Addendum Number 1
California American Water
ASR Wells 5 and 6 Design Build Above Ground Facilities
Request for Proposal

Addendum No. 1 Issued October 9, 2018

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1. The proposal schedule of events is revised as follows:
    a. **RFP Pre-Proposal meeting October 30, 2018, 9:00 AM PST**
    b. **Written questions due November 6, 2018, 4:00 PM PST**
    c. **CAWC distributes answers to written questions November 9, 2018, 5:00 PM PST**
    d. **Project Proposals due November 15, 2018, 3:00 PM PST**

Addendum Number 2
California American Water
ASR Wells 5 and 6 Design Build Above Ground Facilities
Request for Proposal

Addendum No. 1 Issued October 21, 2018

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1. Replace Proposal Form page PF-3 with the attached page PF-3 (add-2).
2. Insert the attached "CAWC Bid Form" which will be included in the cost of the construction phase of the project and added to item "e" of the Proposal Form.

Proposal; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over Owner.

P-4 CONTRACT PRICE

4.01 Proposer will complete the Work in accordance with the Contract Documents for the following price(s):

A. COST OF THE WORK

1. The Cost of all Work other than Unit Price Work shall be determined as provided in Paragraph 10.01 of the General Conditions, as revised or amended by the Supplementary Conditions and shall include the following amounts subject to increases or decreases for changes in Work as provided for in Article 8 of the Agreement

2. Lump Sum Fees

a. Design Professional Services - Preliminary Design up to and Including Issuing of the Design Memorandum.

$_____

b. Design Professional Services – Preliminary Design Completion through Final Design Phases.

$_____

c. Design Professional Services – Construction/Operational Phase

$_____

d. Pre-Construction Services during Design Phase

$_____

e. **Total construction costs: includes Bid Form,** Construction Supervision and Superintendence.

$_____

f. Cost of Bond Premiums (Based on construction estimate):

$_____

Premium unit Price $_____/$_____

Range: $_____ to $_____

TOTAL LUMP SUM (a. + b. + c. + d. + e. + f.):

$_____

MONTEREY PENINSULA WATER SUPPLY PROJECT 10/20/2018
ASR 5 AND 6 - DESIGN BUILD Rev. 0
ABOVE GROUND FACILITIES PROJECT

BID ITEM	APPROX. QTY.	UNIT	DESCRIPTION WITH UNIT PRICE (PRICE IS INCLUSIVE OF ALL APPLICABLE TAXES, PROFIT, INSURANCE, BONDS AND OTHER OVERHEAD)	UNIT PRICE	TOTAL ITEM PRICE
PREDESIGN/DESIGN SERVICES					
1	1	ALLOW	Community Outreach	$7,000.00	$7,000.00
2	1	LS	Design Services (Part III. Scope of Design Services, SDS 1-10)		$0.00
3	1	LS	Dust and Noise Control Plan & Implementation		$0.00
4	1	LS	Building Code Review, Procedures & Plan		$0.00
5	1	LS	Mobilization, Security Fencing, Access Plan		$0.00
6	1	LS	Temporary Power Plan		$0.00
7	1	LS	Mobilization, Security Fencing, Access Plan, etc.		$0.00
8	1	LS	SWPPP/Erosion & Sediment Control Plan		$0.00
9	1	LS	Environmental Requirements {Permits 2.7.3)		$0.00
10	1	LS	AVETTA Certification (2.7.3)		$0.00
11	1	LS	Utility Potholing & AutoCAD Mapping		$0.00
12	1	LS	Staking/Surveying Plan, Mapping, & Implementation		$0.00
13	1	LS	Geotechnical Investigations & Borings, Soils Report (2 Sites)		$0.00
14	1	LS	Demolition of Existing Structure Plan		$0.00
15	1	LS	Traffic Control Plans & Implementation		$0.00
16	1	LS	Acceptance Testing Plan & Implementation(2.7.4)		$0.00
17	1	LS	Quality Management Plan (Design & Construction, (2.7.5)		$0.00
18	1	LS	Materials Testing Plan (e.g. Concrete & Soils)		$0.00
19	1	LS	Pump Test Plan & Performance Testing		$0.00
20	1	LS	Well Pump/Line shaft Vibration Test Plan, & Critical Speed Calculations		$0.00
21	1	LS	Inspection & Test Procedures & Plan		$0.00
22	1	LS	Factory Acceptance Testing/Designer Inspections, (SDS-9)		$0.00
23	1	LS	Operations & Maintenance Training (2.7.6)		$0.00
24	1	LS	Installation Operation, & Maintenance Manual (IOM), Scanned pdf & CD,		$0.00
25	1	LS	Start-Up & Commissioning Procedures Plan		$0.00
26	1	LS	Facility/Utility Shut-Down Plan		$0.00
27	1	LS	Warranty & Acceptance Test Plan		$0.00
28	1	LS	CSI format Technical Specifications (16 Divisions)		$0.00
29	1	LS	Assess Validity, Evaluate, Analyze Accuracy of Preliminary Design		$0.00
30	1	LS	Architectural Drawings/Renderings for Agency Approvals		$0.00
31	1	LS	Civil Drawings, Auto Cad, Full and Half-Sizes		$0.00
32	1	LS	Mechanical Drawings, Auto Cad, Full and Half-Sizes		$0.00
33	1	LS	Electrical & Drawings, Auto Cad, Full and Half-Sizes		$0.00
34	1	LS	Plumbing Drawings, Auto Cad Full and Half-Sizes		$0.00
35	1	LS	Instrument Drawings, Auto Cad Full and Half Sizes		$0.00
36	1	LS	HVAC Drawings, Auto Cad, Full and Half Sizes		$0.00
37	1	LS	Process (P& ID) Drawing Updates, Add Disinfection, Auto Cad, Full/Half Sizes		$0.00
38	1	LS	As-Built Drawing & Conformed Drawings in Auto-CAD		$0.00

PROJECT MANAGEMENT/CONSTRUCTION MEETINGS/REVIEWS					
39	1	LS	Design Meetings (10)		$0.00
40	1	LS	Construction Meetings (24)		$0.00
41	1	LS	Constructability Review (3)		$0.00
42	1	LS	Value Engineering (3)		$0.00
PROCUREMENT/CONSTRUCTION					
43	1	LS	Mobilization/demobilization, Phase 1		$0.00
44	1	LS	Mobilization/demobilization, Phase 2		$0.00
CIVIL/MECHANICAL/PROCESS					$0.00
45	1	LS	Site Preparation for Phase 1 Well Drilling (2 Sites)		$0.00
46	1	LS	Site Preparation, All other work, Phase 2		$0.00
47	1	LS	On-Site Drainage Percolation System, Infiltration Tests		$0.00
48	1	LS	AC Pavement and Subgrade (Tech, Req, Appendix 1)		$0.00
49	1	LS	Site Access & Perimeter Chain Link Fencing, & 7 ft. height, Double Gates (both sites)		$0.00
50	1	LS	ASR Underground Pipeline connections to General Jim Moore Blvd at ASR 5 and 6 (Sheet I-1, Appendix 1)		$0.00
51	1	LS	ASR Above Ground Piping/Valves (Sheet I1 G1, M1 Appendix 1)		$0.00
52	1	LS	Cla-Val Valves, remote controlled, fusion bonded epoxy coating in/out, 110V solenoid manual override, stainless steel trim, indicating limit switches, pilot strainer, open/close speeds, isolation cocks (Tech Req, G1, M1 Appendix 1)		$0.00
53	1	LS	Flow meters, Sparling 656 Tigermag magnetic, local display plus remote transmission 4-20 mA output, polyurethane liner, bidirectional rate and bidirectional totalizing functions (Tech Req, Appendix 1)		$0.00
54	2	EA	Pump water flush lube system, real time flow measurement and lube line differential pressure instrumentation, with interlock shutdown of well pump upon loos of low or pressure in lube line (Tech Req, Appendix 1)		$0.00
55	1	LS	ASR Underground Pipeline connections to General Jim Moore Blvd at ASR 5 and 6 (Sheet I-1, Appendix 1)		$0.00
56	1	LS	ASR Above Ground Piping/Valves (Sheet I1 G1, M1 Appendix 1)		$0.00
57	1	LS	Isolation Valves, (with manual operators larger than 8" diameter)		$0.00
58	2	EA	Vertical Turbine Pumps, 800 HP, 480V, 3 ph, 3000 gpm, 792' TDH 82% Efficiency, TEFC motor, zinc less bronze allow C952 impeller, intermediate shaft bearings		$0.00
59	2	EA	12" x X-42 Grade Column Pipe, 550 ft. long, enclosed tube water flush tube and shaft design		$0.00
60	2	EA	12 x 8 Baki "FCV" Downhole Flow Control Valve, set at 500' bgs		$0.00
61	1	LS	Complete Chemical Offloading Facility for bulk sodium hypochlorite deliver off-loading, with wash-down pad sized for WB-50/5,000 gallon storage tanker truck, local control panel, audible alarm, and warning lights, sump, and sump pump and underground chemical resistant storage tank 1000 gal., Compressed air supply to pressurize truck and offload chemical, Operator Interface Panel with level indicator for chemical level in bulk tank, safety showers (2), eyewash stations (2), chemical injecting quills, and injecting ports with static mixers for hypochlorite injection (at ASR 5 SITE ONLY.)		$0.00
62	1	LS	Complete Disinfection Process Faculty for Sodium Hypochlorite system (12.5% solution strength), assume dosing up to 3 mg/l, storage of 30 days supply of bulk storage, FRP bulk storage tank, (2) day tank, (2) bulk transfer pumps, (2) chemical metering pumps, piping and valves, and ancillary equipment. Note a P & ID has not been completed. Contractor shall attach proposed P & ID with the bid for approval. Assume double containment for all chemical storage and dispensing equipment (at ASR 5 SITE ONLY).		$0.00
Structural/HVAC					$0.00

63	1	LS	Complete ASR 6 Electric/Controls Bldg. 380 sq. ft. interior minimum, Removable Sound Attenuation Enclosure around pump, non-combustible CMU with Concrete Plank Roof, UBC Type U Building Classification, Mediterranean style, similar to ASR 3 & 4 (Appendix 1)		$0.00
64	1	LS	Complete ASR 5 Electric/Controls Bldg. (min interior 350 sq. ft.) and Disinfection Bldg. (min. interior 650 sq. ft.). interior minimum, Sound Attenuation Enclosure around pump, non-combustible CMU with Concrete Plank Roof, UBC Type U Building Classification, Mediterranean style, similar to ASR 3 & 4 (Appendix 1)		$0.00
65	2	EA	Complete HVAC, Air Conditioning with Economizer mode systems each for Electrical/control Building (Tech Req, Appendix 1)		$0.00
Electrical					$0.00
66	2	LS	Complete Electrical Systems, for NEC calculated full-load amperage (FLA) of 1282 amperes, which includes pump, & misc. auxiliary loads, as shown in "Table MSB & Feeder Load Schedule" on Drawing E-1. Panels sizes for 1600-ampere meter/main		$0.00
67	2	EA	Short Circuit and Arch Flash Studies, developed per Cal Am standards, and PGE system data (Appendix 1, 3, 4).Layout per Dwg E-2, Appendix 1.		$0.00
Instrumentation/Controls					$0.00
68	2	EA	Complete control system, functionality including start, stop, speed control of the pumps, based on either flow or pressure set point, or manual adjustment. actuation of the Cla Val process valves, Alarm, warning and shutdown interlock functions, record and store process operational data, communicate with main Cal-Am SCADA system, PLC with 10% spare digital I/O, local control panel (LCP), (Tech Req, Drawing I-1, Appendix 1)		$0.00
69	2	EA	Variable Frequency Drive (VFD), indoor NEMA 1G, 18 pulse PWM, No bypass, Heavy Duty Service (50 C rated), dv/dt output filter, Allen Bradley Power Flex 755		$0.00
70	2	EA	Programmable Logic Controllers, Allen Bradley only. PLC program and OIP screens programmed to control the pumps and show booster and well pump operation, status, and alarms, indicated in Tech requirements and on P & ID, Appendix 1		$0.00
71	2	EA	Data System to Transmit Data via SCADA to Cal Am's central Office in Pacific Grove via cellular modem.		$0.00
72	2	EA	Local Operator Interface Panel (OIP), on front of each control panel. PLC program and OIP screens programmed to control the pumps and show booster and well pump operation, status, and alarms, indicated in Tech requirements and on P & ID, Appendix 1		$0.00
73	1	LS	Differential Pressure Transmitters, and pressure transmitters, heat traced and mounted in O'Brien instrument enclosures All transmitter tubing shall be heat traced		$0.00
			Subtotal		**$ 7,000**
			Contingency	30%	$ 2,100
					$ 9,100

BID ADDENDUM NO. 3

MPWSP Aquifer Storage & Recovery (ASR) Wells 5 and 6
Request for Proposal, Above Ground Facilities
LIST OF SUBMITTALS

The design build contractor shall include in the following submittals as part of the scope of work for the above ground facilities project.

1. **<u>Submittals to provide with Design Build Proposal:</u>**

   - Listing of proposed major electrical equipment manufacturers (see acceptable electrical equipment manufacturers and suppliers in the RFP)
   - Listing of proposed Programmers that are acceptable to California American Water (see attached names of Telestar or Controls System west).
   - Listing of proposed instrumentation and controls manufacturers (see attached SCADA standards)
   - Listing of proposed SCADA cellular modem manufacturer equipment (see attached SCADA standards)
   - Listing of proposed pump and motor equipment manufacturers
   - Listing of proposed chemical feed, storage, & injection quill equipment manufacturers
   - Listing of proposed pipe and valve manufacturers
   - Listing of proposed HVAC equipment manufacturers equipment
   - Construction Schedule, for Phases 1 and 2, Gant chart type, include major work activities for the following headings:
     - Administration
     - Heading: Phase 1 Civil Site Work. Subheadings: Preliminary Design, Final Design, Submittals, Material Procurement, Construction Project Close Out
     - Heading: Phase 2 All other Above Ground Facilities, Subheadings: Preliminary Design, Final Design, Submittals, Material Procurement, Construction, Project Close Out

   - Piping and Instrumentation Diagrams for disinfection facility
   - This is not an all-inclusive listing of submittals. Other submittals may be required for the proposal. Please read the RFP for all additional submittals that are required for the proposal.

2. **<u>Submittals to provide for the Design and Construction of the Above Ground Facilities</u>**:
   - Alarm response list
   - Report to Assess Validity, Evaluate, Analyze Accuracy of Preliminary Design
   - Brass tag samples, size 1" x 2", for equipment, with mechanical fastener samples
   - Bill of Materials, & Fabrication Drawings
   - Building Code Review (part of design basis memorandum)
   - Color selections coatings, CMU, tiles, etc.
   - Certified calibrations for instruments, incl. flow meters
   - Community outreach brochure

- Compaction tests of soils and engineering materials, soil sieve analysis, single/double ring infiltrometer tests, etc.
- Concrete compressive tests
- Concrete mix design
- Drawings & Details, Phase 1 Site civil, piping and valves
- Drawings & Details Phase 2
- Equipment data sheet tables
- Equipment Jobsite Storage, Lube, & Maintenance Requirement List (warranty item)
- Electrical panel elevations
- Equipment IOM Manuals
- Equipment Lubrication Recommended List
- Factory acceptance test plan and schedule
- HMI Screen Shots (4 weeks prior to the FAT)
- Hydrostatic pressure test results
- Hydraulic Profiles for initial and ultimate conditions
- Input/Output Lists for PLC, digital and analog signals
- Installation, Operation, and Maintenance manuals, and CD's
- 'ISA20 Instrument Specification forms: level, sure transmitters/gages, solenoids, flow meters, pH transmitters, chlorine residual analyzers, turbidity meters, pressure switches, pressure regulators, rotameters & calibration columns, variable frequency drives
- Geotechnical Engineering Report, boring logs, and recommendations
- Lighting and Grounding plan, & details
- Ladder logic diagrams
- Mobilization, Security Fencing, Access Plan
- MSDS
- Motor load list
- One-line Diagrams (single line diagrams)
- Permits, encroachment, building, storm water, others as required
- P & ID with tag numbers for all devices/instruments, valves, motors, pumps, etc.
- Paint & Coatings Matrix List
- Parts List, & Spare Parts List
- Piping ,Fittings, Valves, Special fittings, Lay Drawings
- PLC programming documentation (4 weeks prior to FAT)
- PLC control panel layout drawings, interconnection drawings, loop drawings
- Power supply study, Arc Flash study, labeling
- Process functional design specification
- Pump curves Vertical Turbine Pumps, chemical feed pumps, booster pumps
- Pump Test Plan & Performance Testing
- Product Information, catalog cuts for equipment & instruments
- Quality Management Plan
- SCADA control panel elevations
- Schematics wiring diagrams, Variable frequency drives etc.
- Startup & Operations Maintenance list for equipment
- Special Piping system drawings, and materials list (double containment pipe for chemicals)
- Start-Up & Commissioning Procedures Plan
- Symbols, drawings index, legends and abbreviations
- SWPPP, sediment and erosion control plan

- Samples of building materials
- Samples door, window hardware
- Samples, glass for window (12 in. square)
- Schedules, Gant, CPM, bar as required
- Staking/Surveying Plan, Mapping, & Implementation
- Technical Specifications (CSI format)
- Traffic control Plan
- Tags, equipment tag samples all panels, process piping, valves etc.
- Test reports for construction materials
- Utility Potholing & AutoCAD Mapping
- Valve list for control valves, isolation valves
- Vibration test report, 800 HP vertical turbine pumps
- Vibration detection system for the well pumps
- Warranty, 1 year limited, roofing materials
- Warranty, joint sealers
- Warranty, door hardware
- Warranty, protective coatings
- Warranty, equipment all types, 1-year warranty unless specified differently elsewhere
- Warranty, HVAC 2-year warrant
- Warranty, Variable Frequency Drive, 2-yr warranty all parts and labor from final acceptance
- Warranty, 800 HP well VTP (2 pumps), 2-yr warranty all parts and labor from final acceptance
- Warranty, protective circuits & motor relays, well pumps, 2-year warranty
- Warranty, control panels, 2-yr warranty
- Warranty, instruments, 1-yr warranty, except as indicated elsewhere
- Warranty, ductile iron pipe, 10-yr warranty
- Warranty, PLC, RTU, HMI hardware and software, 2-yr warranty
- Warranty, automatic transfer switches, 2-yr warranty
- Wire conduit and cable schedules
- Window and door schedules, and hardware
- Warranty bonds and service contracts
- This is NOT an all-inclusive list, and may be modified by the owner as required

Donald R Monette

From: Michael Grondin
Sent: Wednesday, August 09, 2017 3:35 PM
To: Donald R Monette
Subject: CalAm SCADA Standard and integrator contacts
Attachments: CalAm SCADA Design Standard.pdf

DESIGN BUILDER CONTRACTOR SHALL USE ONE OF THE FOLLOWING LISTED CONTROL INTEGRATORS, AND PROGRAMMERS FOR THE ABOVE GROUND FACILITY PROJECT.

Hi Donald,
Here are the cor

Bruce Borders
Control Systems West, Inc.
1150 Industrial Ave, Suite F
Petaluma, CA 94952
Phone: (707) 763-1108
Email: Bruce.Borders@controlwest.com
Website http://www.controlwest.com/

Tak Koo
Telstar Instruments, Inc.
4017 Vista Part Court
Sacramento, CA 95834
Office (916) 646-1999
Mobile (510) 385-5377
Fax (916) 646-1096
Email: tkoo@telstarinc.com
Website http://www.telstarinc.com

Michael Grondin
SCADA Automation & Control Engineer
California American Water
511 Forest Lodge Rd.
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Pacific Grove, Ca. 93950
Office 831-646-3244
Mobile 831-718-7390

CALIFORNIA AMERICAN WATER

RECOMMENDED GUIDELINES AND STANDARDS FOR

DESIGN AND INSTALLATION OF SCADA SYSTEMS

CALIFORNIA AMERICAN WATER
511 Forest Lodge Road, Suite 100
Pacific Grove, California 93950
July 2017

CALIFORNIA AMERICAN WATER
RECOMMENDED GUIDELINES AND STANDARDS FOR
DESIGN AND INSTALLATION OF SCADA SYSTEMS

INTRODUCTION

The following document provides general guidelines and recommended standards for the design and installation of supervisory control and data acquisition (SCADA) equipment and systems in California American Water facilities. Depending on the size and complexity of the facility, some or all of the following requirements may need to be considered.

When reviewing the process control and monitoring requirements for a particular facility, the following questions should be taken into consideration:

- Does the facility require a programmable logic controller (PLC) or remote telemetry unit (RTU)?
- What is current mode of SCADA communication being utilized, e.g., licensed frequency radio, spread spectrum radio, cellular, other?
- What are the security requirements (physical / cyber etc.) for the facility, and how will they be integrated with or separated from the SCADA system?

California American Water's goal is to increase standardization within its SCADA systems to take advantage of the following benefits:

- Increase reliability by deploying robust and dependable equipment components and technology solutions
- Reduce costs by leveraging volume buying power, and also through the use of "tried & true" control algorithms and programming logic
- Improve our ability to trouble-shoot problems
- Enhance security by minimizing the number of technology platforms that must be protected and secured
- Improve our ability to capture data in a common repository where it can be analyzed and used to make better business decisions going forward.

The rapid evolution of information technology presents a particularly difficult challenge since American Water owns thousands of remote facilities, including tanks, metering vaults/chambers, booster and lift stations, and treatment facilities that must be equipped with robust and effective monitoring systems to ensure safe and reliable service to our customers. Since we always seek to maximize the life cycle value of our investments, California American Water will continue to be served by a wide range of equipment and technologies of varying brands and vintages. Therefore, it is even more important for California American Water facilities to adhere as much as possible to American Water's current SCADA equipment standards and recommendations to minimize the proliferation of an even wider range of equipment components that must be understood, maintained, and upgraded.

CALIFORNIA AMERICAN WATER
RECOMMENDED GUIDELINES AND STANDARDS FOR
DESIGN AND INSTALLATION OF SCADA SYSTEMS

PART 1 GENERAL

This document covers design requirements for the Process Control / SCADA system.

1.1 Applicable Standards

A. International Society Of Automation (ISA) Standards

B. ISA ANSI/ISA-5.1-2009 - Instrumentation Symbols and Identification.

C. ISA-5.3-1983 - Graphic Symbols for Distributed Control / Shared Display Instrumentation, Logic, and Computer Systems.

D. ISA-5.4-1991 - Instrument Loop Diagrams.

E. ISA-5.5-1985 - Graphic Symbols for Process Displays.

F. ISA-20-1981 - Specification Forms for Process Measurement and Control Instruments, Primary Elements, and Control Valves.

G. ISA-92.03.01-1998 - Performance Requirements for Ammonia Detection Instruments (25-500 ppm).

H. NFPA-70, National Electric Code, Latest Edition

I. American Water Scan Directive

1.2 Process and Instrument Drawings (P&ID)

A. Per ISA S5.5 Graphic Symbols for Process Displays.

B. Per ISA-5.3-1983 - Graphic Symbols for Distributed Control / Shared Display Instrumentation, Logic, and Computer Systems.

1.3 Modes of Operation

A. ***Local/Remote Capabilities***: Each piece of process equipment will be equipped with a Local-Off-Remote selector switch at the piece of equipment to allow the location of control to be changed. In order to ensure that the PLC (in the Remote Manual or Remote Automatic Mode) has control, a contact block shall be added on the Remote leg of the selector switch. The output of the contact block will drive a digital input that will serve as a permissive in the SCADA system. If the SCADA

system attempts to control a device from the PLC when it is not in the Remote mode, a failure condition will be delineated at the operator's interface.

B. ***Local-Manual***: An operator at a piece of process equipment will turn the device on and off and make adjustments. Also referred to as MCC in Hand. Required for all equipment.

C. ***Local-Automatic***: Controls are hardwired into pieces of equipment by a vendor (such as prepackaged process equipment) to run under PLC controls. Also referred to as HOA in Hand. Required only where applicable.

D. ***Remote-Manual***: An operator in the control room turns items on and off via the SCADA system HMI. Also, the local OIT or PanelView should have Manual Mode control. Required for all equipment.

E. ***Remote-Automatic***: The SCADA system turns equipment on and off and performs all control. Required for all equipment.

1.4 SCADA System Computers

A. The SCADA system shall include computers suitable for performing the functions of Human Machine Interface (HMI), data storage, and report generation.

B. Data storage shall be in an archive database using AW Standard naming conventions.

1.5 Human Machine Interface Functions

A. *Screens*: Each screen shall utilize the Water Company's standard color conventions for stop, run, open, closed, and intermediate conditions. Text-based screens shall be considered in the design. Water Company to provide sample screens to establish the minimum acceptable level of graphic detail.

B. *Reports*: Each report that is generated by the Water Company shall be incorporated into the system. Reporting shall be from an interface that is consistent with currently generated reports for sites of the same type. When data that is not generated by the system is required on certain forms, the operator shall have the capability to manually enter this information into the report, or overwrite data that the system has downloaded. The Water Company shall provide a list of all reports to be developed by the system integrator.

C. *Alarms*: An alarm summary table shall be developed by the Engineer and reviewed with the Water Company during design. The table shall include specific initial values for all high and low alarm set points. Analog set points are also to be configurable on the graphic displays. Alarm conditions shall be sent to an auto-dialer for notification of off-site personnel. Operators shall not have access to modify alarm set points without special authorization.

D. *Database*: See Above

1.6 System Factory Test

A. Where applicable, the Water Company and Water Company's Engineer shall witness a complete factory test of the entire control system prior to its shipment to the job site.

B. The Engineer shall provide written approval for shipment following acceptance of the factory test.

C. The factory test shall be conducted by the Systems Integrator using simulated inputs to assure all I/O are provided and all inputs, outputs and application software are functioning according to the intent of the plans and specifications. Additional distributed control units shall be provided, if necessary, to accommodate the project phasing requirements. The test procedure shall include simulated system faults and failures. The factory tests shall be staged in two parts: the first to review all I/O and hardware and the second to assure functionality of the system.

D. The factory test shall demonstrate all graphics, report generation and alarm functions of the system.

E. Provide at least a four week written notification to the Water Company prior to the start of the witnessed factory test

1.7 Training

A. The Engineer shall advise the Water Company as to the amount of training to be performed relative to the SCADA system. Depending on the amount of new hardware / software, the appropriate level of operator and supervisor training shall be included in the Engineer's scope of work as detailed below.

1) All training received during the startup and calibration of equipment is considered incidental training and does not count for the requirements listed below.

B. ***Operator Training****:* Operating training has the following goals:

1) Use HMI workstations and keyboards

2) Retrieve and interpret all standards displays including graphics, overview displays, group displays, trends, point summaries, and alarm summaries.

3) Enter data manually.

4) Change control parameters and set points.

5) Assume manual control of equipment and control it from the HMI.

6) Print Reports.

7) Acknowledge Alarms.

8) Respond to software and hardware errors.

9) Historical Data Collection, archival and retrieval.

10) Capabilities and configurability of: reports, alarm reporting, setting passwords, system hardware configuration.

11) Database back up and recovery

C. ***Maintenance Training***: This training provides Water Company personnel with the skills required to diagnose, trouble shoot, and repair the components of the system. As a minimum, maintenance training shall provide technicians with the ability to:

1) Power-up, boot strap, and shut down all of the hardware devices.

2) Perform scheduled maintenance functions on all components.

3) Describe the theory of operation for all circuit boards.

4) Setup and use off-line diagnostics to determine hardware failures to the fault board or module.

5) Use HMI workstations, keypads, or keyboards to retrieve and interpret displays which shall provide on-line diagnostic information

6) Remove and replace all removable boards/modules.

a. Maintenance training shall be at least 75% hands-on instruction and shall be designed for personnel that do not have any familiarity with the equipment furnished.

D. ***Supervisor Training*****:** This training is for personnel who will need to make access changes to the system. This training consists of the following basic tasks:

1) Log-on and log-off to the HMI.

2) Setting and clearing passwords.

3) Configuring access levels for various process parameters and set points.

4) Printing and configuring reports.

1.8 ***Calibration*****:** It is expected that a detailed calibration plan will be developed during the construction phase of the project. The Engineer will review the instrumentation installed and provide guidance to the Water Company as to the number of follow-up visits for calibration, the type of calibration

documentation to be furnished, and the calibration equipment to be furnished to allow Water Company personnel to maintain the equipment after project completion.

1.9 Required Submittals

A. Factory Acceptance Test Plan and Schedule four (4) weeks prior to the Factory Acceptance Test.

B. PLC program with documentation four (4) weeks prior to the Factory Acceptance Test.

C. HMI Screens 4 weeks prior to Factory Acceptance Test.

D. PLC Control Panel Layout Drawings.

E. Interconnection Drawings.

F. Loop Drawings.

PART 2 EQUIPMENT

2.1 Controllers

A. New controllers shall be Allen Bradley ControLogix / CompactLogix Series.

B. Provide 20% spare I/O of each type wired to terminal blocks.

2.2 Panel View or Operator Interface Terminals

A. Allen Bradley PanelView Plus is the standard operator interface of California American Water. Screen size for small site should be 7 inch displays and larger sites should be no smaller than 10 inches.

2.3 Controller Cabinets / Enclosures shall include the following:

A. NEMA 4 construction in process area. NEMA 12 construction in control room.

B. Compact lighting fixture activated by a door switch.

C. 30 minute battery backup or UPS.

D. Heater and fan to prevent condensation

E. Multilevel terminal blocks are NOT permitted.

F. Ground fault interrupter type duplex receptacle

G. Separation of Power Cable and Signal Wires: 120 VAC control cable shall be separated from 4-20 mA signals and 24 VDC cabling as much as practical inside

control cabinets; provide barriers for compliance with ISA Standards. Field wiring into the control panel, including, junction boxes shall be labeled as per the P&ID drawings; not wiring numbers.

H. Well and Booster Pump motor HOA switch: All sites must have a HOA for each pump motor in the event of SCADA network failure. HOA switch should be located within the SCADA panel.

2.4 Communication

A. Cell Modem: Communication equipment must be upgraded to cell modem to the latest standard.

PART 3 EXECUTION

3.1 Protection of Sensitive Electronic Equipment

A. *General*: The Contractor shall follow guidelines for the powering and grounding of sensitive electronic equipment listed in the I.E.E.E. Standard 1100-1992, current edition.

B. Transient Voltage Surge Suppression (TVSS): Provide TVSS at point of use for all instrumentation loads. Provide 30 minute battery backup to all PLC's and analyzers containing programming. Required for all 4 wire instruments (such as a chlorine residual analyzer), and placed on the 120 VAC branch circuit and on the 4-20 mA portion of the circuit. The transient voltage surge suppression on the 4-20 mA wiring shall be located on the PLC end. For all two wire 4-20 mA Instruments that have signal cable running from outdoor to indoor locations (or signal wire run between buildings), transient voltage surge suppression on the field side of the 4-20 mA signal is required.

3.2 *Grounding*: The PLC cabinet shall be provided with a direct connection to the ground grid via a driven rod in addition to the equipment safety ground required by the National Electrical Code. Daisy chaining of grounds is not acceptable. A grounding detail showing the interface between the PLC cabinet and the proposed grounding system is required. Instrumentation shields shall be grounded at the PLC end only. The electrical grounding specifications must be cross referenced to the instrumentation and control specifications so that it is understood that the system integrator monitors the quality of system grounding. In order to facilitate an electrically conductive ground mass, provide connections to structural steel and interface them to the grounding system.

3.3 *Diodes*: Shall be provided across all of the digital outputs to limit surges from switching of electromechanical devices (such as motors).

3.4 *Power Supplies*: Separate power supplies shall be provided for analog inputs and PLC's, and digital outputs.

3.5 *Conduit Spacing*: Required between power and signal / control cables as listed in the I.E.E.E Standard 518-1982, current edition.

3.6 Signal/Control Wiring for Corrosive Areas

A. *Ammonia*: Use Schedule 80 PVC conduit material for any new wiring required in these areas. Existing conduit and conductors should be reused wherever possible. Where possible, enclosures for control and electrical components should be located outside of the feed rooms. Where this is not possible, the enclosures shall be fiberglass NEMA 4X type enclosures.

3.7 3 - Wire Control: Required for all pieces of equipment (one normally open contact for start and one normally closed contact for stop). Chemical Metering pumps (require one contact for start and stop).

3.8 Modulating Valves: Analog control with full opened / full closed feedback or open / closed control with position feedback and full opened / full closed feedback.

3.9 Analog inputs and outputs shall be 4-20 mA. Discrete Inputs shall be 24 VDC. Isolated dry relay contacts shall be furnished for all Discrete Outputs – relays may be integral to the I/O module. Interposing relays may be furnished in cases where the I/O module relay contacts do not have adequate electrical ratings.

3.10 Input / Output Modules: Provide high density I/O modules.

PART 4 ACCEPTABLE MANUFACTURER'S LIST

SCADA / INSTRUMENTATION

Equipment Description	Manufacturers
Pressure Transmitter	Rosemount (Monterey) Endress Hauser
Turbidimeter	Hach
pH Analyzer	Hach Wallace & Tiernan ProMinent
Chlorine Residual Analyzer	Hach Wallace & Tiernan

	Prominent
Industrial Ethernet Switch	Hirschmann Stratix
Radio (Licensed and Un-Licensed) **(Not for New Install)	Microwave Data Systems (GE MDS)
Antenna (Radio) **(Not for New Install)	Clearwave Samco Andrew Decibel Pctel
Cellular Modem	Sierra Wireless (GX450)
Programmable Logic Controller	Allen Bradley (ControLogix, CompactLogix L3 or Higher)
Fluoride Ion Monitor	ABB, ATI Orion ProMinent
Particle Counters/Monitor	Chemtrac Systems, Inc. Hach
Streaming Current Detector	Chemtrac Systems Inc.
Temperature / ORP Analyzer	Emerson ABB ProMinent
Flow Switch	Dwyer Instruments Inc. Flotect Kobold
Venturi Flowmeter	BIF Henry Pratt Primary Flow Signal Badger
Magnetic Flowmeter	ABB Rosemount Endress Hauser Sparling TigerMag (Monterey Preferred)
Displacement & Turbine Flowmeter	Sensus Technologies Neptune McCrometer
Ultrasonic Meter	Nusonics Division – Mesa Laboratories Polysonics Panametrics
Ultrasonic Level Probe	Endress Hauser Inventron Siemens Flowline Ametek – Drexelbrook
Radar Level Probe	Endress Hauser Ohmart-Vega

	Siemens Magnetrol
Capacitance Probe	Ametek - Drexebrook Siemens
Float Level Switch	Siemens Anchor Scientific
Level Instruments – RF Admittance Probe	Ametek - Drexelbrook
Auto Dialer *Note: Not for New Installations	Raco Verbatim Antx
Ammonia Analyzer	Hach ChemScan
PLC Enclosure	Saginaw Control Engineering (SCE) Hoffman Engineering
Human Machine Interface (HMI) Software	ICONICS Gen32 GE Proficy iFix (Sacramento only)

PART 5 SCADA HMI SCREEN AND SYSTEM REQUIREMENTS

5.1 SCADA HMI screen display must include but not limited to the following. *(Set points include; alarm set points, level control set points, process parameters, and various control points.)*

A. Well Sites

a. Well level with alarm set points
b. Well pump motor control and status
c. Chemical analyzer and chemical feed system controls
d. Discharge pressure and flow display with alarm set points
e. Hydro pneumatic tank level and controls (if applicable)
f. Blow valve status and control
g. Totalizer values for flow, runtime and pump starts
h. Well tuning set points
i. Power monitor
j. Trending graph of critical points

B. Booster Pump Stations

a. Pump motor controls and set point
b. Source and discharge tank level display and set points (if applicable)
c. Inlet and discharge pressure with set points
d. Discharge flow and set points (if applicable)
e. Discharge valve control and status
f. Totalizer values for pump runtime and starts

C. Tank Site

a. Tank level and set points
b. Hydro pneumatic controls and set points (if applicable)
c. Chemical analyzer levels and controls (if applicable)

D. Water and Wastewater Treatment Plants

The scope and requirements will be defined on a case-to-case bases due to the size and complexity of these types of facilities.

5.2 SCADA SYSTEM REQUIREMENTS

Before any work is performed on SCADA servers or terminal servers, integrators must follow the corporate scan directive. In addition to the scan directive, if changes are made to the system all related databases must be backup before work is started. Integrators will be given a unique username and password that will be at an administrator level. Any software installation or removal on SCADA servers **MUST** have prior approval by SCADA Engineering group.

A. Sacramento District

The Sacramento district is currently operating on G.E. iFix SCADA with WIN911 alarm system. New or updated site HMI page will include backup of previous pages (if applicable), updating WIN911, and updating Historian.

B. All Other California American Water District

ICONICs Gen32 suite with Hyper Historian is the California American Water standard SCADA system. New or changes to site pages will require backup of pages and logged. AlarmWorx32 is the California American Water Standard alarm monitoring and reporting system.

Aquifer Storage & Recovery Wells 5 & 6
Above Ground Facilities
Bid Addendum 4

1. **Question from Contractor:** Please confirm if only ASR Well Site 5 is to have a disinfection system as described in section 8 on page 20 under ASR Well Site 5 of the Technical Requirements, and not both well sites.

   CAWC Response: Correct. There is one disinfection facility at ASR 5. ASR 6 piping will be routed to ASR 6 routed to ASR 5 for disinfection.

2. **Question from Contractor:** What is the size of the Chlorine Containment Vessel?

   CAWC Response: DB contractor's design engineer should prepare calculations to determine the size requirements for disinfection equipment for their proposal. Note that the simultaneous rate of flow has been changed from 6000 gpm to 4500 gpm, which will make the net volume 3900 gallons for the hypochlorite bulk storage tank. Allow 15% additional volume for the bulk storage tank for head space. No other changes will be made to the design parameters given in the technical. Note also a P&ID for the disinfection facilities is also required as part of the submittal.

3. **Question from Contractor:** Can this Chlorine Containment and the tank be placed outside of the building?
   CAWC Response: No. The containment area and the tanks are within the building. The containment area shall include a "basement" in the building that serves as the double containment sump for the bulk storage tank and the day tank. CAWC will not accept "double-wall" tanks with integral double containment due to the inherent problems with servicing and repairing tank leaks.

4. **Question from Contractor:** Copper rain gutter and flashing is used on all the buildings on the other ASR sites. Is it required for the buildings on ASR Sites 5 & 6?

   CAWC Response: yes

5. **Question from Contractor:** How much clear space is required in the building between above ground pipe and interior walls?

   CAWC Response: allow three feet unless the pipes are mounted on the walls.

6. **Question from Contractor:** Can we submit a pdf copy of the proposal or do you require a bound hard copy?
   CAWC Response: yes. A pdf copy is preferred over a three ring bound hard copy.

7. BID FORM, item 64, STRUCTURAL/HVAC. Revise ASR 5 disinfection building minimum interior size from 650 sq. ft. to 900 sq. ft.

8. BID FORM, DELETE items 20, 58, 59, and 60. Pueblo Water Resources is responsible for design of the well pumps, Baski downhole flow control valves, and column pipe. The well drilling contractor will procure, install, and test these items. Bid item 19: DELETE “”Pump Test Plan & Performance Testing” and REPLACE with “Emergency Spill Response Plan”.

9. **PROPOSAL DUE DATE: The due date for proposals as been revised, and is now 5:00 PM Local Time November 30, 2018**.

10. **Question from Contractor:** Who is responsible for: design and selection of components; procurement, installation; seismic anchoring; review of shop drawings; inspection; and performance testing to verify Overall Plant Efficiency (wire-to-water) and vibration analysis?
CAWC Response: *In regards to the pumping equipment, Pueblo* Water Resources will perform the design work for the selection of the well pumps, Baski downhole flow control valves, column pipe, anchoring requirements, pump foundation design, and oversee pump testing. Well drilling contractor will install and test the pumps, perform vibration tests (along with CAWC), and document the pump has been installed to meet the pump manufacturer’s warranty requirements. The DB contractor is responsible for design and construction of the permanent water lubrication supply system, vibration system (excluding sensors), motor electrical service wiring and VFD, and all downstream requirements such as pump controls/SCADA system, and all ancillary systems as described in the P &ID.

11. **Question from Contractor:** When will the pump be installed? Would it be during the design or construction of the Above Ground Facilities?
CAWC Response: See item 10 above also. Installation of pump equipment in item 10 will be occurring concurrently during the well drilling construction contract and the design-build contract of the Above Ground Facilities project.

12. **Question from Contractor:** When will the pumps be tested? Would it be after the permanent power is brought to the site?
CAWC Response: The well driller will perform pump testing after installation. A Portable generator will power the motor for testing.

13. **Question from Contractor:** Will the contractor installing the pumps be one that is engaged in the sales, installation and service of high capacity vertical turbine lineshaft well pumps?
CAWC Response: Yes, i.e. the well drilling contractor

14. **Question from Contractor:** Who performs the final wiring, rotation check, fluid/grease checks, bowl lateral setting, and alignment?
CAWC Response: The well drilling contractor.

15. **Question from Contractor:** Who performs disinfection and bacteriological testing of the well and pump components? Will disinfection be performed during the final startup of the Above Ground Facilities?
    CAWC Response: CAWC will provide the final Bac-t testing of the well and pump. The Above Ground Facilities Contractor / DB team will be responsible for disinfection of the Above Ground Facilities. CAWC will perform the final acceptance Bac-t testing.

16. **Question from Contractor:** If the well driller is installing the pump pedestal, will the elevation of the pump pedestal be determined for compliance with the 100-year floodplain or for conformance with finished slab elevation (must be 18-inches above finished grade per Title 22)?

    CAWC Response: Yes

17. **Question from Contractor:** Based on the responses above, can you update the Bid Item Table (Bid Form) as it relates to the pump components. The Bid Items that appear to be related to the pump components are 19, 20, 21, 58, 59, and 60.

    CAWC Response: yes, see item 8. However, the DB contractor is required to prepare an inspection and test plan (item 21).

18. **Question from Contractor:** Regarding the Amended Domestic Water Supply Permit from the State Water Resources Control Board, Division of Drinking Water (DDW): Is the Design-Build Team responsible for the initial interaction with DDW to obtain approval of the well site location or will this be conducted by others? Specifically, the items required per Title 22 for well siting approval include: a preliminary source water assessment (DWSAP), well site plan showing control zone and required sanitary offsets, approval of well design plans and specifications, and conformance with CEQA

    CAWC Response: CAWC and/or its consultants will address all DDW siting and permitting issues, DSWAP, well design, and well permitting.

19. **Question from Contractor**: Regarding the Sound Attenuation Enclosure around the pump that is delineated on Bid Items 63 and 64 and described in the *Technical Requirements for Project (Rev. 1 – 7.9.2018)*, we understand the enclosure must be capable of reducing sound to 60 dB at the property line and the enclosure must be removable on three sides. Are the building materials envisioned to be similar to the electrical/control building that consist of CMU construction with a Mediterranean architectural appearance?

    CAWC Response: No.

20. **Question from Contractor**: Can you provide design plans or as-built drawings for the existing CMU/Mediterranean-style building (structural and architectural) that the new buildings must match in appearance?

    CAWC Response: No. Exact matching is not required, but this general style has been accepted by the local agencies.

21. **Question from Contractor**: Please provide a link to the Environmental Impact Report. The RFP says our scope includes "all environmental activities as necessary to adequately complete the design and file permit applications". Can you confirm if AECOM is conducting field surveillance for CEQA/NEPA compliance?

    CAWC Response: Yes. AECOM will provide field surveillance for CEQA/NEPA compliance. The environmental document can be found here: http://www.cpuc.ca.gov/environment/info/esa/mpwsp/feir-eis_toc.html

22. **Question from Contractor**: Please clarify why 12-inch diameter station pipe is selected and not 16-inch. Targeting 5 feet/second for flow velocity is ideal for lessening turbulence, energy loss and noise suppression

    CAWC Response: Flow may be below the max design case depending on design, and accurate metering velocities, especially during Injection operations, which is the more important criterion.

23. **Question from Contractor**: Do you prefer one building to house Well Pump & Equipment/Chemical/Electrical or separate building?

    CAWC Response: the well pump is outside of the building in a sound enclosure as described in the RFP. There is no preference between one or two buildings for the electrical and the disinfection functional requirements .

Aquifer Storage & Recovery Wells 5 & 6
Above Ground Facilities
Bid Addendum 5 – Technical Requirement Changes

Bid Addendum Due Date: the bid proposal DUE DATE has been changed to Friday, 3:00 pm PST December 7th 2018

Technical Requirements of the Proposal for VFD Drive:

1. DB contractor shall provide a minimum of two drive manufacturers for the proposal. One of the drive manufacturers shall be Allen Bradley/Rockwell Automation. .

2. DB contractor shall provide two different drive options:

    a. 18-pulse wave modulation (PWM) drive with harmonic mitigation, and
    b. Active Front End (AFE) drive with harmonic mitigation.

3. Drives & Portable Generators: it is the intent of Cal Am to utilize portable generators when utility power is unavailable. Drive manufacturer shall describe in the proposal what generator requirements are needed to avoid AFE drive/generator tripping due to reactive currents in the L-C-L filter capacitors. Drive manufacturers are to describe in the proposal how the drive vendor has resolved this specific issue, and any other current issues with AFE drives in use with portable generators.

4. Generators: in the proposal, provide generator characteristics, sizing, and essential requirements that are necessary for:

    a. AFE drives
    b. 18-Pulse Width Modulation drives.

5. Drive Cabinet Design: the design of the drive unitshall have the transformers fully separated from and above the VFD drive components. An alternative is to have the transformer placed in a separate enclosure next to the drive components.

6. Drive Frequency Range: the expected voltage frequency range for motor operations is estimated to be 40 to 60 Hz for the connected load.

7. Power Factor: in the proposal, provide power factor of the drive at half, and full- load for both drive types. The drive shall present a displacement power factor of 0.95 or better to the AC line at any speed or load.

8. Harmonics: comply with IEEE 519 at the point of common coupling.

9. Drive Enclosure: NEMA 12.

10. Drive Continuous Duty: 24 hours, 7 days a week.

11. dv/dt filters & separation Distance: the separation distance between the drive and pump motor is less than 100 ft. Drive manufacturer will respond in the proposal reasons why the dv/dt filter is or is not needed, and provide a chart of separation distance vs. magnitude of the voltage spike.

12. 18 PWM drive selection: Rockwell Automation/Allen Bradley is one of the drive manufacturers, who is being considered for the following specific drive: 18 PWM Powerflex 755 heavy-duty AC drive frame size 9, Catalog No. 20G11JD1K2JN0NNNNN. DB contractor shall verify final selection by the vendor and provide product data sheets in the proposal as necessary to evaluate the proposal.

13. Harmonic Mitigation: drive manufacturers are required to complete a harmonic study, and to provide harmonic mitigation as required to meet IEEE 519. More than 75% of the total connected load is non-linear load from the drive. The proposed harmonic reduction equipment are to be described fully in the proposal. The maximum allowable total demand distortion (TDD) is 5% for these drives. TDD shall be less if needed for the drive to properly perform.

14. Power System Analysis: the drive manufacturer for each drive type requires a power system analysis during preliminary design. This analysis shall be included as part of the submittals for the drive.

15. Provide a 2-year warranty parts and labor. Warranty will be effective after commissioning and startup.

16. The proposal shall include the following spare parts for each drive:

    a. 3 Fuses
    b. 1 Bridge Rectifier Kit
    c. 1 Base Driver/Power Supply PCB Kit
    d. 1 Main Control PCB Kit
    e. 1 pre-charge PCB Kit
    f. 1 pre-charge Switch Kit
    g. 1 Surge Suppressor Kit
    h. 1 Transistor Kit
    i. 5 of each type/color Pilot Light Bulbs with special tool to remove bulb
    j. 4 Fuses for each type and size utilized

17. The drive manufacturer shall certify in the proposal, that the service center is a) within 4 hours of Monterey CA, b) response time shall be within 72 hours from notice by Cal Am when service is requested, c) provide per diem charges for an authorized factory technician to repair the drive, d) price list of major components with the proposal, e) drive manufacturer to provide confirmation of acceptance of these criteria.

18. Unit Responsibility: drive manufacturer shall coordinate with the pump and motor manufacturers to ensure that the selection of the motor is compatible with the VFD drive.

Motor Requirements

19. DB contractor shall provide at least one motor manufacturer selection by US Motor manufacturer.

20. Pump Motor Characteristics: TEFC, 800 HP, 3600 rpm, 60 Hz (at full-load), 480 VAC, Full Load Amps 893 amps, 800ft TDH, design flow rate 3000 gpm.

21. NEMA Motor Standard: conform to NEMA MG-1 Part 31, "Definite Purpose Inverter-Fed Polyphase Squirrel Cage Induction Motor with Adjustable voltage and Adjustable Frequency, commonly referred to as "Inverters".

22. Thrust bearings for continuous down thrust, and 30% of downthrust for momentary upthrust

23. Grounding: provide shaft ground rings, and insulated bearings

24. Provide anti-condensation heaters in motor enclosure for standstill heating AFBMA B-10 bearings, A) 5-year life average, B) life under design conditions

25. Class F insulation with temperature rise per manufacturer's selected temperature detectors in NEMA MG-1 part 31.

26. Temperature Detectors: embedded in the windings, quantity and detector type as recommended by the motor manufacturer. Provide details in the proposal.

27. Motor Varnish: double dip stator wires in varnish.

28. Non-reverse ratchet not to be provided

29. Vertical hollow stem shaft are required for the well pump.

30. Pump and Motor Responsibility: integration of the motor lies with the pump manufacturer. The pump manufacturer shall coordinate the pump and motor with the VFD drive.

HVAC Temperature Controlled Electrical Building Environment

31. Temperature-controlled Environment: DB contractor shall design for an ambient outside air temperature of 104° F. Indoor air conditioner shall be capable of continuous operation and provide an inside air temperature of 68°F. Provide 25% additional cooling capacity beyond needed for a target 68° F room temperature.

32. Cross ventilation -- Exhaust fan shall be on the north wall. Inlet louver(s) and double door to be on the south side of the building. Delete man door.

SCADA Project Requirements

33. The entire project is to be bid as a whole facility. This is a turnkey project, and all project design, and construction of the whole facility, are the responsibility of the DB contractor to perform.

34. Discard any references to SCADA by Cal Am found in the request for proposal documents.

35. DB contractor is to provide a fully functioning monitoring and control SCADA system of hardware, and software, and include all necessary programming. Cal Am will not perform any

SCADA work as part of this project The proposed scope of services shall include, but is not limited to: hardware/software systems, and the integration of systems for monitoring and control of pumps, motors, valves, instruments, drives, LCP's: data acquisition, programming and development of controls for PLC, HMI panels, and a dedicated desktop computer with Ionics screens, prepared by the system integrator; preparation of a monitoring and controls design specification, and presented to Cal Am for review and approval. Prior bid addendums identified submittals that are required as part of this scope of work. Refer to the requirements in Bid Addendum 3.

36. The DB contractor will provide in the proposal a detailed description and list of tasks that are proposed for this project.