**Kathryn B. Newhart, EIT, CWP**

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| PhD Candidate  Department of Civil and Environmental Engineering  Colorado School of Mines | 1500 Illinois St., Golden, CO 80401  kbnewhart@mines.edu  (720) 253-6323 |

**Education**

* PhD in Civil and Environmental Engineering, Colorado School of Mines, 2018 – August 2020

“Data-driven process control of municipal wastewater treatment”

Advisors: Prof. Tzahi Cath and Prof. Amanda Hering (Baylor University)

* M.S. in Civil and Environmental Engineering, Colorado School of Mines, 2016 – 2018

GPA: 3.8

* B.S. in Environmental Engineering (minor in Chemistry), Colorado School of Mines, 2016

GPA: 3.7, *Cum Laude*

**Research and Teaching Experience**

* **Research Assistant**, *Colorado School of Mines, Golden, CO* *June 2016 – present*

Re-Inventing the Nation’s Urban Water Infrastructure (ReNUWIt) Engineering Research Center

* + Operator of a demonstration-scale sequencing-batch membrane bioreactor to support potable and nonpotable reuse research
  + Lab manager: waste management and disposal, ordering, equipment maintenance
  + Directed and supervised undergraduate and graduate researchers for summer and academic year-long projects
* **Co-Instructor** *Colorado School of Mines, Golden, CO Fall 2018, Spring 2020*Department of Civil and Environmental Engineering
  + Lectured, prepared engineering design exercises, and mentored students for “Unit Processes for Water and Wastewater Treatment” (2018) and “Advanced Water Treatment and Reclamation” (2020)
  + Evaluation score: 4.15/5 (2018)
* **Teaching Assistant**, *Colorado School of Mines, Golden, CO* *May 2016, 2017, 2018*

Department of Civil and Environmental Engineering

* + Develop and lead laboratory experiments to teach standard environmental sampling, testing, and data analysis procedures
  + Supervise student field investigations of acid mine drainage sites and a wastewater treatment facility
  + Evaluate students’ performance, both individually and in groups
  + Evaluation scores: 4.50/5 (2016), 4.48/5 (2017), 4.24/5 (2018)
* **Undergraduate Research Assistant**, *Colorado School of Mines, Golden, CO* *August 2014 – May 2016*

Center for a Sustainable WE2ST (Water, Energy, Education, Science, and Technology)

* + Assist in the design and execution of a graduate research plan for the evaluation of long-term fouling of forward osmosis membranes with produced water
  + Developed an experimental method of identifying biofilm on forward osmosis membranes by the use of fluorescent stains
  + Operate and optimize a bench scale, sequencing-batch membrane bioreactor with a mixture of municipal wastewater and produced water

**Peer-Reviewed Publications**

* Klanderman, M., **Newhart, K.B.,** Cath. T.Y., Hering, A.S., Fault isolation for a complex decentralized wastewater treatment facility, *Technometrics*, 2019, in review.
* **Newhart, K.B.,** Holloway, R.W., Hering, A.S., Cath, T.Y., Data-driven performance analyses of wastewater treatment plants: A review, *Water Research*, 2019, 157, 498-513
* Odom, G.J., **Newhart, K.B.**, Cath, T.Y., Hering, A.S., Multi-state multivariate statistical process control, *Applied Stochastic Models in Business and Industry*, 2018, 34(6), 880-892
* **Newhart, K.B.** & Avila, I., NDMA: relevance and regulatory status for drinking water facilities, Rocky Mountain Water, November 2017
* Bell, E.A., Poynor, T.E., **Newhart, K.B.**, Regnery, J., Coday, B.D., Cath, T.Y., Produced water treatment using forward osmosis membranes: evaluation of extended-time performance and fouling, *Journal of Membrane Science*, 2017, 525, 77-88.

**Articles in Preparation**

* **Newhart, K.B.**, Klanderman, M., Cath, T.Y., Hering, A.S., Early fault detection of biological and membrane-based wastewater reclamation systems, 2020
* Klanderman, M., **Newhart, K.B.,** Cath. T.Y., Hering, A.S., Fault detection and attribution metrics, 2020
* **Newhart, K.B**., Goldmen-Torres, J., Wisdom, B. Freedman, D., Hering, A.S., Cath, T.Y.,   
  Real-time dose control of peracetic acid disinfection in municipal wastewater treatment, 2020
* Holloway, R., **Newhart, K.B.**, Saffee, H., Impacts of advanced process control on municipal wastewater treatment, 2020
* Govind, J., **Newhart, K.B.**, Maltos, R.A., Cath, T.Y., Mohagheghi, S., Energy-modeling of sequencing-batch membrane bioreactor for treatment optimization, 2020

**Conference and Meeting Presentations**

* “Predictive Control in Wastewater Treatment Facilities Using Simple Statistical Models,” South Platte Coalition for Urban River Evaluation: Confluence at the Confluence, Oct 15, 2019, Englewood, CO
* “Energy Reduction in Municipal Wastewater Treatment,” Colorado Industrial Pretreatment Coordinators Association Fall Conference, Oct 18, 2019, Black Hawk, CO
* “Ammonia Forecasting Using Statistical Models of Activated Sludge Treatment,” Oct 3, 2019, Re-inventing the Nation’s Urban Water Infrastructure (ReNUWIt) NSF ERC Industrial Advisory Board Meeting, Golden, CO
* “Predictive Modelling and Performance Assessment of Ammonia-Based Aeration Control,” Water Environment Federation Technical Exhibition and Conference (WEFTEC), Sept 23, 2019, Chicago, IL
* “A Utility Perspective: Practical Considerations of Operating and Advancing Ammonia-Based Aeration Control,” July 10, 2019, RMWEA Innovation Seminar, Denver, CO
* “Fault Detection Using PCA at a Municipal Wastewater Treatment Facility​,” July 30, 2019, Joint Statistical Meeting, Denver, CO
* RMSAWWA/RMWEA Student Conference, May 13, 2019, Boulder, CO
* “Use of Statistical Process Control at a Decentralized Water Reclamation Facility in Colorado,” Colorado School of Mines Graduate Research and Discovery Symposium, April 18, 2019, Golden, CO
* “Statistical Process Control in Municipal Wastewater Treatment,” RMSAWWA/RMWEA Joint Annual Conference, Sept 13, 2018, Denver, CO
* “Advanced Statistical Modeling of a Pilot-Scale Biological Wastewater Treatment System for Fault Detection,” RMSAWWA/RMWEA Student Conference, May 14, 2018, Golden, CO
* “Principal Component Analysis for Monitoring of Biological and Membrane Wastewater Treatment Systems,” Colorado School of Mines Graduate Research and Discovery Symposium, April 5, 2018, Golden, CO
* “Performance Evaluation of a Sequencing Batch Membrane Bioreactor Using Principal Component Analysis,” Annual WateReuse Symposium, Sept 11, 2017, Phoenix, AZ
* “Use of Principal Component Analysis for Early-Fault Detection in a Pilot-Scale Biological Wastewater Treatment System,” Quality and Productivity Research Conference, June 14, 2017, Storrs, CT
* “Statistical Process Control for Monitoring Biological Wastewater Treatment Systems,” RMSAWWA/RMWEA Student Conference, May 22, 2017, Albuquerque, NM

**Leadership**

* Campus Representative, ReNUWIt Student Leadership Committee, 2019 – 2020
* President, ReNUWIt Student Leadership Committee, 2018 – 2019
* President, CSM Campus Chapter of AWWA/WEF, 2018 – 2019
* Co-Chair, 15th Annual RMSAWWA/RMWEA Joint Student Conference, 2018
* Public Education Committee Member, RMSAWWA/RMWEA, 2017 – 2018
* Media Officer, ReNUWIt Student Leadership Committee, 2017 – 2018
* Campus Representative, ReNUWIt Student Committee on Diversity & Inclusion, 2017 – 2018
* Vice President, CSM Campus Chapter of AWWA/WEF, 2017 – 2018
* Education and Outreach Director, CSM Campus Chapter of AWWA/WEF, 2016 – 2017

**Activities / Honors**

* WEF/WRF LIFT Intelligent Water System Challenge, 1st place, 2019
* AWRA-Colorado Rich Herbert Memorial Scholarship, 2019
* Colorado School of Mines Graduate Research and Discovery Symposium, 1st place oral presentation, 2019
* 16th Annual RMSAWWA/RMWEA Joint Student Conference, 1st place oral presentation, 2019
* 15th Annual RMSAWWA/RMWEA Joint Student Conference, 1st place oral presentation, 2018
* WateReuse Colorado Martha Hahn Memorial Scholarship, 2017
* Edna Bailey Sussman Internship, Summer 2017

**Professional Experience**

* **Engineering Intern,** *Metro Wastewater Reclamation District, Denver, CO March 2019 – present*

Strategy and Innovation Department

* + Integrate the statistical analysis platform *R* into existing SCADA system
  + Optimize peracetic acid disinfection system using data-driven prediction algorithms
  + Compare parallel unit processes to identify differences in operation and treatment
* **Environmental Engineering Intern***,**ConocoPhillips, Houston, TX* *May 2015 – August 2015*
  + Health, Safety, and Environment Group
    - Developed tools to perform QA/QC on the company’s water use data at an asset level before submittal to corporate & collect, manage, and report environmental metrics data at the corporate level
  + Engineering & Technology Group
    - Assist in operation of produced water treatment pilot system in the Permian basin
    - Perform QA/QC on vendor’s data collection & analysis
    - Supervise safe work on job sites

**Certifications**

* Wastewater Operator, Class D, Colorado, 2016-2020
* Fundamentals of Engineering (FE), Environmental, Colorado, NCEES ID 16-475-74