James Bishop

Engineering Geologist at
Central Coast Regional Water Quality Control Board

What is your current occupation?

My title is Engineering Geologist in the Waste Discharge Requirements Program (WDR) of the Central Coast Regional Water Quality Control Board (Central Coast Water Board). Currently, my responsibilities include permitting and regulatory oversight of groundwater recharge projects that inject surface water or recycled water; wastewater treatment facilities that discharge to land and/or produce recycled water; and recycled water distribution and use. I also act as a liaison between the Central Coast Water Board and various entities implementing the Sustainable Groundwater Management Act.

Before working in the WDR program I worked in the Irrigated Lands and Cannabis programs at the Central Coast Water Board. In this role, I led a research study to understand the age and source of nitrate in agricultural areas of the Central Coast. I also help develop groundwater - related requirements for the new agricultural regulatory order (Ag Order 4.0). Finally, I conducted inspection enforcement of cannabis cultivation facilities.

What is your educational background?

I earned bachelor's and master's degrees from the University of Hawaii's Department of Earth Sciences. As an undergraduate, I was a NASA Space Grant Fellow and did an undergraduate thesis mapping titanium dioxide bearing minerals on the lunar crust using radar data from a lunar satellite.

My Master's thesis work focused on the source, transport, and fate of agricultural contaminants in groundwater and coastal waters on Maui.

I am a California Professional Geologist and a member of the Groundwater Resources Association of California.

A key message for students is that the geoscience workforce is dynamic, and boundaries between sectors and occupations are fluid. How has this been true in your career?

During my career, I've primarily worked for state or federal governmental agencies but also dabbled in the private sector during and after my undergraduate degree. The work I have conducted has varied from developing products for the U.S. military to scientific research to governmental regulation.

The path to my first job started when I took a remote sensing course in the geology department as an undergraduate. This spurned my interest for remote sensing. Because I had gained some remote sensing skills in my undergraduate course, I was able to acquire a NASA Space Grant Fellowship where I utilized radar data from the Lunar Reconnaissance Orbiter to map titanium dioxide-bearing minerals on the lunar crust. This experience gave me the skills necessary to acquire an internship and then a full-time job working for a Honolulu based defense contractor called NovaSol (acquired by Corning in 2015) that developed remote sensing technology for the US military. After working for NovaSol, I realized I wasn't passionate about the work and decided to pursue a master's with a hydrogeology focus.

My master's work focused on understanding the source, fate, and transport of contaminants in groundwater and coastal water. Near the end of my master's work, a friend of mine introduced me to a geologist that worked for the US Geological Survey in Santa Cruz. This introduction turned into an 18-month contract position working as a geologist on hurricane and tsunami deposits in New Jersey, California, and Hawaii. This work was outside of my educational background and training thus far but helped expand the breadth of my professional knowledge and skills, offered some great fieldwork, and helped me to build my resume. In addition to my professional development, I worked with some great people and made some great friends.

Near the end of my contract position with the USGS in Santa Cruz, I was hired for a four-year term position working as a hydrologist for the USGS in Menlo Park. In this role, I primarily performed research on the source, transport, of selenium and mercury in San Francisco Bay and the Delta. This work further expanded my professional knowledge of surface water transport, numerical modeling, and chemistry. Again, I worked with great people, made some friends, and got to do some really fun fieldwork. Unfortunately, the cost of living in the San Francisco Bay Area combined with my federal government salary forced me to look for jobs elsewhere. I wanted to remain in California and on the coast which limited my options. Fortunately, I was able to find a job with the Central Coast water Board.

I was hired with the Central Coast Water Board in 2017 and initially worked in the Cannabis and Irrigated Lands Regulatory program. The regulatory nature of this work was dramatically different from the research-focused work that I conducted at the USGS. Despite the differences, I found the work I was conducting to be interesting and rewarding. I was helping to solve water quality problems in a region where water resources are under substantial pressure and therefore highly valuable.

Where do you see your sector moving in future years? How would you advise students to prepare to be competitive job applicants and successful employees?

Because of the increasing ability to produce large quantities of data easily, data science skills that allow conversion of data to information are highly valuable and sought after. I recommend that all people entering the workforce at least some proficiency with a programming language such as Python or R and the ability to perform GIS analyses. The ability to manage large amounts of data via some database skills are also valuable.

The California Water Board (State and Regional Boards) as an initiative underway to promote racial equity with respect to protection from environment to harm. Historically, low income and committees of color have been subject to greater amounts of environmental pollution and the State Water Board is committed to resolving this inequity. Students should educate themselves on historical and current racial inequity as it relates to environmental pollution and consider ways that careers in the environmental sector can help resolve this inequity.

Lastly, science and engineering degree programs tend to provide little to no training on the 'soft' skills necessary to be successful in the workforce. These 'soft' skills such as emotional intelligence, social awareness, leadership, and communication become increasingly important as one's career develops. I recommend that students not neglect the development of these skills in their formal education or during their career development.

What is the role of networking in your sector? Do you have advice for a student who is just beginning to build their network? What is the best way for students to get their foot in the door?

In terms of hiring, networking may be less important in the governmental sector than in the private sector due simply to the fact that most governmental agencies have strict policies in place to encourage fair hiring practices. That being said, a great personal reference from someone within the organization to the hiring panel can be very persuasive.

The other benefit of networking is that if you know someone who works for an organization and you are applying for job at that organization, you can acquire valuable information that may be beneficial in an interview. My first job out of graduate school was with the USGS in Santa Cruz and was a result of a friend introducing and recommending me to someone that was looking to hire a new employee.

Within my job, networking is incredibly important. I often work with people from other programs within my office, other agencies within the Water Board or State Government, other federal or local governmental agencies, consultants, nonprofits, and the regulated community. Developing and maintaining good relationships with the people that I work and interact with makes everything easier. In addition, if I have an initiative that requires coordination, sponsorship, or influence from other organizations, the relationships I have developed with individuals within these organizations are critically important for helping the initiative gain momentum. Building and maintaining good professional relationships is one of the most important skills needed for success in my job.

What does a "typical" day of work look like for you?

My job is very much office-based. I spend about 90% of my time working in the office and 10% of my time either inspecting facilities that I regulate or hosting or attending external stakeholder meetings.

Much of my time in the office is spent communicating and my communications are one of the primary products I deliver. Communications can be in the form of email, phone calls, face-to-face or virtual meetings, official letters (e.g. permits, enforcement, inspection reports), or technical reports. Much of the communication revolves around the facilities that we regulate. I am typically writing permits for new or existing facilities, providing feedback on engineering designs or monitoring data, submitting reports on facility inspections, issuing enforcement letters, or explaining regulation to stakeholders.

In addition, I may be responsible for writing technical reports on emerging regulatory or water quality issues, results of scientific investigations, or recommendations for future initiatives.

I typically conduct facility inspections 2-4 days per month. These inspections are intended to evaluate facility compliance with permit conditions and ensure that monitoring data are being collected and reported correctly. However, secondary goal of these inspections is simply to familiarize myself with the facility and build relationships with the facility operators.

Periodically I am responsible for taking items to our Board for adoption at public meetings. These may be permits for facilities, enforcement activities, resolutions for Central Coast Water Board initiatives, or informational items. Typically, board items must go out for public comment prior to the board meeting. I am responsible for distributing staff reports and permits for public comment and responding to public and Board Member comments before and during the Board adoption hearing.

Occasionally I am responsible for conducting stakeholder outreach to inform the public about new regulations or initiatives. This typically involves communication campaigns via email lists and social media and public meetings at locations throughout the Central Coast region.

What is the best part of your job?

The best part of my job is that I get to do what I think is important and meaningful work. I am helping to protect and enhance water resources in a region experiencing substantial water resource pressure. In addition, I enjoy working as a public servant and providing a great service to the region. Conducting meaningful work and being of service keeps me excited and passionate about the work I do. In addition, the work I do is technically complex both from a scientific and engineering standpoint but also from legal, organizational, and societal perspectives as well.

I also really enjoy the people that I work with. Most of the people I work with are also dedicated and passionate about the work that we do and are also typically nice people. I have developed great friendships with many of the people that I work with.

Lastly, my compensation and benefits package is excellent. I am paid well, I receive plenty of time off, get a great health insurance and retirement package, and my management encourages work-life balance.

Do you have any other comments or advice for students looking to enter your sector of the geoscience workforce?

Many recent graduates in sciences and engineering are very focused on developing, using, and exhibiting the scientific and engineering technical skills they learn through formal education. While these skills are critically important, I would encourage recent graduates to not neglect the importance of the soft skills I mentioned previously such as emotional intelligence, social awareness, communication, and leadership, to name a few. These soft skills are extremely valuable for working in complex governmental organizations that require extensive amounts of coordination and cooperation with coworkers, other governmental agencies, nonprofits, businesses, and the public.

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