

## **KARA L. NELSON**

Blum Chancellor's Chair in Development Engineering

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### **SUMMARY**

Dr. Kara Nelson is the Blum Chancellor's Chair in Development Engineering and a Professor of Civil and Environmental Engineering at the University of California, Berkeley. Prof. Nelson teaches courses and conducts research on critical issues at the intersection of public health and the environment. Her research program investigates practices for water reuse, disinfection, nutrient recovery, and international WASH (water, sanitation, and hygiene), which draw on her expertise in a wide range of treatment processes including filtration, membrane processes, ion exchange, and disinfection with UV, sunlight, and ammonia. She has advised 23 PhD dissertations (completed) and published over 120 articles in peer-reviewed journals. Prof. Nelson teaches courses on innovation in the water sector, drinking water and wastewater treatment processes, pathogen detection and inactivation, and natural treatment systems. She previously led the Engineering Research Thrust at ReNUWit ([www.renuwit.org](http://www.renuwit.org)) and a large regional program to monitor SARS-CoV-2 in wastewater (COVID Wastewater Based Epidemiology for the Bay Area; [www.covid-web.org](http://www.covid-web.org)). Prof. Nelson is passionate about creating a climate in which everyone belongs and can reach their full potential, and previously served as Associate Dean for Equity and Inclusion in the College of Engineering.

### **EDUCATION**

Ph.D. Environmental Engineering, University of California at Davis, 2001  
M.S.E. Environmental Engineering, University of Washington, 1996  
B.A. Biophysics, University of California, Berkeley, 1992

### **APPOINTMENTS**

2023 – present Chair, Development Engineering Graduate Group, U.C. Berkeley  
2020 – present Blum Chancellor's Chair in Development Engineering, U.C. Berkeley  
2013 – present Professor, Department of Civil and Environmental Engineering, U.C. Berkeley  
2017 – 2021 Associate Dean for Equity and Inclusion, College of Engineering, U.C. Berkeley  
2015 (Spring) Visiting Professor, Institute of Biogeochemistry and Pollutant Dynamics, ETH Zurich, Switzerland  
2015 (Spring) Visiting Researcher, Swiss Federal Institute of Aquatic Sciences and Technology (Eawag), Dübendorf, Switzerland  
2014 (Fall) Fulbright-Colciencias Scholar, Cinara Institute, Universidad del Valle, Cali, Colombia  
2008 – 2013 Associate Professor, Department of Civil and Environmental Engineering, U.C. Berkeley  
2001 – 2008 Assistant Professor, Department of Civil and Environmental Engineering, U.C. Berkeley  
1996 – 2001 Research Assistant/Teaching Assistant, Civil and Environmental Eng., U.C. Davis

- 1998 – 1999 Fulbright Fellow, Universidad National Autónoma de México, Mexico City, Mexico
- 1994 – 1996 Research Assistant, Civil and Environmental Engineering, University of Washington
- 1992 – 1994 Research Associate, Lawrence Berkeley National Laboratory

#### HONORS AND AWARDS

- 2021 Chancellor’s Public Service Award for Campus Community Partnership (awarded to Covid-WEB; [www.covid-web.org](http://www.covid-web.org))
- 2014 Fulbright Fellowship (Colombia), Fulbright Program, US Information Agency
- 2011 Award of Merit, Water Environment Foundation, Disinfection Committee
- 2004, 2005 P3 Award from U.S. EPA, Phase I and II (faculty advisor to winning student team)
- 2003 Presidential Early Career Award for Scientists and Engineers (PECASE), Office of Science and Technology Policy, Executive Office of the President
- 2003 CAREER Award, National Science Foundation
- 2001 Academic Enrichment Program Award, University of California, Berkeley, CA
- 1999 Dissertation Grant, University of California Institute for Mexico and the United States
- 1999 GAAAN Fellowship, University of California, Davis, CA
- 1998 Fulbright Fellowship (Mexico), Fulbright Program, US Information Agency
- 1997 Research Mentorship Fellowship, University of California, Davis, CA
- 1997 TOPS Fellowship, University of California, Davis, CA
- 1994, 1995 King Country Metro Graduate Fellowship, University of Washington, Seattle, WA
- 1988, 1989 NSF Research Experience for Undergraduates (REU) Summer Fellowship, Oregon State University, Corvallis, OR

#### LANGUAGES

Spanish: Excellent (comprehension, speaking, reading), Good (writing)

#### COURSES TAUGHT *(course units are based on semester system)*

- CE211A “Environmental physical-chemical processes” (graduate; 3 units)
- CE210 “Control of water-related pathogens” (graduate; 3 units; developed as new course)
- CE110 “Water Systems of the Future” (upper division undergraduate; 3 units; developed as new course)
- CE113 “Ecological engineering for water quality improvement” (upper division undergraduate; 1 unit lab and 2 units lecture; developed as new course)
- E11 “Engineered systems and sustainability” (lower-division undergraduate; 3 units)
- CE111 “Environmental engineering” (upper division undergraduate; 3 units)
- CE290 “Reinventing Urban Water Infrastructure” (graduate; 1 unit; developed as new course)

## **SUPERVISION OF STUDENTS AND POST-DOCTORAL RESEARCHERS**

Post-doctoral researchers (current position): Minxi Jiang (2022 – present); Utsav Shashvatt (2021 – present); Kevin Orner (2019 – 2021; Assistant Professor, West Virginia University) ; Rose Kantor (2017 – 2018; 2019 – 2021; Assistant Research Engineer, UC Berkeley); Andrea Silverman (2015 – 2016; Associate Professor, New York University); Jannis Wenk (2012 – 2014; Senior Lecturer, University of Bath, UK); Temitope Ogunyoku (2011 – 2013; Meta Platforms); Jee Yeon Kim (2009-2010; Samsung Research Group); David Love (2007-2009; Johns Hopkins University); Allegra da Silva (2008-2009; Brown and Caldwell); Maria Raynal (2007-2008; Universidad Nacional Autonoma de México); Tamar Kohn (2004-2006; Professor, Ecole Polytechnique Fédérale de Lausanne); Jose Antonio Barrios (2005; Universidad Nacional Autonoma de México)

Ph.D. dissertations (current position):

- Hannah Greenwald “Health-relevant microorganisms in centralized drinking water and wastewater systems during the COVID-19 pandemic”, May 2022 (Postdoctoral researcher at Yale University)
- Lauren Kennedy “Application of enhanced methods of microbial assessment in piped drinking water, wastewater, and integrated water systems”, May 2021 (Postdoctoral researcher at Stanford University)
- Karina Chavarria “Towards a better understanding of water microbiomes from source to tap in a rapidly urbanizing area with a tropical climate”, May 2021 (Postdoctoral researcher at University of Massachusetts)
- Scott Miller “The Microbiology of Direct Potable Reuse Systems”, December 2019 (State Water Resources Control Board, Division of Drinking Water, Recycled Water Unit)
- Erica Fuhrmeister “Household Reservoirs of Fecal Contamination in Rural Bangladesh,” May 2019 (Assistant Professor, University of Washington)
- Sharada Prasad “When the pits fill up: Fecal sludge “management” in urban India,” May 2018, co-advised with Isha Ray (Consultant, Infosys, Bangalore, India)
- Olga Kavvada “Spatial Modeling of Decentralized Wastewater Infrastructure: The Case for Water Reuse and Nitrogen Recovery,” December 2017, co-advised with Arpad Horvath (R&D Engineer at Engie, Inc.)
- Will Tarpeh “Designing and Evaluating Novel Approaches to Nitrogen Recovery from Source-Separated Urine,” August 2017 (Assistant Professor, Stanford University)
- John Erickson “The Effects of Intermittent Drinking Water Supply in Arraiján, Panama,” August 2016. (Community Water Center, Salinas, CA)
- Anne Thebo “Wastewater Reuse in Irrigated Agriculture: Global Perspectives on Water Quantity, Quality, and Exposure to Health Risks,” August 2016 (Pacific Institute)
- Andrew Torkelson “Enhanced Granular Media Filtration of Waterborne Pathogens: Effect of Media Amendments for Treatment of Drinking Water and Stormwater,” December 2015 (Linksbridge)
- Mi Tra Nguyen “Sunlight inactivation of fecal indicator bacteria in open-water unit process wetlands,” March 2015 (Engineer, Orange County Sanitation District)
- Fermin Reygadas “Evaluation of user compliance, field efficacy, and greenhouse gas emissions of an ultraviolet water disinfection system and other drinking water

- treatment alternatives for rural households in Mexico,” December 2014, co-advised with Prof. Isha Ray (Executive Director, Fundación Cantaro Azul, Chiapas, Mexico)
- Rabia Chaudhry “Virus Removal Mechanisms in Membrane Bioreactors and Implications For Water Reuse,” December 2014 (U.S. EPA, Office of Water, Water Reuse Program)
- Andrea Silverman “Sunlight inactivation of waterborne viruses: Mechanisms, modeling, and application to surface waters and wastewater treatment,” December 2013 (Assistant Professor, New York University)
- Emily Kumpel “Water quality and quantity in intermittent and continuous piped water supplies in Hubli-Dharwad, India”, August 2013 (Assistant Professor, University of Massachusetts, Amherst)
- Sintana Vergara “Transforming trash: reuse as a waste management and climate change mitigation strategy”, May 2012 (Assistant Professor, Humboldt State University)
- Michael Fisher “The effects of wavelength, metals, and reactive oxygen species on the sunlight inactivation of microorganisms: observations and applications to the solar disinfection of drinking water,” July 2011 (Assistant Professor, University of N. Carolina)
- Khalid Kadir “Sunlight-mediated inactivation mechanisms of *Enterococcus faecalis* and *Escherichia coli* in waste stabilization ponds,” July 2010 (lecturer, U.C. Berkeley)
- Ashley Murray “Don’t Think of Wastewater: Evaluation and Planning Tools for Reuse-Oriented Sanitation Infrastructure,” May 2009, co-advised with Prof. Isha Ray (Founder, Pivot Works, Kigali, Rwanda)
- Gordon Williams “The effect of loading rate on tertiary wastewater filtration,” May 2009 (Director of Water Quality, East Bay Municipal Utility District)
- Sarah Silkie “Use of host-specific molecular markers in fecal source tracking,” August 2008 (Portland Water Bureau, OR)
- Brian Pecson “Improving methods for the control of *Ascaris* eggs in wastewater sludge,” Fall 2006 (Trussell Technologies)
- Tryg Lundquist “A reduction pond for denitrification of agricultural drainage,” Fall 2006 (Professor, Cal State San Luis Obispo)
- Former M.S. students: Yicheng Wei, Brandon Cruz, Story Sandy, Curtis Wong, Rebecca Schill (visiting from Technical University of Munich), Yuantian Cai, Adrian Hinkle, Tzipora Wagner, Logan Smesrud, Liwen Wang, Emma Deleu (visiting from Ghent University), John Law, Ileana Wald, Maja Wiprachtiger (visiting from ETH), Emily Woods, Bria Crawford, Iris Schilling (visiting from ETH), Cleo Woelfle-Erskine, Brie Webber, Anna Corrigan, Heidi Fuchs, Deepak Subramanian, Alejandro Guido, Jeff Dahm, Forest Kaser, Micah Lang, Fermin Reygadas, Sarah Brownell, Hans Schwing, Amy Pickering, Alicia Chakrabati, IlJoo Yang, Matthew Tolcher
- Former B.S. students: Van Trinh, Joaquin Jamieson, Yulitzi Vizcarra, Patricia Cornejo, Christina Lang, Aliya Ehde, Joaquin Bradley Silva, Mira Chaplin, Renjing Jiang, Jeremy Guerrero (REU), Lorelay Mendoza (REU), Michael Bustillo-Sakhai, Sara Brown, Mahaa Ahmed (REU), Daisy Benitez (REU), Enrique Lucca (REU), Makeda Negash, Amira Jahan, Omsri Bharat, Rong Chao Bi, Maritza Flores-Marquez (REU), Hank Bradford, Kimberly Huynh (REU), Matt Blair (REU), Marina Mautner, Fikreselam Habebo, Katya Cherukumilli,

Malavika Neti, Douglas Fabini, Joshua Song, Majid Khan, Brian Coox, Ofelia Romero, Rachel Peletz, April Wong, Sonia Lopez, Ali Kattan, Senem Surelli  
Current Ph.D. students: Luis Anaya, Soliver Fusi, Alma Bartholow, Audrey Wang, Allie Nguyen

**PROFESSIONAL AFFILIATIONS**

International Water Association, American Chemical Society, American Society of Microbiology, Water Environment Federation, American Water Works Association, Association of Environmental Engineering and Science Professors

**PROFESSIONAL SERVICE** (*Selected*)

Education, Diversity, Inclusion Advisory Board, PreMiEr, National Science Foundation Engineering Research Center of Precision Microbiome Engineering (2023 – present)  
Board Member, Association of Environmental Engineering and Science Professors (2022 – present)  
Co-editor, Special issue on Intermittent Water Supply, *AQUA: Water Infrastructure, Ecosystems, and Society* (2021-22)  
Lead of Engineering Research Thrust, ReNUWIt, National Science Foundation Engineering Research Center on Reinventing our Nation's Urban Water Infrastructure (2016 – 2022)  
Co-Director of Diversity, ReNUWIt, National Science Foundation Engineering Research Center on Reinventing our Nation's Urban Water Infrastructure (2017 – 2022; member 2011-2017)  
Vice-Chair, Water Environment Foundation Research and Innovation Committee (2019 – 2022)  
NextProf Nexus Workshop (2018 Chair, 2019 Co-Chair, 2020 Co-Chair)  
Science Advisory Board, National Science Foundation Engineering Research Center on Nanotechnology-Enabled Water Treatment (2016 – present)  
CA Water Monitoring Council Wastewater Based Epidemiology Committee (2021 – present)  
Technical Working Group, "DPR-2: Measure Pathogens in Wastewater," CA State Water Resources Control Board (2018 – 2021)  
Peer reviewer for more than 50 manuscripts in last three years  
PhD Dissertation Committees (non-UCB): Angelika Hess (ETH, Switzerland, 2021); Marlene Wolfe (Tufts, 2019); Marlies Christiaens (University of Ghent, Belgium, 2018), David Taylor (MIT, 2018); Jill McClary (Stanford, 2018); K.P. Jayaramu (VTU, India, 2017); Liah Coggins (Univ of Western Australia, 2017); Loic Decrey (EPFL, Switzerland, 2015); Simon Mostafa (CU Boulder, 2015); Annika Norden (Swedish University of Agricultural Sciences, Sweden, 2010)  
Editorial Advisory Board, *Environmental Science: Processes & Impacts* (ESPI), Royal Society of Chemistry (2018 – present)  
Project Advisory Committee for "Evaluating Post Treatment Challenges for Potable Reuse Applications", Water Environment & Reuse Foundation 16-01 (2017 – 2019)  
Organizing committee, Agricultural Water Reuse Workshop, Water Research Foundation and California State Water Resources Control Board (January 2018)  
Member of Independent Advisory Panel for Soquel Creek Water District's Groundwater Replenishment Study, National Water Research Institute (2017)  
Member of Expert Panel on the Development of Water Recycling Criteria for Indirect Potable Reuse (IPR) through Surface Water Augmentation and the Feasibility of Developing Criteria

for Direct Potable Reuse (DPR), State Water Resources Control Board, Division of Drinking Water (2014 – 2016)

Director of Graduate Education, ReNUWit, National Science Foundation Engineering Research Center on Reinventing our Nation's Urban Water Infrastructure (2011 – 2016)

Technical Advisory Board, Sanergy (2015 – 2017)

Secretary, IWA Specialist Group on Pond Treatment Technology (2009 – 2015)

Board Member, International Water Association USA National Committee, (2015 – 2020)

Peer reviewer for research proposals: National Science Foundation (CBET, SBIR); UK Royal Society, Department for International Development; Indo-US Science and Technology Forum; King Abdullah University of Science and Technology (KAUST), Saudia Arabia; King Abdulaziz City for Science and Technology (KACST), Saudia Arabia; Austrian Science Fund, Netherlands Organization for Scientific Research

Reviewer for NSF Graduate Research Fellowships, Panel (2016)

Expert review for U.S. EPA report on "Review of coliphages as possible indicators of fecal contamination for ambient water quality" (2015)

Lead organizer for one-day International Water, Sanitation, and Hygiene Symposium at UC Berkeley (> 50 participants; 2008, 2009, 2012, 2014)

Conference organizing committee, AEESP 2013 Education and Research Conference, Univ of Colorado, Boulder and Colorado School of Mines

Conference organizing committee for IWA Specialist Group on Waste Stabilization Ponds/Wastewater Pond Technology (2006, 2008, 2010, 2013, 2019)

#### **ACADEMIC SERVICE** (*Selected*)

Chair, Development Engineering Graduate Group, U.C. Berkeley (2023 – present)

Program leader, Environmental Engineering graduate program, U.C. Berkeley (2022-present)

Diversity, Equity and Climate Committee (DECC), U.C. Berkeley Academic Senate (2022 – present)

Chair, College of Engineering Council on Equity and Inclusion (2017 – 2021)

Chair, Equity and Inclusion Committee, CEE Department (2015 – 2018)

Strategic Planning Committee, CEE Department (2016, 2020 - present)

Faculty advisor for Environmental Engineering Science, College of Engineering (2015 – present)

Graduate Group for Designated Emphasis in Development Engineering, UC Berkeley (2013 – present)

Faculty Advisory Board, Latinx and the Environment Initiative (2018 – present)

Executive Committee, Climate Equity and Environmental Justice faculty cluster search (2019-2021)

Faculty Equity Advisor, CEE Department (2015 – 2017)

Broadening Participation Committee, College of Engineering (2015 – 2017)

Alumni Liaison, Environmental Engineering Graduate Program, CEE Department, UC Berkeley (2010 – 2020)

Faculty advisor, Engineers Without Borders/Engineers for a Sustainable World, UC Berkeley chapter (2002 – present)

Chair of graduate admissions, Environmental Engineering Program, CEE Department, UC Berkeley (2011 and 2012)

Search committee for director of Berkeley Institute of Environment (2011)  
Executive Committee for Energy and Resources Group, UC Berkeley (2010-2014)  
Engineering Ethics and Social Responsibility Committee, College of Engineering, UC Berkeley  
(2011-2014)  
Curriculum Committee for Blum Center for Developing Economies, UC Berkeley (2006 – 2012)  
Strawberry Creek Environmental Quality Committee, UC Berkeley (member 2006 – 2015; Chair  
2016 - 2018)  
Curriculum Committee, CEE Department, UC Berkeley (2001 – 2007, 2011 - 2014)  
Graduate advisor, Environmental Engineering Program, UC Berkeley (2010 – 2014)

#### PEER-REVIEWED PUBLICATIONS

126. Darby, E., A. Olivieri, C. Haas, G. Di Giovanni, W. Jakubowski, M. Leddy, K.L. Nelson, C. Rock, T. Slifko, and B.M. Pecson. "Identifying and Aggregating High-Quality Pathogen Data: A New Approach for Potable Reuse Regulatory Development." *Environmental Science: Water Research & Technology*; 9:1646-1653. <https://doi.org/10.1039/D3EW00131H>.
125. Wagner, T.R., K.L. Nelson, C. Binz, and M.E. Hacker. "Actor Roles and Networks in Implementing Urban Water Innovation: A Study of Onsite Water Reuse in the San Francisco Bay Area." *Environmental Science & Technology*; 57(15):6205-6215. <https://doi.org/10.1021/acs.est.2c05231>.
124. Kennedy, L.C., S.E. Miller, R.S. Kantor, H. Greenwald, M.J. Adelman, H. Seshan, P. Russell, and K.L. Nelson. "Stay in the Loop: Lessons Learned about the Microbial Water Quality in Pipe Loops Transitioned from Conventional to Direct Potable Reuse Water." *Environmental Science: Water Research & Technology*; 9(5): 1436–54. <https://doi.org/10.1039/D2EW00858K>.
123. Schill, R., K.L. Nelson, S. Harris-Lovett, R.S. Kantor (2023) "The dynamic relationship between COVID-19 cases and SARS-CoV-2 wastewater concentrations across time and space: considerations for model training data sets" *Science of the Total Environment* 871(162069). <https://doi.org/10.1016/j.scitotenv.2023.162069>
122. K.D. Orner, S. Smith, S. Nordahl, A. Chakrabarti, H. Breunig, C.D. Scown, H. Leverenz, K.L. Nelson, A. Horvath. (2022). "Environmental and Economic Impacts of Managing Nutrients in Digestate Derived from Sewage Sludge and High-Strength Organic Waste." *Environmental Science & Technology* 56(17256-17265). <https://doi.org/10.1021/acs.est.2c04020>
121. J.J. Erickson, K.L. Nelson, D.D.J. Meyer (2022) "Does intermittent supply result in hydraulic transients? Mixed evidence from two systems." *AQUA: Water Infrastructure, Ecosystems, and Society*; 71(11):1251-1262. <https://doi.org/10.2166/aqua.2022.206>
120. Miller, S., H. Greenwald, L.C. Kennedy, R.S. Kantor, R. Jiang, A. Pisarenko, A. Chen, K.L. Nelson. (2022) "Microbial water quality through a full-scale advanced wastewater treatment demonstration facility." *ES&T Engineering*. <https://doi.org/10.1021/acsestengg.2c00198>.

119. K.D. Orner, E. Deleu, K. Rabaey, and K.L. Nelson. (2022) "Accelerating Urea Hydrolysis in Fresh Urine by Modifying Operating Conditions of a Sequencing Batch Reactor." *Environmental Technology*. <https://doi.org/10.1080/09593330.2022.2129456>.
118. Greenwald, H., L.C. Kennedy, A. Ehde, Y. Duan, C.I. Olivares, R. Kantor, K.L. Nelson (2022) "Is flushing necessary during building closures? A study of water quality and bacterial communities during extended reductions in building occupancy" *Frontiers in Water* 4. <https://www.frontiersin.org/articles/10.3389/frwa.2022.958523>.
117. Harris-Lovett, S., K.L. Nelson, R. Kantor, and K.S. Korfmacher. (2022) "Wastewater surveillance to inform public health decision-making in residential institutions." *Journal of Public Health Management and Practice*. doi: 10.1097/PHH.0000000000001636.
116. Pecson, B.M., E. Darby, R. Danielson, Y. Dearborn, G. Di Giovanni, W. Jakubowski, M. Leddy, et al. "Distributions of Waterborne Pathogens in Raw Wastewater Based on a 14-Month, Multi-Site Monitoring Campaign." (2022) *Water Research*: 118170. <https://doi.org/10.1016/j.watres.2022.118170>.
115. Kim, S., L.C. Kennedy, M.K. Wolfe, C.S. Criddle, D.H. Duong, A. Topol, B.J. White, et al. (2022) "SARS-CoV-2 RNA Is Enriched by Orders of Magnitude in Primary Settled Solids Relative to Liquid Wastewater at Publicly Owned Treatment Works." *Environmental Science: Water Research & Technology*. <https://doi.org/10.1039/D1EW00826A>.
114. Kantor, R.S., H.D. Greenwald, L.C. Kennedy, A. Hinkle, S. Harris-Lovett, M. Metzger, M.M. Thornton, J.M. Paluba, and K.L. Nelson. (2022) "Operationalizing a Routine Wastewater Monitoring Laboratory for SARS-CoV-2." *PLOS Water* 1(2): e0000007. <https://doi.org/10.1371/journal.pwat.0000007>.
113. Stahl, E.C., A.R. Gopez, C.A. Tsuchida, V.B. Fan, E.A. Moehle, L.B. Witkowsky, J.R. Hamilton, et al. (2021) "LuNER: Multiplexed SARS-CoV-2 Detection in Clinical Swab and Wastewater Samples." *PLOS ONE* 16(11):e0258263. <https://doi.org/10.1371/journal.pone.0258263>.
112. Greenwald, H.D., L.C. Kennedy, A. Hinkle, O.N. Whitney, V.B. Fan, A. Crits-Christoph, S. Harris-Lovett, et al. (2021) "Tools for Interpretation of Wastewater SARS-CoV-2 Temporal and Spatial Trends Demonstrated with Data Collected in the San Francisco Bay Area." *Water Research X* 12: 100111. <https://doi.org/10.1016/j.wroa.2021.100111>.
111. Orner, K.D., S.J. Smith, H.M. Breunig, C.D. Scown, and K.L. Nelson. (2021) "Fertilizer Demand and Potential Supply through Nutrient Recovery from Organic Waste Digestate in California." *Water Research* 206: 117717. <https://doi.org/10.1016/j.watres.2021.117717>.
110. Kwong, L.H., D. Sen, S. Islam, S. Shahriar, J. Benjamin-Chung, B.F. Arnold, A. Hubbard, S.M. Parvez, M. Islam, L. Unicomb, M.M. Rahman, K. Nelson, J.M. Colford, S.P. Luby, A. Ercumen (2021). "Effect of Sanitation Improvements on Soil-Transmitted Helminth Eggs in Courtyard Soil from Rural Bangladesh: Evidence from a Cluster-Randomized Controlled Trial." *PLOS Neglected Tropical Diseases* 15(7): e0008815. <https://doi.org/10.1371/journal.pntd.0008815>.
109. Sklar, R., Z. Zhou, W. Ndayisaba, A. Muspratt, E.R. Fuhrmeister, K. Nelson, and S.K. Hammond. (2021) "Risk of Adenovirus and Cryptosporidium Ingestion to Sanitation



- Workers in a Municipal Scale Non-Sewered Sanitation Process: A Case Study from Kigali, Rwanda.” *Journal of Water, Sanitation and Hygiene for Development*.  
<https://doi.org/10.2166/washdev.2021.241>.
108. Harris-Lovett, S., K.L. Nelson, et al. (2021) “Wastewater Surveillance for SARS-CoV-2 on College Campuses: Initial Efforts, Lessons Learned and Research Needs.” *International Journal of Environmental Research and Public Health* 18(9):4455.  
<https://doi.org/10.3390/ijerph18094455>.
107. Whitney, O.N., L.C. Kennedy, V. Fan, A. Hinkle, R. Kantor, H. Greenwald, A. Crits-Christoph, B. Al-Shayeb, M. Chaplin, A. Maurer, R. Tjian, K.L. Nelson. (2021) “Sewage, Salt, Silica and SARS-CoV-2 (4S): An Economical Kit-Free Method for Direct Capture of SARS-CoV-2 RNA from Wastewater.” *Environmental Science & Technology*. 55(8):4880-4888.  
<https://doi.org/10.1021/acs.est.0c08129>.
106. Kantor, R.S.\*, K.L. Nelson\*, H.D. Greenwald, and L.C. Kennedy. (2021) “Challenges in Measuring the Recovery of SARS-CoV-2 from Wastewater.” *Environmental Science & Technology*. 55(6): 3514–3519. <https://doi.org/10.1021/acs.est.0c08210>. (\*co-corresponding authors). Selected for ES&T 2021 Best Paper Award.
105. A. Crits-Christoph, R.S. Kantor, M.R. Olm, O.N. Whitney, B. Al-Shayeb, Y.C. Lou, A. Flamholz, L.C. Kennedy, H. Greenwald, A. Hinkle, J. Hetzel, S. Spitzer, J. Koble, A. Tan, F. Hyde, G. Schroth, S. Kuersten, J.F. Banfield, and K.L. Nelson. (2021) “Genome Sequencing of Sewage Detects Regionally Prevalent SARS-CoV-2 Variants.” *mBio*, 12(1): 1-9.  
<https://doi.org/10.1128/mBio.02703-20>.
104. Pecson, B.M. et al. (2021) “Reproducibility and Sensitivity of 36 Methods to Quantify the SARS-CoV-2 Genetic Signal in Raw Wastewater: Findings from an Interlaboratory Methods Evaluation in the U.S.” *Environmental Science: Water Research & Technology*.  
<https://doi.org/10.1039/D0EW00946F>.
103. Kennedy, L.C., S.E. Miller, R.S. Kantor, and K.L. Nelson. (2021) “Effect of Disinfectant Residual, pH, and Temperature on Microbial Abundance in Disinfected Drinking Water Distribution Systems.” *Environmental Science: Water Research & Technology* 7(1): 78–92.  
<https://doi.org/10.1039/D0EW00809E>.
102. Erickson, John J., Yamileth C. Quintero, and Kara L. Nelson. (2020) “Characterizing Supply Variability and Operational Challenges in an Intermittent Water Distribution Network.” *Water* 12(8): 2143. <https://doi.org/10.3390/w12082143>.
101. Pecson, B., D. Gerrity, K. Bibby, J.E. Drewes, C. Gerba, R. Gersberg, R. Gonzalez, C.N. Haas, K.A. Hamilton, K.L. Nelson, A. Olivieri, C. Rock, J. Rose, M. Sobsey. (2020) “Editorial Perspectives: Will SARS-CoV-2 Reset Public Health Requirements in the Water Industry? Integrating Lessons of the Past and Emerging Research.” *Environmental Science: Water Research & Technology*, 6:1761-1764. <https://doi.org/10.1039/D0EW90031A>.
100. Fuhrmeister, E.R., A. Ercumen, J.A. Grembi, M. Islam, A.J. Pickering, and K.L. Nelson. (2020) “Shared Bacterial Communities between Soil, Stored Drinking Water, and Hands in

- Rural Bangladeshi Households.” *Water Research* X. 9:100056.  
<https://doi.org/10.1016/j.wroa.2020.100056>.
99. Hoffmann, S., U. Feldmann, P.M. Bach, C. Binz, M. Farrelly, N. Frantzeskaki, H. Hiessl, J. Inauen, T.A. Larsen, J. Leinert, J. Londong, C. Luthi, M. Maurer, C. Mitchell, E. Morgenroth, K.L., Nelson, L. Scholten, B. Truffer, K.M. Udert (2020). “A Research Agenda for the Future of Urban Water Management: Exploring the Potential of Nongrid, Small-Grid, and Hybrid Solutions.” *Environmental Science & Technology* 54(9): 5312–22.  
<https://doi.org/10.1021/acs.est.9b05222>.
  98. Fuhrmeister, E., Ercumen, A., Pickering, A., Jeanis, K., Crider, Y., Ahmed, M., Brown, S., Alam, M., Sen, D., Islam, S., Kabir, M.H., Islam, M., Rahman, M., Kwong, L., Arnold, B., Luby, S., Colford, J., Nelson, K.L. (2020) “Effect of sanitation improvements on pathogens and microbial source tracking markers in the rural Bangladeshi household environment.” *Environmental Science & Technology*. 54(7):4316-4326.  
<https://doi.org/10.1021/acs.est.9b04835>
  97. Gonzalez, C.I., Erickson, J., Chavarría, K., Nelson, K.L., Goodridge, A. (2020) “Household stored water quality in an intermittent water supply network in Panama.” *Journal of Water, Sanitation, and Hygiene for Development*. 10(2): 298–308.  
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#### **REPORTS, BOOK CHAPTERS, NON-PEER-REVIEWED ARTICLES**

Kantor, R.S. and Nelson, K.L. (2022). Sequencing and variant testing of archived and prospective wastewater samples collected at large metropolitan areas in California during the COVID-19 pandemic. Final report to California Department of Public Health.

Tarpeh, W.A., Clark, W.A., Nelson, K.L., and Orner, K.D. (2022). Reimagining excreta as a resource: Recovering nitrogen from urine in Nairobi, Kenya. In: *An Introduction to Development Engineering*. Springer.

Stantec, Brown and Caldwell, UC Berkeley (2019) "Task Order 34: Pipe Loop Study with Pure Water Blends. Pipe Loop Testing Report", Prepared for City of San Diego, Public Utilities Department.

Sheikh, B., K. Nelson, A. Thebo, B. Haddad, T. Gardner, J. Kelley, A. Adin, R. Tsuchihashi, S. Spurlock, N. Funamizu. (2019) "State of Irrigated Agricultural Water Reuse - Impediments and Incentives". Final Report for Project Reuse-15-08/4775, Water Research Foundation.

Silverman, A.I., K.L. Nelson and D.L. Sedlak. (2019) "Guidelines for the Design and Operation of Unit-process Open-water Wetlands." ReNUWit Public Report. NSF Engineering Research Center for Reinventing our Nation's Urban Water Infrastructure.

<http://renuwit.org/highlights/reports/>.

M.B. Leddy, M.H. Plumlee, R.S. Kantor, K.L. Nelson, S.E. Miller, L.C. Kennedy, B.W. Stamps, J.R. Spear, N.A. Hasan, R.R. Colwell. (2018) "High-throughput DNA sequencing to profile microbial water quality of potable reuse." *Water Online*, January 24.

<https://www.wateronline.com/doc/high-throughput-dna-sequencing-to-profile-microbial-water-quality-of-potable-reuse-0001>

Nelson, K. and J. Stokes-Draut. "Urban Water" in Ackerly, D., A. Jones, M. Stacey, et al. (2018). *Bay Area Regional Report for the California 4th Climate Change Assessment*.

Olivieri, A.; Crook, J.; Anderson, M.; Bull, R.; Drewes, J.; Haas, C.; Jakubowski, W.; McCarty, P.; Nelson, K.; Rose, J.; Sedlak, D.; Wade, T. (2016) Expert Panel Final Report: Evaluation of the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse; National Water Research Institute for the State Water Resources Control Board: Sacramento, CA.

Erickson, J. and K.L. Nelson (2016) Investigation of the Effects of Intermittent Drinking Water Supply to Improve Operation and Infrastructure Investment Strategies, Inter-American Development Bank, Report #ATN/OC-14360-RG. [Also in published in Spanish as Investigación de los Efectos del Suministro Intermitente de Agua Potable en la Calidad de Agua y la Infraestructura.]

Ray, I., Burt, Z. and K. Nelson (2016) Toward Gender Equality Through Sanitation. United Nations Discussion Paper.

Nelson, K.L., Williams, G., Sheikh, B., Holden, B., Crook, J., Cooper, R.C. (2010). Filter Loading Evaluation for Reuse; Final Project Report. WateReuse Foundation. Project number WRF-02-003.

Kone, D., Cofie, O.O., and K. Nelson (2010) "Low-cost options for pathogen reduction and nutrient recovery from faecal sludge." In Wastewater Irrigation and Health: Assessing and Mitigating Risk in Low-Income Countries. Eds P. Drechsel, C.A. Scott, L. Raschid-Sally, M. Redwood, and A. Bahri. Earthscan, London, p. 171-188.

Silkie, S.S. and K.L. Nelson (2008) "Assessment of Nutrient Enrichment in Rodeo and Tennessee Valley Watersheds: A Mass Balance Approach to Nutrient Source Tracking," Report to National Park Service, Golden Gate Recreation Area.

M. Lang, F. Kaser, F. Reygadas, K. Nelson, D.M. Kammen. (2006). "Meeting the need for safe drinking water in rural Mexico through point-of-use treatment." Policy Paper Series, Center for Latin American Studies, U.C. Berkeley, Berkeley.

Nelson, K.L. (2005). "Small and Decentralized Systems for Wastewater Treatment and Reuse." in Water Conservation, Reuse and Recycling: Proceedings of an Iranian-American Workshop, National Research Council, The National Academies Press, Washington, D.C., 54-66.

#### **INVITED PRESENTATIONS**

"Will direct potable reuse make drinking water safer?" Tsuan Hua Feng Distinguished Lecture, University of Massachusetts, Amherst, October, 2022.

"Exposing pathogen risks due to inadequate (centralized) drinking water and sanitation infrastructure." Invited speaker at Gordon Research Conference on Microbiology of the Built Environment. June 19-24, Waterville Valley, New Hampshire. [Postponed due to COVID]

"A Global Perspective on Wastewater as an Agricultural Resource: Knowledge Gaps and Opportunities," Keynote speaker at 2021 Environmental Research Conference, Nov 16, 2021.

"Monitoring COVID-19 Prevalence in SF Bay Area Communities through Sewershed Surveillance." Science at Cal lecture, June 23, 2021.

"Research Perspectives on Wastewater surveillance for SARS-CoV-2." Invited talk and panel for American Public Health Laboratories Annual Conference, May 10, 2021.

"When the Well and the Trust Run Dry." Invited talk for Water Webinar series, Ghent University, The University of Queensland, UC Berkeley, March 4, 2021.

"Redefining Waste: Closing Nutrient Cycles through Fertilizer Production." Invited talk at AIChE 2<sup>nd</sup> Food-Energy-Water Nexus Conference, Feb 11, 2021.

"Wastewater as a COVID Resource." Invited talk at Waterpalooza, Sustainable Silicon Valley, December 3, 2020.

“Monitoring COVID-19 Prevalence in Communities through Sewershed Surveillance.” Keynote speaker at CA/NV American Waterworks Association Fall Conference, October 29, 2020.

“COVID-19 and Recycled Water, What We Know Now and What We Are Learning.” Invited talk and panelist, Water Reuse California virtual annual meeting, June 25, 2020.

“A Global Perspective on Wastewater as an Agricultural Resource: Knowledge Gaps and Opportunities,” Keynote speaker at 2020 Environmental, Water Resources and Coastal Engineering Graduate Research Symposium, North Carolina State University, March, 2020.

“Will direct potable reuse make drinking water safer?” Invited seminar, Water UCI, U.C. Irvine, February, 2020.

“Will direct potable reuse make drinking water safer?” The Edmund G. Archuleta Distinguished Lectureship, Invited talk at University of Texas El Paso, September, 2019.

“A Global Perspective on Wastewater as an Agricultural Resource: Knowledge Gaps and Opportunities,” Invited talk at Urbanization, Water and Food Security Gordon Research Conference, Hong Kong University of Science and Technology, July, 2019.

“The Global Sanitation Crisis: What is the Role for Anaerobic Digestion?” Keynote presentation at 16<sup>th</sup> IWA Anaerobic Digestion Conference, Delft University of Technology, The Netherlands, June, 2019.

“Reinventing Urban Water” Webinar at West Yost Associates, June, 2019.

“Research needs for assessing microbial risk in direct potable reuse,” Invited talk at UNC Water Microbiology Conference, University of North Carolina, Chapel Hill, May, 2019.

“Integration of Contributions to Advancing Diversity, Equity, and Inclusion into Hiring in the College of Engineering,” Invited talk at Achieving Equity and Diversity in Faculty Recruitment: Research & Practice, U.C. Davis, April, 2019.

“Direct Potable Reuse: Why, Where, and How?” Invited talk at Global Water Sustainability Symposium, San Diego State University, April, 2019.

“Feasibility assessment of urine source separation and ion exchange to produce fertilizer from urine in San Francisco and Nairobi,” Invited talk at Symposium on Innovative Routes for Nitrogen Recovery, Ghent University, December, 2018.

“Innovations in Water Reuse,” Invited talk at Foro CILAC, Panama City, October, 2018.

“Water Reuse for Designers,” William J. Worthen Foundation Water Reuse Summit for Architects, Engineers, Developers, Owners, Regulatory Agencies, and Utilities, San Francisco, October 29, 2018.

“A Healthy Innovation Ecosystem for Onsite Non-potable Water Systems,” National Blue Ribbon Commission for Onsite Non-potable Water Systems, organized by U.S. Water Alliance and The Water Research Foundation, Seattle, WA, June 6-7, 2018.

“Challenges to non-grid water and sanitation solutions: Technical Perspective,” Invited talk at International Workshop on Non-grid Solutions for the Future of Urban Water Management, organized by Eawag, Monte Verità, Switzerland, March 2018.

“Drivers and Impediments to Use of Recycled Water in Agriculture,” Invited talk at Agricultural Water Reuse Workshop, organized by Water Research Foundation and California State Water Resources Control Board, Sacramento, CA, January 2018.

“Closing the nitrogen loop with source-separation of human waste.” Invited seminar, Environmental Engineering, U.C. Davis, October 2017.

“Rethinking safe drinking water: Insights from studying intermittent water supplies (IWS) in India and Panama and direct potable reuse (DPR) in the United States.” Invited seminar, Environmental and Water Resources Engineering, University of Michigan, April 2017.

“Water Systems of the Future: Innovations in Water Reuse and Resource Recovery” Distinguished Lecture, Biological and Environmental Science and Engineering, King Abdullah University of Science and Technology, Saudia Arabia, 26 March, 2017.

“Innovative Water Reuse Practices in California,” Invited Panelist, Water Availability in California, Berkeley Energy and Resources Collaborative, Goldman School of Public Policy, U.C. Berkeley, October 26, 2016.

“Closing the nitrogen loop with source-separation of human waste.” Invited seminar, Environmental Science Policy and Management, U.C. Berkeley, October 20, 2016.

“State of the Science Panel”, Statewide Water Reuse Forum, Governor Edmund G. Brown Jr.’s Office of Planning and Research Sacramento, CA, 16 September, 2016.

“El suministro intermitente de agua potable: *Lecciones de un estudio de caso en Arraiján, Panamá,*” (Intermittent water supply: Lessons from a case study in Arraiján, Panama), with John Erickson. Invited presentation to Instituto de Acueductos y Alcantarillados Nacionales (National Institute of Aqueducts and Sewers), Panama City, Panama, June 15, 2016.

“El suministro intermitente de agua potable: *Lecciones de un estudio de caso en Arraiján, Panamá,*” (Intermittent water supply: Lessons from a case study in Arraiján, Panama), with John Erickson. Invited presentation at City of Knowledge, INDICASAT, Panama, June 14, 2016.

“El suministro intermitente de agua potable: *Lecciones de un estudio de caso en Arraiján, Panamá,*” (Intermittent water supply: Lessons from a case study in Arraiján, Panama), with John Erickson. Invited presentation at Inter-American Development Bank, Washington, D.C., May 19, 2016.

“Rethinking safe drinking water: Insights from studying intermittent water supplies (IWS) in India and Panama and direct potable reuse (DPR) in the United States,” Invited Seminar, Cornell University, April 21, 2016.

“Current Perspective and Challenges for Pathogen Control in Waste Stabilization Ponds,” Opening Plenary Talk for 11th IWA Specialist Group Conference in Wastewater Pond Technologies, Leeds University, UK, 21-23 March, 2016.

“Decentralized approaches for wastewater management, water reuse, and nutrient recovery,” Invited Seminar, University of Southern California, November 13, 2016.

“Solar disinfection of viruses and bacteria in an open-water wetland: Mechanisms, monitoring, and modeling,” Invited presentation at IUVA Research Frontiers Conference, Leeuwarden, Netherlands, May 19-21, 2015.

“Global perspectives on wastewater reuse: Contrasting Ghana, India and the United States,” Invited Seminar, Technical University of Munich, Chair of Urban Water Systems Engineering, April 27, 2015.

“Microbial water quality in distribution systems: Contrasts between intermittent water supply (IWS) in India and Panama with direct potable reuse (DPR) in the United States,” Invited seminar at Swiss Federal Institute of Aquatic Science and Technology, March 31, 2015.

“Innovations in Natural treatment systems and reuse,” Seminar on Resource Recovery from Wastewater, University of Leeds, Leeds, UK, February 11, 2015.

“Reinventando la Infraestructura para el Manejo del Agua en Ambientes Urbanos” (Reinventing infrastructure for the management of water in urban environments), Public Forum on Treatment of Wastewater, Cali, Colombia, December 4, 2014.

“Are Existing Sanitation Technologies Workable and Appropriate for Urban Areas (in Latin America and Africa)?” Invited presentation at workshop “Bridging Science and Policy to Enhance Urban Water Security in Africa and the Americas”. US National Academy of Science, Inter-American National Academy of Sciences (IANAS), Network of African Academies of

Sciences (NASAC), Rosenberg International Forum on Water Policy, Panama City, October 16-17, 2014.

“Waste Stabilization Ponds: Innovations, Research, and Education,” Keynote Presentation at 10<sup>th</sup> IWA Wastewater Pond Technology Specialist Conference, Cartagena, Colombia, August 21, 2013.

“Impact evaluation for switching from intermittent to 24x7 water supply in Hubli-Dharwad, India,” Invited presentation at Indian Council for Research on International Economic Relations, New Delhi, July 26, 2013. [Co-authors: Emily Kumpel, Ayse Ercumen, Zach Burt]

“Impact evaluation for switching from intermittent to 24x7 water supply in Hubli-Dharwad, India,” Invited presentation at the World Bank, New Delhi, July 25, 2013. [Co-authors: Emily Kumpel, Ayse Ercumen, Zach Burt]

“An evaluation of intermittent versus 24x7 water supply in Hubli-Dharwad, India,” Invited presentation at the Indian Institute of Science, Bangalore, July 19, 2013. [Co-authors: Emily Kumpel, Ayse Ercumen, Zach Burt].

“Water quality impacts of intermittent water supply in Hubli-Dharwad, India,” Invited presentation at the Inter-American Development Bank, Washington, D.C., November 12, 2012. [Co-author: Emily Kumpel]

“Reinventing America’s Urban Water Infrastructure – Tailored water for distributed non-potable and potable reuse.” Invited Plenary Talk at IWA Leading Edge Technologies Conference, Brisbane, Australia, June 3-7, 2012. [Co-authors: Jörg Drewes, Tzahi Cath, Junko Munakata-Marr, Bernd Leinauer, Ana Lucia Prieto, Ryan Hollaway, Dave Vuono, Rabia Chaudhry, Elena Sevostianova.]

“Urban water infrastructure in India,” Invited speaker at IIT Kharagpur-UCB Joint Workshop on Sustainable Water Infrastructure, Indian Institute of Technology, Kharagpur, India, January 10-11, 2012.

“Reducing pathogen risks in drinking water in the developing world from the household to the city scale,” Invited seminar, Department of Civil Engineering and Environmental Science, University of Oklahoma, January 27, 2012.

“Predicting the health impact of household water treatment,” Invited presentation at the WHO Household Water Treatment and Safe Storage Annual Network Meeting, University of North Carolina, October 3, 2011. [Co-authors: Joe Eisenberg, Kyle Enger]

Panel on CAREER Awards, Invited participant, Association of Environmental Engineering and Science Professors Education and Research Conference, University of South Florida, Tampa, FL, July 10-12, 2011.



“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Swiss Federal Institute of Aquatic Science and Technology, June 9, 2011.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Department of Chemical and Environmental Engineering, University of California, Riverside, April 29, 2011.

“Wastewater irrigation of food crops: A global perspective,” Invited seminar, Department of Civil and Environmental Engineering, Stanford University, December 3, 2010.

“Sunlight inactivation of pathogens, in the context of Waste Stabilization Ponds and SODIS,” Invited speaker at “Sanitation and health in an international perspective,” Swedish University of Agricultural Sciences, Department of Energy and Technology, Uppsala, Sweden, October 29, 2010.

“From small to large scale: How do the hygienic requirements change?” Invited presentation at Workshop on Hygienic Risks of Sanitation Systems, Water, Health and Development Conference, University of North Carolina, Chapel Hill, October 24, 2010.

“Perceived vs. Actual Risks: Greywater, Pathogens. and Public Health,” Invited presentation at the Fourth Bay Area Greywater Roundtable, Greywater Alliance, EBMUD Headquarters, Oakland, September 20, 2010.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Department of Civil and Environmental Engineering, University of California, Los Angeles, February 16, 2010.

“Low-cost household water treatment for pathogens”, Invited speaker at Transitioning Technologies from Labs to Least Developed Countries Workshop, Rice 360°, Rice University, November 6, 2009.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Department of Civil and Environmental Engineering, Rice University, November 6, 2009.

“Designing for reuse: Pathogen removal and inactivation mechanisms,” International Expert Consultation on Wastewater Irrigation: Consumer health risk assessment, on-farm and off-farm options for health risk mitigation, and participatory wastewater governance in low-income countries, International Water Management Research Institute, Accra, Ghana, Oct 6-9, 2009.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, WaterCampws (NSF STC), University of Illinois, Champaign-Urbana, April 13, 2007.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Department of Chemical and Environmental Engineering, Yale University, April 11, 2007.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Environmental Sciences and Engineering, University of North Carolina, Chapel Hill, April 10, 2007.

“Sunlight-mediated inactivation of pathogens in water,” Invited seminar, Department of Civil and Environmental Engineering, Stanford University, May 12, 2006.

“Small and decentralized treatment systems in water conservation and reuse,” Invited lecture at National Academy of Science Joint Iranian-United States Symposium on Water Resources, Tunis, Tunisia, December 10, 2003.

“Challenges in water and biosolids reuse,” Invited seminar, Department of Civil and Environmental Engineering, U.C. Davis, March 3, 2003.

“El UV Tube: Una tecnología de desinfección de bajo costo,” (The UV Tube: A low-cost water disinfection technology), Invited seminar at the Mexican Institute for Water Technology, Juicatepec, Mexico, January 8, 2003.

#### **CONFERENCE PRESENTATIONS**

H. Greenwald et al. “Is flushing necessary during building closures? A study of water quality and bacterial communities during extended reductions in building occupancy.” Poster presentation at Association of Environmental Engineering and Science Professors (AEESP), Washington University, St. Louis, Missouri, June 2022.

R. Kantor et al. “Tracking SARS-CoV-2 and variants in wastewater in California.” Poster presentation at Gordon Research Conference on Microbiology of the Built Environment, Waterville Valley, New Hampshire, June 2022.

H. Greenwald et al. “Is flushing necessary during building closures? A study of water quality and bacterial communities during extended reductions in building occupancy.” Poster presentation at Gordon Research Conference on Microbiology of the Built Environment, Waterville Valley, New Hampshire, June 2022.

Bartholow, A. et al. “Seeding advanced treated wastewater for purposes of direct potable reuse.” Poster presentation at Gordon Research Conference on Microbiology of the Built Environment, Waterville Valley, New Hampshire, June 2022.

R. Kantor et al. “SARS-CoV-2 variant tracking from wastewater.” Oral presentation at Water Environmental Federation Public Health and Water Conference, Cincinnati, OH, March 2022.

J. Bradley Silva et al. “Removing barriers to laboratory analysis for wastewater monitoring for SARS-CoV-2.” Oral presentation at Water Environmental Federation Public Health and Water Conference, Cincinnati, OH, March 2022.

H. Greenwald et al. "Explorations of bulk water quality, biofilms, and flushing efficacy after extended stagnation in full-scale buildings and simulated distributions systems." Poster presentation at IWA Microbial Ecology of the Water Environment (MEWE) Conference (virtual), October 2021.

H. Greenwald. "Wastewater-based epidemiology in the San Francisco Bay Area during the COVID-19 Pandemic." Orange County WateReuse Chapter Meeting, August 2021.

H. Greenwald, K. Dowdell et al. "A cross-sectional survey of *Legionella pneumophila* occurrence in stagnated building water systems during the COVID-19 pandemic." Stagnation, Legionella, and Metals (SLAM) Conference, July 2021.

R. Kantor et al. "Wastewater-based epidemiology: From research to reporting." Oral presentation at the American Society for Microbiology virtual annual conference, June 2021.

Greenwald, H. et al. "COVID-WEB: Wastewater monitoring for SARS-CoV-2 in the San Francisco Bay Area." NSF Research Coordination Network, May 2021.

L. Kennedy et al. "Interpretation of spatial and temporal trends of SARS-CoV-2 RNA in wastewater." Oral presentation to the California Water Environment Association, May 2021.

H. Greenwald et al. "Drinking water stagnation and flushing at UC Berkeley during the COVID-19 pandemic", Oral presentation at Building Water Symposium, October 2020.

H. Greenwald et al. "Wastewater-Based Epidemiology for the San Francisco Bay Area." UNC Water and Health Conference, October 2020.

Orner, K.D., Smith, S.J., Breunig, H.M., Scown, C.D., and Nelson, K.L. "Sustainable Nutrient Management Technologies to Accelerate Fertilizer Recovery from Digestate: An Analysis of Nutrient Fluxes in California." Oral presentation at the *American Chemical Society Fall 2020 National Meeting*, San Francisco, CA, August 17-20, 2020.

R. Kantor, S. Miller, L. Kennedy, K.L. Nelson "Profiling Microbial Communities in Advanced Treatment Trains with High-Throughput Sequencing," AWWA International Symposium on Biological Treatment and Potable Reuse, Feb 10-11, 2020, Atlanta, GA.

R. Kantor, S. Miller, K.L. Nelson "Antibiotic Resistance Gene Microorganisms through AWTs", Water Reuse Workshop 2020, Emerging Issues in Potable Reuse, California Water Environment Association, January 22, 2020.

S. Miller, R. Kantor, K.L. Nelson "Changes in Microbial Water Quality Through Two Advanced Water Treatment Facilities, Water Reuse Workshop 2020, Emerging Issues in Potable Reuse, California Water Environment Association, January 15, 2020.

L. Kennedy, R. Kantor, S. Miller, K.L. Nelson “Microbial Community Dynamics in a Simulated Direct Potable Reuse Distribution System,” IWA Microbial Ecology of Water Engineering (MEWE), Hiroshima, Japan, November 17-20, 2019.

S. Miller, L. Kennedy, R. Kantor, K.L. Nelson “Now You See It, Now You Don't: the Microbiology of Potable Reuse Advanced Treatment Trains,” IWA Microbial Ecology of Water Engineering (MEWE), Hiroshima, Japan, November 17-20, 2019.

E. Fuhrmeister, K.L. Nelson “Shared Bacterial Communities Between Soil, Stored Drinking Water, and Hands in Rural Bangladeshi Households,” IWA Microbial Ecology of Water Engineering (MEWE), Hiroshima, Japan, November 17-20, 2019.

K. Chavarria, K.L. Nelson “Effects of Intermittent Water Supply on Bacterial Communities in Drinking Water Distribution Systems,” IWA Microbial Ecology of Water Engineering (MEWE), Hiroshima, Japan, November 17-20, 2019.

R. Kantor, S. Miller, L. Kennedy, K.L. Nelson “The limitations of common molecular techniques for water reuse microbiology”, AWWA International Symposium on Potable Reuse, Austin, TX, Jan 22-23, 2018.

L. Kennedy, S. Miller, R. Kantor, K.L. Nelson “Flow cytometry as a practical tool to assess microbial water quality,” AWWA Water Quality Technology Conference, Portland, OR, Nov 12-16, 2017.

W. Tarpeh, O. Kavvada and K.L. Nelson “Household ion exchange cartridges for nitrogen recovery from urine”, WEFTEC, Chicago, IL, Sept 30 – Oct 3, 2017.

W. Tarpeh, I. Wald, and K.L. Nelson “Evaluating decentralized ion exchange for nitrogen recovery from urine”, WEFTEC, Chicago, IL, Sept 30 – Oct 3, 2017.

S. Miller, L. Kennedy, R. Kantor, R. Rodriguez, K.L. Nelson “Microbiology of DPR systems: Insights from pilot-scale research using flow cytometry and high-throughput sequencing”, WEFTEC, Chicago, IL, Sept 30 – Oct 3, 2017.

K. Nelson, B. Sheikh, A. Thebo “State of Agricultural Water Reuse: Impediments and Incentives”, WEFTEC, Chicago, IL, Sept 30 – Oct 3, 2017.

S. Miller, L. Kennedy, R. Kantor, K.L. Nelson “Insights from Pilot-Scale Research using Flow Cytometry and High-Throughput Sequencing”, IWA International Conference on Water Reclamation and Reuse”, Long Beach, CA, July 23-26, 2017.

K.L. Nelson “A global assessment of de facto reuse of untreated wastewater in irrigated agriculture” IWA International Conference on Water Reclamation and Reuse”, Long Beach, CA, July 23-26, 2017.

A. Thebo, M. Reddy, K.L. Nelson “Agricultural water reuse of untreated wastewater in Southern India: Diarrheogenic E. coli on farms and different produce classes”, IWA International Conference on Water Reclamation and Reuse”, Long Beach, CA, July 23-26, 2017.

A. Thebo, P. Dreschel, E. Lambin, K.L. Nelson “Ensuring the Microbial Safety of Direct Potable Reuse: Recommendations and Research Needs Identified by the California Expert Panel” IWA International Conference on Water Reclamation and Reuse”, Long Beach, CA, July 23-26, 2017.

K. Nelson, B. Sheikh, A. Thebo “State of Agricultural Water Reuse: Impediments and Incentives”, IWA International Conference on Water Reclamation and Reuse”, Long Beach, CA, July 23-26, 2017.

S. Miller, L. Kennedy, R. Kantor, K.L. Nelson “Insights into DPR water with high-resolution techniques” Presentation to City of San Diego, Aug 1, 2017.

William Tarpeh, I. Wald, O. Kavvada, K.L. Nelson “Ion Exchange For Nitrogen Recovery From Urine: Characterization and Implementation”, AEESP, Ann Arbor, June 2017.

William Tarpeh, K.L. Nelson “Novel approaches to recovering nitrogen from urine,” Urine Diversion Summit, Brattleboro, VT, August 2017.

William Tarpeh and K.L. Nelson “Electrochemical Stripping to Recover Nitrogen from Urine”, ACS, San Francisco, April 2017.

Olga Kavvada, W.A. Tarpeh, A. Horvath, K.L. Nelson “Economic and Environmental Analysis of Decentralized Nitrogen Management in San Francisco”, ACS, San Francisco, April 2017.

K.L. Nelson “Research Priorities to Address Pathogen Risks in Direct Potable Reuse” Changing Paradigms of Wastewater Treatment – From Waste to Resource, KAUST Research Conference, WDRC, March 27-29, 2017.

Kara L. Nelson, Scott Miller, Roberto Rodriguez. “Managing microbial water quality for direct potable reuse (DPR).” Gordon Research Conference, Environmental Sciences: Water. Holderness, NH, June 26 – July 1, 2016.

William Tarpeh, Kai Udert, Kara L. Nelson. “Recovering Nitrogen from Source-Separated Urine via Ion Exchange and Electrochemical Stripping.” Gordon Research Conference, Environmental Sciences: Water. Holderness, NH, June 26 – July 1, 2016.

Erica Fuhrmeister, Ayse Ercumen, Amy Pickering, Kara L. Nelson. “Impact of Sanitation Improvements on Fecal Contamination in the Household Environment in Rural Bangladesh.” Gordon Research Conference, Environmental Sciences: Water. Holderness, NH, June 26 – July 1, 2016.

Kara L. Nelson, Scott Miller, Roberto Rodriguez. "Flow Cytometry and Metagenomics in Pilot-Scale Direct Potable Reuse: Bacterial Persistence and Regrowth." WasteReuse Research Conference, Denver, May 23-24, 2016.

Kara L. Nelson. "A Mechanistic Model for Sunlight Inactivation of Viruses and Bacteria in Waste Stabilization Ponds", 11th IWA Specialist Group Conference in Wastewater Pond Technologies, Leeds University, UK, 21-23 March, 2016.

Scott Miller, Kara L Nelson, Roberto Rodriguez. "Flow Cytometry and Bacterial Communities in Pilot-DPR: Bacterial Persistence and Regrowth." California WasteReuse Conference, Santa Rosa, CA, March 13-15, 2016.

Kara L Nelson. "Sunlight inactivation of viruses and bacteria: Mechanistic insights and implications for practice." UV Photochemistry for Water: Implications for Safe Water Disinfection and Oxidation Treatment Application, Pacifichem, Honolulu, Hawaii, December 14-17, 2015

William A. Tarpeh and Kara L. Nelson. "Evaluating Ion Exchange and Electrochemical Nitrogen Recovery From Source-Separated Urine." American Chemical Society, Boston, MA, August 19, 2015.

John Erickson, Paul West, Yamileth Quintero, and Kara L. Nelson. "Online Monitoring in an Intermittent Drinking Distribution System in Panamá." American Water Works Association Annual Conference and Exposition, Anaheim, CA, June 7-10, 2015.

William A. Tarpeh, Kara L. Nelson. "Comparing Ion Exchange and Electrochemical Nitrogen Recovery From Source-Separated Urine." Fecal Sludge Management 3 Conference, Hanoi, Vietnam, January 18-22, 2015.

Sharada Prasad, P Drechsel, K Nelson. "Health risks of sanitation workers associated with faecal sludge management in India." Fecal Sludge Management 3 Conference, Hanoi, Vietnam, January 18-22, 2015.

Rabia M. Chaudhry, Ryan Holloway, Tzahi Cath, Jörg E. Drewes, Kara L. Nelson. "Virus Surface Characteristics And Removal Mechanisms In Membrane Bioreactors." The 29<sup>th</sup> Annual Water Reuse Symposium. Dallas, TX, September 7-10, 2014.

Mi Nguyen, Jannis Wenk, Kara L Nelson. "Natural photosensitizers in constructed unit process wetlands;

Spectroscopic characteristics, production of reactive species and effects on inactivation of indicator organisms.” Gordon Research Conference on Environmental Sciences: Water. Plymouth, NH, June 22-27, 2014.

Jannis Wenk, Mi T. Nguyen, Iris Schilling, Andrea I. Silverman, David L. Sedlak, Kara L. Nelson. Sunlight-induced removal of pathogens in unit process wetlands (Original German title: Sonnenlicht-induzierte Entfernung von Krankheitserregern in Pflanzenkläranlagen). The German Water Chemistry Society Annual Meeting, May 26 - 28, 2014.

Andrea I. Silverman, Mi Nguyen, Kara L. Nelson. “Progress on Modeling Sunlight Disinfection of Viruses.” IWA 17th International Symposium on Health-Related Water Microbiology, Florianopolis, Brazil, 17th September 2013.

Rabia M. Chaudhry, Kara L. Nelson, Jorg E. Drewes. “Pathogenic virus removal mechanisms in membrane bioreactors.” IWA 17th International Symposium on Health-Related Water Microbiology, Florianopolis, Brazil, 17th September 2013.

Rabia M. Chaudhry, Kara L. Nelson, Jorg E. Drewes. “Tailored Water Reuse: Virus removal in membrane bioreactors.” AEESP 50<sup>th</sup> Anniversary Conference, Golden, Colorado, July 14-16, 2013. (*2<sup>nd</sup> place award for best student poster*).

Fermin Reygadas, Joshua S Gruber, Kara Nelson, John M Colford Jr., Isha Ray. “Barriers and Drivers to Adoption and Use of a Household Ultraviolet Water Disinfection System: A Randomized Control Stepped Wedge Trial in Baja California Sur, Mexico.” Water and Health Conference, Chapel Hill, NC, October 14-18, 2013.

Kara L. Nelson, Mi Nguyen, Iris Schilling “A novel pond design for more efficient disinfection,” 10<sup>th</sup> IWA Wastewater Pond Technology Specialist Conference, Cartagena, Colombia, August 21, 2013.

Emily Kumpel and Kara L. Nelson. “The challenge of providing safe water with an intermittently supplied piped water distribution system.” American Geophysical Union Annual Meeting, San Francisco, December, 2012.

Kara L. Nelson, Mi Nguyen, Andrea Silverman, Mike Fisher, Dave Love. “Progress on modeling sunlight-mediated inactivation of viruses.” IWA Disinfection of Water, Wastewater, and Biosolids, Mexico City, Mexico, November 26-28, 2012.

Fermin Reygadas, Joshua Gruber, Isha Ray, Jack Colford, Kara Nelson. “Evaluation of the field efficacy of a household UV water disinfection system: The Mesita Azul randomized control stepped wedge trial in Baja California Sur, Mexico.” IWA Disinfection of Water, Wastewater, and Biosolids, Mexico City, Mexico, November 26-28, 2012.

Kara L. Nelson, Temi Ogunyoku. "The Disinfection of Latrine Faecal Sludge with Ammonia Naturally Present in Excreta." IWA Disinfection of Water, Wastewater, and Biosolids, Mexico City, Mexico, November 26-28, 2012.

Kara L. Nelson and Emily Kumpel. "Comparison of Water Quality in Intermittent versus Continuous Piped Water Supply in Hubli-Dharwad, India." IWA Disinfection of Water, Wastewater, and Biosolids, Mexico City, Mexico, November 26-28, 2012.

Temi Ogunyoku, Kara L. Nelson. "The Disinfection of Latrine Faecal Sludge with Ammonia Naturally Present in Excreta." Fecal Sludge Management Conference, Durban, South Africa, Oct 29, 2012.

Fermin Reygadas, Joshua S Gruber, Kara Nelson, John M Colford Jr., Isha Ray. "Evaluation of the Laboratory and Field Efficacy of the UV Tube, an Ultraviolet Water Disinfection System Designed for Households in Developing Countries." Water and Health Conference, Chapel Hill, NC, October 29-November 2, 2012.

Andrea Silverman and Kara Nelson. "Simulated sunlight inactivation of poliovirus, adenovirus, and bacteriophage MS2 and PRD1 in coastal waters from southern California and Mexico." American Society for Microbiology 112<sup>th</sup> General Meeting, San Francisco, USA, June 16-18, 2012.

Andrew Torkelson and Kara Nelson. "Long-Term Laboratory Study of Virus Removal From Household Drinking Water Filters Using Granular Media." American Society for Microbiology 112<sup>th</sup> General Meeting, San Francisco, USA, June 16-18, 2012.

Mi Nguyen, Kara Nelson. "Development of a predictive model for direct inactivation of MS2 by sunlight." American Society for Microbiology 112<sup>th</sup> General Meeting, San Francisco, USA, June 16-18, 2012.

Andrea Silverman and Kara Nelson. "An evaluation of small, on-farm ponds in Accra, Ghana to treat wastewater before use in urban, irrigation agriculture." Water and Health Conference, Chapel Hill, NC, October 2-6, 2011.

Emily Kumpel and Kara Nelson. "Impact on Water Quality of the Conversion from Intermittent to Continuous Piped Water Supply in Urban South India." Water and Health Conference, Chapel Hill, NC, October 2-6, 2011.

Joshua S Gruber, Fermin Reygadas, Isha Ray, Kara Nelson, John M Colford, Jr. "Impact Evaluation of a Safe Drinking Water Intervention for Rural Baja California Sur, Mexico using a Randomized, Stepped Wedge Design." Water and Health Conference, Chapel Hill, NC, October 2-6, 2011.



Nelson, K.L., Kumpel, E. "Water quality in the intermittent, piped water supply of Hubli-Dharwad, India," Association of Environmental Engineering and Science Professors, University of South Florida, Tampa, FL, July 10-12, 2011.

Torkelson, A.A., Kim, J., Love, D., da Silva, A.K., & Nelson, K.L. "Development of Antimicrobial Surfaces on Silica Media to Enhance Bacteria and Virus Removal and Inactivation During Filtration." Disinfection 2011, Water Environment Foundation, Cincinnati, OH, April 10-12, 2011.

A.A. Torkelson, J.P. Alper, A.K. da Silva, J. Kim, P. Kozodoy, D.C. Love, R. Maboudian, & K.L. Nelson. "Development of Antimicrobial-Coated Surfaces for Disinfection of Drinking Water: Permanent Surface Coatings of a Quaternary Ammonium Silane (QAS) on Silica Sand Enhance Removal and Inactivation of Bacteria and Viruses During Filtration." American Society for Microbiology 110<sup>th</sup> General Meeting, San Diego, USA, May 23-27, 2010.

Fermin Reygadas, Ian Balam, Isha Ray, and Kara L. Nelson. "Field evaluation of the UV Tube in Baja California Sur, Mexico." International Research Colloquium of the Network to promote Household Water Treatment and Safe Storage (HWTS), Dublin, Ireland, September 21 – 23, 2009.

Kara Nelson, Roya Maboudian, Allegra da Silva, Dave Love, John Alper, Andy Torkelson, Peter Kozodoy. "Progress on development of cationic antimicrobial surface coatings for application in HWTS." International Research Colloquium of the Network to promote Household Water Treatment and Safe Storage (HWTS), Dublin, Ireland, September 21 – 23, 2009.

Michael B. Fisher, Kara L. Nelson. "Performance of Accelerated Solar Disinfection (ASODIS) Under Laboratory and Field Conditions." International Research Colloquium of the Network to promote Household Water Treatment and Safe Storage (HWTS), Dublin, Ireland, September 21 – 23, 2009.

Kara L. Nelson, Alexandria B. Boehm, Jee Yeon Kim, David Love, Kristopher McNeill, Britt M. Peterson, Kevan M. Yamahara. "Sunlight inactivation of fecal indicator bacteria and viruses in the field (Avalon Beach, CA) and laboratory" IWA 15th International Symposium on Health-Related Water Microbiology, Naxos Island, Greece, May 31 – June 5, 2009.

Kara L. Nelson, Allegra K. da Silva, Peter Kozodoy, Marta Cerruti, Rosanna M. Lim, Jeffrey A. Dahm, Carlo Carraro, Roya Maboudian "Optimizing Quaternary Ammonium Silane Antimicrobial Coatings for Low-Cost, Portable Point-of-Use Water Treatment by Filtration" IWA 15th International Symposium on Health-Related Water Microbiology, Naxos Island, Greece, May 31 – June 5, 2009.

Allegra K. da Silva, Peter Kozodoy, Marta Cerruti, Rosanna M. Lim, Jeffrey A. Dahm, Carlo Carraro, Roya Maboudian, Kara L. Nelson "Developing a Point of Use (POU) Drinking Water

Filter: Optimization of Self-Assembled Monolayers (SAMs) of Immobilized Quaternary Ammonium Salt (QAS) on Sand Enhances Removal of E. coli from Water”, American Society for Microbiology 109<sup>th</sup> General Meeting Philadelphia, USA, May 17-21, 2009.

Love, D.C., Silverman, A., and K.L. Nelson “Survival of Adenovirus-2, Poliovirus-3, and Bacteriophages in Waters Exposed to Simulated Sunlight,” American Society for Microbiology 109<sup>th</sup> General Meeting Philadelphia, USA, May 17-21, 2009.

Kim, J.Y, Lee, C., Love, D.C., Sedlak, D. L., Yoon, J., and K.L. Nelson “Inactivation of MS-2 coliphage by Ferrous Ion and Zero-valent Iron Nanoparticles”, American Society for Microbiology 109<sup>th</sup> General Meeting Philadelphia, USA, May 17-21, 2009

Nelson, K.L, Kadir, K., Fisher, M., and D. Love “New insights into sunlight disinfection mechanisms in WSP,” 8<sup>th</sup> IWA Specialist Group Conference on Waste Stabilization Ponds, Belo Horizonte, Brazil, April 26-30, 2009.

Love, D.C., Silverman, A., and K.L. Nelson “Comparison of Virus Survival in a Laboratory Solar Simulator and at Avalon Bay, Catalina Island, CA— Corroborating Evidence of Virus Inactivation by Solar UV” EPA National Beach Conference, Huntington Beach, CA, April 20-22, 2009

Alexandria Boehm, Dave Love, Kara Nelson, Kris McNeill, Britt Peterson, Kevan Yamahara, “A model of fecal indicator organisms and viruses at Avalon Bay, Catalina Island, CA, provides insight into sources and fate” EPA National Beach Conference, Huntington Beach, CA, April 20-22, 2009

Allegra K. da Silva, Peter Kozodoy, Jeffrey A. Dahm, and Kara L. Nelson, “Point-Of-Use Disinfection of Drinking Water using Cationic Antimicrobial Surface Coatings,” WEF Disinfection 2009, Atlanta, GA, Feb 28 – Mar 3, 2009.

M.B. Fisher, K.L. Nelson, M. Iriarte, “Sunlight inactivation rates of wild-type, mutant, and wastewater-derived E. coli: Applied and Mechanistic Implications for SODIS” WEF Disinfection 2009, Atlanta, GA, Feb 28 – Mar 3, 2009.

Fermin Reygadas, Isha Ray, and Kara L. Nelson, “Field evaluation of the UV Tube in Baja California Sur, Mexico,” WEF Disinfection 2009, Atlanta, GA, Feb 28 – Mar 3, 2009.

K.L. Nelson “Designing for reuse: Pathogen removal and inactivation mechanisms,” International Expert Consultation on Wastewater Irrigation: Consumer health risk assessment, on-farm and off-farm options for health risk mitigation, and participatory wastewater governance in low-income countries, International Water Management Research Institute, Accra, Ghana, Oct 6-9, 2009.

Nelson, K.L., G.J. Williams. "Virus removal by coagulation and filtration of wastewater – The role of particle association," IWA 14th International Symposium on Health-related Water Microbiology, Tokyo, Japan, September 9-15, 2007.

Nelson, K.L., S.A. Brownell, A.R. Chakrabarti, L.G. Connelly, F.M. Kaser, D. Kammen, M.J. Lang, R.L. Peletz, A.J. Pickering, F. Reygadas. "The UV Tube: Low-cost, point-of-use disinfection of drinking water with ultraviolet light", Association of Environmental Engineering and Science Professors Conference: Interactions at the Interface – Making the Connections Between Environments, Disciplines and Nations, Blacksburg, VA, July 28-Aug 1, 2007.

Kadir, K. and K.L. Nelson "Waste Stabilization Ponds: Technical Functions and Institutional Limitations," The First Joint Egypt-United States Workshop on Innovative Treatment Technologies for Water, Wastewater, Sludge and Other Contaminated Waters, Cairo, Egypt, May 22-24, 2007.

Kohn, T., and K.L. Nelson "Association with natural organic matter enhances the photoinactivation of MS2 by singlet oxygen" Oral presentation at the American Chemical Society Spring Meeting, Chicago, IL, March 26, 2007.

Kohn, T., and K.L. Nelson "The role of singlet oxygen in the sunlight-mediated inactivation of MS2 coliphage in water." Poster presentation at Gordon Research Conference on Environmental Sciences: Water, Plymouth, NH, June 25-30, 2006.

Williams, G., K. Nelson, R. Holden, T. Kouretas, B. Sheikh, J. Crook, and R. Cooper. "Effect of increased loading rate on particles and pathogen indicators in tertiary filters." Oral presentation at 10<sup>th</sup> Annual Water Reuse Research Conference, Phoenix, AZ, May 14-16, 2006.

Nelson, K.L. "Real-time, quantitative, PCR detection of *E.coli* and *Ascaris* eggs." Oral presentation at International Symposium on Waterborne Pathogens, Athens, GA, March 16-18, 2006.

Kadir, K. and K.L. Nelson "Sunlight-mediated inactivation of pathogens in natural systems." Oral presentation at 6<sup>th</sup> Annual Meeting of the American Ecological Engineering Society, U.C. Berkeley, April 13-15, 2006.

Kohn, T., and K.L. Nelson "The role of reactive oxygen species in the sunlight-mediated inactivation of viruses in water." Oral presentation at Pacifichem, Honolulu, HI, December 15-20, 2005.

Kadir, K. and K.L. Nelson "Mechanisms of sunlight-mediated inactivation of *Enterococcus faecalis* in surface waters." Poster presentation at Pacifichem, Honolulu, HI, December 15-20, 2005. (*Award for best student poster*).

Fisher, M.B., Voelker, B.M., and K.L. Nelson "Solar disinfection: Effects of hydrogen peroxide, temperature, and copper plus ascorbate on the photoinactivation of E.coli." Poster presentation at Pacifichem, Honolulu, HI, December 15-20, 2005.

Nelson, K.L. and I.J. Yang "The effects of degradation and consolidation on sludge accumulation in primary waste stabilization ponds" Oral presentation at IWA 6<sup>th</sup> International Conference on Waste Stabilization Ponds, Avignon, France, October 1, 2004.

Pecson, B.M. and K.L. Nelson "The Effects of Exposure Time, Temperature, pH, and ammonia concentration on the inactivation rate of *Ascaris* eggs" Oral presentation at XXIX Conference of the Inter-American Association of Sanitary and Environmental Engineering (AIDIS), San Juan, Puerto Rico, August 22-27, 2004.

Nelson, K.L., B. Sheik, R.C. Cooper, R. Holden, and K. Israel "Efficacy of pathogen removal during full-scale operation of water reuse facilities in Monterey, California." Oral presentation at IWA 4<sup>th</sup> International Symposium on Wastewater Reclamation and Reuse, Mexico City, Mexico, November 12-14, 2003.

Pecson, B. and K.L. Nelson "Inactivation of *Ascaris* eggs by pH, temperature, and ammonia" Oral presentation at WEFTEC 03, Los Angeles, CA, October 6-8, 2003.

Nelson, K.L. "Inactivation of waterborne pathogens in engineered and natural systems." Oral presentation at the 3<sup>rd</sup> American Ecological Engineering Society, College Park, MD, May 28-30, 2003.

Nelson, K.L. "Concentrations and inactivation of *Ascaris* eggs and pathogen indicator organisms in wastewater stabilization pond sludge." Oral presentation at the IWA 5<sup>th</sup> International Specialist Group Conference on Waste Stabilization Ponds, Auckland, NZ, April 2-5, 2002.

Nelson, K.L. "Development of a mechanistic model of sludge accumulation in primary wastewater stabilization ponds." Oral presentation at the IWA 5<sup>th</sup> International Specialist Group Conference on Waste Stabilization Ponds, Auckland, NZ, April 2-5, 2002.

Nelson, K. L., G. Tchobanoglous, and D.O. Cliver "Inactivation of helminth eggs in wastewater stabilization pond sludges." Oral presentation at the WEF/AWWA/CWEA Joint Residuals and Biosolids Management Conference, San Diego, CA, February 21-24, 2001.

Nelson, K. L., and B. Jiménez "Acumulación, degradación, y características del lodo en varios lagunas de estabilización en México" (Accumulation, degradation, and characteristics of sludge in several wastewater stabilization ponds in Mexico.) Oral presentation at the First Latin American Conference on Waste Stabilization Ponds and Reuse, Cali, Colombia, October 24-27, 2000.

Nelson, K. L., and B. Jiménez “Concentración e inactivación de patógenos en los lodos de las lagunas de estabilización en México” (Concentration and inactivation of pathogens in the sludge of wastewater stabilization lagoons in Mexico.) Oral presentation at the XII Congreso Nacional de Ingeniería Sanitaria y Ciencias, Michoacán, Mexico, April 20-24, 2000.

Nelson, K. L. “Inactivation of *Ascaris* eggs in wastewater stabilization pond sludges.” Poster presentation at WEF Disinfection 2000: Disinfection of Wastes in the New Millennium, New Orleans, March 15-18, 2000.

Nelson, K. L. “Remoción e Inactivación de Huevos de Helminthos en Lagunas de Estabilización,” (Removal and Inactivation of Helminth Eggs in Stabilization Ponds). Invited lecture at Course on the Determination and Quantification of Helminth Eggs in Water, Institute of Engineering (UNAM), Academy of Environmental Engineers, and the Interdisciplinary Professional Center for Biotechnology (IPN), Mexico, November 18, 1999.

Nelson, K. L. (1999) “Ultraviolet light disinfection of wastewater stabilization pond effluents and the impact of particles with embedded coliform bacteria.” Oral presentation at the 4<sup>th</sup> IAWQ Specialist Conference on Wastewater Stabilization Ponds: Technology and the Environment, Marrakesh, Morocco, April 20-24.

Nelson, K. L., and B. Jiménez, (1999) “Sludge accumulation, properties, and degradation in a Mexican wastewater stabilization pond.” Oral presentation at the 4<sup>th</sup> IAWQ Specialist Conference on Wastewater Stabilization Ponds: Technology and the Environment, Marrakesh, Morocco, April 20-24.

Nelson, K. L., B. Jiménez, A. Chávez, and C. Maya, (1998) “The use of total suspended solids as an indicator of helminth egg removal from wastewater,” Poster presentation at WEFTEC '98, Water Environment Federation, Orlando, Florida, October 3-7.

#### **OTHER PRESENTATIONS**

Webinar titled “State of Agricultural Water Reuse: Impediments and Incentives,” Water Environment & Reuse Foundation, December 14, 2017.

Webinar titled “State of Agricultural Water Reuse: Impediments and Incentives,” Water Environment & Reuse Foundation, November 8, 2017.

#### **RESEARCH GRANTS AND SUPPORT**

“Improving Pandemic Preparedness and Health Equity through Wastewater Based Epidemiology.” UC Lab Fees Collaborative Research and Training Award. 2022-2025. \$3,470,471 (UCB), \$449,999 (LLNL). Co-PIs: Heather Bischel (UC Davis), Caryn Bern (UCSF).

“Evaluating robust standardizable methods for wastewater surveillance of pathogens and antibiotic resistance.” Center for Disease Control. 2022-2023. \$1,104,069 (UCB). PI: Amy Pickering; co-PIs: Rose Kantor, Erica Fuhrmeister (University of Washington).

“Sequencing of Archived and Prospective Wastewater Samples Collected at Large Metropolitan Areas in California during the COVID-19 Pandemic.” California Department of Public Health. 2021-22. \$455,000.

“Wastewater SARS-CoV-2 Quantification.” California Department of Public Health. 2021-22. \$243,000.

“Sequencing SARS-CoV-2 from wastewater.” California Department of Public Health. 2021. \$139,000.

“Sistema de vigilancia en plantas de tratamiento para el monitoreo de SARS-CoV-2 en Ciudad de México y San Francisco Bay Area.” ALIANZA/Innova UNAM COVID-19 Application. \$5,000. 2020-22.

“COVID Wastewater Epidemiology for the Bay Area.” Research grant from Catena Foundation. 2020-21. \$719,000.

“Developing a regional wastewater SARS-CoV-2 monitoring program for COVID-19 surveillance in the San Francisco Bay Area.” Research gift from Catena Foundation. 2020. \$500,000.

“Early detection of COVID-19 re-emergence via strain-level surveillance of SARS-CoV-2 and RNA viromes in municipal wastewater.” Innovative Genomics Institute Rapid Research Response Grant, U.C. Berkeley. Co-PI: Jill Banfield. 2020-2021. \$100,000.

“Strain-level surveillance of SARS-CoV-2 and RNA viromes in municipal wastewater.” Center for Information Technology in the Interest of Society, U.C. Berkeley. 2020-2021. \$90,000.

“Engineering a Stable Water Microbiome in Direct Potable Reuse Distribution Systems.” National Science Foundation. 2018-2021. \$339,706.

“S-STEM: Transfer Students Pathway to Graduate School.” National Science Foundation. PI: Oscar Dubon. 2018-2023. \$1,000,000.

“INFEWS: Reducing the Environmental Impacts of FEW Systems in and Around Cities.” National Science Foundation. PI: Arpad Horvath. 2017-2021. \$2,431,217.

“NRT-INFEWS: STEM Training for Actionable Research and Global Impact.” National Science Foundation. PI: Alice Agogino. 2016-2021. \$2,976,889.

“Engineering Research Center for Reinventing America’s Urban Water Infrastructure”, National Science Foundation (28139880-50542-C), 2011-2021. PI: Richard Luthy. Co-PIs: Jorg Drewes, David Sedlak, Nirmala Khandan. ERC funding provided for projects E2.4, N1.1, N4.2, E3.3, E2.8. 2011-2016.

“ElectroSan: Creating Value from Waste”, VentureWell. 2016-2018, \$5000.

“Tri-San: Gender Equity in Sanitation”, Blum Center for Developing Economies, U.C. Berkeley. Co-PI: Isha Ray. 2015-2016, \$100,000.

“Obama-Singh 21 Century Knowledge Initiative.” United States-India Educational Foundation (USIEF/OSI/2014/03). Co-PI: Isha Ray. 2014-2017. \$189,524.

“Effects of sanitation on pathogen transmission and child health in Bangladesh,” National Institute of Health, 2014-2018. PI: Jack Colford. Co-PIs: Stephen Luby, Leanne Unicomb, Alan Hubbard. \$2,500,000.

“Investigation of the Effects of Intermittent Drinking Water Supply to Improve Operation and Infrastructure Investment Strategies,” Inter-American Development Bank, 2014-2016. \$100,000.

“Sunlight Inactivation Mechanisms of Pathogenic Bacteria in Natural Waters,” National Science Foundation (CBET-1335673), 2013-2016. Co-PI: Alexandria Boehm. \$189,000 (UC Berkeley portion).

“Safe sludge,” Bill and Melinda Gates Foundation, Grand Challenge Explorations, 2011-2012, \$130,000.

“Global assessment of wastewater irrigation” and “Pathogen removal and disinfection in small, farmer-dug ponds in Accra, Ghana,” International Water Management Institute, 2011-2013, \$52,000.

“Next generation design of the passive latrine use monitor,” Bill and Melinda Gates Foundation, Sub-award from London School of Hygiene and Tropical Medicine, 2011-2013, \$93,756.

“Impact of conversion from intermittent to continuous water supply in Hubli-Dharwad, India. Expanding international research opportunities for US Students,” National Science Foundation (OISE-1031194), 2010-2014, \$149,991.

“Evaluation of intermittent versus 24x7 water supply in Hubli-Dharwad, India”, Blum Center for Developing Economies, U.C. Berkeley, 2009-2011, \$80,000. Lead PI: Kara Nelson; Co-PIs: Jack Colford, Isha Ray.

“The role of sunlight in controlling fecal indicator bacteria and human virus concentrations in recreational waters,” National Science Foundation (CBET-0853568), 2009-2012, \$400,000, Co-PIs Alexandria Boehm, Kris McNeill.

“Q-H2O: A new class of household consumer products for low-cost drinking water treatment”, Sustainable Products and Solutions Program, U.C. Berkeley, 2008-2011, \$270,000. Lead PIs: Kara Nelson, Peter Kozodoy; Co-Pis: Roya Maboudian, George Shanthikumar.

“Initiative on Safe Water and Sanitation”, Blum Center for Developing Economies, U.C. Berkeley, 2006-2010, \$742,000. Lead PI: Kara Nelson; Co-Pis: Jack Colford, David Levine, Isha Ray.

“Development of an ITS-1 ribosomal DNA (rDNA) gene specific quantitative real-time PCR method for detecting viable larvated *Ascaris* ova in biosolids,” U.S. Environmental Protection Agency, 2007-2008, \$90,000.

“Understanding the causes and effects of toxic cyanobacterial blooms in Rodeo Lagoon, Golden Gate National Recreation Area, CA” UC Toxic Substances Research & Teaching Program, 2006-2008, \$50,000.

“Sustainable urban sanitation in developing countries” (component of the Urban Sustainability Initiative, Berkeley Institute for the Environment) Moore Foundation, 2006-2008, \$70,000. Co-Pis: Isha Ray, Jennifer Davis.

“Assessment of nutrient enrichment in Rodeo and Tennessee Valley watersheds” U.S. Park Service, 2005-2007, \$39,781.

“Improving methods for the control of helminth eggs in wastewater and sludge” UC Mexus-Conacyt Collaborative Grant, 2004-2006, \$25,000. Co-PI: Blanca Jimenez.

“UV-Tube design concept for sustainable, point-of-use water disinfection,” P3 Award, U.S. Environmental Protection Agency, 2004-2006, \$10,000 (Phase I), \$75,000 (Phase II). Co-PI: Daniel Kammen.

“Understanding sunlight-mediated inactivation of pathogens in water” Faculty Early Career Development (CAREER) Program, Presidential Early Career Award for Scientists and Engineers (PECASE), National Science Foundation (BES-0239144), 2003-2008, \$400,000.

“Optimization of filtration flux rate for production of Title-22 disinfected tertiary recycled water” National Water Research Institute and WaterReuse Foundation, 2003-2008, \$244,000. (Subcontract from Monterey Regional Water Pollution Control Agency).

“Development of a quantitative detection method for enumerating host-specific fecal bacteria based on real-time, quantitative polymerase chain reaction” Center for Water Resources, University of California, 2003-2005, \$60,000.