

## Emily Kumpel

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### EDUCATION

- Ph.D. (2013) Civil and Environmental Engineering, University of California, Berkeley  
 Civil Systems Program  
 Dissertation: *Water Quality and Quantity in Intermittent and Continuous Piped Water Supplies in Hubli-Dharwad, India*; Advisor: Dr. Kara Nelson
- M.S. (2007) Civil and Environmental Engineering, University of California, Berkeley  
 Civil Systems Program
- B.S. (2006) Mechanical Engineering, Johns Hopkins University

### POSITIONS HELD

- 2017-current Assistant Professor, Department of Civil and Environmental Engineering, University of Massachusetts Amherst
- 2015-2016 Senior Research Scientist, Aquaya Institute, Nairobi, Kenya
- 2014-2015 Research Scientist, Aquaya Institute, Nairobi, Kenya
- 2013-2014 Research Associate, Aquaya Institute, Nairobi, Kenya
- 2011, 2013 Graduate Student Instructor, Civil and Environmental Engineering, University of California, Berkeley
- 2006-2012 NSF Graduate Research Fellow and Chancellor's Fellow, Civil and Environmental Engineering, University of California, Berkeley
- 2008 Intern, World Health Organization, Geneva, Switzerland
- 2005 Teaching Assistant, Department of Mechanical Engineering, Johns Hopkins University

### PEER-REVIEWED PUBLICATIONS

19. J. Kaminsky and **Kumpel, E.** (2018). Dry Pipes: Associations between Utility Performance and Intermittent Piped Water Supply in Low and Middle Income Countries. *Water*, 10(8), 1032.
18. **Kumpel, E.** and Delaire C., R. Peletz, J. Kisiangani, A. Rinehold, J. DeFrance, D. Sutherland, R. Khush (2018). Measuring the Impacts of Water Safety Plans in the Asia-Pacific Region. *International Journal of Environmental Research and Public Health*, 15(6), 1223.
17. Peletz, R., J. Kisiangani, M. Bonham, P. Ronoh, C. Delaire, **E. Kumpel**, S. Marks, R. Khush (2018). Why Do Water Quality Monitoring Programs Succeed or Fail? A Qualitative Comparative Analysis of Regulated Testing in sub-Saharan Africa. *International Journal of Hygiene and Environmental Health*, 221(6): 907-920.
16. Taylor,<sup>a</sup> D.J., R. Peletz, R. Khush, **E. Kumpel** (2018). Efficacy of Microbial Sampling Recommendations and Practices in sub-Saharan Africa. *Water Research*, 134, pp 115-124.
15. Murray, A., E. Kumpel, R. Peletz, R.S. Khush, D.S. Lantagne (2017). The effect of sodium thiosulfate dechlorination on fecal indicator bacteria enumeration: Laboratory and field data. *Journal of Water and Health*, 7(4). DOI: 10.2166/washdev.2017.071
14. Bivins, A., T. Sumner, **E. Kumpel**, G. Howard, O. Cumming, I. Ross, K. Nelson, J. Brown (2017). Estimating infection risks and the global burden of diarrheal disease attributable to intermittent water supply using QMRA. *Environmental Science and Technology*, 51(13), pp 7542–7551.
13. Delaire, C., R. Peletz, **E. Kumpel**, J. Kisiangani, R. Bain, R. Khush (2017). How much will it cost to monitor microbial drinking water quality in sub-Saharan Africa? *Environmental Science and Technology*, 51 (11), pp 5869–5878.
12. **Kumpel, E.**, C. Woelfe-Erskine, I. Ray, and K. Nelson (2017). Measuring household consumption and waste in unmetered, intermittent piped water systems. *Water Resources Research*, 53. doi:10.1002/2016WR019702.
11. Misati,<sup>a</sup> A., G. Ogendi, R. Peletz, R. Khush, and **E. Kumpel** (2017). Can Sanitary Surveys Replace Water

- Quality Testing? Evidence from Kisii, Kenya. *International Journal of Environmental Research and Public Health*, 14(2). doi:10.3390/ijerph14020152
10. **Kumpel, E.**, A. Cock-Esteb, M. Duret, D. de Waal, and R. Khush (2017). Seasonal variation in drinking and domestic water sources and quality in Port Harcourt, Nigeria. *American Journal of Tropical Medicine and Hygiene*, 96(2): 437-445. doi: 10.4269/ajtmh.16-0175
  9. Mellor, J., **E. Kumpel**, A. Ercumen, and J. Zimmerman (2016). A Systems Approach to Climate, Water and Diarrhea in Hubli-Dharwad, India. *Environmental Science & Technology*, 50 (23).
  8. **Kumpel, E.**, R. Peletz, M. Bonham, and R. Khush (2016). Assessing drinking water quality and water safety management in sub-Saharan Africa using regulated monitoring data. *Environmental Science & Technology*, 50(20):10869-10876. doi:10.1021/acs.est.6b02707.
  7. **Kumpel, E.**, R. Peletz, J. Albert, D. de Waal, M. Hirn, A. Danilenko, V. Uhl, A. Daw, and R. Khush (2016). Urban water services in fragile states: An analysis of drinking water sources and quality in Port Harcourt, Nigeria and Monrovia, Liberia. *American Journal of Tropical Medicine and Hygiene*, 15 (0766).
  6. Peletz, R., **E. Kumpel**, M. Bonham, Z. Rahman, and R. Khush (2016). To what extent is drinking water tested in sub-Saharan Africa? A comparative analysis of regulated water quality monitoring. *International Journal of Environmental Research and Public Health*, 13 (3).
  5. **Kumpel, E.** and K. Nelson (2016). Intermittent Water Supply: Prevalence, Practice, and Microbial Water Quality. *Environmental Science & Technology*, 50 (2).
  4. Ercumen, A., B. F. Arnold, **E. Kumpel**, Z. Burt, I. Ray, K. Nelson, and J. M. Colford Jr. (2015). Upgrading a Piped Water Supply from Intermittent to Continuous Delivery and Association with Waterborne Illness: A Matched Cohort Study in Urban India. *PLoS Medicine*, 12(10).
  3. **Kumpel, E.**, R. Peletz, M. Bonham, A. Fay, A. Cock-Esteb, and R. Khush (2015). When are mobile phones useful for water quality data collection? An analysis of data flows and ICT applications among regulated monitoring institutions in sub-Saharan Africa. *International Journal of Environmental Research and Public Health*, 12 (9), 10846–10860.
  2. **Kumpel, E.** and K. Nelson (2014). Mechanisms affecting water quality in an intermittent piped water supply. *Environmental Science & Technology*, 48(5), 2766–2775.
  1. **Kumpel, E.** and K. Nelson (2013). Comparing Microbial Water Quality in an Intermittent and Continuous Piped Water Supply. *Water Research*, 47(14), 5176–5188.

<sup>a</sup> - indicates student advised while at the Aquaya Institute

#### MANUSCRIPTS IN REVIEW

1. Marks, S., **E. Kumpel**, J. Guo, J. Bartram, and J. Davis. Pathways to sustainability: A fuzzy-set qualitative comparative analysis of rural water supply programs.
2. Ray, I., N. Billava, Z. Burt, J. Colford Jr., A. Ercumen, K.P. Jayaramu, **E. Kumpel**, N. Nayak, K. Nelson, C. Woefle-Erskine. From intermittent to continuous water supply: A multi-dimensional evaluation of water system reforms from Hubli-Dharwad, Karnataka.

#### PEER-REVIEWED CONFERENCE PROCEEDINGS PUBLISHED

1. **Kumpel, E.**, A. Sridharan, T. Kote, A. Olmos, T. Parikh (2012). *NextDrop: Using human observations to track water distribution*. USenix Networked Systems for Developing Regions 2012, Boston, MA, June 2012

#### COURSES TAUGHT

*Department of Civil and Environmental Engineering, University of Massachusetts Amherst, Amherst, MA,*

CEE370: Introduction to Environmental and Water Resources Engineering (4 units, undergraduate, required) – Fall 2017 (59 students)

CEE 597D: Water, sanitation, and global development - (3 units, graduate elective; developed as a new course) – Spring 2017 (19 students); Spring 2018 (13 students)

CEE 597B: Potable Water for Disadvantaged Communities (3 units, graduate elective; co-taught with Dave Reckhow, Anita Milman, and Tim Ford) – Fall 2017 (17 students)

**STUDENT ADVISING**

\*co-advised/chaired; IS=Independent study

*Graduate Student Committees Chaired*Current

Nelson da Luz	PhD	CEE, UMass Amherst <i>Perrell Fellowship, Awarded 2017</i>	in progress
Mariam Alkattan	MS	CEE, UMass Amherst	Expected 2019
LeighAnn D'Andrea	MS	CEE, UMass Amherst	Expected 2019

*Graduate Committee Participation*Current

Kyle Onda	PhD	Urban Planning, University of North Carolina, Chapel Hill	Expected 2019
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Past Graduates

Will Yan	MS	CEE, UMass Amherst	2018
Nick Zinck	MS	CEE, UMass Amherst	2018
Stephanie Hung*	MS	Environmental Health, UMass Amherst	2018
Aaron Gichaba	MS	Egerton University, Nakuru, Kenya	Graduated 2015

*Undergraduate Research Advising*Current

Akshay Delity	Honors	Mechanical Engineering, UMass Amherst	2017-2019
Hannah Wharton	Honors	CEE, UMass Amherst	2018-2019
Stephen Stamegna	IS	CEE, UMass Amherst	2018-2019

Past Graduates

Farah Rawas	IS	CEE, UMass Amherst	2017-2018
Siddhi Rathi	Thesis	Vellore Institute of Technology, Chennai, India	2018

**OTHER MENTORING**

2011-2012 Mentor for NSF International Research Experience for Students (OISE-1031194)

2012 Project Advisor for UC Berkeley CE209: Design for Sustainable Communities

**FUNDED RESEARCH PROJECTS**

“CBET-EPSRC: Characterizing the effects of supply hours and pressure of intermittent piped water supplies on water quality.” National Science Foundation (CBET-1804232), 9/2018-8/2021, \$321,405. PI: Emily Kumpel; Co-PI: Caitlyn Butler

“Freshwater Resilience Partnership: Technical Support to Advance Freshwater Resilience,” Rockefeller Foundation, 9/2018-8/2019, \$500,006. PI: Casey Brown. Co-PI: Emily Kumpel, Colin Gleason

“Water Quality in DCR Reservoirs 2018-2020,” Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection, 07/2018-06/2020, \$269,374. PI: John Tobiason. Co-PI: Emily Kumpel, Colin Gleason

“Freshwater Resilience Partnership: Technical Support to Advance Freshwater Resilience,” Rockefeller Foundation, 03/2017-8/2018, \$599,313. PI: Casey Brown. Co-PI: Emily Kumpel, Colin Gleason

**INTERNALLY-SUPPORTED PROJECTS**

“Mutual Mentoring Team Grant,” Institute for Teaching Excellence & Faculty Development (TEFD) at University of Massachusetts Amherst. 9/2018-8/2019, \$6,000. PI: Kara Peterman. Co-PI: Caitlyn Butler, Eleni Christofa, Song Gao, Emily Kumpel

## SELECTED PRESENTATIONS

1. *Efficacy of Microbial Sampling Recommendations and Practices in sub-Saharan Africa*. Gordon Research Conference, Environmental Science: Water, Holderness, NH June 2018
2. *Measuring the impact of intermittent piped water supply on water quality and quantity in Hubli-Dharwad, India*. Ashoka Trust for Research in Ecology and the Environment, Bangalore, India. January 2018
3. *Water quality monitoring in sub-Saharan Africa*. International Water Association North America, University of Michigan, Ann Arbor. June 2017.
4. *Improving sampling strategies for microbial water quality monitoring in low-resource settings*. Association of Environmental Engineering and Science Professors, University of Michigan, Ann Arbor. June 2017.
5. *Availability and flows of regulatory microbial water quality testing data in sub-Saharan Africa*. UNC Water Microbiology, University of North Carolina at Chapel Hill. May 2017 [poster].
6. *Measuring and monitoring urban water systems*. Seminar. Carnegie Mellon University – Rwanda Campus. Kigali, Rwanda, October 2016.
7. *Impact Assessment of Water Safety Plans in the Asia Pacific Region*. Global Water Safety Conference, Puerto Princesa, Palawan, Philippines, April 2016.
8. *Measuring and monitoring urban water systems: Understanding mechanisms of contamination in drinking water supplies*. Invited seminar, University of Virginia, March 2016.
9. *Towards safe and sustainable urban water systems: Understanding mechanisms of contamination in drinking water supplies*. Invited seminar, University of Massachusetts Amherst, March 2016.
10. *Urban water services in fragile states: Water supply and quality in Port Harcourt, Nigeria*. Water and Health: Where Science Meets Policy. University of North Carolina at Chapel Hill. October 2015 [poster].
11. *Mobile platform for water quality data management in Senegal*. 2015 World Water Week, Information technologies for a smarter water future, Stockholm, Sweden, Aug 2015.
12. *Do post-2015 frameworks indicate water quality in sub-Saharan African?* 2015 World Water Week, Implementing the SDGs in the Post-2015 Development Agenda, Stockholm, Sweden, Aug 2015 (poster)
13. *Water quality in Port Harcourt*. Fragile States Review, World Bank, Nairobi, Kenya, Mar 2014
14. *Impact evaluation for switching from intermittent to 24x7 water supply in Hubli-Dharwad, India*. Invited presentation at the World Bank and ICRIER in Delhi, India, July 2013.
15. *Do post-2015 frameworks indicate water quality in sub-Saharan African?* Water and Health, UNC Chapel Hill, NC, Oct 2014.
16. *Monitoring for safe water: Microbial water testing methods and drinking water quality in Africa*. African Water Congress, Abidjan, Ivory Coast, Feb 2014.
17. *Evaluation of intermittent versus 24x7 water supply in Hubli-Dharwad, India*. IWA Development Congress, Nairobi, Kenya, Oct 2013.
18. *Comparing water quality in an intermittent and continuous piped water supply in Hubli-Dharwad, India*. University of Maryland, College Park, MD, Feb 2013.
19. *The challenge of providing safe water with an intermittently supplied piped water distribution system*. Poster, American Geophysical Union, San Francisco, CA, Dec 2012.
20. *Comparing water quality in intermittent and continuous piped water supplies in urban India*. Environmental Engineering Seminar at UC Berkeley, Nov 2012.
21. *NextDrop: Implementation challenges*. Emily Kumpel. WASH in Real Time: Making Better Decisions Through Use of Mobile Applications (workshop). Water and Health, UNC Chapel Hill, NC, Nov 2012.
22. *NextDrop: Using human observations to track water distribution*. USENIX Networked Systems for Developing Regions '12, Boston, MA, June 2012
23. *Mechanisms affecting water quality in intermittent piped water distribution systems*. American Water Works Association ACE, Dallas, Texas, June 2012.
24. *Impact on water quality of the conversion from intermittent to continuous piped water supply in urban South India*. Water and Health, UNC Chapel Hill, NC, Oct 2011. Top Student Abstract.
25. *Water quality and household behaviors affecting water quality in an intermittent and continuous urban piped water supply*. Singapore Water Week, Singapore, June 2010.
26. *A volunteer-led effort linking research to development practice to promote safe water and hygiene in slums in India*. WEF: Disinfection, Atlanta, GA, Mar 2009.
27. *Systematic review of social factors contributing to the sustainability of small community water supplies*. International Small Community Water Supply Network, Kampala, Uganda, Nov 20, 2008.

## REPORTS

1. Kumpel, E., R. Peletz, J. Kisiangani, and R. Khush (2016). "Water Safety Plan Impact Assessment in the Asia Pacific Region". Report to the World Health Organization. August 2016.
2. Kumpel, E. and R. Khush (2015). "Final Report: Water Quality Testing Study in Port Harcourt, Nigeria". Report to the World Bank Water and Sanitation Program. 10 December 2015.
3. Kumpel, E., J. Albert and R. Khush (2014). "Final Report: Water Quality Testing Study in Port Harcourt, Nigeria". Report to the World Bank Water and Sanitation Program. 4 September 2014.

## FELLOWSHIPS, HONORS, AND AWARDS

- 2011 First Place in the Global Social Venture Competition for NextDrop  
 2011 Winner of the Knight News Foundation Challenge for NextDrop  
 2011 Water and Health Conference Top Student Abstract (University of North Carolina, Chapel Hill)  
 2006 National Science Foundation Graduate Research Fellowship  
 2006 Chancellor's Fellowship for Graduate Study (University of California, Berkeley)  
 2006 First place for the Johns Hopkins University Mechanical Engineering Senior Design Project  
 2005 American Society of Mechanical Engineers Kenneth Andrew Roe Scholarship

## SERVICE

### *Professional Service:*

North East Graduate Student Water Symposium (NEGSWS), Advisor (2018-)  
 National Science Foundation Review Panel CMMI (2018)

### *Department and College:*

Summer Engineering Institute (SENGI), College of Engineering, University of Massachusetts Amherst (2018)  
*Designed half-day activity for high school students*  
 AEESP Distinguished Lecturer Coordinator, University of Massachusetts Amherst (2018)  
 Chapter Advisor, Engineers Without Borders, University of Massachusetts Amherst (2017-present)  
 Sustainability Curriculum Fellowship, University of Massachusetts Amherst (2017-2018)  
 Feng Lecture Coordinator, Civil and Environmental Engineering, University of Massachusetts Amherst (2017)

### *Peer-review:*

**Journals (selected):** Environmental Science and Technology; Journal of Water, Sanitation, and Hygiene for Development; Information Technologies and International Development; International Journal of Hygiene and Environmental Health; International Journal of Environmental Research and Public Health, Journal of Cleaner Production, Environmental Science: Water Research & Technology, Science of the Total Environment

**Conferences:** Water and Health Conference (UNC Chapel Hill, 2014)

**Reviewer:** Graduate Women in Science (2017), Big Ideas at Berkeley (2016)

**Affiliations:** Association of Environmental Engineering and Science Professors (AEESP), American Water Works Association; International Water Association; Tau Beta Pi, Pi Tau Sigma

## OTHER ACTIVITIES

- 2017 Participant, QMRAIII, U. of Washington, Center for Advancing Microbial Risk Assessment  
 2009-2013 Co-Founder and Advisor, NextDrop, Bangalore, India  
 2010-2012 Founding member, UC Berkeley Water and Sanitation Idea Lab  
 2010 Consultant, Health Canada  
 2008 Intern, World Health Organization, Geneva, Switzerland  
 2006-2008 Project Director, Haath Mein Sehat, Engineers for a Sustainable World (Berkeley and Mumbai)  
 2005-2006 Intern, Catholic Relief Services, Baltimore, MD, and Antananarivo, Madagascar  
 2002-2008 Board Member, Phelps Stokes Fund, Washington, DC  
 2005 Undergraduate Research Assistant, University of Dar es Salaam, Tanzania

## COUNTRY-SPECIFIC FIELD RESEARCH EXPERIENCE

India (3 years, residence), Kenya (3.5 years, residence), Senegal, Nigeria, Uganda, Madagascar, Tanzania, Sri Lanka, Mexico