



ELIZABETH FARIAS, E.I.T., CWP

DESIGN ENGINEER



EDUCATION

M.S. Civil Engineering

University of New Mexico, Albuquerque, NM

B.S. Environmental Toxicology

University of California, Davis, CA

ORGANIZATIONS AND CERTIFICATIONS

Engineer-in-Training (EIT) Certified
Class 1 Wastewater Collection System Operator
Class 2 Wastewater Collection System Operator
American Water Works Association

PROFESSIONAL EXPERIENCE

Ms. Farias has over 5 years of experience in water and wastewater engineering. Ms. Farias's responsibilities include design engineering and consulting for the company. She is proficient in the use of AutoCAD and Microsoft Office and has some ArcGIS experience. She also has over 5 years of public speaking and 8 years of professional writing experience.

WATER/WASTEWATER ENGINEERING

- *Apple Valley Waterline Relocation Project, Town of Lyons.* Design Engineer. Provided construction management for project closeout, including review of certified payrolls, Section 3 paperwork, and other required project documentation, preparation of a project punchlist, and preparation of payment applications.
- *Wastewater Collection System Improvements Project, City of Creede.* Design Engineer. Prepared an eligibility survey and a pre-qualification submittal; attended a pre-application meeting with the city, DOLA, and CDPHE for SRF funding; prepared a project needs assessment; reviewed video of the city's collection system pipe and evaluated the city's collection system, prepared exhibits using Civil 3D software, recommendations, and cost estimates to replace pipe segments and rehabilitate manholes; coordinated with the Colorado Department of Public Health and Environment (CDPHE) to address compliance schedules in the discharge permit; completed the discharge permit application for permit renewal; assisted in conducting a mixing zone analysis and preparing a mixing zone analysis report; prepared an application for DOLA EIAF program; and prepared monthly status reports for the client.

- *Paint Brush Hills Wells 3 & 4, Paint Brush Hills Metropolitan District.* Design Engineer. Prepared disinfection calculations, assisted in the preparation of construction drawings using Civil3D software, prepared a change order.
- *2020 Water Distribution Improvements Project, East Alamosa Water and Sanitation District.* Design Engineer. Prepared the pre-qualification submittal and attended the pre-application meeting.
- *2019 Collection System Improvements Project and W. 41st Ave Storm Water Improvements Project, Town of Mountain View.* Design Engineer. Prepared an eligibility survey, pre-qualification submittal, project needs assessment, and environmental assessment required for SRF funding; prepared the presentation and assisted in giving presentation at a public meeting required for SRF funded projects, completed the SRF loan application; provided construction management including coordinating with contractor's on required submissions and reviewing labor standards interviews and certified payrolls.
- *Kiowa Water and Sewer Capacity Analysis, Town of Kiowa.* Design Engineer for a water and sewer capacity analysis for the town's ability to serve the Womboldt Annexation, a 400-unit development.
- *Phased Replacement of Collection Lines, Town of Pagosa Springs.* Design engineer for the review of sanitary sewer video inspection reports, including a development of a numerical pipe rating system, and ranked pipe segments for a phased replacement of collection lines.
- *DIA Pavement Analysis, Applied Research Associates.* Design Engineer. Processed pavement images using imaging analysis software, tabulating vertical and horizontal shifts and mapping processed images in a Google Earth .kmz file.
- *2018 Collection System Improvements, City of Monte Vista.* Design engineer for the design and construction administration of collection system improvements. This consisted of 35-point repairs, six clean-out removals and replacements with 4' manholes, two removals and replacements of 4' manholes, five 4' manhole installations, four service line replacements to the right-of-way, and five total line replacements consisting of 1300 LF 8" PVC, 450 LF 6" CIPP, 5500 LF 10" CIPP, and 1800 LF 15" CIPP. Ms. Farias assisted with pay requisition packets for grants and loans, MBE/WBE EPA grant reporting, discharge permit compliance reporting, tracked project expenses and completed the CDPHE annual eligibility survey.
- *Collection System Improvements, City of Creede.* Design engineer for the city's repair and replacement of the collection system. This has included applications for CDPHE's water pollution control revolving fund and DOLA's EIAF grant, completion of the CDPHE annual eligibility survey, completion of a project needs assessment, management of videoing, cleaning, and root-cutting of the entire system, review of all collection system videos, and coordination over discharge permit compliance.
- *Water Master Plan, Town of Del Norte.* Design Engineer for an update to the Town of Del Norte Water Master Plan.
- *Wellhouse 3 & 4 Designs, Paint Brush Hills Metropolitan District.* Design Engineer. Currently assisting with the design of a wellhouse for wells #3 and #4 and developing a site plan to submit for review to El Paso County.

- *Wastewater Treatment Plant Improvements, Town of Naturita.* Design Engineer for updates to the Project Needs Assessment and preliminary design for the treatment plant and completed the CDPHE annual eligibility survey.
- *Wastewater and Stormwater Improvements, Town of Mountain View.* Design engineer for the preparation of a Project Needs Assessment, preparation of an Environmental Assessment, and the completion of CDPHE annual eligibility survey.
- *2018 Water System Improvements, Town of Buena Vista.* Design Engineer for the process design report and coordination with CDPHE over SRF program.
- *Domestic Wastewater Treatment Facility, Town of Ramah.* Design Engineer. Assisted with the preparation of the Project Needs Assessment.
- *Water Rate Analysis, Todd Creek Village Metropolitan District.* Design Engineer for an annual water rate recommendation for the district.
- *Wastewater Treatment Plant Improvements, Fairways Metropolitan District.* Design Engineer. Assisted with updating the district's SAM registration and second CDPHE Colorado Water Pollution Control Revolving Fund loan application.
- *Staff Engineer, TST Infrastructure.* Wrote and edited monitoring plans, operating plans, preliminary engineering reports, and various reports and letters to clients and regulatory agencies. Updated a basis of design report for a water treatment plant for a mid-construction expansion. Used Civil 3D software to create exhibits and figures for water and wastewater projects.
- *Environmental Scientist, CERL Inc.* Instructed and prepared presentations for environmental health and safety courses. Organized and systematized company electronic and paper files. Performed building inspections for indoor air contaminants, conducted sample analysis, and prepared reports for clients.
- *Environmental Engineer, Sundance Consulting.* Assisted in developing and implementing programs designed to increase employee awareness and knowledge of compliance policies related to groundwater sampling events. Performed field work and collected data for a groundwater monitoring project.
- *Environmental Engineer, CDM Smith.* Interpreted technical/scientific requirements in federal and state laws, regulations, and orders as they apply to environmental practices and made recommendations. Performed hydraulic profile calculations and reviewed various calculations. Wrote specifications, conducted construction oversight including contractor submittal review, wrote a quality assurance report for a landfill cell construction project, assisted in closure/post closure landfill reporting. Prepared and reviewed multiple groundwater monitoring reports. Assisted in developing requests for proposals.
- *Engineer-in-Training, Wilson & Company.* Designed a process treatment diagram and sludge removal procedure and coauthored an engineering analysis and mitigation plan for an arsenic treatment facility. Developed policies and procedures to ensure water treatment facility compliance with regulations. Prepared quantity take-off tables and cost estimates for bidding on several projects. Contributed to a headworks facility equipment improvement report and an onsite wastewater system analysis and mitigation plan for an arsenic treatment facility.

- *Research Assistant, University of New Mexico.* Collaborated with Sandia National Laboratory on a water reuse project comparing reverse osmosis membrane fouling at wastewater treatment plants using different treatment processes. Conducted a study to determine the arsenic removal capacity of different ion exchange resins by measuring effluent iron concentrations using atomic absorption spectrophotometry. Completed a water reuse project comparing fouling of reverse osmosis membranes used to treat membrane bioreactor treated wastewater operated at different solids retention times. Studied reverse osmosis foulant layer development using confocal fluorescence microscopy.

PUBLICATIONS

- Farias, E.L., Howe, K.J., Thomson, B.M., 2014. *Effect of membrane bioreactor solids retention time on reverse osmosis membrane fouling for wastewater reuse.* **Water Research** 49, 53-61.
- Farias, E.L., Howe, K.J., Thomson, B.M., 2014. *Spatial and temporal evolution of organic foulant layers on reverse osmosis membranes in wastewater reuse applications.* **Water Research** 58, 102-110.