

Professional Engineering Services

2023 Statement of Qualifications



The AQUA Engineering Team

The AQUA Engineering (AQUA) team is an affiliated group of highly-qualified professionals unlike any other. We provide innovative engineering solutions for public and private sector markets nationwide. Our clients look to us for our quality services and our outstanding ability to effectively and efficiently solve complex engineering challenges that achieve sustainable results. AQUA is made up of a team of experienced engineering professionals, leaders, and associates who are experts in their disciplines and fully committed to helping our clients accomplish their project goals while protecting the environment and enhancing the quality of life for the people in our communities. We seek out opportunities to work with others who share our vision for success and promise to give you the best engineering experience possible on every project. Together, we can create a bright and prosperous future.



AQUA Engineering (AQUA) provides innovative engineering, operations, construction solutions clients nationwide. Since 1992, we have served the public and private sector. AQUA's proven experience demonstrates our capacity and stability to deliver projects that are sustainable and operable. Our team consists of experienced professionals, designers, programmers, technicians, and associates who are capable of solving your needs and are fully committed to your success. Together, we are able to give you the best project solutions possible. We have offices in Utah and Colorado.

533 W 2600 S, Suite 275 Bountiful, UT 84010 801.299.1327

7935 E Prentice Avenue, Suite 100 Greenwood Village, CO 80111 720.667.1250

skm

SKM Engineering (SKM) was founded in 1989. SKM provides sound and proven electrical, instrumentation and control (EI&C) engineering, along with dependable and prompt service at the best value. The SKM team has the knowledge, training, and handson experience required to meet EI&C needs for your facilities. They apply a unique and fresh perspective and are recognized by clients for their ability to solve challenging technical problems quickly with simple and cost effective solutions. SKM provides services for over 100 clients throughout the US and Canada with offices in Utah and Colorado.

533 W 2600 S, Suite 25 Bountiful, UT 84010 801.677.0011



Agua Environmental Services, Inc. (AES) is a division of the AQUA Engineering group, which provides operations consulting, start-up and commissioning services, and instrument calibration to many public and private sector clients. AES has developed a loyal base of clients in need of assistance with contract operations, small turnkey projects, facility management projects, and systems troubleshooting. With its low overhead, AES is able to offer services to many clients that would be difficult to provide with in-house staff, or in the case with small systems, with what would be costly full-time employees.

533 W 2600 S, Suite 250 Bountiful, UT 84010 801.694.9106

OUR LEADERSHIP

Our Principal engineers take a hands-on approach in overseeing projects from initial planning and funding through final design and construction to ensure our work is finished on time, within budget, and complies with the highest standards. Our attention to detail and innovative approach gives you the most value for your investment. We are well known for providing top-rate quality services with minimum overhead and competitive fees.



L. Scott Rogers, PE | Principal scott.rogers@aquaeng.com | 801.683.3720

Mr. Rogers is the founding partner of AQUA Engineering. With over 40 years of experience, he has been heavily involved in developing resource recovery projects and investigating innovative waste to energy technologies for both municipal and agricultural installations.



Brad Rasmussen, PE | Principal brad.rasmussen@aquaeng.com | 801.299.1240

Mr. Rasmussen has over 30 years engineering experience, with the majority spent in the design and project management of wastewater treatment facilities for muanicipalities and industry. He is is experienced working with regulators, communities and industrial sectors to coordinate project issues.



Justin Logan, PE | Principal justin.logan@aguaeng.com | 801.683.3723

Mr. Logan has 25 years of experience, a Principal at AQUA Engineering, Justin leads AQUA's efforts in water and wastewater treatment. He focuses on treatment facility planning, design and construction projects, with emphasis on providing clients effective and affordable solutions.



Darin Hawkes, PE | Principal darin.hawkes@aguaeng.com | 801.683.3727

Mr. Hawkes has 20 years of experience, a Principal at AQUA Engineering, Darin's experience ranges from pumping system design, concrete storage tanks and open reservoir design, to large concrete water storage facilities and high elevation snowmaking reservoirs and dams.



Bob Frachetti, PE | Principal bob.frachetti@aquaeng.com | 720.667.1251

Mr. Frachetti has over 32 years of experience in project management and technical experience in water and wastewater and renewable energy engineering including facilities planning, permitting, design, construction, facility commissioning, performance evaluations, and energy efficiency audits.



Boris Petkovic, PE | Principal boris.petkovic@aguaeng.com | 801.683.3734

Mr. Petkovic has 16 years of experience in water resources and wastewater engineering with a focus on wastewater treatment facility design. Boris has established a reputation for his extensive expertise in designing headworks, clarification/sedimentation facilities, biological reactors, tertiary treatment processes, disinfection facilities and biosolids stabilization and handling facilities.

Extensive Project Experience

Over the years, we have been given the opportunity to work on major engineering projects and have gained extensive experience with the processes and technologies necessary for completing the work effectively and efficiently. We value the trust and confidence that our clients have in us and look to extend our successful track record of designing and building new facilities and improving and upgrading the performance of existing facilities for many years to come. For decades, we have consistently demonstrated our capabilities to provide excellent engineering services that make a difference for our clients and communities. Each client project tells a unique story and demonstrates our capabilities and expertise to provide you with excellent engineering.

AOUA Project Sites



Proven Ability to Get Results

Our extensive experience in engineering is key to how we efficiently and effectively complete complex engineering projects. We value the trust and confidence that our clients have in us and look to extend our successful track record of designing and building facilities that perform at the highest level. For decades, we have consistently demonstrated our ability to provide engineering results that make a difference for our clients and communities.

For nearly 3 decades, we have helped our clients, big and small, complete thousands of infrastructure engineering and community projects. We are recognized as the top engineering solutions provider because of how well we are able to meet unique project needs, stay on-schedule and within budget, and achieve innovative results.



City of Orem Wastewater Treatment Facility



MRWSS District Signal Hill Water Treatment Plant



Wasatch Resource Recovery Resource Recovery Facility



Hyrum City 300 S Boulevard Enhancement



Hyrum City Irrigation Reservoir Expansion



Mayflower Mountain Resort Water Master Planning & Design

Innovative Solutions and Advanced Technologies

We specialize in providing engineering solutions that address emerging market challenges and help our clients succeed at achieving their specific project goals. We work closely with our clients to fully understand their needs and deliver the greatest impact for their investment. The qualifications presented display our firm's capabilities in providing quality and reliable services to our clients. AQUA's principal engineers and project managers take a hands-on approach in overseeing projects from initial planning and funding through final design and construction to ensure that our work is finished on time, within budget, and complies with the highest standards.



Water



Wastewater



Municipal Services



Water Resources



Asset Management / Master Planning / GIS



Resource Recovery / Renewable Energy



Water

AQUA specializes in providing water engineering solutions for the planning, design, construction, and management of infrastructure systems related to water supply, treatment, and distribution. This includes the design and implementation of water treatment plants, pipelines, reservoirs, dams, drainage systems, and flood control measures. Our mission to provide water engineering services is to ensure the efficient, sustainable, and safe provision of water resources for human consumption, irrigation, industry, and other uses, while minimizing environmental impact and maximizing resource conservation.

Our capabilities in Water include:

- ✓ Water Distribution
- ✓ Water Treatment
- ✓ Water Quality Studies
- ✓ Water Rights Studies
- √ Facility Design
- ✓ Plans & Specifications Developments

- ✓ Bidding Services
- ✓ Construction Observation and Management
- √ Commissioning
- ✓ Discharge Permit Applications and Renewals
- ✓ Environmental Compliance



Wastewater

AQUA delivers cost-effective, innovative solutions in the areas of Water and Wastewater Treatment; from master planning and feasibility studies to complete engineering design and construction management services for both public and private facilities. AQUA's experience in water and wastewater treatment engineering goes well beyond textbook designs and is based on decades of troubleshooting treatment facilities, talking with operators, and providing innovative solutions that can be easily commissioned and operated. With hundreds of successful projects, we have the experience that rivals much larger, nationwide firms. Our designs focus on resource recovery by reusing treated effluent for industrial and municipal needs, and reclaiming biosolids and nutrients for use in the agricultural and landscaping sectors. With the goal to conserve our valuable resources we have implemented cutting edge technologies such as Membrane Bioreactors (MBR), Integrated Fixed Film Activated Sludge (IFAS), Granular Sludge, nutrient removal using algae, advanced anaerobic digestion technologies, nutrient recovery technologies, and biosolids to fertilizer processes. Our water treatment plant designs utilize the latest in membrane processes, taste and odor control equipment, and advanced disinfection systems.

Our capabilities in Wastewater Treatment include:

- ✓ Master Plan Development
- √ Facility Planning and Funding
- ✓ Pilot System Design and Operation
- ✓ Process Evaluation and Selection
- √ Facility Design
- ✓ Plans & Specifications Development
- ✓ Bidding Services
- ✓ Construction Observation and Management
- ✓ Commissioning
- Discharge Permit Applications and Renewals

- ✓ Environmental Compliance
- √ Water Reuse
- ✓ Biosolids Management
- ✓ Energy Efficiency Studies
- ✓ Operations Training
- ✓ Operations Manual Development
- ✓ Operations Troubleshooting
- Industrial Pretreatment Programs
- Permit Violation Mitigation
- ✓ Treatment Plant Siting



Municipal Services

Each city, county, and service district has its own unique challenges as it strives to meet the needs of its rate payers. Our goal is to learn and become familiar with these challenges and to find solutions that best fit your circumstances and operations. We listen to your ideas and needs instead of imposing our solutions on you. AQUA has established a reputation for designing municipal infrastructure and facilities that are maintenance friendly and cost effective. In need of project funding? Our staff has experience securing project funding from many federal and state and private agencies. Let us help you solve your infrastructure challenges.

Our capabilities in Municipal Services include:

- ✓ Mapping & Modeling Utilities
- ✓ Master Planning
- ✓ Water Resources
- ✓ Water Distribution & Storage
- ✓ Capital Facility Planning and Impact Fee Analysis
- ✓ Environmental Compliance
- ✓ Grants and Loans Applications
- ✓ Storm Drainage Systems
- ✓ Sewer Collection

- ✓ Subdivision & Land Development
- ✓ Construction Standards Development
- ✓ Construction Specifications
- ✓ Road Systems Design
- ✓ Solid Waste Disposal Landfills
- ✓ Transfer Facilities
- ✓ Parks & Recreation
- ✓ Streets & Boulevards



Water Resources

We provide water resources solutions for cities with water supply, irrigation, water control, and waste disposal needs. Our engineers have the expertise to deliver consulting services that best use resources and provide the data and insights for conserving and distributing water resources to communities.

Our capabilities in Water Resources include:

- ✓ Water Quality Studies
- ✓ Master Plan Development
- √ Facility Structure Design
- ✓ Groundwater Development
- ✓ Spring Development
- ✓ Water Rights
- ✓ Transmission Pipelines
- √ Water Storage

- ✓ Water Source Protection
- ✓ Groundwater Hydrology
- ✓ Water Conservation Plans
- ✓ Distribution Systems
- ✓ Booster Pumping
- ✓ Irrigation/Secondary Water



Asset Management / Master Planning / GIS

We design, implement, and deliver real-world asset management, master planning, and GIS solutions. These tools help infrastructure owners and operators collect, analyze, and share critical business information for reaching optimal performance of their facilities and getting more resilient and sustainable infrastructure. Additionally, these tools assist infrastructure owners in managing long term infrastructure as they prepare for future needs and improvements.

Our capabilities in Asset Management Services include:

- ✓ Geographic Information (GIS)
- Systems ✓ Maintenance Planning
- ✓ Computerized Maintenance Management Systems (CMMS)
- ✓ Land Use

✓ Systems Architecture

✓ Zoning

✓ Software Integration

✓ Transportation

✓ Spatial Analysis

✓ Recreation✓ Environmental

✓ Strategic Planning

- ✓ Technology Implementation
- ✓ Historic Preservation✓ Municipal Land Use Ordinance Development
- ✓ Asset Condition Assessment Risk
- ✓ Development Review
- Determination
- ✓ Annexation



Resource Recovery / Renewable Energy

Natural resources are precious and limited. Using them wisely, and reclaiming or recovering them for reuse is essential for the continued habitation of our planet. Besides incorporating energy efficient designs, we also incorporate technologies into our designs that allow us to harvest energy from sources that would typically be wasted. Our list of projects is extensive, including the design of waste to energy projects that produce methane gas from municipal biosolids, animal manure, and food wastes to generate both heat and power. We understand both state and federal programs that provide enhanced payments for renewable energy from waste products. Recently, solar energy has become part of many of our projects. In a recent project we turned biosolids into a fertilizer that is air spreadable. We have incorporated nutrient recovery systems into our designs to recover both nitrogen and phosphorus.

Our capabilities in Resource Recovery include:

- ✓ Nutrient Recovery
- ✓ Biosolids Reuse
- √ Water Reuse
- Jilus ixeuse
- ✓ Manure to Energy
- ✓ LCFS / RIN Markets
- ✓ Green Gas Markets
- ✓ Biosolids Solar Drying

- ✓ Advanced Anaerobic Digestion Technologies
- ✓ Biosolids to Fertilizer Facilities
- ✓ Energy Efficiency Studies
- ✓ Nutrient Recovery using Algae
- √ Food Waste to Energy
- ✓ Photovoltaic Solar Panels

Firm Experience Summary

- ✓ Over 200 Water & Wastewater Treatment Facilities
- ✓ National & International Experience
- ✓ Proven Record of Innovation, Efficiency, and Resource Recovery
- ✓ Reputation and successful history of efficient, cost-effective, and innovative projects
- ✓ Efficiency + Experience = low overhead, we can provide this high level of service and experience at very competitive billing rates.

Below is a select summary of our treatment plant clients by State, many with multiple projects:

Arizona

*Dan Woodbury, P.E. Personal Experience

- Antelope Point Marina Wastewater Treatment Plant
- Big Park Water Reclamation Plant
- Black Canyon Arsenic WTP (3)
- Bullhead City Wastewater Treatment Plant
- Chino Valley Water Reclamation Facility
- Eagar Wastewater Lagoons
- Inscription Canyon Ranch Water Reclamation Facility
- Katherine Heights Wastewater Treatment System
- Page Wastewater Treatment Plant
- Parker Water Reclamation Plant
- Prescott City Airport Wastewater Treatment
 Plant
- Prescott Valley Water Reclamation Facility
- Scottsdale Water Model and Master Plan*
- Wahweep Marina Wastewater Facility

California

*Dan Woodbury, P.E. Personal Experience

- Beaumont Water Reclamation Facility
- California City Wastewater Treatment Plant
- Corona Water Reclamation Facility
- Fresno Water Model and Analysis*
- Heber Water Reclamation Facility
- Imperial Valley Water Reclamation Facility
- Las Gallinas Water Reclamation Facility
- Mesquite Lakes Water Reclamation
- Morongo Wastewater Treatment Plant
- Stockton West Side Interceptor Sewer*
- Western Riverside County Regional Wastewater

Authority

Willow Creek Wastewater Treatment Facility

Canada

Kamloops Wastewater Treatment Plant

Colorado

*Bob Frachetti, P.E. Personal Principal Experience

- Bayfield Water Reclamation Facility
- Gem Village Wastewater Treatment Lagoons
- Avon Wastewater Treatment Facility Blower Control Project Eagle River Water & Sanitation District*
- Boulder County / Eldorado Springs Wastewater
 System *
- Briggsdale Water Storage Tank and Booster Pump Station*
- Broomfield Wastewater Treatment Facility Odor Control Assessment Study/Design*
- City of Boulder IBM Lift Station*
- City of Idaho Springs Wastewater Treatment Facility*
- Clearwater Water Reclamation Facility*
- Colorado Springs Utilities (CSU) Biogas Utilization Study
- Columbine Lake Water District*
- Dukes West MHP Water System Improvements*
- Gateway Village Water Storage Tank and Booster Pump Station*
- Henderson Mill Water Treatment Plant*
- Lake Forrest Mutual Water Company*
- Lookout Mountain Water District Membrane
 Filtration Upgrade*

- Mt Crested Butte Wastewater Treatment Facility Comprehensive Performance Evaluation (CPE)*
- Nederland Wastewater Treatment Facility*
- Plum Creek Wastewater Treatment Facility*
- Sludge Management Plan, 201 Facility Plan Amendment Madison Metropolitan Sewerage District*
- Squaw Creek Wastewater Treatment Facility
- Eagle River Water and Sanitation District*
- St. Vrain Sanitation District Wastewater Treatment Facility*
- Tabernash Meadows Water & Sanitation District, Ground Water Well Permitting*
- Tabernash Meadows Water & Sanitation District Biosolids Handling Improvements*
- Town of Ault Wastewater Treatment Facility*
- Town of Bennett Wastewater Treatment Facility*
- Town of Bennett Water System Improvements*
- Town of Crested Butte Wastewater Treatment Facility*
- Town of Erie Wastewater Treatment Facility
 Facilities Plan and Comprehensive Performance
 Evaluation (CPE)*
- Town of Georgetown Wastewater Treatment Facility*
- Town of Georgetown Water Treatment Facility Improvements*
- Town of Kersey Wastewater Treatment Facility*
- Town of Lyons Wastewater Treatment Facility*
- Tri-Lakes Wastewater Treatment Facility*
- United Water & Sanitation District / Brannan Pit Raw Water Pump Station*
- Ute Lake Ranch Wastewater Reclamation Facility*
- Vail Wastewater Treatment Facility.
 Instrumentation Upgrades, Eagle River Water & Sanitation District*
- West Jefferson County Wastewater Treatment Facility*
- Wolf Creek Ski Area Wastewater Treatment Facility*

Hawaii

Fort Shafter Water Reclamation Facility

- Pearl Harbor Water Reclamation
- Puako Water Reclamation

Idaho

- Cliffs Water Reclamation Facility Boise
- Franklin City Wastewater Treatment Plant
- Hailey Wastewater Treatment Plants
- Jerome City Wastewater Treatment Plant
- Jerome Pretreatment Facility
- Magic Valley Potato Process Water Treatment Facilities (2)
- City Wastewater Treatment Plant
- Rexburg Wastewater Treatment Facility

Missouri

Guys Foods Process Water Treatment Plant

New Mexico

- Edgewood Water Reclamation Facility
- Gallup Wastewater Treatment Plant
- Moriarty Wastewater Plant
- PaaKo Water Reclamation Facility
- Pinion Hills Wastewater Plant
- San Felipe Water Reclamation Facility
- Santa Rosa Wastewater Plant
- Springer Wastewater Plant
- Taos Wastewater Plant
- Tucumcari Wastewater Plant

Nevada

- Elko Wastewater Treatment Plant
- West Wendover Water Reclamation Facility

Utah

*Dan Woodbury, P.E. Personal Principal Experience

- Alta Water Treatment Plant
- Amangiri Wastewater Treatment Plant
- American Gourmet Process Water Treatment Plant
- Ananyu Water Reclamation Facility
- Ash Creek Wastewater Treatment Facility
- Becton Dickinson Medical Reverse Osmosis Water Treatment Plant*
- Bench Lake Water Reclamation Facility

- Bison Creek Water Reclamation Facility
- Blanding Water Treatment Plant
- Blue Mountain Energy Recover
- Bonneville Lime Slaking Facility
- Boundary Springs Water Treatment Facility
- Bountiful City Water Treatment Facility
- Brigham City Wastewater Treatment
- Bristlecone Water Reclamation Facility
- Brown's Canyon Water Treatment Plant
- Canyonlands by Night Water Plant
- Cedar City Wastewater Treatment Plant
- Central Davis County Sewer District
 Wastewater Treatment Plant
- Central Valley Water Reclamation Facility: Recycled Water Pump Station*
- Clover Club (Borden) Foods Process Water Treatment Facility
- Confluence Park Wastewater Treatment Plant
- Dameron Valley Wastewater Treatment Facility
- Dannon Yogurt Process Water Treatment Plant
- Day Break Water Treatment Facility
- Diamond Ranch Water & Wastewater Facility
- Diamond Ranches Wastewater Treatment Facility
- Diamond Ridges Wastewater Treatment Plant
- Driggs Wastewater Treatment Facility
- E.A. Miller Wastewater Treatment Plant
- East Zion's Special Service District –
 Wastewater Treatment Facility
- Elwood Wastewater Treatment
- Grantsville Wastewater Treatment Lagoons
- Green Hills Water Treatment
- H.C. Brill Foods Plant
- Heber Valley Water Reclamation Facility
- Hill Air Force Base Process Water Treatment Facility
- Hyclone Labs Pretreatment Facility
- Hyrum Wastewater Treatment Plant
- Jordanelle Water Treatment Plant
- Jordan Valley Water Conservancy District Chemical Flash Mixing Station/Vault*
- Jordan Valley Water Conservancy District JA Reach 2 Pigging Project*
- Jordan Valley Water Conservancy District SW

- Quadrant Irrigation Master Plan*
- Jordan Valley Water Conservancy District Southeast Regional Water Treatment Plant Upgrade: Actiflow System*
- Kennecott Mine Water Neutralization Treatment Facility
- Kennecott Refinery Wastewater Treatment Plant
- LDS Cannery Wastewater Treatment Plant
- Leeds Regional Water Reclamation Facility
- Lost Creek Water Treatment Project
- Magna Water Reclamation Facility
- Malt-O-Meal Pretreatment Facility
- Mancos Wastewater Facility
- Morgan Wastewater Treatment Facility
- Moroni Wastewater Treatment Plant
- Mosaic Water Reclamation Facility
- Mountain Green Wastewater Treatment Plant
- Murray City Sewer Master Plan*
- Murray Reservoir Well and Booster Pump Station*
- Nestle Pretreatment Facility
- Oakley Water Reclamation Facility
- Orem Wastewater Treatment Plant
- Orem City Storm Water Utility Project*
- Pacific States Cast Iron Water Treatment
- Payson City Wastewater Treatment Plant
- Provo Wastewater Treatment
- Rainbow Ranch Water Treatment Facility Capitol Reef National Park
- Richmond Water Reclamation Facility
- Riverton City, High Tank, 5 MG Reinforced Concrete Storage Tank*
- Riverton City Secondary Metering Project*
- Ruth's Diner Wastewater Treatment Plant –
 Emigration Canyon
- Salem Wastewater Treatment Lagoons
- Salt Lake City Airport Oil Skimming
- Salt Lake City Wastewater Treatment Plant
- Salt Lake Service Area #3 Water Treatment Plant
- Salt Lake City Storm Drain Master Plan*
- Salt Lake City Storm Water Utility Project*
- Santaguin Wastewater Treatment Facility

- Shepherd's Egg Farm
- Silver Pointe Watewater Plant
- Smith's Food King Dairy and Bakery Process Water
- Treatment Facility
- South Davis Co. Sewer Improvement Dist. North Wastewater Treatment Plant
- South Davis Co. Sewer Improvement Dist. South Wastewater Treatment Plant
- Spanish Fork Wastewater Treatment Plant
- Spring Creek Treatment Plant
- Springdale Wastewater Treatment Facility
- Springville Wastewater Treatment Facility
- Stansbury Wastewater Treatment Facility
- Stouffer Foods Process Water Treatment Plant
- Tooele Army Dept Process Water Treatment Plant
- Tooele Valley Water Reclamation Facility
- Tooele Wastewater Treatment Facility
- Tremonton Wastewater Treatment
- Tuhaye Ranch Wastewater Treatment
- United Park City Mines Water Treatment Facility
- Uintah Basin Replacement Project*
- Upper Millcreek Diversion and Pipeline Hydraulic Model, built at USU: US Army Corps of Engineers and SL County*
- Utah Lake Distributing Canal Pump Station Expansion Project*
- Wasatch County Water Efficiency Project*
- Wasatch Resource Recovery Facility
- Welby Jacob Canal Pump Station Expansion Project*
- Wendover Wastewater Treatment Facility
- Wendover Water Treatment Plant
- West Point Dairy Wastewater Treatment Plant
- Western Quality Dairy
- Western Zirconium Process Wastewater Treatment
- Wolf Creek Water Reclamation Facility

Wyoming

Jona Well Field Water Treatment Plant

Water

AQUA is experienced in design, evaluation, permitting, construction and operations for water systems. We are invested in our client's success in providing safe, clean potable water that meet drinking water regulations. Our primary focus is providing the lowest cost and most reliable potable water system for your facility and community. Our ability to seek out our client's goals and make them a reality is a valuable asset when planning new or renovating an existing water operations.

Mountain Regional Water Special Service District | Signal Hill Water Treatment Plant Reference: Brian Davenport, Operations Director | P: 435-940-1916



AQUA Engineering was hired by Mountain Regional Water Special Services District to design a 6 million gallon a day water treatment facility and to investigate routes to access water from the Weber River. A path in Lost Creek Canyon was chosen for the pipeline, thus giving the project its name. Signal Hill in the Promontory Ranches Development was chosen as the site for the treatment plant. The water plant received approval from the Utah Division of Drinking Water in February of 2005, marking the end of the \$14 million dollar project. AQUA Engineering teamed with Ames Construction of Salt Lake City on the design-build project. The project features the first riverbank, groundwater collection system in Utah. It contains a large booster pump station with six 350 horsepower pumps. It has 5.2 miles of 24 inch diameter mortar lined and coated-welded steel, ductile iron, and high density polyethylene pipe. A 1,000 foot rise in elevation occurs along the alignment, which passes through sensitive environmental areas, two highway crossings and one river crossing. The terminal reservoir is rock lined along the banks and holds 40 acre feet of water. The treatment plant is one of the first microfiltration membrane plants in the State of Utah, treating 3 million gallons a day, and is expandable to 6 million gallons a day. The riverbank infiltration system develops 1,480 acre-feet of water and a potential expansion to Rockport Reservoir brings the total developed water source to 6,600 acre feet.

Hooper Water Improvement District | Water Treatment Plant

Reference: Scott Christiansen, District Manager, P: 801.985.1991 | E: scottsc@hooperwater.net



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Mayflower Mountain Resort, Potable Water Master Plan, Water Tank, and Pump Station Design, and Construction

Reference: Kent Fawcett, Project Manager, P: 435-214-0513 | E: kfawcett@extell.com



The Mayflower Mountain Resort is a 6,000+ Acre planned ski resort development located adjacent to Deer Valley Resort in Wasatch County, Utah. AQUA Engineering worked with the project developer and its land planning consultants to quantify projected drinking water demands associated with each of the project improvements, including hotels, conference centers, restaurants, retail, lodging and residential facilities. Using the water demand data and land use planning figures, AQUA designed and constructed a water system hydraulic model to simulate several alternatives for overall configuration of the proposed drinking water system, including interconnect facilities, transmission and distribution pipelines, pump stations, storage tanks and pressure reducing stations. AQUA was able to optimize the water system design in order to minimize the amount of water system improvements required to serve the project area while maintaining desired levels of service and complying with local, state and federal regulations. AQUA continues to lead the engineering, design and construction management of each of the planned water improvements for the project.

Hyrum City | **Potable Water Storage Tank - 2MG**

Reference: Ron Salvesen, Hyrum City | P: 435.245.6033



AQUA Engineering was selected by Hyrum City to design and managed construction for this 2 million-gallon conventionally reinforced concrete potable water storage tank. During bidding, AQUA provided alternatives for prestressed and columnless (domed) tanks to make sure the city could evaluate all of its options. The site was very difficult being transected by a fault and having steep topography above and below the tank location. The project required extensive slope stabilization using soil nails to carve out enough room for the potable water storage addition. AQUA also designed new diversion and distribution buildings to facilitate operation and control. The biggest project challenges were the geologic conditions at the site and the need to keep the city's water supply intact throughout the project.

Wastewater

Western Riverside County Regional Wastewater Authority | Water Reclamation Facility, Wastewater Treatment, 14 MGD Plant Expansion | 2019

Reference: Tony Pollak, Operations Manager WRCRWA | P: 951.789.5114





WRCRWA owns and operates a joint agency treatment facility near Corona, CA. AQUA Engineering, partnered with WEBB Associates, designed and assisted with construction services for this plant expansion from 8 MGD to 14 MGD. All plant components were addressed and improved as part of this upgrade, including the headworks, primary clarification, flow equalization, secondary treatment, tertiary filtration and disinfection, solids thickening, anaerobic digestion, solids dewatering, solids drying, and odor control. The plant capacity was increased while significantly reducing the power and operational costs associated with this facility. This facility loads automatically using screw conveyors and gates to deliver dewatered cake to each of the three drying beds. The Huber turner then turns, aerates, and assists in the drying process as the solids move through the solar drying beds. Finally discharge conveyors move the dried product to a truck loading facility where the solids are automatically loaded into trailers for hauling. This fully automated process reduces operator labor required for this process. Also, the plant's solids hauling requirement is reduced by about 90% along with the associated disposal costs.

Las Gallinas Valley Sanitary District | Recycled Water Facility, Tertiary Treatment | 2012

Reference: Mike Cortez, Las Gallinas Valley SSD | P: 415.472.1033 (ext. 18)



Working with the District, AQUA Engineering assisted in designing and constructing a fast track project to provide recycled water to the North Marin Water District (NMWD). The recycled water facility was added to the back end of the existing facility processes and includes coagulation, pressure filtration using GE membranes, UV disinfection, and effluent pumping to deliver the water. The existing site did not allow much space for the addition of facilities, but working creatively with the District, the necessary facilities were added to the site. This upgrade allows the District to provide Title 22 compliant recycled water to NMWD. The initial phase provides 1.4 MGD of capacity and can be expanded by just adding additional equipment to 5.6 MGD. AQUA also provided onsite construction management for the upgrade project.

City of Orem | Wastewater Treatment Facility | 2011

Reference: Chris Tschirki, Public Works Director, City of Orem | P: 801.229.7510



AQUA Engineering has worked with the Orem Water Reclamation Facility since 1994. During the 90's, AQUA was involved with several upgrades at the facility including a biosolids dewatering facility, oxidation ditch upgrades, a DAF for thickening WAS, an additional secondary clarifier, and an upgrade to the aerobic digesters. An update to the facility plan followed these upgrades in 2008 and the most recent project began in 2009. This project has been funded through the State of Utah using ARRA funding. While the existing facility had plenty of hydraulic capacity, the plant had reached its biological capacity and needed to be doubled in order to meet future needs. The project includes conversion of secondary clar-ifiers to primaries, conversion of the existing oxidation ditches to more efficient bioreactors, the addition of a new bioreactor, implementation of anaerobic and anoxic zones to enhance biological nutrient removal, additional secondary clarification, and upgrading the solids handling process to two-stage anaerobic digestion to produce Class A biosolids right out of the digestion system. The solids can then be dewatered and used by the public to greatly reduce the annual cost of solids disposal at a landfill. This project increases the plant's capacity to 13.5 MGD for \$12 million. This project increased the facilities biological capacity from 20,000 lbs of BOD per day to 40,000 lbs of BOD per day for just over \$1/ gallon.

Tooele City | Water Reclamation Facility, Trident Press

Reference: Ray Henninger, Tooele City | P: 435.882.1952



AQUA worked with the City of Tooele to develop an expansion plan for both biological and solids treatment process for average daily flows of 3.4 MGD while considering future expansions. The original plant design and construction, completed by others, left the facility with very tight hydraulics and caused significant plant issues and process overflows during peak events. AQUA developed a spreadsheet-based hydraulic profile of all conveyance structures in the plant to determine bottlenecks and problem areas. The model was also used to evaluate how improvements would resolve the hydraulic issues. These improvements were implemented at the facility, restoring previous design hydraulic capacity and expanding that capacity to 3.4 MGD. Biological modeling was used to determine the existing oxidation ditch capacity and how the ditches could be modified to increase the biological capacity. The capacity was expanded by installing diffused aeration while the overall plant power usage was decreased.

Municipal

Municipal & District Consulting Services

Each city, county, and service district has their own unique challenges as it strives to meet the needs of its rate payers. Our goal is to learn and become familiar with these challenges and to find solutions that best fit your circumstances and operations. We listen to your ideas and needs instead of imposing our solutions on you. AQUA has established a reputation for designing municipal infrastructure and facilities that are maintenance friendly and cost effective.

Services Include:

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- ✓ Environmental Compliance
- ✓ Grants and Loans Applications

- ✓ Storm Drainage Systems
- ✓ Sewer Collection
- ✓ Subdivision & Land Development
- ✓ Construction Standards Development
- ✓ Construction Specifications
- ✓ Road Systems Design
- ✓ Solid Waste Disposal

Landfills

- ✓ Transfer Facilities
- ✓ Parks & Recreation
- ✓ Streets & Boulevards

Hyrum City

Ron Salvesen, City Administrator, Hyrum City P: 435.245.6033 | E: rsalvesen@hyrumcity.com

AQUA Engineering serves as the contract City Engineer for Hyrum City, Utah. As part of their responsibilities they have designed numerous improvements and additions to the City's water distribution, source and storage systems, as well as the City's wastewater collection system and treatment works. They have updated 1,000-3,000 feet of pipe each year since 2006, replacing outdated or undersized piping with 8" or larger pipe to meet State size, material, flow and pressure requirements. The 2011 Water Improvement Project included 3100 feet of 8-inch to 14-inch mainline, cased installation in UDOT right of way, coordination to avoid construction delays and traffic interruptions, as well as the replacement of all the services. It also included 2 PRV Stations. AQUA has designed numerous pump station for both potable, irrigation and wastewater conveyance including a 2100 gpm facility to pump treated wastewater effluent into the pressurized secondary irrigation system. This facility was design and permitted by AQUA.

Grantsville City

James Waltz, Public Works Director | Grantsville City P: 435.884.0627 | E: jwaltz@grantsvilleut.gov

AQUA Engineering serves as the contract City Engineer for Grantsville City, Utah. As part of its duties AQUA has been responsible for the design of numerous improvements and additions to the City's water distribution system, streets and drainage network, and several municipal facility projects. AQUA has helped the City to design and construct thousands of feet of waterline from 8-inch to 16-inch, multiple PRVs, booster pump stations, groundwater development projects and disinfection facilities. In addition to the dozens of projects that AQUA has designed for the City, we have also implemented standard details and specifications for all projects occurring in City limits, and have assisted the City with review, approval, inspection of projects ranging from single family homes to multi-phase subdivisions and commercial business parks.

City of West Wendover

Chris Melville, City Manager | City of West Wendover P: 775.664.3081 | E: cmelville@westwendovercity.com

AQUA Engineering serves as the contract city engineer for The City of West Wendover. AQUA reviews and inspects all new subdivision and site developments, improvement of existing developments, and also ensures compliance with Pollution Discharge Elimination System storm water and erosion control requirements. Our efforts also include project inspection and QA/QC as well as coordinating and working with planning commissions, city councils, and associated staff to make sure projects are designed and constructed correctly.

Elk Ridge City

David Jean, Public Works Director | Elk Ridge City P: 801-423-2300 Ext. 5 | E: davidj@elkridgecity.org

AQUA Engineering serves as the contract city engineer for Elk Ridge City. AQUA reviews and inspects all new subdivision and site developments, improvement of existing developments, and also ensures compliance with Utah Pollution Discharge Elimination System storm water and erosion control requirements. Our efforts also include project inspection and QA/QC as well as coordinating and working with planning commissions, city councils, and associated staff to make sure projects are designed and constructed correctly. In addition to its' typical City Engineering duties, AQUA has helped Elk Ridge to design several projects ranging from water pipeline replacements, PRVs and booster pump stations, street improvements and municipal facilities.

Mountain Regional Water District

Reference: Brian Davenport, Operations Director P: 435-940-1916 | E: briand@mtregional.org

AQUA Engineering serves as contract District Engineer for Mountain Regional Water District. As the District Engineer, AQUA is responsible for assisting the district with water system master planning, design engineering and construction management services for various water system improvements projects. AQUA has completed several water system master plans and capital facility plans for the District as well as designed multiple pump stations, PRVs, storage tanks and an energy recovery facility and the district's flagship water treatment facility. Notable projects include the Signal Hill Water Treatment Plant, a 4MGD micro-filtration membrane plant; the Lost Canyon Booster Pump Station, a 4,000+horsepower pumping facility that conveys 7,000 Acre-Feet of raw water through 5 miles of high pressure welded steel pipe to the Snyderville Basin for regional water use by several water service districts including MRW; and the Silver Creek Tank and Pump Station which assist the District with its' sustainability goals by capturing the energy of water moving downhill through the use of micro-turbine, offsetting the District's energy costs by \$300,000 annually.

Emigration Improvement District

Eric Hawkes | Emigration Improvement District P: 801-243-5741 | E: eric@ecid.org

AQUA Engineering has worked with Emigration Improvement District (EID) on various water related projects to improve water service and provide fire protection to the residents of Emigration Canyon. AQUA performed the initial water system evaluation and modeling followed by design and project management for the installation of 22,600 lineal feet of 8" water main along the main canyon road including fire hydrants, pressure reducing stations, connection to existing lines, service laterals, and asphalt patching. Once this project was completed, the water model for the system was updated and calibrated based on actual fire flow tests at several fire hydrant locations. In addition, a fire hydrant map was generated for the Salt Lake County UFA.

Water Resources

AQUA provides secondary water and irrigation consulting services to some of its municipal clients. These efforts are generally focused on the development and master planning of surface water resources as well as their storage and distribution. We have also advised our clients on the use of reclaimed wastewater in pressurized irrigation systems and were directly involved in the first actual use of reclaimed wastewater for residential irrigation. Our experience includes the design of open irrigation reservoirs with clay and synthetic liners, the piping of irrigation ditches and canals, and diversion and pumping facilities. We have also evaluated the benefits and costs of diverting irrigation canal and ditch rights/shares to pressurized irrigation systems to ensure there is a net benefit to the systems. As surface water resources become scarce we anticipate a more aggressive focus on the reclamation of treated wastewater effluent for irrigation and have positioned the firm to be a leader in this field of practice.

Hyrum Irrigation Reservoir Expansion, Irrigation System Improvements

Reference: Ron Salveson, Hyrum City, P: 435.245.6033



When Hyrum City needed more storage for its pressurized irrigation system it looked to AQUA to determine how best to achieve the goal without breaking the bank. After meeting with the City it was determined the additional storage could be developed by joining the two existing and adjacent reservoirs. However, the city needed assurance that management and water quality advantages would not be lost in the process. AQUA was able to allay the city's concerns by factoring in the effect of additional supply afforded by an upcoming project that would divert treated wastewater effluent to the reservoir. We were able to determine that the resulting base flow and the ability to fill the system from the bottom before surface water was available would offset the need to maintain separate reservoirs. The project added an additional 30 acre-feet of storage without the need to expand the reservoir footprint. AQUA designed the expansion project and managed and inspected the work that had to be completed during the irrigation off-season which made installing and joining the membrane liner more difficult due to the effects of cold weather.

Hyrum City | Feeder Canal Piping Project, Irrigation System Improvements

Reference: Ron Salveson, Hyrum City, P: 435.245.6033



The Feeder Canal diverts water from Hyrum Reservoir to provide irrigation water to the agricultural areas along the Little Bear River in Cache County. The storage rights as well as the diversion and conveyance structures are owned by the U.S. Bureau of Reclamation. Residential development was encroaching on the area served by the canal and over the past few years the city secured commitments from affected landowners to pipe the canal. AQUA provided the design, project management, and inspection necessary to complete the project which utilized 24" reinforced concrete pipe and cast in place and precast structures. We submitted our design to the federal agency for review and approval. We also worked with the affected landowners to ensure that their capability to divert the water for agricultural use was preserved. A second project is planned to divert the water in the piped canal to a pump station so it can be utilized in the city's pressurized irrigation system as the historically agricultural areas yield to development.

Elk Ridge City | Secondary Water System Preliminary Engineering Report, Irrigation Systems Reference: Hal Shelley, Mayor | 901.423.2300



When Elk Ridge City needed to determine if it should participate in two different water importation projects it looked to AQUA to complete the necessary research and evaluation work to provide the basis for an informed decision. Of secondary concern was whether or not to continue requiring the installation of dry irrigation lines for residential development. AQUA immediately began looking for funding assistance and was successful in securing a planning grant from the Utah Division of Water Resources to match the city's contribution for the study. Both the Utah Lake System of the Bonneville Unit of the Central Utah Project and Highline Canal Closure Project had their advantages but we focused just as much effort on determining if either of these projects were really necessary given the city's finite boundary and its higher elevation relative to the proposed projects. In the end we determined the city could save money by relying on local water resources if it were to actively promote and achieve water conservation in the community.

City of Payson | **Irrigation Pump Station**

Reference: Travis Jockumusen, City of Payson | P: 801.465.5235



AQUA did the preliminary design, regulatory clearances, and final design and oversaw the construction of an irrigation pump station at Spring Lake, which is Payson's main irrigation storage. The water is pumped into the existing pressure irrigation system, and the inlet to the pumps goes through a screening system. The pump station consisted of two vertical turbine pumps with 1200 gpm capacity each, with controls inside of a building.

Oakley City | **Pressure Irrigation Evaluation**

Reference: Bob Johnson, Contract Operator | P: 435.640.5734



AQUA evaluated the possibility of installing a new pressure irrigation system for Oakley City. The study area included an adjacent farming area. The irrigation system would supply water for both the residences in the City along with the farming community surrounding the City. The system would include water from three water companies along with the City's water. The effluent from the wastewater treatment facility was evaluated for use in the pressure irrigation system as reuse. There were three separate diversions from the Weber river that would be combined into a single irrigation system. Different areas of service were evaluated for cost feasibility. The City has started on the first phase of this project which AQUA designed.

Asset Management / Master Planning / GIS

Town of Bennett | CAI Assessment & Master Plan Update

Reference: Trish Stiles, Town of Bennett | P: 303.644.3249



AQUA evaluated the Town's capital assets for inventory, providing an assessment/analysis, developing a Capital Improvement Plan (CIP), and providing financial planning/ project funding recommendations. Our asset inventory and masterplan update focuses on the Buildings, Streets, Wastewater Utilities, including collection, treatment, distribution, and reuse, and Storm Water Utilities.

City of West Wendover | Public Works Facility CAI Assessment & Master Plan

Reference: Chris Melville, City of West Wendover | P: 775.664.3081



AQUA is providing a capital asset inventory assessment/analysis, developing the City's master plan, and providing financial planning/project funding recommendations. Our asset inventory and master plan update focuses on the Buildings, Streets, Wastewater Utilities, including collection, treatment, distribution, and reuse, and Storm Water Utilities.

Mayflower Mountain Resort | Water Master Planning and Design

Reference: Kent Fawcett, Project Manager | P: 801.702.7993



The Mayflower Mountain Resort project is a 6,000+ acre ski resort development located in Wasatch County, UT. Aqua Engineering prepared a master plan for the resort's drinking water system and continues to provide design engineering services for each of the facilities. The project includes two automated interconnect valve vault facilities, tow booster pump stations, three water storage tanks and over 20 miles of transmission and distribution piping. The oroject also required significantly elevated coordination with the project owners, local water service districts, land us planning authoritries and the federal government.

Indian Hills Water District | Water Master Plan

Reference: Kristin Waters, Indian Hills Water District | P: 303.697.8810



AQUA provided engineering services to evaluate the current treatment and distribution systems and its water storage to determine the current condition and make recommendations on improvements needed and where expansion is possible. Also providing direction on treatments for high nitrate issues, fire hydrant locations, SCADA improvements and expansion, and leak detection monitoring.

Resource Recovery / Renewable Energy

South Davis Sewer District | **Nutrient Recovery Facility** | **2019**

Reference: Dal Wayment, General Manager South Davis Sewer District | P: 801.580.3889



In 2016, AQUA was retained to help South Davis Sewer District upgrade their two-stage trickling filter, as the amount of phosporus and nitrogen being loaded into the plant will double soon due to the discharge of their new adjacent food waste energy project (Wasatch Resource Recovery), which is currently under construction. After considering many options, AQUA discovered an process utilizing algae developed by ClearAs. A full scale pilot system has been installed and running for about five months. This state-of-the-art process produces wastewater that far exceeds type one reuse standards for the state of Utah.

Wasatch Resource Recovery | Resource Recovery Facility | 2019

Reference: Dal Wayment, General Manager South Davis Sewer District | P: 801.580.3889



AQUA Engineering, as part of a design-build team with Alder Construction, has designed, overseen construction and commissioned a \$45 million, 300 ton per day food waste digestion project. 2500 dekatherms of bio-methane is produced and sold. Digestate from a food waste anaerobic digestion system is dewatered, precipitates out the ortho phosphate into the dewatered cake, and scrubs out the ammonia from the pressate into an ammonium sulphate. The stripping / scrubbing system uses heat and a pH rise to strip out the ammonia and then uses sulfuric acid to scrub the ammonia out of the air / ammonia mixture. The cake is land applied at this time, but there are plans to turn it into an air spreadable fertilizer. The design is for 120 wet tons per day of 25% dry cake. Ammonia recovery from the pressate is designed for 90% with phosphorus recover also at 90%. This facility is a regional facility taking waste from much of the northern half of Utah.

Fair Oaks Farms | Resource Recovery, Nutrient Recovery, Anaerobic Digestion

Reference: Carl Ramsey, Fair Oaks Farms | P: 219.869.1773



AQUA Engineering, as part of a design-build team with Alder Construction, designed, oversaw the construction, and commissioned a regional \$20 million, 200 ton per day fertilizer plant that takes digestate from local dairy manure digesters, combines it with minerals and essential nutrients to create an agglomerated pril that can be stored and air spread when desired.

Orem City | Wastewater Treatment Facility Nutrient Removal

Reference: Chris Tschirki, Public Works Director, Orem City | P: 801.229.7510



AQUA Engineering has worked with the Orem Water Reclamation Facility since 1994. During the 90's, AQUA was involved with several upgrades at the facility including a biosolids dewatering facility, oxidation ditch upgrades, a DAF for thickening WAS, an additional secondary clarifier, and an upgrade to the aerobic digesters. An update to the facility plan followed these upgrades in 2008 and the most recent project began in 2009. This project has been funded through the State of Utah using ARRA funding. While the existing facility had plenty of hydraulic capacity, the plant had reached its biolog-ical capacity and needed to be doubled in order to meet future needs. The project includes conversion of secondary clarifiers to primaries, conversion of the existing oxidation ditches to more efficient bioreactors, the addition of a new bioreactor, implementation of anaerobic and anoxic zones to enhance biological nutrient removal, additional secondary clarification, and upgrading the solids handling process to two-stage anaerobic digestion to produce Class A biosolids right out of the digestion system. The solids can then be dewatered and used by the public to greatly reduce the annual cost of solids disposal at a landfill. This project increases the plant's capacity to 13.5 MGD for \$12 million. This project in-creased the facilities biological capacity from 20,000 lbs of BOD per day to 40,000 lbs of BOD per day for just over \$1/gallon.

Tooele City | Solar Drying Facility | 2012

Reference: Paul Hensen, City Engineer Tooele City | P: 801.879.4484



AQUA Engineering provided engineering design and construction management services for the Tooele Water Reclamation Facility Upgrade Phases 1A and 1B. The work included expanding both the liquid and solids treatment processes at the facility. The liquid stream improvements included new headworks equipment, additional aeration capacity in the oxidation ditches, a new secondary clarifier, and conversion from chlorination to UV disinfection. The solids portion of the plant was improved through the addition of an aerobic solids holding tank, dewatering screw presses, and a solar drying facility. These improvements restored the original plant's hydraulic capacity and provided additional capacity as the City grows. The solar drying facility, along with onsite solids storage, allows the treatment of biosolids meeting Class B and Class A requirements. Additionally, the quantity of solids to be removed from the plant has been greatly reduced. Construction of the facility was completed in 2012 and the facility upgrade has won awards including "Top 10 in the Nation" from Water & Wastes Digested News and the Water Environment Association of Utah's "Outstanding Biosolids Program Award".



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