LOBBY Registration, Load PowerPoint presentations for concurrent sessions

ROOM 1D

120

Mentorship Program Meet and Greet

Poster & Exhibit Set up, Coffee & Morning Refreshments

8:45-10:00 **OPENING SESSION**

ROOM 1A Conference Welcome

Susan White & Nicole Wilkinson, NC Water Resources Research Institute

Opening Keynote From the Nile to North Carolina: Crossing Boundaries for Creative and **Effective Collaboration**

Mina Girgis, Ethnomusicologist and CEO of the Nile Project

10:00-10:20 BREAK

ROOM 1D

Networking, Refreshments, View Exhibits & Posters

10:20-11:40 CONCURRENT SESSION 1

ROOM 3 DROUGHT IN THE CAROLINAS: COMPONENTS OF A DROUG	HT EARLY WARNING SYSTEM
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MODERATOR:

10:20-10:40 Amanda Farris, Carolinas Integrated Sciences and Assessments

10:40-11:00 Paul Conrads, USGS

11:00-11:20 Greg Carbone, University of South Carolina

11:20-11:40 Zack Mondry, USDA Forest Service

ROOM 4 RIVER STORIES: THE CAPE FEAR RIVER (ADDITIONAL SESSION INFO COMING SOON!)

MODERATOR: CY STOBER, NC DEPARTMENT OF ENVIRONMENTAL QUALITY

10:20-10:40 Tom Hoban, Cape Fear River Assembly

10:40-11:00 Keeping the Haw River

11:00-11:20 Sustainable Sandhills

11:20-11:40 TBD

ROOM 5 RESTORING STREAMS, LAKES AND WETLANDS FOR UPLIFT, HYDROLOGY AND INTENDED USE

MODERATOR:

10:20-10:40 Where has the Grass Gone: Factors Impacting Submerged Aquatic Vegetation Bring Together Partners at Lake Mattamuskeet, Michelle Moorman, USFWS

10:40-11:00 Water Quality Impacts of Using Pumps to Control Drainage in Coastal Agriculture and Waterfowl Impoundments Randall Etheridge, East Carolina University

11:00-11:20 Hydrology of Natural Wetlands in North Carolina and the Implications of Future Wetland Restoration, Jack Kurki-Fox, NC State University

11:20-11:40 Stream and Wetland Restoration + Regenerative Stormwater Conveyance = Significant Functional Uplift in Columbia, SC Ward Marotti, WK Dickson

ROOM 6

PLANNING FOR ADOPTION AND IMPLEMENTATION OF STORMWATER BMPS THROUGH MONITORING AND ASSESSMENT

MODERATOR:

10:20-10:40 Stormwater Management Under a Changing Climate Scott Job, Tetra Tech

10:40-11:00 A Pilot Study for Low Impact Development in a Protected Watershed *Charles Stillwell, NC State University*

11:00-11:20 Establishing Regulatory Pollutant Removal Credits for Stormwater Control Measures in North Carolina, Sarah Waickowski, NC State University

11:20-11:40 Evaluating the Spatial Distribution of Pollutants and Associated Maintenance Requirements in an 11 Year Old Bioretention Cell in Urban Charlotte, NC *Jeffrey Johnson*, *NC State University*

11:40-1:00 NETWORKING & AWARDS LUNCHEON

ROOM 2A



Celebrate the 3rd Annual Source Water Collaborative Awards & Enjoy a Preview Performance from a small group of Nile Project Musicians

1:00-2:20 CONCURRENT SESSION 2

ROOM 3

CLIMATE IMPLICATIONS FOR WATER RESOURCES

MODERATOR:

1:00-1:20 Climate Implications for Water Resources Amanda Farris, Carolinas Integrated Sciences and Assessments

1:20-1:40 Developing Exercises to Improve Planning for Public Health Impacts on Community Water Infrastructure from Coastal Hazards *Jessica Whitehead, NC Sea Grant*

1:40-2:00 Climate Implications for Long-term Water Supply Planning Aashka Patel, University of South Carolina

2:00-2:20 Climate Voyager: An Iteratively Built Tool for Visualizing Climate Projections *Corey Davis, NC State Climate Office*

ROOM 4

WATER SUSTAINABILITY THROUGH NANOTECHNOLOGY: PART 1 (SPEAKER INFO COMING SOON)

MODERATOR: JACOB JONES, NC STATE UNIVERSITY

There is an emergent need for innovative, sustainable technologies to improve and maintain worldwide availability and quality of clean water. Development of new materials for water treatment is essential to more efficiently produce drinking water from sea water (desalination), reclaim water from wastewater (potable and non-potable reuse), and to recover valuable resources from waste (nutrients, rare earth elements, precious metals). Engineered nanotechnologies and nanomaterials can uniquely address many emerging challenges in water sustainability. The first part of this session will include talks from a large-scale, interdisciplinary project recently funded by NC State's Gamechanging Research Initiative Program (GRIP) that focuses on the development and evaluation of novel nanotechnologies. Speakers include researchers designing new materials using machine learning, prototyping and testing active desalination membranes, assessing chemical separation capabilities of novel materials, and developing real-time life cycle analysis techniques. This second half of this session will be dedicated to brainstorming to foster and nucleate collaborative projects.

ROOM 5

INNOVATIVE TOOLS AND TECHNIQUES FOR IMPROVED WATER QUALITY, TREATMENT AND ASSESSMENT

MODERATOR:

1:00-1:20 Accelerating Methane Generation Rates in Anaerobic Digesters using Electrically Conductive Materials *Douglas Call, NC State University*

1:20-1:40 Assessing the Role of Turbulent Mixing on Phytoplankton Dynamics in Piedmont Reservoirs *Tarek Aziz, NC State University*

1:40-2:00 Innovative Ecological Engineering BMPs and their Application Towards the Chesapeake Bay Cleanup Effort *Kevin Nunnery, Biohabitats*

2:00-2:20 Applications and Benefits of the High Definition Stream Survey: Combining GPS, Video, and other Sensors to Gather More Data in Less Time and with Lower Costs *Brett Connell, Trutta Consulting*

Room 6

ASSESSING AND ADDRESSING STORMWATER IMPACTS IN COASTAL NORTH CAROLINA

MODERATOR:

1:00-1:20 Addressing Coastal Stormwater Pollution at the Community Scale in North Carolina *Tracy Skrabal, North Carolina Coastal Federation*

1:20-1:40 Contributions of Citizen Science Towards Assessing the Impacts of Sea Level Rise on the Extent of Groundwater and Marine Inundation on a Barrier Island Setting *Alex Manda, East Carolina University*

1:40-2:00 Town Creek Culvert: The Model Marriage Between Green and Gray Infrastructure *Mark Horstman, WK Dickson*

2:00-2:20 Implementation and Monitoring of Stormwater Control Measures in the Lower White Oak River Watershed, North Carolina *Charlie Humphrey, East Carolina University*

2:20-2:40 NETWORKING BREAK

ROOM 1D



Networking, Refreshments, View Exhibits & Posters

2:40-4:20 CONCURRENT SESSION 3

ROOM 3

PLANNING FOR OUR WATER FUTURE: TOOLS, ASSESSMENT AND ENGAGEMENT TO INFORM MANAGEMENT AND POLICY

MODERATOR:

2:40-3:00 A New Water Quality Model for Evaluating Stormwater Discharges from Transportation Projects *Curtis Weaver, US Geological Survey*

3:00-3:20 Assessment of Watershed Vulnerability to Land Use and Climate Change Kelly Suttles, NC State University

3:20-3:40 Alternative Approaches to Water Resource Restoration and Planning *Cam McNutt, NC Department of Environmental Quality*

3:40-4:00 State to State: A Comparison of Water Loss Training Programs Across Multiple States *Drew Blackwell, Cavanaugh & Associates*

4:00-4:20 Assessment of Stream Quality in the Piedmont Area of the Southeastern United States *Celeste Journey, US Geological Survey*

ROOM 4

WATER SUSTAINABILITY THROUGH NANOTECHNOLOGY: PART 2 (SPEAKER INFO COMING SOON)

MODERATOR: JACOB JONES, NC STATE UNIVERSITY

There is an emergent need for innovative, sustainable technologies to improve and maintain worldwide availability and quality of clean water. Development of new materials for water treatment is essential to more efficiently produce drinking water from sea water (desalination), reclaim water from wastewater (potable and non-potable reuse), and to recover valuable resources from waste (nutrients, rare earth elements, precious metals). Engineered nanotechnologies and nanomaterials can uniquely address many emerging challenges in water sustainability. The first part of this session will include talks from a large-scale, interdisciplinary project recently funded by NC State's Gamechanging Research Initiative Program (GRIP) that focuses on the development and evaluation of novel nanotechnologies. Speakers include researchers designing new materials using machine learning, prototyping and testing active desalination membranes, assessing chemical separation capabilities of novel materials, and developing real-time life cycle analysis techniques. This second half of this session will be dedicated to brainstorming to foster and nucleate collaborative projects.

ROOM 5

PUBLIC AND ENVIRONMENTAL HEALTH: ASSESSMENT OF EXPOSURE RISKS, PRESENCE AND MANAGEMENT OPTIONS FOR MULTIPLE INFECTIOUS AND TOXIC AGENTS (PART 1)

MODERATOR:

2:40-3:00 Efficacy of Sodium Hypochlorite for Disinfecting *Raoultella terrigena*, *Salmonella typhimurium* LT2, and Primary Influent Derived *E. coli*, *Salmonella spp.*, and Total Coliforms Cells Cultured with Varying Preparation Conditions, and in Multiple Test Water Matrices Under Point-of-Use Conditions *Collin Coleman*, *University of North Carolina-Chapel Hill*

3:00-3:20 Occurrence and Concentrations of Infectious Adenoviruses in North Carolina Type 2-Like Reclaimed Water *Emily Bailey, University of North Carolina-Chapel Hill*

3:20-3:40 Impact of Hospital and Patient Discharges on North Carolina Surface and Drinking Water Quality as Measured by Iodinated Contrast Agents *Kirsten Studer, University of North Carolina-Chapel Hill*

3:40-4:00 A Bayesian Belief Network Model Assessing the Risk to Wastewater Workers of Contracting Ebola Virus Disease During an Outbreak *Joseph Zabinksi*, *University of North Carolina-Chapel Hill*

4:00-4:20 Hospital Sewage and Human Fecal Waste Contaminated by Ebola Virus: Why is Chlorine-Based Disinfection a Risk? *Emanuele Sozzi, University of North Carolina-Chapel Hill*

ROOM 6

GO GREEN OR GO HOME: SUCCESSES OF GREEN INFRASTRUCTURE IN THE URBAN ENVIRONMENT

MODERATOR:

2:40-3:00 Managing Trees to Reduce Stormwater: i-Tree Hydro can help Urban Forests and other Green Infrastructures Play a Vital Role in Reducing Stormwater Runoff *Catherine Deininger, Biocenosis LLC*

3:00-3:20 An Evaluation of Gray and Green Infrastructure to Address Water Quality and Flooding in the City of Encinitas *Jason Wright, Tetra Tech*

3:20-3:40 Hydrologic and Water Quality Impacts of a Green Street Retrofit in Fayetteville, North Carolina *Kathryn Conroy, NC State University*

PARTICIPANTS IN THIS SESSION AND OTHERS INTERESTED IN GREEN INFRASTRUCTURE AND INNOVATIVE STORMWATER MANAGEMENT ARE ENCOURAGED TO ATTEND THE WALKING TOUR OF STORMWATER BMPS AT NCSU BEGINNING AT 4:00 PM—SEE BELOW FOR DETAILS

3:40-5:30

FIELD TOURS (VARIOUS TIMES)

MEETING LOCATION TBD

GREEN INFRASTRUCTURE AND STORMWATER MANAGEMENT AT NC STATE UNIVERSITY

TOUR LEADS: CHRISTY PERRIN, NC WATER RESOURCES RESEARCH INSTITUTE AND BETSY PEARCE, WAKE COUNTY

This walking tour is geared towards those interested in learning about some of the many great features and practices implemented at NCSU that protect water resources through green infrastructure practices such as stormwater control measures, use of native vegetation and more. More details coming soon regarding the practices that will be highlighted on this tour. There is no additional fee for this tour but space is limited. Sign up when you register for the conference, and bring comfortable shoes.

MEETING LOCATION TBD

NCSU SOLAR HOUSE TOUR

TOUR LEADS: TBD

The North Carolina Solar House was constructed in 1981 by NCSU's College of Engineering and is now part of the NC Clean Energy and Technology Center, which serves as a resource center for for industry, citizens and students for innovative, clean energy technologies through demonstration, technical assistance, outreach and training. Take a short walk from the McKimmon Center for a tour to learn about the many sustainability features incorporated into the Solar House.

5:30-7:00

PRE-CONCERT NETWORKING RECEPTION, STUDENT ART CONTEST & SILENT AUCTION DON'T FORGET YOUR NAMEBADGE!

TALLEY
STUDENT
UNION



After finishing up the tours, meet at the Talley Student Union on NCSU's main campus for heavy hors d'ouvres, beer and wine. Network with fellow conference participants. Enjoy the high school art contest submissions and bid on your favorite piece to take home (all proceeds go back to the contestant's classroom to support art programming).

Pick up your tickets for the Nile Project Concert! Tickets will be handed out at the reception on a first come-first served basis so arrive early to get the best seats! If you'd like to sit together, you must pick up your tickets together to ensure seats are in the same section.

Stewart Theater and concert seating begins at 7:00 p.m.

7:30-9:15 NILE PROJECT CONCERT

TALLEY STUDENT UNION

The first Nile Project U.S. tour in 2015 earned raves from coast to coast. The New York Times called them "a committed, euphoric international coalition," and Afropop Worldwide said the Nile Project was "nothing short of revolutionary." Founded in 2011 by Egyptian ethnomusicologist Mina Girgis and Ethiopian-American singer Meklit Hadero, the Nile Project is one of the tightest cross-cultural musical collaborations in history. This collective is made up of musicians from all along the great river that connects 11 countries and over 400 million people – a region marred by political and ecological conflicts. Using the concert experience as a springboard, the Nile Project inspires, educates, and empowers stakeholders to collectively work towards the sustainability of their shared ecosystem. And they play extraordinary music.

Pick up your tickets for the Nile Project Concert! Tickets will be handed out at the reception on a first come-first served basis so arrive early to get the best seats! If you'd like to sit together, you must pick up your tickets together to ensure seats are in the same section.

Stewart Theater and concert seating begins at 7:00 p.m. Concert begins at 7:30 p.m.

End Day 1 of the Conference. Sign up for PDH Credits at the registration desk. Single-day participants turn in evaluations or visit <u>go.ncsu.edu/wrri_aceval</u> for chance to win free 2018 conference registration.

THURSDAY, MARCH 16TH

8:00-9:30	POSTER SESSION with NETWORKING BREAKFAST
Lовву	Registration, Load PowerPoint presentations for concurrent sessions
ROOM 1D	Join us early for coffee and breakfast as you meet with poster presenters and talk with them about their work.

9:30-10:45 RIVER STORIES: THE NEUSE RIVER 20 YEARS LATER

ROOM 1A

Join the Nile Project's Mina Girgis and panelists to learn about the successes and challenges of managing the Neuse River through the lens of storytelling and connecting with your local river

10:45-11:00 NETWORKING BREAK

ROOM 1D

Networking, Refreshments, View Exhibits & Posters



11:00-12:20 CONCURRENT SESSION 4

Room 3	CONNECTING WATER RESOURCE RESEARCH TO THE NEEDS OF PRIVATE WELL OWNERS FOR THE PROTECTION OF PUBLIC HEALTH
	MODERATOR: AMY KEYWORTH, NC DEPARTMENT OF ENVIRONMENTAL QUALITY SESSION DESCRIPTION COMING SOON!
Rоом 4	Understanding the Role of Nutrient Inputs on Eutrophication and Algal Bloom Dynamics in Coastal Rivers in NC Moderator:

11:00-11:20 Role of Organic Nitrogen to Eutrophication Dynamics in the Neuse River Estuary, NC *Alexandria Hounshell, University of North Carolina-Chapel Hill*

11:20-11:40 Unraveling Dual Influences of Increasing Nutrients and Changing Flow Regimes on Bloom Potentials Along the Middle Cape Fear River Nathan Hall, University of North Carolina-Chapel Hill

11:40-12:00 How Changes in Quality and Quantity of Nitrogen Loading to the Neuse River Estuary have Affected Algal Biomass *James Bowen, University of North Carolina-Charlotte*

12:00-12:20 Environmental Factors that Contribute to the Occurrence of N_2 -Fixing Cyanobacterial Blooms and N_2 -Fixation of Diazotrophic Algae During an Algal Bloom in Pamlico River, North Carolina *Linghan Dong, University of North Carolina-Chapel Hill*

ROOM 5

PUBLIC AND ENVIRONMENTAL HEALTH: ASSESSMENT OF EXPOSURE RISKS, PRESENCE AND MANAGEMENT OPTIONS FOR MULTIPLE INFECTIOUS AND TOXIC AGENTS (PART 2)

MODERATOR:

11:00-11:20 Methods for Surveillance of Antimicrobial Resistant Bacteria in Environmental Water and Wastewater in North Carolina *Katy Brown, University of North Carolina-Chapel Hill*

11:20-11:40 Coal Combustion Resdidual (CCR) Uptake and Oxidative Stress Profiles in Fathead Minnows Following Dietary Exposure to Biofilm and Plankton Collected from a CCR-Impacted Lake *Jessica Brandt, Duke University*

11:40-12:00 Prevalence of Antibiotic-Resistant *E. coli* in North Carolina Watersheds With and Without Swine CAFOs *Elizabeth Christenson, University of North Carolina-Chapel Hill*

12:00-12:20 Season Matters When Sampling Streams for Swine Waste Disposal Impacts *Michael Mallin, University of North Carolina-Wilmington*

ROOM 6

BEFORE, DURING AND AFTER THE STORM: THE USGS AND PARTNERS' RESPONSE TO HURRICANE MATTHEW

MODERATOR: CHAD WAGNER, US GEOLOGICAL SURVEY

11:00-11:20 Riverine Flooding and Inundation Mapping

11:20-11:40 Streamgaging and Flood Forecasting

11:40-12:00 Storm Surge Monitoring

12:00-12:20 Documenting and Forecasting Coastal Change

12:20-1:30 NETWORKING LUNCH

ROOM 2



Lunch & Celebrate the Winners of the NCWRA-WRRI Student Poster Competition

1:30-3:30

PARTICIPATORY SESSIONS

ROOM 3

CONNECTING WATER RESOURCE RESEARCH TO THE NEEDS OF PRIVATE WELL OWNERS FOR THE PROTECTION OF PUBLIC HEALTH

MODERATOR: AMY KEYWORTH, NC DEPARTMENT OF ENVIRONMENTAL QUALITY

With one fourth of North Carolinians reliant on private wells, these wells play a critical role in meeting North Carolina's water resource needs. The private well community (well users, public health officials, and well water contractors) is increasingly looking for information to ensure that private well users have access to safe drinking water. This session will provide opportunities for researchers and members of the private well community to come together and discover the latest water resources research, as well as examine how research is applied or can be applied to solve immediate challenges in the private well community.

ROOM 4

FALLS LAKE AND THE UPPER NEUSE RIVER BASIN ASSOCIATION: MANY STAKEHOLDERS, MANY CHALLENGES

MODERATOR: FORREST WESTALL, UPPER NEUSE RIVER BASIN ASSOCIATION

The Upper Neuse River Basin Association (UNRBA) was formed in the mid-1990s to provide a forum for the water quality issues and concerns emerging from the new Falls of the Neuse Reservoir developed by the Army Corps of Engineers. Following a long and controversial process that lead to the reservoir's creation, the dam was completed and filling of the reservoir was initiated in the early 1980s. The eutrophication issues of the reservoir lead to legislative

actions between 2006 and 2008. These actions resulted in the development of the most restrictive and ambitious nutrient reductions requirements ever developed in North Carolina. The UNRBA changed focus in 2010-11 and in 2012 embarked on the development of a comprehensive program of monitoring, information collection and modeling that would allow a reexamination of the nutrient management strategy for Falls Lake. The UNRBA is working toward its reexamination and on September 28, 2016 convened a group of stakeholders to help guide the Association's Modeling and Regulatory Support project that will provide critical input to the development of recommended adjustments to the nutrient management strategy. In 2016, the NC Legislature, in a budget amendment, designated an evaluation process for both the Jordan and Falls Reservoirs under the direction of UNC-CH. The General Assembly also created an environmental policy "Collaboratory" which, in addition to its general charge, manage the evaluation for Falls and Jordan. The emerging and parallel efforts on nutrient management for Falls Lake creates many opportunities and challenges for collaboration on a complex water quality issue with huge public policy considerations. This session will review these interactions and the efforts of the UNRBA to capture input from many stakeholders.

ROOM 5

EFFECTIVE COMMUNICATION OF SCIENCE AND ITS IMPACTS: TOOLS AND SKILL BUILDING FOR STUDENTS, FACULTY AND THE SCIENTIFIC COMMUNITY

MODERATOR: JORY WEINTRAUB, DUKE UNIVERSITY INITIATIVE FOR SCIENCE AND SOCIETY

Funding is scarce. Anti-science rhetoric is on the rise. Policymakers often fail to grasp the research necessary to make informed decisions in the best interests of their constituents. But empirical data suggest that good science communication both empowers citizens and benefits the careers of scientists. This session is geared towards students, postdocs and faculty and will explore the empirical benefits of communicating science and address practical skills for effective communication and demonstrating the broader impacts of research through hands-on, interactive exercises.

ROOM 6

TURNING DIFFICULT CONVERSATIONS INTO LEARNING CONVERSATIONS

MODERATOR: MARY LOU ADDOR, NATURAL RESOURCES LEADERSHIP INSTITUTE AND CHRISTY PERRIN, NC WATER RESOURCES RESEARCH INSTITUTE/NC WATERSHED STEWARDSHIP NETWORK

SESSION DESCRIPTION COMING SOON!

3:30 CONFERENCE ADJOURNS

REGISTRATION DESK

Sign up for PDH credits

ROOM 1D

Come by Room 1D after your participatory session ends



Drop your nametag & turn in your conference evaluations at the door to enter a drawing for a free 2018 conference registration

See results and highlights from the conference

Celebrate award winners

Take some coffee for the road