamora Re, Maria	<i>Optimizing Water Use for Frost Protection</i>	74	1
Zhuang, Yilin	<i>A System Dynamics Approach to Municipal Water and Energy Resources Management in Hillsborough County</i>	10	1

Alphabetic List of Speakers and Panelists

Last Name, First Name	Title	Day	Time	Location
Adams, Damian	<i>Assistant Professor, University of Florida</i>	2/16/12	8:30 AM	Room 282
Alenicheva, Diana	<i>Graduate Student, University of Florida</i>	2/16/12	8:30 AM	Ballroom F
Ammerman, David	<i>Project Manager, AECOM</i>	2/15/12	1:30 PM	Ballroom A
Anderson, Damann	<i>Vice President, Hazen and Sawyer, P.C.</i>	2/15/12	3:30 PM	Ballroom A
Band, Lawrence	<i>Voit Gilmore Distinguished Professor, University of North Carolina at Chapel Hill</i>	2/15/12	8:30 AM	Rion Ballroom
Barnett, Ernie	<i>Director, Everglades Policy and Coordination, South Florida Water Management District</i>	2/15/12	1:30 PM	Ballroom F
Bartlett, Drew	<i>Director, FL Dept. Environmental Protection</i>	2/16/12	3:30 PM	Rion Ballroom
Bays, James	<i>Technology Fellow, CH2MHILL</i>	2/15/12	3:30 PM	Ballroom A
Borisova, Tatiana	<i>Assistant Professor, University of Florida</i>	2/16/12	8:30 AM	Ballroom F
Borisova, Tatiana	<i>Assistant Professor, University of Florida</i>	2/16/12	8:30 AM	Room 282
Bottcher, Del	<i>President, Soil & Water Engineering Technology, Inc.</i>	2/16/12	10:30 AM	Ballroom A
Bottcher, Del	<i>President, Soil & Water Engineering Technology, Inc.</i>	2/16/12	1:30 PM	Ballroom A
Boyer, Treavor	<i>Assistant Professor, University of Florida</i>	2/15/12	1:30 PM	Ballroom A
Brown, Mark	<i>Professor, Environmental Engineering Sciences, University of Florida</i>	2/16/12	8:30 AM	Room 282
Budell, Rich	<i>Director, Florida Department of Agriculture and Consumer Services</i>	2/16/12	3:30 PM	Rion Ballroom
Busby, Tiffany	<i>President, Wildwood Consulting Inc.</i>	2/16/12	8:30 AM	Ballroom B
Busby, Tiffany	<i>President, Wildwood Consulting Inc.</i>	2/16/12	10:30 AM	Ballroom B
Childers, Daniel	<i>Professor, Arizona State University</i>	2/15/12	10:30 AM	Rion Ballroom
Clark, Mark	<i>Associate Professor, University of Florida</i>	2/16/12	1:30 PM	Ballroom A
Clark, Mark	<i>Associate Professor, University of Florida</i>	2/16/12	3:30 PM	Rion Ballroom
Cohen, Matthew	<i>Associate Professor, School of Forest Resources and Conservation, University of Florida</i>	2/15/12	3:30 PM	Ballroom E
Douglass, Rachel	<i>Ph.D. Student, University of Florida</i>	2/15/12	3:30 PM	Ballroom E
Draper, Eric	<i>Executive Director, Audubon of Florida</i>	2/16/12	3:30 PM	Rion Ballroom
Fitzgerald, Kiera	<i>Vice President - Engineering, TSG Technologies, Inc.</i>	2/15/12	1:30 PM	Ballroom B
Flagg, Eric	<i>Documentary Filmmaker and College Instructor, Jellyfish Smack Productions</i>	2/15/12	1:30 PM	Room 282
Flannery, Michael	<i>Chief Environmental Scientist, Southwest Florida Water Management District</i>	2/15/12	1:30 PM	Ballroom E
Frick, Tom	<i>Bureau Chief, Watershed Restoration, Florida Department of Environmental Protection</i>	2/16/12	8:30 AM	Ballroom B
Frick, Tom	<i>Bureau Chief, Watershed Restoration, Florida Department of Environmental Protection</i>	2/16/12	10:30 AM	Ballroom B
Gamble, Lesley	<i>Adjunct Assistant Professor, University of Florida</i>	2/15/12	1:30 PM	Room 282
Gilbert, Douglas	<i>Environmental Manager, Florida Department of Environmental Protection</i>	2/15/12	1:30 PM	Ballroom E



Alphabetic List of Speakers and Panelists

Last Name, First Name	Title	Day	Time	Location
Gilinsky, Ellen	<i>Senior Policy Advisor, Environmental Protection Agency</i>	2/15/12	8:30 AM	Rion Ballroom
Goswami, Debashish	<i>Post-Doctoral Research Associate, IFAS, University of Florida</i>	2/15/12	1:30 PM	Ballroom F
Gray, Paul	<i>Science Coordinator, Audubon of Florida</i>	2/16/12	1:30 PM	Room 282
Greco, Stacie	<i>Water Conservation Coordinator, Alachua County Environmental Protection Department</i>	2/16/12	10:30 AM	Ballroom F
Greening, Holly	<i>Executive Director, Tampa Bay Estuary Program</i>	2/16/12	8:30 AM	Ballroom E
Greening, Holly	<i>Executive Director, Tampa Bay Estuary Program</i>	2/16/12	10:30 AM	Ballroom E
Hankin, Karl	<i>Manager of Water/Sewer System Planning, JEA</i>	2/15/12	3:30 PM	Ballroom F
Hazan, Flavio	<i>Research Assistant, Program for Resource Efficient Communities, University of Florida</i>	2/16/12	10:30 AM	Ballroom A
Heffernan, Jim	<i>Assistant Professor, Florida International University</i>	2/16/12	8:30 AM	Ballroom A
Honour, Danielle	<i>Principal, CDM Smith</i>	2/15/12	1:30 PM	Ballroom B
Hutton, Rick	<i>Supervising Engineer, Gainesville Regional Utilities</i>	2/16/12	8:30 AM	Ballroom B
Hutton, Rick	<i>Supervising Engineer, Gainesville Regional Utilities</i>	2/16/12	10:30 AM	Ballroom B
Jazil, Mohammad	<i>Attorney, Hopping, Green & Sams, P.A.</i>	2/15/12	3:30 PM	Ballroom B
Jazil, Mohammad	<i>Attorney, Hopping, Green & Sams, P.A.</i>	2/16/12	1:30 PM	Ballroom B
Jones, Gregg	<i>Water Resources Technical Director, Cardno ENTRIX</i>	2/16/12	8:30 AM	Ballroom A
Joyner, Daryll	<i>Bureau Chief, Assessment & Restoration Support, Florida Department of Environmental Protection</i>	2/16/12	10:30 AM	Room 282
Joyner, Daryll	<i>Bureau Chief, Assessment & Restoration Support, Florida Department of Environmental Protection</i>	2/16/12	1:30 PM	Ballroom B
Keller, Chris	<i>Engineer, Wetland Solutions, Inc.</i>	2/15/12	3:30 PM	Ballroom A
King, Sean	<i>Graduate Assistant, Environmental Engineering Sciences, University of Florida</i>	2/15/12	3:30 PM	Ballroom E
Knight, Robert	<i>Director, Howard T. Odum Florida Springs Institute</i>	2/15/12	3:30 PM	Ballroom E
Knight, Robert	<i>Director, Howard T. Odum Florida Springs Institute</i>	2/16/12	8:30 AM	Ballroom E
Knight, Robert	<i>Director, Howard T. Odum Florida Springs Institute</i>	2/16/12	10:30 AM	Ballroom E
Kreye, Melissa	<i>Graduate student, School of Forest Resources and Conservation, University of Florida</i>	2/16/12	8:30 AM	Ballroom F
LoSchiavo, Andrew	<i>Adaptive Management Coordinator, U.S. Army Corps of Engineers</i>	2/16/12	8:30 AM	Ballroom E
LoSchiavo, Andrew	<i>Adaptive Management Coordinator, U.S. Army Corps of Engineers</i>	2/16/12	10:30 AM	Ballroom E
Lowe, Ed	<i>Division Director, Environmental Sciences, St. Johns River Water Management District</i>	2/16/12	8:30 AM	Ballroom E
Lowe, Ed	<i>Division Director, Environmental Sciences, St. Johns River Water Management District</i>	2/16/12	10:30 AM	Ballroom E
Lusk, Mary	<i>PhD Student, University of Florida</i>	2/16/12	10:30 AM	Ballroom A
MacNair, Doug	<i>Principal, Cardno ENTRIX</i>	2/15/12	3:30 PM	Ballroom B
Martin, Kirk	<i>Vice President, CDM Smith</i>	2/15/12	1:30 PM	Ballroom B
Mattson, Robert	<i>Environmental Scientist V, St. Johns River Water Management District</i>	2/16/12	8:30 AM	Ballroom A
McGee, Ph.D., Beth	<i>Senior Regional Water Quality Scientist, Chesapeake Bay Foundation</i>	2/16/12	10:30 AM	Room 282

Alphabetic List of Speakers and Panelists

Last Name, First Name	Title	Day	Time	Location
McKee, Kathleen	<i>Research Coordinator, Water Institute, University of Florida</i>	2/15/12	1:30 PM	Room 282
Millstein, Max	<i>Economist, US Army Corps of Engineers</i>	2/15/12	1:30 PM	Ballroom F
Milon, J. Walter	<i>Professor, University of Central Florida</i>	2/15/12	3:30 PM	Ballroom B
Minogue, Patrick	<i>Assistant Professor, University of Florida</i>	2/15/12	3:30 PM	Ballroom A
Monaghan, Paul	<i>Assistant Professor, University of Florida</i>	2/16/12	10:30 AM	Ballroom F
Nair, Vimala	<i>Research Professor, Soil and Water Science Department, University of Florida</i>	2/16/12	10:30 AM	Ballroom A
Northrop, Robert	<i>Extension Forester, IFAS, University of Florida</i>	2/15/12	3:30 PM	Ballroom F
Oppenheimer, Joan	<i>Vice President, MWH</i>	2/16/12	8:30 AM	Ballroom A
Perry, Jon	<i>Environmental Specialist III, Sarasota County</i>	2/16/12	8:30 AM	Ballroom B
Perry, Jon	<i>Environmental Specialist III, Sarasota County</i>	2/16/12	10:30 AM	Ballroom B
Pettit, Chris	<i>Office of Counsel, Southwest Florida Water Management District</i>	2/16/12	1:30 PM	Ballroom B
Poole, Samuel	<i>Attorney - Partner, Berger Singerman</i>	2/16/12	1:30 PM	Ballroom A
Racevskis, Laila	<i>Assistant Professor, University of Florida</i>	2/16/12	8:30 AM	Room 282
Sansalone, John	<i>Professor, University of Florida</i>	2/15/12	1:30 PM	Ballroom A
Sansalone, John	<i>Professor, University of Florida</i>	2/15/12	3:30 PM	Ballroom F
Schmidt, Michael	<i>Vice President, CDM Smith</i>	2/15/12	1:30 PM	Ballroom F
Schumann, Arnold	<i>Associate Professor, University of Florida</i>	2/15/12	1:30 PM	Ballroom A
Shabman, Len	<i>Resident Scholar, Resources for the Future</i>	2/16/12	10:30 PM	Room 282
Shabman, Len	<i>Resident Scholar, Resources for the Future</i>	2/16/12	1:30 AM	Room 282
Shabman, Len	<i>Resident Scholar, Resources for the Future</i>	2/16/12	3:30 PM	Rion Ballroom
Sharpley, Andrew	<i>Professor, University of Arkansas</i>	2/15/12	10:30 AM	Rion Ballroom
Sims, Roger	<i>Partner, Holland & Knight LLP</i>	2/15/12	1:30 PM	Ballroom B
Steinbrecher, Paul	<i>President, Florida Water Environment Association Utility Council</i>	2/15/12	3:30 PM	Ballroom B
Steinbrecher, Paul	<i>President, Florida Water Environment Association Utility Council</i>	2/16/12	3:30 PM	Rion Ballroom
Swain, Hilary	<i>Executive Director, Archbold Biological Station</i>	2/16/12	1:30 PM	Room 282
Tomasko, David	<i>Sr. Group Manager, Atkins</i>	2/15/12	1:30 PM	Ballroom E
Tucker, William	<i>Senior Principal Scientist, AMEC</i>	2/15/12	1:30 PM	Ballroom E
Wells, Ondine	<i>Planning, Outreach and Public Coordination, Normandeau Associates, Inc.</i>	2/16/12	10:30 AM	Ballroom F
Whalen, Benita	<i>Agricultural Water Programs Director, South Florida Water Management District</i>	2/16/12	10:30 AM	Room 282
Whalen, Benita	<i>Agricultural Water Programs Director, South Florida Water Management District</i>	2/16/12	1:30 PM	Room 282
Wohl, James	<i>Owner, Rafters T Ranch</i>	2/16/12	1:30 PM	Room 282
Zhang, Bo	<i>PhD Candidate, LEED AP, University of Florida</i>	2/16/12	8:30 AM	Ballroom F



We gratefully acknowledge our sponsors

Platinum Sponsors



Silver Sponsors



Bronze Sponsors



**Carl S. Swisher
Foundation**



Session Sponsors



Student Sponsors

CardnoENTRIX, Inc.
Ellen Gilinsky
GRU
HACH Hydromet
JEA

Jones Edmunds & Associates, Inc.
Soil & Water Engineering Technology, Inc.
Carl S. Swisher Foundation
Tampa Bay Water





JUST ADD WATER

JANUARY 31, 2012 – FEBRUARY 17, 2012



RECEPTION

FEBRUARY 15, 2012 | 5–7 PM

ARTISTS

ANNIE PAIS

JERRY CUTLER

DOUG BARRETT

KATERIE GLADDYS

MARGARET ROSS TOLBERT

CHARLIE CUMMINGS

BETHANY TAYLOR

JOHN MORAN

KATE HELMS

★
VENUE

“the gallery”, 2nd Floor,
J. Wayne Reitz Union

★
“the gallery” HOURS

Mon–Thurs, 9 am–9 pm,
Fri–Sun, 9 am–6 pm

★ ★ Contact: 352-392-2378 ★ ★

schoolofart+arthistory
university of florida + college of fine arts

UF Water Institute
UNIVERSITY of FLORIDA

REITZUNION | programs, arts, and leisure

UF College of Fine Arts
School of Art and Art History
UNIVERSITY of FLORIDA

UF Division of Student Affairs
UNIVERSITY of FLORIDA



Water Institute
570 Weil Hall
PO BOX 116601
Gainesville, FL 32611-6601
Phone: 352.392.5893
Fax: 352.392.6855

We gratefully acknowledge our sponsors:

Platinum Sponsors



Silver Sponsors



Bronze Sponsors



**Carl S. Swisher
Foundation**



Session Sponsors



Student Sponsors

Cardno ENTRIX, Inc.
HACH Hydromet
Ellen Gilinsky
GRU
JEA

Jones Edmunds & Associates, Inc.
Soil & Water Engineering Technology, Inc.
Carl S. Swisher Foundation
Tampa Bay Water

Photo courtesy of Larry Kohnak

For more information visit <http://waterinstitute.ufl.edu/symposium2012/>

waterinstitute.ufl.edu