

NOTICE INVITING BIDS

Pursuant to statute and to the authorization approved by the Camrosa Water District, NOTICE IS HEREBY GIVEN that sealed Proposals for the **Camrosa Water District's Lynnwood Well Iron and Manganese Treatment System Procurement** will be received by the District.

SCOPE OF WORK:

The project involves the procurement of an iron and manganese filtration system capable of treating up to 1,800 GPM of water produced by the District's Lynnwood and Woodcreek Wells to levels below 0.01 mg/l. Proposers are required to submit proposals and information for the specified treatment system. Camrosa Water District intends to select a filter supplier that will be incorporated into the final plans and specifications. The District will then go out to bid to select a contractor that will procure and install the approved filtration equipment at the well site. The selected filter supplier's treatment system's firm and fixed price will be part of the bid schedule. **All proposals are required to be submitted by July 22, 2024, by 2:00 PM via delivered hardcopy and PDF on a flash drive.**

For questions, please contact Mr. Terry Curson at terryc@camrosa.com or (805) 482-8063. The Request for Proposal may be downloaded at no cost on Camrosa's website at www.camrosa.com under the Engineering tab.

Dated this 14th day of June 2024

CAMROSA WATER DISTRICT

CAMROSA WATER DISTRICT
LYNNWOOD WELL IRON AND MANGANESE TREATMENT SYSTEM
PROCUREMENT
CAMARILLO, CALIFORNIA
REQUEST FOR PROPOSAL

CONSOR
San Diego, CA

June 2024

CAMROSA WATER DISTRICT LYNNWOOD WELL
 IRON AND MANGANESE TREATMENT SYSTEM PROCUREMENT

Pages

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PART 1 PROCUREMENT REQUIREMENTS

SECTION 00 11 13 REQUEST FOR PROPOSAL

The Camrosa Water District, CA hereinafter called the Owner, is requesting proposals to furnish and deliver the following equipment:

Iron and Manganese Filtration System Equipment for the Lynnwood Well Site.

Proposers are required to submit proposals and information for the Proposed Camrosa Water District Lynnwood Well 2 Iron and Manganese Treatment System. Camrosa Water District intends to select a filter supplier that will construct and deliver the system to the site. The water district will then go out to bid to hire a contractor to complete installation of the system on the site. The selected filter supplier's treatment system's firm and fixed price will be part of the bid schedule for the Contractor and the selected Contractor will be required to purchase the treatment system from the selected filter supplier.

Sealed proposals for the Lynnwood Well Iron and Manganese Treatment System shall be addressed to Terry Curson, PE, District Engineer, and will be received at the offices of the Utility: Camrosa Water District, 7385 Santa Rosa Rd., Camarillo, CA 93012, Attn: Lynnwood Well Treatment System Proposal. Proposals shall be received until 2:00 p.m., local time, on the 22nd day of July 2024. Proposals will consist of paper copy and .pdf copy of proposal on a USB flash drive. Proposals received after said time will not be considered.

At the Owner's prerogative, interviews of responsive proposers may be held by phone the week of August 5 - 9, 2024.

The Contract Document may be examined at the office of the Owner.

Proposals by all interested parties will be considered. All interested parties may obtain a Contract Document from Terry Curson, PE, District Engineer, at terryc@camrosa.com. Return of the Contract Document is not required.

Complete descriptive information, as specified by the Contract Document, shall be submitted with the Proposal for review and evaluation.

Proposals, including but not limited to prices quoted, shall remain firm for a period of 180 days, and include delivery f.o.b. destination to the project site.

The right is reserved to reject any Proposal not conforming to the intent of the Procurement Document. The right also is reserved to reject all Proposals. The right is further reserved to postpone the selection of the Filter Supplier for up to 45 days from the Proposal opening date. The Camrosa Water District at its sole discretion reserves the right to select the proposal that is deemed most beneficial, and in the best interest of Camrosa Water District.

The Owner will notify Proposers of addenda, if any, via email.

For information or questions regarding the Request for Proposals, contact Terry Curson, PE,
District Engineer.

Camrosa Water District, CA

DATED THIS 13th DAY OF June, 2024.

SECTION 00 21 14 INSTRUCTIONS TO PROPOSERS

1. GENERAL INFORMATION

The following instructions outline the procedure for preparing and submitting Proposals. Proposers must fulfill all requirements as specified in this Solicitation Document.

2. NAMES

2.1. The following entity names are used in the Solicitation Document:

- 2.1.1. Owner: The facilities constructed will be owned by Camrosa Water District. The contracting agency for the purpose of this contract is the Camrosa Water District. The Owner may also be referred to as the Buyer.
- 2.1.2. Engineer: The engineering consultant hired by the Owner to provide the complete engineering design of the iron and manganese treatment system and to provide other services to the Owner during the bidding and construction process.
- 2.1.3. Filter Supplier: The entity selected by the Owner to supply the iron and manganese treatment system after evaluation of the results, and pricing proposals. Synonymous with manganese filter supplier, Seller, manganese filter vendor, and Manganese filter System Supplier (MSS).
- 2.1.4. General Contractor: The entity awarded the Contract for construction of the Camrosa Water District Lynnwood Well Treatment Plant System. The selection of the General Contractor will be made through a bid solicitation that occurs when the design is complete. The General Contractor will contract directly with the filter supplier and install the iron and manganese filtration system furnished and delivered by the selected Filter Supplier.
- 2.1.5. Proposer(s): The entity submitting a proposal based on this solicitation.

3. TYPE OF PROPOSAL

- 3.1. The selection is being made through a Request for Proposals process, which includes consideration of both price and non-price factors. Price factors include both capital and life cycle costs.
- 3.2. The proposal requests specific information to allow the Owner to estimate the overall construction cost and 20-year present worth for operational costs.

- 3.3. The non-price factors are important selection criteria that the Owner and Engineer believe impact the value and quality of the product furnished.

4. PREPARATION OF PROPOSALS

- 4.1. Proposers shall use only the Proposal forms provided in this Contract Document. All blank spaces in the Proposal form must be filled in completely, in both words and figures, where required. No changes shall be made in the wording on the forms. Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures.
- 4.2. Prices quoted shall be f.o.b. destination, include all appropriate taxes and fees, with full insurance paid by Proposer, to the Camrosa Water District, Lynnwood Well Site. The Camrosa Water District Lynnwood Well site is in Camarillo, California. The price quoted shall be good for 180 days from the proposal due date and will be the price provided to General Contractors bidding on the construction of the treatment installation. The prices quoted shall be incorporated into the contract plans and bid schedule and be the same supplied to any General Contractor wishing to make a bid on the installation of this system. The supplier's breakdown of equipment, materials and cost should be included into the specifications as an addendum. Anything not included or listed would be the responsibility of the General Contractor. Price should also include support services that would include 4 site visits (media installation, startup, verification, and 1 other visit). Each visit will consist of a maximum of 8 hours on-site. Prices shall include electronic copies of all engineered drawings and owner's manuals.
- 4.3. The Proposer shall acknowledge receipt of all addenda in the Proposal. Proposals received without acknowledgment or without the Addendum enclosed may be considered nonconforming.

5. DEFINITION OF DAYS

Time references are to calendar days unless specifically stated otherwise.

6. SUBMISSION OF PROPOSALS

All Proposals must be submitted no later than the time prescribed, at the place, and in the manner set forth in the Request for Proposal. Proposals must be made on the Proposal form provided herein. The Proposal Form shall be submitted separately from the remainder of these Contract Documents, together with the other required submittal information.

7. INFORMATION REQUIRED WITH THE PROPOSAL

- 7.1. Proposals without sufficient submittal data to provide a complete evaluation may not be considered. Refer to the General Requirements and the technical specifications for submittal requirements.
- 7.2. Each Proposer shall state in its proposal its name, place of business, its exact post office address, and contact person name, address, phone number and email address. Anyone signing a proposal as an Agent for another must file with the proposal acceptable evidence of its authority to do so.

8. INQUIRIES REGARDING SOLICITATION DOCUMENTS

Inquiries regarding the Solicitation Document may be directed to the following persons:

Terry Curson, PE, District Engineer, at 805-482-8063 or terry@camrosa.com.

9. TELEGRAPHIC OR WRITTEN MODIFICATION OF PROPOSAL

Any Proposer may modify or withdraw its Proposal by telegraphic or written communication at any time prior to the scheduled closing time for receipt of Proposals, provided Engineer or Owner receives such communication prior to the closing time. Telegraphic or written communication should not reveal the Proposal price; however, it should state the addition, subtraction, or other modification so that the final prices or terms will not be known by the Owner until the sealed Proposal is opened.

10. CONTACT FOLLOWING PROPOSAL OPENING

- 10.1. Proposers shall not initiate contact with the Owner between Proposal opening and Award.
- 10.2. If needed, the Owner may invite Proposers to a phone/virtual interview during the week of August 5-9, 2024. The interview shall consist of a 30-minute presentation by the Proposer followed by a 30-minute question and answer period.

The Proposer shall present information specific to this Proposal: provide a description of the equipment being proposed, which may include photos of similar installations, and its expected performance for this application. Explain the values presented in the performance matrix tables and provide support for the values that are proposed.

- 10.3 The District reserves the right to make minor changes to the filter suppliers' proposal that could include modifying certain manufacturers of valves, components, etc. The Owner will negotiate cost modifications with the Proposer on any proposal changes requested by the Owner.

11. NOTICE OF INTENT TO AWARD

The Owner shall provide written notice of the intent to select the Filter Supplier. Following receipt of this notice, the Proposers that are not selected shall have 5 working days in which to protest the selection. A protest, if submitted, shall be in writing and shall specify the grounds upon which the protest is based. At the end of the 5-day period, if no protests are received, the Owner will proceed with the selection. If protests are received, they shall be addressed by the District.

12. FILTER SUPPLIER SELECTION

Within 45 days after the opening of Proposals, the Owner will accept one or more of the Proposals or decide that no Proposals are acceptable. The acceptance of the Proposal will be by written Notice of Filter Supplier Selection, mailed, emailed, or delivered to the office designated in the Proposal. Filter manufacturers can submit on more than one filter option, if appropriate.

13. BASIS OF AWARD

13.1. The Owner, with the assistance of the Engineer, will consider the following factors in selecting a Proposal. Owner will evaluate these factors based on submittals included by Proposers with their Proposals and based on investigations conducted by Owner as deemed necessary by Owner to determine the performance record and ability of Proposers. Refer to Section 46 10 00, Iron and Manganese Packaged Treatment System, Article Definitions, for definition of terms used in these contract documents. The relative importance of each factor (in terms of a percentage weighting) is shown in parentheses.

13.2. Non-price Factors (Total, 50 Percent):

13.2.1. Expected Performance (15 Percent):

13.2.1.1. Filtration and production rate.

13.2.1.2. Backwashing intervals.

13.2.1.3. Types and amounts of backwash water and/or air required.

13.2.1.4. Proposed iron and manganese filter media life.

13.2.1.5. Functionality of instrumentation and control system.

13.2.2. System Efficiency (10 Percent).

13.2.2.1. A minimum acceptable recovery is specified. Higher recovery rates will provide additional value to the Owner.

13.2.2.2. Proposed manganese dioxide filter type/configuration and ability to handle known and expected source water.

13.2.3. Expected Responsiveness of Contractor (10 Percent):

13.2.3.1. Expected responsiveness of local service representatives.

13.2.3.2. Expected responsiveness of national service representatives.

13.2.4. System Flexibility (5 Percent):

13.2.4.1. Ability to meet future water quality criteria.

13.2.4.2. Ability to handle raw water quality upsets.

13.2.4.3. Expected ease of operation and maintenance based on performance at similar installations.

13.2.4.4. Ease with which equipment can be removed for inspection and troubleshooting.

13.2.4.5. Ease with which manganese filter modules can be removed and repaired.

13.2.4.6. Ease of how the filters fit within the existing site and the ability for expansion to increase capacity. Filter supplier is to supply shop drawings that identify the length, width, and height of each skid that would be needed for the site. The shop drawings shall also identify the inlet, outlet, backwash, and filter to waste discharge pipes on the shop drawings. The shop drawings are to be submitted with the proposal on a flash drive in .pdf and .dwg format.

13.2.4.7. Ability to operate at higher filter rate than typical performance for short duration to meet capacity objectives during backwashing and abnormal operation periods.

13.2.5. Proposal Responsiveness (10 Percent):

13.2.5.1. Proposal completeness.

13.2.5.2. Proposal organization and clarity.

13.3. Price Factors (Total 50 Percent):

13.3.1. Full Scale System Cost (Including Installation and Startup Support) (50 Percent).

13.3.1.1. Skid assembly of manganese filters, piping, valves, and flowmeters as identified in specifications for filter supplier.

13.3.2. Operation and Maintenance Costs (Considered in Life Cycle Cost Evaluation):

13.3.2.1. Manganese dioxide media replacement cost (including a Statement of Expected Replacement Interval).

13.3.2.2. Operating costs for chemicals, including cleaning and neutralization chemicals.

13.3.2.3. A Life Cycle Cost Analysis will be provided by the proposer.

13.3.2.4. The life cycle period for the purposes of the cost evaluation of the Iron and Manganese Filter System is defined as 20 years.

13.3.2.5. The interest rate (opportunity cost of capital) for purposes of the cost evaluation of the Iron and Manganese Filter System is defined as 6 percent.

13.3.2.6. The present worth of recurring annual costs is defined as the annual cost multiplied by 11.47 (P/A at 6% for 20 years)

13.3.2.7. The present worth of a future cost occurring after acceptance of the iron and manganese filter system shall be calculated using a single Payment Present Worth Factor (P/F, $i\%$, n) where " i " is 6 percent and n is the number of years from acceptance at which the future cost is incurred. If the manganese filter replacement interval were 10 years, the Single Payment Present Worth Factor would be 0.5584 and the present worth cost of manganese filter replacement would equal the future cost of manganese filter replacement times 0.5584 for each 10-year period in a 20-year life cycle.

14. REJECTION OF PROPOSALS

14.1. The Owner reserves the right to reject all Proposals, to reject any Proposal not in conformance with the Request for Proposals; and to waive any minor informalities,

clerical errors, and insubstantial non-compliances in said Proposals. The selection will be made by the Owner to the responsible Proposer(s) which, in the Owner's sole and absolute judgment has submitted the best responsive Proposal(s) to meet the Owner's needs. The owner holds the right to have the filter supplier provide clarification or updates to their proposal, if needed.

15. CONDITIONS AFFECTING WORK

15.1. Each Proposer must examine for themselves the location of the proposed work and conditions affecting the work. If any party who contemplates submitting a proposal is in doubt as to the true meaning of any part of the specifications, or other proposed documents included or referenced herein, they may submit to the Engineer a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by Addendum duly issued and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. The Owner and Engineer will not be responsible for any other explanations or interpretations of the proposed documents.

16. STATE AND LOCAL TAXES

16.1. Any taxes required by the laws and statutes of the State of California and its political subdivisions shall be included in the proposal price and paid by the Filter Supplier.

17. TIME OF COMPLETION

17.1. The time is of the essence for work to be performed under this Contract. The time allowed for the completion of the work is stated in the Proposal.

END OF SECTION

SECTION 00 41 00 PROPOSAL FORM

To: Camrosa Water District, Camarillo, California
Address: 7385 Santa Rosa Rd. (For hand delivery or overnight mail)
Camarillo, CA 93012
Attn: Terry Curson, PE, District Engineer

Project Title: Camrosa Water District Lynnwood Well Iron and Manganese Treatment System

Note to PROPOSER: Preferably use BLUE ink for completing this Proposal form.

Proposer's person to contact for additional information on this Proposal:

Name: _____

Telephone: _____

Fax: _____ Email: _____

1. PROPOSER'S DECLARATION AND UNDERSTANDING

1.1. This Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal; Proposer has not solicited or induced any person, firm, or corporation to refrain from procurement; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over Owner.

1.2. In submitting this Proposal, Proposer declares that it has carefully examined the Solicitation Document and that this Proposal is made according to the provisions and under the terms of the Solicitation Document, which Document is hereby made a part of this Proposal.

1.3. The Proposer agrees that if this Proposal is accepted, it will provide the same exact price to any General Contractor that completes installation of the treatment system. The Proposer will be a sub-contractor to the General Contractor.

1.4. Proposer accepts provisions of the Agreement as to the assignment of the Proposal for furnishing the Work as specified in the Contract Documents.

2. DEFINITION OF DAYS

2.1. Time references are to calendar days.

3. CONTRACT TIMES

3.1. Proposer agrees to provide a submittal of stamped shop drawings 30 days from the date the General Contractor receives a written Notice to Proceed from the Owner. Once the Owner has accepted the Proposer's submittal the Proposer will then have 120 days to construct and ship the treatment system to the site.

4. ADDENDA

4.1. Proposer hereby acknowledges that it has received Addenda Nos. _____, _____, _____ (Proposer shall insert number of each Addendum received) and agrees that Addenda issued are hereby made part of the Procurement Documents, and Proposer further agrees that this Proposal includes impacts resulting from said Addenda.

5. SALES TAXES

5.1. Refer to Instructions To Proposers.

6. PROPOSED PERFORMANCE SCHEDULE

6.1. The Proposer shall provide a detailed scope of supply documenting what equipment and material will be included with their proposal and include it with this proposal form in their submittal to the District. The scope of supply shall include the following:

6.1.2. Make, model, and quantity of all valves, controllers, displays, instruments, equipment, filter vessels, gauges, flowmeters, etc.

6.1.3. Proposed materials of construction for each item listed in (a), including proposed trim for valves and wall thicknesses for all filter vessels.

6.1.4. Schedule of internal skid piping with pipe material listed, connection type, schedule/wall thickness of piping, and bolt materials.

6.1.5. Detailed spare parts list.

6.1.6. Proposed shop coating schedule for all piping, valves, and equipment.

6.1.7. List of external wiring connections for both power and control.

6.1.8. Assumed enclosure types for all control panels and displays.

6.1.9. Shop drawings of filter system in .pdf and .dwg format on a flash drive.

6.1.10 List of exclusions.

6.2. Proposer shall provide required information by filling in all blanks that follow. The values and information provided in the Schedule shall provide a summary of the equipment and systems

being offered by the Proposer and as described elsewhere in the information submitted as part of the Proposal package.

6.3. The Proposed performance schedule shall be evaluated against performance of the Proposer’s iron and manganese filter systems at similar installations.

Guaranteed Iron and Manganese Filter System Performance Schedule

Lynnwood Well Site	Values
Maximum Operating Flow, gpm	1,800
Filters Mounted on Skids	Yes / No
Filter Skids Moveable with 10,000 lb. Forklift?	Yes / No
All Header Piping Provided?	Yes / No
All Flow Control Valves Provided?	Yes / No
System can be controlled by District SCADA	Yes / No
Compliance with Guarantee/Warranty	Yes / No
Backwash Flow Rate Required	gpm
Backwash Frequency (hours of filter run time per backwash)	hrs.
Air Scour Required	Yes / No

6.4. Proposer shall complete the following information as part of Proposal. By completing this information and submitting this Proposal, Proposer is stating that system will meet these performance standards.

Number of Systems installed Since Jan 1, 2014 _____

Number of Systems Installed in California _____

Number of Systems Installed with Capacity of 1.5 mgd or Larger _____

Location of Field Maintenance Representative _____

Location of Manufacturing Facility _____

Name of Contact Person _____

Email of Contact Person _____

Name/Title

Name/Title

If a Corporation: IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this _____ day of _____, 2024.

(SEAL)

Name of Corporation

State of Incorporation: _____

By: _____

Title: _____

Attest: _____

Secretary (Mandatory Signature)

If a Joint Venture:

By:

(Business Name)

(Name and signature of person authorized to sign)

By:

(Business Name)

(Name and signature of person authorized to sign)

(Each joint venture party must sign. The manner of signing each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Proposer's person to contact for official communications and for additional information on this Proposal (name, telephone, fax, email, street address for overnight mail).

SUBMITTED ON _____, 2024.

END OF SECTION

PART 2 TECHNICAL SPECIFICATIONS

SECTION 46 10 00 IRON AND MANGANESE PACKAGED TREATMENT SYSTEM

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Society of Mechanical Engineers (ASME): Section VIII, Division 1, Boiler and Pressure Vessel Code.
 2. American Water Works Association (AWWA): B100, Filtering Material.
 3. American Welding Society (AWS): D1.1, Structural Welding Code-Steel.
 4. Underwriter’s Laboratory Inc. (UL).
 5. NACE International

1.02 SUMMARY

The proposed system is designed to treat up to 1,800-gpm of water produced by the Camrosa Water District’s Lynnwood Well and Woodcreek Well. The well water quality is provided in the table below.

Table 1. Planning Criteria for Lynnwood Well Iron and Manganese Treatment

Planning Criteria	Values
Operating Flow, gpm	1,800
System Pressure @ wellhead, psi	100 - 125
Raw Water Quality	
pH, S.U.	7.4
Temperature, °C	16
Total Dissolved Solids, mg/L	730 - 914
Total Hardness, mg/L as CaCO ₃	413 - 467
Arsenic mg/L	.003 - .006
Chromium, mg/L	0.005
Iron, Total, mg/L	0.04 – 0.12
Manganese, Total, mg/L	0.036 – 0.12 (Exceeds MCL)
Calcium, mg/L	49
Magnesium, mg/L	46
Alkalinity, mg/L as CaCO ₃	240
Chloride, mg/L	123 - 161
Sulfate, mg/L	167 - 286
Treated Water Quality Objectives	
Minimum Residual Free Chlorine (mg/L)	>2.7
Maximum Arsenic, mg/L	<0.003
Maximum Iron, mg/L	<0.01
Maximum Manganese, mg/L	<0.01

Table 2. Filter Equipment Requirements

Equipment/Design Criteria	Design Value
Plant Capacity, gpm	1,800
Operating Pressure, psi	100 - 125
Run Time, hours/day	24
Filters	
Loading Rate, gpm/ft ²	9.0
Minimum Manganese Dioxide Media Depth, in	42
EBCT, min	2.9
Backwash	
Maximum Instantaneous Backwash Flow Rate, gpm	250
Backwash Loading Rate, gpm/ft ²	20
Backwash Frequency, hours	24
Backwash Duration, min, per Vessel	5
Recommended Number of Backwashes per 24-hours	1
Backwash % of Production	0.8%
Filter to Waste Duration, min, per Vessel	0 – 10 (operator choice)
Chlorine (Sodium Hypochlorite)	
Dose, mg/L	5.0 (Max)
Dose, lbs./day	108 (existing capacity 200)
Solution Strength	0.8%
Solution Feed Rate, gal/hr.	67.5
Chlorine Demand from Filtration, average, mg/L	1.6
Desired Finished Water Chlorine Residual, mg/L	2.7

The treatment objective for the oxidation/filtration facilities is to remove iron and manganese levels to below 0.01 mg/L. Chlorine residuals in the finished water shall be a minimum of 2.7 mg/L. Ammonium sulfate will be injected after the filters to chloramine the water for distribution system disinfectant residual. After backwash each filter shall be filtered to waste for 0 – 10 minutes as determined by District.

The normal operating pressure of the proposed system is between 100 - 125 psig. The treatment system shall consist of steel pressure filters on skids. All materials used in the manufacture of this system will conform to the specifications contained herein. Each filter shall contain a minimum depth of 42" of ANSI/NSF 61 certified manganese dioxide filter media.

The maximum height of the filter system from the ground to the top of any piping above the filters is 12'. A pilot test report completed by the District in 2020 is attached for the bidder's information.

1.03 DELIVERY

The delivery dates will be established by the General Contractor and are anticipated between March and May of 2025, but could be sooner or later depending on General Contractor's schedule. Delivery will be no more than 16 weeks after approval of shop drawing submittals.

1.04 ALTERNATIVE DESIGN

If the Manufacturer suggests a significantly different filter system than described here, the scope and cost of design services shall be included in the Manufacturer's price for the filter system.

1.05 OTHER DOCUMENTS

A drawing of the existing site, enclosed, is incorporated into this specification for reference. The drawing is intended to provide a general layout of the facility to show manufacturers where the filter system will be located. If there is a conflict between the Drawing and this specification, this specification governs.

1.06 SUBMITTALS

A. Action Submittals:

1. Drawings showing dimensions, weights, and details of components, piping connections, and wiring for installation and operation.
2. Product data for equipment, components, and accessories, including valves and controls.
3. Seismic anchorage and bracing drawings and cut sheets.
4. Samples: Submit sample of media following delivery of shipment.

B. Informational Submittals:

1. Manufacturer's Certificate of Compliance
2. Manufacturer's written installation instructions
3. Manufacturer's Certificate of Proper Installation for equipment units
4. Statement of Qualification:
 - a. Equipment Manufacturer
 - b. Manufacturer's representative
5. Seismic anchorage and bracing calculations.
6. Operation and Maintenance Data.
7. Test Reports:
 - a. Sieve analysis on a representative sample of filter media prior to loading and shipment.
 - b. Factory inspection reports.
 - c. Performance test log.
 - d. Coating inspection report by a certified NACE inspector.

PART 2 PRODUCTS

2.01 FILTER TANKS

Tanks shall be of electric welded pressure vessel quality low carbon steel construction rated for 125 psig working pressure and hydrostatically tested at 100% in excess of the working pressure. Sidewalls shall be built of Grade A-572 steel or equivalent and tank heads and hand-holes shall comply with ASME Code requirements. Sidewalls shall be at least ¼" gauge and heads shall be at least 5/16" gauge. Prior to shipment of filter tanks, completed ASME Manufacturer's Data Report for Pressure Vessel forms (Form U-1 A) shall be submitted to District.

Tanks shall have stainless steel grooved coupling connections on the service inlet and outlet. Manifolds shall have a flanged connection on the system inlet and outlet.

Access opening for tanks shall include a minimum of one in the top head and one 8" (minimum size) circular access port in lower sidewall of tank as close to lower head as possible to allow for under drain servicing or media removal. Additional openings are acceptable if needed for system maintenance.

Support for tanks shall be structural steel angle legs welded to lower section of the sidewall. The support and anchoring of filter vessels and accessories shall be designed by a California State Licensed Structural engineer, and stamped drawings must be submitted to the owner, and accepted by the permitting agency prior to installation of the filters.

Seismic anchorage shall be provided and integral to the filter skids. Anchors shall be placed in the general locations shown on the drawings. Anchor plates shall be welded to the skids and factory coated with the exterior coating system described in section 2, below. Provide a copy of the California State licensed structural engineer's report prior to shipment.

2.02 COATINGS

Immersed steel surfaces on tanks of all diameters shall be sand blasted to a near white metal surface finish per (SSPC-SP10) finish. Non-immersed steel surfaces shall be Commercial Blast Cleaned as per SSPC-SP6.

All filter vessel immersion service surfaces and manifold immersion surfaces shall be coated with a fusion bonded epoxy coating, certified to ANSI/NSF Standard 61 for contact with potable water, applied in accordance with the manufacturer's recommendations.

The exterior finish shall be applied in at least two coats and may be achieved in more than two coats. Exterior coating color will be selected by the owner from the coating manufacturer standard color palette. If the Owner wants a custom color that is not part of the standard color palette Owner will negotiate and agree on price with the General Contractor prior to submittal approval.

Touch up paint shall be supplied for all coating systems and colors used. Paint shall be in sealed containers from the manufacturer clearly labeled with the color, system, location to be used, and shelf life expiration date. Touch up paint shall be compatible with the coating systems and be able to be field applied without special tools, knowledge or equipment.

2.03 INTERNAL DISTRIBUTION

The filter system shall be a "down-flow" type with untreated water entering the top of the filter and flow through the filter tank and out the bottom of the tank.

The upper distribution system shall be of the baffle type to evenly distribute the water over the entire media surface area.

The lower distribution system shall be of a proven design to provide a uniform backwash flow across all the filter media. The under drain will be constructed with 316L stainless steel wedge wire

radial outlets. Each radial arm shall have adequate outlet orifices for the stated flow located beneath the wedge wire. The distribution system shall be embedded in a layer sub-fill of washed gravel topped with 2" of garnet to support the filter bed.

2.04 MAIN OPERATING VALVES

The main operating valves for each tank shall be electrically or hydraulically operated, slow opening and closing, free of water hammer. Pneumatic valves are not acceptable. There shall be no contact of dissimilar metals within the valve and no special tools shall be required to service the valve. The valves shall have NSF 61 certification and meet applicable AWWA standards. The operating pressure shall be equal to the filter inlet system pressure.

2.05 PIPE AND FITTINGS

Raw, finished, and backwash water manifolds and piping shall be Schedule 40 steel with a wall thickness of 0.25 inches or greater. Pipe sizes shall be as shown on the filter manufacturer plans. The inlet and the outlet pipes for the filter system will connect with will be 10" ductile iron. Immersed portions of manifolds shall have a coating certified to ANSI/NSF Standard 61 in the same manner specified for filter vessels in Section 2, above except that manifolds with diameters smaller than 3" may be made of Type 316L stainless steel and left uncoated.

A 2" threaded connection shall be provided on all inlet manifolds for owner mounting of an air relief valve.

2.06 FLOW CONTROL

An adjustable backwash flow control valve, to assure proper backwashing, shall be included. Backwash flow will be provided internally to the system (i.e. no additional flow from the well or distribution system shall be used during backwash). Proper filter bed fluidization during backwashing shall be required. Backwash flow rates shall be determined at system start-up.

Filter system shall be designed to allow each filter to be filtered to waste after a backwash for up to 10 minutes. The filter to waste rate for each filter will be the same as the normal filtration rate.

The maximum flow rate of water that can be discharged to sewer from this site is 250 gallons per minute.

2.07 CONTROLS

The operation and backwash of the filter system will be controlled through the District's SCADA system using Allen Bradley Compaq Logic controls. The filter manufacturer may supply a filter control panel or a supplied solenoid panel for each valve. Either system will need to be compatible with the District's SCADA system and the District Integrator will program the controls of the filter system through the SCADA system.

The District Integrator will program the valves to prevent more than one unit from backwashing at the same time, except when the system is manually overridden.

System shall be programmed to initiate backwash at regular frequencies from hourly to once every 48 hours and at a set pressure differential. The capability for backwashing remotely through the SCADA system shall be included in the programming.

2.08 FILTER MEDIA

The filter media shall be NSF/ANSI Standard 61 listed as a manganese dioxide media. The size of the media shall be 0.42mm to 0.85mm (20 to 40 US Mesh). The media shall be a manganese dioxide product with a backwashing flow rate of 20 gpm/sq ft or less. Iron and manganese shall be removed to a level below 0.010 mg/L. This is below the recommended Health Protective Concentration (HPC) by the California Division of Drinking Water of 0.020 mg/L and is less than the Secondary Maximum Contaminant Level (SMCL) of 0.050 mg/L. Particle retention shall be ten (10) micron and larger for particles other than iron and manganese.

2.09 REGENERATION SYSTEM

Chlorine, in the form of sodium hypochlorite solution injected in the raw water, shall be the oxidant used in this system and a free chlorine residual equal to or greater than 2.7 mg/L shall be maintained in the product water leaving the treatment unit. No oxidant other than chlorine shall be used in this system. There is an existing on-site chlorine generation system that will be used for treatment so the filter supplier will not supply any chemical feed equipment.

2.10 ACCESSORIES

Liquid filled pressure gauges with +/- 0.5 % full scale accuracy in corrosion resistant frames shall be provided (0-150 psig) for the inlet and outlet manifold of the system. Gauges shall be 4½" in diameter with integral surge suppression snubbers and will be mounted above the control panel. Gauges will be equipped with isolation ball shut-off valves. Pressure gauges will be Marsh or Ashcroft brand or equal.

Sampling ports shall be provided for the product water from each filter vessel as well as composite sampling ports for raw and finished water. A sampling port shall also be included for sampling backwash effluent.

Two ¾" threaded half couplings shall be provided on the inlet and outlet manifold for such use as the customer may deem appropriate. These shall be plugged at time of delivery.

A 2" combination air relief/release valve shall be provided on the inlet piping header for the filters. A 1" combination air relief/release valve shall be provided for the backwash header piping. The valves will be included in the price of the filter system.

2.11 FLOW METERS

A 10" finished water flowmeter and a backwash flowmeter will be supplied by the equipment supplier and will be included as part of the cost of the treatment supply system. The flowmeters will be reduced-bore ABB Watermaster electromagnetic flowmeters for drinking water applications and will be certified to NSF/ANSI 61. The flow tube shall have flanged connection ends and be constructed of aluminum or 316 stainless steel with a pressure rating 1.5 times the

operational pressure of the service pipe. One flowmeter will be installed on the 10" finished water line and the other on the backwash water line. Readout assemblies will be connected directly to the meter. The flow meters model number is ABB WaterMaster FER111 FER111200K1S4A1B1A1A0A1B3A.

The backwash flowmeter size will match the size of the backwash piping supplied by the filter manufacturer.

2.12 INSTRUCTIONS

Three complete printed and bound sets of *Installation and Operating and Maintenance Manuals* shall be included with the treatment system. A copy of the O & M manual shall also be provided on CD in a searchable Adobe PDF format. The O & M manual shall include schematics of controls.

2.13 GUARANTEES

The manufacturer shall guarantee all equipment, coatings, valves, and controls for three (3) years against defects in workmanship or materials. Any part proving defective will be replaced or repaired, at our option, within this period in accordance with our standard guarantee.

The manufacturer shall guarantee that, under actual operating conditions:

- (1) the media shall not be washed out of the system during the service run or backwashing period.
- (2) the under drain system, gravel and media shall not become fouled, either with turbidity or by other particles, while operating as specified by the manufacturer.
- (3) iron and manganese removal will meet water quality objectives listed above.
- (4) Iron and manganese removal shall be maintained with no more than two backwash cycles per 24-hour filter run time under normal operating conditions.

Upon selection, equipment suppliers may perform their own pilot test to demonstrate performance at their own expense to confirm their design parameters.

The three (3) year warranty period will begin on the date the project's Notice of Completion is recorded.

2.14 OTHER DOCUMENTS

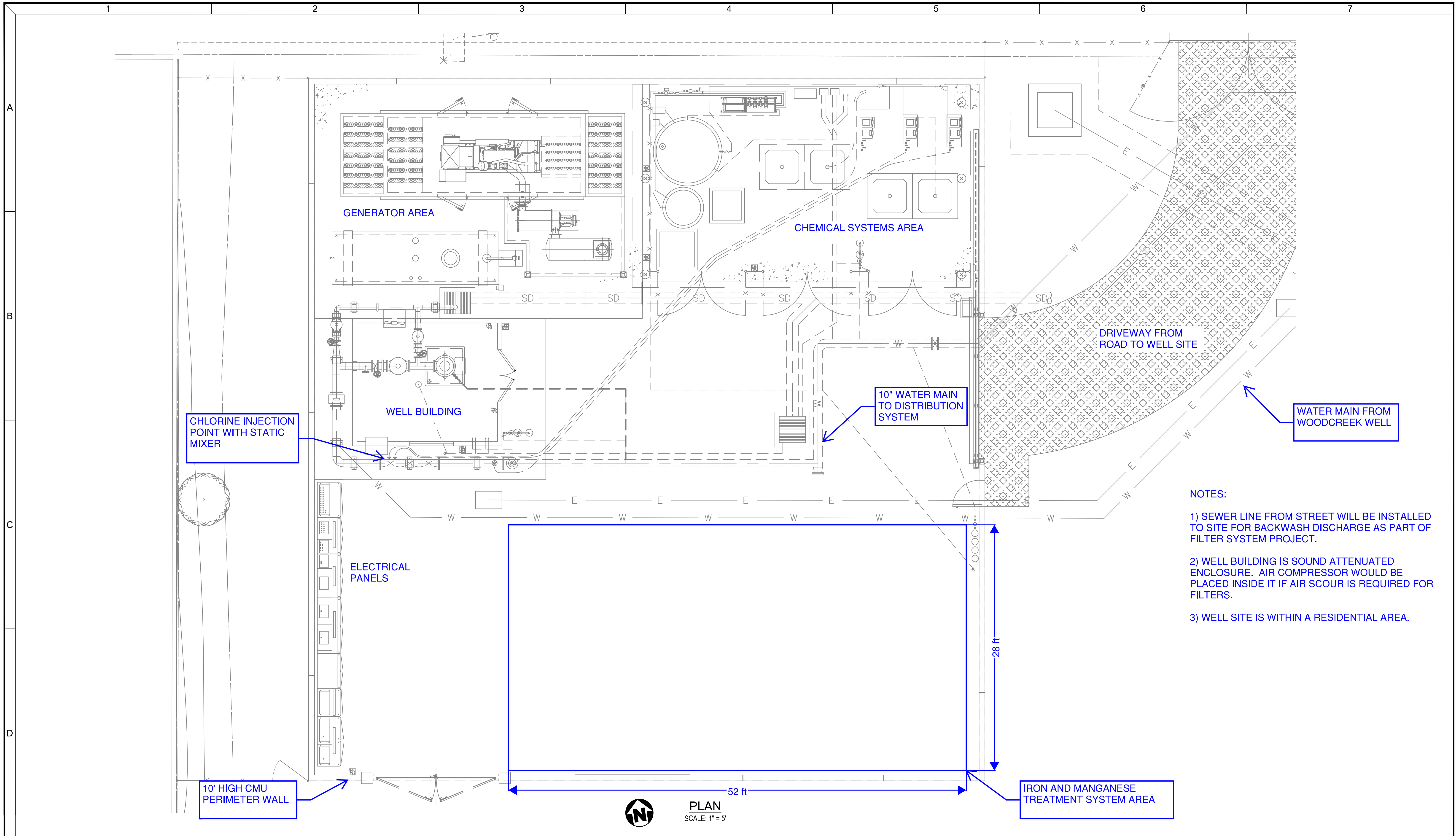
A drawing of the existing site is enclosed and incorporated into this specification by reference so filter suppliers can determine if their filter system will fit within the available space. The manufacturer will provide a layout of their proposed filter system within the existing site drawing to show how their system would fit on the site.

PART 3 EXECUTION

3.01 FIELD SERVICE

The services of a factory authorized service representative shall be made available to coordinate and supervise with the contractor prior to, during, and after installation including start-up of the filters. Support services that would include up to 4 site visits (media installation, startup, verification, and 1 other visit). Each visit will consist of a maximum of 8 hours on-site. It will also include inspection, provide operator training, and initial start-up and as required for system operation.

END OF SECTION



- NOTES:**
- 1) SEWER LINE FROM STREET WILL BE INSTALLED TO SITE FOR BACKWASH DISCHARGE AS PART OF FILTER SYSTEM PROJECT.
 - 2) WELL BUILDING IS SOUND ATTENUATED ENCLOSURE. AIR COMPRESSOR WOULD BE PLACED INSIDE IT IF AIR SCOUR IS REQUIRED FOR FILTERS.
 - 3) WELL SITE IS WITHIN A RESIDENTIAL AREA.

<p>This document, ideas, and designs incorporated herein, are an instrument of professional service, and is not to be used, in whole or in part, for any other project without the written authorization of CONSOR.</p>	Consultant:	Engineer's Seal:	Client / Owner:	Project Title:	Drawing Title:	Designed By:	CONSOR Project No.: W232492CA.00
		PRELIMINARY NOT FOR CONSTRUCTION		CAMROSA WATER DISTRICT LYNNWOOD WELL IRON AND MANGANESE SYSTEM	EXISTING	Drawn By:	Issued On:
					LYNNWOOD WELL SITE	Checked By:	Drawing No.: D-100
						Approved By:	0 1/2 1 IF BAR DOES NOT MEASURE 1" DRAWING IS NOT TO SCALE