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save time — save energy — save money

Statement of Qualifications

City of Moab Design and Installation of SCADA Services for Water and Sewer Facilities

August 21, 2025

Electrical

Instrumentation

Controls

SCADA

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SECTION 1 INTRODUCTORY LETTER

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Sommar Johnson, City Recorder
City of Moab
217 Center Street
Moab, UT 84532

August 14, 2025

RE: Section 1 - Introductory Letter
Design and Installation of SCADA System for Water and Sewer Facilities

Dear Sommar Johnson:

On behalf of SKM Engineering (SKM), I am pleased to submit our letter of interest for the City of Moab's Design and Installation of SCADA System for Water and Sewer Facilities project.

SKM acknowledges receipt of Addendum No.1 issued on July 17, 2025, Addendum No. 2 issued on August 5, 2025, and Addendum No. 3 issued August 20, 2025.

Firm Qualifications

SKM has a proven track record of delivering secure, reliable, and expandable SCADA solutions for municipal water and wastewater utilities across the region. We have a strong history of supporting communities throughout Southeast Utah, including successful infrastructure projects in Confluence Park, Blanding, and Mexican Hat, demonstrating our commitment to responsive service and regionally informed engineering solutions. Our team comprises licensed professional engineers, certified automation professionals, and experienced control systems integrators. We have four controls engineers based in Utah County as well as an additional ten in Salt Lake and Davis counties.

We have implemented SCADA systems hosted on virtual platforms with web-based access, and we excel in multi-protocol environments including Modbus, BACnet, and Ethernet/IP. Our solutions conform with CISA cybersecurity standards, where required (many times we don't meet their model based on infrastructure that clients have and is out of our control so I like to have the "where required") ensure high system availability through redundant server and UPS configurations, and are built with open architecture hardware and non-proprietary software to ensure longevity and scalability. We place strong emphasis on lifecycle support, from concept design to commissioning, and through long-term maintenance and user training.

Project Understanding & Approach

We understand that the City aims to establish a centralized SCADA infrastructure that unifies water and sewer monitoring and control systems, with a focus on centralized data communications and alarming, historical data collection and analytics, a scalable platform for future integration of stormwater, camera, and facility monitoring systems, and a robust approach to security and data protection.

Our approach will be customized to align with these goals and will include: a comprehensive Management Plan detailing the project schedule, roles, and phasing; open-architecture hardware and non-proprietary software that fulfill all technical and cybersecurity requirements; complete design documentation, fabrication, and system integration with formal acceptance testing; and robust operator training along with long-term support, including 24/7 emergency response and routine system updates.

The primary point of contact for this proposal is:

L. Allen Rogers, P.E., Principal
533 West 2600 South, Ste. 25, Bountiful, UT 84010
Office: 801.683.3765 | Mobile: 801.497.6847
Email: allen.rogers@skmeng.com

We appreciate your consideration, please do not hesitate to contact us with any questions or to request additional information.

Sincerely,

L. Allen Rogers, P.E. — Principal

SECTION 2 PROJECT APPROACH AND TEAM

PROJECT APPROACH

SKM understands SCADA (Supervisory Control and Data Acquisition) systems are critical components of operations, allowing our clients to monitor, control, and optimize their processes. Designing and maintaining SCADA systems requires a comprehensive approach and a well-defined philosophy to ensure their reliability, security, and effectiveness.

Based on the RFP documentation and discussions during the walkthrough we are suggesting the following approach and have based our pricing off this approach:

- We would like to meet as soon as feasible if we have the pleasure of being awarded the job. There are a lot of hardware, software and programming options and each have their own pros and cons. We would like to discuss with City Staff each of those options. The following is a sample of some of the items we would like to discuss:
    - PLC Hardware: We prefer to use Allen-Bradley or Modicon PLCs and would like to discuss the differences. We can use other brands as well, but have found these two to be the most reliable.
    - HMI/SCADA Software: As with PLC hardware we also have some preferences here. We would prefer to use Ignition by Inductive Automation or VTSCada by Trihedral. There are other packages as well that can be discussed.
    - Communications: During the walkthrough it was noted that City Staff would like to move to cellular vs the high bandwidth radios currently in use. Primary reasons for this were to avoid communication outages and bottlenecks while also eliminating unintentional lightning rods. We would like to evaluate each site with regards to cellular and other communication options.
    - Overall system programming – apart from regular operations of the system evaluate other options that can be done to benefit the city. Examples being automated reporting, time of day operation with Rocky Mountain Power rates, water auditing, automatic reporting to CMMS systems.
- After making decisions on direction and cost we would design the system, procure equipment, and any necessary licenses.
- Fabrication of any panel work would take place as well as programming the HMI and PLCs. We want to have the system programmed completely before we come and install it. During this phase we would involve city staff and design the HMI pages to fit your specific goals and needs.
- Installation would occur based on the schedule agreed upon with city staff and SKM. We would utilize A&E Electric for any electrical scope of the project. There are basically two approaches to installation. Rip off the bandaid as fast as possible or slowly tear it off to minimize pain. Both approaches will come with some pain.
    - Ripping off as fast as possible would entail an intense few weeks while we move through and install everything as quickly as possible and will include doing several sites at the same time as multiple teams move through.
    - The slower approach would be a more measured installation of a few sites at a time

done sequentially. This allows for more time to verify operations with city staff before moving onto another site. The downside is it means operating two systems in parallel for a longer amount of time and at times would require running some wells manually for a time period.

As we design our systems we do so with the following philosophy:

- Non-Proprietary: SKM believes in open systems. We are proud of our work and also the fact that we do not utilize any proprietary software or hardware. We want our customers to utilize us because we bring value, not because they are stuck. If we aren't living up to expectations our clients can hire another integrator to take our place without having to replace any hardware or software.
- Security Considerations: Security is paramount in SCADA systems. Implement strong authentication mechanisms, encryption protocols, and access controls to prevent unauthorized access. Regular security audits and updates are crucial.
- Communication Protocols: Working with the client to select the appropriate communication protocols that align with the operational requirements and network infrastructure. Common protocols include Ethernet/IP, Modbus, OPC, DNP3, and MQTT.
- Scalability and Futureproofing: SKM designs systems with scalability in mind to accommodate future expansion and technological advancements.
- Training and Documentation: Provide comprehensive training for operators and maintenance personnel to ensure they are proficient in using and troubleshooting the SCADA system. Maintain up-to-date documentation for all system components and configurations.
- Regular Maintenance and Updates: Establish a routine maintenance schedule to perform updates, patches, and preventive maintenance. Regularly monitor system performance and address any anomalies promptly.
- Disaster Recovery and Backup: Develop a robust disaster recovery plan that includes regular data backups, off-site storage, and procedures for restoring operations in case of system failures.
- Compliance and Regulations: Ensure that the SCADA system adheres to relevant industry standards, regulations, and cybersecurity best practices.
- On-Call Support: SKM provides a group of professionals that are available for our clients to utilize when issues or emergencies occur. Our large staff of controls engineers provides peace of mind and ensures that response time will be short. Our programming standards and documentation allow each of our staff to be able to provide the support needed.
- Collaboration and Feedback: Foster collaboration between SCADA designers, operators, and maintenance engineers. Encourage feedback loops to continuously improve the system based on real-world usage.
- Continuous Improvement: SKM embraces a philosophy of continuous improvement. We work with our clients to regularly assess system performance, gather feedback, and implement enhancements to optimize operations further.

SCADA systems are not static entities; they evolve with technology and operational changes. Therefore, an adaptive and forward-looking approach is essential for upgrades and maintaining effective SCADA systems.

QUALIFICATIONS OF PROJECT TEAM

Our project organization for the The City of Moab project is structured to facilitate the successful implementation of SCADA systems. This structured organization guarantees that each project aspect is addressed by experts, contributing to a successful SCADA system implementation, with the flexibility to adapt based on specific project needs and scale.

Principal In-Charge
L. Allen Rogers, PE

Quality Assurance / Quality Control
Ryan Pack, PE

Engineering
Mark Taylor
SCADA Engineer

Network Engineering
James Duggar

PLC Programming
Tovey Ashby
William "Huck" Fenn
Doug Biglar
Staff Engineers

Database Engineer
David Miller

HMI Designers
Daniel Leavitt
Design Lead & Graphics

Consultants
A&C Electrical
Ron XX

UL 508A Panel Shop
Electro Power Utah
Todd Chase
Shannon Schwartz

City of Moab Design and Installation of SCADA Services for Water and Sewer Facilities

The success of this project depends on the expertise, responsiveness, and collaboration of the project team. Our key personnel bring deep technical knowledge and decades of combined experience in engineering design, control systems, SCADA integration, and project delivery for water and wastewater infrastructure. Each team member plays a critical role in ensuring quality, efficiency, and alignment with the City's goals and technical requirements. The following summaries highlight the qualifications, relevant experience, and specific responsibilities of our proposed project team.

L. Allen Rogers, P.E. — Principal

Mr. Rogers is an experienced engineer and designer specializing in electrical systems, control systems, telemetry, and SCADA. He has contributed to the design, programming, startup, and maintenance of numerous projects involving source water, water treatment, wastewater collection, and wastewater treatment facilities. He has extensive hands-on experience with a variety of programmable logic controllers (PLCs), including Allen-Bradley, Control Microsystems, and Modicon. His proficiency also extends to a range of operator interface platforms such as Allen-Bradley, C-More, and Maple, as well as GE Fanuc iFIX (Intellution) HMI software. Throughout his career, he has supported the implementation of new systems, the replacement of legacy systems, and the expansion of existing infrastructure—bringing a practical, systems-oriented approach to every phase of a project

Education:

BS Electrical Engineering
University of Utah, 2010

Professional Engineer:

UT, OR

Mark Taylor — Principal | Senior Controls Engineer

Mr. Taylor is a controls engineer with experience in source water, irrigation, water treatment, wastewater collection, and wastewater treatment. In each of these areas, he has been responsible for SCADA system design and programming, project management, implementation, commissioning, and maintenance. Mr. Taylor has also been responsible for operator coordination, training, and support. He has designed and installed new systems, replaced old systems, and expanded existing control systems. Mr. Taylor has worked with communications networks including radio, fiberoptic, ethernet, and serial.

Education:

B.S. Electronics Engineering Technology, Weber State University, 2002

Tovey Ashby — Principal | Senior Programmer

Mr. Ashby is a senior programmer with experience in control system design, integration, and support. His experience includes source water, irrigation, water treatment, wastewater collection, and wastewater treatment. He has been responsible for the SCADA system programming, implementation, commissioning, and maintenance. Mr. Ashby has also been on the forefront of developing programming standards implemented across SKM to help streamline project development and reduce programming bugs. This includes custom function blocks for repeatable code used in many systems and templates for HMI/SCADA systems software.

Education:

A.S. Electrical Automation and Robotics Technology, Utah Valley University, 2004
B.S. Technology Management, Utah Valley University, 2006

William "Huck" Fenn — Lead Programmer

Mr. Fenn is a project manager / senior controls engineer with significant experience with water treatment facilities. He is an expert at motor control, PLC's, HMI's and system communications. He has setup, calibrated and maintained all types of instrumentation found in a typical water and wastewater facility. He has overseen installation of equipment, testing activities as well as startup and commissioning activities. He understands and can write process flow diagrams and control narratives in order to integrate them into a PLC/control system. Mr. Fenn has vast experience with power distribution and motor controls including variable frequency drives and soft starters. He is able manage projects and clients.

Doug Biglar — Controls Engineer

Mr. Bigler is a Controls Engineer with 20 years experience, 2 with SKM and 18 in industrial metals refining/ mining. With a background in controls and project engineering, Doug has designed, programmed and implemented SCADA, PLC, HMI systems to meet customer needs. In addition to electrical controls, Doug has experience in industrial ventilation and mechanical design including, safety systems, environmental requirements, process controls, cost reduction, lean manufacturing.

David Miller — Database and Reporting

Mr. Miller has two years of experience with SKM as a Controls Engineer, a total of 5 years of experience working on SCADA systems in both water treatment and natural gas industries, and over 20 years of experience in database development, software engineering, and software systems integration. At SKM David is responsible for developing and maintaining customized reports that clients use for regulatory compliance and reporting as well as giving them day to day insight into their system operations and performance. This includes work in developing and implementing customized modules based on the needs of individual systems as well as troubleshooting and maintenance both on systems that he has developed as well as legacy databases, reports, custom modules, and SCADA system interfaces for a wide array of clients.

Education:

B.S. Computer Science, Utah State University, 2003
M.S. Instructional Technology, Utah State University, 2005

Chris Scott — Controls Engineer

Mr. Scott has 8 years of experience with SKM as a Controls Engineer. Chris is responsible for design and implementation of high efficient SCADA systems and program PLC Controls. Chris has experience with many different types of PLCs from the leading manufacturers including Allen Bradly, GE, and Schnider. He also has electrical experience wiring and troubleshooting motors, valves, and sensors. Chris also configures and implements radio networks to tie all distant water sites into a single SCADA system.

Education:

Manufacturing Engineering, B.S. - Arizona State University, 2017

SECTION 3 PROJECT EXPERIENCE AND REFERENCES

PROJECT EXPERIENCE

SKM Engineering (SKM) has a proven track record of successfully delivering projects of similar type and size, our proposal showcases our expertise and commitment to excellence. Our qualifications and capabilities position us as a reliable partner to perform the work for The City with precision and efficiency.

Our approach involves the facilitation of collaborative workshops with the District, allowing for a comprehensive understanding of project execution requirements and standards. This collaborative effort ensures that the delivered solutions align seamlessly with the unique needs and objectives of the project.

We possess extensive experience in working with Rockwell-based PLC and SCADA platforms, as well as similar software systems including Inductive Automation Ignition. Our proficiency extends to HMI screen development, where we excel in creating intuitive and user-friendly interfaces. Additionally, our expertise encompasses historian configuration, trending, and reporting development, providing valuable insights for informed decision-making.

Developing a robust alarm philosophy and configuring an effective alarming system is a core strength of our team. We understand the critical role that communication plays in in-plant Ethernet networks, and we have a proven track record of implementing reliable and secure communication solutions.

Our commitment to operational continuity is evident in our ability to maintain plant operations during construction, testing, and commissioning phases. We have performed multiple SCADA upgrades and have worked successfully with operations to cut over the control systems maintaining operability. We prioritize the seamless integration of new systems while ensuring minimal disruptions to ongoing plant activities.

System documentation and training are integral components of our service delivery. We take pride in developing comprehensive documentation that serves as a valuable resource for future reference and training programs that empower your team to operate and maintain the implemented systems effectively. This includes Drawings, programs, software backups and operation documentation.

For the SCADA Security Integrator role, the following experience will demonstrate our strong background in similar environments with a commitment to adopting ISA-62443 standards. Our team has the ability to develop rigorous testing protocols to ensure the security of the SCADA system. Furthermore, our expertise extends to crafting cybersecurity incident response plans, showcasing our dedication to preemptive and responsive cybersecurity measures. We have on staff network engineers to aid with this effort.

In summary, SKM brings a wealth of experience, technical proficiency, and a collaborative approach to ensure the successful delivery of projects while prioritizing security, reliability, and operational excellence.

Mountain Regional Water Special Service District, Utah

SCADA System Integration and Optimization

Mountain Regional Water was formed to consolidate several smaller water systems into a unified district. In 2002 SKM led the modernization of their infrastructure by retrofitting over 55 remote sites and a water treatment plant with SCADAPack RTUs, touch screen HMIs, motion-detection security, and full monitoring and control capabilities. Communication was established using MDS radios, and solar power was deployed at remote tank sites with up to seven days of autonomy.

In 2012, SKM worked with Mountain Regional to define upgrade criteria, ultimately retaining the existing hardware platform to reduce costs. Over two years, SKM delivered a turn-key solution including hardware, installation, programming, and training.

A major focus was energy efficiency—logic changes enabled rate structure adjustments that offset the cost of the upgrade. Additional programming improvements, such as mass balance leak detection, have continued to deliver operational savings.

SKM has provided ongoing maintenance and upgrades since 2002 and was honored with the 2017 Firebrand Award at the 2018 Inductive Automation Conference for innovation in SCADA deployment.

Details

Owner: Mountain Regional Water Special Service District
Reference: Chris Braun
Contact: (435) 640-1682 | E: cbraun@mtnregional.org
Location: Park City, Utah
Timeline: 2002 (active)
Current Maintenance Contract

Features

SCADA	Implementation	Remote Sites
Allen Bradley PLCs	MDS Radios	Motion Detection SecurityMtn

Park City Water SCADA System Upgrade

Park City has been a valued client, and we have proudly provided SCADA support since the initial implementation of their upgraded control system. Prior to the project, the City faced significant operational challenges, managing three disparate control systems across their water department. These legacy systems, coupled with outdated equipment, were no longer meeting the City's growing needs for reliable control and data acquisition.

Recognizing the urgency, SKM partnered with Carollo Engineers to design and implement a modern, unified control system using a design-build approach. The result was a state-of-the-art solution that integrated 70 remote sites and two full-scale water treatment plants into a single, cohesive platform.

The new system leveraged industry-leading technologies, including:

- Ignition software for SCADA visualization and control,
- Allen-Bradley hardware for robust automation,
- A Cisco-based network infrastructure, and
- A Radwin radio system for reliable wireless communication.

Construction and integration were carefully phased over a six-month period, ensuring a seamless transition with zero downtime. This approach allowed the City to maintain uninterrupted operations, even during peak demand seasons, while significantly enhancing system reliability, visibility, and control.

Details

Owner: Park City Municipal Corporation
Reference: Isaac Kersner, Water Distribution Manager
Contact: (801) 725-5331| E: isaac.kershner@parkcity.org
Location: Park City, Utah
Timeline: 2015 - Current Maintenance Contract

Features

Electrical | Instrumentation | Controls | SCADA

Ignition	Allen-Bradley	Cisco
Radwin Radio	70 Remote Sites	Integration

City of Moab Design and Installation of SCADA Services for Water and Sewer Facilities

Two Customers See Big Improvements, Can Share Data

https://inductiveautomation.com/resources/customerproject/two-customers-see-big-improvements-can-share-data

Project Scope

Mountain Regional Water District (MRW):

- ✓ 65,000 tags
- ✓ 52 devices (40 SCADA Packs, 3 AB Logix PLCs, 9 Modbus Ethernet IO Units)
- ✓ Up to 15 clients at a time
- ✓ Redundant Architecture
- ✓ MSSQL DB
- ✓ 4,000 configured alarms
- ✓ 3,000 historicized data points
- ✓ 25 main screens, 120 pop-ups

Park City:

- ✓ 135,000 tags
- ✓ 103 devices (60 radios, 37 AB Logix Series PLCs, 5 Modbus devices)
- ✓ Up to 20 clients at a time
- ✓ Redundant Architecture with fallback
- ✓ MSSQL Cluster DB
- ✓ 6,000 configured alarms
- ✓ 5,000 historicized tags
- ✓ 35 main screens, 150 pop-ups

Project Overview: This project was done for two separate organizations that work together on several activities. A key feature of the project was setting up a system whereby the two entities can share data. The main part of the project was a SCADA upgrade for both.

Problem: The Mountain Regional Water District (MRW) and the city of Park City both wanted to improve their HMI/SCADA systems. Each was seeking a more reliable and robust HMI that could provide good data visibility, alarming, and expandability at an affordable cost. Further on in the project, there became a greater need to share data between the two entities and run automated reports.

Solution: Ignition provided numerous features at a low cost. It provided the ability to do things that would have been impossible in other software platforms.

MRW was the first to do an upgrade. MRW was impressed with the features of Ignition and decided to use it after becoming tired of the licensing model and lack of feature improvements in its existing software.

SKM streamlined the process using the templates and custom UDTs to bring more data to the front. MRW's original project had 5,000 tags and the new project has 65,000. SKM took operators from looking through a peephole into their system to having a nice bay window in about the same time it would have taken to create the 5,000-tag system in the other software.

By this time, the district was having new ideas on how to best use this data to optimize operations. MRW began using Ignition to monitor and optimize energy consumption, track efficiencies, and find water leaks before they became large or were called in. The project was able to pay for itself in a few years due to the savings created by the new levels of data and the added control.

City of Moab Design and Installation of SCADA Services for Water and Sewer Facilities

Around the completion of the MRW project, Park City was looking to upgrade its existing system as well. Like MRW, Park City was impressed by the feature set and the database-friendly approach of Ignition. Also, the low cost was appealing. One of Park City's long-term goals is to integrate its HMI/SCADA system with its Maintenance Management Software and Automatic Metering systems. MRW was also a strong proponent at this point and was very open with Park City about its own project and experiences.

With Ignition in place, Park City has a much larger view into its system. The city went from 10,000 tags to 135,000. Project requirements included the ability to run automated state reports. These reports had to be in Excel notebooks in a set format. While the reporting module in Ignition is a great and powerful tool, there was no way to create these reports in a streamlined fashion from the native reporting tool. Rather than having to say, "the software can't do that," SKM created a module. With the Apache POI and some assistance from Travis Cox at Inductive Automation, SKM made the new module with scripting extensions to run these reports. The reports run with the scheduler of the reporting module — and save the city's operations staff days each month.

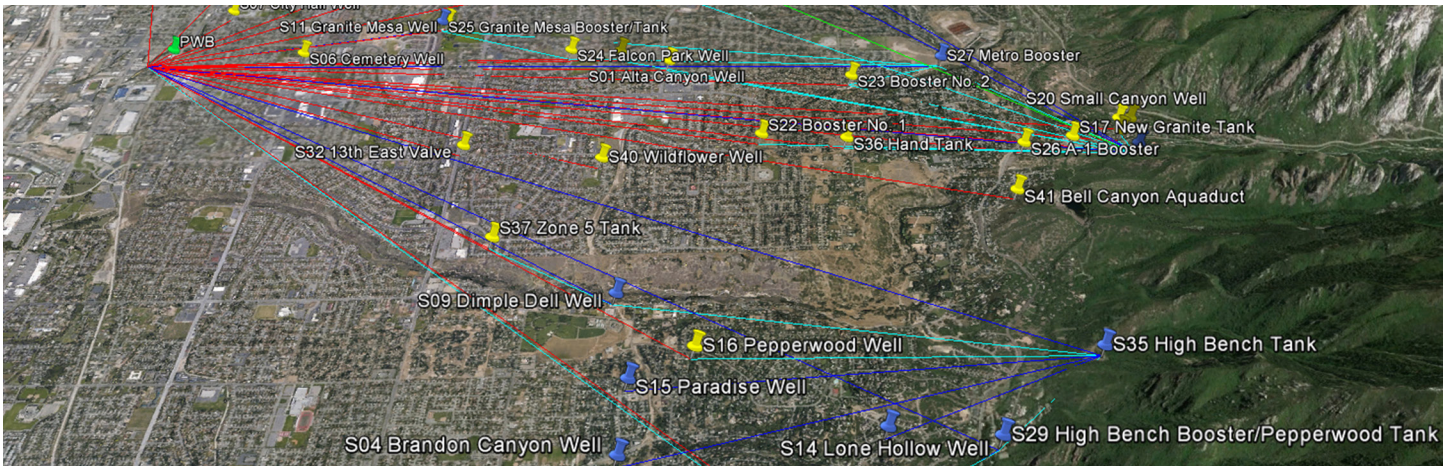
The Park City project used radios that could be monitored over SNMP. Once again, this was not something that Ignition does natively, but SKM was able to use a module created by Kymera Systems to accomplish the task.

MRW and Park City share ownership in some large assets and water sources, including a large pump station. The pump station is operated by MRW. Also at the site is a water quality station that is operated and maintained by Park City. Each organization wanted to see the other's data, as it was fairly critical to both operations. Once again, Ignition was the solution. Using the Web Dev Module, each organization serves up a JSON with pertinent data that is read in by the other organization's servers.

Results

The biggest result was two satisfied customers. Both organizations saw several benefits. There are future plans at both — including integration into other systems and the addition of more physical IO. A big benefit is that neither entity will have to go back to Inductive Automation and pay more money to work on their future projects. And SKM is seeing more users at both organizations getting engaged with Ignition and creating their own screens — with help from SKM and Inductive University.

SCADA System Implementation and Long-Term Maintenance



Since 2004, SKM has partnered with Sandy City to deliver and maintain a comprehensive Supervisory Control and Data Acquisition (SCADA) system for its municipal water and storm water infrastructure. The system, initially completed in 2005, replaced an outdated tone telemetry network with a modern solution using Allen-Bradley PLCs, MDS radios, and Intellution iFIX/iHistorian for HMI and data management.

Key highlights include:

- Integration of 39 remote sites (tanks, boosters, wells) into the SCADA network.
- Ongoing maintenance and support under a long-term contract since 2004.
- 2016 HMI upgrade to enhance visualization and control for both water and storm water systems.
- Continuous system expansions and improvements, including the addition of a storm water system.

This long-standing collaboration has significantly improved operational efficiency, system reliability, and data visibility for Sandy City's water infrastructure.

Details

Owner: Sandy City
Reference: Scott Ellis, Operations Manager
Contact: (801) 568-7193
Location: Sandy, Utah
Timeline: 2004 (active)
Current Maintenance Contract

Features

SCADA	Implementation	Remote Sites
Allen Bradley PLCs	MDS Radios	iFix/iHistorian

Salt Lake City, Utah

Parley's Water Treatment SCADA & Controls Upgrade

SKM has been providing engineering services for the Parleys Water Treatment Plant, focusing on modernizing its electrical, instrumentation, and control systems. The project includes:

- PLC panel design and installation, now fully completed.
- New HMI system, successfully started up and commissioned.
- Chemical system upgrades, including Ferric Chloride and Sodium Permanganate dosing systems.
- Upstream fiber optic network design to connect remote reservoirs and facilities.

Key highlights include:

- System Planning & Programming
- Integration & Hardware Manufacturing
- Installation & Commissioning
- Consulting & Implementation

This comprehensive upgrade enhances operational efficiency, monitoring capabilities, and long-term reliability for the plant and its connected infrastructure.

Details

Owner: Salt Lake City
Reference: Jamey West
Contact: (801) 799-4083 | E: jameywest@slcgov.com
Location: Salt Lake City, Utah
Cost: $1.5 Million
Timeline: 2020

Features

System Planning	Integration	Hardware Manufacturing
Installation	Startup	Commissioning

Park City, UT

Three Kings Water Treatment Plant Programming

The Three Kings WTP located in Park City was a replacement of the existing Spiro WTP. The plant was built to satisfy growing demand in the basin and stricter regulatory requirements on treating metals from the mine tunnels. The plant consisted of several processes including floc/sed, filter vessels, adsorbers, UV and solids handling. SKM provided all the instrumentation, SCADA/PLC networking equipment, PLC panels, HMI software and programming for the process systems.

Highlights of the project include:

- Connected IO – the majority of the IO in the project was brought in through Ethernet or Profibus providing more insight and digital data from instrumentation.
- Island Mode – While normally the plant is connected to the rest of the city SCADA system the plant can operate independently if disconnected from the rest of the city network.
- Chemical Budgeting – Programming was put in place to help manage chemical costs giving the end user significant insight and control into chemical usage.
- Allen-Bradley ControlLogix PLCs with Ignition software provided a powerful platform to provide controls and visualization for the end user.

Details

Owner: Park City Municipal Corporation
Reference: Eric Williams
Contact: P: (435) 640-8091 | E: ewilliams@parkcity.org
Location: Park City, Utah
Cost: $2.8 Million
Timeline: 12/3/2019 – 6/30/24

Features

HMI Software	Instrumentation	SCADA/PLC
Allen-Bradley PLCs	Ignition Software	Programming

SECTION 4 COST ANALYSIS

SECTION 4 COST ANALYSES

Introduction

We have included a range of pricing to give an idea of expected system cost. The range varies greatly depending on the options and hardware the city ultimately decides to use. While the project cost shows "Low End" and "High End" rest assured that even our "Low End" of the range will be a completely functional system with high quality parts and programming. As a quick example of the difference between the Low and High range of prices we can look at a tank sight and a well house on solar and well site.

For the tank site the lower cost option would be a replace in kind of the IO module. A new module would be installed and utilize the existing solar, battery, radio and cabinet. The higher cost option would be a totally new cabinet and new solar system. A medium cost option would be utilizing cellular that may require an upsize or replacement of the existing solar while still using the existing enclosure. This would all be covered in the initial system design and we would walk through each site and go over the pros and cons of all the options.

For the well site the low cost would also include a rip and replace of the controller and power supplies in the existing cabinet. A new controller, cell modem, power supply and network equipment would be installed in the box. The programming would be on the simpler end, but fully functional. The high end cost would be a completely new cabinet build replacing the entire existing cabinet along with a larger touchscreen, more room for expansion and more bells and whistles in the programming like on peak/off peak pumping coordination. In the middle of the cost range would be a pre-wired backpanel swap instead of whole cabinet, but much cleaner than an in place replacement.

Every approach has its pros and cons and needs to be weighed on benefits to capital expenditures and ongoing operational expenditures.

Capital Cost

Site Name	Low End Cost	High End of Cost
Mountain View Tank	$2,000.00	$8,000.00
Old City Park	$16,000.00	$22,000.00
Power House Tank	$2,000.00	$8,000.00
Pump 10	$18,000.00	$28,000.00
Pump 6	$18,000.00	$28,000.00
Pump 7	$18,000.00	$28,000.00
Skakel Tank	$2,000.00	$8,000.00
Skakel Well	$20,000.00	$32,000.00
Spring Box 3	$2,000.00	$8,000.00
White CL2	$16,000.00	$22,000.00
Spring Box 1	$2,000.00	$8,000.00
Pump 12	$20,000.00	$30,000.00
Lionsback LS	$23,000.00	$33,000.00
North Trunk Lift Station	$23,000.00	$33,000.00

Lionsback Tank	$2,000.00	$8,000.00
Lionsback Lower Booster	$21,000.00	$32,000.00
Williams Way Lift Station	$23,000.00	$33,000.00
Spring 2	$2,000.00	$8,000.00
Lionsback Upper Booster	$21,000.00	$32,000.00
SCADA Software	$18,000.00	$30,000.00
HMI Programming	$30,000.00	$80,000.00
Misc Computer Hardware (CCW, etc)	$3,500.00	$8,000.00
Initial System Consultation and Design	$15,000.00	$15,000.00
Total	$317,500.00	$542,000.00

Operating Cost

The operating costs listed in the below table are estimated costs. In reality none of them are mandatory. It is what we would suggest to keep systems patched and up to date, but frequencies can be adjusted to lower or increase costs. All hardware comes with a one year warranty except the power supplies that have a ten year warranty. All our code/programming also comes with a one year warranty where we will correct any issues that may come up. Our 2025 hourly billing rates are provided on the following page that would be used for support.

Ongoing Cost	Low End	High End
Software Support/License Cost Annual	$3,000.00	$6,000.00
Controller Replacement Cost	$2,000.00	$3,500.00
Telephone/VPN/Onsite same hourly rate if not warranty issues.		
After Hours Support is time and a half.		
UPS Battery Replacements for all UPS Systems Every Two years	$1,500.00	$2,000.00
Recommended Software and OS Up-dates for Security Annual Cost	$3,500.00	$5,200.00

Other Life Cycle Costs

Expected Life Cycle of Systems	
Controller and IO Modules	10-15 years
Power Supply Equipment	10 years
Touchscreens	5-10 years
Network and Cellular Equipment	5-7 years
Servers	5 years

skm

save time - save energy - save money

Electrical & Controls Engineering
2025 Hourly Billing Rates

Labor Category	Rate
Electrical Principal Engineer	$235
Electrical Engineer III	$215
Electrical Engineer II	$195
Electrical Engineer I	$170
CAD Designer/Manager	$160
CAD Designer III	$150
CAD Designer II	$140
CAD Designer I	$120
Controls Project Manager	$205
Controls Engineer III	$195
Controls Engineer II	$180
Controls Engineer I	$155
Electrical Transmission Engineer	$225
Administrative	$100

Reimbursable Expenses Schedule:
Additional expenses will be handled in the following manner:

Mileage:	IRS per mile rate for vehicles not rented
Sub-Consultants:	Pass through at cost, no mark-up
Equipment Costs:	Billed at cost plus 10% markup

SECTION 5 RESUMES

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Allen Rogers, P.E. - Principal

(801) 683-3765 - allen.rogers@skmeng.com

Mr. Rogers a principal engineer is a programmer and designer with experience in electrical design, control systems, and Telemetry and SCADA systems. Mr. Rogers has assisted in the design, programming, startup and maintenance on several source water, water treatment, wastewater collection, and wastewater treatment projects. Mr. Rogers has experience with many different aspects of SCADA systems. He has worked with many different programmable logic controllers including Allen Bradley, Control Microsystems, and Modicon. He has used many different operator interfaces including Allen Bradley, C-More, and Maple. He has experience with GE Fanuc iFix (Intellution) HMI software. Mr. Rogers has worked with several different communication systems including radio, Ethernet, serial, and proprietary communication systems. Mr. Rogers has also assisted in several path studies using licensed and unlicensed radios.

Work Experience

19 Years

Education

BS Electrical Engineering
University of Utah, 2010

Registration

Professional Engineer:

Utah

Specialties

- Programming
- Project Management
- Design
- Electrical Design, Control
- Systems, Telemetry and SCADA
- systems
- Programmable Logic Controllers
- HMI
- Radios

Project Experience

Three Kings Water Treatment Plant Programming, Park City, UT – Programmer/Principal/Project Manager

Jordanelle Special Service District, 6800 Tank SCADA and Programming – Programmer/Principal/Project Manager

Blanding SCADA Programming and Hardware, Blanding, UT – Programmer

Driggs Water Improvement Projects and ongoing Support

Ash Creek Confluence Park I&C – Principal/Project Manager

Eagle Mountain Headworks Building

Fisher Water Treatment Plant Programming – Principal/Project Manager

Logan Wastewater Treatment Plant – Principal/Project Manager

Gallup Water SCADA Replacement, Gallup, NM – Programmer
Mr. Rogers assisted in the programming of the HMI and PLCs of the city's SCADA system. The project replaced over twenty remote sites during an installation time of two weeks.

Gallup Wastewater Expansion, Gallup, NM – Programmer
Mr. Rogers assisted in the programming of plant PLCs and the creation of loop diagrams for additions to the wastewater plant.

Lost Creek and Rockport Boosters, Summit County, UT – Programmer
Mr. Rogers programmed the PLCs, operator interfaces, and HMI for the Lost Creek Booster expansion and the Rockport Booster stations. The main pump station had 10 pumps running at 500 PSI.

Mountain Regional Water, Summit County, UT – Programmer/Project Manager
The system includes 40 remote sites, a treatment plant, and large booster pump system. Mr. Rogers is currently involved in setting up new radio networks and upgrading hardware and HMI software for the system.

Elko WWTP Upgrade, Elko, NV – Designer
Mr. Rogers assisted in the electrical design, load calculations, conduit schedules, and lighting plan for the Elko WWTP Headworks expansion project.

Elko WWTP Reporting, Elko, NV – Programmer
Mr. Rogers was responsible for the design and programming of a complete reporting package that integrated all reporting aspects of the plant from the lab, operator field readings, and HMI historical data into one database. Reports were then automatically generated from information contained in the database.

CWSID WWTP Upgrade, Ogden, UT – Designer
Mr. Rogers assisted in the design of the control system of the Central Weber Sewer Improvement District WWTP 60 MGD upgrade. He was responsible for developing many control loop specifications and aided in the creation of the process and instrumentation diagrams.

Allen Rogers, P.E. - Principal

Project Experience (continued)

Intrepid Potash, Carlsbad, NM – Programmer
Mr. Rogers was responsible for a large portion of the programming of an underground stacker/reclaimer system that involved a stacker, several conveyor belt systems, and a loading system.

Quinns Junction WTP, Park City, UT – Project Manager
Mr. Rogers was in charge of the integration of the Quinn's plant which included programming the plant PLC, HMI Software, and reporting for the plant. Mr. Rogers's was also responsible for integrating the OEM Pall system into the plant HMI to create a seamless operating experience for the plant staff.

Salt Lake City WRF, Salt Lake City, UT – Project Manager
Mr. Rogers just completed a network upgrade at the plant that installed a new fiber backbone throughout the plant and new CTC cabinets using Layer 2 and 3 Cisco switches in nineteen locations. Mr. Rogers is currently designing the replacement of the antiquated remote IO system throughout the plant with new PLCs.

Las Gallinas Re-use Water Project, San Rafael, CA – Project Manager
Mr. Rogers led the design team for the closed filter re-use water project in Las Gallinas. The system consisted of treating effluent with a GE Zpak system for irrigation use. Mr. Rogers recently finished construction oversight on the electrical portion of the project.

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Ryan Pack, P.E. - Principal

(801) 683-3761 - ryan.pack@skmeng.com

Mr. Pack has experience with many components of SCADA and controls. He has worked with controls as simple as relay logic and PID loop controllers thru complex radio controlled SCADA systems. He has worked with many different programmable logic controllers and Operator interfaces including Allen Bradley, Control Microsystems, GE, Koyo, Modicon, Siemens, and others. He has utilized many software packages for human machine interface including Allen Bradley, GE Proficy (Intellution), Wonderware, and National Instruments Lookout. He has designed and installed new systems, replaced old systems, and expanded existing control systems. Mr. Pack has worked with many communications systems including radio, fiberoptics, ethernet, serial, and proprietary communications systems such as controlnet and profibus. He has conducted numerous path studies, for both licensed and non-licensed radio communications systems. He has designed and installed radio telemetry systems with over 50 remote sites.

Work Experience

23 Years

Education

BS Electrical Engineering
University of Utah, 2002

MBA
Weber State University, 2005

Registration

Professional Engineer:

UT, ID, NV, WY, CO, HI, NM. NY, IA

Specialties

- Electrical and Controls
- Design
- Construction Oversight
- Control Systems
- Telemetry and SCADA Systems
- Design
- Control Testing
- Programming
- Startup and Maintenance
- Contracts

Project Experience

Blanding SCADA Programming & Hardware – Principal/Project Manager

Bluff SCADA – Principal

Chino Wastewater Treatment Plant SCADA and Maintenance – Principal/Project Manager

Grantsville Irrigation SCADA – Principal/Project Manager

Hyrum Wastewater Treatment Plant SCADA and Support – Principal/Project Manager

Roy Water SCADA – Principal/Project Manager

Snyderville silver Creek SCADA Upgrade – Principal/Project Manager

Lost Creek Project, Summit County, UT – Electrical/Controls Engineer
Mr. Pack worked on this project in all aspects from the shallow wells to the treatment facility. Ryan designed Mountain Regional Water's SCADA system, and has continued working on the system since original installation. He oversaw the programming and startup of the existing Lost Creek Canyon control system, and is extremely familiar with its layout, configuration, and applications. Ryan also worked on the design for the motor controls, power distribution, lighting, and instrumentation for this system.

Mountain Regional Water SCADA, Summit County, UT – Controls Engineer
SKM designed a new SCADA system for the district that included all of the water distribution, raw water collection, and treatment. He worked with the water district to designed a new SCADA system that included all of the water distribution, raw water collection, and treatment. He worked with the water district to meet their monitoring, reporting, and control needs. Ryan coordinated the installation with their staff, and programmed much of the system. This included reporting, monitoring, alarming, and full control of the system. He continues to maintain the system with SKM's staff of service personnel.

Idaho Falls Water SCADA, Idaho Falls, ID – Controls Engineer
SKM designed a backup power generation system for the water department, as well as the control interface between the Generator and the SCADA system. Mr. Pack is currently maintaining their water system SCADA and controls, and is under contract to perform programming on their upcoming additions.

Santaquin SCADA, Santaquin, UT – Controls Engineer
SKM designed a new SCADA system for the city that included all of the water distribution, wastewater collection, and wastewater treatment facility. Mr. Pack worked with the city to meet their monitoring and control needs, and provide a system that would work for them. He coordinated the installation with local trades, and aided in the programming of the system. This included reporting, monitoring, alarming, and full system control.

Summit Park Boosters, Summit County, UT – Electrical/Controls Engineer
SKM worked on the electrical and controls design for the two pump stations, and flow control station required for this project. Mr. Pack designed the motor controls, instrumentation, and controls required to operate the facilities as required by Mountain Regional Water.

Bountiful City Water, Bountiful, UT – Electrical/Controls Engineer
SKM has worked on numerous projects for the City of Bountiful. Mr. Pack has designed numerous motor control and distribution systems for wells and boosters for the city. He has worked with the department head to incorporate complete system control from the motor control enclosure for each of these sites.

Ryan Pack, P.E. - Principal

Project Experience (continued)

Davis and Weber Counties Canal SCADA, Weber County, UT – Controls Engineer
SKM is currently working on installation of a new SCADA monitoring system for the canal company. This includes the monitoring of all canal discharge flows, as well as monitoring of the primary canal flow. Ryan designed the radio network, control system, and aided the district in coordinating installation of required hardware. East Zion SCADA, East Zion SSD, UT. Electrical/Controls Engineer. Ryan Designed the Electrical, Controls, and SCADA system for this community's water system. This included phase conversion for the booster pumps, tank level monitoring, well control and communications between the sites. Ryan designed all of the motor controls and instrumentation for this project.

East Zion SCADA, East Zion SSD, UT – Electrical/Controls Engineer
Ryan Designed the Electrical, Controls, and SCADA system for this community's water system. This included phase conversion for the booster pumps, tank level monitoring, well control and communications between the sites. Ryan designed all of the motor controls and instrumentation for this project.

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Mark Taylor, E.I.T. - Principal

(801) 683-3762 - mark.taylor@skmeng.com

Mr. Taylor is a programmer and field technician with experience in control systems design and integration, as well as control systems maintenance and support. His experience includes source water, irrigation, water treatment, wastewater collection, and wastewater treatment. In each of these areas, he has been responsible for SCADA system programming, implementation, commissioning, and maintenance. Mr. Taylor has also been responsible for operator coordination and training for many of these projects. He has designed and installed new systems, replaced old systems, and expanded existing control systems. Mr. Taylor has worked with communications systems including radio, fiberoptic, ethernet, serial, and proprietary communications systems such as controlnet. He has conducted numerous path studies, for both licensed and non-licensed radio communications systems. He has installed radio telemetry systems with over 40 remote sites.

Work Experience

23 Years

Education

BS Electronics Engineering Technology,
Weber State University, 2002

Registration

EIT

Certification

Ignition Gold Certification

Project Experience

Sandy City SCADA, Sandy, UT – Programmer
Mr. Taylor programmed the PLCs, the HMI computers, and the operator interfaces for the city's entire freshwater system. This included reporting, monitoring, alarming, and full system control. The project involved over 40 remote sites. Mr. Taylor was also responsible for operator training and commissioning. SKM and Mr. Taylor are under contract with Sandy for SCADA system support and expansion.

Santaquin WRF- Santaquin, Utah – Continues to support the plant with upgrades, maintenance, and on call services
SKM was selected as the owner's system integrator to build SCADA for the plant. There are two vendor supplied solids handling packages, 4 vendor supplied MBR trains, and a vendor supplied UV system. SKM provided PLC programming for headworks, influent lift station, blowers, dewatering, drain, recycle, aeration, and reuse. SKM integrated all PLCs into a GE iFIX HMI with Win911 for alarm notification and DreamReport for reporting. SKM programmed GE PLC equipment included RX3i Processors with VersaMax IO. The SCADA/HMI has roughly 3200 PLC IO points

Snyderville Basin Water Reclamation District- Park City, Utah – Continues to support the plant with upgrades, maintenance, and on call services
SKM has provided system integration services for SBWRD for over 15 years. First as on call services and support for East Canyon and Silvercreek plants, then as owner's integrator for plant upgrades at East Canyon, owner's integrator at the new Silvercreek plant (2019), and as integrators for the collections SCADA system. SKM assisted the treatment plants with conversion from GE 90-30 PLCs to GE RX3i, PLCs and conversions from Wonderware to Inductive Automation Ignition. SKM developed PLC and HMI programming standards at the East Canyon plant that were then used for the new Silvercreek plant. SKM has programmed 17 GE RX3i PLCs for SBWRD. The 3 SCADA systems (East Canyon, Silvercreek, and Collections) currently have roughly 71,000 tags.

Central Davis Sewer District- Kaysville, Utah – Continues to support the plant with upgrades, maintenance, and on call services
SKM has provided system integration services for CDSD for over 20 years. First as on call services and support for the plant and collections systems, then as owner's integrator for plant upgrades and new collections pump stations and monitoring sites. On the PLC side, SKM has provided additions, upgrades, standardization, and support. On the HMI side, SKM has provided upgrades, migrations, vendor integration, and support. On the network side, SKM has provided design, implementation, and support on fiber and copper networks for the plant, as well as radio design, implementation, and support for collections. Currently the SCADA connects to roughly 22 remote devices and has approximately 30,000 tags.

Toana Vista Golf Course SCADA, West Wendover, NV – Programmer/Field Technician
Mr. Taylor programmed the PLCs, designed the PLC panels, and programmed the HMI computer. This included reporting, monitoring, alarming, and system control. The project involved interfacing with the existing SCADA system at the wastewater plant to pump water to the golf course for water feature/irrigation purposes.

Magna WWTP SCADA, Magna, UT – Programmer/Field Technician
Mr. Taylor programmed the PLC and operator interface for part of the plant that was being upgraded, and then did all of the programming involved in upgrading the entire plant's existing HMI. He was also responsible for commissioning and operator training. Mr. Taylor and SKM maintain the plant's SCADA and controls, and are under contract to perform programming on upcoming additions.

Mark Taylor, E.I.T. - Principal

Project Experience (continued)

Kennecott Daybreak SCADA, South Jordan, UT – Programmer
Mr. Taylor programmed the HMI computer. This included reporting, monitoring, alarming, and system control. He also picked up where a previous control system integration company had left off, and worked with the system operators to successfully commission the entire automatic control system. Mr. Taylor and SKM are currently under contract with Daybreak to maintain and expand their SCADA system.

Moroni WWTP SCADA, Moroni, UT – Programmer
Mr. Taylor programmed the PLC and HMI computer for the entire WWTP facility. This included reporting, monitoring, alarming, and system control as well as commissioning and operator training. Mr. Taylor and SKM are currently under contract with Moroni to maintain and expand their SCADA system.

Mountain Regional Water SCADA, Summit County, UT – Programmer
SKM designed a new SCADA system for the district that included all of the water distribution, raw water collection, and treatment. Mark assists in maintaining the system.

Pureflow Filtration Systems, Whittier, CA – Programmer
Mr. Taylor has programmed several PLCs and operator interfaces for Pureflow Filtration System's proprietary freshwater filters. These projects often involved interfacing with existing SCADA systems and coordinating with other control system integrators, as well as system operators. SKM and Mr. Taylor are currently working with Pureflow on several new projects in several different states.

West Wendover SCADA, West Wendover, NV – Programmer/Field Technician
Mr. Taylor performed all of the programming involved in upgrading the city's HMI computers for their existing SCADA system. The SCADA system includes the WWTP, freshwater, waste water collections, and wastewater reuse. Mr. Taylor and SKM continue to work with West Wendover, assisting them in all of their SCADA maintenance and expansion needs.

Magna EDR and BioBrox Facility, Magna, UT – Programmer
Mr. Taylor programmed the PLC and HMI for the EDR and BioBrox facility, and was also responsible for commissioning and operator training.

Other Project Experience

Payson, UT - WWTP SCADA system support, Reuse facility programming and commissioning

Spanish Fork, UT - WWTP SCADA system support, pump station, screw press, aerator program and commission

Davis Weber Canal Company, UT - SCADA system support and expansion

Santa Rosa, NM - SCADA System/Instrumentation upgrade

Snyderville Basin, UT - WWTP SCADA system support

Tooele, UT - WWTP SCADA system support

Central Davis SID, UT - WWTP SCADA System support and expansion

Springville, UT - Lift Station Programming/Commissioning, WWTP SCADA system support

Springer , NM - WWTP programming and commissioning

Grantsville, UT - SCADA system expansion and support

Little Mountain, UT - WWTP programming and commissioning

Orem, UT - Headworks programming, SCADA system support

Snowbird, UT - SCADA system support and expansion

Moroni City, UT - SCADA system support, HMI upgrade

EA Miller, UT - Cloth filter programming and commissioning

Hyrum, UT - SCADA system support

Payson, UT - WWTP SCADA system support, Reuse facility programming and commissioning

Spanish Fork , UT - WWTP SCADA system support, pump station, screw press, aerator programming

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James Duggar - Network Engineer

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Mr. Duggar has been with SKM for one year as an IT technician. He has had previous experience in deploying storage servers and providing secure remote access through VPN technologies for a small business video production studio. He also has 4 years of previous experience in implementing and supporting IT infrastructure used for kiosks intended for use in large public displays. He has extensive experience in deploying and maintaining Linux based servers in both physical and virtual/cloud environments as he has maintained private servers and infrastructure for the past 15 years. He has worked with switches from various manufacturers including Cisco, HP Enterprise/Aruba, Ubiquity/UniFi, and FS.com. He has also worked with Industrial switches offered by Cisco, Allen Bradley, and FS.com. Through his experience with Virtualization server hosting, he has also become familiar with virtualized network switches including Linux Bridge and Open vSwitch. He has worked with firewall packages from Sophos, pfSense, and UniFi, as well as Linux's iptables. He has also worked with VPN technologies such as SSL based VPNs as provided through OpenVPN based implementations, and Wireguard. He also has understanding and familiarity in working with and implementing SSL/TLS Certificates, and Public Key Infrastructure (PKI) technologies. At SKM, James strives to deploy and maintain servers and networks to standards defined by the National Institute of Standards and Technology (NIST).

Work Experience

10 Years

Certifications

Inductive Automation Ignition 8.1

Education

Davis High School, 2005

Specialties

- Networking and Network Diagnostics
- Web Application and Database Server administration
- Hypervisors/Virtualization Technology
- Linux and Windows Administration

Project Experience

Central Davis Sewer District
During a major upgrade of networking and IT equipment, I set up new Virtualization servers utilizing Hyper-V to provide Virtualized environments for new Ignition Web Application servers as well as upgraded Database servers. I also programed new network switches to integrate with their currently designed network topology, and updated firewall policies to provide better isolation of OT network devices from business IT infrastructure. James also continues to provide support for the plant's SCADA network and IT infrastructure.

Wasatch Peaks Resort
Worked with Operators at Wasatch Peaks to provide them Remote VPN access to Ignition's Perspective HMI system, as well as updated firewall policies to provide greater isolation of OT network devices from business IT infrastructure.

SLC Water Reclamation Facility
Working with other design, engineering, and implementation departments to design and assign IPv4 addressing schemes for new devices and networks being deployed in an expansion to the Wastewater plant.

Beaumont CA
Set up and assisted with the migration to new servers utilizing Hyper-V as a virtualization platform to host new Ignition Web Application servers as well as new Database servers.

Identified inefficiencies in database backup procedures and developed new procedures which improved backup storage efficiency, reduced overall server load during database backups, and greatly reduced the time needed to complete database backups.

Spanish Fork
Worked with other design and engineering departments to design and assign IPv4 addressing schemes for new devices and networks being deployed in an expansion to their Wastewater plant.

Los Alamos
Set up a new Virtualization server utilizing VMware ESXi to host virtualized environments for Ignition Web Application servers and Database servers.

Eagle Mountain Sewer Maintenance

Hyrum SCADA Support

Mountain Green SID BNR Wastewater Treatment Plant SCADA

Payson Wastewater Treatment Plant Services

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Tovey Ashby - Senior Programmer

(801) 683-3763 - tovey.ashby@skmeng.com

Mr. Ashby is a senior controls engineer with experience in control system design, integration, and support. His experience includes source water, irrigation, water treatment, wastewater collection, and wastewater treatment. He has been responsible for SCADA system programming, implementation, commissioning, and maintenance. Mr. Ashby has experience various aspects of SCADA systems. He has worked with several brands of programmable logic controllers including Allen Bradley, Automation Direct, Control Microsystems, Siemens, GE and Schneider Electric. He has experience with many different operator interfaces including Allen Bradley, Schneider Electric, Siemens, and Automation Direct. He has extensive experience with Inductive Automation Ignition, GE Proficy iFix, FactoryTalk View and Wonderware HMI software. He also has extensive experience in scripting with VBA, Python, Java and other languages. Mr. Ashby has also been on the forefront of developing programming standards implemented across SKM to help streamline project development and reduce programming bugs. This includes custom function blocks for repeatable code used in many systems and templates for HMI/SCADA systems software.

Work Experience

18 Years

Education

AS Electrical Automation and Robotics Technology,
Utah Valley University 2004

BS Technology Management,
Utah Valley University 2006

Specialties

- Controls Engineering
- Industrial Network Design
- Radio and Telemetry Systems
- SCADA System Design and Integration
- PLC and HMI Design and Integration

Project Experience

Park City – Programmer/Integrator
Park City has two main divisions. Distribution and Treatment. The SCADA system entails redundant SCADA servers with communications to over 100 devices using various protocols including Allen-Bradley Ethernet/DeviceNet/ControlNet, Modbus TCP/IP and SNMP to PLC's, radios and analyzers. Management is able to extract data on water and power usage using custom reports and dashboards. There are also communications between other SCADA systems of neighboring municipalities including Mountain Regional Water and Summit Water. This allows data to be shared to assist in management of systems. Mr. Ashby has been involved in mapping data between the different municipalities SCADA systems as well as re-writing queries and data management to be faster and more accurate. He has also worked on cleaning up interfaces to make the screens more user friendly and helped staff with learning how to program in Ignition so they can make minor adjustments on their own.

Metropolitan Water District of Salt Lake and Sandy – Programmer/Integrator
Mr. Ashby was responsible for the upgrade of communications to power monitoring equipment from serial communications to Ethernet. This also entailed upgrading Redundant PLC's from ControlNet and DeviceNet to Ethernet. Motor Management Relays were replaced with updated hardware with Ethernet communications. Mr. Ashby developed repeatable communication logic to mesh communications from the new protocol to the existing logic in the PLC's while maintaining compatibility with communications to the existing SCADA software.

Mr. Ashby was responsible for conversion of a Lime Slaker system developed by another vendor from Wonderware to iFix. This entailed replicating functionality between the 2 different systems with differing capabilities while referencing a PLC program with no documentation.

Mr. Ashby has developed a pilot program for a remote system on Ignition hosted on a Linux operating system to test functionality and show the additional features available in the new software to the client. This involved conversion of the old system from iFix to Ignition while keeping PLC programming standards intact and maintaining existing standards on the SCADA system. Pending success in the pilot system may result in the upgrade of the entire SCADA system to Ignition at both the treatment plants in Salt Lake and Sandy.

Idaho Falls – Programmer/Integrator
Idaho Falls maintains a water system consisting of 19 wells and boosters. Mr. Ashby has been involved with the upgrade of the SCADA Software Proficy iFix to Ignition by Inductive Automation. Further, this was the first implementation of this major revision of software from the vendor. This upgrade included restructuring of the tag database and recreating animations with new bindings and scripting. He has also been involved with migrating historical data from the old system to the new. Being a new version of software, bindings and animations and design needed to be restructured compared to past systems. This involved some development of new standards and templates and datatypes being updated for this version of software.

Idaho Falls was the first system on a major revision change of SCADA software. Mr. Ashby worked to update standard templates and programming to work on the new software to be used for future projects. He has also updated screens and templates to utilize user-selectable color themes to be high performance to help operators view important data more easily. He has re-created reports on the new system using power tables and SQL queries to emulate reports from the old system that used an Excel Add-in.

Tovey Ashby - Senior Programmer

Project Experience (continued)

Salt Lake WWTP, SLC, UT – Programmer/Integrator
Mr. Ashby has developed streamlined templates and standards for the iFix SCADA system for SLC WWTP. The system includes a redundant SCADA as well as a separate Historian Server along with several Thin Clients. The SCADA system includes custom trending features as well as historical filtering of alarms and other data.

Central Weber Sewer Improvement District, Ogden, UT – Programmer/Integrator
Mr. Ashby has been integral with other SKM programmers in programming this plant and was forefront on developing/updating SKM's programming standards throughout the project. This system includes a redundant EtherNet network as well as radio communications and a Redundant SCADA system including reporting, alarming, security and video monitoring.

Richmond WWTP, Richmond, UT – Programmer/Integrator
Mr. Ashby was responsible for the programming of the PLCs, HMI, and touchscreens for the entire wastewater treatment plant. This system is a Kubota MBR. The HMI included system monitoring, reporting, alarming, and full system control.

Jerome WWTP, Jerome, ID – Programmer/Integrator
Mr. Ashby was responsible for the programming of the PLCs, HMI, and touchscreens for the entire wastewater treatment plant including a Kubota MBR system.

Wolf Creek WWTP, Eden, UT – Programmer/Integrator
Mr. Ashby was responsible for the programming of the PLCs, HMI, and touchscreens for the entire wastewater treatment plant. The Wolf Creek WWTP was a Zenon MBR plant and required complex programming and system controls.

Rupert WWTP, Rupert, ID – Programmer/Integrator
Mr. Ashby was responsible for the programming of the PLCs, HMI, and touchscreens for the majority of the wastewater treatment plant and also integrating control systems from multiple vendors into the SCADA system with ControlNet. The HMI included system monitoring, reporting, alarming and full system control. The main PLC system is setup with redundant processors.

Kennecott Utah Copper, Magna, UT – Programmer/Integrator
Mr. Ashby has been providing contract-programming services for KUCC for over 6 years. During this time he has provided general HMI maintenance, PLC maintenance to the tailings pump stations, the addition of pit area pump stations and multiple other projects. Also, he has provided general maintenance for the South Area Water system. Kennecott exclusively uses Allen Bradley control systems including PLC-5 / SLC / MicroLogix / ControlLogix / CompactLogix processors, various models of PanelView touchscreens, RSView SCADA Software and PowerFlex VFD's / Softstarts that communicate over a variety of protocols including EtherNet / DH+ / DeviceNet / RIO Modules.

APG Neuros – Programmer
Mr. Ashby has transcribed the standard programs for APG Neuros Turbo Blowers from Allen Bradley into Siemens in various programming languages including LAD/FBD/STL/SCL.

Other Project Experience

Wendover WWTP - West Wendover, NV

Simplot Silica Sand Mine, Overton, NV

Bear River WCD - Brigham City, UT

JBS WWTP - Hyrum, UT

Taos WWTP - Taos, NM

Sedona Lift Stations - Sedona, AZ

Blue Mountain Energy Recovery - Blue Mountain, UT

Stansbury WWTP - Stansbury, UT

Jurupa WWTP - Jurupa, CA

Bear River WCD - Brigham City, UT

Gallup Water/Wastewater - Gallup, NM

Idaho Falls Water - Idaho Falls, ID

JBS WWTP - Hyrum, UT

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William “Huck” Fenn - Controls Engineer

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Mr. Fenn is a project manager / senior controls engineer with significant experience with water treatment facilities. He is an expert at motor control, PLC’s, HMI’s and system communications. He has setup, calibrated and maintained all types of instrumentation found in a typical water and wastewater facility. He has overseen installation of equipment, testing activities as well as startup and commissioning activities. He understands and can write process flow diagrams and control narratives in order to integrate them into a PLC/control system. Mr. Fenn has vast experience with power distribution and motor controls including variable frequency drives and soft starters. He is able manage projects and clients. He is a self-directed and motivated worker who requires little to no supervision.

Work Experience

14 Years

Certifications

Studio 5000™ Logix Designer Level CompactLogix Fundamentals and Troubleshooting]

SLC™ 500 and RSLogix™ 5000 Advanced Maintenance and Troubleshooting

Logix5000 Project Development and Basic Ladder Logic Programming

Studio 5000 Logix Designer Level : Basic Ladder Logic Interpretation

Studio 5000 Logix Designer Level : Function Block Programming

Ron Beaufort Training Boot Camp

Specialties

- RSLogix 5000 Troubleshooting and Programming
- Ignition Scada Programming
- Python Basics
- Process flow diagrams
- Networking knowledge
- Microsoft suite
- Data analysis
- Management skills

Project Experience

Organic Energy Solutions - System Integrator
This is a new Bio Waste Facility built in San Bernardino, Ca. Huck led the SKM team in the PLC programming, HMI programming, startup, and commissioning activities for the project. He is the project manager for ongoing support and maintenance.

Santa Fe, County WRF - System Integrator
This is a new Membrane Waste Water Facility built in Santa Fe, NM. Huck led the SKM team in the PLC programming, HMI programming, startup, and commissioning activities for the project. He is the project manager for ongoing support and maintenance.

Eagle Mountain Waste Facility and Water Department – Scada Upgrade - System Integrator
Huck led the SKM team in the Scada upgrade which included making updates to the PLC programs, and commissioning activities for the project. He worked hard to make it a seamless transfer to the new system so as not to interrupt the control of their many systems. He is the project manager for ongoing support and maintenance for the Plant as well as the multiple lift stations and water wells throughout the city.

City of Beaumont Membrane Upgrade - System Integrator
The City of Beaumont (CA) went through the process of swapping membrane manufacturer for the MBR. This required programming to facilitate the seamless swap with little to no interruptions in the daily throughput of the facility. Huck led the SKM team in the programming, startup, and commissioning activities for the project.

Salt Lake City Water Reclamation Facility Plant Upgrade - System Integrator / Project Manager
Since 2021 SLCDPU has been under construction with a major facility upgrade project. Approximately 20% of the City’s old facility will stay and the rest is getting a full overhaul with the building of new systems and buildings just west of their current facility. Huck is the lead System Integrator for the project helping to get all of the PLCs and HMI programs ready during each stage of the project. With multiple FAT tests and HMI reviews with the contractor and client. He is working closely with plant staff and contractor to upgrade there HMI system as they transfer to the new facility.

Salt Lake City Water Reclamation Facility – Controls Engineer/Project Manager
Since 2011 SKM has provided assistance to SLCDPU with the SCADA system at the Water Reclamation Facility. Huck assumed the role as project manager for ongoing support and maintenance. He works closely with plant staff to implement fixes, additions and improvements during that time. He has been very responsive in particular if there is an emergency or an item that needs immediate attention.

Timpanogos Special Service District Utility to Generator Power MCC Upgrade - System Integrator
This client has upgraded their MCC Utility and backup systems. Huck was responsible for PLC and HMI programming, startup, and commissioning activities for the project. He is the project manager for ongoing support and maintenance.

City of Imperial WWTP Upgrade – System Integrator
The City of Imperial’s (CA) wastewater treatment plant had become aged and needed to be replaced. A new MBR facility with constructed as well as a new aeration basin. Huck was responsible for the PLC and HMI programming for the project, as well as the MBR startup and commissioning activities. The existing SCADA software was replaced, and the new software (Ignition) was implemented for the remaining existing facilities as well as the new MBR and aeration basin.

William "Huck" Fenn - Controls Engineer

Project Experience (continued)

City of Beaumont WWTP Upgrade – System Integrator
The City of Beaumont (CA) recently upgraded its treatment plant to a Membrane Bioreactor (MBR) system with RO treatment for desalination. Mr. Fenn led the SKM team in the programming, startup, and commissioning activities for the project. He oversaw the programming of two main redundant PLC systems (Allen-Bradley) with associated inputs and outputs. He implemented the redundant HMI system (Ignition) and incorporated the two main PLC's as well as nearly a dozen vendor PLC systems. In addition, Mr. Fenn and the SKM team recently upgraded and programmed all the City's ten lift stations with new PLC's and HMI screens.

Central Weber Sewer Improvement District – Controls Engineer
Since 2003 SKM has been providing system integration for CWSID. Huck assisted with the HMI software upgrade as well as with ongoing support and maintenance. He works closely with plant staff to implement any modifications or additions that may be needed.

Hyrum Wastewater Treatment Plant – Project Consultant
Huck helped the City in their design and implementation of an MBR expansion project and played a key role for the anticipated system integration required for the expansion.

Park City Creekside Well – Controls Engineer
Park City Water recently upgraded their Creekside Well. Huck wrote the programs for the system, participated in factory acceptance testing, I/O and loop testing and startup and commissioning activities.

Anticline Disposal Water Treatment Facility – Process Foreman/Automation Technician
Anticline takes Frac water and treats it for re-injection into the ground water and was in need of someone who could be in charge of their control system. Over a period of seven years Huck grew from being an operator to taking over this role and position. During those years he programmed PLC's, HMI's and maintained the entire control system and its associated power distribution, motor controls and instrumentation.

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Doug Bigler - Controls Engineer, EIT

(801) 683-3753 - doug.bigler@skmeng.com

Mr. Bigler is a Controls Engineer with 23 years experience, 5 with SKM and 19 in industrial metals refining/ mining. With a background in controls and project engineering, Doug has designed, programmed and implemented SCADA, PLC, HMI systems to meet customer needs. In addition to electrical controls, Doug has experience in industrial ventilation and mechanical design including, safety systems, environmental requirements, process controls, cost reduction, lean manufacturing.

Work Experience

23 Years

Education

Granite Peaks HS, 1997

Generals, SLCC - Some college work aimed at journeyman electrician

Certification

Rockwell Studio 5000 Logix Designer Level 1 through 3

SolidWorks essentials and SolidWorks Administering Enterprise PDM

HAZWOPER

Specialties

- PLC, design, support
- VFD drives, setup and programing
- HMI, design, support
- Industrial ventilation, LEV, Design
- Controls, design, panel layout
- Ethernet networking (PLC)
- Troubleshooting
- Problem solving, mechanical and electrical
- Lean Manufacturing
- Technical aptitude and fast learning
- Instrumentation, specs, selection, setup and support General industrial equipment, specs, repair and support

Project Experience

Park City Three Kings – Programmer
Large scope new water plant startup, utilizing 5 PLC's and latest ethernet instrumentation. Interpret control narratives provided by customer, program PLC's, test and commission systems. Develop Ignition Perspective SCADA system. This plant involves complex sequencing across multiple systems. Simulation testing is underway with Jacob's engineering ahead of startup.

CONTROLS ENGINEER-PROGRAMER, SKM ENGINEERING
PLC Programming – Allen Bradley, Schneider, etc. Programming automation for Wastewater and Water Collection systems upgrades and replacements. Cutover projects for critical water services control systems. All programming to meet company and customer standards.

SCADA (DCS) Programming – Ignition, FactroyTalk and others. Programming HMIs and OITs to meet customer needs. Alarming, trending, data collection, server setup and installation.

Project – Manage site activities with contractors and customers. Ensure work is done safely and to customer expectations. Configure and test field instruments. Interpret drawings, troubleshoot control systems and network connections when needed. Document drawing changes and programming details.

Support – Support existing installations as needed, on site or remotely.

Safety – Take safety measures as needed at each construction site and ensure contractors are qualified and trained.

CDSD Galbraith Lane PLC Upgrade – Controls Engineer

Fisher WTP Programming – Controls Engineer

Magna Sewer Service – Controls Engineer

Ogden City WO5 2025 SCADA Support – Controls Engineer

Oquirrh Mountain SCADA – Controls Engineer

Park City SCADA Support– Controls Engineer

Pleasant Grove SCADA– Controls Engineer

Sandy City Water System Maintenance – Controls Engineer

SLC WRF Screw Press Temporary System – Controls Engineer

Spanish Fork WRF – Controls Engineer

SVWRF VFD Replacement Project – Controls Engineer

Tooele WWTP SCADA Upgrade – Controls Engineer

WaterPro HMI Upgrade – Controls Engineer

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David Miller - Database Engineer

(801) 683-3779 - david.miller@skmeng.com

Mr. Miller has 4 years of experience with SKM as a Controls Engineer, a total of 5 years of experience working on SCADA systems in both water treatment and natural gas industries, and over 20 years of experience in database development, software engineering, and software systems integration. At SKM David is responsible for developing and maintaining customized reports that clients use for regulatory compliance and reporting as well as giving them day to day insight into their system operations and performance. This includes work in developing and implementing customized modules based on the needs of individual systems as well as troubleshooting and maintenance both on systems that he has developed as well as legacy databases, reports, custom modules, and SCADA system interfaces for a wide array of clients.

Work Experience

22 Years

Education

B.S. Computer Science,
Utah State University, 2003

M.S. Instructional Technology,
Utah State University, 2005

Certifications

ITIL Foundations Certified

Ignition Core Certified

Specialties

- SCADA System Interfaces
- Database Maintenance
- System Integration
- Report Design/Development

Project Experience

SKM Engineering Reporting Standards and Tools – Database Developer/Reporting Specialist
Develop baseline reporting standards along with deployable scripting functions, database tables, and report templates to ensure consistent availability of commonly reportable information when implementing new SCADA systems for clients. Provide training for other engineers to understand the available tools for implementation and troubleshooting purposes. Oversee coding best practices and code maintenance for SKM's custom reporting module for Ignition. Assist in advanced troubleshooting and maintenance of reporting issues for any client.

Park City SCADA System Maintenance – Software Engineer
Maintain existing reports and troubleshoot issues of data integrity. Integrate data collection processes from 3rd Party vendors. Update SCADA interface components to match ongoing system design enhancements.

Western Municipal Water District Data Calculations and Backup – Software Engineer
Replace resource intensive database views with a daily procedure to calculate and record aggregated hourly and daily summary data. Developed a scripted interface to be able to extend what data is being calculated as needs change over time. Developed a nightly process to backup local data to a remote database allowing us to keep the local database trimmed to more recent data to enhance performance while maintaining access to a full history of data in the remote database.

Mountain Regional Water Demand Zone Interface – Software Engineer
Built a database backend for storing meter-level demand information as well as Zone level aggregate data according to user defined demand zones to enable zone-scoped reporting. Developed a user-facing interface to enable zone definition and ongoing zone maintenance by the end users of the SCADA system. Created functions to read the current zone definitions and gather and store meter and zone demand information on an hourly cadence.

Clearas Water Quality Reporting interface – Database Developer/Reporting Specialist
Develop database backend and complementary SCADA front end interface for recording lab water quality data. Develop and deploy a custom module for outputting water quality report data integrating both the lab data and relevant data recorded through the SCADA system instrumentation.

Ogden City State Water Quality Reports – Software Engineer
Develop custom reporting functionality to deliver state mandated water quality data into a system specific, state defined reporting template. Interface with Water Treatment Specialist from the Utah Division of Drinking Water and technicians at Ogden City to ensure the accuracy of data and that all reporting requirements were met.

Beaumont Support Services – Controls Engineer

JSSD Keetley Maintenance – Controls Engineer

Ogden City 2020 Support Services – Controls Engineer

Tracy - John Jones Water Treatment Plant – Controls Engineer

WRCRWA Support – Controls Engineer

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Daniel Leavitt - Senior Designer / Drafter

801) 683-3766 - daniel.leavitt@skmeng.com

Mr. Leavitt is an electrical drafter and 3D graphic artist with experience in electrical design, control systems, process, instrumentation and PLC design. His experience includes water treatment, wastewater collection and wastewater treatment. He has drafted power distribution of 120V and 480V systems, created lighting plans, schematics, conduit development, process and instrumentation diagrams and lighting panel schedules. He has also developed 3D graphics of many different mechanical process areas for controls for the PLC at multiple plants.

Work Experience

18 Years

Education

Salt Lake Community College, Architectural Drafting

ITT Technical Institute, AAS, Computer Drafting and Design

Specialties

- Electrical Water/Wastewater
- AutoCAD Electrical
- Sketchup
- Excel
- Bluebeam
- Photoshop

Project Experience

West Bountiful, UT, South Davis Sewer District South Plant – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

Imperial, CA, WWTP MBR Upgrade – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

Western Riverside County Regional Water Authority, CA WWTP Digester 3 Addition – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

Beaumont, CA Wastewater Treatment Plant Upgrade – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

North Salt Lake, UT Wasatch Resource Recovery – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

Las Gallinas, CA Sanitary District Water Treatment Facility – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide Bluebeam PDFs and/or hardcopy prints for Engineer review/submittals.

Rexburg, ID Water Reclamation Facility Upgrades Phase 1 & 2 – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide PDFs and/or hardcopy prints for Engineer review/submittals.

Holden, WA, Rio Tinto Mine Water Treatment Plant – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files.
Create lighting calculations for plant lighting. Provide PDFs and/or hardcopy prints for Engineer review/submittals.

Daniel Leavitt - Senior Designer / Drafter

Project Experience (continued)

Las Vegas, NV, Final Treatment Building – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files. Provide PDFs and/or hardcopy prints for Engineer review/submittals.

Western Riverside County Regional Water Authority, CA WWTP Plant Upgrade – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files. Provide PDFs and/or hardcopy prints for Engineer review/submittals.

Fort Shafter, HI, Water Reclamation Facility – Electrical Designer
Create, design and manage AutoCAD files for the project. Create load calculations and schedules using excel to be implemented in the AutoCAD files. Provide PDFs and/or hardcopy prints for Engineer review/submittals.

HMI 3D Graphics

Beaumont, CA Wastewater Treatment Plant Upgrade – Graphics Artist
Create, design and manage Sketchup files for the project. Render 3D Sketchup files for a more realistic appearance. Provide high resolution images from the renderings using Photoshop for the electrical programmers to implement into the HMI/SCADA system.

Rexburg, ID Water Reclamation Facility Upgrades Phase 1 & 2 – Graphics Artist
Create, design and manage Sketchup files for the project. Render 3D Sketchup files for a more realistic appearance. Provide high resolution images from the renderings using Photoshop for the electrical programmers to implement into the HMI/SCADA system.

Western Riverside County Regional Water Authority, CA WWTP Plant Upgrade – Graphics Artist
Create, design and manage Sketchup files for the project. Render 3D Sketchup files for a more realistic appearance. Provide high resolution images from the renderings using Photoshop for the electrical programmers to implement into the HMI/SCADA system.

Heber, UT, Heber Valley SSD Plant Expansion – Graphics Artist
Create, design and manage Sketchup files for the project. Render 3D Sketchup files for a more realistic appearance. Provide high resolution images from the renderings using Photoshop for the electrical programmers to implement into the HMI/SCADA system.

West Wendover, NV, Plant Expansion – Graphics Artist
Create, design and manage Sketchup files for the project. Render 3D Sketchup files for a more realistic appearance. Provide high resolution images from the renderings using Photoshop for the electrical programmers to implement into the HMI/SCADA system.

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Connect with us!

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