# Marie T. Rivers, PE

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## SUMMARY OF QUALIFICATIONS

- Data science skills with Python, R, and SQL plus strong environmental domain knowledge
- 10 years of engineering consultant experience focused on hydraulic modeling and water resources
- Master's degrees in both data science and engineering
- Strong experience analyzing, modeling, visualizing, and communicating environmental and spatial data

## EDUCATION

**Master of Environmental Data Science** (June 2022)
**Bren School of Environmental Science & Management – University of California, Santa Barbara (UCSB)**
Highlighted Coursework: Scientific Programming, Remote Sensing, Statistics, Spatial Analysis, Machine Learning, Data Visualization, Environmental Policy Evaluation, Modeling Environmental Systems, Text and Sentiment Analysis, Ethics and Bias in Environmental Data Science

**Master of Science in Environmental Engineering** (May 2011)
**Department of Civil and Environmental Engineering – University of Massachusetts, Amherst**
Thesis: Annual, Monthly, and Storm Scale Analysis of Chloride Fluxes from Highway Deicing Agents to the Cambridge Reservoir

**Bachelor of Environmental Engineering** (May 2009)
**Department of Civil and Environmental Engineering – University of Delaware, Newark**
Concentration: Water Resources and Water Quality
Minors: Civil Engineering and Geology

## DATA ANALYSIS EXPERIENCE

**Masters Capstone: Improving Usability of Remotely Sensed Snow Data Through Web Based Visualizations and Tutorials** (1/22–6/22)
**Role**: Data Manager | **Client**: UCSB Earth Research Institute

- Developed an interactive web application to visualize snow cover and albedo data
- Wrote technical documentation and reproducible tutorials to aide water managers, researchers, and outdoor enthusiast access data of spatial and temporal interest
- Analyzed historic snow cover statistics from remote sensing data (HDF5 format) to calculate anomalies and inform present day trends

## EXPERIENCE

**Geospatial Research Scientist II – National Renewable Energy Laboratory**, Golden, CO (12/22–present)

- Applies geospatial analyses to the siting of renewable energy technologies

**Water Resources Engineering Professional Associate – Jacobs Engineering**, Boston, MA (1/20–7/21)

- Managed a combine sewer overflow program by reviewing regulatory requirements, writing compliance reports and advising the city on measures to reduce flow in combined sewers
- Modeled proposed scenarios using WaterGEMS software to evaluate infrastructure upgrades, operational changes and pipe configurations to improve water quality and resiliency for a municipal water utility
- Presented the hydraulic effects of water storage changes using model outputs, graphs and maps to inform decision makers within a municipal water utility
- Completed a spatial analysis using ArcGIS and stakeholder input to identify new water infrastructure sites
- Authored a training manual for a Certified Professional in Water Pollution Control program focused on methods used to monitor, model, control and remove pollutants from surface water and pollution sources

– Continued –

## EXPERIENCE (Continued)

**Principal Engineer – Hazen and Sawyer**, Boston, MA (11/17–1/20)

- Prepared technical memoranda, design plans, technical specifications, health and safety plans and inspection reports for water infrastructure design and rehabilitation projects
- Coordinated project status, budget and schedule with project team, client contact, and contractor
- Created Geographic Information System (GIS) maps and summary tables using ArcGIS and Excel for reports and client presentations
- Cowrote responses to Request for Proposals to secure project work with existing and new clients

**Project Engineer – Tata & Howard**, Marlborough, MA (6/11–11/17)

- Built, calibrated and verified over 10 hydraulic models in WaterGEMS and InfoWater software using historic records, GIS data and hydrant flow tests to allow clients to evaluate existing and future conditions
- Modeled 20+ water distribution systems to provide water utilities with solutions to hydraulic deficiencies
- Wrote water distribution system reports to communicate existing and future conditions, critical components, prioritized infrastructure replacement recommendations, and multi-decade budget estimates
- Designed over 40,000 feet of new and rehabilitated water main projects to improve reliability of community drinking water distribution systems

## ADDITIONAL EXPERIENCE

**Research Assistant – UMass Environmental Engineering Department**, Amherst, MA (6/09–5/11)

- Modeled transport of road salt in stormwater runoff from highways to water supply reservoirs using continuously logged water quality data and Microsoft Excel Visual Basic to quantify pollutant loading

**Engineering Intern – Geosyntec Consultants**, Acton, MA (6/08–8/08)

- Quantified infiltration rates for porous pavement, bioretention cells, and raingarden systems to monitor Low Impact Development system performance

**Water Resource Intern – Delaware Water Resource Center**, Newark, DE (9/07–5/08)

- Analyzed groundwater field data and modeled groundwater flow in an unconfined aquifer

**Engineering Aide – Massachusetts Dept of Environmental Protection**, Worcester, MA (6/06–8/06, 6/07–8/07)

- Assisted in writing Water Quality Assessment Reports and prepared GIS figures for selected watersheds to document environmental conditions

## LICENSES AND CERTIFICATIONS

Professional Civil Engineer, Water Resources – MA License # 51946
OSHA 10 Hour

## CONFERENCE PROCEEDINGS

Rivers, Marie and Marc Morin. (2019), "An Alternate Approach to Painting and Structural Improvements to the Bellevue 2 Steel Water Tank" New England Water Works Association 138th Annual Conference, September 22-25, Rockport, Maine. (conference proceeding)

## PUBLICATIONS

Rivers, M.T. 2011 (Masters Thesis). Annual, Monthly, and Storm Scale Analysis of Chloride Fluxes from Highway Deicing Agents to the Cambridge Reservoir. University of Massachusetts, Amherst.

## TECHNICAL AND PROJECT MANAGEMENT SKILLS

**Programming, Coding & Data Analysis**: R, Python, SQL, Git (GitHub), PostgreSQL, ArcGIS, Google Earth Engine, Tableau, data visualization, machine learning, remote sensing, markdown, hydraulic modeling
**Project Management & Computing**: Microsoft Office Suite (Word, Excel, PowerPoint), Zotero, Slack, ZenHub