

McKENNA

FARMER

PH.D. CANDIDATE | CIVIL & ENVIRONMENTAL ENGINEERING

environmental engineering & science



1. Where are you from?

I am from East Troy, Wisconsin.

2. Where did you get your undergrad degree from and what was your major? Do you have a MS? I earned a B.S. in Civil Engineering from the University of Wisconsin-Platteville. I graduated in the spring of 2019 and then started the Ph.D. program in the fall of 2019.

3. What attracted you to engineering? Like a lot of others, I was told in high school that engineering would be a great fit for me since I was good at math and science. I had no idea what engineering was, even with my dad being an engineer, but I took that advice anyway and started undergraduate school with a major in mechanical engineering. I realized right away that mechanical engineering wasn't the right fit, but I was drawn in by civil and environmental engineering. I love that the field is about solving problems and improving systems that all of us interact with daily. The environmental engineering field specifically attracted me because of the emphasis on protecting natural ecosystems, minimizing the human impact on the environment, and protecting public health.

4. What attracted you to pursue a Ph.D. in your specialty area?

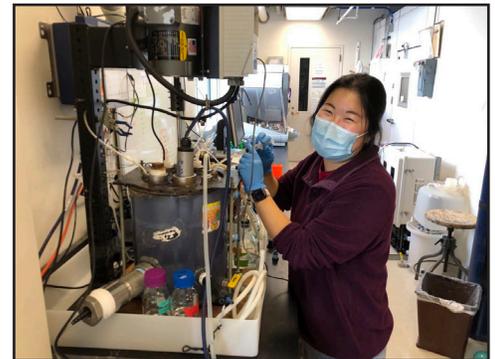
I was very lucky to have two professors in undergraduate school, Dr. Michael Penn, and Dr. Austin Polebitski, who sparked my interest in wastewater research. They gave me the advice and support to pursue a Ph.D. The University of Wisconsin-Platteville did not have many research opportunities, so they recommended that I apply to Research Experiences for Undergraduate (REU) programs. I was accepted at the Colorado School of Mines under the ReNUWIt Engineering Research Center and spent an amazing summer researching water and sewer service affordability. This research experience opened my eyes to the wide breadth of environmental engineering research and gave me a great idea of day-to-day life in graduate school. The ReNUWIt program also helped me realize that environmental engineering, especially the wastewater field, is very collaborative and full of people from various backgrounds. This made the idea of pursuing a Ph.D. even more exciting.

5. How do you explain your thesis research to a non-scientist?

My research is about wastewater, which we all produce when we flush the toilet and use the sink or shower. I test different ways to treat wastewater using microbes. I study how specific types of microbes remove nutrients like nitrogen and phosphorus from the water. These elements are harmful to water bodies in large doses which can cause algal blooms creating poor quality drinking water. Finding the most efficient ways to remove these pollutants is important for protecting the environment and improving our wastewater treatment systems. I also study how we can harness these microbes to not only remove pollutants from wastewater, but gain back valuable resources like energy or chemicals.



McKenna Farmer



In the lab

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6. What attracted you to NU?

Besides my specific research interests in the Wells Lab, I was sold on the collaborative environment at NU. I valued that aspect a lot looking into graduate programs, the research collaborations within the CEE department, the engineering departments, and across different institutions impressed me. Of course, it was also hard to beat the location right on Lake Michigan!

7. What has been the highlight of your time at NU and CEE?

I can't pinpoint one specific event or date, but overall, the people in the CEE department have made my time at NU very special so far. My cohort has been supportive and a great group of friends and colleagues since day one. My labmates are also welcoming and knowledgeable; it's clear that the professors, department staff, and support staff on campus want us to succeed. I was worried that going into graduate school the atmosphere could be overly competitive or cutthroat, but I've experienced the opposite in my lab and throughout the department.

8. What has been the most challenging aspect of your graduate school experience?

It's safe to say the pandemic has been the most challenging aspect so far. The physical, emotional, and social toll has weighed on all aspects of our lives since the start of the pandemic. In terms of the graduate school experience, it's been a ride since the spring of my first year. I was originally planning on starting lab-based work in the spring of 2020, but I was lucky to be able to transition to remote work and learn bioinformatics during that spring and summer. Now it's been almost two years since the pandemic started, and the impacts and challenges have still been hard to deal with.

9. Can you tell us about your experience being mentored or mentoring others?

I've had a lot of positive mentorship experiences in undergraduate school, graduate school, and work experiences. I'm also at the point where I'm mentoring other students in the lab, which pretty much always feels like a novice teaching the novices. My dip into mentoring others has given me a lot of perspective on my mentors and made me reflect on how I want to mentor these students.

10. What are your interests or hobbies outside of your research?

Outside of research, I'm involved in a lot of outreach efforts with the GradSWE chapter here on campus. I help plan events for high school students interested in STEM and I love connecting with these students. I also enjoy cooking and playing video games in my free time.