

Reza Moghaddam, PhD

Environmental Engineer — Water Systems Specialist — Sustainable Solutions Expert

CONTACT INFORMATION

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Nationality: New Zealand Resident

PROFESSIONAL EXPERIENCE

Environmental Engineer	Mar 2023 - Present
<i>National Institute of Water and Atmospheric Research (NIWA), New Zealand</i>	
Water Engineer	Sep 2022 - Dec 2022
<i>Williamson Water and Land Advisory, New Zealand</i>	
Chemical Engineer	2016 - 2019
<i>Bidestan Alcohol and Foodstuff Co, Iran</i>	

KEY COMPETENCIES

Environmental Systems Modeling

- ◇ Integrated watershed modeling and simulation
- ◇ Advanced hydraulic and hydrologic analysis
- ◇ Predictive environmental quality assessment
- ◇ Digital twin development for water systems

Water Treatment Technology

- ◇ Treatment system design and optimization
- ◇ Innovative contaminant removal strategies
- ◇ Water quality management frameworks
- ◇ Decentralized treatment solutions

Geospatial Analysis

- ◇ Environmental spatial modeling
- ◇ Multi-dimensional data visualization
- ◇ Land-water interaction analysis
- ◇ Terrain and hydrologic feature characterization

Sustainable Engineering

- ◇ Nature-based solution development
- ◇ Green infrastructure implementation
- ◇ Ecological engineering approaches
- ◇ Resilient system design for climate adaptation

Process Engineering

- ◇ Bioprocess engineering and optimization
- ◇ Resource recovery system development
- ◇ Industrial ecology implementation
- ◇ Circular economy approaches

Technical Expertise

- ◇ Data science for environmental applications
- ◇ Research methodology and experimental design
- ◇ Environmental regulatory framework navigation
- ◇ Indigenous environmental management principles

EDUCATION

PhD in Environmental Engineering University of Waikato, New Zealand Thesis: "Enhanced Nitrate Removal via Carbon Dosing in Woodchip Bioreactors"	2019-2022
MSc in Chemical Engineering Sahand University of Technology, Iran	2015-2017
BSc in Chemical Engineering University of Zanjan, Iran	2011-2015

RESEARCH PUBLICATIONS

Selected Journal Articles

- ◇ **Moghaddam, R.**, et al. (2023). "Flow analysis and hydraulic performance of denitrifying bioreactors under different carbon dosing treatments." *Journal of Environmental Management*, 328, 116926.
- ◇ **Moghaddam, R.**, et al. (2023). "Constant carbon dosing of a pilot-scale denitrifying bioreactor to improve nitrate removal from agricultural tile drainage." *Ecological Engineering*, 187, 106851.
- ◇ **Moghaddam, R.**, et al. (2022). "Enhanced nitrate removal and side effects of methanol dosing in denitrifying bioreactors." *Ecological Engineering*, 185, 106818.

Technical Reports

- ◇ Matheson, F., Semadeni-Davies, A., **Moghaddam, R.**, et al. (2024). "Application of a riparian planning tool to the Pokaiwhenua catchment: Prediction of water quality and ecological outcomes." Prepared for DairyNZ.
- ◇ Hughes, A., **Moghaddam, R.** (2024). "Kaiate Stream: assessment of changes in faecal contaminants and turbidity after implementation of mitigation measures." NIWA Client Report, 2024008HN.

TECHNICAL TOOLS

Modeling Software	Data Analysis & Programming
◇ SWMM/pySWMM (Stormwater Management)	◇ Python (Pandas, NumPy, Matplotlib, SciPy)
◇ EPANET (Water Distribution Networks)	◇ R (Statistical Computing)
◇ HEC-RAS (River Analysis)	◇ QGIS & ArcGIS (Spatial Analysis)
◇ MODFLOW (Groundwater Modeling)	◇ Matlab

PROFESSIONAL DEVELOPMENT

Professional Affiliations	Languages
◇ Member, Engineering New Zealand	◇ English (Professional proficiency)
◇ Pursuing Chartered Professional Engineer (CPEng) status	◇ Persian (Native proficiency)
◇ Active in international water quality forums	