

PATRICK O'SHEA, E.I.

Geospatial & Water Resources Specialist

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CAREER SUMMARY

Over the past four years, I have applied my geospatial training and domain knowledge in hydrology/earth sciences to water resource engineering. An unconventional engineer, I have brought a creative and fresh perspective to water resource problem-solving that has enabled clients successful outcomes. I find working with and deriving insights from spatial data to be the most exciting aspect of my work, and enjoy exploring the most effective ways to visually communicate those insights. I am now looking to pivot my career to a role that utilizes geospatial skills to solve the challenges I am most passionate about.

FORMAL EDUCATION

M.S. Spatial Data Science/ Pennsylvania State University May 2023 - Present

Relevant Coursework: GIS Programming and Software Development, Web Application Development, Advanced Python Programming for GIS, Cartography and Visualization, Open Web Mapping, Geospatial Information Analysis

M.S. Hydrology/ Colorado School of Mines December 2018

Relevant Coursework: Applied Geographic Information Systems, Watershed Systems Modeling, Integrated Surface Water Hydrology

M.S. Geosciences/Scripps Institution of Oceanography May 2016

Relevant Coursework: Intro to Computing

B.S. Double Major in Geography and Geology, Mathematics Minor/ University of Miami May 2015

Geography Departmental Honors, GIS Certificate

Relevant Coursework: Introductory and intermediate GIS, Cartography, Remote Sensing of the Environment, Special Study in Geography

ADDITIONAL CERTIFICATIONS

Engineering Intern: Colorado, Certification number EI.0077541

Active Jan 2021 - Present

FAA Licensed Drone Pilot, Certification number 4774082

Active Jan 2023 - Present

SKILLS & PROFICIENCIES

Spatial Analysis – Data Management – Project Management – Publication & Report Writing – Collaboration – Data Visualization – Spatial Statistics – Python Scripting – Remote Sensing – Drone Piloting – GPS Surveying

Esri Suite – QGIS/GDAL – Leaflet – R – Python – Google Earth Engine – HTML – Java Script – CSS – Git – HEC-RAS – HEC-HMS – PCSWMM – HY-8 – ArcHydro

PROFESSIONAL EXPERIENCE

Student Contractor: Web Developer

May 2024-August 2024

USGS Web Informatics and Mapping Group (WIM) / Remote

- Assists in developing the StreamStats web application

Scientist

June 2023 - April 2024

Hazen and Sawyer, Inc. / Cleveland, Ohio

- Performed sanitary sewer hydrologic analyses using PCSWMM software.
- Created custom python scripts for performing geospatial workflows.

- Assisted engineers with various project tasks and deliverables.

Water Resource Engineer

October 2022 - February 2023

Bridge & Stream Engineering / Remote

- Utilized publicly available geospatial data to construct 2-D hydraulic models in HEC-RAS.
- Used Esri Suite to process geospatial data (i.e. soils data, land cover data, terrain data, etc.) for incorporation into hydraulic models, hydrologic models, and design drawings.
- Created workmaps and figures for incorporation into reports for clients.
- Gathered and georectified field data for integration into models and design drawings.

Water Resource Design Engineer II

February 2021– September 2022

Water Resources Designer

September 2019 – February 2021

Galloway & Company, Inc. / Johnstown, Colorado

- Developed GIS standard operating procedures for the water resources team and produced various GIS derived deliverables both within the team and within the company in general.
- Utilized publicly available geospatial data to construct 1-D and 2-D hydraulic models in HEC-RAS.
- Delineated subbasins to define basin parameters for EPA SWMM hydrologic models.
- Constructed complex workmaps showing modifications to FEMA floodplains.
- Gathered and processed LiDAR data.

Engineering Technician

January 2019– September 2019

City of Greeley / Greeley, Colorado

- Reviewed and provided comments on low to moderately complex civil engineering projects within the City of Greeley.
- Conducted site visits to certify the grades of new residential developments, and met with contractors regarding properties.
- Researched, tracked, and followed up on outstanding development agreements the city entered into.

Hydrology Pathways Intern

August 2017– December 2018

USGS Colorado Water Science Center / Lakewood, Colorado

- Created a 3-D lithologic model to evaluate aquifer storage in the Wet Mountain Valley Aquifer.
- Contributed to the Water, Energy, and Biogeochemical Budgets (WEBB) program by preparing, collecting, and filtering water samples taken from the Loch Vale Watershed in Rocky Mountain National Park.
- Assisted in an array of surface and groundwater projects including the Fountain Creek Watershed Flood and Sediment Transport Study, acid mine drainage in the Sugarloaf Mining District, and NAWQA.

Planetary Geology and Geophysics Undergraduate Research Program

May 2015 – July 2015

Southwest Research Institute / Boulder, Colorado

- Used Esri Suite to constrain the slope and aspect patterns of selected dune fields on the Martian southern hemisphere.
- Designed a custom methodology, conducted independent research, and communicated my progress at weekly meetings.
- Presented a poster of the project's results at the American Geophysical Union Conference (AGU) 2015.

PUBLICATIONS

O'Shea, P.M., Sen Roy, S. & Singh, R.B. Diurnal variations in the spatial patterns of air pollution across Delhi. *Theor Appl Climatol* 124, 609–620 (2016). <https://doi.org/10.1007/s00704-015-1441-y>