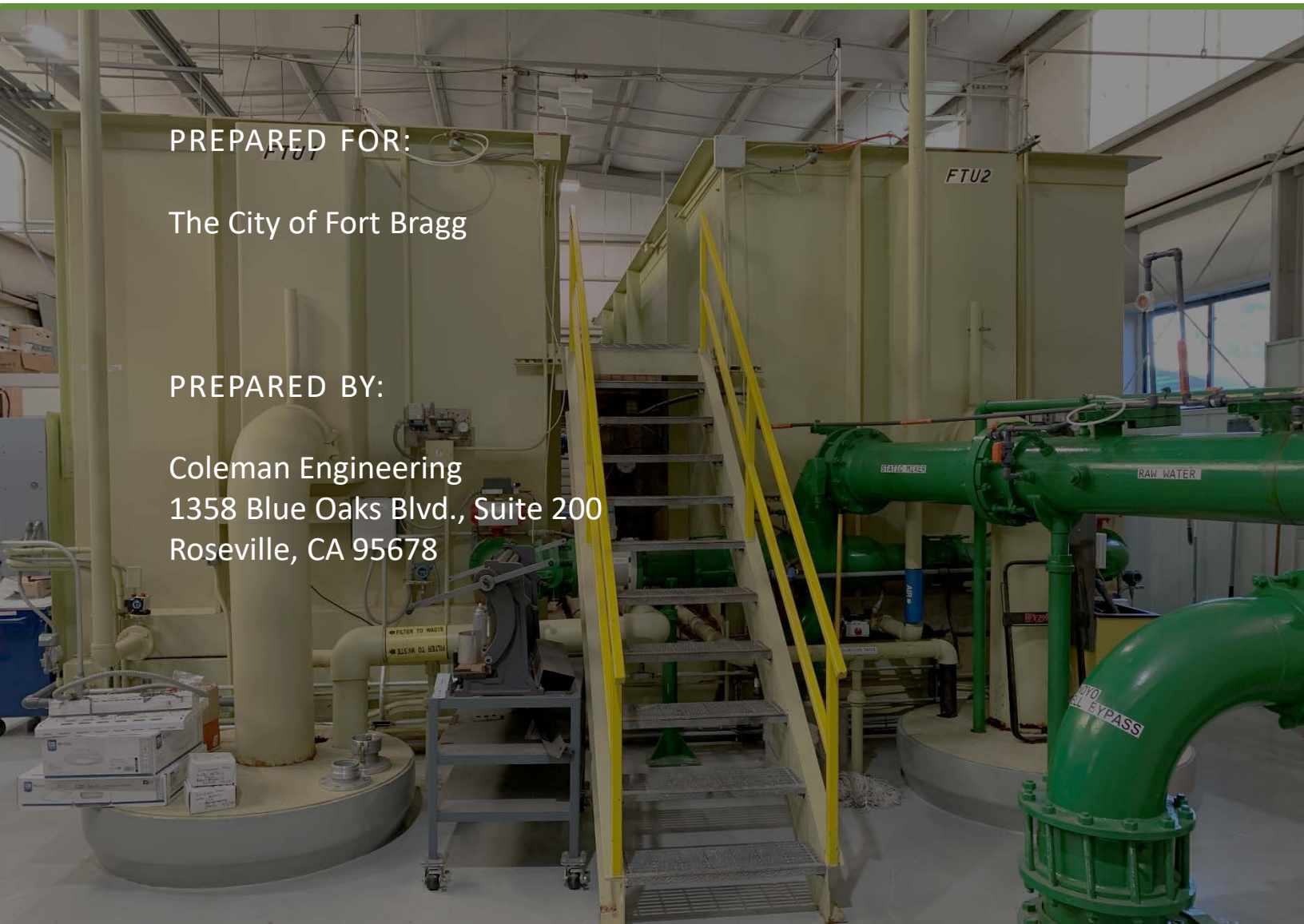
COLEMAN ENGINEERING

PROPOSAL FOR ENGINEERING SERVICES WATER TREATMENT PLANT REHABILITATION PROJECT

PROJECT NO. WTR-00017

November 20, 2020



PREPARED FOR:

The City of Fort Bragg

PREPARED BY:

Coleman Engineering
1358 Blue Oaks Blvd., Suite 200
Roseville, CA 95678

November 20, 2020

City of Fort Bragg
Attn: June Lemos, CMC, City Clerk
416 North Franklin Street
Fort Bragg, CA 95437

Re: Proposal for Engineering Services – Water Treatment Plant Rehabilitation Project (City Project No. WTR-00017)

Dear Ms. Lemos,

Our Coleman Engineering team welcomes the opportunity to provide engineering design services and prepare construction documents for the City of Fort Bragg's Water Treatment Plant Rehabilitation Project. We have been preparing for this project opportunity and RFP since we started working with the City in 2017 on the Desalination Study.

Starting with that first project and continuing with the current Raw Water Line Replacement design, we have developed an excellent working relationship with the City while consistently delivering engineering services on-time and within budget. Perhaps just as importantly, we enjoy working together with the City and feel that the project results have been enhanced by our genuine interest in the work and the City's goals.

We plan to bring much of the same team to this Water Treatment Plant Rehabilitation Project. Where new disciplines are required, we have invited team members who fit the City's working style and with whom we have worked well before. This is an experienced team ready to produce great things for the City of Fort Bragg.

Coleman Engineering is currently working with the City and is very familiar with the City's engineering and operations teams and their expectations. We are proposing the same management team, with Chad Coleman as Project Manager and Simon Gray as our Quality Manager. We have also teamed with very capable partners to assemble an experienced, specialized team of professional engineers, surveyors, and scientists. A review of Proposal Sections B and C will clearly demonstrate the high level of directly applicable experience that

this team offers to the City. We also ask you to consult with our references listed in Section D, especially those from the City, to validate our ability to deliver on quality, schedule, and budget.

- Frisch Engineering is our electrical engineering partner. We have an excellent history working together. The firm has excellent and recent experience working on Trident Filters. They recently completed a very similar project in the City of Willits.
- Andy Granner is an outstanding resource who will help us with contructability reviews and cost estimating. Andy has been a successful general contractor and knows how things work in the field. He will help to make our designs better in much the same way that Aaron Smud has done on the Raw Water Line Replacement Project.
- CSI Services are expert engineers who specialize in protective coatings and lining, notably with respect to corrosion control. They will help us correctly characterize the extent of corrosion and recommend coatings for the FTUs and Water Storge Tank 2. We teamed very successfully with CSI Services to provide similar engineering services to the City of Crescent City.
- VE Solutions is our structural engineer and Sigerson Architects is the team's registered architect. They will work together on the new and remodeled buildings, with responsibility for space planning and design of the required improvements. We have worked with both firms on multiple recent and successful water and wastewater projects.
- Cinquini and Passarino is our local surveyor from Santa Rosa who has excellent experience providing professional surveying services in Mendocino County. They are our surveyors for the City's Raw Water Line Replacement Project.
- Crawford and Associates will provide geotechnical engineering services. Crawford is also currently working on the Raw Water Line Replacement Project for the City.

We have included a discussion of specific Approaches to the Work in Section E. We hope that this discussion demonstrates that our team has spent a significant amount of time researching and preparing for this project. We have developed ideas and approaches that will translate into value for the City.

Proposal Section F details our proposed scope of services in response to the tasks described in the RFP. It details the exact deliverables requested by the City and required to obtain State and Federal Funding; for State approval of an Amended Drinking Water Supply Permit; and for a contractor to construct the project successfully and economically. Section G includes a summary and detailed schedule for project delivery.

We trust that the level of detail shown in our proposal demonstrates our enthusiasm for the project, and the level of planning, preparation, and attention to detail that Coleman Engineering will continue to deliver throughout the project.

We look forward to continuing to serve the City of Fort Bragg by preparing the design and construction documents for the Water Treatment Plant Rehabilitation Project.

Sincerely,

Chad R. Coleman, P.E.
Principal in Charge/PM

Simon N. Gray, P.E.
Quality Manager

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FIRM DESCRIPTION

Firm History

Coleman Engineering, Inc. is a private consulting engineering firm that is focused entirely on water and wastewater engineering. We were incorporated in 2010 as a California Corporation. The firm is located at 1358 Blue Oaks Boulevard, Suite 200, Roseville, CA 95678. We currently have eleven full-time staff. Three of our professionals are licensed Professional Engineers in California, with additional registrations in the states of Nevada, Utah, Washington and Idaho. Details of personal licenses and our team organization are given late on in this proposal. Our company President and Principal Engineer, Chad Coleman P.E., is also a Certified Grade 3 Water Treatment Plant Operator in California. We also employ a full-time water and wastewater treatment plant operator.

We are currently working with the City on the Raw Water Line Replacement Project. This important project will improve the security of the City's raw water supply through the replacement of existing pipeline sections that convey raw water from Waterfall and Newman Gulches to the City's water treatment plant. The project is now in its final design stage. Our work on Phase II of the project includes a new raw water pipeline within the treatment plant site.

In 2017 and 2018 we worked on the City's Brackish Water Desalination Feasibility Study that examined the potential for supplementing the City's water supply through brackish water reverse osmosis treatment. Locally we are also working for the State of California Department of Parks and Recreation on improvements to the existing drinking water system for the MacKerricher State Park north of Fort Bragg. This project includes the design of a replacement water treatment plant and design of two raw water intake systems at Lake Cleone and Mill Creek.

Services We Provide

Planning Studies

Master planning for water, sewer, and recycled water systems. Development of Capital Improvement Plans and Specific Plans for developments. Water and wastewater facility condition and vulnerability assessments. Reviews of operation and maintenance procedures.

Modeling

Hydraulic models of pressurized and gravity conveyance systems and hydraulic transient modeling of large hydroelectric penstocks.

Design

Feasibility and pre-design studies and reports, including detailed alternatives evaluations and project selection. Preliminary and final design of water, wastewater, and recycled water treatment and pipeline conveyance projects, including plans, technical specifications, and contract documents for bidding. Capital and life-cycle cost estimating. Schedule preparation and constructability review.

Bidding and Construction Services

Bid support, including responses to Requests for Information (RFIs), pre-bid meetings and site walks, bid addenda, bid evaluation, and contract award recommendation. Engineering Services During Construction, including site meetings, submittal reviews, responses to RFIs, claims support and evaluation, pay request reviews, and construction observation. Contractor schedule review and analysis. Funding agency contract conditions compliance monitoring. Full construction management and inspection. Record drawings and operations and maintenance manuals.

Operations

Water and wastewater system operations. Consulting services. Contract operator services. Measurement and documentation of conformance with regulatory requirements. Coordination and negotiation with regulators.

Funding Support

Engineering and managerial support to obtain and manage state and federal funding from a variety of loan and grant sources. Engineering and managerial support of bridge loans to fund planning, environmental and design activities.

B

RELEVANT EXPERIENCE

> I appreciate that Chad is flexible - he can always meet the City's schedule. He understands a lot about our system because he's done a lot of work for us so there's institutional knowledge there, and he produces a quality product.
>
> Chris Ehlers | Assistant Director of Public Works
> City of Brentwood

This section details relevant projects that show our experience in preparing water treatment plant designs, particularly focusing on those in which we have incorporated vendor-supplied equipment packages. The City also has direct experience working with us in environmentally sensitive areas on the current Raw Water Line Replacement Project. In addition to the project information provided below, both Chad Coleman and Simon Gray have considerable experience in the planning, design and construction of water main projects. This experience is detailed in their resumes included with this proposal.

We have provided project information including location, size and extent of the facilities, and details of the roles of team members, including those proposed for this project.

We encourage reviewers of this Proposal to call any of our clients listed in Section D to discuss how they were served by our professional team.

Public Agency

Replacement Of Raw Water Pipeline

CITY OF FORT BRAGG, CA

PROJECT RELEVANCE:

- Positive working relationship with the City of Fort Bragg
- Working knowledge of City processes
- Understanding of local and environmental factors

PROJECT SUMMARY

The City of Fort Bragg's water treatment plant receives part of its raw water supply via a pipeline from Waterfall and Newman Gulches. Significant lengths of this transmission main are in steep, heavily-wooded and landslip-prone gorges that are difficult to access. The pipeline is also located in sensitive riparian environments, including the Coastal Zone. Sections are reaching the end of their service life and pipe failures are becoming more regular and widespread.

Coleman Engineering is currently designing four sections of pipeline replacement, totaling about 11,000 linear feet, to increase reliability and resilience of the City's raw water supply system. Services include detailed route alternatives analyses and selection, topographical mapping including a LiDAR drone survey, geotechnical investigation, preliminary and final pipeline design, slope stabilization design, constructability-based cost estimation and scheduling, and extensive CEQA environmental field studies and document preparation.

Public Agency

Big Basin State Park Water Treatment Plant

CA DEPARTMENT OF PARKS AND RECREATION

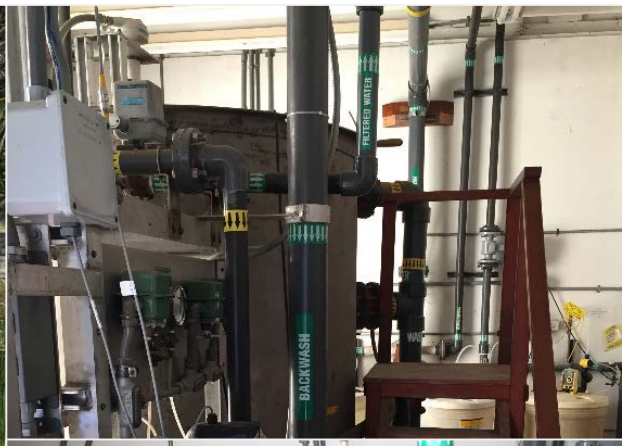
PROJECT RELEVANCE:

- Water treatment plant upgrade using WesTech clarifier equipment plus piping, meters and valves
- Addition of laboratory space and new pressure filter
- Upgrade to existing building
- Environmentally sensitive area

PROJECT SUMMARY

Big Basin State Park drinking water contains excessive levels of Total Trihalomethanes (TTM) caused by the level of organic compounds in the source water. Coleman Engineering has been retained by the Department of Parks and Recreation (DPR) to provide engineering services required for the preparation of construction documents (plans, specifications, and construction estimate) for the installation of a coagulant injection and sedimentation basin system at the Water Treatment Plant to remove organic compounds from the source water.
Coleman Engineering provided preliminary engineering which involved bench-scale testing using protocol determined by DPR. Following this 50% design draft plans were produced.
The final design is anticipated to include a coagulant storage and feed system, packaged sedimentation tank, new carbon filter, associated piping, valves and controls, new roll-up door on the WTP building and, overall site improvements.

Public Agency



MacKerricher State Park Water Treatment System

CA DEPARTMENT OF PARKS AND RECREATION

PROJECT RELEVANCE:

- Upgrades to a WesTech Tri-Mite water treatment plant
- Environmentally sensitive area
- Improvements to an existing water treatment plant building

PROJECT SUMMARY

The water intake for MacKerricher State Park is located in Lake Cleone. Due to beach erosion, Lake Cleone is returning to its original state as a tidal lagoon. Because of the saltwater intrusion and excessive vegetation, a new water source is required. The project is intended to provide a new water source for the park and provide water treatment system upgrades.

Coleman Engineering has provided preliminary engineering and revision of the design of the two raw water intakes. The services included the Mill Creek Intake and Pump Station and Lake Cleone Pump House Improvements. A preliminary design memo and 50% draft plans have been successfully produced for the Department of Parks and Recreation.

Coleman Engineering was also been retained by the Department of Parks and Recreation to provide assistance to Environmental Consultants during the environmental review process.

Public Agency

Pond Liner Project

CITY OF BRENTWOOD, CA

PROJECT RELEVANCE:

- Lining an existing pond
- Grading design to remove existing sediment and maximize storage
- Select the best liner material for the given conditions

PROJECT SUMMARY

Coleman Engineering designed a 450,000 square foot pond liner and pond drain pump station. Formerly, the pond was used as a percolation basin but when that was no longer allowed, the City needed to line the pond and provide a means to pump the stored water back to the plant headworks. The design process included topographical and geotechnical surveying and Civil Engineering for pond excavation, grading and liner design details. Working with an experienced team of subconsultants, Coleman Engineering was able to provide power to the pump station using existing electrical systems and also integrate the required contacts in the pump station into the existing plant SCADA system using the existing wireless network.

Public Agency

Recycled Water Project, Phases 1-3

CITY OF UKIAH, CA

PROJECT SUMMARY

Simon Gray was the project manager for fast-track final design and bid phase services for the City of Ukiah's Recycled Water Project, Phases 1-3. The project was driven by regulatory pressures: the City of Ukiah's upcoming wastewater treatment plant (WWTP) permit renewal would have required costly WWTP improvements; while local farmers were under pressure to stop extracting water from the environmentally-sensitive Russian River for agricultural irrigation and frost protection.

A "win-win" solution was proposed: the City would divert and store Title 22 recycled water from its' WWTP and distribute it for free to local orchards and vineyards. The City would initially reduce its effluent discharge to its percolation ponds adjacent to the Russian River by 60%, and farmers would have a replacement water source for irrigation and frost protection. Future phases would reduce WWTP discharges by over 80%.

The $22 million project comprised a 66-million-gallon, three cell, lined open storage reservoir; a 3000-gpm, four 75 HP pump, 205 feet head, vertical turbine pump station; over 30,000 feet of 16- and 12-inch diameter C900 PVC pipelines; seven jack-and-bore crossings of creeks, roads, and railroads; and 28 connections to local farms and vineyards. The project was funded through a State Revolving Fund grant and loan. An additional modelling study identified a hydraulic bottleneck: design of upgraded replacement chlorine contact basins was added to the recycled water project to remove this constraint.

Public Agency

Sunset Water Treatment Plant

PLACER COUNTY WATER AGENCY

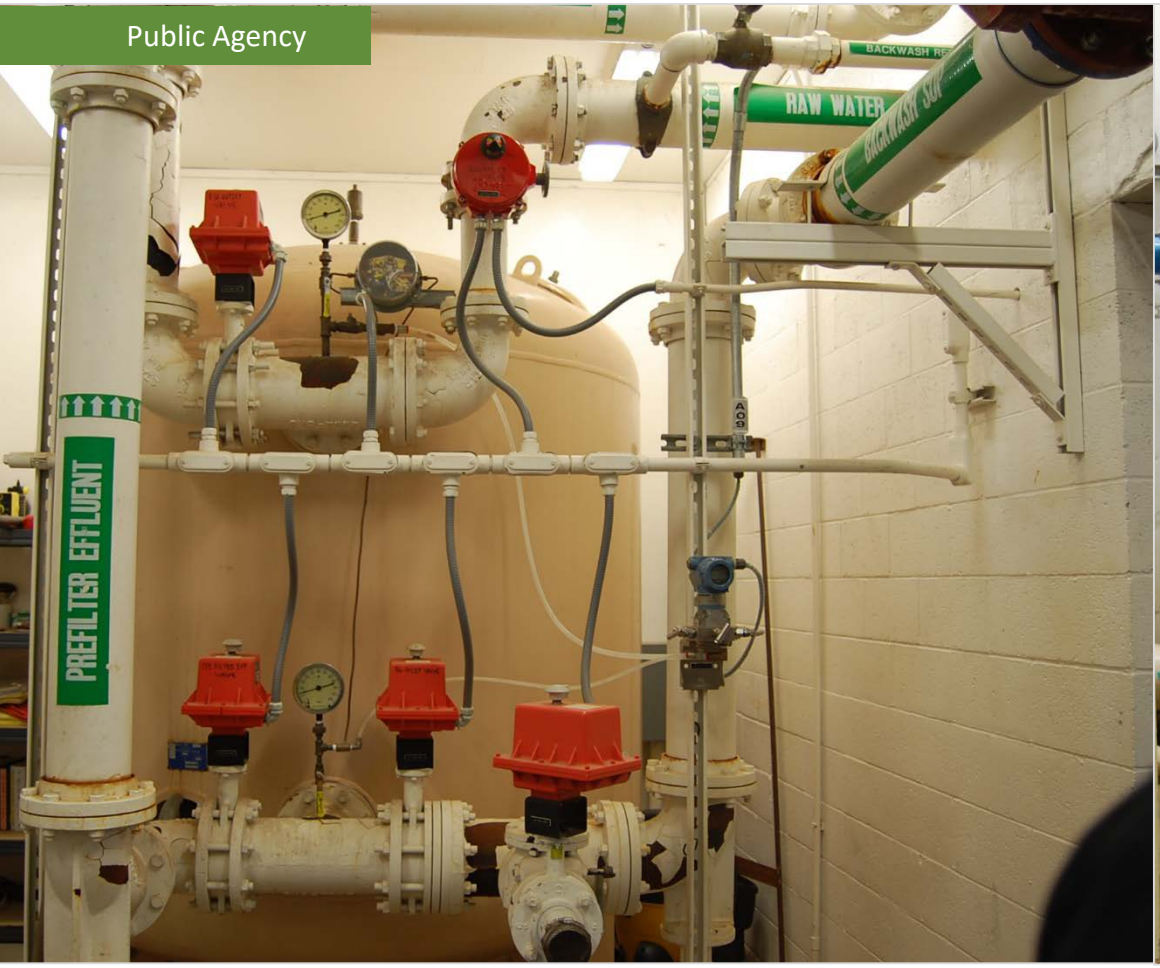
PROJECT RELEVANCE:

- Water treatment plant rehabilitation
- Upgrade to existing systems and multi-media gravity filter rebuild
- Accommodate work inside and on top of an existing old building

PROJECT SUMMARY

Chad Coleman was the Principal in Charge responsible to provide technical assistance to PCWA on the replacement of filter media in an existing water treatment plant. Coleman Engineering provided specialty services which included a site visit and discussion with operations staff, an assessment of current conditions, and recommendations and technical specification writing required to assist the Agency in obtaining the new filter media they needed.

Public Agency



Alta Water Treatment Plant

PLACER COUNTY WATER AGENCY

PROJECT RELEVANCE:

- Replacement of pressure filters and media
- Replacement of miscellaneous valves, fittings, and sensors
- Rehabilitation of motors and an inlet strainer
- Improvements to existing building structure

PROJECT SUMMARY

Coleman Engineering carried out the pre-design and design of multiple improvements to an existing water treatment plant located in Alta, CA. Improvements that required assessment and design to increase maximum plant flow rate included: new raw water pumps and MCC with VFD's, influent strainer, static mixer, influent raw water meter and rate of flow control valve, new pressure filters with air scour systems, backwash pump, in-plant water system and new genset with ATS. In addition, improvements were designed for the interior building walls to create concrete splash walls and remove timber framing that had rotted over the years. An additional study was made of system operations to determine ways to increase CT prior to the first customer.

Public Agency

Hawthorne Water Treatment Plant

CALIFORNIA WATER SERVICE, CA

PROJECT SUMMARY

The project was a rebuild of two pressure filter systems for removal of arsenic and the addition of air stripping and chemical feed systems to remove methane. The plant had been mothballed for many years due to its inability to treat the ground water. Frisch Engineering provided electrical design to update, revise, and re-use the filter control panel and provided a design for a new control panel for the new pumps, blowers and other equipment. The filter control panel received a new PLC, revised I/O, and new program that connected to the new control panel as remote I/O. Panels and installation work was performed by Electrical Contractor and System Integrator.

Frisch Engineering performed electrical design, PLC programming, operator interface programming, startup and commissioning. The two PLCs were completely programmed from scratch to control the remote wells, the filter system including backwashing, air stripper system, and the chemical feeds.

Many electrical items had to be retrofitted and replaced due to the old age and lack of use of the system. This project was a rush project that was completed in 6 months.

Public Agency

Water Treatment Plants 1 & 2 Controls Upgrade

MAMMOTH CSD, CA

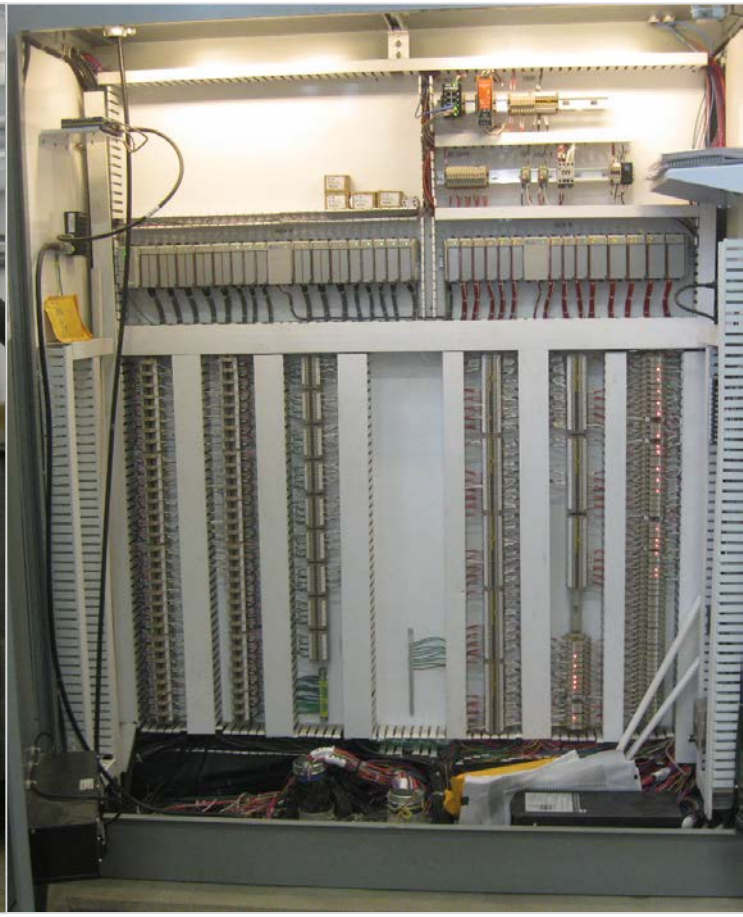
PROJECT SUMMARY

Both upgrade projects were a replacement of the existing Filtronics control panels and incorporation of the motor controls and filter controls into a new single PLC. Previously, the pressure filters were controlled by a filter control panel that only performed backwash controls based on run time. The wells and booster pumps were controlled by a plant PLC. The design replaced both with a new PLC and incorporated remote telemetry to the 4 well sites with a new radio system.

A new Lowry air stripper system was added after the filters and had VFD driven blowers. Frisch Engineering redesigned the controls of the plant to pump to two different zones and remote storage tanks. The control strategy was very complicated in that any tank could call the station to operate and if more than one was calling for water, the flow had to be split among the tanks proportionately.

Electrical pump VFDs were replaced with new units for the 200 HP and 100 hp booster pumps. Frisch replaced almost all the instrumentation in the project which includes the filter pressure and flow, chemical analyzers, and tank levels.

Public Agency



Water Treatment Plant Control System

CITY OF WILLITS, CA

PROJECT SUMMARY

The existing Microfloc Trident filters were failing due to pneumatic valve problems and a very old control system. Additionally, the plant suffered from fluctuating raw water conditions that inhibited the plant from producing the water necessary to serve the customers.

In this project Frisch Engineering replaced the entire plant control system with a new PLC and control panel and replace the filter valves with new motorized valves. They added an additional filter and new clarifier for pretreatment and associated chemical controls. The backwash pumps and raw water pumps were re-used and reconnected to the new control system.

The electrical design included a new motor control center, control panel, instrumentation and SCADA system.

Funded Project Success

In addition to our excellent technical qualifications, we also have fantastic experience providing services on projects that are funded by State and Federal Agencies. We are absolutely committed to maintaining a full roster of funded projects at all times. We are committed to delivering successful projects for our many clients who require State and Federal funding to complete their projects.

The table below is a demonstration of example projects for which Coleman Engineering has successfully assisted or is currently assisting clients to secure Federal and State funding.

Client and Project Name	Funding Types and Totals	Phase and Status
Castle City MHP Water System Consolidation	• SRF Planning (Prop. 84) = $125,500 • SRF Construction (Prop. 1) = $1,642,923	Planning and Design Complete. Bidding Assistance and Construction underway now (August 2020).
Castle City MHP Wastewater System Consolidation	• SRF Planning = $500,000	Planning funding application is being prepared. Milestone goals are to complete Planning in 2021.
City of Crescent City Water System Improvements	• SRF Planning (Prop. 1) = $120,000	Planning Complete.
Hamilton City Sanitary District Wastewater Treatment Plant and Pipeline Improvements	• RCAC = $150,000 • USDA = $1,088,000	Planning, Design and Construction completed in 2015.
Los Molinos CSD New Well and Consolidation	• SRF Planning (Prop. 84) = $120,000 • SRF Construction (Prop. 1) = $2,087,875	Planning and Design complete. Construction currently underway.
Locke Water Works Consolidation Pipeline	• SRF Planning (Props. 1 and 84) = $360,000	Planning and Pilot Studies complete. Final Design currently underway. Construction anticipated 2021.
Madison CSD, Yolo County Water System Improvements	• CDBG Planning Funding = $50,000 • SRF and Private Construction funding = $5,000,000	Preliminary Engineering complete. Assisting the District to pursue funding from Private, State, and Federal sources.

> They're always responsive, professional, and see the big picture.
>
> *Walt Witt | Clay Station Septic Committee*

Client and Project Name	Funding Types and Totals	Phase and Status
Shaffer School Well Source Capacity Project	• SRF Planning (Prop. 1) = $381,000	Planning and Design completed March 2019.
Sky View County Water District Water System Improvements	• Emergency SRF Planning = $57,507 • SRF Planning = $500,000	Emergency Funding secured and emergency planning complete. Planning Funding secured. Design projected for completion in 2021.
Spalding CSD Sewer Pond Ballast	• CDBG Design and Construction = $170,000	Design and Construction completed in February 2018.
Tuolumne City Sanitary District Wastewater Treatment Plant Improvements	• RCAC = $1,230,000 • USDA = $4,985,000	Design and Construction completed in 2013.
Winship School Arsenic Treatment/ New Well	• SRF Planning (Prop. 84) = $250,250 • SRF Construction (Prop. 1) = $400,000	Planning, Design and Bid Assistance complete. Currently in Construction.

C

KEY PERSONNEL QUALIFICATIONS

Our Project Team

We have assembled a strong team from both our Coleman Engineering resources and specialist sub consultants to provide quality professional engineering services for this important project. Both **Chad Coleman** (Principal / Project Manager) and **Simon Gray** (Technical Review and Quality Management) are well known to the City from the current Raw Water Line Replacement Project: Chad also worked for the City as project manager for the recent Brackish Water Desalination Feasibility Study.

We have also engaged the services of the following firms well known to the City through the ongoing Raw Water Line Replacement Project:

- **Crawford & Associates, Inc.** – Geotechnical investigation and design.
- **Cinquini & Passarino, Inc. –** Topographical mapping and survey.

To meet other needs of the project, we intend to work with several specialist firms that we have worked with for many years and who regularly form part of our Coleman Engineering project teams:

- **Frisch Engineering, Inc.** – Electrical and instrumentation and control systems' evaluation and design.
- **VE Solutions, Inc –** Structural analysis and design. Brad Friederichs is our "go-to" structural engineer.
- **ME Systems, Inc – Building mechanical and HVAC systems.**

Two other specialists will assist us with important project tasks:

- **Andy Granner –** Constructability, construction sequencing and cost estimating. Andy is a former contractor with extensive WTP construction and rehabilitation experience. Andy will provide specialist advice to our design team on sequencing and maintaining WTP process components in operation during construction. He was responsible for recommending Aaron Smud to us for similar constructability and cost estimating services on the Raw Water Line Replacement Project.
- **Containment Solutions, Inc. (CSI) –** Tank rehabilitation, corrosion evaluation and protection design.

Starting first with an Organization Chart that shows our team's individual roles, responsibilities and interrelationships, this Section also includes a synopsis of each key team member's qualifications. More detailed information on their relevant experience can be found in their resumes provided in the appendix. We have also included descriptions of our sub consultant firms and their capabilities and relevant experience.

Organization Chart

CITY OF FORT BRAGG

John Smith | Public Works Director
Chantell O'Neal | Assistant Public Works Director
Heath Daniels | Operations Supervisor
Diane O'Connor | Engineering Technician

COLEMAN ENGINEERING

Chad COLEMAN

Principal / Project Manager

Simon GRAY

Technical Review & Quality Management

Jon KAMINKSY

Project Engineer

PROJECT TEAM AND SPECIALISTS

Jim Dickey, P.L.S.
Topographic Mapping & Survey
CINQUINI & PASSARINO, INC.

Ben Crawford, P.E., G.E.
Geotechnical Investigation & Design
CRAWFORD & ASSOCIATES, INC.

Thomas Frisch, P.E.
Electrical and I&C Systems Evaluation and Design
FRISCH ENGINEERING, INC.

Brad Friederichs, P.E., S.E.
Structural Analysis and Design
VE SOLUTIONS, INC.

Scott Turnbull, P.E.
Building Mechanical and HVAC Systems
ME SYSTEMS, INC.

Andy Granner
Constructability, Construction Sequencing and Cost Estimating

Pat Sweeney
Tank Rehabilitation and Evaluation
CONTAINMENT SOLUTIONS, INC.

Jessica Bonham, E.I.T.
Staff Engineer
COLEMAN ENGINEERING, INC.

Phil Godman
Water Treatment Plant Operations Specialist
COLEMAN ENGINEERING, INC.

Key Personnel Qualifications

Professional	Education	Qualifications	Years of Experience
Chad Coleman, P.E.	M.S., Brigham Young University B.S., Brigham Young University	Professional Civil Engineer: CA #56490 | ID # 8964 | NV # 16990 | UT # 188915 Water Treatment Plant Operator, Grade 3, CA #31314	25
Simon Gray, P.E.	BSc (Eng.) (Hons), Civil Engineering, Imperial College of Science and Technology, University of London, United Kingdom Certificate in Business Administration, Hong Kong Management Association / Wolsey Hall, Oxford, United Kingdom, Leadership Course, Ashridge Business School, Ashridge, United Kingdom	Professional Civil Engineer: CA # 60311 | WA # 51959 Chartered Engineer, United Kingdom: #45101217	35
John Kaminsky, P.E.	M.S., Civil and Environmental Engineering University of California, Davis CA B.S., Civil Engineering University of California, Davis CA	Professional Civil Engineer: CA #82004 | ID #17460 | WA #55136	12
Jessica Bonham, E.I.T.	M.S., Environmental Engineering, California State University, Sacramento (expected December 2020) B.S., Civil Engineering, California State University, Sacramento	Engineer-in-Training: CA #163909	3
Phil Godman	A.S., Biological Sciences, California State University, Sacramento	State Water Resources Control Board, Water Treatment Operator, Grade T3 #33132, CA State of California Department of Public Health, Waste Distribution Operator, Grade D2, #41405, CA State Water Resources Control Board, Wastewater Treatment Plant Operator, Grade II, #41010, CA	15

Sub Consultant Team

Coleman Engineering contracts with subconsultants to provide the specialized engineering and other services required for each project. Below is a list and details of the subconsultants we will work with on this project. We have regularly worked with these firms and know them to be experts in their field and trusted partners.

Andrew P. Granner

Andy Granner – Constructability and Cost Estimating. Andy Granner has over 30 years of experience in the construction industry. He specializes in constructability and construction cost estimate reviewing. His technical expertise is focused in the following areas; Water and wastewater treatment plants, including related process mechanical & electrical systems; water, wastewater and storm water storage, pumping and delivery projects; reinforced concrete construction, including water bearing and non-water bearing structures; advanced water and wastewater treatment plant construction, including immersed membrane and reverse osmosis treatment technologies; mechanical process piping, including material selection, excavation, backfill and installation techniques; and water and wastewater treatment plant equipment installation techniques, including pumping equipment.

Frisch Engineering, Inc. – Electrical Engineering. Frisch Engineering was founded in 2001 and has been dedicated to the water, wastewater and power industries ever since. Based in Folsom, CA and with over 650 projects completed, the firm is a State of California registered micro business. Typical projects are pump stations, treatment plants, reservoirs, wells, wastewater lift stations, power plants, hydro-electric facilities, substations, and telemetry systems. Frisch Engineering is proficient in power distribution, protective relaying, hardware controls, PLCs, SCADA, programming, and instrumentation. Principal Tom Frisch will be the lead for this project.

VE SOLUTIONS, INC.

VE Solutions, Inc. – Structural Engineering. Founded in 1997 and located in Carmichael, CA, VE Solutions, Inc. provides structural engineering design for steel, concrete, prestressed concrete, masonry and wood buildings and structures. The firm has particular experience in the rehabilitation of damaged structures. VE Solutions' Principal, Brad Friederichs, has worked on numerous water and wastewater infrastructure projects as structural designer for Coleman Engineering.

ME Systems Engineering, Inc. – Mechanical Engineering.

M/E Systems Engineering has provided consulting mechanical engineering services to the North State area of California since 1988. With offices in both Redding and Roseville staffed with registered mechanical engineers with over 50 years of combined experience, they are California's most experienced mechanical design firm north of Sacramento. Their specialty is the design of mechanical systems for buildings. Projects have included public buildings, schools, medical facilities, offices, retail stores, residences, multi-family facilities, and industrial facilities.

Cinquini and Passarino, Inc. – Topographical Mapping and Survey.

Cinquini & Passarino, Inc. has a history of stability and reliability throughout the North Bay providing municipal and private clients with reliable surveying services ranging from topographic surveys, railroad surveys, boundary surveys, right of way surveys, terrestrial laser scanning, aerial drone surveys, GPS surveys, GIS data collection and construction surveys. Cinquini & Passarino, Inc .'s focus is land surveying and with offices in Santa Rosa, Healdsburg, Napa and Oakland.

Crawford & Associates, Inc. – Geotechnical Investigation.

Crawford & Associates, Inc. is a full-service geotechnical engineering firm based in Sacramento, CA. The firm is a State of California certified small business. In addition to geotechnical investigation, testing and reporting, the firm provides geotechnical foundation design, materials testing, special inspection, and hazardous materials assessment services in the water and wastewater, bridge, and structures sectors. In the water and wastewater fields, Crawford specializes in investigation for, and design of pump stations, treatment plants, tanks, pipelines, and reservoirs. The firm has broad experience working with various oversight agencies, including FEMA; Cal OES; FHWA; Caltrans; regional water quality control boards; State of California Departments of Water Resources and Fish and Wildlife, United States Corps of Engineers; and Union Pacific Railroad.

Containment Solutions, Inc. – Corrosion Evaluation & Repair.

CSI is a third-party consulting engineering firm specializing in protective coatings and linings, notably with respect to corrosion control. CSI Services provides comprehensive consulting services including in-process inspection of surface preparation and coating applications, field and laboratory testing, maintenance and corrosion surveys, coating system evaluations, technical specifications, failure analysis, and expert witness services. CSI is an SSPC Certified QP5 Inspection Firm and routinely provides NACE & SSPC Certified Coating Inspectors on projects such as bridges, train stations, stadiums, treatment plants, pipelines, and storage tanks. The firm also routinely completes underwater inspections of potable and non-potable water storage facilities.

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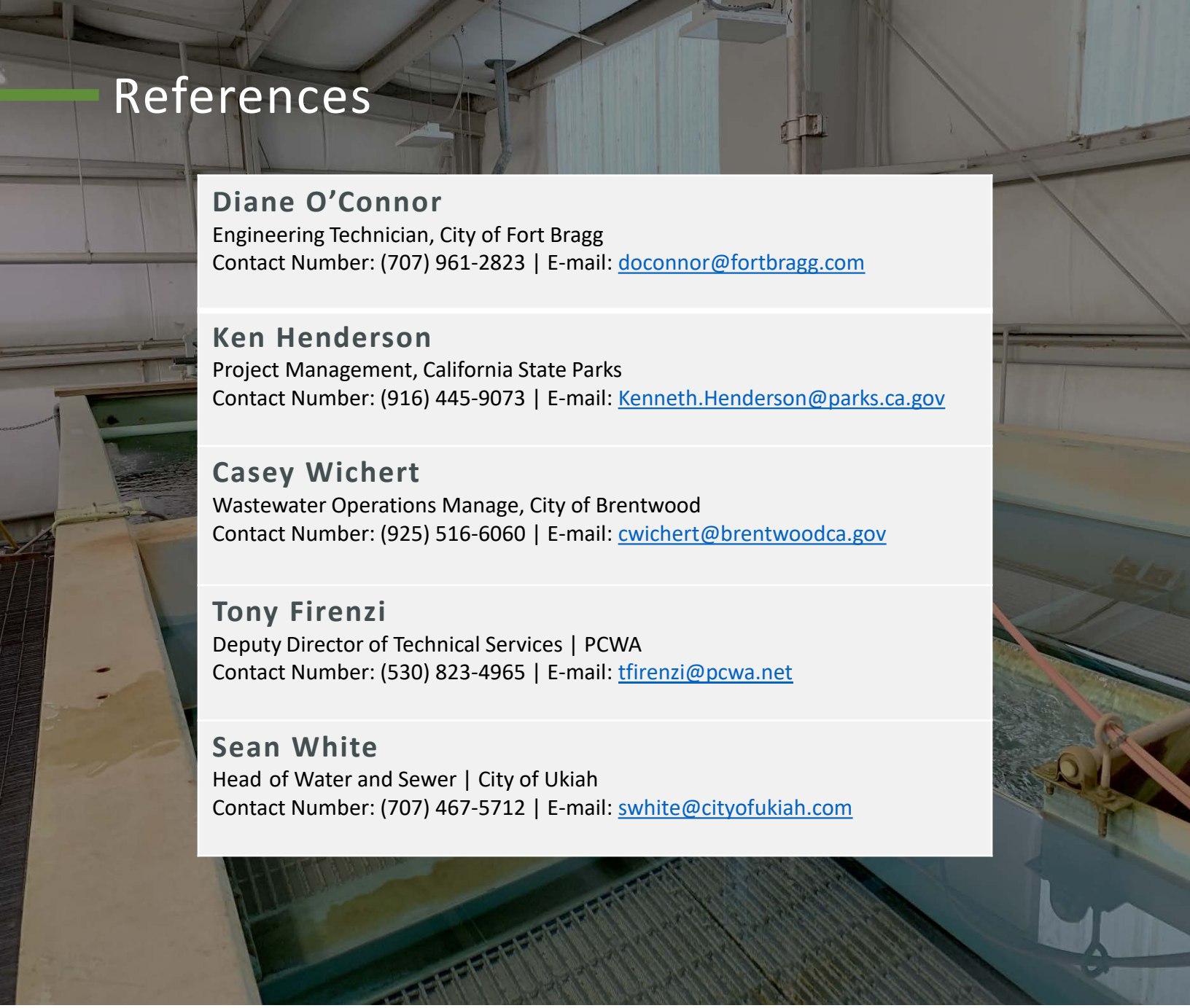
REFERENCES



References

Diane O'Connor
Engineering Technician, City of Fort Bragg
Contact Number: (707) 961-2823 | E-mail: doconnor@fortbragg.com

Ken Henderson
Project Management, California State Parks
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The best measure of the quality of our services is to ask our many satisfied clients. Our professionals focus on thorough communications that facilitate project delivery that is both on time and within budget. We welcome questions and exploration of the high level of service and of the demonstrated technical expertise of the Coleman Engineering staff.

E

PROJECT APPROACH AND SCOPE OF WORK

PROJECT APPROACH

We have anticipated this important City project since working on the Desalination Plant Feasibility Study in 2017 and now during the current Raw Water Line Replacement Project, which includes pipeline design on the City's water treatment plant site. We've taken the opportunity to discuss project elements with the City team over the years, and together with more detailed study during proposal preparation, we have developed a detailed project approach that will lead to a successful project. In this section we detail this approach and highlight some important insights that we believe are key to that success.

Our design philosophy focuses on the simple but important outcome that our plans must "actually work". This means the contractor can follow them clearly in the field. The design must be "turnkey": there must be no missing pieces. We want the contractor to be able to build this project with very few questions and minimal changes.

Filter treatment units 1 and 2

The primary measure of success is that at completion the City is confident that the upgraded facility will last for decades. Our aim is for City staff and operators not to have to worry about anything except normal operation and routine maintenance.

Our approach is based on integrating the significant number of improvements into seven discrete systems as set out below. In further sections we discuss the important issues of constructability and budget constraints and controls.

SEVEN DISCRETE SYSTEMS

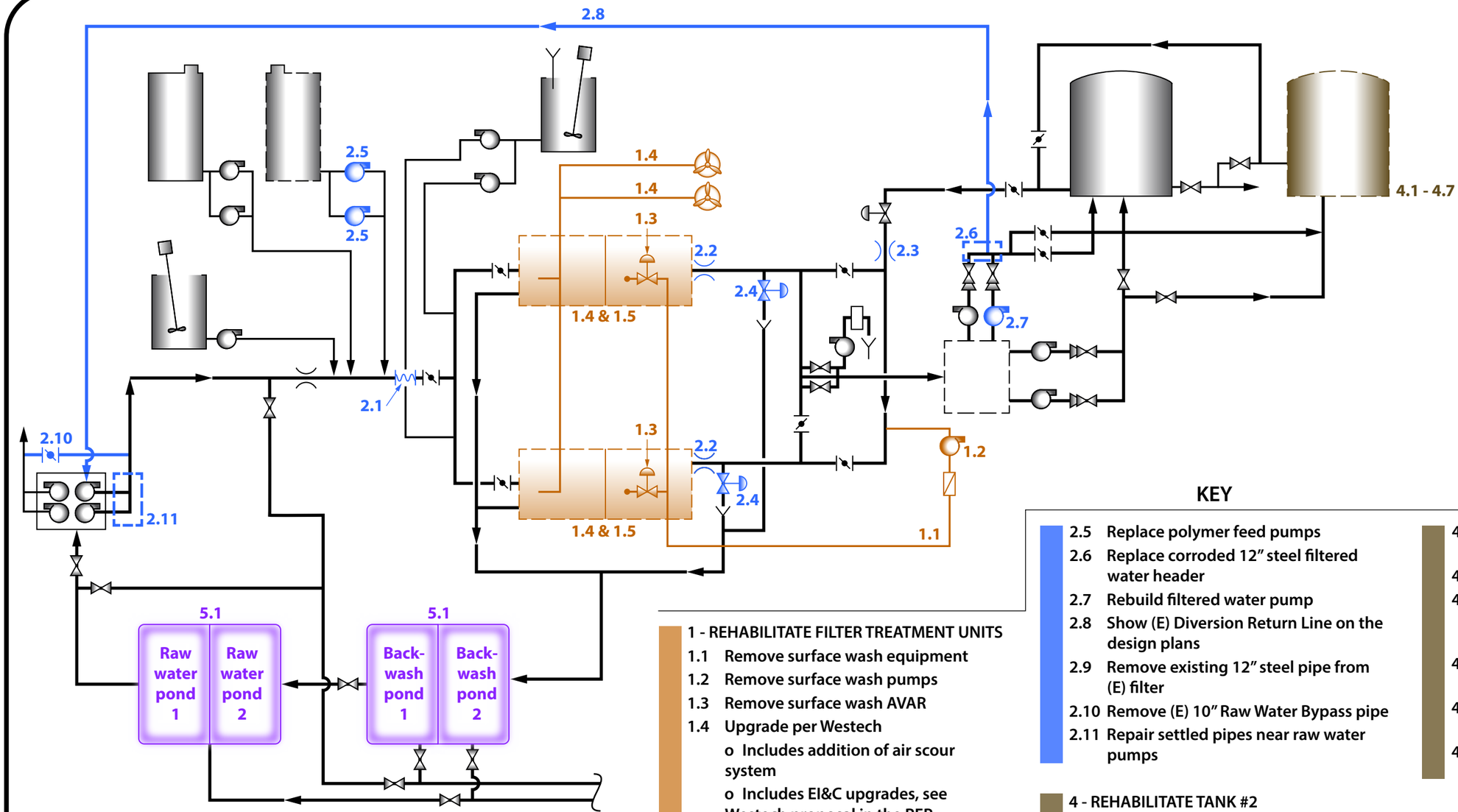
Consolidating the improvements into seven discrete systems (basically process areas) will allow our team to evaluate each system in detail and to make sure that during design we are evaluating the impact of each improvement as part of a whole treatment process. This will ensure the City's desired outcomes will be achieved when the improvements are made.

We have developed Figures 1 and 2 to define the seven systems and to show how we have split the rehabilitation items into each of these categories. Figure 1 shows rehabilitation components by process schematic, while Figure 2 shows those components defined by location.

We had a very productive pre-proposal meeting and site walk at the WTP with Heath Daniels and were able to discuss each improvement in detail. As a result, we have developed an understanding of the reasoning behind each proposed improvement. We obviously do not want to simply make the changes without this understanding, but we also need to see how each change would impact the associated process operation, and how the combined set of improvements will work together in each area.

We anticipate continuing this process at the project kick-off meeting to be certain that each member of our team fully understands the reasons for each requested change. Key to success of this approach is adding our experience to the local operating experience of the City team.

Specific approaches to the seven discrete systems are summarized in the following sub-sections:



KEY

1 - REHABILITATE FILTER TREATMENT UNITS

- 1.1 Remove surface wash equipment
- 1.2 Remove surface wash pumps
- 1.3 Remove surface wash AVAR
- 1.4 Upgrade per Westech
  - o Includes addition of air scour system
  - o Includes EI&C upgrades, see Westech proposal in the RFP
- 1.5 Repair and repaint Trident steel tanks

2 - UPGRADE AND MODIFY WATER PLANT PIPING, FLOW METERS, AND VALVES

- 2.1 Replace static mixer with powered mixer
- 2.2 Remove 2 effluent flow meters
- 2.3 Install flow meter in backwash line
- 2.4 Replace both filter-to-waste valves with larger sized valves
- 2.5 Replace polymer feed pumps
- 2.6 Replace corroded 12" steel filtered water header
- 2.7 Rebuild filtered water pump
- 2.8 Show (E) Diversion Return Line on the design plans
- 2.9 Remove existing 12" steel pipe from (E) filter
- 2.10 Remove (E) 10" Raw Water Bypass pipe
- 2.11 Repair settled pipes near raw water pumps

4 - REHABILITATE TANK #2

- 4.1 Move the discharge/effluent piping from the tank interior to the exterior and upsize to 16 inches
- 4.2 Remove the fill pipe from the tank interior to the exterior
- 4.3 Add a flow meter to the new fill pipe
- 4.4 Connect the new 16-inch future use stub to the nearby 20-inch distribution line
- 4.5 Add a flow meter to the 16-inch portion of the pipe
- 4.6 Connect the existing 16-inch pipe stub to the distribution pipe in Cedar Street
- 4.7 Recoat interior and exterior of existing tank

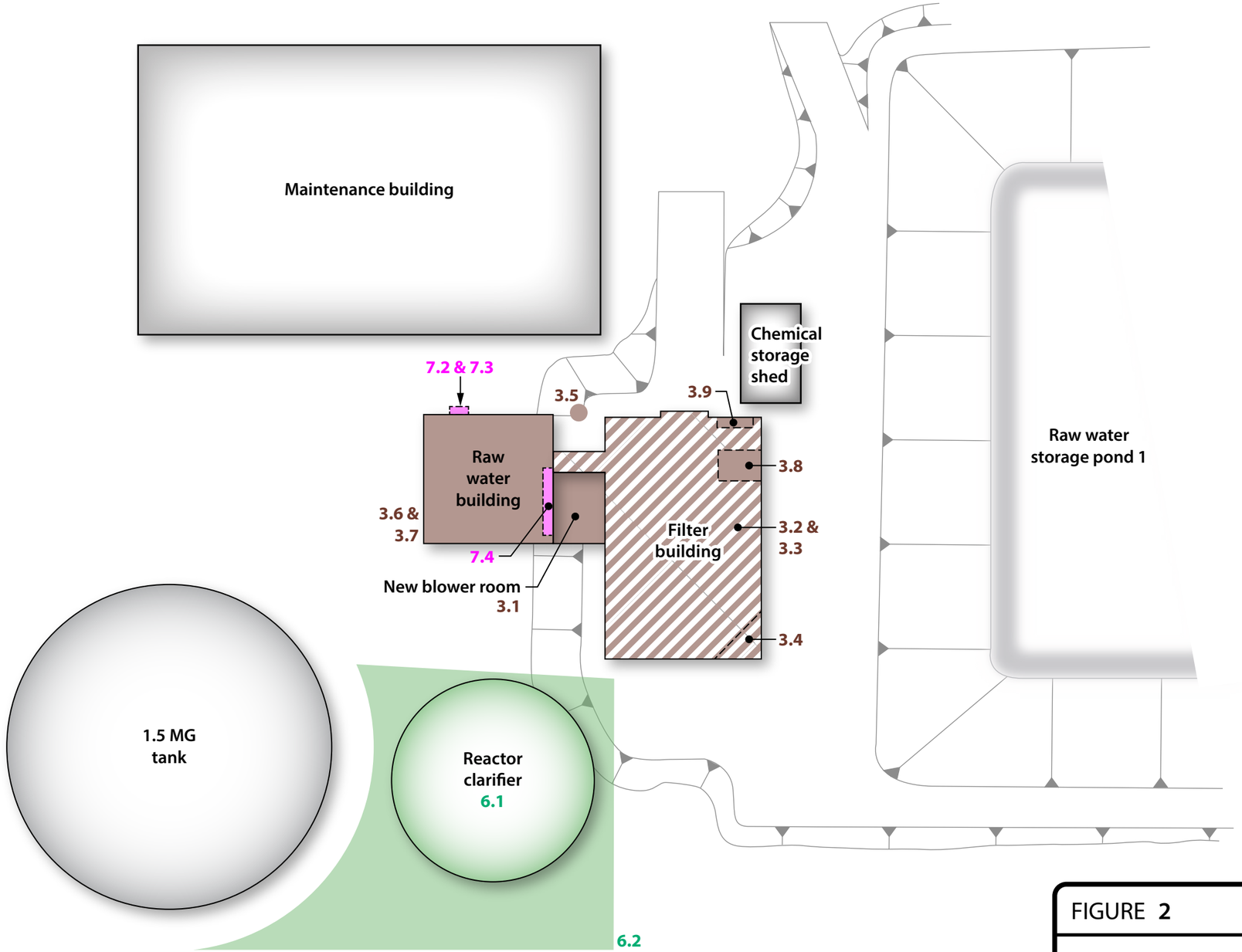
5 - REPAIR EXISTING RAW WATER AND BACKWASH PONDS

- 5.1 Dredge, dewater, dispose of sludge; line ponds

FIGURE 1 | DATE **November 20, 2020**

REHABILITATION COMPONENTS BY PROCESS SCHEMATIC

COLEMAN ENGINEERING



KEY

3 - REPAIR, UPGRADE, AND CONSTRUCT WTP BUILDING

- 3.1 Construct new Blower Room
- 3.2 Replace roof of WTP Filter Building
- 3.3 Replace ventilation system in WTP Building
- 3.4 Evaluate and design repair cracks in foundation
- 3.5 Evaluate and design repair causes of settling pipes near raw water pumps
- 3.6 Replace Raw Water Building
- 3.7 Add overhead cranes in Raw Water Building
- 3.8 Move the laboratory
- 3.9 Replace cabinets in Laboratory Room

6 - MISCELLANEOUS SITE IMPROVEMENTS

- 6.1 Remove (E) Reactor Clarifier
- 6.2 Construct AC Pavement

7 - ELECTRICAL AND SCADA UPGRADES

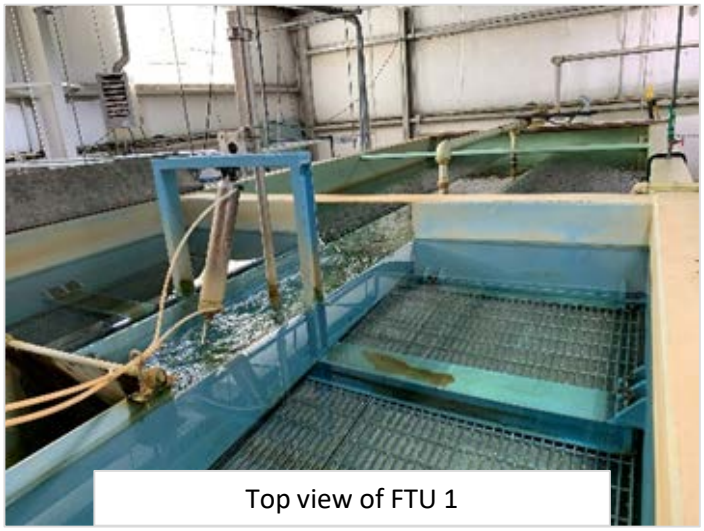
- 7.1 Replace/upgrade plant PLC's
- 7.2 Replace Utility Meter Cabinet
- 7.3 Replace Service Equipment Mount
- 7.4 Remove old MCC and Equipment and decommission live circuit

FIGURE **2**	DATE **November 20, 2020**
REHABILITATION COMPONENTS BY SITE PLAN	COLEMAN ENGINEERING

System 1: Rehabilitate Filter Treatment Units

It is critical that we integrate and coordinate our work closely with WesTech during the design phase. We will develop an understanding of both their intent and their scope of services so that we know what we need to include as additional design items.

We will concentrate on construction timing and construction sequencing and phasing plans to make sure that the WTP remains operational during construction.



Top view of FTU 1

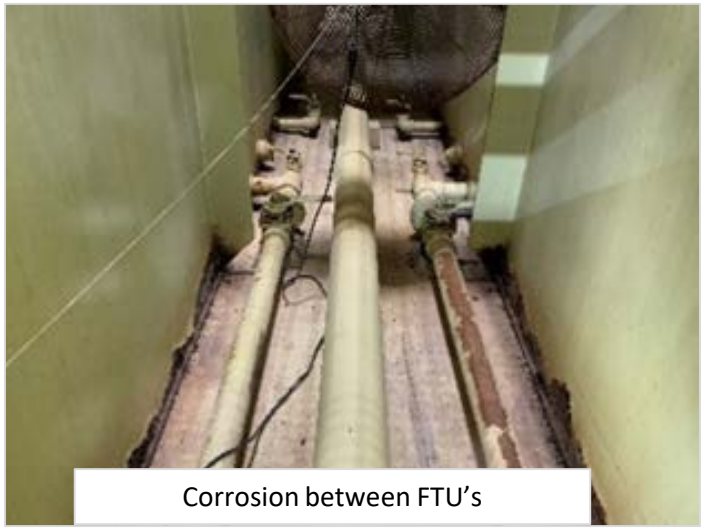
We have recently worked in this way with WesTech on several similar projects. WesTech provided a packaged clarifier unit for the Big Basin Water Treatment Plant that was designed by this same Coleman Engineering team. We interfaced carefully with WesTech to understand their scope of supply and particularly how the electrical and instrumentation components would be integrated into the existing WTP. We will apply the same level of detail to coordination with WesTech on this project.

Our design approach allows for isolation of the filter treatment units early in the project so that future work can be accomplished with minimal downtime. These limited early outages will allow for long-term functionality of each single train while it is isolated from the other train.

PLC beside FTU1

The design team will evaluate the likely extent of corrosion in the filter unit tanks. We will then design solutions to address these issues while still providing the City with flexibility to adjust during construction.

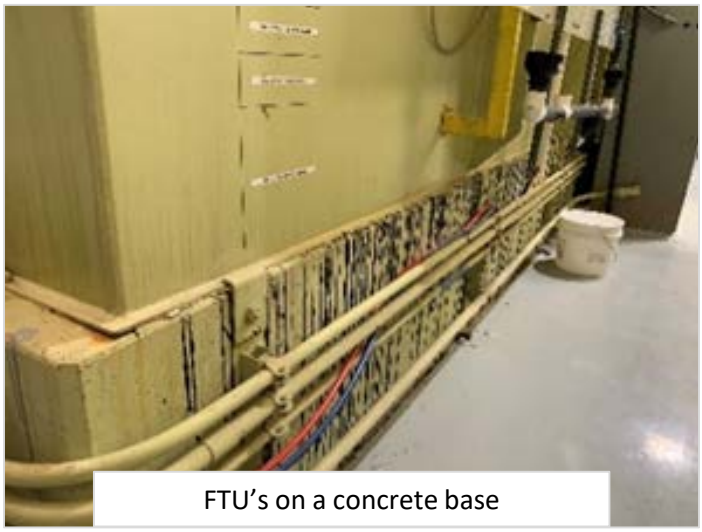
During design, the filter treatment units will be in operation. Filter media, water and the tank internal structure will limit access for tank evaluation. To overcome this constraint, we propose to use externally measured ultrasonic testing (UT). This will allow us to measure steel thicknesses and potential corrosion for most of the tank walls and even some of the floor area



Corrosion between FTU's

Steel corrosion requires both air and moisture to proliferate. For these types of tank, it is unlikely that corrosion will be present in any large degree in the middle of the tank floor. This is because the weight of the water inside the tank effectively precludes air from the space. Any air that remains at the time of a tank's placement will be depleted until the corrosion rate is mostly insignificant. Without air, corrosion cannot attack the steel to the degree necessary to cause failure.

The City's filter treatment tanks sit on concrete foundation pedestals. This means it is also unlikely for corrosion to be a significant issue in the middle of the tank floor. The concrete is in a relatively high pH environment, and this tends to pacify the steel rather than contribute to its demise through corrosion. We understand that there is some coating, perhaps a bitumastic coat, under the tank that may be providing a measure of corrosion control as well.



FTU's on a concrete base

Our focus during design will remain on the relatively accessible tank walls and floor edges. If during the evaluation significant questions remain concerning the condition of the floor, we will look at the potential of using underwater UT equipment to measure the floor thickness and determine any corroded material.

Our subsequent design will allow for appropriate options to be implemented at the direction of the City and Construction Manager. We anticipate that four alternative filter treatment unit repair alternatives may be included in bid documents:

- Spot repairs where steel plate "patches" may be welded over potentially corroded areas. This will likely be bid on a per-square-foot-of-patch area basis.
- Angle iron repair to be welded to the internal tank wall and floor over potentially corroded areas. This will likely be bid on a per-linear-foot-of-patch basis.
- Full-floor plate replacement by welding a new floor plate to the tank walls. This will likely be bid as a lump sum for a total floor area replacement.
- Full-floor plate replacement welded to angle iron that extends up the walls over potentially corroded areas. This will likely be bid as a lump sum for a total floor and lower wall area replacement.

Including multiple filter treatment unit tank repair methods will give the City maximum flexibility and also control over the budget. We anticipate that the best option will be determined by the City and the Construction Manager during construction when each filter treatment tank is off-line, drained, its media and internal elements are removed, and adequate access is available. At that time definitive measurements can be taken, and the best option adopted with confidence.

System 2: Upgrade and Modify Water Plant Piping, Flow Meters, and Valves

We have looked at two potential approaches during proposal preparation. The first approach is to plan early in the design for isolation of two complete treatment trains. This will include everything from the raw water ponds through the Trident filters, the backwash ponds, and will include the effluent pumping equipment. In this way, everything requiring upgrade in an entire train can be addressed at the same time. We believe that our pre-proposal work demonstrated on Figures 1 and 2 will contribute greatly to this effort to make sure that the entire train can be isolated effectively.

Effluent piping

The second approach is to consider each proposed change individually during design and to carefully confirm that the change will create each desired outcome. However, the individual improvements in System 2 - Miscellaneous Plant Piping, Meters, and Valves can appear to be somewhat disjointed when viewed separately. When taken as a group, as shown on Figure 1, it becomes more obvious how each item in this group is related. The first approach is thus the preferred approach. We will consider the entire process train to be sure that we are delivering a design that will exceed City expectations.

Corroded steel filtered water header

Static mixer to be replaced

Also, this is an area that we believe will benefit significantly from our Water Treatment Plant Operations experience. Both Chad Coleman and Phil Godman are Certified Water Treatment Plant Operators who will have a role on the project to review and provide design input from an operations perspective.

System 3: Repair, Upgrade and Construct WTP Buildings

There are multiple upgrades that we have included in this system area:

1. Replacement of the Raw Water Building and addition of an overhead crane.
2. Construction of a new Blower Room between the Filter Building and the Raw Water Building.
3. Replacement of the metal panel roof of the Filter Building and the roof ventilator.
4. Repair of floor slab cracks and settlement at the southwest corner of the Filter Building and the Raw Water Pumps.
5. Addition of a laboratory room inside the Filter Building.
6. Replacement of cabinetry in the old laboratory room.

Our team includes an experienced Licensed Architect to ensure that building designs will be compliant with California Building Codes and ADA Codes. He works regularly with both Coleman Engineering and our structural engineer.

The new Raw Water Building will be designed to accommodate the height of the existing vertical turbine pumps, which are approximately 13-feet long. The current arrangement with hatches in the roof requires a rental crane to be mobilized any time a pump needs to be pulled. There are no large rental cranes in the City, so the expense to bring one in from out-of-town is significant.

Vertical turbine pumps in the raw water building

We have assumed that the new Raw Water Building will be a pre-engineered metal building since that is the most economical approach. We have confirmed that this building type is also consistent with the existing Filter Building, is compatible with the proposed crane installation, and can be insulated for sound attenuation.

The new Blower Room will be located in the space between the existing Filter Building and the new Raw Water Building. Key to this design will be understanding the sound generated by the blowers: they are typically some of the loudest equipment in a WTP. We have coordinated with WesTech and their blower supplier, FPZ, to determine that the blowers are rated to 81 dBA. A sound attenuating enclosure can be added to each blower that will reduce the sound to 71 dBA. Another option is to provide sound mitigation to the whole new Blower Room, we will evaluate whether it is more cost effective to mitigate sound nuisance with equipment enclosures or to mitigate the whole room.

We will use our prior experience designing similar facilities to produce a safe, operator-friendly facility that the neighbors will continue not to notice.


Blower room likely to be between buildings


Settled pipe after tree removal


Crack in the filter treatment building slab

We will recommend to the City that the new Laboratory Room be designed to include concrete stem walls and other features that will be resistant to water damage. This room is likely to be exposed to potential and regular water intrusion at the sill. We will also recommend that the countertops and cabinetry be made of laboratory-grade phenolic material so that their lifespan will be extended.

New laboratory room area

The remaining space which was formerly the laboratory room will be dedicated to computers and other SCADA equipment. For that reason, all water sources and the sink will be removed from this room. Water-damaged cabinetry will be replaced in the new dedicated Computer room.

There is a potential additional item of work that is not addressed in the RFP but may be necessary. This relates to improvements to the Filter Building to make it compliant with California Building Code Accessibility requirements. We note from the record drawings that the existing restroom does not appear to meet these accessibility requirements. Given the likely value of construction, the Code does require that accessibility upgrades occur together with the main rehabilitation construction. However, as the City is also the Authority Having Jurisdiction, there may be some leeway for the City to waive these requirements. We have not included accessibility upgrades in our Scope of Services, but we do look forward to having this discussion with the City early in the project to determine the City's preferences.

Dedicated Computer Room

System 4: Rehabilitate Tank #2

Rehabilitation of Tank 2 is relatively straightforward. It primarily needs repairs and repainting: this project is a good opportunity to extend the life of this critical infrastructure.

Water storage tank 2

We will coordinate with the City to determine the best time of year to take Tank 2 out-of-service to avoid negatively impacting WTP operations and treated water supply. Our design will include realistic construction schedule estimates to dictate start and completion times that also will not be overly costly to the City.

Engineering for this item of work will be completed simultaneously with the remainder of the project but we have budgeted for plans and specifications to be prepared as a stand-alone set so that the City can bid this as a discrete project. This approach will maximize flexibility and the ability to adjust to available budgets.

System 5: Repair Existing Raw Water and Backwash Ponds

The Raw Water and Backwash Ponds need geotextile liners to prevent ongoing loss of water due to sub-surface exfiltration. The Backwash Ponds have concrete floors and ramps that facilitate sludge removal, but the slopes are unlined. Liners will be placed in the existing ponds and attached to the concrete floors as appropriate to reduce exfiltration.

Backwash pond drained for sludge removal

While lining the ponds is a relatively easy process, the design will consider construction sequencing and process to prevent seepage pressures (due to infiltration from the remaining unlined pond) building up behind the newly placed liner.

Our approach is to design for control and removal of the groundwater infiltration during construction so that liners are not damaged. After the liners are complete and the ponds are refilled, the resulting balance of water pressure should protect the liners from subsequent damage.

Groundwater infiltration into the drained pond

The design team will consider options to control seepage during construction including the use of a temporary liner drain system; cutoff walls to prevent infiltration; a French Drain system between ponds to prevent infiltration; and balancing the ponds' liquid levels. A system that terminates in groundwater monitoring / dewatering wells so that groundwater can be easily measured and removed whenever it is necessary to drain a pond is a prudent feature to include.

System 6: Miscellaneous Site Improvements

There are two site improvements included in the project that will add to the beneficial use of the site. The Reactor Clarifier will be demolished and removed, and the resulting area will be paved. We will maximize the area that can be reclaimed for the beneficial use of WTP staff. This is not a highly technical piece of the project, but it does deserve attention to make sure that a usable area is not neglected, and that that available area is maximized. Also, specifications for the demolition

must include careful controls on backfill and compaction so that the future site does not settle and damage the pavement.

The existing drainage sump may require relocation. It may fall within an area that could be paved or used in the future. We will work with the City to determine whether the sump can be paved over or if it should be relocated.

Reactor clarifier to be removed and area paved

System 7: Electrical and SCADA Upgrades

The proposed electrical and SCADA upgrades will improve both the safety and reliability of the WTP electrical utility service and the interior electrical distribution system. We propose two important approaches as detailed below.

Our first approach involves early and careful coordination with WesTech. We will thoroughly understand the limits of their scope of supply so that our design team is clear on what must be added for a complete electrical, instrumentation, and controls design. From our experience, common areas of overlap or omission can include the programming, integration, startup, and demonstration steps. As a result, we plan to coordinate with WesTech to make sure that none of the required work is omitted or double counted.

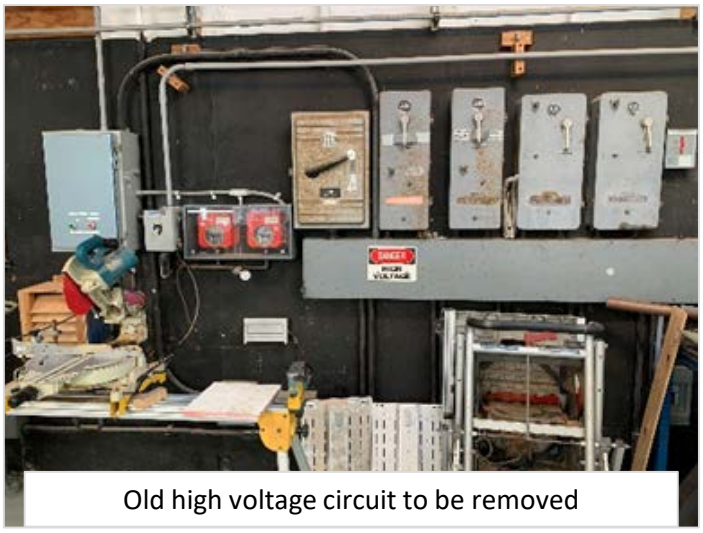
Secondly, our design team will pay careful attention to planning electrical upgrades so that downtime is minimized. Planned outages will be coordinated with other mechanical outages to minimize overall total downtime.

Existing PLC to be upgraded by WesTech

We will also draw on our previous and specific experience with Trident WTP upgrades. We have found that the ability to control the flow split between filters was often overlooked during original Trident facility installation. In previous retrofit installations, such as in the City of Willits, our Electrical Engineer added and improved items such as electric modulating valves, level transmitters, and effluent flowmeters. They designed for replacement of the PLC and provided a custom program and SCADA to control all plant processes, including the filters.

Existing power service to be replaced

We have a deep understanding of Trident filter systems, surrounding auxiliary systems, and the instrumentation and control system required for effective automation. We realize in this project WesTech will be completing the integration and programming, but our team can check and test those systems to confirm quality work is being provided to the City. Additionally, we recommend that systems be developed to detect abnormalities and shut down processes in advance of possible spills or water quality issues. The WesTech proposal does not appear to cover this type of detail. Prior to finalizing our Agreement, we would like to discuss ways our team can help fill in these potential gaps.



Old high voltage circuit to be removed

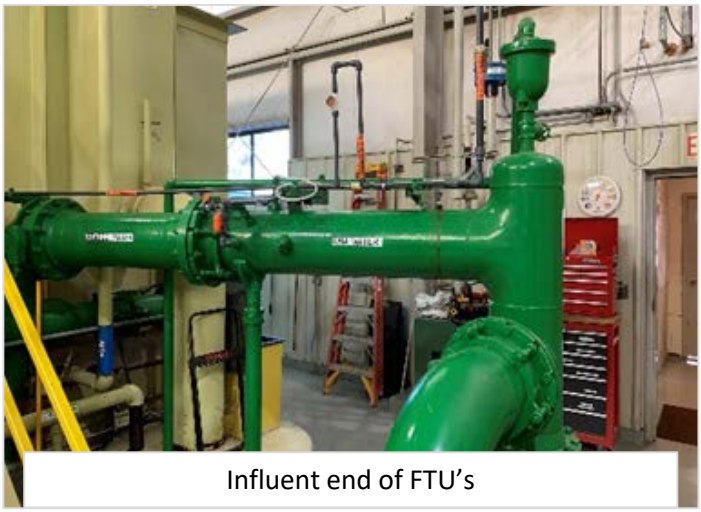
In addition to the WesTech upgrades, the design team has planned for replacement of the main electrical service and removal of an old live circuit. These improvements will be carefully coordinated with the remainder of the plant improvements so that downtimes are minimized, and operator ease is maximized. Removal of the old circuits and service will be an excellent safety enhancement. Finally, we have not planned for any other uses in the Raw Water Building in the location to be abandoned by the old high voltage circuit since we know that the City operations staff has plans for that area.

CONSTRUCTABILITY

We understand that the entire treatment plant must remain operational between May and September each year. Our constructability and phasing plans will therefore focus on ways to isolate the two trains between the months of October and April. This will make sure that the City is continuously able to treat sufficient water to meet customer demands. In addition, upgrades can be made efficiently during the off-peak months.

We will use our experience to prepare plans and specifications that give enough direction and define constraints for a constructable design yet allow enough space for the contractor to be creative and to get the best pricing. This is a fine line that we have learned to walk, so that each project results in successful outcomes for our clients.

We will carefully review and analyze all operational constraints in collaboration with City staff. Examples of operational constraints include mechanical, electrical and process limitations, capacity restrictions during certain times of the year, and as space and regulatory constraints at the WTP site. Several of the intended improvements will impact the operation of portions of the existing treatment facility. Proper analysis and planning will be required to avoid unintended and unwanted interruptions of treatment operations.



Influent end of FTU's

Areas which will require such coordination and planning include the rehabilitation of the Filter Treatment Units, rehabilitation of Tank 2 and the repair of the Raw Water and Backwash Ponds to eliminate leakage and exfiltration. Modifications to the process piping and electrical / SCADA improvements will also require careful advanced coordination and planning. We will undertake the necessary steps during the design phase and will work in concert with the contractor during construction to maintain a continuously functioning water treatment facility.

Our design team will adopt a real-world "turnkey" design approach. This will then assist the contractor to develop its cost-effective construction methodology. During the construction phase we will continue to work collaboratively with the contractor and the City to achieve the common goals of the project. We have successfully completed complex and demanding water treatment projects in the past, and this experience will prove vital in replicating this success on this project.

BUDGET CONSTRAINTS AND CHANGES

The team understands that this project is planned to be funded by the City with considerations for possible State and Federal grant or loan funding. As such, we have planned several approaches that will assist the City to complete the project successfully and to allow for phasing and scaling of the various project elements so that future budgets can be accommodated.

Our team includes a constructability and cost estimating expert. Andy Granner spent a career in the construction industry, including his last position as President of treatment plant specialist contractor Auburn Constructors. Andy will contribute his experience and expertise to the team in two ways. First, his constructability reviews and sequencing plans will help the designers produce an economical design that is efficient to construct. By prioritizing constructability during design our team will remain focused on the City's budget constraints.

Second, Andy will provide cost estimating services to the team to make sure that we are continuing to work within the financial constraints of the City. He will generate actionable information that both the design team and the City can use to adjust as needed during design so that we are not surprised by high bids.

We have also planned for selection of optional construction items of work. In this way certain items can be selected for inclusion post-bid depending on the financial condition of the project. One of the best examples of this was described in the filter treatment unit tank rehabilitation section where we detail four options for tank corrosion repair. Only one repair option will be ultimately selected but that decision will not be made until construction is underway and the filter tank is exposed. At that time, the work will be defined but costs will already be fixed by the unit bids that were received.

We will organize the bid schedule and group the work into discrete portions of work that can be selected by the City or not, based on budget constraints versus bids received. We will help the City prioritize the various items of work so that low priority items can be postponed if budget constraints require it.

Finally, we have planned to prepare two stand-alone sets of plans. The WTP Improvements will be shown on one plan set and the Tank 2 Improvements will be shown on a separate set. In this way the City can bid the two projects separately as budgets and timing allow.

DESIGN WITH OPERATORS IN MIND

Coleman Engineering brings two certified Water Treatment Plant Operators to the team. Chad Coleman is the Principal Engineer and Project Manager who will be able to draw on experience during QA reviews. Phil Godman continues to work as a full-time Coleman Engineering employee as a Water and Wastewater Treatment Plant Operator. We have found great success using Phil's daily operations experience by bringing him into the plan review process.

When Coleman Engineering designs, our goal is for all process and operations to be "Operator Friendly".

Scope of Services

Client:	City of Fort Bragg, CA
Project:	Water Treatment Plant Rehabilitation City Project No. WTR-00017
Project Location:	Water Treatment Plant
Summary of Services:	Preliminary Engineering Services Design Engineering Services Funding Application Support
Utility System:	Drinking Water

Background

Coleman Engineering will provide professional engineering services to the City of Fort Bragg (City) in support of upgrades to the drinking water treatment plant. The City has provided a complete list of improvements that are desired for inclusion in the project. Each planned improvement is listed in the Project Definition section below.

In addition to the design services, Coleman Engineering will also prepare a Preliminary Engineering Report that will assist the City to apply for grant and loan funding for the project.

Project Definition

The City has provided a comprehensive list of components that are to be included in the WTP Rehabilitation Project. Coleman Engineering has organized the list into seven discrete process areas. The table below shows the items that are assumed for inclusion in the project.

	WTP Process Area	Components to be Included (City Plan Sheet reference)
1	Rehabilitate Filter Treatment Units	1.1- Remove surface wash equipment (Sheets 7, 8)
		1.2- Remove surface wash pumps (Sheet 8)
		1.3- Remove surface wash AVAR (Sheet 8)

	WTP Process Area	Components to be Included (City Plan Sheet reference)
		1.4- Upgrade per WesTech (Sheet 7)
		1.5- Repair and repaint Trident steel tanks (Sheet 7)
2	Upgrade and modify water plant piping, flow meters, and valves	2.1- Replace static mixer with powered mixer (Sheet 3)
		2.2- Remove 2 effluent flow meters (Sheet 3)
		2.3- Install flow meter in backwash line (Sheets 3, 8)
		2.4- Replace both filter-to-waste valves with larger sized valves (Sheets 3, 8)
		2.5- Replace polymer feed pumps (Sheet 7)
		2.6- Replace corroded 12” steel filtered water header (Sheet 11)
		2.7- Rebuild filtered water pump (Sheet 11)
		2.8- Show (E) Diversion Return Line on the design plans (Sheet 11)
		2.9- Remove existing 12” steel pipe from (E) filter (Sheet 11)
		2.10- Remove (E) 10” Raw Water Bypass pipe (Sheet 11)
		2.11- Repair settled pipes near raw water pumps (Sheet 11)
3	Repair, upgrade, and construct WTP buildings	3.1- Construct new Blower Room (Sheets 7, 11)
		3.2- Replace roof of WTP Filter Building (Sheet 9)
		3.3- Replace ventilation system in WTP Building (Sheet 9)
		3.4- Evaluate and design repair of cracks in foundation (Sheet 10)
		3.5- Evaluate and design repair causes of settling pipes near raw water pumps (Sheet 11)
		3.6- Replace Raw Water Building (Sheet 11)
		3.7- Add overhead cranes in Raw Water Building (Sheet 11)

	WTP Process Area	Components to be Included (City Plan Sheet reference)
		3.8- Move the laboratory (Sheet 7)
		3.9- Replace cabinets in Laboratory Room (Sheet 10)
4	Rehabilitate Tank #2	No plan references provided. Details below from page 1 of the RFP.
		4.1- Move the discharge/effluent piping from the tank interior to the exterior and upsize to 16 inches.
		4.2- Remove the fill pipe from the tank interior to the exterior
		4.3- Add a flow meter to the new fill pipe.
		4.4- Connect the new 16-inch future use stub to the nearby 20-inch distribution line
		4.5- Add a flow meter to the 16-inch portion of the pipe
		4.6- Connect the existing 16-inch pipe stub to the distribution pipe in Cedar Street
		4.7- Recoat interior and exterior of existing tank
5	Repair existing raw water and backwash ponds	5.1- Dredge, dewater, dispose of sludge; line ponds (Sheet 5)
6	Miscellaneous site improvements	6.1- Remove (E) Reactor Clarifier (Sheet 5)
		6.2- Construct AC Pavement (Sheet 4)
7	Electrical and SCADA upgrades	7.1- Replace/upgrade plant PLC's and SCADA Upgrades (Sheet 7)
		7.2- Replace Utility Meter Cabinet (Sheet 11)
		7.3- Replace Service Equipment Mount (Sheet 20)
		7.4- Remove old MCC and Equipment and decommission live circuit (Sheet 20)

Services and Data to be Provided to Coleman Engineering by the City

Prior to commencing design services, the City will provide the following services and data to Coleman Engineering:

- Confirm all project elements listed above are valid and approved for inclusion in the Scope
- Existing Project Documents provided previously:
    - As-Built Plans – Water Treatment Plant Improvements by Culp Wesner Culp, dated September 12, 1988: Sheets 3-5, 7-11, 16, 20
- Additional existing site information with available as-built and/or record drawings
- Any available historical flow information from the existing water treatment plant
- Any available historical flow and water quality information from the source water intakes
- Any available topographic mapping and survey
- Any previous geotechnical reports for the site

Scope of Services

TASK 1 – Preliminary Engineering

1.1 Project Management and Meetings During Preliminary Engineering: Coleman Engineering will manage the preliminary engineering phase of the project by coordinating with the City and sub-consultants, allocating the resources, and planning and organizing its efforts to maximize the goals of the City.

Coleman Engineering has budgeted to attend 4 on-site meetings in the City during the Preliminary Engineering task.

1.2 Record Coordination and Research: Coleman Engineering will collect, and review records provided by City that may include:

- As-Built Drawings
- Studies
- Reports
- Maps
- Other documents relevant to the limits and scope of this project

1.3 Topographic Survey: Cinquini & Passarino will provide topographic survey of the site sufficient to define the areas of interest to the project. Topography will be prepared at a drawing scale of 1-inch = 20-feet with a 1-foot contour interval. Topographic survey will be provided on existing City horizontal and vertical control. Specific areas include:

- The Reactor Clarifier area so that plans can indicate limits of future AC paving.
- Area and piping around the Raw Water Building.

- Area between the Raw Water Building and the Filter Building.
- The Raw Water and Backwash Ponds – including topography of pond bottoms and estimates of depths of sludge.
- Areas where pipes are to be connected near Water Storage Tank 2 and Cedar Street.

1.4 Geotechnical Engineering: Crawford & Associates will provide geotechnical engineering services necessary to assist with evaluation of the crack in the Filter Building Floor Slab and with the Raw Water Piping settlement issues and the Raw Water and Backwash Water Pond Liners. It is anticipated that Crawford & Associates will review available documentation; make field visits and observations; perform limited hand work (dynamic cone penetrometers and hand augers) in the vicinity of the new Blower Room, the existing Ponds, and the existing Filter Building; but due to extensive existing utilities and limited access, mechanical drilling and sampling will not be performed.

Crawford & Associates will provide geotechnical input and recommendations to Coleman Engineering for use in the design. Recommendations will include current CBC seismic design parameters (using site Class D, without site specific analysis resulting in slightly higher base shears); foundation recommendations for the new Blower Room spread foundations; grading recommendations including stability, excavatability, fill placement and compaction; general geotechnical repair options for the existing filter building; vicinity map; and site plan with exploration locations.

1.5 Preliminary Engineering: The Coleman Engineering team will prepare preliminary engineering calculations and analysis for the purpose of providing sufficient documentation for a Preliminary Engineering Report (PER). Alternative approaches to the City's list of desired improvements will not be considered in depth since the purpose of the report will be limited to funding applications and not for actual project elements evaluation and recommendations. It is anticipated the Preliminary Engineering will include:

- Coordination with WesTech to clearly define their Scope of Supply vs. what the Coleman team needs to design separately.
- Constructability and Project Phasing considerations
- Investigation of Trident tank corrosion situation and evaluate options for rehabilitation.
- Evaluate process piping, flow meters, and valves to confirm that City desires will be met by making the requested changes shown in Process Area 2 above.

- New Blower Room Space Planning and preliminary engineering
- New Raw Water Building preliminary engineering, including for the new crane.
- Filter Building roof and ventilator research
- Space planning for the new Laboratory Room.
- Investigations and evaluations into Tank #2 to confirm that changes requested by the City will result in the desired upgrades.
- Evaluation of corrosion and physical conditions of Tank #2.
- Research and planning for Raw Water and Backwash Water Pond liners.
- Research and planning for sub-surface drainage around the Raw Water and Backwash Water Ponds.
- Research and planning for removal of the existing Reactor Clarifier and replacement with AC pavement.
- Research and planning for requested electrical upgrades.
- Develop Opinions of Probable Construction Cost.

1.6 Preliminary Engineering Report: A PER will be prepared to document engineering efforts to evaluate project alternatives and to document the recommended project design criteria. The PER will include an Opinion of Probable Construction Cost that will be useful for setting project budgets and for making application for Construction Funding to both the State of California DWSRF Program and to USDA-RD. The Engineering Report will follow DWSRF format as required for Attachment T1 of the DWSRF Construction Funding Application.

The PER will be prepared in a Draft form for internal review by the City. Following receipt of City comments, Coleman Engineering will complete the PER into a Final version.

Task 1 Deliverables:

- *Draft Preliminary Engineering Report (pdf file)*
- *Final Preliminary Engineering Report (pdf file)*

TASK 2 – Design Engineering

2.1 Project Management and Meetings During Design Engineering: Coleman Engineering will manage the design engineering phase of the project by coordinating with the City and sub-consultants, allocating the resources, and planning and organizing its efforts to maximize the goals of the City.

Regular review telephone meetings are planned to update the City on the status and progress of testing and preliminary engineering. Six (6)

meetings have been budgeted for this task including three (3) telephone conference calls and three (3) on-site meetings.

2.2 Design of Water Treatment Plant Upgrades: Coleman Engineering will follow the list provided by the City and shown in the Project Definition section of this Scope to design upgrades to the water treatment plant, not including the improvements to Water Storage Tank 2 which will be shown in a separate plan set.

It is anticipated that the Plans will be prepared for submittal to the City at the following stages: 50% draft, 95% draft, 100% final. Plans to be submitted at the 50% stage are identified in the sheet list below. All plan sheets will be submitted with the 95% and 100% sets. Plan Sheets will be organized by the following Process Areas:

1) General
2) WTP Site
3) Filter Building
4) Raw Water Building
5) Blower Room
6) Ponds

50% Plans	Sheet	Title
✓	G1.01	Cover Sheet (maps, sheet index)
	G1.02	General and Project Notes 1
	G1.03	General and Project Notes 2
✓	G1.04	Legend and Abbreviations
✓	G1.05	Process Flow Diagram
✓	G1.06	Existing Site and Key Sheet
	D2.01	Demolition of 12-inch Steel Pipe
	D2.02	Demolition of 10-inch Raw Water Bypass Pipe
	D2.03	Demolition of Reactor Clarifier
	D3.01	Demolition Plan – FTU Surface Wash Equipment
	D3.02	Demolition Details – FTU Surface Wash Equipment
	D3.03	Demolition of Effluent Flow Meters
	C2.01	Paving Plan and Details at Old Reactor Clarifier
	C2.02	Repair Raw Water Inlet Manifold Piping
✓	C3.01	FTU Tank Structural Rehab Details 1
	C3.02	FTU Tank Structural Rehab Details 2

50% Plans	Sheet	Title
✓	C6.01	Ponds Plan
	C6.02	Ponds Grading
✓	C6.03	Pond Liner Details 1
	C6.04	Pond Liner Details 2
	C6.05	Pond Area Drainage and Monitoring Well Details
✓	A3.01	Filter Building Floor Plan
	A3.02	Filter Building Roof Plan
	A3.03	Filter Building Details
✓	A3.04	Laboratory and Computer Room Floor Plans
	A3.05	Laboratory Room Cabinet Elevations and Details
	A3.06	Computer Room Cabinet Elevations and Details
✓	A4.01	Raw Water Building Floor Plan
	A4.02	Raw Water Building Roof Plan
	A4.03	Raw Water Elevations and Building Sections
	A4.04	Raw Water Building Details
✓	A5.01	Blower Room Floor Plan and Roof Plan
	A5.02	Blower Room Elevations and Sections
	A5.03	Blower Room Details
✓	S1.01	Structural General Notes
	S1.02	Structural General Notes
	S1.03	Structural Typical Details
	S1.04	Structural Typical Details
	S3.01	Structural Details – Filter Building
	S4.01	Structural Floor Plan – Raw Water Building
	S4.02	Structural Roof Plan—Raw Water Building
	S4.03	Structural Sections and Details-Raw Water Building
	S5.01	Structural Details – Blower Room
✓	M3.01	FTU Upgrade Plan
✓	M3.02	FTU AC Upgrade Details 1
	M3.03	FTU AC Upgrade Details 2
✓	M3.04	FTU Filter Upgrade Details 1
	M3.05	FTU Filter Upgrade Details 2

50% Plans	Sheet	Title
	M3.06	FTU Air Piping Plan and Details
	M3.07	Static Mixer and Polymer Feed Pumps Upgrades
	M3.08	Backwash Flow Meter and FTW Valve Replacements
	M4.01	Filtered Water Header Replacement
✓	E1.01	Electrical Symbols and Abbreviations
	E1.02	Electrical Details #1
	E1.03	Electrical Details #2
	E1.04	Pump Motor Elementary Diagram 1
	E1.05	Pump Motor Elementary Diagram 2
	E2.01	Electrical Site Plan Overall
	E2.02	Electrical Site Plan Building Area
	E2.03	Electrical Site Plan Tanks
✓	E2.04	Switchboard One-Line and Elevation
	E2.05	Panelboard Schedules
	E3.01	Filter Building Power and Control Plan
	E3.02	Filter Building Lighting and Receptacle Plan
	E3.03	Filter Building Demolition Plan
	E3.04	Filter Building Electrical Area Plans
	E4.01	Raw Water Building Power and Control Plan
	E4.02	Raw Water Building Lighting and Receptacle Plan
	E4.03	Blower Building Power and Control Plan
	E4.04	Blower Building Lighting and Receptacle Plan
✓	I1.01	Instrumentation Symbols and Abbreviations
	I2.01	P&ID – Raw Water Pumps
	I3.01	P&ID – Filter 1
	I3.02	P&ID – Filter 2
	I4.01	P&ID – Clearwell Pump Station
	I4.02	P&ID Water Storage Tank 2
	I3.03	P&ID – Chemical System
	I3.04	P&ID Miscellaneous Systems
	P3.01	Laboratory Room Plumbing Details

2.3 Design of Water Storage Tank 2 Upgrades: Coleman Engineering will follow the list provided by the City and shown in the Project Definition section of this Scope to design upgrades to Water Storage Tank 2.

It is anticipated that the Plans will be prepared for submittal to the City at the following stages: 50% draft, 95% draft, 100% final. Plans to be submitted at the 50% stage are identified in the sheet list below. All plan sheets will be submitted with the 95% and 100% sets.

50% Plans	Sheet	Title
✓	G1	Cover Sheet (maps, sheet index)
	G2	General and Project Notes
	G3	Legend and Abbreviations
✓	C1	Water Storage Tank 2 Improvements Key
✓	C2	Water Storage Tank 2 Details 1
	C3	Water Storage Tank 2 Details 2
	C4	Water Storage Tank 2 Details 3
✓	C5	16-inch to 20-inch Pipe Connection Details
✓	C6	Cedar Street Pipe Connection Details
✓	E1	Electrical Symbols and Abbreviations
✓	E2	Electrical Water Storage Tank 2 Site Plan
	E3	Electrical Water Storage Tank 2 Details
	I1	Instrumentation Symbols and Abbreviations
	I2	P&ID Water Storage Tank 2

2.4 Technical Specifications: Coleman Engineering will prepare technical specifications using CSI *MasterFormat* standards revised April 2016 and using the City's standard Division 1 and front-end documents.

The Table of Contents for the Technical Specifications will be submitted with the 50% Draft. All sections will be submitted at 95% and 100% Drafts.

The City will provide front end documents, their standard Division 1 sections. Coleman Engineering will provide additional Division 1 sections

pertinent to the project, and provide other pertinent civil, architectural, structural, mechanical, electrical, and instrumentation sections.

2.5 Cost Opinions: Coleman Engineering will prepare an opinion of probable construction cost suitable to assist the City with setting budgets. A cost opinion will be prepared to accompany each draft plan submittal consistent with the level of design detail developed.

2.6 Draft Submittals: Coleman Engineering will submit draft Plans, Specifications, and Cost Opinions at the following stages: 50% Draft, 95% Draft, and 100% Final.

2.7 Coordination and Permitting Assistance with DDW: Coleman Engineering will assist the City by providing coordination and Permitting Assistance with the California State Water Board, Division of Drinking Water (DDW). It is assumed that these water treatment plant upgrades will require review and approval by DDW as part of an approval of an Amended Domestic Water Supply Permit Application. Coleman Engineering has budgeted 40 hours to provide coordination and permitting assistance services to the City, including preparation and submittal of the application.

Task 2 Deliverables:

- *50% Draft Plans, Specification Table of Contents, and cost opinion (pdf files formatted for 11"x17" printing)*
- *95% Draft Plans, Specifications, and cost opinion (pdf files)*
- *100% Final Plans, Specifications, and cost opinion (pdf files)*
- *Domestic Water Supply Permit Application (pdf file)*

Schedule

Coleman Engineering will provide services in an expeditious and professional manner. For the purposes of this Scope and Fee, the following schedule milestones are assumed, dependent on the receipt of the required information and data. If the assumed schedule is not compatible with the City's expectations, Coleman Engineering will be glad to work with the City to develop a revised schedule.

The schedule also assumes that the City will take two weeks to review each submittal and will return comments to Coleman Engineering in a single consolidated document.

Milestone	Projected Date
Execution of Agreement	January 2021
Kick-Off Meeting	January 2021
Submit Draft PER	March 23, 2021
Submit Final PER	April 21, 2021
Submit 50% Draft PS&E	June 2, 2021
Submit 95% Draft PS&E	July 22, 2021
Submit 100% Final PS&E	August 27, 2021

Engineering Fee

Coleman Engineering will bill on a Time and Materials basis according to the terms of payment outlined in the Agreement. Coleman Engineering reserves the right to transfer budget between tasks without affecting the total project budget.

The estimated budgets below include the cost of expenses directly related to the project including mileage, duplication, blueprinting, postage, delivery charges, plotting, outside reproductions, etc.

Coleman Engineering estimates the following budgets will be required to provide the services described above.

Task	Scope Item	Estimated Budget
1	Preliminary Engineering	$129,810
2	Design Engineering	$356,620
	TOTAL ENGINEERING BUDGET =	$486,430

Tasks Not Included in this Scope of Services

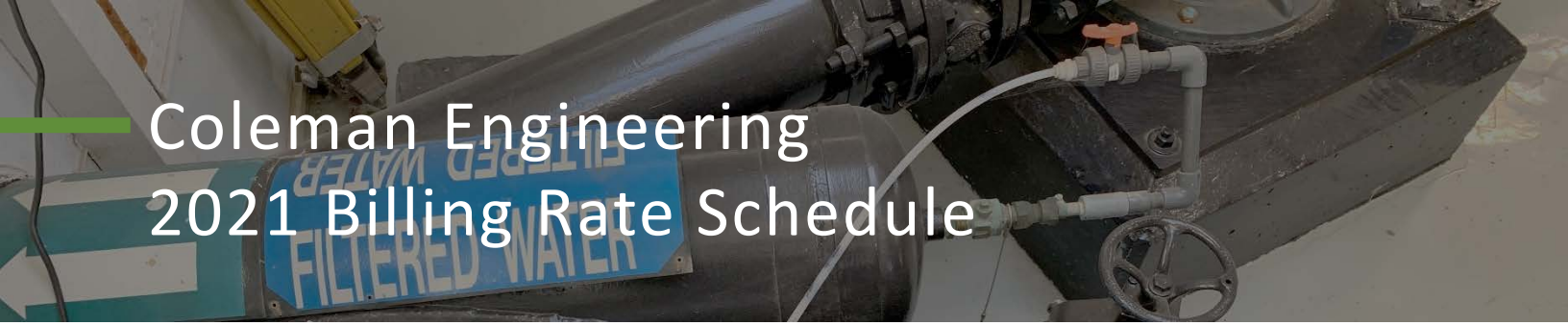
This Scope of Services is intended to outline the services offered to the City by Coleman Engineering. The list below is offered as a clarification of the services that are not included, not anticipated, or that will be completed by others.

1. Coleman Engineering CAD standards to be used. Plans will be prepared as stand-alone documents and not to be inserted into any other plan set.
2. Bidding and Contracting documents (commonly Division 0 and 1) will be provided by the City.

3. Bidding Phase Services and Engineering Services During Construction are not included in this Scope but are anticipated to be added to future phases.
4. No legal or boundary surveying is included in the Scope.
5. No hydraulic modeling or hydraulic transient analysis of any pipelines is anticipated to be required and is not included.
6. Site security facilities and equipment, including monitoring and alarms are not included. No CCTV monitoring design is included.
7. No PLC or SCADA system programming is included. PLC programming will be provided by WesTech under contract to the Contractor.
8. No Arc Flash analysis is included in the budget.
9. SWPPP preparation will be performed by the contractor in accordance with the SWPPP specification section.
10. Landscape architecture, including planting, irrigation, and other site aesthetic features are not included.
11. The only coordination for approvals that will be made are with the City and California Division of Drinking Water. No other agencies will be consulted, coordinated with, or sought out for approvals.
12. Obtaining any required construction permits.
13. Full time construction inspection (may be offered under a separate contract).
14. Legal review of bidding documents.
15. Expert witness services (may be offered under a separate contract).
16. Obtaining NPDES permits for discharges from sites (may be offered under a separate contract).
17. Hazardous materials permits or approvals.

F

BUDGET AND SCHEDULE OF CHARGES



Coleman Engineering
2021 Billing Rate Schedule

Classification	Billing Rates
Principal Engineer	$217
Project Manager	$202
Assistant Project Manager	$188
Project Engineer	$170
Staff Engineer	$150
Engineering Intern	$90
CAD Drafter/Designer	$126
Project Technician	$115
Project Assistant	$92
W/WW Operator – Grade 1/2/3/4/5	$93 / $103 / $124 / $150 / $185
Construction Manager	$170 - $202
Resident Inspector	$136 - $160
CM Field Admin	$75 - $95

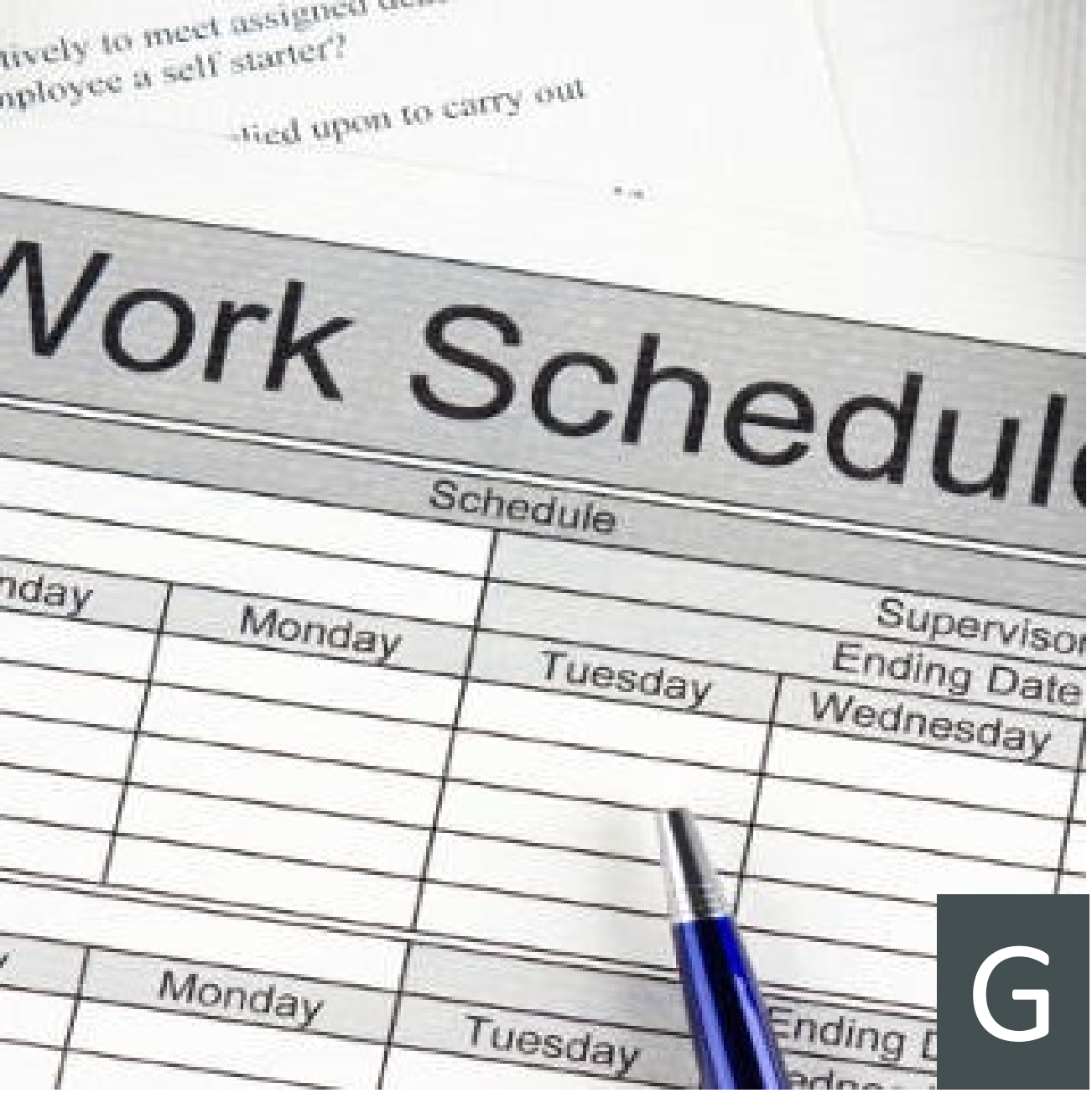
- Billing rates and expense charges are subject to annual update.
- Hourly rates include Indirect Costs such as general computers, telephone, fax, routine in-house reproductions, first class letter postage, miscellaneous supplies, and other incidental general expenses.
- Direct Costs of services and materials such as vendor reproductions/prints, shipping, major in-house Coleman Engineering reproduction efforts, travel expenses, special engineering supplies, etc. will be billed at actual cost plus 10%.
- Sub-Consultants will be billed at actual cost plus 10%.
- Mileage will be billed at the current Federal Rate ($0.575/mile as of Jan. 1, 2020)
- Expert Witness Services will be billed at standard rates plus a 25% premium.
- Computer charges are included in the Standard Hourly Rates for those employees and contract personnel assigned to use such specialty hardware and software.
- Billing rates apply to all computers and equipment, whether owned or rented by Coleman Engineering, and to all employment categories including regular full-time, part-time, limited term and contract personnel, etc.
- A finance charge of 1.5% per month (an annual rate of 18%) on the unpaid balance will be added to invoice amounts if not paid within 45 days from the date of the invoice.

City of Fort Bragg
Water Treatment Plant Rehabiliatation Project - City Project No. WTR-00017

Task Number	Task	Labor Hour Estimate						Labor Sub-Totals	Sub-Consultant Fee	Sub-Consultant	Expense Costs	Expense Description	Total Budget per Sub-Task	Task Sub-Totals	Total Budget Hours	Total Budget Days
		Principal-in-Charge / PM	Project Manager / QA	Asst. PM	Staff Engineer	CAD Designer	Project Assistant									
	2021 BILLING RATES =	$217.00	$202.00	$188.00	$150.00	$126.00	$92.00									
1.0	**Preliminary Engineering**															
1.1	PM and Meetings During Preliminary Engineering							$0					$0		0	0.0
	Project Management	8					8	$2,472					$2,472		16	2.0
	On-Site Meetings (4)	32		16	16			$12,352	$2,112	Granner	$978	mileage	$15,442		64	8.0
1.2	Record Coordination and Research			2	8	4		$2,080					$2,080		14	1.8
1.3	Topographic Survey				2	4		$804	$17,083	C&P			$17,887		6	0.8
1.4	Geotechnical Engineering			2	4			$976	$14,950	Crawford			$15,926		6	0.8
1.5	Preliminary Engineering		6					$1,212					$1,212		6	0.8
	Coordinate with WesTech	2		8	4			$2,538					$2,538		14	1.8
	Constructability and Project Phasing	2		8	4			$2,538	$7,040	Granner			$9,578		14	1.8
	Corrosion Investigation at FTU Tanks			2	4			$976	$2,200	CSI			$3,176		6	0.8
	Process evaluation vs. list of upgrades	4		8	4			$2,972					$2,972		16	2.0
	Blower Room Space Planning				2	4		$804					$804		6	0.8
	Raw Water Building and crane pre-engineering			2	4			$976					$976		6	0.8
	Filter Building roof and ventilator research			2	6			$1,276					$1,276		8	1.0
	Space Planning for the new Lab				2	4		$804					$804		6	0.8
	Water Storage Tank #2 process evaluation			4	4			$1,352					$1,352		8	1.0
	Water Storage Tank #2 corrosion and coatings			2	4			$976	$2,200	CSI			$3,176		6	0.8
	Pre-engineering for Pond Liners	2		4	8	2		$2,638					$2,638		16	2.0
	Pre-engineering for pond drainage			2	4			$976	$5,500	Crawford			$6,476		6	0.8
	Site and demo planning			2	4			$976					$976		6	0.8
	Pre-engineering for Electrical upgrades				2			$300	$5,500	Frisch			$5,800		2	0.3
	Develop OPCC's	4		8	16			$4,772	$4,224	Granner			$8,996		28	3.5
1.6	Preliminary Engineering Report		6					$1,212					$1,212		6	0.8
	Establish Report Outline for SRF and USDA			4				$752					$752		4	0.5
	Write Draft PER	4		16	40		8	$10,612					$10,612		68	8.5
	Discuss and incorporate comments from the City	4		8	16			$4,772					$4,772		28	3.5
	Write Final PER	2		8	24		4	$5,906					$5,906		38	4.8
														$129,810		
2.0	**Design Engineering**															
2.1	PM and Meetings During Design Engineering							$0					$0		0	0.0
	Project Management	8					8	$2,472					$2,472		16	2.0
	Telephone Meetings (3)	6		6	6			$3,330					$3,330		18	2.3
	On-Site Meetings (3)	24		24	24			$13,320			$733	mileage	$14,053		72	9.0
2.2	Design of Water Treatment Plant Upgrades	20						$4,340					$4,340		20	2.5
	G Sheets - 6			4	8	48		$8,000					$8,000		60	7.5
	D Sheets - 6			4	16	120		$18,272					$18,272		140	17.5
	C Sheets - 9			8	20	180		$27,184					$27,184		208	26.0
	A Sheets - 13			2	4	4		$1,480	$33,000	VE Solutions			$34,480		10	1.3
	S Sheets - 9			2	4	4		$1,480	$33,000	VE Solutions			$34,480		10	1.3
	M Sheets - 9			8	20	216		$31,720					$31,720		244	30.5
	E Sheets - 18			4	8	4		$2,456	$44,000	Frisch			$46,456		16	2.0
	I Sheets - 8			2	4	2		$1,228	$22,000	Frisch			$23,228		8	1.0
	P Sheets - 1			4	8	24		$4,976					$4,976		36	4.5
2.3	Design of Water Storage Tank 2 Upgrades	12						$2,604					$2,604		12	1.5
	G Sheets - 3			2	4	24		$4,000					$4,000		30	3.8
	C Sheets - 6			4	16	72		$12,224					$12,224		92	11.5
	E Sheets - 3			2	4	4		$1,480	$5,500	Frisch			$6,980		10	1.3
	I Sheets - 2			2	2	2		$928	$5,055	Frisch			$5,983		6	0.8
2.4	Technical Specifications	8		24	80		16	$19,720	$11,000	Frisch			$30,720		128	16.0
2.5	Cost Opinions							$0					$0		0	0.0
	50% Draft OPCC	8		12	16			$6,392	$3,520	Granner			$9,912		36	4.5
	95% Draft OPCC	4		8	12			$4,172	$4,224	Granner			$8,396		24	3.0
	100% Final OPCC	2		4	8			$2,386	$1,408	Granner			$3,794		14	1.8
2.6	Draft Submittals							$0					$0		0	0.0
	50% Draft PS&E	8	8			4		$3,856					$3,856		20	2.5
	95% Draft PS&E	8	8			4		$3,856					$3,856		20	2.5
	100% Final PS&E	8	8			4		$3,856					$3,856		20	2.5
2.7	Coordination and Permitting Assistance with DDW	8		24	8			$7,448					$7,448		40	5.0
														$356,620		

BUDGET TOTALS

Total Budget Hours	**188**	**36**	**258**	**454**	**734**	**44**						**1,714**	
Total Budget Days	**23.5**	**4.5**	**32.3**	**56.8**	**91.8**	**5.5**							**214**
Total Budget Dollars	**$40,796**	**$7,272**	**$48,504**	**$68,100**	**$92,484**	**$4,048**	**$261,204**	**$223,515**		**$1,711**		**$486,430**	



G

WORK SCHEDULE

Key Milestones

Coleman Engineering will provide services in an expeditious and professional manner. For the purposes of this Scope and Fee, the following schedule milestones are assumed, dependent on the receipt of the required information and data. If the assumed schedule is not compatible with the City's expectations, Coleman Engineering will be glad to work with the City to develop a revised schedule.

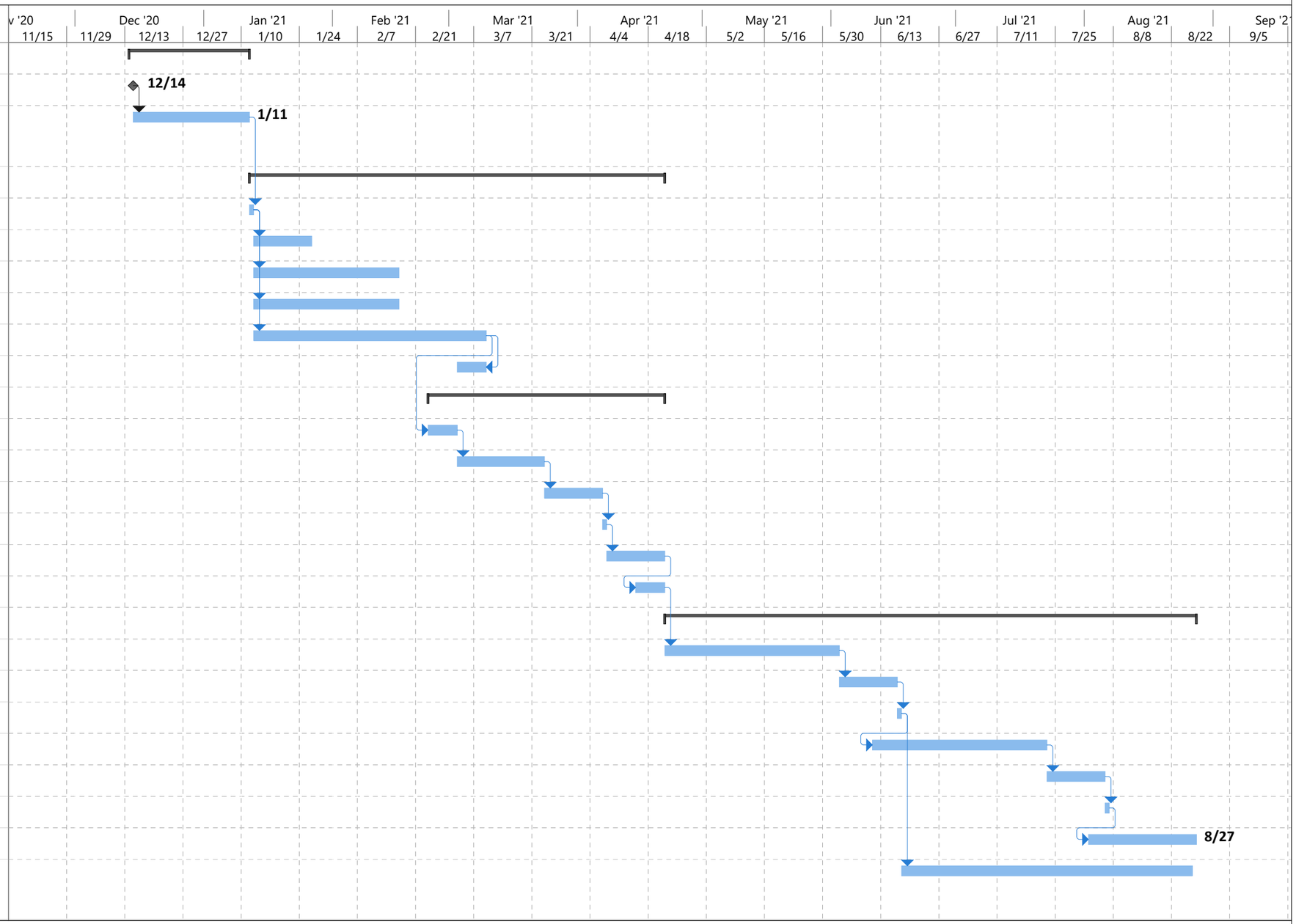
The schedule also assumes that the City will take two weeks to review each submittal and will return comments to Coleman Engineering in a single consolidated document.

Milestone	Projected Date
Execution of Agreement	January 2021
Kick-Off Meeting	January 2021
Submit Draft PER	March 23, 2021
Submit Final PER	April 21, 2021
Submit 50% Draft PS&E	June 2, 2021
Submit 95% Draft PS&E	July 22, 2021
Submit 100% Final PS&E	August 27, 2021

The following page illustrates a much more detailed schedule that is the basis for the milestone dates projected above.

City of Fort Bragg
Water Treatment Plant Rehabilitation
City Project No. WTR-00017

ID	Task Name	Duration
1	**Procurement and Contracting**	**21 days**
2	Selection	1 day
3	Final Scoping and Approved Contract at 1st Council Meeting in January	20 days
4	**Preliminary Engineering**	**72 days**
5	Kick-Off Meeting	1 day
6	Record Coordination and Research	10 days
7	Topographic Survey	25 days
8	Geotechnical Engineering	25 days
9	Preliminary Engineering	40 days
10	Develop OPCC's	5 days
11	**Preliminary Engineering Report**	**41 days**
12	Establish Report Outline for SRF and USDA	5 days
13	Write Draft PER	15 days
14	City review and comment on the PER	10 days
15	PER Review Meeting	1 day
16	Incorporate PER comments from the City	10 days
17	Write Final PER	5 days
18	**Design - Plans, Specifications, and Estimates**	**92 days**
19	50% Draft PS&E	30 days
20	City review and comment on the 50% Draft	10 days
21	50% Draft Review Meeting	1 day
22	95% Draft PS&E	30 days
23	City review and comment on the 95% Draft	10 days
24	95% Draft Review Meeting	1 day
25	100% Final PS&E	20 days
26	Coordination and Permitting Assistance with DDW	50 days



November 20, 2020
CRC

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ION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

FICATE HOLDER	CANCELLATION
City of Fort Bragg its officials, officers, employees, agents, and 416 N. Franklin Street Fort Bragg CA 95437	SHOULD AN[illegible] THE EXPIR[illegible] ACCORDAN[illegible] AUTHORIZED RE[illegible] Randy Gardn[illegible]

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INSURANCE

INSURANCE

Coleman Engineering holds fully comprehensive insurance policies which meet the City's requirements. Please see the table below for our policy limits.

	City of Fort Bragg Requirements	Coleman Engineering Limits
Commercial General Liability	Per Occurrence: $1,000,000 Aggregate: $2,000,000	Per Occurrence: $2,000,000 Aggregate: $4,000,000
Business Automobile	Not less than $1,000,000	$2,000,000
Worker's Compensation and Employers Liability	$1,000,000	$1,000,000
Professional Liability	Per Occurrence: $2,000,000 Aggregate: $2,000,000	Per Occurrence: $2,000,000 Aggregate: $2,000,000

I

CONSULTANT AGREEMENT

AGREEMENT

Coleman Engineering appreciates the opportunity to review the City's Standard Professional Services Agreement. We note that the insurance requirements in Section 5 are robust. As detailed in the previous section, we easily meet all the City's insurance requirements and look forward to providing the requested coverages.

We also look forward to keeping this Engineering Agreement compliant with the terms and limitations of our insurance carriers to be certain that the City maintains the full benefit of the insurance which Coleman Engineering will provide. To that end we look forward to the opportunity to review the agreement with the City.

Coleman Engineering has signed two Professional Service Agreements with the City recently. We are currently working under the Raw Water Line Replacement Project Agreement and suggest it may be easiest to simply use this same agreement again for this project.

If the City prefers the use of the Standard Professional Services Agreement attached to the RFP, we will respectfully request review of sections 1.1, 1.2, 1.3, 1.4, 1.5, 4.4, 5.5, 6.8, 6.12, 6.15 and 6.17. We will suggest edits to these sections so that the full benefit of the insurance provided will remain available to the City if it is ever needed.

APPENDIX

Resumes for Key Personnel

Chad R. Coleman, P.E.

Principal Engineer / Project Manager

Education

M.S., Civil Engineering
Brigham Young University

B.S., Civil Engineering
Brigham Young University

Registrations

Professional Engineer # 56490, CA

Professional Engineer # 8964, ID

Professional Engineer # 188915, UT

Professional Engineer # 16990, NV

Water Treatment Plant Operator, CA, Grade 3

Professional Affiliations

American Public Works Association

American Water Works Association

Water Environment Federation

Sacramento Area Water Works Association

Mountain Counties Water Resources Association

California Water Environment Association

Special Certifications

Completed Risk Assessment Methodology for Water Utilities (RAM-W™) Training Course sponsored by AWWA

Certified Grant Administrator, Idaho

Chad has over twenty-five years of experience planning, designing, and managing construction of water and wastewater infrastructure and facilities. He is experienced with the planning, design, and construction management of municipal wells, water treatment plants, water storage tanks, transmission and distribution piping, and pumping stations; as well as wastewater collection system rehabilitation and design, wastewater lift stations and wastewater treatment plants.

Chad distinguishes himself by providing outstanding client service that is punctuated with attention to excellent written and verbal communications.

Selected Project Experience

Midas Booster Pump Station, Rocklin, California: Retained by The Granite Bay Developers for the design of a water booster pump station for a new housing development. The pump station was located at the exiting Placer County Water Agency (PCWA) Midas Tank site in Rocklin, California. The design included the water hydraulic modeling of the distribution system, a surge analysis, and a preliminary design report and cost estimate. Modifications to the existing tank include a new above ground wall mounted tank nozzle and tie-ins to the exiting tank inlet/outlet and overflow lines. The pump station included a pump building, electrical and control panel, emergency generator with automatic transfer switch, fuel tank, surge tank, and a total 3 jockey pumps and 4 booster pumps with variable frequency drives.

Well Source Capacity Compliance, Shaffer School, Litchfield, California: Principal in Charge for responsible for existing well testing and well zone testing and site investigation to bring the Shaffer School drinking water system into compliance with drinking water standards. Project was Prop 1 funded and involved investigation of an existing on site well for possible development and a new well to determine water quality and total yield to meet peak hour and maximum day demands. Responsible for field oversight, hydraulic calculations, and groundwater data analysis.

Well #5, Los Molinos Community Services District, Los Molinos, CA: Principal in Charge. Project included design of a well, pipeline, treatment, storage, fire protection, and distribution facilities; structural design for control buildings, supports, and site improvements;

preparation of funding application; project planning and management; resident inspection; construction management; and O&M training. The project was funded by USDA Rural Development in two phases.

Reno VA Booster Pump Station, Psomas, Reno, NV: Principal in Charge for design of a new booster pump station to meet the needs of the Reno VA Hospital Expansion Project that included a dedicated fire water and domestic water underground water storage tank. Responsibilities included: layout, design and coordination of all sub consultants. Challenges included design of a building and equipment that could withstand blast radius conditions but still maintain operability for a critical facility.

Calaveras County Water Agency, Techite Pipe Replacement: Principal in Charge of the preliminary design of approximately 8100-fee of 10-inch PVC pipeline. The purpose of the project was to replace Techite pipe that had reached the end of its useful life. Because the project site included many differing terrains and challenges, the design effort included evaluation and recommendation of numerous construction methods, including: parallel open cut, remove and replace open cut, bore and jack, and sliplining the old pipe. The preliminary design effort was successful in helping the Water Agency to make budget decisions and to prepare for funding applications.

Arsenic Treatment, Funding, Planning and Design, Winship-Robbins Elementary School District: Principal in Charge for the design of a new 120 gpm water supply well to mitigate arsenic levels in an existing well. The well was designed to meet all state and local standards and features State Revolving Fund Contract Documents. A pilot well was drilled and zone-tested to verify the water quality prior to design. The well is designed to draw water only from select aquifers that meet drinking water standards. The final design includes controls, 500-gallon hydropneumatic tank, and provisions to treat water as needed in the future. The site was designed for simplified maintenance and fully automatic functionality to accommodate the District.

Broadmoor Estates Water Main Replacements, Sacramento Suburban Water District, Sacramento, CA: Principal in Charge responsible for preparation of design, plans and specifications for replacement of 6,500 feet of new water distribution piping and 95 residential service connections.

Latrobe Road Utilities Relocation, El Dorado Irrigation District, CA: Project Manager responsible for design and plan preparation for construction of approximately 4,000 feet of 18-inch water line and abandonment of a like footage of 12-inch water line.

Alta Water Treatment Plant Improvements, Placer County Water Agency, Auburn, CA: Principal in Charge for the

pre-design and design of multiple improvements to an existing water treatment plant located in Alta, CA. Improvements that required assessment and design to increase maximum plant flow rate included: new raw water pumps and MCC with VFD's, influent strainer, static mixer, influent raw water meter and rate of flow control valve, new pressure filters with air scour systems, backwash pump, in-plant water system and new genset with ATS. In addition, improvements were designed for the interior building walls to create concrete splash walls and remove timber framing that had rotted over the years. An additional study was made of system operations to determine ways to increase CT prior to the first customer.

Water System Consolidation, Castle City Mobile Home Park, Newcastle, CA: Principal in Charge for design of new potable water pipeline, fire-flow pipeline, and connection to existing Placer County Water Agency potable water main to service 212-unit residential mobile home park. Responsible for coordinating project funding from the Drinking Water State Revolving Loan Fund, design of over 2,800 feet of pipe alignment including existing utility conflicts, connections at existing pipelines, landscape removal and replacement costs, hydraulic calculations, project cost estimates, and plan drafting. Construction is scheduled for 2017.

Hydropneumatic Pump Station 3.3, Brentwood, CA: Project Manager responsible for the design and construction engineering services for a hydropneumatic pump station required to serve the new Vineyards development in the City of Brentwood. The hydro- pump station included four domestic pumps capable of a firm capacity of 750 gpm and a maximum capacity of 3,300 gpm. In addition, the site included a 275 KW emergency generator and a 20,000-gallon hydropneumatic tank.

Reservoir 2.3, Brentwood, CA: Project Manager responsible for the design and construction engineering services for a partially buried 4-million-gallon pre-stressed concrete water storage reservoir.

Booster Pump Station 2.3, Brentwood, CA: Project Manager responsible for the design and construction engineering services for a booster pumping station with a firm pumping capacity of 2,700 gpm which pumped to an upper pressure zone and a ground level tank in that zone.

Hydropneumatic Booster Pump Station 2.2, Brentwood, CA: Project Manager responsible for design of a hydropneumatic booster pump station capable of a firm capacity of 1,400 gpm and a total capacity of 5,400 gpm used to provide domestic service and fire protection water to the northwest side of Brentwood. System included a 25,000-gallon hydropneumatic tank and a 450-kW generator.

Simon Gray, P.E.

Principal

Education

BSc (Eng.) (Hons), Civil Engineering, Imperial College of Science and Technology, University of London, United Kingdom

Certificate in Business Administration, Hong Kong Management Association / Wolsey Hall, Oxford, United Kingdom,

Leadership Course, Ashridge Business School, Ashridge, United Kingdom

Registrations

Professional Engineer # 60311, CA

Professional Engineer # 51959, WA

Chartered Engineer # 45101217, United Kingdom

Fellow, Institution of Civil Engineers, United Kingdom

Professional Affiliations

American Water Works Association

Water Environment Federation

American Public Works Association

Sacramento Area Water Works Association

Mountain Counties Water Resources Association

California Water Environment Association

Simon has 37 years of varied and broad-based technical and managerial experience covering all aspects of project implementation. His career is well balanced, and includes planning studies, condition assessment, design, contracting, project and construction management in the United States, United Kingdom, Hong Kong, Singapore, Indonesia, Malaysia and Trinidad and Tobago. This extensive experience also includes successful management of multi-discipline 'fast-track' design build projects with particular emphasis on constructability and design–construction coordination. Simon has also been responsible for successful public outreach on many potentially- contentious projects and has particular skills in communicating technical concepts to a lay audience, and in consensus-building.

Simon has worked on multi-million-dollar programs as well as on small-scale projects for municipalities and rural communities. He also has heavy civil engineering experience beyond water engineering that includes roads, bridges, power stations, buildings, and airports.

Selected Project Experience

Well No. 5 and Consolidation Pipeline, Los Molinos, CA: Staff Engineer for a well drilling and development and water supply pipelines project. The planning phase was Proposition 84 - funded and included connection of two mobile home parks. Challenges included CEQA compliance, horizontal drilling under a creek, and two borings under Caltrans Highway 99, and funding restrictions. Solutions included a three-phase-sequenced, Proposition 1 construction funding agreement that allowed the State Division of Drinking Water time to find additional funding.

Arsenic Treatment, Funding, Planning and Design, Winship-Robbins Elementary School District: Staff Engineer for the design of a new 120 gpm water supply well to mitigate arsenic levels in an existing well. The well was designed to meet all state and local standards and features State Revolving Fund Contract Documents. A pilot well was drilled and zone-tested to verify the water quality prior to design. The well is designed to draw water only from select aquifers that meet drinking water standards. The final design includes controls, a 500-gallon hydropneumatic tank, and provisions to treat water as

needed in the future. The site was designed for simplified maintenance and fully automatic functionality to accommodate the District.

Locke Water System Intertie Project, Locke Water Works Company, Locke, CA: Staff Engineer responsible for design of a SRF-funded, intertie project comprising 4000-feet of 4-inch dia. potable water pipeline across the Delta Channel to connect the existing Town of Locke system to the Sacramento County Water Agency network in Walnut Grove. Planning was funded by both Propositions 1 and 84.

Well Source Capacity Compliance, Shaffer School, Litchfield, CA: Staff Engineer for a Proposition 1-funded project that included investigation of an existing well for possible development and a new well to determine water quality and total yield to meet peak hour and maximum day demands. The subsequent design project included well design and development, the site distribution system, and a sewer lift station and force main.

Raw Water Line Replacement Project, City of Fort Bragg, Fort Bragg, CA: Staff Engineer. Coleman Engineering has been retained by the City of Fort Bragg to design a replacement raw water transmission line to support the construction of approximately 15,000 LF of raw water transmission line and appurtenances from the City's Water Treatment Facility to Summers Lane Reservoir and from Highway 20 to Waterfall Gulch. This pipeline is critical to the secure supply of raw water from the City's best quality sources, and the existing pipeline is nearing the end of its service life.

Jonathan W. Kaminsky, P.E.

Project Manager

Education

M.S., Civil and Environmental Engineering
University of California, Davis CA

B.S., Civil Engineering
University of California, Davis CA

Registrations

Professional Engineer # 82004, CA

Professional Engineer # 17460, ID

Professional Engineer # 55136, WA

Technical Expertise

Well design

Pumping station design

Aquifer pump testing

Geophysical testing

Water seepage investigations

Distributions system hydraulic modeling, calibration, and field testing

Groundwater level contouring

Water system master planning

Public water system permitting

Jon is experienced planning, designing, and managing construction of water and wastewater infrastructure and facilities. He is an expert in the planning, design, and construction management of wells of all types including drinking water and agricultural water. In addition, Jon is experienced providing engineering services for all other parts of water and wastewater utility systems.

Selected Project Experience

Water System Facility Plan and Projects, City of Lewiston, ID: Project Engineer. Responsible for completing a condition assessment of the City's groundwater supply, booster pumps, and distribution system. This project included the design of well pump for Well 3, water quality testing of Well 2, and analysis of water quality data for City's wells. Performed engineering design for storage tank and pump station.

Water System Improvement Project, Fernwood Water and Sewer District, ID: Project Manager. Completed a preliminary engineering report, well site evaluation, design plans and specifications for a booster station and new pipelines. Conducted and managed bidding, submittal review, construction inspections, and construction meetings. Managed project budget and coordinated with federal and state grant and loan agencies. Attended District Board meetings to discuss project scope, budget, and timeline ensuring project was delivered on time and on budget.

Water System Emergency Improvement, City of White Bird, ID: Project Manager. Conducted well performance testing, evaluated well yield and required recovery time, and assessed the hydrogeological conditions of the City's wells during the water system emergency. Completed a Well Evaluation Report detailing findings of the field data. Completed design of new well pumps and chlorination facilities for the City's groundwater sources. Managed project budget and coordinated USDA-RD grant administrators.

Water System Upgrades, City of Deary, ID: Project Engineer. Directed and inspected replacement of well pump; conducted well capacity testing; evaluated test data to determine yield based on pumping test data.

Simco Road Wells 1 and 2, J&M Solid Rock (Management Group), LLC, Boise, ID: Project Engineer. Performed engineering design for two production wells intended to be used as municipal drinking water wells. Completed well site evaluations, preliminary engineering reports, and construction plans and specifications. Performed construction inspections and well yield testing. Composed well completion reports for regulatory approval of the wells for use as a public drinking water source.

Groundwater Source Exploration, Blue Lake Springs Mutual Water Company, CA: Project Engineer. Conducted groundwater level monitoring, water quality sampling and analysis, and well testing for hard rock wells; performed siting and managed exploratory drilling for new production wells; inspected and managed production well rehabilitation and deepening activities; mapped and modeled the distribution system for a pressure zone analysis and water master plan.

El Prado Well Rehabilitation, Sacramento Suburban Water District, CA: Project Engineer. Performed engineering construction services for a well rehabilitation and pump station construction. Conducted submittal review, coordinated responses to RFPs and filed change orders. Conducted site inspections including rebar placement, asphalt paving, well casing extension, well chlorination and rehabilitation, and submersible pump installation. Conducted construction meetings between the client and contractor. Conducted start up testing on the well and closeout punch-list inspections.

Public Water System Permitting, Crew Wine Company, Zamora, CA: Project Engineer. Completed a TMF (technical, managerial, and financial) evaluation and documentation for permitting as a non-transient, non-community public water system. Performed and inspection and evaluation of the production well, storage tank, distribution lines, and backflow devices. Completed a demand analysis to determine adequacy of the well source capacity and available storage to meet the system's maximum day demand per State regulations. Prepared recommendations regarding water quality sampling plans and location changes to meet County requirements. Conducted a walkthrough of the system with the County Environmental Health Department for final approval of the permit.

Well Field Investigation and Analysis, City of Cloverdale, CA: Staff Engineer. Created a MODFLOW model of the City's drinking water production well field to analyze groundwater and surface water influence. Conducted production well testing to optimize pumping operations.

Jessica Bonham, P.E.

Staff Engineer

Education

B.S., Civil Engineering, California State University, Sacramento

M.S., Environmental Engineering, California State University, Sacramento (expected December 2020)

Registrations

EIT Certifications # 163909 CA

Jessica is experienced with water modeling, and design of treatment systems, field sampling, piping system design and calculations, and maintaining and designing water supply systems. Jessica has the ability to make educated decisions and solve difficult problems and is a valuable member of the Coleman Engineering team.

Selected Project Experience

Well No. 5 and Consolidation Pipeline, Los Molinos, CA: Staff Engineer for a well drilling and development and water supply pipelines project. The planning phase was Proposition 84 - funded and included connection of two mobile home parks. Challenges included CEQA compliance, horizontal drilling under a creek, and two borings under Caltrans Highway 99, and funding restrictions. Solutions included a three-phase-sequenced, Proposition 1 construction funding agreement that allowed the State Division of Drinking Water time to find additional funding.

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and maximum day demands. The subsequent design project included well design and development, the site distribution system, and a sewer lift station and force main.

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Big Basin Redwoods Water Treatment Plant, California Department of Parks and Recreation, Santa Cruz, CA: Staff Engineer. Coleman Engineering has been retained to provide professional engineering services to the California Department of Parks and Recreation (DPR) in support of upgrades to the drinking water system for Big Basin Redwoods State Park. This includes preliminary engineering to perform bench scale laboratory studies in support of recommendations for source water and water treatment plant improvements; development of Pilot Study testing protocol; development of contract documents (plans and specifications) for construction of plant improvements.

MacKerricher State Park Water Treatment Plant, California Department of Parks and Recreation, CA: Staff Engineer. Coleman Engineering has provided professional preliminary engineering services and 50% draft plans to the California Department of Parks and Recreation (DPR) in support of upgrades to the drinking water system for MacKerricher State Park. Preliminary Engineering and Design.

Potrero Pump Station, San Francisco, CA: Coleman Engineering assisted with the preparation of Master Utility Plans for the Potrero Power Station Project located in San Francisco, CA. The purpose of the Potrero Project was to redevelop the project site into a mixed-use development. Coleman Engineering designed a sewer lift station and force main pipeline for Potrero's non-potable water system which would serve the new development. The lift station facility was designed to pump peak wet weather flows and included the sizing of a force main, wet well, and lift station pumps. Staff Engineer.

Phil Godman

Wastewater and Water System Operator

Registrations

State Water Resources Control Board, Water Treatment Operator, Grade T3 #33132, CA

State Water Resources Control Board, Water Distribution Operator, Grade D2, #41405, CA
(renewal pending lifting of COVID restrictions)

State Water Resources Control Board, Wastewater Treatment Plant Operator, Grade 2, #41010, CA

Philip Godman has 14 years of experience operating a variety of water and wastewater systems including treatment plants, distribution systems, pumping systems, and collection systems. He is very experienced in dealing with all stakeholders of the systems he has operated and his experience brings with it a wealth of knowledge and understanding that makes him an invaluable member of the Coleman Engineering Team.

Selected Project Experience

Thunder Valley Casino, Lincoln, CA: Operator-in-Charge of both the potable water and wastewater system from 2013-2020. The potable water facilities are supplied by a 4-inch connection to the Placer County Water Agency's distribution system and a local groundwater well and consist of a 1.0 MG storage tank, domestic water booster pump station, fire flow booster station, and emergency back-up wells. Treatment includes sodium hypochlorite for disinfection and orthophosphate for corrosion control. Careful blending from the two sources of supply is required to achieve the desired water quality in the facility.

The wastewater treatment plans is a 350,000 gpd MBR that discharges to Orchard Creek and is closely monitored by the RWQCB under a strict NPDES permit. Special testing was carried out to accommodate stricter permitting.

Phil was responsible for all day-to-day operations and maintenance of both systems including: establishing standard operating procedures and abnormal operating procedures, process control, lab sampling, maintenance activities, repairs, training of staff, etc. Phil is also proficient in using the State of California CIWQS on-line reporting system as a result of this experience.

Castle City Mobile Home Park, Newcastle, CA: Phil served as water and wastewater system operator from 2006-2013. Because these systems served an active adult senior community, there was an extensive requirement for Phil to demonstrate excellent customer relations. It was common for Phil to arrange access to private properties in order to provide maintenance and repair services. Most residents had and used

Phil's personal cell phone number and he made himself available to them 24 hours per day.

The facilities consist of a potable water treatment facility serving 200 connections and utilizes local surface water as its source. Treatment was achieved using a standard coagulation-filtration process followed by a clear well and booster pump to the distribution system. The wastewater collection system includes a sewer pump station and collection pipe draining to a facultative lagoon system that discharges via percolation and evaporation. There is no surface wastewater discharge from this system.

Red Hawk Casino, El Dorado County, CA: Trainer for all operators at this 100,000 GPD MBR wastewater treatment plant from 2016-2020. Effluent disposal consists of approximately 17 acres of subterranean leach fields.

Auburn Rancheria Casino Collection System, Auburn, CA: Operator in Charge of this wastewater collection system including maintenance and operations of two sewer lift stations from 2016-2020.

Cache Creek Casino Wastewater Treatment Plant, Brooks, CA: Water and Wastewater System Operator from 2013-2016. The water, wastewater and recycled water facilities serve one of the most active casinos in the greater Bay Area. The potable water facilities are supplied by ground water wells, an EDR water treatment plant, a 1.0 MG storage tank, and booster pump station. The wastewater facilities include a 350,000 gpd MBR that produces Title 22 compliant recycled water that is stored in seasonal storage facilities and used for golf course irrigation and toilet flushing at the resort. The treatment and disposal facilities are all monitored by the RWQCB under very stringent guidelines.

Cosumnes River Elementary School, Elk Grove, CA: Wastewater Superintendent from 2013-2016. Phil was responsible for day to day operations and maintenance of the wastewater facilities and for extensive Client interactions necessary to maintain relationships and achieve continuous compliance with permit conditions.

Benjamin D. Crawford, PE, GE

Principal Geotechnical Engineer

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services
Sacramento | Modesto | Pleasanton | Rocklin | Ukiah

Biography

Ben Crawford is the Founder and President of Crawford & Associates, Inc. He is a graduate of California Polytechnic State University, San Luis Obispo, with a concentration both in Geotechnical Engineering and Hydrology. He has managed complex projects throughout Northern California, including tanks, pump stations, pipelines, and Water/Wastewater treatment facilities.. Ben has over 15 years of experience providing geotechnical recommendations for water and wastewater, schools, residential and commercial structures, water and communication towers, retaining walls, pipelines, and airports.

Education

California Polytechnic State University,
San Luis Obispo, B.S. Civil Engineering, 2002

Registrations

Civil Engineer, CA #68457, Exp. 9/30/19
Geotechnical Engineer, CA #2861, Exp. 9/30/19

Affiliations

GBA – Geoprofessional Business Association
APWA – American Public Works Association
Modesto Engineers Club
ACEC – American Council of Engineering Companies
CEAC – County Engineers Association of California

Related Experience

2015 Pump Station Condition and Performance Assessment Project, Rosemont Pump Station – Sacramento, CA

As Principal, Ben oversaw the preparation of a Geotechnical/Geologic Memorandum, which includes the construction of a new wet well structure supported on a below ground mat foundation; a new valve vault structure supported on a mat foundation; instrumentation installation inside the wet well portion of the pump station; and an 180 sq. ft. canopy-covered mat foundation for the electrical equipment. To prepare the report, CAInc drilled, sampled, and logged exploratory borings and completed laboratory testing; reviewed geologic settings, soil conditions, and groundwater conditions; and reviewed site seismicity. Provided recommendations for excavation and compaction of areas to support the mat foundations.

Arden Pump Station Wet Well Assessment and Remediation – Sacramento, CA

As Principal, Ben oversaw the preparation of a Draft Geotechnical Report for a temporary bypass pump that will be installed adjacent to an existing pump station at the Sacramento Regional County Sanitation District's (Regional San) Arden location. To prepare the report, CAInc drilled, sampled, and logged exploratory borings and completed laboratory testing; reviewed geologic settings, soil conditions, and groundwater conditions; and reviewed site seismicity. Key Geotechnical considerations for the project include the presence of historical fill of varying quality and existing underground utilities. Provided excavation and fill recommendations for the bypass pump slab and minimum footing dimensions for the retaining wall.

Well 17 Project for Linda County Water District – Marysville, CA

CAInc provided foundation recommendations for structures at two sites. The Well 17 site includes a below ground sump station, mist eliminator structure, and chemical & electrical control facility supported on concrete mat foundations; 25-foot diameter steel backwash tank on ashallow perimeter ring foundation; and ancillary structures/tanks including brine and fuel tanks, generator, pressurized filters, and transformer supported on shallow spread footings/concrete mat foundations. The Storage Tank Site includes an approx. 1-million-gallon, 100-foot diameter steel storage tank on perimeter ring foundations, interior column spread footings, a booster pump station supported on a concrete basin/vault, and booster pump ancillary piping and equipment. The project will also include approximate 1,000 linear feet of open cut water pipeline connecting the Well 17 and Storage Tank Site. CAInc used SETTLE 3D Version 3.0 software to evaluate immediate and consolidation settlement for both the storage basin tank and pump station. Grading, pavement, and utility trench recommendations were also provided.

Hexavalent Chromium (Cr6) Compliance Design Project – Newman, Stanislaus County, CA

CAInc prepared a Draft Geotechnical Memorandum for the proposed water tank facility. The facility will include a one-million-gallon 80 ft diameter potable steel water storage tank on a shallow perimeter ring foundation with a center column supported roof; electrical building, booster pump station pad and a generator/fuel pad; drainage basin; one mile of water transmission pipe. To prepare the memo, CAInc drilled and sampled six test borings and logged the borings consistent with the Unified Soil Classification System (USCS) and the Caltrans Logging Manual. Recommendations were provided for foundations, pavement, grading, and utility trenches.

Zone 7 Water Agency Busch Valley Well No. 1 – Pleasanton, Alameda County, CA

Proposed improvements consist of the single story, CMU block, water treatment building supported on shallow spread footings or mat foundation; underground water and waste pipelines; spill containment system with below ground tank; basin; asphalt parking and drive areas; and flatwork. As Principal, Ben oversaw a Geotechnical Report which included recommendations for grading, foundations including spread foundations and mat foundations, exterior flatwork, utility trenches and subsurface structures, and structural pavement sections.

North Valley Regional Recycled Water Program (Turlock Component) – Turlock, Stanislaus County, CA
As Principal-In-Charge, Ben oversaw the preparation of a Geotechnical Report for the recycled wastewater project which includes over 35,000 lineal feet of open-cut trenches, three trenchless crossings, flow control vault, metering vault, and various ancillary structures. Forty exploratory borings were drilled, logged, and analyzed to develop recommendations for foundations. Key geotechnical considerations associated with design and construction of this project included shallow groundwater levels, presence of soft clays and very loose sands, and the potential for liquefaction.

City of Oakdale Sewer Line Replacement Project – Oakdale, Stanislaus County, CA
As Principal-In-Charge, Ben oversaw the preparation of a Draft Geotechnical Design Report for the City of Oakdale. The City plans to replace an existing sewer main from their wastewater treatment plant to the intersection of North Oak Avenue and Kimball Street. The overall plan alignment measures about 2,300 feet. The new pipeline will be constructed using horizontal directional drilling (HDD) beneath the Stanislaus River. The HDD alignment will be about 50 ft below ground surface (bgs) at its deepest point. Recommendations were provided for HDD and Open-Cut Pipeline sections.

City of Tracy Recycled Water Project – Tracy, San Joaquin County, CA
The City of Tracy is constructing a recycled water pipeline from the WWTP to a pump station. The combined recycled water will be conveyed to the Delta Mendota Canal. Key project components include about 50,000 total lineal feet of open-cut trenches, six trenchless crossings, pump station at the WWTP, new pump station, and ancillary structures including manholes, blowoff assemblies, air valve assemblies, isolation valves. Ben oversaw the preparation of a Geotechnical report. Key geotechnical considerations associated with design and construction include the presence of soft clays and shallow groundwater levels. CAInc provided calculations and recommendations for soil loads on rigid buried pipes, flexible buried pipes, thrust restraint, composite modulus of soil reaction for open cut construction, and trenchless pipeline recommendations.

Southwest Berm Slope Stability, Vernalis Plant- French Camp Project – Tracy, San Joaquin County, CA
Proposed project to excavate Proposed Pit A and convert the Existing Pit into a new settling pond. The Existing Pit is about 115 feet deep, and Proposed Pit A is planned to be excavated to an approximate depth of 150 feet. During this process, a berm (southwest berm) will eventually be created between the two pits. Prepared a Geotechnical Report to provide analysis, conclusions, and recommendations for the project. Drilled, logged, and sampled 1 exploratory boring on the proposed southwest berm. Provided Seepage and Slope Stability Analysis and recommendations for the Proposed Pit A southwest berm configuration and planning purposes.

Bass Lake Wastewater Treatment Plant Equipment Pad Improvements – Madera County, CA
Prepared a preliminary Geotechnical Memorandum for the Bass Lake Wastewater Treatment Plant (WWTP) Equipment Pads. To prepare the memo, the CAInc team reviewed existing geotechnical and groundwater data, excavated three test pits, and performed geotechnical engineering analysis. Provided recommendations for the EQ tank installation depth and mat foundation; RAS/WAS pump station, blower, and screw press shallow foundations; engineered fill requirements; and construction considerations.

Atherton Tank and Pump Station – Manteca, San Joaquin County, CA
Ben Crawford and the CAInc team prepared geotechnical recommendations for the Atherton Tank and Pump Station (formerly Manteca Well 26 and Booster Pump Station). The project consisted of three new booster pumps and a 90-foot diameter steel water storage tank. Performed detailed settlement calculations and determined that an over excavation and recompaction of the near surface loose sands would be required. Provided foundation recommendations for a reinforced concrete mat foundation and perimeter ring foundation. In 2013, the City of Manteca upgraded the project to include a 150 ft. diameter, 33 ft. tall, 3.6-million-gallon steel water tank founded on a perimeter ring foundation; a dedicated booster pump station, piping and standby on-site electrical generation. The project has been completed utilizing **design/build** delivery. CAInc completed the design/build process and worked with the City, Design Team and Contractor to update our recommendations during construction.

Brentwood Non-Potable Water Storage Tank and Pump Station – Brentwood, Contra Costa County, CA
The City of Brentwood plans to construct a 3 million gallon prestressed concrete storage tank at its wastewater treatment facility. The tank will be about 25 feet in height and 170 feet in diameter. The tank will be used to store non-potable water (NPW) for the NPW distribution system. Proposed improvements also include a new pump station, ancillary piping, and a small service structure to house and service equipment. CAInc prepared a Geotechnical Report, which included a review of available geologic and seismic maps; drilling, logging, and sampling; laboratory testing; and geotechnical engineering calculations and analysis to develop recommendations. Recommendations were provided for dewatering, grading, foundation design parameters, utility trenches, and pavement recommendations.

Tobin Water Tank and Pipeline – Tobin, Plumas County, CA
Prepared a Geotechnical Report for the project to will provide raw water storage for fire protection for the community of Tobin. The new 60,000-gallon water tank will be constructed of welded steel and will be connected to approximately 4,500 lf of new pipeline. To prepare the report, CAInc reviewed drilled, logged, and performed laboratory tests on soil samples; and performed geotechnical engineering calculations and analysis to develop recommendations. Recommendations were provided for site grading, tank foundations, and pipeline trenching.

Andrew P. Granner

apg@grannerllc.com · 1135 Mariemont Ave., Sacramento, CA 95864 · (916) 997-9733

Areas of Expertise

- Dispute resolution
- Agreement negotiation
- Claims and litigation consultant
- Construction practices review and implementation
- Constructability and Construction Cost Estimate Review

Technical Expertise

- Water and wastewater treatment plants, including related process mechanical & electrical systems.
- Water, wastewater and storm water storage, pumping and delivery projects.
- Reinforced concrete construction, including water bearing and non-water bearing structures.
- Advanced water and wastewater treatment plant construction, including immersed membrane and reverse osmosis treatment technologies.
- Mechanical process piping, including material selection, excavation, backfill and installation techniques.
- Water and wastewater treatment plant equipment installation techniques, including pumping equipment.

Education

Iowa State University

May, 1987 – Bachelor of Science in Construction Engineering

- Graduated with Distinction

Career Experience

Auburn Constructors, Inc. | 730 West Stadium Lane, Sacramento, CA 95834

President

January, 2003 – March, 2014

- Managed all corporate business attributes and business development.
- Successfully increased annual corporate earnings from $20M to $55M.
- Developed a successful and industry-leading Electrical Division through acquisition.
- Maintained and improved profitability of the corporation, including never losing money on any single project nor in any single year.
- Maintained a successful surety relationship while achieving maximum surety credit ratings.

- Oversaw corporate safety achievements of zero OSHA and MSHA citations in corporate history, reduced corporate EMR to 0.57, numerous safety awards both locally and nationally as well as multiple years of achieving a 0.00 Incident Rate for corporate recordable injuries.
- Successfully negotiated and implemented numerous Prime Contracts with private entities such as developers, mining companies, Tribal Gaming Authorities and private water companies.
- Successfully negotiated and implemented numerous alternate delivery method Prime Contracts including Design-Build, Design Assist, Guaranteed Maximum Price and Fixed Fee agreements.
- Achieved successful dispute resolution through professional dialogue, meaningful negotiation, principle-centered arguments and thoughtful understanding of the matter at hand.

Auburn Constructors, Inc. | 730 West Stadium Lane, Sacramento, CA 95834

Vice President of Operations

October, 1996 – December, 2002

- Oversaw all corporate field operations.
- Oversaw all projects completed with positive profit and zero OSHA citations.
- Completed all recruiting and hiring of construction craftsmen.
- Managed all corporate inter-project labor resources, equipment utilization and coordination.
- Performed all duties of corporate Safety Director and successfully implemented corporate drug and alcohol screening policies.
- Successfully implemented all field Quality Assurance and Quality Control measures.
- Performed all subcontractor and vendor contractual coordination and implementation.
- Reviewed and approved all project budgets and cost projections.

Auburn Constructors, Inc. | 730 West Stadium Lane, Sacramento, CA 95834

Project Manager

Vice President and Secretary

October, 1990 – September, 1996

- Founding shareholder and assisted in the development of all corporate papers.
- Successfully estimated and managed multiple construction projects.
- Achieved zero OSHA citations on all projects managed.
- Completed all projects managed with positive profits.
- Successfully developed and nurtured business relationships with multiple subcontractors and vendors.

Stimpel-Wiebelhaus, Inc. | Sacramento, CA

Project Manager

June, 1989 – September, 1990

- Operated as a precursor to the development of Auburn Constructors, Inc.

Kaweah Construction Company, Inc. | Sacramento, CA

Project Manager

June, 1987 – June, 1989

Brad Friederichs, S.E.

Professional Registration

California Structural Engineer, S2780

Education

B.S. Civil Engineering with honors, California State University, Sacramento, 1979

Professional Affiliations

President, Structural Engineers Association of Central California

American Society of Civil Engineers

American Concrete Institute

American Institute of Steel Construction

References

Mr. Jim Niehues, president, Yolo Machinery Company, Woodland, CA 530-661-1288 (numerous projects)

Mr. Gary Bechtel, Vice President, Gateway Pacific Contractors, Inc., West Sacramento, CA 916-665-4100

(West Sacramento Water Tank, Nevada Irrigation District Pump Station)

Mr. James Lindegaard, Facilities Engineer, Broadridge Company, El Dorado Hills, CA 916-221-8498

Time Commitment:
Design Phase—50%
Const Phase—20%

Brad Friederichs has 40 years' experience as a structural engineer for wastewater, water treatment, commercial, industrial, agricultural, retail and residential structures. His expertise is in cast-in-place concrete, prestressed concrete, steel, wood and masonry construction. His specialty is in producing completely detailed, contractor friendly, value-oriented construction documents resulting in projects that bid well with few change orders.

PROJECT EXPERIENCE related to Water/Wastewater/Stormwater Projects

EID On-Call Structural Engineer Project structural engineer for six sewer lift station rehabilitation projects consisting of a new concrete slab and a precast slab over existing FRP wet wells. Projects are Carson Creek, Waterford, Bridlewood, Southpointe, Carson Creek Ph II and Eastridge. Work in-progress.

EID El Dorado Hills WWTP Odor Control Project A cast-in-place concrete slab for new biofilter media and a catwalk for the foul air duct at the primary clarifier. Drawings completed in 2015.

EID El Dorado Hills WWTP Digester Lid Evaluation and Rehabilitation Investigate and repair rock pockets and voids due to pour consolidation in the newly constructed 60 ft diameter prestressed concrete digester lid. Prepare repair plans and inspect the construction for rehab of the lid in 2009.

Folsom Plan Area, Stormwater Structures and Retaining Walls Off-site and on-site improvements for hydropneumatic control structures, junction boxes, manholes and retaining walls. Cost: $5 million. Currently under construction.

Placer County Water Agency Gold Run Pipeline Pump Station Structural engineer for a 15 ft x 40 ft CMU building on a stepped concrete foundation in 2013. The foundation system has an integral wet well. Cost: $150,000

Placer County Water Agency I-80 Bluff Improvements Structural engineering for 75 lin. ft x 18 ft max. high tieback wall. The wall is constructed with steel piles, prestressed tiebacks and precast concrete infill panels in 2010. Cost: $1.5 million

Placer County Water Agency Monte Vista Intake Structure Structural engineer for cast-in-place concrete structures consisting of a canal intake, screen and tank foundation. The approximate plan dimensions are 30 ft x 30 ft x 10 ft high in 2010. Cost: $1 million

West Sacramento 2 MG Water Tank Foundation and Pump Station Structural engineer for an auger cast pile and concrete mat slab foundation for the steel tank. Structural design for a 30 ft x 80 ft CMU building also placed on auger cast piles. The piles reduce settlement due to liquefaction in 2015. Cost: $10 million. References: Gary Bechtel, Gateway Pacific General Contractor, Sacramento, CA 916-664-4100 ext 113

Lincoln New Wastewater Treatment Plant, Lincoln, CA Structural engineer for clarifiers, DAF, filter, influent junction structure, influent lift station, plant water pump station, RAS pump station, reaeration basin, solids holding basin, oxidation basin (75'x150'x20' deep). All structures are below grade and constructed of cast-in-place concrete in 2002. Cost: $80 million

Cal Am Water Lincoln Oaks 1.5 MG Tank Review and Pump Station Structural engineer for review of the tank and design for 26 ft x 35 ft CMU pump station with wet well in 2014. Cost: $5 million

Georgetown PUD Greenwood Reservoir 1.5 MG Tank Foundation and Pump Station Structural engineer for foundation design of the tank and for multiple cast-in-place concrete structures and a two-story, CMU building for office, shop and supplies in 2010. Cost: $5 million

Callamont Estates, Washoe County, NV 500,000 gallon Water Tank Structural design for a 72 ft dia. x 21 ft high cast-in-place concrete buried water tank in 2010. Cost: $1.5 million

CINQUINI & PASSARINO INC.
LAND SURVEYING

James M. Dickey, P.L.S.

1360 N. Dutton Ave., Suite 150, Santa Rosa, CA 95401
(707) 542-6268 Fax (707) 542-2106

TITLE
President

EXPERIENCE
20 Years

EDUCATION
Associates of Science Degree, Associates of Arts Degree in Civil Engineering & Land Surveying (1998)
Santa Rosa Junior College, Santa Rosa, California

LICENSES & CERTIFICATIONS
Professional Land Surveyor, California, PLS 7935

PROFESSIONAL MEMBERSHIPS
California Land Surveyors Association, Sonoma County Chapter Past President

American Council of Engineering Companies – California, North Coast Chapter

Caltrans District 4, Calmentor Program, Steering Committee Member

American Railway Engineering and Maintenance of Way Association

PROFESSIONAL PROFILE

Licensed Professional Land Surveyor with the State of California with twenty years of experience in land surveying and associated technologies. His land surveying experience responsibility for boundary surveys, aerial photo control surveys, topographic surveys, and construction surveys.

PROFESSIONAL EXPERIENCE

Nicasio Transmission Line, Marin County, CA. The Marin Municipal Water District needed to retrace their pipeline easement for approximately 6 miles through the Golden Gate National Recreation Area and Samuel P. Taylor State Park. Mr. Dickey was Principal in Charge for establishing a high quality control network that met or exceeded a 2 cm accuracy for intervisible points along the 6 mile project corridor and preparing a topographic map of the existing pathway.

Tiburon Pipeline Replacement Project, Tiburon, CA. Cinquini & Passarino provided topographic mapping of Paradise Drive and Trestle Glen Boulevard for MMWD's pipeline improvement project. As a part of this project we performed monument conservation to preserve the positions of existing monuments along the roadway right of way. This included research of recorded and unrecorded survey maps, deed research and field reconnaissance.

Sonoma Marin Area Rail Transit (SMART). Sonoma and Marin Counties, CA. Mr. Dickey was Principal in Charge and coordinated five field crews to prepare the GPS Surveyed primary control network for a future 72-mile rail transit line through Sonoma and Marin Counties. Additional surveys were performed for establishment of the right of way originally circa 1860 - 1877, topographic sites and additional information as needed. All information was researched and managed in an efficient manner to ensure that it is easy to retrace what was surveyed and how the surveys were completed. Mr. Dickey has also completed numerous right of way acquisition documents for the project which include appraisal maps, legal descriptions, plats and coordination with multiple project engineers. Mr. Dickey also serves is the project surveyor for the project to review any surveying performed by the DB contractor.

Patrick C. Sweeney – Curricular Vitae

Short-Form Water

Education

Bachelor of Science Degree, Industrial Technology
California State University at Los Angeles

Certifications

SSPC – Certified Protective Coatings Specialist
Certificate #887-792-1267

NACE International – Certified Coatings Inspector Level 3 #4324

Instructor for SSPC's PCI Program

SSPC – Certified Master Coating Inspector (MCI) #10031

SSPC – Certified Protective Coating Inspector (PCI) Level III

SSPC – Certified Concrete Coating Inspector (CCI)

Instructor for SSPC's PCI Program

Instructor for SSPC's C-1 "Fundamentals of Coating on Industrial Structures."

Instructor for SSPC's C-2 "Specifying and Managing Protective Coatings Projects."

SSPC-C3 Certified Supervisor for Deleading of Ind. Structures

SSPC-C7 Fundamentals of Dry Abrasive Blast Cleaning

Federal Highway Admin./FHI - Certified Instructor "Bridge Coatings Inspection" (13709).

Certified Linabond Copolymer Inspector

Certified Ameron T-Lock/Arrowlock Inspector

Professional Affiliations

AWWA (Past Chair Corrosion and Tank… Maintenance Committees)

SSPC (SoCal /So Nev Chapter Chair)

NACE International (Channel Islands Section Trustee)

Mr. Sweeney has worked for over 30 years as a coating inspector, coating expert/specialist, & project manager supporting the quality of coating or lining projects in water, wastewater, and other environments. He also manages CSI Services, a SSPC QP5 certified inspection firm. He has successfully completed over 3000 projects and routinely completes maintenance and corrosion surveys (both dry & underwater) and develops specifications. He has prepared over 600 Industrial specifications. A partial listing of projects follow:

Golden Gate Bridge North Viaduct Retrofit Project - Project Manager for both shop and field coating inspection for the $350,000,000 Seismic Retrofit and Repainting of the Bridge.

City of Pleasanton, CA - Project Manager during the maintenance of over 3 water storage tanks. Assignments included evaluations, engineering and design, and inspection services.

El Dorado Irrigation District, CA - Project Manager during the maintenance of over 4 water storage tanks. Assignments included evaluations, engineering and design, and inspection services.

City of West Sacramento, CA - Project Manager during the maintenance of over 2 water storage tanks. Assignments included evaluations, engineering and design, and inspection services.

Santa Clarita Valley Water Agency, Santa Clarita, CA - Project Manager during the maintenance of over 100 water storage tanks. Assignments included evaluations, engineering and design, inspection services, and the development of a Master Tank Maintenance Plan.

Elk Grove Water District - Project Manager during the maintenance of over 6 water storage tanks. These assignments included evaluations, engineering and design, and inspection services.

City of Hayward - Project Manager during the maintenance of over 7 water storage tanks, and numerous wastewater structures. Assignments included evaluations, engineering and design, and inspection services.

U.S. Department of Defense - Project Manager during the coating & corrosion evaluation of over 300 steel, concrete, and plastic storage tanks located within 75 different military bases. Acted as Protective Coating Specialist on over 50 projects throughout US and Pacific Rim.

Amador Water Agency, CA - Project Manager during the maintenance of over 4 water storage tanks and numerous new water tanks. Assignments included evaluations, engineering, and inspection.

SSPC, NACE, and FHWA Certification Programs
Mr. Sweeney has instructed over 1750 coating inspectors throughout the U.S. through these accredited weeklong courses.

A more comprehensive CV of accomplishments and qualifications is available.

M/E SYSTEMS ENGINEERING
Mechanical and Energy Consulting Engineers

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(530) 244-7147
Roseville Office
9063 Foothills Blvd, Ste 3, Roseville, CA 95747
(916) 774-6330

RÉSUMÉ

SCOTT TURNBULL, P.E.

Scott has designed building related mechanical-systems since 2003 and manages the Roseville branch office for M/E Systems Engineering. He is responsible for the project management and design of new and renovated HVAC and plumbing systems. Scott's goal is to meet building owners' requirements with mechanical designs that are both simple to control and energy efficient. He is acquainted with the specialized requirements of the Division of the State Architect (DSA) and other State agencies. His projects have included commercial/retail, educational (K-12 and higher education), multi-family residential, government, municipal utility, and medical facilities. Scott's designs have incorporated energy efficient technologies including thermal energy (ice) storage, variable refrigerant flow (VRF), and geothermal heating systems. He has experience with LEED projects, including a LEED Gold certified community medical clinic.

Education: B.S. in Mechanical Engineering, Northern Arizona University, 2002

Registration: Mechanical Engineer, California #M33987

Professional Affiliations:
American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
American Society of Plumbing Engineers (ASPE)

Relevant Water/Wastewater Projects:

- New Wastewater Treatment Plant Control Building (Brentwood, CA)
  - Analyzer room refrigerant-based cooling and mechanical ventilation system.
  - Electrical room refrigerant-based cooling system.
- Riolo Vineyards Sewer Lift Station (Placer County, CA)
  - Chemical room refrigerant-based cooling and mechanical ventilation system.
  - Electrical room refrigerant-based cooling system.
- Reno Veteran's Affairs (VA) Hospital Booster Pump Station (Reno, NV)
  - Chemical room refrigerant-based cooling and mechanical ventilation system.
- Allendale Booster Pump Station (Hollister, CA)
  - Pump room mechanical ventilation system.
  - Electrical room refrigerant-based cooling system.
- Westside Tank and Pump Station (Roseville, CA)
  - Pump room evaporative cooling system.
  - Chemical room mechanical ventilation system.
  - Electrical room refrigerant-based cooling system.

FRISCH ENGINEERING, INC.

Consulting Electrical Engineers
13405 Folsom Blvd., Unit 600
Folsom, CA 95630

Phone 916.353.1025

Thomas P. Frisch, P.E.

Experience Summary

Mr. Thomas Frisch has worked in the water/wastewater/power/landfill industry since 1991 and has developed skills in power, controls, instrumentation and communications. He has become very familiar with most practices and processes used in this industry. His experience is diverse since he has worked as a Contractor and Consultant in various capacities. As a Contractor, he brought contract drawings to completion by designing the final details, making submittals and managing production. As a Consultant, he has designed over 250 water and wastewater projects ranging from small pump stations to large scale treatment plants. Consequently, he has a high degree of product knowledge that enables him to minimize design exposure to unproven materials or practices. He knows the challenges that Contractors face in taking plans to construction and knows when to assist on behalf on the Owner. His designs for electrical, instrumentation, and telemetry systems have been very successful with near-zero change orders due to design flaws. His designs include complex PLC motor controls for booster pump stations, lift stations and motor operated valves and SCADA telemetry between pump stations and tanks. He has performed electrical studies such as a damage assessment or to determine system capacity and cost comparisons to determine electrical operational costs of VFDs vs. throttled fixed speed motors

Education

B.S. Electrical Engineering, University California Los Angeles, 1991

Registration

Professional Electrical Engineer Reg. CA E15761, NV, NM, AZ, as needed

Work Experience

Electrical Engineer (25 years)

Mr. Frisch obtained his Professional Engineering License 1998, and shortly thereafter, began working as a consultant in Electrical Design. Thomas has designed over 250 projects ranging from small sewage lift stations to large (5000 HP total medium voltage) pump stations and water treatment plants. During this time, Mr. Frisch has become proficient as a designer, obtained the respect of his peers, and now operates a successful Electrical Engineering design and construction services business.

As a Principal at a small engineering firm, Mr. Frisch is exposed to many facets of engineering design and construction. From medium voltage distribution systems, to PLCs and instrumentation, to communications, he has obtained a vast amount of experience and can advise with confidence on any electrical issue.

He has become an authority on power distribution, arc-flash safety, and breaker coordination. Safety has become a very big issue in recent years, and he is responding with improved designs that allow maintenance while improving safety. He can review existing distribution and arc flash studies, find discrepancies, revise breaker settings, suggest modifications, and as a result, make significantly improvements.

Mr. Frisch has redesigned controls for a number of Hydroelectric facilities and understands the additional complexity with making power. In those systems, many of his engineering proficiencies are required for a successful project.

Project Experience

SCADA	San Juan Water District SCADA System
	SMUD Carson Power Plant
	City of Galt WWTP Tertiary Improvements
	City of Galt SCADA System
	City of West Sacramento SCADA System Improvements
	City of Lincoln SCADA System
Water	City of Galt, Industrial Park Reservoir and BPS
	San Jose Water Company, Vickery Tank and PS, Franciscan Way PS, Kyburz PS, Belgatos Reservoir replacement, Cambrian Pump Station, Columbine Tanks, Overlook Tanks and Booster Pump Station, Cavanee Pump Station.
	Trinity Center WTP
	Lewiston RW Pump Station, WTP, and Tank
	California Water Service, Lucerne WTP
	Sacramento Suburban Enterprise Northrop BPS and Reservoir
	Pebble Beach CSD, Forest Lake Treatment Plant
	Cal Water Service Dominguez Wells 275 and 294 WTP Projects
	Trinity Center WTP
	Contra Costa Contra Loma Dam Seismic Monitoring
	Contra Costa Raw Water Pumping Plants, Comistas and Cowell Pump Stations, Contra Loma Pump Station, Shell Recycle Pump Station.
	City of Roseville, Crowder Road Flow Metering
	City of West Sacramento, Carlin Tank and BPS
	EID Promontory Tank and Reservoir 12
Wells	City of Davis, Well #30, Well 31 and Well 32
	City of Mountain View, Well 22
	City of Vacaville, Well 15 and 16, and Well 16 Ion Exchange Hex Chrome
	Sierra Army Depot, Well 5, 8, and 12 rehabilitation and treatment
	Rio Linda Water District Well 14 and Well 15
Storm Water	Bureau of Reclamation RD784, Pump Station #6
	Bureau of Reclamation RD784, Pump Station #2,5,6,8,10
	S. Olivehurst Storm Water Pump Station
	Yuba City Walnut Park Storm Water Pump Station
	RD900 Pump Station Generator Improvements

Waste Water	Redding Clear Cleek WWTP Dewatering Project
	Redding Stillwater WWTP Expansion
	EID El Dorado Hill Waste Treatment Plant Capacity Upgrade
	City of Atwater Wastewater Treatment Plant
	City of Roseville, Sewer Lift Station Upgrade
	City of Vacaville, Easterly Wastewater Treatment Plant Tertiary Upgrade
	Redding Mary Street Sewage Lift Station
	Redding Sunnyhill Lift Station Pump and VFD replacement
	Redding Auditorium Drive Lift Station Replacement
	El Dorado Irrigation District, Bass Lake Reclaim BPS
	Pebble Beach CSD, Forest Lake Reclaim Reservoir and Booster Pump Station
	EID Highland Hills Sewage Lift Station
	EID Cambridge Oaks Sewage Lift Station
	City of Sacramento Sump 119
	EID Creekside Greens SLS
	Yuba City Lift Station 1
	Yuba City Lift Station 3
	Locke Low Pressure Sanitary System
Landfill	Altamont Landfill, Permeate Storage and Recycle system
	Pacheco Pass Leachate Return Pump System
Study	Cal-Am Water, Well Site Pump Station Assessment
	Sacramento County, Storm Pump Station Assessment
	EID Deer Creek WWTP Electrical Arc Flash Safety Evaluation
	Metropolitan Water District, MWD Plant Standardization and Automation Upgrade Study
	City of Roseville, Sewer Lift Station Assessment
	City of Vacaville Radio Survey and Performance Test
Power	SMUD Carson Power Plant
	CCWD Los Vaqueros Hydroelectric Energy Recovery
	San Gabriel Water Company, Sandhill WTP in-conduit hydro project
	Three Valleys Water District, In Conduit hydro electric project
	City of Atwater WWTP
	CCWD Pumping Plants Substation Electrical Protection
	City of Stockton WWTP Cogen Facility

	City of Lincoln Waste Water Treatment Plant Power Systems
	EID El Dorado Hills WWTP Solar Generation System
	EID Deer Creek Power System Analysis – Arc Flash reduction
Lighting, Misc	City of Sacramento Amtrak Rail Station
	State of California, Capital East Parking Lot
	Elk Grove Boulevard Revitalization
	Serramonte Parking Garage Lighting and EV Chargers
	Kruger Foods
	CCWD Pumping Plants Security Systems
	Cottage Bakery Office and new Refrigeration

COLEMAN
ENGINEERING

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