

**WATER AND RESOURCE RECOVERY CENTER LEASE**

**BETWEEN**

**CITY OF DUBUQUE**

**AND**

**BRD THREE, LLC**

This **WRRC LEASE** (this “Lease”) is made and executed this \_\_\_\_ day of \_\_\_\_\_, 2016 (the “Effective Date”), between the City of Dubuque, a governmental entity (“City”), and BRD Three, LLC, a limited liability company (“BRD”).

**WHEREAS**, City is the owner of the Dubuque Water and Resource Recovery Center (“WRRC”) located in Dubuque, Iowa (the “WRRC Property”) and that certain portion of the WRRC Property legally described in Exhibit A attached hereto and incorporated by reference herein (the “Site”). Further, City is the owner of the gas management system located at the WRRC Property as described in Exhibit B attached hereto and incorporated by reference herein (“WRRC Gas Management System”, and together with the Site, are collectively referred to as the “Premises”).

**WHEREAS**, City desires to lease the Premises to BRD, and BRD desires to lease the Premises from City, for the purposes of utilizing the WRRC Gas Management System and constructing, maintaining and operating a gas utilization system to process digester gas from the WRRC into natural gas and distribute such gas for environmentally beneficial uses (the “BRD Gas System”), subject to and in accordance with the provisions of this Lease and that certain Water and Resource Recovery Center Gas System Development and Operating Agreement executed by the parties in connection herewith (the “Development and Operating Agreement”).

**WHEREAS**, this Lease includes all Easements (as defined herein) benefiting the Premises, the WRRC and WRRC Property necessary to develop and operate the BRD Gas System, including those Easements set forth in Section 16.

**NOW, THEREFORE**, for and in consideration of the mutual covenants and agreements herein set forth, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each party hereto, City and BRD hereby agree as follows:

1. **Definitions.** All capitalized terms used herein and undefined shall have the meanings ascribed thereto in the Development and Operating Agreement.
2. **Lease of Premises.** City hereby leases the Premises to BRD upon the terms and conditions contained herein and in accordance with the Development and Operating Agreement. For purposes of this Lease, the term “Premises” shall include the Site as described in Exhibit A and the WRRC Gas Management System as described in Exhibit B (such descriptions to be amended and updated as may be necessary during the development and operation of the BRD Gas System).
3. **Term.**

(a) The initial term of this Lease shall be from the Effective Date until the end of the initial term set forth in the Development and Operating Agreement (the “Initial Term”). BRD shall have the option to renew this Agreement for one (1) additional five (5) year period (“Renewal Term”) upon the same terms and conditions contained herein (“Renewal Option”). BRD may exercise its Renewal Option

by delivering to City within ninety (90) days of the expiration of the Initial Term a written notice exercising its Renewal Option hereunder. Within ninety (90) days prior to the expiration of the Renewal Term, the parties agree to negotiate in good faith the terms for any subsequent renewal terms. "Term" shall be defined to include the Initial Term and any Renewal Term.

(b) Notwithstanding the foregoing, the commencement of this Lease for purposes of commencement of the parties' rights and obligations hereunder shall be the commencement date for construction of the BRD Gas System as notified by BRD in accordance with the terms of the Development and Operating Agreement (the "Commencement Date").

**4. Rent.** Beginning with the Commencement Date and during the Term, BRD shall pay City as rental for the Premises a monthly rental amount agreed by the parties in the Operations Plan (as that term is defined in the Development and Operating Agreement). During the Term, City shall provide BRD, in accordance with the Operations Plan, with access to and use of such space, utilities and resources as may be required to operate the BRD Gas System. No later than thirty (30) days prior to the expiration of the first Year of Operations, and each subsequent calendar year ending June 30th thereafter during the Term, the parties shall re-calculate BRD's monthly rent based upon actual costs incurred by the City. Rent is due and payable the first of each month. BRD also shall reimburse City for any additional costs incurred as a result of the BRD System being inoperable.

**5. Security Deposit.** As security for BRD's compliance with its Removal Obligations set forth herein, BRD will deliver to City upon the Commencement Date the amount of Twenty-Five Thousand Dollars (\$25,000) as a security deposit. This security deposit will be returned to BRD at the expiration of this Lease, provided BRD has fully complied with its Removal Obligations contained herein.

**6. Use of Premises.** BRD may only use the Premises for the purposes of constructing, maintaining and operating the BRD Gas System in accordance with the terms of the Development and Operating Agreement. Such use shall not interfere with City's WRRC operations. Subject to the terms of this Lease and the Development and Operating Agreement, the County shall not unreasonably interfere with BRD's operations at the Premises.

**7. Compliance with Law.** During the Term, each party shall, at its sole cost and expense, comply with all applicable statutes, laws, ordinances, regulations, and requirements in effect during the term of this Lease applicable to its operations at the WRRC Property.

**8. Maintenance and Repairs.** BRD shall maintain and repair the WRRC Gas Management System in accordance with the Development and Operating Agreement. BRD shall keep the Site in good and safe condition and repair. Additionally, BRD shall keep the Site free of trash, junk, derelict vehicles and derelict equipment.

**9. Indemnity.**

(a) Each party (the "Indemnifying Party") shall indemnify, defend and hold harmless the other party, its elected and appointed officials, managers, members, officers, affiliates, employees, successors, legal representatives and assigns (the "Indemnified Party"), from and against any all claims, damages, liabilities, losses, judgments, settlements and costs (including, without limitation, reasonable attorney's fees and disbursements) ("Claims") relating to (i) an Indemnifying Party's, or its personnel or agent's breach of this Lease, including, but not limited to, the parties obligations pursuant to Section 11 hereof, and/or (ii) bodily injury or death of any person or damage to real and/or tangible personal property arising from the negligence or willful misconduct of the Indemnifying Party, its personnel or agents during the Term.

(b) The Indemnified Party must provide notice to the Indemnifying Party promptly upon learning of any Claim for which defense or settlement may be sought, but failure to do so will have no effect except to the extent the Indemnifying Party is prejudiced by the delay. The Indemnified Party seeking defense or settlement will allow the Indemnifying Party to control the defense and settlement of the Claim and will reasonably cooperate with the defense. The Indemnifying Party will use counsel reasonably experienced in the subject matter at issue and will not settle a Claim without the written consent of the Indemnified Party, which consent will not be unreasonably withheld or delayed, except that no consent will be required to settle a claim where relief against the Indemnified Party is limited to monetary damages that are paid by the Indemnifying Party under this Section 10. The Indemnifying Party shall have no obligation to indemnify for any settlement made without its prior written consent.

**10. Environmental.**

(a) City's Covenants, Representations and Warranties:

(i) City represents and warrants, to the best of its actual knowledge, that there are no Environmental Conditions currently existing on the WRRRC Property. City further covenants that it shall not cause nor by its act or omission permit to be caused any Environmental Conditions to occur or exist on the WRRRC Property during the Term. City shall comply with any and all federal, state and local environmental laws and regulations applicable to City's operations at the WRRRC, and, specifically, shall not take any action or make any omission which may cause the WRRRC to violate any environmental permit, law or regulation. For the purposes of this Lease, "Environmental Conditions" shall mean the presence, release or threatened of hazardous substances or materials, created or caused by any party, that does or may reasonably be expected to (1) require abatement or correction under any environmental law or regulation, (2) give rise to any civil or criminal liability on the part of any party under any environmental law, or (3) create a public or private nuisance; and

(ii) City shall obtain and comply with any and all permits currently held, and subsequently required to be held during the Term, by the City related to the operation of the WRRRC, except the City shall not be responsible for obtaining any permits related to the development and operation of the BRD Gas System. City shall provide BRD all assistance necessary in order to obtain any and all permits or authorizations necessary to construct and operate the BRD Gas System.

(b) BRD Covenants, Representations and Warranties:

(i) BRD, its directors, officers, owners, employees and agents shall not cause nor by its act or omission permit to be caused an Environmental Condition on the WRRRC Property;

(ii) BRD shall comply with any and all federal, state and local environmental laws and regulations applicable to the WRRRC, and, specifically, shall not take any action or make any omission which may cause the WRRRC to violate an environmental permit, law or regulation;

(iii) BRD shall obtain all applicable environmental permits and authorizations necessary for the development and operation of the BRD Gas System; and

(iv) BRD shall sign the existing Consent Decree applicable to the WRRRC and WRRRC Property, and to the extent applicable to BRD's operations, BRD shall comply with the terms thereof.

**11. Insurance.** BRD shall procure and maintain during the Term, at its own expense, the insurance as required under the Development and Operating Agreement. For clarity, BRD shall not be required to procure and maintain duplicative insurance for purposes of complying with this Section.

**12. Surrender.**

(a) Within six (6) months after the expiration or earlier termination of the Term, except for the WRRC Gas Management System, BRD shall, at its own expense, remove all physical material pertaining to the BRD Gas System from the Premises (the "Gas System Assets") and leave the area formerly occupied by the Gas System Assets in substantially the same physical condition which existed immediately before the installation of the Gas System Assets (the "Removal Obligations"); provided, however, that if any Gas System Asset shall remain on the Premises, at City's discretion, such Gas System Asset(s) shall not be subject to the Removal Obligations hereunder and thereafter shall become the property of City. With respect to any equipment or materials that are installed by BRD to connect the BRD Gas System with the WRRC Gas Management System, City shall make final determinations as to which physical materials shall remain where the Gas System Assets interconnect with the WRRC Gas Management System.

(b) City shall grant BRD all necessary or reasonably required easements and access rights to and from the WRRC Property in order for BRD to perform its aforesaid Removal Obligations and for the purposes of effecting or completing any required decommissioning under any permit, license or agreement issued in connection with the BRD Gas System.

(c) City hereby acknowledges and agrees that BRD shall not be responsible in any manner for the removal from the WRRC Property of the WRRC Gas Management System or other WRRC assets or property at the WRRC Property (the "WRRC Assets") or for the restoration of the WRRC Property arising out of the removal of the WRRC Assets by the City or any third party; provided, however, that in the event the BRD Gas System or BRD's Removal Obligations cause any damage to the WRRC Assets, BRD shall remedy such damage and/or restore the WRRC Assets.

(d) BRD's Removal Obligations pursuant to this section shall be secured by the security deposit set forth in Section 5 above.

**13. Eminent Domain.** If any part of the Premises shall be taken by any public authority (other than City) under the power of eminent domain, then this Lease shall terminate as to the part of the Premises taken upon the date of taking by such public authority. City shall have no right to receive any portion of the condemnation award made for BRD's buildings, fixtures and improvements on the Premises, and BRD shall have no right to receive any portion of the condemnation award made for the Premises (including the value of any leasehold interest). City hereby agrees that, during the term of this Lease, it shall not exercise any power of eminent domain with regard to the Premises.

**14. Taxes.** To the extent assessed against BRD, BRD shall pay before delinquent all real and personal property taxes and ad valorem taxes that are levied against BRD's use of the Premises, improvements on the Premises, and all personal property installed or located by BRD on or about the Premises, which are assessed for any year during the Term of this Lease and notified by any taxing authority or City to BRD. If any such taxes shall cover any period of time prior to or after the expiration of the Term, BRD's share of such taxes shall be equitably prorated to cover only the period of time within the tax fiscal year during which this Lease shall be in effect, and City shall reimburse BRD to the extent required. Notwithstanding any of the foregoing, the parties hereby agree to cooperate in good faith to (a) resolve any disputed tax bill attributable to any third parties' use of the Premises, and (b) explore and utilize any sales, excise, use or other tax exemption, refund or abatement with respect to or arising out of the development and operation of the BRD Gas System.

**15. Grant of Easements.** City hereby grants to BRD all rights and easements necessary and required by BRD in carrying out its activities and operations pursuant to the Operations Plan approved by City pursuant

to the Development and Operating Agreement, including without limitation: (a) the right to construct, operate, maintain, replace, and move the BRD Gas System on the Premises; (b) the right to maintain, replace and repair the WRRC Gas Management System in accordance with the Operations Plan; (c) the right to (i) construct and/or use all underground wires and cables, for the transmission of electrical energy and/or for communication purposes, and all necessary and proper foundations, footings, and other appliances and fixtures for use in connection with said wires and cables on, along and in the WRRC Property, and (ii) construct, use, maintain, repair and replace one or more lateral pipeline(s) on the WRRC Property, including interconnection and/or switching facilities from which BRD, or its utility partners, may interconnect to a utility transmission system, together with the appropriate rights of way, on, along and in the WRRC Property (said, wires, cables, pipelines, facilities and rights of way are herein collectively called the “Transmission Facilities”); and (d) the right of 24-hour access to the WRRC Property, including ingress to and egress from the BRD Gas System and Transmission Facilities to carry out its activities and operations as described herein and in the Development and Operating Agreement (all such rights and easements, collectively, the “Easements”).

**16. Default; Termination; Remedies.**

(a) Upon the occurrence of a material default hereunder, which default is not cured within thirty (30) days following written notice of default, or, if such default is not reasonably capable of cure during such period, within ninety (90) days following written notice of default provided that the defaulting party is exercising good faith and due diligence to cure the default, the non-defaulting party may terminate this Lease.

(b) City may terminate this Lease with immediate effect if BRD (i) makes an assignment or any general arrangement for the benefit of creditors, (ii) files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause of action under any bankruptcy or similar law for the protection of creditors, or has such a petition filed against it, (iii) otherwise becomes bankrupt or insolvent (however evidenced), or (iv) is unable to pay its debts as they fall due.

(c) Upon the termination of the Development and Operating Agreement in accordance with its terms, this Lease shall terminate, without any further action on the part of the parties hereto, upon the termination date of the Development and Operating Agreement.

(d) In the event of termination of this Lease for any reason, BRD shall, with immediate effect, cease to be obligated to pay any rental amounts or Operating Costs due hereunder which are incurred and/or payable after the termination date and shall have no further liability or obligations to the City except as otherwise provided for in this Lease.

(e) Notwithstanding the termination or expiration of this Lease, and except as otherwise stated in this Lease, those obligations contained herein that by their terms or nature are intended to survive such termination or expiration and shall be binding upon the parties and their legal representatives, heirs, successors and assigns.

**17. BRD to Maintain Free and Clear Title.** BRD shall not mortgage or transfer its interest in the Premises as security for a debt nor allow any lien, encumbrance or restriction arising through BRD to attach to the Premises during the Term; provided, however, nothing in this Section 18 shall prohibit BRD from incurring any security interest, lien or encumbrance on its personal property located at the Premises or in any BRD products or proceeds generated by BRD under the Development and Operating Agreement.

18. **Quiet Enjoyment.** City covenants, represents and warrants that it shall (a) not disrupt BRD's peaceful and quiet enjoyment of the Premises, including all rights to develop and operate the BRD Gas System, during the Term, and (b) defend BRD's possession of the Premises against the claims of any third party, however arising.

19. **Recording Lease or Memorandum of Lease.** BRD shall have the right to record an original of this Lease or a memorandum of this Lease, including the grant of Easements contained herein. City will cooperate with BRD in the execution and delivery of such documents (including a memorandum or short form of this Lease or comparable documents) as may be required to effectuate the foregoing in accordance with the requirements, customs and practices governing such recordation.

20. **Representations and Warranties.** Each of the parties represents and warrants to the other that (a) it has the full right, power and authority to enter into this Lease and to consummate, undertake and perform its obligations contemplated herein, (b) this Lease is the legal, valid and binding obligation of such party, enforceable in accordance with its terms, and (c) no consent, authorization, license, permit, registration or approval of, or exemption or other action is required in connection with its execution and delivery of this Agreement and the performance of its obligations hereunder.

21. **Brokerage Commission and Finder's Fee.** The parties agree that they have dealt exclusively with each other and not through any real estate broker, investment banker, person, firm or entity that would, by reason of such dealings, be able to claim a real estate brokerage, business opportunity brokerage or finder's fee as the procuring cause of this transaction. Each of the parties agrees to indemnify the other and hold the other harmless of and from any and all loss, cost, damage, injury or expense arising out of, or in any way related to, assertions, by any other person, firm or entity, of a claim to real estate brokerage, business opportunity brokerage or finder's fee based on alleged contacts between the claiming party and the indemnifying party which have resulted in allegedly providing a broker or finder with the right to claim such commission or finder's fee. The provisions of this Section 22 shall survive the termination of this Lease.

22. **Entire Agreement.** Except as the parties hereto may otherwise agree in writing, this Lease, the Development and Operating Agreement, together with the agreements referred to herein and the Exhibits hereto and thereto, constitute the full and entire agreement and understanding between the parties with regard to the subject matter of this Lease. This Lease may not be modified or amended except in a writing signed by the parties. In the event of any conflict between the terms of this Lease and the Development and Operating Agreement, the terms of the Development and Operating Agreement shall control. Except for the Development and Operating Agreement, and as the parties hereto may otherwise agree in writing, all prior and contemporaneous agreements, covenants, representations and warranties, express or implied, oral and written, of the parties with regard to the subject matter of this Lease are superseded by this Lease, the Exhibits to this Lease, and the documents referred to or implementing the provisions of this Lease. For clarity, the confidentiality obligations of the parties pursuant to the Development and Operating Agreement shall apply to and govern this Lease.

23. **Governing Law.** This Agreement shall be governed in all respects by the laws of the State of Iowa and the venue for any litigation with respect to this Agreement shall be in the courts of Dubuque County, Iowa.

24. **Waiver.** No waiver of any provision of this Lease shall be effective unless it is in writing and signed by the party against which it is sought to be enforced, and no such waiver shall constitute a further or continuing waiver of any preceding or succeeding breach of the same or any other provision.

25. **Assignment.** Except as specifically provided otherwise in this Lease, neither this Lease nor any interest herein shall be subcontracted or assigned, in whole or in part, by BRD without the prior written consent of City, which consent may not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, the restriction on assignment set forth in this Section shall not be deemed violated by virtue of (a) a merger or change in control or ownership of BRD's parent or any successor entity, or (b) the use of any Easement by any third party partner or subcontractor of BRD in the development and operation of the BRD Gas System.

26. **Force Majeure.** A party shall be excused from performing its contractual obligations if it is prevented or delayed in such performance by conditions that constitute *force majeure*, such as acts of God, acts of terrorism, acts of the public enemy, labor disturbances, authority of law, fire or explosion, war or warlike act, insurrection, a party's reasonable response (by way of example and not limitation, such as taking evasive action or canceling meetings or events) to a governmental warning affecting local or national security, or any like causes beyond its control. A party wishing to take advantage of the relief provided in this Section must as soon as practical advise the other party in writing of the existence of the *force majeure* condition and the estimated time of its duration. The parties shall cooperate to ascertain the facts and the effect of the delay on, and make appropriate adjustments where necessary.

27. **Successors and Assigns.** Each of the terms, provisions, and obligations of this Lease shall be binding upon, shall inure to the benefit of, and shall be enforceable by the parties and their respective legal representatives, successors and permitted assigns.

28. **Notices.** All notices and other communications given or made pursuant hereto shall be in writing and shall be deemed to have been given or made if in writing and delivered personally or sent by registered or express mail (postage prepaid) or by facsimile to the parties at the following addresses and facsimile numbers:

If to BRD:	BRD Three, LLC 5062 S. 108 <sup>th</sup> Street, #113 Omaha, Nebraska 68137 Attn: Gregory S. MacLean Facsimile: (402) 682-3680
Copy to:	Fraser Stryker PC LLO 500 Energy Plaza 409 S. 17 <sup>th</sup> Street Omaha, NE 68102 Attn: Stephen M. Bruckner, Esq. Facsimile: (402) 341-8290
If to City:	Michael C. Van Milligen City Manager, City of Dubuque 50 W. 13th St Dubuque, IA 52001
Copy to:	Barry Lindahl City Attorney, City of Dubuque Suite 330, Harbor View Place 00 Main Street Dubuque, Iowa 52001-6944

**29. Severability.** If any term of this Agreement is found to be invalid or unenforceable, the remaining provisions will remain effective and such term shall be replaced with another term consistent with the purpose and intent of this Agreement.

**30. Cumulative Remedies; Offset.** No remedy made available hereunder by any of the provisions of this Lease is intended to be exclusive of any other remedy, and each and every remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute or otherwise. Without limiting any other rights or remedies available to the parties hereto, (i) either may offset from amounts otherwise due to the other party, arising under or related to this Lease or the transactions contemplated herein, any sums owed by such party (whether arising under or related to this Lease or the transactions contemplated herein, or otherwise).

**31. No Third-Party Beneficiaries.** Except as specifically provided in this Lease, nothing in this Lease will be construed as giving any person, other than the parties hereto and their respective heirs, successors and permitted assigns, any right, remedy or claim under or in respect of this Lease or any provision hereof.

**32. Counterparts.** This Lease may be executed in one or more counterparts, including counterparts by facsimile each of which shall be deemed an original, but all of which together shall constitute a single agreement.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]



IN WITNESS WHEREOF, the parties have executed this Lease as of the date first written above.

**City of Dubuque, Iowa,**  
an Iowa governmental entity

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**BRD Three, LLC,**  
an Iowa limited liability company

By: \_\_\_\_\_  
Name: Gregory S. MacLean  
Title: Manager

STATE OF IOWA )  
 ) ss.  
COUNTY OF DUBUQUE )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me a Notary Public in and for said county and state, personally appeared \_\_\_\_\_ as \_\_\_\_\_ of the City of Dubuque, Iowa, an Iowa governmental entity , known to me to be the identical person who subscribed their name to the foregoing, and acknowledged the execution thereof to be their voluntary act and deed and the voluntary act and deed of said corporation.

\_\_\_\_\_  
Notary Public

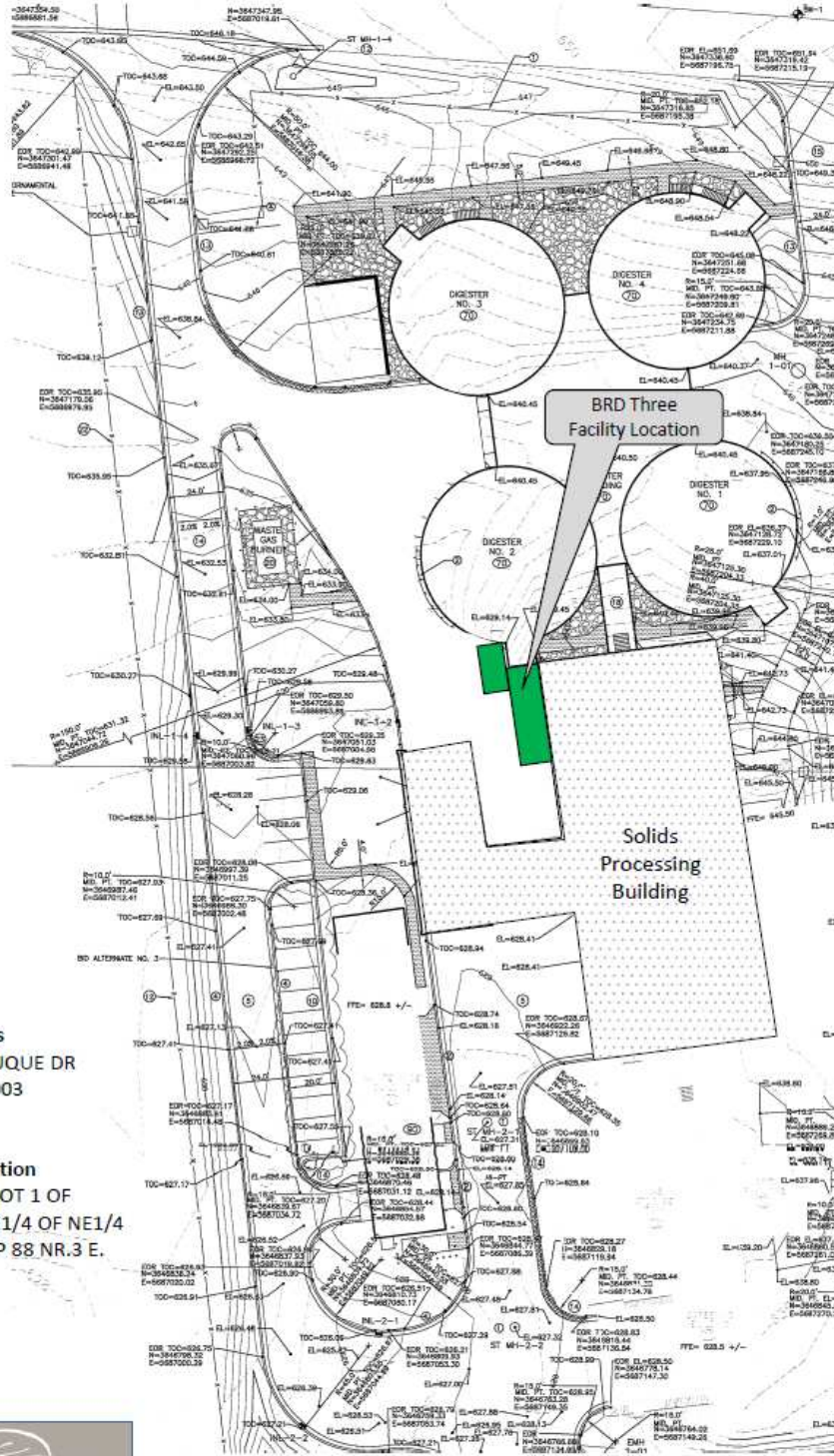
STATE OF )  
 ) ss.  
COUNTY OF \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me a Notary Public in and for said county and state, personally appeared \_\_\_\_\_ as \_\_\_\_\_ of BRD Three, LLC, an Iowa limited liability company, known to me to be the identical person who subscribed their name to the foregoing, and acknowledged the execution thereof to be their voluntary act and deed and the voluntary act and deed of said corporation.

\_\_\_\_\_  
Notary Public

**EXHIBIT A**

# Legal Description of Site



**Parcel ID**  
 1606200004  
**Alternate ID**  
 3-48-1-4  
**Property Address**  
 795 JULIEN DUBUQUE DR  
 DUBUQUE IA 52003  
**Sec/Twp/Rng**  
 N/A  
**Brief Tax Description**  
 SUB OF FR GOV LOT 1 OF  
 LANDS INSIDE NE1/4 OF NE1/4  
 OF SEC 6 IN TWSP 88 NR.3 E.  
 LOT 3



## BRD Three BioGas Facility Location

**Water & Resouce Recovery Center**  
 795 Julien Dubuque Dr.  
 Dubuque, IA 52003



## EXHIBIT B

### Description of WRRC Gas Management System

## SYSTEM OVERVIEW

The Unison Solutions, model BGS-350-112-HS, gas conditioning system is designed to supply up to 350 scfm of clean, dry, gas compressed to 3 psig. The system will be installed at the Dubuque WPCP in Dubuque, IA. The compression/moisture removal skid is designed for indoor operation in a Class I, Division 1 area. The H<sub>2</sub>S and siloxane removal systems are designed for outdoor operation in a Class 1, Division 1 area. The gas conditioning system control panel is designed for indoor operation in an unclassified area. The glycol chiller is designed for outdoor operation in an unclassified area. The gas conditioning system is comprised of several parts including: the H<sub>2</sub>S removal system, the gas conditioning skid which pressurizes the gas, removes moisture, and regulates the discharge pressure, the siloxane removal system, the glycol chiller which supplies cold glycol for use by the gas conditioning skid, and the gas conditioning system control panel which controls the system.

Gas is supplied to the system through a 6" inlet where it passes through the inlet scrubber (FLT 300) where any free moisture and particulates larger than 3 μ in the biogas are removed. The gas then enters two H<sub>2</sub>S removal vessels piped in lead/lag configuration.

The gas then enters the gas conditioning skid and passes through a 6" fail closed actuated butterfly valve before entering the suction scrubber which removes moisture and any particulates left over from the H<sub>2</sub>S removal process. The gas enters a blower (BLR 331) where it is compressed to approximately 4 psig at a temperature of about 169 °F.

After leaving the blower, the gas enters the drying process. The process begins with gas passing through a dual core, gas to glycol heat exchanger (HX 341). The first stage uses the hot gas after compression to reheat the cool dry gas to its final reheat temperature. Gas then travels through the second stage of the heat exchanger which uses cold glycol from a remote glycol chiller to cool the gas to its dew point of approximately 40 °F. Condensate from the heat exchanger is removed via a float drain (FD 741). The gas then completes the process by being reheated via the hot compressed gas to a temperature of approximately 80 °F.

Once the gas has been dried, it flows through two siloxane vessels (FLT 361 & 362), which remove the siloxanes and other VOC's from the gas stream. The vessels are piped in lead/lag configuration. After exiting the siloxane removal vessels, the gas flows through a final particulate filter (FLT 351) to ensure that any carryover siloxane media/dust is removed from the gas stream. The gas is then ready for delivery to the end use equipment at a temperature of about 80 °F and a pressure of 3 psig.

The gas conditioning system control panel is equipped with a Programmable Logic Controller (PLC) that receives data from transmitters, RTD's, and digital inputs. The PLC also protects the equipment during process interruptions. The control panel includes auxiliary terminals for a remote run command input, and a customer fault input. Dry contact outputs are included for run status, warning status, fault status, and turbine run outputs. An Allen Bradley Ethernet IP connection is available for connection to the facility SCADA system. The customer is responsible for providing a broadband internet connection to the gas conditioning system control panel. This will create a VPN between the site and Unison; creating a faster response time to customer's requests by allowing Unison to remotely log onto the PLC, Human Machine Interface (HMI), and individual devices.

## SYSTEM MANUAL VALVE LISTING

Valve #	Normal operating position	Function
VY 3001	OPEN	Close to isolate the H <sub>2</sub> S Removal System
VI 3001	OPEN	Close to isolate PDI 300
VI 3002	CLOSED	Open to vent PDI 300
VI 3003	OPEN	Close to isolate PDI 300
VI 3004	CLOSED	Open to vent PDI 300
VB 301	CLOSED	Open to vent H <sub>2</sub> S piping
VB 302	CLOSED	Open to vent FLT 301
VB 303	CLOSED	Open to vent FLT 301
VB 304	CLOSED	Open to vent H <sub>2</sub> S piping
VB 305	CLOSED	Open to vent H <sub>2</sub> S piping
VB 306	CLOSED	Open to vent FLT 302
VB 307	CLOSED	Open to vent FLT 302
VB 308	CLOSED	Open to vent H <sub>2</sub> S piping
VI 3005	OPEN	Close to isolate PDI 301
VI 3006	CLOSED	Open to vent PDI 301
VI 3007	OPEN	Close to isolate PDI 301
VI 3008	CLOSED	Open to vent PDI 301
VI 3009	OPEN	Close to isolate PDI 302
VI 3010	CLOSED	Open to vent PDI 302
VI 3011	OPEN	Close to isolate PDI 302
VI 3012	CLOSED	Open to vent PDI 302
VB 701	OPEN	Close to isolate STR 701 and FD 701
VB 702	CLOSED	Open to manually drain condensate from FLT 300
VB 703	OPEN	Close to isolate FD 701
VB 704	CLOSED	Open to manually drain condensate from FLT 301
VB 705	CLOSED	Open to manually drain condensate from FLT 301
VB 706	CLOSED	Open to manually drain condensate from FLT 302

VB 707	CLOSED	Open to manually drain condensate from FLT 302
VY 3008	OPEN	Close to divert gas to future H <sub>2</sub> S vessel
VY 3009	CLOSED	Open to connect a future H <sub>2</sub> S vessel to the system
VY 3010	CLOSED	Open to connect a future H <sub>2</sub> S vessel to the system
VB 3601	CLOSED	Open to fill FLT 361 with nitrogen
VB 3602	CLOSED	Open to fill FLT 362 with nitrogen
VB 3603	CLOSED	Open to vent siloxane piping
VB 3604	CLOSED	Open to vent siloxane piping
VB 3605	CLOSED	Open to drain FLT 361
VB 3606	CLOSED	Open to drain FLT 362
VB 3607	CLOSED	Open to allow flow to QC 361
VB 3608	CLOSED	Open to allow flow to QC 362
VB 3609	CLOSED	Open to allow flow to QC 363
VB 3610	CLOSED	Open to allow flow to QC 364
VY 3607	CLOSED	Open to connect a future siloxane vessel to the system
VY 3608	OPEN	Close to divert gas to future siloxane vessel
VY 3609	CLOSED	Open to connect a future siloxane vessel to the system
VY 3610	OPEN	Close to isolate the siloxane removal system
VI 321	OPEN	Close to isolate PDI 321
VI 322	CLOSED	Open to vent PDI 321
VI 323	OPEN	Close to isolate PDI 321
VI 324	CLOSED	Open to vent PDI 321
VB 721	CLOSED	Open to manually drain condensate from FLT 321
VB 722	OPEN	Close to isolate STR 721 and PMP 721
VB 741	OPEN	Close to isolate STR 741 and FD 741
VB 742	CLOSED	Open to manually drain condensate from HX 341
VB 743	OPEN	Close to isolate FD 741
VB 231	CLOSED	Open to drain oil from BLR 331
VB 731	CLOSED	Open to manually drain condensate from SIL 331



VB 331	OPEN	Close to isolate blower bearing chamber from inlet
VI 331	CLOSED	Open to test gas
VB 341	CLOSED	Open to vent to atmosphere
VI 341	CLOSED	Open to test gas
VY 341	VARIABLE	Adjust to change gas reheat temperature
VY 342	OPEN	Close to isolate siloxane removal system
VY 343	CLOSED	Open to by-pass gas around siloxane removal system
VY 351	OPEN	Close to isolate siloxane removal system
VY 352	OPEN	Close to isolate end use equipment
VY 353	CLOSED	Open to discharge gas to a future high pressure system
VI 351	OPEN	Close to isolate PDI 351
VI 352	CLOSED	Open to vent PDI 351
VI 353	OPEN	Close to isolate PDI 351
VI 354	CLOSED	Open to vent PDI 351
VB 351	CLOSED	Open to vent to atmosphere
VB 751	CLOSED	Open to manually drain condensate from FLT 351
VB 141	CLOSED	Open to manually drain glycol piping
VB 142	CLOSED	Open to vent glycol piping
VB 143	CLOSED	Open to manually drain glycol piping

**Select the H<sub>2</sub>S removal vessel configuration from the following list:**

Mode 1: FLT-301 is primary and FLT-302 is secondary

Mode 2: FLT-302 is primary and FLT-301 is secondary

Mode 3: FLT-301 and FLT-302 are in parallel

	<b>Mode 1 Position</b>	<b>Mode 2 Position</b>	<b>Mode 3 Position</b>
VY 3002	OPEN	CLOSED	OPEN
VY 3003	CLOSED	OPEN	OPEN
VY 3004	CLOSED	OPEN	OPEN
VY 3005	OPEN	CLOSED	OPEN
VY 3006	CLOSED	OPEN	CLOSED
VY 3007	OPEN	CLOSED	CLOSED

**Select the siloxane removal vessel configuration from the following list:**

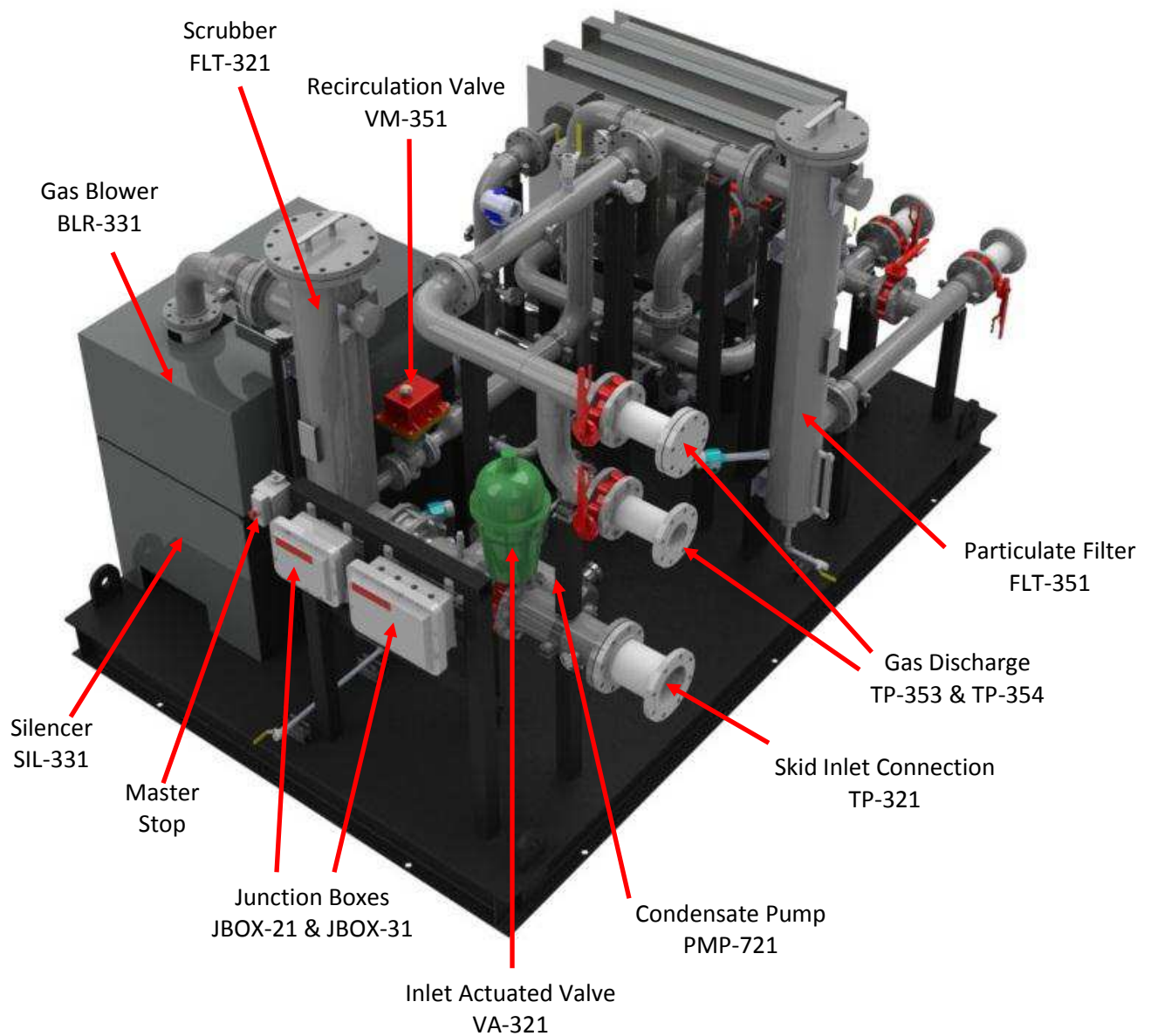
Mode 1: FLT-361 is primary and FLT-362 is secondary

Mode 2: FLT-362 is primary and FLT-361 is secondary

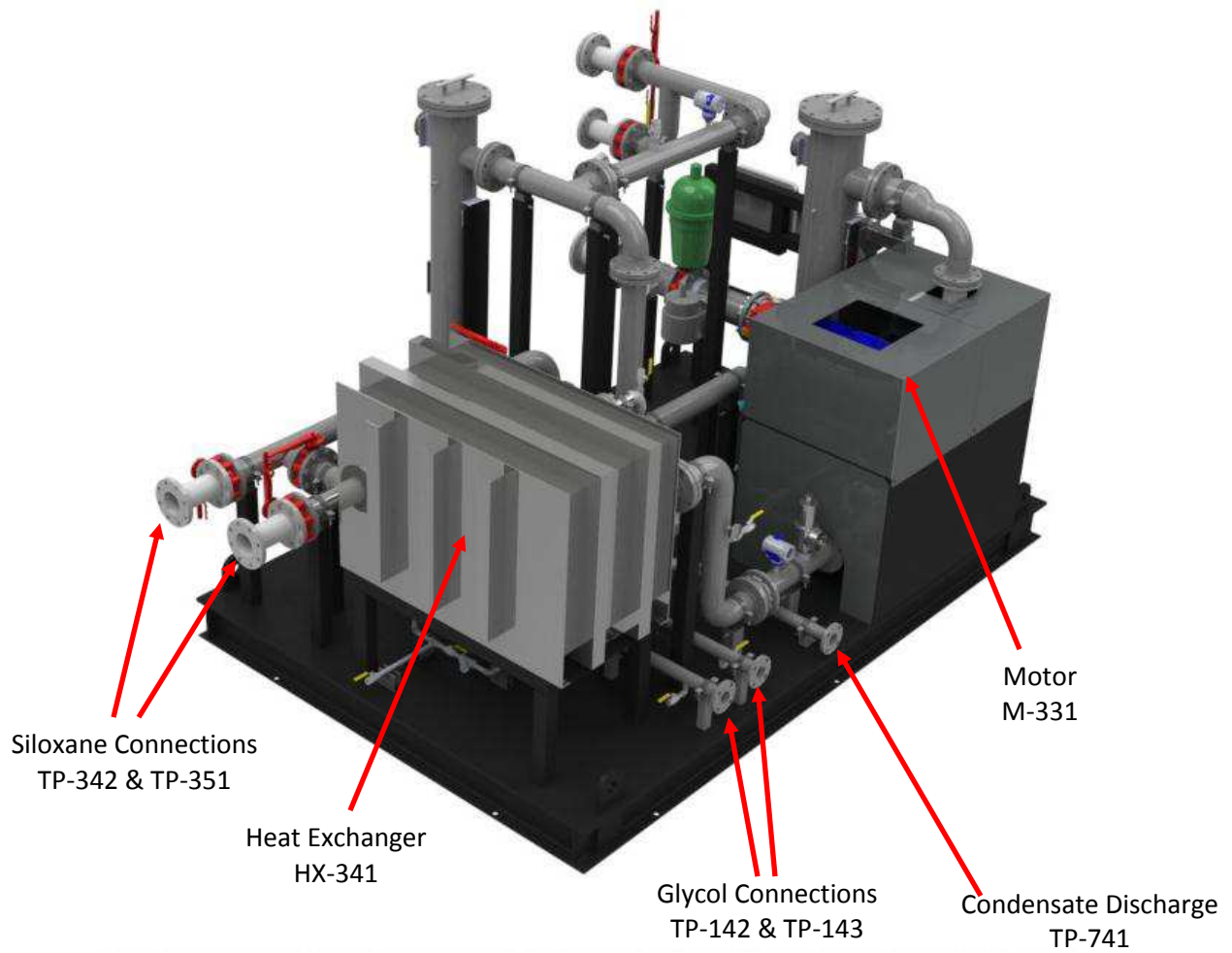
Mode 3: FLT-361 and FLT-362 are in parallel

	<b>Mode 1 Position</b>	<b>Mode 2 Position</b>	<b>Mode 3 Position</b>
VY 3601	OPEN	CLOSED	OPEN
VY 3602	CLOSED	OPEN	OPEN
VY 3603	OPEN	CLOSED	CLOSED
VY 3604	CLOSED	OPEN	CLOSED
VY 3605	CLOSED	OPEN	OPEN
VY 3606	OPEN	CLOSED	OPEN

## UNDERSTANDING THE SYSTEM



(GAS CONDITIONING SYSTEM CONTROL PANEL, GLYCOL CHILLER, H<sub>2</sub>S REMOVAL FILTERS, AND  
SILOXANE REMOVAL FILTERS NOT SHOWN)



(GAS CONDITIONING SYSTEM CONTROL PANEL, GLYCOL CHILLER, H<sub>2</sub>S REMOVAL FILTERS, AND  
SILOXANE REMOVAL FILTERS NOT SHOWN)

## SYSTEM SUMMARY

Inlet Conditions		Discharge Conditions	
Design Flow	350 scfm	Design Flow	350 scfm
Design Pressure	0.36 psig	Design Pressure	3.05 psig
Design Temperature	98°F	Design Temperature	80°F
Design R.H.	100%	Design R.H.	23%
Maximum allowable incoming Temperature		98°F	
Maximum allowable incoming Pressure		0.36 psig	
Inlet Process Connection		6" Class 150 RF Flange	
Discharge Process Connection		4" Class 150 RF Flange	
Condensate Process Connections		2" Class 150 RF Flange	
Glycol Process Connections		2" Class 150 RF Flange	

## SYSTEM OVERVIEW

The Unison Solutions, model CGS-350-178, gas conditioning system is designed to compress and cool up to 350 scfm of gas compressed to 100 psig. The system includes the following: gas compression skid consisting of an inlet moisture/particulate filter, flooded screw compressor, oil separator, oil heat exchanger (using effluent water), oil mist eliminator and a remote mounted air to gas after-cooler. In addition, the system includes a remote mounted gas conditioning system control panel which provides power and control to the system. The gas compression skid is designed for indoor operation in a Class I, Division 1 area. The gas conditioning system control panel is designed for indoor operation in an unclassified area.

Gas enters the gas compression skid through a 4" electrically actuated, fail close, butterfly valve (VA 371). Gas travels to a moisture/particulate filter (FLT 371) sized for 350 SCFM and used to capture 99% of particulates 3 micron and larger. Condensate formed in this filter collects in the bottom of the filter and exits thru a float drain (FD 771). After leaving the moisture/particulate filter, the gas enters a flooded screw compressor (CMP 371) where it is compressed to approximately 105 psig at a temperature of 200°F.

Upon exiting the compressor, the gas enters an oil-gas separator (FLT 271) to remove any remaining oil from the gas stream. Gas then travels to a remote mounted air/gas after-cooler which cools the gas to approximately 122°F. Gas then re-enters the compression skid thru an oil mist eliminator (FLT 372) which removes any remaining oil and particulate 0.3 $\mu$  or greater. The process (at the discharge of the skid) produces a final temperature of 122°F with a relative humidity of approximately 44%. The gas exits the skid through a 2" flanged connection. The gas then travels to a field mounted sour gas fuel kit which will provide final filtration and regulates the pressure to the desired set point (approximately 75-85 psig) for the Capstone CR1000 micro-turbines.

The gas conditioning system control panel is equipped with a Programmable Logic Controller (PLC) that receives data from transmitters, RTDs, and digital inputs. The PLC also protects the equipment during process interruptions. The gas conditioning system control panel includes auxiliary terminals for a remote run command input and a customer fault input. Dry contact outputs are included for skid run status, skid warning status and skid alarm status.

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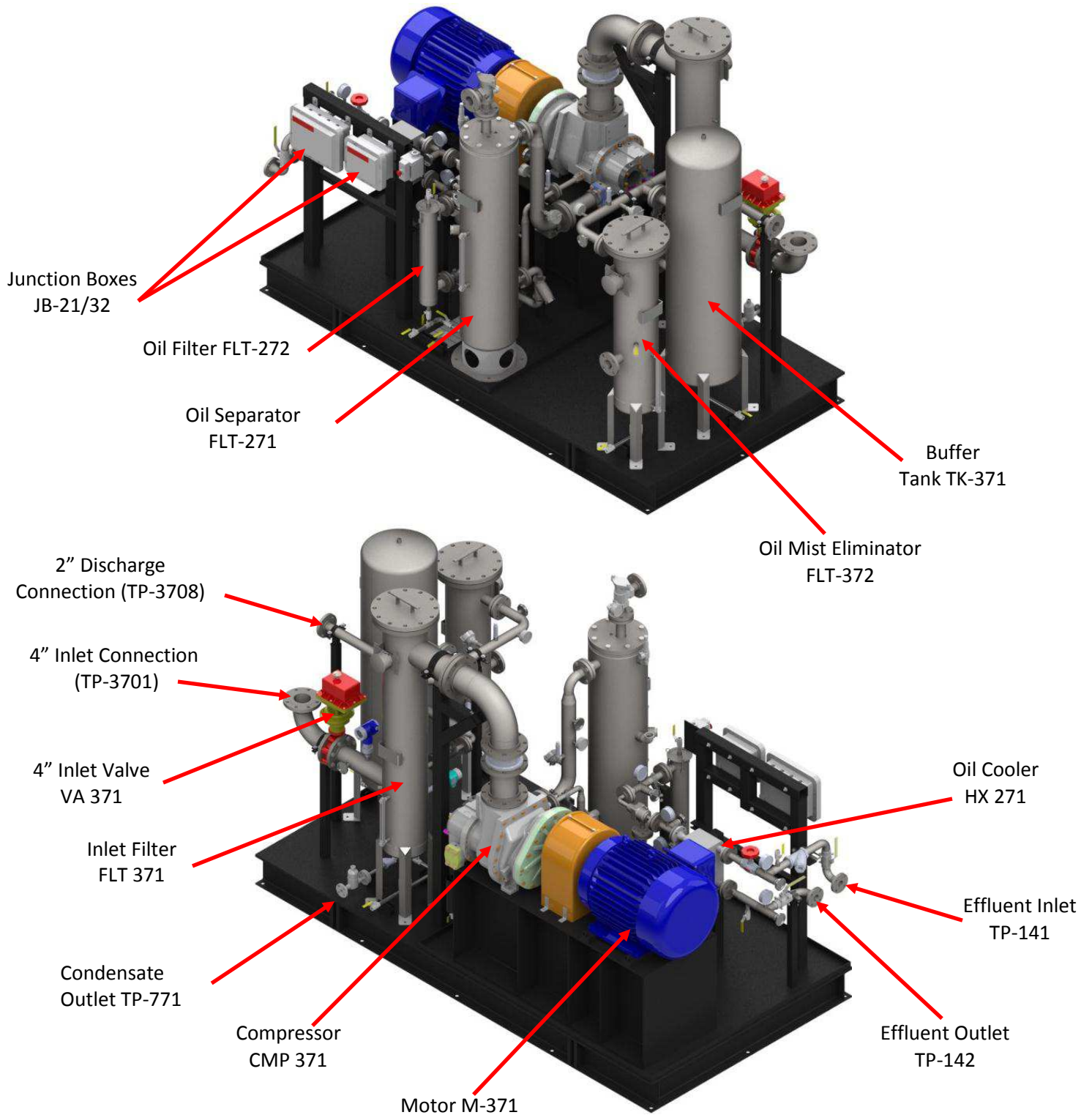
## SYSTEM MANUAL VALVE LISTING

Valve #	Normal operating position	Function
Effluent Water Line Valves		
VB 141	Open	Close to Isolate STR 141 or system piping
VG 141	Variable	Close to Isolate STR 141 or adjust water flow
VB 142	Open	Close to Isolate system piping
VB 143	Closed	Open to vent water piping
VB 144	Closed	Open to drain water piping
Oil Line Valves		
VB 270	Closed	Open to drain STR 271
VB 271	Closed	Open to drain oil from FLT 271
VB 272	Closed	Open to drain or add oil from/to FLT 271
VB 273	Closed	Open to drain oil from FLT 271 or FLT 272
VB 274	Closed	Open to drain oil from FLT 272
VB 275	Closed	Open to vent FLT 272
VB 276	Closed	Open to drain TK 271
VB 277	Closed	Open to drain down-stream side of FLT 372
VB 278	Closed	Open to drain up-stream side of FLT 372
Gas Line Valves		
VB 371	Closed	Open to vent FLT 271
VB 372	Open	Close to isolate HX 372
VB 373	Open	Close to isolate HX 372
VB 374	Open	Close to isolate skid from end use device
VB 381	Open	Close to isolate from skid discharge
VB 382	Open	Close to isolate FLT 381
VB 383	Open	Close to isolate FLT 382
VB 384	Open	Close to isolate FLT 381
VB 385	Open	Close to isolate FLT 382
VB 386	Closed	Open to vent FLT 381
VB 387	Closed	Open to vent FLT 382
VB 388	Closed	Open to drain fuel kit
Condensate Line Valves		
VB 771	Open	Close to isolate FD 771 and STR 771
VB 772	Closed	Open to manually drain FD 771
VB 773	Open	Close to isolate FD 771
VB 774	Closed	Open to manually drain condensate from HX 372
VB 775	Closed	Open to manually drain condensate from TK 371
Instrument Valves		
VI 371	Open	Close to isolate PDI 371
VI 372	Closed	Open to calibrate PDI 371 (while isolated) or to sample gas
VI 373	Open	Close to isolate PDI 371
VI 374	Closed	Open to calibrate PDI 371 (while isolated)
VI 375	Open	Close to isolate PDI 372
VI 376	Closed	Open to calibrate PDI 372 (while isolated)
VI 377	Open	Close to isolate PDI 372
VI 378	Closed	Open to calibrate PDI 372 (while isolated)



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# UNDERSTANDING THE SYSTEM



(GAS CONDITIONING SYSTEM CONTROL PANEL NOT SHOWN)

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## SYSTEM SUMMARY

Inlet Conditions		Discharge Conditions	
Design Flow	350 scfm	Design Flow	350 scfm
Design Pressure	3.0 psig	Design Pressure	100 psig
Design Temperature	80°F	Design Temperature	122°F
Design R.H.	23%	Design R.H.	44%
Inlet Process Connection		4" Class 150 pattern Lug Valve	
Discharge Process Connection		2" Class 150 pattern Lug Valve	
Condensate Process Connections		1/2" Class 150 RF Flange	
Effluent Water (Oil Cooler) Process Connections		2" Class 150 RF Flange	

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