

# Dr. Elizabeth Fassman-Beck

Department Head

Southern California Coastal Water Research Project

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## 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

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. *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. *Journal of Water Resources Planning and Management* 127(3):168-171.

## Technical Reports

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.