Nutrient Dynamics, Policy and Management in Watersheds

Photo courtesy of Larry Kohrnak

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

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
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<tr>
<th>Time</th>
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<th>Room</th>
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<tr>
<td>7:30 AM - 5:00 PM</td>
<td>Symposium Check-In</td>
<td>Registration Desk</td>
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<tr>
<td>8:30 AM - 10:00 AM</td>
<td>Plenary Session 1&lt;br&gt;(moderator: Wendy Graham, Water Institute, University of Florida)&lt;br&gt;• Wendy Graham, Professor and Director, University of Florida Water Institute&lt;br&gt;• Winfred Phillips, Senior Vice President and Chief Operating Officer, University of Florida&lt;br&gt;• Ellen Gilinsky, Senior Policy Advisor, Office of Water, Environmental Protection Agency&lt;br&gt;“State Development and Implementation of Nutrient Standards: Putting Florida into the National Context”&lt;br&gt;• Larry Band, Professor, Voit Gilmore Distinguished Professor, University of North Carolina&lt;br&gt;“Sources, Cycling and Control of Carbon and Nutrients in Urban Watersheds”&lt;br&gt;Sponsored By: Progress Energy</td>
<td>Rion Ballroom</td>
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<tr>
<td>10:00 AM - 10:30 AM</td>
<td>Refreshment Break</td>
<td>Grand Ballrooms CDGH</td>
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<td>10:30 AM - 12:00 PM</td>
<td>Plenary Session 2&lt;br&gt;(moderator: Wendy Graham, Water Institute, University of Florida)&lt;br&gt;• Andrew N. Sharpley, Professor, University of Arkansas&lt;br&gt;Fate and Management of Phosphorus in Agricultural Systems&lt;br&gt;• Daniel L. Childers, Professor, Arizona State University&lt;br&gt;“Is Phosphorus the Rodney Dangerfield of Sustainability Challenges?”&lt;br&gt;Sponsored By: The Mosaic Company</td>
<td>Rion Ballroom</td>
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<td>12:00 PM - 1:30 PM</td>
<td>Lunch (pick up box lunch in Ballrooms CDGH)</td>
<td>Rion Ballroom</td>
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<tr>
<td>1:30 PM - 3:00 PM</td>
<td>Governance Approaches to Nutrient Management 1&lt;br&gt;(moderator: Joseph Delfino, University of Florida)&lt;br&gt;• Kiera S. Fitzgerald, Vice President - Engineering, TSG Technologies, Inc.&lt;br&gt;City of Miami Beach’s Implementation of a MBR Scalping Plant&lt;br&gt;• Danielle Honour, Principal, CDM Smith&lt;br&gt;Putting Together the Pieces of Lake Tohopekaliga Puzzle&lt;br&gt;• Kirk Martin, Vice President, CDM Smith&lt;br&gt;Public Private Partnerships: A Better Way to Manage Water in Florida?&lt;br&gt;• Roger W. Sims, Partner, Holland &amp; Knight LLP&lt;br&gt;Reclaimed Water - A Key Strategy for Nutrient Management and Water Conservation&lt;br&gt;Sponsored By: Tampa Bay Water</td>
<td>Ballroom B</td>
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<td>1:30 PM - 3:00 PM</td>
<td>Innovative Biological, Physical, and Chemical Nutrient Reduction &amp; Recovery Technologies 1&lt;br&gt;(moderator: Kati Migliaccio, University of Florida)&lt;br&gt;• David K. Ammerman, Project Manager, AECOM&lt;br&gt;Appropriate Treatment for Intended Use&lt;br&gt;• Treavor H. Boyer, Assistant Professor, University of Florida&lt;br&gt;Potential for Phosphorus Recovery and Beneficial Reuse&lt;br&gt;• John Sansalone, Professor, University of Florida&lt;br&gt;The Role of Computational Fluid Dynamics and Continuous Simulation to Optimize BMPs&lt;br&gt;• Arnold Schumann, Associate Professor, University of Florida&lt;br&gt;Open Hydroponics - Implications for Water and Nutrient Efficiencies and Groundwater Protection under Citrus Production&lt;br&gt;Sponsored By: St. Johns River Water Management District</td>
<td>Ballroom A</td>
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1:30 PM - 3:00 PM  
**Efficacy of Nutrient Source Control Strategies 1**  
(moderator: Darrell Smith, Florida Department of Agriculture and Consumer Services)  
Ballroom F  
- 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**  
(moderator: H. Carl Fitz, University of Florida)  
Ballroom E  
- 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**  
(moderator: Annie Pais, Florida’s Eden)  
Room 282  
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 Coodinator, 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
Wednesday

3:30 PM - 5:00 PM

**Governance Approaches to Nutrient Management 2**

(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**

(moderator: Trevor 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**

(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**

(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
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
(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
(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
(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
Panel: Adventures in Ecological Restoration: 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

Panel: Managing Nutrient Dynamics: 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

Refreshment Break
Agenda

10:30 AM - 12:00 PM

Panel: Implementation of Creative Solutions to Nutrient Issues in Florida: Experiences and Progress through the TMDL Program 2
(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
(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
(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
Panel: Adventures in Ecological Restoration:  
Case Studies of Nutrient Control in Florida 2  
(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

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

Buffet Luncheon (Presentation of Best Student Poster Awards)  
Rion Ballroom

Panel: Numeric Nutrient Criteria: Where do we go from here?  
(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
Panel: Innovative Land Development/Community Design Practices
(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

Panel: Managing Nutrient Dynamics: Estimating Values and Designing Payments
(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 Ecosystem 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

Refreshment Break

Grand Ballrooms CDGH
Final Plenary Session

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

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*

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*Outstanding Florida Waters: Water Quality Analyses*

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

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*Evaluating the role of Aquatic Vegetation on Phosphorus Loads in the Everglades Agricultural Area*
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Accretion and Storage of Phosphorus in Recently Accreted Soils (RAS) in the Stormwater Treatment Areas (STAs) of the Everglades Basin

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Can Fertilization in Pine Straw Production Threaten Water Quality?

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- Gioeli, Kenneth [40] UF/IFAS St. Lucie County Extension
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- Hellmuth, Rebecca [59] University of Florida
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- Helms, Katherine [64] Sculpture, SAAH, University of Florida
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- Irick, Daniel [56] University of Florida
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<td>Partner, Holland &amp; Knight LLP</td>
<td>2/15/12</td>
<td>1:30 PM</td>
<td>Ballroom B</td>
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<tr>
<td>Steinbrecher, Paul</td>
<td>President, Florida Water Environment Association Utility Council</td>
<td>2/15/12</td>
<td>3:30 PM</td>
<td>Ballroom B</td>
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<td>Steinbrecher, Paul</td>
<td>President, Florida Water Environment Association Utility Council</td>
<td>2/16/12</td>
<td>3:30 PM</td>
<td>Rion Ballroom</td>
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<tr>
<td>Swain, Hilary</td>
<td>Executive Director, Archbold Biological Station</td>
<td>2/16/12</td>
<td>1:30 PM</td>
<td>Room 282</td>
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<tr>
<td>Tomasko, David</td>
<td>Sr. Group Manager, Atkins</td>
<td>2/15/12</td>
<td>1:30 PM</td>
<td>Ballroom E</td>
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<tr>
<td>Tucker, William</td>
<td>Senior Principal Scientist, AMEC</td>
<td>2/15/12</td>
<td>1:30 PM</td>
<td>Ballroom E</td>
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<tr>
<td>Wells, Ondine</td>
<td>Planning, Outreach and Public Coordination, Normandeau Associates, Inc.</td>
<td>2/16/12</td>
<td>10:30 AM</td>
<td>Ballroom F</td>
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<tr>
<td>Whalen, Benita</td>
<td>Agricultural Water Programs Director, South Florida Water Management District</td>
<td>2/16/12</td>
<td>10:30 AM</td>
<td>Room 282</td>
</tr>
<tr>
<td>Whalen, Benita</td>
<td>Agricultural Water Programs Director, South Florida Water Management District</td>
<td>2/16/12</td>
<td>1:30 PM</td>
<td>Room 282</td>
</tr>
<tr>
<td>Wohl, James</td>
<td>Owner, Rafter T Ranch</td>
<td>2/16/12</td>
<td>1:30 PM</td>
<td>Room 282</td>
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<tr>
<td>Zhang, Bo</td>
<td>PhD Candidate, LEED AP, University of Florida</td>
<td>2/16/12</td>
<td>8:30 AM</td>
<td>Ballroom F</td>
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