Mark Dougherty, Ph.D., P.E.

Associate Professor
Biosystems Engineering Department
218 Corley Bldg.
Auburn University
Auburn, AL 36849-5417

Phone: (334) 844 8939 (W) **Fax**: (334) 844 3530 **E-mail:** doughmp@auburn.edu

Education

Ph.D. Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA 2004
M.S. Biological Systems Engineering, Virginia Tech, Blacksburg,VA 1995
B.S. Agricultural Engineering, Texas Tech, Lubbock, TX 1990

Professional Background

Associate Professor, Biosystems Engineering Department, Auburn University
Auburn, AL, August 2010 - present
Assistant Professor, Biosystems Engineering Department, Auburn University
Auburn, AL, August 2004 – July 2010
Research Fellow, Charles E. Via, Jr. Department of Civil & Envir. Engineering, Virginia Tech
Blacksburg, VA, September 2000 – 2004
Project Engineer, Anderson and Associates, Inc.
Blacksburg, VA, Sept. 1999 – Sept. 2000
Research Assistant, Forestry Department, Virginia Tech
Blacksburg, VA, August 1998 – August 1999
Staff Engineer, Natural Resource, Agriculture, and Engineering Service (NRAES)
Ithaca, NY, March 1995 - August 1998
Graduate Research Assistant, Biological Systems Engineering Department, Virginia Tech
Blacksburg, VA, August 1993 – March 1995
Assistant Design Engineer, Hayter Engineering, Inc.
Paris, TX, June 1990 - June 1993

Professional Focus

Sustainable development is one of the most challenging areas facing today's societies. The challenge is to strike a balance between a sustainable environment and an acceptable level of economic progress. **Dougherty's** goal is to advance our awareness of the key environmental and social processes impacting conjunctive use of public water resources.

Dougherty's research interests consequently include a variety of water resources topics; engineering aspects of water quality; surveying; mapping; and geographic information systems; water quality management and source water protection using watershed-scale geographic information and field-scale investigation; environmental impact of green infrastructure; reuse of wastewater for irrigation; and reduction of erosion on steep slopes using biological, mechanical, and chemical systems; international engagement to enhance food production systems and urban water usage.

Selected Publications

[1] Laljeet, S., Lamba, J., Kumar, H., Srivastava, P., Dougherty, M., and R. Prasad. 2020. An innovative approach to rainwater harvesting for irrigation based on ENSO forecasts. Journal of Soil & Water Conservation, 75(5) 565-578. doi: 10.2489/jswc.2020.00085.

[2] LeBleu, C., Dougherty, M., Rahn, K., Wright, A., Bowen, R., Wang, R., Orjuela, J.A., and K. Britton. 2019. Quantifying thermal characteristics of stormwater through low impact development systems. Hydrology, 6(16). doi:10.3390/hydrology6010016.

[3] Rahn, K, Davis, P, and M. Dougherty. 2017. Laboratory methods examining the effects of pavement runoff. *Proceedings of the Creative Construction Conference 2017*, CCC 2017, 19-22 June 2017, Primosten, Croatia. Procedia Engineering 196 (2017) 527-534.
[4] Elias, E., Rodriquez, H. Srivastava, P. Dougherty, M., James, D., and R. Smith. 2016. Impacts of forest to urban land conversion and ENSO phase on water quality of a public water supply reservoir. *Forests*, 7(2). doi:10.3390/f7020029).
[5] Rahn, K., Hein, M., and M. Dougherty. 2015. The contribution of pavements to urban heat islands. *Proceedings of ASC 51st Annual International Conference*, April 22-25, 2015, College Station, TX.
[6] Elias, E., Laband, D., Dougherty, M., Lockaby, G., Srivastava, P., and H. Rodriguez. 2014. The Public Water Supply Protection Value of Forests: A Watershed-Scale Ecosystem Services Analysis Based upon Total Organic Carbon. *Open Journal of Ecology* 2014 v.04 no.09 pp. 517-531.
[7] Elias, E., Dougherty, M., and D. Laband. 2013. Estimating the Public Water Supply Protection Value of Forests. *J. Contemporary Water Research & Education*. Issue 152 (December).
[8] Hein, M.F., Dougherty, M., and T. Hobbs. 2013. Cleaning methods for pervious concrete pavements. *International Journal of Construction Education and Research*, 9:2, 102-116.
[9] Christian, K.J., Wright, A.N., Sibley, J.L., Brantley, E.F., Howe, J.A., and M. Dougherty. 2012. Effect of phosphorus concentration on growth of Muhlenbergia capillaris in flooded and non-flooded conditions. *J. Environ. Hort*. 30(4):219-222.
[10] He, J., Dougherty, M., and A.H. AbdelGadir. 2012. Numerical assisted assessment of vadose-zone nitrogen transport under a soil moisture controlled wastewater SDI dispersal system in a Vertisol. *Ecological Engineering*, doi: 10.1016/j.ecoleng.2012.12.048.
[11] Elias, E., Dougherty, M., Srivastava, P., and D. Laband. 2011. The impact of forest to urban land conversion on streamflow, total nitrogen, total phosphorus, and total organic carbon inputs to the Converse Reservoir, Southern Alabama, USA. *Urban Ecosystems*, doi: 10.1007/s11252-011-0198-z.
[12] Dougherty, M., Hein, M.S., Martina, B.A., and B.K. Ferguson. 2011. A quick surface infiltration test to assess maintenance needs on small pervious concrete sites. *Journal of Irrigation and Drainage Engineering* 137(8): 553-563.
[13] LeBleu, C., Dougherty, M., Brantley, E., and C. Francis. 2008. Assessing nutrient reduction in a rain garden with an internal water storage (IWS) layer In Negotiating Landscapes, Proceedings of CELA 2007: *The Council of Educators in Landscape Arch*., August 14-19, State College, PA.
[14] Dougherty, M., Dymond, R.L., Grizzard, T.J., Jr. , Godrej, A.N., Zipper, C.E., Randolph, J., and C.M. Anderson-Cook. 2006. Empirical modeling of hydrologic and NPS pollutant flux in an urbanizing basin. *J. American Water Resources Association* 42 (5) Oct 2006.
[15] Dougherty, M., Dymond, R.L., Grizzard, T., Godrej, A., Zipper, C., and J. Randolph. 2006. Quantifying long-term NPS pollutant flux in an urbanizing watershed. *J. Environmental Engineering* 132 (4), 547-554.
[16] Dougherty, M., Dymond, R.L., Goetz, S.J., Jantz, C.A., and N. Goulet. 2004. Evaluation of impervious surface estimates in a rapidly urbanizing watershed. *Photogrammetric Engineering & Remote Sensing*, 70(11):1275-1284.

Selected Honors and Awards

- **Walker Teaching Award**, College of Engineering, Auburn University, 2020
- **Dean's Award for Excellence in Instruction**, College of Agriculture, Auburn University, 2019
- **Spirit of Sustainability Award,** Auburn University, 2019
- **Certified Landscape Irrigation Designer,** Irrigation Association, 2018
- **USDA-NIFA National Water & Energy Conservation Award**, Multistate Project W-3138, 2017
- **Outstanding Faculty**, Biosystems Engineering, 2015, 2012, 2011
- **President's Outstanding Collaborative Units Award**, 2011
- **Certified Professional in Erosion and Sediment Control**, 2010
- **Alabama Professional Engineer**, 2005