Dr. Elizabeth Fassman-Beck

Department Head
Southern California Coastal Water Research Project

Education

Ph.D., civil engineering, University of Virginia, Charlottesville, VA. 2002

MSc., civil engineering, University of Virginia, Charlottesville, VA. 1998

BSE, civil and environmental engineering, Duke University, Durham, NC. 1996

Professional Experience

Stevens Institute of Technology (New Jersey), Associate Professor, 2014-2019

University of Auckland (New Zealand), Senior Lecturer (USA equivalent of Assoc. Professor), 2007-2013

University of Auckland (New Zealand), Lecturer (USA equivalent of Assist. Professor), 2004-2007

University of Colorado at Denver, Honorary Instructor, 2003

2002-2004, Consultant: Wright Water Engineers, Denver, Colorado, USA, 2002-2004

Honors and Awards

TEDx SHORTS Podcast: The potential of green infrastructure, 2021

Opening Keynote Lecture: Sustainable Stormwater Symposium, Portland, OR, 2019

The College of New Jersey Earth Day Keynote Address, Ewing, NJ, 2019

ASCE New Jersey Chapter Educator of the Year, 2018

TEDx at Stevens: Looking up the Downspout: Green Infrastructure for Roof Runoff , 2018

2ND Place USEPA Campus RainWorks Challenge (national design competition), Faculty advisor. 2017 Top 8 finisher, 2015

ASCE Wesley W. Horner Award from ASCE/EWRI for the publication Fassman and Simcock (2012), 2014

Outstanding Reviewer Award, ASCE Journal of Environmental Engineering, 2012

Professional Appointments

National Municipal Stormwater Alliance Stormwater Testing and Evaluation for Products and Practices (STEPP) program, Technical Reviewer, 2024-present

National Academies of Sciences, Engineering, and Medicine, Consensus Committee on Managing Pollutant Loads in Highway Stormwater Runoff, 2023-present.

State of Oregon Stormwater Technology Testing Center, Advisory Board, 2022-present

US EPA Board of Scientific Counsellors, Safe and Sustainable Water Resources Subcommittee, 2017-present

International Advisory Board: University of Sheffield-University of Newcastle (UK), Urban Green DaMS project, 2018-present

Director of a Regional Center of Living Architecture Excellence, designated by Green Roofs for Healthy Cities, 2018-2019

Advisor, Green Roof Diagnostics, Culpeper, VA, 2018-2019

Associate Editor: ASCE Journal of Environmental Engineering, 2014-2018; ASCE Journal of Sustainable Water in the Built Environment, 2014-present; Editorial Board Member: Urban Water Journal, 2015-present

Professional Societies and Certifications

Elected Member of the EWRI/ASCE Urban Water Resources Research Council Core Group (2012-2018); Chair BMP Database Teaching Tools Task Committee (2018-ongoing); Member Permeable Pavement Task Committee 2012-2015.

Elected Member of the Joint Committee on Urban Drainage (JCUD), a limited-membership coordinating committee (1 person per country) between the IWA and International Association of Hydroenvironmental Research 2011-2017.

Member: International Water Association (IWA); Member, American Society of Civil Engineers (ASCE) and Environmental and Water Resources Institute (EWRI)

Journal Articles

Xin, D., S. Sauers, D. Nguyen, J. Gray, E. Fassman-Beck. 2026. Field monitoring of microplastics in biofilter media: insights into media characteristics and design. *Blue-Green Systems* DOI:10.2166/bgs.2026.008.

Xin, D., S. Sauers, D. Nguyen, E. Fassman-Beck. 2026. Field Monitoring of Microplastics in Urban Runoff: Treatment Efficiency of Biofilters. *Environmental Science & Technology* DOI:10.1021/acs.est.5c18706.

Gray, J., E. Fassman-Beck, K.L. Cheng, R. Biller, K.C. Schiff. 2026. Frequency of Maintenance Needs in Biofilters throughout Los Angeles. *Journal of Sustainable Water in the Built Environment* DOI:10.1061/JSWBAY.SWENG-725.

Tiernan, E.D., J. Gray, D. Nguyen, B. Shi, M. Wang, K. Dunn, J. Peng, D. McCarthy, E. Fassman-Beck. 2026. Automated detection of illicit discharges in storm drains using a distributed network of low-cost IoT sensors. *Urban Water Journal* DOI:10.1080/1573062X.2026.2641088.

McGruer, V., G. Braun, D. Xin, B.I. Escher, E. Fassman-Beck, A.C. Mehinto. 2026. Evaluating the Effectiveness of Street Sweeping for Reducing Toxicity of Urban Runoff. *ACS ES&T Water* 4:2301-2309.

Nissen, K.A., M. Borst, E. Fassman-Beck, R. Sousa. 2026. Bioretention Flow-Through Planter Performance and Design Considerations. *Journal of Sustainable Water in the Built Environment* DOI:10.1061/JSWBAY.SWENG-582.

Xin, D., A.P. Davis, E. Fassman-Beck. 2025. Assessment of PFOA and PFOS Sorption to Engineered Media in Biofiltration Columns. *Journal of Sustainable Water in the Built Environment* DOI:10.1061/JSWBAY.SWENG-668.

Nissen, K., M. Borst, E. Fassman-Beck. 2025. Influence of Volumetric Water Content Sensor Configuration in Evaluating Bioretention Planter Retention and Evapotranspiration. *Journal of Hydrologic Engineering* DOI:10.1061/JHYEFF.HEENG-613.

Xin, D., J. Gray, T. Zabala, A.P. Davis, E. Fassman-Beck. 2025. Impact of Media Properties on Dissolved Copper Sorption in Stormwater Biofiltration. *ACS ES&T Water* DOI:10.1021/acsestwater.5c00680.

Fassman-Beck, E., E.D. Tiernan, K.L. Cheng, K.C. Schiff. 2025. A data-driven index for evaluating BMP water quality performance. *Water Research* 282:123769.

Tiernan, E.D., J. Gray, L.S. Beck, E. Fassman-Beck. 2025. Design of a Mobile, Field-Scale Rainfall Generator for Urban Runoff Water Quality Studies. *Journal of Irrigation and Drainage Engineering* DOI:10.1061/JIDEDH.IRENG-10507.

Cheng, Y., B.G. Johannessen, D.A. Vaccari, E. Fassman-Beck. 2025. Characterization of Nitrogen Discharge from Extensive Sedum Green Roofs with Multiple Amending Designs and Materials. *Journal of Sustainable Water in the Built Environment* 11:04024009.

Tiernan, E., E. Fassman-Beck, N. Lombardo. 2024. Effects of Postprocessing Decisions on Flow-Weighted Event Mean Concentrations. *Journal of Sustainable Water in the Built Environment* 10:04024005.

Cheng, Y., D.A. Vaccari, B.G. Johannesson, E. Fassman-Beck. 2022. Multiyear Study on Phosphorus Discharge from Extensive Sedum Green Roofs with Substrate Amendments. *Journal of Sustainable Water in the Built Environment* 8:04022014.

Cheng, Y., D.A. Vaccari, E. Fassman-Beck. 2022. Phosphorus Leaching Behavior from Extensive Green Roof Substrates. *Journal of Sustainable Water in the Built Environment* 8:06022003.

Abdalla, E.M.H., V. Pons, V. Stovin, S. De-Ville, E. Fassman-Beck, K. Alfredsen, T.M. Muthanna. 2021. Evaluating different machine learning methods to simulate runoff from extensive green roofs. *Hydrology and Earth System Sciences* 25:5917–5935.

Fassman-Beck, E., F. Saleh. 2021. Sources and Impacts of Uncertainty in Uncalibrated Bioretention Models Using SWMM 5.1.012. *Journal of Sustainable Water in the Built Environment* 7:04021006.

Nissen, K.A., M. Borst, E. Fassman-Beck. 2020. Bioretention planter performance measured by lag and capture. *Hydrological Processes* DOI:10.1002/hyp.13927.

Hunt, W.F., Fassman-Beck, E., et al. 2020. Designing Dry Swales for Stormwater Quality Improvement Using the Aberdeen Equation. *Journal of Sustainable Water in the Built Environment* 2020, 6(1): 05019004.

Liu, R., Fassman-Beck, E. Pore. 2018. Structure and Unsaturated Hydraulic Conductivity of Engineered Media for Living Roofs and Bioretention based on Water Retention Data. *Journal of Hydrologic Engineering*10.1061/(ASCE)HE.1943-5584.0001621.

Liu, R., Fassman-Beck, E. 2016. Hydrologic response of engineered media in living roofs and bioretention to large rainfalls: experiments and modeling. *Hydrological Processes* 31(3): 556-572.

10.1002/hyp.11044.

Liu, R., Fassman-Beck, E. 2016. Effect of composition on basic properties of engineered media for living roofs and bioretention. *Journal of Hydrologic Engineering* 21(6): 06016002. 10.1061/(ASCE)HE.1943-5584.0001373.

Fassman-Beck, E., Hunt, W., Berghage, R., Carpenter, D., Kurtz, T., Stovin, V., Wadzuk, B. Curve. 2016. Number and Formula Coefficients for Extensive Living Roofs. *Journal of Hydrologic Engineering* 10.1061/(ASCE)HE.1943-5584.0001318, 04015073.

Roehr, D., Fassman-Beck, E. 2016. Regenwasserrueckhaltung - warum Dachbegruenung weiterhin ein Thema der Zukunft ist. *Neue Landschaft* 11:41-48.

Fassman-Beck, E., Wang, S., Simcock, R., Liu, R. 2015. Assessing the Effects of Bioretention's Engineered Media Composition and Compaction on Hydraulic Conductivity and Water Holding Capacity. *Journal of Sustainable Water in the Built Environment* 04015003-1. 10.1061/JSWBAY.0000799.

Borne, K., Fassman-Beck, E., Winston, R., Hunt, W., Tanner, C. 2015. Implementation and Maintenance of Floating Treatment Wetlands for Urban Stormwater Management. *Journal of Environmental Engineering* 04015030. 10.1061/(ASCE)EE.1943-7870.0000959.

Azizi, N.S.M., Wilkinson, S., Fassman, E. 2015. An analysis of occupants response to thermal discomfort in green and conventional buildings in New Zealand. *Energy and Buildings* 104 (2015-10-01):191-198. 10.1016/j.enbuild.2015.07.012.

Azizi, N.S.M., Wilkinson, S., Fassman, E. 2015. Strategies for improving energy saving behaviour in commercial buildings in Malaysia. *Engineering, Construction and Architectural Management* 22(1):73-90. 10.1108/ECAM-04-2014-0054s.

Young, R., Zanders, J., Lieberknecht, K., Fassman-Beck, E. 2014. A comprehensive typology for mainstreaming urban green infrastructure. *Journal of Hydrology* Part C 519 (2014): 2571-2583. 10.1016/j.jhydrol.2014.05.048.

Borne, K., Fassman-Beck, E., Tanner, C. 2014. Floating Treatment Wetland Influences Fate of Metals in Road Stormwater Retention Ponds. *Water Research* 48(1):430-442.

Mokhtar Azizi, N.S., Wilkinson, S., Fassman, E. 2014. Management Practice to Achieve Energy Efficiency Performance of Green Buildings in New Zealand. *Architectural Engineering and Design Management* 10(1-2):25-39.

Borne, K., Fassman, E., Tanner, C. 2013. Stormwater Nitrogen Removal Performance of a Floating Treatment Wetland. *Water Science and Technology* 68(7):1657-1664.

Olorunkiya, J., Wilkinson, S., Fassman, E., Stuart, D. 2013. Eliciting Stakeholders' Preferences for Low Impact Design Incentive: A Conjoint Analysis Approach. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction* 5(4):180-190. 10.1061/(ASCE)LA.1943-4170.0000120.

Fassman-Beck, E.A., Simcock, R., Voyde, E.A., Hong, Y.S. 2013. 4 Living Roofs in 3 Locations: Does Configuration Affect Runoff Mitigation? *Journal of Hydrology* 490(2013):11-20.

Borne, K., Fassman, E.A., Tanner, C.C. 2013. Floating Treatment Wetland Retrofit to Improve Stormwater Pond Performance for Sediment, Copper and Zinc. *Ecological Engineering* 54(2013):173-182. 10.1016/j.ecoleng.2013.01.031.

Fassman, E.A., Simcock, R. 2012. Moisture Measurements as Performance Criteria for Extensive Living Roof Substrates. *Journal of Environmental Engineering* 138(8):841-851.

Fassman, E.A. 2012. Stormwater BMP Treatment Performance Variability for Sediment and Heavy Metals. *Separation and Purification Technology* 84(2012):95-103.

Olorunkiya, J. Fassman, E., Wilkinson, S. 2012. Risk: A Fundamental Barrier to the Implementation of Low Impact Design Infrastructure for Urban Stormwater Control. *Journal of Sustainable Development (Canada)* 5(9):27-41.

Mokhtar-Azizi, N.S., Wilkinson, S., Fassman, E., Che Ani, A.I. 2012. Management Practice to Achieve Energy Efficiency Performance: Green versus Conventional Office Building in Malaysia. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction* 10.1061/(ASCE)LA.1943-4170.0000115.

Fassman, E.A., Blackbourn, S. 2011. Runoff Water Quality Mitigation by Permeable Pavement. *Journal of Irrigation and Drainage* 137(11):720-729.

Voyde, E.A., Fassman, E.A., Simcock, R. 2010. Hydrology of an Extensive Living Roof under Sub-Tropical Climate Conditions in Auckland, New Zealand. *Journal of Hydrology* 394(2010):384-395.

Fassman, E.A., Blackbourn, S. 2010. Urban Runoff Mitigation by a Permeable Pavement System Over Impermeable Soils. *Journal of Hydrologic Engineering* 15(6):475-485.

Voyde, E.A., Fassman, E.A., Simcock, R., Wells, J. 2010. Quantifying Evapotranspiration Rates for New Zealand Green Roofs. *Journal of Hydrologic Engineering* 15(6):395-403.

Fassman, E.A., Blackbourn, S. 2007. Source Control for Watershed Protection: Permeable Pavement Technology. *Journal of Environmental Engineering and Management* 17(1):81-88.

Fassman, E.A. 2006. Improving Effectiveness and Evaluation Techniques of Stormwater Best. Management Practices. *J. Environ. Sci. Health*, Part A (Special Issue).A41(7):1247-1256.

Jones, J.E., Earles, T.A., Fassman, E.A., Herricks, E.E., Urbonas, B., Clary, C. 2005. Urban Storm-Water Regulations - Are Impervious Area Limits a Good Idea? *Journal of Environmental Engineering* 131(2):176-179.

Borst, M.A., Riscassi, A., Estime, L., Fassman, E. 2002. Free-Water Depth as a Management Tool for Constructed Wetlands.Â *Journal of Aquatic Plant Management* 40, 43-45.

Yu, S.L., Kuo, J.T., Fassman, E.A., Pan, H. 2001. Field Test of Grassed Swale Performance in Removing Runoff Pollution.Â *Journal of Water Resources Planning and Management* 127(3):168-171.

Technical Reports

Drake, J., A. Erickson, L. Sherman, S. Gaines, H. Piza, S. Waickowski, R. Winston, R. Biller, F. Cheng, M. Turcotte, J. Venzon, E. Fassman-Beck, K.C. Schiff. 2026. Structural Planning and Design for Optimizing Operations and Maintenance for Stormwater Control Measures. Technical Report 1474. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., D. Xin, S. Sauers, D. Nguyen, J. Gray. 2026. Field Monitoring of Microplastics Loading and Accumulation in Biofiltration Best Management Practices. Technical Report 1457. Southern California Coastal Water Research Project. Costa Mesa, CA.

Stein, E.D., B. Bledsoe, E. Fassman-Beck, J. Hathaway, S. Struck. 2025. Application of Nature-Based Solutions for Temperature Management Santa Clara River Case Study: Summary of Expert Panel Workshop May 5-8, 2024. Technical Report 1418. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., E. Tiernan, D. Xin, A.C. Mehinto, V. McGruer, S. Sauers. 2025. Development of a Method to Measure the Impacts of Street Sweeping on Wet Weather Runoff Water Quality. Technical Report 1411. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., K.C. Schiff. 2024. SMC Non-Structural BMP Workshop Report - March 1, 2022. Technical Report 1405. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., E. Tiernan, D. Nguyen, R. Butler. 2024. Turf Replacement BMPs to Reduce Dry and Wet Weather Runoff. Technical Report 1391. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., K.C. Schiff, R. Butler. 2023. Development of the SMC Regional BMP Monitoring Network 2020-2023. Technical Report 1352. Southern California Coastal Water Research Project. Costa Mesa, CA.

Winston, R.J., E. Fassman-Beck. 2022. Permeable Pavement Maintenance: A Review of Literature to Assess Clogging, Predict Maintenance Frequency, and Compare Maintenance Techniques. Technical Report 1280. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., K.C. Schiff. 2022. SMC Regional BMP Monitoring Network Work Plan 2022-2023 - Version 1.0. Technical Report 1270. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., E. Darin, E. Fassman-Beck, G. Shusterman, L. Flores, T. Hale, C. Beegan . 2022. Monitoring Guidance To Support Adaptive Watershed Management. Technical Report 1257. Southern California Coastal Water Research Project. Costa Mesa, CA.

Ramus, J., E. Garvey, S. Brown, E. Fassman-Beck, E.D. Stein. 2022. Assessing the State of Knowledge and Research Needs for Stormwater Harvesting. Technical Report 1305. The Water Research Foundation. Alexandria, VA .

Schiff, K.C., M. Beck, E. Fassman-Beck. 2021. North Orange County Municipal Separate Storm Sewer System (MS4) Monitoring Evaluation. Technical Report 1221. Southern California Coastal Water Research Project. Costa Mesa, CA.

Fassman-Beck, E., K.C. Schiff, D. Apt. 2020. Evaluating Potential Methods to Quantify Stormwater Capture. Technical Report 1116. Southern California Coastal Water Research Project. Costa Mesa, CA.