ARKANSAS WATER RESOURCES CENTER

# Meeting Arkansas's Water Needs Now and Into the Future

JULY 21 & 22, 2015

AWRC Annual Conference University of Arkansas Global Campus

# WELCOME TO THE 2015 ANNUAL WATERSHED & RESEARCH CONFERENCE

Dr. Brian Haggard, Professor & Director Erin Scott, Program Manager

#### 2015 TECHNICAL ADVISORY COMMITTEE

Bob Caulk - Beaver Watershed Alliance

Sandra Chandler - Arkansas Geological Survey

Nathan Wentz - ADEQ

Randy Easley - Central Arkansas Water

Michelle Evans-White - University of Arkansas

Jerry Farris - Arkansas State University

Reed Green - US Geological Survey

Tim Kresse - US Geological Survey

Hal Liechty - University of Arkansas Monticello

Bob Morgan - Beaver Water District

Tony Ramick - ANRC

Michele Reba - USDA-ARS

Andrew Sharpley - UA Division of Agriculture

Tim Snell - The Nature Conservancy

Evan Teague - Arkansas Farm Bureau

Billy Ammons - CH2M HILL OMI

Darcia Routh - ADH

We appreciate your service!

## Tuesday July 21

#### 7:30 am

Check-in, Coffee, Juice, Pastries

#### 9:00 am

Conference Welcome & Introduction **Brian Haggard**, *AWRC Director*, *UA Dept. of Biological and Agricultural Engineering* 

#### 9:05 am

Implementing the Updated Water Plan **Edward Swaim**, Arkansas Natural Resources Commission

Session 1: Animal Manure and the Land-Water Interface - 20 Years Later

#### 9:50 am

Reducing Nutrient Runoff Using Litter Incorporation Dan Pote, USDA-ARS

#### 10:10 am

Long-term Effects of Alum Applications to Poultry Litter on Phosphorus Runoff and Leaching

Philip Moore, USDA-ARS

#### 10:30 am

Modeling Phosphorus Runoff to Test the Phosphorus Index

Peter Kleinman, USDA-ARS

Session 1 continues on next page

#### Session 1 Continued

#### 10:50 am

Science for the People: Big Creek Monitoring - One Year On **Andrew Sharpley**, *UA Dept. of Crop, Soil and Environmental Sciences* 

#### 11:10 am

Recent Efforts in Fecal Source Tracking: Do We Know More Now than 10 Years Ago?

Kristen Gibson, UA Dept. of Food Science

Lunch & Poster Session

#### 11:30 am Lunch Provided

#### 12:30 pm

Poster Session Presenters should chaperone their posters.



## Networking Lunch sponsored by





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#### **STUDENT POSTER SESSION**

Measuring and Modeling Net Photosynthesis of Three Rice Genotypes Based on their Photosynthetic Response to Light, CO2 and Temperature

**Student** Daniel Bereznyakov, Univ. of Massachusetts Amherst

Advisor Dr. Kusum Naithani

Relationship Between Ozark Stream Phosphorus Concentration and Macroinvertebrate Taxonomic Composition

Student Isamar Cortes, Montclair State Univ.

Advisor Dr. Michelle Evans-White

High Activity and Rapid Growth of Regina grahamii in a Highly Seasonal Environment

**Student** Jessika Dorcas, Elon Univ. **Advisor** Dr. John D. Wilson

Methane Emission Inventory at the University of Arkansas

**Students** Sierra Matlock and William Woodward, Purdue Univ.

Advisor Mr. Erik Pollock

The Difference in Methane Output in Correlation to Water Quality Over a Conventionally Flooded and Alternative Wetting and Drying Rice Fields

**Student** Tyler Fletcher, Connors State College **Advisor** Dr. Benjamin Runkle

#### Using Electrodialysis for the Purification of Swine Wastewater used in Growing *Porphyridium cruentum*

Students Emily Gottberg, Clemson Univ. and Jessica Vaden, Univ. of Maryland Baltimore County Advisor Dr. James Hestekin

#### Effects of Summer Drought on Smallmouth Bass Relative Weight, Diets and Growth Potential in Ozark Streams

**Student** Brin Kessinger, Ohio State Univ. **Advisor** Dr. Dan Magoulick

Water Column Anaerobic Ammonium Oxidation in a Thermally Stratified Reservoir (Lake Fayetteville) Student Deanna Mantooth, Univ. of Arkansas

Advisor Dr. Thad Scott

Heterocyte Densities as Proxies for Nitrogen Fixation in Ozark Lakes Student Sarah Hallett, Univ. of Arkansas

Water Quality Testing and Sampling Along the West Fork of the White River Student Haley McLaughlin, Univ. of Arkansas

**Advisor** Dr. Brian Haggard

Advisor Dr. Thad Scott

Effect of Heavy Metals in Karst Systems Student Asher Sampong, Univ. of Arkansas Advisor Dr. Steve Boss

Poster session continues on next page

#### **STUDENT POSTER SESSION**

Different Sources of Methane Emissions in Conventional and Alternate Wetting and Drying Rice Fields

**Student** Dustyn Perkins, Univ. of Arkansas **Advisor** Dr. Benjamin Runkle

Acidothermus cellulolyticus and Streptomyces Growth and Enzyme Behavior in the Presence of Lignin

**Student** Jasmine Phan, Carroll College **Advisor** Dr. Ravi Barabote

Do Herbivorous Fish Densities (*Campostoma* spp.) Relate Positively with Ozark Stream Nutrient Concentrations?

**Student** Amber Roberts, Westville High School **Advisor** Dr. Michelle Evans-White

The Effects of Winter Cover Crops on Tomato Yield and Performance in an Organic High Tunnel Environment

**Student** Bailey Smith, Univ. of Arkansas **Advisor** Dr. Curt Rom

Climate Effect on Resistance to Fire Blight Among Apple Varieties Grown in the Northwest Arkansas Region

**Student** Khoa Hoang Thai, Univ. of Arkansas **Advisor** Dr. Curt Rom and Julia Stover

Crayfish Size in Relation to Substrate Size in the White River Drainage System

**Student** Bailey Stein, Eckerd College **Advisor** Dr. Dan Magoulick

Stream Algal Biomass Across a Gradient of Agricultural and Unconventional Natural Gas Wells

**Student** Hannah Verkamp, Univ. of Arkansas **Advisor** Dr. Michelle Evans-White

Influence of Flow Regime on Algal Growth and Physicochemical Attributes in Forested Ozark Streams Student Delaney Hall. Univ. of Arkansas

Advisor Dr. Michelle Evans-White

#### **FACULTY POSTER**

Cattle Diet Effects on Nutrient Concentrations in Runoff from Fecal Patches

Presenter Dr. Dirk Philipp, Univ. of Arkansas

Poster Session sponsored by



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### Tuesday July 21

Session 2: Agricultural Water Management in the Delta

#### 1:30 pm

Irrigation Water Management in the Delta: the State of the Industry **Chris Henry**, *UA Dept. of Biological and Agricultural Engineering* 

#### 1:45 pm

USDA-ARS Long-Term Agroecosystem Research Network: A New Initiative for Long-Term Monitoring, Research, and Collaboration...

JR Rigby, USDA-ARS

#### 2:00 pm

To On-Farm Reservoir or Not To On-Farm Reservoir: an Economist's Perspective

**Kent Kovacs,** UA Dept. of Agricultural Economics

#### 2:15 pm

Erosion of Irrigation Reservoir Levees **Daniel Wren,** *USDA-ARS* 

#### 2:30 pm

Nutrient Mitigation Potential in Vegetated Ditches: Experimental Exploration of Mechanisms and Caveats **Jason Taylor**, *USDA-ARS* 

#### 2:45 pm

Nutrient Losses from Row Crop Production in Arkansas **Mike Daniels,** *UA Dept. of Crop, Soil and Environmental Sciences* 

#### 3:00 pm Networking Break

Networking Break sponsored by

Water Monitoring Solutions



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## Tuesday July 21

Session 3: Emerging Research by Students Funded through the USGS 104B Program

#### 3:30 - 5:00 pm

Arkansas Climate Diversity **Megan Land**, ASU Dept. of Civil Engineering

Relationship between Sediment Oxygen Uptake Rate and Sediment Oxygen Demand

**Adrian Beirise,** UA Dept. of Biological and Agricultural Engineering

Physical and Chemical Predictors of Human Perceptions of Water Quality in Five Southwestern Ozark Rivers **Amie O. West,** *UA Environmental Dynamics Program* 

The Impact of Organic Matter on the Evolution of Water Chemistry and Biomass Production in Epikarst Springs of Newton County, AR **Victor L. Roland II**, *UA Environmental Dynamics Program* 

Influence of Selected Integrase and Mobilization Genes on the Persistence of Trimethoprim and Sulfamethoxazole Resistant *Escherischi coli* 

**Suhartono**, UA Dept. of Crop, Soil and Environmental Sciences

Use of Coliphage and Enteric Viruses for Fecal Source Tracking in 303 (d) Streams in the Illinois River Watershed **Jay M. Jackson**, *UA Dept. of Food Science* 

A Comparison of Four Nucleic Acid Extraction Methods from Environmental Samples through Next Generation Sequencing Connie Moloney, *UA Dept. of Civil* Engineering

## 6:30 pm Social at Marley's Pizzeria

Sponsored by



Located at 609 W. Dickson St.

## Wednesday July 22

#### 7:30 am

Check-in, Coffee, Juice, Pastries

Session 4: Urban Stormwater Management I

#### 8:15 am

What if We Don't Maintain It? Long-Term Clogging and Cleaning Method Assessment for Pervious Concrete **Jason Vogel**, OSU Dept. of Biosystems and Agricultural Engineering

#### 8:35 am

Municipal Implementation of Runoff Reduction Assessment in Tennessee **Andrea Ludwig,** *Univ. of TN Dept. of Biosystems Engineering and Soil Science* 

#### 8:55 am

White Oak Bayou Management in an Urbanizing Watershed **Greg Phillips**, *GBMc and Associates* 

#### 9:15 am

Stream Restoration and Streambank Stabilization, Upper Prairie Creek Watershed, Rogers, Arkansas **Kale Farmer**, FTN Associates

#### 9:35 am Networking Break

## Networking Break sponsored by



#### Session 5: Urban Stormwater Management II

10:00 am
An Evaluation of the Northwest Arkansas
Rain Garden Project
Brad Hufhines, Beaver Water District

10:20 am Capturing the Flow through Stakeholder Engagement

**Katie Teague**, *UA System Division of Agriculture Cooperative Extension Service* 

10:40 am
Reduction of Sediment and Nutrient
Transport through Stream Restoration
Projects on Mullins and Niokaska Creeks
Matthew VanEps, Watershed Conservation
Resource Center

11:00 am Why an Inspector Certification? Max Sestili, City of Hot Springs

#### 11:30 am Lunch Provided

Construction Site Inspection Training and Certification Course

#### 1:00 pm

BMP Design, Application and Inspection for Construction Sites

**Jessica Johnson**, City of Hot Springs Opportunity for CEU's (continuing education units)

4:30 pm Certification Exam (optional)

5:00 pm Conference Adjourns

## Networking Lunch sponsored by



Thank you for attending!

#### Thank You Moderators!

Philip Moore philip.moore@ars.usda.gov

Michele Reba michele.reba@ars.usda.gov

Tim Kresse tkresse@usgs.gov

Janet Paith jpaith@bentonvillar.com

Katie Teague kteague@uaex.edu

If you have any questions regarding the conference sessions, please feel free to contact the session moderators at the email provided.

# 17th Annual EPA Region 6 Stormwater Conference



**What:** 17th Annual EPA Region 6

Stormwater Conference

**When:** October 18-22, 2015

Where: Hot Springs Convention

Center, 134 Convention Blvd, Hot Springs, AR

**Why:** To address topics like managing municipal stormwater, LID, TMDL's,

BMP's, and new rules and regulations throughout the

region.

## Thank You Speakers!

Edward Swaim edward.swaim@arkansas.gov

Dan Pote dan.pote@ars.usda.gov

Suhartono suhart@uark.edu Jay M. Jackson jmj021@uark.edu

Peter Kleinman peter.kleinman@ars.usda.gov Andrew Sharpley sharpley@uark.edu

Connie Moloney cmoloney@uark.edu

Jason Vogel jason.vogel@okstate.edu

Philip Moore philip.moore@ars.usda.gov

Kristen Gibson kegoo5@uark.edu Andrea Ludwig aludwig@utk.edu

Greg Phillips
gphillips@gbmcassoc.com

Chris Henry cghenry@uark.edu

JR Rigby jr.rigby@ars.usda.gov

Kale Farmer

Brad Hufhines bhufhines@bwdh20.org

Daniel Wren daniel.wren@ars.usda.gov

Kent Kovacs kkovacs@uark.edu Matthew VanEps vaneps@watershedconservation.org

Jason Taylor jason.taylor@ars.usda.gov Mike Daniels mdaniels@uaex.edu

Katie Teague kteague@uaex.edu

Max Sestili

msestili@cityhs.net

If you have any questions regarding the conference presentations, please feel free to contact the speakers at the email provided.

Megan Land megan.land@smail.astate.edu Adrian Beirise abeirise@uark.edu

Jessica Johnson jjohnson@cityhs.net

Victor L. Roland II vlroland@uark.edu

Amie O. West aowest@uark.edu

## Thank You Sponsors!







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# Where to Go

#### **UA Global Campus**

2 E Center St. Fayetteville, AR 72701

#### The Chancellor Hotel and Parking

70 N East Ave. Fayetteville, AR 72701

#### Marley's Pizzeria

609 W. Dickson St. #103 Fayetteville, AR 72701



#### **Arkansas Water Resources Center**

203 Engineering Hall University of Arkansas Fayetteville, Ark. 72703

arkansas-water-center.uark.edu