

California Water Institute Provides Project Opportunities for Students

Classroom Case Study: State Water Resources Control Board Division of Drinking Water Regional Consolidation Feasibility Study

Fresno State students were key to completing a California Water Institute project that partnered with the State Water Resources Control Board Division of Drinking Water (DDW), the City of Fresno and Self-Help Enterprises. DDW wanted a feasibility study on regional consolidating of small, independent water suppliers who had issues meeting the state's safe drinking water standards into the City of Fresno's water system. To help with the study, CWI approached Fresno State professors from the Lyles College of Engineering; Cordie Qualle, who taught civil engineering and Lloyd Crask who taught construction management.

Each professor assembled a group of students from their class to collaborate and specialize in working on the feasibility study as their class assignment. Former CWI Executive Director Thomas Esqueda helped direct the project, guiding students to water suppliers that were being considered for consolidation with the City of Fresno's system.

Civil engineering students looked at the design, size and location of pipelines, and how the water suppliers could connect to the city's water system. Construction management students looked at the length and scope of the project, including cost accounting and equipment needs. Students from both disciplines combined their knowledge of design and analysis to prepare a draft consolidation report. CWI staff and student assistants completed the report which was presented to the DDW. The report was used to present the pros and cons of regional consolidation for the small water suppliers.

Cordie Qualle, now assistant director of CWI, stressed the importance of cross-functional teamwork, an experience these students learned first-hand outside of the classroom. "Civil engineering students interacting with construction management students, they're learning how to find a common dialogue and a common language," he said.

Because much of their academic learning is focused on engineering theory, Qualle said this project helped his civil engineering students learn other skills like communication and how to navigate city design standards – experience they wouldn't have learned as quickly in a classroom. "If they don't have the theory, they're not going to be able to do good design work. But we don't have a lot of units left to teach all the soft skills, so the soft skills are taught in their capstone design project class," Qualle said.

Not every student who worked on the DDW consolidation project was an engineering or construction management student. Kevin Mitchell, who helped map the City of Fresno's water mains, was a geography major who later interned at CWI, creating a portfolio of work with data maps and reports. Mitchell graduated in 2019 and landed a full-time job with the Fresno Irrigation District as a GIS specialist. In his current role, Mitchell maps canals, pipes, wells, and farms for the district – work that is similar to what he learned during his internship at CWI. Mitchell said the experience gave him an advantage in the job market.

"Just with a bachelor degree, you have knowledge, but no experience. You're not ready to start a full-time job doing what you learned in class. You need an internship just to get experience, you need an extra 100 to 200 hours of work experience," he said.

Mitchell considers himself lucky. For some classmates he knew, it took between one to two years to find a job in their field. Mitchell was hired two weeks after graduation.



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