



Wright Water Engineers, Inc.

SCOTT D. SCHREIBER, P.E., CFM
VICE PRESIDENT OF STREAM AND WATERSHED SERVICES

CURRENT Scott serves as WWE's Vice President of Stream and Watershed Services. He is a water resource engineer with extensive experience in stream restoration, stormwater management design, water budget analysis, Clean Water Act permitting, corridor planning studies, land development, groundwater studies, athletic field design, LOMR submittals, LID and LEED designs, and drainage infrastructure design. Scott is proficient with HEC-RAS, SWMM, Civil 3D, RiverCAD, StormCAD CUHP, and HY-8. He also has experience designing groundwater monitoring wells, designing municipal supply wells, and developing sampling and analysis plans to determine subsurface hydrology.

EDUCATION M.E., Water Resource Engineering and Management, 2010
Georgia Institute of Technology (Georgia Tech)

B.S., Civil Engineering, 2005
Virginia Polytechnic Institute and State University (Virginia Tech)

REGISTRATION Registered Professional Engineer—Colorado #46577; Connecticut #35469
Certified Floodplain Manager—United States US-18-10632
Natural Resources Conservation Service Technical Services Provider #TSP-23-24823

ADDITIONAL TRAINING Applied Fluvial Geomorphology, 2013
Rosgen Wildland Hydrology

AutoCAD Civil 3D, 2009
CAD-1

HEC-RAS Water Surface Profile Modeling, 2007
Boss International, Inc.

StormCAD Project Development, 2007
Bentley Systems, Inc.

REPRESENTATIVE PROJECTS

Channel and Stream Engineering

Canyon Creek Fish Passage. Serving as the Project Manager, worked with Trout Unlimited to develop conceptual designs for fish passage at a very long and steep culvert underneath the interstate highway. Work included drafting concepts, writing grants, giving presentations, and acquiring funding through multiple grants. Design was incorporated into the existing culvert with minimal impacts and reconnected approximately 12 miles of stream.

Middle Colorado River Integrated Water Management Plan. WWE evaluated major water rights along the river and ways to secure those water rights into the future. The fully stated goal of the IWMP was to improve security for all water uses in the Middle Colorado River by understanding and protecting existing uses, meeting shortages, and maintaining healthy riverine ecosystems in the face of increased future demand and climate uncertainty. Water users, water rights holders, community members, and vested stakeholders were invited to comment on the plan. WWE also provided overall consultation on the plan by attending meetings and workshops and working with other team members on the management of the Middle Colorado River.

Big Thompson River Envisioning Plan. Served as Project Manager to produce a strategic design and implementation plan to guide future projects for the long-term benefit of the environment, communities, and water use needs for a section of the Big Thompson River. Evaluated the hydrology of the Big Thompson River under multiple scenarios to support a river health assessment. WWE supported refining the river health assessment scoring and provided overall consulting on the river assessment and development of fish passage designs at the many diversions.

Weaver Ditch Efficiency Analysis. Serving as the Project Manager supporting American Rivers and Roaring Fork Conservancy, worked with Sopris Engineering to evaluate the Weaver Ditch through the Town of Carbondale to look for areas of ditch improvements to allow more water to stay in the Crystal River. Work included surveying and drafting of the entire ditch alignment, identifying locations of proposed gage stations, and installing gages. WWE also evaluated flow within the ditch during different seasons to calibrate the newly installed stream gages.

Deep Creek Instream Flow Evaluation. Supporting American Rivers and the Colorado Water Conservation Board (CWCB), evaluated the required amount of water that would be needed to inundate sensitive riparian corridors along a potential Wild and Scenic River. Work performed included detailed survey at two locations along the river to support developing biological flow criteria through the use of HEC-RAS and R2Cross. Work also evaluated requirements for developing legal Instream Flow through the state's prior appropriation water rights doctrine.

Gypsum Creek Floodplain Remapping. WWE was hired to remap the entire Gypsum Creek floodplain through the Town of Gypsum. Developed detailed hydraulic modeling that would support a FEMA Letter of Map Revision (LOMR). Work utilized newly adopted 100-year hydrology to develop a floodway model. WWE supported updates to the official FEMA mapping.

Todd Creek Channel Design. Serving as the design engineer on revitalizing an existing agricultural channel to be included as an amenity as part of a major development outside Denver. This work included evaluated and developing stable channel sections, planforms, and profiles for almost a mile of stream corridor. The river restoration re-connected the floodplain through use of multiple terraces to provide a resilient and revitalized floodplain and creek corridor.

Shay Ditch Channel Design. Serving as the design engineer, evaluated multiple channel alignments through a proposed commercial development. WWE developed creative designs and unique solutions that the developer had not thought of. Work included developing typical channel design and stream restoration measures to provide an amenity for the development.

Coal Creek Stream Restoration. Designed restoration in an area destroyed by the 2013 flood. The complexity of the work was compounded by an undersized crossing downstream. This half-mile of creek restoration provided for a single thread channel to replace the braided system caused by the downstream culvert. This project was situated at a town park, so aesthetics and river access were very important. The work utilized a series of drop structures and riffles to mimic natural hydraulics where possible, and utilized aesthetic elements in the form of waterfalls and pools. (Work performed at previous firm.)

South Platte Stream Management Plan. Over the past 20 years, a movement has been underway to increase the storage available in Chatfield Reservoir. As this storage has increased, an allotment of water has been set aside for environmental and recreational uses along the South Platte to provide additional flows when the river needs it the most, late summers and winter. Facilitated a commitment by Denver Trout Unlimited to donate \$75,000 towards the development of this additional storage. Also developed a Stream Management Plan grant through the CWCB to evaluate the effects of the increased flows. Manage the work of Miller and Associates and donate time to evaluate the benefits of the increased flows during various times of the year with the goal of releasing those flows from Chatfield to benefit the ecosystem as much as possible.

Fall River and Fish Creek Emergency Watershed Protection Programs. With previous firm, developed 30 percent design plans and supporting documents for multiple sections of Fall River and Fish Creek in Estes Park. These plans were the basis for implementation of the final design and engineering documents that were a part of the permit application packet for both the US Army Corps of Engineers and local floodplain permit authority. The designs and associated reports were developed to establish mitigation measures to reduce the impact of future flooding, provide channel stabilization, protect and restore wetlands areas, and protect aquatic and riparian habitat. The design team developed an understanding of the hydraulic and hydrologic conditions and geomorphic site conditions to determine the most technically feasible, cost-effective, and resilient restoration alternatives. A risk-based approach to planning was used to fully accommodate the complexities of these river systems along with interrelated roads, homes, and infrastructure. Preliminary designs incorporated natural channel techniques of multi-staged channels and connected floodplains. Unique design structures included beaver dam analogs to replicate pre-flood conditions. Full revegetation plans and associated costs estimates and operational and monitoring strategies were developed as part of this project. (Work performed at previous firm.)

Lena Gulch Drop Structure and Channel Restoration. Project Engineer on the design of a very large, triple cell box culvert to convey 100-year design flows underneath a major crossing in Golden, Colorado. The work consisted of developing design hydrology for the creek as well as the site. As part of the project, the stormwater infrastructure in the area was also redesigned and upgraded. Also responsible for permits and bid documents. (Work performed at previous firm.)

Lykins Gulch Drop Structure and Pedestrian Underpass. Following the 2013 flood, many utilities crossing the rivers were left exposed or damaged. Working as project manager, designed a double-drop structure to protect a water line and a sanitary sewer. The work included providing structural support of the sanitary sewer using helical pillars and then emplacing two grouted-boulder drop structures to safely convey the water over the utilities. Developed a retrofit for an existing underpass that was known to flood and cause safety concerns after rain events. (Work performed at previous firm.)

St. Vrain and Left Hand Creek Stream Management Plan (SMP). Working with Biohabitats, performed a river health assessment evaluating how the stakeholders' priority ecological and recreational values compared to the current condition of the systems. Characterized the hydrology and assessed future needs. Developed a set of criteria to rank and select the top priority reaches for management strategies.

Left Hand Creek Canyon Restoration, Boulder County, Colorado. As part of continuing flood recovery along Left Hand Creek, designed and permitted approximately 9 miles of Left Hand Creek to provide for a more resilient system and improve the ecological value of the stream corridor. The work included evaluation of conceptual designs, stakeholder outreach, and development of floodplain permitting documents for Boulder County. Provided consultation to comply with the Migratory Bird Treaty Act and the Eagle Act.

Regional Stream Stewardship and Recovery Handbook. Coauthor of handbook to provide critical stewardship information to landowners living on streamside properties. The handbook is a toolbox of techniques a homeowner can use to be a good river steward and describes circumstances that require outside help. The handbook was sponsored by the Lefthand Watershed Oversight Group, the Big Thompson Watershed Coalition, The Little Thompson Watershed Restoration Coalition, and the St. Vrain Creek Coalition. (Work performed at previous firm.)

Big Thompson River Corridor Master Plan. Worked on a master plan that outlines a detailed vision for nine miles of the Big Thompson River through Loveland, Colorado, including improvements to reduce flood hazards and provide multiple benefits to people and wildlife along the corridor. Worked in collaboration with THK and Matrix.

Big Thompson River Corridor Maintenance Plan. The highest priority project from the Big Thompson River Corridor Master Plan was the development of a maintenance plan to provide direction to the City of Loveland on actions to be taken along the Big Thompson to provide safety for the community and resiliency of the river corridor. The maintenance plan utilized a mapping application to determine the amount of work required and the cost associated with each maintenance activity.

South St. Vrain Stream Restoration at Hall Ranch, Boulder County, Colorado. Served as Project Manager and stream restoration engineer for the 3.2-mile study of the South St. Vrain Creek following the 2013 flood. Developed stream restoration designs that incorporated flood mitigation measures to reduce the impact of future flooding, provide public safety, protect public and private infrastructure, maintain or re-establish floodplain connectivity, and restore the creek channel and surrounding areas to stable, resilient, and ecologically-rich habitats. A broad range of public, private, and non-profit stakeholders were engaged to foster a consensus-driven and technically sound, resilient solution. This work was the basis for project funding and implementation. (Work performed at previous firm.)

Fish Creek Public Infrastructure Project, Estes Park, Colorado. Completed hydrologic and hydraulic analysis of Fish Creek following the September 2013 flood to redevelop the Federal Emergency Management Agency (FEMA) regulatory floodplain and determine appropriate protection measures for replaced utilities. This project included stream restoration in the vicinity of many public utilities, crossings, and infrastructure concerns. (Work performed at previous firm.)

Big Dry Creek Floodplain Restoration and Open Space Master Plan Pilot Project. Working with THK Associates to develop the Floodplain Restoration and Open Space Master Plan for Big Dry Creek in Thornton. The Pilot Project includes stream restoration to address erosion and improvements to enhance public access and use of the open space.

Fountain Creek Corridor Restoration. As a project engineer, provided engineering services to the City of Pueblo for two demonstration projects that will utilize innovative approaches to improve water quality in and along Fountain Creek. These studies will benefit water quality improvement systems with a bed load sediment collector system to selectively remove problem sediments and evaluate changes in stream morphology and channel reestablishment, as well as a 25 acre off-channel detention basin to provide wetland habitat and evaluate flood attenuation and pollutant reduction. The goals are to increase flood storage and slow the flood wave, while also improving water quality through biochemical and physical processes. (Work performed at previous firm.)

Stone Creek Master Plan. As the Project Manager, performed a stream restoration master plan on a 1.6-mile stretch of Stone Creek for development of a healthy, sustainable creek with increased habitat and stable channel form parameters, using natural design techniques to reduce the need for ongoing maintenance. The master plan evaluated existing site conditions and deficiencies and provided a field survey to develop prioritization areas. The plan addressed variable impacts to diversions, homeowners, golf course maintenance, and other considerations. The plan included a tool box of conceptual designs, grant funding opportunities, and permitting requirements to direct capital improvement projects in the future. Also submitted LOMR documents and construction design documents for a bypass floodway channel to remove multiple homes and structures from the 100-year floodplain of Stone Creek through a FEMA Flood Mitigation grant. (Work performed at previous firm.)

Stone Creek Stream Restoration and Fish Passage. WWE designed and permitted this fast-track stream restoration project aimed at improving aquatic and riparian health while minimizing maintenance along Stone Creek in EagleVail. Developed a natural channel design to replace two four-foot boulder structures while providing habitat in the form of deep pools and woody structures, and fish passage through cobble riffles. WWE provided construction observation on the project, which needed to be completed by October 1 to allow the creek to be open for spawning brown trout.

Wines Ditch Fish Passage. Working with Colorado Parks and Wildlife (CPW) and the Wines Ditch Diversion Company near Gateway, Colorado, a series of alternatives were developed and prioritized utilizing different ramp styles and bypass channels to determine the most efficient fish passage design that would also not impact existing diverted water rights. The purpose of the project was to utilize a push up dam, stabilize a failing diversion structure, and remove the need for continued maintenance. Multiple stakeholders were included to evaluate alternatives.

Florida Canal Fish Passage. Working with CPW and Gateway Resort, a series of fish passage structures were designed to replace an old diversion that was unsafe for boaters. The old diversion also limited fish passage by native species. The new fish passage design was developed to allow safe boat passage and to provide the ability to modify fish passage operations in order to limit passage of certain fish species during certain parts of the year.

King Heatherly Diversion and Fish Passage Design. Engineered a multi-benefit project developed for the Middle Colorado Watershed Council (MCWC) to repair a failing diversion, stabilize banks, limit maintenance, and provide fish passage for native bluehead suckers. Working with the ranch manager, water commissioner, Bureau of Land Management (BLM), CPW, and MCWC, developed a creative solution to limit the required maintenance on the structure, stabilize the undercut diversion and surrounding banks, and install a rock ramp that is passable by many different species of fish including natives.

South Boulder Creek Stream Management Plan. Working with the Boulder Flycasters chapter of Trout Unlimited, utilized the Colorado Stream Health Assessment Framework to evaluate the overall health of nine miles of South Boulder Creek, including fish passage design concepts, and helped develop a specialized framework for evaluating multi-benefit diversion rehabilitation projects.

Monument Creek Stream Restoration Plan, Colorado Springs, Colorado. Performed stream surveys on over 28 miles of streams and hydrologic analysis of 2,236 square miles of watershed to develop conceptual designs and costs to stabilize and increase habitat. Evaluations led to stream restoration priority projects and final design. (Work performed at previous firm.)

Basalt River Restoration. As a project engineer worked for the CWCB to help the communities and floodplain administrators involved with the Roaring Fork and Fryingpan Rivers address inherent flood hazards and channel instability. Designed the restoration of two miles of the Roaring Fork River, which was a segment of the river through Basalt which is unstable due to encroachment by development and roadway construction. River restoration work was focused on returning the “Gold Medal” waters to a scenic and natural river through the heart of the Town. Subsequently worked with the CWCB and local communities to master plan channel improvements and adopt a no-net rise encroachment restriction for further development. (Work performed at previous firm.)

Rock Creek at Carlson—Lastoka Open Space. Designed and restored over 1,300 linear feet of Rock Creek to its relic channel and abandoned a manmade drainageway that was constructed more recently. Objectives included restoring the creek’s natural geomorphic stability, raising the groundwater table, and reestablishing a riparian corridor that supports native vegetation and habitat. Final design utilized reference reach data to design the creek’s geomorphic parameters and bioengineered features including log vanes, rock cross vanes, and soil lift bank stabilization. (Work performed at previous firm.)

St. Vrain Creek Reach 3. Reach 3 of St. Vrain Creek was heavily impacted by mining prior to the 2013 flood and then suffered even greater impacts due to the flood. WWE worked with Otak to develop critical stream repairs and protect infrastructure to improve resiliency and enhance overall habitat values for target species on St. Vrain Creek. The project included utilizing an existing overflow channel as the main channel and developing riparian habitat for sensitive species. The existing main channel had to remain active to provide water to downstream water rights holders. WWE provided overall support on the design as well as review of plans and coordination with ditch companies to ensure adequate design of the diversion structure.

Three Mile Creek Confluence Planning and Design. Served as Project Manager developing concepts and details for open space at the confluence of Three Mile Creek and the Roaring Fork River in Glenwood Springs. The work included public outreach to determine what was desired at the open space as well as graphical renderings to gain input from the public and educate them on proposed techniques. The project included special consideration of sensitive spawning grounds at the confluence. The work also included designs and cost estimates for the chosen alternative. Helped acquire funding for the project through local grants.

Natural Resources Conservation Service Technical Services Provider (TSP). Registered by Natural Resources Conservation Service to provide water resources planning, design, and implementation services that meet NRCS criteria in 23 categories related to:

- Canals and diversions
- Stream habitat improvement
- Ponds
- Stormwater and drainage
- Wetlands and riparian areas
- Wells
- Irrigation
- Recreation land improvement

Also able to assist clients with applications for the many programs and other funding opportunities NRCS provides..

Water Quality

West Vail I-70 Exit 173 Water Quality Improvements. Served as Project Manager and design engineer in evaluation and recommendation of best management practices (BMPs) for water quality improvements for the I-70 West Vail Exit 173 interchange. The goal was to provide better stormwater management for the receiving waters of Gore Creek to align with the Restore the Gore vision. Developed strategies to increase water quality treatment effectiveness in the study area utilizing various techniques including hydrodynamic separators and filtration units. Work culminated in water quality treatment option memo that looked at many different treatment techniques. Evaluated, recommended, and designed water quality control measures.

East Vail Stormwater Master Plan. Served as Project Manager in evaluation of stormwater planning for the Town throughout East Vail. Developed strategies and solutions to address deficiencies dealing with water quality and water quantity to align with Restore the Gore goals. Various upgrades to stormwater infrastructure included resizing of drainage appurtenances and providing additional water quality through the use of innovative solutions and bio-engineering. Work also included updating manual and design guidelines.

Vail Water Quality. Served as Project Manager in reviewing and updating sampling and analysis plans for water quality treatment project near Gore Creek. Work included reviewing existing Colorado Department of Public Health and Environment (CDPHE) grant submittal requirements and adapting plan to meet required goals. WWE supported updating overall analyte list, installing monitoring equipment, training the Town on sampling protocols and supporting submittal of grant report.

Various Stormwater Management Plans. Multiple projects. Tasks included development and maintenance of stormwater management plans for large-scale residential and commercial construction sites.

Stormwater Management Planning and Drainage Evaluation and Design

Durango Cost Analysis. As part of an update of the Durango Stormwater Master Plan, performed an analysis of the impacts of new criteria. The new criteria were quantitatively compared to the old criteria by evaluating multiple actual projects under each scenario to understand the material and cost implications of the new standards.

CDOT Peak Period Shoulder Lane. Serving as the design engineer, developed, analyzed, and designed several water quality structures to reduce pollutant loading to Clear Creek near Idaho Springs, Colorado. The work consisted of developing water quality basins and inlets that would trap water quality contaminants including traction sand before entering the parallel waterway. Aspects such as amount of sand and timing of maintenance had to be evaluated to be included in design criteria. (Work performed at previous firm.)

Garmisch Street Master Planning. Evaluated hydrology, hydraulics, and potential improvements to surface and subsurface conveyance improvements along the Garmisch Street corridor in the City of Aspen. Used existing hydrologic and hydraulic models that WWE developed for the City as a part of WWE's 2014 Detention Analysis and WWE's recently completed mud and debris flow analysis to support Colorado Urban Hydrograph (CUHP)/Stormwater Management Model (SWMM) and FLO-2D models.

Shady Lane Minor Drainage Improvements Served as Project Manager for a storm sewer design for a nuisance drainage issue located at a school bus stop in a residential area. Work consisted of developing hydrology for a residential area based on existing conditions and evaluating design ideas in a tight corridor with little vertical elevation change between inlet and discharge locations.

Bunting Avenue Minor Drainage Improvements: Served as the Project Manager for a nuisance drainage issue in a neighborhood due to large volumes of offsite drainage. The work included evaluating multiple scenarios to safely convey water through a residential area to the ultimate receiving water. Unique solutions had to be evaluated to limit impact to surrounding neighbors while also still providing access to homes. The work evaluated many different options including dry wells and infiltration. The work included designs and bid documents.

City of Aspen Mud Flow Analysis. Completed FLO-2D analysis on potential development opportunities within the core of Aspen. The work evaluated the potential for sub-grade terraces to be re-developed that would previously store mud and debris and how development of those terraces might impact downstream properties.

Deltic Timber Corporation, Little Rock, Arkansas. Performed evaluation of Low Impact Development design elements and impacts to drainages related to requirements for proposed land development in the Lake Maumelle Watershed.

Silverthorne Stormwater Master Plan. Served as Project Manager in evaluation of stormwater plan for the Town. Developed strategies and solutions to address deficiencies. Work also included updating manual and design guidelines.

Copper Mountain Stormwater Management Plan, Colorado. Review and revision to erosion and sediment control plan recommending appropriate control measures, and assurance of proper implementation and maintenance of resort.

Colorado Springs, Colorado, Drainage Criteria Manual. Developed Impervious Reduction Factor spreadsheet for the City's urban drainage criteria manual to account for innovative engineering techniques.

Xcel Energy Construction Site Permitting. Development of grading, erosion, and sediment control plans (GESCs) for various construction activities for a Front Range utility.

Cucumber Creek Estates Drainage Evaluation. Served as the Project Manager for a drainage evaluation upgradient of a sensitive wetland area in Breckenridge, Colorado. The work included evaluating pre-and post-hydrology to ensure the development was not increasing the runoff rate to the sensitive wetlands. The designs also took into account providing a water quality capture volume. Work consisted of hydrologic and hydraulic modeling as well as design documents.

Hydrology/Hydraulics/Mudflow Analysis

Dam Breach Analysis. Conducted dam breach inundation analyses of multiple reservoirs for the preparation of Emergency Action Plans. Dam breach peak flows, depths, times of arrival, and other factors were determined with empirical calculations and HEC-HMS and HEC-RAS models. Assessed potential risks and determined hazard levels. (Work performed at previous firm.)

Kolorado Ranch Pond Design. Worked with private client to design a 2-surface-acre pond that was 15 feet deep along the Colorado River. Work included development of hydrologic model and coordination with the State Engineers Office.

Mitchell Creek Post-Fire Analysis. Developed post-fire hydrology and FEMA CLOMR for Mitchell Creek in Glenwood Springs, Colorado.

Pitkin County Post-Fire Analysis. Evaluated multiple drainages within Pitkin County to determine hydrology for pre- and post-fire hydrology. The work included the development of two-dimensional hydraulic models to understand debris and flooding extents. The analysis was used to delineate various emergency corridors that could be impacted by flooding or debris flows following wildfires.

Slate Creek Debris Flow. Developed two-dimensional hydraulic model for Slate Creek in Marble, Colorado. This active debris flow path sees material move through the drainage about every two years. The work was to understand inundation extents throughout a private property.

Flying Dog Ranch Hydrology and Debris Flow. Evaluated hydrology through multiple different programs and scenarios to understand potential impacts of debris flows on Collins Creek, which is tributary to Woody Creek in Pitkin County, Colorado.

Trails

Phnom Bakheng. Worked on drainage evaluation of trails and walkway system of a World Monument site in Angkor Cambodia. Work included matching historical and existing drainage and trail aspects such as large underground conveyance structures made out of block. Utilized available building tools such as elephants and trees. Sensitive work environment allowed for little modification to existing drainage patterns, so the plan focused on more resilient trails and drainage system.

Fish Creek Trail Restoration. Worked with the Town of Estes Park, Colorado Department of Transportation (CDOT), Federal Highway Administration (FHWA), FEMA, and Larimer County to plan, design, and build improvements needed to repair the utilities, trail, Fish Creek Road, and cross street connections to Fish Creek Road after the damage caused during the 2013 flood. Over five miles of trails were developed, including evaluation of hydrology and design of drainage appurtenances. The trail was designed to meet ADA standards and developed within floodplain to allow for beneficial use of the flood fringe. (Work performed at previous firm.)

St. Vrain River Trail and Bridge: Serving as lead designer and Project Manager, designed a replacement bridge and over one mile of trail to replace trail that was destroyed during the 2013 flood. The existing 75-foot bridge and trail systems were replaced with an 150'-bridge and a more resilient trail system to resist the next flood. The work included drainage analysis, floodplain design, structural evaluation, revegetation, and irrigation. This challenging project had a tight deadline to have the trail and bridge open for an annual 5K run and festival. (Work performed at previous firm.)

Blue River Trail Segment 5, Silverthorne, Colorado. Performed modeling analysis and design for proposed trail development along the Blue River in Silverthorne, Colorado. The trail covered multiple miles along the Blue River through sensitive environments and private land. Trail drainage had to be designed in a sensitive wetland environment.

Clear Creek County Trail System. Led design of many miles of trail through Clear Creek County along Clear Creek. Work consisted of the evaluation of the hydrology of Clear Creek and many of the side tributaries as well as design of many drainage crossing the trails. Work also included tight corridors along state listed historical roads where minimal impacts would occur. Interpretive signage was developed. (Work performed at previous firm.)

Town of Vail Bike Path. Designed a retaining wall along bike path in Vail. (Work performed at previous firm.)

Hydraulic Design, Permitting, and Evaluation

Arapahoe County Water and Wastewater Authority (ACWWA) Hydraulic Analysis. Investigated possibility of trading water rights for easements in conjunction with a commercial development.

ACWWA Water Service Main Feasibility Study. Design evaluation of possible pressure piping connections to existing infrastructure for water service mains.

Surface and Groundwater Investigations

Confidential Durango Resort. Performed preliminary cost estimates for water infrastructure and 0.24-MGD wastewater system improvements, including assessment of treatment processes that required updating due to age and relatively new regulations.

Cotter Corporation. Assisted with civil engineering design and permitting for a diversion pipeline to route untreated contaminated water around an urban drinking water supply reservoir. Work involved coordination with numerous regulatory agencies and simultaneous ongoing issues at the site, such as wetlands, endangered species, floodplains, and water quality permitting.

United Water and Sanitation District Chambers Reservoir. Observed drilling of Dawson and alluvial monitoring wells related to construction of a 14,000-acre-foot reservoir. Performed monitoring and sampling and analyzed data from various aquifers to determine if aquifers are hydraulically connected.

Construction Pond Sampling. Performed water quality sampling of a construction pond to determine if high concentrations of anions and cations caused transmissivity issues using a global positioning device.

Surface Water and Groundwater Testing and Analysis, Various Locations, Rocky Mountain West. Coordination and collection of surface water and groundwater quality samples from waters in the Denver Region for analysis using technical programs to evaluate changes in surface water and aquifer properties. Reviewed and analyzed data.

Mountain View Recreation, Inc. v. Utilities, Inc. of Central Nevada, et al. Fifth Judicial District Court Case No.: CV 22655. Researched water requirements with regard to fire suppression at the Mountain View Casino site in Pahrump, Nevada.

Well Design & Construction

Alluvial and Bedrock Groundwater Observation Wells, Colorado. Design and implementation of wells constructed in alluvium and Denver Basin groundwater aquifers for observations and analysis for the following entities: ACWWA, United Water and Sanitation, and Tri-County Health Department. Construction oversight included evaluation of soils and materials, determination of aquifer water characteristics, and determination of perforated intervals.

2000' Deep Landfill Well. Working as the project engineer design of 2000 foot water supply well was completed. Well was drilled to a depth of 2000 feet for the purpose of daily cleanup water at the landfill. The work included design of well, permitting of well and 24-hour construction observation of well.

Base Closure Investigation: Work was performed to design and install 8 wells as part of base realignment and closure (BRAC) operations in Alabama. Drilling consisted of sonic drilling methods and logging of samples at discrete intervals for sampling.

Drinking Water Well: Work was performed that included design, permitting and construction of drinking water wells to supply a subdivision outside Denver Colorado. Work required included surveying of hole, evaluations of soil samples and final pump test completed on well for sizing of actual pump.

Water Rights

Two Rivers Water Company, Walden, Colorado. Developed and compiled water rights, stream hydrology, diversion records, ditch conveyance information, and soil classifications for a surface water diversion in central Colorado to be used in an analysis of possible treatment of Coal Bed Methane produced water through a natural process. Water quality and soil data were sampled and acquired for use in a mass balance dilution scenario.

Sanborn Park. Developed water rights analysis for water profile for ranch owner near Delta Colorado, Work included evaluating impact to other water right holders within the watershed including Glover Analysis. Work was also completed to understand augmentation water that would need to be acquired to allow for use of groundwater wells. Work was completed to understand historical consumptive use and potential impacts to surrounding water rights.

Substitute Water Supply Plans, Colorado. Researched water rights in the area of a proposed wind farm to locate usable water for construction.

Colorado Springs Landfill. Evaluated water rights and well permitting for a production well to be used at a landfill.

Miscellaneous

City of Detroit Underwater Bridge Inspections. Worked with a team of certified PADI divers and structural engineers to perform inspections of bridges above and below water in and around Detroit, Michigan. Work performed evaluating scaling and exposed rebar to provide life cycle evaluations and costs to rehabilitate if necessary. Work also included supporting fellow diver during underwater operations. (Work performed at previous firm.)

PREVIOUS FIRM EXPERIENCE

Senior Water Resources Engineer, Matrix Design Group. Responsibilities included project management of hydrologic and hydraulic modeling, stream restoration, natural channel design, and flood recovery.

Water Resource Engineer, Ayres and Associates. Responsibilities included stream restoration design, underwater inspections, stormwater master planning, hydrologic evaluations, hydraulic modeling, floodplain modeling, project management, construction observation and client marketing.

Civil Engineer, S.A. Miro. Design of mountain resorts in Breckenridge, Colorado, addressing unique environmental concerns and constraints.

Golf Course and Athletic Field Water Resource Engineer, Williamsburg Environmental Group. Responsibilities included modeling of hydrology and hydraulics, water budget analysis, BMP design, Low Impact Development implementation, drainage design, erosion and sediment control plan development, EPA permitting, and dam design and safety.

Civil Site Engineer, Anderson and Associates. Responsibilities included grading, storm sewer design, and potable water piping systems for residential developments.

PROFESSIONAL AFFILIATIONS

Member, American Society of Civil Engineers

Denver Trout Unlimited: Executive Board Member, Past Vice President, 2015–Present

Glenwood Springs River Commission, 2018–Present, Current Chair

CWCB Colorado River Basin Roundtable Board Member: Co-recreational Chair, 2020–Present

CWCB South Platte Metro Roundtable Board Member: Recreational Rep and WSRA Grant Subcommittee, 2014–2017

U.S. Ski & Snowboard Team Advisory Board, 2013–2016

Eagle Scout, 2001

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