

Technical Proposal  
FORT BRAGG  
REDWOOD WELL FILTRATION SYSTEM  
PROPOSAL BY RYAN PROCESS  
08/25/2021

Prepared for City of Fort Bragg

Fort Bragg, CA

AUGUST 24, 2021

**Aqua Clear Water Treatment Specialists**

The Clear Choice for Commercial and Industrial Water Treatment Systems and Services  
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Client	City of Fort Bragg
Location	Fort Bragg, CA
Project Title	Redwood Well Filtration System
Engineering Firm	N/A
Project No.	TBD
Contact Person(s)	Heath Daniels – Operations Supervisor
ACI Document No.	QUO-001692-20210816
Status	Initial proposal
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Revision	0

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Revision history	Reason	Date	By
0	Issued for proposal	08/24/21	S. Peck

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## 1 Introduction

Aqua Clear, Inc. is pleased to present this proposal in response to *City of Fort Bragg's* request for a *Well Filtration System* to pretreat water for the new Reverse Osmosis System at the *water treatment* facility located in *Fort Bragg, CA*.

Founded in 1993, Aqua Clear Water Treatment Specialists is the Southern California cleantech provider of technology and service for both industrial water purification and wastewater reclamation.

Aqua Clear's mission is to develop and grow lasting relationships with clients through listening to and serving their business goals while providing access to integrated solutions for purification of water and reclamation of wastewater.

Aqua Clear's cost-effective solutions are site-specific to maximize the operational efficiency and reduce the environmental footprint of our client's facilities deriving payback from the cascading reuse of water within their facility.

Aqua Clear manufactures and field services a variety of filtration, membrane (RO, UF, CMF, EDI), equipment. Aqua Clear also formulates a variety of water treatment chemicals for coolers, boilers, membranes and clarifiers and provides chemical treatment programs and onsite service.

Aqua Clear offers RO membrane healthcare programs, monitoring and service to extend the life of the membranes. We provide membrane chemicals for the RO skid and have the capacity to perform membrane fouling analysis and offsite cleaning.

## 2 Project scope

Aqua Clear will supply a *Well Filtration System* as described within this proposal based on information provided by *City of Fort Bragg* on August 13 & 23, 2021. Aqua Clear will be responsible for the fabrication of the skid (and will offer startup assistance and operator training as an option).

### 2.1. Equipment and Capacity

The *Well Filtration System* will pretreat feed water at a total capacity 40 gpm based on the water quality data provided by City of Fort Bragg.

The Multi-Media Filtration System will consist of the following components:

- Duplex Cartridge Filters – raw water
- Duplex Cartridge Filters – validated for LT2
- UV Disinfection
- Chemical Injection Systems (2)
- Pre-plumbed
- Powder-coated steel frame
- Repress delivery pump (shipped loose)

## 2.2. Raw Water Quality

From *Alpha Analytical Laboratories report dated 06/14/21*, the data below represents the influent to the filtration system.

Fort Bragg, City of 416 N. Franklin St. Ft. Bragg CA, 95437	Project Manager: Frank Kemper Project: Source Chemical Monitoring Project Number: -	Reported: 06/14/21 16:57
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### Metals by EPA 200 Series Methods

Analyte	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst ELAP#	Notes
	Result	Limit								
Redwood Well (21E2715-02) Water Sampled: 05/24/21 10:45 Received: 05/24/21 14:20										
Calcium	7.3	0.050	mg/L	1	AE14347	05/26/21 10:30	06/04/21 15:02	EPA 200.7		TLB 2303
Iron	390	100	ug/L	1	AE14347	05/26/21 10:30	06/04/21 15:02	EPA 200.7		TLB 2303
Magnesium	4.8	0.050	mg/L	1	AE14347	05/26/21 10:30	06/04/21 15:02	EPA 200.7		TLB 2303
Sodium	19	0.050	mg/L	1	AE14347	05/26/21 10:30	06/04/21 15:02	EPA 200.7		TLB 2303

### Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst ELAP#	Notes
	Result	Limit								
Redwood Well (21E2715-02) Water Sampled: 05/24/21 10:45 Received: 05/24/21 14:20										
Aggressive Index	8.56	2.00	NU	1	AE14347	05/26/21 10:30	06/04/21 15:02	AWWA		TLB 2303
Bicarbonate	17	5.0	mg/L	1	AE14440	05/27/21 08:00	05/27/21 11:56	SM2320B		CEF 1551
Carbonate	ND	5.0	mg/L	1	AE14440	05/27/21 08:00	05/27/21 11:56	SM2320B		CEF 1551
Color	ND	5.0	CU	1	AE14343	05/25/21 06:30	05/25/21 06:30	SM2120B		JVO 1551
Hydroxide	ND	5.0	mg/L	1	AE14440	05/27/21 08:00	05/27/21 11:56	SM2320B		CEF 1551
MBAS, calculated as LAS, mw 340	ND	0.050	mg/L	1	AE14349	05/25/21 09:30	05/25/21 16:00	SM5540C		MRL 1551
Odor	7.1	1.0	T.O.N.	1	AE14343	05/25/21 08:20	05/25/21 08:20	EPA 140.1		JVO 1551 OD-1
Perchlorate	ND	4.0	ug/L	1	AE14462	05/25/21 08:00	05/25/21 17:40	EPA 314.0		MVA 2303
pH	5.83	1.68	pH Units	1	AE14358	05/24/21 16:00	05/24/21 16:00	SM4500-H+ B		JLH 1551 T-14
Specific Conductance (EC)	160	20	umhos/cm	1	AE14358	05/24/21 16:00	05/24/21 16:00	SM2510B		JLH 1551
Total Dissolved Solids	110	10	mg/L	1	AE14498	05/27/21 07:00	06/09/21 08:20	SM2540C		PBM 1551
Turbidity	1.4	0.10	NTU	1	AE14358	05/24/21 16:00	05/24/21 16:00	SM2130B		JLH 1551
Total Alkalinity as CaCO3	14	5.0	mg/L	1	AE14440	05/27/21 08:00	05/27/21 11:56	SM2320B		CEF 1551
Hardness, Total	38	1	mg/L	1	AE14347	05/26/21 10:30	06/04/21 15:02	SM2340B		TLB 2303

### Anions by EPA Method 300.0

Analyte	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst ELAP#	Notes
	Result	Limit								
Redwood Well (21E2715-02) Water Sampled: 05/24/21 10:45 Received: 05/24/21 14:20										
Chloride	18	0.50	mg/L	1	AE14330	05/24/21 19:56	05/24/21 19:56	EPA 300.0		SMS 1551
Fluoride	ND	0.10	mg/L	1	AE14330	05/24/21 19:56	05/24/21 19:56	EPA 300.0		SMS 1551
Nitrate as N	2.2	0.40	mg/L	1	AE14330	05/24/21 19:56	05/24/21 19:56	EPA 300.0		SMS 1551
Nitrite as N	ND	0.40	mg/L	1	AE14330	05/24/21 19:56	05/24/21 19:56	EPA 300.0		SMS 1551
Sulfate as SO4	21	0.50	mg/L	1	AE14330	05/24/21 19:56	05/24/21 19:56	EPA 300.0		SMS 1551

## 2.4. Utility Connections and Operating Environment

The environment in which the water plant will operate is assumed to be described as:

- Non-Hazardous Electrical Area Classification
- Temperature: 35 – 140°F, during normal operation
- Relative Humidity: 5 - 95% (non-condensing)

For this proposal the available site utilities are assumed to include:

- Electrical Supply: 110V/60Hz/1Ph
- **Feed Water: >50 psi**
- Drain: atmospheric

This proposal is also based on the following documents received:

Document Number	Title	Revision
Alpha Analytical Lab	Redwood Well Analytical Report	06/14/21



### 3 Equipment Description

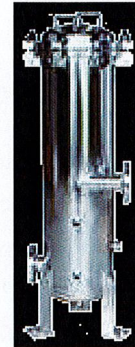
Based on the scope of the project defined in Section 2, below is a general description of the equipment and components that comprise the Well Filtration system. Specific technical data follows.

#### 3.1 Well Filtration System

3.2 The Well Filtration System designed for 40 gpm will be mounted on a skid. It includes the following NSF-certified components:

##### 3.1.1 Sediment Cartridge Filters

- Two (2) 40" 304SS Housings
- Harmsco WB 170SC-2
- Two (2) 30.75" x 7.75" 5-micron high flow filters
- Harmsco HC-170/5
- Eight (8) spare filters

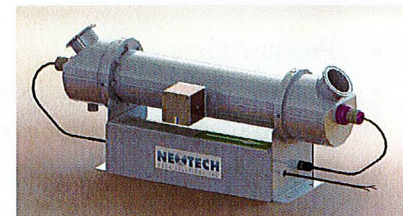


##### 3.1.2 LT2 Cartridge Filters

- Two (2) 40" 304SS Housings
- Harmsco MUNI-1-2FL-304
- Two (2) 30.75" x 7.75" 1-micron absolute LT2-validated high flow filters
- Harmsco HC/170-LT2
- Eight (8) spare filters

##### 3.1.3 UV Disinfection

- 254-nm lamp
- Neotech D322
- 316L SS chamber
- 40 mJ/cm2 dosage
- UV Intensity Sensor



3.1.4 Chemical Injection Pumps (2) *Supplied by Ryan Process*

- Chlorine Injection
- Caustic Injection
- Peristaltic
- Thermo Scientific Masterflex or equal
- 110V



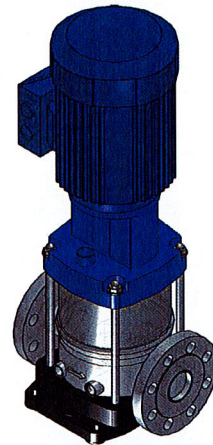
3.1.5 Static Flow Meter

- 2" Sch 80 PVC
- Injection Port
- Koflo or equal



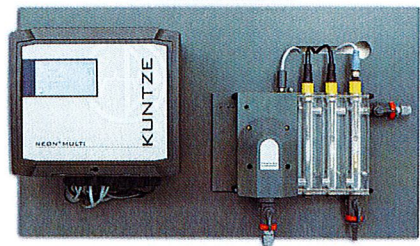
3.1.6 Repressurization Delivery Pump – *Shipped loose*

- Vertical multi-stage centrifugal design
- 304SS
- 40 gpm @ 45 psi
- 3 HP
- ~~• 230/460/3-phase/60Hz~~
- DPV or equal



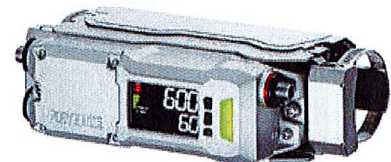
3.1.7 Instrumentation

- Pressure Gauges (6)
- Chlorine & pH analyzer (Kuntze Krypton Multi or equal)  
*Supplied by Ryan Process*
- Clamp-on Flow Meter (Keyence FD-R or equal) *Supplied by Ryan Process*



3.1.8 Mechanical

- Sch 80 PVC Piping and Valves
- Mounted on powder coated steel frame



## 4 Documentation

Respective documentation for each of the new equipment will also be provided.

### 4.1 Documentation provided

- Operation and maintenance manuals
- Component catalog cut sheets
- As built general arrangement drawings
- As built process and instrumentation diagrams
- As built electrical drawings and wiring diagrams

### 4.2 O&M Manuals (2 USBs)

Aqua Clear's Instruction/Operation/Maintenance Manual covers the multitude of facets to operation of a water treatment unit. The manual includes topics such as:

- Description of the modes of operation
- Detailed overview of the controller of the system and how to confidently navigate the wealth of information
- Installation and start-up guidelines
- Step-by-step instructions on all operations of the water treatment system
- Troubleshooting of common problems
- Typical maintenance required by the system
- Data recording instructions
- Safety procedures
- Relevant system drawings for reference throughout the manual

#### 4.3 Technical Exclusions

<b>The following is not included in our proposal. Some items will need to be provided by others:</b>
• Floor drain
• Electrical supply
• Containment unit for chemicals.
• Safe storage of equipment at site until ready for installation
• Civil works.
• Equipment access platforms, walkways, stairs etc. unless otherwise specified
• Electrical wiring interconnections (including wiring, conduit and other appurtenances) to and between Aqua Clear supplied skids/equipment
• Equipment anchor bolts.
• Raw materials, chemicals, and other consumables required for normal operation.
• Bulk chemical storage facilities including chemical totes.
• All required permits.

## 5 Commercial

### 5.1 Price Summary

- 1) Filtration Skid \$ 118,600.00  
*Tax 10,525.75*  
*Ship 4,000*

### 5.2 Standard Exceptions and Clarifications

*Total 133,125.75*

- 1) The above prices do not include taxes, VAT
- 2) The above prices do not include duties or other government fees
- 3) Shipping & Crating cost not included

### 5.3 Commercial Terms and Conditions

Validity	Proposal valid for 30-days
Shipping / Delivery	Delivered to Fort Bragg, CA (Cost to be determined)  Manufacturing time is 4-6 weeks. Ship date is dependent on component suppliers meeting their lead times.  Delays in drawing/document approval will result in a day-for-day adjustment to ship date via customer change order.
Payment Terms	50% down payment, due upon PO  50% prior to shipment
Warranty	Aqua Clear's standard warranty is 18 months from shipment date or 12 months from installation, whichever occurs first. This stated warranty period will supersede any and all other implied warranty period(s) stated in the proposal package.
Cancellation Policy	See terms and conditions.

**General Terms & Conditions**

All terms and conditions of sale are negotiable at the time of order. Aqua Clear standard terms and conditions of sale have been attached in the Commercial Proposal for review.

## 6 Supporting documents

1. Aqua Clear General Terms and Conditions
  - a. Sales
  - b. Service