

# Mariana I. Fernández Correa, EIT

marifc@umich.edu • 787-399-8750 • <https://www.linkedin.com/in/marifc/>

## EDUCATION

### University of Michigan

Ann Arbor, MI

MSE. Environmental Engineering | Focus: Hazards, Risk & Resilience | GPA: 3.85/4.00

May 2026

- Rackham Merit Fellow & Global Tauber Institute for Global Operations Fellow
- Relevant coursework: Spatial Data Statistics; Hazard Analysis; Risk Analysis; Sensors and Data Analysis

BSE. Environmental Engineering, International Minor | GPA: 3.66/4.00 Magna Cum Laude

August 2025

- Engineering Honors Program | Engineering Global Leadership (EGL)
- Relevant coursework: Floodplain Hydraulics; Technical Communications; Stream Restoration Hydrology; Operations and Business; Fluid Mechanics.

## WORK EXPERIENCE

### Enviva Biomass, Inc.

Raleigh, NC

Process Engineering Intern

May 2025 - August 2025

- Enhanced modeling accuracy of key wood fiber properties, moisture content, and particle size, leading to more reliable forecasts of production capacity and profitability.
- Developed a forecasting model to predict moisture content in naturally dried wood, addressing the company's main bottleneck (drying), enabling better raw material planning and higher throughput; expected to generate \$1.4M–\$1.6M in annual profit at the pilot site.
- Incorporated particle size into regression models predicting throughput, addressing the second most common bottleneck across all sites, and improving throughput modeling accuracy.

## RESEARCH EXPERIENCE

### UM Civil and Environmental Engineering

Ann Arbor, MI

Graduate Engineering Research Assistant – Ecohydrology Lab

May 2026- Present

- Analyze Google Maps ETA discrepancies in R and VS Code, using historical travel-time spikes as a proxy for urban flooding to map the severe impact of localized rainfall on Metro Detroit traffic flow.

Graduate Engineering Research Assistant – Hydraulic & Coastal Engineering Lab

May 2026- Present

- Utilize GIS to map and screen prospective inland sites for closed-loop pumped hydro storage in Michigan, filtering by topography, land-use restrictions, and community priorities to accelerate clean energy planning

Engineering Research Assistant – Biological Fluid Mechanics Lab

September 2022 - August 2025

- Co-Author on “Kaylin Jones, Mariana I. Fernández Correa, Julien Malherbe, and Aline Cotel. 2025. Investigating the entrance hydrodynamics of sea lamprey traps. *Canadian Journal of Fisheries and Aquatic Sciences*. 82: 1-15.”
- Analyzed hydrodynamic flow patterns around mesh-based Sea Lamprey traps using Particle Image Velocimetry (PIV) methodology and MATLAB (PIVlab) to generate heatmaps of relevant turbulent parameters influencing fish swimming.
- Conducted flow experiments in a laboratory flume and later scaled them up to full-size trials with live lamprey, enabling a behavioral and hydrological approach. This provided the foundation for future improvements to lamprey trap design.
- Reviewed extensive literature and placed it in the context of lamprey, attraction flows, and modern Sea lamprey trap design to begin understanding what comprises lampreys' attractive flows, the first step in optimizing their trap rates.

## RELEVANT EXPERIENCE & PROJECTS

### Hensel Phelps – Extern

Torrance, CA March 2024

- Gained hands-on insight into heavy civil project management by reviewing Requests for Information (RFIs) for the welding subcontractor, collaborating with the cost-estimating team on financial decision-making, and shadowing Field Engineers during daily on-site troubleshooting and safety checks.

### Vibrio Predictive Model on Chesapeake Bay – Spatial Data Statistics

August 2025 - December 2025

- Developed and compared six spatio-temporal statistical models in R (GLM, SAR, CAR) to predict *Vibrio* bacteria presence in Chesapeake Bay, achieving the highest predictive accuracy and lowest error using a binomial GLM with integrated spatial and time lags for seasonal variability.

### Stormwater Design for Salem Meadows Development – Capstone

January 2024 - May 2024

- Designed the stormwater conveyance system for a proposed 400-acre development, using EPA SWMM to create an integrated system that included swales, pipe conveyance, and wet detention ponds, which effectively mitigated the projected increase in post-development runoff while complying with WCWRC, MDOT, and LEED Gold sustainability standards.

## SKILLS

Computer: R, Python, MATLAB, VBA, SWMM, HEC-RAS, GIS (Entry- level)

Languages: English & Spanish (native writer and speaker)

Certifications: Engineer in Training (EIT) – Michigan | Six Sigma Green Belt Lean Manufacturing (expected in September)