

Rachel King

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EDUCATION

University of Massachusetts Amherst

College of Natural Sciences

Master of Science in Hydrogeology

Expected Graduation: May 2025

- **GPA:** 3.8
- **Master's Thesis:** Streamflow Generation in the Andean Puna: Implications for Water Budgets
- **Relevant coursework:** Stable Isotope Biogeochemistry, Aqueous Geochemistry, Groundwater Modeling Independent Study

University of Massachusetts Amherst

College of Natural Sciences

Bachelor of Science in Environmental Science

May 2023

- **GPA:** 3.66
- **Relevant coursework:** Introduction to GIS, Geologic Fluids and Processes, Glacial Geology, Environmental Economics, Toxicology and Chemistry, Ecosystems and Biodiversity, Environmental Soil Science, Mineralogy, Organic Chemistry

SOFTWARE SKILLS

ArcGIS Pro, MATLAB, Python, Adobe Illustrator, Google Earth Engine, Leapfrog Geo, Oasis Montaj, Microsoft suite, Geochemist's Workbench, Groundwater Vistas (Basic), ModelMuse (Basic), MODFLOW6 (Basic)

RELEVANT EXPERIENCE

UMass Hydrogeology Research Group

Graduate Research Assistant

My thesis work is centered around characterizing how streams work in the high elevation, arid and remote Puna Plateau in Argentina. This region is currently being explored and exploited for lithium brine resources. Accurate representation of water availability in these basins is critical to responsible mining practices.

- Managed hydrologic database for Pastos Grandes lithium project in Argentina. Organized pressure transducer, water/air temperature sensor, weather station, streamflow, water stable isotope, tritium data.
- Plotted and analyzed hydrogeologic and geochemical data using Python and MATLAB.
- Integrated datasets to represent water availability estimations in the basin, led technical reports written for Lithium Argentina mining company
- Worked closely with the Lithium Argentina field team and developed strong collaboration
- Spatially represented hydrogeologic data using ArcGIS Pro
- Mapped streams, vegetation and snow using Sentinel-2 imagery and Google Earth Engine, remote sensing techniques
- Designed water monitoring and geochemical sampling plan for Pozuelos basin in Argentina
- Led and participated in meetings with industry professionals, consultants and other stakeholders

Undergraduate Researcher

November 2022 – August 2023

- Led analysis of Airborne Electromagnetic survey data from Clayton Valley, Nevada by identifying electrical conductivity signatures of freshwater and brine in different lithologies to map brine-freshwater interface and estimate freshwater inflow using Oasis montaj and Leapfrog Geo.
- Spatially mapped lithologic units in Plymouth Massachusetts to inform groundwater flow model
- Analyzed detailed groundwater well data using Groundwater Modeling Software (GMS) and Excel

National Renewable Energy Laboratory

Geothermal Systems Intern

May 2022 – August 2022

- Researched the potential for a supercritical resource at Newberry Volcano, Oregon

- Compiled geologic data about various potential supercritical and enhanced geothermal system sites contributing to a Play Fairway Analysis of geothermal resource
- Communicated my findings and experience through a research paper and poster
- Completed geophysical surveys (magnetotelluric and gravity) on Newberry Volcano in order to unde

Onvector LLC

Market Research Intern and Social Media Manager

May 2021 – June 2022

- Studied the vertical farming market and created a presentation highlighting technologies
- Worked on customer discovery, reaching out to vertical farming experts, and arranged meetings and phone calls
- Maintained Onvector's LinkedIn page, created three posts per week regarding PFAS contamination
- Edited training modules with WeVideo application and updated WordPress website

Green Path Strategies

Communications Intern

May 2020 – May 2021

- Collaborated with a variety of renewable energy companies and organizations for their communication needs
- Monitored Bureau of Ocean Energy Management hearings regarding Vineyard Wind Project
- Organized spreadsheets of public comments to gauge community opinion and support
- Created COVID-19 Reports for counties with Tenaska Solar Projects

FIELD EXPERIENCE

Salar de Pastos Grandes, Salta Providence, Argentina

November 2023

- Implemented hydrologic monitoring tools, pressure transducers, temperature sensors, solar radiation shields to characterize water levels, inflows and precipitation
- Explored salt flat, wells, streams, lagoons in order to better understand hydrologic monitoring goals and flew drone to capture high resolution imagery
- Collaborated with local community members to show our equipment and explain our scientific goals
- Presented about thesis research to mining professionals and stakeholders

Clayton Valley, Nevada & Fish Lake Valley, California

April 2023

- Participated in sample campaign of brine aquifers and freshwater inflows at Albemarle Silver Peak Lithium Mine
- Collected temperature, specific conductance, and pH data with YSI instrument for all brine and freshwater samples to map temperature and salinity
- Assisted in logging 200-meter core of ashes, clays, and sands

Newberry Volcano, Oregon

June 2022

- Carried equipment 7-10 miles per day, hiking strenuous terrain, for a three-week field campaign
- Worked with collaborators at Oregon State University to implement magnetotelluric equipment and took gravity measurements using a gravimeter
- Organized field data each day and recorded in excel workbook

TEACHING EXPERIENCE

University of Massachusetts Amherst

Teaching Assistant for Hydrogeology (GEO-587)

Spring 2024

- Led weekly lab sections with field trips
- Prepared and organized for slug tests, pump tests and well sampling

Teaching Assistant for Introduction to Environmental Science

Fall 2023

- Led multiple discussion classes per week

Awarded the Outstanding Teaching Assistant Award for the 2023 – 2024 school year

TECHNICAL REPORTS

Corkran, D., Kirshen, A., Moran, B.J., Blin, N., **King, R.**, Bresee, M., & Boutt, D. (2024). Massachusetts State-wide Groundwater Model and Flooding Risk Assessment 1.0. Report funded by the Massachusetts Executive Office of Energy and Environmental Affairs and published on the ResilientMass website, <https://resilient.mass.gov/home.html>.

Blin N., Kirshen, A., Boutt, D., & **King, R.**, (2024). Salar de Pastos Grandes Water Budget Assessment. Report submitted to Lithium Americas Argentina Cooperation.

Kirshen, A., Boutt, D., Corkran, D., Moran, B.J., Lombardo, C., & **King, R.** (2023). Saltwater Intrusion Vulnerability Assessment in Plymouth, MA - Compounding effects of Sea Level Rise on Water Quality and Aquifer Sustainability. Report submitted for Municipal Vulnerability Preparedness project in Plymouth, MA.

King, R., Boutt, D., Kirshen, A., Munk, L.A. (2023). Albemarle Clayton Valley Airborne Electromagnetic Survey Interpretation. Report submitted to Albemarle Corporation