

# Mike Du Bose, EIT

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Portland, OR

## Education

### Portland State University

Sept. 2018 – Expected June 2021

Degree: BS Civil Engineering with Honors, Minor in Mathematics | GPA: 3.96

### Portland Community College

Jan. 2015 – Sept. 2018

Degree Earned: General Associates with Honors | GPA: 3.93

**Societies/Activities:** CEE Honors Program, American Society of Civil Engineers, Engineers Without Borders, Undergraduate Research Assistant, Engineering & Calculus Teaching Assistant, PCC Cascade Math Club

**Relevant Classes:** Numerical Methods for Water Resources Engineering, GIS for Environmental & Engineering Applications, Unit Operations in Environmental Engineering, Water Resource Engineering, Fluid Mechanics, Hydraulics, Spatial Analysis (CAD), Soil Mechanics, Geotechnical Design, Plane Surveying, Applied Statistics for Scientists & Engineers, Ecohydrology (Spring 2021)

## Work Experience

### Undergraduate Research Assistant/Honors Thesis – CE-Qual-W2 Model Analyst

Dec. 2020 – Present

- Prepared inputs and parameters for a CE-Qual-W2 model of the Willamette and Columbia Rivers to analyze potential outcomes and scenarios for massive oil and liquid fuel spills from the Portland Critical Energy Infrastructure (CEI) hub due to the Cascadia Subduction Zone earthquake.
- Compiled a literature review of liquid fuel constituents, characteristics, fate and transport in riverine systems. Calculated the constituent decay rates assuming a well-mixed batch reactor and first-order decay.
- Determined which fuels remain buoyant, which constituents volatilize, and conditions causing oil to disperse through the water column.
- Next steps: run CE-Qual-W2 model for various Cascadia/CEI scenarios, analyze outcomes, report and present the results.

### Capstone – Wastewater Treatment Wetland Denitrification Unit Design

Jan. 2021 – Present

- Evaluated three denitrification processes and lake shore regrading to mitigating harmful algal blooms (HABs) in Fernhill Lake for the Fernhill Wastewater Treatment facility in Forest Grove, OR. Operated by Clean Water Services (CWS), Fernhill Lake abuts the Fernhill Treatment Wetland, a popular birding and recreation area. A natural, chemical-free, denitrification process was required to prevent harm to the migrating birds and wetland environment.
- Analyzed denitrification alternatives prior to nitrified effluent entering the lake, specifically a wood chip bioreactor and a biofilter, and rated each based on criteria supplied by CWS. Dimensions for each were calculated using standard unit operations methods and equations.
- Next steps: design scale models for wood chip bioreactor beds and a biofilter using an extant Parshall flume in AutoCAD and Civil3D; finalize report of analyses and recommendations to the client (CWS).

### ASCE PSU Environmental Design Team

Jan. 2020 – Present

#### Team Captain

- Led weekly meetings and delegated action items to team members based on their scopes and abilities. Assisted individual team members to overcome challenges and technical issues.
- Designed a water filtration system comprised of store bought components and media that would be available in a natural disaster.
- Used historic water quality data from source water to determine which contaminants were present and the appropriate process for removing them from the water.
- Calculated alum dosing required for coagulation/flocculation, the amount of chlorine as store-bought bleach required for disinfection, and the amount of quicklime required to buffer the pH to 7.0 using concepts and equations from unit operations.
- Determined layer depth of filtration media using methods from hydraulics and soil mechanics related to medium type, hydraulic conductivity, and headloss.
- Constructed models of the water filter design and flow diagram using AutoCAD.

## **EPA Campus RainWorks Challenge – Bioswale & Green Wall Design**

**Sept. 2020 – Dec. 2020**

### Lead Project Coordinator

- Assembled and led a multidisciplinary team of graduate and undergraduate students, and faculty and professional advisors to design a bioswale and green wall demonstration project for a proposed “Green Street” (closed to automobile traffic) on PSU campus.
- Created a multiphase project timeline and organized subgroups to complete the required tasks effectively and efficiently for each phase.
- Wrote weekly meeting agendas and delegated meeting roles to facilitate leadership experience amongst all team members.
- Calculated minimum bioswale design volume using city stormwater design codes and using the rational method for peak overland flow, and time of concentration.
- Edited the final technical paper to ensure cohesive and complete information with proper ASCE Reference style of all citations and references.

## **Portland Community College**

**Sept. 2016 – Aug. 2020**

### Mathematics Tutor & Physics Tutor

- Coached students from historically underserved populations in math and analytic skills for TRiO Student Support Services.
- Tutored as many as 40 students per day in physics and a broad range of math – from pre-algebra to differential equations and statistics for the Student Learning Center.
- Improved student outcomes by implementing strategies for learning and problem solving.
- Collaborated with other tutors to develop creative techniques to promote student understanding.

### Skills and Interests

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**Skills:** Microsoft Office (Word, Excel, PowerPoint), AutoCAD, ArcGIS Pro, CE-Qual-W2, HEC-RAS, MATLAB, R.

**Interests/hobbies:** Hiking, travelling, playing music with my band, record collecting, developing vegan recipes building on over a decade of restaurant experience, and homebrewing.