

# Whitney Alyson Lisenbee, EIT and PEO Scholar

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## EDUCATION

### University of Tennessee-Knoxville

Ph.D. in Civil and Environmental Engineering, Water Resources Concentration

May 2020, GPA: 3.92/4.0

Advisor: Dr. Jon Hathaway, Ph.D., P.E.

Associate Professor, Goodpasture Endowed Faculty, NSF Career Awardee

*Dissertation: A study of DRAINMOD-Urban for enhanced bioretention cell modeling*

### Oklahoma State University

M.S. in Biosystems and Agricultural Engineering, Environmental & Natural Resources Concentration

May 2016, GPA: 3.88/4.0

Advisor: Dr. Garey A. Fox, Ph.D., P.E.

Department Head, Biological and Agricultural Engineering, N.C. State University

*Thesis: Comparison of water quality and quantity in Eastern Redcedar-encroached woodland and native tallgrass prairie watersheds: A monitoring and modeling study*

B.S. in Biosystems and Agricultural Engineering, Honors Degree, Spanish Minor

May 2014, Magna Cum Laude, GPA: 3.81/4.0

## ACADEMIC POSITIONS

2020-present: Postdoctoral Scholar, Pennsylvania State University, University Park, PA

Dr. Jason Kaye, Ph.D., Professor

Evaluated nutrient flows across multiple scales in the Chesapeake Bay region using SWAT for sustainable agriculture scenarios

2020: Research Specialist, University of Tennessee, Knoxville, TN

Dr. Jon Hathaway, Ph.D., P.E., Associate Professor

Conducted sensitivity analysis of DRAINMOD-Urban and SWMM for bioretention cell modeling and examined accuracy of soil parameters

2016-20: Graduate Research Assistant, University of Tennessee, Knoxville, TN

Dr. Jon Hathaway, Ph.D., P.E., Associate Professor

Modeled and analyzed hydrology of bioretention cells using a new model, DRAINMOD-Urban, as compared to SWMM

2014-16: Graduate Research Assistant, Oklahoma State University, Stillwater, OK

Dr. Garey A. Fox, Ph.D., P.E., Professor and Buchanan Chair

Developed experimental plan, implemented monitoring system, and analyzed data for multidisciplinary research of the effects of Eastern redcedar removal on water quality

- 2012: Niblack Research Scholar, Oklahoma State University, Stillwater, OK  
One of 12 students selected to receive a research scholarship to determine the effects of vegetation on streambank stability and soil erodibility
- 2011: Wentz Research Scholar, Oklahoma State University, Stillwater, OK  
One of 40 students to receive a research scholarship to evaluate plant growth in a new lightweight green roof media
- 2011: Undergraduate Research Assistant, Oklahoma State University, Stillwater, OK  
Tested material densities and water retention to determine a lightweight experimental green roof material

## RESEARCH INTERESTS

My research interests include land use changes and other human impacts on hydrodynamic systems, water availability, sustainability, urban hydrology, water quality, stormwater mitigation, low impact development, and food-energy-water nexus.

## GRANTS

Rainfall Interception by Urban Trees. J.M. Hathaway and **W.A. Lisenbee**. 5/17 – 9/18. U.S. Forest Service. \$24,960.

## PUBLICATIONS- (3 peer-reviewed, 2 conference proceedings, 1 in preparation)

ORCID id: 0000-0002-2895-5074

1. *In Preparation, Environmental Modelling and Software- Lisenbee, W.A., J. Hathaway, M. Smith and T. Fletcher (2020). Modeling Bioretention Stormwater Systems: A Review of Current Models and Research Needs.*
2. *In Preparation-Lisenbee, W.A., and J. Hathaway (2020). Comparison of DRAINMOD-Urban to the SWMM-LID Module for Bioretention Modeling.*
3. *In Preparation- Lisenbee, W.A., and J. Hathaway (2020). Pedotransfer Functions for Estimating Soil Parameters in Bioretention Modeling: A Sensitivity Study.*
4. **Lisenbee, W.A., J. Hathaway, L. Negm, M. Youssef and R. Winston (2020). Enhanced Bioretention Cell Modeling with DRAINMOD-Urban: Moving from Water Balances to Hydrograph Production. *Journal of Hydrology*, 582 (124491), doi: 10.1016/j.jhydrol.2019.124491**
5. **Lisenbee W., Hathaway J., Winston R. (2019) Promoting Successful Urban Watershed Restoration Through Enhanced Bioretention Cell Modelling. In: Mannina G. (eds) New Trends in Urban Drainage Modelling. UDM 2018. Green Energy and Technology. Springer, Cham doi: 10.1007/978-3-319-99867-1\_47**
6. Young, B.N., J.M. Hathaway, **W.A. Lisenbee**, and Q. He. (2018) Assessing the Runoff Reduction Potential of Highway Swales and WinSLAMM as a Predictive Tool. *Sustainability*, 10, 2871; doi:10.3390/su1008287

7. **Lisenbee, W.A.**, G.A. Fox, A.A. Saenz, and R.B. Miller. (2017) Comparison of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters for Varying Land Cover. *Transactions of the ASABE*, 60(1), 173-184. doi: 10.13031/trans.12012
8. **Lisenbee, W.A.**, G.A. Fox, C. Zou, D.E. Storm, C. Penn, E. Stebler, and A. Mittelstet. (2015) Predicted influence of Eastern Redcedar removal on water quantity and quality ASABE Paper No. 152176482. St. Joseph, Mich: ASABE Conference Proceedings

**ORAL PRESENTATIONS- (International: 1, National: 10, Regional: 5)- Presenter listed first**

1. **Lisenbee, W.A.**, and J. Hathaway. July 20-24, 2020. The Role of Estimated Soil Parameters on Bioretention Modeling: A Sensitivity Study. American Society of Civil Engineering (ASCE) International Low Impact Development Conference, Virtual Online.
2. R. Winston, **Lisenbee, W.A.**, J. Hathaway, L. Negm and M. Youssef. July 1-5, 2019. Enhanced Bioretention Cell Modeling: Moving from Water Balances to Hydrograph Production. Novatech 10<sup>th</sup> International Conference, Lyon, France.
3. **Lisenbee, W.A.**, J. Hathaway, R. Winston, L. Negm and M. Youssef. June 3-6, 2019. Enhanced Bioretention Cell Modeling: Moving from Water Balances to Hydrograph Production. 19<sup>th</sup> Annual Meeting of the American Ecological Engineering Society (AEES), Asheville, NC.
4. **Lisenbee, W.A.**, J. Hathaway, R. Winston, L. Negm and M. Youssef. May 19-23, 2019. Enhanced Bioretention Cell Modeling: Moving from Water Balances to Hydrograph Production. American Society of Civil Engineering (ASCE) World Environmental and Water Resources Congress, Pittsburgh, PA.
5. **Lisenbee, W.A.**, J. Hathaway, R. Winston, M. Youssef and L. Negm. August 12-15, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. American Society of Civil Engineering (ASCE) International Low Impact Development Conference, Nashville, TN.
6. **Lisenbee, W.A.**, J. Hathaway, and R. Winston. June 12-14, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. 18<sup>th</sup> Annual Meeting of the American Ecological Engineering Society (AEES), Houston, TX.
7. **Lisenbee, W.A.**, J. Hathaway, and R. Winston. April 11-13, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. Tennessee Water Resources Symposium (TWRS), Montgomery Bell State Park, TN.
8. **Lisenbee, W.A.**, A. Tirpak, and J. Hathaway, October 16-19, 2017. Advances in Bioretention: Suspended Pavement Systems and Future Directions for DRAINMOD Modeling. Tennessee Stormwater Association (TNSA) Annual Conference, Falls Creek Falls State Park, TN.
9. **Lisenbee, W.A.**, A. Tirpak, and J. Hathaway, July 16-19, 2017. Advances in Bioretention: Suspended Pavement Systems and Future Directions for DRAINMOD Modeling. ASABE Annual International Meeting, Spokane, WA.
10. **Lisenbee, W.A.**, G.A. Fox, and R.B. Miller, July 17-20, 2016. Comparison of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters for Varying Land Cover. ASABE Annual International Meeting, Orlando, FL.
11. **Lisenbee, W.A.**, G.A. Fox, and R.B. Miller, March 24-25, 2016. Comparison of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters for Varying Land Cover. Student Water Conference, Oklahoma State University, Stillwater, OK.

12. **Lisenbee, W.A.**, G.A. Fox, C. Zou, D.E. Storm, C.J. Penn, E. Stebler, and A. Mittelstet. July 26-29, 2015. Predicted Influence of Red Cedar Removal on Water Quantity and Quality Using WEPP. ASABE Annual International Meeting, New Orleans, LA.
13. **Lisenbee, W.A.**, G.A. Fox, C. Zou, D.E. Storm, C.J. Penn, E. Stebler, and A. Mittelstet. June 3-5, 2015. Predicted Influence of Red Cedar Removal on Water Quantity and Quality Using WEPP. American Ecological Engineering Society (AEES) Annual Meeting, Stillwater, OK.
14. **Lisenbee, W.A.**, G.A. Fox, C. Zou, D.E. Storm, C.J. Penn, E. Stebler, and A. Mittelstet. March 25-27, 2015. Predicted Influence of Red Cedar Removal on Water Quantity and Quality Using WEPP. Student Water Conference, Oklahoma State University, Stillwater, OK.
15. **Lisenbee, W.A.**, July 13-16, 2014. The Effects of Vegetation on Stream Bank Stability and Soil Erodibility. ASABE Annual International Meeting, Montreal, QB, CA.
16. Fox, G.A., A. Khanal, and **W. Lisenbee**. June 5, 2014. Quantification of the Impact of Plant Roots on the Erodibility of Cohesive Soils. ASCE-EWRI World Environmental and Water Resources Congress, Portland, OR.
17. **Lisenbee, W.A.**, February 19, 2013. The Effects of Vegetation on Stream Bank Stability and Soil Erodibility. Oklahoma State University Research Symposium, Stillwater, OK.

**POSTER PRESENTATIONS- (International: 1, National: 4, Regional: 9)**

1. Lisenbee, W.A., J. Hathaway, R. Winston, M. Youssef and L. Negm. September 23-26, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. 11<sup>th</sup> International Conference on Urban Drainage Modelling, Palermo, Italy.
2. Lisenbee, W.A., and J. Hathaway. July 29-August 1, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) 2018 Biennial Colloquium, Shepherdstown, WV.
3. Lisenbee, W.A. and J. Hathaway, March 1, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. Women in STEM Research Symposium, Knoxville, TN.
4. Lisenbee, W.A. and J. Hathaway, January 22-23, 2018. Promoting Successful Urban Watershed Restoration through Enhanced Bioretention Cell Modeling. GEM-ASEE Doctoral Engineering Research Showcase, Washington, D.C.
5. Lisenbee, W.A., G.A. Fox, A.A. Saenz, and R.B. Miller, June 7-9, 2016. Comparison of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters for Varying Land Cover. American Ecological Engineering Society (AEES) Annual Meeting, Knoxville, TN.
6. Lisenbee, W.A., G.A. Fox, and R.B. Miller, March 29-30, 2016. Evaluation of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters in Forests and Grasslands. Oklahoma Clean Lakes and Watersheds Association (OCLWA), Stillwater, OK.
7. Lisenbee, W., G.A. Fox, and R.B. Miller. December 3, 2015. Evaluation of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters in Forests and Grasslands. Oklahoma NSF EPSCoR 2015 Annual State Conference, Norman, OK.

8. Lisenbee, W.A., G.A. Fox, and R.B. Miller, December 1, 2015. Evaluation of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters in Forests and Grasslands. 36th Annual Oklahoma Governor's Water Conference and Research Symposium, Norman, OK.
9. Lisenbee, W.A., G.A. Fox, C. Zou, D.E. Storm, C.J. Penn, E. Stebler, and A. Mittelstet. April 8-9, 2015. Predicted Influence of Red Cedar Removal on Water Quantity and Quality using WEPP. Oklahoma Clean Lakes and Watersheds Association (OCLWA), Stillwater, OK.
10. Lisenbee, W.A., April 2-3, 2014. Designing an Alum Microfloc Curtain for Water Treatment in Lake Wister. Oklahoma Clean Lakes and Watersheds Association (OCLWA), Stillwater, OK.
11. Lisenbee, W.A., July 21-24, 2013. The Effects of Vegetation on Stream Bank Stability and Soil Erodibility. ASABE Annual International Meeting, Kansas City, MO.
12. Lisenbee, W.A., April 4-5, 2013. The Effects of Vegetation on Stream Bank Stability and Soil Erodibility. Student Water Conference, Oklahoma State University, Stillwater, OK.
13. Lisenbee, W.A., April 18-19, 2013. The Effects of Vegetation on Stream Bank Stability and Soil Erodibility. Oklahoma Clean Lakes and Watersheds Association (OCLWA), Stillwater, OK.
14. Lisenbee, W.A., November 13-14, 2012. Plant Growth in Light Weight Green Roof Media. 33rd Annual Oklahoma Governor's Water Conference and Research Symposium, Tulsa, OK.

## TEACHING EXPERIENCE

- Fall 2017-19: Teaching Assistant, University of Tennessee, Knoxville, TN  
 Dr. Jon Hathaway, Ph.D., P.E., Associate Professor  
 CE 391: Water Resources Engineering I  
 Taught three lectures covering hydrology material and organized a weekly review session
- Spring 2017: UT-CIRTL Associate Level Certification in Teaching and Learning  
 Attended a two-day workshop to learn about methods for "Facilitating Undergraduate Evidence-Based Learning" hosted by the University of Tennessee Center for the Integration of Research, Teaching and Learning (UT-CIRTL)
- Spring 2017: Teaching Assistant, University of Tennessee, Knoxville, TN  
 Dr. Jennifer Retherford, Ph.D., Lecturer  
 CE 205: Professional Development I  
 Attended lectures to help with in-class exercises, graded participation assignments as well as formatting and references of technical papers
- Fall 2015: Teaching Assistant, Oklahoma State University, Stillwater, OK  
 Dr. Glenn Brown, Ph.D., P.E., Regent's Professor  
 ENSC 3233: Fluid Mechanics  
 Taught discussion section weekly for 25 students from a class of 250 students, graded weekly homework, quizzes and tests, & held weekly tutoring sessions
- Fall 2013: Teaching Assistant, Oklahoma State University, Stillwater, OK  
 Dr. Garey A. Fox, Ph.D., P.E., Professor and Buchanan Chair  
 BAE 1012: Introduction to Biosystems Engineering  
 Managed classroom activities, graded assignments and held weekly tutoring sessions to prepare students for an engineering degree

Fall 2012: Success Coaching for the Academic Excellence Center, OSU, Stillwater, OK  
Mentored freshmen in an Introduction to Engineering class to introduce them to resources at Oklahoma State University (OSU) such as tutoring, student organizations, and research

## MENTORING

2020 Mariah Yau, *Research Experience for Seniors program*- Agricultural field-scale SWAT modeling  
 2020 Luis Alonso Aguirre Soto, *Clean Water Science Network mentoring program*  
 2018 Danielle Ursprung, *Undergraduate Research Assistant*- Rain garden outreach project to enhance environmental literacy and STEM education in area high schools  
 2017-18 Sierra Sims, *Undergraduate Research Assistant*- Quantifying the contributions of urban trees to stormwater management by monitoring rainfall interception

## PROFESSIONAL EXPERIENCE

2014-16: Support Assistant, Oklahoma Water Resources Center, Stillwater, OK  
Organized materials for conferences, constructed and reviewed newsletters and social media content, and promoted preservation of water resources in Oklahoma  
 2014: Pilot Plant Intern at City of Tulsa AB Jewell Water Treatment Plant, Tulsa, OK  
Managed an ongoing project by sampling, testing, and monitoring the pilot plant  
 2012: Environmental Intern at Chesapeake Energy Corporation, Oklahoma City, OK  
Implemented a new online waste management database, visited field operating sites, & communicated with personnel in the field locations

## AWARDS AND HONORS

2019: 2<sup>nd</sup> Place Student Poster: UT 7<sup>th</sup> Annual Watershed Symposium  
 2018: P.E.O. Scholar Award: 1 of 100 chosen from 741 nominees for a prestigious national award for women in Ph.D. programs dedicated to making significant contributions to their respective fields of study and providing support and encouragement to other women  
 2016: Chancellor's Fellowship: Department of Civil and Environmental Engineering, UT-Knoxville 4-year scholarship in addition to assistantship  
 2016: 3<sup>rd</sup> Place Paper: Boyd-Scott Graduate Student Paper Award, American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting  
 2014: OSU Alumni Association's Senior of Significance: top 40 seniors  
 2014: OSU College of Agricultural Sciences and Natural Resources Senior of Distinction: top 10 senior  
 2014: 1<sup>st</sup> Place Paper: Kenneth K. Barnes Undergraduate Student Paper Award, ASABE Annual International Meeting  
 2014: 1st Place in Student Poster: Oklahoma Clean Lakes and Watershed Association (OCLWA) Conference  
 2014: 2<sup>nd</sup> Place in Design Competition: ASABE G.B. Gunlogson Fountain Wars as Cowboy Waterworks Team President  
 2013: 2<sup>nd</sup> Place in Student Poster: OCLWA Conference

- 2013: 3<sup>rd</sup> Place in Design Competition: ASABE G.B. Gunlogson Fountain Wars as Cowboy Waterworks Team Member
- 2013: 1<sup>st</sup> Place Paper: Physical Sciences & Technology Undergraduate Competition, OSU 24<sup>th</sup> Annual Research Symposium

## **OUTREACH**

- 2019 North Knox County Library Rain Garden Installation  
Designed and installed rain garden demonstration at local library with Hydrolunteers
- 2017-18 Baker Creek Water Quality Project  
Volunteered to assist with field stream water quality sampling demonstrations for elementary and middle-school students
- 2016-19 NSF Career Award Rain Garden Project in Knoxville High Schools  
Lead outreach project at four Knoxville high schools by teaching lessons on rain gardens and installing monitoring equipment for students to lead their own research projects
- 2016-19 Adopted Second Creek Cleanups  
Organized regular stream cleanups for Hydrolunteers student group
- 2017-19 Keep Knoxville Beautiful River Rescue Stream Cleanup  
Organized Hydrolunteers student team to take part in a local stream cleanup event
- 2015 National FFA Convention and Expo- Invited by ASABE national headquarters to represent Soil and Water Engineering  
Participated in recruiting activities and demonstrated stream engineering and restoration using the OSU Stream Trailer to approximately 5000 high school students and educators
- 2015 Kansas State Jet Erosion Test (JET) Workshop  
Performed test demonstrations of the Jet Erosion Test at workshop for Kansas State University, Biosystems and Agricultural Engineering Graduate Program, June 8-9, 2015, Manhattan, KS.
- 2014-16 Oklahoma EPSCOR Women in Science Conference-OSU BAE Recruiter  
Recruited female middle-school students to the Biosystems and Agricultural Engineering (BAE) department at OSU with a liquid nitrogen ice cream demonstration

## **COMMUNITY AND CAMPUS INVOLVEMENT (*Leadership Positions*)**

- 2016-present Hydrolunteers (Environmental Student Group)  
2018-20: *Vice President*  
2016-18: *Volunteer Coordinator*
- 2014-2019 Future City Middle School Design Competition-  
2018-19: *Competition Judge*  
2017: *Team Mentor*  
2014-16: *Competition Judge*
- 2014-16 Biosystems and Agricultural Engineering Graduate Student Association (BAEGSA)  
2015-16: *Social Chair*  
2014-15: *Graduate Student Government Representative*
- 2013-14 Engineering Freshman Mentor

- 2012-14 Cowboy Waterworks (Student Design Team)  
 2014-15: *Graduate Advisor*  
 2013-14: *President, 2<sup>nd</sup> Place in ASABE Fountain Wars Competition*  
 2012-13: *3<sup>rd</sup> Place in ASABE Fountain Wars Competition*
- 2012-14 Biosystems & Agricultural Engineering Ambassador  
 2010-14 Delta Delta Delta  
 2013-14: *Reference Chairman*  
 2012-13: *Academic Development Chairman*  
 2012-13: *Standards Committee*  
 2011-12: *Risk Management Chairman*
- 2010-14 American Society Agricultural & Biological Engineers Student Chapter  
 2007-14 American Cancer Society's Relay for Life  
 2007-14: *Committee Member*  
 2012-14: *Luminaria Committee Chair*  
 2010-11: *Residential Life Recruitment Chair*

## **SKILLS**

Language: Intermediate proficiency in Spanish

Computer: ArcGIS, DRAINMOD, HEC-HMS, MiniTab, Python, SAS, SWMM, VBA, WEPP

Reviewer: Journal of Hydrology

## **PROFESSIONAL AND HONOR SOCIETIES**

American Society of Agricultural and Biological Engineers (ASABE)

-Committee member for NRES 21-Hydrology and NRES 25-Streams, Reservoirs and Wetlands

-Oral Presentation Judge for G.B. Gunlogson Fountain Wars Design Competition

American Society of Civil Engineers (ASCE)- Environment, Water and Natural Resources (EWRI)

American Ecological Engineering Society (AEES)

American Society of Engineering Education (ASEE)

Alpha Epsilon- ASABE Honor Society

Phi Kappa Phi Honor Society

Mortar Board National College Senior Honor Society