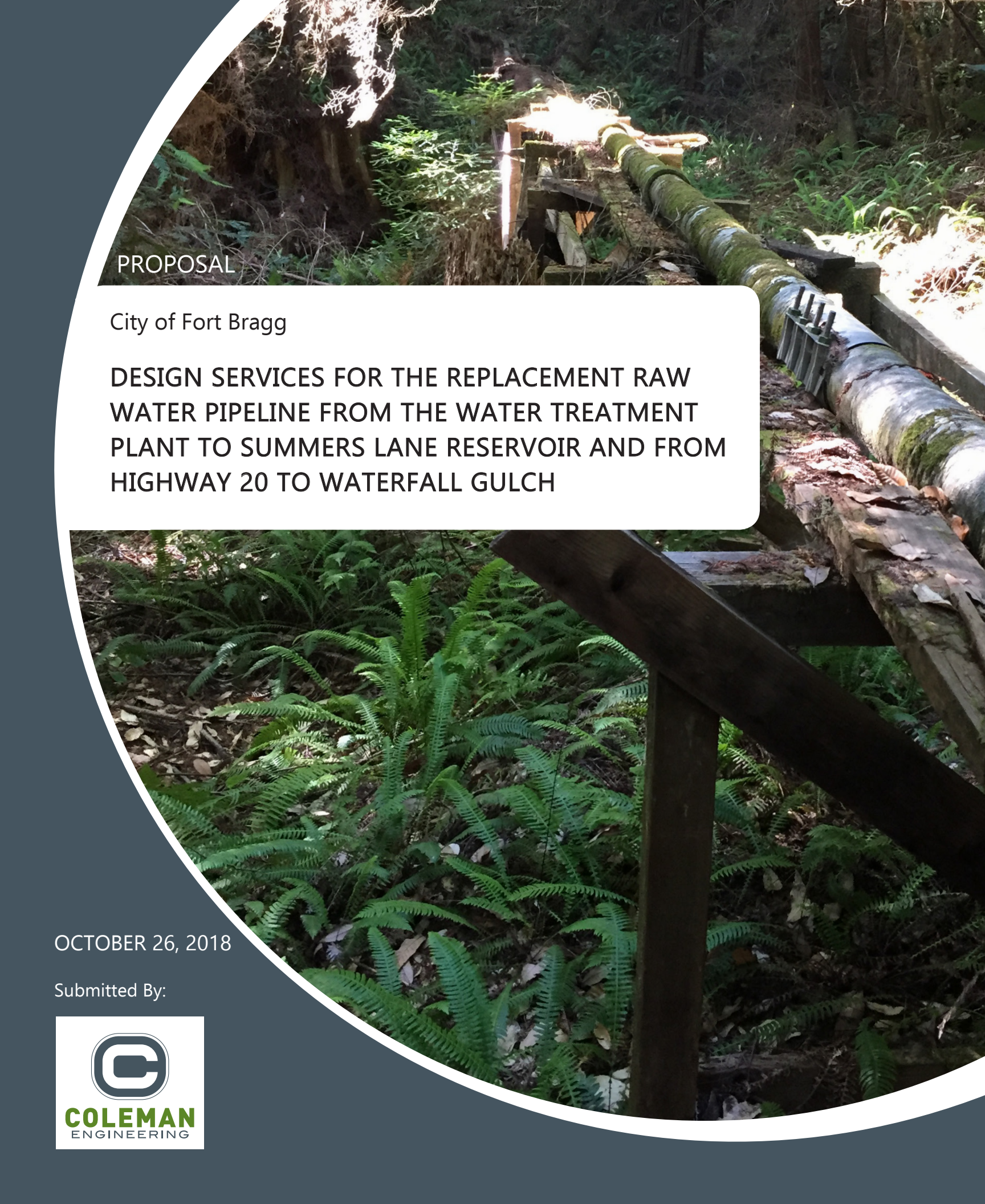




PROPOSAL

City of Fort Bragg

**DESIGN SERVICES FOR THE REPLACEMENT RAW
WATER PIPELINE FROM THE WATER TREATMENT
PLANT TO SUMMERS LANE RESERVOIR AND FROM
HIGHWAY 20 TO WATERFALL GULCH**

OCTOBER 26, 2018

Submitted By:



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COVER LETTER

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October 26, 2018

City of Fort Bragg
Engineering Department
Attn: Tom Varga, Director of Public Works
416 North Franklin Street
Fort Bragg, CA 95437

Re: **Proposal to Design Replacement Raw Water Pipeline**

Dear Mr. Varga,

The Coleman Engineering team welcomes the opportunity to provide Engineering Services to the City of Fort Bragg for Design of the Replacement Raw Water Pipeline from the Water Treatment Plant to Summers Lane Reservoir and from Highway 20 to Waterfall Gulch.

Coleman Engineering has teamed in a collaborative effort with local and very capable partners to assemble an experienced, specialized team of professional engineers, surveyors, and scientists. A review of Proposal Sections A - D will clearly demonstrate the high level of directly applicable experience that this team offers to the City.

- » **Crawford and Associates** is our local Geotechnical Engineer from Ukiah.
- » **Cinquini and Passarino** is our local Surveyor from Santa Rosa who has excellent experience providing professional surveying services in Mendocino County.
- » **Alpine Summit Development** will contribute constructability and cost estimating services to the team.
- » **Brewer Environmental Services** is led by Doug Brewer, who graduated from Humboldt State and then spent the next 30 years providing CEQA/NEPA/ESA/CWA compliance and regulatory permitting services. We have planned to include some services from Brewer in our base scope and also offer complete environmental and permitting services as an Additional Task as requested by the City.
- » **Summit Forestry** may provide Timberland Management Services, including a Timber Harvest Plan, based from their local Fort Bragg office. We have offered their scope as an Additional Task as requested by the City.

Coleman Engineering professionals have been actively researching this project for over a year. During that time, we have engaged with potential teaming partners, walked the route multiple times, met with City staff, and prepared in a deliberate and thoughtful way to address the many issues likely to be presented on this project.

Proposal Sections E - H are dedicated to demonstrating our preparation and plans for successful project delivery. Our team has identified issues critical to the success of the project and determined approaches and potential solutions. Some of the key issues we present in Proposal Section E include:

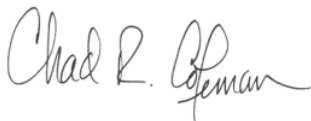
- » Use of trenchless construction methods to minimize tree removal.
- » Modifying the pipe alignment to minimize tree removal.
- » Addressing geotechnical issues to protect the new pipe from future damage.
- » Consideration of pipe hydraulics for a cost-effective design.
- » Improving operational flexibility at the Water Treatment Plant.
- » Carefully considering environmental and permitting issues so the City gets the most project for its investment.
- » Minimizing the number of private easements and right-of-way agreements to save money.
- » Careful project management approaches to maintain schedule and budget

We trust that the high level of pre-project engagement shown in our proposal demonstrates our enthusiasm for the project, and the level of planning, preparation, and attention to detail that Coleman Engineering will bring throughout the project.

The following page includes our signed acknowledgment of our receipt and review of Addendum No. 1, which was issued by the City on September 25, 2018.

We look forward to serving the City of Fort Bragg by preparing the Design of the Replacement Raw Water Pipeline from the Water Treatment Plant to Summers Lane Reservoir and from Highway 20 to Waterfall Gulch.

Sincerely,



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



Simon N. Gray, P.E.
Project Manager



ADDENDUM NO. 1
TO REQUEST FOR PROPOSALS FOR
Raw Water Line Replacement Project
PROJECT NO. 2018-02

DATE:	September 25, 2018
TO:	RFP Interested Parties
SUBJECT:	Additions to RFP Scope of Work, Pre-bid Site Visit
REVISED SUBMITTAL DATE:	October 26, 2018 at 2:00 PM
REVISED INTERVIEW DATES (If needed):	November 2 and 5, 2018
REVISED SELECTION DATE:	November 9, 2018

This Addendum No. 1 is an update to the Scope of Work to include and encourage the use of non-trenching pipe-replacement technologies and to add easement acquisition documentation.

Additions to Scope of Work:

Replace Item 1: *"Identify and map existing pipeline location by researching and reviewing maps and by performing fieldwork. Complete land surveying and mapping of the existing pipeline route sufficient for design. Prepare easement plats and descriptions necessary to obtain the required temporary construction and permanent maintenance easements."*

Replace Item 5: *"Preparation of preliminary design and cost estimation, mapping, and a detailed project description to support applications and reports needed for seeking of project funding. Potential sources include United States Department of Agriculture (USDA), State Revolving Fund (SRF), Community Development Block Grant (CDBG) or other Federal or State agency sources. The City would like to encourage the use of trenchless technology where possible."*

The City will be holding a pre-bid, partial site visit on October 9, 2018. Interested parties please contact Diane O'Connor, Engineering Technician, at 707-961-2823 ext. 134, or doconnor@fortbragg.com.

Please sign this addendum in the space provided and include the signed copy of the addendum with your proposal documents. **NOTE THAT PROPOSALS SUBMITTED**



WITHOUT A SIGNED COPY OF THIS ADDENDUM MAY BE CONSIDERED NON-RESPONSIVE AND MAY BE REJECTED.

June Lemos, CMC, City Clerk

September 25, 2018

The undersigned has received and read this addendum.

Coleman Engineering

Contractor

Signature

A handwritten signature in black ink that reads 'Chad R. Coleman'.

Name (Printed) Chad Coleman

Date October 26, 2018

A. FIRM DESCRIPTION

Coleman Engineering, Inc. is a private consulting engineering firm located in Roseville, CA that is focused entirely on water and wastewater engineering. We were founded in 2010 as a professional corporation, per Part 4, Division 3, Title 1 of the California Corporations Code, and currently have seven full-time staff comprising five professionals and two administrative team members. Three of our professionals are licensed Professional Engineers in California, with additional registrations in the states of Nevada, Utah, Washington, Texas,

and Idaho. Our company president and principal engineer, Chad Coleman, P.E., is also a Certified Grade 3 Water Treatment Plant Operator in California.

"Very high technical competency. Design and plans completed well in advance of schedule. Responses to questions and comments were provided very quickly"
 - Keith Coggins, City of Oakley

A general summary of the services provided by Coleman Engineering is given below:

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. • Hydraulic transient modeling of large hydroelectric penstocks.
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.
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 "front-end" documents for bidding. • Capital and life-cycle cost estimating. • Schedule preparation and review. • Constructability reviews.
Bid and Construction Phases	• 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.

FIRM DESCRIPTION - SUB CONSULTANTS

Cinquini and Passarino | Surveyor

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.



estimates, constructability reviews, means and methods, value engineering, contract negotiation, change orders, estimating and cost validation that all lead to successful project delivery.

Crawford & Associates, Inc. (CAInc) |

Geotechnical CAlnc is a Geotechnical Engineering firm that specializes in large-scale public works projects. In 2016, CAlnc merged with Taber Consultants, one of the nation's oldest Geotechnical Engineering companies. The principals of both firms bring significant Geotechnical Engineering experience on a wide variety of projects throughout Northern California. CAlnc has experience working with various oversight agencies including FEMA, FHWA, Cal OES, Counties, Cities, Caltrans, Building Departments, Regional Water Quality Control Boards, DWR, ArmyCorp, DSA, UPRR, CA Fish and Wildlife, Water and Irrigation Districts, Utilities and Environmental Health Departments. CAlnc regularly sub consultants with DBE drilling and traffic control companies meet project DBE goals



Brewer Environmental | Environmental

Brewer Environmental provides a full range of environmental compliance strategies and documentation for compliance with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), the state and federal Endangered Species Act (ESA) and the Clean Water Act. Brewer Environmental specializes in environmental project planning and development, fatal flaw analyses, and maintenance of environmental stewardship standards.



Summit Forestry | Timber & Timberland Management

Summit Forestry is based in Fort Bragg and has successfully completed permitting projects for timber harvest plans (THP), long term non-industrial timber management plans (NTMP) as well as exemptions for municipalities, fire prevention, post-fire, disease, or insect salvage, construction and timberland conversions to alternate uses. They are a timber and timber land management company specializing in permit acquisition for harvesting timber in California, as well as botanical and wildlife surveys in the North Coast region. As a full-service shop, Summit Forestry takes projects from the beginning to the end including plan layout; flagging, marking, road design, harvest design, silvicultural prescriptions and log sales to local and distant lumber mills. They also bid the job out to potential logging companies and perform logging administration once the plan is approved and operations begin. Having extensive local knowledge in the timber industry allows Summit Forestry to remain current on logging rates and timber market prices.

Alpine Summit Development, LLC.

| Constructability

Alpine Summit Development LLC was founded in 2012. Managing director Aaron Smud has over twenty years of construction experience as an estimator and project manager on numerous project types including water infrastructure, wastewater, storm drainage, site grading, natural gas pipeline, roadways, environmental, and minor structures. His experience includes developing resource-loaded definitive construction cost



B. RELEVANT EXPERIENCE

In this section, we have provided representative examples of projects similar to the City's project. These projects include many features common to the Replacement Raw Water Pipeline Project: steep and forested terrain with ravine, creek and state highway crossings, minimization of tree removal,

alternative alignment assessment, evaluation and subsequent use of trenchless construction methods, evaluation of geotechnical hazards including landslide-prone areas, pipe selection by pressure class by segment, constructability reviews, and environmental permitting and compliance.

CENTRAL AMADOR WATER PROJECT GRAVITY SUPPLY LINE, AMADOR WATER AGENCY

Pioneer, CA

Chad Coleman was responsible for leading the detailed pre-design for a 20-inch dia., 3-mile long water gravity pressure pipeline to deliver raw water from a PG&E forebay, across the Mokelumne River, to the Amador Water Agency's Buckhorn Water Treatment Plant in Pioneer, CA. The project was located at approximately 3,000 feet elevation in steep, mountainous and forested terrain, with ravines. The agency previously had to pump raw water from the forebay, but a re-routing of the raw water pipeline allowed for gravity flow. Cost evaluations showed that the project would rapidly pay for itself through the savings generated by ceasing pumping.



SECRET TOWN PIPELINE REPLACEMENT, PLACER COUNTY WATER AGENCY

Colfax, CA



Chad Coleman was responsible for preliminary and final design, and the preparation of bid documents for a 1,500-foot long, 36-inch diameter raw water supply pipeline replacement project on the Boardman Canal system operated by the Placer County Water Agency. The Boardman canal system supplies the great majority of the water to the PCWA drinking water system. The old Boardman system included many sections of Techite pipe that had failed and were in immediate danger of failure. The purpose of this project was to replace a section of Techite pipe through a steep and remote ravine section. Design and construction of the pipe was completed without incident and within budget and schedule goals.

BAKER SIPHON PIPELINE REPLACEMENT, PLACER COUNTY WATER AGENCY

Weimar, CA



Chad Coleman was responsible for preliminary and final design, and the preparation of bid documents for an 800-foot long, 42-inch dia. raw water pipeline replacement project on the Boardman Canal system operated by the Placer County Water Agency. The Boardman canal system supplies the great majority of the water to the PCWA drinking water system. The old Boardman system included many sections of Techite pipe that had failed and were in immediate danger of failure. The purpose of this project was to replace a section of Techite pipe through a section of the alignment that crossed private pasture lands. Design and construction of the pipe was completed without incident and within budget and schedule goals.

TECHITE PIPE REPLACEMENT, CALAVERAS COUNTY WATER AGENCY

Big Trees, CA

Coleman Engineering prepared preliminary and final design documents for approximately 8,100 feet of 10-inch dia. AWWA C900 series PVC water pipeline for the Ebberts Pass water system in the Sierra community of Big Trees, Calaveras County. This new pipeline replaces an existing Techite pipeline that had reached the end of its useful working life. The project site and pipeline route included differing and mountainous terrain, and challenges that included limited space for construction. Most of the pipeline had to be replaced along the exact existing pipeline alignment. We prepared detailed construction staging and sequencing plans to allow the existing pipeline to be replaced while maintaining supply to customers. In addition, the design effort included evaluation and recommendation of numerous construction methods, including parallel open cut where there was space, removal and replacement using open-cut trench excavation, bore and jack trenchless construction, and slip-lining of the old pipe. The preliminary design effort was successful in helping the Water Agency to make budget decisions and to prepare for funding applications. Final design included the preparation of bid documents comprising plans, specifications, and cost estimates.



CONSOLIDATION PIPELINE FOR LOCKE WATER WORKS COMPANY

Locke, CA

Coleman Engineering provided planning, secure SRF funding, design, and manage construction of a consolidation pipeline between the town of Locke and neighboring Walnut Grove. Project was SRF Prop 84 funded and involved investigation of conventional coagulation filtration, adsorptive media treatments, and consolidation with Walnut Grove. A 4,000-foot pipeline was designed and will be constructed to consolidate with the Sacramento County Water Agency which involved a new force main between Locke and Walnut Grove, horizontal directional drilling under a county drainage canal and extensive environmental hurdles. Consolidation was preferred due to annual O&M costs of adsorptive media and capital costs over time.

CONSOLIDATION PIPELINE, LOS MOLINOS CWD

Los Molinos, CA

Coleman Engineering was responsible for well zone testing and investigation of adsorptive media to remove arsenic under state compliance order and a test well. Project was Prop 84 funded and the state preferred to go with a consolidation pipeline to a new well we are designing located at the Los Molinos Community Services District. Challenges included CEQA compliance, horizontal drilling under a creek, and two borings under Caltrans Highway 99E. The project resulted in a solution that is very cost effective to operate and maintain.

NORTH AUBURN TRANSMISSION MAIN PROJECT, NEVADA IRRIGATION DISTRICT

Grass Valley, CA

Coleman Engineering was responsible for construction inspection, and resident engineering services to NID for the installation of a new 20-inch dia. transmission pipeline in north Auburn. The pipeline crosses a natural waterway and State Highway 49. Both conventional open trench excavation methods and trenchless pipe installation by micro-tunneling and by bore and jacking operations were used on the project. The project also included night work. Coleman Engineering provided full time construction inspection services as well as office engineering during construction. Construction results were excellent with a perfect safety record, and project completion was on time and within budget.



AUBURN BYPASS PIPELINE, PLACER COUNTY WATER AGENCY

Auburn, CA

Chad Coleman successfully designed and provided construction engineering services for a 4,600-foot long, 20-inch dia. ductile iron transmission pipe for the Placer County Water Agency. The purpose of the project was to provide a new interconnection between adjacent water distribution zones to allow the use of a storage tank by neighboring customers. The project required a great deal of coordination with the City of Auburn for encroachment permits and traffic control conditions. Project results were excellent and the facility was completed on time and within budget.



BANNER CASCADE PIPELINE PROJECT, NEVADA IRRIGATION DISTRICT

Grass Valley, CA

This \$26 million project involved the replacement of the 24-mile long Lower Cascade Canal with seven miles of 36, 48 and 54-inch diameter raw water transmission pipeline in rural Nevada County. The canal was an old, vulnerable miner's ditch that was operating close to capacity. The replacement gravity pressure pipeline was designed for maximum pressures up to 300 psi due to its location in forested mountain terrain with steep ravines. The pipe pressure rating was evaluated by segment and the pipe class matched to the maximum possible pressure in that segment: this resulted in cost-savings for the client.



The initial phase included the preparation of a full Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA). Simon Gray was responsible as project manager and for engineering components, technical review, sub-consultant management and cost estimating in this phase. During the public review period for the Draft EIR, he also participated in public forums and in detailed "question and answer sessions" with the public and the District Board. The routing studies paid particular attention to minimizing cross country routes to avoid tree removal, and to use local roads where possible.

For subsequent preliminary and final design, Simon was the program manager and had overall responsibility for contractor prequalification and management of four teams covering pipeline and hydropower plant design and preparation of bid documents, right-of-way acquisition, environmental permitting, topographical survey, public consultation; project controls; cost estimating, and the ISO 9000 quality assurance / technical review team. During the bid and construction phases Simon was responsible for bid assistance and evaluation, submittals and change order review, construction observation, and responding to contractor RFIs.

REGIONAL PIPELINE, PLACER NEVADA WASTEWATER AUTHORITY

Auburn / Lincoln, CA

The project involved routing studies for 18 miles of 36-inch diameter gravity trunk sewer. Seven existing wastewater treatment plants (WWTP) are to be closed to eliminate treated effluent discharges to local creeks in the Auburn area of Northern California. The new pipelines connect these existing facilities and convey raw wastewater to the City of Lincoln's WWTP for treatment. They are located in rural wooded areas and use local roadways where available. The project also included pump stations and force mains, storage, and flow equalization facilities. Simon Gray was the project manager and was also responsible for a separate routing study for a pipeline to connect the Applegate WWTP to the Regional Pipeline. Simon provided technical input to environmental documents prepared in accordance with CEQA and the federal National Environmental Policy Act (NEPA).



C. KEY PERSONNEL QUALIFICATIONS

This section provides details of our proposed project team for the District's assignment. Chad Coleman is well known to the City, having recently completed your desalination feasibility study. Our project manager, Simon Gray, is highly experienced with conveyance project design and construction. Locally, he was recently project manager for the City of Ukiah's \$22 million recycled water project.

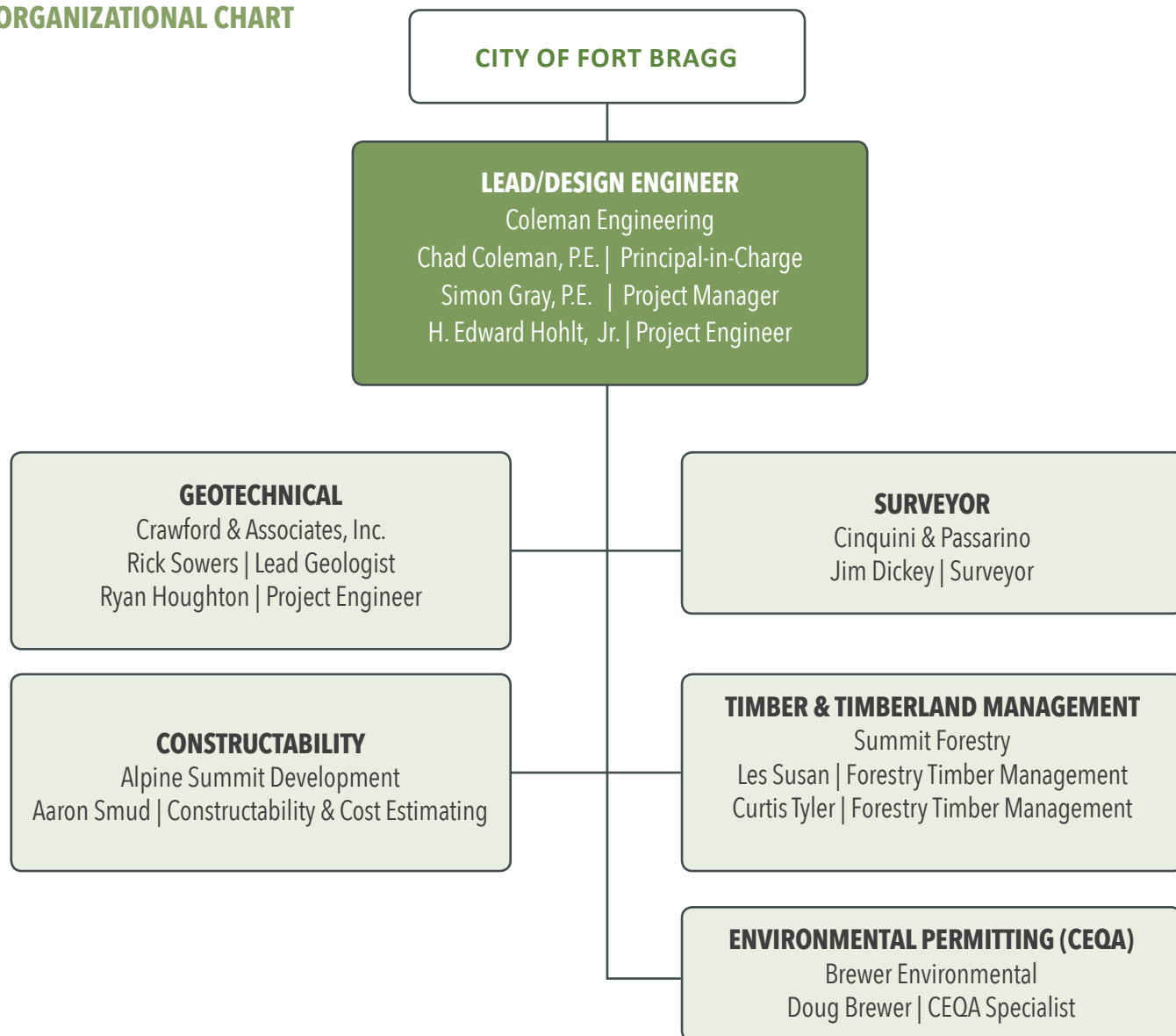
Sub consultants will provide specialist support as needed: those listed in Section A have been selected not only for

their skills and experience, but also for their long working relationships with Coleman Engineering.

The organization chart below shows the project team, together with their primary roles and responsibilities, that we expect to provide the full range of services anticipated by the City. We commit to making these team members available to the City.

Our team member resumes are provided on the following pages.

ORGANIZATIONAL CHART





Chad R. Coleman, P.E.

PRINCIPAL ENGINEER

EDUCATION

- M.S., Civil Engineering
Brigham Young University
- B.S., Civil Engineering
Brigham Young University

REGISTRATIONS

- Professional Engineer
CA # 56490,
ID # 8964,
UT # 188915,
NV # 16990
- 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 PIPELINE PROJECT EXPERIENCE

Calaveras County Water Agency, Techite Pipe Replacement: Principal in Charge of the preliminary design of approximately 8100-feet 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 slip lining the old pipe. The preliminary design effort was successful in helping the Water Agency to make budget decisions and to prepare for funding applications.

Water System Intertie Project, Sacramento Suburban Water District, Sacramento, CA: Project Manager for the coordination and design of upgrades to seven existing interties between SSWD and their neighboring water purveyors. The purpose of the upgrades was to add a SCADA monitoring of intertie flow, pressure and intrusion in an effort to enhance the security of the water system. Coleman Engineering developed construction plans and specifications.

North Auburn Transmission Main Construction Management, Nevada Irrigation District, Grass Valley, CA: Project Manager responsible to provide inspection, and Resident Engineering services to NID for the installation of a new 20-inch transmission pipeline in north Auburn. The pipeline crosses a natural waterway and Highway 49, a state highway. Both conventional excavation methods and trenchless pipe installation methods are to be used on the project.

Broadview Terrace Mutual Water Company, Water System Upgrades 2011, Oakhurst, CA: Chad filled the role as Project Manager to help this small private water company to improve their system. The project included a new supply connection to a neighboring water system, and distribution system improvements. The significance of the new connection was to design a way to automate the operations using a pressure reducing valve plumbed as an altitude valve with a delay so that it would keep an elevated tank full and turned over sufficiently. The project was designed on a very small budget to fit within funding and budget limits.



Chad R. Coleman, P.E.
PRINCIPAL ENGINEER

PAGE 2

Quail Valley Ranch Raw Water Supply Pipeline, Yuba County, CA: Project Manager responsible for design of a new 5-mile pipeline to supply water from the South Feather Water and Power treatment plant in Bangor to a new development in Yuba County.
Secret Town Pipeline Replacement, PCWA: Project Manager responsible for design and all quality control for a 1,500-foot, 36-inch pipeline replacement project on the Boardman Canal system of the Placer County Water Agency.

Baker Siphon Pipeline Replacement, PCWA: Project Manager responsible for design and all quality control for an 800-foot, 42-inch raw water pipeline replacement project on the Boardman Canal system of the Placer County Water Agency.

Multiple Water Main Replacement Projects, Sacramento Suburban Water District, Sacramento, CA: Project Manager responsible for preparation of design, plans and specifications for replacement of nearly 50,000 feet of new water distribution piping and 827 residential service connections. The project location was in established neighborhoods in Sacramento where old water mains were located in back yards and were leaking regularly. New mains were replaced in streets with new service lines installed by directional drilling into the back yards.

Drayton Heights Water Main Replacements, Sacramento Suburban Water District, Sacramento, CA: Project Manager responsible for preparation of design, plans and specifications for replacement of 11,200 feet of new water distribution piping and 202 residential service connections.

Central Amador Water Project, Gravity Supply Line - Amador Water Agency, CA: Project Manager responsible to lead the a detailed pre- design of a 20-inch, 3-mile long pipeline to deliver raw water from a PG&E forebay, across the Mokulumne River, to the Agency's Buckhorn Water Treatment Plant.

Broadmoor Estates Water Main Replacements, Sacramento Suburban Water District, Sacramento, CA: Project Manager 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.

East Area Raw Water System, City of Folsom, CA: Project Engineer responsible for feasibility planning and design of a raw water system to provide untreated irrigation water to the East Area of Folsom. Design included a 2,000-gpm submersible pump station with appurtenances to accommodate widely varying irrigation flow rates and pressure surges and two miles of 12-inch transmission pipeline. The project was constructed entirely without ceasing operations or service to existing customers through the use of extensive and detailed construction phasing planning during design.

South Stockton Water Transmission Mains, City of Stockton, CA: Project Engineer responsible to create contract documents for design-build teams to use in bidding. The project included construction of 8,000-feet of 16-inch transmission pipe and 4,800-feet of 24-inch transmission pipe.



Chad R. Coleman, P.E.
PRINCIPAL ENGINEER

PAGE 3

Broadway Water Line Relocation, Sacramento, CA: Project Engineer responsible for design 2,000 feet of 8-inch water distribution main that was to be relocated as part of a larger reconstruction of Broadway Avenue.

Water Line Replacements, Arcade Water District, Sacramento, CA: Project Engineer responsible for design management and construction support for 30,000 feet of 8-inch and 16-inch water line replacements for approximately 530 customer service connections.

Dumbarton Force Main Pipeline, City of Newark: Principal in Charge responsible for the planning, and pre-design of a twin 33-inch sewer force main pipeline facility. The pipeline was to be relocated to accommodate new development. The project required design of approximately 10,000-feet pipeline across very poor soils with provisions for manned and unmanned access.

Vineyards NPW Pipeline, City of Brentwood, CA: Project Manager leading conceptual level investigations of the conversion of a 24-inch steel PG&E gas pipeline for use as a non-potable water pipeline. The first phase of the project will connect the Roddy Ranch Pump Station site to the Vineyards development. The project has included modeling to size the required pipeline as well as the investigation of multiple construction methods for the most efficient utilization of the steel pipeline as well as other facilities already constructed and in place. This is a current conceptual investigation project that will develop into design of the new NPW pipeline as soon as pipeline ownership and right-of-way issues are resolved.



Simon N Gray, P.E.

PROJECT MANAGER

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
CA # 60311,
WA # 51959,
- Chartered Engineer #
45101217, United Kingdom
- Fellow, Institution of Civil Engineers, United Kingdom

PROFESSIONAL AFFILIATIONS

- American Water Works Association
- Water Environment Federation
- Sacramento Area Water Works Association
- Mountain Counties Water Resources Association
- California Water Environment Association

Simon has 35 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 PIPELINE PROJECT EXPERIENCE

City of Ukiah Recycled Water Project, Phases 1-3, Ukiah, CA: Project Manager. Responsible for fast-track final design of this \$22 million project comprising a 66-MG lined open storage reservoir, 3000-gpm vertical turbine pump station, over 30,000 feet of 16- and 12-inch diameter PVC pipelines, and jack-and-bore crossings of creeks, roads, and railroads. Also performed technical review and supervised geotechnical investigation, topographical mapping, permitting, and right-of-way acquisition activities. Assisted in completing State Revolving Fund funding and regulatory agency approvals. Responsible for an associated water balance/zero liquid discharge modeling study to confirm storage requirements and a nitrogen balance study. As an extension to the project, Simon was also responsible for preliminary and final design of replacement chlorine contact basins at the City's wastewater treatment plant.

Banner Cascade Pipeline Project, Nevada Irrigation District, Grass Valley, CA: Project Manager. The \$26 million project involved the replacement of the Lower Cascade Canal with seven miles of 36, 48 and 54-inch diameter raw water transmission pipeline in rural Nevada County. The initial phase included the preparation of a full Environmental Impact Report in accordance with CEQA. Simon was responsible as project manager and for engineering components, technical review, sub-consultant management and cost estimating in this phase. During the public review period for the Draft EIR, he also participated in public forums and in detailed "question and answer sessions" with the public and the District Board. For subsequent design, Simon was the program manager and had overall responsibility for management of four teams covering pipeline and hydropower plant design; right-of-way acquisition, environmental permitting,



topographical survey, public consultation; project controls; cost estimating, and the ISO 9000 quality assurance / technical review team.

Placer Nevada Wastewater Authority Regional Pipeline, Auburn / Lincoln, CA: Project Manager. Simon was responsible as the project manager for routing studies for 18 miles of 36-inch diameter trunk sewer. Seven existing wastewater treatment plants (WWTP) are to be closed to eliminate treated effluent discharges to local creeks. The new pipelines will connect these existing facilities and convey raw wastewater to the City of Lincoln's new WWTP for treatment. The project also includes wastewater pump stations and force mains, storage, and flow equalization facilities. Simon was also responsible for a routing study for a pipeline to connect the Applegate WWTP to the Regional Pipeline, and for technical input to environmental documents prepared in accordance with the California Environmental Quality Act (CEQA) and the Federal NEPA.

Upper Northwest Interceptor Section 8 - Van Maren Pumping Station, Sacramento Regional County Sanitation District, Sacramento, CA: Construction Manager. The \$12 million contract included construction of a 40 million gallons per day (mgd) submersible wastewater pump station and an associated operations and standby generator building on a constricted urban site. The project also included construction of 36 and 48-inch diameter pipelines at depths up to 30 feet in residential neighborhoods, and jack-and-bore tunneling under busy City streets. Simon was responsible as the Construction Manager with specific input on change order preparation and negotiation.

Lower Northwest Interceptor Planning and Preliminary Design, Sacramento Regional County Sanitation District, Sacramento, CA: Deputy Program Manager and Design Manager. The \$600 million LNWI is a 15-mile long, part force main, and part gravity interceptor sewer. The conduit diameters vary from 84 to 120-inch with peak flows up to 220 mgd. These initial planning stages included route selection and feasibility studies. In addition to his duties as the Deputy Program Manager, Simon was responsible for system-wide preliminary hydraulic design as well as for sub-consultant coordination and management. This 'fast-track' project was notable for its use of decision criteria software and evaluation matrices.

Bradshaw Interceptor Sections 6A and 7A Constructability Reviews, Sacramento Regional County Sanitation District, Sacramento, CA: Project Manager. The two Bradshaw Interceptor contracts included the construction of approximately 30,000 linear feet of 84-inch to 108-inch diameter pipeline at a depth of about 35 feet. Construction included open-cut and jack-and bore tunneling through urban and rural areas. The route included environmentally-sensitive wetlands, creek crossings and vernal pools. Simon carried out a detailed review of the design and bid documents for constructability and practicality, and for contractual compliance and consistency.

West Shore Export Truckee River Crossing Rehabilitation Project, Tahoe City Public Utility District, Tahoe City, CA: Project Engineer. Condition assessment, rehabilitation alternatives analysis, and design to rehabilitate a 300 feet long, 36-inch diameter welded steel gravity trunk sewer crossing over the environmentally-sensitive Truckee River. The condition assessment included ultrasonic testing techniques to confirm localized loss of pipe wall thickness from corrosion. The alternatives analysis included detailed cost estimating incorporating construction methodology. A segmented HDPE pipe liner insert and localized pipe section strengthening were recommended.



Bradshaw Interceptor Section 7A Construction Management, Sacramento Regional County Sanitation District, Sacramento, CA: Construction Manager. The Bradshaw 7A Interceptor contract included the construction of 13,700 linear feet of 84-inch to 96-inch diameter pipeline at a typical depth of about 35 feet along Happy Lane, Kiefer Boulevard and Bradshaw Road in Sacramento. Construction included both open-cut trenching and jack-and bore tunneling along, adjacent to, and under busy commuter routes. Simon was responsible for contract administration, construction supervision and management of the CM Team. Key issues for the project included traffic control and neighborhood public outreach.

Mirabel Heights Wastewater Pump Stations and Pipelines, Sonoma County, CA: Project Manager. The project involved the design of two 1.0 mgd capacity submersible pump stations capable of pumping low flows through high static lifts. Simon was responsible for project management; civil and mechanical engineering design; liaison with the local water agency; preparation of loan and grant applications and the production of bid documents and drawings.

Reclaimed Water System Extension Project, City of Livermore, CA: Project Manager. This 4,000 linear feet, 24-inch diameter extension to the City of Livermore's recycled water system project included a 300 feet jack and bore tunnel under Interstate 580, as well as extensive coordination with Caltrans; the California Department of Fish and Game and other state departments; power, telephone, cable TV utility agencies; sub-division developers; the Federal Aviation Administration and other agencies. Simon was responsible for project management and technical review.

Southeast Geysers Effluent Pipeline, B Street Pump Station, Lake County Sanitation District, Lakeport, CA: Project Manager. The 10 mgd B Street Pump Station is an in-line booster pump station that forms part of the Southeast Geysers Effluent Pipeline in Lake County. The pump station and pipeline system conveys blended secondary wastewater effluent and water from Clear Lake to the Geysers geothermal complex for steam and power generation. Simon was responsible for project management for the detailed design and bid phases, including bid document preparation, answering bidders' questions, and assisting the client with bid evaluation and detailed contract negotiation.

Strategic Sewage Disposal Scheme Stage 1, Upgrade of Existing Preliminary Treatment Works Contract, Hong Kong Government, Hong Kong: Project Manager. The 'fast track' design build contract involved the design and construction of improvements to seven existing preliminary treatment plants around Victoria Harbour, Hong Kong. Improvements included upgraded inlet pumping stations, coarse and fine screen installations and grit removal facilities. Contract value was \$120 million. Simon was responsible for leading a 35-member strong multi-discipline design team that included geotechnical, mechanical, civil, electrical, building services and control engineers for an EPC client-contractor. He carried out constructability reviews in line with the contractor's chosen methods of working, and for design-construction coordination. In addition, he implemented a Quality Assurance System for the project to ISO 9000 series standards.

Upper Mountain View Pressure Zone Improvements Project, City of Shelton, WA: Project Manager. Simon was the design and construction phase project manager for this fast-track project that includes construction of a 400,000-gallon elevated water storage tank, yard piping reconfigurations, well and well pump evaluations and upgrades, a 1-million-gallon welded steel ground level reservoir, a booster pump station, over 10,000 linear feet of 12-inch and 16-inch diameter transmission mains, and pressure reducing valve stations. The project included local agency permitting, environmental mitigation, constraints from FAA-controlled air space and compliance with funding agency procedures and requirements. Four jack and bore connections were also required for road and stream crossings.



H. Edward Hohlt Jr., P.E.

PROJECT ENGINEER

EDUCATION

- B.S., Environmental Engineering, Old Dominion University
- B.S., Physics, Longwood College

REGISTRATIONS

- Civil Engineer # 83593, CA

PROFESSIONAL AFFILIATIONS

- American Public Works Association
- Society of American Military Engineers
- Water for People

Edward Hohlt is a professional engineer with 15 years of civil engineering experience that includes engineering with an emphasis in planning, design and construction support services for various infrastructure focused projects. These projects include site, as well as, municipal infrastructure that includes grading, land development, roadway design, water, wastewater and storm drainage utilities.

SELECTED PIPELINE PROJECT EXPERIENCE

Folsom State Prison Fire Water Main System, CDCR, Folsom, CA: Project Engineer for the design and construction of the fire water main for the new Health Care Facility Improvement Program buildings at Folsom State Prison. The existing distribution system for the prison is incapable of meeting the fire flow demand requirements set forth in the California Fire Code. CDCR determined the most feasible option to meet the requirements was to install a standalone fire water system rather than upgrade the distribution system for the prison. The project included the installation of approximately 5,800 linear feet of 12-inch DIP and 1,000 linear feet of 10-inch DIP mains with new fire hydrants, fire service connections and appurtenances. The project also included hydraulic modeling of the system to determine main diameters and confirming the selected diameters will provide flow and pressures as required. The project included interconnecting the new fire water main with the existing reservoirs and fire water pumping system.

Twin Force Mains - Phases 2, William Lyon Homes, Newark, CA: Project Engineer assisting with developing construction phasing of two (2), 33-inch high density polyethylene (HDPE) force mains to replace two (2), existing reinforced concrete mains. The site limitations (adjacent environmental remediation, multiple stakeholders, and proximity to existing and proposed utilities) presented a number of challenges that were overcome by strong communication and coordination. Notable project features include phased design and construction, bypass pumping during interconnection. These features of the design promote continuous force main operation and land development during construction, and simplify the approval from the authorizing organizations (sewer district, flood control agency, and private land owners). [2017-ongoing]

Utility Coordinator for METRO Southeast Corridor Light Transit Rail, Houston, TX: Lead Public Utilities Coordinator on the evaluation of individual public utilities requiring relocation out of a predetermined zone of disturbance for the light transit rail. Reviewed available record drawings to determine approximate locations of existing utilities as well as determined the location of abandoned utilities. Coordinated proposed relocations with the lead Private Utility Coordinator in an effort to avoid conflicts during construction. Established a project wide product delivery schedule as well as individual segment schedules for detail oriented work. Worked with the head quantity estimator to



obtain specific public utility quantity take-offs and performed value engineering. Coordinated the implementation of design related comments from the client in order to advance the project schedule

Calumet Large Diameter Water Line Rehabilitation, Houston, TX: Project Engineer responsible for the rehabilitation of three cast iron water distribution lines within high traffic areas. The project involved the installation of internal join seals at each bell/spigot of a 24, 30, 36-inch main. The work also included coordination with private utility companies, arborists, geotechnical engineers, and internal pipe rehabilitation specialists. Assisted with design of a new distribution line to maintain services to residential and commercial customers along with determining areas for the contractor to perform the rehabilitation. Assisted with coordinating the implementation of design related comments from the client in order to maintain the project schedule.

State Highway 6 - 24-inch Water Line Installation | Houston, Texas: As project Engineer Edward performed inspection services of the installation of the 24-inch water line along State Highway 6. Responsibilities included drafting reports for the documentation of daily work activities, evaluating contractor's means and methods of construction for compliance with approved specifications, and reporting noncompliant construction methods.

Brentwood Non-Potable Water Tank, City of Brentwood, Brentwood, CA: Project Engineer to assist with the redesign of the non-potable water tank configuration and pump station layout to accommodate new flow requirements set forth by the City of Brentwood. The non-potable water tank will receive all designated secondary effluent flows from the wastewater treatment plant for offsite distribution. The tank's outlet structure was redesigned to incorporate flows for offsite usage as well as discharges to the outfall.

Reno VA Booster Pump Station, Psomas, Reno, NV: Project Engineer 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.

Allendale Booster Pump Station and Sewer Lift Station, DeNova Homes, Hollister, CA: Project Engineer for design of a new booster pump station capable of delivering 232 gpm peak flow and 1500 gpm fire flow for the Allendale Development. Responsibilities included; hydraulic modeling, pump selection and verification of assumptions. Challenges included balancing the system over several elevation changes to mitigate the need for alternative measures for high pressure areas as well as crossing an active fault zone. System was sized to meet future build out conditions.

Riolo Vineyards Sewer Lift Station, King Engineering, Placer County, CA: Project Engineer assisting with design and calculations for the installation of a new 2,200-gpm sanitary sewer lift station in Placer County, CA. The lift station will serve multiple developments, and the design includes close coordination with the County, multiple engineering firms and other design disciplines. Responsible for comprehensive integration of design with existing and proposed developments including an existing receiving force main to be shared with two other existing lift stations. The station includes wet well, operations/electrical building, underground emergency storage and odor control facilities.



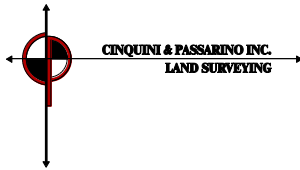
Luther Pass Pump Station Modifications, South Tahoe Public Utility District, Lake Tahoe, CA: Project Manager responsible for design of the pump station modifications for South Tahoe Public Utility District. Design includes site improvements, site structures, and mechanical, electrical, and instrumentation systems. The 40-year old pump station is critical to the District's 26-mile wastewater disposal system. At the heart of the pump station are four multiple stage horizontal split-case centrifugal pumps with a total connected horsepower of 3,400 hp. As one of the most important pump stations in the Lake Tahoe Basin, it is responsible for moving 8 MGD of treated effluent completely out of the watershed with discharge pressures approaching 600 psi.

CMC Water Treatment Plant Raw Water Pre-Treatment Upgrades, CDCR, San Luis Obispo, CA: Project Engineer for the design and construction of a new high-rate clarifier for the 3 MGD water treatment plant at California Men's Colony (CMC). The water treatment plant provides drinking water for CMC and other retail customers from three different source waters: Chorro Reservoir, Whale Rock Reservoir, and a groundwater well. During periods of rainfall runoff, Chorro Reservoir raw water turbidity will spike from 10 NTU to a high in excess of 60 NTU in a few hours. The new ballasted clarification process unit reduces plant feed water turbidity levels to acceptable levels. Upgrading plant-wide power supply to a common 480V system is being included improve reliability. The plant-wide SCADA system was also upgraded to monitor and control the new pre-treatment unit.

CMC Water Treatment Plant Filter Backwash & Sludge Handling Upgrades, CDCR, San Luis Obispo, CA: Project Engineer for the design and construction of the filter backwash and sludge handling upgrades for the 3 MGD water treatment plant at California Men's Colony (CMC). These upgrades include valves and instrumentation to automate the filter backwash process, control the rate of wash water flow, monitor headloss, the use of air scour during backwash cycles and filtered water quality monitoring. Also included is a new wash water equalization tank to receive and treat waste wash water from filter backwashing operations. A portion of the waste wash water (10% maximum per regulations) from the equalization tank can then be returned to the head of the plant with the remainder of the waste wash water being routed to a sanitary sewer. The plant-wide SCADA system was also upgraded to monitor and control the upgrades facilities.

Well 6 Water Treatment System, City of Sebastopol, CA: Project Engineer responsible for layout of new filter treatment units, associated piping, site improvements, as well as relocating existing treatment units onsite. The project repaired the existing well casing to prevent collapse and provide continued water supply for the next 10 years, and to construct an arsenic treatment system to meet current public health standards for arsenic in drinking water.

Reno VA Sewer Study, Psomas, Reno, NV: Project Engineer for the analysis of the City of Reno sewer collection system and Reno VA expansion sewer flow loading. The project included the rehabilitation and expansion of the hospital which lead to an increase in fixture units. The increase fixture units results in increased sanitary flow from the facility. Utilizing existing flow data, manhole survey, along with review of previous system improvements, it was determined the existing sewer system has the capacity to handle the new loading from the project.



James M. Dickey, P.L.S.

SURVEYOR

EDUCATION

- Associates of Science Degree, Associates of Arts Degree in Civil Engineering & Land Surveying
- Santa Rosa Junior College, Santa Rosa, California

REGISTRATIONS

- Professional Land Surveyor, California, PLS 7935

PROFESSIONAL AFFILIATIONS

- 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

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.

SELECTED PROJECT 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 as the project surveyor for the project to review any surveying performed by the DB contractor.



Rick Sowers, PE, CEG

LEAD GEOLOGIST

EDUCATION

- University of Nevada, Reno
B.S. Geological Engineering,

REGISTRATIONS

- Civil Engineer
CA 38788
NV 10203
- Professional Geologist
CA 3681
- Certified Engineering Geologist
CA 1104

PROFESSIONAL AFFILIATIONS

- Geoprofessional
Business Association
- Association of
Engineering Geologists
- American Society of
Civil Engineers
- American Public
Works Association
- U. S. Society on Dams
- Society of American
Military Engineers
- Placer Architects, Geologists,
Engineers and Surveyors

Rick Sowers has practiced geologic and geotechnical engineering for over 43 years with experience in California, Nevada and Guam. He has extensive experience directing, coordinating, supervising and reviewing efforts of project managers and project engineers/geologists for levees, dams, bridge foundation investigations, major highway/interchange projects, commercial buildings, retaining walls, landslides, water tanks, water/wastewater treatment plants, pipelines and fault studies. Rick has served as Project Director and Engineering Geologist for hundreds of transportation projects throughout northern California, many involving rail, interchanges and separation structures within the State Highway System.

SELECTED PROJECT EXPERIENCE

Humboldt Bay MWD Pipeline - Humboldt County, CA: Principal-in-Charge for a geotechnical investigation for a new pipeline crossing of the Mad River. The pipeline will replace an aging 14" water line, currently attached to an abandoned railroad bridge, that supplies the communities of Blue Lake, Fieldbrook and Glendale. Total length of the river crossing is about 540 feet. Alternatives included a new aerial crossing with suspension towers located on each bank, or installed under the river by horizontal directional drilling (HDD) methods.

Secret Town Pipeline, Placer County Water Agency - Placer County, CA:

Geotechnical investigation for replacement of an existing water line segment, including a section of failed Techite pipe. Project involved about 1700 ft of new 30-inch pipeline within steeply dipping metamorphic rock parallel to the UPRR lines and Interstate 80. A future replacement segment will include replacement under I-80 to an existing inlet structure, and require jack-and-bore, directional drilling or microtunneling through coarse rock fill and hard bedrock.

Fortuna Wastewater Treatment Plant Flood Protection Project - Fortuna, Humboldt County, CA:

Rick was the Principal-In-Charge. The purpose of the project is to construct a flood protection berm around the WWTP. Rick oversaw the preparation of the Geotechnical Report, which provided geotechnical recommendations for the project. To prepare the report, Rick and his team reviewed existing site information, reviewed geologic and fault maps, drilled and sampled three test borings, excavated four test pits, sampled stockpiled fill for possible fill sources, and performed geotechnical engineering analysis. Provided recommendations for seismic design, determined corrosion potential of the site, and provided recommendations for berm construction.

Rohner Creek Flood Protection Project - Fortuna, Humboldt County, CA:

Geotechnical investigation along the Rohner Creek watershed through the City of Fortuna to evaluate flood-reduction improvements. Project elements included channel widening, retaining walls, diversion pipelines, bridge replacements and detention basins.



Branscomb Road (CR 429) Failure at MP 17.21 – Mendocino County, CA: Rick prepared a Geotechnical Memo for the slope failure of a section of road approx. 24' wide and 74' long that resulted in the complete loss of the outboard fill section and paved shoulder. Recommended a soldier pile tieback wall to achieve secure support within the rock and provide lateral resistance to active pressures.

Orr Springs Road (CR 223) Slide at MP 39.20 – Permanent Repair – Mendocino County, CA: The subject road failure has resulted in the complete loss of the outboard lane and over half of the inboard lane for a distance of approximately 55 feet and maximum depth of 16 feet. As Principal-In-Charge, Rick oversaw a Geotechnical Memo which described **the** existing site and soil conditions and analyzed soil samples obtained from test borings. The primary causes of slope failure were due to the inherent weakness of the fill and intensely weathered sandstone, the high degree of saturation from seasonal storm water infiltration during this past very wet winter, and possible internal seepage pressures – including seepage from within the underlying weathered rock. Recommendations include a soldier pile tieback wall.

Tobin Water Tank – Plumas County, CA: Principal-in-Charge for a geotechnical investigation to provide raw water storage for fire protection for the community of Tobin. The new water tank is a bolted steel tank with 120,000 gallon capacity. Approximately 4,500 lf of new pipeline will transmit water to the site along steep slopes of the Feather River canyon. The project is in a geologic challenging environment characterized by jointed/fractured granitic rock.

Willow Creek Wastewater Treatment Plant – Willow Creek, Humboldt County, CA:

Principal-in-Charge for a geotechnical investigation to replace an aging individual septic system with a single community wastewater collection and treatment system. The project included a new gravity and pump collection system and pressure main to a new treatment plant. The pressure main may be installed with horizontal directional drilling method. Key geotechnical issues included shallow groundwater, areas of hard rock, and fill/debris from a historic mill site.

Miners Ranch Water Treatment Plant – Butte County, CA: Rick was the Principal for the project. The project includes two tanks, four pump stations, backwash storage basin, a dewatering building, a filter building, and adsorption clarifies, and two small structures. CAInc prepared a geotechnical report, which provided information on existing geologic settings, subsurface conditions, laboratory test results, soil corrosion potential, and seismicity. The report also provided conclusions and recommendations for site grading, structure foundations, utilities, pavement, concrete flatwork, and construction considerations.

Brentwood WWTP Pond #6 Improvements and Pump Station – Contra Costa County, CA:

Rick was the Principal for the project. Prepared a Geotechnical Report to provide geotechnical recommendations for improvements to the WWTP. To prepare the report, Rick and his team reviewed existing geotechnical and groundwater data, excavated test pits and sent samples to an independent lab for testing. Provided recommendations for pond and liner construction, fill placement, pump station, lateral earth pressures, and construction considerations.

Meadow Vista Water Treatment Plant – Placer County, CA: Geotechnical investigation for design and construction of new treatment facilities at an existing plant. Site improvements include two 0.9 MG water storage tanks, access roads and cut slopes in rock, booster pump station and facility piping. Study included subsurface investigation, laboratory testing, and analyses for development of construction and foundation design criteria.



Big Rock CSD Water Tank Replacement Project - Del Norte County, CA: Preliminary geotechnical evaluation to replace a 100,000-gallon tank with a new, bolted steel tank. The existing tank is vulnerable to strong ground motions from seismic events and the new tank will be designed on a cut pad within bedrock into slopes prone to landslides. Significant challenges include strong seismic shaking, slope stability and new cuts into variable serpentine bedrock.

Ione WWTP Improvements - Amador County, CA: Geotechnical Design Report for design and construction of new treatment facilities at an existing plant. Site improvements include new valve vault, chlorine contact basin, pump station and filters. Study included subsurface investigation, laboratory testing, and analyses for development of construction and foundation design criteria, including seismic design and liquefaction analysis.

Jackson WWTP Improvements - Amador County, CA: Preliminary Geotechnical Evaluation for design and construction of new treatment and wastewater storage facilities to upgrade the existing plant. Proposed improvements include plant upgrades and pipeline to earthen storage reservoir. Several reservoir sites were evaluated for preliminary design of earthwork, slopes and groundwater in areas of steep terrain and shallow rock.

Donner Summit WWTP Expansion - Nevada County, CA: Geotechnical Design Report for the Donner Summit PUD for plant expansion, including membrane and equipment building, storage tank, access roads and headworks building. Site investigation included assessment of large granitic boulders, exceeding 20 feet in dimension, with extensive grading and retaining walls.

Sellers Sewer Lift Station - Contra Costa County, CA: Geotechnical investigation for reconstruction of an existing sewer pump station. Site is within variably loose, granular soils with high groundwater, and in high seismic area. Study included seismic design, foundation support, lateral earth pressures, soil corrosivity, and construction considerations (including dewatering).



Ryan Houghton, PE

PROJECT ENGINEER

EDUCATION

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

REGISTRATIONS

- Civil Engineer CA C145591

PROFESSIONAL AFFILIATIONS

- Lake and Mendocino Engineers Association

Ryan Houghton has a Master's Degree in Civil Engineering with an emphasis in geotechnical engineering. He also has experience with hydraulics, site design and grading, and SWPPP preparation. In the field of geotechnical engineering, his responsibilities include observing and logging field investigations for geotechnical site investigations, evaluating laboratory results, engineering analysis, writing geotechnical reports, and computer aided design and drafting. His responsibilities in the field of hydraulic engineering include the collection of field data, creating and running hydraulic models, and writing hydraulic reports.

SELECTED PROJECT EXPERIENCE

Albion Little River Road (CR 403) Failure at MP 0.50 – Mendocino County, CA:

As Project Engineer, Ryan prepared a Geotechnical Memorandum for a 40' long outer road shoulder failure due to heavy rains in winter 2017. The Memo included an analysis of existing geologic and subsurface conditions, and results laboratory testing to determine material properties of underlying soil/rock units. In analyzing potential repair options, CAInc considered a soldier pile tieback wall; a mechanically stabilized earth (MSE) wall; and a reconstructed RSP fill slope for permanent repair. The soldier pile tieback wall was recommended to achieve secure support within intact rock, provide lateral resistance to active pressures, and reduce environmental impacts downslope of the failure.

Branscomb Road (CR 429) Failure at MP 17.21 – Mendocino County, CA:

Branscomb Road is a paved, two-lane section approximately 24 feet wide and established in a combination cut/fill section. Heavy rains in Winter 2017 caused a failure of the outer road shoulder, for a distance of approximately 74 feet. Ryan prepared a Geotechnical Memorandum for the site, which included an analysis of existing geologic and subsurface conditions and results laboratory testing to determine material properties of underlying soil/rock units. CAInc also considered a Mechanically Stabilized Earth (MSE) wall and RSP Fill Slope for permanent repair. The Soldier Pile Tieback wall was recommended at the preferred repair option. This option will achieve secure support within the rock and provide lateral resistance to active pressures and will limit the environmental impact downslope of the failure.

Humboldt Bay Municipal Water District Water Transmission Pipeline

Replacement under Mad River – Humboldt County, CA: The project will replace an existing 14" ductile iron pipe where it presently crosses the Mad River attached to a 1930's era North Coast Railroad Authority (NCRA) steel-truss bridge. The bridge is vulnerable to damage or failure during an earthquake or severe flood. Total length of the river crossing is about 540 feet. CAInc prepared a Final Geotechnical Report which included project coordination and preparation; geologic reconnaissance; subsurface exploration; geophysical surveys; and laboratory testing. Recommended the HDD pipeline be maintained within the bedrock unit to reduce the potential for frack-out.



Ryan Houghton, PE
PROJECT ENGINEER

PAGE 2

Willow Creek Wastewater Treatment System - Humboldt County, CA: As Project Engineer, Ryan prepared a Geotechnical Report to provide geotechnical recommendations for the proposed wastewater treatment system, which will replace the aging individual septic systems with a single community wastewater collection and treatment system. To prepare this report, CAInc reviewed available geologic maps of the site; conducted a site review; drilled, logged and sampled exploratory borings; performed laboratory tests on representative soil samples from the exploratory borings; and performed geotechnical engineering calculations and analysis to develop recommendations. Provided recommendations for the collection system, pressure main, septic and recirculation tank foundations, and filter bed wall foundations.

College of the Redwoods - Water Tank Replacement - Eureka, CA: 2015 Geotechnical site investigation for the replacement of two water tanks. Tasks included subsurface drilling coordination, logging of soil borings and collection of representative samples, researching the site geology and seismicity, foundation and grading recommendation, and preparation of report exhibits.

City of Fort Bragg - South Fort Bragg Coastal Trail-Cypress Access - Fort Bragg, CA: 2015

Design of proposed access road and accompanying pedestrian trails. Tasks included layout and design of project elements in AutoCAD Civil 3D, plan preparation, and truck-turning simulations using AutoTURN computer program. Also, conducted a geotechnical site investigation to determine structural sections for the proposed access road. Tasks included test pit logging, analysis of minimum required structural road section alternatives, and a written geotechnical memo summarizing results of the site investigation.

Aaron Smud

CONSTRUCTABILITY AND COST ESTIMATING

EDUCATION

- Bachelor of Science in Business/ Economics
- Eastern Oregon University
Major: Business Administration

QUALIFICATIONS

- HCSS Heavy Bid, Estimating software (15 years experience)
- Hard Dollar, Estimating Software (3 years experience)
- AGTEK, Take-Off Software
- Microsoft Project
- Traffic Control and Safety Plan Designer
- Erosion Prevention and Sedimentation Control (SWPPP) Developer
- OSHA Competent Person Trained

PROFESSIONAL AFFILIATIONS

- American Water Works Association (AWWA)
- Engineering Utility Contractors Association
- American Society of Professional Estimators
- HCSS User Group
- Fortune Builders

With over twenty years of construction experience as an estimator and project manager on numerous project types including water infrastructure, wastewater, storm drainage, site grading, natural gas pipeline, roadways, environmental, and minor structures. Role of experience includes developing resource loaded definitive construction cost estimates, constructability reviews, mean and methods, value engineering, contract negotiation, change orders estimating and cost validation that all lead to successful project delivery. Versed in developing and negotiating proposals within project teams for Design-Bid/Build, CM/GC, Alliance, and other bid delivery methods. Background includes extensive involvement in all aspects of civil construction including, estimating, project management, project startup, submittals, subcontracts, scheduling, and project sequencing.

Substantial field experience as a labor, equipment operator and crew foreman has provided a thorough understanding of construction equipment capabilities, realistic production rates, the importance of safety, and the significance of a high quality product. This hands on experience and knowledge has allowed for more accurate and efficient estimates.

SELECTED PROJECT EXPERIENCE

PG&E Pipeline Safety Enhancement Program - San Ramon, CA: Leading a team of estimators for natural gas pipeline projects within an Alliance Target Price format. Supporting numerous work streams including Pipe Replacement, Valve Automation, Station, Strength Test, and ILI. Developing resource loaded estimates, negotiating construction contracts, provide constructability reviews, change order estimating and negotiation, value engineering proposals, and other construction services throughout this regional safety and reliability program. This team has been directly involved in combined client savings of over \$80 million through estimating and negotiation support.

Lake Oswego Finished and Raw Water Pipeline Projects - Lake Oswego, OR; \$39,180 000:

Lead Cost Estimator for a pipeline project that upgraded the City's 16-mgd water system to 32 mgd. Included both Raw and Finished Water Pipeline with a total approx. footage of 38,917 lf. The sizes ranged from 24" DIP to 48" WSP diameter waterlines. It also included extensive traffic control, site work, mechanical improvements restoration and the Bonita Pump Station.

Davis Surface Water Improvement Project - Davis, CA; \$20,194 915: Cost Estimator for a transmission pipeline improvement project. Included Finished Water Pipeline with a total approx. footage of 28,836 lf. The sizes ranged from 12" DIP to 30" WSP diameter waterlines. It also included horizontal directional drill, auger bores, valve vaults, turnout structures, extensive traffic control, site work, mechanical improvements and restoration.

Mill Creek Raw Waterline Replacement - Toledo, OR \$4,215,050: Replace approximately 24,000 LF of 6" AC raw waterline with 8" PVC and DIP. The cross-country site work including ROW clearing, creek crossings access roads, erosion control, steep ROW, and re-vegetation. The project also had a number of pipeline appurtenances such as valve vaults, blow-offs, air release valves, and modifications to the existing intake and treatment facilities.

Powell Butte Reservoir 2 - Transmission and site piping - Portland, OR \$16,862,290:

Install various sizes from 90" to 24" WSP tank feeder, bypass and drain lines to a new 50 MG concrete reservoir. Other key scope items included new valve vaults, retrofitting existing vaults, deep trench shoring, and numerous appurtenances. The project had extensive environmental and schedule restrictions.

Portsmouth Force Main Segment 1 - Portland, OR \$28,150,000: 10,000 LF of 66" welded steel sewer force main that includes 7,000 LF of open cut and 3,000 LF of microtunnel installation. Design and construct three secant pile tunnel shafts and one sheet pile shaft that average 40' depth. Construct five reinforced concrete structures, combinations air/vacuum relief valves, and odor control units. A unique onsite soil cement process was used to create pipe backfill and encapsulate existing contaminated media.

Provo River Canal Enclosure - Pleasant Grove, UT \$182,957,000: 101,000 LF of 144" to 132" welded steel waterline. The massive irrigation canal enclosure project required a variety of related improvements including nearly \$20 million of existing utility relocations, 800,000 cy of mass excavation, inter-tie structures, existing tunnel slipline, large concrete box culverts, intake facility and fiber optic telemetry system. One major challenge of the project was that almost all construction had to be done in the winter months. I functioned as the lead estimator on all aspects of the project.

Juniper Ridge Hydroelectric Power Project - Bend, OR \$23,237,455: This project was a Design Build RFP that consisted of enclosing a 13,300 lf section of existing canal with 108" WSP that would increase velocity and divert flows into a new 3.8 MW turbine generator. Extensive site work, rock excavation, and limited working season were all project challenges. The bid format required compiling both a design, and construction team that are equally competent, creative, and competitive to generate a proposed design and a hard cost estimate.

Plymouth Pipeline Project, - Plymouth, CA \$5,599,653: Approximately 38,600 LF of 12" domestic waterline, 80 foot span prefabricated steel pedestrian/pipe bridge, and nine pressure reducing stations. The cross-country site work including ROW clearing, grading, erosion control, steep ROW, creek crossing, and re-vegetation. The project also had a number of pipeline appurtenances such as blow-offs, air release valves, fire hydrants, and modifications to the existing Plymouth Treatment Plant and Water Tank Site.

Anatolia Major Roads I-III and Douglas Road - Rancho Cordova, CA \$31,012,000: Installation of approximately 14,320 lf of 24" to 42" VCP gravity sewer, 15,780 lf of 6" & 8" DIP force main sewer, 39,400 lf of 24" to 42" DIP waterline, 27,000 lf 12" to 60" storm drain, 4ea twin 7' x 10' concrete box culverts, 24" and pressure reducing station.

SUMMIT FORESTRY

LEE SUSAN

FORESTRY TIMBER MANAGEMENT

EDUCATION

- Humboldt State University,
Arcata California
Bachelor of Science in Forestry

REGISTRATIONS

- Registered Professional
Forester
RPF License #2127

PROFESSIONAL AFFILIATIONS

- Member California Licensed
Forester's Association
Board of Director's
- Received CDF Golden Trowel
Award 1995

CLIENT REFERENCES

- Mrs. Debbie Walsh
8507 Mill Station Road
Sebastopol, CA 95472
(707) 548-4843
- Mr. Robert Pardini
Licensed Timber Operator
P.O. Box 185
Boonville, CA 95415
(707) 895-3464
- Mr. Tom Arens
5877 Melita Road
Santa Rosa, CA 95409
707-396-8374

Forestry consultant and proprietor of Summit Forestry. Summit Forestry provides a full range of professional forestry services to its clients. Services provided include Timber Harvest Plan and Non Industrial Timber Management Plan preparation, timber valuations, wildlife surveys, logging contract administration, timber harvesting and general forest management assistance. During 2010 and 2011, in addition to ongoing forestry operations, Lee was an owner operator of a cable yarding side which successfully harvested over 3,000MBF of timber.

Lee Susan went to work for Louisiana Pacific Corporation in 1979 after graduating from Humboldt State University. Lee started as an assistant forester and in time became an Area Forester. In that capacity Lee was responsible for the day to day operations on approximately 20,000 acres of timberland. Lee left LP in 1993 in order to start his own business.

SUMMIT FORESTRY

Curtis Tyler

FORESTRY TIMBER MANAGEMENT

EDUCATION

- Humboldt State University,
Arcata California
B.S. Forest Resource
Management.

REGISTRATIONS

- Registered Professional
Forester
RPF License #2990

EMPLOYMENT HISTORY

Summit Forestry

Fort Bragg, CA

February 1996-October 2006;

May 2010–Present

- » Responsible for all aspects of timber harvest plan (THP) preparation including: layout of road, skid trail, and harvest units, tree marking, yarding method determination, stream classification and channel surveys, timber cruising, in field and office mapping as well as THP writing and editing.
- » GIS mapping utilizing ArcGIS 9.x and 10.x. Responsible for introduction of GIS into the workflow, installation of GIS software, acquisition of GIS compatible hardware and maintenance of hardware, acquisition, creation and backup of data including GPS data post processing.
- » GIS analysis of elevation, slope, aspect, visual, and hydrologic aspects of timbered environments.
- » Drone use for mapping and surveying timber stands, roads, slides and other natural and manmade features. Creation of orthorectified imagery, DEM's, DTM's, 3D models and spherical panoramas. FAA certified remote pilot #3917667.
- » Trimble GPS utilization for fixed plot mapping for California Dept. of Forestry Contract and PALCO contract.
- » Aerial photography interpretation for wildlife habitat and timber stand types as well as inclusion into GIS maps using digital elevation Models (DEM's) and/or digital orthophoto quadrangles (DOQ's).
- » Supervise other employees in the use of GIS, forest field work and data entry.
- » Archaeology survey and site delineation and archaeology survey reports including GIS mapping using GPS site boundaries and/or points.
- » Wildlife surveys including Northern Spotted Owls, Southern Seep Salamanders, yellow and red legged frogs, raptors, Red Tree Voles and Marbled Murrelets.
- » Botanical surveys and reports for threatened, rare and/or endangered species and communities.
- » Other responsibilities include crew and logging supervision/compliance.

Self Employed

County Wide

April 2009 – Present

Cartographer

- » Create mapping products that meet US Army Corps of Engineers specification for development, remediation and assessment.
- » Assist in the planning and utilization of resources through the use of GIS and GPS for local Indian Tribes by analyzing geographic data of various formats including remotely sensed data such as aerial photography, digital elevation models and LiDAR, as well as digitized data.

- » Train individuals and organizations in the use and best practices of ArcGIS 9.x and 10 and GPS.
- » Provide profession witness services in court pertaining to mapping, map making and interpretation.

Archaeological Commission

County of Mendocino

February 2009-Present

Commissioner

- » Review coastal development permits, parcel splits and other projects for potential historical and prehistoric archaeological impacts
- » Recommend and review archaeological reports and studies for projects that come before the Commission.
- » Update Commission ordinance, goals and guidelines and develop procedures for screening projects to be reviewed.

County of Mendocino

Ukiah, CA

October 2006-April 2010

GIS Technician

- » Daily use of ESRI's ArcGIS 9.x suite of products and extensions to in order to manage and maintain countywide spatial data sets.
- » Conduct bi-monthly meetings to educate County GIS users in tips and tricks to efficiently complete GIS tasks
- » Maintain and update geo-database for countywide application of data within various departments including health services, assessors, department of transportation, surveyors, and air quality as well as other departments within and without the county offices.
- » Prepare display maps upon request for departments and individuals of the County in order to clearly define or convey ideas, goals and information.
- » Prepare data for use and display by other County and private GIS users.
- » Analyze GIS data for use in planning, law enforcement and regulation enforcement using ArcGIS and 3D Analyst, Spatial Analyst, Survey Analyst and Geo-statistical Analyst.
- » Install, troubleshoot and maintain ArcGIS for 17 countywide workstations.
- » Use and train others to use Trimble and Magellan GPS units to accurately obtain GPS points, lines and polygons.
- » Train County employees in the correct use of ArcPad 7.x and 8.x to collect, edit and enhance County GIS data using ArcPad's built in check-in, check-out capabilities.
- » Assist in the accurate collection of GPS data for projects including road centerlines, road mileage markers, microwave relay sites and other County projects.
- » Post process GPS data to increase accuracy and include in mapping products and databases.
- » I also routinely attend and participate in local GIS user groups and presentations as well as ESRI sponsored events such as the 2008 Regional User Group held in Sacramento, CA in February and Getting the Most out of ArcGIS Desktop: Tips and Tricks for Productivity in 2007.



Douglas L. Brewer

REGULATORY COMPLIANCE

Mr. Brewer has over 30 years of experience assisting clients in the fields of environmental disclosure and permitting with the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), state and federal Endangered Species Act (ESA) and Clean Water Act. He has served as Project Director on complex infrastructure projects and has managed large multidisciplinary teams of scientists and engineers. Mr. Brewer has served in key leadership positions for several national and international firms in the last 15 years and has strong skills in organizational management, business strategy development, marketing and budget management. He has managed the spectrum of projects from small to large multi-year complex projects with budgets ranging from \$500-\$1,000,000.

Mr. Brewer has worked with a variety of clients, including regulated utilities, cities and counties, government agencies, as well as private industries.

Mr. Brewer specializes in assisting clients in project planning and development through early planning to identify fatal-flaws and constraints and developing viable solutions. He assists clients in maintaining their environmental stewardship standards and ensuring long-term sustainability of project operations. Mr. Brewer has served as an instructor on Clean Water Act Water Quality Permitting and Total Maximum Daily Loads (TMDL) through University of California, Davis Extension. Mr. Brewer's career experience includes, but not limited to, the following projects.

Directed or managed over 150 environmental impact assessment analyses on a wide variety of water, wastewater, power and other major infrastructure projects in California. Project experience includes CEQA/NEPA/ESA/CWA compliance, regulatory permitting and compliance, environmental impact analysis for water and power projects, wastewater, ground water, water supply, flood control, habitat conservation, and energy-based projects.

SELECTED PROJECT EXPERIENCE

Coleman Engineering/City of Crescent City Public Works Department, Initial Study Mitigated Negative Declaration/USDA Documentation for Water Supply Project. 2016. Project Manager for preparation of CEQA ISMND and USDA environmental documentation for USDA funded water supply project involving two new water pipelines, storage tank maintenance and water meter installation.

Coleman Engineering, Los Molinos Community Services District, Initial Study Mitigated Negative Declaration/ SRF Documentation for the Arsenic Compliance and Water Supply Consolidation Project. Project Manager. 2015.

Managed preparation of CEQA IS/MND for small water supply project which included new groundwater well and approximately 2,500' of new water pipeline to connect two small mobile home parks to LMCS D water system. Also prepared CEQA+ SWRCB State Revolving Fund (SRF) project documentation (Environmental Form, Endangered Species Act, Clean Air Act and NHPA Section 106 compliance).

NEXGEN Engineering/City of Colusa Public Works Department, Water Rights Petition Environmental Analysis.

Project Manager. ENERCON prepared detailed water rights and environmental analysis for the potential reclamation of 400,000 gallons per day of treated wastewater for alfalfa production. Conducted evaluation of ceasing wastewater discharge to Powell Slough and effects on water quality and aquatic life. Water rights petition was approved with no restrictions by SWRCB in December 2015.

Foothill Raw Water Supply Supplemental EIR and Permit Acquisition, Newcastle, California, Placer County Water Agency. Principal-in-Charge. Managed major raw water supply project involving 60-inch diameter raw water pipeline and two finished water pipelines to serve Foothill WTP in Newcastle. Clean Water Act Section 404 NWP and CDFG permits successfully obtained

City of Williams, Wastewater Treatment Plant Upgrade project ISMND, California, City of Williams. Project Director. Prepared CEQA environmental document and SRF program documentation for new treatment plant. Assisted in plant siting to avoid wetlands and acquisition of funding.

City of Colusa Wastewater Treatment Plant Upgrade and Reclamation Project. Initial Study Mitigated Negative Declaration (IS/MND). Prepared environmental document for treatment plant nitrification/denitrification using Bio-Lac process, new 55' diameter clarifier and 2- mile long reclamation pipeline and collection system upgrades. Assisted City with State Revolving Fund (SRF) grant application requirements.

City of Jackson CA, Department of Public Works, Jackson Creek Beneficial Use Assessment Study. Mr. Brewer was the primary study design leader for evaluating the biological conditions in 6 mile segment of Jackson Creek in assessing management decisions regarding wastewater discharges to Jackson Creek and the need for wastewater treatment plant upgrades. The study used SWRCB Surface Water Ambient Monitoring Protocols and evaluated fisheries, water quality, wildlife to assist with predictions of impacts from eliminating the City's discharge to Jackson Creek.

Meadow Vista County Water District CEQA Initial Study/Mitigated Negative Declaration (IS/MND), California.

Project Director. Directed SRF funded water supply reliability project involving increased storage and improved diversion from Bear River Canal. Worked closely with client to avoid wetland impacts. Managed ISMND and associated SRF reports.

City of Modesto, Modesto Water Treatment Plant Expansion, Modesto Irrigation District/City of Modesto.

Principal-in-Charge. Managed major water treatment plant expansion from 30-60 MGD and associated pipelines and water storage facilities in City of Modesto. Project involved 67 TAF water rights transfer to MID to city and associated actions with SWRCB.

Placer County Water Agency, Foothill Raw Water Supply Supplemental EIR and Permit Acquisition, Newcastle, California, Placer County Water Agency. Principal-in-Charge. Managed major raw water supply project involving 60-inch diameter raw water pipeline and two finished water pipelines to serve Foothill WTP in Newcastle. Clean Water Act Section 404 NWP and CDFG permits successfully obtained.

Nevada Irrigation District (NID) Regional Water Supply Project, Lincoln, Nevada, City of Lincoln. Project Planning and Analysis Leader. Prepared constraints analysis and assisted with planning for biological, land use, and cultural resources chapters of EIR for a regional water supply project involving 20-mile pipeline and two storage reservoirs.

Wastewater Collection System IS/MND and SRF Funding Assistance, Jamestown, California. Project Director. Prepared environmental documentation and SRF program documentation for collection system upgrades.

D. REFERENCES

Coleman Engineering is pleased to provide contact information for the following clients who will be happy to speak with the City regarding the high level of service provided by Coleman Engineering. We invite the City to call any of the following individuals and we will be happy to provide others if necessary.

James Lowden
General Manager
Los Molinos Community Services District
(530) 824-2914

Keith Coggins
Engineer Development Manager
City of Oakley
(925) 625-7155

Chris Ehlers
Assistant Director of Public Works/Operations
City of Brentwood
(925) 516-6030

Brenda Bonillo
District Secretary
Tuolumne City Sanitary District
(209) 928-3517

Clarence Chu
President
Locke Water Works Company
(916) 776-1661

Charles Palmer
District Engineer
Calaveras County Water District
(209) 754-3174

E. KEY ISSUES, CHALLENGES AND PROJECT APPROACH

We have identified a number of key issues and challenges that must be proactively addressed in order for this project to be successful. Our core team and our sub consultants have met during this proposal phase to identify and review these issues and challenges, discuss potential solutions, and develop our project approach. This section presents a discussion of each of the key issues and challenges facing the project, and our intended approach to their successful resolution.

We anticipate that this approach will be refined as we meet with City staff, gather more site-specific information from field investigations, and begin design services. Early resolution of these key issues and challenges is critical, as it will ensure that we can successfully deliver the project in an efficient, productive, and effective manner.

Approach 1 : Using trenchless construction methods can reduce tree removal

Issue: Excessive tree removal necessitated by a long, linear pipeline project through the forest.

Concern: We understand that tree removal is likely to be an issue that causes resistance to the project from local residents and resource agencies.

Our Approach: Because the pipeline is long and aligned through forest lands, there is potential to impact a significant number of trees. Our team will explore all means of minimizing tree harvest requirements. One attractive method is the use of trenchless pipe construction technologies that could reduce the extent of open trench excavation and minimize the number of impacted trees.

Based on our experience, the trenchless method most likely to be applicable in this forest setting is Horizontal Directional Drilling (HDD). HDD allows for pipe to be placed in both



Typical HDD Equipment

straight and curved horizontal alignments. Access requirements at both ends of an HDD operation are less significant than other trenchless methods. We anticipate the identification of multiple sections of pipe that can be installed using HDD equipment, which in turn will minimize impacts to the forest.

Our team will carefully consider where HDD drilling muds and lubricants could potentially “frac out” from the ground surface during pipe installation. This attention is needed as this pipe will be relatively shallow. Any creek crossings that are attempted using HDD will require careful consideration of this issue.

Cured in Place Pipe (CIPP) is a possibility where lining the existing pipe makes sense. CIPP can minimize excavation and provide a fully independent structural replacement pipe. The existing raw water pipe is well suited to a CIPP approach since there are no service connections, no laterals, no connecting pipes, and no hydrants. CIPP for pressurized water pipe can be pulled through bends and fittings, and maximum pull lengths can extend to 1,000-feet. This can significantly reduce both excavation and tree removal. We see great potential with this



Steep, heavily wooded terrain

approach, and we will thoroughly evaluate CIPP as a means of pipe rehabilitation for the raw water pipeline.

Pipe bursting is another trenchless technology that could be applied on this project. It has appeal for several reasons:

- Pipes can be upsized to a larger size if desired.
- As existing alignment is remote, the potential to damage other utilities is minimal.
- The existing alignment can be used, so there will be no need to change future easements.

Pipe bursting does, however, have some limitations in this setting. It is not very effective negotiating bends, so its use may be limited to straight sections of pipe. Pipe bursting generally requires more space and creates more impacts at both ends of the pipe than HDD. The equipment footprint at both ends of the pipe is significant. We will consider this when determining the applicability of pipe bursting.

Pipe material needs to be considered when selecting a specific trenchless technology. Generally, two types of pipe are used with trenchless applications: High Density Polyethylene (HDPE), and Fusible Polyvinyl Chloride (FPVC). Our experience has shown that there are several key factors to consider when

selecting pipe materials for trenchless applications: cost, pipe hydraulics, and future operations.

By allowing multiple materials to compete during the bidding process, costs can be minimized. Cost becomes a real concern when pipe material selection is limited: as competition decreases, cost usually increases. We will endeavor to allow multiple pipe materials to be specified so that competition is maximized.

Pipe hydraulics can become an issue because the pipe design methods for HDPE and FPVC are different. HDPE requires a thicker pipe wall which results in a smaller internal diameter. In pressurized systems, the resulting loss of water conveyance capacity in an HDPE pipe can adversely impact long-term operation costs. We will select pipe that is adequately sized to convey the required flow. This is discussed below in more detail.

HDPE pipe is not normally standardized on iron pipe sizes. Including HDPE in a system requires an agency to maintain fittings, repair clamps, and other appurtenances and tools that are sized for two different pipe sizes. In contrast, FPVC pipe is manufactured to the same dimensions as all other AWWA C900 and C905 pipe. Its dimensions are exactly the same as the remainder of the system, which then requires no extra tools or fittings. We will discuss this issue of pipe sizing and operational impacts with City Operations staff to ensure that everyone understands the issues prior to selection of allowable pipe materials.

Approach 2: Modifying the pipe alignment can reduce tree removal

Issue: Excessive tree removal necessitated by a long, linear pipeline project through the forest.

Concern: We understand that tree removal is likely to be an issue that causes resistance to the project from local residents and resource agencies.

Our Approach: Our team has made multiple visits to the project site both with and without City staff. We believe there are opportunities to significantly improve the project by re-aligning the pipe in specific locations. We have identified multiple forest roads and logging trails that appear to offer the opportunity to place the new pipe without requiring the removal of trees.

For many projects, realignment can cause issues as new easements have to be obtained. However, from our discussions with City staff we understand that there are no reliable existing easements for the raw water pipeline. This means that all easements along the full length of the new raw water pipeline will require new documentation and agreements with property owners – regardless of whether the existing alignment is maintained or if the pipe is realigned. It appears then that there would be very little penalty to the project in terms of additional cost, public relations difficulties, or schedule from realigning where improvements could minimize tree removal.

We have already considered multiple locations for pipe re-alignment. Examples include Forest Road 450 and a logging skid trail in Phase V, as well as residential roads in Phase IV. Figures 1 and 2 show examples of potential pipe realignment opportunities.

We will actively seek locations that could both support realignment to minimize tree removal and improve accessibility for City staff to operate and maintain the new raw water pipeline.



Forest Road 450 – a possible alternative route to avoid tree removal

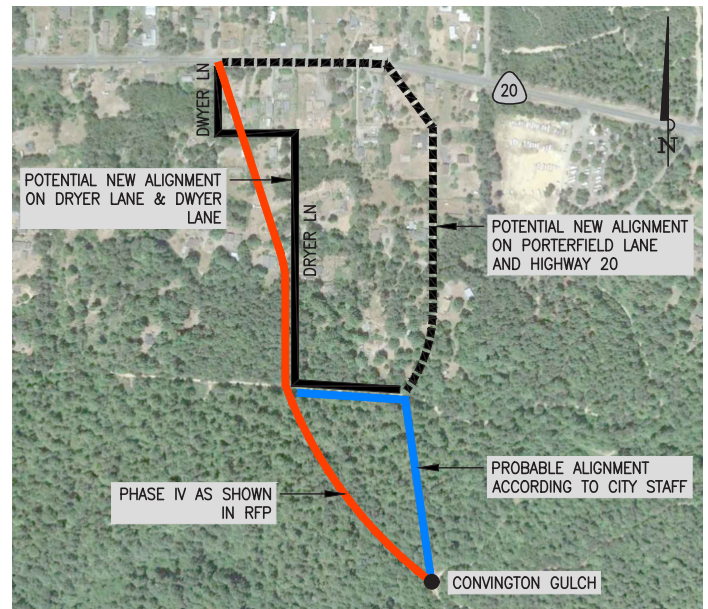


Figure 1 Potential Phase IV realignment

Approach 3: Ground investigation will assist design and construction method selection

Issues: The key geotechnical issues associated with this project are:

- Steep terrain along the pipeline alignment, with slopes prone to landslides.
- Shallow groundwater and springs.

Our Approach: Together with our geotechnical sub consultant, Crawford & Associates (Ukiah), we will evaluate these and other geotechnical issues relative to the proposed pipe alignment, prepare design parameters, and review applicability of construction methods. This will include trenchless construction methods such as HDD.

The design team will review published topographic, geologic, and seismic mapping, and geotechnical data. The team will also conduct geologic reconnaissance and mapping to identify those critical areas that are landslide-prone, or contain springs and other adverse geologic and geotechnical conditions that may affect pipeline location, design and long-term security.

Based on the results of field and laboratory testing, the geotechnical engineering team will conduct engineering evaluation and analysis that includes slope stability analysis, excavation stability, pipeline foundation support, and groundwater assessment. Following all field analysis and lab testing of samples, a Geotechnical Engineering Report will be prepared to define physical conditions and make recommendations for the new pipeline including trench excavation, trenchless options (including HDD and frac-out potential), pipe support and backfill, thrust block parameters, drainage/sub-drainage, and soil corrosivity. This thorough approach to geotechnical and geological conditions will lead to a robust and reliable pipeline design.

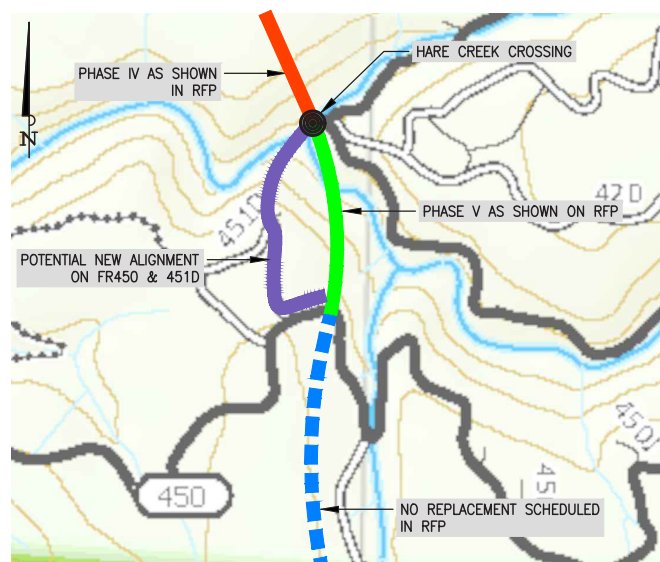


Figure 2 - Potential realignment in Phase V



Slope stability has been a historical issue

Approach 4: Thorough consideration of pipe hydraulics will produce a cost-effective design.

Issue: Selecting the correct pipe diameter.

Concern: The design flow rate is limited, and no future increase is anticipated, so there is little reason to oversize the new raw water pipeline. Proper selection of the pipe diameter thus has the potential to save the City money.

Our Approach: We have performed some initial pipe hydraulic calculations during this proposal phase. These have been limited as we don't as yet have detailed topographic survey information. However, using publicly available USGS topographic data together with City-provided alignment information, we have created an approximate profile of the proposed raw water pipeline.

The design flow rate of the raw water pipeline is limited by the water right at Waterfall Gulch. According to information provided by the City, the Waterfall Gulch Appropriate Water Right is limited to a Maximum Annual Diversion of 475 acre-feet per year at a maximum rate of 0.668 cubic feet per second (cfs). 0.668 cfs is approximately equal to 300 gallons per minute (gpm). We understand that the State Department of Fish and Wildlife wants to reduce the maximum diversion by 25%, but that number is currently in dispute. So while it may be possible for the design flow to be reduced, it seems unlikely that it would ever be increased. We have concluded that it is prudent and cost-effective to design the new raw water pipeline to convey this 300 gpm.



Potential for landslides will be assessed



Waterfall Gulch raw water source and inlet pipe

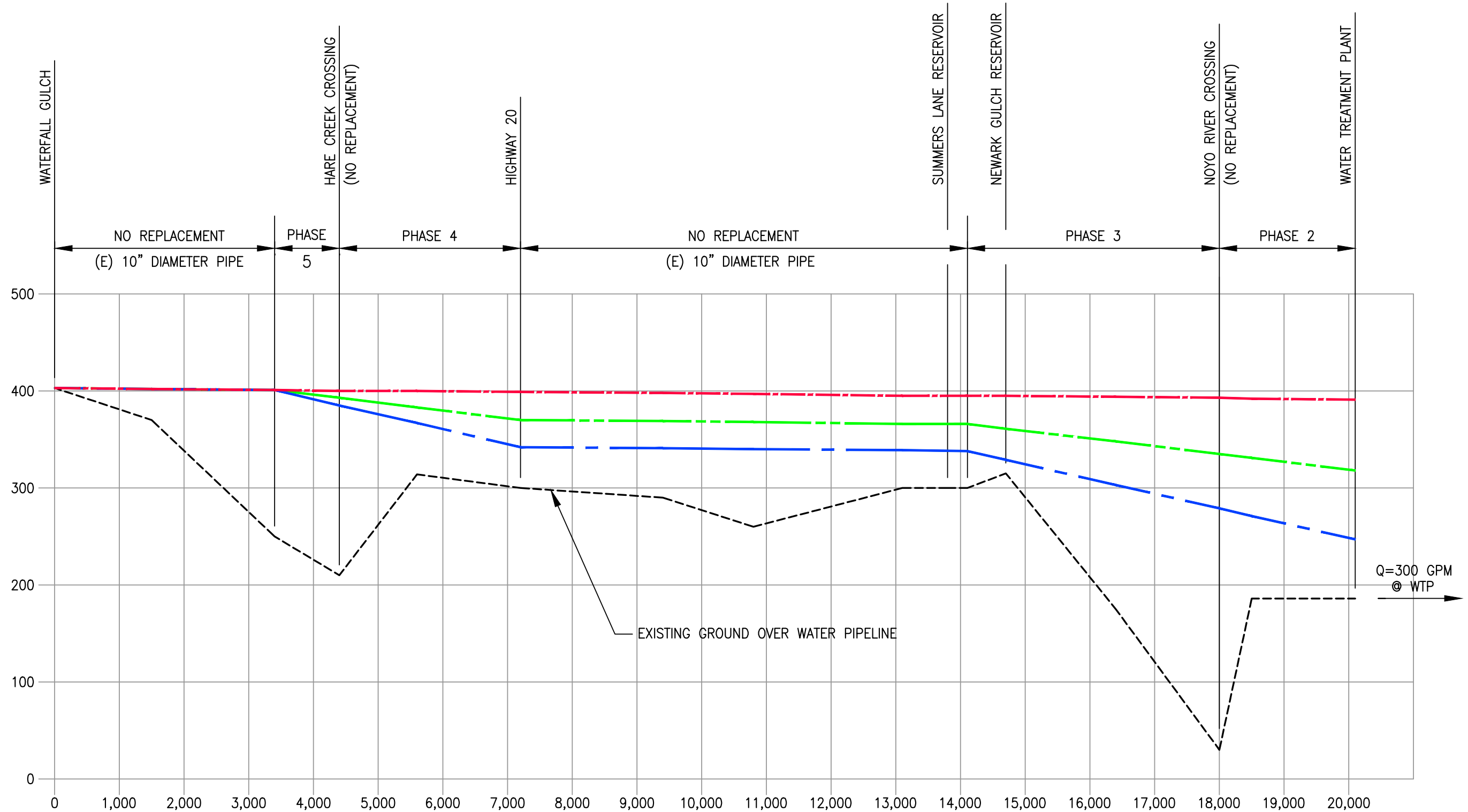
As part of our preparatory work, we have already run three separate computer models of the proposed pipeline. These models have determined hydraulic details of the proposed pipeline under the following three scenarios:

- **Replacing all new pipe with new 10-inch diameter pipe.** This would continue the City's program of replacing old 6-inch pipe with new 10-inch diameter pipe. This is the most conservative approach to the project and provides for extra future capacity.
- **Replacing all new pipe with new 6-inch diameter pipe.** This scenario would leave the existing new sections of 10-inch diameter pipe in place but would replace future sections of pipe with new 6-inch diameter pipe. This scenario generates a potential cost-effective solution

by not oversizing the future replacement sections.

- **Replacing all new pipe with new 5.25-inch diameter pipe.** The purpose of this scenario is to evaluate the use of a CIPP lining on the project. A fully-structural CIPP lining would have an internal diameter of approximately 5.25-inches. We have conservatively modeled an alternative where all replacement sections were lined with CIPP in order to evaluate the resulting pipeline hydraulics.

Figure 3 on page 40 shows the calculated Hydraulic Grade Lines of the three scenarios explained above.



LEGEND

EXISTING GROUND (PER GOOGLE EARTH ELEVATIONS)	---
HYDRAULIC GRADE LINE - ALL NEW PIPE 10" DIAMETER	---
HYDRAULIC GRADE LINE - ALL NEW PIPE 6" DIAMETER	---
HYDRAULIC GRADE LINE - ALL NEW PIPE 5.25" DIAMETER	---

SCALE

HORZ: 1"=1,500'
VERT: 1"=100'

FIGURE 3 - RAW WATER PIPELINE PROFILE HGL SCENARIOS

Preliminary conclusions that can be determined from the modeling work we completed include the following:

- The calculated hydraulic grade lines show that all of the scenarios are viable for further study and consideration during design.
- Because the smallest internal diameter of 5.25-inches is viable it means that pipe lining is worth consideration. This is a conservative view of the project since we assumed ALL new phases were to be replaced entirely with lined pipe. This will most certainly NOT be the case since pipe lining will not be appropriate in all locations. Therefore, it is likely that pipe lining can be used in the limited settings for which designers determine it is applicable.
- There is not likely to be a hydraulic reason for spending the money on new 10-inch diameter pipe. The preliminary modeling shows that the difference between 10-inch pipe and 6-inch pipe for replaced sections is an additional 70-feet of excess head at the WTP. But, the 6-inch diameter pipe is modeled to provide plenty of pressure at the discharge of the raw water pipeline so there is probably no technical reason to spend additional money on 10-inch diameter pipe.

This initial analysis does not meet a design level standard due to the lack of a detailed topographic survey, but it is still very useful for determining starting points for design and likely limitations generated by pipe hydraulics. Our team will work with the City to determine the best uses of available budget and will consider pipe diameter vs. costs vs. the possibility of future capacity increases to settle on the most appropriate pipe sizes for the project.

Approach 5: Optimizing pipe ratings by segment can save the City money.

Opportunity: Because of the relatively large variation in pipeline pressure along the pipe alignment, there is an opportunity to save money by optimizing the pressure rating of the pipe in each segment.

Issue: Selecting the correct pipe pressure class.



Pressures will vary significantly along the pipe alignment



Exposed pipe crossing below Newman Gulch Reservoir

Approach: Figure 3 above shows that the elevation of the pipe is anticipated to vary by approximately 370-feet: Waterfall Gulch is at an approximate maximum elevation of 400-feet and the crossing of the Noyo River is at approximately 30-foot elevation. This results in a maximum possible pipeline pressure of approximately 160 psi, but not all pipe will be subjected to this pressure.

It is important to note that although the Summers Lane Reservoir normally serves as a pressure break at an approximate elevation of 300-feet, the existing pipe and valve arrangement make it possible to bypass this reservoir. If the bypass is in operation, the pressure from Waterfall Gulch at elevation 400-feet will be transmitted through the entire pipeline. Our design must assume that there will be no pressure break at the Summers Lane Reservoir in order to protect the new raw water pipeline. We will carefully evaluate elevations along the pipe alignment using the site-specific

topographic survey to determine actual maximum pipe pressures. Using these maximum pressures, our design team will select the most appropriate pipe for each phase. In this manner, the design will be optimized and customized for site-specific conditions.

Approach 6: Use of Summers Lane and Newman Gulch Reservoirs

Opportunity: Phasing construction can allow us to take advantage of the reservoirs' locations and storage capacity.

Issue: The Summers Lane and Newman Gulch Reservoirs are located in the middle of the raw water pipeline. Their combined storage capacity of approximately 46 acre-feet gives the design team a great deal of flexibility when considering shutdowns of the existing raw water pipeline for new construction.

Our Approach: When designers can give contractors options and alternatives, the result is almost always lower pricing. Contractors then have the latitude to use their experience to approach projects in creative ways.

Phases IV and V of the raw water pipeline are both located upstream of the Summers Lane and Newman Gulch Reservoirs. As these reservoirs have substantial storage



Summers Lane Reservoir gives Designers and the Contractor flexibility



Newman Gulch Reservoir

capacity, it is likely that extended pipeline shutdowns could be employed during construction of Phases IV and V. These shutdowns could facilitate easier construction by allowing the contractor to work inside the existing pipeline alignment without having to protect the existing pipeline.

However, correct planning and then monitoring during construction will be important so that the Summers Lane and Newman Gulch Reservoirs aren't drawn down excessively. The water supply from Waterfall Gulch is essentially free to the City, since it flows to the Water Treatment Plant by gravity. In contrast, water from the City's other water supply at the Noyo River requires significant pumping to reach the Water Treatment Plant, so it is costlier. We will consider this issue during design so that any downtimes are limited. There is a significant opportunity to save money by allowing the Contractor greater flexibility during construction.

Approach 7: Install new inlet piping at the water treatment plant will improve operational flexibility.

Opportunity: New piping will allow the raw water ponds to be bypassed and facilitate direct discharge into the influent wet well. This will give operators more flexibility when the raw water ponds need to be out-of-service for maintenance.

Issue: The existing raw water inlet piping limits operators to passing all flow through the raw water ponds.

Our Approach: During our site visits, we learnt that existing raw water inlet piping at the water treatment plant requires operators to pass flow at all times through the raw water storage ponds. This limitation makes bypass of the ponds very difficult in the event of required downtime.



Raw Water Flow Meter at the WTP



Raw Water Flow Meter Vault at the WTP

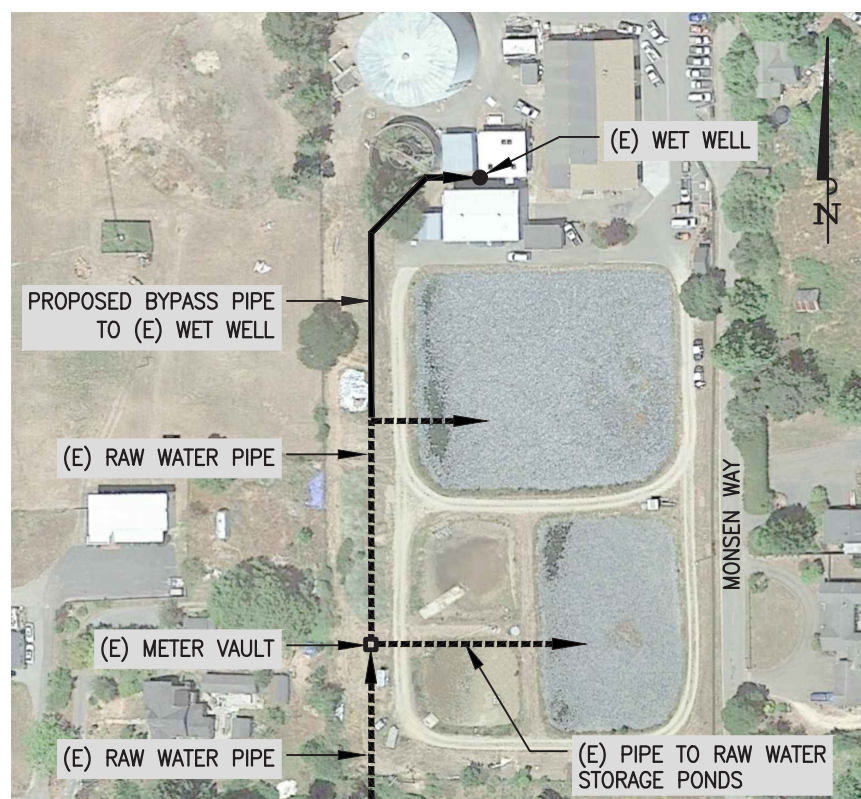


Figure 4 - Potential WTP Bypass Pipeline

Our design team will work closely with the City's WTP operations staff to find an alignment for a new raw water inlet pipe that bypasses the raw water ponds. We anticipate a pipe connection from the existing metering vault to the inlet wet well. Installing new valves will allow operators to select their preferred flow path. The figure below shows a schematic view of this potential improvement at the WTP site.

Approach 8: Maximize the use of environmental consulting during the project

Opportunity: Maximize the benefits of environmental consulting services that are to be provided.

Issue: The City has left open the possibility that it will contract directly for environmental consulting services rather than engage environmental consulting services as a sub-discipline to the design engineer. The right level of environmental consulting is critical to obtaining future funding.

Our Approach: We have provided the City with the means to accommodate either preference. Our level of effort includes the modest participation of Brewer Environmental Services as part of our base scope. These base scope services will allow the design team to communicate effectively and efficiently with the City's selected environmental consultant. Doug Brewer will serve as a liaison between our design engineers and the City's environmental consultant to ensure that the project runs smoothly and efficiently.

We have also included a complete scope for all environmental consulting services anticipated at this stage of the project. These services are additional to the base scope, as requested by the City. Our approach will allow the City to either select only the base scope and get the benefit of Brewer's considerable experience assisting our design team, or the City can select the full environmental additional services. We believe that this latter approach of combining engineering and environmental services in one team will provide both cost and time savings to the City.



Pipeline to be replaced below the 100-year High Water Line of the Noyo River

Our team has already completed a preliminary review of the State of California's Natural Diversity Database to confirm which species are likely to be considered by the various resource agencies. This review identified the following 73 categories of species that occur in the Fort Bragg Topographic Quadrangle:

- 6 amphibians
- 7 birds
- 6 fish
- 3 insects
- 1 mammal
- 1 mollusks
- 1 reptile
- 2 terrestrial communities
- 46 plants

One of the terrestrial communities identified is the Mendocino Pygmy Cypress Forest. We understand that this species caused the City particular concern during the Summers Lane Reservoir project. We will pay particular attention to this forest during design.

We have planned our scope and fee for the full environmental consulting services to include preparation of CEQA-Plus documents. CEQA-Plus is the level of environmental study that will be sufficient for both State and Federal funding applications. Because future phases of the pipeline replacement project are likely to use funding from sources unknown at this time, we believe that the best approach is to prepare for all possible State and Federal applications by using CEQA-Plus documentation.

Our discussions with City staff have highlighted that the City anticipates some difficulties with the California Department of Fish and Wildlife (CDFW) over this project. There is currently disagreement over the rate and total quantity of discharge from the Waterfall Gulch Reservoir. CDFW may use their opportunity to review environmental documents as leverage to achieve their goal of a 25% reduction in diversions from Waterfall Gulch. Our design and environmental consulting team will assist the City resolve this issue by preparing thoroughly defensible environmental documentation.

Finally, we understand that environmental consulting services must include a Coastal Commission Development Permit. City staff have stated that they expect this project to be appealed to the Coastal Commission, and as such, they anticipate that the environmental documentation must be very thorough and prepared in a way that will be defensible to the Coastal Commission.

Approach 9: Consider all environmental impacts and the potential for other near-term improvements

Opportunity: There is potential to maximize the City's investment in the project's environmental review, and in obtaining clearances and permits required for this project.

Issue: There may be situations where the City intends to avoid environmental issues, but other related project elements still trigger a federal or state permit requirement. This will lead



Noyo River at the pipeline crossing location

to further coordination and consultation with the regulatory agencies. It may thus be prudent to initially incorporate these other project elements, as the City is going to go through the time and expense of the regulatory processes in any case.

Our Approach: During this proposal stage, we have realized that there may be opportunities to capitalize on planned environmental consulting and clearances. The most noticeable example is at the Noyo River crossing, and there may be opportunities at the other crossings. We understand that the City does not plan to replace the Noyo River crossing because it was last replaced in 1987 and is believed to be in good condition. However, we believe that its age and relative vulnerability in the bottom of the river indicate that a thorough engineering evaluation may be advisable.

The City has stated that it would like the pipelines to be replaced on both sides of the Noyo River crossing. These working limits will necessitate work inside the 100-year flood zone, which in turn triggers compliance with both the Clean Water Act Section 404 and the CDFW Fish and Wildlife Code 1600. As the current project scope will already necessitate federal permitting processes, it may be prudent to consider also including the river crossings. The resource agencies generally make little distinction between working within the 100-year flood plain and actually working in the river. So it may

be advantageous for the City to consider replacement of the Noyo River crossing pipe as part of the project while the pipes on both sides of the river are being replaced. We will review this concept with the City at the start of the project.

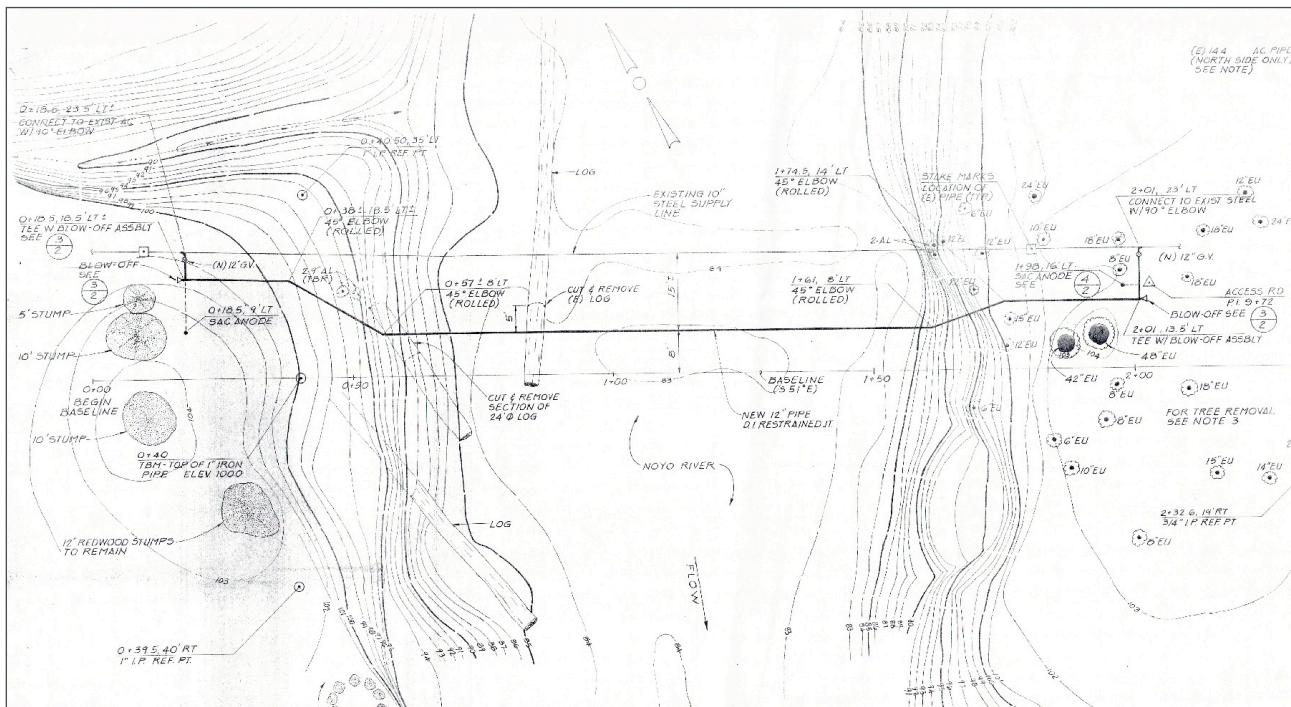
We anticipate that there will be other instances similar to the Noyo River crossing where environmental consulting and clearances required for the scoped project may actually facilitate additional work to be accomplished as part of this project. This "economies of scale" approach may facilitate additional pipe to be replaced at relatively small incremental cost. We look forward to exploring this issue in more depth and to providing cost-effective recommendations to the City for consideration.

Approach 10: Minimizing the number of easements and right-of-way agreements will save money

Issue: The new pipeline alignment must include new easements and rights-of-way. We understand from City staff that there are no reliable easements for the existing raw water pipeline. As a result, the new pipeline will require a completely new set of easements across both private properties and public rights-of-way.

Our Approach: A preliminary study by our professional surveyor sub-consultant has shown that there may be as many as 21 private properties to be crossed by the new pipeline. We have compared the existing pipeline alignment to parcels as recorded by Mendocino County. Counting parcels that the pipeline crosses, or is very near to and may cross, we have itemized the following list:

- City of Fort Bragg – 2 parcels
- Wilson – 1 parcel
- Jackson State Forest – 2 parcels
- Merson Family Real Estate Partnership – 1 parcel
- Merson – 1 parcel
- Mason – 2 parcels
- Peter – 1 parcel
- Felkins – 1 parcel
- Nyren – 1 parcel
- Georgia Pacific Corporation – 1 parcel
- Lyme Redwood Timberlands – 3 parcels
- Peavey – 2 parcels
- Bates – 3 parcels



1987 As-Built Plans of the pipe at the Noyo River Crossing

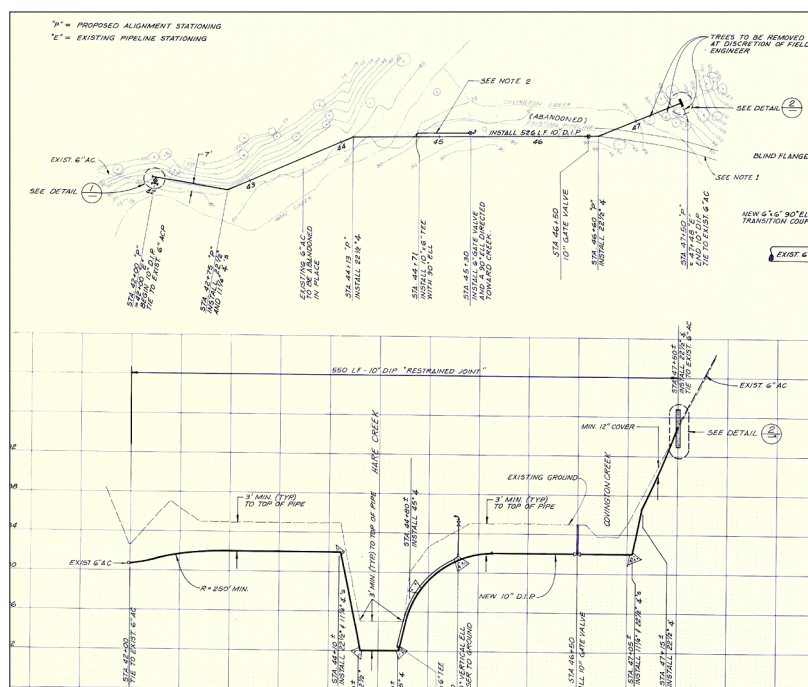
Naturally, the final count of properties to be crossed will depend on the final selected alignment. We have demonstrated above that the pipeline alignment can be improved. It is likely that this will result in not only a pipeline that is easy to operate and maintain, but also in a decrease in the number of easements that must be obtained. This will in turn result in reduced easement and right-of-way acquisition costs.

We anticipate the need for public right-of-way permits from both Mendocino County for county-owned roads, and from Caltrans for state highways. These permits generally have relatively short lifespans, so the team will look to design to meet current anticipated permitting conditions. However, phases of the pipeline will be constructed in several years' time and they may be subject to new permit provisions by the County or State at that time. We will attempt to include design provisions for these later phases to ease future permitting.

Approach 11: Early, thorough and regular constructability reviews will produce a practical and cost-effective design.

Issue: Design and construction in the dense, steep forested coastal setting is heavily influenced by construction methodology.

Approach: Our design team is very experienced in pipeline design. However, we see benefit in supplementing our experience by incorporating the services of a retired pipeline contractor highly experienced in working in this type of terrain. Aaron Smud of Alpine Summit Development will perform a series of constructability reviews as design progresses to ensure our designs are practical, cost-effective, and allow the contractor flexibility to use its particular expertise to build the pipeline. Aaron has many years of experience constructing pipelines on the coast of Oregon and California in similar terrain and environments. This experience includes open-cut and trenchless pipeline construction methods. He has led construction crews in the installation of similar pipelines in steep, densely-forested ravine settings very similar to those we expect to encounter in Fort Bragg.



As-Built Plans of the pipeline at the Hare Creek crossing



Crossing of State Highway 20 will be required

Approach 12: Our approach results in projects that are on-time, to the required quality, and within budget

Communications: Our written and verbal communications are clear, concise, and thorough. We pride ourselves on thorough and timely communications with all of our clients. As a matter of training, we proactively contact our clients in anticipation of their future needs and expectations.

Weekly Planning and Accountability: At Coleman Engineering we are deliberate about our project planning. Each week we hold a project accountability meeting where we review deliverables and project schedules. By meeting weekly, we are able to manage schedules and budgets in a timely manner so that we are never out of touch with the expectations of our clients and the demands of our projects.

Financial Project Management: Coleman Engineering uses the Ajera Project Management and Accounting software to track all staff time, manage project accounting, and to generate invoices. We require each staff member to enter their time daily, so project expenses are up to date for comparison to budgets. By applying the technology in which we have made a significant investment, Coleman Engineering has been able to maintain an excellent history of delivering projects on time and on budget.

Quality Management: Our approach to quality is based upon applying the "right reviews" at the "right time" with the "right people" to ensure that a project starts off correctly and ends successfully. To meet our quality expectations, we prepare a project-specific Quality Management Plan that forms part of our overall Project Management Plan. It details methods and procedures to verify that deliverables meet our client's and industry quality standards.

Prior to submittal, each deliverable is reviewed by a senior engineer highly experienced in the type of work being performed as a quality control review. These reviewers are independent of the design or study team, so they are not influenced by previous approaches or thinking. Each submittal to our client can be accompanied by a Quality Control Review Form with the signatures of each reviewer. This provides evidence that all deliverables have been reviewed in accordance with the Quality Management Plan guidelines and procedures which forms our program of quality assurance.

F. SCOPE OF WORK

BACKGROUND

Scope of Work section details the tasks that are needed to implement the approach presented in the previous section. The tasks included here are used as the basis for the project schedule and fee to be consistent. We have presented the Scope of Services in a format below, so it can be easily incorporated as an "Exhibit 1" to the City's Professional Services Agreement for the project.

Sections of the City of Fort Bragg's raw water supply pipeline are reaching the end of their service lives. This transmission main is a critical element of the City's water supply infrastructure and it consists of a mixture of PVC, asbestos cement, ductile iron and steel pipe materials. A portion of the existing raw water supply pipe is above ground and is supported on a trestle. The pipeline conveys raw water by gravity from two raw water sources at the Waterfall Gulch and Newman Gulch intakes to the City's water treatment plant (WTP) at the east end of Cedar Street. The elevation at the pipeline's highest point is approximately 400 feet (Waterfall Gulch intake), while the low point in the profile is at the Noyo River crossing just above sea level. The Noyo River crossing is one of two river crossings, the other is at Hare Creek.

This Scope of Services describes design engineering and associated services required to prepare design plans, specifications, cost estimates and bid documents for Phases II, III, IV, and V of a replacement raw water pipeline. Phase 1 of the project, which comprises the section of pipeline from the north side of State Highway 20 to the Summers Lane Reservoir, was completed in 2013 and is not part of this project. Phases II – V are as follows:

- » Phase II – from the WTP to the north side of the Noyo River crossing.
- » Phase III – from the south side of the Noyo River crossing to the Summers Lane Reservoir.
- » Phase IV – from the north side of Highway 20 (and also

replacing the current Highway 20 crossing) to the north side of the Hare Creek crossing.

- » Phase V – from the south side of the Hare Creek crossing along Waterfall Gulch to a connection with the new pipeline section which ends at Forest Road 450.

The existing and new pipelines are located in an area characterized by steep slopes, shallow groundwater, springs, heavy forestation and sensitive riparian environments. There are areas prone to landslides and ground movement. Phases II and III are located in part within the Coastal Zone, which requires additional permitting to be supported under this project.

Coleman Engineering, Inc (Consultant), supported by our specialist sub consultants, will perform the services described in this scope under three tasks as follows, with potential additional services included under an optional Task 4:

- » Task 1 - Project Management and Meetings
- » Task 2 – Preliminary Design Studies
- » Task 3 - Preliminary and Final Design
- » Task 4 - Additional Services (OPTIONAL)

Scope of Services

TASK 1 – PROJECT MANAGEMENT AND MEETINGS

Task 1.1 - Project Administration. Coleman Engineering will administer the project and maintain project schedule and budget. The Project Manager will be available to discuss with the City the project progress, planned services in the next billing period, updated schedule, and budget status monthly to coincide with the regular invoice.

Task 1.2 – Project Meetings. Coleman Engineering will meet with the City through project meetings and conference calls. Coleman Engineering will prepare an agenda and brief meeting summaries for each of the meetings and will prepare

and update Action and Decision Logs. 7 meetings have been budgeted for, as identified below:

- » Project Kick-off Meeting (City offices). At this meeting, the Consultant and the City will review and refine a work plan and schedule, including critical milestones, that form part of an overall Project Management Plan (PMP). The PMP will also include the Quality Management Plan. Prior to the meeting, the Consultant will have presented the City with a data and information request and it is assumed that the City will provide the requested data and information at the meeting. This will include, but not be limited to details of easements and right-of-way, previous design documents, previous topographical mapping and survey, record drawings, operations and maintenance records, any previous condition assessment studies, and details of any pipeline rehabilitation work.
- » Project Meetings (up to 6: 3 in-person meetings at City offices and 3 conference calls). These meetings are to review progress and to resolve design questions requiring City input.

Workshops (up to 4) to review City comments on the draft Project Practicability Report, the 30% Draft Plans, the 60% Draft Design documents, and 100% Final design are budgeted under separate tasks below.

Task 1.3 – Quality Management. Quality control will be monitored throughout the entirety of the project. Coleman Engineering will peer-review deliverables internally prior to delivery to the City in accordance with its quality assurance / quality control program and the procedures described in the project-specific Quality Management Plan.

Task 1: Deliverables

- » Monthly invoices and progress report discussions.
- » Meeting agendas and notes, Action and Decision Logs.
- » Project Management Plan and Quality Management Plan.

TASK 2 – PRELIMINARY DESIGN STUDIES

Task 2 details project preliminary design studies, including a review of data and information, site reconnaissance, development and evaluation of potential alignment alternatives and modifications, initial topographical mapping and survey, reporting on the existing pipeline, and recommendation of a preferred project.

2.1 Data Collection and Review. The City will provide Coleman Engineering with all relevant and available data and information in its possession relating to the project at the project kick-off meeting (See Task 1). Coleman Engineering will review this data and information under this task for subsequent use in future tasks. Coleman Engineering, after completing this review, may request further data and information from the City.

Coleman Engineering will also obtain and review any utility records, maps, and information as part of this task.

2.2 Full Team Site Reconnaissance Walk. A one-day site reconnaissance walk involving the full design team, sub consultants, and available City staff will be organized, coincident with the project kick-off meeting. The intent of the site walk is to identify key technical issues such as geotechnical issues, access constraints, tree removal, constructability and applicable construction methods by segment. The site walk will include not only the anticipated pipeline alignment but also potential alternative alignments. Notes of the walk findings with photographs documenting the walk's conclusions will be prepared and circulated to the design team.

2.3 Alternative Alignments Development and “Fatal Flaw” Evaluation. Following review of received data and information and the site reconnaissance walk, a series of alternative alignments will be developed for investigation and evaluation. Potential alignment adjustments will be assessed for “fatal flaws” caused by adverse pipe hydraulics, proximity to geotechnical and geologic hazards, constructability and access concerns, extensive tree removal requirements, adverse environmental impacts, ease of easement acquisition, and

other factors. The results of this fatal flaw evaluation will be documented in the Project Practicability Report prepared in a subsequent task.

2.4 Initial Topographical Mapping and Survey. In this task, the Surveying sub consultant Cinquini and Passarino will perform an initial topographical mapping of the proposed alignment and potential alignment modifications that have passed the fatal flaw analysis of the previous task. Cinquini and Passarino will collect topographic LiDAR data along the project alignment. Mapping will include a 200-foot wide strip of mapping. Mapping will include the following:

- » Aerial photography, 13 color mapping exposures at 15cm GSD with ABGPS/IMU collection
- » Analytical aerotriangulation for densification of control
- » Collection of lidar at 12 pts/m²
- » Extraction of ground class from collected lidar, delivery of contour keypoint file and contours at a 2-ft interval in AutoCAD format, classified lidar deliverable in las format
- » Orthorectification using results of aerotriangulation and lidar DSM, mosaic of imagery into north and south tiles with 0.5' pixel resolution
- » Mapping will also include the intake elevation at Waterfall Gulch.

Mapping will be prepared on California Coordinate System of 1983, Zone 2 and NAVD 1988 Vertical Datum.

Coleman Engineering will utilize the LiDAR data files to prepare base maps for plan sheets and to evaluate optional alignments.

2.5 Prepare Pipeline Existing Conditions and Constraints Technical Memorandum. Under this task Coleman Engineering will prepare a Technical Memorandum (TM) that will include its review of data and information received, findings of the site reconnaissance walk, selected relevant conclusions from the alternative alignments' evaluation, and discussions with City staff. The TM will report on the existing conditions of, and constraints on, the existing raw water pipeline and associated appurtenances. Data will be included in an appendix to the TM.

2.6 Prepare Project Practicability Report. The Project Practicability Report will summarize previous findings from the Pipeline Existing Conditions and Constraints TM and the alternative alignments evaluation. Under this task, Coleman Engineering will perform additional hydraulic analyses of potential alternative alignments and pipe diameters, and a detailed technical evaluation of alternative alignments in order to recommend a preferred pipeline route and project. The evaluation will include geotechnical and geologic hazard assessment, pipe hydraulics, constructability reviews, extent of tree removal, environmental impact, and ease of easement acquisition. Findings, analyses, conclusions and recommendations will be presented in the Report. The Report will also include operations and maintenance costs over the likely service life of the project.

2.7 Workshop No. 1. Workshop No. 1 will be held to review the City's comments on the Project Practicability Report and to confirm the proposed project to be carried forward to preliminary and final design under Task 3.

Task 2: Deliverables

- » Site reconnaissance walk notes for design team use.
- » Topographical mapping and survey for use in subsequent design tasks.
- » Pipeline Existing Conditions and Constraints TM (electronic copy in pdf format, with 5 hard copies).
- » Project Practicability Report (electronic copy in pdf format, with 5 hard copies).
- » Workshop No. 1 agenda and notes.

Task 2: Assumptions

- » The City will provide all relevant data and information at the kick-off meeting in response to a detailed request from Coleman Engineering.
- » The City will identify and mark the alignment of the existing pipe in the field.
- » Topographical survey to NAVD 1988 Vertical Datum, with mapping related horizontally to California Coordinate System of 1983, Zone 2.

TASK 3 – PRELIMINARY AND FINAL DESIGN

Task 3 develops the preferred project defined in Task 2 into a preliminary and final design. The task also includes development of a detailed project description to support environmental review and permitting analysis, and for use in seeking project funding from a variety of state and federal sources. 30% design level plans will be prepared for City review. Final design documents will include plans, specifications and cost estimates, and submittals will be made at 60% and 100% design levels of completion for City review and comment. Individual document sets will be prepared for each project phase at each submittal. Workshops to discuss the City's comments and to agree on any changes to be incorporated into the design will be held after each submittal. Final bid-ready documents will be completed after Workshop No. 4.

3.1 Final Topographical Mapping and Survey. Under this task, Cinquini and Passarino will perform additional topographical mapping and survey to provide more detailed topographic features as well as legal surveying data of the adopted pipeline alignments.

The topographic survey will be at a drawing scale of 1 inch = 20 feet, with a one-foot contour interval. The topographic survey will include the following:

- » Topographic survey coverage area will include a strip of mapping approximately 20 feet in width along the proposed pipeline alignment. The alignment will need to

be flagged in the field prior to mapping.

- Mapping for Phase II will be approximately 2200 LF
- Mapping for Phase III will be approximately 3950 LF
- Mapping for Phase IV will be approximately 2850 LF
- Mapping for Phase V will be approximately 1200 LF
- » Topographic survey will include all necessary work to produce a topographic map, including features such as, but not limited to; building corners and elevations, curb lines, water meters, sewer cleanouts, valves, manholes (including rim, invert and pipe information), utility markings on the pavement, utility poles, driveway and doorway locations, sidewalks, trees six (6) inches and larger, retaining wall or decorative walls, and other pertinent information that could apply to the project during design.
- » Retrace the boundary lines and look for the existing property corners along the project alignment. Work will be limited to the retracement of the following locations and will not establish the interior property lines for large ownership tracts of land. We will establish the property lines near Sherwood Road based on existing record maps. We will establish the property lines at the Fort Bragg Newman Gulch intake based on record maps. Work will include the establishment of the property lines for the parcels that are proposed to have the waterline located within the parcel.
- » Topographic survey will be provided on NAVD 1988 Vertical Datum
- » Topographic map to horizontally relate to California Coordinate System of 1983, Zone 2.

Cinquini and Passarino will also prepare legal descriptions and plats for the proposed waterline alignment. Title reports will not be researched or obtained. The following legal descriptions have been assumed in the Scope and Budget.

- » Phase II will require 3 Legal descriptions and plats

- » Phase III will require 3 Legal descriptions and plats
- » Phase IV will require 6 Legal descriptions and plats
- » Phase V will require 3 Legal descriptions and plats

3.2 Geotechnical and Geological Investigation, Testing and Report

3.2.1 Geotechnical Investigation Planning. Under this sub-task, geotechnical sub consultant Crawford and Associates (CAI) will coordinate with the design team and the City to confirm project definition and schedule; review project data; review published topographic, geologic, and seismic mapping; and review available geotechnical data. CAI will have participated in the Task 2 site reconnaissance walk and will have initially identified critical areas such as landslides, springs, and other adverse geologic/geotechnical conditions that may affect pipeline location and design during that inspection. If necessary, CAI will obtain exploration permits as required by the Mendocino County Environmental Health Department.

3.2.2 Subsurface Exploration. CAI will complete backhoe test pits, extended to depths of 5 to 8 feet, along accessible sections of the new pipeline. For areas inaccessible to backhoe equipment, CAI will utilize hand-auger and hand-probe equipment to assess soil conditions within the upper 5 to 8 feet. They will obtain bulk soil samples for laboratory testing and reference. CAI has included for 3 days of backhoe and 2 days of hand-auger/probes for this task.

3.2.3 Laboratory Testing. Laboratory testing will include gradation and plasticity index for soil classification and bearing capacity analysis, as well as minimum resistivity, pH, sulfate content, and chloride content for soil corrosivity analysis.

3.2.4 Geotechnical Engineering Evaluation and Analysis. Based on the results of sub-tasks 3.2.1 through 3.2.3, CAI will conduct engineering evaluation and analysis in support of geotechnical recommendations for design and construction. These will include slope stability analysis, excavation stability, pipeline foundation support, and groundwater assessment.

3.2.5 Prepare Draft and Final Geotechnical Report. CAI

will prepare a Draft Geotechnical Report that will include a discussion of geologic conditions; soil/groundwater conditions; potential hazards; and design recommendations for the new pipeline, including trench excavation, pipe support and backfill, thrust block parameters, drainage/sub-drainage, and soil corrosivity. CAI will prepare a Final Geotechnical Report that will address comments received on the Draft Report.

3.3 Prepare 30% Draft Plans. Using the documents prepared as part of Task 2, including the Project Practicability Report, and the subsequent geotechnical investigation in Task 3, Coleman Engineering will develop the recommended project plans to a 30% design level of completion. One plan set will be prepared for each of the four phases identified in the RFP: Phase II, Phase III, Phase IV, and Phase V. The four draft plan sets will be submitted to the City for review and comment.

It is anticipated that the plan set will include the sheets shown in the following table. Plans to be submitted at the 30% and 60% stages are identified. All plan sheets will be submitted with the 100% Draft and 100% Final sets.

PHASE II PROJECT PLANS			
30%	60%	Sheet	Title
✓	✓	G1	Cover Sheet (maps, sheet index, legend, abbreviations)
	✓	G2	Project Notes (Standard Notes and Project Specific Notes)
✓	✓	C1	Sheet Layout Plan
Plan only	✓	C2	Raw Water Pipeline Plan and Profile 1
Plan only	✓	C3	Raw Water Pipeline Plan and Profile 2
Plan only	✓	C4	Raw Water Pipeline Plan and Profile 3
	✓	C5	Design Details 1
		C6	Standard Details 1
		C7	Standard Details 2
PHASE III PROJECT PLANS			
30%	60%	Sheet	Title
✓	✓	G1	Cover Sheet (maps, sheet index, legend, abbreviations)
	✓	G2	Project Notes (Standard Notes and Project Specific Notes)
✓	✓	C1	Sheet Layout Plan
Plan only	✓	C2	Raw Water Pipeline Plan and Profile 1
Plan only	✓	C3	Raw Water Pipeline Plan and Profile 2
Plan only	✓	C4	Raw Water Pipeline Plan and Profile 3
Plan only	✓	C5	Raw Water Pipeline Plan and Profile 4
Plan only	✓	C6	Raw Water Pipeline Plan and Profile 5
	✓	C7	Design Details 1
		C8	Design Details 2
		C9	Standard Details 1
		C10	Standard Details 2
PHASE IV PROJECT PLANS			
30%	60%	Sheet	Title
✓	✓	G1	Cover Sheet (maps, sheet index, legend, abbreviations)
	✓	G2	Project Notes (Standard Notes and Project Specific Notes)
✓	✓	C1	Sheet Layout Plan
Plan only	✓	C2	Raw Water Pipeline Plan and Profile 1
Plan only	✓	C3	Raw Water Pipeline Plan and Profile 2
Plan only	✓	C4	Raw Water Pipeline Plan and Profile 3
	✓	C5	Design Details 1
		C6	Standard Details Sheet 1
		C7	Standard Details Sheet 2

PHASE V PROJECT PLANS			
30%	60%	Sheet	Title
✓	✓	G1	Cover Sheet (maps, sheet index, legend, abbreviations)
	✓	G2	Project Notes (Standard Notes and Project Specific Notes)
Plan only	✓	C1	Sheet Layout Plan
Plan only	✓	C2	Raw Water Pipeline Plan and Profile 1
Plan only	✓	C3	Raw Water Pipeline Plan and Profile 2
	✓	C4	Design Details 1
		C5	Standard Details 1
		C6	Standard Details 2

3.4 Workshop No. 2. Workshop No. 2 will be held to review the City's comments on the draft 30% Draft Plans and to agree changes to be incorporated into the 60% Draft plans. Review comments and responses to comments will be documented in a comment log as part of the workshop minutes.

3.5 Prepare Project Description for Environmental and Funding Support. An Environmental Project Description to support environmental review and permitting, and applications needed to seek state and federal funding, will be prepared under this task. Likely sources of funding include USDA, SRF and CDBG programs although others may be possible. The Coleman Engineering team will engage the services of Brewer Environmental Consulting to prepare a CEQA and NEPA compliant level project description. The project description is anticipated to include the following topics: project goals and objectives, project funding, project elements, construction phasing and implementation.

3.6 Prepare 60% Draft Design Submittal. Incorporating agreed review comments from the 30% Draft plans, 60% Draft plans will be developed using Coleman Engineering's AutoCAD standards. Technical specifications will be prepared using Microsoft Word and will be in CSI format. An estimate of probable construction cost will be prepared to reflect the 60% level of design, with appropriate contingencies applied. An electronic PDF of the cost estimate will be provided with the

60% submittal. The 60% design submittal will be provided to the City for review and comment.

3.7 Workshop No. 3. Workshop No. 3 will be held to review the City's comments on the 60% Design Submittal and to agree changes to be incorporated in the 100% design. All review comments and responses to comments will be documented in a comment log as part of the workshop minutes.

3.8 Prepare 100% Design Submittal Incorporating agreed review comments from Workshop No. 3, 100% design level plans will be developed using Coleman Engineering's AutoCAD standards. All technical specification documents will be prepared using Microsoft Word and will be in CSI format. An estimate of probable construction cost will be prepared to reflect the 100% level of design, with appropriate contingencies applied. An electronic PDF of the cost estimate will be provided with the 100% submittal. The 100% design submittal will be provided to the City for review and comment.

3.9 Workshop No. 4. Workshop No. 4 will be held to review the City's comments on the 100% Design Submittal and to agree changes to be incorporated in the final bid-ready documents. All review comments and responses to comments will be documented in a comment log as part of the workshop minutes.

3.10 Prepare Final Bid Documents. Agreed comments received from the City at Workshop No. 4 will be incorporated into the plans and specifications to develop sets of final bid-ready documents by Phase. The cost estimate will be updated to reflect the final design and it will be separated into individual phases.

Task 3: Deliverables

- » Additional topographical mapping and survey data for use in design.
- » Draft and Final Geotechnical Reports (electronic copy in pdf format for the draft and final reports, and 3 hard copies of the final report).
- » Phases II-V 30% Draft Plans (4 separate plan sets, pdf format, with plans at 11 x 17 half size).
- » Phases II-V 60% Draft Plans, Technical Specification Table of Contents, and Construction Cost Opinions (4 separate plan sets, pdf format, with plans at 11 x 17 half size).
- » Phases II-V 100% Draft Plans, Technical Specifications, and Construction Cost Opinions (4 separate plan sets, pdf format, with plans at 11 x 17 half size).
- » Phases II-V 100% Final Plans, Technical Specifications, and Construction Cost Opinions (4 separate plan sets, pdf format, with plans at 11 x 17 half size).
- » Workshop Nos. 2, 3 and 4 agenda and notes.

Task 3: Assumptions

- » Geotechnical field explorations for each project phase can be completed concurrently and in one mobilization.
- » Geotechnical exploration for the Highway 20 crossing (Phase III) will be completed outside of the Caltrans Right-of-Way and not require an encroachment permit.
- » All geotechnical explorations will be outside of Mendocino County Right-of-Way and not require an encroachment permit.
- » A Coastal Zone permit (applicable to portions of Phase II and III) for the geotechnical exploration will be obtained by the City.

- » All necessary rights-of-entry to the geotechnical exploration sites and site inspections will be provided by the City.
- » Plans and technical specifications for all Phases will be combined into one review document for the 60% and 100% submittals. The final bid-ready plans and specifications will be prepared such that there is a stand-alone set for each Phase. Common plans, such as standard details, will be incorporated into each bid-ready document set.
- » City or County building permit reviews are not required.
- » Traffic control plans are not included and will be prepared by the construction contractor.
- » The City will provide its standard front-end bidding and contracting documents in Word format.
- » Bid documents will be prepared to comply with requirements of funding sources if those sources are known when the documents are being finalized.
- » City will be responsible for obtaining title reports for the affected parcels for preparation of plats and legal descriptions.

TASK 4 - ADDITIONAL SERVICES (OPTIONAL)

For this task, as requested we have included for additional environmental consulting services, preparation of Timber Harvest Plans, and for funding support. Tasks are scoped below to be stand-alone. In the event that the City wishes to implement both Tasks 4.1 and 4.2 together, we will work with the City to remove overlaps that exist between these two tasks which will result in some decrease in the fee.

4.1 Environmental Consulting Services

Task 4.1 describes Coleman Engineering's approach to providing detailed environmental compliance and permitting services for the proposed raw water pipeline project. These are additional, optional services to the services proposed in Tasks 1-3 for the City's consideration. We recognize that the City and other local municipalities have invested substantial budget in preparing CEQA environmental documents and obtaining

necessary permits on their projects that trigger CEQA compliance. If the CEQA documents are relatively recent (< 5 years old), we will seek to use existing certified environmental documents to maximize efficiency in achieving environmental compliance for this project. For example, we intend to use the City's 2014 Summers Lane Reservoir Initial Study Mitigated Negative Declaration to the extent feasible for this project. The City intends to build the project in phases over time as City funding and as state or federal loan program funding levels allows. As such, the goal is to prepare one environmental document to cover all phases, so the project can be evaluated in its totality but be constructed in phases. If new significant information arises in the future in later phases (e.g., new species listing in the area), the City can evaluate the need to provide supplemental analysis or prepare an addendum to the original document. This is the proper approach to CEQA environmental analysis: otherwise challengers could claim the City is evaluating each phase by itself and not looking at the whole project.

The project is situated in the Noyo River redwood forest watershed which has abundant natural resources which support numerous special status species (e.g. Coastal Tailed frog, Red-legged frogs, Pygmy cypress trees, Southern Torrent salamander) that will need to be considered in developing an efficient compliance strategy and realistic schedule for the project. The City must first comply with the CEQA requirement for detailed planning and disclosure of environmental impacts through a public and state agency review process. In addition, the City will likely have to comply with several federal environmental laws including Clean Water and Clean Air Acts, National Historic Preservation Act as part of the federal funding programs (e.g., SRF Program CEQA Plus or USDA RA Program). If federal funds are considered and used, these funding programs have their own separate environmental compliance processes in addition to CEQA. Some of the potential environmental issues that the team will address including, but not limited to, are:

- » Coastal Zone Impacts. Phases II and III are partially located within the regulatory boundaries of the State Coastal Commission Coastal Zone. The Coastal Zone policies and procedures are administered by Mendocino County Coastal Zone Administrator. The permit and approval process with this Administrator can be thorough and time-consuming in our experience. The process requires full disclosure of environmental impacts to the area and the Administrator will require the City's document to issue the permit. We recommend the City initiate consultation with the Mendocino County Coastal Commission on this permit as soon as practicable.
- » Potential Impacts to Special-Status Species and Endangered Species Act compliance. The watersheds in the Fort Bragg and the Mendocino County region supports numerous special status species that are protected either under the state or federal ESA. The Noyo River and Hare Creek support Coho salmon and steelhead fisheries and numerous wildlife species in their watersheds. We understand the City intends to provide biological and cultural resources studies as part of the pre-design to assist with pipeline planning. We will use that work as well as conduct detailed biological surveys to assess existing habitats and to determine whether the project area supports these species. Our approach will be to identify key species and habitats and conduct habitat assessments and wildlife surveys early in the process.
- » Potential Impacts to Historical and Cultural Resources: National Historic Preservation Act Section 106 and Tribal Consultation under AB 52. The project is in an area with a local lumber industry history, as well as occupation by Native American Indian Tribes that inhabited the Fort Bragg area. There are several recognized Indian Tribes in the Fort Bragg area including the Noyo Pomo Tribe, Sherwood, Coyote Valley Band of Pomo Indians. In addition, as part of the CEQA compliance process required by Assembly Bill 52, the City must now conduct early coordination with local Indian Tribes that have expressed

interest in City projects. We realize that substantial work has already been done for the Summers Lane Reservoir project and we intend to use it, if possible. We will conduct database searches and field surveys early in the process to determine if there are significant resources in the project corridor.

- » • Impacts to Wetlands and Waters of the United States. The pipeline crosses the Noyo River and Hare Creek and their floodplains that will potentially trigger compliance with the Clean Water Act Section 404 and California Department of Fish and Wildlife (CDFW) Fish and Game Code Section 1600. We observed several seeps and springs along the pipeline route during our field survey with the City. The City will be required to obtain both 404 permit authorization from US Army Corps of Engineers and a Streambed Alteration Agreement with CDFW, even if the river crossings are not re-constructed, as the pipeline is located in the floodplains.
- » Land Use Impacts. There may not be legal easements or rights-of-way for the entire pipeline and that it crosses both private (Georgia Pacific) and State Lands Commission sovereign property.
- » Issues Associated with Timber Harvest Plan (THP) We understand that the City will need to remove secondary growth redwood, alder and other trees in the pipeline corridor in order to construct the new water line. This action will trigger the need for preparation of a THP by a certified forester. We have retained a local Forester on our team, Mr. Lee Susan of Summit Forestry, who successfully assisted the City on the Summers Lane project. The THP approval process is administered by State Department of Forestry (CDF) under the requirements of the Forest Practices Act and is a separate permitting process with its own public review and comment period. CDF will likely use the City's CEQA compliance document to assist with processing the THP permit but we will need to ensure the document covers all of their issues of concern.

We understand that City staff would like if possible to process this project with a CEQA Initial Study Mitigated Negative Declaration (ISMND) document. This approach requires that the project not have any significant unavoidable impacts (e.g., loss of heritage trees, impacts to special-status species, or controversy from the public or state agencies.) We will need to start work on the biology and cultural surveys, and on technical sections, to determine whether this is feasible. We will work with City staff to prepare the Initial Study to determine whether an ISMND is possible. If not, we will work with the design team to evaluate alternative pipeline alignments to avoid fatal flaw issues. If there are major impacts or substantial controversy over the project, it is likely a legally-defensible Focused EIR will have to be prepared to protect the City. This scope of services and associated fee is for preparation of an ISMND only: should a Focused EIR be found necessary, additional scope and fee would be required.

The City's raw water pipeline project may likely require the following agency permits and approvals:

- » State Coastal Commission Development Permit.
- » CDFW 1602 Streambed Alteration Agreement.
- » U.S. Army Corps of Engineers - Clean Water Act Section 404 Permit.
- » Clean Water Act (CWA) Section 401 Water Quality Certification.
- » National Historic Preservation Act Section 106 Compliance.
- » California AB 52 Tribal Consultation compliance.
- » USFWS Endangered Species Act Section 7 permit.
- » California Department of Forestry and Fire Protection (Cal Fire) Timber Harvest Permits.
- » North Coast RWQCB Construction Stormwater Permit.
- » Caltrans Region 2 Encroachment Permit.

In addition to preparing one comprehensive environmental document that covers all phases of the project, we will also prepare permit applications and packages for Phase II in parallel with preparation of the CEQA document. Our goal is to have the Phase II permit applications ready for submission when the City Council certifies the CEQA document. An environmental project description is to be prepared under an earlier task within the main scope of services.

4.1.1 Prepare Admin Draft and Final ISMND. Our environmental subconsultant Brewer Environmental (BEC) will provide technical responses to the Office of Planning and Research (OPR) CEQA checklist in this task for review and comment by Coleman Engineering and the City. We will prepare responses to the OPR initial study checklist questions and prepare a basic CEQA Initial Study/Mitigated Negative Declaration (IS/MND) for this project. An IS/MND will provide an in-depth environmental project review and provide recommended mitigation measures for all significant impacts from the project. We will respond to comments and prepare the final draft IS/MND for submittal to the OPR State Clearinghouse. We will print a total of 20 copies and deliver 15 CD copies of the IS/MND to the State Clearinghouse and complete the Notice of Completion. We will provide the City with a CD-ROM of the document and any appendices for use in uploading documents to City's website (if desired).

BEC will prepare all required CEQA notices (Public Notice, OPR Notice of Completion, OPR Notice of Determination (NOD)). The City will be responsible for paying for the public notice in the Fort Bragg Advocate News and the required CDFW CEQA review fee when filing the NOD. Our budget does not include attendance at the City Council meeting for certification of the ISMND.

BEC will prepare a standard Mitigation Monitoring and Reporting Program (MMRP) as required by CEQA to ensure that the City implements mitigation measures that are approved and adopted by the City Council. The MMRP will delineate roles and responsibilities of the City and the selected contractor for the project.

4.1.2 Biological Resources and Wetlands. Biological Resources. For the Summers Lane Project, CDFW was concerned about CRLF and other amphibians in an area which is within the raw water pipeline project area. BEC will prepare a response to the Section VI. Biological Resources of the ISMND. BEC will conduct a search of the CDFW California Natural Diversity Database (CNDDDB) and USFWS Information for Planning and Consultation (Ipac) to develop a list of potential special-status species of concern for consideration in the environmental analysis. BEC will conduct a one-day general field survey (10 feet on each side of pipeline for total of 20 feet) of the project elements to assess existing conditions and wildlife habitats in the project area. The project is located in coastal mixed coniferous forest (secondary growth redwood forest). Based on the alignment shown in the RFP, Phases II and III are in upland areas away from Newman Gulch but the pipe does enter the Noyo River floodplain near the crossing. At this time, based on our current knowledge of the project we have assumed no special-status species protocol-level surveys will be needed for this project based on preliminary review using Google Earth. We will prepare a general biological analysis that will meet CEQA and SRF funding requirements. If detailed species-specific surveys are required for California Red-legged frogs etc., we will prepare a scope and fee amendment for approval of this as additional work.

Wetland Delineation. The Project pipeline is located within the Newman Gulch, Hare Creek and Noyo River watersheds and as such may be subject to Clean Water Act Section 404 jurisdiction. BEC will conduct a preliminary federal wetland delineation to identify wetland and waters of the United States and the State of California. BEC will document ordinary highwater marks on streams and the Noyo River that will be affected by the project. BEC will conduct a wetland delineation, identifying boundaries, types, and acreages of all aquatic resources that are under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and the California Coastal Commission. Prior to field work, BEC will review project-specific hydrological feature data and publicly available information. Potential Federal and State waters

contained within the survey area will be evaluated using the methodology set forth by the U.S. Army Corps of Engineers.

4.1.3 Cultural Resources. The City may receive funding through the Drinking Water State Revolving Fund (DWSRF), which is subsidized by the federal Safe Drinking Water Act. Because the project is federally funded, the project must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), which is codified in Title 54 US Code of Federal Regulations (CFR) § 306108. BEC will conduct the following tasks necessary for Section 106 compliance and consultation with the State Historic Preservation Office (SHPO) under the National Historic Preservation Act. In addition, BEC will assist the lead agency consultation in compliance with Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (AB 52).

Create Area of Potential Effects Map. An Area of Potential Effects (APE) map will be created depicting the length and width and all areas (e.g., new construction, easements, staging areas, and access roads) directly affected by the proposed project.

Pre-field Background Research/Records Search. A record search at the NEIC and background research to identify previously recorded resources in or near the proposed project.

Section 106 Consultation. Native American tribal organizations or individuals identified by the Native American Heritage Commission will be contacted by mail, and by a follow-up phone call after two weeks. Local historical societies will also be contacted to inquire on any known historic-era properties in the proposed project area.

AB 52 Consultation. Native American tribal organizations or individuals tribally and geographically affiliated with the proposed project area will be contacted by certified mail, and the letter will include a map depicting the project location, lead agency point contact, project status, and a description of the proposed project.

Field Survey. An intensive pedestrian survey will be performed of the entire APE, after the pre-field background research is completed.

Draft and Final Historic Properties Inventory Report. BEC will prepare a draft and final Historical Properties Inventory Report (HPIR) that documents the methods and findings of the cultural resources study. The HPIR will follow the requirements outlined in the California State Water Resources Control Board Basic Criteria for Cultural Resources Report Preparation guide.

Draft and Final Letter to SHPO. BEC will prepare, on behalf of the State Water Resources Control Board, a consultation letter to SHPO.

Cultural Resources/ Tribal Cultural Resources. BEC will provide support for the Cultural Resources/Climate Change sections of the ISMND.

4.1.4 Air Quality and Greenhouse Gases. As part of the environmental analysis, an air quality and greenhouse gas analysis must be prepared to satisfy CEQA requirements. The emission calculations CalEEMod model will be used to quantify emissions from construction, if the lead agency deems fit to quantify construction emissions. BEC will provide support for the GHG/Climate Change sections of the ISMND. If needed, quantification of GHG will be performed to determine emission levels from both the construction and operational aspects of the proposed project.

4.1.5 Other CEQA Topics. Using existing available information from state and federal resources, as well as from previous City Council adopted documents, BEC will prepare basic responses to the other topics in the CEQA checklist.

4.1.6 CEQA Mitigation Monitoring and Reporting Program. BEC will prepare the required CEQA MMRP under this task. It will include detailed descriptions of recommended mitigation measures, entity responsible, timing, frequency and reporting requirements.

4.1.7 Prepare for and attend the City Council

Certification Hearing. Under this task, we will prepare, and assist City staff with, a PowerPoint presentation to the City Council on the CEQA process and the MMRP.

4.1.8 Prepare Admin Draft and Final Federal Funding Program Environmental Information Checklists.

BEC will assist the City with preparation of either a USDA or SRF environmental information packages under this task. BEC will coordinate with City staff to determine what compliance pathway this project will take in their process. BEC will prepare the Environmental Report (ER) in this task and will rely heavily on information in the CEQA document for its preparation. BEC will respond to one round of comments on the checklist package from CE/City.

4.1.9 Regulatory and Responsible Agency Coordination. BEC will attend meetings and teleconferences with the City/USDA/State of California and other funding agencies as necessary within the fee associated with this task.

Timeline – Environmental Consulting Services

The administrative draft ISMND could be completed within 6-8 weeks from receipt of the complete and City-approved Project Description. Preparation of the ISMND is a critical milestone as the required Timber Harvest Plans (THP) will need to include the mitigation measures the City has agreed to implement to mitigate various environmental issues. After the ISMND is certified by City Council, the THP(s) can be submitted to Cal Fire for their review and approval. Permit packages for the CWA Section 404 permit, CDFW 1602 agreement and associated approvals will be prepared for the first phase of construction in parallel with preparation of the draft ISMND. The intent is to have the packages completed after the CEQA document is certified by the City Council.

4.2 Preparation of a Timber Harvest Plan. Construction of the raw water pipeline will require the removal of a significant number of trees and the preparation of Timber Harvest Plans (THP) to manage that removal. It is likely that a THP will be needed for each of the planned project phases.

This optional task includes for preparation of the THP(s).

Our sub consultant, Summit Forestry (Summit) will prepare the appropriate THP(s) and/or exemption(s). They will initially determine the nature of the THP(s) and/or exemption associated with the replacement of the City's raw water pipeline, once the method of pipeline replacement and construction equipment needed is known. The firm will then lay out in the field the appropriate flagging and marking for each THP and/or exemption. The THP and/or exemption will be prepared per State regulations and will be submitted to the California Department of Forestry and Fire Protection (Cal Fire) for review, acceptance and approval.

Summit will query appropriate databases including the California Natural Diversity Database (CNDDB), the California Native Plant Society (CNPS) and the Northwest Information Center (NWIC) to gain an understanding of potential and known occurrences of biological and cultural resources. Summit will then perform seasonally appropriate surveys for herpetofauna, raptors, NSOs, botanical and archaeological resources. Reports will be prepared for the species surveyed and those reports will be submitted to the appropriate agencies.

Detailed below are various logging contract administrative tasks that could be performed by Summit should they be required by the City. These are not currently included in Task 4.2, but could be added if requested by the City.

- » Timber sales. This includes arranging and showing the timber to log buyers from interested mills, acceptance of bids and determination of the best price per Thousand Board Feet (MBF) when logging and trucking is considered.
- » Logging contractor selection. Summit can arrange and show the project to interested logging contractors, accept bids, and determine the recommended course of action.
- » Logging contract administration. Summit will coordinate with the selected logging contractor to resolve any potential issues that arose during the survey work. They will check on the project as it is being logged to make

sure the intent of the THP is being followed, and that the end result will allow for pipeline replacement construction equipment access.

Timeline - Timber Harvest Plan

Depending on when the project is awarded, Summit will begin the process of determining the best course of action with regard to THP and/or exemption preparation and begin work to secure an approved plan from Cal Fire. The process generally takes 3 to 4 months from commencement to approval, including a public comment period.

Surveys for Environmentally Sensitive Habitat Areas (ESHA) and biological resources of special concern must be done at seasonally appropriate times per the various protocols which govern said surveys.

The NSO survey protocol has a two-year protocol period, with six calls being performed in the spring of year one and six calls in the spring of year two ending in May. This allows for potential harvesting in mid to late May through the summer months of year two.

Botanical surveys tend to span from early spring to late summer in order to survey for certain species of special concern during their flowering period.

Herpetofauna surveys likewise must be done during seasonally appropriate times which vary between species and can span the entire year.

In general, it takes a year for permit and survey work to be completed with an additional spring time NSO survey, once the project is awarded. If, for example, the City awards the project in December of 2018, then the earliest possible date of commencement of timber harvesting would be mid May 2020. This assumes that biological surveys and THP/exemption preparation would be completed in 2019, including the NSO first year six-call survey, and one final six-call survey to be completed in May 2020.

4.3 Funding Acquisition Support

Coleman Engineering has budgeted a total of \$20,000 to plan for multiple staff to assist the City in obtaining project construction funding. The following are examples of services we anticipate that the City may request of the Coleman Engineering team.

- » Preparing technical information required by State and Federal funding applications
- » Meeting with potential funding agencies
- » Revising design documents to match funding agency requests
- » Coordinating with sub-consultants to obtain information requested by funding agencies
- » Updating Construction Cost Opinions to match future funding applications

Coleman Engineering will be pleased to assist the City in many ways, including those not listed above that are not anticipated at the time of this writing. Our professionals are very experienced interacting with local State and Federal funding agency staff, understanding funding programs, and assisting our clients to successfully apply for funds and then manage those funds. The purpose of these Services and associated Budget are to allocate and reserve funds so that the full team will be available to the City to assist as requested with all tasks related to Funding Acquisition Support. We expect to provide these services only as requested by the City on a Time & Materials basis.

4.4 Pipeline Locating Services

Coleman Engineering has planned to coordinate assistance with locating and documenting the alignment of the existing pipeline in sections that may be unknown to the City. We assume that the City may not be able to identify some sections of the pipe that are not well defined in As-Built drawings or on the ground surface. Accordingly, we suggest a budget of \$15,000 for pipeline location services to be used on a Time & Materials basis only as authorized and requested by the City.

G. BUDGET AND SCHEDULE OF CHARGES



City of Fort Bragg
Design of the Replacement Raw Water Pipeline from the Water Treatment Plant to Summers Lane Reservoir and from Highway 20 to Waterfall Gulch

Task Number	Task	Man Hour Estimate						Labor Sub-Totals	Sub-Consultant Costs					Expense Costs	Expense Description	Total Budget per Sub-Task	Task Sub-Totals	Total Budget Hours	Total Budget Days
		Principal-in-Charge	Project Manager	Project Engineer	Staff Engineer	CAD Designer	Project Assistant		Crawford & Associates	Cinquini and Passarino	Alpine Summit Development	Brewer Enviromental	Summit Forestry						
	2018 Fee Rates	\$196.00	\$184.00	\$155.00	\$135.00	\$114.00	\$83.00												
1.0	Project Management and Meetings																		
1.1	Project Administration	4	16				16	\$5,056									\$5,056	36	4.5
1.2	Meetings						4	\$332									\$332	4	0.5
	Kick-Off Meeting	8	8					\$3,040						\$229	mileage		\$3,269	16	2.0
	Project Meetings on site (3)		8	16				\$3,952						\$687	mileage		\$4,639	24	3.0
	Project Meetings on telephone (3)	2	6	4				\$2,116									\$2,116	12	1.5
1.3	Quality Management	20	8				4	\$5,724									\$5,724	32	4.0
																		\$21,136	
2.0	Preliminary Design Studies																		
2.1	Data Collection and Review		2	8	8	4		\$3,144									\$3,144	22	2.8
2.2	Full Team Site Reconnaissance Walk	8	8	8				\$4,280	\$1,750	\$2,000	\$1,714	\$1,500		\$229	mileage		\$11,473	24	3.0
2.3	Alternatives Alignment Development and Fatal Flaw Evaluation	4	8	20	36	64		\$17,512									\$17,512	132	16.5
2.4	Initial Topographical Mapping and Survey		4	4		4		\$1,812		\$16,000							\$17,812	12	1.5
2.5	Prepare Pipeline Existing Conditions and Constraints TM	4	16	24	32	40	4	\$16,660						\$300	Print and Ship		\$16,960	120	15.0
2.6	Prepare Project Practicability Report	4	12	40	64	40	4	\$22,724			\$740			\$300	Print and Ship		\$23,764	164	20.5
2.7	Workshop No.1	8	8				2	\$3,206						\$229	mileage		\$3,435	18	2.3
																		\$94,100	
3.0	Preliminary and Final Design																		
3.1	Final Topographical Mapping and Survey		2	6		4		\$1,754		\$86,300							\$88,054	12	1.5
3.2	Geotechnical and Geologic Investigation, Testing and Report	2	4	8	8			\$3,448	\$43,622								\$47,070	22	2.8
3.3	Prepare 30% Draft Plans	4	8	12	16			\$6,276						\$350	Print and Ship		\$6,626	40	5.0
	G1 Sheets - 4					24		\$2,736									\$2,736	24	3.0
	G2 Sheets - 1 (used 4x)							\$0									\$0	0	0.0
	C1 Sheets - 4					24		\$2,736									\$2,736	24	3.0
	C P/P Sheets - 13					104		\$11,856									\$11,856	104	13.0
	C Design Details - 5							\$0									\$0	0	0.0
	C Standard Details - 2 (used 4x)							\$0									\$0	0	0.0
3.4	Workshop No. 2		8	8			2	\$2,878						\$229	mileage		\$3,107	18	2.3
3.5	Prepare Project Description for Enviro & Funding Support	2	4	8	12			\$3,988				\$3,500					\$7,488	26	3.3
3.6	Prepare 60% Design Submittal	4	8	12	16		4	\$6,608			\$740			\$350	Print and Ship		\$7,698	44	5.5
	G1 Sheets - 4					4		\$456									\$456	4	0.5
	G2 Sheets - 1 (used 4x)					8		\$912									\$912	8	1.0
	C1 Sheets - 4					4		\$456									\$456	4	0.5
	C P/P Sheets - 13					156		\$17,784									\$17,784	156	19.5
	C Design Details - 5					80		\$9,120									\$9,120	80	10.0
	C Standard Details - 2 (used 4x)							\$0									\$0	0	0.0
	Technical Specifications @ 60% draft		8	20	40		16	\$11,300									\$11,300	84	10.5
	OPCC @ 60% draft		2	4	8			\$2,068			\$4,440						\$6,508	14	1.8
3.7	Workshop No. 3	8	8				2	\$3,206						\$229	mileage		\$3,435	18	2.3
3.8	Prepare 100% Draft Design Submittal	4	8	12	16		4	\$6,608			\$555			\$350	Print and Ship		\$7,513	44	5.5
	G1 Sheets - 4					4		\$456									\$456	4	0.5
	G2 Sheets - 1 (used 4x)					4		\$456									\$456	4	0.5
	C1 Sheets - 4					4		\$456									\$456	4	0.5
	C P/P Sheets - 13					52		\$5,928									\$5,928	52	6.5
	C Design Details - 5					20		\$2,280									\$2,280	20	2.5
	C Standard Details - 2 (used 4x)					48		\$5,472									\$5,472	48	6.0
	Technical Specifications @ 100% draft		4	12	24		16	\$7,164									\$7,164	56	7.0
	OPCC @ 100% draft		2	4	8			\$2,068			\$6,660						\$8,728	14	1.8
3.9	Workshop No. 4		8	8			2	\$2,878						\$229	mileage		\$3,107	18	2.3
3.10	Prepare Final Bid Documents	8	8	16	24	40	12	\$14,316			\$740			\$500	Print and Ship		\$15,556	108	13.5
BUDGET TOTALS (MAIN SCOPE)																		\$284,458	
Total Budget Hours		94	186	254	312	732	92											1,670	
Total Budget Days		11.8	23.3	31.8	39.0	91.5	11.5												209
Total Budget Dollars		\$18,424	\$34,224	\$39,370	\$42,120	\$83,448	\$7,636	\$225,222	\$45,372	\$104,300	\$15,589	\$5,000	\$0	\$0	\$4,210		\$399,693		
4.0 Additional Services (Optional)																			
4.1	Additional Environmental Consulting Services	8	32	48			4	\$15,228				\$68,475		\$229	mileage		\$83,932	92	11.5
4.2	Preparation of a Timber Harvest Plan	4	24	32			4	\$10,492					\$79,750	\$229	mileage		\$90,471	64	8.0
4.3	Funding Acquisition Support	16	28	36		40	19	\$20,000									\$20,000	139	17.4
4.4	Subsurface Pipeline Location	2	4	8	16	8	2	\$5,606							\$15,000		\$20,606	40	5.0
BUDGET TOTALS (OPTIONAL SCOPE)																		\$215,009	
Total Budget Hours		30	88	124	16	48	29											335	
Total Budget Days		3.8	11.0	15.5	2.0	6.0	3.6												42
Total Budget Dollars		\$5,880	\$16,192	\$19,220	\$2,160	\$5,472	\$2,402	\$51,326	\$0	\$0	\$0	\$68,475	\$79,750	\$15,000	\$458		\$215,009		

G. BUDGET AND SCHEDULE OF CHARGES

Coleman Engineering 2018 Billing Rate Schedule

Classification	Billing Rates
Principal Engineer	\$196
Project Manager	\$184
Asst. PM	\$170
Project Engineer	\$155
Staff Engineer	\$135
Engineering Intern	\$80
CAD Drafter/Designer	\$114
Project Technician	\$104
Project Assistant	\$83

- 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 (\$0.545/mile as of Jan. 1, 2018)
- 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.

H. WORK SCHEDULE

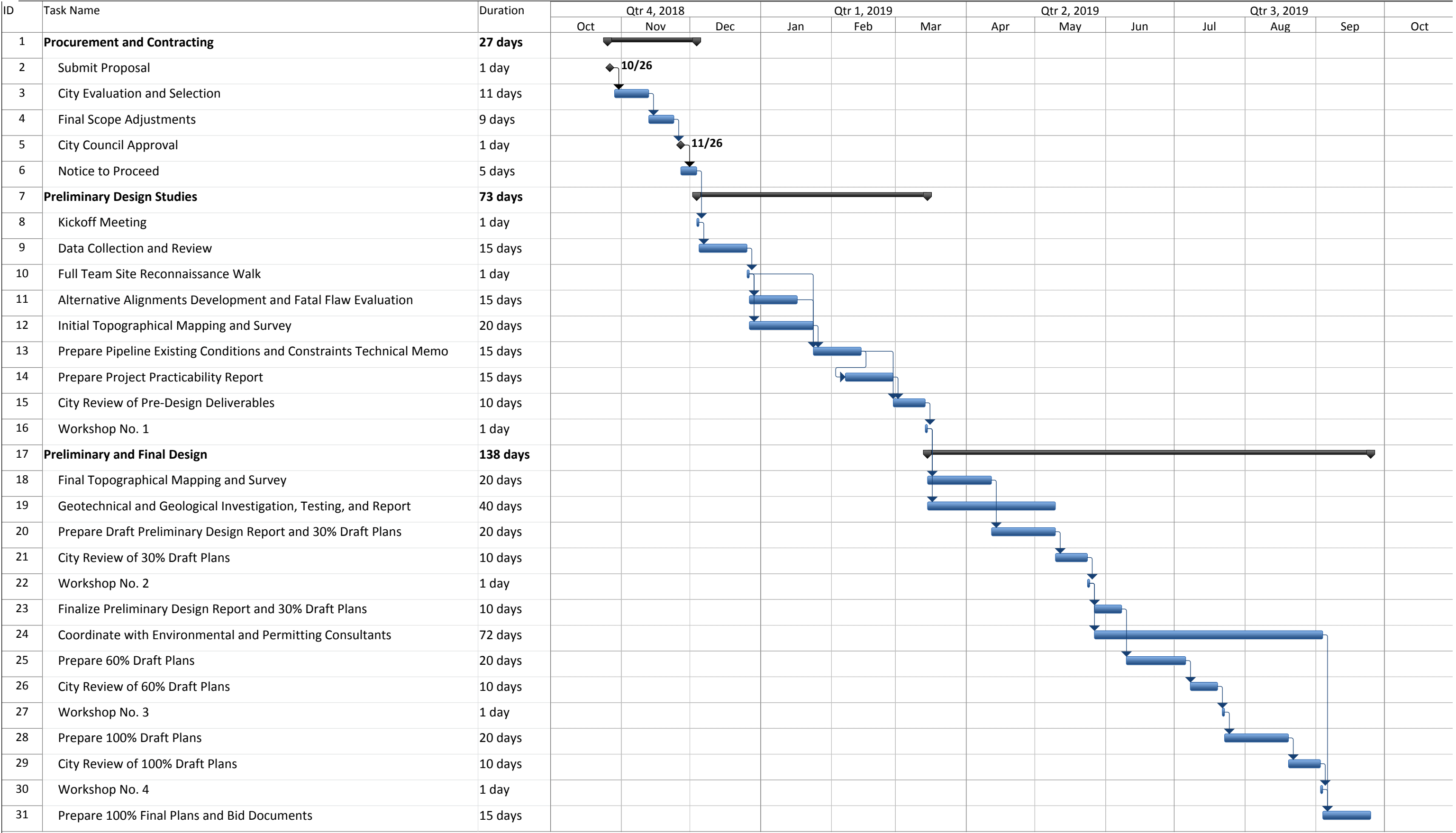
Coleman Engineering has prepared the following project schedule with a goal of providing planning and design services in 2019 so that construction can begin in the summer of 2020. This is our understanding of the City's desired schedule.

We have assumed a standard 30%, 60%, 100% and final design submittal process with City reviews following each draft submittal.

Our team has planned together to provide the required services in concert with each other.

In the event that the City desires the Additional Tasks of Environmental Services or the preparation of a Timber Harvest Plan, we will work those services into the same schedule. It is likely that some of the environmental permitting tasks may take longer than the design services due to the required responses from so many State and Federal agencies. However, we have studied the issues and feel confident that the permitting and clearances can be provided in time for the Summer 2020 construction season.

Schedule for Design of the Replacement of Raw Water Pipeline for the City of Fort Bragg



I. INSURANCE

Coleman Engineering commits to procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property that may arise from or in connection with the services by the Consultant and our team members as set forth in the City's Standard Professional Services Agreement. In fact, Coleman Engineering already

carries all of the required insurance policies and the specified limits. The cost of all required insurance has been included in our proposal.

The following Certificates of Insurance document the limits and special conditions required by the City.



Client#: 42909

COLEENGI

ACORD™**CERTIFICATE OF LIABILITY INSURANCE**DATE (MM/DD/YYYY)
1/05/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Greyling Ins. Brokerage/EPIC 3780 Mansell Road, Suite 370 Alpharetta, Georgia 30022		CONTACT NAME: Nicole Larsen PHONE (A/C, No, Ext): 770-552-4225 FAX (A/C, No): 866-550-4082 E-MAIL ADDRESS: Nicole.Larsen@greyling.com	
		INSURER(S) AFFORDING COVERAGE	
		NAIC #	
INSURED Coleman Engineering, Inc 1358 Blue Oaks Blvd., Ste 200 Roseville, CA 95678		INSURER A : RLJ Insurance Company INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :	

COVERAGES**CERTIFICATE NUMBER: 18-20****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ HIRED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB ☐ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) ☐ Y / N If yes, describe under DESCRIPTION OF OPERATIONS below		N / A				PER STATUTE ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Professional Liability			RDP0031208	01/18/2018	01/18/2020	Per Claim \$1,000,000 Aggregate \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

City of Fort Bragg its officials, officers, employees, agents & volunteers 416 N. Franklin Street Fort Bragg, CA 95437	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

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#S935720/M932419

NLAR1



THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY
AGAINST OTHERS TO US**

E3306
1st Edition

01/18/18
Effective Date

60479-17-16
Policy Number

This endorsement modifies insurance provided under the following:

BUSINESSOWNERS COMMON POLICY CONDITIONS - BP 00 09

SCHEDULE

Name of Person or Organization:

CITY OF FORT BRAGG ITS OFFICER OFFICIALS EMPLOYEES VOLUNTEERS

(If no entry appears above, information required to complete this Endorsement must be shown in the Declarations as applicable to this endorsement.)

The provisions of the Businessowners Common Policy Conditions are modified by this endorsement as follows:

Condition K. Transfer Of Rights Of Recovery Against Others To Us in the Businessowners Common Policy Conditions is amended by the addition of the following:

3. We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard." This waiver applies only to the person or organization shown in the Schedule above.

This endorsement is part of your policy. It supersedes and controls anything to the contrary. It is otherwise subject to all the terms of the policy.



POLICY NUMBER: 604791716

BUSINESSOWNERS
BP 04 48 01 97

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – DESIGNATED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

BUSINESSOWNERS POLICY

SCHEDULE*

Name Of Person Or Organization: CITY OF FORT BRAGG ITS OFFICIALS, OFFICERS, EMPLOYEES

* Information required to complete this Schedule, if not shown on this endorsement, will be shown in the Declarations.

The following is added to Paragraph **C. Who Is An Insured** in the Businessowners Liability Coverage Form:

4. Any person or organization shown in the Schedule is also an insured, but only with respect to liability arising out of your ongoing operations or premises owned by or rented to you.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
06/26/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Gardner Insurance & Financial Services 8035 Madison Ave #D2 Citrus Heights CA 95610	CONTACT NAME: Randy Gardner		
	PHONE (A/C, No, Ext): 916-965-4690	FAX (A/C, No): 916.965.5068	
	E-MAIL ADDRESS: rgardner@farmersagent.com		
INSURED COLEMAN ENGINEERING INC 1358 BLUE OAKS BLVD, STE 200 ROSEVILLE CA 95678	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A: Truck Insurance Exchange		21709
	INSURER B: Farmers Insurance Exchange		21652
	INSURER C: Mid Century Insurance Company		21687
	INSURER D:		
	INSURER E:		
	INSURER F:		

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	GENERAL LIABILITY							
	☒ COMMERCIAL GENERAL LIABILITY							
	☐ CLAIMS-MADE ☒ OCCUR							
		X	X	604791716	01/18/2018	01/18/2019	EACH OCCURRENCE \$ 2,000,000	
							DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 75,000	
							MED EXP (Any one person) \$ 5,000	
							PERSONAL & ADV INJURY \$ 2,000,000	
							GENERAL AGGREGATE \$ 4,000,000	
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG \$ 2,000,000	
	☐ POLICY ☐ PRO-JECT ☐ LOC						\$	
B	AUTOMOBILE LIABILITY							
	☐ ANY AUTO							
	☐ ALL OWNED AUTOS							
	☐ HIRED AUTOS							
	☒ SCHEDULED AUTOS	X	X	604791716	01/18/2018	01/18/2019	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000	
	☒ NON-OWNED AUTOS						BODILY INJURY (Per person) \$	
						BODILY INJURY (Per accident) \$		
						PROPERTY DAMAGE (Per accident) \$		
							\$	
A	☒ UMBRELLA LIAB							
	☒ EXCESS LIAB							
	☐ CLAIMS-MADE			605122863	01/18/2018	01/18/2019	EACH OCCURRENCE \$ 1,000,000	
	☐ DED ☐ RETENTION \$						AGGREGATE \$	
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY							
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y/N						
	If yes, describe under DESCRIPTION OF OPERATIONS below	Y	N/A	X	A09327740	07/01/2018	07/01/2019	☒ WC STATUTORY LIMITS ☐ OTHER \$
							E.L. EACH ACCIDENT \$ 1,000,000	
							E.L. DISEASE - EA EMPLOYEE \$ 1,000,000	
							E.L. DISEASE - POLICY LIMIT \$ 1,000,000	

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

CERTIFICATE HOLDER

CANCELLATION

City of Fort Bragg its officials, officers, employees, agents, and vo 416 N. Franklin Street Fort Bragg CA 95437	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE Randy Gardner

ACORD 25 (2010/05)

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Mid-Century Insurance Company (A Stock Company)
Member Of The Farmers Insurance Group Of Companies ®

Home Office: 6301 Owensmouth Ave., Woodland Hills, CA 91367

POLICY DECLARATIONS - SERVICE OR OFFICE PRIMARY POLICY

Named Insured COLEMAN ENGINEERING INC

Mailing Address 1358 BLUE OAKS BLVD, STE 200
ROSEVILLE, CA 95678

Policy Number 60479-17-16

☐ Auditable

Policy Period From 01-18-2018
To 01-18-2019 12:01 A.M. Standard time at your mailing address shown above.

In return for the payment of premium and subject to all the terms of this policy, we agree with you to provide insurance as stated in this policy. We provide insurance only for those Coverages described and for which a specific limit of insurance is shown.

The following premium credits and discounts applied to the premium associated with this coverage part:

Multiple Policy Discount - Homeowners And Personal Auto Insurance

There may be other credits and discounts you may be able to enjoy, please contact your agent for full details.

Your Agent

Randy Gardner
8035 Madison Av #d2
Citrus Hts, CA 95610
(916) 965-4690

Policy Number: 60479-17-16

Effective Date: 01-18-2018

PROPERTY, INLAND MARINE AND CRIME COVERAGES AND LIMITS			BUILDING	
The following coverages apply to the described building. Please refer to the Base Coverages And Extensions section for other coverages and extensions applying at the policy level and to the individual location (premises) section for coverages and limits specific to the location (premises).				
Option: BV - Blanket Value (see Base Coverage & Extensions for the total limit) Valuation: ACV - Actual Cash Value; AV - Agreed Value; RC - Replacement Cost; ERC - Extended RC; FRC - Functional RC; GRC - Guaranteed RC Abbreviation: ALS = Actual Loss Sustained; BI = Business Income; EE = Extra Expense				
Premises Number	Bldg. No.	Covered Premises Address	Mortgagee Name And Address	
001	001	1358 Blue Oaks Blvd, Ste 200 Roseville, CA 95678	WELLS FARGO BANK, NA SBA BBSG SALO MAC T7422 012 PO BOX 47745 SAN ANTONIO, TX 78265-8745 LOAN NO. 957466911 WELLS FARGO BANK, N. A. PO BOX 659713 4101 WISEMAN BLVD, BLDG 307 SAN ANTONIO, TX 78265-9713 LOAN NO. 7829083827-26	
Coverage			Option	Valuation
Business Personal Property (BPP)				RC
Tenants Improvements And Betterments				\$49,500
				\$90,100
				\$1,000
				\$1,000

Policy Number: 60479-17-16

Effective Date: 01-18-2018

PROPERTY, INLAND MARINE AND CRIME COVERAGES AND LIMITS CONTINUED		PREMISES
The following coverages apply to the described location (premises). Please refer to the Base Coverages And Extensions section for other coverages and extensions applying at the policy level and to the individual building section for coverages and limits specific to the building.		
Premises Number	Bldg. No.	Covered Premises Address
001	All	1358 Blue Oaks Blvd, Ste 200, Roseville, CA 95678
Coverage		Limit Of Insurance
Accounts Receivables - On-Premises		\$5,000
Debris Removal		25% Of Loss + 10,000
Personal Effects		\$2,500
Pollutant Clean Up And Removal Aggregate		\$10,000
Valuable Paper And Records - On-Premises		\$5,000
		Deductible / Waiting Period
		\$1,000
		\$1,000
		\$1,000
		\$1,000
		\$1,000

Policy Number: 60479-17-16

Effective Date: 01-18-2018

PROPERTY, INLAND MARINE AND CRIME COVERAGES AND LIMITS OF INSURANCE

The following Coverages and Extensions apply to all covered locations (premises) and/or buildings. Please refer to the Individual location (premises) and/or building section for coverages and limits specific to such location (premises) and/or building.

Base Coverages And Extensions	Limit Of Insurance	Deductible/ Waiting Period
Accounts Receivables - Off-Premises	\$2,500	\$1,000
Arson Conviction Reward	\$5,000	None
Business Income & Extra Expense - Civil Authority	3 Weeks	72 Hours - BI
Business Income (BI) & Extra Expense (EE)	18 Months - ALS	72 Hours
BPP Seasonal Increase	25%	
Electronic Data Processing Equipment	\$10,000	\$1,000
Electronic Data Processing Media And Records	\$2,500	\$1,000
Employee Dishonesty	\$5,000	\$500
Extended Business Income	30 Days	
Fire Department Service Charge	\$1,000	None
Fire Extinguisher Systems Recharge Expense	\$2,500	None
Forgery And Alteration	\$2,500	\$1,000
Limited Cov. - Fungi Wet Rot Dry Rot & Bacteria - Aggregate	\$15,000	\$1,000
Money And Securities - Inside Premises	\$5,000	\$500
Money And Securities - Outside Premises	\$5,000	\$500
Money Orders And Counterfeit Paper Currency	\$1,000	\$1,000
Newly Acquired Or Constructed Building	\$250,000	\$1,000
Outdoor Property	\$2,500	\$1,000
Outdoor Property - Trees, Shrubs & Plants (Per Item)	\$500	\$1,000
Outdoor Signs	\$2,500	\$1,000
Personal Property At Newly Acquired Premises	\$100,000	\$1,000
Personal Property Off Premises	\$5,000	\$1,000
Premises Boundary	100 Feet	
Preservation Of Property	30 days	
Valuable Paper And Records - Off-Premises	\$2,500	\$1,000



Policy Number: 60479-17-16

Effective Date: 01-18-2018

**LIABILITY AND MEDICAL EXPENSES
COVERAGE AND LIMITS OF INSURANCE**

Each paid claim for the following coverage reduces the amount of insurance we provide during the applicable policy period. Please refer to the policy.

Premium Basis: (A) Area; (C) Total Cost; (P) Payroll; (S) Sales/Receipts; (U) Each Unit
(M) Public Area Square Feet
(O) Other:

Covered Premises And Operations

Address	Classification / Exposure	Class Code	Prem. Basis	Annual Exposure	Rate	Advance Premium
1358 Blue Oaks Blvd, Ste 200 Roseville, CA 95678	Engineering Services	8711	Incl	Included	Included	Included

56-2407 1-15
562407-E1D

Policy Number: 60479-17-16

Effective Date: 01-18-2018

LIABILITY AND MEDICAL EXPENSES COVERAGE AND LIMITS OF INSURANCE CONTINUED	
Coverage	Amount / Date
General Aggregate (Other Than Products & Completed Operations)	\$4,000,000
Products And Completed Operations Aggregate	\$2,000,000
Personal And Advertising Injury	Included
Each Occurrence	\$2,000,000
Tenants Liability (Each Occurrence)	\$75,000
Medical Expense (Each Person)	\$5,000
Pollution Exclusion - Hostile Fire Exception	Included
Non-Owned Auto Liability	Included
Per Location General Aggregate Limit	Included

J. CONSULTANT AGREEMENT

Coleman Engineering has reviewed the City's Professional Services Agreement. The main purpose of our review was to make sure that provisions of the Agreement are consistent with the terms of Professional Liability Insurance. We consider strict compliance with the terms of Professional Liability Insurance to be a win-win situation for the City and Coleman Engineering. This is because the City will have the protection of the Two Million Dollar insurance policy and Coleman Engineering will also enjoy that protection in case it is needed.

After a thorough review of the Agreement, we suggest the following changes to bring the Agreement into conformance with Professional Liability Insurance terms and with State law.

- » Entire Agreement – Replace all references to the Proposal with references to the Scope of Services. The Proposal will include language that is not sufficiently detailed or defined to serve a purpose in the Agreement. The Scope of Services has been written with the appropriate detail and language for attachment to the Agreement.
- » Entire Agreement – Replace references to the "Work" with the "Services".
- » Entire Agreement – Replace references to "work products" with "instruments of professional services".
- » Section 5 – Add the following sentence to the end of the paragraph. "The Consultant shall not be liable for delays caused by factors outside of its control."
- » Section 12 – We will suggest multiple edits that address important issues. First, professional liability insurance does not cover the cost of defense so we will suggest language that does not include the obligation for the Consultant to provide a defense to the City. Also, California Civil Code Section 2782.8 does not allow Consultants to be liable for defense costs prior to the establishment of comparative liability. Second, the indemnity must be tied to actual

negligent services. Finally, we will suggest that we take the opportunity to make edits that make the language specific to this project by striking out language that does not apply.

- » Section 13, I. – We will suggest deletion of this section since the Agreement will not pertain to a construction contract.
- » Section 16 – We will suggest deletion of this section since the project does not have any DBE requirements.
- » Section 19 – Replace "Work Products" with "Instruments of Professional Services" in the title. And, edit Section a. to read, "Consultant shall document the results of the services to the satisfaction of the City as detailed in the Scope of Services." Edit Section b. to make clear that the Consultant will sign plans "as required by State Code" and not "all" plans. Edit Section c. to make clear that reuse of Consultants documents by the City requires the Consultants "prior written approval".



COLEMAN
ENGINEERING

1358 Blue Oaks Boulevard, Suite 200, Roseville, CA 95678 • 916-791-1188
www.Coleman-Eng.com