



**SPMUD BOARD OF DIRECTORS  
SPECIAL MEETING: 3:30 PM  
November 17, 2022**

Zoom Meeting: 1 (669) 900-9128  
Meeting ID: 843 8063 7066

The District's regular Board meeting is held on the first Thursday of every month. This notice and agenda are posted on the District's website ([www.spmud.ca.gov](http://www.spmud.ca.gov)) and posted in the District's outdoor bulletin board at the SPMUD Headquarters at the above address. Meeting facilities are accessible to persons with disabilities. Requests for other considerations should be made through the District Headquarters at (916)786-8555.

Pursuant to the Governor's Executive Order N-29-20, issued March 17, 2020, and SPMUD Resolution 22-42, the November 17, 2022 special meeting of the SPMUD Board of Directors will be held via teleconference using Zoom Meeting 1 (669) 900-9128, <https://us02web.zoom.us/j/84380637066>. Public comments can be emailed to [ecostan@spmud.ca.gov](mailto:ecostan@spmud.ca.gov) from the time the agenda is posted until the matter is heard at the meeting. Comments should be kept to 250 words or less.

**AGENDA**

**I. CALL MEETING TO ORDER**

**II. ROLL CALL OF DIRECTORS**

President Gerald Mitchell	Ward 1
Director William Dickinson	Ward 2
Director John Murdock	Ward 3
Director James Durfee	Ward 4
Vice President James Williams	Ward 5

**III. PLEDGE OF ALLEGIANCE**

**IV. PUBLIC COMMENTS**

Items not on the Agenda may be presented to the Board at this time; however, the Board can take no action.

Public comments can be emailed to [ecostan@spmud.ca.gov](mailto:ecostan@spmud.ca.gov) from the time the agenda is posted until the matter is heard at the meeting. Comments should be kept to 250 words or less.

**V. BOARD BUSINESS**

Board action may occur on any identified agenda item. Any member of the public may directly address the Board on any identified agenda item of interest, either before or during the Board's consideration of that item.

**1. RESOLUTION 22-44 AUTHORIZATION TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT FOR THE DESIGN OF SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM IMPROVEMENTS** [pg 3 to 24]

Staff will present the proposed Professional Services Agreement with Carollo Engineers for Design of the SCADA system improvement in the amount of \$654,100.

Action Requested: Roll Call Vote

**Staff recommends that the Board of Directors adopt Resolution 22-44, authorizing the General Manager to award the attached contract for professional services with Carollo Engineers.**

**VI. CLOSED SESSION**

PUBLIC EMPLOYMENT – General Manager Performance Evaluation  
(Per Subdivision (a) of Government Code Section 54957)

**VII. CLOSED SESSION READOUT**

**VIII. ADJOURNMENT**

If there is no other Board business the President will adjourn the meeting to its next regular meeting on **December 1, 2022, at 4:30 p.m.**

**SOUTH PLACER MUNICIPAL UTILITY DISTRICT**

**STAFF REPORT**

**To:** Board of Directors

**From:** Eric Nielsen, Superintendent

**Cc:** Herb Niederberger, General Manager

**Subject:** Resolution 22-44 - Authorization to Execute a Professional Services Agreement for the Design of Supervisory Control and Data Acquisition (SCADA) System Improvements

**Meeting Date:** November 17, 2022

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**Overview**

The District's current Supervisory Control and Data Acquisition (SCADA) system has been in place for about 11 years. It runs on a proprietary architecture and is supported by only one service provider in California. The current system lacks flexibility and has limited functionality. In addition, staff has growing concerns regarding the absence of multiple vendor support, and the lone service provider's future availability. Staff has identified the replacement of the system as a key component of the District's ongoing Capital Improvement Program.

A SCADA Master Plan was prepared and delivered to the District in June 2022. It provides the major scope of items, preliminary design, and associated planning level cost estimates for the SCADA/cybersecurity program. The next stage of the process to upgrade the SCADA system is to have engineered drawings and specifications prepared for future solicitation of bids by licensed contractors and integrators to construct and implement the improvements.

The District issued a Request for Proposals (RFP) on August 19, 2022, for professional engineering services through its e-procurement tool, Public Purchase. The RFP documents included the District's SCADA Master Plan as an attachment and were viewed by 95 firms. The District received three (3) proposals from reputable firms by the due date of September 23, 2022. Proposals were evaluated based on the criteria provided in the RFP and two firms were selected for interviews. Staff held interviews with the two firms during the week of October 10, 2022. Carollo Engineers ranked highest after the evaluation of proposals and interviews.

Carollo Engineer's proposed scope includes tasks that will prepare detailed instructions on how to build improvements to the District's SCADA system to improve present performance and efficiencies and develop programming standards so that the District continues to realize the value and benefit of the system in the future.

The District called some of Carollo's clients in the area who are undergoing similar efforts to replace proprietary SCADA systems that monitor and control remote sites (e.g., pump stations) to understand their experiences working with Carollo Engineers. These agencies spoke very

highly of Carollo Engineers and emphasized the trust they place in them, the quality of their work product, and the value they feel is received from the services provided.

Per the proposal, the design phase would conclude around July 2024, and construction/integration of the improvements would run from the beginning of 2025 through 2026.

**Recommendation**

Staff recommends the Board of Directors adopt Resolution 22-44, authorizing the General Manager to award the attached contract for professional services with Carollo Engineers.

**Strategic Plan Goals**

This action is consistent with SPMUD Strategic Plan Priorities:

- Maintain an excellent regulatory compliance record
  - Reduce Sanitary Sewer Overflows (SSOs)
- Leverage existing and applicable technologies to improve efficiencies
  - Update SCADA
- Provide exceptional value for the cost of sewer service

**Related District Ordinances and Policies**

Policy 3150 - Purchasing

**Fiscal Impact**

The cost for the professional services to design the SCADA System Improvements is \$654,100 and will be funded as an expense from the budgeted line item in Fund 400.

**Attachment**

1. Resolution 22-44 – Authorization to Execute a Professional Services Agreement for the Design of Supervisory Control and Data Acquisition (SCADA) System Improvements
2. Professional Services Agreement – Design of SCADA System Improvements – Carollo Engineers

**SOUTH PLACER MUNICIPAL UTILITY DISTRICT**

**RESOLUTION NO. 22-44**

**AUTHORIZATION TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT FOR  
THE DESIGN OF SUPERVISORY CONTROL AND DATA ACQUISITION  
(SCADA) SYSTEM IMPROVEMENTS**

WHEREAS, the South Placer Utility District (District) owns and operates a Supervisory Control and Data Acquisition (SCADA) system that requires improvements; and

WHEREAS, a SCADA Master Plan was prepared that provided the major scope of items, preliminary design, and associated planning level cost estimates for the upgrade and replacement of a SCADA/cybersecurity program; and

WHEREAS, the next stage of the process to upgrade the SCADA system requires the preparation of engineered drawings and specifications, and solicit bids by licensed contractors and integrators to construct and implement the improvements; and

WHEREAS, the District solicited a (qualifications-based) Request for Proposals (RFP) for consulting services to develop a Design of SCADA System Improvements in accordance with the District's Purchasing Policy 3150; and

WHEREAS, Carollo Engineers was selected in accordance with the Consultant Selection Process outlined in the RFP.

NOW, THEREFORE BE IT RESOLVED, the South Placer Municipal Utility District Board of Directors authorizes the General Manager to execute a professional services agreement with Carollo Engineers in the amount of \$654,100.00.

PASSED and ADOPTED at a Special Meeting of the South Placer Municipal Utility District Board of Directors at Rocklin, CA this 17th day of November 2022.

Signed: \_\_\_\_\_  
Gerald Mitchell, President of the Board of Directors

Attest: \_\_\_\_\_  
Emilie Costan, Board Secretary



South Placer Municipal Utility District
5807 Springview Drive Rocklin, CA 95677

PROFESSIONAL SERVICES AGREEMENT

EXECUTED:

Provide Professional Services for the project know as:

Design of SCADA System Improvements

DISTRICT: South Placer Municipal Utility District
DISTRICT REPRESENTATIVE: Eric Nielsen
(916) 786-8555; enielsen@spmud.ca.gov

CONTRACTOR: Carollo Engineers, Inc.
CONTRACTOR REPRESENTATIVE: Elise Moore
(916) 221-2556; emoore@carollo.com

SERVICES:

The undersigned agrees to complete the work specified in strict accordance with the General Provisions, Scope of Work and Pricing incorporated herein within the time specified in the proposal.

Total agreement amount shall not exceed \$ 654,100

This includes all applicable taxes and fees. Proof of insurance, as described in the General Provisions, has been provided to the District.

Name and address of Contractor:

Carollo Engineers, Inc.
2880 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833

The person signing this Contract for Contractor represents and warrants that he or she has read, understands, and agrees to all the Contract terms and is fully authorized to sign this Contract on behalf of the Contractor and to bind the Contractor to the performance of the Contract's obligations.

Signature of person authorized to sign:

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

NOTICE OF AWARD (This section for District use only)

[ ] You are directed to proceed with the work upon receipt of this award.

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## GENERAL PROVISIONS

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1. **SCOPE OF SERVICES:** Contractor shall do all work, attend all meetings, and carry out all activities necessary to complete all services described in the attached Scope of Work included as part of this Agreement. This Agreement and its exhibits, attached or incorporated by reference, shall be known as the “Agreement Documents.” The Contractor enters into this Agreement as an independent contractor and not as an employee of the District.
2. **TIME OF PERFORMANCE:** The Services described in this Contract are to commence upon execution and receipt of this Agreement and shall be completed in a prompt and timely manner in accordance with the conditions of the Agreement Documents.
3. **COMPENSATION:** Payments shall be paid monthly upon completion of services for a total amount not to exceed \$ 654,100. The District reserves the right to perform any of these services with its own staff or to retain other contractors to perform the services. “Reimbursable Expenses” are limited to actual expenditures of the Contractor for expenses that are necessary for the proper satisfaction of the Contract and are only payable if specifically authorized in advance in writing by the District. No additional charges will be allowed unless specified in the Contract, including charges for transportation, fuel, containers, packing, or disposal. Contractor is responsible for supplying invoices and all documentation necessary to verify invoices to the District’s satisfaction. Invoices shall be emailed to [ap@spmud.ca.gov](mailto:ap@spmud.ca.gov) or mailed to 5807 Springview Drive, Rocklin, CA 95677.
4. **TERMINATION:** This Agreement may be terminated, without cause, at any time by the District or Contractor upon ten days written notice. Contractor shall be compensated for all services provided for in the Agreement to that date. District shall be entitled to all work created pursuant to the Agreement.
5. **CHANGES:** District or Contractor may request changes to the scope of services to be performed. Such changes must be authorized in advance by the District in writing. Mutually agreed to changes shall be incorporated in written amendments to this Agreement.
6. **PROPERTY OF THE DISTRICT:** It is mutually agreed that all work or materials prepared under this Agreement shall become the property of the District.
7. **CONFIDENTIALITY:** During performance of this Agreement, the contractor may gain access to and use District information. The contractor agrees to protect all District Information and treat it as strictly confidential, and further agrees that they shall at no time, either directly or indirectly, divulge, disclose, or communicate in any manner any District information to any third party without the prior written consent. In addition, the contractor shall comply with all policies governing the use of the District network and technology systems.
8. **NOTIFICATION OF MATERIAL CHANGES IN BUSINESS:** Contractor agrees that if it experiences any material changes in its business, including a reorganization, refinancing, restructuring, leveraged buyout, bankruptcy, name change, or loss of key personnel, it will immediately notify the District of the changes. Contractor also agrees to immediately notify the District of any condition that may jeopardize the scheduled delivery or fulfillment of Contractor's obligations to the District under this Contract.

9. WARRANTY: Contractor warrants that it has the expertise or has experts available to perform the services set forth in this Agreement in a manner consistent with accepted standards of its profession. It warrants that it will perform said services in a legal manner in conformance with all applicable laws and guidelines.
10. STANDARD OF PERFORMANCE: Contractor shall perform in the manner and according to the standards currently observed by a competent practitioner of Contractor's profession in California and in compliance with all requirements of this Contract. All products that Contractor delivers to District under this Contract must be prepared in a professional manner and conform to the standards of quality normally observed by a person currently practicing in Contractor's profession.

Contractor shall designate a Project Manager as its representative in all matters relating to the Agreement. The Project Manager shall remain in such capacity unless and until he is removed at the request of the District or replaced with the written permission of the District.

11. CERTIFICATE OF COMPLIANCE WITH LABOR CODE 3700: Section 3700 of the Labor Code requires every employer to be insured against liability for workers compensation or to undertake self-insurance in accordance with the provisions of that code, and the Contractor will comply with such provisions before commencing with any work of this Agreement.
12. INTEREST IN AGREEMENT: Contractor covenants that neither it nor any of its employees has an interest in this Agreement which would conflict in any manner or degree with the performance of its services hereunder.
13. NEGLIGENCE: Contractor shall be responsible for performing the work in a safe and skillful manner consistent with generally accepted standards and shall be liable for its own negligence and the negligent acts of its employees. District shall have no right of control over the manner in which the work is done but only as to its outcome and shall not be charged with the responsibility of preventing risk to any of Contractor's employees.
14. INDEMNITY: Contractor shall indemnify, defend, and hold harmless the District, its officers, officials, agents and employees from and against any and all claims, costs, losses and expenses to the extent caused by Contractor's negligent performance of work or failure to comply with the obligations contained in the Agreement Documents, except such loss or damage which was caused by the active negligence or willful misconduct of the District.
15. INSURANCE: Contractor shall not commence with any work before obtaining, and shall maintain in force at all times during the term of this Agreement, the policies of insurance as specified by the District and incorporated herein by this reference.

Contractor shall maintain during the life of the Agreement the following minimum insurance:

1. Commercial general liability: insurance, including personal injury liability, blanket contractual liability and broad form property damage liability. The combined single limit for bodily injury and property damage shall be not less than \$1,000,000.
2. Automobile bodily injury and property damage liability: insurance covering owned, non-owned, rented, and hired cars. The combined single limit for bodily injury and property damage shall not be less than \$1,000,000.
3. Professional liability: insurance with limits of not less than \$1,000,000.
4. Limits of liability: The total amount of all claims the District may have against the Contractor under this Agreement or arising from the performance or non-performance of the services under any theory of law, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall



be strictly limited to \$500,000. As the District's sole and exclusive remedy under this Agreement any claim, demand or suit shall be directed and/or asserted only against the Contractor and not against any of the Contractor's employee's, officers or directors.

5. Additional insured: District shall be named as additional insured on policies 1 and 2 above. Upon request, a certificate of insurance will be provided to SPMUD with a 30-day written notice in the event the above policies are cancelled.

16. SEVERABILITY: If a court with jurisdiction rules that any portion of this Contract or its application to any person or circumstance is invalid or unenforceable, the remainder of this Contract will not be affected thereby and will remain valid and enforceable as written, to the greatest extent permitted by law.

17. FACILITIES AND EQUIPMENT: Contractor shall, at its sole cost and expense, furnish all facilities and equipment that may be required for the contractor to perform services pursuant to this Agreement.

18. LICENSES AND PERMITS: Contractor represents and warrants that Contractor has, and shall maintain at all times during the term of this Contract at its sole cost and expense, all licenses, permits, qualifications, and approvals of any nature that are legally required for Contractor to practice its profession or fulfill the terms of this Contract, including any required certification issued by the California Secretary of State.

19. MISCELLANEOUS PROVISIONS:

- A. Contractor shall not engage in unlawful employment discrimination.
- B. Information received from the contractor will be disclosed upon receipt of a request under the California Public Records Act; however, if any information is set apart and clearly marked "trade secret" when provided to the District, the District shall give notice of any request for disclosure. The contractor shall have five (5) days from the date of notification to enter into an agreement with the District, providing for the defense of, and complete indemnification and reimbursement of all costs incurred by the District in any legal action to compel disclosure of the information. The contractor shall have sole responsibility for defense of the "trade secret" designation.
- C. This Agreement and its exhibits constitute the entire agreement between the parties relative to the services herein and no modifications shall be effective unless and until such modification is in writing and signed by both parties.
- D. Contractor shall maintain and make available to District accurate records of all its costs and receipts with respect to any work under this Agreement for six months after the final payment under this Agreement.

## SCOPE OF SERVICES

# DESIGN OF SCADA SYSTEM IMPROVEMENTS

South Placer Municipal Utility District

## PROJECT DESCRIPTION

South Placer Municipal Utility District (DISTRICT) has requested the services of Carollo Engineers, Inc. (CONSULTANT) to provide design services related to Supervisory Control and Data Acquisition (SCADA) system upgrades. The objectives of this project are to provide a secure, useful, and open-source SCADA system design which will enhance automation and remote monitoring and control for monitoring the DISTRICT's existing 13 flow monitoring sites and 11 lift stations. Standardized PLC designs will be developed for use at each flow monitoring site and lift station. Additionally requirements for connectivity and integration into the DISTRICT's new SCADA system will be defined and the electrical design will integrate the remote PLCs and programming standards for use during construction.

## SCOPE OF WORK

### Task 1 – Project Management, Communication, and Coordination

Project Management includes the facilitation of a Kickoff Meeting, review workshops, work order administration, monthly progress status updates, coordination with the DISTRICT Project Manager, and quality control and assurance.

The following subtasks will be performed as part of Task 1.

#### Task 1.1 - Project Management, Communication, and Coordination

The CONSULTANT's Project Manager will make staffing assignments, review work progress, coordinate quality assurance and control procedures, and communicate monthly progress to the DISTRICT. The Project Manager will manage the budget, schedule, and invoicing.

The Project Manager will prepare and maintain a decision log that will record the decisions made by the DISTRICT throughout the project. The decision log will contain decisions made during regular meetings, workshops, and phone conversations with DISTRICT staff.

The decision log will list the date the decision was made, the type of meeting in which it was made, individuals involved in making the decision, and the nature of the decision.

#### Task 1.2 - Project Workplan and Schedule

The CONSULTANT will use information presented in the SCADA Master Plan (Tesco, 2022) and input from District staff during the Kickoff Meeting to develop a Project Workplan outlining the recommended initiatives to advance the control systems and existing operator interfaces toward the DISTRICT's vision for this project.

#### Task 1.3 - Project Kickoff Meeting

CONSULTANT will facilitate a project Kickoff Meeting with DISTRICT staff to develop and define the DISTRICT's high-level goals for control and operation of the new SCADA system. This will be a working meeting with participation from key DISTRICT staff and stakeholders to discuss the DISTRICT's goals for control and operation of their remote facilities. Additionally, CONSULTANT will review the overall scope, schedule, and budget for preparation of the documents and establish lines of communication between

## SCOPE OF SERVICES

CONSULTANT and DISTRICT staff. The DISTRICT shall indicate to CONSULTANT specific areas of focus to include in the plan at the Kickoff Meeting.

### Task 1.4 – Visioning & Goal Setting Workshop

CONSULTANT will facilitate a Visioning & Goal Setting workshop with DISTRICT staff to validate the existing SCADA Master Plan document in each major area of SCADA system technology. The purpose of this workshop will be to further develop staff preferences, confirm findings of the SCADA Master Plan, and develop a consensus and agreement on the project roadmap.

CONSULTANT will summarize the DISTRICT’s objectives for system-wide operational changes and required upgrades and requirements to close operational gaps and achieve the DISTRICT’s vision. This summary of objectives and upgrade goals will be the foundation for all follow up evaluations, analysis, and decision-making required in developing the Project Workplan and Design Standards.

### Task 1.5 – Project Meetings

CONSULTANT will schedule and facilitate up to six (6) project meetings as requested in the RFP (1 hour each) throughout the project as necessary for coordination efforts beyond meetings and workshops outlined in other tasks.

#### Task 1 Deliverables

- Project Workplan
- Schedule
- Meeting Minutes
- Decision Log
- Monthly Progress Reports and Invoices
- Visioning Memorandum

#### Task 1 Assumptions

- Project duration of 12 months. ....
- Workshops will be 2 (hours) in duration, held with hybrid attendance of up to 2 CONSULTANT attendees per workshop. In-person meetings will be held at the District’s Corporate Headquarters.
- District participation in workshops to include decision-makers and other key staff as required.

## Task 2 – Design Needs Assessment & Technology Evaluation

As requested by the DISTRICT, CONSULTANT will complete an investigation of the existing SCADA and communication systems and prepare recommendations for system upgrades. This will consist of the following subtasks as part of Task 2.

### Task 2.1 – Existing SCADA Documentation Review

CONSULTANT will review and use the following SCADA system documentation provided by the DISTRICT to plan future workshops and site inspections to verify documentation, acquire missing information, and to assess the condition of SCADA system assets.

- Site plans showing control panel locations and existing network cabling.
- System process and instrumentation diagrams (P&IDs), as available.
- Existing system block diagrams.
- Control panel shop drawings showing control panel dimensions, wiring diagrams, layout, and bill(s) of material.

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- Screenshots of the existing HMI system.
- Existing process control narratives as available.
- SCADA planning documentation.
- Databases and reports.
- Asset lists.

### Task 2.2 – SCADA System Design Workshops

CONSULTANT will facilitate the workshops as outlined below. The objectives of these workshops will be to document existing system deficiencies and develop the desired system-wide SCADA operations and monitoring needs. Decisions will be logged and final diagrams will be prepared for inclusion in the Project Plans and Design Standards.

The following is a list of the planned workshops and their content:

1. Hardware Review and Selection
  - a. Known difficulties or issues with existing system.
  - b. Goals for standardization of PLC and HMI hardware platforms.
  - c. Options for PLC platform architecture.
  - d. Desired system features.
2. Software Review and Selection
  - a. Known difficulties or issues with existing system.
  - b. Goals for standardization of PLC and HMI software platforms.
  - c. Options for PLC platform architecture.
  - d. Historian/Data warehouse evaluation and requirements.
  - e. Desired hardware and software system features.
3. Communication System Review
  - a. Known difficulties or issues.
  - b. Areas within radio coverage.
  - c. Acceptable radio/wireless technologies.
  - d. Communication requirements.
  - e. State of communication within facilities.
  - f. Special preferences.
4. Cybersecurity & Design Review
  - a. Review roles and responsibilities between IT and SCADA departments.
  - b. Present state of security plans and implementation.
  - c. Physical security for SCADA systems and general plant security.
  - d. General cybersecurity requirements.
  - e. Discuss Disaster Recovery Plan.
  - f. SCADA specific cybersecurity requirements.
  - g. Cybersecurity standards and typical drawings.
5. Technology & Standards Review
  - a. Review DISTRICT preference and comfortability in the performance and maintenance of SCADA and PLC hardware and software systems.
  - b. Data to be transferred and protocols to be used on the radio communication interface.
  - c. Discuss limitations in adjusting from existing communication to new standards.

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### Task 2.3 – Existing Communication Link Analysis & Pathloss Mapping

CONSULTANT will analyze existing communication links based on data and feedback from the DISTRICT and conduct a virtual path study using Pathloss modeling software. The existing communication architecture (all sites and existing radio frequencies) will be modeled as a baseline for comparison against modeled architecture improvements. The modeled architecture improvements may include new communication tower options and/or additional/new radio frequencies, if found beneficial to the overall layout for the improved system architecture.

### Task 2.4 – In-Field Radio Path Survey

CONSULTANT will work with DISTRICT staff and CONSULTANT's SUBCONTRACTOR (Applied Technology Group) to conduct in-field path testing to verify the newly modeled system architecture using recommended radio and communication hardware.

### Task 2.5 – Evaluate Alternate Power & Communication Solutions

CONSULTANT will evaluate viable technology and source power alternatives for the remote sites (as needed) to allow for a possible mixed communication media system and/or stand-alone system based on industry standard engineering practices. For each of the non-powered sites, CONSULTANT will evaluate the battery and solar systems, hardware, and software necessary to bring data back to the DISTRICT's SCADA system regardless of final communication technology recommendations.

### Task 2.6 – Communication Study Report & Review Workshop

CONSULTANT will prepare a Communication Study Report identifying alternatives explored and stating recommendation for hardware improvements to the existing network, network layout improvements, and hardware requirements for alternative data collection network (such as wireless Ethernet) if recommended, and system reliability improvements. The Communication Study Report will include draft system architecture diagrams, with recommended locations for repeater systems as needed, antenna types, and tower heights for each of the stations studied, as well as a priority list for completion of recommended improvements and estimated cost for each.

### Task 2.7 – Recommendations & Implementation Plan

The findings of Tasks 2.2, 2.3, 2.4, 2.5, and 2.6 will be summarized in a Technical Memorandum (TM), along with recommendations for required hardware, software, configuration, programming, and testing necessary to support the communication network and SCADA system improvements proposed.

This TM will also include a cutover plan for integration that ties directly to the schedule for network system upgrades for the proposed SCADA system improvements.

CONSULTANT will present the findings and recommendations as a Draft SCADA Recommendations & Implementation TM review workshop where the DISTRICT's comments will be collected for incorporation into a Final TM for the DISTRICT's use.

### Task 2 Deliverables

- Workshop minutes documenting hardware, software, communication, and cybersecurity standards.
- In-field radio path verification results.
- Draft Communication Study Report.
- Final Communication Study Report.
- Draft SCADA Recommendations & Implementation Plan
- Implementation TM.

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- Final SCADA Recommendations & Implementation TM.
- Meeting Minutes.
- Decision log.

### *Task 2 Assumptions*

- DISTRICT provision of requested data/information
- Workshops will be 2 (hours) in duration each, held with hybrid attendance of up to 2 CONSULTANT representatives per workshop. In-person meetings will be held at the District's Corporate Headquarters.
- Two (2) site-reconnaissance trips will be performed by CONSULTANT.
- Workshops will be held in a hybrid format using Microsoft Teams for attendees to attend virtually in addition to in-person attendance.
- Remote facilities consist of 13 lift stations, 11 flow monitoring stations, and 2 repeater sites.
- DISTRICT staff will assist in the field verification efforts as required.

### **Task 3 – Detailed SCADA Replacement Design**

CONSULTANT will develop design documents for the DISTRICT to issue for solicitation of bids and basis of a contract to implement the SCADA system upgrades. The following subtasks will be performed as part of Task 3:

#### **Task 3.1 – 30% Design & Review Workshop**

CONSULTANT will prepare 30% preliminary Design Documents for the DISTRICT's review. The 30% Preliminary Design Documents will include design drawings, technical specifications, and a preliminary construction cost estimate. The 30% design will include:

- Preliminary PLC cabinet internal and external elevation drawings. A drawing for one PLC cabinet (of each type) will be presented so that feedback can be incorporated into the panel layout before site-specific drawings are prepared.
- Preliminary determination of the number of different PLC layouts to be developed and the identification of which sites will use each layout. The goal will be to categorize lift stations and flow monitoring sites into a small number of standard layouts to maintain consistency and provide design and construction efficiencies.
- Preliminary communication architecture diagrams.
- Preliminary typical details.
- Preliminary specifications. These specifications will be master or template specifications with minimal project-specific editing.

CONSULTANT will conduct a two-hour design submittal review meeting after the submittal of the 30% Design Submittal to collect District feedback. Following the meeting, CONSULTANT will prepare minutes for distribution to meeting attendees.

#### *Task 3.1 Deliverables*

- Electronic set of 30% Preliminary Design Documents.
- 30% Preliminary Design Review Meeting Minutes.
- 30% Preliminary Construction Cost Estimate.

## SCOPE OF SERVICES

### Task 3.2 – 60% Design & Review Workshop

The CONSULTANT will prepare 60% Design Documents for the DISTRICT’s review. The 60% Design Documents will include design drawings, technical specifications for all sections, supporting documents and updated construction cost estimates. CONSULTANT will schedule a 60% Design Review workshop to review the design details with the DISTRICT and collect feedback for inclusion in the 90% Design submittal package.

The following is a listing of the anticipated design drawings and specifications to be included in the 60% Design submittal package:

Table 1 Electrical Drawings

DWG	Number	Sheet Type	Sheet Title
GE	001	GENERAL ELECTRICAL	LEGEND & SYMBOLS
GE	002	GENERAL ELECTRICAL	ABBREVIATIONS
TE	001	ELECTRICAL TYPICAL DETAILS	GROUNDING - EG
TE	002	ELECTRICAL TYPICAL DETAILS	MOUNTING - EM
TE	003	ELECTRICAL TYPICAL DETAILS	NAMEPLATES - EN
E	001	POWER & CONTROL - I	LIFT STATION ARRANGEMENT 1
E	002	POWER & CONTROL - II	LIFT STATION ARRANGEMENT 1
E	003	POWER & CONTROL - III	LIFT STATION ARRANGEMENT 1
E	004	POWER & CONTROL - I	LIFT STATION ARRANGEMENT 2
E	005	POWER & CONTROL - II	LIFT STATION ARRANGEMENT 2
E	006	POWER & CONTROL - III	LIFT STATION ARRANGEMENT 2
E	007	POWER & CONTROL - I	LIFT STATION ARRANGEMENT 3
E	008	POWER & CONTROL - II	LIFT STATION ARRANGEMENT 3
E	009	POWER & CONTROL - III	LIFT STATION ARRANGEMENT 3
E	010	POWER & CONTROL - I	FLOW MONITORING SITE ARRANGEMENT 1
E	011	POWER & CONTROL - II	FLOW MONITORING SITE ARRANGEMENT 1
E	012	POWER & CONTROL - III	FLOW MONITORING SITE ARRANGEMENT 1

Table 2 Electrical Specifications

Specification Number	Description
16050	Common Work Results for Electrical
16052	Hazardous Classified Area Construction
16060	Grounding and Bonding
16070	Hangers and Supports
16075	Identification for Electrical Systems
16123	600-Volt or Less Wires and Labels
16125	Fiber Optic Cable and Appurtenances
16130	Conduits
16134	Boxes

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Specification Number	Description
16140	Wiring Devices
16150	Low Voltage Wire Connections
16210	Utility Coordination
16222	Low Voltage Motors up to 500 Horsepower
16240	Battery Systems
16262	Variable Frequency Drives 0.50 – 50 Horsepower
16269	Uninterruptable Power Supplies 30 – 1,000 KVA
16272	Dry-Type Transformers
16285	Surge Protective Devices
16290	Electrical Power Monitoring
16412	Low Voltage Molded Case Circuit Breakers
16414	Low Voltage Power Breakers
16422	Motor Starters
16433	Service Entrance Automatic Transfer Switchgear
16445	Panelboards
16494	Low Voltage Fuses
16510	Lighting: LED Luminaries
16670	Lightning Protection
16710	Fire Alarm and Smoke Detection System
16750	Common Work Results for Electronic Safety and Security
16752	Electronic Access Control and Intrusion Detection
16754	Video Surveillance Control and Management Systems
16756	Video Surveillance Remote Devices and Sensors
16758	Perimeter Security Systems
16950	Field Electrical Acceptance Tests
16990	Conduit Schedule

Table 3 Instrumentation & Control Drawings

DWG	Number	Sheet Type	Sheet Title
GN	001	INSTRUMENTATION	SYMBOLS AND ABBREVIATIONS 1
GN	002	INSTRUMENTATION	SYMBOLS AND ABBREVIATIONS 2
GN	003	INSTRUMENTATION	SYMBOLS AND ABBREVIATIONS 3
GN	004	INSTRUMENTATION	SYMBOLS AND ABBREVIATIONS 4
GN	005	INSTRUMENTATION	SCHEMATIC SYMBOLS
GN	006	INSTRUMENTATION	SAMPLE LOOP DRAWING
GN	007	INSTRUMENTATION	EQUIPMENT TAGGING SYSTEM
TN	001	INSTRUMENTATION	TYPICAL DETAILS 1
TN	002	INSTRUMENTATION	TYPICAL DETAILS 2



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DWG	Number	Sheet Type	Sheet Title
TN	003	INSTRUMENTATION	TYPICAL DETAILS 3
TN	004	TYPICAL PCM PANEL	PLC AND INSTRUMENT
N	001	PCM PANEL	ELEVATION INTERNAL - 1
N	002	PCM PANEL	ELEVATION EXTERNAL - 1
N	003	PCM PANEL	ELEVATION INTERNAL - 2
N	004	PCM PANEL	ELEVATION EXTERNAL - 2
N	005	PCM PANEL	ELEVATION INTERNAL - 3
N	006	PCM PANEL	ELEVATION EXTERNAL - 3
N	007	PCM PANEL	ELEVATION INTERNAL - 4
N	008	PCM PANEL	ELEVATION EXTERNAL - 4
N	009	NETWORK RACK	ELEVATION - 1
N	010	NETWORK RACK	ELEVATION - 2
N	011	NETWORK RACK	ELEVATION - 3
N	012	INSTRUMENTATION	PCS SITE PLAN
N	013	INSTRUMENTATION	SYSTEM ARCHITECTURE
N	014	INSTRUMENTATION	OVERALL NETWORK TOPOLOGY DIAGRAM
N	015	INSTRUMENTATION	FIBER DISTRIBUTION
N	016	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION 1
N	017	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION 2
N	018	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION 3
N	019	PROCESS & INSTRUMENTATION	TYPICAL FLOW MONITORING SITE 1
N	020	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION TABLE 1
N	021	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION TABLE 2
N	022	PROCESS & INSTRUMENTATION	TYPICAL LIFT STATION TABLE 3

Table 4 Instrumentation & Control Specifications

Specification Number	Description
17050	Common Work Results for Process Control and Instrumentation Systems
17100	Control Strategies
17101	Specific Control Strategies
17710	Control Systems: Panels, Enclosures, and Panel Components
17712	Control Systems: Uninterruptable Power Supplies 10 kVA and Below
17713	Control Systems: Computer Consoles
17720	Control Systems: Programmable Logic Controllers
17721	Control Systems: Local Operator Interface (LOI)
17722	Control Systems: Remote Telemetry Unit Hardware
17730	Control Systems: PCS Computer Equipment
17733	Control Systems: Network Materials and Equipment

## SCOPE OF SERVICES

Specification Number	Description
17750	Control Systems: Wireless Communications
17762	Control Systems: PCS Software
17764	Control Systems: Maintenance Software
17901	Schedules: Field Instruments
17902	Schedules: Control Panels
17903	Schedules: I/O List
17904	Schedules: Local Operator Interface
17905	Schedules: HMI List
17950	Testing, Calibration, and Commissioning

### *Task 3.2 Deliverables*

- Electronic set of 60% Design Documents
- 60% Design Review Meeting Minutes
- 60% Construction Cost Estimate

### *Task 3.3 – 90% Design & Review Workshop*

The CONSULTANT will prepare 90% Design Documents for the DISTRICT’s review. The 90% Design Documents will include design drawings, technical specifications for all sections, supporting documents and updated construction cost estimates. CONSULTANT will schedule a 90% Design Review workshop to review the design with the DISTRICT and collect final edits for inclusion in the 100% Design submittal package.

### *Task 3.3 Deliverables*

- Electronic set of 90% Design Documents
- 90% Design Review Meeting Minutes
- 90% Construction Cost Estimate

### *Task 3.4 – 100% Design*

The CONSULTANT will prepare 100% Design Documents for bidding purposes. The 100% Design Documents will include design drawings, technical specifications for all sections, supporting documents, and a final construction cost estimate.

### *Task 3.4 Deliverables*

- Electronic set of 100% Design Documents
- 100% Construction Cost Estimate

### *Task 3 Assumptions*

- DISTRICT front-end specifications will be used for design deliverables.
- CONSULTANT’s standard technical specifications (Divisions 02 through 17) will be used.
- CONSULTANT’s standard CAD software, templates, and symbols will be used in the development of the drawings.
- Electronic deliverables will include PDF, CAD, Word, and Excel files as appropriate.
- DISTRICT review period for each set of deliverables will be completed within four (4) weeks of receipt.
- Cost estimates will be prepared in accordance with AACE guidelines and will have levels of accuracy appropriate with the associated design level.

## SCOPE OF SERVICES

### Task 4 – Programming Standards Development

CONSULTANT will present SCADA system examples for discussion in the workshops. Feedback from the DISTRICT will be used to develop standards for control system architecture, graphical presentation, and operator interface design to be followed for future DISTRICT SCADA and control system projects, including new facilities, process upgrades, and control system upgrade initiatives. Typical control system specifications will be presented to facilitate the selection of standards to be included in the template and selection for key elements to conform to DISTRICT preferences and requirements.

#### Task 4.1 – SCADA Graphics Workshop

CONSULTANT will facilitate one (1) in-person workshop with DISTRICT staff to review the CONSULTANT's initial recommendations, industry standards, and develop a consensus and agreement on SCADA standards to be utilized by the DISTRICT in future implementations. The SCADA Graphics Workshop will focus on the following main areas:

- Software package selection and add-on features.
- Tag nomenclature for HMI tag naming and structure.
- Graphical style: high performance vs. conventional.
- Screen layout requirements including headers, footers, and screen navigation.
- Screen object color standards.
- Graphical objects for standard equipment including pumps, valves, and instruments.

#### Task 4.2 – PLC Programming Workshop

CONSULTANT will facilitate one (1) in-person workshop with DISTRICT staff to review the CONSULTANT's initial recommendations, industry standards, and to develop a consensus and agreement on PLC programming standards to be utilized by the DISTRICT in future projects. The PLC Programming Workshop will focus on the following main areas:

- File naming.
- Change management and version control.
- Add on Instructions (AOIs) and User Defined Data Types (UDTs).
- Equipment Types.
- Tag naming.
- Standard programs.

#### Task 4.3 – Programming Standards Development

CONSULTANT will use information gathered from the workshops to develop a draft set of programming standards. SCADA programming standards will be developed to document all decisions made by the DISTRICT during the workshop. PLC programming standards will be developed to document tag naming and common PLC functions that would be used for system control. The draft set of standards will be provided to the DISTRICT for review.

Following DISTRICT review of the standards, a follow-up review meeting will be held to discuss review comments. The comments will be addressed, and a final set of Programming Standards will be delivered to the DISTRICT.

#### Task 4.4 – Programming Templates Development

As part of the Programming Standards, CONSULTANT will develop SCADA and PLC programming component templates for use by others on future projects. These templates will serve as a guide to maintain

## SCOPE OF SERVICES

consistency throughout the lifecycle of the DISTRICT's SCADA system. Below is an itemized list of templates that will be provided by the CONSULTANT and documented within the Programming Standards:

- One (1) sample lift station detail screen.
- One (1) template screen detailing screen layout, header, footer, and process area.
- One (1) equipment faceplate.
- One (1) Add-on Instruction and graphic symbol for each of the following:
  - Pump/motor
  - Valve
  - Flow meter
  - Level indicator

### *Task 4 Deliverables*

- Meeting Minutes.
- Draft Programming Standards Document.
- Final Programming Standards Document.
- Draft Programming Template.
- Final Programming Templates.

## **Task 5 – Bid Phase Support**

### **Task 5.1 – Pre-Bid Workshop**

CONSULTANT will attend one pre-bid conference with the DISTRICT and the various bidding contractors and will be available to present the project scope (at DISTRICT's preference). The DISTRICT will prepare and distribute pre-bid meeting minutes and agenda.

### **Task 5.2 – Review and Address Bid-related Inquiries**

CONSULTANT will respond to bidder questions and develop responses to be submitted via addenda. Responses will be conveyed via DISTRICT issued addendum.

### **Task 5.3 – Bid-review and Recommendations**

CONSULTANT will assist the DISTRICT with the review of received bids and present a memorandum of recommendation.

### *Task 5 Deliverables*

- Written responses to submitted bidder questions in the form of email to the DISTRICT.
- Bid review and recommendations memorandum.

## **General Assumptions/Exclusions**

In addition to those summarized herein, CONSULTANT's fee and schedule are based on the following general project assumptions and exclusions:

- DISTRICT front-end specifications will be used for design deliverables.
- CONSULTANT's standard technical specifications (Divisions 02 through 17) will be used.
- CONSULTANT's standard CAD software, templates, and symbols will be used in the development of the drawings.
- Hybrid workshops will be held at the District's Corporate Headquarters. CONSULTANT will provide laptop and audio/video devices for remote attendance. DISTRICT will provide projection equipment.

## SCOPE OF SERVICES

- Proposed effort assumes that the final bid document plan set will not exceed 65 drawing sheets and 76 technical specifications.
- The DISTRICT will complete any necessary environmental documentation and/or permit requirements for the implementation of this Project.
- The DISTRICT will provide all legal services related to contract review, bidding irregularities, protests, claims, and related items.
- The scope does not include services associated with potholing, topographic mapping, or geotechnical investigation. If it is determined that any of these services is needed for final design, CONSULTANT will prepare an amended scoping package for DISTRICT review.
- Engineering services during construction and construction management services are not included in this Scope of Services. CONSULTANT will prepare an amended scoping package for these services, upon DISTRICT request to do so.

## PAYMENT

CONSULTANT's compensation for the services described herein shall not exceed six hundred and fifty-four thousand and one hundred dollars (\$654,100) without prior authorization from the DISTRICT. These costs are developed in the attached Exhibit A, utilizing Consultant's current Fee Schedule (Exhibit B).

## SCHEDULE

Consultant will manage the completion of the tasks defined herein in accordance with the attached project schedule (Exhibit C).

**SOUTH PLACER MUNICIPAL UTILITY DISTRICT  
DESIGN OF SCADA SYSTEM IMPROVEMENTS  
EXHIBIT A - FEE PROPOSAL**



			Carollo Engineers, Inc.											Subconsultants		PROJECT TOTAL			
			PIC	PM	QA/QC	Cyber Eng.	PE	Radio Eng.	Sr. CAD Tech	CAD Tech	Doc. Process.	Total Hours	Labor Cost	PECE <sup>1</sup>	Expenses		Carollo Subtotal	Applied Technology Group	Sub Markup
			Hann	Moore	Yegnaraman	Anderson	Robinson	Ganesan											
Fee Schedule (2022)			\$322	\$280	\$322	\$301	\$280	\$236	\$203	\$146	\$129			\$13					10%
Fee Schedule (2023)			\$341	\$297	\$341	\$319	\$297	\$250	\$215	\$155	\$137			\$14					10%
Fee Schedule (2024)			\$362	\$315	\$362	\$338	\$315	\$265	\$228	\$164	\$145			\$14					10%
Fee Schedule (2025)			\$384	\$315	\$362	\$338	\$315	\$265	\$228	\$164	\$145			\$15					10%
Fee Schedule (2026)			\$407	\$333	\$384	\$358	\$333	\$281	\$242	\$174	\$154			\$15					10%
Task	Task Description	Fee Schedule Year																	
<b>1</b>	<b>Project Management &amp; Quality Control and Assurance</b>																		
1.1	Project Management, Communication and Coordination	2022-2024	8	180	-	-	-	-	-	-	42	230	\$ 61,898	\$ 3,220	\$ -	\$ 65,118	\$ -	\$ -	\$ 65,118
1.2	Project Workplan and Schedule	2022	4	16	-	-	4	4	-	-	4	32	\$ 8,348	\$ 448	\$ -	\$ 8,796	\$ -	\$ -	\$ 8,796
1.3	Project Kickoff Meeting	2022	2	8	-	-	4	4	-	-	-	18	\$ 4,948	\$ 252	\$ -	\$ 5,200	\$ -	\$ -	\$ 5,200
1.4	Visioning & Goal Setting Workshop	2022	2	8	-	-	8	4	-	-	-	22	\$ 6,068	\$ 308	\$ -	\$ 6,376	\$ -	\$ -	\$ 6,376
1.5	Project Meetings	2022-2024	2	16	-	4	8	8	-	-	-	38	\$ 11,083	\$ 532	\$ -	\$ 11,615	\$ -	\$ -	\$ 11,615
	<b>TASK 1 TOTAL</b>		<b>18</b>	<b>228</b>	<b>-</b>	<b>4</b>	<b>24</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>46</b>	<b>340</b>	<b>\$ 92,345</b>	<b>\$ 4,760</b>	<b>\$ -</b>	<b>\$ 97,105</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 97,105</b>
<b>2</b>	<b>Design Needs Assessment &amp; Technology Evaluation</b>																		
2.1	Existing SCADA Documentation Review	2022	-	40	1	16	24	24	-	-	-	105	\$ 28,722	\$ 1,470	\$ -	\$ 30,192	\$ -	\$ -	\$ 30,192
2.2	SCADA System Design Workshops	2022	-	80	-	24	4	8	-	-	-	116	\$ 32,632	\$ 1,624	\$ 2,000	\$ 36,256	\$ -	\$ -	\$ 36,256
2.3	Existing Communication Link Analysis & Pathloss Mapping	2023	-	6	2	-	-	40	-	-	-	48	\$ 12,470	\$ 672	\$ 800	\$ 13,942	\$ -	\$ -	\$ 13,942
2.4	In-Field Radio Path Survey	2023	-	40	-	4	-	8	-	-	-	52	\$ 15,150	\$ 728	\$ 800	\$ 16,678	\$ 25,000	\$ 2,500	\$ 44,178
2.5	Evaluate Alternate Power & Communication Solutions	2023	-	8	-	4	24	24	-	-	-	60	\$ 16,778	\$ 840	\$ -	\$ 17,618	\$ -	\$ -	\$ 17,618
2.6	Communication Study Report & Review Workshop	2023	-	24	8	6	8	88	-	-	16	150	\$ 38,344	\$ 2,100	\$ 1,275	\$ 41,719	\$ -	\$ -	\$ 41,719
2.7	Recommendations & Implementation Plan	2023	-	40	2	2	4	24	-	-	8	80	\$ 21,478	\$ 1,120	\$ -	\$ 22,598	\$ -	\$ -	\$ 22,598
	<b>TASK 2 TOTAL</b>		<b>-</b>	<b>238</b>	<b>13</b>	<b>56</b>	<b>64</b>	<b>216</b>	<b>-</b>	<b>-</b>	<b>24</b>	<b>611</b>	<b>\$ 165,573</b>	<b>\$ 8,554</b>	<b>\$ 4,875</b>	<b>\$ 179,002</b>	<b>\$ 25,000</b>	<b>\$ 2,500</b>	<b>\$ 206,502</b>
<b>3</b>	<b>Detailed SCADA Replacement Design</b>																		
3.1	30% Design & Review Workshop	2022-2023	4	16	16	16	50	60	16	16	8	202	\$ 53,543	\$ 2,828	\$ 250	\$ 56,621	\$ -	\$ -	\$ 56,621
3.2	60% Design & Review Workshop	2023	-	24	20	8	90	80	24	24	16	286	\$ 74,293	\$ 4,004	\$ 250	\$ 78,547	\$ -	\$ -	\$ 78,547
3.3	90% Design & Review Workshop	2024	4	24	20	8	90	80	24	24	16	290	\$ 80,198	\$ 4,060	\$ 250	\$ 84,508	\$ -	\$ -	\$ 84,508
3.4	100% Design	2024	-	16	16	8	50	40	16	16	8	170	\$ 47,299	\$ 2,380	\$ 250	\$ 49,929	\$ -	\$ -	\$ 49,929
	<b>TASK 3 TOTAL</b>		<b>8</b>	<b>80</b>	<b>72</b>	<b>40</b>	<b>280</b>	<b>260</b>	<b>80</b>	<b>80</b>	<b>48</b>	<b>948</b>	<b>\$ 255,333</b>	<b>\$ 13,272</b>	<b>\$ 1,000</b>	<b>\$ 269,605</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 269,605</b>
<b>4</b>	<b>Programming Standards Development</b>																		
4.1	SCADA Graphics Workshop	2024	-	12	-	-	-	-	-	-	-	12	\$ 3,360	\$ 168	\$ -	\$ 3,528	\$ -	\$ -	\$ 3,528
4.2	PLC Programming Workshop	2024	-	12	-	-	-	-	-	-	-	12	\$ 3,360	\$ 168	\$ -	\$ 3,528	\$ -	\$ -	\$ 3,528
4.3	Programming Standards Development	2024	-	80	8	-	-	-	-	-	8	96	\$ 27,568	\$ 1,344	\$ 800	\$ 29,712	\$ -	\$ -	\$ 29,712
4.4	Programming Templates Development	2024	-	80	8	-	-	-	-	-	8	96	\$ 27,568	\$ 1,344	\$ 800	\$ 29,712	\$ -	\$ -	\$ 29,712
	<b>TASK 4 TOTAL</b>		<b>-</b>	<b>184</b>	<b>16</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>216</b>	<b>\$ 61,857</b>	<b>\$ 3,024</b>	<b>\$ 1,600</b>	<b>\$ 66,481</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 66,481</b>
<b>5</b>	<b>Bid Phase Support</b>																		
5.1	Pre-Bid Workshop	2024	2	8	-	-	-	-	-	-	-	10	\$ 3,240	\$ 140	\$ 75	\$ 3,455	\$ -	\$ -	\$ 3,455
5.2	Review and Address Bid-related Inquires	2024	-	12	-	10	-	4	-	-	-	26	\$ 8,218	\$ 364	\$ -	\$ 8,582	\$ -	\$ -	\$ 8,582
5.3	Bid Review and Recommendations	2024	1	2	1	1	1	1	-	-	-	7	\$ 2,271	\$ 98	\$ -	\$ 2,369	\$ -	\$ -	\$ 2,369
	<b>TASK 5 TOTAL</b>		<b>3</b>	<b>22</b>	<b>1</b>	<b>11</b>	<b>1</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>43</b>	<b>\$ 13,729</b>	<b>\$ 602</b>	<b>\$ 75</b>	<b>\$ 14,406</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 14,406</b>
<b>BASE PROJECT TOTAL</b>			<b>26</b>	<b>730</b>	<b>101</b>	<b>100</b>	<b>368</b>	<b>496</b>	<b>80</b>	<b>80</b>	<b>134</b>	<b>2,115</b>	<b>\$ 588,838</b>	<b>\$ 30,212</b>	<b>\$ 7,550</b>	<b>\$ 626,600</b>	<b>\$ 25,000</b>	<b>\$ 2,500</b>	<b>\$ 654,100</b>

Notes:

<sup>1</sup> Project Equipment and Communication Expense.

**EXHIBIT B**

**CAROLLO ENGINEERS, INC.  
FEE SCHEDULE**

**As of January 1, 2022  
California**

	<b><u>Hourly Rate</u></b>
<b>Engineers/Scientists</b>	
Assistant Professional	\$200.00
Professional	245.00
Project Professional	290.00
Lead Project Professional	311.00
Senior Professional	332.00
<b>Technicians</b>	
Technicians	151.00
Senior Technicians	210.00
<b>Support Staff</b>	
Document Processing / Clerical	134.00
<b>Project Equipment Communication Expense (PECE) Per DL Hour</b>	<b>13.00</b>
<b>Other Direct Expenses</b>	
Travel and Subsistence	at cost
Mileage at IRS Reimbursement Rate Effective January 1, 2022	\$.585 per mile
Subconsultant	cost + 10%
Other Direct Cost	cost + 10%
Expert Witness	Rate x 2.0

This fee schedule is subject to annual revisions due to labor adjustments.

