

EQUIPMENT PURCHASE CONTRACT
(EPC-2C)

Quotation # **QE1400193ETI**

Proposal #: **PW12DDA0002-05**

THE BUYER: **Vintage Production California LLC**
270 Quail Court
Santa Paula, California
USA 93060
Phone: 805-933-5655
Fax: 805-525-7372

THE SELLER: **Eco-Tec Inc.**
1145 Squires Beach Road
Pickering, Ontario
Canada L1W 3T9
Phone: 905-427-0077
Fax: 905-427-4477

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1. Contract Value and Scope

This contract is made by and between the Buyer and the Seller; whereby the Buyer agrees to buy and the Seller agrees to sell the under mentioned goods according to the terms and conditions stipulated below:

<i>Item</i>	<i>Description</i>	<i>Scope of Supply</i>	<i>Quantity</i>	<i>Total Amount</i>
1	Eco-Tec Spectrum Plus Micro Media Filter	Attachment 1	One (1)	\$ 863,364 USD
2	Option: Adder for high performance valve supply	Attachment 1	One (1)	\$ 24,010 USD

2. Method of Payment:

Payment shall be made according to the terms described in Attachment 2.

3. Terms of Delivery

3.1 Goods are provided on the following basis: ex-works Eco-Tec

3.2 Shipment to be 22 weeks from down payment.

4. Performance and Acceptance:

The goods will perform according to specifications as confirmed during commissioning as demonstrated by a Final Acceptance Test (FAT) as described in Attachment 1. The Buyer will sign a Certificate of Acceptance based on successful completion of the Final Acceptance Test as outlined in Attachment 3. The Seller will take as an obligation all necessary measures at its own expense in accordance with the terms and conditions of the Seller’s warranty policy, to ensure demonstration of the Final Acceptance Test.

5. Language:

The Contract is in the English language, executed in originals, with one (1) duplicate to be retained by each party hereto. English shall be the official language in the performance of duties hereunder, and any correspondence, documents, manuals, instructions, notices and other communications in connection with the Contract shall be made in the English language.

6. Packing:

The goods to be shipped by the Seller shall be packed and shipped in accordance with the packing standards stipulated in the Technical Proposal (Attachment 1) and, if not specified therein, shall be packed in according to usual commercial and industrial practice.

7. Drawings and Documents

The Seller shall provide the Buyer with drawings, data, instructions and manuals as required by the Buyer to install, operate and maintain the goods. The description and quantity of these drawings and documents is found in the Technical Proposal (Attachment 1). If the drawings are provided for information only, any changes to the drawings or the goods, except to correct errors, shall be at additional cost and may affect

delivery.

- 7.1 **Drawing Review** – If drawings are submitted for review, then Buyer will respond with review of the drawings within five (5) working days of drawing submittal. A maximum of two (2) responses indicating changes required for review to be allowed.

When Buyer indicates changes to drawings, Seller will respond within five (5) days indicating that changes will be made as requested and revised that changes will be made, or submitted, or advising that the changes are beyond the scope of the supply according to Attachment 1 and may require an adjustment to the price and/or schedule.

- 7.2 **Change Request and Notification** – Buyer may request Seller to advise the amount of the price and/or schedule adjustment based on the requested change.

Seller shall advise Buyer within five (5) days of the price and/or schedule adjustment. Buyer may accept the change based on the price and/or confirmation according to Schedule 7, or Buyer may reject the change on this basis.

If Seller receives no reply to the advice of price and/or schedule adjustment within five (5) days of issue, then the change will not be implemented and the project will resume according to its original scope and schedule.

- 7.3 **Change Review Delays** – While Seller will make its best efforts to avoid delays while change notification, pricing and review process takes place, the schedule may be delayed for a time equivalent to the delay from change notification until Buyer's acceptance or rejection of the change.

8. **Proprietary Information and Confidentiality**

All designs, plans, drawings, data and specifications provided by Seller are regarded as proprietary information and shall remain the property of Seller and shall not be reproduced or used other than in conjunction with the purchase, installation, operation, and maintenance of the goods without the prior written consent of Seller.

The Buyer and the Seller shall treat all documents, data, material, and information supplied by one to the other as confidential and shall not disclose the above to any third party, without the prior consent in writing from the other party, for a period of five (5) years from the date the Buyer issues the last Final Acceptance Certificate. The documents, data, materials and information disclosed by training and technical assistance shall be kept secret and shall not be disclosed to third parties unless such documents, data, materials and information:

- a. were known to the Buyer prior to transmission thereof the Seller
- b. become publicly available through no fault of the Buyer
- c. are lawfully obtained by the Buyer from a third party, and without obligation to confidentiality
- d. are in the public domain

9. **Patent Infringement**

The Seller shall indemnify and hold Buyer, and its employees harmless against all costs, actions, claims and demands brought by a third party in the event that the goods are claimed to infringe on any patent.

10. Taxes and Duties

- 10.1 All taxes in connection with the execution of this contract levied by the Buyer's national government on the Buyer in accordance with the tax laws in effect shall be borne by the Buyer
- 10.2 All taxes in connection with the execution of this contract levied by the Seller's national government on the Seller in accordance with the tax laws in effect shall be borne by the Seller.
- 10.3 All taxes in connection with the execution of this contract levied by any other national government in accordance with the tax laws in effect shall not be borne by the Seller or, if assessed on the Seller, such taxes shall be reimbursed by the Buyer to the Seller.

11. Cancellation for Convenience

Buyer shall have the right for any reason; including its own convenience; by written notice to the Seller, to terminate the contract. In the event of such termination, Buyer shall pay to the Seller amounts according to the following cancellation payment schedule:

From order acceptance until 6 weeks after order acceptance – 25% of contract price
From 6 weeks to 12 weeks after order acceptance – 50% of contract price
From 12 weeks to 18 weeks after order acceptance – 75% of contract price
After 18 weeks from order acceptance – 100% of contract price.

12. Warranty

Eco-Tec Inc. warrants that goods supplied will remain free from defects in material, workmanship, or design for a period of twelve (12) months from date of startup or twenty-four (24) months from date of purchase, whichever is shorter with the following exceptions:

- Electric motors – warranted for 12 months from date of startup or 18 months from date of shipment, whichever is shorter, on materials and workmanship.
- Mechanical seals - warranted for 12 months from date of startup or 18 months from date of shipment, whichever is shorter, on materials and workmanship.
- Heat exchangers – subject to original manufacturer's warranty, typically 12 months from date of startup on material and workmanship, or as stated in engineering proposal.
- Non-standard components specified by purchaser – subject to original manufacturer's warranty.
- Ion exchange resin, filter elements, filter media, anodes, electrochemical membranes and electrochemical probes – excluded from warranty.
- Warranty for reverse osmosis membranes are original membrane manufacturer's warranty, which is transferred to end-user. Such membrane warranties are typically pro rated for the operating life of warranty.
- All warranties are limited to original user. Warranty does not cover ordinary wear and tear, abuse, misuse, overloading, alterations or any cause outside of Eco-Tec Inc.'s control.

PURCHASER AGREES THAT ECO-TEC INC.'S LIABILITY SHALL BE LIMITED TO REPAIRING OR REPLACING EX-WORKS ECO-TEC INC.'S FACTORY, OR ALLOWING AN EQUIVALENT CREDIT AT ECO-TEC INC.'S OPTION, ANY PART OR PARTS OR FOR ANY COSTS INCURRED THEREWITH. THIS REMEDY OF REPAIR, REPLACEMENT, OR CREDIT, AT ECO-TEC INC.'S OPTION IS THE EXCLUSIVE REMEDY HEREUNDER. ECO-TEC INC. SHALL HAVE NO OTHER

LIABILITY TO BUYER FOR ANY CLAIMS HOWSOEVER ARISING. IN PARTICULAR THE PURCHASER SHALL HAVE NO CLAIM FOR ANY CONSEQUENTIAL DAMAGES.

13. Force Majeure

The Seller shall not be held responsible for the delay in shipment or non-delivery of the goods due to Force Majeure such as war, serious fire, flood, typhoon, strike, civil unrest, blockade, embargo and earthquakes or other events agreed upon by both parties, which might occur during the process of manufacturing or in the course of loading or transit. The Seller shall advise the Buyer immediately of the occurrence mentioned above and within fourteen (14) days thereafter, the Seller shall send by airmail to the Buyer for their acceptance a certificate of the incident issued by the Competent Government Authorities where the incident occurs as evidence thereof.

Under such circumstances, the Seller, however, is still under the obligation to take all necessary measures to expedite the delivery of the goods. In case the incident lasts for more than 10 weeks, the Buyer shall have the right to cancel the contract. Such a cancellation will be considered to be a cancellation for the convenience of the Buyer and Seller will be compensated according to the cancellation payment schedule up to the beginning of the delay due to Force Majeure.

14. Applicable Law

The parties agree to attorn to the jurisdiction of California, USA and agree that this agreement shall be interpreted and construed in accordance with the laws of the State of California, USA.

15. Changes / Amendments

Changes to the contract conditions, scope of goods, price, or delivery shall be documented in the form of an amendment according to Attachment 5 and signed by both parties.

16. Title

Title of goods shall pass from Seller to Buyer when goods have been fully paid for.

17. Manufacture Code and Standards

Seller shall design and manufacture goods to a high international standard. Seller shall not be responsible for failure to meet manufacturing codes, effluent limitations or other regulations, and shall not be liable for payment of any resultant claims or fines, except where specifically stated otherwise in the Technical Proposal in Attachment 1, or in this contract.

18. Limitation of Liability

Except for warranty obligations as defined in Article 12, Seller shall not be liable for any further damages for injury, loss of use, business interruption, or any other special, incidental or consequential damages.

19. Notices

Notices pursuant to this contract shall be in writing and sent by registered mail, courier, facsimile or email to the representative at the address of the Buyer and Seller as listed below. Notices sent by mail or courier shall be deemed received upon signed

acknowledgement of receipt. Notices sent by facsimile or email shall be deemed received upon receipt by sending party of a reply confirming receipt by receiving party.

THE BUYER

Vintage Production California LLC
270 Quail Court
Santa Paula, California, USA
93060

Attention: Matt Pearson
Telephone: 805-933-5655
Facsimile: 805-525-7372
Email Address:
Matthew_Pearson@oxy.com

THE SELLER

Eco-Tec Inc.
1145 Squires Beach Road
Pickering, Ontario, Canada
L1W 3T9

Attention: Paul Pajunen
Telephone: 905-427-0077
Facsimile: 905-427-4477
Email Address: ppajunen@eco-tec.com

Either party may change its address for notices by giving written notice to the other party.

20. Entire Agreement

The Contract supersedes all previous representations, understandings or agreements, oral or written, between the parties with respect to the subject matter of the Contract, and the agreements and documents contemplated hereby contains the entire understanding of the parties as to the terms and conditions of their relationship. Terms included in the Contract may not be contradicted by evidence of any prior oral or written agreement or evidence of contemporaneous oral or written agreement.

IN WITNESS THEREOF, this contract is to be signed by both parties in two original copies; each party hold one copy, the attachment(s) of this contract shall be an integral part of the contract and have the same force as the contract. Eco-Tec's Proposal document shall be a part of this contract.

THE BUYER

Vintage Production California LLC

Representative

Signature of person

Title

THE SELLER

Eco-Tec Inc.

Representative

Signature of person

Title

Attachment 1 - Technical Proposal



Eco-Tec's RecoPur[®]

Produced Water Treatment System

For

Vintage Production California LLC
 Re: Grubb Lease Full-scale Filtration

Technical Proposal

Water Treatment

Oil & Gas

Metal Finishing

Pulp & Paper

Steelmaking

Gas Processing

Project No:	PW12DDA0002-05
Date:	2013/10/10
Prepared By:	JLU



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Confidentiality

All information provided by Eco-Tec including, but not limited to, proposals, quotations, design, plans, drawings, and specifications are regarded as proprietary information and shall remain the property of Eco-Tec. This information shall not be used other than in conjunction with the purchase, installation and operation of an Eco-Tec System, without the prior written consent of Eco-Tec.

The party accepting the proprietary information from Eco-Tec agrees to use due diligence not to release any portion of it to the party's employees, except those who require said information to purchase, install or operate the system and who are contractually bound not to make unauthorized use of same, nor to any third party, without express written approval of Eco-Tec. In the event electronic files are submitted, Eco-Tec's original electronic files will take precedence.

1. Technical Specifications

1.1 Process Description

Vintage Production California LLC requires filtration of produced water effluent from an IGF as part of their water flood operations. Eco-Tec proposes its unique dual media Spectrum Plus Micro Media Filter (SMMF). The SMMF is sized to produce 30,000 BPD filtered water.

Produced Water Filtration

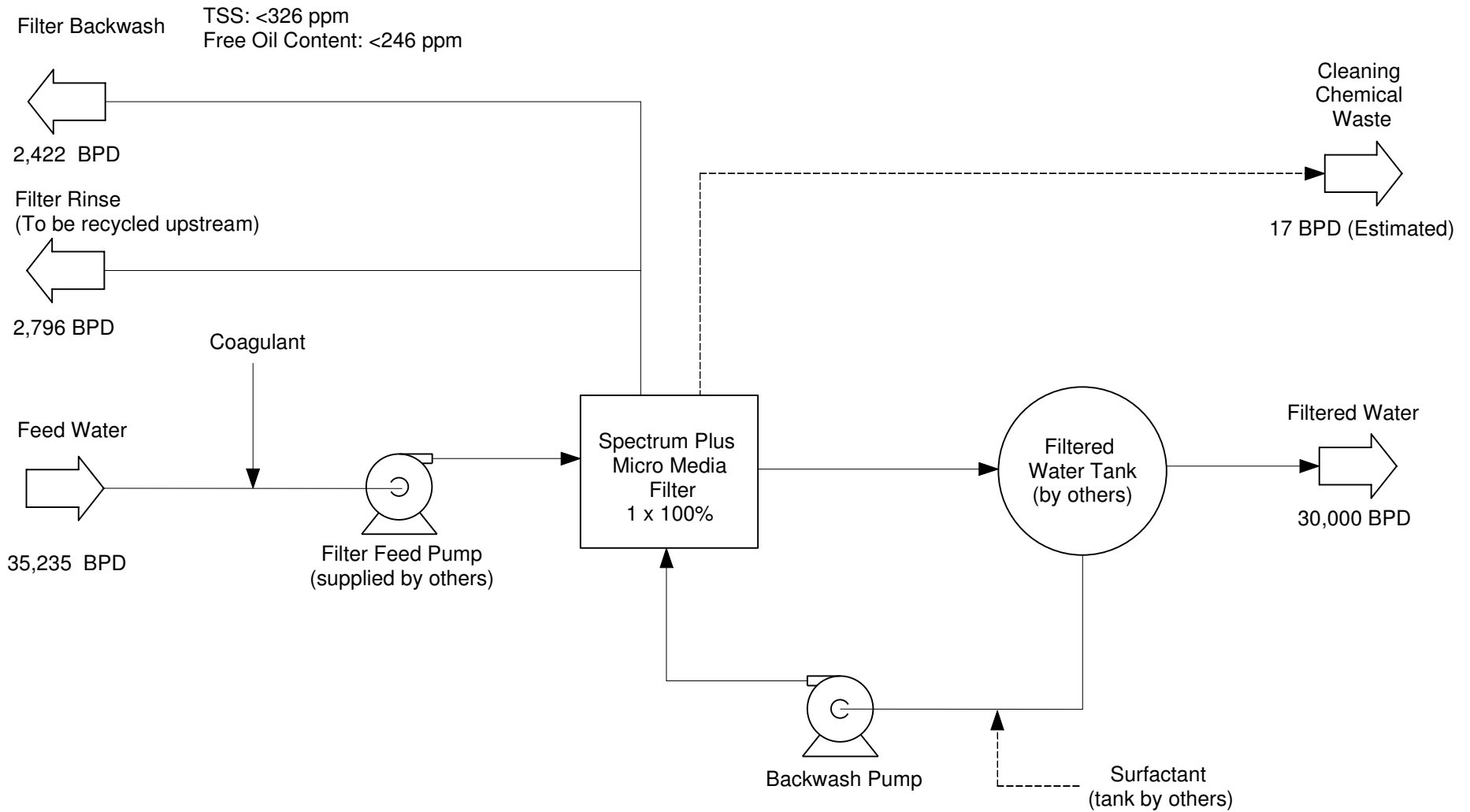
Produced water will be processed by an IGF (by others), where the majority of oil and solids is removed. The water will be pumped (by others) through a Spectrum Plus Micro Media Filter, where the remaining suspended solids and free oil are removed. Feed to the filter will be dosed with coagulant to aid in the agglomeration of particles. Filtered water flows to the Filtered Water Tank (by others).

Periodically (based on increased pressure differential on the filter or total filter throughput), the filter will perform an automated backwash. During filter backwash, water from the Filtered Water Tank (by others) is pumped through the filter. After backwash, the filter is rinsed to return the filtrate to acceptable quality. Also periodical surfactant cleaning is required to clean the filter media. Surfactant solution (by others) will be pumped through the filter using Eco-tec's existing filter backwash pump.

Waste

Filter rinse will be sent upstream of the IGF for reprocessing. Backwash waste from the Spectrum Plus Micro Filter can also be sent upstream for reprocessing if acceptable. Surfactant cleaning waste (17 BPD) must be sent to drain or collected in a tanker truck for liquid haulage. Refer to process schematics for concentrated filter backwash composition.

1.2 Process Schematic



This drawing is the exclusive property of Eco-Tec Inc., is confidential, must not be made public or copied without the written permission of Eco-Tec Inc. and is subject to return on demand. All rights of design are reserved.



ECO-TEC

PROCESS SCHEMATIC
Vintage Grubb Lease - 30,000 BPD

Project No.: PW12DDA0002-r4

Date : 2013/10/01

1.3 Basis of Design

The design parameters of the produced water to be treated are summarized below. Data was provided by the customer (see Water Analysis in Appendix A).

Produced Water Quality:

Parameter	Unit	Design Value
Total Suspended Solids	ppm	< 20
Free Oil Content	ppm	< 20
pH	-	
Temperature	°F	60-80 (Operating), 175(Max.)

Notes:

- 1) It has been assumed that there are no emulsified nor dissolved oils in the feed. Emulsified and dissolved oils cannot be removed.

System Performance

For treatment of the water outlined above, the system will produce the following:

System Flow:

Total Filtered Water Produced Net	30,000	BPD
Number of Filtration Units	1	
Redundancy	1 x 100 %	

Filtered Water Quality:

Parameter	Unit	Value
Free Oil Content	mg/L	1 – 2 expected < 3 guaranteed
Total Suspended Solids	mg/L	≤ 1

1.4 Eco-Tec Scope of Supply

Eco-Tec proposes to supply a system that will provide water as described in Section 1.3.

<u>Quantity</u>	<u>Description</u>
One (1)	Coagulant Addition System <ul style="list-style-type: none"> - One (1 x 100%) metering pumps - Includes static mixer piping, socket or flange fittings, and stand
One (1 x 100%)	Spectrum™ Plus Micro Media Filter <ul style="list-style-type: none"> - Model 232-019 - Premium lined self-supporting enclosed steel vessel - Selected grade media - Internal piping and automatic valves - Instrumentation and controls - Control panel with PLC, Ethernet communication, and internally mounted air solenoid manifold with solenoid valves
One (1 x 100%)	Filter Backwash Pump <ul style="list-style-type: none"> - Centrifugal pump with motor and fittings
One (1)	Central Control Panel <ul style="list-style-type: none"> - Panel with PLC, touch screen HMI, Ethernet communication module - NEMA 4X Central Control Panel/Compact Logix/12” color HMI - UL Certification - Sunshade and Vortex cooler for panel
Three (3)	Equipment Installation Manuals <ul style="list-style-type: none"> - Installation documents
Three (3)	Equipment Operating and Maintenance Manuals <ul style="list-style-type: none"> - System operation and troubleshooting - Recommended spare parts list - Component literature
Three (3)	Sets of Documentation Eco-Tec’s standard documentation includes: <ul style="list-style-type: none"> - P&ID - Skid general arrangement drawings - Pneumatic drawings - Electrical schematic - Control panel layout drawings - Annotated PLC program logic - Test reports - Pre-startup installation inspection report

One (1)	Commissioning Spare Parts Package
Seven (7)	Days of Startup and Commissioning Supervision <ul style="list-style-type: none">- Includes trip for one (1) Eco-Tec Supervisor – Technical Services- On-site startup and commissioning supervision followed by a Factory Acceptance Test (FAT)
One (1)	Instrument List
One (1)	Client numbering system
Twenty (20)	MTRs for valves and instruments
One (1)	Certified Material Test Report for Goulds pump
One (1)	Stainless Steel name plate for vessel

1.5 Client Scope of Supply

The following items are required by others (but not supplied by Eco-Tec):

<u>Quantity</u>	<u>Description</u>
One (1 x 100%)	Filter Feed Pumps <ul style="list-style-type: none"> - Centrifugal pump with motor, starter, and fittings - See utility requirements (Section 1.7)
One (1)	Filtered Water Tank <ul style="list-style-type: none"> - System – Minimum working tank volume required is 2,300 bbl - Level controller - Fittings - Gas blanketing and controls
All	Coagulant Supply <ul style="list-style-type: none"> - Coagulant for the Spectrum™ Plus Micro Media Filter - Liquid level controls on tanks or intermediate bulk containers (IBCs) - See Section 1.8 for chemical descriptions
All	Surfactant Cleaning Tank <ul style="list-style-type: none"> - Tank to be provided to prepare a batch of surfactant cleaning solution. - Solution will be formulated using a dry powdered surfactant, a liquid surfactant and softened water (See Section 1.8). - A minimum tank volume of 40 BBL is required - Provision to mix and heat the solution to 185°F must be included.
One (1)	Initial Supply of Filtered Water During Commissioning <ul style="list-style-type: none"> - Minimum volume required is 700 bbl to be filled into Filtered Water Tank - Filtered water quality should not exceed 1 mg/L suspended solids, 3 mg/L free oil, zero free oxygen.
All	Interconnecting, Piping, Wiring and Civil Work <ul style="list-style-type: none"> - Interconnecting piping and wiring to install equipment outside Eco-Tec's termination points
All	Installation Work <ul style="list-style-type: none"> - Unloading, storage, and installation services - Foundation, anchor bolts, structures and equipment on which the Seller's equipment will be installed - Insulation or heat tracing if required - Re-assembly of piping and fittings (as required) between skids
All	Motor Control Center <ul style="list-style-type: none"> - Three-phase motor starters and VFDs (where required)

- All **Power Supply**
- Single-phase and three-phase power for operation of the entire system
- All **Lifting Equipment**
- Equipment for site installation and maintenance
- All **Instrument Air Supply**
- Supply of compressed air for the operation of valves
- See Utility Requirements
- All **Plant Natural Gas Supply**
- Supply of compressed natural gas during the operating cycle of the Spectrum™ Plus Micro Media Filter
- See Utility Requirements
- All **System Operating Personnel**
- Plant personnel to monitor and perform maintenance to the system as required

1.6 Chemical and Utility Consumptions

Consumption per thousand (1,000) bbl of softened water produced, based on the water analysis given in section 1.3:

Chemical:

Coagulant (Eco-Clear A)	0.411	USG
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Waste:

Spectrum Plus Micro Media Filter – Rinse (Recycled)	93.2	bbl
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Spectrum Plus Micro Media Filter – Backwash	81.3	bbl
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Compressed Air:

Instrument (Grubb Condition)	9.6	SCF
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Plant (Natural Gas)	811	SCF
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Electrical:

Filter Backwash Pump	1.5	kWh
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Note: 1) Compressed air for the operation of system instruments must be filtered to 50 microns, oil free, dewpoint 10 degree C below compressed air temperature at point of use.

1.7 Utility Requirements

Process Streams:

Produced Water from Filter Feed Pumps to Spectrum Plus Micro Media Filter

Peak flow to Spectrum Plus Micro Media Filter	1,385	Usgpm
Required feed pressure	42	psi (g)
Filtrate discharge pressure	10 – 15	psi (g)

Backwash Waste from Spectrum Plus Micro Media filters

Peak flow from filters during backwash	1371	Usgpm
Required backwash pressure	35	psi (g)
Discharge pressure	10 – 15	psi (g)

Compressed Air – Instrument:

Peak requirement	75	SCFM
Average	0.20	SCFM
Supply pressure	80 – 100	psi (g)

Compressed Natural Gas – Plant:

Peak requirement	435	SCFM
Supply pressure	15 – 25	psi(g)

Electrical (Estimated):

Filter Backwash Pump	17	Hp
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Note: 1) Compressed air for the operation of system instruments must be filtered to 50 microns, oil free, dewpoint 10 degree C below compressed air temperature at point of use.

1.8 Chemical Specifications

Coagulant

Description

Clear to pale yellow cationic coagulant, which is effective at low temperatures over a wide pH range.

Aluminum hydroxychloride 10 – 30 % w/w

Hydrochloric Acid (HCl) 1 – 5 % w/w

Sulphuric Acid (H₂SO₄) 1 – 5 % w/w

Specific Gravity 1.2 – 1.28

Viscosity 5 – 30 cps

Freezing Point - 18 °C

Known, compatible commercial chemical Eco-Clear A, Aluminex I, Nalco 8158, Klaraid IC1179, Kemira SternPac

Note: Onsite testing must be done to select the correct coagulant and set the correct dosing rate. Eco-Tec recommends filtering with 10 micron absolute filters.

Surfactant:

1 g/L Tergitol 15 S9

20 g/L Sodium Tripolyphosphate

1.9 Preliminary Equipment Specifications

Spectrum Plus Micro Media Filter Equipment Specifications

Pre-assembled media filter, complete with media (shipped loose), feed and backwash pumps, automatic valves, instrumentation and controls. Factory tested prior to shipment.

Vessels and Housing

Item	Equipment Specifications
Design Conformance	Designed and fabricated in accordance with ASME strength formulas. Welding by certified welders and procedures.
Codes	ASME stamped
Design Pressure	150 psi (g)
Test Pressure	1.3 times design pressure
Thermal Relief Valves	Included
Fasteners	Zinc plated carbon steel
Material of Construction	Carbon steel
Internal Lining	Sand blasted to SSPC-SP5 (near white metal) and painted with Enviroline 405HT
Exterior Finish	Sand blasted to SSPC-SP10, and painted with two part epoxy
Manway	Included
Paint Supplier/Colour	Sherwin-Williams/Dunes Tan

Distribution System

Item	Equipment Specifications
Lower Laterals	316SS core with PVDF mesh

Filter Vessel

Item	Equipment Specifications
Material	Bottom Layer: Micro Media Top Layer: Coarse Media
Straight Wall Height	108"
Diameter	126"

Piping & Valves

Piping

Item	Equipment Specifications
Material of Construction	316 stainless steel
Test Pressure	1.5 times design pressure for metal
Steel bolt/spiral wound gasket	ASTM A193 Grade B7

Valves

Item	Equipment Specifications
Valve Type	2" and above: lug type butterfly valves, lined metal body with lined disc c/w air to open spring-closed actuator. Below 2": diaphragm or ball valve, c/w spring closed actuator.
Tags	Engraved phenolic with stainless steel chain
Model	Keystone Series 920 – Butterfly Valves, Teflon/EPDM Seat, 316SS Disc Triac Series 88 – Ball Valve, RTFE Seat 316SS Wetted Parts
Limit Switches	Included
Modulating Valves	Two (2) located at Filter Feed Line Backwash Line

Pumps

Coagulant Feed Pump

Item	Equipment Specifications
Type	Metering
Material of Construction	EPDM wetted parts
Motor	120 V, 1 phase, 60 Hz

Filter Backwash Pump

Item	Equipment Specifications
Type	Centrifugal
Material of Construction	316SS
Motor	High efficiency TEFC, 3 phase, 1800 rpm (60Hz)
Valves	316SS ½" double block and bleed valves
Seal	Single mechanical
Model	Goulds 3196, ANSI
Hp	50 Hp

Air Solenoids

Item	Equipment Specifications
Type	Sliding soft seat spool
Instrument/Air Tubing Material of Construction	316 SS
Model	ASCO Numatics L1

Instrumentation

Flow

Item	Equipment Specifications
Type	Ultrasonic flow meter
Quantity	1 (per filter)
Location	Product / backwash line
Manufacturer	Flexim
Hazardous Locations Certification	Class 1 / Division 2

Pressure

Item	Equipment Specifications
Type	3051S1 Pressure Transmitter with Integral Manifold
Quantity	2 (per filter)
Location	1. Inlet 2. Outlet
Manufacturer	Rosemount
Hazardous Locations Certification	Class 1 / Division 2

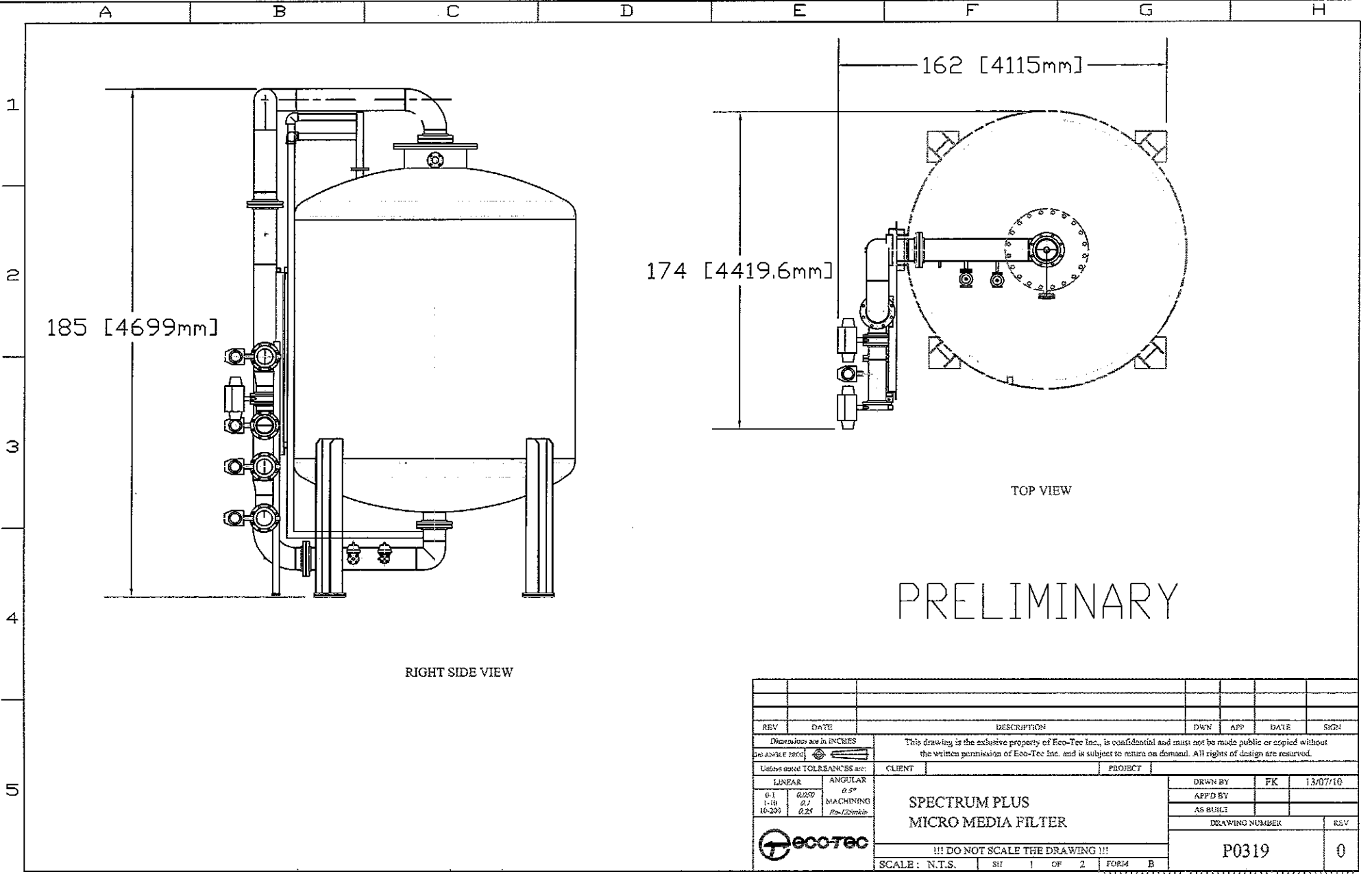
Temperature

Item	Equipment Specifications
Type	3144P Temperature Transmitter
Quantity	2
Location	1. Common inlet header 2. Common outlet headers
Manufacturer	Rosemount
Hazardous Locations Certification	Class 1 / Division 2

Electrical Panel (mounted on filter unit)

Item	Equipment Specifications
Design Conformance	National Electrical Code
Certification of Manufactured Panel	UL
Control Panel Rating	NEMA 4X
System Power Supply Voltage	120 V, 1 Phase
Power Supply Frequency	60 Hz
Control Voltage	24 VDC (internal power supply in panel)
Electrical Enclosure Material	Stainless Steel
Enclosure Cooling System	Vortex Cooler
Conduit	Galvanized steel with short flexible runs where required
PLC and Communication Port	Allen Bradley Compact Logix with Ethernet communication module, RS-232
HMI	12" color HMI
Lights & Switches	Allen Bradley 22mm, NEMA 4X/IP64
Labels	English
Alarm Signal	Dry contact for alarm indication
Wire Marking	Computer generated label
Control Wire Size	16 AWG (1.25 mm ²)
Sunshade	Included
Wire Termination	Tension Clamp Terminal Blocks with bare wire insertion
Control Panel Area Design Conformance	Class 1, Division 2

1.10 Preliminary Equipment Layout



1.11 Performance Demonstration

General Conditions

1. Purchaser responsibilities:
 - i) Ensure that all equipment, as described in the Equipment List of the final proposal, is properly installed.
 - ii) Ensure that any items required, but not provided by Eco-Tec, are provided, properly installed and fully operational.
 - iii) Provide all services and utilities necessary to operate the System, as described in the final proposal.
 - iv) Provide any labour necessary to operate the System.
 - v) Provide feed solution to the System not exceeding the feed composition as listed in the Design Basis.
 - vi) Take a composite sample of the feed and the purified water stream once each hour for a period of four hours. Sampling procedure to be provided by Eco-Tec.
 - vii) Record volumes of all steps and total cycle time of the purification system.
 - viii) Arrange to have samples analyzed as they are collected. Analytical procedures to be approved by Eco-Tec.
2. Eco-Tec responsibilities:
 - i) Provide a Technical Service Supervisor to supervise the performance test.
 - ii) Eco-Tec warrants that performance of the system will meet or exceed the Performance Test Criteria provided in the Protocol, item 3. If the Performance Test Criteria is not met during the test due to a fault attributable to Eco-Tec, then Eco-Tec will take as an obligation all necessary measures, such as equipment modifications, at it's own expense in accordance with the terms and conditions of Eco-Tec's warranty policy, to meet the Performance Test Criteria.
3. Other:
 - i) If the testing is delayed by others, Eco-Tec reserves the right to bill the purchaser for excess time and expenses.

Protocol

1. After commissioning of the System is complete, a performance test will be performed to demonstrate that the System meets or exceeds the Performance Test Criteria.
 - i) A composite sample of the feed and purified water stream from the system will be taken. The stream volumes will be monitored over these runs.
 - ii) Samples will be analyzed by a mutually acceptable laboratory, as they are collected. The customer is responsible for the cost of analyses.
 - iii) If test results are not available within one (1) business day, Eco-Tec reserves the right to bill the purchaser for excess time and expenses.
2. Performance Test Calculations:
 Concentration of the contaminants and chemicals in the samples and volumes of each stream will be averaged and evaluated against the performance values listed in 3) below.
3. Performance Test Criteria:
 Design of the Systems has been determined from information supplied by the customer as listed in the Design Basis.

For treatment of the feed water as outlined in 1.3, the system will produce the following:

System Flow:

Total Filtered Water Produced	30,000	BPD
Number of Filtration Units	1	
Redundancy	1 x 100 %	

Filtered Water Quality:

Parameter	Unit	Value
Free Oil Content	mg/L	< 3
Total Suspended Solids	mg/L	≤ 1

1.12 Equipment Weights & Dimensions

Supplied by Eco-Tec:

Equipment	Qty.	Installed Dimensions (L x W x H) (in)	Shipping Weight (lb)
Spectrum Plus Micro Media Filter	1	156 x 157 x 180	9,300
<u>Media</u> (shipped uninstalled):			
Coarse	260.1 ft ³		13,014
Fine	165.2 ft ³		27,522

1.13 Technical Exceptions and Clarifications

Reference Document	Sec	Pg.	Client's Specification or Questions from Client	ET Response (Explanation)
Specification No: OEHI-L-965			PIPING CLASS A - CS	
			Valves are to be purchased from manufactures list. Velan is the manufacturer common for gate, globe, check and ball valves. Other manufacturers are: Bonney Forge, Vogt, Smith, DSI, Xanik, Pacific, Kitz, Powell, KTM, Kace, Balon, OMB.	Eco-Tec takes exception to provide valves from the supplier list because ET only uses valves that are tested to our approved standards. Please refer to Section 1.9 for valve specification.

2. Manufacturing and Technical Support

2.1 Manufacturing and Factory Testing

Equipment is designed manufactured and assembled at Eco-Tec's factory in Pickering, Ontario, Canada, according to BS EN ISO 9001:2000 Quality Procedures. Completed equipment is fully wet tested, with resin installed, using regenerant chemicals and with PLC control system assembled.

2.2 Documentation

A complete set of documentation is provided which includes:

- Installation instructions
- P&ID
- General arrangements
- Electrical drawings
- Operation, maintenance and training manuals
- Component literature

Complete information regarding documentation supplied is provided with a full proposal, or upon request.

2.3 Packaging and Shipping

Equipment is typically packaged into standard shipping containers for truck, rail, and ocean transport. Some large equipment, which cannot fit into containers, will be crated for above deck shipment. Some small equipment can be crated for air shipment in order to expedite delivery.

2.4 Installation

Equipment is factory assembled onto integrated skids with local electrical panels. Pumps and tanks may be provided as loose items. Resin is pre-installed in resin beds. Installation Instructions and drawings are provided for client to install equipment systems. Onsite supervision of installation is available but is not normally required. Any questions can typically be answered by phone or email. In order to facilitate installation, optional supply of prefabricated interconnecting piping can be provided.

2.5 Commissioning, Training and Performance Demonstration

An Eco-Tec Technical Services Supervisor provides onsite supervision of commissioning. At the end of commissioning a performance demonstration test is conducted and training is provided to operators and maintenance personnel.

2.6 Operation and Maintenance

Systems are designed to be fully automated and so require only periodic monitoring and preventative maintenance. Operators are trained and encouraged to complete operating logs on a regular basis and submit them to Eco-Tec for review and feedback. (EcoServ Program).

2.7 Technical Service

Technical service is available by phone, 7 days a week, 24 hours a day, or by email. Onsite technical service can be provided upon request according to published rate, which are provided in a full proposal or upon request.

2.8 Spare Parts

A recommended spare parts list is provided for customers to stock certain critical spares. Eco-Tec stocks replacement parts and resins, most of which can be shipped within 24 hours of an order.

Appendix A – Water Analysis

Water Analysis Report



Baker Petrolite

VINTAGE
GRUBB
IGF OUT

Account Manager
J. GRINDSTAFF

Summary of Entered Data			Sample 39480VIN @ 75°F					
Sampling Date	29Aug11		Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date	7Sep11		Chloride	14,602	412	Sodium	9,561	416
Analyst	IRENE LOPEZ/ JIALOR CHEUNG		Bicarbonate	1,600	26.2	Magnesium	149	12.3
			Carbonate	N/A	N/A	Calcium	359	17.9
TDS (mg/l or g/m ³)	26,514		Sulfate	9.75	0.20	Strontium	40.5	0.93
Density (g/cm ³ or tonne/m ³)	1.0172		Phosphorous	N/A	N/A	Barium	19.1	0.28
Anion/Cation Ratio	0.97		Borate	N/A	N/A	Iron	6.61	0.24
			Silica	57.0	0.00	Potassium	109	2.80
Carbon Dioxide	100		Hydrogen Sulfide		0.8	Aluminum	N/A	N/A
						Chromium	N/A	N/A
						Copper	N/A	N/A
			pH at time of sampling		7.60	Lead	N/A	N/A
			pH at time of analysis		8.24	Manganese	0.41	0.01
			pH used in Calculations		7.60	Nickel	N/A	N/A

Specific ion interactions calculated for ions in bold faced type; other ions contribute to ionic strength.

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl										
Temp.	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂
		Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Fugacity psi
°F	psi											
80	0.0	1.20	132	-2.92		-2.98		-2.07		0.71	5.21	0.41
100	0.0	1.25	147	-2.95		-2.94		-2.06		0.55	4.39	0.62
120	0.0	1.30	164	-2.97		-2.88		-2.05		0.41	3.56	0.90
140	0.0	1.35	180	-2.98		-2.80		-2.03		0.30	2.74	1.27
160	0.0	1.41	197	-2.98		-2.70		-2.00		0.20	1.98	1.74
180	0.0	1.48	214	-2.98		-2.58		-1.97		0.13	1.31	2.32
200	0.0	1.55	230	-2.97		-2.46		-1.93		0.07	0.74	2.99
220	2.5	1.63	245	-2.96		-2.32		-1.90		0.03	0.29	3.75
240	10.3	1.72	258	-2.95		-2.17		-1.86		-0.00		4.55
260	20.8	1.82	270	-2.94		-2.02		-1.82		-0.02		5.38
280	34.5	1.93	279	-2.93		-1.86		-1.78		-0.02		6.18
300	52.3	2.05	287	-2.91		-1.70		-1.75		-0.02		6.94

Precipitation of each scale is considered separately; total scale will be less than the sum of the amounts of the five scales.

The amount of scale indicates the severity of the problem; the index (equivalent to Stiff Davis SI) indicates how difficult it is to control the problem.

The CO₂ fugacity is reported. Under usual conditions it is essentially the same as the CO₂ partial pressure.

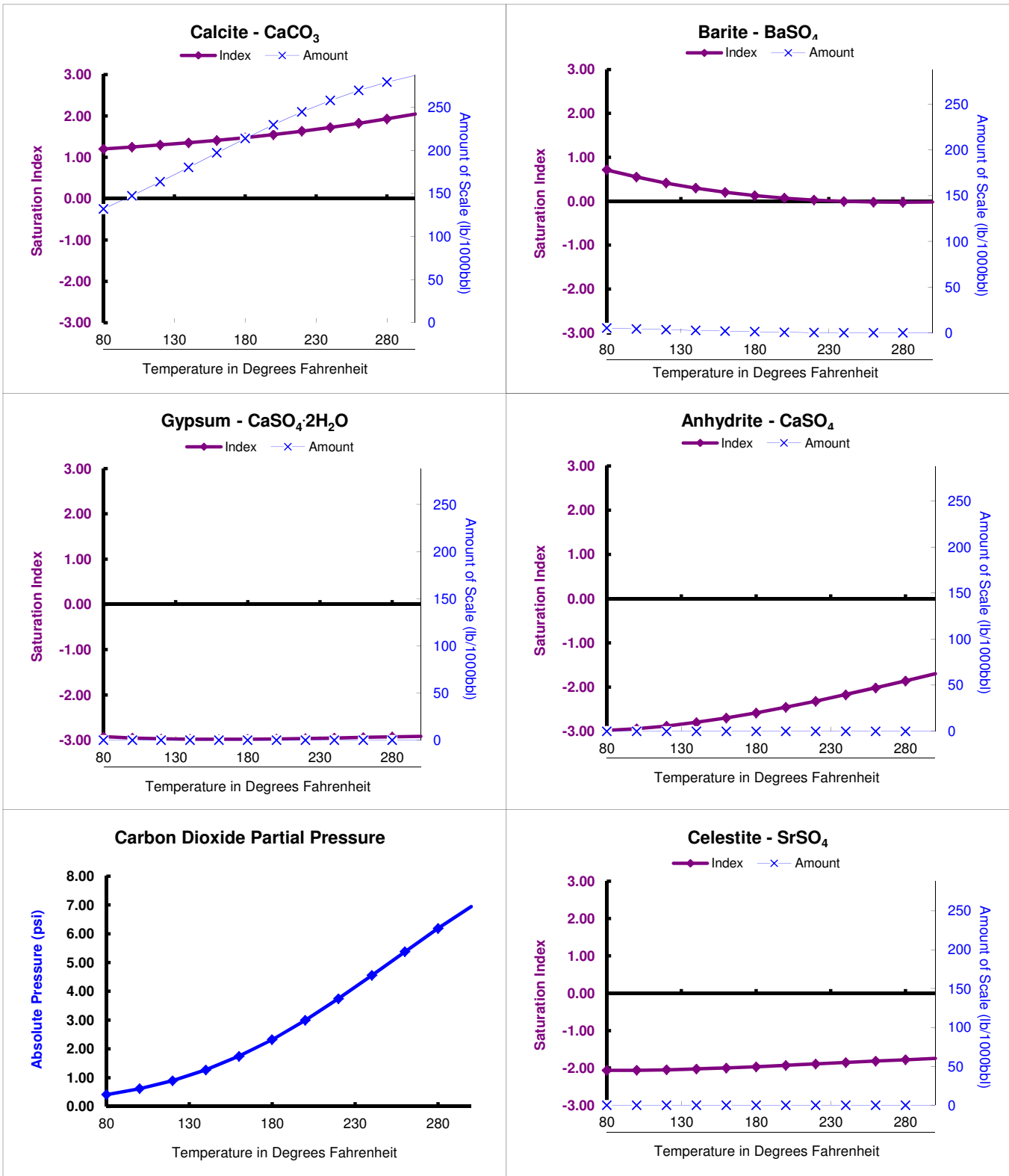
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Scale Predictions



For Sample 39480VIN @ 75°F from VINTAGE , GRUBB , IGF OUT , Sep/7/11

Baker Petrolite



Appendix B – Formal Quotation

Quotation

Eco-Tec Inc.
 1145 Squires Beach Road
 Pickering, Ontario
 Canada L1W 3T9
Tel: 905-427-0077
Fax: 905-427-4477
www.eco-tec.com

Quote Number: QE1400193ETI
Project Number: PW12DDA0002
Date: 2013/10/10
Expiry Date: 2013/12/09
Your Reference:

Representative:
Pricing is: Firm

To: Vintage Production California LLC
 270 Quail Court
 Suite 201
 Santa Paula California
 USA 93060

Attention: Stephan Botha

Description	Price
One (1) Eco-Tec Spectrum Plus Micro Media Filter (SMMF), 30,000 bpd net flow capacity, as described in Engineering Proposal #PW12DDA0002-05, dated October 10, 2013.	863,364.00
Option: Adder for high performance valve supply	24,010.00
Estimated freight and insurance to site (prepay and charge at actual)	25,029.00

Payment Terms
 Refer to EPC-2C

Cancellation Terms
 Refer to EPC-2C

Shipment: 22 weeks after receipt of order and downpayment

Shipping Terms: Ex-Works

Quote Prepared by: PRP

Payable In: US Dollars

Quote Approved By: _____ 

Customs/Duty: Included

All Prices Exclude Taxes Unless Stated Otherwise
All Sales Subject To Terms, Conditions and Limits of Liability on Form # 2.3.3
Customer Original

Appendix C – Review of Eco-Tec Rental Filter

Leslie Persaud

From: Drew Desembrana <d-desembrana@eco-tec.com>
Sent: Thursday, August 09, 2012 4:30 PM
To: Paul Pajunen
Cc: Charlie Kyriacou; Rocky Simmons; 'Glenn Caven'; Mike Sheedy; Mike Dejak; 'John Hardy'
Subject: Results from Latest Trip to Vintage Grubb Lease (Jul-31 - Aug-5)
Attachments: VIntage TSS.jpg; Vintage Grubb Lease July 31 - Aug 5.pdf

Paul,

Following up on our previous string of emails, here is how we stand regarding Vintage Grubb Lease:

Report From Charles' Trip:

- Charles restarted the filter with the new media and distribution system
- The filter ran continuous for 36+ hrs with repeatable cycles and fully recovered backwashes
- Filtrate performance with respect to free oil and turbidity where good – see attached graph again
- Nitrogen depletion showed decreased filter capacity – this is due to less effective gas scouring
- Only downtime was due to nitrogen depletion and minor solenoid issue – not due to filter clogging
- Due to last set of nitrogen being depleted, the filter clogged one last time
- The filter was left unrecoverable by automatic backwashing
- It was decided to end our visit – Eco-Tec believes the continuous run length demonstrated our stated performance, and that the inadequate nitrogen supply has made it difficult to restart

Again, the results and the graph were sent to Matt Pearson at Oxy. He acknowledged our continuous run, but would like to know about the filtrate performance besides turbidity measurements.

As such, Charles gathered information from previous visits. Also, Antonio provided filtrate performance from an existing site. The results show very similar results:

Vintage Grubb Lease Filtrate Performance

Inlet

Total Suspended Solids (TSS) – 15 ppm
Free Oil – 16 ppm
Turbidity – 15 NTU

Outlet

Total Suspended Solids (TSS) – less than 1.2 ppm (done on previous trip)
Free Oil – less than 1.8 ppm (done with Turner analyzer)
Turbidity – 3.6 NTU

Notes:

1. A TSS measurement was not performed on-site during our last visit. It was our intention to; however, due to nitrogen depletion we did not have an opportunity to do so.
2. The attached picture shows samples taken by Ryan Reed, an operator at Vintage Grubb Lease. The left sample shows feed water at 26.4 ppm TSS, and the right sample shows filtrate at 1.2 ppm TSS. It should be noted that the method of analysis for TSS that was used does not differentiate between free oil and solids. Thus, the values shown are combined TSS and free oil concentrations. This combined TSS demonstrates our typical performance of less than 1 ppm free oil, and less than 0.5 ppm TSS.
3. Filtrate performance at another site (Kern River) shows very similar results.

As Rocky requested, please pass the newest information of our filtrate performance onto Matt Pearson at Oxy.

Please let us know if you have any other questions.

Drew Desembrana, B.A.Sc.

Technical Solutions Specialist

Eco-Tec Inc.

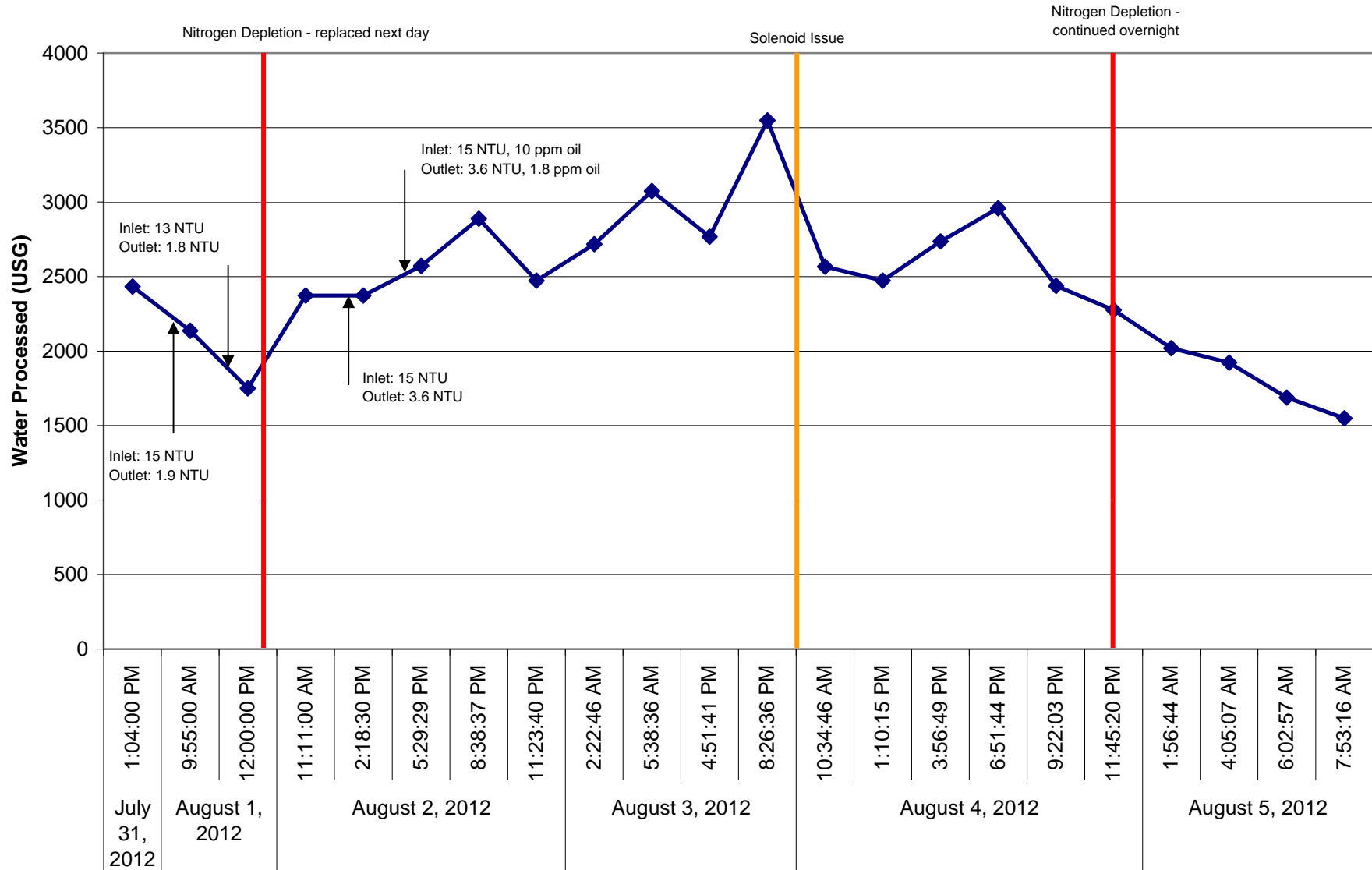
1145 Squires Beach Road, Pickering, ON, L1W 3T9

Phone: (905) 427-0077 ext. 251

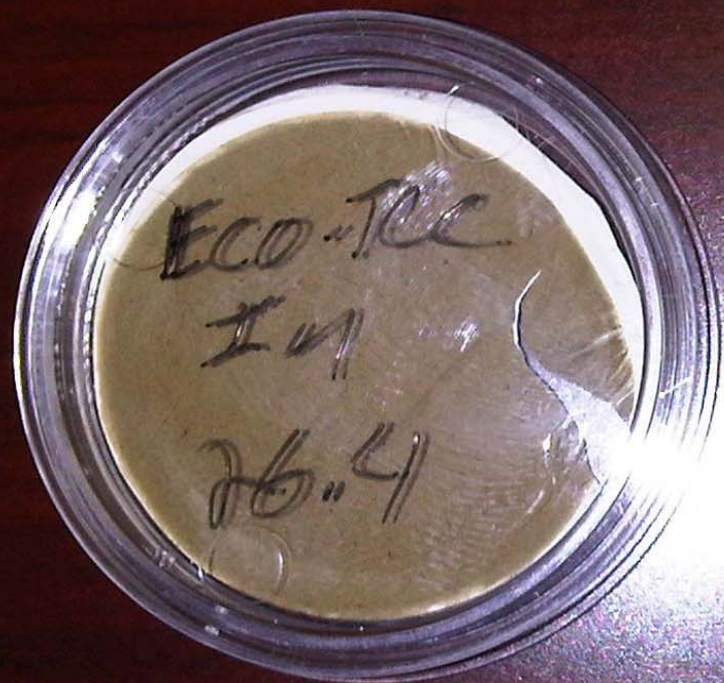
Email

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Vintage Grubb Lease July 31 - Aug 5



Note: The availability of nitrogen gas has a large impact on the performance of the Spectrum Plus Micro Media Filter. Nitrogen depletion shows a negative impact on the effectiveness of the gas scouring of the media.



Appendix D – P& ID

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1

VINTAGE PRODUCTION CALIFORNIA LLC
 PRODUCED WATER P&ID

DRAWING REGISTER
 TOTAL NUMBER OF SHEETS = THIS SHEET + 14

REVISION STATUS

Sheet	Description	Revision
1	Symbols	0
2	Legend & Line Number Designations	0
3	Filter Feed Tank	0
4	Coagulant Addition System	0
5	Spectrum Plus Micro Media Filter	0
6	Filtered Water Tank	0
7	Waste Tank	0


2

3

4

5

PRELIMINARY

REV. NO.	REVISION	DATE	BY	CHK	SCALE		
					CHECKED BY		
					DRAWN BY BL	CLIENT VINTAGE PRODUCTION CALIFORNIA LLC	
					DATE 2013/10/08	TITLE PRODUCED WATER P&ID	
					SHEET TITLE		
This drawing is the exclusive property of Eco-Tec, Inc., is confidential must not be made public or copied without the written permission of Eco-Tec Inc. and is subject to return on demand. All rights of design are reserved.					ET DRAWING NO. P0338	DRAWING NO.	REVISION 0

A

B

C

D

E

F

G

H

SYMBOLS

LINE NUMBER DESIGNATION

	PNEUMATIC, ELECTRONIC INSTRUMENTS & MECHANICAL DEVICES COMPUTING DEVICE FUNCTIONS SHOWN <?/> etc (Note 11)
	BEHIND BOARD MOUNTED
	CONTROL ROOM BOARD MOUNTED
	LOCAL BOARD MOUNTED
	ELECTRO-PNEUMATIC TRANSDUCER
	PLC SHARED REMOTE DISPLAY - ACCESSIBLE To OPERATOR
	DISTRIBUTED SHARED DISPLAY - ACCESSIBLE To OPERATOR
	COMPUTER I/O TO/FROM MICROPROCESSER ANALOG CONTROLLER, etc (For SUPERVISORY CONTROL)
	REMOTE DISTRIBUTED SHARED DISPLAY - ACCESSIBLE To OPERATOR
	PLC SHARED DISPLAY - ACCESSIBLE To OPERATOR
	DCS FUNCTION - NOT ACCESSIBLE To OPERATOR
	PLC FUNCTION - NOT ACCESSIBLE To OPERATOR
	UNDEFINED INTERLOCK (ELECTRICAL)
	RESET For LATCH TYPE ACTUATOR
	PRESSURE SAFETY VALVE
	PRESSURE VACUUM SAFETY VALVE
	MANUAL CHOKE
	DIAPHRAGM ACTUATOR (BODY TYPE SELECTED FROM MECH. SYMBOLS)
	ROTARY ACTUATOR
	SOLENOID VALVE (3-WAY)
	PADDLEWHEEL SENSOR
	PITOT TUBE / ANNUBAR
	VENTURE TUBE or FLOW NOZZLE
	ROTAMETER TYPE FLOW INDICATOR
	MAGNETIC FLOW METER
	WEDGE METER
	MASS FLOW METER
	TURBINE/POSITIVE DISPLACEMENT SENSOR
	ULTRASONIC FLOW METER
	VORTEX FLOW METER
	FLOW STRAIGHTENING VANES
	PURGE / FLUSH
	LINE REDUCER
	THERMOWELL

	MAIN PROCESS PIPING
	CLIENT SUPPLIED PIPING / EQUIPMENT
	LIMITS of PACKAGED EQUIPMENT
	SAMPLE LINES
	FLOW DIRECTION
	INSTRUMENT AIR (GAS) TUBING
	INSTRUMENT ELECTRICAL LINK
	SOFTWARE or DATA LINK
	INSTRUMENT CAPILLARY TUBING
	HYDRAULIC TUBING
	HEAT TRACE
	BALL VALVE
	GATE VALVE
	Y-TYPE GLOBE VALVE
	GLOBE VALVE
	HAND OPERATED CONTROL VALVE
	NEEDLE VALVE
	PLUG VALVE
	BUTTERFLY VALVE
	BUTTERFLY VALVE WITH ACTUATOR
	CHECK VALVE
	THREE WAY VALVE
	Y-PATTERN VALVE
	VALVE c/w BYPASS
	PINCH VALVE
	PISTON CHECK VALVE
	STOP CHECK VALVE
	BALL CHECK VALVE
	DIAPHRAGM VALVE
	DIAPHRAGM VALVE WITH ACTUATOR
	DUCK BILL CHECK VALVE
	Y-TYPE STRAINER
	T-TYPE STRAINER
	CONICAL STRAINER
	PERMANENT BUCKET STRAINER
	FLEXIBLE HOSE
	BELLOWS EXPANSION JOINT

	DIAPHRAGM ACTUATOR With MANUAL HANDWHEEL OVERRIDE
	MOTOR OPERATED VALVE
	SELF CONTAINED PRESSURE REGULATOR
	DIAPHRAGM ACTUATOR With POSITIONER
	DIAPHRAGM GAUGE PROTECTOR (CHEMICAL SEAL)
	LOCAL ILLUMINATION
	HORN
	OPEN DRAIN
	STATIC MIXER
	SURGE SUPPRESSOR
	BLIND FLANGE
	SUPPLIED BY ECO-TEC, SHIPPED LOOSE, INSTALLED BY OTHERS
	GRADE
	SOLENOID
	FILTER
	RUPTURE DISC
	PRESSURE REGULATOR
	SOLENOID DRIVEN METERING PUMP
	MOTOR DRIVEN METERING PUMP
	CALIBRATION TUBE
	4/5 FUNCTION VALVE, BACK PRESSURE, PRESSURE RELIEF, ANTI SIPHON, MANUAL PRESSURE RELIEF
	PERSISTALTIC PUMP
	PULSATION DAMPENER
	ISOLATION/TEST MANIFOLD
	TWO VALVE MANIFOLD
	THREE VALVE MANIFOLD

	AIR BOOSTER
	CENTRIFUGAL PUMP
	TAG BALLON
	DIAPHRAGM PUMP
	BLOWER
	TIE POINT
	PIPE CAP
	MEDIA TRAP
	VACUUM PUMP
	GEAR PUMP
	REGENERATIVE BLOWER

3SS-289-DI-06	
LINE SIZE	LINE NUMBER
X NOT SPECIFIED	LINE SERVICE
LINE MATERIAL	
X NOT SPECIFIED	X NOT SPECIFIED
A ALLOY 20	A AIR
CFRP CPVC/FRP WRAPPED	AW ACIDIC WASTE
CPVC CPVC	CA CONC. ACID
CS CARBON STEEL	CC CONC. CAUSTIC
DVW DRAIN/WASTE/VENT/DUCT	CON CONDENSATE
FRP FIBERGLASS REINFORCED	CO CHEMICALS
K PVDF (KYNAR)	CW COOLING WATER
LS LINED STEEL	DJ DEIONIZED WATER
PE POLYETHYLENE	EXH EXHAUST/VENT
PET POLYETHYLENE TUBING	F FILTRATE
PP POLYPROPELENE	FF FILTER FEED
PPT POLYPROPELENE TUBING	FW FILTERED WATER
PVC PVC	IA INSTRUMENT AIR
SS STAINLESS STEEL	PA PURIFIED AMINE
SST STAINLESS STEEL TUBING	R REGENERANT
	ROP RO PERMEATE
	ROR RO REJECT
	S STEAM
	SA SERVICE AIR
	UA UNPURIFIED AMINE
	UG UNPURIFIED GAS
	W WATER (UNSPECIFIED SOURCE)
	WDI WARM DI WATER
	WW WASTE WATER
	FLOW RATE
	X NOT SPECIFIED (INTERMITTENT)
	LIQUID (GPM)
	GAS (SCFM)

1

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PRELIMINARY

SCALE									
CHECKED BY									
DRAWN BY	BL								
DATE	2013/10/08								
SHEET	1								
ET DRAWING NO.	P0338								
DRAWING NO.									
REVISION	0								

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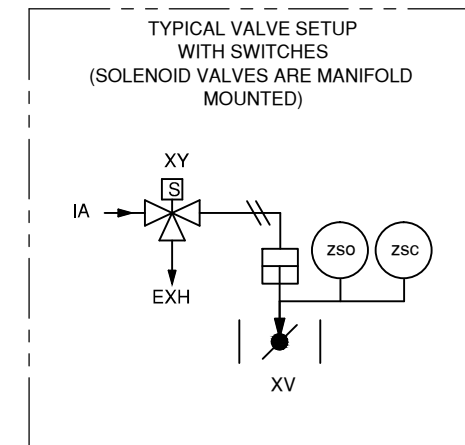
CLIENT
VINTAGE PRODUCTION CALIFORNIA LLC

TITLE
PRODUCED WATER
P&ID

	PRIMARY SENSING DEVICES			CONTROL DEVICES					NOTE 10				NOTE 10				DISPLAY DEVICES				MISCELLANEOUS SYMBOLS		
	PRIMARY ELEMENT	BLIND XMTR	IND. XMTR	INDICATING CONTROLLER	BLIND CONTROLLER	RECORDING CONTROLLER	SELF ACTIVATED VALVES	FINAL CONTROL ELEMENT	SWITCHES		ALARMS		INDICATING	RECORDING (NOTE 12)	SCAN (NOTE 7)	TOTALIZE OR INTEGRATE	LOCAL INDICATOR	SAFETY DEVICE	LOCAL TEST CONN	RELAY & TRANSDUCERS (NOTE 8)			
									LOW	HIGH	LOW	HIGH											
ANALYSIS (NOTE 13)	A	AE	AT	AIT	AIC	AC	ARC			ASL	ASH	AAL	AAH	AI	AR	AJ			AP	AY			
BURNER COMBUSTION	B	BE	BT	BIT		BC				BSL		BAL		BI	BR	BJ		BC		BY			
AVAILABLE	C	CE	CT	CIT	CIC		CRC			CSL	CSH	CAL	CAH	CI	CR					CY			
DENSITY	D	DE	DT	DIT	DIC	DC	DRC			DSL	DSH	DAL	DAH	DI	DR					DY			
VOLTAGE	E	EE	ET	EIT	EIC	EC	ERC			ESL	ESH	EAL	EAH	EI	ER					EY			
FLOW	F	FE/RO (NOTE 14)	FT	FIT	FIC	FC	FRC	FCV	FV	FSL	FSH	FAL	FAH	FI	FR		FCI	FC		FY			
GAUGING	G	GE	GT	GIT	GIC	GC	GRC			GSL	GSH	GAL	GAH	GI	GR	GJ							
HAND	H					HC			HV	HS		HSA											
CURRENT	I	IE	IT	IIT	IIC	IC	IRC			ISL	ISH	IAL	IAH	II	IR		ICI			IY			
POWER	J	JE	JT	JIT	JIC	JC	JRC			JSL	JSH	JAL	JAH	JI	JR		JCI			JY			
TIME	K		KT	KIT	KIC	KC	KRC		KV	KSL	KSH	KAL	KAH	KI	KR		KCI			KY			
LEVEL	L	LE	LT	LIT	LIC	LC	LRC	LCV	LV	LSL	LSH	LAL	LAH	LI	LR			FC		LY			
MOISTURE	M	ME	MT	MIT	MIC	MC	MRC			MSL	MSH	MAL	MAH	MI	MR	MJ			MP	MY			
USERS CHOICE (NOTE 1)	N									NS				NI						NY			
TORQUE	O	OE	OT	OIT	OIC	OC	ORC			OSL	OSH	OAL	OAH	OI	OR								
PRESSURE	P	PE	PT	PIT	PIC	PC	PRC	PCV	PV	PSL	PSH	PAL	PAH	PI	PR			PC	PSV				
PRESSURE DIFFERENTIAL	PD	PDE	PDT	PDIT	PDIC	PDC	PDRC	PDCV	PDV	PDSL	PDSH	PDAL	PDAH	PDI	PDR								
QUANTITY (TOTALIZE, NOTE 2)	Q		QT	QIT	QIC	QC	QRC			QSL	QSH	QAL	QAH	QI	QR		QCI						
RATIO (NOTE 2)	R	RE	RT	RIT	RIC	RC	RRC			RSL	RSH	RAL	RAH	RI	RR								
SPEED OR FREQUENCY	S	SE	ST	SIT	SIC	SC	SRC		SZ (NOTE 6)	SSL	SSH	SAL	SAH	SI	SR		SCI						
TEMPERATURE	T	TE	TT	TIT	TIC	TC	TRC	TCV	TV	TSL	TSH	TAL	TAH	TI	TR	TJ		TC					
TEMPERATURE DIFFERENTIAL	TD	TDE	TDT	TDIT	TDIC	TDC	TDRC		TDV	TDSL	TDSH	TDAL	TDAH	TDI	TDR								
MULTI-VARIABLE	U	UE	UT	UIT	UIC	UC	URC		UZ (NOTE 6)	USL	USH	UAL	UAH	UI	UR								
VIBRATION	V	VE	VT	VIT	VIC	VC	VRC			VSL	VSH	VAL	VAH	VI	VR								
WEIGHT	W	WE	WT	WIT	WIC	WC	WRC			WSL	WSH	WAL	WAH	WI	WR								
UNCLASSIFIED (NOTE 3)	X	XE	XT	XIT	XIC	XC	XRC			XSL	XSH	XAL	XAH	XI	XR								
USERS CHOICE (NOTE 1)	Y	YE	YT	YIT						YS				YI									
POSITION (NOTE 5)	Z	ZE	ZT	ZIT	ZIC	ZC	ZRC			ZSL	ZSH	ZAL	ZAH	ZI	AR	ZJ							

NOTES: (for symbol sheet)

- (1) Intended to cover unlisted meanings. Needs definition only once in a project.
- (2) May be used as "SECOND LETTER" i.e., "F" may be the first letter on flow applications.
- (3) Intended for use on fire, gas, horns, and other specially instruments.
- (4) Intended for use on relays or converters, such as computing relays.
- (5) Intended for use with position devices such as limit switches on open and closed valves.
C=closed, O=open
- (6) Intended for devices other than control valves such as variable speed drives.
- (7) Intended for use with multi-point recorder, flame detectors, etc. may be (1) or (R), etc.
- (8) Function of transducers or relays should be shown outside balloon, i.e., I/P, S/O, etc.
- (9) Pressure Relief Valves, Pressure Vacuum Vents and Rupture Discs will be shown as PSV, PVSV and PSE respectively.
- (10) Primary Device ()HH-HIGH HIGH, ()LL-LOW LOW
- (11) See I.S.A. STANDARDS 5.1 for all computation functions.
- (12) If dedicated recording required insert "D" in bracket outside box.
- (13) Type of analysis will be defined outside of tag balloon.
- (14) Orifice plates and restriction orifices will be designated FE and RO respectively.



TERMINATION POINT OF EQUIPMENT SUPPLIED BY ECO-TEC

X-XXXX
[F]
[F/I]

SUPPLIED BY OTHERS
SUPPLIED LOOSE BY ECO-TEC

SUPPLIED AND INSTALLED BY ECO-TEC

LIMITS OF PACKAGED EQUIPMENT SUPPLIED BY ECO-TEC

SUPPLIED BY OTHERS

SUPPLIED BY ECO-TEC

TL - VALVE SUPPLIED WITH TRAVEL LIMITER

PS - VALVE SUPPLIED WITH POSITION SWITCH

S - SAMPLE POINT

PRELIMINARY

REV. NO.	REVISION	DATE	BY	CHK	SCALE	
					CHECKED BY	
					DRAWN BY BL	CLIENT VINTAGE PRODUCTION CALIFORNIA LLC
					DATE 2013/10/08	TITLE PRODUCED WATER P&ID
					SHEET 2	
					ET DRAWING NO. P0338	DRAWING NO.
						REVISION 0

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FILTER FEED TANK

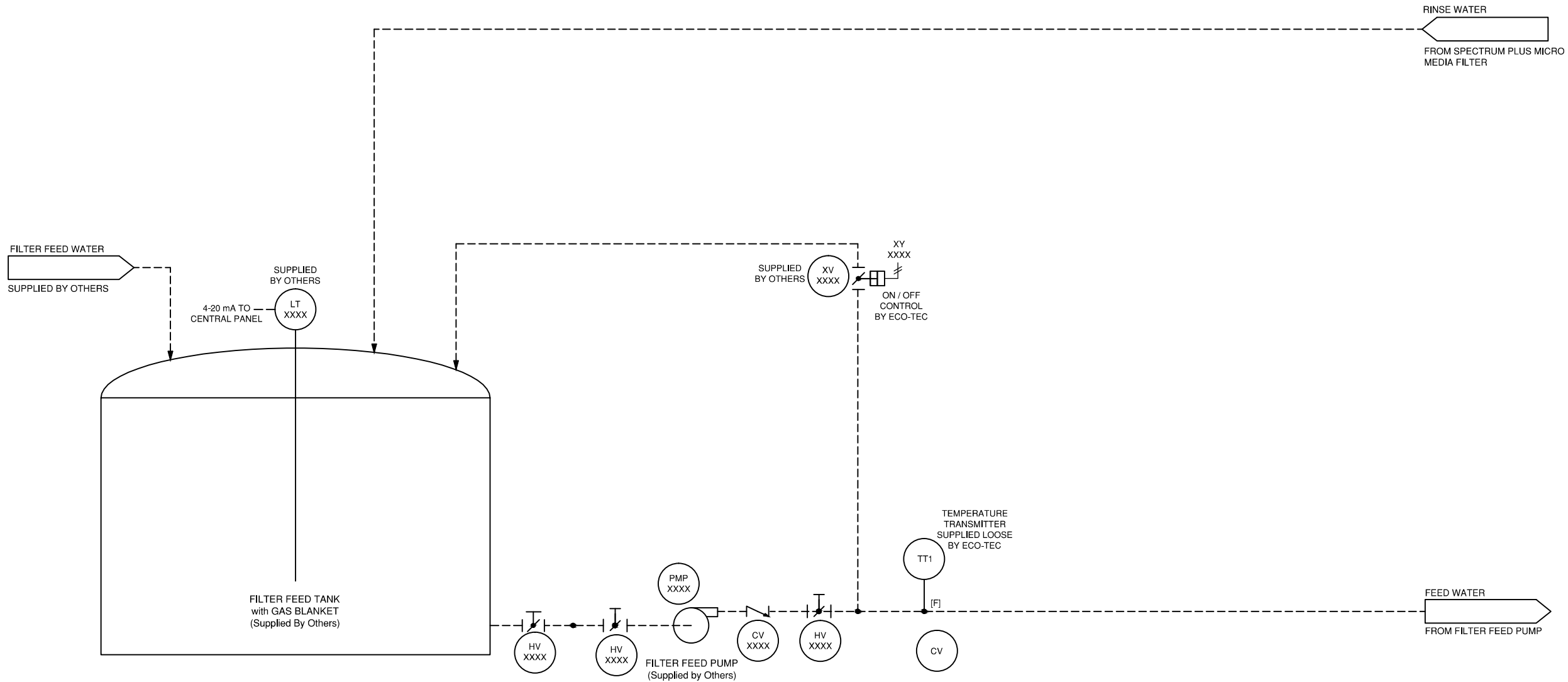
1

2

3


4

5

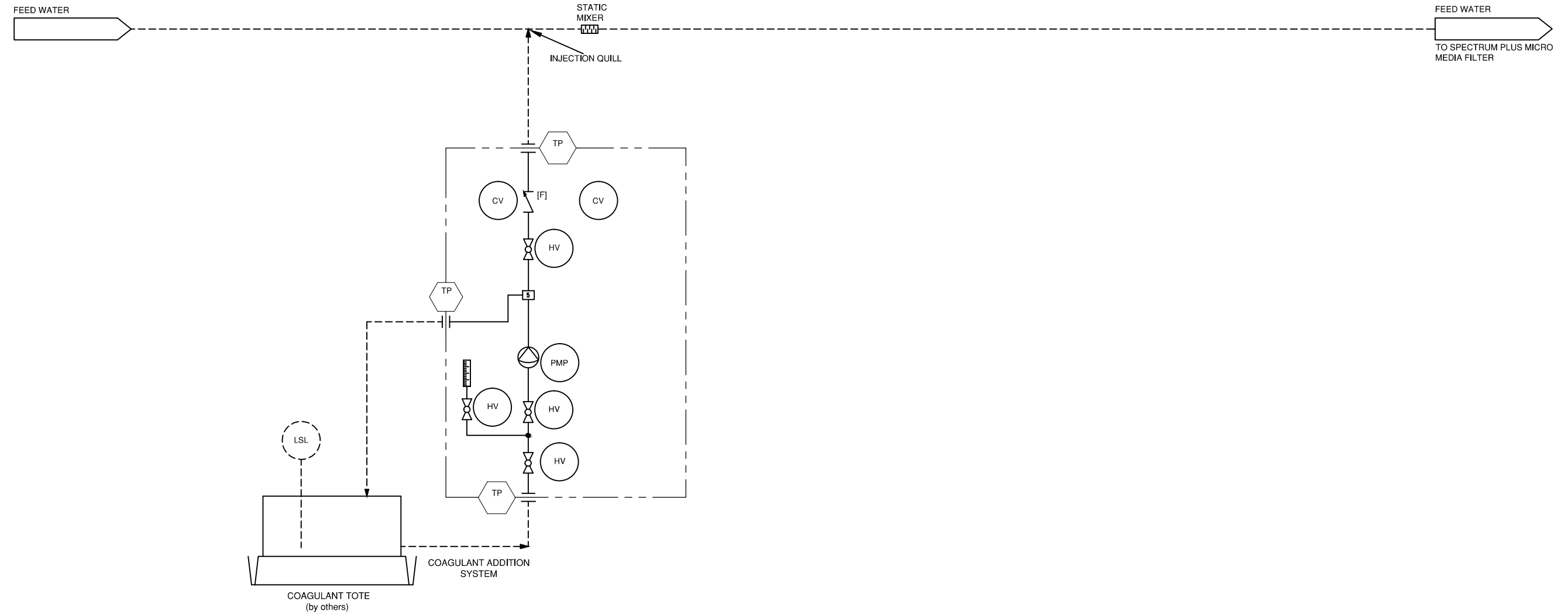


NOTE : ALL AUTOMATED VALVES ARE SUPPLIED WITH POSITION INDICATION

PRELIMINARY


REV. NO	REVISION	DATE	BY	CHK	SCALE		
					CHECKED BY		
					DRAWN BY BL		CLIENT VINTAGE PRODUCTION CALIFORNIA LLC
					DATE 2013/10/08		TITLE PRODUCED WATER P&ID
					SHEET 3		
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COAGULANT ADDITION SYSTEM

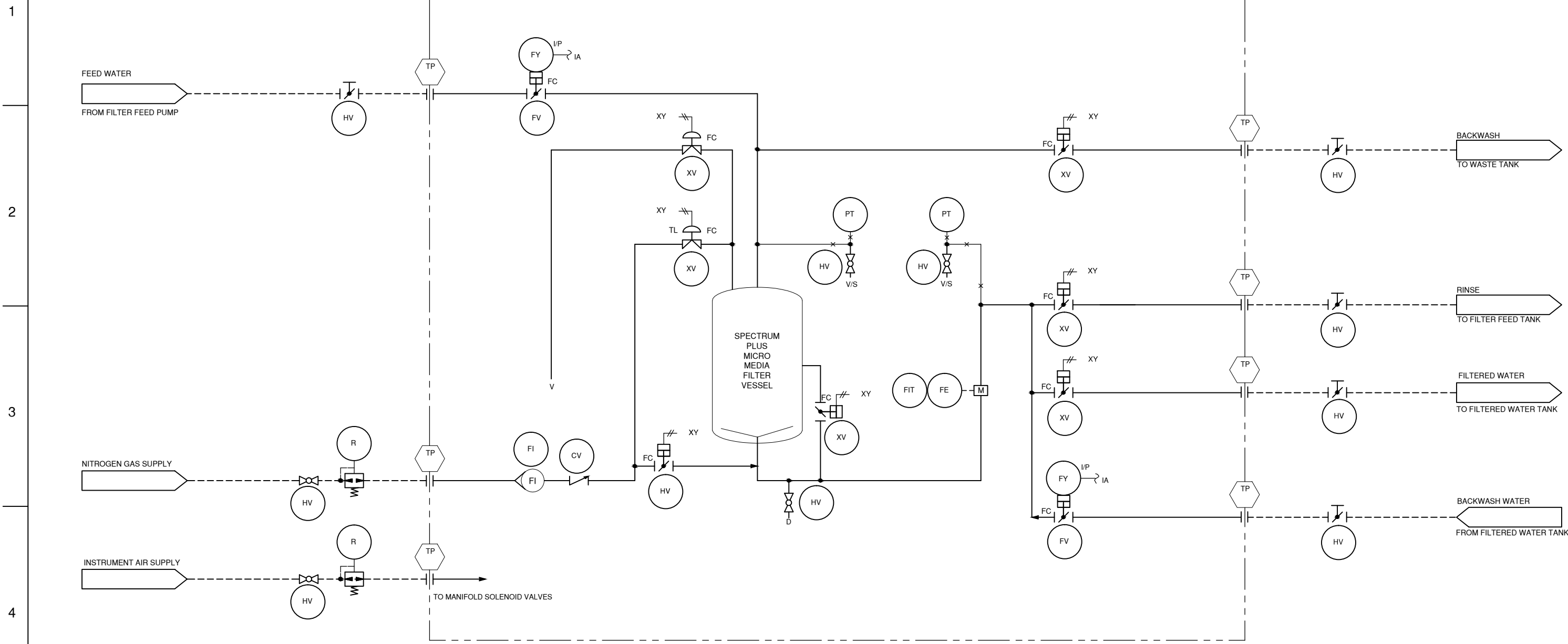


NOTE : ALL AUTOMATED VALVES ARE SUPPLIED WITH POSITION INDICATION

PRELIMINARY

REV. NO.	REVISION	DATE	BY	CHK	SCALE		
					CHECKED BY		
					DRAWN BY BL		CLIENT VINTAGE PRODUCTION CALIFORNIA LLC
					DATE 2013/10/08		TITLE PRODUCED WATER P&ID
					SHEET 4		
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SPECTRUM PLUS MICRO MEDIA FILTER



NOTE : ALL AUTOMATED VALVES ARE SUPPLIED WITH POSITION INDICATION

PRELIMINARY

REV. NO	REVISION	DATE	BY	CHK	SCALE	
					CHECKED BY	
					DRAWN BY BL	
					DATE 2013/10/08	
					SHEET 5	
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A

B

C

D

E

F

G

H

1

2

3

4

5

FILTERED WATER TANK

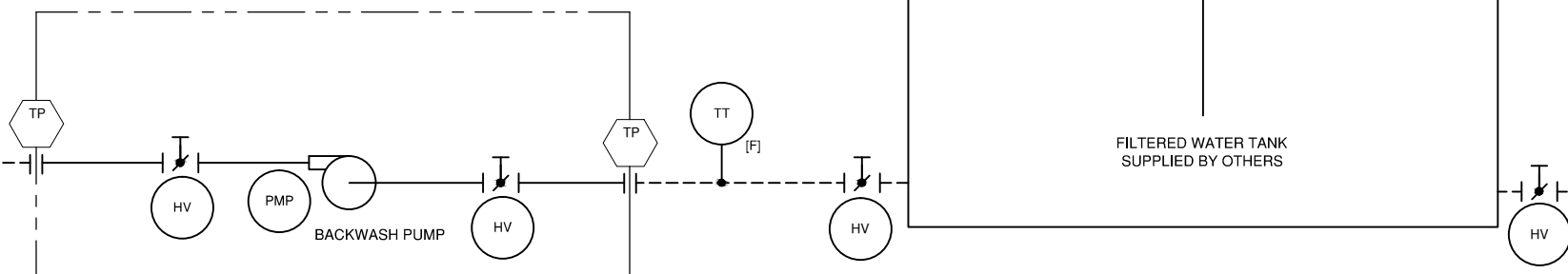
FILTERED WATER
FROM SPECTRUM PLUS MICRO
MEDIA FILTER

BACKWASH WATER
TO SPECTRUM PLUS MICRO
MEDIA FILTER

LT 4-20 mA TO
CENTRAL PANEL

FILTERED WATER TANK
SUPPLIED BY OTHERS

FILTERED WATER
TO POINT OF USE



NOTE : ALL AUTOMATED VALVES ARE SUPPLIED WITH POSITION INDICATION

PRELIMINARY

REV. NO.	REVISION	DATE	BY	CHK	SCALE		
					CHECKED BY		
					DRAWN BY BL	CLIENT VINTAGE PRODUCTION CALIFORNIA LLC	
					DATE 2013/10/08	TITLE PRODUCED WATER P&ID	
					SHEET 6		
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A

B

C

D

E

F

G

H

1

2

3

4

5

WASTE TANK

BACKWASTE WASTE
FROM SPECTRUM PLUS MICRO
MEDIA FILTER

SUPPLIED
BY OTHERS


LT
XXXX

4-20 mA TO
CENTRAL PANEL

WASTE TANK
(Supplied By Others)

NOTE : ALL AUTOMATED VALVES ARE SUPPLIED WITH POSITION INDICATION

PRELIMINARY

REV. NO	REVISION	DATE	BY	CHK	SCALE		
					CHECKED BY		
					DRAWN BY BL	CLIENT VINTAGE PRODUCTION CALIFORNIA LLC	
					DATE 2013/10/08	TITLE PRODUCED WATER P&ID	
					SHEET 7		
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Appendix E – System Service Flow Rates

Streams	Peak Flow (GPM)		
Feed	1385		
Product	1385		
Backwash	1371		
Waste	1371		
	Peak Flow (SCFM)	Volume per cycle (SCF)	Duration (MIN)
Nitrogen Gas Scouring	433	7484.6	19.7

Attachment 2 - Terms of Payment

1. 10% of the contract price due against presentation of the following documents:
 - original invoice
 - mutually signed purchase order
2. 35% of the contract price due against presentation of the following documents:
 - original invoice
 - copy of document transmittal issued by the Supplier of P&ID and General Arrangement drawings
3. 45% of the contract price due against presentation of the following documents:
 - original invoice
 - certificate of system readiness for shipment at Supplier facility.
4. 10% of the contract price due upon successful startup (successful FAT completion), or net sixty (60) days after shipment, whichever occurs first against presentation of the following documents:
 - original invoice
 - certificate of acceptance test (before 60 days from shipping date)

Note: All payments by wire transfer.

Attachment 3 - Certificate of Acceptance

Date:

Reference: Proposal#

This confirms that the goods have been successfully demonstrated to perform according to Final Acceptance Test (FAT) for the goods as defined in the Technical Proposal (Attachment 1).

THE BUYER

Vintage Production California LLC

THE SELLER

Eco-Tec Inc.

Signature

Signature

Name

Name

Title

Title

Date

Date

Attachment 4 - Certificate of Drawing Submittal for Final Review

Date: _____

Reference: Proposal#

This certifies that Eco-Tec has submitted the first revision of Process and Instrumentation Drawings and the initial issue of General Arrangement and Electrical Drawings as defined in Technical Proposal.

Date of Submittal of Drawings:

Certified by Eco-Tec Inc.

Attachment 5 - Acceptance of Change to Scope

Date: _____

Re: Eco-Tec Change Notice: CN #: _____

The change to the scope and/or price and/or delivery for their equipment purchase contract as described in the above reference change notice is hereby accepted on behalf of the Buyer.

THE BUYER

Authorized Signature

Name of Person Signing

Title

Date

Attachment 6 – Form of Amendment To Eco-Tec Commercial Contract

THE BUYER:

THE SELLER:

**TECHNICAL PROPOSAL:
ORIGINAL DOCUMENT DATE:
AMENDMENT NUMBER:
AMENDMENT DATE:**

The original contract is amended as follows which had been agreed via [email, mail, facsimile], [enter date] by [Buyer name] and [Seller name].

- 1. Change to Scope and Supply:** *Describe changes as applicable.*
- 2. Change to Price:**
These changes have [increased/decreased] the price of the contract by [enter \$ amount] from the original price of [enter \$ amount] to a new price of [enter \$ amount].
- 3. Change to Shipment / Delivery:** *Describe changes as applicable*
- 4. Change to Payment Terms:** *Describe changes as applicable*

This amendment is acknowledged and agreed.

THE BUYER

THE SELLER

Authorized Signature

Authorized Signature

Name of Person Signing

Name of Person Signing

Title

Title

Date

Date