

## Dominic L. Boccelli

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### EDUCATION

2003	Ph.D.	Environmental Engineering	Carnegie Mellon University
1999	M.S.	Environmental Engineering	University of Cincinnati
1994	B.S.	Environmental Engineering	Rensselaer Polytechnic Institute
1993	B.S.	Chemistry	Rensselaer Polytechnic Institute

### PROFESSIONAL EXPERIENCE

2013 – pres.	<b>Associate Professor, University of Cincinnati</b>
2015	<b>Visiting Faculty, University of Adelaide</b> (Jul – Nov; sabbatical) School of Civil, Environmental, and Mining Engineering
2007 – 2013	<b>Assistant Professor, University of Cincinnati</b> Department of Biomedical, Chemical and Environmental Engineering (formerly School of Energy, Environmental, Biological, and Medical Engineering) (formerly part of the Department of Civil and Environmental Engineering)
2012	<b>Visiting Faculty, University of Adelaide</b> (Jul – Sep) School of Civil, Environmental, and Mining Engineering
2005 – 2007	<b>Environmental Engineer, US Environmental Protection Agency</b> Water Infrastructure Protection Division National Homeland Security Research Center Office of Research and Development
2003 – 2005	<b>Postdoctoral ORISE Research Participant at the CDC</b> National Center for Environmental Health
2004 – 2005	<b>Visiting Scholar, University of Cincinnati</b> Department of Civil and Environmental Engineering
1998 – 2003	<b>Graduate Research Assistant, Carnegie Mellon University</b> Department of Civil and Environmental Engineering
1995 – 1998	<b>Graduate Research Assistant, University of Cincinnati</b> Department of Civil and Environmental Engineering
1993 – 1995	<b>Chemist/Laboratory Coordinator, National Refrigerants, Inc.</b>

### RESEARCH INTERESTS

Dr. Boccelli's primary research interests are in the areas of Water Resources, Water Quality, and Environmental Systems Analysis. His research activities focus on developing decision support tools based on fundamental principles of environmental engineering and science to assist engineers, managers, and policy makers in making technology, design, and regulatory decisions. More explicitly, these tools will incorporate various mathematical modeling and optimization techniques to attain the desired objectives. Additionally, given his academic and research experience, his research will include laboratory and field experiments, where appropriate, to develop an improved understanding

of the processes used in the decision making process. This two-pronged research philosophy has arisen from his research and experience in both Environmental Engineering and Chemistry.

## AWARDS AND HONORS

Endeavour Executive Fellowship (Australian Dept. of Education), 2015  
Master Engineering Educator (College of Engineering and Applied Science), 2014  
nominated, Impact Award, National Institutes for Water Resources for project entitled  
“Exploring Spatial and Temporal Demand Aggregation on Transport Characteristics in  
Distribution System Modeling” (nominated by the Ohio Water Resources Center), 2012  
Outstanding Reviewer, *Journal of Water Resources Planning and Management*, 2011  
nominated, Sarah Grant Barber Outstanding Advising Award (nominated by students), 2011  
NSF CAREER Workshop Travel Award, AEESP, 2009  
Professor of the Year (voted by students; Engineering Tribunal), AY 2007–2008  
Professor of the Quarter (voted by students; Engineering Tribunal), Winter 2008  
Paul P. Christiano Distinguished Service Award, 2002  
National Science Foundation Graduate Research Traineeship, 1999-2002  
Student Paper Competition - 2nd Place, ASCE-EWRI, 2001  
Student Paper Competition - 2nd Place, AWWA, OH Section Meeting, 1997  
Student Poster Competition - Finalist, AWWA, KY/TN Section Meeting, 1997  
Phalanx Inductee, in recognition of leadership, 1992  
Frank Becker Memorial Scholarship, in recognition of leadership, 1991  
Rensselaer Scholarship, 1989-1991

## PROFESSIONAL REGISTRATION

Engineer Intern, Ohio, October 1996

## RESEARCH ACTIVITIES

### PEER REVIEWED JOURNAL ARTICLES

24. Yang, X. and Boccelli, D. L. (2016). “Model-Based Event Detection for Contaminant Warning Systems.” *Journal of Water Resources Planning and Management*, ASCE, in review – revised submission.
23. Yang, X. and Boccelli, D. L. (2016). “Dynamic Water Quality Simulations for Contaminant Intrusion Events in Distribution Systems.” *Journal of Water Resources Planning and Management*, ASCE, accepted.
22. Khan, S., Han, C., Khan, H. M., Boccelli, D. L., and Dionysiou, D. D. (2015). “Sulfur-doped TiO<sub>2</sub> for Photocatalytic Degradation of Lindane under Visible and Solar Light Irradiation: Strong Enhancement Due to Peroxymonosulfate Addition.” *Chemical Engineering Journal*, in review.
21. Rana, S. M. M. and Boccelli, D. L. (2015). “Contaminant Spread Forecasting and Confirmatory Sampling Location Identification in a Water Distribution System Network.” *Journal of Water Resources Planning and Management*, under revision.

20. Chen, J. and Boccelli, D. L. (2015). “Forecasting Hourly Water Demands with Seasonal Autoregressive Models for Real-Time Application.” *Water Resources Research*, under revision.
19. Rossman, P., Boccelli, D. L., and Pressman, J. (2015). “Characterizing Variability in Ohio River NOM and Validating Reconstituted Freeze-Dried NOM as a Surrogate for its Aqueous Source.” *Journal AWWA*, under revision.
18. Khan, S., He, X., Khan, H. M., Boccelli, D. L., and Dionysiou, D. D. (2015). “Efficient Degradation of Lindane in Aqueous Solution by Iron(II) and/or UV Activated Peroxymonosulfate.” *Journal of Photochemistry and Photobiology A: Chemistry*, accepted.
17. Shah, N. S., He, X., Khan, J. A., Khan, H. M., Boccelli, D. L., and Dionysiou, D. D. (2015). “Comparative Studies of Various Iron-Mediated Oxidative Systems for the Photchemical Degradation of Endosulfan in Aqueous Solution.” *Journal of Photochemistry and Photobiology A: Chemistry*, 306(15), 80-86, doi:10.1016/j.photochem.2015.03.014.
16. Yang, X. and Boccelli, D. L. (2014). “Simulation Study to Evaluate Temporal Aggregation and Variability of Stochastic Water Demands on Distribution System Hydraulics and Transport.” *Journal of Water Resources Planning and Management*, ASCE, 140(8), doi:10.1061/(ASCE)WR.1943-5452.0000359.
15. Yang, X. and Boccelli, D. L. (2014). “A Bayesian approach for real-time probabilistic contaminant source identification.” *Journal of Water Resources Planning and Management*, ASCE, 140(8), doi:10.1061/(ASCE)WR.1943-5452.0000381.
14. Kapoor, V., DeBry, R., Boccelli, D. L., and Wendell, D. (2014). “Sequencing Human Mitochondrial Hypervariable Region II as a Molecular Fingerprint for Environmental Waters.” *Environmental Science & Technology*, 48(18), 10648-10655, doi:10.1021/es503189g.
13. Klosterman, S., Uber, J. G., Murray, R., and Boccelli, D. L. (2014). “Adsorption Model for Arsenate Transport in Corroded Iron Pipes with Application to a Simulated Intrusion in a Water Distribution Network.” *Journal of Water Resources Planning and Management*, ASCE, 140(5), 649-657 doi:10.1061/(ASCE)WR.1943-5452.0000353.
12. Arandia-Perez, E., Uber, J. G., Boccelli, D. L., Janke, R., Hartman, D., and Lee, Y. (2014). “Modeling Automatic Meter Reading Water Demands as Nonhomogenous Point Processes.” *Journal of Water Resources Planning and Management*, ASCE, 140(1), 55-64, doi:10.1061/(ASCE)WR.1943-5452.0000318.
11. Shah, N. S., He, X., Khan, H. M., Khan, J. A., O’Shea, K. E., Boccelli, D. L., and Dionysiou, D. D. (2013). “Efficient Removal of Endosulfan from Aqueous Solution by UV-C/peroxides: A Comparative Study.”, *Journal of Hazardous Materials*, 263, 584-592, doi:10.1016/j.jhazmat.2013.10.019
10. Divelbiss, D. W, Boccelli, D. L., Succop, P. A., and Oerther, D. B. (2013). “The effect of environmental health factors and household demographics on the operation and maintenance of the Biosand Filter and diarrhea health burden in rural Guatemala.” *Environmental Science & Technology*, 47(3), 1638-1645, doi:10.1021/es303624a.
9. Motamarri, S. and Boccelli, D. L. (2012). “Development of a Neural-Based Forecasting Tool to Classify Recreational Water Quality Using Fecal Indicator Organisms.” *Water Research*, 46(14), 4508-4520, doi:10.1016/j.watres.2012.05.023.

8. Boccelli, D. L., Small, M. J., and Diwekar, U. M. (2007). "Drinking Water Treatment Plant Design for Particulate Removal Incorporating Variability and Uncertainty." *Journal of Environmental Engineering*, ASCE, 133(3), 303-312.
7. Boccelli, D. L., Small, M. J., and Dzombak, D. A. (2006). "Effects of Water Quality and Model Structure on Arsenic Removal Simulation: An Optimization Study." *Environmental Engineering Science*, 23(5), 835-850.
6. Boccelli, D. L., Small, M. J., and Dzombak, D. A. (2005). "Enhanced Coagulation for Satisfying the Arsenic Maximum Contaminant Level under Variable and Uncertain Conditions." *Environmental Science & Technology*, 39(17), 6501-6507.
5. Boccelli, D. L., Small, M. J., and Diwekar, U. M. (2004). "Treatment Plant Design for Particulate Removal: Effects of Flow Rate and Particle Characteristics." *Journal American Water Works Association*, 96(11), 77-90.
4. Boccelli, D. L., Tryby, M. E., Uber, J. G., and Summers, R. S. (2003). "A Reactive Species Model for Chlorine Decay and THM Formation Under Rechlorination Conditions." *Water Research*, 37(11), 2654-2666.
3. Tryby, M. E., Boccelli, D. L., Uber, J. G., and Rossman, L. A. (2002). "A Facility Location Model for Booster Disinfection of Water Supply Networks." *Journal of Water Resources Planning and Management*, ASCE, 128(5), 312-321.
2. Tryby, M. E., Boccelli, D. L., Koechling, M. T., Uber, J. G., Summers, R. S., and Rossman, L. A. (1999). "Booster Chlorination for Managing Disinfectant Residuals." *Journal American Water Works Association*, 91(1), 95-108.
1. Boccelli, D. L., Tryby, M. E., Uber, J. G., Rossman, L. A., Zierolf, M. L., and Polycarpou, M. M. (1998). "Optimal Scheduling of Booster Disinfection in Water Distribution Systems." *Journal of Water Resources Planning and Management*, ASCE, 124(2), 99-111.

## PEER REVIEWED JOURNAL ARTICLES (under revision)

3. Rana, S. M. M. and Boccelli, D. L. (2016). “Contaminant Spread Forecasting and Confirmatory Sampling Location Identification in a Water Distribution System Network.” *Journal Water Resources Planning and Management*, under revision.
2. Chen, J. and Boccelli, D. L. (2016). “Forecasting Hourly Water Demands with Seasonal Autoregressive Models for Real-Time Application.” *Water Resources Research*, under revision.
1. Rossman, P., Boccelli, D. L., and Pressman, J. (2016). “Characterizing Variability in Ohio River NOM and Validating Reconstituted Freeze-Dried NOM as a Surrogate for its Aqueous Source.” *Journal AWWA*, under revision.

## PEER REVIEWED JOURNAL ARTICLES (in preparation – drafts)

12. Qin, T. and Boccelli, D. L. (2016). “Network Clustering Using Hydraulic Path Similarity” *Journal of Water Resources Planning and Management*, in preparation (preliminary draft).
11. Woo, H.-M., Su, Y., Boccelli, D. L., Uber, J. G., and Janke, R. (2016). “Quantitative Analysis for Tracer Study Using Dynamic Time Warping.” *Journal of Water Resources Planning and Management*, in preparation.
10. Kalbande, R., Pawlowski, C. and Boccelli, D. L. (2016). “Deterioration Modeling for Collection Systems using Probabilistic Neural Networks.” *TBD*, MS proposal defense.
9. Qin, T. and Boccelli, D. L. (2016). “Estimation of Water Demands Using an MCMC-MRF Algorithm.” *TBD*

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8. McDonnell, B., Boccelli, D. L., Jacobson, L., and Yang, Y. J. (2016). “Controlling Disinfection By-Products Within a Distribution System by Bubble Aeration Within Storage Tanks.” *Water Research*, in preparation.
  7. Su, Y., Woo, H.-M., Boccelli, D. L., Uber, J. G., and Janke, R. (2016). “Tracer Study on NKWD and Use of DDTW to Evaluate Model Behavior.” *Journal American Water Works Association*, in preparation (preliminary draft).
  6. Yang, X. and Boccelli, D. L. (2016). “An Integrated System-Wide Model-Based Event Detection Algorithm.” *Journal of Water Resources Planning and Management*, ASCE, in preparation.
  5. Tasneem, N., Boccelli, D. L., and Buffam, I. (2016). “Modeling Nutrient Dynamics Within a Green Roof” *TBD*, MS proposal defense.
  4. Wang, L. and Boccelli, D. L. (2016). “Parameter Estimation for PRP Model” *TBD*
  3. Chen, J. and Boccelli, D. L. (2016). “Real-Time Forecasting and Visualization Toolkit of Multi-Seasonal Time Series.” *Environmental Modeling and Software*, in preparation.
  2. Chen, J. and Boccelli, D. L. (2016). “Stochastic Demand-Hydraulic Model: Methodology.” *Water Resources Research*, in preparation.

1. Chen, J. and Boccelli, D. L. (2016). “Stochastic Demand-Hydraulic Model: Software Development and Application.” *Environmental Modeling and Software*, in preparation.
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## PEER REVIEWED JOURNAL ARTICLES (in preparation – drafts on hold)

5. Alexander, M. T., Wu, M.-Y., Oerther, D.B., and Boccelli, D. L. (2016). “Detection of ANAMMOX Bacteria in a Chloraminated Drinking Water Distribution System.” *Systematic and Applied Microbiology*, in preparation.
4. Alexander, M. T. and Boccelli, D. L. (2016). “An Integrated Field-Scale Assessment of Chloramine Dynamics and By-Product Formation.” *Journal American Water Works Association*, in preparation.
3. McDonnell, B. Boccelli, D. L., Fang, M., and Yang, Y. J. (2016). “Model Assessment of Aeration as a Potential Component of a THM Mitigation Strategy.” *Environmental Science & Technology*, in preparation.
2. Woo, H.-M., Uber, J. G., Boccelli, D. L., and Janke, R. (2016). “New Methodology for Pump Head-Discharge Curve Estimation using Linear Model in Water Distribution Systems.” *Journal of Water Resources Planning and Management*, in preparation.
1. Zecchin, A. C., Boccelli, D. L., and Lambert, M. F. (2016). “A Node-Based Method for the Simulation of Advective and Reactive Constituent Transport in Water Networks.” *Water Resources Research*, in preparation.

## PEER REVIEWED JOURNAL ARTICLES (to be written – internal list)

4. Boccelli, D. L. , Zecchin, A., and Simpson, A. (2016). “Site Selection for Tracer Studies.” *TBD*
3. Marchi, A., Dandy, G. A., and Boccelli, D. L. (2016). “Limitations for Real-Time Demand Estimation.” *TBD*
2. Qin, T. and Boccelli, D. L. (2016). “Application of MCMC” *TBD*
1. Wright, J. and Boccelli, D. L. (2016). “Energy Consumption in Distribution Systems” *TBD*

## PEER REVIEWED CONFERENCE PROCEEDINGS

3. Chen, J. and Boccelli, D. L. (2013). “Demand Forecasting for Water Distribution Systems.” *Proceedings, Computing and Control in the Water Industry 2013*, Perugia, Italy.
2. Qin, T. and Boccelli, D. L. (2013). “Estimating Demands with a Markov Chain Monte Carlo Approach.” *Proceedings, Computing and Control in the Water Industry 2013*, Perugia, Italy.
1. Boccelli, D. L., and Uber, J. G. (2001). “Evaluation of Multi-component Model of Chlorine Residual Dynamics in Water Distribution Systems.” *Water Software Systems: Theory and Applications, Vol. 1*, B. Ulanicki, B. Coulbeck, and J. Rance eds., *Proceedings of Computing and Control for the Water Industry*, Research Studies Press Ltd, Baldock, Hertfordshire, England.

## CONFERENCE PRESENTATIONS/PROCEEDINGS

63. Oliveira, P. J., Rana, S. M. M., Qin, T., Woo, H., Chen, J. and Boccelli, D. L. (2016). "Case Study: Evaluation of a Composite Demand-Hydraulic Modeling Framework." *2016 Water Distribution System Analysis Symposium*, Cartagena, Columbia. (submitted)
62. Marchi, A., Dandy, G. C. and Boccelli, D. L. (2016). "Limitations on Real Time Demand Estimation in Water Distribution Systems." *2016 Water Distribution System Analysis Symposium*, Cartagena, Columbia. (submitted)
61. Chen, J. and Boccelli, D. L. (2015). "A Real-Time Demand-Hydraulic Model of Water Distribution Systems." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Austin, TX.
60. Qin, T. and Boccelli, D. L. (2015). "Grouping Water Demand Nodes by Similarity Among Flow Paths in Water Distribution Systems." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Austin, TX.
59. Chen, J. and Boccelli, D. L. (2014). "Real-Time Spatially Distributed Demand Estimation." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Portland, OR.
58. Su, Y., Boccelli, D. L., Woo, H., Uber, J. G., and Janke, R. (2014). "Analyzing Tracer Test Data Using Dynamic Time Warping." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Portland, OR.
57. Yang, X. and Boccelli, D. L. (2014). "System-Wide Event Detection for Contaminant Warning Systems." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Portland, OR.
56. Arandia-Perez, E., Uber, J. G., Boccelli, D. L., Janke, R., and Lee, Y. (2013). "Real-Time Stochastic Modeling of Water Demands from Highly Disaggregated Data: A Case Study." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.
55. Francis, R. A., Boccelli, D. L., Seshasayee, B., VanBriesen, J. M., and Small, M. J. (2013). "Role of Chlorine Boosters in Seasonal Disinfection By-Product Concentrations and Speciation in a Large Urban Drinking Water Distribution System." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.
54. Chen, J. and Boccelli, D. L. (2013). "A Demand Forecasting Framework for Water Distribution Systems." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.
53. Rana, M. and Boccelli, D. L. (2013). "Contamination Spread Forecasting and Identification of Sampling Locations in a Water Distribution Network." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.
52. Qin, T. and Boccelli, D. L. (2013). "Characterizing Consumptive Demands with a Markov Chain Monte Carlo Algorithm." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.



51. Yang, X. and Boccelli, D. L. (2013). "Real Time Model-Based Event Detection: A Comprehensive Evaluation." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Cincinnati, OH.
50. McDonnell, B. E. and Boccelli, D. L. (2012). "Controlling Disinfection By-Products Within a Distribution System Through Bubble Aeration." *2012 Water Distribution System Analysis Symposium*, Adelaide, Australia.
49. Yang, X. and Boccelli, D. L. (2012). "Real-Time Event Detection: A Model-Based Approach." *2012 Water Distribution System Analysis Symposium*, Adelaide, Australia.
48. Buffam I., Townsend-Small, A., Boccelli, D. L., Russell, V., and Durtsche, R. D. (2012). "Greening the Skyline – Biogeochemical Services and Disservices Provided by Green Roof Ecosystems." *4<sup>th</sup> International EcoSummit*, Columbus, OH.
47. Yang, X. and Boccelli, D. L. (2012). "Model-Based Event Detection in Distribution Systems." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Albuquerque, NM.
46. Uber, J. G., Hatchett, S. Janke, R., Boccelli, D. L., Kramer, A. and Morley, K. (2011). "Real-Time Modeling of Water Distribution System Behavior: Development and Piloting of EPANET-RTX and First Utility Impressions." *Water Quality Technology Conference and Exposition*, AWWA, Phoenix, AZ.
45. Yang, X., Boccelli, D. L., and De Sanctis, A. E. (2011). "A Comparison Between Two Bayesian Approaches for Probabilistic Contaminant Source Identification." *Proceedings, Computing and Control in the Water Industry 2011*, Exeter, UK.
44. Hatchett, S., Uber, J. G., Boccelli, D. L., Haxton, T., Janke, R., Kramer, A., Matracia, A., and Panguluri, S. (2011). "Real-time Distribution System Modeling: Development, Application, and Insights." *Proceedings, Computing and Control in the Water Industry 2011*, Exeter, UK.
43. Divelbiss, D. W, Boccelli, D. L., Succop, P. A., and Oerther, D. B. (2011). "The effect of environmental health factors and household demographics on the operation and maintenance of the Biosand Filter and diarrhea health burden in rural Guatemala." *11th Annual American Ecological Engineering Society Conference*, Raleigh, NC.
42. Yang, X., Boccelli, D. L., and De Sanctis, A. E. (2011). "A Bayesian Approach for Probabilistic Contamination Source Identification." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Palm Springs, CA.
41. Yang, X. and Boccelli, D. L. (2011). "A Bayesian Approach for Probabilistic Contamination Source Identification." *Proceedings of the 2011 NSF Engineering Research and Innovation Conference*, Atlanta, GA.
40. Alexander, M. T. and Boccelli, D. L. (2010). "A Field-Scale Evaluation of a Multi-Species Water Quality and Hydraulic Model." *Water Quality Technology Conference and Exposition*, AWWA, Savannah, GA.
39. Alexander, M. T. and Boccelli, D. L. (2010). "Field Verification of an Integrated Hydraulic and Multi-Species Water Quality Model." *2010 Water Distribution Systems Analysis Symposium*, Tucson, AZ.

38. Arandia-Perez, E., Uber, J. G., Boccelli, D. L., Janke, R., Hartman, D., and Lee, Y. (2010). “Bayesian Temporal Modeling of Water Demands at Household Level.” *2010 Water Distribution Systems Analysis Symposium*, Tucson, AZ.
37. Hatchett, S., Boccelli, D., Haxton, T., Janke, R., Matraccia, A., Panguluri, S., Uber, J. (2010). “How Accurate is a Hydraulic Model?” *2010 Water Distribution Systems Analysis Symposium*, Tucson, AZ (**nominated for Best Paper Award – top 10 out of approximately 150 papers**).
36. Yang, X. and Boccelli, D. L. (2010). “A Full-Scale Simulation Study of Stochastic Water Demands on Distribution System Transport.” *2010 Water Distribution Systems Analysis Symposium*, Tucson, AZ (**received Best Student Paper Award, nominated for Best Paper Award – top 10 out of approximately 150 papers**).
35. Janke, R., Boccelli, D., Hall, J., Hatchett, S., Haxton, T., Panguluri, S., and Uber, J. (2010). “Real-Time Operational Control of Water Distribution Systems.” *Water Security Congress*, AWWA, Washington, DC.
34. Boccelli, D. L., Uber, J. G., and Hatchett, S. (2010). “Drinking Water Distribution Systems as an Urban Environmental Observatory: Theory and Application.” *Proceedings of the World Water and Environmental Resources Congress*, Providence, RI.
33. Yang, X. and Boccelli, D. L. (2009). “The Impacts of Demand Variability on Distribution System Water Quality and Transport.” *Proceedings, Computing and Control in the Water Industry 2009*, Sheffield, UK.
32. Alexander, M., Boccelli, D. L., and Kupferle, M. J. (2009). “Field-Scale Assessment of a Multispecies Water Quality System: A Chloramination Study.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Kansas City, MO.
31. DeSanctis, A. E., Boccelli, D. L., Hatchett, S., Shang, F., and Uber, J. G. (2009). “Real-Time Implementation of Contamination Source Identification Method for Water Distribution Systems.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Kansas City, MO.
30. Motamarri, S. and Boccelli, D. L. (2009). “The Development of a Neural-Based Biomarker Forecasting Tool for Classifying Recreational Water Quality.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Kansas City, MO.
29. Yang, X. and Boccelli, D. L. (2009). “The Impact of Water Demand Variability on Distribution System Hydraulics and Transport.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Kansas City, MO.
28. Perez, E. A., Uber, J. G., Shang, F., Boccelli, D. L., Janke, R., and Hartman, D. (2009). “Spatial-Temporal Statistical Analysis of Hourly Water Demand at Household Level.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Kansas City, MO.
27. DeSanctis, A. E., Boccelli, D. L., Shang, F., and Uber, J. G. (2008). “Probabilistic Approach to Characterize Contamination Sources with Imperfect Sensors.” *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Honolulu, HI.

26. Johnson, R. P., Blackschleger, V., Boccelli, D. L., and Lee, Y. (2008). "Water Security Initiative Field Study: Improving Confidence in a Hydraulic Model." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Honolulu, HI.
25. DeSanctis, A. E., Boccelli, D. L., Shang, F., and Uber, J. G. (2008). "On Contamination Source Identification with Imperfect Sensor Network." *Water Security Congress*, AWWA, Cincinnati, OH.
24. Li, Z., Buchberger, S. Boccelli, D. L. ,and Filion, Y. (2007). "Spatial Correlation Analysis of Stochastic Residential Water Demands." *Computing and Control for the Water Industry 2007*, Leicester, UK.
23. Boccelli, D. L. and Hart, W. E. (2007). "Optimal Monitoring Location Selection for Water Quality Issues." *9<sup>th</sup> Annual Symposium on Water Distribution System Analysis, Proceedings of the World Water and Environmental Resources Congress*, ASCE, Tampa, FL.
22. Boccelli, D. L., Moll, D., Uber, J. G., Blount, B., and Cardinali, F. (2007). "Characterization of Exposure to Trihalomethanes in a Distribution System Using Modeling and Epidemiologic Methods: Preliminary Analysis and Descriptive Statistics." *9<sup>th</sup> Annual Symposium on Water Distribution System Analysis, Proceedings of the World Water and Environmental Resources Congress*, ASCE, Tampa, FL.
21. Yang, L., Boccelli, D. L., and Uber, J. G. (2006). "Assessing Uncertainty in Chlorine Residual Predictions in Drinking Water Distribution Systems." *2006 Water Distribution Systems Analysis Symposium*, Cincinnati, OH.
20. Moughton, L. J., Buchberger, S. G., Boccelli, D. L., Filion, Y. R., and Karney, B. W. (2006). "Cross Correlation Analysis of Residential Demand in the City of Milford, Ohio." *2006 Water Distribution Systems Analysis Symposium*, Cincinnati, OH.
19. Shang, F., Uber, J. G., van Bloemen Waanders, B. G., Boccelli, D. L., and Janke, R. (2006). "Real Time Water Demand Estimation in Water Distribution Systems." *2006 Water Distribution Systems Analysis Symposium*, Cincinnati, OH.
18. Boccelli, D. L., Janke, R., and Murray, R. (2006). "Drinking Water Distribution Systems: A Dual-Use Vision for Implementing an Environmental Observatory for an Engineered System." *Proceedings of the World Water and Environmental Resources Congress*, ASCE, Omaha, NE.
17. Janke, R., Murray, R., Uber, J., Bahadur, R., Samuels, W., Boccelli, D. L., and Watson, J-P. (2006). "Evaluation of TEVA and PipelineNet Monitoring Location Designs within the TEVA Computational Framework." *2006 AWWA Annual Conference and Exposition*, AWWA, San Antonio, TX.
16. Boccelli, D. L. and Uber, J. G. (2005). "Incorporating Spatial Correlation in a Markov Chain Monte Carlo Approach for Network Model Calibration." *7<sup>th</sup> Annual Symposium on Water Distribution System Analysis, Proceedings of the World Water and Environmental Resources Congress*, ASCE, Anchorage, AK.
15. Boccelli, D. L., Shang, F., Uber, J. G. and Wang, J. (2004). "Tracer Studies and Water Quality Monitoring for Evaluating Network Model Confidence." *4<sup>th</sup> International Conference on Watershed Management and Urban Water Supply*, Shenzhen, China.

14. Boccelli, D. L. and Uber, J. G. (2004). "A Markov Chain Monte Carlo Approach to Network Model Calibration Using Tracer Tests." *Water Quality Technology Conference and Exposition*, AWWA, San Antonio, TX.
13. Boccelli, D. L., Shang, F., Uber, J. G., Orcevic, A., Moll, D., Hooper, S., Maslia, M., Sautner, J., Blount, B., and Cardinali, F. (2004). "Tracer Tests for Network Model Calibration." *6<sup>th</sup> Annual Symposium on Water Distribution System Analysis, Proceedings of the World Water and Environmental Resources Congress*, ASCE, Salt Lake City, UT.
12. Boccelli, D. L. and Small, M. J. (2003). "Variability and Uncertainty in Modeling Arsenic Sorption and Treatment." *Water Quality Technology Conference and Exposition*, AWWA, Philadelphia, PA.
11. Boccelli, D. L. and Small, M. J. (2003). "An Updating Procedure for the Efficient Estimation of Probabilistic Constraints." *Environmental and Water Resources Systems Analysis Symposium, EWRI 2003 Conference on Water Resources Planning & Management*, ASCE, Philadelphia, PA.
10. Boccelli, D. L., Diwekar, U. M., and Small, M. J. (2002). "Evaluating Parameter and Model Uncertainty in Drinking Water Treatment Plant Design." *2002 AWWA Annual Conference and Exposition*, AWWA, New Orleans, LA.
9. Boccelli, D. L., Sahin, K. H., Diwekar, U. M., and Small, M. J. (2002). "The BONUS Algorithm: An Efficient Technique for Optimization Under Uncertainty." *Environmental and Water Resources Systems Analysis Symposium, EWRI 2002 Conference on Water Resources Planning & Management*, ASCE, Roanoke, VA.
8. Boccelli, D. L., Diwekar, U. M., and Small, M. J. (2002). "Incorporating Variability and Uncertainty in Treatment Plant Design." *2002 Information Management & Technology Conference*, AWWA, Kansas City, MO.
7. Boccelli, D. L. (2001). "Incorporating Uncertainties in Drinking Water Treatment Plant Design." *Young Professionals in Environmental & Water Resources Engineering, Supplement to the Proceedings of the EWRI World Water and Environmental Resources Congress*, ASCE-EWRI, Orlando, FL, 33-41.
6. Boccelli, D. L., Tryby, M. E., Uber, J. G., Summers, R. S., and Rossman, L. A. (1999). "Modelling Rechlorination Kinetics Considering a Reactive Species." *Proceedings 1999 Annual Conference*, AWWA, Chicago, IL.
5. Boccelli, D. L., Tryby, M. E., Uber, J. G., and Rossman, L. A. (1998). "Optimal Location of Booster Disinfection Stations for Residual Maintenance." *Water Resources and the Urban Environment, Proceedings of the 25th Annual Conference on Water Resources Planning and Management*, ASCE, Chicago, IL, 266-271.
4. Boccelli, D. L., Tryby, M. E., Koechling, M. T., Summers, R. S., Uber, J. G., and Rossman, L. A. (1998). "Booster Chlorination: Bulk Decay Kinetics, TTHM Formation, and Model Development." *Proceedings 1998 Annual Conference, Volume C*, AWWA, Dallas, TX, 579-593.

3. Boccelli, D. L., Tryby, M. E., Koechling, M. T., Summers, R. S., Uber, J. G., and Rossman, L. A. (1998). "Booster Chlorination: Residual Maintenance and Trihalomethane Formation." *Proceedings, Protecting Water Quality in the Distribution System: What is the Role of Disinfection Residuals*, AWWA, Philadelphia, PA.
2. Boccelli, D. L., Tryby, M. E., Koechling, M. T., Uber, J. G., and Summers, R. S. (1997). "Bulk Decay Kinetics of Rechlorinated Water." *Proceedings 1997 Annual Conference, Volume C*, AWWA, Atlanta, GA, 357-384.
1. Tryby, M. E., Boccelli, D. L., Uber, J. G., and Rossman, L. A. (1997). "Optimal Scheduling of Booster Disinfection." *Proceedings 1997 Annual Conference, Volume C*, AWWA, Atlanta, GA, 375-384.

## INVITED PRESENTATIONS

5. Boccelli, D. L. (2015). "A Framework for Real-Time Spatially Distributed Demand Estimation." seminar to the Environmental Engineering program of the School of Civil, Environmental and Mining Engineering, University of Adelaide, Adelaide, Australia.
4. Boccelli, D. L., Moll, D., Uber, J. G., Blount, B., and Cardinali, F. (2015). "Characterization of Exposure to Trihalomethanes in a Distribution System Using Modeling and Epidemiologic Methods: Preliminary Data Analysis and Descriptive Statistics." seminar to the Department of Environmental Health, University of Cincinnati, Cincinnati, OH
3. Boccelli, D. L. (2014). "Real-Time Demand Estimation and Security Applications for Drinking Water Distribution Systems." seminar to the School of Environment, Tsinghua University, Beijing, China.
2. Boccelli, D. L. (2012). "Decision Support and Water Quality: The Next Frontier." part of *Optimisation of Urban Water Supply Systems: A Pipe Dream?* part of the WRC Water Wednesday Series, sponsored by the Water Research Centre, University of Adelaide, Adelaide, Australia.
1. Boccelli, D. L. (2010). "Systems Analysis and the Urban Watershed: Towards an Integrated Future." seminar to the Environmental Research Center, Missouri University of Science & Technology, Rolla, MO.

## REPORTS

2. Alexander, M. T. and Boccelli, D. L. (2010). *An Integrated Field-Scale Assessment of Chloramine Dynamics, By-Product Formation, and Nitrification Modeling*, Water Research Foundation, Denver, CO.
1. Uber, J. G., Summers, R. S., Boccelli, D. L., and Tryby, M. E. (2003). *Maintaining Distribution System Residuals Through Booster Chlorination*, AWWA Research Foundation and American Water Works Association, Denver, CO.

## SYMPOSIA

1. *Green Roof Policy and Research Symposium*, October 27, 2011, Cincinnati, OH: Organized by V. Russell and D. L. Boccelli

## WORKSHOP PRESENTATIONS

5. Boccelli, D. L. (2010). “Detailed Application: Chloramine Chemistry.” In *EPANET–MSX Workshop, Water Distribution System Analysis Symposium*, Tucson, AZ.
4. Boccelli, D. L. (2010). “Chemical Reaction Dynamics Leading to a System of Differential Equations.” In *EPANET–MSX Workshop, Water Distribution System Analysis Symposium*, Tucson, AZ.
3. Boccelli, D. L. (2006). “Field Evaluation of CWS and Initial Lessons Learned from WaterSentinel.” In *Workshop: Contamination Warning Systems: Design, Implementation, and Evaluation, Water Distribution System Analysis Symposium*, Cincinnati, OH.
2. Boccelli, D. L. (2006). “Case Study: Hillsborough County Water Department.” In *Workshop: Distribution System Tracer Studies – Design, Implementation, and Case Studies, Water Distribution System Analysis Symposium*, Cincinnati, OH.
1. Boccelli, D. L. (2006). “Tracer Selection and Injection Method.” In *Workshop: Distribution System Tracer Studies – Design, Implementation, and Case Studies, Water Distribution System Analysis Symposium*, Cincinnati, OH.

## UNPUBLISHED CONFERENCE PRESENTATIONS

9. Yang, X., Chen, J., Boccelli, D. L., and Uber, J. G. (2012). “Real-Time Distribution System Network Modeling and Fault Diagnosis.” *2012 NSF CMMI Engineering Research and Innovation Conference*, Boston, MA.
8. Buffam I., Boccelli, D. L., Mooney-Bullock, R., Durtsche, R., and Russell, V. (2011). “Collaborative research on potential impacts of green roof infrastructure in the city of Cincinnati.” *2<sup>nd</sup> World Congress on Cities and Adaptation to Climate Change*, Bonn, Germany.
7. Divelbiss, D. W, Boccelli, D. L., Succop, P. A., and Oerther, D. B. (2011). “The effect of environmental health factors and household demographics on the operation and maintenance of the Biosand Filter and diarrhea health burden in rural Guatemala.” *Association of Environmental Engineering and Science Professors*, Tampa, FL.
6. Carrico, B., Singer, P., Boccelli, D. L., and Shang, F. (2006). “Using Water Distribution System Modeling to Evaluate THM Formation and Chlorine Decay during Booster Chlorination.” *2006 AWWA Annual Conference and Exposition*, AWWA, San Antonio, TX (poster).
5. Mitteldorf, J., Ravela, S. C., Bell, R., Boccelli, D. L., Croll, D. H., and Seetharam, D. (2002). “On the Prudent Predator.” *International Conference on Complex Systems*, NECSI, Nashua, NH.
4. Boccelli, D. L., Diwekar, U. M., and Small, M. J. (2001). “Least-Cost Design of Drinking Water Treatment Plants Considering Variability and Uncertainty.” *INFORMS Annual Meeting 2001 Miami Beach*, INFORMS, Miami Beach, FL.
3. Gurian, P. L., Lockwood, J. R., Boccelli, D. L., Schervish, M. J., and Small, M. J. (1999). “Estimating the Cost of a Revised Arsenic Drinking Water Standard.” *Proceedings of the 1999 Association of the Environmental Engineering and Science Professors Research Conference*, AEESP, University Park, PA. (poster).

2. Boccelli, D. L., Tryby, M. E., Uber, J. G., and Summers, R. S. (1999). "Evaluation of a Two-Species Model for Chlorine Decay and THM Formation Under Rechlorination Conditions." *Annual Water Resources Planning and Management Conference*, ASCE, Tempe, AZ. (poster).
1. Boccelli, D. L. and Tryby, M. E. (1997). "Optimized Booster Disinfection for Distribution System Water Quality." *American Water Works Association Kentucky/Tennessee Section Meeting*, Covington, KY. (poster).

## RESEARCH GRANTS (FUNDED)

### Competitive External Projects

Project/Date	Source	Amount
Transport and Fate of Cyanotoxins in Drinking Water Distribution Systems [Jan16 – Apr17] co-PI: Boccelli (38%) PI: Seo (U. Toledo; 62%)	Ohio Board of Regents	\$106,209
Data Assimilation and Forecasting for Real-Time Drinking Water Distribution System Modeling [Aug15 – Jul18] PI: Boccelli (100%)	NSF	\$336,321
Endeavor Executive Fellowship [Jul15 – Nov15]  PI: Boccelli (100%)	Australian Gov., Dept. of Ed. and Train.	\$18,500
Spatial Demand Estimation: Moving Towards Real-Time Distribution System Network Modeling [Mar15 – Feb16] PI: Boccelli (100%)	OH-WRRI (USGS)	\$32,844
Water Treatment Adaptation Tool Development [Feb13 – May13] PI: Boccelli (94%) co-PI: Sorial (6%)	USEPA	\$17,469
Assessment of a Novel Application of Biochar to Improve Runoff Water Quality from Vegetated Roofs [Mar13 – Feb14] co-PI: Boccelli (50%) PI: Buffam (50%)	OH-WRRI (USGS)	\$37,070
Real-Time Modeling Development and Application [Feb12 – Feb13]  co-PI: Boccelli (15%) PI Uber (85%)	Argonne National Laboratory	\$216,988
An Integrated Framework for Response Actions for a Drinking Water Distribution Security Network [Jul12 – Jun13] PI: Boccelli (100%)	OH-WRRI (USGS)	\$30,752
Distribution Network Modeling for Adaptation Measures and Effectiveness [Oct11 – Sep12] PI: Boccelli (94%) co-PI: Sorial (6%)	USEPA	\$47,068

<b>Project/Date</b>	<b>Source</b>	<b>Amount</b>
Water Security Research to Extend EPANET, Quantify Uncertainty in Demand, and Develop a Framework for Evaluating Algorithms for Contamination Warning Systems [Dec10] co-PI: Boccelli (20%) PI: Uber (74%); co-PI: Suidan (6%)	USEPA	\$16,708
Case Studies of Sustainable Water Resources and Infrastructure Adaptation to Climate and Socioeconomic Changes [Dec10] PI: Boccelli (94%) co-PI: Suidan (6%)	USEPA	\$5,319
Real-Time Modeling Development and Application [Dec10 – Nov11]  co-PI: Boccelli (20%) PI: Uber (80%)	Argonne National Laboratory	\$175,583
Case Studies of Sustainable Water Resources and Infrastructure Adaptation to Climate and Socioeconomic Changes [Oct10 – Nov10] PI: Boccelli (94%) co-PI: Suidan (6%)	USEPA	\$6,824
Water Security Research to Extend EPANET, Quantify Uncertainty in Demand, and Develop a Framework for Evaluating Algorithms for Contamination Warning Systems [Oct10 – Nov10] co-PI: Boccelli (20%) PI: Uber (74%); co-PI: Suidan (6%)	USEPA	\$19,560
A Comprehensive Field-Scale Distribution System Network Model Assessment and Analysis: Hydraulics and Water Quality [Sep10 – Aug12] PI: Boccelli (100%)	WaterRF	\$149,967
Case Studies of Sustainable Water Resources and Infrastructure Adaptation to Climate and Socioeconomic Changes [Sep09 – Sep10] PI: Boccelli (94%) co-PI: Suidan (6%)	USEPA	\$85,917
Water Security Research to Extend EPANET, Quantify Uncertainty in Demand, and Develop a Framework for Evaluating Algorithms for Contamination Warning Systems [Sep09 – Sep10] co-PI: Boccelli (20%) PI: Uber (74%); co-PI: Suidan (6%)	USEPA	\$290,470
Studying Distribution System Hydraulics and Flow Dynamics to Improve Water Utility Operational Decision Making [Oct10 – Sep13]  co-PI: Boccelli (40%) PI: Uber (60%)	National Institute of Hometown Security (KY)	\$389,658
Exploring Spatial and Temporal Demand Aggregation on Transport Characteristics in Distribution System Modeling [Jul09 – Jun10] PI: Boccelli (100%)	OH-WRRI (USGS)	\$38,265



<b>Project/Date</b>	<b>Source</b>	<b>Amount</b>
Water Security Research to Extend EPANET, Quantify Uncertainty in Demand, and Develop a Framework for Evaluating Algorithms for Contamination Warning Systems [Sep08 – Sep09] co-PI: Boccelli (14%) PI: Uber (80%); co-PI: Suidan (6%)	USEPA	\$294,434
Real-Time Distribution System Network Modeling and Fault Diagnosis [Jul09 – Aug12] PI: Boccelli (65%) co-PI: Uber (35%)	NSF	\$313,701
An Integrated Field-Scale Assessment of Chloramine Dynamics, By-Product Formation, and Nitrification Modeling [Aug08 – Jul09] PI: Boccelli (80%) co-PI: Kupferle (20%)	AwwaRF	\$74,929
Competitive Learning to Develop a Biomarker Forecasting Tool for Classifying Recreational Water Quality [Jul08 – Jun09] PI: Boccelli (100%)	OH-WRRI (USGS)	\$37,321
Construction and Commencement: Pipe Leak Detection Experimental Station [Sep07 – Oct07] co-PI: Boccelli (23.5%) PI: Bishop (23.5%); co-PI: Ioannides (23.5%), Papautsky (23.5%), Suidan (6%)	USEPA	\$34,396
Construction and Commencement: Pipe Leak Detection Experimental Station [Aug07 – Sep07] co-PI: Boccelli (23.5%) PI: Bishop (23.5%); co-PI: Ioannides (23.5%), Papautsky (23.5%), Suidan (6%)	USEPA	\$10,153

## Competitive Internal Projects

Project/Date	Source	Amount
Enhancing the Water Center towards Integrated Water Resources Management [Sep14 – Sep17] PI: Boccelli (65%) co-PI: Deans Lim, Nelson and Probst; Department Heads Buchberger, Gudmundsdottir, Helmicki, Liu, Owen, Palazzo, Petren, Sorial; and Buffam, Dionysiou, Keener, Taylor, Tong, Townsend-Small, Uber, Wang, Wendell (35%, total)	URC	\$1,610,119
Balancing Energy, Environmental Impacts, and Water Quality: An International Collaboration [Jul12 – Oct12] PI: Boccelli (100%)	FDC	\$4,000
Green Infrastructure: Improving Regional Understanding of Performance and Policy [Sep10 – Aug11]  PI: Boccelli (34%) co-PI: Russell (33%), Oerther (33%)	Center for Sustainable Urban Environments	\$15,000
Green Infrastructure: Improving Regional Understanding of Performance and Policy [Sep09 – Aug10]  PI: Boccelli (34%) co-PI: Russell (33%), Oerther (33%)	University Research Council	\$25,000
Sustainable Water Resources in Developing Countries [Aug08]  PI: Boccelli (100%)	Faculty Development Council	\$4,000

*Funding Summary:* To date, Dr. Boccelli has been involved with over \$4.4M of funding as either principal or co-principal investigator (approximately \$2.8M from external sources and \$1.7M from internal sources). Based on his “percentage of effort,” this amounts to approximately \$2.5M of the total \$4.4M. Of the total funding amount, the projects with Dr. Boccelli as the principal investigator have totaled approximately \$2.8M.

## STUDENTS ADVISED

### Ph.D. Students

Student	Enrollment	Qualifier	Graduation
Paulo José Alves de Oliveira	Sep-15	TBD	TBD
Masud Rana	Sep-15	TBD	TBD
Tian Qin	Sep-10	Jan-12	TBD
Jinduan Chen	Sep-10	Jan-12	Jul-15
Xueyao Yang	Nov-07	Jan-09	Dec-13

### M.S. Students

Student	Enrollment	Graduation
Lihe Wang	Jan-14	TBD
Nabila Farah	Jan-14	TBD
Ritesh Kalbande	Jan-13	TBD
Masud Rana	Jan-12	Dec-13
Yuan Su	Sep-11	TBD
Paul Rossman	Sep-11	Jul-14
John Beitel	Sep-10	TBD
Bryant McDonnell	Sep-09	Aug-12
Daniel Divelbiss <sup>1</sup>	Sep-09	Jun-11
Joseph Wright	Jul-09	TBD
Matthew Alexander	Jul-08	Aug-10
Srinivas Motamarri	Jan-08	Dec-10
Xueyao Yang	Nov-07	Dec-10
Karen Kleier <sup>1</sup>	Sep-07	Jun-12
Fikile Mtshiyi <sup>1</sup>	Sep-07	TBD

### M.Eng. Students

Student	Enrollment	Graduation
Eric King	Sep-12	May-13
Ruta Deshpande	Sep-12	NA <sup>2</sup>

### B.S. Students

Student	Graduation
Chris Allen	2014
Mark Schutte <sup>3</sup>	2013
Kory Anstead	2012
Marc Gloyeske	2012
John Vance	2012
Jocelyn DeMange	2010

<sup>1</sup>formerly advised by D. B. Oerther (now at Missouri S&T)

<sup>2</sup>switched to Thesis track

<sup>3</sup>as Study Abroad Mentor

## STUDENT COMMITTEE SERVICE

### Ph.D. Students

<b>Student</b>	<b>Advisor</b>	<b>Graduated</b>
Hui Ren	Jonathan Corey	TBD
Hyoungmin Woo	Jim Uber	TBD
Nestor Mancipe	Steven Buchberger	2015
Ines Schrottenbaum	Jim Uber	2015
Ernesto Arandia-Perez	Jim Uber	2013

### Ph.D. Students (External)

<b>Student</b>	<b>Advisor</b>	<b>University</b>	<b>Graduated</b>
Hailiang Shen	Edward McBean	University of Guelph	Feb-11

### M.S. Students

<b>Student</b>	<b>Advisor</b>	<b>Graduated</b>
Andrew Schriener	Jim Uber	2015
Toritseju Omaghomi	Steven Buchberger	2014
Michael Hudepohl	Steven Buchberger	2014
Lavanya Pemmasani	Jim Uber	2012
Xiaoyuan Jia	Jim Uber	2012
Sheeba Rose May Susai Manickam	Steven Buchberger	2012
Xuan Liu	Jim Uber	2012
Chandler McCoy-Simandle	Steven Buchberger	TBD
Benjamin Packard	Margaret Kupferle	2010
Matthew McCutcheon	Steven Buchberger	2010
Steven Klosterman	Jim Uber	2010
Rishab Mahajan	Jim Uber	2009
Sinem Atgin	Jim Uber	2008
Lynette Moughton	Steven Buchberger	2009
Liping Yang	Jim Uber	TBD

# TEACHING ACTIVITIES

## SUMMARY OF COURSES TAUGHT AND DEVELOPED

### Instructor, University of Cincinnati

Department of Biomedical, Chemical and Environmental Engineering  
(formerly part of the School of Energy, Environmental, Biological, and Medical Engineering)  
(formerly part of the Department of Civil and Environmental Engineering)

*ENVE-4093 Hydraulic Systems:* This course provides an overview of fundamental topics in engineering hydraulics. It builds on the concepts and material learned in Fluid Mechanics to provide a broad coverage of topics ranging from pipe flows to open channel flow and design. This course is intended to bridge the gap between fundamental understanding of basic fluid principles and hydraulic engineering design. (3 cr. hr.; undergraduate; formerly CEE/ENVE-493)

*ENVE-4093L Fluid Mechanics and Hydraulic Systems Laboratory:* Laboratory experiments designed to provide a physical demonstration of hydrostatics, pipe flow, measuring devices, and open channels. Laboratory will closely follow the theoretical course ENVE-4093. Additional emphasis will be placed on writing skills via laboratory reports. (2 cr. hr.; undergraduate; formerly CEE/ENVE-494)

*ENVE-6094 Statistical Principles for Environmental Systems:* Overview of rules of probability, random variables, probability distribution functions, and random processes. Techniques for estimating the parameters of probability models and related statistical inference. Application to the analysis and design of engineered systems under conditions of variability and uncertainty. (Pre-requisite: STAT-366 or equivalent, 4 cr. hr., undergraduate/graduate; formerly ENVE-694)

### **ENVE-4093L Fluid Mechanics and Hydraulic Systems Laboratory, Comments on Laboratory Development:**

When I first arrived at UC, the hydraulic laboratory was in various stages of disrepair. At that time, the laboratory was “demonstration only,” which indicates that the labs were demonstrated, but data from previous labs provided to the students to perform the analysis. Thus, there were no “hands on” labs. Initial efforts within the laboratory were focused on getting four experiments operational using the available equipment. Over the years 2009 – 2012 (Spring semester), with funding provided by OBR, the lab expanded from four to six working labs. With a large infusion of funds from the department in the summer of 2012, the lab has recently been expanded to eight physical labs and two computational labs. In addition to purchasing new equipment (to replace 40+ year old equipment), other existing equipment has been almost entirely refurbished. While the lab “only” increased from six to ten labs, of the original six labs four underwent significant refurbishment or complete replacement. Thus, the lab has been almost completely since my arrival in 2007. The key improvements include:

- An almost complete refurbishment of the lab associated with estimating velocity profiles and friction factors in closed pipe flow, which can not be replicated with commercially available laboratory equipment
- Development and implementation of two new closed pipe laboratories: one associated with minor head losses, and another with head loss and flows in parallel and series pipes
- A refurbished set of experiments associated with the calibration of weirs and evaluation of Manning’s “n”, and a new lab associated with specific energy and the Froude number given the purchase of a new flume

- The development of two computational labs based on EPANET – a drinking water distribution system network model – and SWMM – a dynamic rainfall-runoff and conveyance model, which are two common models utilized associated with drinking water distribution and storm water conveyance.

As part of updating the lab, I also served as a member (2008-09) of an interdisciplinary group of faculty focused on developing multi-departmental laboratory experiences associated with Fluid Mechanics. The team included faculty from (prior to the re-organization) Civil, Mechanical, and Aerospace Engineering. In particular, we made integrated decisions associated with the use of OBR funds to benefit multiple programs.

I also developed a memorandum of understanding (MOU; 2011) between (under the current organization) Civil, Environmental, Mechanical and Aerospace Engineering to share equipment and resources between the four programs for use within ENVE 4093L and MECH 5072C.

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## Course Evaluations<sup>†</sup>

Number	Title	Hrs	Qtr	Yr	Size	Evaluation <sup>‡</sup>
ENVE4093	Hydraulic Systems	3	Sp	15	25	4.6/4.8
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	15	22	4.1/4.6
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Fa	14	20	4.2/4.3
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	14	34	4.4/4.9 <sup>¶</sup>
ENVE9005	Readings in Env. Eng. and Sci.	2	Sp	14	1	-/-
ENVE4093	Hydraulic Systems	3	Fa	13	43	4.5/4.7
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Fa	13	44	4.4/4.8 <sup>¶</sup>
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	13	30	NA/NA <sup>§</sup>
ENVE4093	Hydraulic Systems	3	Fa	12	29	4.4/4.4
ENVE4093L	Fluid Mech. and Hyd. Sys. Lab.	2	Fa	12	25	NA/NA <sup>§</sup>
ENVE493	Hydraulic Systems	3	Sp	12	27	4.0/4.1
ENVE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	12	27	3.8/4.3 <sup>¶</sup>
ENVE503	Senior Project	2	Sp	12	3	NA/NA <sup>§</sup>
ENVE694	Stat. Prin. Env. Sys.	4	Sp	12	10	3.3/3.5
ENVE493	Hydraulic Systems	3	W	12	47	3.8/4.3
ENVE494	Fluid Mech. and Hyd. Sys. Lab.	2	W	12	35	3.4/4.0 <sup>¶</sup>
ENVE502	Senior Project	2	W	12	3	4.5/4.5
ENVE493	Hydraulic Systems	3	Sp	11	45	4.7/4.6
ENVE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	11	40	4.1/4.4 <sup>¶</sup>
ENVE694	Stat. Prin. Env. Sys.	4	Sp	11	13	4.8/4.8
ENVE493	Hydraulic Systems	3	W	11	35	4.3/4.8
ENVE494	Fluid Mech. and Hyd. Sys. Lab.	2	W	11	35	4.3/4.8 <sup>¶</sup>
CEE493	Hydraulic Systems	3	Sp	10	32	3.7/4.0
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	10	31	NA/NA <sup>§</sup>
CEE694	Stat. Prin. Env. Sys.	4	Sp	10	5	3.3/3.3
CEE493	Hydraulic Systems	3	W	10	24	3.9/4.3
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	W	10	24	3.7/4.3
CEE676	Adv. Seminar Env. Sci. and Eng.	1	A	09	27	4.4/4.6
CEE493	Hydraulic Systems	3	Sp	09	24	5.0/4.9
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	09	24	4.7/4.9
CEE493	Hydraulic Systems	3	W	09	19	4.6/4.9
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	W	09	20	4.6/5.0
CEE493	Hydraulic Systems	3	Sp	08	24	4.0/4.5
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	08	23	3.6/4.4
CEE493	Hydraulic Systems	3	W	08	30	4.6/4.8
CEE493	Hydraulic Systems	3	Sp	07	25	3.13/3.31
CEE494	Fluid Mech. and Hyd. Sys. Lab.	2	Sp	07	25	2.24/3.12

<sup>†</sup> The 'CEE' course designations were replaced by 'ENVE' due to restructuring; ENVE course numbers changed in Fall 2012 due to semester conversion

<sup>‡</sup> Evaluation: Overall Class/Overall Faculty Rating (Max. 5.0/5.0); Switched from Group Median to Mean in AY 11-12

<sup>§</sup> Electronic evaluations not available

<sup>¶</sup> Composite score of multiple sections

# SERVICE ACTIVITIES

## UNIVERSITY SERVICE

### University of Cincinnati

- Founder and Director of the Water Center, 2014 – present
  - successfully competed for Office of Provost funds (\$1.6M) to hire six new water-related faculty; coordinated faculty from six departments and three colleges
  - coordinating the first four interdisciplinary water-related faculty hires
  - developing expectations for the Water Center and Director
  - planning research retreat with Phil Taylor, Office of VP for Research
  - interface for water-related faculty between administration, faculty and external groups
  - coordinated/prepared large-scale Water Center proposals, including external proposals for the NSF SRN, USEPA National Modeling Center, and NSF PIRE
- chair, Urban Water Infrastructure Search Committee, 2015 – present
- Steering Committee member, President’s Advisory Council on Environmental Sustainability, 2007–2015
  - co-leader with M. Zaretsky (DAAP) for assessing current sustainability research and approaches to further interdisciplinary research in sustainability at the University of Cincinnati
  - coordinating monitoring efforts associated with the University of Cincinnati’s Storm Water Management to enhance research, education, and outreach activities
- member, committee for establishing a Ph.D. in Sustainability, 2014 – 2015
- member, Green Demonstration Project, 2011–2014
  - the development of a co-operative agreement between the University of Cincinnati and Metropolitan Sewer District to design and implement storm water management and water re-use infrastructure on the UC campus
  - successful completion of the project will result in the annual removal of 40 million gallons of water from the combined sanitary-storm water system through
    - i. the installation of porous pavers and bio-infiltration cells in the area around the Myers Alumni Center and Campus Green garage, and
    - ii. the recycle and re-use of the blow down water from UC’s power plant
- University Research Council
  - Proposal Reviewer, Postdoctoral Fellowship Program, 2008–2010
  - Proposal Reviewer, Graduate Student Research Fellowships Program, 2009–2010
  - Proposal Reviewer, Faculty Research Grant Program, 2008–2009
  - Proposal Reviewer, Interdisciplinary Faculty Research Grants Program, 2009
- External Reviewer, School of Planning Director Reappointment Committee, 2008–2009 (College of Design, Architecture, Art, and Planning)

### College of Engineering and Applied Science

- Instructor, Fundamentals of Engineering Fluid Mechanics Review 2008, 2009, 2011 – 2016
- co-chair, Environment Cluster Search Committee, 2014
- Fluid Mechanics OBR Committee, 2008–2009
  - member of an interdisciplinary team focused on developing multi-departmental laboratory experiences associated with Fluid Mechanics



## **Department of Biomedical, Chemical and Environmental Engineering<sup>4</sup>**

- member, By-Laws Committee, 2009–present
- advisor, M.Eng. in Env Eng , 2010–present
- member, Strategic Planning Committee, External Advisory Board, 2013–present
- member, Faculty Search Committee [two searches], 2013–2014
- member, PhD Qualifying Exam, Proposal Reviewer, 2014
- reviewer, John David Eye Scholarship and Scarpino Award for Best M.S. Thesis, 2013
- advisor, Minor in Sustainable Urban Environments, 2010

## **Department of Civil and Environmental Engineering**

- member, ABET Review Committee, Appendix D, 2009–2010
- host, Graduate Recruitment Weekend, 2010
- member, David Eye Scholarship Review Committee, 2009
- member, Qualifying Exam Committee, 2008
- faculty member, Engineers Without Borders, 2008
  - assisted with the design and overview of a drinking water distribution system for Otho Abwao, Kenya (faculty advisor: D. B. Oerther)
- Ad hoc Committee
  - Web Site Improvement and Development, 2008

## **Department of Environmental Health**

- internal advisory committee, Center for Environmental Genetics, 2015 – present

## **School of Design, Architecture, Art, and Planning**

- Village Life Outreach Project
  - chair of the Life Committee, establishing a committee of students, faculty, and government/industry partners for the development and implementation of water resources solutions for the villages of Burere, Nyambogo and Roche (Tanzania), 2014 – present
  - member, assisting with the design and overview of rain harvesting, drinking water, and sanitary systems for the Roche Health Center, Tanzania (faculty advisor: M. Zaretsky), 2008 – present

## **PROFESSIONAL MEMBERSHIPS**

American Society of Civil Engineers (ASCE), 2000–present  
American Water Works Association (AWWA), 1997–present  
Association of Environmental Engineering and Science Professors (AEESP), 1998–present  
Environmental Water Resources Institute (EWRI), 2000–present  
Institute for Operations Research and the Management Sciences (INFORMS), 2000–2004

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<sup>4</sup>formerly the School of Energy, Environmental, Biological, and Medical Engineering

## PROFESSIONAL SERVICE

### Committees

#### ASCE-EWRI

- member, Water Distribution System Analysis Committee, 2011–present
- Control Group member, Water Distribution System Analysis Committee, 2014–present
- member, Environmental & Water Resources Systems Committee, 2001–present
- Control Group member, Environmental & Water Resources Systems Committee, 2008–2012
- member, Environmental & Water Resources Systems Education Subcommittee, 2005–2010

#### AWWA

- member, Distribution System Water Quality Committee, 2010–present
- member, Engineering Computer Applications Committee, 1999–2005

#### AwwaRF

- member, Project Advisory Committee, 2005–2006

### Conferences

- 2015 Computing and Control in the Water Industry, Leicester, UK
  - member of the Technical Review Committee
- 2014 Water Distribution System Analysis Conference, Bari, Italy
  - member, International Advisory Committee
- 2012 Water Distribution System Analysis Conference, Adelaide, AUS
  - session moderator, and member of the Technical Review and Paper/Presentation Award Committees
- 2010 Water Distribution System Analysis Conference, Tucson, AZ
  - member, International Advisory Committee
- 2009 Computing and Control in the Water Industry, Sheffield, UK
  - reviewer for Scientific Community (abstracts)

### Software

Chair of the Steering Committee, Open Source EPANET Project, 2015–present

- coordinating an international group of researchers and practitioners associated with the open source development of the popular EPANET drinking water distribution software package

### Outreach

Cincinnati Area Water Distribution System Seminar, 2009–present

- co-founder with Walter Grayman (W. M. Grayman Consulting) and Megan Sekhar (USEPA)
- established a biannual meeting of local experts (academic, government, and industry) to serve as a platform for disseminating information associated with current activities from all aspects of drinking water distribution systems

## Reviewer: Peer-Reviewed Journals

American Chemical Society

- *Environmental Science & Technology*
- *Industrial & Engineering Chemistry Research*

American Geophysical Union

- *Water Resources Research*

American Society of Civil Engineers

- *Journal of Environmental Engineering*
- *Journal of Infrastructure Systems*
- *Journal of Water Resources Planning and Management*

American Water Works Association

- *Journal American Water Works Association*

Copernicus Publications

- *Drinking Water Engineering and Science Discussions (open-access)*

Elsevier

- *Colloids & Surfaces A: Physicochemical and Engineering Aspects*
- *Desalination*
- *Environmental Modelling & Software*
- *Journal of Environmental Management*
- *Journal of Hydroinformatics*
- *Journal of Hydrology*
- *Mathematical and Computer Modelling*

Francis & Taylor

- *Urban Water Journal*

International Water Association

- *Journal of Water Supply: Research and Technology–AQUA*
- *Water Research*
- *Water Science & Technology: Water Supply*

Liebert

- *Environmental Engineering & Science*

Springer

- *Annals of Operations Research*
- *Environmental Monitoring and Assessment*

## Reviewer: Book Chapters

2050 Water Resources and Environmental Vision Book

## Reviewer: Funding Agencies

American Water Works Association Research Foundation

- Solicited Research Program

National Science Foundation

Ohio Water Resources Research Institute (USGS)

Water Quality Research Australia (WQRA)

## OTHER ACTIVITIES

### CONSULTING

- External Reviewer: Proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California, 2008 (California State Water Resource Control Board, Division of Water Quality)
- Peer Reviewer: Analyses and Historical Reconstruction of Groundwater Flow, Contaminant Fate and Transport, and Distribution of Drinking Water within the Service Areas of the Hadnot Point and Holcomb Boulevard Water Treatment Plants and Vicinities, U.S. Marine Corps Base Camp Lejeune, North Carolina, Chapter A, Supplement 1 and Supplement 2, 2012 (ATSDR/DHAC)