

Air Case ID: 13173 Permit Id: 4160

|                          |                                                                          |
|--------------------------|--------------------------------------------------------------------------|
| FIN No.:                 | A2295                                                                    |
| Company Name:            | CEA DAIRY RNG NEVADA, LLC                                                |
| HA Basin No: 108         | Increment Tracked <input checked="" type="checkbox"/>                    |
| Permit No:               | AP49254325 <span>✕</span> <span>Select a Permit No</span> <span>▼</span> |
| Date App. Received:      | 08/27/2026 <span>📅</span> <span>✕</span>                                 |
| Permit Writer:           | Not Assigned (NA) <span>▼</span> <span>✕</span>                          |
| Case Type:               | Class 2 Renewal w/o Public Notice <span>▼</span> <span>✕</span>          |
| Default ODS Date:        | 09/10/2026 <span>📅</span> <span>✕</span>                                 |
| Actual ODS Date:         | <span>📅</span> <span>✕</span>                                            |
| Date App. to be Closed:  | 11/09/2026 <span>📅</span> <span>✕</span>                                 |
| Stop Days:               | <span>📅</span> <span>✕</span> Actual Date App. to be Closed: 11/9/2026   |
| App. Incomplete?         | <input type="checkbox"/>                                                 |
| Date App. Closed:        | <span>📅</span> <span>✕</span>                                            |
| Fee Paid (\$):           | 5000 <span>✕</span>                                                      |
| Case Description:        | <div></div>                                                              |
| Comments:                | <div></div>                                                              |
| Flag (For Class 4) :     | None <span>▼</span>                                                      |
| <div>Update Cancel</div> |                                                                          |

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AUG 27 2026

ENVIRONMENTAL PROTECTION

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BAPC/BAQP

Application Certification  
Page 2 of 2

**APPLICATION CERTIFICATION DOCUMENT (CONTINUED)**

(With Required Attachments)

**PLEASE NOTE THE FOLLOWING REQUIREMENTS WHICH APPLY TO PERMIT APPLICANTS DURING THE APPLICATION PROCESS:**

- A. A permit applicant must submit supplementary facts or corrected information upon discovery [NAC 445B.297(1)(b)].
- B. A permit applicant is required to provide any additional information which the Director requests in writing within the time specified in the Director's request [NAC 445B.297(1)(c)].
- C. Submission of fraudulent data or other information may result in prosecution for an alleged criminal offense [NRS 445B.470].

**CERTIFICATION:**

**I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete.**



Signature of Responsible Official

Joshua Eakle - Vice President, Contracted Energy

Print or Type Name and Title

8/20/26

Date



August 20, 2026

Nevada Division of Environmental Protection  
Bureau of Air Pollution Control  
901 South Stewart Street, Suite 4001  
Carson City, NV 89701-5249

**Re: Class II Air Quality Operating Permit Renewal  
CEA Dairy RNG Nevada, LLC**

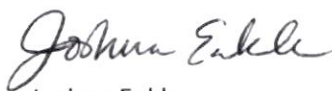
To whom it may concern:

CEA Dairy RNG Nevada, LLC (CEA Dairy) owns and operates a Renewable Natural Gas (RNG) Production Facility in Yerington, Lyon County, NV (Facility). The Facility currently operates under Class II Air Quality Operating Permit No. AP4925-4325 issued 8 November 2021 and will expire on 8 November 2026, as per Nevada Administrative Code (NAC) 445B.315. As such, CEA Dairy is submitting this permit renewal application package at by August 30, 2026, or at least 70 days prior to permit expiration.

CEA Dairy had previously submitted a permit modification application on 11 July 2025 which is currently still open. The purpose of the modification was to clarify the operating conditions, equipment, and monitoring and recordkeeping requirements as well as to allow for more operational flexibility within the permit limits. This renewal application includes those modifications that are pending and seeks to further clarify the limits and requirements that will go into the permit.

Should you have any questions about this permit renewal application, please contact Mr. Taylor Loftis at (980) 283-2659 or [tloftis@all4inc.com](mailto:tloftis@all4inc.com), or Ms. Ella Beale at (804) 310-1710 or [ella.l.beale@dominionenergy.com](mailto:ella.l.beale@dominionenergy.com).

Sincerely,



Joshua Eakle

CEA Dairy RNG Nevada, LLC  
Vice President – Contracted Energy

cc: Ms. Ella Beale  
Mr. Taylor Loftis (ALL4)

**From:** [ePayments@ndep.nv.gov](mailto:ePayments@ndep.nv.gov)  
**To:** [RNGCommOps](#)  
**Subject:** [EXTERNAL] Application Fee payment confirmation  
**Date:** Wednesday, August 26, 2026 9:41:38 AM

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**PLEASE PRINT AND RETAIN THIS CONFIRMATION FOR YOUR RECORDS!**

Company Name: Cea Dairy Rng Nevada  
Company Address: 120 Tredegar Street  
VA Richmond 23219

Contact First Name: Ella  
Contact Last Name: Beale  
Telephone: (804) 310-1710

Payment Type: Application Fee

Notes: Permit renewal for Permit No. AP4925-4325. FIN L2295. CEA Dairy RNG Nevada, LLC Desert Hills Dairy RNG Facility

Confirmation E-mail: [RNGCommOps@dominionenergy.com](mailto:RNGCommOps@dominionenergy.com)

Today's Date: 8/26/2026

Confirmation Number: 7877516438096167504116

Settlement Date: 8/26/2026



|              |            |
|--------------|------------|
| Payment      |            |
| Amount:      | \$5,000.00 |
| Service Fee: | \$125.00   |
| Total        |            |
| Amount:      | \$5,125.00 |

## **1. PROJECT SUMMARY**

CEA Dairy RNG Nevada, LLC (CEA RNG) owns the Desert Hills Renewable Natural Gas (RNG) Production Facility (the Facility), located on the Desert Hills Dairy Farm (the Dairy) in Lyon County, Nevada. The Facility currently operates under Class II Air Quality Operating Permit No. AP4925-4325. CEA RNG has prepared this Class II air quality permit renewal application for the Facility pursuant to Nevada Administrative Code (NAC) 445B.3453. In July 2025 CEA RNG submitted a permit modification application which is still pending. This renewal application includes the changes from that application as well as some additional changes to the venting of biogas that is to be allowed under the permit.

The Facility utilizes manure from the Dairy to produce RNG that is then compressed into trucks prior to being shipped off site for injection into a natural gas pipeline. The modification application was submitted to address several as-built changes to the Facility and to incorporate additional operational flexibility within the permit to address certain operating conditions that were not foreseen when developing the original permit application.

The proposed modifications to the existing permit generally include updated to emissions and operating limits, operating scenarios, the listed capacities of the flare (\$2.004) and emergency generator (\$2.001), and monitoring and recordkeeping requirements.

The required Nevada Division of Environmental Protection (NDEP) application forms are included in Appendix A and the proof of payment for the \$5,000 application fee is included in Appendix C.

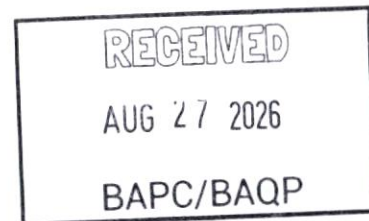


# CLASS II AIR QUALITY OPERATING PERMIT RENEWAL APPLICATION

## LYON COUNTY, NEVADA

CEA DAIRY RNG NEVADA, LLC – DESERT HILLS RNG PRODUCTION FACILITY

AUGUST 2026



SUBMITTED BY:

SUBMITTED TO:



### CEA Dairy RNG Nevada, LLC

Desert Hills RNG Production Facility  
350 Campbell Lane  
Yerington, NV 89447-9731

### Nevada Division of Environmental Protection

Bureau of Air Pollution Control  
901 South Stewart Street, Suite 4001  
Carson City, Nevada 89701-5249



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## 1. PROJECT SUMMARY

CEA Dairy RNG Nevada, LLC (CEA RNG) owns the Desert Hills Renewable Natural Gas (RNG) Production Facility (the Facility), located on the Desert Hills Dairy Farm (the Dairy) in Lyon County, Nevada. The Facility currently operates under Class II Air Quality Operating Permit No. AP4925-4325. CEA RNG has prepared this Class II air quality permit renewal application for the Facility pursuant to Nevada Administrative Code (NAC) 445B.3453. In July 2025 CEA RNG submitted a permit modification application which is still pending. This renewal application includes the changes from that application as well as some additional changes to the venting of biogas that is to be allowed under the permit.

The Facility utilizes manure from the Dairy to produce RNG that is then compressed into trucks prior to being shipped off site for injection into a natural gas pipeline. The modification application was submitted to address several as-built changes to the Facility and to incorporate additional operational flexibility within the permit to address certain operating conditions that were not foreseen when developing the original permit application.

The proposed modifications to the existing permit generally include updated to emissions and operating limits, operating scenarios, the listed capacities of the flare (\$2.004) and emergency generator (\$2.001), and monitoring and recordkeeping requirements.

The required Nevada Division of Environmental Protection (NDEP) application forms are included in Appendix A and the proof of payment for the \$2,500 application fee is included in Appendix C.

## 2. REQUESTED PERMIT UPDATES

This section outlines CEA RNG's requested modifications to the existing permit that are in addition to the modifications that have already been submitted. Modifications that are already in progress include terminology updates, emission factor updates, equipment updates, and new proposed emission limits for the emergency engine (S2.001) and the anaerobic digesters during startup and shutdown (S2.002 and S2.003), and operating and descriptive parameter updates. The monitoring and recordkeeping modifications are discussed in further detail below.

### 2.1 ADDITIONAL VENTING SCENARIO

The current permit includes limits on the ADs during commissioning activities. These limits were developed under the assumption that both digesters would be undergoing startups at the same time but did not address subsequent startup and shutdown events when the Facility has one digester in production and a second digester out of service. When operating an AD and starting up a second AD, the AD starting up must be vented to atmosphere until such time as the methane content in the biogas reaches sufficient concentration that it can be flared. When an AD is being shut down, the headspace must be cleared of biogas to ensure that the H<sub>2</sub>S concentration within the headspace of the vessel is safe for workers. During shutdown, biogas is flared until the methane content is less than the concentration at which it can be flared; then, the remaining biogas in the headspace must be vented.

During startup and shutdown events, biogas can be vented through either the contingency vent or directly to atmosphere via the PRVs on an individual AD (S2.002 or S2.003). However, venting through the contingency vent from either AD requires the Facility to halt all RNG production activities as the design of the Facility does not allow for biogas from one AD to be directed to the contingency vent while biogas from the other AD is directed to the BUS. The alternative to halting RNG production is to vent the biogas directly to atmosphere through the PRVs.

CEA RNG is requesting that the permit be revised to allow direct venting from the digesters through the PRVs during startup, shutdown, or other “Events”<sup>1</sup> when the biogas can no longer be routed to the flare and cannot be routed to the contingency vent, so that the Facility can continue producing RNG during a single AD startup or shutdown event. The facility’s PTE includes emissions for these scenarios, which are included in the requested limits in Table 2-5 for the ADs and in Table 2-8 for the contingency vent.

The following table, Table 2-1, presents the proposed changes to operational and emission limits for the ADs during Startup & Shutdown.

**Table 2-1**  
**Proposed Limit Revisions (S2.002 & S2.003)**

| <b>Limit Description</b>                              | <b>Updated Limit Description</b>                 | <b>Original Limit</b>                      | <b>Proposed Limit</b>                                    |
|-------------------------------------------------------|--------------------------------------------------|--------------------------------------------|----------------------------------------------------------|
| Raw Biogas H <sub>2</sub> S Content<br>(Sec. V.B.2.c) | NA – No change                                   | Maximum of 11,500 ppmv of H <sub>2</sub> S | Maximum of 6,800 ppmv of H <sub>2</sub> S on a dry basis |
| Slurry Feed<br>(Sec. V.B.2.a)                         | N/A - To be Removed                              | Maximum of 86,691,665 gallons per year     | N/A – To be Removed                                      |
| Annual Hours of Operation<br>(Sec. V.B.2.d)           | Annual Biogas Venting Throughput (Sec. V.B.2.d.) | Maximum of 500 hours per year              | 12,000,000 dscf/yr of biogas vented                      |

### **2.1.1 Flare – Maintenance & Startup & Shutdown (S2.004b & S2.004c)**

Flare – Maintenance (S2.004b) and Flare – Startup & Shutdown (S2.004c) are currently subject to multiple throughput and emission limitations. The current limitations on the flare are based on operating the flare for a given number of hours per year at a certain maximum waste gas stream flowrate of dscfm. These limits, which were developed as part of the design basis for the Facility taking into account the Dairy’s expected manure output capacity and planned process operations, do not allow for ideal operational flexibility. The flare that is installed at the facility is capable of flaring up to 750 dscfm of raw or treated biogas and 330 dscfm of RNG, which is dictated by the blowers that push biogas or RNG from the process

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<sup>1</sup> Events that require direct venting include but are not limited to planned and unplanned maintenance and downstream offsite interruptions, such as pipeline or truck loading shutdowns.

to the flare. The flare is designed to operate at flow rates up to 750 dscfm, but actual flow can vary and may be less than 750 dscfm. Since the flare will operate at varying flow rates, depending on the waste stream and other variables, annual emissions from the unit are more accurately correlated with the volumes of biogas or RNG flared rather than an assumed short-term flow rate and actual hours of operation.

CEA RNG is requesting that all short-term flare limitations be based on the flare's maximum capacity (e.g., 750 dscfm or 45,000 dscf/hr for biogas and 330 dscfm or 19,800 dscf/hr for RNG) and that all annual limitations be listed in units of gas throughput (e.g., 70,000,000 dscf/yr RNG or 135,000,000 dscf/yr raw and treated biogas). Limitations on annual hours of operation are redundant and overly restrictive when compared to annual throughput limitations because emissions are calculated based on annual flow, not annual hours of operation.

The current permit contains hours of operation limits for the flare during maintenance and commissioning (startup & shutdown). As previously discussed, gas throughput is a more appropriate limit than hours of operation. As such, CEA RNG is requesting that the hours of operation limits be replaced with total RNG and raw and treated biogas flaring limits of 70 MMdscf/yr and 135 MMdscf/yr, respectively. The proposed limits would apply to the sum of the raw and treated biogas and RNG flared during maintenance, startup, and shutdown. Since the amount of time spent in maintenance, startup, or shutdown varies from year to year, a combined limit will allow additional operational flexibility to accommodate flaring when necessary for either maintenance or startup/shutdown.

Table 2-2 presents the proposed changes to operational and emission limits for the flare during maintenance and startup & shutdown.

**Table 2-2**  
**Proposed Limit Revisions (S2.004b & S2.004c)**

| Limit Description                                            | Updated Limit Description                                     | Original Limit                                                                                                                                                                                                                                                                                                            | Proposed Limit                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S2.004b Exhaust Flow<br>(Sec. V.C.1.b.2)                     | N/A no change                                                 | Maximum of 400 dscfm                                                                                                                                                                                                                                                                                                      | Maximum of 45,000 dscf/hr Biogas,<br>19,800 dscf/hr RNG                                                                                                                                                                                                                                                              |
| S2.004c Exhaust Flow<br>(Sec. V.C.1.b.3)                     | N/A no change                                                 | Maximum of 300 dscfm                                                                                                                                                                                                                                                                                                      | Maximum of 45,000 dscf/hr Biogas,<br>19,800 dscf/hr RNG                                                                                                                                                                                                                                                              |
| S2.004b Waste Gas/Off-Spec RNG<br>(Sec. V.C.2.a.2)           | S2.004b Raw & Treated Biogas/ RNG<br>(Sec. V.C.2.a.2)         | Maximum of 24,000 scf per hour                                                                                                                                                                                                                                                                                            | Maximum of 45,000 dscf/hr Biogas,<br>19,800 dscf/hr RNG                                                                                                                                                                                                                                                              |
| S2.004c Waste Gas/Off-Spec RNG<br>(Sec. V. C.2.a.3)          | S2.004c Raw & Treated Biogas/ RNG<br>(Sec. V. C.2.a.3)        | Maximum of 18,000 scf per hour                                                                                                                                                                                                                                                                                            | Maximum of 45,000 dscf/hr Biogas,<br>19,800 dscf/hr RNG                                                                                                                                                                                                                                                              |
| S2.004b Annual Hours of Operation<br>(Sec. V.C.2.b.2)        | N/A – To Be Removed and Replaced                              | Maximum of 400 hours per year                                                                                                                                                                                                                                                                                             | N/A – To Be Removed and Replaced                                                                                                                                                                                                                                                                                     |
| S2.004c Annual Hours of Operation<br>(Sec. V.C.2.b.3)        | N/A – To Be Removed and Replaced                              | Maximum of 500 hours per year                                                                                                                                                                                                                                                                                             | N/A – To Be Removed and Replaced                                                                                                                                                                                                                                                                                     |
| New Proposed Limit – Replaces Sections V.C.2.b.2 & V.C.2.b.3 | S2.004b & S2.004c Annual Throughput Limit<br>(Sec. V.C.2.b.2) | N/A – New Proposed Limit                                                                                                                                                                                                                                                                                                  | 135,000,000 dscf/yr Biogas and<br>70,000,000 dscf/yr RNG                                                                                                                                                                                                                                                             |
| S2.004b Emissions<br>(Sec. V.C.3.b.1-8)                      | N/A - No Change                                               | PM – 0.18 lb/hr & 0.036 tpy<br>PM <sub>10</sub> – 0.18 lb/hr & 0.036 tpy<br>PM <sub>2.5</sub> – 0.18 lb/hr & 0.036 tpy<br>SO <sub>2</sub> – 19.3 lb/hr & 3.85 tpy<br>NO <sub>x</sub> – 1.18 lb/hr & 0.24 tpy<br>CO – 3.47 lb/hr & 0.69 tpy<br>VOC – 0.0012 lb/hr & 0.0002 tpy<br>H <sub>2</sub> S – 0.54 lb/hr & 0.11 tpy | PM – 0.18 lb/hr & 0.52 tpy<br>PM <sub>10</sub> – 0.18 lb/hr & 0.52 tpy<br>PM <sub>2.5</sub> – 0.18 lb/hr & 0.52 tpy<br>SO <sub>2</sub> – 38.0 lb/hr & 20.55 tpy<br>NO <sub>x</sub> – 1.69 lb/hr & 4.97 tpy<br>CO – 6.99 lb/hr & 21.60 tpy<br>VOC – 0.13 lb/hr & 0.39 tpy<br>H <sub>2</sub> S – 1.01 lb/hr & 0.55 tpy |
| S2.004c Emissions<br>(Sec. V.C.3.c.1-8)                      | N/A - No change                                               | PM – 0.14 lb/hr & 0.034 tpy<br>PM <sub>10</sub> – 0.14 lb/hr & 0.034 tpy<br>PM <sub>2.5</sub> – 0.14 lb/hr & 0.034 tpy<br>SO <sub>2</sub> – 27.4 lb/hr & 6.9 tpy<br>NO <sub>x</sub> – 0.77 lb/hr & 0.19 tpy<br>CO – 2.10 lb/hr & 0.52 tpy<br>VOC – 0.0009 lb/hr & 0.00023 tpy<br>H <sub>2</sub> S – 0.77 lb/hr & 0.19 tpy |                                                                                                                                                                                                                                                                                                                      |

### 2.1.2 Biogas Processing System (S2.005)

Throughput and emission limitations in the existing permit applicable to the BPS are based on annualized design values for actual operation with assumed manure throughput. CEA RNG requests that the limits be adjusted to reflect operations based on nameplate capacity under worst-case operating conditions. For



example, the maximum throughput for the BPS system is 45,000 scfm. Table 2-3 presents the proposed changes to operational and emission limits for S2.005.

**Table 2-3**  
**Proposed Limit Revisions (S2.005)**

| <b>Limit Description</b>                | <b>Original Limit</b>                                                         | <b>Proposed Limit</b>                                                      |
|-----------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| S2.005 Exhaust Flow<br>(Sec. V.D.1.b)   | Maximum of 160.0 dscfm                                                        | Maximum of 24,750 dscf/hr                                                  |
| S2.005 Throughput<br>(Sec. V.D.2.a.1)   | Maximum of 24,000 scf per hour and 210,240,000 scf/yr of Raw Biogas           | Maximum of 34,500 dscf/hr                                                  |
| S2.005 Exhaust Flow<br>(Sec. V.D.2.a.2) | Maximum of 9,600 scf per hour and 84,096,000 scf/yr of exhaust biogas         | Maximum of 24,750 dscf/hr                                                  |
| S2.005 Emissions<br>(Sec. V.D.3.a-c)    | VOC – 0.0097 lb/hr & 0.042 tpy<br>H <sub>2</sub> S – 0.0086 lb/hr & 0.038 tpy | VOC – 0.013 lb/hr & 0.058 tpy<br>H <sub>2</sub> S – 0.037 lb/hr & 0.16 tpy |

As provided in Table 2-3, CEA RNG is proposing changes to both the VOC and H<sub>2</sub>S limitations on an hourly and annual basis from the BPS vent. The emissions increases are the result of changes in assumptions about the maximum short-term processing capacity of the BPS. The original application assumed a feed rate of 400 scfm based on the known quantity of available manure, as described in Section 2.3. CEA RNG has revised the PTE calculations for the BPS to be based on its nameplate capacity of 777 scfm inlet biogas and has made more conservative assumptions regarding the H<sub>2</sub>S concentration (20 ppmv, dry basis) in the BPS exhaust as compared to the assumed concentration in the original application (10 ppmv, dry basis).

### **2.1.3 Digester Contingency Venting (S2.006)**

The Contingency Vent is currently subject to multiple throughput and emission limitations. CEA RNG has identified particular maintenance activities that may require the ADs to be emptied or restarted such that the AD headspace will be vented through S2.006 in cases other than initial commissioning. It is CEA RNG's understanding from discussions with NDEP that the commissioning permit provisions in Condition V.E. also address restarts of the digesters. However, CEA RNG would like to further expand the scenarios under which the contingency vent may be used to include any event that may require the venting of biogas from the facility and where the contingency vent is available for use for that venting. Such scenarios would

include malfunctions in equipment, planned and unplanned maintenance events that require digester shutdowns or restarts, off-site events that prevent the facility from producing RNG, or in cases where the facility is unable to flare biogas.

In order to more clearly describe the function of S2.006, CEA RNG is proposing to rename S2.006 from Commissioning Contingency Venting to Digester Contingency Venting. CEA RNG has revised the PTE calculations for S2.006 to assume that the contingency vent is operating 8,760 hours per year at a flow rate of 770 scfm (46,200 dscf per hour).

Table 2-4 presents the proposed changes to operational and emission limits for S2.006.

**Table 2-4**  
**Proposed Limit Revisions (S2.006)**

| <b>Limit Description</b>                         | <b>Original Limit</b>                                                                 | <b>Proposed Limit</b>                                                        |
|--------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| S2.006 Exhaust Flow<br>(Sec. V.D.1.b)            | Maximum of 427 dscfm                                                                  | Maximum of 46,200 dscf/hr<br>Treated or Raw Biogas                           |
| S2.006 Throughput<br>(Sec. V.D.2.a.1)            | Maximum of 18,000 dscf per<br>hour and 21,600,000 dscf/yr of<br>Treated or Raw Biogas | Maximum of 46,200 dscf/hr<br>Treated or Raw Biogas                           |
| S2.006<br>Hours of Operation<br>(Sec. V.D.2.a.2) | Maximum of 1,200 hours per<br>year                                                    | 75 MMscf/yr                                                                  |
| S2.006<br>Emissions<br>(Sec. V.D.3.a-c)          | VOC – 0.12 lb/hr & 0.073 tpy<br>H <sub>2</sub> S – 0.037 lb/hr & 0.022 tpy            | VOC – 0.0084 lb/hr & 0.007 tpy<br>H <sub>2</sub> S – 0.042 lb/hr & 0.183 tpy |

As provided in Table 2-4, CEA RNG is proposing changes to both the VOC and H<sub>2</sub>S limitations on an hourly and annual basis from the contingency vent. The changes in emissions are the result of changes in assumptions about the maximum short-term production capacity of the ADs and changes to emissions factor for VOC and H<sub>2</sub>S concentrations. The original application assumed an exhaust rate of 246 scfm for up to 1,200 hours per year based on assumptions about gas production during commissioning. CEA RNG has revised the PTE calculations for the contingency vent to be based on the production capacity of the BPS (777 dscfm inlet biogas) and operating 8,760 hours per year. As a result of these updates, the emission

rate for some pollutants increased, while others decreased. Detailed emissions calculations are provided in Appendices C and D.

## 2.2 PROPOSED CHANGES TO MONITORING AND RECORDKEEPING

The Facility's current permit includes monitoring, recordkeeping, and reporting requirements to ensure compliance with the limitations that are applicable to the emission units at the Facility. In addition to CEA RNG proposing changes to the structure of several limitations to better align with the Facility's operations, CEA RNG is also proposing changes to the associated monitoring and recordkeeping conditions of the permit to better align with the proposed limits. Additionally, there are parameters that can be directly monitored and others that must be calculated based on the parameters that are monitored as summarized in the tables below. Table 2-5 provides a summary of CEA RNG's requested monitoring and recordkeeping requirements for the proposed operating limits in Table 2-1 through Table 2-4.

**Table 2-5**  
**Proposed Monitoring and Recordkeeping**

| Proposed Limit                                              | Proposed Monitoring                                                                                                   | Proposed Recordkeeping                                                                                                                        |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Biogas Direct Venting - 12,000,000 dscf/yr of biogas vented | Monitor – Gas Holder Volume (%)<br>Calculate – Theoretical Gas Production (dscf/hr), Total Flow (dscf) per "Event"[1] | Record – Gas Holder Volume (%), Duration of Each Venting Event (mins), Theoretical Gas Production (dscf/hr), Total Flow (dscf) per "Event"[1] |
| Flare Flowrate Hourly - Maximum of 45,000 dscf/hr Biogas    | Monitor – Flowrate[2] (acf/hr)<br>Calculate – Flowrate (dscf/hr)                                                      | Record – Flowrate (acf/hr) and Flowrate (dscf/hr)                                                                                             |
| Flare Flowrate Hourly - 19,800 dscf/hr RNG                  | Monitor – Flowrate (acf/hr)<br>Calculate – Flowrate (dscf/hr)                                                         | Record – Flowrate (acf/hr) and Flowrate (dscf/hr)                                                                                             |
| Flare Flowrate Annual - 135,000,000 dscf/yr Biogas          | Monitor – Daily Flow (acf)<br>Calculate – Daily Flow (dscf), Annual Flow (dscf/yr)                                    | Record – Daily Flow (acf), Daily Flow (dscf), and Annual Flow (dscf/yr)                                                                       |
| Flare Flowrate Annual – 70,000,000 dscf/yr RNG              | Monitor – Daily Flow (acf)<br>Calculate – Annual Flow (dscf/yr)                                                       | Record – Daily Flow (dscf) and Annual Flow (dscf/yr)                                                                                          |
| BPS Exhaust Vent - Maximum of 24,750 dscf/hr                | Monitor – Flowrate (acf/hr)<br>Calculate – Flowrate (dscf/hr)                                                         | Record – Flowrate (acf/hr) and Flowrate (dscf/hr)                                                                                             |
| BPS Exhaust Vent - Maximum of 24,750 dscf/hr                | Monitor – Flowrate (acf/hr)<br>Calculate – Flowrate (dscf/hr)                                                         | Record – Flowrate (acf/hr) and Flowrate (dscf/hr)                                                                                             |
| Contingency Vent - Maximum of 46,200 dscf/hr                | Monitor – Flowrate (acf/hr)<br>Calculate – Flowrate (dscf/hr)                                                         | Record – Flowrate (acf/hr) and Flowrate (dscf/hr)                                                                                             |

<sup>[1]</sup> As defined in Footnote 3 in Section 2.4.2.3.

<sup>[2]</sup> Flowrates are monitored at actual conditions as actual cubic feet (acf).

In addition to the monitoring and recordkeeping for the limits above, there are monitoring, recordkeeping and reporting provisions in the current permit that CEA RNG is requesting to streamline as a part of this permit modification as detailed below.

### **2.2.1 Anaerobic Digester - Startup & Shutdown Monitoring & Recordkeeping (S2.002 & S2.003)**

Per the existing permit, CEA RNG is currently monitoring AD slurry feed. CEA RNG is proposing to monitor the following additional parameters: total solids percent of the slurry feed by weight (TS%), volatile solids percent of the slurry feed by weight (VS%), and AD temperature (°F). The revisions are being requested so that the Facility can utilize the calculated hourly theoretical gas production rate (dscf/hr) and venting hours for S2.002 and S2.003 to calculate the total vented volume of gas (dscf) for comparison to the proposed 12 MMdscf/yr limit for direct venting from the digesters.

CEA RNG is also requesting to remove direct monitoring requirements for several emission units (e.g., hours of venting for S2.002 and S2.003, Annual Hours of Operation, etc.). In each instance, CEA RNG has proposed an alternate parameter or calculation to replace the current monitoring and recordkeeping requirement.

In addition to the proposed changes in parametric monitoring, CEA RNG is also proposing changes to the terminology used to describe the monitored parameters (e.g., H<sub>2</sub>S concentration in raw biogas vs. H<sub>2</sub>S concentration in biogas). In these cases, the term 'raw biogas' is not inclusive of all biogas types that could be present in the system as the facility may employ operational techniques (e.g., oxygenation) that reduce H<sub>2</sub>S concentrations in the biogas. The biogas in these instances is more accurately described as 'treated biogas' and the proposed monitoring and recordkeeping requirements are inclusive of both raw and treated biogas. Additional clarifications to the monitoring and recordkeeping requirements include the addition of more specific units of measure (e.g., ppm vs. ppmv (dry basis), actual cubic feet [acf] vs. dscf,



etc.) and descriptions for calculation methods where a recorded parameter is not monitored directly. Table 2-10 presents the proposed monitoring and recordkeeping for the two ADs (S2.002 and S2.003).

**Table 2-6**  
**Proposed Monitoring and Recordkeeping Revisions (S2.002 & S2.003)**

| Current Monitoring & Recordkeeping                                                           | Proposed Monitoring & Recordkeeping                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitor & Record – Slurry Feed Throughput for S2.002 & S2.003, Combined<br>Frequency - Daily | Monitor & Record – Combined Slurry Feed Throughput (gal/day) for S2.002 & S2.003, Total Solids Percent (TS%) by Weight, Volatile Solids (VS%) by Weight, and AD Temperature (°F)<br>Frequency - Daily                                                                                               |
| Monitor & Record – Raw Biogas Generated for S2.002 & S2.003, Combined<br>Frequency - Daily   | Calculate & Record – Theoretical Biogas Generated (dscf/day) for S2.002 & S2.003, Combined<br>Frequency – Daily<br>Calculation Method – Theoretical Biogas Generation is Calculated using Slurry Feed (gal), Slurry Total Solids (TS%), Slurry Volatile Solids (VS%), and Digester Temperature (°F) |
| Monitor & Record – H <sub>2</sub> S Concentration (ppmv) in Raw Biogas<br>Frequency - Weekly | Monitor & Record – H <sub>2</sub> S Concentration (ppmv) in Biogas <sup>[1]</sup><br>Frequency - Weekly                                                                                                                                                                                             |
| Monitor & Record the Hours of Operation for S2.002 and S2.003, Each<br>Frequency – Daily     | Calculate & Record the Hours of Operation <sup>[2]</sup> for S2.002 and S2.003, Each<br>Frequency – Daily<br>Calculation Method – Daily Hours of Operation will be equal to the total time each day when S2.002 and S2.003 are charged with Slurry Feed.                                            |
| Monitor & Record – Hours when S2.002 & S2.003 vent to atmosphere, Each<br>Frequency – Daily  | Monitor & Record – Gas Holder Volume (%) in S2.002 and S2.003, Each<br>Frequency – Hourly<br>Calculate – Daily Venting Hours for S2.002 or S2.003 are calculated by summing the duration of time when Gas Holder Volume (%) is equal to 100% for both S2.002 and S2.003.<br>Frequency – Monthly     |
| Monitor & Record – Hours when S2.002 & S2.003 vent to atmosphere, Each<br>Frequency – Daily  | Calculate & Record – Daily Total Venting (dscf/day) from S2.002 and S2.003, Combined<br>Calculation Method – Average Hourly Theoretical Biogas Generation Rate (dscf/hr) multiplied by Venting Hours for S2.002 or S2.003 (hr/day)                                                                  |

<sup>[1]</sup> Measurement to be taken in the AD headspace or in another location indicative of the H<sub>2</sub>S concentration in the AD headspace. Biogas may be raw biogas or treated biogas, depending on current operations. Measurement will be taken on a wet basis at 100% relative humidity and converted to a dry basis.

<sup>[2]</sup> There is not an hour meter on S2.002 or S2.003. The ADs are considered to be operating if there is manure slurry present inside the AD.

**Note:** Table 2-10 is continued on the following page.

Table 2-7  
Proposed Monitoring and Recordkeeping Revisions (S2.002 & S2.003) [Cont.]

| Current Monitoring & Recordkeeping                                                                                                                                                             | Proposed Monitoring & Recordkeeping                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calculate & Record – Average Hourly Throughput (gal/hr) of Slurry Feed<br>Calculation Method – Sum of Daily Throughput Divided by the Sum of Daily Hours of Operation                          | Calculate & Record – Average Hourly Throughput (gal/hr) of Slurry Feed<br>Calculation Method – Sum of Daily Throughput (gal/day) Divided by the Sum of Daily Hours of Operation (hr/day)<br>Frequency – Weekly                                 |
| Calculate & Record – Average Hourly Raw Biogas Generation Rate (scf/hr), Combined<br>Calculation Method – Sum of the Daily Raw Biogas Generated Divided by the Sum of Daily Hours of Operation | Calculate & Record – Average Hourly Theoretical Biogas Generation Rate (dscf/hr), Combined<br>Calculation Method – Daily Theoretical Biogas Generated (dscf/day) Divided by the Sum of Daily Hours of Operation (hr/day)<br>Frequency – Weekly |
| Monitor & Record – Total Yearly Slurry Feed Throughput Rate (gallons/year)<br>Calculation Method – Sum of the Daily Slurry Feed Rates (gallons/day)                                            | Calculate & Record – Total Yearly Slurry Feed Throughput Rate (gallons/year)<br>Calculation Method – Sum of the Daily Slurry Feed Rates (gallons/day)<br>Frequency – Monthly                                                                   |
| Monitor & Record – Total Yearly Raw Biogas Generation Rate (scf/year)<br>Calculation Method – Sum of the Daily Raw Biogas Generation Rates (scf/day)                                           | Calculate & Record – Total Yearly Theoretical Biogas Generation Rate (dscf/year)<br>Calculation Method – Sum of the Daily Theoretical Biogas Generation Rates (dscf/day)<br>Frequency – Monthly                                                |
| Monitor & Record – Total Yearly Hours when S2.002 & S2.003 Vent to Atmosphere, Each<br>Calculation Method – Sum of the Daily Hours of Venting (hr/day), Each                                   | Calculate & Record – Annual Venting Hours (hr/yr) when S2.002 & S2.003 Vent to Atmosphere, Each<br>Calculation Method – Sum of the Daily Hours of Venting (hr/day), Each<br>Frequency – Monthly                                                |

### 2.2.2 Flare – Pilot, Maintenance, & Startup & Shutdown Monitoring & Recordkeeping (S2.004a, S2.004b, & S2.004c)

The current monitoring and recordkeeping requirements for the flare utilize the hours of operation as the basis for calculating the daily waste gas/off-spec RNG flow to the flare. This method of estimating the flow rate to the flare is overly conservative as it assumes that the flare is receiving the maximum flowrate (scfm) anytime it is operating. The Facility directly monitors the gas flow to the flare for both biogas and RNG. CEA RNG is proposing to replace the calculation of daily flare flow with a direct measurement of flare flow with the exception of the pilot natural gas consumption (S2.004a), which will continue to be calculated based on the daily hours of operation and maximum flow of 50 scfm. Additionally, CEA RNG is



proposing to clarify how the hours of operation are calculated since the flare is not equipped with an hour meter. A summary of the proposed changes to the monitoring and recordkeeping for the flare are provided in Table 2-8.

**Table 2-8**  
**Proposed Monitoring and Recordkeeping Revisions (S2.004)**

| <b>Current Monitoring &amp; Recordkeeping</b>                                                                                                                                                       | <b>Proposed Monitoring &amp; Recordkeeping</b>                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitor & Record the Hours of Operation for S2.004a, S2.004b, and S2.004c, Each<br>Frequency – Daily                                                                                                | Calculate & Record the Hours of Operation for S2.004a, S2.004b, and S2.004c, Each<br>Frequency – Weekly<br>Calculation Method – Daily Hours of Operation will be equal to the total time each day when the flow of gas to S2.004a, S2.004b, and S2.004c is greater than zero.                                                                                                                                               |
| Monitor & Record the consumption rate (scf) of Natural Gas for S2.004a by multiplying the maximum hourly consumption rate by the total daily hours of operation<br>Frequency – Daily                | Monitor & Record the consumption rate (scf) of Natural Gas for S2.004a<br>Frequency – Daily                                                                                                                                                                                                                                                                                                                                 |
| Monitor & Record the consumption rate (scf) of Waste Gas/Off-Spec RNG Gas for S2.004b by multiplying the maximum hourly consumption rate by the total daily hours of operation<br>Frequency – Daily | Calculate & Record the consumption rate (dscf) of biogas and RNG for S2.004b<br>Frequency – Daily<br>Calculation Method – The daily throughput (dscf) of biogas for S2.004b is the sum of the throughput in (acf, wet), corrected to a dry, standard basis assuming 100% relative humidity in the biogas measured as it enters S2.004b. RNG is assumed to be dry and is corrected to scf based on temperature and pressure. |
| Monitor & Record the consumption rate (scf) of Waste Gas/Off-Spec RNG Gas for S2.004c by multiplying the maximum hourly consumption rate by the total daily hours of operation<br>Frequency – Daily | Calculate & Record the consumption rate (dscf) of biogas and RNG for S2.004c<br>Frequency – Daily<br>Calculation Method – The daily throughput (dscf) of biogas for S2.004c is the sum of the throughput in (acf, wet), corrected to a dry, standard basis assuming 100% relative humidity in the biogas measured as it enters S2.004c. RNG is assumed to be dry and is corrected to scf based on temperature and pressure. |
| Conduct and Record an observation of visible emissions (excluding water vapor) on the Stack of S2.004 while operating.<br>Frequency - Monthly                                                       | Conduct and Record an observation of visible emissions (excluding water vapor) on the Stack of S2.004 while operating <sup>[1]</sup> or record that S2.006 did not operate during daylight hours during the calendar month.<br>Frequency - Monthly                                                                                                                                                                          |
| Inspect S2.004 in accordance with the manufacturer's operation and maintenance manual and record the results and any corrective actions taken.                                                      | Inspect S2.004 in accordance with the manufacturer's operation and maintenance manual and record the results and any corrective actions taken.                                                                                                                                                                                                                                                                              |

<sup>[1]</sup> If the flare has not operated during daylight hours during any month, the Facility shall complete the observation during the next daylight flaring event. The Facility shall not be required to operate the flare solely to complete an opacity observation.

### 2.2.3 Biogas Processing System Monitoring & Recordkeeping (S2.005)

The current permit requires CEA RNG to monitor and record inlet throughput of biogas, outlet throughput of exhaust biogas, and hours of operation for the BPS. The BPS is not equipped with an hour meter to directly measure hours of operation. Therefore, hours of operation must be calculated using another parameter as an indicator that the BPS is operating. The parameter utilized by the Facility to indicate operation of the BPS is inlet flow of biogas. The BPS is assumed to be operating at any time when the inlet flow of biogas from the ADs is greater than zero.

The Facility directly measures biogas throughput on a wet basis (scf) and RNG output on a dry basis (dscf). The BSP is not equipped with a monitor on the exhaust from the BUS to measure BUS Permeate. BUS Permeate flow must be calculated by subtracting the RNG flow (dscf) from the inlet biogas flow rate in scf, corrected to a dry basis (dscf). Biogas throughput is corrected from a wet to a dry basis assuming 100 percent relative humidity.

**Table 2-9**  
**Proposed Monitoring and Recordkeeping Revisions (S2.005)**

| <b>Current Monitoring &amp; Recordkeeping</b>                                     | <b>Proposed Monitoring &amp; Recordkeeping</b>                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitor & Record the throughput of Raw Biogas for S2.005<br>Frequency – Daily     | Calculate & Record the throughput of Biogas (dscf) for S2.005<br>Frequency – Daily<br>Calculation Method – The daily throughput (dscf) of biogas for S2.005 is the total biogas flow measured to the BPS in (acf, wet), corrected to a dry, standard basis assuming 100% relative humidity in the biogas measured as it enters S2.005. |
| Monitor & Record the throughput of Exhaust Biogas for S2.005<br>Frequency – Daily | Calculate & Record the throughput of BUS Permeate (dscf) for S2.005<br>Frequency – Daily<br>Calculation Method – The daily throughput (dscf) of BUS Permeate for S2.005 is the difference of the biogas throughput (dscf) and the RNG output of S2.005 (dscf).                                                                         |
| Monitor & Record the Hours of Operation for S2.005<br>Frequency – Daily           | Calculate & Record the Hours of Operation for S2.005<br>Frequency – Daily                                                                                                                                                                                                                                                              |



|                                                                                           |                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                           | Calculation Method – Daily Hours of Operation <sup>[1]</sup> will be equal to the total time each day when the flow of gas to S2.005 is greater than zero.                                                                                                                                                        |
| Record the Average Hourly Throughput (scf/hr) for S2.005<br>Frequency – Daily             | Calculate and Record – Hourly Average Throughput (dscf/hr) for S2.005<br>Frequency – Daily<br>Calculation Method – Hourly Average Throughput (dscf/hr) will be calculated by dividing the Total Daily Throughput (dscf) for S2.005 by the Daily Hours of Operation of S2.005.                                     |
| Record the Average Hourly Exhaust Gas Throughput (scf/hr) for S2.005<br>Frequency – Daily | Calculate and Record – Hourly Average Exhaust Gas Throughput (dscf/hr) for S2.005<br>Frequency – Daily<br>Calculation Method – Hourly Average Exhaust Gas Throughput (dscf/hr) will be calculated by dividing the Total Daily Exhaust Gas Throughput (dscf) for S2.005 by the Daily Hours of Operation of S2.005. |
| Record the Annual Throughput (scf/yr) for S2.005<br>Frequency – Annually                  | Calculate and Record – Annual Throughput (dscf/yr) for S2.005<br>Frequency – Monthly<br>Calculation Method – Annual Throughput (dscf/yr) will be calculated by summing the Daily Biogas Throughput (dscf/day) for S2.005.                                                                                         |
| Record the Annual Exhaust Gas Throughput (scf/yr) for S2.005<br>Frequency – Annually      | Calculate and Record – Annual Exhaust Gas Throughput (scf/yr) for S2.005<br>Frequency – Monthly<br>Calculation Method – Annual Exhaust Gas Throughput (dscf/yr) will be calculated by summing the Daily Exhaust Gas Throughput (dscf/day) for S2.005.                                                             |

<sup>[1]</sup> Hours of operating for the BPS includes hours of operating time when venting through the contingency vent (S2.006).

#### 2.2.4 Digester Contingency Venting Monitoring & Recordkeeping (S2.006)

The Facility's current permit requires monitoring of hours of operation and throughput for the contingency vent, S2.006. The Facility does not directly monitor flow or hours of operation for S2.006 as there are no parametric monitoring systems installed on the contingency vent. All throughput and operating parameters for S2.006 are calculated based on monitoring conducted elsewhere in the process. For example, hours of operation for S2.006 are determined based on a manual log of when the vent is

open and closed. During these times, it is assumed that the inlet flow to S2.005 is all vented. A summary of these updated requirements is provided in Table 2-10.

**Table 2-10**  
**Proposed Monitoring and Recordkeeping Revisions (S2.006)**

| <b>Current Monitoring &amp; Recordkeeping</b>                                                                                                                     | <b>Proposed Monitoring &amp; Recordkeeping</b>                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitor & Record the Throughput of Raw Biogas for S2.006<br>Frequency – Daily                                                                                     | Calculate & Record the throughput of Biogas (dscf) for S2.006.<br>Frequency – Daily<br>Calculation Method – The daily throughput (dscf) of biogas for S2.006 is the total biogas flow measured to S2.005 in (acf, wet), corrected to a dry, standard basis assuming 100% relative humidity in the biogas measured as it enters S2.006, during times when it is manually logged that the vents were open. |
| Monitor & Record the Hours of Operation for S2.006<br>Frequency – Daily                                                                                           | Calculate & Record the Hours of Operation for S2.006<br>Frequency – Daily<br>Calculation Method – Daily Hours of Operation will be equal to the sum of the total time each day when valves were opened, as noted in the manual log.                                                                                                                                                                      |
| Record the Average Hourly Throughput (scf/hr) for S2.006<br>Frequency – Daily                                                                                     | Calculate and Record – Hourly Average Throughput (dscf/hr) for S2.006<br>Frequency – Daily<br>Calculation Method – Hourly Average Throughput (dscf/hr) will be calculated by dividing the Total Daily Throughput (dscf) for S2.006 by the Daily Hours of Operation of S2.006.                                                                                                                            |
| Record the Annual Throughput (scf/yr) for S2.006<br>Frequency – Annually                                                                                          | Calculate and Record – Annual Throughput (dscf/yr) for S2.006<br>Frequency – Monthly<br>Calculation Method – Annual Throughput (dscf/yr) will be calculated by summing the Daily Biogas Throughput (dscf/day) for S2.006.                                                                                                                                                                                |
| Conduct and Record an observation of visible emissions (excluding water vapor) on the Stack of S2.006 while operating.<br>Frequency - Monthly                     | Conduct and Record an observation of visible emissions (excluding water vapor) on the Stack of S2.006 while operating or record that S2.006 did not operate during the calendar month.<br>Frequency – Monthly                                                                                                                                                                                            |
| Inspect Sulfur Removal Unit (SRU) in accordance with the manufacturer's operation and maintenance manual and record the results and any corrective actions taken. | Inspect the SRU in accordance with the manufacturer's operation and maintenance manual and record the results and any corrective actions taken.                                                                                                                                                                                                                                                          |

### **3. FACILITY AND PROCESS DESCRIPTION**

The following section presents a description of the Facility location and process description.

#### **3.1 FACILITY LOCATION**

The Dairy is located in Lyons County, which is located in the western portion of the State of Nevada, 9 miles north-northwest of the town of Yerington. The North American Datum of 1983 (NAD83) coordinates of the site are 39° 6' 18.93" N latitude and 119° 14' 35.57" W longitude. The Facility is located on the north side of the Dairy. The Facility's physical address is 350 Campbell Lane, Yerington, NV 89447-9731. The location of the Facility is depicted on Figure 1.

The activities at the Facility generally fall under Standard Industrial Classification (SIC) code 4925, *Mixed, Manufactured, or Liquefied Gas Production*, and North American Industrial Classification System (NAICS) code 325120, *Industrial Gas Manufacturing*.

#### **3.2 PROCESS DESCRIPTION**

The following sections present a description of the RNG production process from digestion through RNG truck loading, including utilities. The Facility's Process Flow diagram is depicted on Figure 2.

##### **3.2.1 Utilities**

The facility operates two 3 MMBtu/hr natural gas-fired boilers (IA1.001 and IA1.002) to provide heat to the ADs for temperature control and a 151 kW (204 hp) natural gas-fired emergency generator (S2.001) that operates in the event of loss of commercial power and up to 100 hours per year for non-emergency purposes.

##### **3.2.2 Anaerobic Digestion**

The high solids manure slurry received from the Dairy is pumped to the ADs. The ADs are equipped with a mixing system to recirculate the manure slurry in order to maintain a homogenous temperature of



approximately 104 °F. Heat for the ADs is provided by the two natural gas boilers. The ADs are expected to generate a combined maximum of 460 scfm of raw biogas based on a wet basis under normal operating conditions and with the expected raw material feed rate. However, the maximum design capacity of the ADs is 575 scfm of biogas.

The ADs are equipped with flexible covers, allowing for biogas to be collected in the freeboard space above the manure slurry in the tanks. Biogas generated through the anaerobic digestion process contains methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ammonia (NH<sub>3</sub>), H<sub>2</sub>S, and negligible quantities of VOC. Without managing the H<sub>2</sub>S content, the H<sub>2</sub>S content of biogas generated from anaerobic digestion is typically equal to or less than 2,000 ppmv (dry basis), but can reach up to 8,000 ppmv (dry basis). The H<sub>2</sub>S concentration in the ADs is managed using methods including but not limited to oxygen injection and/or the use of additives (e.g., MicroNO<sub>x</sub><sup>2</sup>), as needed. With these management techniques, the H<sub>2</sub>S content in the ADs will not exceed 6,800 ppmv (dry basis).

During normal operations, the biogas generated in the ADs is routed to the biogas processing system for upgrading to RNG, and the liquid effluent that exits the ADs is separated from the effluent solids and returned to the Dairy.

Pressure in the freeboard space in the ADs is maintained less than 5 millibar (mbar). Pressure in the ADs can be reduced by sending gas from the ADs to the BPS or by flaring. In the event that gas cannot be sent to the BPS or flared, the ADs are equipped with pressure relief valves (PRVs) designed to open at 5 mbar. In the event pressure in the ADs exceeds the PRV setpoint, the valves automatically open to vent biogas directly to atmosphere.

The ADs also vent biogas to the atmosphere during startup, shutdown, and maintenance or other “Events” as described in Section 2.4.2.3. When the ADs are emptied, biogas is flared until the methane content is too low for it to be combusted. Once the biogas is not combustible, it is vented through the contingency vent when it is available or directly to atmosphere via the PRVs.

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<sup>2</sup> MicroNO<sub>x</sub> is an iron-rich additive that can be used to reduce H<sub>2</sub>S concentrations within the ADs. <https://biobooster.de/services/biological-service/>

### 3.2.3 Biogas Processing System

The Facility utilizes a Quadrogen Integrated BPS to remove impurities (e.g.,  $\text{H}_2\text{S}$ ,  $\text{H}_2\text{O}$ ,  $\text{CO}_2$ , etc.) from biogas in order to produce pipeline quality RNG and to protect downstream equipment from corrosion and failure. The BPS has a maximum short-term processing capacity of 777 scfm.

The first stage of the BPS is a biogas conditioning module (BCM), which generally consists of condensers, chillers, VOC and  $\text{NH}_3$  removal, an SRU, and an electric compressor. The final stage of the BPS is the BUS, a biogas membrane separator which produces a permeate stream rich in  $\text{CO}_2$  and a retentate stream rich in  $\text{CH}_4$ .

The first step in the BCM is to knockout water prior to sending the biogas to the feed gas cooler and second water knockout tank. The biogas then flows into the SRU, which is an essential piece of process equipment that removes sulfur from the biogas to ensure the RNG meets pipeline quality and tariff standards. The SRU consists of two sets of high-capacity media beds which use an adsorbent (e.g., iron oxide) to capture  $\text{H}_2\text{S}$ . The exit gas from the SRU has less than or equal to 10 ppmv  $\text{H}_2\text{S}$  (dry basis). During normal operations, after passing through the SRU, the biogas is then compressed through a water separator and then treated to remove  $\text{NH}_3$  and VOC. The effluent liquid leaves the BCM and is transferred to the existing lagoons at the Dairy. The biogas then has less than 10 ppmv  $\text{NH}_3$  (dry basis). For the purposes of this application, CEA RNG has not taken credit for VOC reduction in the BPS.

The Facility utilizes a fast-cycle PSA System to upgrade the biogas to RNG in the BUS. The PSA removes  $\text{CO}_2$  through a cycle of four phases: pressure build-up, adsorption, depressurization, and regeneration. In the adsorption phase,  $\text{CO}_2$  is adsorbed onto the media beds and, during normal operations, the retentate is pipeline-quality RNG. In the event that effluent gas from the BPS does not meet quality specifications or cannot be compressed into trucks, it is routed to the flare. The remaining contaminants (e.g.,  $\text{H}_2\text{S}$  at 20 ppmv, dry basis) captured in the PSA media bed is evacuated using three vacuum blowers and the BUS permeate is vented to atmosphere via the BPS vent (S2.005).

### 3.2.4 Flaring

The Facility is equipped with a 750 dscfm capacity, pilot-assisted automatic ignition, flare using pipeline quality natural gas as a pilot fuel. The flare has a destruction efficiency of greater than or equal to 95% for VOC and H<sub>2</sub>S. The flare has the potential to receive biogas streams from the ADs (raw or treated biogas) or RNG (post-BPS). Conditioned biogas streams cannot be routed to the flare.

Raw and treated biogas can be flared if it is not possible to send the gas through the BPS (such as during maintenance activities); during startup and shutdown of the ADs when the biogas has insufficient methane concentration to be processed through the BPS; or during offsite downstream trucking or pipeline interruptions. Flaring emissions of raw or treated biogas are captured under either Flaring – Maintenance Emissions Unit (S2.004b) or Startup and Shutdown Emission Unit (S2.004c). Treated biogas may be flared if the concentration of H<sub>2</sub>S is less than or equal to 5,000 ppm H<sub>2</sub>S. Biogas with H<sub>2</sub>S content greater than 5,000 ppm H<sub>2</sub>S will be vented via the contingency vent, after sulfur removal.

RNG from the BPS is flared during periods when it is not possible to load the RNG trucks, which can be due to truck loading station maintenance or malfunction, RNG is off-spec, offsite downstream trucking or pipeline interruptions, etc. All flaring of RNG is captured under Flaring – Maintenance Emission Unit (S2.004b) or Flaring – Startup & Shutdown (S2.004c).

#### 4. FACILITY EMISSION CALCULATIONS

PTE for the Facility was calculated as described in this section. Updates to emissions factors were made in instances where more representative data became available. Other updates include changes to equipment throughputs and assumptions utilized to estimate the PTE from the facility as discussed in Section 2. Table 4-1 below provides the PTE for the Facility.

CEA has included a conservative estimate of the emissions associated with AD startup and shutdown in the PTE calculations by assuming a certain volume of gas is vented directly through the AD PRVs in addition to continuous operation of the contingency vent each year, as well as assuming that the flare may combust up to 135 MMdscf/yr of treated biogas and up to 70 MMdscf/yr RNG. Short-term (e.g., hourly up to 24 hours) emissions are calculated assuming worst-case short-term flow rates (dscfm), while annual emissions are calculated based on worst-case annualized total flow rates (MMdscf/yr).



**Table 4-1**  
**Uncontrolled Potential-to-Emit (tons/yr)**

| Emission Unit ID                     | Emission Unit Description                                          | PM          | PM <sub>10</sub> | PM <sub>2.5</sub> | CO           | NO <sub>x</sub> | SO <sub>2</sub> | VOC         | H <sub>2</sub> S |
|--------------------------------------|--------------------------------------------------------------------|-------------|------------------|-------------------|--------------|-----------------|-----------------|-------------|------------------|
| S2.001                               | Emergency Generator                                                | 8.38E-04    | 8.38E-04         | 8.38E-04          | 0.09         | 0.04            | 4.94E-05        | 0.02        | --               |
| S2.002 & S2.003                      | Anaerobic Digester Tanks 1 and 2                                   | --          | --               | --                | --           | --              | --              | 9.66E-04    | 1.46             |
| S2.004a, S2.004b, & S2.004c          | Flare – Pilot<br>Flare – Maintenance<br>Flare - Startup & Shutdown | 0.14        | 0.54             | 0.54              | 21.60        | 4.97            | 20.55           | 0.39        | 10.93            |
| S2.005                               | Biogas Processing System (BPS)                                     | --          | --               | --                | --           | --              | --              | 5.18E-02    | 0.16             |
| S2.006                               | Digester Contingency Venting (treated biogas)                      | --          | --               | --                | --           | --              | --              | 8.05E-03    | 12.13            |
| IA1.001 & IA1.002                    | Boilers 1 and 2                                                    | 0.02        | 0.10             | 0.10              | 1.08         | 1.29            | 7.73E-03        | 7.09E-02    | --               |
| IA1.003                              | Fugitive: Equipment Leaks                                          | --          | --               | --                | --           | --              | --              | 3.04E-04    | 0.29             |
| IA1.004                              | Fugitive: Solid Digestate Storage                                  | 3.72        | 1.76             | 0.27              | --           | --              | --              | --          | --               |
| IA1.005                              | Fugitive: Truck Traffic                                            | 4.84        | 1.31             | 0.13              | --           | --              | --              | --          | --               |
| <b>Total (as proposed)</b>           |                                                                    | <b>8.72</b> | <b>3.71</b>      | <b>1.04</b>       | <b>22.77</b> | <b>6.30</b>     | <b>20.55</b>    | <b>0.56</b> | <b>24.97</b>     |
| <b>Total (current permit)</b>        |                                                                    | --          | 0.40             | 0.34              | 4.51         | 3.43            | 10.84           | 0.23        | 13.47            |
| <b>Total (change) <sup>[1]</sup></b> |                                                                    | --          | 3.31             | 0.70              | 18.26        | 3.62            | 9.71            | 0.33        | 11.5             |

<sup>[1]</sup> Total change represents the increase in the PTE from the facility from the current permit for the facility to the PTE as calculated under the proposed operating and emissions limitations in this application. SO<sub>2</sub>, CO and NO<sub>x</sub> increases are the result of an increase in the assumed annual maximum flared gas.

#### **4.1 EMERGENCY GENERATOR (S2.001)**

The emergency generator (S2.001) is a 151 kW (204 hp) natural gas-fired four-stroke, lean burn engine used in case of a power outage and up to 100 hours per year for non-emergency purposes. The only emissions from the emergency generator are pollutants associated with the combustion of pipeline-quality natural gas. Potential emissions from the emergency generator have been estimated using applicable emission limits from 40 CFR 60, Subpart JJJJ, supplementing with emission factors from AP-42 Chapter 3.2. Short-term emissions from the emergency generator assumes the unit is running at maximum heat input capacity and annual emissions assume the unit is running at maximum capacity for 100 hours per year of operation in accordance with NDEP guidance.<sup>3</sup>

#### **4.2 BIOGAS PRODUCTION PROCESS**

Emissions from the biogas production process can be divided into two separate scenarios: emissions during normal operations, such as flaring biogas and/or off-spec RNG; and emissions during maintenance, startup, and shutdown, such as flaring, contingency venting, and direct venting. The emissions and change in total uncontrolled PTE based on updates are discussed below.

##### **4.2.1 Normal Operations**

Emissions from the biogas production process during normal operations are generally limited to fugitive equipment leaks (IA1.003) and the BUS Permeate exhaust (S2.005). BUS Permeate exhaust emissions are calculated based on the flowrate of the BUS Permeate and calculated concentrations of pollutants present in conditioned biogas. The chemical concentrations in the BUS Permeate stream were calculated using a mass balance approach, with worst-case conditioned biogas concentrations and maximum biogas flow as the inlet feed and RNG plus BUS Permeate as the outlets. Concentrations of individual hazardous air pollutants and other organic pollutants in biogas and RNG were obtained from the GTI Energy guidance document.

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<sup>3</sup> Operating hours only include non-emergency operating hours, as noted in Condition V.A.2.c.2. There is no limit on use during emergency situations [40 CFR 63.6640(f)(1)].

#### 4.2.2 AD Venting (Direct and Contingency)

Biogas is normally maintained within the digester headspace; when the gas holder volume reaches capacity, the pressure relief vents on top of the digesters (S2.002 and S2.003) open to release biogas and prevent the flexible membrane cover from rupturing. Quantifying the actual amount of biogas vented, requires the Facility to take the following steps:

- The facility continuously monitors actual gas holder volume. This monitoring data will be used to identify the periods when one or more digesters are at capacity and therefore venting.
- The production rate during each venting is assumed to be equal to the maximum short-term production capacity of the two-unit anaerobic digestion system, 575 scfm. If only one digester was full/at capacity, then half of this rate (287.5 scfm) is assumed since only one tank was venting. Note: The system does not typically operate at its nameplate generating capacity; this is a conservative assumption.
- The facility also continuously monitors the inlet flow to the upgrading process "Processing Rate (scf)" and the inlet flow to the flare "Flare Rate (scf)"
- The actual venting rate is calculated for each minute as follows:
$$\text{Venting Rate (scfm)} = \text{Production Rate (scfm)} - \text{Processing Rate (scfm)} - \text{Flare Rate (scfm)}$$
- Annual vented volume will be calculated by summing each of the individual events during the prior 12-month period.
- H<sub>2</sub>S emissions are calculated using actual measured H<sub>2</sub>S data. An event-specific H<sub>2</sub>S emission factor will be developed for each venting event, applied to that event's throughput, and summed to calculate the annual emissions of H<sub>2</sub>S.

Annual emissions from direct venting through the PRVs assumes a maximum of 12 MMdscf/year of biogas is released to the atmosphere from the ADs. The PTE includes 75 MMdscf/year of direct venting through the contingency vent as a conservative assumption. Venting through the contingency vent is monitored directly and recorded on-site. Meter data will be used to track the monthly and annual flow of biogas through the contingency vent.

#### 4.2.3 Raw and Treated Biogas & RNG Flaring

As noted above, raw or treated biogas or RNG from the process is routed to the flare for multiple reasons, including but not limited to startups, shutdowns, malfunctions, or maintenance scenarios. Emissions from the flare were conservatively estimated assuming a flow of up to 135 MMdscf of raw or treated biogas and 70 MMdscf of RNG will be flared during any annual period.

The composition of raw and treated biogas was based on the worst-case contents in the GTI Energy guidance document on a pollutant-by-pollutant basis, with the exception of H<sub>2</sub>S, which was assumed to have a maximum concentration of 5,000 ppmv<sup>4</sup> on a short-term basis and an annual average of 1,800 ppmv.<sup>5</sup> Biogas with concentrations of H<sub>2</sub>S in excess of 5,000 ppmv that cannot be processed may be vented to the contingency vent, which will reduce the H<sub>2</sub>S concentration to less than 10 ppmv.

The flare achieves greater than 95% reduction for H<sub>2</sub>S and VOC. For the purposes of SO<sub>2</sub> emissions calculation, CEA RNG has assumed that 100% of the H<sub>2</sub>S sent to the flare from either gas stream is converted to SO<sub>2</sub>. Emissions from flare combustion were calculated using maximum short-term and annual flow rates and emission factors from Chapter 1.4, AP-42 Chapter 13.5 and 40 CFR Part 98, Subpart C. Detailed emissions calculations for flare operation are provided in Appendix B.

#### 4.3 INSIGNIFICANT SOURCES

The Facility operates multiple insignificant activities including two natural gas-fired boilers, fugitive equipment leaks, solids storage and handling, and truck traffic. Each of these sources are included in the facility-wide PTE calculations, but no changes are being made to this equipment as part of this permit modification.

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<sup>4</sup> H<sub>2</sub>S concentrations inside some digesters have been measured at up to 8,000 ppmv (dry basis), but the Facility operates the ADs such that the concentration in H<sub>2</sub>S will not exceed 6,800 ppmv (dry basis). For purposes of conservative PTE calculations, the Facility will only flare gas with H<sub>2</sub>S concentration less than or equal to 5,000 ppmv (dry basis).

<sup>5</sup> Annual emissions calculations for the flare assume 100% of biogas is 'treated biogas' with an H<sub>2</sub>S concentration of 1,800 ppmv (dry basis).



## **5. REGULATORY APPLICABILITY ANALYSIS**

This section summarizes the Federal and state regulatory applicability to the Facility's emissions sources. There are no changes to regulatory applicability as a result of this permit modification.

### **5.1 PERMITTING PROGRAMS**

#### **5.1.1 Title V (Part 70) Operating Permit Program**

The Title V (Part 70) Operating Permit Program requires facilities that meet the definition of a major source to obtain a Title V Operating Permit. According to 40 CFR Part 70.2, a major source is defined as a stationary source that has the potential to emit 100 tons per year or more of any criteria pollutant, 10 tons per year or more of a single HAP, and/or 25 tons per year or more of total combined HAPs. The PTE of the Facility is less than the applicable Title V thresholds and is therefore a minor source. The proposed revisions to the permit will not affect the Facility's minor source status.

#### **5.1.2 Prevention of Significant Deterioration (PSD)**

The federal PSD program, codified in 40 CFR §52.21, requires any new major stationary source of air pollutants to obtain a major source air construction permit before commencing construction. Nevada has incorporated the federal PSD program at NAC 445B.221. The Facility is not a major source with respect to the PSD program and will not become a major source because of the proposed modifications. As such, the PSD program does not apply.

#### **5.1.3 Nonattainment Area New Source Review (NNSR)**

Under NAC 445B.308.4, the NNSR program applies to a facility located in a nonattainment area that emits or has the potential to emit greater than the major source threshold quantities of nonattainment pollutants. The Facility is located in Lyons County, which is designated as being in attainment or unclassifiable status for all pollutants. As such, the NNSR program does not apply to the Facility.

#### 5.1.4 Nevada State Operating Permit Program

The Facility currently operates under Class II Air Quality Operating Permit No. AP4925-4325. The provisions for revision of an operating permit are contained in NAC 445B.3465 and are applicable to any stationary source with a Class II operating permit. CEA RNG is submitting this permit modification application in accordance with the Class II permit modification requirements. The proposed revisions to the permit will not affect the Facility's status as a Class II operating permit holder. A comparison of facility-wide PTE to the Class II permitting thresholds is provided in Table 5-1.

**Table 5-1**  
**Class II Air Quality Operating Permit Applicability Summary**

| <b>Emission Unit ID</b>               | <b>Emission Unit Description</b>           | <b>PM (tpy)</b> | <b>PM<sub>10</sub> (tpy)</b> | <b>PM<sub>2.5</sub> (tpy)</b> | <b>CO (tpy)</b> | <b>NO<sub>x</sub> (tpy)</b> | <b>SO<sub>2</sub> (tpy)</b> | <b>H<sub>2</sub>S (tpy)</b> | <b>VOC (tpy)</b> |
|---------------------------------------|--------------------------------------------|-----------------|------------------------------|-------------------------------|-----------------|-----------------------------|-----------------------------|-----------------------------|------------------|
| S2.001                                | Emergency Generator                        | 8.38E-04        | 8.38E-04                     | 8.38E-04                      | 0.09            | 0.04                        | 4.94E-05                    | --                          | 0.02             |
| S2.002 & S2.003                       | Anaerobic Digester Tanks 1 and 2           | --              | --                           | --                            | --              | --                          | --                          | 2.70                        | 1.29E-03         |
| S2.004a, S2.004b, & S2.004c           | Flare Combustion                           | 0.54            | 0.54                         | 0.54                          | 21.60           | 4.97                        | 20.55                       | 0.74                        | 0.39             |
| S2.005                                | Biogas Processing System                   | --              | --                           | --                            | --              | --                          | --                          | 0.16                        | 5.81E-02         |
| S2.006                                | Digester Contingency Vent (treated biogas) | --              | --                           | --                            | --              | --                          | --                          | 0.03                        | 0.01             |
| IA1.001 & IA1.002                     | Boilers 1 and 2                            | 0.10            | 0.10                         | 0.10                          | 1.08            | 1.29                        | 7.73E-03                    | --                          | 7.09E-02         |
| IA1.003                               | Fugitive: Equipment Leaks                  | --              | --                           | --                            | --              | --                          | --                          | 0.29                        | 3.04E-04         |
| IA1.004                               | Fugitive: Solid Digestate Handling         | 3.72            | 1.76                         | 0.27                          | --              | --                          | --                          | --                          | --               |
| IA1.005                               | Fugitive: Truck Traffic                    | 4.84            | 1.31                         | 0.13                          | --              | --                          | --                          | --                          | --               |
| <b>Total</b>                          |                                            | <b>9.20</b>     | <b>3.71</b>                  | <b>1.04</b>                   | <b>22.77</b>    | <b>6.30</b>                 | <b>20.55</b>                | <b>3.93</b>                 | <b>0.56</b>      |
| NAC 445B.037<br>Class II Permit (tpy) | Threshold                                  | --              | 5                            | 5                             | 50              | 5                           | 5                           | --                          | --               |
| Class II Permit required? (Y/N)?      |                                            | n/a             | No                           | No                            | No              | Yes                         | Yes                         | n/a                         | n/a              |

## **5.2 FEDERAL NEW SOURCE PERFORMANCE STANDARDS**

New Source Performance Standards (NSPS), codified in 40 CFR Part 60, establish pollutant emission limits and monitoring, reporting, and recordkeeping requirements for various emission sources based on source type and size. The NSPS apply to new, modified, or reconstructed sources. Nevada has incorporated the Federal NSPS by reference under NAC 445B.019.2. The applicability or non-applicability of relevant NSPS are described below.

### **5.2.1 40 CFR Part 60, Subpart A – NSPS General Provisions**

The Facility operates an emergency engine that is an affected facility under an NSPS subpart. Therefore, the Facility is subject to the applicable requirements of 40 CFR Part 60, Subpart A, General Provisions (NSPS General Provisions). There are no changes to the applicable requirements as a result of this permit modification.

### **5.2.2 40 CFR Part 60, Subparts D, Db, and Dc – NSPS for Steam Generating Units**

40 CFR Part 60, Subparts D, Db, and Dc cover steam-generating units. The boilers are the only equipment meeting the definition of a steam generating unit at the Facility. The boilers have a maximum heat input capacity of less than 10 MMBtu/hr. Therefore, Subparts D, Db, and Dc do not apply. There will be no changes to the applicability of this regulation because of this permit modification.

### **5.2.3 40 CFR Part 60, Subparts K, Ka, and Kb – NSPS for Volatile Organic Liquid Storage Vessels**

40 CFR Part 60, Subparts K, Ka, and Kb apply to volatile organic liquids (VOL) storage vessels of certain sizes that have been constructed, reconstructed, or modified during various time periods. Subparts K and Ka categorically do not apply to any sources at the Facility. Subpart Kb applies to storage vessels constructed, modified, or reconstructed after July 23, 1984 with a capacity greater than or equal to 75 cubic meters (m<sup>3</sup>), or approximately 19,813 gallons.

The terms process tank and storage vessel are defined at 40 CFR §60.111b as follows:

*Storage Vessel* means each tank, reservoir, or container used for the storage of volatile organic liquids but does not include: (1) Frames, housing, auxiliary supports, or other components that are not directly involved in the containment of liquids or vapors; (2) Subsurface caverns or porous rock reservoirs; or (3) Process tanks.

*Process Tank* means a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw material. In many process tanks, unit operations such as reactions and blending are conducted. Other process tanks, such as surge control vessels and bottoms receivers, however, may not involve unit operations.

The ADs function to produce biogas through anaerobic digestion. As such, the ADs meet the definition of 'process tank' at 40 CFR §60.111b and are not considered storage vessels. Therefore, Subpart Kb does not apply. There will be no changes to the applicability of this regulation as a result of the proposed permit modification.

#### **5.2.4 40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines**

There are no changes to the applicability or applicable requirements of 40 CFR Part 60, NSPS Subpart JJJJ (Subpart JJJJ) as a result of the proposed permit modification and horsepower (HP) update for the emergency generator.

Subpart JJJJ applies to emergency stationary SI ICE with a maximum engine power greater than 19 kW that are manufactured after January 1, 2009. The Facility's emergency generator was manufactured after January 1, 2009, and has a maximum engine power greater than 19 kW (25 hp). Therefore, it is subject to Subpart JJJJ per 40 CFR §60.4230(a)(4)(iv).



The emergency generator meets the standards in Subpart JJJJ, Table 1, as required by 40 CFR §60.4233(e). Per 40 CFR §60.4243(b)(1), the emergency generator is certified according to the procedures in Subpart JJJJ for the same model year. In accordance with §60.4243(a)(1), compliance with Subpart JJJJ is demonstrated by: (i) operating and maintaining each emergency generator in accordance with the manufacturer's emission-related instructions and (ii) keeping records of maintenance conducted.<sup>6</sup>

In order for the engine to be considered an emergency stationary ICE under Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs §60.4243(d)(1) through (3), is prohibited. Per §60.4243(d)(1) and (2), there is no time limit on the use of emergency stationary ICE in emergency situations and such engines can be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing.

#### **5.2.5 40 CFR Part 60, Subpart OOOOa – NSPS for Crude Oil and Natural Gas Facilities**

40 CFR Part 60, Subpart OOOOa (Subpart OOOOa) applies to affected facilities within the crude oil and natural gas source category that commence construction, modification, or reconstruction after September 18, 2015. Based on the definition at 40 CFR §60.5430a, the natural gas portion of the source category includes: *natural gas production, processing, transmission, and storage, which include (sic) the well and extend (sic) to, but do(sic) not include, the local distribution company custody transfer station.*<sup>7</sup> Although the term 'natural gas' is not defined in Subpart OOOOa, the above referenced definition of the source category suggests that the term as used in the context of Subpart OOOOa is intended to refer to a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface that are originally extracted from a well.

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<sup>6</sup> The facility may elect not to operate the engine in accordance with the manufacturer's emissions related instructions, and if so must develop a maintenance plan and may be required to conduct a performance test to demonstrate compliance with the applicable emission limits [40 CFR 60.4243(a)(2)].

<sup>7</sup> 81 FR 35934, 03 June 2016.

The Facility produces RNG by processing biogas that is produced in the ADs, not from wells. As such, RNG and precursor gases are not considered 'natural gas' as the term is used in Subpart OOOOa. Therefore, the requirements of Subpart OOOOa do not apply to the Facility.

#### **5.2.6 Non-Applicability of Other NSPS**

NSPS standards are developed for particular industrial source categories. The applicability of a particular NSPS to a facility can be ascertained based on the industrial source category covered. The applicability of potentially relevant NSPS were addressed above. In addition to those identified above as non-applicable, the remaining NSPS are not applicable to the Facility.

### **5.3 FEDERAL NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS**

The Facility is an area source of hazardous air pollutants (HAP) as defined in 40 CFR Part 63.2. National Emissions Standards for Hazardous Air Pollutants (NESHAP), codified in 40 CFR Parts 61 and 63, regulate HAP emissions from various affected sources. The applicability or non-applicability of potentially relevant NESHAP are described below.

#### **5.3.1 40 CFR 61, Subpart V – National Emission Standards for Hazardous Air Pollutants**

40 CFR 61, Subpart V applies to sources that are intended to operate in volatile hazardous air pollutant (VHAP) (i.e., benzene or vinyl chloride) service. As defined in 40 CFR §61.241, in VHAP service means that equipment contains or is in contact with at least 10 percent by weight of a VHAP. All streams at the Facility contain less than 10 percent by weight of VHAP. Therefore, Subpart V does not apply.

#### **5.3.2 40 CFR Part 63, Subpart A – General Provisions**

The Facility is Subject to 40 CFR Part 63, Subpart ZZZZ NESHAP for the emergency generator. Per 40 CFR §63.6590(c), for stationary reciprocating internal combustion engines (RICE) subject to NSPS Subpart JJJJ, the requirements of Part 63 are met by complying with NSPS Subpart JJJJ and "[n]o further requirements apply for such engines under [Part 63]." Therefore, the Facility is not subject to the applicable

requirements of 40 CFR Part 63 Subpart A, General Provisions. There will be no changes to the applicable requirements as a result of this permit modification.

### **5.3.3 40 CFR Part 63, Subpart HH – NESHAP from Oil and Natural Gas Production Facilities**

40 CFR Part 63, Subpart HH (NESHAP HH) applies to affected sources at oil and natural gas production facilities meeting the criteria at 40 CFR §63.760. The Facility produces RNG, which does not meet the definition of natural gas at 40 CFR Part 63.761 because RNG does not originate from geologic formations beneath the earth's surface. As such, NESHAP HH does not apply.

### **5.3.4 40 CFR Part 63, Subpart HHH – NESHAP from Natural Gas Transmission and Storage Facilities**

40 CFR Part 63, Subpart HHH (NESHAP HHH) applies to affected sources at natural gas transmission and storage facilities meeting the criteria at 40 CFR §63.1270. The Facility produces RNG, which does not meet the definition of natural gas at 40 CFR Part 63.1271 because RNG does not originate from geologic formations beneath the earth's surface. Further, NESHAP HHH only applies to major sources of HAPs per 40 CFR §63.1270(a) and the Facility is an area source of HAPs. For these reasons, NESHAP HHH does not apply.

### **5.3.5 40 CFR Part 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines**

This NESHAP applies to stationary reciprocating internal combustion engines (RICE) at major and area sources of HAPs. The engine at the Facility meets the definition of an emergency stationary RICE in §63.6675. Since the engine was constructed, i.e., ordered, after June 12, 2006, it is a 'new stationary RICE' per §63.6590(a)(2)(iii). Because the engine is also subject to NSPS Subpart JJJJ, no further requirements apply to the emergency generator under this NESHAP per §63.6590(c)(1). There will be no changes to the applicable requirements as a result of this permit modification.

### **5.3.6 40 CFR Part 63, Subpart DDDDD – NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters**

This NESHAP applies to an industrial, commercial, or institutional boiler or process heater, as defined in §63.7575, that is located at, or is part of, a major source of HAP emissions. The Facility is not a major source of HAP. Therefore, this NESHAP does not apply.

### **5.3.7 40 CFR Part 63, Subpart JJJJJ – NESHAP for Industrial, Commercial, and Industrial Boilers Area Sources**

This NESHAP applies to industrial, commercial, and institutional boilers of various sizes and fuel types that are included within a listed subcategory in §63.11200 and defined in §63.11237, located at area sources of HAP. The Facility is an area source of HAP. However, the boilers at the Facility only combust natural gas. Gas-fired boilers are not included in any of the subcategories in §63.11200. Therefore, Subpart JJJJJ does not apply to the boilers at the Facility.

### **5.3.8 Non-Applicability of Other NESHAP**

As with NSPS standards, NESHAP are developed for specific industrial source categories. Therefore, the applicability of a particular NESHAP can be readily ascertained based on the industrial source category covered. All NESHAP regulations in 40CFR Part 61 and 40 CFR Part 63, excluding those identified as potentially applicable and addressed above, are not applicable to the Facility.

## **5.4 CHEMICAL ACCIDENT PREVENTION**

Subpart B of 40 CFR. Part 68 outlines requirements for risk management prevention (RMP) plans pursuant to CAA Section 112(r). Applicability of this subpart is determined based on the type and quantity of the chemicals stored within a process as defined in 40 CFR 68.3. The Facility stores one or more RMP chemicals in quantities greater than the RMP trigger thresholds. Therefore, the Facility is subject to 40 CFR Part 68 and will comply with the applicable requirements thereunder.<sup>8</sup>

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<sup>8</sup> The facility is also subject to the requirements of the Chemical Accident Prevention Program codified in Nevada Revised Statute (NRS) 459.380 and has applied for coverage.



## 5.5 NEVADA AIR QUALITY REGULATIONS

The following section discusses applicable sections of Nevada Administrative Code (NAC 445 and 445B) of the Bureau of Air Pollution Control and Air Quality Planning of NDEP. There are no changes to applicability under NAC 445 and 445B as a result of this modification.

### 5.5.1 NAC 445B.2203 – Emission of Particulate Matter: fuel-burning equipment

This regulation limits the emissions of  $PM_{10}$  resulting from the combustion of fuel in fuel-burning equipment. The following are to be used to determine the appropriate limit:

For a maximum heat input  $\geq 4$  MMBtu/hr and  $\leq 10$  MMBtu/hr: 0.6 lb/MMBtu

For a maximum heat input  $\geq 10$  MMBtu/hr and  $\leq 4,000$  MMBtu/hr:

For a maximum heat input  $> 4,000$  MMBtu/hr:

Where: X = the maximum operating rate in million Btu's per hour

Y = the allowable rate of emission in pounds per million Btu's

The only fuel-burning equipment<sup>9</sup> at The Facility are the two (2) 3.0 MMBtu/hr boilers used to indirectly heat the ADs. The boilers are less than 4 MMBtu/hr, therefore this regulation does not apply.

### 5.5.2 NAC 445B.22033– Emission of Particulate Matter: Sources not otherwise limited

This regulation limits  $PM_{10}$  emissions from any emission unit not otherwise included in NAC 445B.22027 to 445B.22037. The particulate emissions limit is calculated based on the process weight rate of the operation, which is either based on batch or continuous operations, where:

For a process weight rate (P)  $\leq 30$  tons/hr:

For a process weight rate (P)  $> 30$  tons/hr:

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<sup>9</sup> Fuel burning equipment is defined in NAC 445B.073 and only includes direct and indirect heat transfer equipment, which excludes flares and emergency generators.



The sources of particulate matter emissions at the Facility include the boilers used for heating the ADs, the emergency generator, the flare, and the fugitive emissions from the solids stockpile (IA1.004). The boilers and the solids stockpile are covered under NAC 445B.22027 and 445B.22037, respectively. The emergency generator and flare are not subject to limitation elsewhere, so the limits as calculated using the equations above apply to both the emergency generator and flare.

The maximum process weight for the flare as calculated using a flow rate of 750 dscfm of biogas is 1.71 tons per hour, resulting in an emission limit of 5.87 lb/hr of PM<sub>10</sub>. The emergency generator has a maximum fuel usage of 1,679 scfm of natural gas, which results in a process weight rate of 0.04 ton/hr and emission limit of 0.44 lb/hr. The emissions limits for the flare and emergency generator are each in excess of their maximum hourly emission rate. Therefore, both the flare and the emergency generator are inherently in compliance with the applicable limitations.

#### **5.5.3 NAC 445B.22037– Emission of Particulate Matter: Fugitive dust**

This regulation prohibits the handling, transporting, or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.

#### **5.5.4 NAC 445B.22047– Sulfur emissions: Fuel-burning equipment**

This regulation limits the emission of compounds of sulfur resulting from the combustion of fuel in fuel-burning equipment. The following are to be used to determine the appropriate limit:

For a maximum heat input < 250 MMBtu/hr:

Where: X = the maximum operating rate in million Btu's per hour

Y = the allowable rate of emission of sulfur in pounds per hour

The only fuel-burning equipment at the Facility are the two (2) 3.0 MMBtu/hr boilers which combust natural gas and have an allowable sulfur emission rate of 2.1 lb/hr, each. The boilers are inherently in compliance with this requirement due to the low sulfur content of the natural gas fuel.

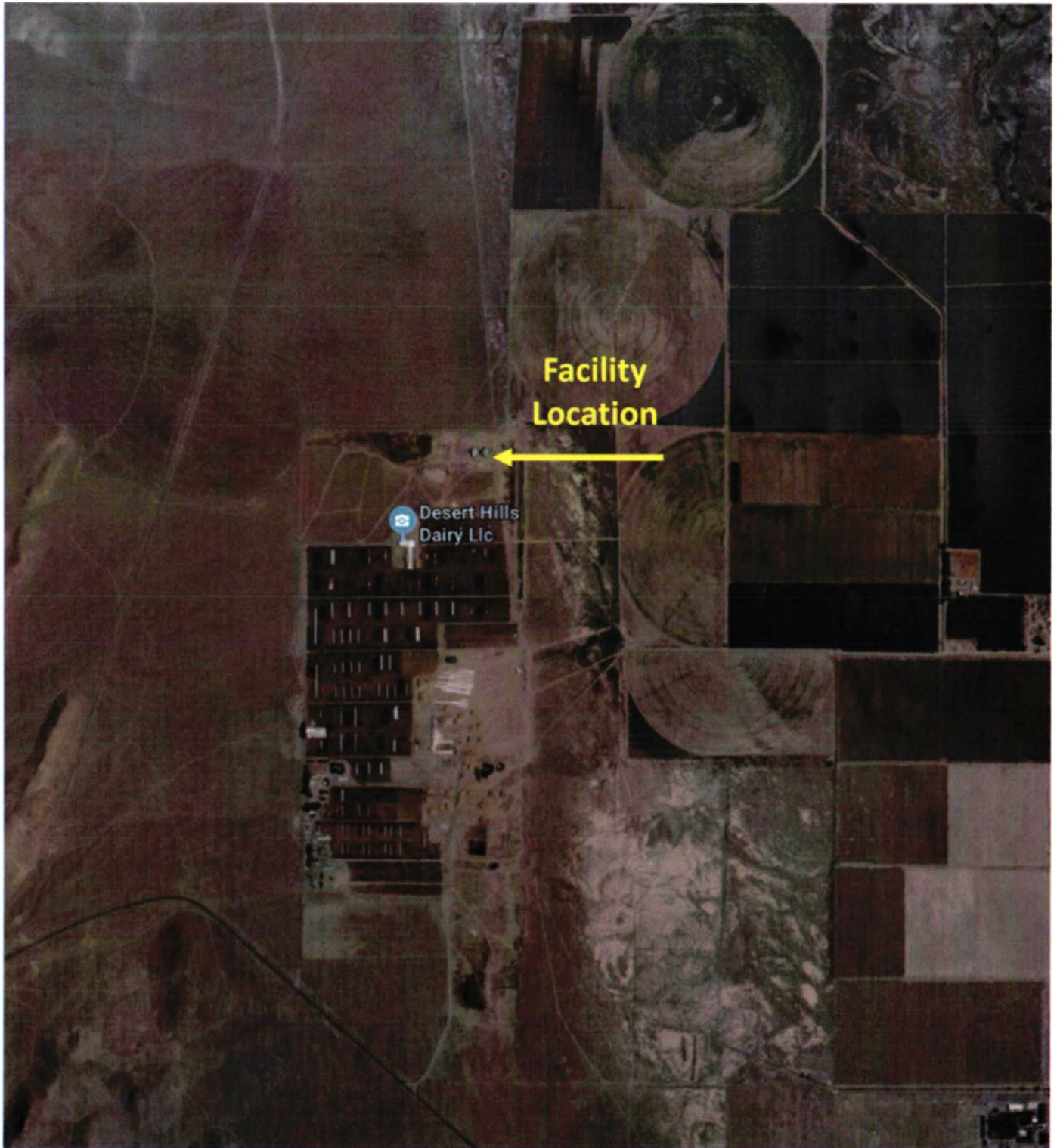
#### **5.5.5 NAC 445B.22017-Visible Emissions: Maximum Opacity; Determination and Monitoring of Opacity**

This regulation provides the opacity limits and the methods of determination of all emission units, unless otherwise provided in the regulation or in NAC 445B.2202. Per 445B.22017.1(a), visual measurement must be determined using EPA's Reference Method 9. All emissions units at the Facility have an opacity limit of 20%.

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## FIGURES

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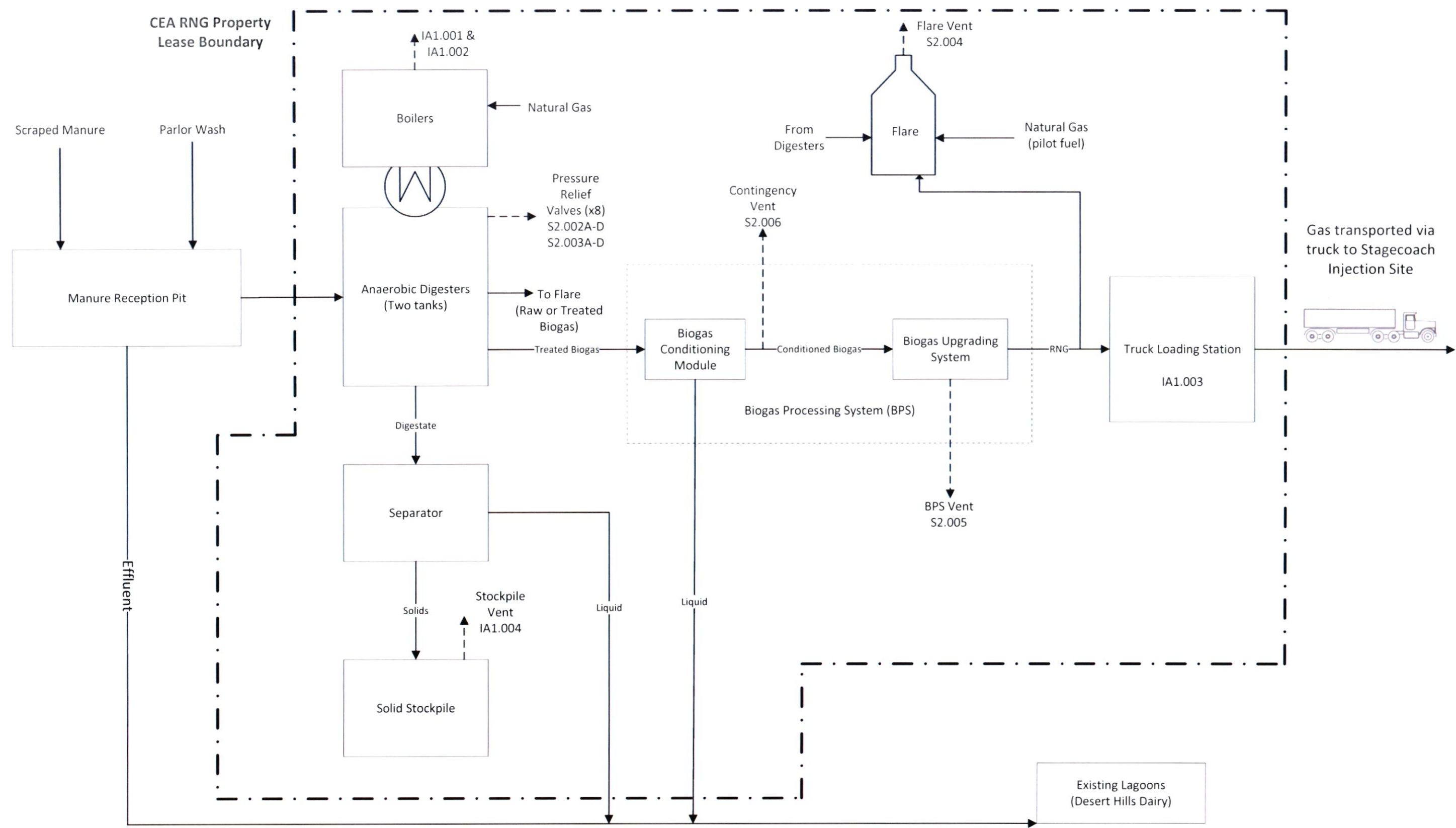
## VICINITY MAP

**Desert Hills Dairy**  
350 Campbell Lane  
Yerington, NV 98447

Notes: Imagery is from Google Earth, 10/16/2023.







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APPENDIX A -  
NDEP FORMS

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# **Class II Air Quality Operating Permit Application Form**

**Facility Name:** CEA Dairy - Desert Hills Dairy Farm

**Existing Facility ID:** A2295

**Existing Class II AQOP:** AP-4925-4325

**Type of Facility:** Renewable Natural Gas Production Facility

**Number of Units (including IA's) in Facility:** Eight (8)

**If a Revision, Number of Units (including IA's) Affected in Action:** NA

## **Application Type:**

- ☐ New AQOP  
☐ Revision of Existing AQOP  
☒ Renewal of Existing AQOP



### **Please Submit Application to:**

Nevada Division of Environmental Protection  
Bureau of Air Pollution Control, Class II Permitting Branch  
901 South Stewart Street, Suite 4001  
Carson City, Nevada 89701-5249  
Phone (775) 687-9349

February 2021  
(Ver. 5)

## IMPORTANT INFORMATION

- The Application packet contains:
  - General Company Information Form
  - Industrial Process Form
  - Combustion Equipment Form
  - Storage Silo Form
  - Liquid Storage Tanks Form
  - Insignificant Activities Form
  - Facility-Wide Potential to Emit Table
  - Surface Area Disturbance Form
  - Plant Boundary Coordinates Form
  - Plant Building Parameters Form
  - Application Certification Document with Required Attachments
- Please see the Guidance Document for additional instructions on how to complete the application.
- A printed copy of the application must be submitted (mailed or hand delivered), along with an electronic version.
- The application filing fee required by Nevada Administrative Code (NAC) 445B.327 must be submitted with the completed application. Checks must be made payable to the "Nevada State Treasurer, Environmental Protection" with "BAPC" noted in the memo line. Fees may also be submitted electronically at <https://epayments.ndep.nv.gov/>.
- This application shall be used for new Class II sources, revisions to existing Class II Air Quality Operating Permits, and the renewal of Class II Air Quality Operating Permits. This application packet is not for use for an Administrative Renewal, Administrative Amendment, a general permit, a stand-alone Surface Area Disturbance (SAD) permit, nor for a Request for Change of Location Approval permit for a temporary source.
- An application for a Class II Air Quality Operating Permit must be signed by the Responsible Official, as defined in NAC 445B.156. The certification/signature page is the last page of the application and the original "wet" signature must be provided.
- All items in the application must be addressed. If an item does not apply "N/A" or similar notation must be entered in the appropriate blank. All other information must be provided. Incomplete applications will be returned to the Responsible Official within 10 working days of receipt of the application.
- For the renewal of a Class II Operating Permit, a complete application and corresponding processing fee must be submitted in accordance with NAC 445B.3473, prior to the expiration date of the current permit. The BAPC suggests that the application be submitted well in advance of the timeline outlined in NAC 445B.3473 to ensure the application is deemed complete.
- If the facility applies for a permit that has not previously held a Class I or Class II operating permit, is located within 1,000 feet of a school, hospital, or residential area, or the Director determines that the change to the stationary source results in an increase in allowable emissions that exceeds the thresholds in NAC 445B.3457, the BAPC shall establish a 30-day period for public participation.

## GENERAL COMPANY INFORMATION FORM

1. Briefly describe the permitted facility's process and include the Standard Industrial Classification (SIC) number and North American Industry Classification System (NAICS). Add details in the attached Process Narrative.

SIC code 4925, *Mixed, Manufactured, or Liquefied Gas Production*, and NAICS code 221210, *Natural Gas Distribution*.

2. Company Name and Address that are to appear on the operating permit [NAC 445B.295(1)]:

Name: CEA Dairy RNG Nevada, LLC (CEA Dairy)

Address: 120 Tredegar Street

City: Richmond

State: VA

Zip Code: 23219

3. Owner's Name and Address [NAC 445B.295(1)]:

Name: same as above

Address:

City:

State:

Zip Code:

4. Facility Name and Address, if different from #2 [NAC 445B.295(1)]:

Name: Desert Hills RNG Production Facility

Address: 350 Campbell Lane

City: Yerington

State: NV

Zip Code: 98447-9731

5. If records are required under the operating permit will be kept at a location other than the facility, specify that location [NAC 445B.295(7)]:

Name: N/A

Address:

City:

State:

Zip Code:



## GENERAL COMPANY INFORMATION FORM (continued)

**6. Responsible Official Name, Title and Mailing Address [NAC 445B.295(1)]:**

Name: Joshua D. Eakle  
Title: Authorized Representative  
Address: 707 E. Main Street, 15th Floor  
City: Richmond  
State: VA Zip Code: 23219  
Phone Number: (804) 837-0613  
Fax Number: (N/A)  
E-mail Address: Joshua.d.eakle@dominionenergy.com

**7. Plant Manager or other appropriate Contact Name, Title and Address [NAC 445B.295(1)]:**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Phone Number: (xxx) xxx-xxxx  
Fax Number: (xxx) xxx-xxxx  
E-mail Address: \_\_\_\_\_

**8. Location and Driving Directions to the Facility (For Example: From Elko, Nevada, 4 miles south of I-80 at xx Interchange) [NAC 445B.295(8)]:**

Hydrographic Basin (HA) Number: Region 9: Walker River Region  
HA Basin Name: Mason Valley

Township(s): T14 N; Range(s): 24 E; Section(s): 01

UTM Coordinates for the Front Gate of the Facility (NAD 83, Zone 11):

\_\_\_\_\_ m North; \_\_\_\_\_ East; Nearest City:

Yerington \_\_\_\_\_

County: Lyons

Driving Directions from nearest city to the Facility: From Yerington, NV, Main St. go west on US-95 ALT North for 6.3 miles; turn left onto Campbell Lane, continue for 5 miles; the site entrance will be on the left.

## GENERAL COMPANY INFORMATION FORM (continued)

9. Emission Cap Requested [NAC 445B.070 and NAC 445B.296(2)]:

☒ Yes ☐ No (If yes, provide details in the attached Process Narrative)

10. **Important note** for completing the Industrial Process, Combustion Equipment, Storage Silo, and Liquid Storage Tank Application forms: forms need to be included for permitted emission units and insignificant activities. Provide additional forms as needed. All items in the application must be addressed. If an item does not apply then "N/A" or similar notation must be entered in the appropriate blank (TBD, unknown, etc.).

11. Is the Facility located within 1,000 feet of a school, hospital, or residential area?

☐ Yes ☒ No

12. Does the Facility require controls or other limit restrictions to remain a Class II source?

☐ Yes ☒ No

13. Has the facility provided modeling for each non-combustion baghouse individually?  
(See Testing Determination System for Baghouses Guidance Document)

☐ Yes ☐ No N/A

## INDUSTRIAL PROCESS APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: AD Vents

Emission Unit Description: PRV vents on Anaerobic Digesters (eight)

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation:

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in attached Process Narrative.

| Description                        |                                                                                                                                                                                                                                                                  |                                                                                                                  | Data                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>Equipment Description</b>       | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                                                                                                                                                       | eg. Unit ID: S2.001, PF1.001                                                                                     | S2.002 & S2.003                         |
|                                    | Source Classification Code (SCC)                                                                                                                                                                                                                                 | eg. 3-03-024-04 for Conveyors                                                                                    | 50300779                                |
|                                    | Manufacturer                                                                                                                                                                                                                                                     |                                                                                                                  | PlanET                                  |
|                                    | Date Manufactured                                                                                                                                                                                                                                                |                                                                                                                  | 2022                                    |
|                                    | Model Number                                                                                                                                                                                                                                                     |                                                                                                                  | N/A                                     |
|                                    | Equipment Dimensions (LxWxH)                                                                                                                                                                                                                                     | feet                                                                                                             | 112.5' (diameter) x 24.5' (height)      |
|                                    | Drop Length <small>if applicable</small>                                                                                                                                                                                                                         | feet                                                                                                             | N/A                                     |
|                                    | Drop Height <small>if applicable</small>                                                                                                                                                                                                                         | feet                                                                                                             | N/A                                     |
|                                    | The drop height is measured from the <input type="checkbox"/> top of the drop length <input type="checkbox"/> middle of the drop length <input type="checkbox"/> bottom of the drop length, in reference to the ground. <small>Choose one, if applicable</small> |                                                                                                                  |                                         |
|                                    | Drop Horizontal Dimension 1 <small>if applicable</small>                                                                                                                                                                                                         | feet                                                                                                             |                                         |
|                                    | Drop Horizontal Dimension 2 <small>if applicable</small>                                                                                                                                                                                                         | feet                                                                                                             |                                         |
|                                    | Emissions Released Inside building?                                                                                                                                                                                                                              | yes/no                                                                                                           |                                         |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                                                                                                                                                                   | m                                                                                                                | 4,330,889 (approx. location of 8 vents) |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                                                                                                                                                                    | m                                                                                                                | 306,067 (approx. location of 8 vents)   |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                                                                                                                                                                          |                                                                                                                  |                                         |
|                                    | Batch Process <small>if applicable</small>                                                                                                                                                                                                                       | unit /batch                                                                                                      | N/A                                     |
|                                    | Start Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                    | hour:minute                                                                                                      | N/A                                     |
|                                    | End Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                      | hour:minute                                                                                                      | N/A                                     |
| <b>Control Equipment</b>           | Manufacturer                                                                                                                                                                                                                                                     |                                                                                                                  | N/A                                     |
|                                    | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small>                                                                                                                                       | yes/N/A                                                                                                          | N/A                                     |
| <b>Stack Parameters</b>            | Stack Height                                                                                                                                                                                                                                                     | feet                                                                                                             | 39                                      |
|                                    | Stack Inside Diameter                                                                                                                                                                                                                                            | feet                                                                                                             | 0.5                                     |
|                                    | Stack Temperature                                                                                                                                                                                                                                                | °F                                                                                                               | 90                                      |
|                                    | Stack Exit Velocity                                                                                                                                                                                                                                              | feet/second                                                                                                      | 4                                       |
|                                    | Actual Gas Volume Flow Rate                                                                                                                                                                                                                                      | acfm                                                                                                             | 575                                     |
|                                    | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                                                                                                                                                             | dscfm                                                                                                            | N/A                                     |
|                                    | Stack Release Type                                                                                                                                                                                                                                               | <input type="checkbox"/> vertical <input checked="" type="checkbox"/> capped <input type="checkbox"/> horizontal |                                         |

1. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).
- Throughput of the digesters is the total gas that is vented, flared, and upgraded. The flare and the BPS have a meter at their inlets. The amount of gas that is vented is a calculated value.



## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name:

Emission Unit Description: NG Emergency Generator

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☐ No If yes, identify in process narrative. \_\_\_\_\_

| Description                                                      |                                                                                                                            |                                                                                                                  | Data                  |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Equipment Description</b>                                     | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                 | eg. Unit ID: S2.001                                                                                              | S2.001                |
|                                                                  | Source Classification Code (SCC)                                                                                           | e.g. 3-03-024-04 for Conveyors                                                                                   | 20200254              |
|                                                                  | Manufacturer                                                                                                               |                                                                                                                  | Kohler                |
|                                                                  | Date Manufactured                                                                                                          |                                                                                                                  | 11/9/2021             |
|                                                                  | Model and Serial Number                                                                                                    |                                                                                                                  | KG6208TAHD            |
|                                                                  | Emissions Released Inside building?                                                                                        | yes/no                                                                                                           | No                    |
| <b>For Reciprocating Internal Combustion Engines (RICE) Only</b> | Type of Engine Code (See Notes*)                                                                                           |                                                                                                                  | E-SI                  |
|                                                                  | Date Constructed                                                                                                           | month/day/yr                                                                                                     | 11/9/2021             |
|                                                                  | Cylinder Displacement                                                                                                      | liter/cylinder                                                                                                   | 0.8                   |
|                                                                  | EPA Tier #                                                                                                                 |                                                                                                                  |                       |
| <b>Location of Emission Source</b>                               | UTM Northing (NAD 83, Zone 11)                                                                                             | m                                                                                                                | 4,330,916.35          |
|                                                                  | UTM Easting (NAD 83, Zone 11)                                                                                              | m                                                                                                                | 306,060.02            |
| <b>Operating Parameters /Fuel Usage</b>                          | Fuel Type                                                                                                                  |                                                                                                                  | Natural Gas           |
|                                                                  | Fuel Flow Meter Installed?                                                                                                 | yes/no/NA                                                                                                        | Yes/A                 |
|                                                                  | Sulfur Content                                                                                                             | %                                                                                                                |                       |
|                                                                  | Heat Content                                                                                                               | Btu/unit                                                                                                         | 1020 Btu/scf          |
|                                                                  | Start Time <small>if operating less than 24 hours/day</small>                                                              | hour:minute                                                                                                      | N/A, emergency engine |
|                                                                  | End Time <small>if operating less than 24 hours/day</small>                                                                | hour:minute                                                                                                      | N/A, emergency engine |
| <b>Control Equipment</b>                                         | Manufacturer                                                                                                               |                                                                                                                  | N/A                   |
|                                                                  | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small> | yes/N/A                                                                                                          | N/A                   |
| <b>Stack Parameters</b>                                          | Stack Height                                                                                                               | feet                                                                                                             | 5                     |
|                                                                  | Stack Inside Diameter                                                                                                      | feet                                                                                                             | 0.29                  |
|                                                                  | Stack Temperature                                                                                                          | °F                                                                                                               | 1292                  |
|                                                                  | Stack Exit Velocity                                                                                                        | feet/second                                                                                                      | 256                   |
|                                                                  | Actual Gas Volume Flow Rate                                                                                                | acfm                                                                                                             | 1,024                 |
|                                                                  | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                       | dscfm                                                                                                            | N/A                   |
|                                                                  | Stack Release Type                                                                                                         | <input checked="" type="checkbox"/> vertical <input type="checkbox"/> capped <input type="checkbox"/> horizontal |                       |

Notes\*

| Code | Description                        | Code   | Description                       |
|------|------------------------------------|--------|-----------------------------------|
| LU   | Limited Use                        | E-SI   | Emergency Spark Ignition          |
| LDG  | Landfill/Digester Gas              | SI4SRB | Spark Ignition 4-Stroke Rich Burn |
| NECI | Non-Emergency Compression Ignition | SI4SLB | Spark Ignition 4-Stroke Lean Burn |
| ECI  | Emergency Compression Ignition     | SI2SLB | Spark Ignition 2-Stroke Lean Burn |

## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT (continued)

### Emission Unit Description:

1. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied by manufacturer, fuel flow meter).  
Maximum fuel consumption rate supplied by manufacturer.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under NAC 445B.056?:  
☐ Yes ☒ No



## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: S2.004a

Emission Unit Description: Flare - Pilot

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in process narrative. \_\_\_\_\_

| Description                                                      |                                                                                                                            |                                | Data                                                                                                             |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Equipment Description</b>                                     | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                 | eg. Unit ID: S2.001            | S2.004a                                                                                                          |
|                                                                  | Source Classification Code (SCC)                                                                                           | e.g. 3-03-024-04 for Conveyors | 2310002301                                                                                                       |
|                                                                  | Manufacturer                                                                                                               |                                | PEI Perennial Energy                                                                                             |
|                                                                  | Date Manufactured                                                                                                          |                                | NA                                                                                                               |
|                                                                  | Model and Serial Number                                                                                                    |                                | NA                                                                                                               |
|                                                                  | Emissions Released Inside building?                                                                                        | yes/no                         | No                                                                                                               |
| <b>For Reciprocating Internal Combustion Engines (RICE) Only</b> | Type of Engine Code (See Notes*)                                                                                           |                                | NA                                                                                                               |
|                                                                  | Date Constructed                                                                                                           | month/day/yr                   | NA                                                                                                               |
|                                                                  | Cylinder Displacement                                                                                                      | liter/cylinder                 | NA                                                                                                               |
|                                                                  | EPA Tier #                                                                                                                 |                                | NA                                                                                                               |
| <b>Location of Emission Source</b>                               | UTM Northing (NAD 83, Zone 11)                                                                                             | m                              | 4330915.26                                                                                                       |
|                                                                  | UTM Easting (NAD 83, Zone 11)                                                                                              | m                              | 306020.17                                                                                                        |
| <b>Operating Parameters /Fuel Usage</b>                          | Fuel Type                                                                                                                  |                                | Natural Gas                                                                                                      |
|                                                                  | Fuel Flow Meter Installed?                                                                                                 | yes/no/NA                      | yes                                                                                                              |
|                                                                  | Sulfur Content                                                                                                             | %                              | 0.0003%                                                                                                          |
|                                                                  | Heat Content                                                                                                               | Btu/unit                       | 1020 Btu/scf                                                                                                     |
|                                                                  | Start Time <small>if operating less than 24 hours/day</small>                                                              | hour:minute                    | NA, operates continuously                                                                                        |
|                                                                  | End Time <small>if operating less than 24 hours/day</small>                                                                | hour:minute                    | NA, operates continuously                                                                                        |
| <b>Control Equipment</b>                                         | Manufacturer                                                                                                               |                                | NA                                                                                                               |
|                                                                  | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small> | yes/N/A                        | NA                                                                                                               |
| <b>Stack Parameters</b>                                          | Stack Height                                                                                                               | feet                           | 19                                                                                                               |
|                                                                  | Stack Inside Diameter                                                                                                      | feet                           | 0.5                                                                                                              |
|                                                                  | Stack Temperature                                                                                                          | °F                             | 900                                                                                                              |
|                                                                  | Stack Exit Velocity                                                                                                        | feet/second                    | 0.18                                                                                                             |
|                                                                  | Actual Gas Volume Flow Rate                                                                                                | acfm                           | 2.11                                                                                                             |
|                                                                  | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                       | dscfm                          | 0.83                                                                                                             |
|                                                                  | Stack Release Type                                                                                                         |                                | <input checked="" type="checkbox"/> vertical <input type="checkbox"/> capped <input type="checkbox"/> horizontal |

**Notes\***

| Code | Description                        | Code   | Description                       |
|------|------------------------------------|--------|-----------------------------------|
| LU   | Limited Use                        | E-SI   | Emergency Spark Ignition          |
| LDG  | Landfill/Digester Gas              | SI4SRB | Spark Ignition 4-Stroke Rich Burn |
| NECI | Non-Emergency Compression Ignition | SI4SLB | Spark Ignition 4-Stroke Lean Burn |
| ECI  | Emergency Compression Ignition     | SI2SLB | Spark Ignition 2-Stroke Lean Burn |

## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT (continued)

### Emission Unit Description:

1. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied by manufacturer, fuel flow meter).  
Gas flow meter and hours of operations  

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2. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under NAC 445B.056?  
☒ Yes ☐ No

## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: S2.004b

Emission Unit Description: Flare -Maintenance (Normal Operations)

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in process narrative. \_\_\_\_\_

| Description                                                      |                                                                                                                            |                                                                                                                  | Data              |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Equipment Description</b>                                     | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                 | eg. Unit ID: S2.001                                                                                              | S2.004b           |
|                                                                  | Source Classification Code (SCC)                                                                                           | e.g. 3-03-024-04 for Conveyors                                                                                   | 31000216          |
|                                                                  | Manufacturer                                                                                                               | PEI Perennial Energy                                                                                             |                   |
|                                                                  | Date Manufactured                                                                                                          | 09-2021                                                                                                          |                   |
|                                                                  | Model and Serial Number                                                                                                    | CP-1, CP-1951                                                                                                    |                   |
|                                                                  | Emissions Released Inside building?                                                                                        | yes/no                                                                                                           | No                |
| <b>For Reciprocating Internal Combustion Engines (RICE) Only</b> | Type of Engine Code (See Notes*)                                                                                           |                                                                                                                  | N/A               |
|                                                                  | Date Constructed                                                                                                           | month/day/yr                                                                                                     | N/A               |
|                                                                  | Cylinder Displacement                                                                                                      | liter/cylinder                                                                                                   | N/A               |
|                                                                  | EPA Tier #                                                                                                                 | N/A                                                                                                              |                   |
| <b>Location of Emission Source</b>                               | UTM Northing (NAD 83, Zone 11)                                                                                             | m                                                                                                                | 4,330,915         |
|                                                                  | UTM Easting (NAD 83, Zone 11)                                                                                              | m                                                                                                                | 306,020           |
| <b>Operating Parameters /Fuel Usage</b>                          | Fuel Type                                                                                                                  | Biogas & RNG                                                                                                     |                   |
|                                                                  | Fuel Flow Meter Installed?                                                                                                 | yes/no/NA                                                                                                        | Yes               |
|                                                                  | Sulfur Content                                                                                                             | %                                                                                                                | 0.5%              |
|                                                                  | Heat Content                                                                                                               | Btu/unit                                                                                                         | 200-1,020 Btu/scf |
|                                                                  | Start Time <small>if operating less than 24 hours/day</small>                                                              | hour:minute                                                                                                      | N/A               |
|                                                                  | End Time <small>if operating less than 24 hours/day</small>                                                                | hour:minute                                                                                                      | N/A               |
| <b>Control Equipment</b>                                         | Manufacturer                                                                                                               |                                                                                                                  |                   |
|                                                                  | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small> | yes/N/A                                                                                                          |                   |
| <b>Stack Parameters</b>                                          | Stack Height                                                                                                               | feet                                                                                                             | 34.8              |
|                                                                  | Stack Inside Diameter                                                                                                      | feet                                                                                                             | 2.3               |
|                                                                  | Stack Temperature                                                                                                          | °F                                                                                                               | 900               |
|                                                                  | Stack Exit Velocity                                                                                                        | feet/second                                                                                                      | 65.6              |
|                                                                  | Actual Gas Volume Flow Rate                                                                                                | acfm                                                                                                             | 16,778            |
|                                                                  | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                       | dscfm                                                                                                            | N/A               |
|                                                                  | Stack Release Type                                                                                                         | <input type="checkbox"/> vertical <input checked="" type="checkbox"/> capped <input type="checkbox"/> horizontal |                   |

**Notes\***

| Code | Description                        | Code   | Description                       |
|------|------------------------------------|--------|-----------------------------------|
| LU   | Limited Use                        | E-SI   | Emergency Spark Ignition          |
| LDG  | Landfill/Digester Gas              | SI4SRB | Spark Ignition 4-Stroke Rich Burn |
| NECI | Non-Emergency Compression Ignition | SI4SLB | Spark Ignition 4-Stroke Lean Burn |
| ECI  | Emergency Compression Ignition     | SI2SLB | Spark Ignition 2-Stroke Lean Burn |

## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT (continued)

### Emission Unit Description:

1. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied by manufacturer, fuel flow meter).  
Gas flow meter.  

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2. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under NAC 445B.056?  
☐ Yes ☒ No



## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: S2.004c  
 Emission Unit Description: Flare - Startup & Shutdown  
 Alternative Operating Scenario: ☒ Yes ☐ No  
 Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_  
 Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in process narrative. \_\_\_\_\_

| Description                                                      |                                                                                                                            |                                                                                                                  | Data                 |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Equipment Description</b>                                     | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                 | eg. Unit ID: S2.001                                                                                              | S2.004c              |
|                                                                  | Source Classification Code (SCC)                                                                                           | e.g. 3-03-024-04 for Conveyors                                                                                   | 31000216             |
|                                                                  | Manufacturer                                                                                                               |                                                                                                                  | PEI Perennial Energy |
|                                                                  | Date Manufactured                                                                                                          |                                                                                                                  | 09-2021              |
|                                                                  | Model and Serial Number                                                                                                    |                                                                                                                  | CP-1, CP-1951        |
|                                                                  | Emissions Released Inside building?                                                                                        | yes/no                                                                                                           | No                   |
| <b>For Reciprocating Internal Combustion Engines (RICE) Only</b> | Type of Engine Code (See Notes*)                                                                                           |                                                                                                                  | N/A                  |
|                                                                  | Date Constructed                                                                                                           | month/day/yr                                                                                                     | N/A                  |
|                                                                  | Cylinder Displacement                                                                                                      | liter/cylinder                                                                                                   | N/A                  |
|                                                                  | EPA Tier #                                                                                                                 |                                                                                                                  | N/A                  |
| <b>Location of Emission Source</b>                               | UTM Northing (NAD 83, Zone 11)                                                                                             | m                                                                                                                | 4,330,915            |
|                                                                  | UTM Easting (NAD 83, Zone 11)                                                                                              | m                                                                                                                | 306,020              |
| <b>Operating Parameters /Fuel Usage</b>                          | Fuel Type                                                                                                                  |                                                                                                                  | Biogas & RNG         |
|                                                                  | Fuel Flow Meter Installed?                                                                                                 | yes/no/NA                                                                                                        | Yes                  |
|                                                                  | Sulfur Content                                                                                                             | %                                                                                                                | See Appendix B       |
|                                                                  | Heat Content                                                                                                               | Btu/unit                                                                                                         | 200-1,020 Btu/scf    |
|                                                                  | Start Time <small>if operating less than 24 hours/day</small>                                                              | hour:minute                                                                                                      | N/A                  |
|                                                                  | End Time <small>if operating less than 24 hours/day</small>                                                                | hour:minute                                                                                                      | N/A                  |
| <b>Control Equipment</b>                                         | Manufacturer                                                                                                               |                                                                                                                  |                      |
|                                                                  | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small> | yes/N/A                                                                                                          |                      |
| <b>Stack Parameters</b>                                          | Stack Height                                                                                                               | feet                                                                                                             | 34.8                 |
|                                                                  | Stack Inside Diameter                                                                                                      | feet                                                                                                             | 2.3                  |
|                                                                  | Stack Temperature                                                                                                          | °F                                                                                                               | 900                  |
|                                                                  | Stack Exit Velocity                                                                                                        | feet/second                                                                                                      | 65.6                 |
|                                                                  | Actual Gas Volume Flow Rate                                                                                                | acfm                                                                                                             | 16,778               |
|                                                                  | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                       | dscfm                                                                                                            | N/A                  |
|                                                                  | Stack Release Type                                                                                                         | <input checked="" type="checkbox"/> vertical <input type="checkbox"/> capped <input type="checkbox"/> horizontal |                      |

**Notes\***

| Code | Description                        | Code   | Description                       |
|------|------------------------------------|--------|-----------------------------------|
| LU   | Limited Use                        | E-SI   | Emergency Spark Ignition          |
| LDG  | Landfill/Digester Gas              | SI4SRB | Spark Ignition 4-Stroke Rich Burn |
| NECI | Non-Emergency Compression Ignition | SI4SLB | Spark Ignition 4-Stroke Lean Burn |
| ECI  | Emergency Compression Ignition     | SI2SLB | Spark Ignition 2-Stroke Lean Burn |



## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT (continued)

### Emission Unit Description:

1. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied by manufacturer, fuel flow meter).  
Gas flow meter.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under NAC 445B.056?:  
☐ Yes ☒ No

## INDUSTRIAL PROCESS APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: S2.005

Emission Unit Description: Biogas Processing System (BUS Permeate exhaust)

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in attached Process Narrative. \_\_\_\_\_

| Description                        |                                                                                                                                                                                                                                                                  |                                              | Data                                                                                                             |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Equipment Description</b>       | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                                                                                                                                                       | eg. Unit ID: S2.001, PF1.001                 | S2.005                                                                                                           |
|                                    | Source Classification Code (SCC)                                                                                                                                                                                                                                 | eg. 3-03-024-04 for Conveyors                | 3-10-003-06                                                                                                      |
|                                    | Manufacturer                                                                                                                                                                                                                                                     |                                              | Quadrogen                                                                                                        |
|                                    | Date Manufactured                                                                                                                                                                                                                                                |                                              |                                                                                                                  |
|                                    | Model Number                                                                                                                                                                                                                                                     |                                              | NA                                                                                                               |
|                                    | Equipment Dimensions (LxWxH)                                                                                                                                                                                                                                     | feet                                         | NA                                                                                                               |
|                                    | Drop Length <small>if applicable</small>                                                                                                                                                                                                                         | feet                                         | NA                                                                                                               |
|                                    | Drop Height <small>if applicable</small>                                                                                                                                                                                                                         | feet                                         | NA                                                                                                               |
|                                    | The drop height is measured from the <input type="checkbox"/> top of the drop length <input type="checkbox"/> middle of the drop length <input type="checkbox"/> bottom of the drop length, in reference to the ground. <small>Choose one, if applicable</small> |                                              |                                                                                                                  |
|                                    | Drop Horizontal Dimension 1 <small>if applicable</small>                                                                                                                                                                                                         | feet                                         | NA                                                                                                               |
|                                    | Drop Horizontal Dimension 2 <small>if applicable</small>                                                                                                                                                                                                         | feet                                         | NA                                                                                                               |
|                                    | Emissions Released Inside building?                                                                                                                                                                                                                              |                                              | yes/no                                                                                                           |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                                                                                                                                                                   | m                                            | 4330938.82                                                                                                       |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                                                                                                                                                                    | m                                            | 306050.22                                                                                                        |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                                                                                                                                                                          |                                              | Biogas                                                                                                           |
|                                    | Batch Process <small>if applicable</small>                                                                                                                                                                                                                       | <span style="color: red;">unit /batch</span> | NA, continuous process                                                                                           |
|                                    | Start Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                    | hour:minute                                  | NA, continuous process                                                                                           |
|                                    | End Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                      | hour:minute                                  | NA, continuous process                                                                                           |
| <b>Control Equipment</b>           | Manufacturer                                                                                                                                                                                                                                                     |                                              | NA                                                                                                               |
|                                    | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small>                                                                                                                                       | yes/N/A                                      | NA                                                                                                               |
| <b>Stack Parameters</b>            | Stack Height                                                                                                                                                                                                                                                     | feet                                         | 25                                                                                                               |
|                                    | Stack Inside Diameter                                                                                                                                                                                                                                            | feet                                         | 0.67                                                                                                             |
|                                    | Stack Temperature                                                                                                                                                                                                                                                | °F                                           | 203                                                                                                              |
|                                    | Stack Exit Velocity                                                                                                                                                                                                                                              | feet/second                                  | 9.12                                                                                                             |
|                                    | Actual Gas Volume Flow Rate                                                                                                                                                                                                                                      | acfm                                         | 191                                                                                                              |
|                                    | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                                                                                                                                                             | dscfm                                        | 160                                                                                                              |
|                                    | Stack Release Type                                                                                                                                                                                                                                               |                                              | <input checked="" type="checkbox"/> vertical <input type="checkbox"/> capped <input type="checkbox"/> horizontal |

1. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).

Biogas is throughput is monitored at the inlet of the BPS.

## INDUSTRIAL PROCESS APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: S2.006

Emission Unit Description: Contingency Venting

Alternative Operating Scenario: ☒ Yes ☐ No

Insignificant Activity: ☐ Yes ☒ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in attached Process Narrative.

| Description                        |                                                                                                                                                                                                                                                                  |                                                                                                                  | Data                                                         |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Equipment Description</b>       | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                                                                                                                                                       | eg. Unit ID: S2.001, PF1.001                                                                                     | S2.006                                                       |
|                                    | Source Classification Code (SCC)                                                                                                                                                                                                                                 | e.g. 3-03-024-04 for Conveyors                                                                                   | N/A - Emissions Originate in Anaerobic Digester SCC 50300779 |
|                                    | Manufacturer                                                                                                                                                                                                                                                     |                                                                                                                  | PlanET                                                       |
|                                    | Date Manufactured                                                                                                                                                                                                                                                |                                                                                                                  | 2022                                                         |
|                                    | Model Number                                                                                                                                                                                                                                                     |                                                                                                                  | N/A                                                          |
|                                    | Equipment Dimensions (LxWxH)                                                                                                                                                                                                                                     | feet                                                                                                             | N/A                                                          |
|                                    | Drop Length <small>if applicable</small>                                                                                                                                                                                                                         | feet                                                                                                             | N/A                                                          |
|                                    | Drop Height <small>if applicable</small>                                                                                                                                                                                                                         | feet                                                                                                             | N/A                                                          |
|                                    | The drop height is measured from the <input type="checkbox"/> top of the drop length <input type="checkbox"/> middle of the drop length <input type="checkbox"/> bottom of the drop length, in reference to the ground. <small>Choose one, if applicable</small> |                                                                                                                  |                                                              |
|                                    | Drop Horizontal Dimension 1 <small>if applicable</small>                                                                                                                                                                                                         | feet                                                                                                             | N/A                                                          |
|                                    | Drop Horizontal Dimension 2 <small>if applicable</small>                                                                                                                                                                                                         | feet                                                                                                             | N/A                                                          |
|                                    | Emissions Released Inside building?                                                                                                                                                                                                                              |                                                                                                                  | yes/no                                                       |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                                                                                                                                                                   | m                                                                                                                | 306,083.4                                                    |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                                                                                                                                                                    | m                                                                                                                | 4,330,907.8                                                  |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                                                                                                                                                                          |                                                                                                                  | Biogas (Raw or Treated)                                      |
|                                    | Batch Process <small>if applicable</small>                                                                                                                                                                                                                       | unit /batch                                                                                                      | N/A                                                          |
|                                    | Start Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                    | hour:minute                                                                                                      | N/A                                                          |
|                                    | End Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                      | hour:minute                                                                                                      | N/A                                                          |
| <b>Control Equipment</b>           | Manufacturer                                                                                                                                                                                                                                                     |                                                                                                                  | Quadrogen                                                    |
|                                    | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small>                                                                                                                                       | yes/N/A                                                                                                          | N/A                                                          |
| <b>Stack Parameters</b>            | Stack Height                                                                                                                                                                                                                                                     | feet                                                                                                             | 25                                                           |
|                                    | Stack Inside Diameter                                                                                                                                                                                                                                            | feet                                                                                                             | 0.25                                                         |
|                                    | Stack Temperature                                                                                                                                                                                                                                                | °F                                                                                                               | 50                                                           |
|                                    | Stack Exit Velocity                                                                                                                                                                                                                                              | feet/second                                                                                                      | 47.01                                                        |
|                                    | Actual Gas Volume Flow Rate                                                                                                                                                                                                                                      | acfm                                                                                                             | 246                                                          |
|                                    | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                                                                                                                                                             | dscfm                                                                                                            | N/A                                                          |
|                                    | Stack Release Type                                                                                                                                                                                                                                               | <input type="checkbox"/> vertical <input checked="" type="checkbox"/> capped <input type="checkbox"/> horizontal |                                                              |

1. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).

Gas flow meter.



## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: IA1.001 & IA1.002

Emission Unit Description: Boilers 1 & 2

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☒ Yes ☐ No If yes, identify exemption regulation: NAC 445B.288(2)(e)

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☐ No If yes, identify in process narrative.

| Description                                                      |                                                                                                                            |                                                                                                                  | Data                     |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Equipment Description</b>                                     | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                 | eg. Unit ID: S2.001                                                                                              | IA1.001 & IA1.002        |
|                                                                  | Source Classification Code (SCC)                                                                                           | e.g. 3-03-024-04 for Conveyors                                                                                   | 1-103-006-03             |
|                                                                  | Manufacturer                                                                                                               |                                                                                                                  | Vitocrossal              |
|                                                                  | Date Manufactured                                                                                                          |                                                                                                                  |                          |
|                                                                  | Model and Serial Number                                                                                                    |                                                                                                                  | 300 CA3B 3               |
|                                                                  | Emissions Released Inside building?                                                                                        | yes/no                                                                                                           | No                       |
| <b>For Reciprocating Internal Combustion Engines (RICE) Only</b> | Type of Engine Code (See Notes*)                                                                                           |                                                                                                                  | NA                       |
|                                                                  | Date Constructed                                                                                                           | month/day/yr                                                                                                     | NA                       |
|                                                                  | Cylinder Displacement                                                                                                      | liter/cylinder                                                                                                   | NA                       |
|                                                                  | EPA Tier #                                                                                                                 |                                                                                                                  | NA                       |
| <b>Location of Emission Source</b>                               | UTM Northing (NAD 83, Zone 11)                                                                                             | m                                                                                                                | 4330907.80               |
|                                                                  | UTM Easting (NAD 83, Zone 11)                                                                                              | m                                                                                                                | 306070.15                |
| <b>Operating Parameters /Fuel Usage</b>                          | Fuel Type                                                                                                                  |                                                                                                                  | Natural Gas              |
|                                                                  | Fuel Flow Meter Installed?                                                                                                 | yes/no/NA                                                                                                        | NA                       |
|                                                                  | Sulfur Content                                                                                                             | %                                                                                                                | 0.00034                  |
|                                                                  | Heat Content                                                                                                               | Btu/unit                                                                                                         | 1020 Btu/scf             |
|                                                                  | Start Time <small>if operating less than 24 hours/day</small>                                                              | hour:minute                                                                                                      | NA, continuous operation |
|                                                                  | End Time <small>if operating less than 24 hours/day</small>                                                                | hour:minute                                                                                                      | NA, continuous operation |
| <b>Control Equipment</b>                                         | Manufacturer                                                                                                               |                                                                                                                  | NA                       |
|                                                                  | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small> | yes/N/A                                                                                                          | NA                       |
| <b>Stack Parameters</b>                                          | Stack Height                                                                                                               | feet                                                                                                             | 17                       |
|                                                                  | Stack Inside Diameter                                                                                                      | feet                                                                                                             | 0.83                     |
|                                                                  | Stack Temperature                                                                                                          | °F                                                                                                               | 113                      |
|                                                                  | Stack Exit Velocity                                                                                                        | feet/second                                                                                                      | NA                       |
|                                                                  | Actual Gas Volume Flow Rate                                                                                                | acfm                                                                                                             | NA                       |
|                                                                  | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                       | dscfm                                                                                                            | NA                       |
|                                                                  | Stack Release Type                                                                                                         | <input type="checkbox"/> vertical <input type="checkbox"/> capped <input checked="" type="checkbox"/> horizontal |                          |

**Notes\***

| Code | Description                        | Code   | Description                       |
|------|------------------------------------|--------|-----------------------------------|
| LU   | Limited Use                        | E-SI   | Emergency Spark Ignition          |
| LDG  | Landfill/Digester Gas              | SI4SRB | Spark Ignition 4-Stroke Rich Burn |
| NECI | Non-Emergency Compression Ignition | SI4SLB | Spark Ignition 4-Stroke Lean Burn |
| ECI  | Emergency Compression Ignition     | SI2SLB | Spark Ignition 2-Stroke Lean Burn |

## COMBUSTION EQUIPMENT APPLICATION FORM CLASS II OPERATING PERMIT (continued)

### Emission Unit Description:

1. How will fuel consumption be monitored for this emission unit? (e.g. maximum fuel consumption rate supplied by manufacturer, fuel flow meter).

Using maximum fuel consumption rate supplied by manufacturer.

2. Does this unit have the capability to bypass air pollution controls in an emergency situation as defined under NAC 445B.056?

☐ Yes ☒ No



## INDUSTRIAL PROCESS APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: IA1.003

Emission Unit Description: Truck Loading Station

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☒ Yes ☐ No If yes, identify exemption regulation: NAC 445B.288(4)

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in attached Process Narrative.

| Description                        |                                                                                                                                                                                                                                                                  |                               |                                                                                                                  | Data |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------|------|
| <b>Equipment Description</b>       | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                                                                                                                                                       | eg. Unit ID: S2.001, PF1.001  | IA1.003                                                                                                          |      |
|                                    | Source Classification Code (SCC)                                                                                                                                                                                                                                 | eg. 3-03-024-04 for Conveyors | 2310020800                                                                                                       |      |
|                                    | Manufacturer                                                                                                                                                                                                                                                     |                               | ANGI                                                                                                             |      |
|                                    | Date Manufactured                                                                                                                                                                                                                                                |                               |                                                                                                                  |      |
|                                    | Model Number                                                                                                                                                                                                                                                     |                               | Oasis Series 300                                                                                                 |      |
|                                    | Equipment Dimensions (LxWxH)                                                                                                                                                                                                                                     | feet                          | NA                                                                                                               |      |
|                                    | Drop Length <small>if applicable</small>                                                                                                                                                                                                                         | feet                          | NA                                                                                                               |      |
|                                    | Drop Height <small>if applicable</small>                                                                                                                                                                                                                         | feet                          | NA                                                                                                               |      |
|                                    | The drop height is measured from the <input type="checkbox"/> top of the drop length <input type="checkbox"/> middle of the drop length <input type="checkbox"/> bottom of the drop length, in reference to the ground. <small>Choose one, if applicable</small> |                               |                                                                                                                  |      |
|                                    | Drop Horizontal Dimension 1 <small>if applicable</small>                                                                                                                                                                                                         | feet                          | NA                                                                                                               |      |
|                                    | Drop Horizontal Dimension 2 <small>if applicable</small>                                                                                                                                                                                                         | feet                          | NA                                                                                                               |      |
|                                    | Emissions Released Inside building?                                                                                                                                                                                                                              |                               | yes/no                                                                                                           | no   |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                                                                                                                                                                   | m                             | 4330931.75                                                                                                       |      |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                                                                                                                                                                    | m                             | 306083.71                                                                                                        |      |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                                                                                                                                                                          |                               | Renewable Natural Gas                                                                                            |      |
|                                    | Batch Process <small>if applicable</small>                                                                                                                                                                                                                       | unit /batch                   | NA                                                                                                               |      |
|                                    | Start Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                    | hour:minute                   | NA, truck is loaded at the same time gas is produced                                                             |      |
|                                    | End Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                      | hour:minute                   | NA                                                                                                               |      |
| <b>Control Equipment</b>           | Manufacturer                                                                                                                                                                                                                                                     |                               | NA                                                                                                               |      |
|                                    | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small>                                                                                                                                       | yes/N/A                       | NA                                                                                                               |      |
| <b>Stack Parameters</b>            | Stack Height                                                                                                                                                                                                                                                     | feet                          | NA                                                                                                               |      |
|                                    | Stack Inside Diameter                                                                                                                                                                                                                                            | feet                          | 0.08                                                                                                             |      |
|                                    | Stack Temperature                                                                                                                                                                                                                                                | °F                            | 70                                                                                                               |      |
|                                    | Stack Exit Velocity                                                                                                                                                                                                                                              | feet/second                   | 0.33                                                                                                             |      |
|                                    | Actual Gas Volume Flow Rate                                                                                                                                                                                                                                      | acfm                          | 0.109                                                                                                            |      |
|                                    | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                                                                                                                                                             | dscfm                         | 27                                                                                                               |      |
|                                    | Stack Release Type                                                                                                                                                                                                                                               |                               | <input type="checkbox"/> vertical <input type="checkbox"/> capped <input checked="" type="checkbox"/> horizontal |      |

1. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).

There is a meter at the inlet of the truck

## INDUSTRIAL PROCESS APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name: IA1.004

Emission Unit Description: Solids Stock Pile

Alternative Operating Scenario: ☐ Yes ☒ No

Insignificant Activity: ☒ Yes ☐ No If yes, identify exemption regulation: NAC 445B.288(4)

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☒ No If yes, identify in attached Process Narrative.

| Description                        |                                                                                                                                                                                                                                                                  |                               | Data                                                                                                             |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Equipment Description</b>       | BAPC Emission Unit ID<br><small>Applicable for Renewal or Revision</small>                                                                                                                                                                                       | eg. Unit ID: S2.001, PF1.001  | IA1.004                                                                                                          |
|                                    | Source Classification Code (SCC)                                                                                                                                                                                                                                 | eg. 3-03-024-04 for Conveyors | 50300783                                                                                                         |
|                                    | Manufacturer                                                                                                                                                                                                                                                     |                               | NA                                                                                                               |
|                                    | Date Manufactured                                                                                                                                                                                                                                                |                               | NA                                                                                                               |
|                                    | Model Number                                                                                                                                                                                                                                                     |                               | NA                                                                                                               |
|                                    | Equipment Dimensions (LxWxH)                                                                                                                                                                                                                                     | feet                          | NA                                                                                                               |
|                                    | Drop Length <small>if applicable</small>                                                                                                                                                                                                                         | feet                          | NA                                                                                                               |
|                                    | Drop Height <small>if applicable</small>                                                                                                                                                                                                                         | feet                          | NA                                                                                                               |
|                                    | The drop height is measured from the <input type="checkbox"/> top of the drop length <input type="checkbox"/> middle of the drop length <input type="checkbox"/> bottom of the drop length, in reference to the ground. <small>Choose one, if applicable</small> |                               |                                                                                                                  |
|                                    | Drop Horizontal Dimension 1 <small>if applicable</small>                                                                                                                                                                                                         | feet                          | NA                                                                                                               |
|                                    | Drop Horizontal Dimension 2 <small>if applicable</small>                                                                                                                                                                                                         | feet                          | NA                                                                                                               |
|                                    | Emissions Released Inside building?                                                                                                                                                                                                                              |                               | yes/no                                                                                                           |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                                                                                                                                                                   | m                             | 4330860.33                                                                                                       |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                                                                                                                                                                    | m                             | 306070.33                                                                                                        |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                                                                                                                                                                          |                               | Digestate/Sludge                                                                                                 |
|                                    | Batch Process <small>if applicable</small>                                                                                                                                                                                                                       | unit /batch                   | NA, continuous process                                                                                           |
|                                    | Start Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                    | hour:minute                   | NA, continuous process                                                                                           |
|                                    | End Time <small>if operating less than 24 hours/day</small>                                                                                                                                                                                                      | hour:minute                   | NA, continuous process                                                                                           |
| <b>Control Equipment</b>           | Manufacturer                                                                                                                                                                                                                                                     |                               | NA                                                                                                               |
|                                    | Manufacturer's Guarantee Included?<br><small>If "yes", attach manufacturer's sheets immediately after these forms.</small>                                                                                                                                       | yes/N/A                       | NA                                                                                                               |
| <b>Stack Parameters</b>            | Stack Height                                                                                                                                                                                                                                                     | feet                          | NA                                                                                                               |
|                                    | Stack Inside Diameter                                                                                                                                                                                                                                            | feet                          | NA                                                                                                               |
|                                    | Stack Temperature                                                                                                                                                                                                                                                | °F                            | ambient                                                                                                          |
|                                    | Stack Exit Velocity                                                                                                                                                                                                                                              | feet/second                   | NA                                                                                                               |
|                                    | Actual Gas Volume Flow Rate                                                                                                                                                                                                                                      | acfm                          | NA                                                                                                               |
|                                    | Dry Gas Volume Flow Rate<br><small>If not included in detailed calculations.</small>                                                                                                                                                                             | dscfm                         | NA                                                                                                               |
|                                    | Stack Release Type                                                                                                                                                                                                                                               |                               | <input type="checkbox"/> vertical <input type="checkbox"/> capped <input checked="" type="checkbox"/> horizontal |

1. How will throughput be monitored for this emission unit? Identify if the throughput will be monitored at this emission unit or at another emission unit and the method (e.g. weigh belt).

There is no measurement or monitoring on the amount of solids going to the stockpile.

## STORAGE SILO APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name:

Emission Unit Description:

Alternative Operating Scenario: ☐ Yes ☐ No

Insignificant Activity: ☐ Yes ☐ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☐ No If yes, identify in process narrative. \_\_\_\_\_

| Description                        |                                                                                                                    |                                                                           | Data |  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------|--|
|                                    |                                                                                                                    |                                                                           |      |  |
| <b>Equipment Description</b>       | BAPC Emission Unit ID                                                                                              | eg. Unit ID: S2.001, PF1.001<br><i>Applicable for Renewal or Revision</i> |      |  |
|                                    | Source Classification Code (SCC)                                                                                   | e.g. 3-03-024-04<br><i>for Conveyors</i>                                  |      |  |
|                                    | Manufacturer                                                                                                       |                                                                           |      |  |
|                                    | Date Manufactured                                                                                                  |                                                                           |      |  |
|                                    | Model Number                                                                                                       |                                                                           |      |  |
|                                    | Equipment Dimensions (LxWxH)                                                                                       | feet                                                                      |      |  |
|                                    | Drop Dimensions (LxWxH)<br><i>if applicable</i>                                                                    | feet                                                                      |      |  |
|                                    | Emissions Released Inside building?                                                                                | yes/no                                                                    |      |  |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                     | m                                                                         |      |  |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                      | m                                                                         |      |  |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                            |                                                                           |      |  |
|                                    | Batch Process <i>if applicable</i>                                                                                 | unit/batch                                                                |      |  |
|                                    | Start Time <i>if operating less than 24 hours/day</i>                                                              | hour:minute                                                               |      |  |
|                                    | End Time <i>if operating less than 24 hours/day</i>                                                                | hour:minute                                                               |      |  |
| <b>Control Equipment</b>           | Manufacturer                                                                                                       |                                                                           |      |  |
|                                    | Manufacturer's Guarantee Included?<br><i>If "yes", attach manufacturer's sheets immediately after these forms.</i> | yes/N/A                                                                   |      |  |
| <b>Stack Parameters</b>            | Stack Height                                                                                                       | feet                                                                      |      |  |
|                                    | Stack Inside Diameter                                                                                              | feet                                                                      |      |  |
|                                    | Stack Temperature                                                                                                  | °F                                                                        |      |  |
|                                    | Stack Exit Velocity                                                                                                | feet/second                                                               |      |  |
|                                    | Actual Gas Volume Flow Rate                                                                                        | acfm                                                                      |      |  |
|                                    | Dry Gas Volume Flow Rate<br><i>If not included in detailed calculations.</i>                                       | dscfm                                                                     |      |  |
|                                    | Stack Release Type                                                                                                 | Vertical/Capped/<br>Horizontal                                            |      |  |



## STORAGE SILO APPLICATION FORM CLASS II OPERATING PERMIT

System Number and Name:

Emission Unit Description:

Alternative Operating Scenario: ☐ Yes ☐ No

Insignificant Activity: ☐ Yes ☐ No If yes, identify exemption regulation: \_\_\_\_\_

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ Yes ☐ No If yes, identify in process narrative. \_\_\_\_\_

| Description                        |                                                                                                                    |                                                                           | Data |  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------|--|
|                                    |                                                                                                                    |                                                                           |      |  |
| <b>Equipment Description</b>       | BAPC Emission Unit ID                                                                                              | eg. Unit ID: S2.001, PF1.001<br><i>Applicable for Renewal or Revision</i> |      |  |
|                                    | Source Classification Code (SCC)                                                                                   | e.g. 3-03-024-04<br><i>for Conveyors</i>                                  |      |  |
|                                    | Manufacturer                                                                                                       |                                                                           |      |  |
|                                    | Date Manufactured                                                                                                  |                                                                           |      |  |
|                                    | Model Number                                                                                                       |                                                                           |      |  |
|                                    | Equipment Dimensions (LxWxH)                                                                                       | feet                                                                      |      |  |
|                                    | Drop Dimensions (LxWxH)<br><i>if applicable</i>                                                                    | feet                                                                      |      |  |
|                                    | Emissions Released Inside building?                                                                                | yes/no                                                                    |      |  |
| <b>Location of Emission Source</b> | UTM Northing (NAD 83, Zone 11)                                                                                     | m                                                                         |      |  |
|                                    | UTM Easting (NAD 83, Zone 11)                                                                                      | m                                                                         |      |  |
| <b>Operating Parameters</b>        | Material Type Processed                                                                                            |                                                                           |      |  |
|                                    | Batch Process <i>if applicable</i>                                                                                 | unit/batch                                                                |      |  |
|                                    | Start Time <i>if operating less than 24 hours/day</i>                                                              | hour:minute                                                               |      |  |
|                                    | End Time <i>if operating less than 24 hours/day</i>                                                                | hour:minute                                                               |      |  |
| <b>Control Equipment</b>           | Manufacturer                                                                                                       |                                                                           |      |  |
|                                    | Manufacturer's Guarantee Included?<br><i>If "yes", attach manufacturer's sheets immediately after these forms.</i> | yes/N/A                                                                   |      |  |
| <b>Stack Parameters</b>            | Stack Height                                                                                                       | feet                                                                      |      |  |
|                                    | Stack Inside Diameter                                                                                              | feet                                                                      |      |  |
|                                    | Stack Temperature                                                                                                  | °F                                                                        |      |  |
|                                    | Stack Exit Velocity                                                                                                | feet/second                                                               |      |  |
|                                    | Actual Gas Volume Flow Rate                                                                                        | acfm                                                                      |      |  |
|                                    | Dry Gas Volume Flow Rate<br><i>If not included in detailed calculations.</i>                                       | dscfm                                                                     |      |  |
|                                    | Stack Release Type                                                                                                 | Vertical/Capped/<br>Horizontal                                            |      |  |



NOT APPLICABLE

## LIQUID STORAGE TANK APPLICATION FORM CLASS II OPERATING PERMIT (CONTINUED)

Emission Unit Description:

| Description                                       |                                    |                      | Data |
|---------------------------------------------------|------------------------------------|----------------------|------|
| <b>Operating Parameters</b>                       | Material Type                      |                      |      |
|                                                   | Operating Time per Year            | hour/year            |      |
|                                                   | Maximum Throughput                 | gallon/month         |      |
|                                                   | Maximum Throughput                 | gallon/year          |      |
| <b>Control Equipment</b>                          | Type of Control                    |                      |      |
|                                                   | Control Efficiency                 | %                    |      |
|                                                   | Pollutant(s) Controlled            |                      |      |
|                                                   | Manufacturer                       |                      |      |
|                                                   | Manufacturer's Guarantee Included? | yes/N/A              |      |
| <b>Volatile Organic Compounds (VOC) Emissions</b> | Emission Limit                     | ton/year             |      |
| <b>Other Pollutants</b>                           | Emission Factor (with units)       | <i>(insert unit)</i> |      |
|                                                   | Emission Factor Reference          |                      |      |
|                                                   | Emission Limit                     | pound/hour           |      |
|                                                   | Emission Limit                     | ton/year             |      |

INDUSTRIAL PROCESS AND STORAGE SILO DETAILED CALCULATIONS

| Unit No.           | Unit Description | Operating Hours |        | Throughput |        |       | Controls |                                    | Emissions         |        |      |                      |                       | References |
|--------------------|------------------|-----------------|--------|------------|--------|-------|----------|------------------------------------|-------------------|--------|------|----------------------|-----------------------|------------|
|                    |                  | Daily           | Annual | Hourly     | Annual | Units | Type     | Efficiency or Dry Volume Flow Rate | Pollutant         | Factor | Unit | Hourly Rate (lbs/hr) | Yearly Rate (tons/yr) |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |
| System No. & Name: |                  |                 |        |            |        |       |          |                                    |                   |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM                |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |
|                    |                  |                 |        |            |        |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |

\*Exact format may be changed, but requested information is still required.

COMBUSTION EQUIPMENT DETAILED CALCULATIONS

| Unit No.           | Unit Description | Operating Hours |        | Heat Input (MMBtu) |        | Fuel Usage |        |       | Power Output |       | Controls |                                    | Emissions         |        |      |                      |                       | References |  |
|--------------------|------------------|-----------------|--------|--------------------|--------|------------|--------|-------|--------------|-------|----------|------------------------------------|-------------------|--------|------|----------------------|-----------------------|------------|--|
|                    |                  | Daily           | Annual | Hourly             | Annual | Hourly     | Annual | Units | Amount       | Units | Type     | Efficiency or Dry Volume Flow Rate | Pollutant         | Factor | Unit | Hourly Rate (lbs/hr) | Yearly Rate (tons/yr) |            |  |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | SO <sub>2</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | NO <sub>x</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | CO                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | VOC               |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Pb                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Hg                |        |      |                      |                       |            |  |
| H <sub>2</sub> S   |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |
| ●                  |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | SO <sub>2</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | NO <sub>x</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | CO                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | VOC               |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Pb                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Hg                |        |      |                      |                       |            |  |
| H <sub>2</sub> S   |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>10</sub>  |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | PM <sub>2.5</sub> |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | SO <sub>2</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | NO <sub>x</sub>   |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | CO                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | VOC               |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Pb                |        |      |                      |                       |            |  |
|                    |                  |                 |        |                    |        |            |        |       |              |       |          |                                    | Hg                |        |      |                      |                       |            |  |
| H <sub>2</sub> S   |                  |                 |        |                    |        |            |        |       |              |       |          |                                    |                   |        |      |                      |                       |            |  |

\*Exact format may be changed, but requested information is still required.



GREENHOUSE GASES (GHG) DETAILED CALCULATIONS

| Unit No.           | Unit Description | Operating Hours |        | Heat Input (MMBtu) |        | Fuel Usage |        |       | Controls |                                    | Emissions        |        |                |      |                      |                       | References |
|--------------------|------------------|-----------------|--------|--------------------|--------|------------|--------|-------|----------|------------------------------------|------------------|--------|----------------|------|----------------------|-----------------------|------------|
|                    |                  | Daily           | Annual | Hourly             | Annual | Hourly     | Annual | Units | Type     | Efficiency or Dry Volume Flow Rate | Pollutant        | Factor | GWP Multiplier | Unit | Hourly Rate (lbs/hr) | Yearly Rate (tons/yr) |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
| ●                  |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |
| System No. & Name: |                  |                 |        |                    |        |            |        |       |          |                                    |                  |        |                |      |                      |                       |            |
| ●                  |                  |                 |        |                    |        |            |        |       |          |                                    | CO <sub>2</sub>  |        | 1              |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | CH <sub>4</sub>  |        | 25             |      |                      |                       |            |
|                    |                  |                 |        |                    |        |            |        |       |          |                                    | N <sub>2</sub> O |        | 298            |      |                      |                       |            |

\*Exact format may be changed, but requested information is still required.





# S E E    A P P E N D I X    B

## FACILITY-WIDE POTENTIAL TO EMIT TABLE (FOR ALL SOURCES INCLUDING INSIGNIFICANT ACTIVITIES) (POUND/HOUR AND TON/YEAR)

| Pollutant                                                  | Facility-Wide Potential to Emit<br>(pound/hour) | Facility-Wide Potential to Emit<br>(ton/year) |
|------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Total Particulate Matter (PM)                              |                                                 |                                               |
| Total PM <sub>10</sub>                                     |                                                 |                                               |
| Total PM <sub>2.5</sub>                                    |                                                 |                                               |
| Total Sulfur Dioxide (SO <sub>2</sub> )                    |                                                 |                                               |
| Total Carbon Monoxide (CO)                                 |                                                 |                                               |
| Total Oxides of Nitrogen (NO <sub>x</sub> )                |                                                 |                                               |
| Total Volatile Organic Compounds (VOC)                     |                                                 |                                               |
| Total Lead (Pb)                                            |                                                 |                                               |
| Total Hydrogen Sulfide (H <sub>2</sub> S)                  |                                                 |                                               |
| Total Sulfuric Acid Mist (H <sub>2</sub> SO <sub>4</sub> ) |                                                 |                                               |
| Total Hazardous Air Pollutants (HAPs)                      |                                                 |                                               |
| Total Greenhouse Gases (CO <sub>2e</sub> )                 |                                                 |                                               |
|                                                            |                                                 |                                               |
| Other Regulated Pollutants (Specify)                       |                                                 |                                               |
|                                                            |                                                 |                                               |
|                                                            |                                                 |                                               |

## REVISION TABLE

Please complete the table below if this application is for a **Revision** of an existing Class II Air Quality Operating Permit. Add more columns if needed for any other applicable regulated pollutants. All Potential To Emit (PTE) must be in tons per year (TPY) [NAC 445B.3457(5)(b)]

| Description                       | Pollutants |                  |                   |                 |                 |    |     |      |                  |       |
|-----------------------------------|------------|------------------|-------------------|-----------------|-----------------|----|-----|------|------------------|-------|
|                                   | PM         | PM <sub>10</sub> | PM <sub>2.5</sub> | SO <sub>2</sub> | NO <sub>x</sub> | CO | VOC | HAPs | CO <sub>2e</sub> | Other |
| Permitted Facility-Wide PTE (TPY) |            |                  |                   |                 |                 |    |     |      |                  |       |
| Proposed Facility-Wide PTE (TPY)  |            |                  |                   |                 |                 |    |     |      |                  |       |
| Change in Facility-Wide PTE (TPY) |            |                  |                   |                 |                 |    |     |      |                  |       |



## SURFACE AREA DISTURBANCE FORM

1. Total Acres of the Facility Site: [Click or tap here to enter text.](#)
2. Total Acres Disturbed: [Click or tap here to enter text.](#)
3. Add Surface Area Disturbance location as Township(s), Range(s) and Section  
[Click or tap here to enter text.](#)
4. NAC 445B.22037 requires fugitive dust to be controlled (regardless of the size or amount of acreage disturbed), and requires an ongoing program, using best practical methods, to prevent particulate matter from becoming airborne. All activities which have the potential to adversely affect the local air quality must implement all appropriate measures to limit controllable emissions. Appropriate measures for dust control may consist of a phased approach to acreage disturbance rather than disturbing the entire area all at once; using wet suppression through such application methods as water trucks or water spray systems to control wind-blown dust; the application of soil binding agents or chemical surfactant to roadways and areas of disturbed soil; as well as the use of wind-break or wind limiting fencing designed to limit wind erosion soils.
5. If the Surface Area Disturbance is greater than 5 acres, please check each box that applies for Best Management Practices (BMPs) used for controlling dust on project's disturbed areas:
  - ☐ Water trucks
  - ☐ Graveling/paving of roadway storage areas and staging areas
  - ☐ Dust palliatives
  - ☐ Posting and limiting vehicle speeds to 10-15 miles per hour
  - ☐ Ceasing operations during high wind events
  - ☐ Fencing or berming to prevent unauthorized access to disturbed areas
  - ☐ Application of water sprays on material storage piles on a regular basis
  - ☐ Covering material storage piles with tarpaulin or geo-textiles; tenting
  - ☐ Use of overhead water spray racks or water hoses
  - ☐ Track-out controls (graveled entranced, exit area, and street sweeping)
  - ☐ Landscape preservation and impact avoidance
  - ☐ Wind fence
  - ☐ Pre-watering of areas to be disturbed (including all unpaved onsite roads and staging areas)
  - ☐ Inform all subcontractors (including truck drivers) of their responsibilities for the control of fugitive dust while they are on the project site
  - ☐ Training of equipment operators to recognize fugitive dust generation and having the authority to shut down operations until water truck arrives and sprays water on the disturbed areas
  - ☐ Other Applicable BMPs: [Click or tap here to enter text.](#)
  - ☐ Other Applicable BMPs: [Click or tap here to enter text.](#)
  - ☐ If using water trucks, list how many water trucks are used and their capacity in gallons:  
[Click or tap here to enter text.](#)

### PLANT BOUNDARY COORDINATES FORM if applicable

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# N O T   A P P L I C A B L E ( n o   c h a n g e s )

## PLANT BUILDING PARAMETERS FORM if applicable

### Building Parameters

Building Name: \_\_\_\_\_

Building Tier : \_\_\_\_\_

Roof Height (ft): \_\_\_\_\_

Building Diameter (ft): \_\_\_\_\_

### Building UTM Coordinates

| UTM Easting | UTM Northing | UTM Easting | UTM Northing |
|-------------|--------------|-------------|--------------|
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |

### Building Parameters

Building Name: \_\_\_\_\_

Building Tier : \_\_\_\_\_

Roof Height (ft): \_\_\_\_\_

Building Diameter<sup>4</sup> (ft): \_\_\_\_\_

### Building UTM Coordinates

| UTM Easting | UTM Northing | UTM Easting | UTM Northing |
|-------------|--------------|-------------|--------------|
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
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|             |              |             |              |
|             |              |             |              |
|             |              |             |              |
|             |              |             |              |

## APPLICATION CERTIFICATION DOCUMENT

(With Required Attachments)

Please check all applicable boxes below to indicate the information provided in your application submittal:

- ☒ General Company Information Form
- ☒ Industrial Process Application Form(s)
- ☒ Combustion Equipment Application Form(s)
- ☐ Storage Silos Application Form(s)
- ☐ Liquid Storage Tank Application Form(s)
- ☐ Manufacturer's Guarantee
- ☒ Facility-Wide Potential to Emit Table
- ☐ Surface Area Disturbance Form
- ☐ Plant Boundary Coordinates Form *if applicable*
- ☐ Plant Building Parameters Form *if applicable*
- ☒ Detailed Emission Calculations (for all emission units including IA units)
- ☐ Source Testing Data (if referenced in calculations)
- ☒ Process Narrative
- ☒ Process Flow Diagram(s)
- ☐ Site Plan(s) showing the locations (UTM coordinates), dimensions, and heights of buildings on the site
- ☒ Maps:
  - ☒ Vicinity Map of where the facility is located in the State
  - ☐ Area Map of the Facility (including location of all emission units, building locations (with UTM's), location of front gate, and fence line/site boundary (with UTM's))
- ☐ Environmental Evaluation (AERMOD Air Dispersion Modeling) *if applicable*  
[NAC 445B.310]
- ☐ Manufacturer's Guarantee *if applicable*
- ☐ Equipment Specifications *if applicable*
- ☐ TANKs Modeling Output *if applicable*
- ☒ Application Fee Attached or Electronically Submitted
- ☒ Digital Copy of Application on CD or Thumb Drive **PDF sent via email**
- ☒ Application Certification Document with Original Responsible Official Signature

**APPLICATION CERTIFICATION DOCUMENT (CONTINUED)**  
(With Required Attachments)

**PLEASE NOTE THE FOLLOWING REQUIREMENTS WHICH APPLY TO PERMIT APPLICANTS DURING THE APPLICATION PROCESS:**

- A. A permit applicant must submit supplementary facts or corrected information upon discovery [NAC 445B.297(1)(b)].
- B. A permit applicant is required to provide any additional information which the Director requests in writing within the time specified in the Director's request [NAC 445B.297(1)(c)].
- C. Submission of fraudulent data or other information may result in prosecution for an alleged criminal offense [NRS 445B.470].

**CERTIFICATION:**

**I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete.**

  
\_\_\_\_\_  
Signature of Responsible Official

Joshua Eakle - Vice President, Contracted Energy  
\_\_\_\_\_

Print or Type Name and Title  
\_\_\_\_\_

08/20/2026  
\_\_\_\_\_

Date

---

APPENDIX B -  
EMISSION CALCULATIONS

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APPENDIX B-1  
PROJECT CRITERIA POLLUTANT EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. CRITERIA POLLUTANT & GREENHOUSE GAS EMISSIONS SUMMARY - UNCONTROLLED                                         |                                       |          |                        |                         |          |                       |                                      |                        |           |                            |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------|----------|------------------------|-------------------------|----------|-----------------------|--------------------------------------|------------------------|-----------|----------------------------|
| Emission Unit ID                                                                                                | Emission Unit Description             | PM (tpy) | PM <sub>10</sub> (tpy) | PM <sub>2.5</sub> (tpy) | CO (tpy) | NO <sub>x</sub> (tpy) | SO <sub>2</sub> <sup>(1)</sup> (tpy) | H <sub>2</sub> S (tpy) | VOC (tpy) | GHG CO <sub>2e</sub> (tpy) |
| S2.001                                                                                                          | Emergency Generator                   | 8.38E-04 | 8.38E-04               | 8.38E-04                | 0.09     | 0.04                  | 4.94E-05                             | --                     | 0.02      | 9.78                       |
| S2.002 & S2.003                                                                                                 | Aerobic Digester Tanks 1 and 2        | --       | --                     | --                      | --       | --                    | --                                   | 2.70                   | 1.29E-03  | 3,787                      |
| S2.004a, S2.004b, & S2.004c                                                                                     | Flare Combustion                      | 0.54     | 0.54                   | 0.54                    | 21.60    | 4.97                  | 20.55                                | 10.93                  | 0.39      | 78,849                     |
| S2.005                                                                                                          | Biogas Processing System              | --       | --                     | --                      | --       | --                    | --                                   | 0.16                   | 5.81E-02  | 2,570                      |
| S2.006                                                                                                          | Digester Contingency Vent             | --       | --                     | --                      | --       | --                    | --                                   | 16.85                  | 8.05E-03  | 23,670                     |
| IA1.001 & IA1.002                                                                                               | Boilers 1 & 2                         | 0.10     | 0.10                   | 0.10                    | 1.08     | 1.29                  | 7.73E-03                             | --                     | 7.09E-02  | 1,554                      |
| IA1.003                                                                                                         | Fugitive: Equipment Leaks             | --       | --                     | --                      | --       | --                    | --                                   | 0.29                   | 3.04E-04  | 333                        |
| IA1.004                                                                                                         | Fugitive: Solids Storage and Handling | 3.72     | 1.76                   | 0.27                    | --       | --                    | --                                   | --                     | --        | --                         |
| IA1.005                                                                                                         | Fugitive: Truck Traffic (haul roads)  | 4.84     | 1.31                   | 0.13                    | --       | --                    | --                                   | --                     | --        | --                         |
| Total                                                                                                           |                                       | 9.20     | 3.71                   | 1.04                    | 22.77    | 6.30                  | 20.55                                | 30.93                  | 0.56      | 110,773                    |
| [A.1] SO <sub>2</sub> Emissions from the F01 are the result of controlling H <sub>2</sub> S from S2.002-S2.003. |                                       |          |                        |                         |          |                       |                                      |                        |           |                            |
| B. CRITERIA POLLUTANT & GREENHOUSE GAS EMISSIONS SUMMARY - CONTROLLED                                           |                                       |          |                        |                         |          |                       |                                      |                        |           |                            |
| Emission Unit ID                                                                                                | Emission Unit Description             | PM (tpy) | PM <sub>10</sub> (tpy) | PM <sub>2.5</sub> (tpy) | CO (tpy) | NO <sub>x</sub> (tpy) | SO <sub>2</sub> <sup>(1)</sup> (tpy) | H <sub>2</sub> S (tpy) | VOC (tpy) | GHG CO <sub>2e</sub> (tpy) |
| S2.001                                                                                                          | Emergency Generator                   | 8.38E-04 | 8.38E-04               | 8.38E-04                | 0.09     | 0.04                  | 4.94E-05                             | --                     | 0.02      | 9.78                       |
| S2.002 & S2.003                                                                                                 | Aerobic Digester Tanks 1 and 2        | --       | --                     | --                      | --       | --                    | --                                   | 2.70                   | 1.29E-03  | 3,787                      |
| S2.004a, S2.004b, & S2.004c                                                                                     | Flare Combustion                      | 0.54     | 0.54                   | 0.54                    | 21.60    | 4.97                  | 20.55                                | 0.74                   | 0.39      | 11,292                     |
| S2.005                                                                                                          | Biogas Processing System              | --       | --                     | --                      | --       | --                    | --                                   | 0.16                   | 5.81E-02  | 2,570                      |
| S2.006                                                                                                          | Digester Contingency Vent             | --       | --                     | --                      | --       | --                    | --                                   | 0.03                   | 0.01      | 23,670                     |
| IA1.001 & IA1.002                                                                                               | Boilers 1 & 2                         | 0.10     | 0.10                   | 0.10                    | 1.08     | 1.29                  | 7.73E-03                             | --                     | 0.07      | 1,554                      |
| IA1.003                                                                                                         | Fugitive: Equipment Leaks             | --       | --                     | --                      | --       | --                    | --                                   | 0.29                   | 3.04E-04  | 333                        |
| IA1.004                                                                                                         | Fugitive: Solid Digestate Storage     | 3.72     | 1.76                   | 0.27                    | --       | --                    | --                                   | --                     | --        | --                         |
| IA1.005                                                                                                         | Fugitive: Truck Traffic (haul roads)  | 4.84     | 1.31                   | 0.13                    | --       | --                    | --                                   | --                     | --        | --                         |
| Facility-Wide Total                                                                                             |                                       | 9.20     | 3.71                   | 1.04                    | 22.77    | 6.30                  | 20.55                                | 3.93                   | 0.56      | 43,216                     |
| NAC 445B.310 Threshold-Modeling (tpy)                                                                           |                                       | 25       | 25                     | 25                      | 25       | 25                    | 25                                   | --                     | 25        | --                         |
| NAC 445B.037 Threshold-Class II Permit (tpy)                                                                    |                                       | --       | 5                      | 5                       | 50       | 5                     | 5                                    | --                     | --        | --                         |
| Modeling triggered (Y/N)?                                                                                       |                                       | No       | No                     | No                      | No       | No                    | No                                   | n/a                    | No        | n/a                        |
| Class II Permit required? (Y/N)?                                                                                |                                       | n/a      | No                     | No                      | No       | Yes                   | Yes                                  | n/a                    | n/a       | n/a                        |
| [A.1] SO <sub>2</sub> Emissions from the F01 are the result of controlling H <sub>2</sub> S from S2.002-S2.003. |                                       |          |                        |                         |          |                       |                                      |                        |           |                            |

APPENDIX B-2  
PROJECT HAP EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. ANNUAL HAP & NONCRITERIA EMISSIONS SUMMARY |          |           |           |                   |                               |                 |                                        |                 |
|-----------------------------------------------|----------|-----------|-----------|-------------------|-------------------------------|-----------------|----------------------------------------|-----------------|
| Pollutant                                     | CAS      | HAP (Y/N) | ADs & BPS | Boilers (tons/yr) | Emergency Generator (tons/yr) | Flare (tons/yr) | Fugitive Emission Components (tons/yr) | Total (tons/yr) |
| 1,1,2,2-Tetrachloroethane                     | 79345    | Y         | 9.24E-05  | --                | 2.12E-06                      | --              | 3.04E-07                               | 9.48E-05        |
| 1,1,2-Trichloroethane                         | 79005    | Y         | 5.71E-03  | --                | 1.28E-06                      | --              | 1.33E-05                               | 5.72E-03        |
| 1,2,4-Trimethylbenzene                        | 95636    | N         | 4.04E-03  | --                | --                            | --              | --                                     | 4.04E-03        |
| 1,3,5-Trimethylbenzene                        | 108678   | N         | 1.32E-03  | --                | --                            | --              | --                                     | 1.32E-03        |
| 1,3-Butadiene                                 | 106990   | Y         | --        | --                | 5.57E-05                      | --              | --                                     | 5.57E-05        |
| 1,3-Dichloropropene                           | 542756   | Y         | --        | --                | 1.07E-06                      | --              | --                                     | 1.07E-06        |
| 1-Methylnaphthalene                           | 90120    | N         | 3.55E-04  | --                | --                            | --              | --                                     | 3.55E-04        |
| 2-Chlorophenol                                | 95578    | N         | 1.22E-04  | --                | --                            | --              | --                                     | 1.22E-04        |
| 2-Methylnaphthalene                           | 91576    | N         | 6.08E-04  | 3.09E-07          | --                            | 4.09E-06        | --                                     | 6.12E-04        |
| 3,4-Methylphenol (o,p-cresol)                 | 615623   | N         | 1.01E-02  | --                | --                            | --              | --                                     | 1.01E-02        |
| 3,4-Methylphenol (o,p-cresol)                 | 106445   | Y         | 7.19E-03  | --                | --                            | --              | --                                     | 7.19E-03        |
| 3-Methylchloranthrene                         | 56495    | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| 4,4'-DDD                                      | 72548    | N         | 3.63E-07  | --                | --                            | --              | --                                     | 3.63E-07        |
| 4,4'-DDT                                      | 50293    | N         | 4.54E-06  | --                | --                            | --              | --                                     | 4.54E-06        |
| 7,12-Dimethylbenz(a)anthracene                | 57976    | Y         | --        | 2.06E-07          | --                            | 2.72E-06        | --                                     | 2.93E-06        |
| Acenaphthene                                  | 83329    | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Acenaphthylene                                | 203968   | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Acetaldehyde                                  | 75070    | Y         | --        | --                | 2.34E-04                      | --              | --                                     | 2.34E-04        |
| Acrolein                                      | 107028   | Y         | --        | --                | 2.34E-04                      | --              | --                                     | 2.34E-04        |
| Ammonia                                       | 7664417  | N         | 2.12E-01  | --                | --                            | --              | 4.26E-04                               | 2.13E-01        |
| Aniline                                       | 62533    | Y         | 1.97E-03  | --                | --                            | --              | 2.00E-06                               | 1.98E-03        |
| Anthracene                                    | 120127   | Y         | --        | 3.09E-08          | --                            | 4.09E-07        | --                                     | 4.39E-07        |
| Arsenic Compounds                             | AS5      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Benz(a)anthracene                             | 56553    | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Benzene                                       | 71432    | Y         | 8.63E-04  | 2.71E-05          | 1.33E-04                      | 3.57E-04        | 2.35E-06                               | 1.38E-03        |
| Benzo(a)pyrene                                | 50328    | Y         | --        | 1.55E-08          | --                            | 2.04E-07        | --                                     | 2.20E-07        |
| Benzo(b)fluoranthene                          | 205992   | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Benzo(g,h,i)perylene                          | 191242   | Y         | --        | 1.55E-08          | --                            | 2.04E-07        | --                                     | 2.20E-07        |
| Benzo(k)fluoranthene                          | 207089   | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Benzyl Alcohol                                | 100516   | N         | 1.05E-02  | --                | --                            | --              | --                                     | 1.05E-02        |
| Beryllium Compounds                           | BEC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| bis(2-chloroisopropyl)ether                   | 108601   | N         | 4.64E-04  | --                | --                            | --              | --                                     | 4.64E-04        |
| bis(2-chloroisopropyl)ether                   | 39638329 | N         | 4.64E-04  | --                | --                            | --              | --                                     | 4.64E-04        |
| bis(2-Ethylhexyl)phthalate                    | 117817   | Y         | 8.42E-04  | --                | --                            | --              | 8.02E-08                               | 8.42E-04        |
| Cadmium Compounds                             | CDC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Carbon Disulfide                              | 75150    | N         | 1.05E-05  | --                | --                            | --              | --                                     | 1.05E-05        |
| Carbon Tetrachloride                          | 56235    | Y         | 2.56E-04  | --                | 1.49E-06                      | --              | 3.53E-06                               | 2.61E-04        |
| Carbonyl Sulfide                              | 463581   | N         | 1.99E-04  | --                | --                            | --              | --                                     | 1.99E-04        |
| Chlorobenzene                                 | 108907   | Y         | 1.35E-04  | --                | 1.08E-06                      | --              | 4.88E-08                               | 1.36E-04        |
| Chloroform                                    | 67663    | Y         | --        | --                | 1.15E-06                      | --              | --                                     | 1.15E-06        |
| Chromium Compounds                            | 7440473  | Y         | --        | 1.80E-05          | --                            | 2.38E-04        | --                                     | 2.56E-04        |
| Chrysene                                      | 218019   | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| Cobalt Compounds                              | CDC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Dibenz(a,h)anthracene                         | 53703    | Y         | --        | 1.55E-08          | --                            | 2.04E-07        | --                                     | 2.20E-07        |
| Dichlorobenzene                               | 106467   | Y         | --        | --                | --                            | --              | --                                     | --              |
| Diethyl Disulfide                             | 110816   | N         | 1.49E-05  | --                | --                            | --              | --                                     | 1.49E-05        |
| Diethylphthalate                              | 84662    | N         | 4.01E-05  | --                | --                            | --              | --                                     | 4.01E-05        |
| Dimethyl Disulfide                            | 624920   | N         | 2.44E-05  | --                | --                            | --              | --                                     | 2.44E-05        |
| Dimethyl Sulfide                              | 75183    | N         | 1.61E-05  | --                | --                            | --              | --                                     | 1.61E-05        |
| Di-n-butylphthalate                           | 84742    | Y         | 2.58E-04  | --                | --                            | --              | 1.44E-07                               | 2.58E-04        |
| Endosulfan I                                  | 959988   | N         | 4.94E-07  | --                | --                            | --              | --                                     | 4.94E-07        |
| Endrin                                        | 72208    | N         | 3.70E-07  | --                | --                            | --              | --                                     | 3.70E-07        |
| Endrin aldehyde                               | 7421934  | N         | 1.82E-06  | --                | --                            | --              | --                                     | 1.82E-06        |
| Ethyl Mercaptan                               | 75081    | N         | 1.51E-05  | --                | --                            | --              | --                                     | 1.51E-05        |
| Ethylbenzene                                  | 100414   | Y         | 2.91E-03  | --                | 2.08E-06                      | --              | 7.36E-06                               | 2.92E-03        |
| Ethylene Dibromide                            | 106934   | Y         | --        | --                | 1.79E-06                      | --              | --                                     | 1.79E-06        |
| Fluoranthene                                  | 206440   | N         | 7.04E-05  | 3.86E-08          | --                            | 5.11E-07        | --                                     | 7.10E-05        |
| Fluorene                                      | 86737    | Y         | --        | 3.61E-08          | --                            | 4.77E-07        | --                                     | 5.13E-07        |
| Formaldehyde                                  | 50000    | Y         | --        | 9.66E-04          | 1.72E-03                      | 1.28E-02        | --                                     | 1.55E-02        |
| Heptachlor                                    | 76448    | Y         | 4.02E-06  | --                | --                            | --              | --                                     | 4.02E-06        |
| Heptachlor epoxide                            | 1024573  | N         | 4.19E-06  | --                | --                            | --              | --                                     | 4.19E-06        |
| Hexane                                        | 110543   | Y         | 2.79E-04  | 2.32E-02          | --                            | 3.06E-01        | --                                     | 3.30E-01        |
| Indeno(1,2,3-c,d)pyrene                       | 193395   | Y         | --        | 2.32E-08          | --                            | 3.06E-07        | --                                     | 3.30E-07        |
| i-Propyl Mercaptan                            | 107039   | N         | 8.33E-05  | --                | --                            | --              | --                                     | 8.33E-05        |
| Isopropylbenzene                              | 98828    | Y         | 7.15E-04  | --                | --                            | --              | 5.15E-05                               | 7.67E-04        |
| m,p-Xylenes                                   | 1330207  | Y         | 3.84E-03  | --                | 1.64E-05                      | --              | 6.49E-06                               | 3.86E-03        |
| Manganese Compounds                           | MNC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Mercury                                       | 7439976  | Y         | --        | 3.35E-06          | --                            | 4.43E-05        | --                                     | 4.76E-05        |
| Methanol                                      | 67561    | Y         | --        | --                | 2.57E-04                      | --              | --                                     | 2.57E-04        |
| Methoxychlor                                  | 72435    | N         | 1.32E-05  | --                | --                            | --              | --                                     | 1.32E-05        |
| Methyl Mercaptan                              | 74931    | N         | 2.38E-04  | --                | --                            | --              | --                                     | 2.38E-04        |
| Methylene Chloride                            | 75092    | Y         | --        | --                | 3.46E-06                      | --              | --                                     | 3.46E-06        |
| Naphthalene                                   | 91203    | Y         | 3.60E-04  | 7.86E-06          | 8.15E-06                      | 1.04E-04        | 6.54E-07                               | 4.81E-04        |
| n-Butylbenzene                                | 104518   | N         | 1.19E-03  | --                | --                            | --              | --                                     | 1.19E-03        |
| Nickel Compounds                              | NIC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Nitrobenzene                                  | 98953    | Y         | 5.68E-05  | --                | --                            | --              | 9.17E-07                               | 5.77E-05        |
| N-nitroso-di-n-propylamine                    | 621647   | N         | 7.17E-05  | --                | --                            | --              | --                                     | 7.17E-05        |
| n-Propylbenzene                               | 103651   | N         | 1.07E-03  | --                | --                            | --              | --                                     | 1.07E-03        |
| o-Xylene                                      | 95476    | Y         | 2.94E-03  | --                | --                            | --              | 3.87E-05                               | 2.98E-03        |
| Phenanthrene                                  | 85018    | N         | 1.57E-04  | 2.19E-07          | --                            | 2.89E-06        | --                                     | 1.60E-04        |
| Phenol                                        | 108952   | Y         | 2.21E-03  | --                | --                            | --              | 1.18E-06                               | 2.21E-03        |
| p-Isopropyltoluene                            | 99876    | N         | 7.86E-03  | --                | --                            | --              | --                                     | 7.86E-03        |
| Pyrene                                        | 129000   | Y         | --        | 6.44E-08          | --                            | 8.51E-07        | --                                     | 9.15E-07        |
| Pyridine                                      | 110861   | N         | 9.54E-05  | --                | --                            | --              | 4.34E-06                               | 9.98E-05        |
| sec-Butylbenzene                              | 135988   | N         | 1.45E-03  | --                | --                            | --              | --                                     | 1.45E-03        |
| Selenium Compounds                            | SEC      | Y         | --        | --                | --                            | --              | --                                     | --              |
| Styrene                                       | 100425   | Y         | 1.02E-04  | --                | 9.99E-07                      | --              | 4.00E-07                               | 1.03E-04        |
| t-Butyl Mercaptan                             | 75661    | N         | 4.38E-05  | --                | --                            | --              | --                                     | 4.38E-05        |
| tert-Butylbenzene                             | 98066    | N         | 5.05E-04  | --                | --                            | --              | --                                     | 5.05E-04        |
| Tetrachloroethylene                           | 127184   | Y         | 2.08E-04  | --                | --                            | --              | 4.77E-06                               | 2.13E-04        |
| Thiophene                                     | 110021   | N         | 1.77E-05  | --                | --                            | --              | --                                     | 1.77E-05        |
| Toluene                                       | 108883   | Y         | 1.10E-02  | 4.38E-05          | 4.68E-05                      | 5.79E-04        | 1.66E-06                               | 1.17E-02        |
| Vinyl Chloride                                | 75014    | Y         | --        | --                | 6.03E-07                      | --              | --                                     | 6.03E-07        |
| Total HAP (tons/yr)                           |          |           |           |                   |                               |                 |                                        | 3.90E-01        |
| Highest Single HAP (tons/yr)                  |          |           |           |                   |                               |                 |                                        | 3.30E-01        |

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APPENDIX B-2  
PROJECT HAP EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| B. SHORT-TERM HAP & NONCRITERIA EMISSIONS SUMMARY |          |              |                                        |                    |                                    |                   |                                                |                    |
|---------------------------------------------------|----------|--------------|----------------------------------------|--------------------|------------------------------------|-------------------|------------------------------------------------|--------------------|
| Pollutant                                         | CAS      | HAP<br>(Y/N) | ADs and BPS <sup>[1]</sup><br>(lbs/hr) | Boiler<br>(lbs/hr) | Emergency<br>Generator<br>(lbs/hr) | Flare<br>(lbs/hr) | Fugitive<br>Emission<br>Components<br>(lbs/hr) | Total<br>(lbs/day) |
| 1,1,2,2-Tetrachloroethane                         | 79345    | Y            | 1.46E-05                               | --                 | 4.25E-05                           | --                | 6.93E-08                                       | 1.37E-03           |
| 1,1,2-Trichloroethane                             | 79005    | Y            | 9.01E-04                               | --                 | 2.57E-05                           | --                | 3.03E-06                                       | 2.23E-02           |
| 1,2,4-Trimethylbenzene                            | 95636    | N            | 6.39E-04                               | --                 | --                                 | --                | --                                             | 1.53E-02           |
| 1,3,5-Trimethylbenzene                            | 108678   | N            | 2.09E-04                               | --                 | --                                 | --                | --                                             | 5.01E-03           |
| 1,3-Butadiene                                     | 106990   | Y            | --                                     | --                 | 1.11E-03                           | --                | --                                             | 2.67E-02           |
| 1,3-Dichloropropene                               | 542756   | Y            | --                                     | --                 | 2.13E-05                           | --                | --                                             | 5.12E-04           |
| 1-Methylnaphthalene                               | 90120    | N            | 5.60E-05                               | --                 | --                                 | --                | --                                             | 1.34E-03           |
| 2-Chlorophenol                                    | 95578    | N            | 1.92E-05                               | --                 | --                                 | --                | --                                             | 4.62E-04           |
| 2-Methylnaphthalene                               | 91576    | N            | 9.60E-05                               | 7.06E-08           | --                                 | --                | --                                             | 2.31E-03           |
| 3,4-Methylphenol (o,p-cresol)                     | 615623   | N            | 1.59E-03                               | --                 | --                                 | --                | --                                             | 3.81E-02           |
| 3,4-Methylphenol (o,p-cresol)                     | 106445   | Y            | 1.14E-03                               | --                 | --                                 | --                | --                                             | 2.72E-02           |
| 3-Methylchloranthrene                             | 56495    | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| 4,4'-DDD                                          | 72548    | N            | 5.73E-08                               | --                 | --                                 | --                | --                                             | 1.38E-06           |
| 4,4'-DDT                                          | 50293    | N            | 7.16E-07                               | --                 | --                                 | --                | --                                             | 1.72E-05           |
| 7,12-Dimethylbenz[a]anthracene                    | 57976    | Y            | --                                     | 4.71E-08           | --                                 | --                | --                                             | 1.13E-06           |
| Acenaphthene                                      | 83329    | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Acenaphthylene                                    | 203968   | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Acetaldehyde                                      | 75070    | Y            | --                                     | --                 | 4.68E-03                           | --                | --                                             | 1.12E-01           |
| Acrolein                                          | 107028   | Y            | --                                     | --                 | 4.68E-03                           | --                | --                                             | 1.12E-01           |
| Ammonia                                           | 7664417  | N            | 5.90E-02                               | --                 | --                                 | --                | 9.73E-05                                       | 1.42E+00           |
| Aniline                                           | 62533    | Y            | 3.12E-04                               | --                 | --                                 | --                | 4.56E-07                                       | 7.50E-03           |
| Anthracene                                        | 120127   | Y            | --                                     | 7.06E-09           | --                                 | --                | --                                             | 1.69E-07           |
| Arsenic Compounds                                 | ASC      | Y            | --                                     | --                 | --                                 | --                | --                                             | --                 |
| Benz[a]anthracene                                 | 56553    | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Benzene                                           | 71432    | Y            | 1.36E-04                               | 6.18E-06           | 2.65E-03                           | --                | 5.37E-07                                       | 6.71E-02           |
| Benzo[a]pyrene                                    | 50328    | Y            | --                                     | 3.53E-09           | --                                 | --                | --                                             | 8.47E-08           |
| Benzo[b]fluoranthene                              | 205992   | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Benzo[g,h,i]perylene                              | 191242   | Y            | --                                     | 3.53E-09           | --                                 | --                | --                                             | 8.47E-08           |
| Benzo[k]fluoranthene                              | 207089   | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Benzyl Alcohol                                    | 100516   | N            | 2.48E-03                               | --                 | --                                 | --                | --                                             | 5.95E-02           |
| Beryllium Compounds                               | 7440417  | Y            | --                                     | 3.53E-08           | --                                 | --                | --                                             | 8.47E-07           |
| bis(2-chloroisopropyl)ether                       | 108601   | N            | 7.33E-05                               | --                 | --                                 | --                | --                                             | 1.76E-03           |
| bis(2-chloroisopropyl)ether                       | 39638329 | N            | 7.33E-05                               | --                 | --                                 | --                | --                                             | 1.76E-03           |
| bis(2-Ethylhexyl)phthalate                        | 117817   | Y            | 1.90E-04                               | --                 | --                                 | --                | 1.83E-08                                       | 4.56E-03           |
| Cadmium Compounds                                 | 7440439  | Y            | --                                     | 3.24E-06           | --                                 | --                | --                                             | 7.76E-05           |
| Carbon Disulfide                                  | 75150    | N            | 1.66E-06                               | --                 | --                                 | --                | --                                             | 3.97E-05           |
| Carbon Tetrachloride                              | 56235    | Y            | 4.17E-05                               | --                 | 2.97E-05                           | --                | 8.05E-07                                       | 1.73E-03           |
| Carbonyl Sulfide                                  | 463581   | N            | 3.14E-05                               | --                 | --                                 | --                | --                                             | 7.54E-04           |
| Chlorobenzene                                     | 108907   | Y            | 2.13E-05                               | --                 | 2.17E-05                           | --                | 1.11E-08                                       | 1.03E-03           |
| Chloroform                                        | 67663    | Y            | --                                     | --                 | 2.30E-05                           | --                | --                                             | 5.52E-04           |
| Chromium Compounds                                | 7440473  | Y            | --                                     | 4.12E-06           | --                                 | --                | --                                             | 9.88E-05           |
| Chrysene                                          | 218019   | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| Cobalt Compounds                                  | 7440484  | Y            | --                                     | 2.47E-07           | --                                 | --                | --                                             | 5.93E-06           |
| Dibenz[a,h]anthracene                             | 53703    | Y            | --                                     | 3.53E-09           | --                                 | --                | --                                             | 8.47E-08           |
| Dichlorobenzene                                   | 106467   | Y            | --                                     | --                 | --                                 | --                | --                                             | --                 |
| Diethyl Disulfide                                 | 110816   | N            | 2.35E-06                               | --                 | --                                 | --                | --                                             | 5.63E-05           |
| Diethylphthalate                                  | 84662    | N            | 6.54E-06                               | --                 | --                                 | --                | --                                             | 1.57E-04           |
| Dimethyl Disulfide                                | 624920   | N            | 3.86E-06                               | --                 | --                                 | --                | --                                             | 9.25E-05           |
| Dimethyl Sulfide                                  | 75183    | N            | 2.54E-06                               | --                 | --                                 | --                | --                                             | 6.10E-05           |
| Di-n-butylphthalate                               | 84742    | Y            | 4.24E-05                               | --                 | --                                 | --                | 3.29E-08                                       | 1.02E-03           |
| Endosulfan I                                      | 959988   | N            | 7.81E-08                               | --                 | --                                 | --                | --                                             | 1.87E-06           |
| Endrin                                            | 72208    | N            | 5.85E-08                               | --                 | --                                 | --                | --                                             | 1.40E-06           |
| Endrin aldehyde                                   | 7421934  | N            | 2.87E-07                               | --                 | --                                 | --                | --                                             | 6.90E-06           |
| Ethyl Mercaptan                                   | 75081    | N            | 2.38E-06                               | --                 | --                                 | --                | --                                             | 5.72E-05           |
| Ethylbenzene                                      | 100414   | Y            | 4.59E-04                               | --                 | 4.16E-05                           | --                | 1.68E-06                                       | 1.21E-02           |
| Ethylene Dibromide                                | 106934   | Y            | --                                     | --                 | 3.58E-05                           | --                | --                                             | 8.58E-04           |
| Fluoranthene                                      | 206440   | N            | 1.11E-05                               | 8.82E-09           | --                                 | --                | --                                             | 2.67E-04           |
| Fluorene                                          | 86737    | Y            | --                                     | 8.24E-09           | --                                 | --                | --                                             | 1.98E-07           |
| Formaldehyde                                      | 50000    | Y            | --                                     | 2.21E-04           | 3.44E-02                           | --                | --                                             | 8.31E-01           |
| Heptachlor                                        | 76448    | Y            | 6.35E-07                               | --                 | --                                 | --                | --                                             | 1.52E-05           |
| Heptachlor epoxide                                | 1024573  | N            | 6.62E-07                               | --                 | --                                 | --                | --                                             | 1.59E-05           |
| Hexane                                            | 110543   | Y            | 4.41E-05                               | 5.29E-03           | --                                 | --                | --                                             | 1.28E-01           |
| Indeno[1,2,3-c,d]pyrene                           | 193395   | Y            | --                                     | 5.29E-09           | --                                 | --                | --                                             | 1.27E-07           |
| i-Propyl Mercaptan                                | 107039   | N            | 1.32E-05                               | --                 | --                                 | --                | --                                             | 3.16E-04           |
| Isopropylbenzene                                  | 98828    | Y            | 1.13E-04                               | --                 | --                                 | --                | 1.18E-05                                       | 2.99E-03           |
| m/p-Xylenes                                       | 1330207  | Y            | 6.07E-04                               | --                 | 3.27E-04                           | --                | 1.48E-06                                       | 2.25E-02           |
| Manganese Compounds                               | 7439965  | Y            | --                                     | 1.12E-06           | --                                 | --                | --                                             | 2.68E-05           |
| Mercury                                           | 7439976  | Y            | --                                     | 7.65E-07           | --                                 | --                | --                                             | 1.84E-05           |
| Methanol                                          | 67561    | Y            | --                                     | --                 | 5.14E-03                           | --                | --                                             | 1.23E-01           |
| Methoxychlor                                      | 72435    | N            | 2.08E-06                               | --                 | --                                 | --                | --                                             | 5.00E-05           |
| Methyl Mercaptan                                  | 74931    | N            | 3.77E-05                               | --                 | --                                 | --                | --                                             | 9.04E-04           |
| Methylene Chloride                                | 75092    | Y            | --                                     | --                 | 6.92E-05                           | --                | --                                             | 1.66E-03           |
| Naphthalene                                       | 91203    | Y            | 5.69E-05                               | 1.79E-06           | 1.63E-04                           | --                | 1.49E-07                                       | 5.32E-03           |
| n-Butylbenzene                                    | 104518   | N            | 1.89E-04                               | --                 | --                                 | --                | --                                             | 4.53E-03           |
| Nickel Compounds                                  | 7440020  | Y            | --                                     | 6.18E-06           | --                                 | --                | --                                             | 1.48E-04           |
| Nitrobenzene                                      | 98953    | Y            | 8.98E-06                               | --                 | --                                 | --                | 2.09E-07                                       | 2.20E-04           |
| N-nitroso-di-n-propylamine                        | 621647   | N            | 1.13E-05                               | --                 | --                                 | --                | --                                             | 2.72E-04           |
| n-Propylbenzene                                   | 103651   | N            | 1.70E-04                               | --                 | --                                 | --                | --                                             | 4.07E-03           |
| o-Xylene                                          | 95476    | Y            | 4.65E-04                               | --                 | --                                 | --                | 8.85E-06                                       | 1.14E-02           |
| Phenanthrene                                      | 85018    | N            | 2.49E-05                               | 5.00E-08           | --                                 | --                | --                                             | 5.98E-04           |
| Phenol                                            | 108952   | Y            | 3.54E-04                               | --                 | --                                 | --                | 2.70E-07                                       | 8.50E-03           |
| p-Isopropyltoluene                                | 99876    | N            | 1.86E-03                               | --                 | --                                 | --                | --                                             | 4.47E-02           |
| Pyrene                                            | 129000   | Y            | --                                     | 1.47E-08           | --                                 | --                | --                                             | 3.53E-07           |
| Pyridine                                          | 110861   | N            | 1.51E-05                               | --                 | --                                 | --                | 9.91E-07                                       | 3.86E-04           |
| sec-Butylbenzene                                  | 135988   | N            | 2.29E-04                               | --                 | --                                 | --                | --                                             | 5.51E-03           |
| Selenium Compounds                                | SEC      | Y            | --                                     | --                 | --                                 | --                | --                                             | --                 |
| Styrene                                           | 100425   | Y            | 2.17E-05                               | --                 | 2.00E-05                           | --                | 9.14E-08                                       | 1.00E-03           |
| t-Butyl Mercaptan                                 | 75661    | N            | 6.92E-06                               | --                 | --                                 | --                | --                                             | 1.66E-04           |
| tert-Butylbenzene                                 | 98066    | N            | 7.98E-05                               | --                 | --                                 | --                | --                                             | 1.92E-03           |
| Tetrachloroethylene                               | 127184   | Y            | 3.42E-05                               | --                 | --                                 | --                | 1.09E-06                                       | 8.46E-04           |
| Thiophene                                         | 110021   | N            | 2.80E-06                               | --                 | --                                 | --                | --                                             | 6.72E-05           |
| Toluene                                           | 108883   | Y            | 1.74E-03                               | 1.00E-05           | 9.37E-04                           | --                | 3.79E-07                                       | 6.44E-02           |
| Vinyl Chloride                                    | 75014    | Y            | --                                     | --                 | 1.21E-05                           | --                | --                                             | 2.89E-04           |

[8.1] Worst-case pollutant emission rate from Sections B and C of Appendix B-5

End of calculation

**APPENDIX B-3**  
**PROCESS GAS FLOW SUMMARY**  
**CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility**

| <b>A. PROCESS GAS FLOW SUMMARY BY EMISSION SCENARIO</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                  |                                    |                                     |                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|-------------------------------------|---------------------------------------------|
| Emission Scenario <sup>[1]</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Gas Type                         | Flow Rate <sup>[1]</sup><br>(scfm) | Duration <sup>[1]</sup><br>(hrs/yr) | Annual Flow <sup>[1], [2]</sup><br>(scf/yr) |
| <i>Process Production Rates</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                  |                                    |                                     |                                             |
| Normal Operation <sup>[3]</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Biogas                           | 777                                | --                                  | --                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | BPS Permeate                     | 345                                | 8,760                               | 181,400,000                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | RNG                              | 432                                | --                                  | --                                          |
| <i>Maximum Annual Flare Flows</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                  |                                    |                                     |                                             |
| AD Direct Venting (PRVs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Treated Biogas <sup>(Vent)</sup> | -- <sup>[4]</sup>                  | -- <sup>[4]</sup>                   | 12,000,000                                  |
| Direct Venting (Contingency Vent)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Treated Biogas <sup>(Vent)</sup> | -- <sup>[4]</sup>                  | -- <sup>[4]</sup>                   | 75,000,000                                  |
| Flared Gas from Maintenance Events, Startups and Shutdowns, and Other Events                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Treated Biogas                   | 750                                | -- <sup>[5]</sup>                   | 135,000,000                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | RNG                              | 330                                | -- <sup>[5]</sup>                   | 70,000,000                                  |
| BPS Permeate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                  |                                    |                                     | 181,400,000                                 |
| Biogas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |                                    |                                     | 135,000,000                                 |
| Treated Biogas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                    |                                     | 135,000,000                                 |
| Conditioned Biogas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                  |                                    |                                     | 0                                           |
| RNG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                  |                                    |                                     | 70,000,000                                  |
| <i>Maximum Annual PRV Flows</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                  |                                    |                                     |                                             |
| Treated Biogas <sup>(Vent)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |                                    |                                     | 12,000,000                                  |
| Biogas <sup>(Vent)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                  |                                    |                                     | 75,000,000                                  |
| [A.1] RNG production assumes 56% conversion of biogas to RNG on a volume basis. BPS permeate annual flow assumes 8,760 hr/yr operation (e.g., zero flaring prior to BPS). Includes both out-of-spec and in-spec RNG.                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |                                    |                                     |                                             |
| [A.2] Potential annual flow estimates based on a maximum of 70,000,000 scf/yr of RNG flaring, 9,000,000 scf/yr of AD venting through PRVs, and 75,000,000 scf/yr digster venting through the contingency vent. The biogas flaring assumes a maximum of 125,000,000 scf/yr treated biogas.                                                                                                                                                                                                                                                                                                                              |                                  |                                    |                                     |                                             |
| [A.3] During normal facility operations, the only process gas emitted will be BPS Permeate and fugitive equipment leaks. The other emission scenarios that require process gas to be sent to the flare would result from startup, shutdown, maintenance, or other events that require flaring. When the flare is operational, there will be no emissions from the BPS unless RNG is being flared. BPS short-term rates are based on maximum equipment capacity of the BPS. Long-term BPS exhaust is bottlenecked by the production rate of the digesters. Kiewit has assumed 8,760 hours per year of BPS permeate as a |                                  |                                    |                                     |                                             |
| [A.4] An AD overpressure condition is not expected. The flow rate that would be vented or flared during an overpressure event is unknown. It is assumed that a digester tank overpressure condition could result in up to 9,000,000 scf/yr of treated biogas vented directly to atmosphere from the combination of the two ADs.                                                                                                                                                                                                                                                                                        |                                  |                                    |                                     |                                             |
| [A.5] Short term flow rates and durations of flaring are variable depending on process conditions, but will not exceed the capacity of the flare. Therefore, short term emissions from the flare are based on the capacity of the flare. BPS permeate is not vented to the flare.                                                                                                                                                                                                                                                                                                                                      |                                  |                                    |                                     |                                             |



APPENDIX B-4  
GAS COMPOSITION DATA  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| Compound                                                                | CAS No.  | MW<br>(lb/lb-mol) | HAP?<br>(Y/N) | Molar/Volumetric Concentration (mole % or ppbv) <sup>[1][2]</sup> |                |                    |                |          | Mass Concentration (lb/scf) <sup>[3]</sup> |            |                |                    |          |              |
|-------------------------------------------------------------------------|----------|-------------------|---------------|-------------------------------------------------------------------|----------------|--------------------|----------------|----------|--------------------------------------------|------------|----------------|--------------------|----------|--------------|
|                                                                         |          |                   |               | Raw Biogas                                                        | Treated Biogas | Conditioned Biogas | Maximum Biogas | RNG      | BPS Permeate                               | Raw Biogas | Treated Biogas | Conditioned Biogas | RNG      | BPS Permeate |
| Composition Data from Facility Design Info                              |          |                   |               |                                                                   |                |                    |                |          |                                            |            |                |                    |          |              |
| Methane (CH <sub>4</sub> )                                              | 74828    | 16.0              | N             | 55%                                                               | 55%            | 55%                | --             | 98%      | 1%                                         | 2.32E-02   | 2.32E-02       | 2.32E-02           | 4.13E-02 | 4.22E-04     |
| Carbon Dioxide (CO <sub>2</sub> )                                       | 124389   | 44.0              | N             | 44.4%                                                             | 44.4%          | 44.4%              | --             | 1.5%     | 98.0%                                      | 5.15E-02   | 5.15E-02       | 5.15E-02           | 1.74E-03 | 1.14E-01     |
| Nitrogen (N <sub>2</sub> )                                              | 7727379  | 28.0              | N             | 0.5%                                                              | 0.5%           | 0.5%               | --             | 0.7%     | 0.2%                                       | 3.69E-04   | 3.69E-04       | 3.69E-04           | 5.16E-04 | 1.48E-04     |
| Oxygen (O <sub>2</sub> )                                                | 7782447  | 32.0              | N             | 0.1%                                                              | 0.1%           | 0.3%               | --             | 0.2%     | 0.45%                                      | 8.43E-05   | 8.43E-05       | 2.53E-04           | 1.69E-04 | 3.79E-04     |
| Hydrogen Sulfide (H <sub>2</sub> S) - Hourly                            | 7783064  | 34.1              | N             | 0.68%                                                             | 0.500%         | 0.001%             | --             | 0.0004%  | 0.002%                                     | 6.11E-04   | 4.49E-04       | 8.99E-07           | 3.59E-07 | 1.80E-06     |
| Hydrogen Sulfide (H <sub>2</sub> S) - Annual ammonia (NH <sub>3</sub> ) | 7783064A | 34.1              | N             | 0.36%                                                             | 0.180%         | 0.001%             | --             | 0.0004%  | 0.002%                                     | 3.23E-04   | 1.62E-04       | 8.99E-07           | 3.59E-07 | 1.80E-06     |
|                                                                         | 7664417  | 17.0              | N             | 0.002%                                                            | 0.002%         | 0.002%             | --             | 0.002%   | 0.002%                                     | 8.97E-07   | 8.97E-07       | 8.97E-07           | 8.97E-07 | 8.97E-07     |
| Composition Data from GTI Document <sup>[2]</sup>                       |          |                   |               |                                                                   |                |                    |                |          |                                            |            |                |                    |          |              |
|                                                                         |          |                   |               | Note 3                                                            | Note 4         | Note 5             |                | Note 7   | Note 8                                     |            |                |                    |          |              |
| Benzene                                                                 | 71432    | 78.11             | Y             | 13.65                                                             | 13.65          | 12.74              | 13.65          | 1.38     | 29.02                                      | 2.8E-09    | 2.8E-09        | 2.6E-09            | 2.8E-10  | 6.0E-09      |
| Carbon Tetrachloride                                                    | 56235    | 153.82            | Y             | 1.93                                                              | 1.93           | 2.12               | 2.12           | 0.21     | 4.51                                       | 7.8E-10    | 7.8E-10        | 8.6E-10            | 8.7E-11  | 1.8E-09      |
| Pyridine                                                                | 110861   | 79.1              | N             | 1.49                                                              | 1.49           | 1.49               | 1.49           | 0.15     | 3.17                                       | 3.1E-10    | 3.1E-10        | 3.1E-10            | 3.1E-11  | 6.6E-10      |
| Toluene                                                                 | 108883   | 92.14             | Y             | 147.26                                                            | 147.26         | 40.35              | 147.26         | 14.86    | 313.04                                     | 3.6E-08    | 3.6E-08        | 9.8E-09            | 3.6E-09  | 7.6E-08      |
| 1,1,2-Trichloroethane                                                   | 79005    | 133.4             | Y             | 52.82                                                             | 52.82          | 49.62              | 52.82          | 5.33     | 112.28                                     | 1.9E-08    | 1.9E-08        | 1.7E-08            | 1.9E-09  | 3.9E-08      |
| Tetrachloroethene                                                       | 127184   | 165.83            | Y             | 1.44                                                              | 1.44           | 1.61               | 1.61           | 0.16     | 3.42                                       | 6.3E-10    | 6.3E-10        | 7.0E-10            | 7.1E-11  | 1.5E-09      |
| Ethylbenzene                                                            | 100414   | 106.17            | Y             | 33.81                                                             | 33.81          | 22.76              | 33.81          | 3.41     | 71.87                                      | 9.5E-09    | 9.5E-09        | 6.4E-09            | 9.5E-10  | 2.0E-08      |
| m/p-Xylenes                                                             | 1330207  | 106.16            | Y             | 44.67                                                             | 44.67          | 5.54               | 44.67          | 4.51     | 94.96                                      | 1.2E-08    | 1.2E-08        | 1.5E-09            | 1.3E-09  | 2.7E-08      |
| Styrene                                                                 | 100425   | 104.15            | Y             | 0.45                                                              | 0.45           | 1.63               | 1.63           | 0.16     | 3.47                                       | 1.2E-10    | 1.2E-10        | 4.5E-10            | 4.5E-11  | 9.5E-10      |
| o-Xylene                                                                | 95476    | 106.16            | Y             | 34.22                                                             | 34.22          | 5.10               | 34.22          | 3.45     | 72.74                                      | 9.6E-09    | 9.6E-09        | 1.4E-09            | 9.7E-10  | 2.0E-08      |
| Isopropylbenzene                                                        | 98828    | 120.19            | Y             | 7.35                                                              | 7.35           | 1.11               | 7.35           | 0.74     | 15.62                                      | 2.3E-09    | 2.3E-09        | 3.5E-10            | 2.3E-10  | 4.9E-09      |
| n-Propylbenzene                                                         | 103651   | 120.2             | N             | 11.03                                                             | 11.03          | 1.69               | 11.03          | 1.11     | 23.45                                      | 3.5E-09    | 3.5E-09        | 5.4E-10            | 3.5E-10  | 7.4E-09      |
| 1,3,5-Trimethylbenzene                                                  | 108678   | 120.19            | N             | 13.58                                                             | 13.58          | 2.18               | 13.58          | 1.37     | 28.87                                      | 4.3E-09    | 4.3E-09        | 6.9E-10            | 4.3E-10  | 9.1E-09      |
| tert-Butylbenzene                                                       | 98066    | 134.22            | N             | 4.65                                                              | 4.65           | 1.02               | 4.65           | 0.47     | 9.88                                       | 1.6E-09    | 1.6E-09        | 3.6E-10            | 1.7E-10  | 3.5E-09      |
| 1,2,4-Trimethylbenzene                                                  | 95636    | 120.19            | N             | 41.53                                                             | 41.53          | 7.79               | 41.53          | 4.19     | 88.28                                      | 1.3E-08    | 1.3E-08        | 2.5E-09            | 1.3E-09  | 2.8E-08      |
| sec-Butylbenzene                                                        | 135988   | 134.22            | N             | 13.36                                                             | 13.36          | 1.58               | 13.36          | 1.35     | 28.40                                      | 4.7E-09    | 4.7E-09        | 5.6E-10            | 4.8E-10  | 1.0E-08      |
| Phenol                                                                  | 108952   | 94.11             | Y             | 28.14                                                             | 28.14          | 29.38              | 29.38          | 2.97     | 62.46                                      | 7.0E-09    | 7.0E-09        | 7.3E-09            | 7.4E-10  | 1.5E-08      |
| Aniline                                                                 | 62533    | 93.13             | Y             | 26.18                                                             | 26.18          | 24.60              | 26.18          | 2.64     | 55.65                                      | 6.4E-09    | 6.4E-09        | 6.0E-09            | 6.5E-10  | 1.4E-08      |
| 2-Chlorophenol                                                          | 95578    | 128.56            | N             | 1.17                                                              | 1.17           | 1.05               | 1.17           | 0.12     | 2.49                                       | 4.0E-10    | 4.0E-10        | 3.6E-10            | 4.0E-11  | 8.4E-10      |
| p-Isopropyltoluene                                                      | 99876    | 134.21            | N             | 8.17                                                              | 8.17           | 108.52             | 108.52         | 10.95    | 230.69                                     | 2.9E-09    | 2.9E-09        | 3.8E-08            | 3.9E-09  | 8.2E-08      |
| Benzyl Alcohol                                                          | 100516   | 108.14            | N             | 13.76                                                             | 13.76          | 179.07             | 179.07         | 18.08    | 380.66                                     | 3.9E-09    | 3.9E-09        | 5.1E-08            | 5.2E-09  | 1.1E-07      |
| 3,4-Methylphenol (o,p-cresol)                                           | 615623   | 151.21            | N             | 82.07                                                             | 82.07          | 18.64              | 82.07          | 8.28     | 174.46                                     | 3.3E-08    | 3.3E-08        | 7.4E-09            | 3.3E-09  | 7.0E-08      |
| bis(2-chloroisopropyl)ether                                             | 108601   | 171.06            | N             | 3.35                                                              | 3.35           | 3.15               | 3.35           | 0.34     | 7.12                                       | 1.5E-09    | 1.5E-09        | 1.4E-09            | 1.5E-10  | 3.2E-09      |
| n-Butylbenzene                                                          | 104518   | 134.22            | N             | 10.99                                                             | 10.99          | 2.13               | 10.99          | 1.11     | 23.36                                      | 3.9E-09    | 3.9E-09        | 7.5E-10            | 3.9E-10  | 8.3E-09      |
| N-nitroso-di-n-propylamine                                              | 621647   | 130.19            | N             | 0.68                                                              | 0.68           | 0.64               | 0.68           | 0.07     | 1.45                                       | 2.3E-10    | 2.3E-10        | 2.2E-10            | 2.4E-11  | 5.0E-10      |
| Nitrobenzene                                                            | 98953    | 123.11            | Y             | 0.57                                                              | 0.57           | 0.57               | 0.57           | 0.06     | 1.21                                       | 1.8E-10    | 1.8E-10        | 1.8E-10            | 1.9E-11  | 3.9E-10      |
| Naphthalene                                                             | 91203    | 128.17            | Y             | 3.47                                                              | 3.47           | 1.36               | 3.47           | 0.35     | 7.38                                       | 1.2E-09    | 1.2E-09        | 4.6E-10            | 1.2E-10  | 2.5E-09      |
| 2-Methylnaphthalene                                                     | 91576    | 142.2             | N             | 5.28                                                              | 5.28           | 5.28               | 5.28           | 0.53     | 11.22                                      | 2.0E-09    | 2.0E-09        | 2.0E-09            | 2.0E-10  | 4.2E-09      |
| 1-Methylnaphthalene                                                     | 90120    | 142.2             | N             | 3.08                                                              | 3.08           | 3.08               | 3.08           | 0.31     | 6.55                                       | 1.2E-09    | 1.2E-09        | 1.2E-09            | 1.2E-10  | 2.5E-09      |
| Diethylphthalate                                                        | 84662    | 222.24            | N             | 0.21                                                              | 0.21           | 0.23               | 0.23           | 0.02     | 0.49                                       | 1.2E-10    | 1.2E-10        | 1.3E-10            | 1.4E-11  | 2.9E-10      |
| Phenanthrene                                                            | 85018    | 178.23            | N             | 1.09                                                              | 1.09           | 1.09               | 1.09           | 0.11     | 2.32                                       | 5.1E-10    | 5.1E-10        | 5.1E-10            | 5.2E-11  | 1.1E-09      |
| Di-n-butylphthalate                                                     | 84742    | 278.34            | Y             | 1.06                                                              | 1.06           | 1.19               | 1.19           | 0.12     | 2.53                                       | 7.8E-10    | 7.8E-10        | 8.7E-10            | 8.8E-11  | 1.9E-09      |
| Fluoranthene                                                            | 206440   | 202.26            | N             | 0.43                                                              | 0.43           | 0.43               | 0.43           | 0.04     | 0.91                                       | 2.3E-10    | 2.3E-10        | 2.3E-10            | 2.3E-11  | 4.9E-10      |
| bis(2-ethylhexyl)phthalate                                              | 117817   | 390.564           | Y             | 0.65                                                              | 0.65           | 3.80               | 3.80           | 0.38     | 8.08                                       | 6.7E-10    | 6.7E-10        | 3.9E-09            | 3.9E-10  | 8.3E-09      |
| Chlorobenzene                                                           | 108907   | 112.55            | Y             | 1.48                                                              | 1.48           | 1.48               | 1.48           | 0.15     | 3.15                                       | 4.4E-10    | 4.4E-10        | 4.4E-10            | 4.4E-11  | 9.3E-10      |
| Hexane                                                                  | 110543   | 86.18             | N             | 4.00                                                              | 4.00           | 4.00               | 4.00           | 0.40     | 8.50                                       | 9.1E-10    | 9.1E-10        | 9.1E-10            | 9.2E-11  | 1.9E-09      |
| Carbonyl Sulfide                                                        | 463581   | 60.08             | N             | 4.09                                                              | 4.09           | 4.09               | 4.09           | 0.41     | 8.69                                       | 6.5E-10    | 6.5E-10        | 6.5E-10            | 6.5E-11  | 1.4E-09      |
| Carbon Disulfide                                                        | 75150    | 76.15             | N             | 0.17                                                              | 0.17           | 0.17               | 0.17           | 0.02     | 0.36                                       | 3.4E-11    | 3.4E-11        | 3.4E-11            | 3.4E-12  | 7.3E-11      |
| Methyl Mercaptan                                                        | 74931    | 48.11             | N             | 6.12                                                              | 6.12           | 6.12               | 6.12           | 0.62     | 13.01                                      | 7.8E-10    | 7.8E-10        | 7.8E-10            | 7.8E-11  | 1.6E-09      |
| Ethyl Mercaptan                                                         | 75081    | 62.14             | N             | 0.30                                                              | 0.30           | 0.30               | 0.30           | 0.03     | 0.64                                       | 4.9E-11    | 4.9E-11        | 4.9E-11            | 5.0E-12  | 1.0E-10      |
| i-Propyl/n-Propyl Mercaptan                                             | 107039   | 76.16             | N             | 1.35                                                              | 1.35           | 1.35               | 1.35           | 0.14     | 2.87                                       | 2.7E-10    | 2.7E-10        | 2.7E-10            | 2.7E-11  | 5.8E-10      |
| t-Butyl Mercaptan                                                       | 75661    | 90.19             | N             | 0.60                                                              | 0.60           | 0.60               | 0.60           | 0.06     | 1.28                                       | 1.4E-10    | 1.4E-10        | 1.4E-10            | 1.4E-11  | 3.0E-10      |
| Dimethyl Sulfide                                                        | 75183    | 62.14             | N             | 0.32                                                              | 0.32           | 0.32               | 0.32           | 0.03     | 0.68                                       | 5.2E-11    | 5.2E-11        | 5.2E-11            | 5.3E-12  | 1.1E-10      |
| Dimethyl Disulfide                                                      | 624920   | 94.2              | N             | 0.32                                                              | 0.32           | 0.32               | 0.32           | 0.03     | 0.68                                       | 7.9E-11    | 7.9E-11        | 7.9E-11            | 8.0E-12  | 1.7E-10      |
| Diethyl Disulfide                                                       | 110816   | 122.3             | N             | 0.15                                                              | 0.15           | 0.15               | 0.15           | 0.02     | 0.32                                       | 4.8E-11    | 4.8E-11        | 4.8E-11            | 4.9E-12  | 1.0E-10      |
| Thiophene                                                               | 110021   | 84.14             | N             | 0.26                                                              | 0.26           | 0.26               | 0.26           | 0.03     | 0.55                                       | 5.8E-11    | 5.8E-11        | 5.8E-11            | 5.8E-12  | 1.2E-10      |
| 3,4-Methylphenol (o,p-cresol)                                           | 106445   | 108.14            | Y             | 82.07                                                             | 82.07          | 18.64              | 82.07          | 8.28     | 174.46                                     | 2.3E-08    | 2.3E-08        | 5.3E-09            | 2.4E-09  | 5.0E-08      |
| bis(2-chloroisopropyl)ether                                             | 39638329 | 171.06            | N             | 3.35                                                              | 3.35           | 3.15               | 3.35           | 0.34     | 7.12                                       | 1.5E-09    | 1.5E-09        | 1.4E-09            | 1.5E-10  | 3.2E-09      |
| Heptachlor                                                              | 76448    | 373.3             | Y             | 1.33E-02                                                          | 1.33E-02       | 1.33E-03           | 1.33E-02       | 1.34E-03 | 2.83E-02                                   | 1.3E-11    | 1.3E-11        | 1.3E-12            | 1.3E-12  | 2.8E-11      |
| Heptachlor epoxide                                                      | 1024573  | 389.3             | N             | 1.33E-02                                                          | 1.33E-02       | 1.33E-03           | 1.33E-02       | 1.34E-03 | 2.83E-02                                   | 1.4E-11    | 1.4E-11        | 1.4E-12            | 1.4E-12  | 2.9E-11      |
| Endosulfan I                                                            | 959988   | 406.9             | N             | 1.50E-03                                                          | 1.50E-03       | 1.50E-04           | 1.50E-03       | 1.51E-04 | 3.19E-03                                   | 1.6E-12    | 1.6E-12        | 1.6E-13            | 1.6E-13  | 3.4E-12      |
| Endrin                                                                  | 72208    | 380.9             | N             | 1.20E-03                                                          | 1.20E-03       | 1.20E-04           | 1.20E-03       | 1.21E-04 | 2.55E-03                                   | 1.2E-12    | 1.2E-12        | 1.2E-13            | 1.2E-13  | 2.6E-12      |
| 4,4'-DDD                                                                | 72548    | 320               | N             | 1.40E-03                                                          | 1.40E-03       | 1.40E-04           | 1.40E-03       | 1.41E-04 | 2.98E-03                                   | 1.2E-12    | 1.2E-12        | 1.2E-13            | 1.2E-13  | 2.5E-12      |
| Endrin aldehyde                                                         | 7421934  | 380.9             | N             | 5.90E-03                                                          | 5.90E-03       | 5.90E-04           | 5.90E-03       | 5.96E-04 | 1.25E-02                                   | 5.9E-12    | 5.9E-12        | 5.9E-13            | 6.0E-13  | 1.3E-11      |
| 4,4'-DDT                                                                | 50293    | 354.49            | N             | 1.58E-02                                                          | 1.58E-02       | 1.58E-03           | 1.58E-02       | 1.59E-03 | 3.36E-02                                   | 1.5E-11    | 1.5E-11        | 1.5E-12            | 1.5E-12  | 3.1E-11      |
| Methoxychlor                                                            | 72435    | 345.6             | N             | 4.71E-02                                                          | 4.71E-02       | 4.71E-03           | 4.71E-02       | 4.75E-03 | 1.00E-01                                   | 4.3E-11    | 4.3E-11        | 4.3E-12            | 4.3E-12  | 9.1E-11      |
| 1,1,2,2-Tetrachloroethane                                               | 79345    | 167.8             | Y             | 0.68                                                              | 0.68           | 0.68               | 0.68           | 0.07     | 1.45                                       | 3.0E-10    | 3.0E-10        | 3.0E-10            | 3.0E-11  | 6.4E-10      |
| Total VOCs                                                              |          |                   |               | 719                                                               | 719            | 584                | 991            | 100      | 2,106                                      | 2.15E-07   | 2.15E-07       | 1.79E-07           | 3.04E-08 | 6.41E-07     |

[1] Concentrations from facility design data are provided as mole percent. Concentrations from the GTI document are provided as parts per billion by volume (ppbv).

[2] GTI, Pipeline Quality Biomethane: North American Guidance Document for Introduction of Dairy Waste Derived Biomethane into Existing Natural Gas Networks Task 2, 30 September 2009. Accessed 09 September 2022.

[3] GTI document, Table 17. Chlorobenzene and 1,1,2,2-tetrachloroethane were not detected in raw biogas samples but were detected in conditioned biogas samples. The concentration for these chemicals was set equal to that of conditioned biogas.

[4] The composition of oxygenated biogas was assumed to be the same as Raw Biogas.

[5] GTI document, Table 23.

[6] Maximum value from raw, oxygenated, or conditioned biogas.

[7] RNG composition assumes the same individual constituents as the maximum value for biogas, ratioed to 100 ppb VOC. 100 ppb VOC assumes approximately 90% reduction in VOC in RNG from raw biogas. The GTI study provided a value of approximately 56 ppb of VOC in biomethane (i.e., RNG).

[8] The composition of the BPS permeate stream was calculated by via mass balance between the maximum raw biogas flow and the RNG composition. This is a conservative assumption as some VOC will condense in the biogas conditioning process.

[9] Mass Concentration (lb/scf) = Molar Concentration (%) × MW (lb/lb-mol) ÷ 379.5 lb-mol/scf OR Molar Concentration (ppbv) ÷ 10<sup>9</sup> × MW (lb/lb-mol) ÷ 379.5 lb-mol/scf.



APPENDIX B-5  
RNG PRODUCTION PROCESS EMISSIONS  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. PROCESS UNIT INFORMATION AND GENERAL CALCULATION PARAMETERS |             |        |                                                                                             |  |
|----------------------------------------------------------------|-------------|--------|---------------------------------------------------------------------------------------------|--|
| Flare destruction removal efficiency (DRE)                     | 95%         |        | Flare design assumption.                                                                    |  |
| Carbon Dioxide (CO <sub>2</sub> ) GWP                          | 1           |        | 40 CFR Part 98, Subpart A, Table A-1.                                                       |  |
| Methane (CH <sub>4</sub> ) GWP                                 | 25          |        | 40 CFR Part 98, Subpart A, Table A-1.                                                       |  |
| Short-Term Flow Rates                                          |             |        |                                                                                             |  |
| Treated Biogas to Flare                                        | 750         | scfm   | Maximum short term flow based on maximum flare capacity, 750 scfm.                          |  |
| Treated Biogas to BPS                                          | 777         | scfm   | Maximum short term flow based on maximum BPS capacity, 777 scfm.                            |  |
| RNG                                                            | 432         | scfm   | Maximum RNG output based on assumed CH <sub>4</sub> content in biogas and max BPS capacity. |  |
| BPS Permeate                                                   | 345         | scfm   | Maximum flow rate of BPS permeate.                                                          |  |
| Annual Flow Rates                                              |             |        |                                                                                             |  |
| Treated Biogas <sup>(Vent)</sup>                               | 75,000,000  | scf/yr | See Appendix B-3 for detailed annual flow rates.                                            |  |
| Treated Biogas <sup>(Vent)</sup>                               | 12,000,000  | scf/yr |                                                                                             |  |
| Treated Biogas                                                 | 135,000,000 | scf/yr |                                                                                             |  |
| RNG                                                            | 70,000,000  | scf/yr |                                                                                             |  |
| BPS Permeate                                                   | 181,400,000 | scf/yr |                                                                                             |  |

| B. HOURLY EMISSION RATE CALCULATIONS: Venting or Flaring of Treated Biogas |          |                   |                                            |                |                    |          |              |                                         |                                       |
|----------------------------------------------------------------------------|----------|-------------------|--------------------------------------------|----------------|--------------------|----------|--------------|-----------------------------------------|---------------------------------------|
| Compound                                                                   | CAS No.  | MW<br>(lb/lb-mol) | Mass Concentration (lb/scf) <sup>[1]</sup> |                |                    |          |              | Uncontrolled<br>(lbs/hr) <sup>[2]</sup> | Controlled<br>(lbs/hr) <sup>[3]</sup> |
|                                                                            |          |                   | Raw Biogas                                 | Treated Biogas | Conditioned Biogas | RNG      | BPS Permeate |                                         |                                       |
| Criteria Pollutants and Greenhouse Gases                                   |          |                   |                                            |                |                    |          |              |                                         |                                       |
| Nitrogen Oxides (NO <sub>x</sub> )                                         | --       | 46.0              | --                                         | --             | --                 | --       | --           | --                                      | --                                    |
| Sulfur Dioxide (SO <sub>2</sub> )                                          | --       | 64.1              | --                                         | --             | --                 | --       | --           | --                                      | --                                    |
| Volatile Organic Compounds (VOC)                                           | --       | --                | 2.15E-07                                   | 2.15E-07       | 1.79E-07           | 3.04E-08 | 6.41E-07     | 9.66E-03                                | 4.83E-04                              |
| Methane (CH <sub>4</sub> )                                                 | 74828    | 16                | 2.32E-02                                   | 2.32E-02       | 2.32E-02           | 4.13E-02 | 4.22E-04     | 1,081                                   | 1,081                                 |
| Carbon Dioxide (CO <sub>2</sub> )                                          | 124389   | 44                | 5.15E-02                                   | 5.15E-02       | 5.15E-02           | 1.74E-03 | 1.14E-01     | 2,400                                   | 2,400                                 |
| Greenhouse Gases (CO <sub>2e</sub> ) <sup>[4]</sup>                        | --       | --                | --                                         | --             | --                 | --       | --           | 29,426                                  | 29,426                                |
| HAP & Other Non-Criteria Pollutants                                        |          |                   |                                            |                |                    |          |              |                                         |                                       |
| Hydrogen Sulfide (H <sub>2</sub> S) <sup>[5]</sup>                         | 7783064  | 34.10             | 6.11E-04                                   | 4.49E-04       | 8.99E-07           | 3.59E-07 | 1.80E-06     | 27.50                                   | 1.01E+00                              |
| Ammonia (NH <sub>3</sub> )                                                 | 7664417  | 17.03             | 8.97E-07                                   | 8.97E-07       | 8.97E-07           | 8.97E-07 | 8.97E-07     | 4.04E-02                                | 2.02E-03                              |
| Carbonyl Sulfide                                                           | 463581   | 60.08             | 6.48E-10                                   | 6.48E-10       | 6.48E-10           | 6.54E-11 | 1.38E-09     | 2.91E-05                                | 1.46E-06                              |
| Carbon Disulfide                                                           | 75150    | 76.15             | 3.41E-11                                   | 3.41E-11       | 3.41E-11           | 3.44E-12 | 7.25E-11     | 1.54E-06                                | 7.68E-08                              |
| Methyl Mercaptan                                                           | 74931    | 48.11             | 7.76E-10                                   | 7.76E-10       | 7.76E-10           | 7.83E-11 | 1.65E-09     | 3.49E-05                                | 1.75E-06                              |
| Ethyl Mercaptan                                                            | 75081    | 62.14             | 4.91E-11                                   | 4.91E-11       | 4.91E-11           | 4.96E-12 | 1.04E-10     | 2.21E-06                                | 1.11E-07                              |
| iPropyl Mercaptan                                                          | 107039   | 76.16             | 2.71E-10                                   | 2.71E-10       | 2.71E-10           | 2.73E-11 | 5.76E-10     | 1.22E-05                                | 6.10E-07                              |
| tButyl Mercaptan                                                           | 75661    | 90.19             | 1.43E-10                                   | 1.43E-10       | 1.43E-10           | 1.44E-11 | 3.03E-10     | 6.42E-06                                | 3.21E-07                              |
| Dimethyl Sulfide                                                           | 75183    | 62.14             | 5.24E-11                                   | 5.24E-11       | 5.24E-11           | 5.29E-12 | 1.11E-10     | 2.36E-06                                | 1.18E-07                              |
| Dimethyl Disulfide                                                         | 624920   | 94.2              | 7.94E-11                                   | 7.94E-11       | 7.94E-11           | 8.02E-12 | 1.69E-10     | 3.57E-06                                | 1.79E-07                              |
| Diethyl Disulfide                                                          | 110816   | 122.3             | 4.83E-11                                   | 4.83E-11       | 4.83E-11           | 4.88E-12 | 1.03E-10     | 2.18E-06                                | 1.09E-07                              |
| Thiophene                                                                  | 110021   | 84.14             | 5.76E-11                                   | 5.76E-11       | 5.76E-11           | 5.82E-12 | 1.23E-10     | 2.59E-06                                | 1.30E-07                              |
| Benzene                                                                    | 71432    | 78.11             | 2.81E-09                                   | 2.81E-09       | 2.62E-09           | 2.84E-10 | 5.97E-09     | 1.26E-04                                | 6.32E-06                              |
| Carbon Tetrachloride                                                       | 56235    | 153.82            | 7.82E-10                                   | 7.82E-10       | 8.59E-10           | 8.67E-11 | 1.83E-09     | 3.52E-05                                | 1.76E-06                              |
| Pyridine                                                                   | 110861   | 79.1              | 3.11E-10                                   | 3.11E-10       | 3.11E-10           | 3.13E-11 | 6.60E-10     | 1.40E-05                                | 6.99E-07                              |
| Toluene                                                                    | 108883   | 92.14             | 3.58E-08                                   | 3.58E-08       | 9.80E-09           | 3.61E-09 | 7.60E-08     | 1.61E-03                                | 8.04E-05                              |
| 1,1,2-Trichloroethane                                                      | 79005    | 133.4             | 1.86E-08                                   | 1.86E-08       | 1.74E-08           | 1.87E-09 | 3.95E-08     | 8.36E-04                                | 4.18E-05                              |
| Tetrachloroethene                                                          | 127184   | 165.83            | 6.29E-10                                   | 6.29E-10       | 7.04E-10           | 7.10E-11 | 1.50E-09     | 2.83E-05                                | 1.42E-06                              |
| Ethylbenzene                                                               | 100414   | 106.17            | 9.46E-09                                   | 9.46E-09       | 6.37E-09           | 9.55E-10 | 2.01E-08     | 4.26E-04                                | 2.13E-05                              |
| m/p-Xylenes                                                                | 1330207  | 106.16            | 1.25E-08                                   | 1.25E-08       | 1.55E-09           | 1.26E-09 | 2.66E-08     | 5.62E-04                                | 2.81E-05                              |
| Styrene                                                                    | 100425   | 104.15            | 1.23E-10                                   | 1.23E-10       | 4.47E-10           | 4.52E-11 | 9.51E-10     | 5.56E-06                                | 2.78E-07                              |
| o-Xylene                                                                   | 95476    | 106.16            | 9.57E-09                                   | 9.57E-09       | 1.43E-09           | 9.66E-10 | 2.03E-08     | 4.31E-04                                | 2.15E-05                              |
| Isopropylbenzene                                                           | 98828    | 120.19            | 2.33E-09                                   | 2.33E-09       | 3.52E-10           | 2.35E-10 | 4.95E-09     | 1.05E-04                                | 5.24E-06                              |
| n-Propylbenzene                                                            | 103651   | 120.2             | 3.49E-09                                   | 3.49E-09       | 5.35E-10           | 3.53E-10 | 7.43E-09     | 1.57E-04                                | 7.86E-06                              |
| 1,3,5-Trimethylbenzene                                                     | 108678   | 120.19            | 4.30E-09                                   | 4.30E-09       | 6.90E-10           | 4.34E-10 | 9.14E-09     | 1.94E-04                                | 9.68E-06                              |
| tert-Butylbenzene                                                          | 98066    | 134.22            | 1.64E-09                                   | 1.64E-09       | 3.61E-10           | 1.66E-10 | 3.50E-09     | 7.40E-05                                | 3.70E-06                              |
| 1,2,4-Trimethylbenzene                                                     | 95636    | 120.19            | 1.32E-08                                   | 1.32E-08       | 2.47E-09           | 1.33E-09 | 2.80E-08     | 5.92E-04                                | 2.96E-05                              |
| sec-Butylbenzene                                                           | 135988   | 134.22            | 4.73E-09                                   | 4.73E-09       | 5.59E-10           | 4.77E-10 | 1.00E-08     | 2.13E-04                                | 1.06E-05                              |
| Phenol                                                                     | 108952   | 94.11             | 6.98E-09                                   | 6.98E-09       | 7.29E-09           | 7.35E-10 | 1.55E-08     | 3.14E-04                                | 1.57E-05                              |
| Aniline                                                                    | 62533    | 93.13             | 6.42E-09                                   | 6.42E-09       | 6.04E-09           | 6.48E-10 | 1.37E-08     | 2.89E-04                                | 1.45E-05                              |
| 2-Chlorophenol                                                             | 95578    | 128.56            | 3.96E-10                                   | 3.96E-10       | 3.56E-10           | 4.00E-11 | 8.43E-10     | 1.78E-05                                | 8.92E-07                              |
| p-Isopropyltoluene                                                         | 99876    | 134.21            | 2.89E-09                                   | 2.89E-09       | 3.84E-08           | 3.87E-09 | 8.16E-08     | 1.30E-04                                | 6.50E-06                              |
| Benzyl Alcohol                                                             | 100516   | 108.14            | 3.92E-09                                   | 3.92E-09       | 5.10E-08           | 5.15E-09 | 1.08E-07     | 1.76E-04                                | 8.82E-06                              |
| 3,4-Methylphenol (o,p-cresol)                                              | 615623   | 151.21            | 3.27E-08                                   | 3.27E-08       | 7.43E-09           | 3.30E-09 | 6.95E-08     | 1.47E-03                                | 7.36E-05                              |
| bis(2-chloroisopropyl)ether                                                | 108601   | 171.06            | 1.51E-09                                   | 1.51E-09       | 1.42E-09           | 1.52E-10 | 3.21E-09     | 6.80E-05                                | 3.40E-06                              |
| n-Butylbenzene                                                             | 104518   | 134.22            | 3.89E-09                                   | 3.89E-09       | 7.53E-10           | 3.92E-10 | 8.26E-09     | 1.75E-04                                | 8.75E-06                              |
| N-nitroso-di-n-propylamine                                                 | 621647   | 130.19            | 2.33E-10                                   | 2.33E-10       | 2.20E-10           | 2.35E-11 | 4.96E-10     | 1.05E-05                                | 5.25E-07                              |
| Nitrobenzene                                                               | 98953    | 123.11            | 1.85E-10                                   | 1.85E-10       | 1.85E-10           | 1.87E-11 | 3.93E-10     | 8.32E-06                                | 4.16E-07                              |
| Napthalene                                                                 | 91203    | 128.17            | 1.17E-09                                   | 1.17E-09       | 4.59E-10           | 1.18E-10 | 2.49E-09     | 5.27E-05                                | 2.64E-06                              |
| 2-Methylnapthalene                                                         | 91576    | 142.2             | 1.98E-09                                   | 1.98E-09       | 1.98E-09           | 2.00E-10 | 4.21E-09     | 8.90E-05                                | 4.45E-06                              |
| 1-Methylnapthalene                                                         | 90120    | 142.2             | 1.15E-09                                   | 1.15E-09       | 1.15E-09           | 1.16E-10 | 2.45E-09     | 5.19E-05                                | 2.60E-06                              |
| Diethylphthalate                                                           | 84662    | 222.24            | 1.23E-10                                   | 1.23E-10       | 1.35E-10           | 1.36E-11 | 2.86E-10     | 5.53E-06                                | 2.77E-07                              |
| Phenanthrene                                                               | 85018    | 178.23            | 5.12E-10                                   | 5.12E-10       | 5.12E-10           | 5.17E-11 | 1.09E-09     | 2.30E-05                                | 1.15E-06                              |
| Di-n-butylphthalate                                                        | 84742    | 278.34            | 7.77E-10                                   | 7.77E-10       | 8.73E-10           | 8.81E-11 | 1.86E-09     | 3.50E-05                                | 1.75E-06                              |
| Fluoranthene                                                               | 206440   | 202.26            | 2.29E-10                                   | 2.29E-10       | 2.29E-10           | 2.31E-11 | 4.87E-10     | 1.03E-05                                | 5.16E-07                              |
| bis(2-Ethylhexyl)phthalate                                                 | 117817   | 390.564           | 6.69E-10                                   | 6.69E-10       | 3.91E-09           | 3.95E-10 | 8.31E-09     | 3.01E-05                                | 1.51E-06                              |
| Chlorobenzene                                                              | 108907   | 112.55            | 4.39E-10                                   | 4.39E-10       | 4.39E-10           | 4.43E-11 | 9.33E-10     | 1.98E-05                                | 9.88E-07                              |
| Hexane                                                                     | 110543   | 86.18             | 9.08E-10                                   | 9.08E-10       | 9.08E-10           | 9.17E-11 | 1.93E-09     | 4.09E-05                                | 2.04E-06                              |
| 3,4-Methylphenol (o,p-cresol)                                              | 106445   | 108.14            | 2.34E-08                                   | 2.34E-08       | 5.31E-09           | 2.36E-09 | 4.97E-08     | 1.05E-03                                | 5.26E-05                              |
| bis(2-chloroisopropyl)ether                                                | 39638329 | 171.06            | 1.51E-09                                   | 1.51E-09       | 1.42E-09           | 1.52E-10 | 3.21E-09     | 6.80E-05                                | 3.40E-06                              |
| Heptachlor                                                                 | 76448    | 373.3             | 1.31E-11                                   | 1.31E-11       | 1.31E-12           | 1.32E-12 | 2.78E-11     | 5.89E-07                                | 2.94E-08                              |
| Heptachlor epoxide                                                         | 1024573  | 389.3             | 1.36E-11                                   | 1.36E-11       | 1.36E-12           | 1.38E-12 | 2.90E-11     | 6.14E-07                                | 3.07E-08                              |
| Endosulfan I                                                               | 959988   | 406.9             | 1.61E-12                                   | 1.61E-12       | 1.61E-13           | 1.62E-13 | 3.42E-12     | 7.24E-08                                | 3.62E-09                              |
| Endrin                                                                     | 72208    | 380.9             | 1.20E-12                                   | 1.20E-12       | 1.20E-13           | 1.22E-13 | 2.56E-12     | 5.42E-08                                | 2.71E-09                              |
| 4,4'-DDD                                                                   | 72548    | 320               | 1.18E-12                                   | 1.18E-12       | 1.18E-13           | 1.19E-13 | 2.51E-12     | 5.31E-08                                | 2.66E-09                              |
| Endrin aldehyde                                                            | 7421934  | 380.9             | 5.92E-12                                   | 5.92E-12       | 5.92E-13           | 5.98E-13 | 1.26E-11     | 2.66E-07                                | 1.33E-08                              |
| 4,4'-DDT                                                                   | 50293    | 354.49            | 1.48E-11                                   | 1.48E-11       | 1.48E-12           | 1.49E-12 | 3.14E-11     | 6.64E-07                                | 3.32E-08                              |
| Methoxychlor                                                               | 72435    | 345.6             | 4.29E-11                                   | 4.29E-11       | 4.29E-12           | 4.33E-12 | 9.12E-11     | 1.93E-06                                | 9.65E-08                              |
| 1,1,2,2-Tetrachloroethane                                                  | 79345    | 167.8             | 3.01E-10                                   | 3.01E-10       | 3.01E-10           | 3.03E-11 | 6.39E-10     | 1.35E-05                                | 6.77E-07                              |

[B.1] Composition data from Appendix B-4. RNG and BPS Permeate concentrations are excluded from this calculation because neither would be generated if raw biogas, oxygenated biogas, or conditioned biogas are vented or flared.

[B.2] Uncontrolled (lbs/hr) = Maximum Mass Concentration of Treated Biogas (lb/scf) × Process Gas Flow Rate (scf/min) × 60 min/hr.  
Note: Uncontrolled emissions are calculated pre-flare controls and also include emissions from direct venting from the ADs under certain scenarios. The facility does not have the capability to flare conditioned biogas and is not permitted to flare raw biogas.

[B.3] Controlled (lbs/hr) = Uncontrolled (lbs/hr) × (1 - Flare DRE). Flare DRE assumed zero for CO<sub>2</sub>.  
Note: Controlled emissions for H<sub>2</sub>S and all VOCs are after control by the flare and are not representative of direct venting of the ADs. Worst-case CO<sub>2</sub>e emissions are based on 777 scfm of treated biogas vented through the contingency vent.

[B.4] CO<sub>2</sub>e: Controlled (lbs/hr) = CO<sub>2</sub> Controlled (lbs/hr) × CO<sub>2</sub> GWP + CH<sub>4</sub> Controlled (lbs/hr) × CH<sub>4</sub> GWP.

[D.5] H<sub>2</sub>S: Uncontrolled (tons/yr) = Maximum BPS Capacity (scfm) × 60 min/hr × H<sub>2</sub>S Mass Concentration [Raw Biogas] (lb/scf).

H2S: Controlled (lbs/hr) is = Maximum Flare Capacity (Biogas) scfm × 60 min/hr × H2S Mass Concentration [Treated Biogas] (lb/scf) × (1 - Flare DRE).

Continued on next page



APPENDIX B-5  
RNG PRODUCTION PROCESS EMISSIONS  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| C. HOURLY EMISSION RATE CALCULATIONS: Venting or Flaring of RNG and Venting of BPS Permeate                                                                                                                                                                   |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|--------------------------------------------|-------------------|-----------------------|----------|-----------------|-----------------------------------------|---------------------------------------|
| Compound                                                                                                                                                                                                                                                      | CAS No.  | MW<br>(lb/lb-mol) | Mass Concentration (lb/scf) <sup>[1]</sup> |                   |                       |          |                 | Uncontrolled<br>(lbs/hr) <sup>[2]</sup> | Controlled<br>(lbs/hr) <sup>[3]</sup> |
|                                                                                                                                                                                                                                                               |          |                   | Raw Biogas                                 | Treated<br>Biogas | Conditioned<br>Biogas | RNG      | BPS<br>Permeate |                                         |                                       |
| Criteria Pollutants and Greenhouse Gases                                                                                                                                                                                                                      |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| Sulfur Dioxide (SO <sub>2</sub> )                                                                                                                                                                                                                             | --       | 64.1              | --                                         | --                | --                    | --       | --              | --                                      | --                                    |
| Volatile Organic Compounds (VOC)                                                                                                                                                                                                                              | --       | --                | --                                         | --                | --                    | 3.04E-08 | 6.41E-07        | 1.46E-02                                | 1.33E-02                              |
| Methane (CH <sub>4</sub> )                                                                                                                                                                                                                                    | 74828    | 16                | --                                         | --                | --                    | 4.13E-02 | 4.22E-04        | 1,868                                   | 101.69                                |
| Carbon Dioxide (CO <sub>2</sub> )                                                                                                                                                                                                                             | 124389   | 44                | --                                         | --                | --                    | 1.74E-03 | 1.14E-01        | 2,430                                   | 2,430                                 |
| Greenhouse Gases (CO <sub>2e</sub> ) <sup>[4]</sup>                                                                                                                                                                                                           | --       | --                | --                                         | --                | --                    | --       | --              | 49,131                                  | 4,973                                 |
| HAP & Other Compounds                                                                                                                                                                                                                                         |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| Hydrogen Sulfide (H <sub>2</sub> S)                                                                                                                                                                                                                           | 7783064  | 34.10             | --                                         | --                | --                    | 3.59E-07 | 1.80E-06        | 5.34E-02                                | 3.80E-02                              |
| Ammonia (NH <sub>3</sub> )                                                                                                                                                                                                                                    | 7664417  | 17.03             | --                                         | --                | --                    | 8.97E-07 | 8.97E-07        | 5.90E-02                                | 2.06E-02                              |
| Carbonyl Sulfide                                                                                                                                                                                                                                              | 463581   | 60.08             | --                                         | --                | --                    | 6.54E-11 | 1.38E-09        | 3.14E-05                                | 2.86E-05                              |
| Carbon Disulfide                                                                                                                                                                                                                                              | 75150    | 76.15             | --                                         | --                | --                    | 3.44E-12 | 7.25E-11        | 1.66E-06                                | 1.51E-06                              |
| Methyl Mercaptan                                                                                                                                                                                                                                              | 74931    | 48.11             | --                                         | --                | --                    | 7.83E-11 | 1.65E-09        | 3.77E-05                                | 3.43E-05                              |
| Ethyl Mercaptan                                                                                                                                                                                                                                               | 75081    | 62.14             | --                                         | --                | --                    | 4.96E-12 | 1.04E-10        | 2.38E-06                                | 2.17E-06                              |
| iPropyl Mercaptan                                                                                                                                                                                                                                             | 107039   | 76.16             | --                                         | --                | --                    | 2.73E-11 | 5.76E-10        | 1.32E-05                                | 1.20E-05                              |
| tButyl Mercaptan                                                                                                                                                                                                                                              | 75661    | 90.19             | --                                         | --                | --                    | 1.44E-11 | 3.03E-10        | 6.92E-06                                | 6.31E-06                              |
| Dimethyl Sulfide                                                                                                                                                                                                                                              | 75183    | 62.14             | --                                         | --                | --                    | 5.29E-12 | 1.11E-10        | 2.54E-06                                | 2.32E-06                              |
| Dimethyl Disulfide                                                                                                                                                                                                                                            | 624920   | 94.2              | --                                         | --                | --                    | 8.02E-12 | 1.69E-10        | 3.86E-06                                | 3.51E-06                              |
| Diethyl Disulfide                                                                                                                                                                                                                                             | 110816   | 122.3             | --                                         | --                | --                    | 4.88E-12 | 1.03E-10        | 2.35E-06                                | 2.14E-06                              |
| Thiophene                                                                                                                                                                                                                                                     | 110021   | 84.14             | --                                         | --                | --                    | 5.82E-12 | 1.23E-10        | 2.80E-06                                | 2.55E-06                              |
| Benzene                                                                                                                                                                                                                                                       | 71432    | 78.11             | --                                         | --                | --                    | 2.84E-10 | 5.97E-09        | 1.36E-04                                | 1.24E-04                              |
| Carbon Tetrachloride                                                                                                                                                                                                                                          | 56235    | 153.82            | --                                         | --                | --                    | 8.67E-11 | 1.83E-09        | 4.17E-05                                | 3.80E-05                              |
| Pyridine                                                                                                                                                                                                                                                      | 110861   | 79.1              | --                                         | --                | --                    | 3.13E-11 | 6.60E-10        | 1.51E-05                                | 1.37E-05                              |
| Toluene                                                                                                                                                                                                                                                       | 108883   | 92.14             | --                                         | --                | --                    | 3.61E-09 | 7.60E-08        | 1.74E-03                                | 1.58E-03                              |
| 1,1,2-Trichloroethane                                                                                                                                                                                                                                         | 79005    | 133.4             | --                                         | --                | --                    | 1.87E-09 | 3.95E-08        | 9.01E-04                                | 8.21E-04                              |
| Tetrachloroethene                                                                                                                                                                                                                                             | 127184   | 165.83            | --                                         | --                | --                    | 7.10E-11 | 1.50E-09        | 3.42E-05                                | 3.11E-05                              |
| Ethylbenzene                                                                                                                                                                                                                                                  | 100414   | 106.17            | --                                         | --                | --                    | 9.55E-10 | 2.01E-08        | 4.59E-04                                | 4.18E-04                              |
| m/p-Xylenes                                                                                                                                                                                                                                                   | 1330207  | 106.16            | --                                         | --                | --                    | 1.26E-09 | 2.66E-08        | 6.07E-04                                | 5.53E-04                              |
| Styrene                                                                                                                                                                                                                                                       | 100425   | 104.15            | --                                         | --                | --                    | 4.52E-11 | 9.51E-10        | 2.17E-05                                | 1.98E-05                              |
| o-Xylene                                                                                                                                                                                                                                                      | 95476    | 106.16            | --                                         | --                | --                    | 9.66E-10 | 2.03E-08        | 4.65E-04                                | 4.23E-04                              |
| Isopropylbenzene                                                                                                                                                                                                                                              | 98828    | 120.19            | --                                         | --                | --                    | 2.35E-10 | 4.95E-09        | 1.13E-04                                | 1.03E-04                              |
| n-Propylbenzene                                                                                                                                                                                                                                               | 103651   | 120.2             | --                                         | --                | --                    | 3.53E-10 | 7.43E-09        | 1.70E-04                                | 1.55E-04                              |
| 1,3,5-Trimethylbenzene                                                                                                                                                                                                                                        | 108678   | 120.19            | --                                         | --                | --                    | 4.34E-10 | 9.14E-09        | 2.09E-04                                | 1.90E-04                              |
| tert-Butylbenzene                                                                                                                                                                                                                                             | 98066    | 134.22            | --                                         | --                | --                    | 1.66E-10 | 3.50E-09        | 7.98E-05                                | 7.27E-05                              |
| 1,2,4-Trimethylbenzene                                                                                                                                                                                                                                        | 95636    | 120.19            | --                                         | --                | --                    | 1.33E-09 | 2.80E-08        | 6.39E-04                                | 5.82E-04                              |
| sec-Butylbenzene                                                                                                                                                                                                                                              | 135988   | 134.22            | --                                         | --                | --                    | 4.77E-10 | 1.00E-08        | 2.29E-04                                | 2.09E-04                              |
| Phenol                                                                                                                                                                                                                                                        | 108952   | 94.11             | --                                         | --                | --                    | 7.35E-10 | 1.55E-08        | 3.54E-04                                | 3.22E-04                              |
| Aniline                                                                                                                                                                                                                                                       | 62533    | 93.13             | --                                         | --                | --                    | 6.48E-10 | 1.37E-08        | 3.12E-04                                | 2.84E-04                              |
| 2-Chlorophenol                                                                                                                                                                                                                                                | 95578    | 128.56            | --                                         | --                | --                    | 4.00E-11 | 8.43E-10        | 1.92E-05                                | 1.75E-05                              |
| p-Isopropyltoluene                                                                                                                                                                                                                                            | 99876    | 134.21            | --                                         | --                | --                    | 3.87E-09 | 8.16E-08        | 1.86E-03                                | 1.70E-03                              |
| Benzyl Alcohol                                                                                                                                                                                                                                                | 100516   | 108.14            | --                                         | --                | --                    | 5.15E-09 | 1.08E-07        | 2.48E-03                                | 2.26E-03                              |
| 3,4-Methylphenol (o,p-cresol)                                                                                                                                                                                                                                 | 615623   | 151.21            | --                                         | --                | --                    | 3.30E-09 | 6.95E-08        | 1.59E-03                                | 1.45E-03                              |
| bis(2-chloroisopropyl)ether                                                                                                                                                                                                                                   | 108601   | 171.06            | --                                         | --                | --                    | 1.52E-10 | 3.21E-09        | 7.33E-05                                | 6.68E-05                              |
| n-Butylbenzene                                                                                                                                                                                                                                                | 104518   | 134.22            | --                                         | --                | --                    | 3.92E-10 | 8.26E-09        | 1.89E-04                                | 1.72E-04                              |
| N-nitroso-di-n-propylamine                                                                                                                                                                                                                                    | 621647   | 130.19            | --                                         | --                | --                    | 2.35E-11 | 4.96E-10        | 1.13E-05                                | 1.03E-05                              |
| Nitrobenzene                                                                                                                                                                                                                                                  | 98953    | 123.11            | --                                         | --                | --                    | 1.87E-11 | 3.93E-10        | 8.98E-06                                | 8.18E-06                              |
| Naphthalene                                                                                                                                                                                                                                                   | 91203    | 128.17            | --                                         | --                | --                    | 1.18E-10 | 2.49E-09        | 5.69E-05                                | 5.18E-05                              |
| 2-Methylnaphthalene                                                                                                                                                                                                                                           | 91576    | 142.2             | --                                         | --                | --                    | 2.00E-10 | 4.21E-09        | 9.60E-05                                | 8.75E-05                              |
| 1-Methylnaphthalene                                                                                                                                                                                                                                           | 90120    | 142.2             | --                                         | --                | --                    | 1.16E-10 | 2.45E-09        | 5.60E-05                                | 5.10E-05                              |
| Diethylphthalate                                                                                                                                                                                                                                              | 84662    | 222.24            | --                                         | --                | --                    | 1.36E-11 | 2.86E-10        | 6.54E-06                                | 5.96E-06                              |
| Phenanthrene                                                                                                                                                                                                                                                  | 85018    | 178.23            | --                                         | --                | --                    | 5.17E-11 | 1.09E-09        | 2.49E-05                                | 2.26E-05                              |
| Di-n-butylphthalate                                                                                                                                                                                                                                           | 84742    | 278.34            | --                                         | --                | --                    | 8.81E-11 | 1.86E-09        | 4.24E-05                                | 3.86E-05                              |
| Fluoranthene                                                                                                                                                                                                                                                  | 206440   | 202.26            | --                                         | --                | --                    | 2.31E-11 | 4.87E-10        | 1.11E-05                                | 1.01E-05                              |
| bis(2-Ethylhexyl)phthalate                                                                                                                                                                                                                                    | 117817   | 390.564           | --                                         | --                | --                    | 3.95E-10 | 8.31E-09        | 1.90E-04                                | 1.73E-04                              |
| Chlorobenzene                                                                                                                                                                                                                                                 | 108907   | 112.55            | --                                         | --                | --                    | 4.43E-11 | 9.33E-10        | 2.13E-05                                | 1.94E-05                              |
| Hexane                                                                                                                                                                                                                                                        | 110543   | 86.18             | --                                         | --                | --                    | 9.17E-11 | 1.93E-09        | 4.41E-05                                | 4.02E-05                              |
| 3,4-Methylphenol (o,p-cresol)                                                                                                                                                                                                                                 | 106445   | 108.14            | --                                         | --                | --                    | 2.36E-09 | 4.97E-08        | 1.14E-03                                | 1.03E-03                              |
| bis(2-chloroisopropyl)ether                                                                                                                                                                                                                                   | 39638329 | 171.06            | --                                         | --                | --                    | 1.52E-10 | 3.21E-09        | 7.33E-05                                | 6.68E-05                              |
| Heptachlor                                                                                                                                                                                                                                                    | 76448    | 373.3             | --                                         | --                | --                    | 1.32E-12 | 2.78E-11        | 6.35E-07                                | 5.79E-07                              |
| Heptachlor epoxide                                                                                                                                                                                                                                            | 1024573  | 389.3             | --                                         | --                | --                    | 1.38E-12 | 2.90E-11        | 6.62E-07                                | 6.03E-07                              |
| Endosulfan I                                                                                                                                                                                                                                                  | 959988   | 406.9             | --                                         | --                | --                    | 1.62E-13 | 3.42E-12        | 7.81E-08                                | 7.11E-08                              |
| Endrin                                                                                                                                                                                                                                                        | 72208    | 380.9             | --                                         | --                | --                    | 1.22E-13 | 2.56E-12        | 5.85E-08                                | 5.33E-08                              |
| 4,4'-DDD                                                                                                                                                                                                                                                      | 72548    | 320               | --                                         | --                | --                    | 1.19E-13 | 2.51E-12        | 5.73E-08                                | 5.22E-08                              |
| Endrin aldehyde                                                                                                                                                                                                                                               | 7421934  | 380.9             | --                                         | --                | --                    | 5.98E-13 | 1.26E-11        | 2.87E-07                                | 2.62E-07                              |
| 4,4'-DDT                                                                                                                                                                                                                                                      | 50293    | 354.49            | --                                         | --                | --                    | 1.49E-12 | 3.14E-11        | 7.16E-07                                | 6.53E-07                              |
| Methoxychlor                                                                                                                                                                                                                                                  | 72435    | 345.6             | --                                         | --                | --                    | 4.33E-12 | 9.12E-11        | 2.08E-06                                | 1.90E-06                              |
| 1,1,2,2-Tetrachloroethane                                                                                                                                                                                                                                     | 79345    | 167.8             | --                                         | --                | --                    | 3.03E-11 | 6.39E-10        | 1.46E-05                                | 1.33E-05                              |
| [C.1] Composition data from Appendix B-4. Raw Biogas, Treated Biogas, and Conditioned Biogas are excluded from this calculation because none of these streams can be vented or flared while RNG and BPS Permeate are being generated.                         |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| [C.2] Uncontrolled (lbs/hr) = [RNG Mass Concentration (lb/scf) × Process Gas Flow Rate (scf/min) + BPS Permeate Mass Concentration (lb/scf) × BPS Permeate Gas Flow Rate (scf/min) ] × 60 min/hr.                                                             |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| Note: Uncontrolled emissions are calculated pre-flare controls and also include emissions from direct venting from the ADs under certain scenarios.                                                                                                           |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| [C.3] Controlled (lbs/hr) = [RNG Mass Concentration (lb/scf) × Process Gas Flow Rate (scf/min) × (1 - Flare DRE) + BPS Permeate Mass Concentration (lb/scf) × BPS Permeate Gas Flow Rate (scf/min)] × 60 min/hr. Flare DRE assumed zero for CO <sub>2</sub> . |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| Note: Controlled emissions are after control by the flare are are not representative of direct venting of the ADs.                                                                                                                                            |          |                   |                                            |                   |                       |          |                 |                                         |                                       |
| [C.4] CO <sub>2e</sub> : Controlled (lbs/hr) = CO <sub>2</sub> Controlled (lbs/hr) × CO <sub>2</sub> GWP + CH <sub>4</sub> Controlled (lbs/hr) × CH <sub>4</sub> GWP.                                                                                         |          |                   |                                            |                   |                       |          |                 |                                         |                                       |



APPENDIX B-5  
RNG PRODUCTION PROCESS EMISSIONS  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| D. ANNUAL EMISSION RATE CALCULATIONS                                                                                                                                                                                                                                                                                                                                        |          |                   |                                |                                      |          |                             |                                          |                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|--------------------------------|--------------------------------------|----------|-----------------------------|------------------------------------------|----------------------------------------|
| Compound                                                                                                                                                                                                                                                                                                                                                                    | CAS No.  | MW<br>(lb/lb-mol) | Biogas<br>Venting<br>(tons/yr) | Annual Flow (tons/yr) <sup>[1]</sup> |          | BPS<br>Permeate<br>(ton/yr) | Uncontrolled<br>(tons/yr) <sup>[2]</sup> | Controlled<br>(tons/yr) <sup>[3]</sup> |
|                                                                                                                                                                                                                                                                                                                                                                             |          |                   |                                | Treated Biogas                       | RNG      |                             |                                          |                                        |
| Criteria Pollutants and Greenhouse Gases                                                                                                                                                                                                                                                                                                                                    |          |                   |                                |                                      |          |                             |                                          |                                        |
| Sulfur Dioxide (SO <sub>2</sub> )                                                                                                                                                                                                                                                                                                                                           | --       | 64.1              | --                             | --                                   | --       | --                          | --                                       | --                                     |
| Volatile Organic Compounds (VOC)                                                                                                                                                                                                                                                                                                                                            | --       | --                | 9.34E-03                       | 1.45E-02                             | 1.06E-03 | 5.81E-02                    | 8.30E-02                                 | 6.82E-02                               |
| Methane (CH <sub>4</sub> )                                                                                                                                                                                                                                                                                                                                                  | 74828    | 16                | 1.01E+03                       | 1.57E+03                             | 1446.11  | 38.24                       | 4,058                                    | 1,198                                  |
| Carbon Dioxide (CO <sub>2</sub> )                                                                                                                                                                                                                                                                                                                                           | 124389   | 44                | 2.24E+03                       | 3.47E+03                             | 60.87    | 10,306                      | 16,081                                   | 16,081                                 |
| Greenhouse Gases (CO <sub>2e</sub> ) <sup>[4]</sup>                                                                                                                                                                                                                                                                                                                         | --       | --                | 27,457                         | --                                   | --       | 11,262                      | 129,712                                  | 49,611                                 |
| HAP & Other Compounds                                                                                                                                                                                                                                                                                                                                                       |          |                   |                                |                                      |          |                             |                                          |                                        |
| Hydrogen Sulfide (H <sub>2</sub> S) <sup>[5]</sup>                                                                                                                                                                                                                                                                                                                          | 7783064A | 34.10             | 1.00E+00                       | 1.09E+01                             | 1.26E-02 | 1.63E-01                    | 12.10                                    | 7.43E-01                               |
| Ammonia (NH <sub>3</sub> )                                                                                                                                                                                                                                                                                                                                                  | 7664417  | 17.03             | 3.90E-02                       | 6.06E-02                             | 3.14E-02 | 8.14E-02                    | 2.12E-01                                 | 1.25E-01                               |
| Carbonyl Sulfide                                                                                                                                                                                                                                                                                                                                                            | 463581   | 60.08             | 2.82E-05                       | 4.37E-05                             | 2.29E-06 | 1.25E-04                    | 1.99E-04                                 | 1.55E-04                               |
| Carbon Disulfide                                                                                                                                                                                                                                                                                                                                                            | 75150    | 76.15             | 1.48E-06                       | 2.30E-06                             | 1.21E-07 | 6.58E-06                    | 1.05E-05                                 | 8.18E-06                               |
| Methyl Mercaptan                                                                                                                                                                                                                                                                                                                                                            | 74931    | 48.11             | 3.37E-05                       | 5.24E-05                             | 2.74E-06 | 1.50E-04                    | 2.38E-04                                 | 1.86E-04                               |
| Ethyl Mercaptan                                                                                                                                                                                                                                                                                                                                                             | 75081    | 62.14             | 2.14E-06                       | 3.32E-06                             | 1.74E-07 | 9.47E-06                    | 1.51E-05                                 | 1.18E-05                               |
| iPropyl Mercaptan                                                                                                                                                                                                                                                                                                                                                           | 107039   | 76.16             | 1.18E-05                       | 1.83E-05                             | 9.57E-07 | 5.22E-05                    | 8.33E-05                                 | 6.50E-05                               |
| tButyl Mercaptan                                                                                                                                                                                                                                                                                                                                                            | 75661    | 90.19             | 6.20E-06                       | 9.63E-06                             | 5.04E-07 | 2.75E-05                    | 4.38E-05                                 | 3.42E-05                               |
| Dimethyl Sulfide                                                                                                                                                                                                                                                                                                                                                            | 75183    | 62.14             | 2.28E-06                       | 3.54E-06                             | 1.85E-07 | 1.01E-05                    | 1.61E-05                                 | 1.26E-05                               |
| Dimethyl Disulfide                                                                                                                                                                                                                                                                                                                                                          | 624920   | 94.2              | 3.46E-06                       | 5.36E-06                             | 2.81E-07 | 1.53E-05                    | 2.44E-05                                 | 1.91E-05                               |
| Diethyl Disulfide                                                                                                                                                                                                                                                                                                                                                           | 110816   | 122.3             | 2.10E-06                       | 3.26E-06                             | 1.71E-07 | 9.32E-06                    | 1.49E-05                                 | 1.16E-05                               |
| Thiophene                                                                                                                                                                                                                                                                                                                                                                   | 110021   | 84.14             | 2.51E-06                       | 3.89E-06                             | 2.04E-07 | 1.11E-05                    | 1.77E-05                                 | 1.38E-05                               |
| Benzene                                                                                                                                                                                                                                                                                                                                                                     | 71432    | 78.11             | 1.22E-04                       | 1.90E-04                             | 9.93E-06 | 5.42E-04                    | 8.63E-04                                 | 6.74E-04                               |
| Carbon Tetrachloride                                                                                                                                                                                                                                                                                                                                                        | 56235    | 153.82            | 3.40E-05                       | 5.28E-05                             | 3.04E-06 | 1.66E-04                    | 2.56E-04                                 | 2.02E-04                               |
| Pyridine                                                                                                                                                                                                                                                                                                                                                                    | 110861   | 79.1              | 1.35E-05                       | 2.10E-05                             | 1.10E-06 | 5.99E-05                    | 9.54E-05                                 | 7.45E-05                               |
| Toluene                                                                                                                                                                                                                                                                                                                                                                     | 108883   | 92.14             | 1.56E-03                       | 2.41E-03                             | 1.26E-04 | 6.89E-03                    | 1.10E-02                                 | 8.58E-03                               |
| 1,1,2-Trichloroethane                                                                                                                                                                                                                                                                                                                                                       | 79005    | 133.4             | 8.08E-04                       | 1.25E-03                             | 6.56E-05 | 3.58E-03                    | 5.71E-03                                 | 4.45E-03                               |
| Tetrachloroethene                                                                                                                                                                                                                                                                                                                                                           | 127184   | 165.83            | 2.74E-05                       | 4.25E-05                             | 2.49E-06 | 1.36E-04                    | 2.08E-04                                 | 1.65E-04                               |
| Ethylbenzene                                                                                                                                                                                                                                                                                                                                                                | 100414   | 106.17            | 4.11E-04                       | 6.38E-04                             | 3.34E-05 | 1.82E-03                    | 2.91E-03                                 | 2.27E-03                               |
| m/p-Xylenes                                                                                                                                                                                                                                                                                                                                                                 | 1330207  | 106.16            | 5.44E-04                       | 8.43E-04                             | 4.41E-05 | 2.41E-03                    | 3.84E-03                                 | 3.00E-03                               |
| Styrene                                                                                                                                                                                                                                                                                                                                                                     | 100425   | 104.15            | 5.37E-06                       | 8.34E-06                             | 1.58E-06 | 8.63E-05                    | 1.02E-04                                 | 9.21E-05                               |
| o-Xylene                                                                                                                                                                                                                                                                                                                                                                    | 95476    | 106.16            | 4.16E-04                       | 6.46E-04                             | 3.38E-05 | 1.85E-03                    | 2.94E-03                                 | 2.30E-03                               |
| Isopropylbenzene                                                                                                                                                                                                                                                                                                                                                            | 98828    | 120.19            | 1.01E-04                       | 1.57E-04                             | 8.22E-06 | 4.49E-04                    | 7.15E-04                                 | 5.58E-04                               |
| n-Propylbenzene                                                                                                                                                                                                                                                                                                                                                             | 103651   | 120.2             | 1.52E-04                       | 2.36E-04                             | 1.23E-05 | 6.74E-04                    | 1.07E-03                                 | 8.38E-04                               |
| 1,3,5-Trimethylbenzene                                                                                                                                                                                                                                                                                                                                                      | 108678   | 120.19            | 1.87E-04                       | 2.90E-04                             | 1.52E-05 | 8.29E-04                    | 1.32E-03                                 | 1.03E-03                               |
| tert-Butylbenzene                                                                                                                                                                                                                                                                                                                                                           | 98066    | 134.22            | 7.15E-05                       | 1.11E-04                             | 5.81E-06 | 3.17E-04                    | 5.05E-04                                 | 3.94E-04                               |
| 1,2,4-Trimethylbenzene                                                                                                                                                                                                                                                                                                                                                      | 95636    | 120.19            | 5.72E-04                       | 8.88E-04                             | 4.65E-05 | 2.54E-03                    | 4.04E-03                                 | 3.15E-03                               |
| sec-Butylbenzene                                                                                                                                                                                                                                                                                                                                                            | 135988   | 134.22            | 2.06E-04                       | 3.19E-04                             | 1.67E-05 | 9.11E-04                    | 1.45E-03                                 | 1.13E-03                               |
| Phenol                                                                                                                                                                                                                                                                                                                                                                      | 108952   | 94.11             | 3.04E-04                       | 4.71E-04                             | 2.57E-05 | 1.40E-03                    | 2.21E-03                                 | 1.73E-03                               |
| Aniline                                                                                                                                                                                                                                                                                                                                                                     | 62533    | 93.13             | 2.79E-04                       | 4.34E-04                             | 2.27E-05 | 1.24E-03                    | 1.97E-03                                 | 1.54E-03                               |
| 2-Chlorophenol                                                                                                                                                                                                                                                                                                                                                              | 95578    | 128.56            | 1.72E-05                       | 2.68E-05                             | 1.40E-06 | 7.64E-05                    | 1.22E-04                                 | 9.51E-05                               |
| p-Isopropyltoluene                                                                                                                                                                                                                                                                                                                                                          | 99876    | 134.21            | 1.26E-04                       | 1.95E-04                             | 1.36E-04 | 7.40E-03                    | 7.86E-03                                 | 7.54E-03                               |
| Benzyl Alcohol                                                                                                                                                                                                                                                                                                                                                              | 100516   | 108.14            | 1.71E-04                       | 2.65E-04                             | 1.80E-04 | 9.84E-03                    | 1.05E-02                                 | 1.00E-02                               |
| 3,4-Methylphenol (o,p-cresol)                                                                                                                                                                                                                                                                                                                                               | 615623   | 151.21            | 1.42E-03                       | 2.21E-03                             | 1.16E-04 | 6.30E-03                    | 1.01E-02                                 | 7.84E-03                               |
| bis(2-chloroisopropyl)ether                                                                                                                                                                                                                                                                                                                                                 | 108601   | 171.06            | 6.57E-05                       | 1.02E-04                             | 5.33E-06 | 2.91E-04                    | 4.64E-04                                 | 3.62E-04                               |
| n-Butylbenzene                                                                                                                                                                                                                                                                                                                                                              | 104518   | 134.22            | 1.69E-04                       | 2.62E-04                             | 1.37E-05 | 7.49E-04                    | 1.19E-03                                 | 9.32E-04                               |
| N-nitroso-di-n-propylamine                                                                                                                                                                                                                                                                                                                                                  | 621647   | 130.19            | 1.01E-05                       | 1.57E-05                             | 8.24E-07 | 4.50E-05                    | 7.17E-05                                 | 5.60E-05                               |
| Nitrobenzene                                                                                                                                                                                                                                                                                                                                                                | 98953    | 123.11            | 8.04E-06                       | 1.25E-05                             | 6.53E-07 | 3.57E-05                    | 5.68E-05                                 | 4.44E-05                               |
| Naphthalene                                                                                                                                                                                                                                                                                                                                                                 | 91203    | 128.17            | 5.10E-05                       | 7.91E-05                             | 4.14E-06 | 2.26E-04                    | 3.60E-04                                 | 2.81E-04                               |
| 2-Methylnaphthalene                                                                                                                                                                                                                                                                                                                                                         | 91576    | 142.2             | 8.61E-05                       | 1.34E-04                             | 6.99E-06 | 3.81E-04                    | 6.08E-04                                 | 4.75E-04                               |
| 1-Methylnaphthalene                                                                                                                                                                                                                                                                                                                                                         | 90120    | 142.2             | 5.02E-05                       | 7.79E-05                             | 4.08E-06 | 2.23E-04                    | 3.55E-04                                 | 2.77E-04                               |
| Diethylphthalate                                                                                                                                                                                                                                                                                                                                                            | 84662    | 222.24            | 5.35E-06                       | 8.30E-06                             | 4.76E-07 | 2.60E-05                    | 4.01E-05                                 | 3.18E-05                               |
| Phenanthrene                                                                                                                                                                                                                                                                                                                                                                | 85018    | 178.23            | 2.23E-05                       | 3.46E-05                             | 1.81E-06 | 9.87E-05                    | 1.57E-04                                 | 1.23E-04                               |
| Di-n-butylphthalate                                                                                                                                                                                                                                                                                                                                                         | 84742    | 278.34            | 3.38E-05                       | 5.25E-05                             | 3.08E-06 | 1.68E-04                    | 2.58E-04                                 | 2.05E-04                               |
| Fluoranthene                                                                                                                                                                                                                                                                                                                                                                | 206440   | 202.26            | 9.97E-06                       | 1.55E-05                             | 8.10E-07 | 4.42E-05                    | 7.04E-05                                 | 5.50E-05                               |
| bis(2-Ethylhexyl)phthalate                                                                                                                                                                                                                                                                                                                                                  | 117817   | 390.564           | 2.91E-05                       | 4.52E-05                             | 1.38E-05 | 7.54E-04                    | 8.42E-04                                 | 7.86E-04                               |
| Chlorobenzene                                                                                                                                                                                                                                                                                                                                                               | 108907   | 112.55            | 1.91E-05                       | 2.96E-05                             | 1.55E-06 | 8.46E-05                    | 1.35E-04                                 | 1.05E-04                               |
| Hexane                                                                                                                                                                                                                                                                                                                                                                      | 110543   | 86.18             | 3.95E-05                       | 6.13E-05                             | 3.21E-06 | 1.75E-04                    | 2.79E-04                                 | 2.18E-04                               |
| 3,4-Methylphenol (o,p-cresol)                                                                                                                                                                                                                                                                                                                                               | 106445   | 108.14            | 1.02E-03                       | 1.58E-03                             | 8.26E-05 | 4.51E-03                    | 7.19E-03                                 | 5.61E-03                               |
| bis(2-chloroisopropyl)ether                                                                                                                                                                                                                                                                                                                                                 | 39638329 | 171.06            | 6.57E-05                       | 1.02E-04                             | 5.33E-06 | 2.91E-04                    | 4.64E-04                                 | 3.62E-04                               |
| Heptachlor                                                                                                                                                                                                                                                                                                                                                                  | 76448    | 373.3             | 5.69E-07                       | 8.83E-07                             | 4.62E-08 | 2.52E-06                    | 4.02E-06                                 | 3.14E-06                               |
| Heptachlor epoxide                                                                                                                                                                                                                                                                                                                                                          | 1024573  | 389.3             | 5.93E-07                       | 9.21E-07                             | 4.82E-08 | 2.63E-06                    | 4.19E-06                                 | 3.27E-06                               |
| Endosulfan I                                                                                                                                                                                                                                                                                                                                                                | 959988   | 406.9             | 7.00E-08                       | 1.09E-07                             | 5.68E-09 | 3.10E-07                    | 4.94E-07                                 | 3.86E-07                               |
| Endrin                                                                                                                                                                                                                                                                                                                                                                      | 72208    | 380.9             | 5.24E-08                       | 8.13E-08                             | 4.26E-09 | 2.32E-07                    | 3.70E-07                                 | 2.89E-07                               |
| 4,4'-DDD                                                                                                                                                                                                                                                                                                                                                                    | 72548    | 320               | 5.14E-08                       | 7.97E-08                             | 4.17E-09 | 2.28E-07                    | 3.63E-07                                 | 2.83E-07                               |
| Endrin aldehyde                                                                                                                                                                                                                                                                                                                                                             | 7421934  | 380.9             | 2.58E-07                       | 4.00E-07                             | 2.09E-08 | 1.14E-06                    | 1.82E-06                                 | 1.42E-06                               |
| 4,4'-DDT                                                                                                                                                                                                                                                                                                                                                                    | 50293    | 354.49            | 6.42E-07                       | 9.96E-07                             | 5.21E-08 | 2.85E-06                    | 4.54E-06                                 | 3.54E-06                               |
| Methoxychlor                                                                                                                                                                                                                                                                                                                                                                | 72435    | 345.6             | 1.87E-06                       | 2.90E-06                             | 1.52E-07 | 8.27E-06                    | 1.32E-05                                 | 1.03E-05                               |
| 1,1,2,2-Tetrachloroethane                                                                                                                                                                                                                                                                                                                                                   | 79345    | 167.8             | 1.31E-05                       | 2.03E-05                             | 1.06E-06 | 5.80E-05                    | 9.24E-05                                 | 7.21E-05                               |
| [D.1] Annual Flow (tons/yr) = Annual Flow Rate (scf/yr) × Mass Concentration (lb/scf) ÷ 2,000 lbs/ton. Composition data is summarized in Sections B and C of this calculation.                                                                                                                                                                                              |          |                   |                                |                                      |          |                             |                                          |                                        |
| [D.2] Uncontrolled (tons/yr) = Biogas Venting (tons/yr) + Biogas Flaring (tons/yr) + RNG Flaring (tons/yr) + BPS Permeate (tons/yr)                                                                                                                                                                                                                                         |          |                   |                                |                                      |          |                             |                                          |                                        |
| [D.3] Controlled (tons/yr) = [Biogas (tons/yr) + RNG (tons/yr)] × (1 - Flare DRE) + BPS Permeate (tons/yr)+ Biogas Venting (tons/yr). Flare DRE assumed zero for CO <sub>2</sub> .                                                                                                                                                                                          |          |                   |                                |                                      |          |                             |                                          |                                        |
| [D.4] CO <sub>2e</sub> : Controlled (tons/yr) = CO <sub>2</sub> Controlled (lbs/hr) × CO <sub>2</sub> GWP + CH <sub>4</sub> Controlled (lbs/hr) × CH <sub>4</sub> GWP.                                                                                                                                                                                                      |          |                   |                                |                                      |          |                             |                                          |                                        |
| [D.5] H <sub>2</sub> S: Controlled (tons/yr) = [Biogas (tons/yr) + RNG (tons/yr)] × (1 - Flare DRE) + BPS Permeate (tons/yr) + Annual Biogas Vented [PRVs] (scf/yr) × H <sub>2</sub> S Mass Concentration [Treated Biogas] (lb/scf) + Annual Biogas Vented [Contingency Vent] (scf/yr) × H <sub>2</sub> S Mass Concentration [Conditioned Biogas] (lb/scf) ÷ 2,000 lbs/ton. |          |                   |                                |                                      |          |                             |                                          |                                        |
| H <sub>2</sub> S: Uncontrolled (tons/yr) = [Biogas (tons/yr) + RNG (tons/yr)] + BPS Permeate (tons/yr) + Annual Biogas Vented [PRVs] (scf/yr) × H <sub>2</sub> S Mass Concentration [Treated Biogas] (lb/scf) + Annual Biogas Vented [Contingency Vent] (scf/yr) × H <sub>2</sub> S Mass Concentration [Treated Biogas] (lb/scf) ÷ 2,000 lbs/ton.                           |          |                   |                                |                                      |          |                             |                                          |                                        |
| End of calculation                                                                                                                                                                                                                                                                                                                                                          |          |                   |                                |                                      |          |                             |                                          |                                        |



**APPENDIX B-6**  
**BOILER EMISSIONS SUMMARY**  
**CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility**

| A. PROCESS INFORMATION       |             |             |        |
|------------------------------|-------------|-------------|--------|
| Parameter                    | Value       | Units       | Notes: |
| Fuel Type                    | Natural Gas |             |        |
| Higher Heating Value (HHV)   | 1,020       | MMBtu/MMscf | [1]    |
| Boiler Heat Input Capacity   | 3           | MMBtu/hr    |        |
| Number of Units              | 2           |             |        |
| Total Heat Input Capacity    | 6           | MMBtu/hr    |        |
| Total Boiler Operating Hours | 8,760       | hr/yr       |        |

[A.1] See AP-42, Table 1.4-1, Footnote a.

| B. CRITERIA POLLUTANTS AND NON-HAP EMISSIONS |                                 |                        |                      |
|----------------------------------------------|---------------------------------|------------------------|----------------------|
| Pollutant                                    | EF <sup>[1]</sup><br>(lb/MMscf) | Emissions              |                      |
|                                              |                                 | (lb/hr) <sup>[2]</sup> | (tpy) <sup>[3]</sup> |
| PM                                           | 7.6                             | 0.02                   | 0.10                 |
| PM <sub>10</sub>                             | 7.6                             | 0.02                   | 0.10                 |
| PM <sub>2.5</sub>                            | 7.6                             | 0.02                   | 0.10                 |
| CO                                           | 84                              | 0.25                   | 1.08                 |
| NO <sub>x</sub>                              | 100                             | 0.29                   | 1.29                 |
| SO <sub>2</sub>                              | 0.6                             | 0.00                   | 0.01                 |
| VOC                                          | 5.5                             | 0.02                   | 0.07                 |
| CO <sub>2</sub>                              | 120,000                         | 352.94                 | 1,546                |
| CH <sub>4</sub>                              | 2.3                             | 0                      | 0.03                 |
| N <sub>2</sub> O                             | 2.2                             | 0                      | 0.03                 |
| CO <sub>2e</sub> <sup>[4]</sup>              | --                              | 355                    | 1,554                |

[B.1] Emission factors from AP-42, Tables 1.4-1 and 1.4-2.

[B.2] Emissions (lbs/hr) = EF (lb/MMscf) × Heat Input Capacity (MMBtu/hr) ÷ HHV (MMBtu/MMscf).

[B.3] Emissions (tons/hr) = Emissions (lbs/hr) × Total Boiler Operating Hours (hrs/yr) ÷ 2,000 lbs/ton.

[B.4] CO<sub>2e</sub> = CO<sub>2</sub> × CO<sub>2</sub> GWP (1) + CH<sub>4</sub> × CH<sub>4</sub> GWP (25) + N<sub>2</sub>O × N<sub>2</sub>O GWP (298).

*Continued on next page*

**APPENDIX B-6  
BOILER EMISSIONS SUMMARY**

**CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility**

| <b>C. SPECIATED HAP EMISSIONS</b>                                                                  |          |              |                                              |                        |                      |
|----------------------------------------------------------------------------------------------------|----------|--------------|----------------------------------------------|------------------------|----------------------|
| Pollutant                                                                                          | CAS No.  | HAP<br>(Y/N) | Emission Factor <sup>[1]</sup><br>(lb/MMscf) | Emissions              |                      |
|                                                                                                    |          |              |                                              | (lb/hr) <sup>[2]</sup> | (tpy) <sup>[3]</sup> |
| 2-Methylnaphthalene                                                                                | 91576    | Y            | 2.40E-05                                     | 7.06E-08               | 3.09E-07             |
| 3-Methylchloranthrene                                                                              | 56495    | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| 7,12-Dimethylbenz(a)anthracene                                                                     | 57976    | Y            | 1.60E-05                                     | 4.71E-08               | 2.06E-07             |
| Acenaphthene                                                                                       | 83329    | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Acenaphthylene                                                                                     | 203968   | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Anthracene                                                                                         | 120127   | Y            | 2.40E-06                                     | 7.06E-09               | 3.09E-08             |
| Arsenic                                                                                            | 7440382  | Y            | 2.00E-04                                     | 5.88E-07               | 2.58E-06             |
| Barium                                                                                             | 7440393  | N            | 4.40E-03                                     | 1.29E-05               | 5.67E-05             |
| Benz(a)anthracene                                                                                  | 56553    | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Benzene                                                                                            | 71432    | Y            | 2.10E-03                                     | 6.18E-06               | 2.71E-05             |
| Benzo(a)pyrene                                                                                     | 50328    | Y            | 1.20E-06                                     | 3.53E-09               | 1.55E-08             |
| Benzo(b)fluoranthene                                                                               | 205992   | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Benzo(g,h,i)perylene                                                                               | 191242   | Y            | 1.20E-06                                     | 3.53E-09               | 1.55E-08             |
| Benzo(k)fluoranthene                                                                               | 207089   | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Beryllium                                                                                          | 7440417  | Y            | 1.20E-05                                     | 3.53E-08               | 1.55E-07             |
| Cadmium                                                                                            | 7440439  | Y            | 1.10E-03                                     | 3.24E-06               | 1.42E-05             |
| Chromium                                                                                           | 7440473  | Y            | 1.40E-03                                     | 4.12E-06               | 1.80E-05             |
| Chrysene                                                                                           | 218019   | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Cobalt                                                                                             | 7440484  | Y            | 8.40E-05                                     | 2.47E-07               | 1.08E-06             |
| Copper                                                                                             | 7440508  | N            | 8.50E-04                                     | 2.50E-06               | 1.10E-05             |
| Dibenz(a,h)anthracene                                                                              | 53703    | Y            | 1.20E-06                                     | 3.53E-09               | 1.55E-08             |
| Dichlorobenzene                                                                                    | 25321226 | Y            | 1.20E-03                                     | 3.53E-06               | 1.55E-05             |
| Fluoranthene                                                                                       | 206440   | Y            | 3.00E-06                                     | 8.82E-09               | 3.86E-08             |
| Fluorene                                                                                           | 86737    | Y            | 2.80E-06                                     | 8.24E-09               | 3.61E-08             |
| Formaldehyde                                                                                       | 50000    | Y            | 7.50E-02                                     | 2.21E-04               | 9.66E-04             |
| Hexane                                                                                             | 110543   | Y            | 1.80E+00                                     | 5.29E-03               | 2.32E-02             |
| Indeno(1,2,3-c,d)pyrene                                                                            | 193395   | Y            | 1.80E-06                                     | 5.29E-09               | 2.32E-08             |
| Manganese                                                                                          | 7439965  | Y            | 3.80E-04                                     | 1.12E-06               | 4.90E-06             |
| Mercury                                                                                            | 7439976  | Y            | 2.60E-04                                     | 7.65E-07               | 3.35E-06             |
| Molybdenum                                                                                         | 7439987  | N            | 1.10E-03                                     | 3.24E-06               | 1.42E-05             |
| Nickel                                                                                             | 7440020  | Y            | 2.10E-03                                     | 6.18E-06               | 2.71E-05             |
| Naphthalene                                                                                        | 91203    | Y            | 6.10E-04                                     | 1.79E-06               | 7.86E-06             |
| Pentane                                                                                            | 109660   | N            | 2.60E+00                                     | 7.65E-03               | 3.35E-02             |
| Phenanthrene                                                                                       | 85018    | Y            | 1.70E-05                                     | 5.00E-08               | 2.19E-07             |
| Propane                                                                                            | 74986    | N            | 1.60E+00                                     | 4.71E-03               | 2.06E-02             |
| Pyrene                                                                                             | 129000   | Y            | 5.00E-06                                     | 1.47E-08               | 6.44E-08             |
| Selenium                                                                                           | 7782492  | Y            | 2.40E-05                                     | 7.06E-08               | 3.09E-07             |
| Toluene                                                                                            | 108883   | Y            | 3.40E-03                                     | 1.00E-05               | 4.38E-05             |
| Total HAPs                                                                                         |          |              | 1.89                                         | 5.55E-03               | 2.43E-02             |
| [C.1] See AP-42, Table 1.4-3.                                                                      |          |              |                                              |                        |                      |
| [C.2] Emissions (lb/hr) = EF (lb/MMscf) × Heat Input Capacity (MMBtu/hr) ÷ HHV (MMBtu/MMscf).      |          |              |                                              |                        |                      |
| [C.3] Emissions (tpy) = Emissions (lb/hr) × Total Boiler Operating Hours (hrs/yr) ÷ 2,000 lbs/ton. |          |              |                                              |                        |                      |

*End of calculation*



APPENDIX B-7  
EMERGENCY GENERATOR EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. PROCESS UNIT INFORMATION AND GENERAL CALCULATION PARAMETERS                                                                           |                     |          |        |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|--------|
| Parameter                                                                                                                                | Value               | Units    | Notes: |
| Emission Unit Description                                                                                                                | Emergency Generator |          |        |
| Power Rating                                                                                                                             | 152                 | kW       | [1]    |
| Power Rating                                                                                                                             | 204                 | hp       | [2]    |
| Fuel                                                                                                                                     | Natural Gas         |          |        |
| Fuel Usage                                                                                                                               | 1,678               | scf/hr   | [1]    |
| Fuel Heating Value                                                                                                                       | 1,020               | Btu/scf  | [3]    |
| Fuel Input                                                                                                                               | 1.68                | MMBtu/hr | [4]    |
| Max Hours of Operation                                                                                                                   | 100                 | hr/yr    | [5]    |
| [A.1] Emergency Generator power rating (kW) based on installation of one (1) 152 kW generator and fuel usage (scf/hr) from Kohler KG125. |                     |          |        |
| [A.2] Power rating converted from kW to hp using the conversion factor of 1.34 hp/kW.                                                    |                     |          |        |
| [A.3] Fuel Heating Value for natural gas from AP 42 Chapter 3.2.                                                                         |                     |          |        |
| [A.4] Maximum fuel input per engine nameplate (1,679 KBTU/hr).                                                                           |                     |          |        |
| [A.5] Max Hours of Operation based on 1995 EPA Guidance.                                                                                 |                     |          |        |

| B. CRITERIA POLLUTANT EMISSIONS                                                                                                                                                                                                                                          |                                     |                       |                                             |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|---------------------------------------------|----------------------------------------------|
| Pollutant                                                                                                                                                                                                                                                                | Emission Factor <sup>[1], [2]</sup> | Emission Factor Units | Hourly Emissions <sup>[3]</sup><br>(lbs/hr) | Annual Emissions <sup>[4]</sup><br>(tons/yr) |
| PM                                                                                                                                                                                                                                                                       | 9.99E-03                            | lb/MMBtu              | 0.017                                       | 8.38E-04                                     |
| PM <sub>10</sub>                                                                                                                                                                                                                                                         | 9.99E-03                            | lb/MMBtu              | 0.017                                       | 8.38E-04                                     |
| PM <sub>2.5</sub>                                                                                                                                                                                                                                                        | 9.99E-03                            | lb/MMBtu              | 0.017                                       | 8.38E-04                                     |
| CO                                                                                                                                                                                                                                                                       | 4.0                                 | g/hp-hr               | 1.80                                        | 0.09                                         |
| NO <sub>x</sub>                                                                                                                                                                                                                                                          | 2.0                                 | g/hp-hr               | 0.90                                        | 0.04                                         |
| SO <sub>2</sub>                                                                                                                                                                                                                                                          | 5.88E-04                            | lb/MMBtu              | 0.001                                       | 4.94E-05                                     |
| VOC                                                                                                                                                                                                                                                                      | 1.08                                | g/hp-hr               | 0.48                                        | 2.42E-02                                     |
| CO <sub>2</sub>                                                                                                                                                                                                                                                          | 110                                 | lb/MMBtu              | 184.690                                     | 9.23                                         |
| CH <sub>4</sub>                                                                                                                                                                                                                                                          | 2.30E-01                            | lb/MMBtu              | 0.39                                        | 0.02                                         |
| CO <sub>2e</sub> <sup>[5]</sup>                                                                                                                                                                                                                                          |                                     |                       | 195.50                                      | 9.78                                         |
| [B.1] PM, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , CO <sub>2</sub> , CH <sub>4</sub> and Total HAP emission factors from Table 3.2-3 of AP 42, Chapter 3.2 for a 4-stroke, lean burn natural gas engine.                                                 |                                     |                       |                                             |                                              |
| [B.2] CO and NO <sub>x</sub> emission factors were set equal to the limits in 40 CFR 60, Subpart JJJJ. The VOC factor is equal to the Subpart JJJJ limit, plus the formaldehyde factor from AP-42, Chapter 3.2-3 converted to g/hp-hr assuming 1.68 MMBtu/hr and 204 hp. |                                     |                       |                                             |                                              |
| [B.3] Hourly Emissions (lbs/hr) = Heat Input Rating (MMBtu/hr) × Emission Factor (lb/MMBtu)                                                                                                                                                                              |                                     |                       |                                             |                                              |
| [B.4] Annual Emissions (tons/yr) = Hourly Emissions (lbs/hr) × Max Hours of Operation (hrs/yr) ÷ 2,000 lbs/ton                                                                                                                                                           |                                     |                       |                                             |                                              |
| [B.5] CO <sub>2e</sub> = CO <sub>2</sub> × CO <sub>2</sub> GWP (1) + CH <sub>4</sub> × CH <sub>4</sub> GWP (25)                                                                                                                                                          |                                     |                       |                                             |                                              |

Continued on next page

APPENDIX B-7  
EMERGENCY GENERATOR EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| C. SPECIATED HAP EMISSIONS                                                                                     |         |              |                                              |                                      |                                       |
|----------------------------------------------------------------------------------------------------------------|---------|--------------|----------------------------------------------|--------------------------------------|---------------------------------------|
| Pollutant                                                                                                      | CAS No. | HAP<br>(Y/N) | Emission Factor <sup>[1]</sup><br>(lb/MMBtu) | Emissions <sup>[2]</sup><br>(lbs/hr) | Emissions <sup>[3]</sup><br>(tons/yr) |
| 1,1,2,2-Tetrachloroethene                                                                                      | 79345   | Y            | 2.53E-05                                     | 4.25E-05                             | 2.12E-06                              |
| 1,1,2-Trichloroethane                                                                                          | 79005   | Y            | 1.53E-05                                     | 2.57E-05                             | 1.28E-06                              |
| 1,1-Dichloroethane                                                                                             | 75343   | N            | 1.13E-05                                     | 1.90E-05                             | 9.49E-07                              |
| 1,2-Dichloroethane                                                                                             | 107062  | N            | 1.13E-05                                     | 1.90E-05                             | 9.49E-07                              |
| 1,2-Dichloropropane                                                                                            | 78875   | N            | 1.30E-05                                     | 2.18E-05                             | 1.09E-06                              |
| 1,3-Butadiene                                                                                                  | 106990  | Y            | 6.63E-04                                     | 1.11E-03                             | 5.57E-05                              |
| 1,3-Dichloropropene                                                                                            | 542756  | Y            | 1.27E-05                                     | 2.13E-05                             | 1.07E-06                              |
| Acetaldehyde                                                                                                   | 75070   | Y            | 2.79E-03                                     | 4.68E-03                             | 2.34E-04                              |
| Acrolein                                                                                                       | 107028  | Y            | 2.79E-03                                     | 4.68E-03                             | 2.34E-04                              |
| Benzene                                                                                                        | 71432   | Y            | 1.58E-03                                     | 2.65E-03                             | 1.33E-04                              |
| Carbon Tetrachloride                                                                                           | 56235   | Y            | 1.77E-05                                     | 2.97E-05                             | 1.49E-06                              |
| Chlorobenzene                                                                                                  | 108907  | Y            | 1.29E-05                                     | 2.17E-05                             | 1.08E-06                              |
| Chloroform                                                                                                     | 67663   | Y            | 1.37E-05                                     | 2.30E-05                             | 1.15E-06                              |
| Ethylbenzene                                                                                                   | 100414  | Y            | 2.48E-05                                     | 4.16E-05                             | 2.08E-06                              |
| Ethylene Dibromide                                                                                             | 106934  | Y            | 2.13E-05                                     | 3.58E-05                             | 1.79E-06                              |
| Formaldehyde                                                                                                   | 50000   | Y            | 2.05E-02                                     | 3.44E-02                             | 1.72E-03                              |
| Methanol                                                                                                       | 67561   | Y            | 3.06E-03                                     | 5.14E-03                             | 2.57E-04                              |
| Methylene Chloride                                                                                             | 75092   | Y            | 4.12E-05                                     | 6.92E-05                             | 3.46E-06                              |
| Naphthalene                                                                                                    | 91203   | Y            | 9.71E-05                                     | 1.63E-04                             | 8.15E-06                              |
| PAH                                                                                                            | PAH     | Y            | 1.41E-04                                     | 2.37E-04                             | 1.18E-05                              |
| Styrene                                                                                                        | 100425  | Y            | 1.19E-05                                     | 2.00E-05                             | 9.99E-07                              |
| Toluene                                                                                                        | 108883  | Y            | 5.58E-04                                     | 9.37E-04                             | 4.68E-05                              |
| Vinyl Chloride                                                                                                 | 75014   | Y            | 7.18E-06                                     | 1.21E-05                             | 6.03E-07                              |
| Xylenes                                                                                                        | 1330207 | Y            | 1.95E-04                                     | 3.27E-04                             | 1.64E-05                              |
| Total HAPs                                                                                                     |         |              |                                              | 5.47E-02                             | 2.73E-03                              |
| [C.1] HAP emission factors for the emergency generator from Tables 3.2-3 of AP 42, Chapter 3.2.                |         |              |                                              |                                      |                                       |
| [C.2] Hourly Emissions (lbs/hr) = Heat Input Rating (MMBtu/hr) × Emission Factor (lb/MMBtu)                    |         |              |                                              |                                      |                                       |
| [C.3] Annual Emissions (tons/yr) = Hourly Emissions (lbs/hr) × Max Hours of Operation (hrs/yr) ÷ 2,000 lbs/ton |         |              |                                              |                                      |                                       |

*End of calculation*



APPENDIX B-8  
FLARE COMBUSTION EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. PROCESS UNIT INFORMATION AND GENERAL CALCULATION PARAMETERS |          |                |                                                                                   |
|----------------------------------------------------------------|----------|----------------|-----------------------------------------------------------------------------------|
| Parameter                                                      | Value    | Units          | Notes:                                                                            |
| Hours of Operation                                             | 8,760    | hr/yr          | Assumed duration of flaring due to malfunction and maintenance scenarios          |
| <b>Pilot Gas Stream</b>                                        |          |                |                                                                                   |
| Fuel Heating Value, HV                                         | 1,020    | Btu/scf        | Natural gas HV from AP-42 Chapter 1.4, Table 1.4-1, Footnote a                    |
|                                                                | 49       | scf/hr         | Flare design information                                                          |
| Maximum Short Term Flow Rate                                   | 4.90E-05 | MMscf/hr       | (49 scf/hr ÷ 1,000,000 scf/MMscf)                                                 |
|                                                                | 5.00E-02 | MMBtu/hr       | (49 scf/hr × 1,020 Btu/scf ÷ 1,000,000 Btu/MMBtu)                                 |
| Maximum Annual Flow Usage                                      | 4.29E-01 | MMscf/yr       | (4.90E-05 MMscf/hr × 8,760 hr/yr)                                                 |
|                                                                | 438.00   | MMBtu/yr       | (5.00E-02 MMBtu/hr × 8,760 hr/yr)                                                 |
| <b>Process Gas Stream</b>                                      |          |                |                                                                                   |
| Biogas Fuel HHV                                                | 550      | Btu/scf        | Calculated value of higher heating value for biogas based on constituents.        |
| Biogas Fuel LHV                                                | 500      | Btu/scf        | Calculated value of lower ("net") heating value for biogas based on constituents. |
| RNG Fuel HHV                                                   | 1,020    | Btu/scf        | Conservative assumption of higher heating value for RNG.                          |
| Biogas H <sub>2</sub> S Limit                                  | 5,000    | ppmv           | Maximum short-term H <sub>2</sub> S content for biogas sent to flare.             |
|                                                                | 750      | scfm           | Maximum short term flow based on maximum flare capacity per 40 CFR 60.18.         |
| Maximum Short Term Flow Rate <sup>[1]</sup>                    | 0.045    | MMscf/hr       | (750 scfm × 60 min/hr ÷ 1,000,000 scf/MMscf)                                      |
|                                                                | 24.75    | MMBtu/hr (HHV) | (750 scfm × 60 min/hr × 550 Btu/scf ÷ 1,000,000 Btu/MMBtu)                        |
|                                                                | 22.5     | MMBtu/hr (LHV) | (750 scfm × 60 min/hr × 500 Btu/scf ÷ 1,000,000 Btu/MMBtu)                        |
| Maximum Annual Flow Rate                                       | 340      | MMscf/yr       | Sum of Biogas and RNG sent to the flare from Appendix B-3.                        |
|                                                                | 145,650  | MMBtu/yr (HHV) | (270 MMscf Biogas/yr × 550 MMBtu/MMscf ÷ 70 MMscf RNG/yr × 1,020 MMBtu/MMscf)     |
|                                                                | 138,900  | MMBtu/yr (LHV) | (270 MMscf Biogas/yr × 500 MMBtu/MMscf ÷ 70 MMscf RNG/yr × 1,020 MMBtu/MMscf)     |

[A.1] Maximum flare flow rates (MMBtu/hr) based on the maximum blower biogas feed of 750 scfm (maximum RNG flow to flare is 330 scfm).

| B. HOURLY EMISSION RATE CALCULATIONS - Criteria Pollutants and Greenhouse Gases |                            |                            |         |                                          |                                            |                               |
|---------------------------------------------------------------------------------|----------------------------|----------------------------|---------|------------------------------------------|--------------------------------------------|-------------------------------|
| Compound                                                                        | Emission Factor (lb/MMscf) | Emission Factor (lb/MMBtu) | EF Note | Pilot Gas Stream <sup>[6]</sup> (lbs/hr) | Process Gas Stream <sup>[7]</sup> (lbs/hr) | Total <sup>[8]</sup> (lbs/hr) |
| PM                                                                              | 7.6                        | 0.0075                     | [1]     | 3.73E-04                                 | 0.18                                       | 0.18                          |
| PM <sub>10</sub>                                                                | 7.6                        | 0.0075                     | [1]     | 3.73E-04                                 | 0.18                                       | 0.18                          |
| PM <sub>2.5</sub>                                                               | 7.6                        | 0.0075                     | [1]     | 3.73E-04                                 | 0.18                                       | 0.18                          |
| CO                                                                              | --                         | 0.31                       | [2]     | 1.55E-02                                 | 6.98                                       | 6.99                          |
| NO <sub>x</sub>                                                                 | --                         | 0.068                      | [3]     | 3.40E-03                                 | 1.68                                       | 1.69                          |
| SO <sub>2</sub> <sup>[9]</sup>                                                  | 0.6                        | 0.0006                     | [1]     | 2.94E-05                                 | 38.0                                       | 38.0                          |
| VOC                                                                             | 5.5                        | 0.0054                     | [1]     | 2.70E-04                                 | 0.13                                       | 0.13                          |
| Carbon Dioxide (CO <sub>2</sub> )                                               | --                         | 117.0                      | [4]     | 5.85                                     | --                                         | 5.85                          |
| Methane (CH <sub>4</sub> )                                                      | --                         | 2.20E-03                   | [5]     | 1.10E-04                                 | --                                         | 1.10E-04                      |
| Nitrous Oxide (N <sub>2</sub> O)                                                | --                         | 2.20E-04                   | [5]     | 1.10E-05                                 | 0.01                                       | 5.47E-03                      |
| CO <sub>2e</sub> <sup>[10]</sup>                                                | --                         | --                         | --      | 5.85                                     | --                                         | 7.30                          |

[B.1] Emission Factor (EF) in lb/MMscf from AP-42 Chapter 1.4, Table 1.4-2. Converted to lb/MMBtu as follows: lb/MMBtu = lb/MMscf / Pilot Stream HV.

[B.2] EF from AP-42 Chapter 13.5, Table 13.5-2, lb/MMBtu (LHV).

[B.3] EF from AP-42 Chapter 13.5, Table 13.5-1.

[B.4] EF from 40 CFR Part 98, Subpart C, Table C-1.

[B.5] EF from 40 CFR Part 98, Subpart C, Table C-2.

[B.6] Pilot Gas Stream (lbs/hr) = EF (lb/MMBtu) × Pilot Gas Stream Maximum Short Term Flow Rate (MMBtu/hr).

[B.7] Process Gas Stream (lbs/hr) = EF (lb/MMBtu) × Process Gas Stream Maximum Short Term Flow Rate (MMBtu/hr).

[B.8] Total (lbs/hr) = Pilot Gas Stream (lbs/hr) + Process Gas Stream (lbs/hr).

[B.9] SO<sub>2</sub> Controlled (lbs/hr) = Maximum Flare Flow Rate (scfm) × Maximum H<sub>2</sub>S Concentration 3,600 (ppmv) ÷ 106 ÷ 379.5 lb-mol/scf × H<sub>2</sub>S Molecular Weight (lb/lb-mol) × 60 min/hr × [Molecular Weight of SO<sub>2</sub> (lb/lb-mol) ÷ Molecular Weight H<sub>2</sub>S (lb/lb-mol)]

Note: Assumes 100% conversion of H<sub>2</sub>S to SO<sub>2</sub>.

[B.10] CO<sub>2e</sub> = CO<sub>2</sub> × CO<sub>2</sub> GWP (1) + CH<sub>4</sub> × CH<sub>4</sub> GWP (25) + N<sub>2</sub>O × N<sub>2</sub>O GWP (298). GWPs from 40 CFR Part 98, Subpart A, Table A-1.

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APPENDIX B-8  
FLARE COMBUSTION EMISSIONS SUMMARY

CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

C. ANNUAL EMISSION RATE CALCULATIONS - Criteria Pollutants and Greenhouse Gases

| Compound                          | Emission Factor<br>(lb/MMscf) | Emission Factor<br>(lb/MMBtu) | EF Note | Pilot Gas Stream <sup>[2]</sup><br>(tons/yr) | Process Gas<br>Stream <sup>[3]</sup><br>(tons/yr) | Total <sup>[4]</sup><br>(tons/yr) |
|-----------------------------------|-------------------------------|-------------------------------|---------|----------------------------------------------|---------------------------------------------------|-----------------------------------|
| PM                                | 7.6                           | 0.0075                        | [1]     | 1.63E-03                                     | 0.54                                              | 0.54                              |
| PM <sub>10</sub>                  | 7.6                           | 0.0075                        | [1]     | 1.63E-03                                     | 0.54                                              | 0.54                              |
| PM <sub>2.5</sub>                 | 7.6                           | 0.0075                        | [1]     | 1.63E-03                                     | 0.54                                              | 0.54                              |
| CO                                |                               | 0.31                          | [1]     | 6.79E-02                                     | 21.53                                             | 21.60                             |
| NO <sub>x</sub>                   |                               | 0.068                         | [1]     | 1.49E-02                                     | 4.95                                              | 4.97                              |
| SO <sub>2</sub>                   | 0.6                           | 0.0006                        | [1]     | 1.29E-04                                     | 20.55                                             | 20.55                             |
| VOC                               | 5.5                           | 0.0054                        | [1]     | 1.18E-03                                     | 0.393                                             | 0.39                              |
| Carbon Dioxide (CO <sub>2</sub> ) |                               | 117.0                         | [1]     | 25.62                                        | --                                                | 25.62                             |
| Methane (CH <sub>4</sub> )        |                               | 2.20E-03                      | [1]     | 4.83E-04                                     | --                                                | 4.83E-04                          |
| Nitrous Oxide (N <sub>2</sub> O)  |                               | 2.20E-04                      | [1]     | 4.83E-05                                     | 0.016                                             | 1.61E-02                          |
| CO <sub>2e</sub> <sup>[5]</sup>   |                               |                               |         | 25.64                                        | --                                                | 30.43                             |

[C.1] See Section B of this calculation for emission factor references.  
[C.2] Pilot Gas Stream (tons/yr) = Emission Factor (lbs/MMBtu) × Pilot Gas Stream Maximum Annual Flow Rate (MMBtu/yr) ÷ 2,000 lbs/ton.  
[C.3] Process Gas Stream (tons/yr) = Emission Factor (lbs/MMBtu) × Process Gas Stream Maximum Annual Flow Rate (MMBtu/yr) ÷ 2,000 lbs/ton.  
[C.4] Total (tons/yr) = Pilot Gas Stream (tons/yr) + Process Gas Stream (tons/yr).  
[C.5] CO<sub>2e</sub> = CO<sub>2</sub> × CO<sub>2</sub> GWP (1) + CH<sub>4</sub> × CH<sub>4</sub> GWP (25) + N<sub>2</sub>O × N<sub>2</sub>O GWP (298). GWPs from 40 CFR Part 98, Subpart A, Table A-1.

D. HAP HOURLY AND ANNUAL EMISSION RATES

| Pollutant                      | CAS No.  | HAP<br>(Y/N) | Emission<br>Factor <sup>[1]</sup><br>(lb/MMscf) | Flare Emissions <sup>[2], [3]</sup> |           |
|--------------------------------|----------|--------------|-------------------------------------------------|-------------------------------------|-----------|
|                                |          |              |                                                 | (lbs/hr)                            | (tons/yr) |
| 2-Methylnaphthalene            | 91576    | Y            | 2.40E-05                                        | 1.08E-06                            | 4.09E-06  |
| 3-Methylchloranthrene          | 56495    | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| 7,12-Dimethylbenz(a)anthracene | 57976    | Y            | 1.60E-05                                        | 7.21E-07                            | 2.72E-06  |
| Acenaphthene                   | 83329    | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Acenaphthylene                 | 203968   | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Anthracene                     | 120127   | Y            | 2.40E-06                                        | 1.08E-07                            | 4.09E-07  |
| Arsenic                        | 7440382  | Y            | 2.00E-04                                        | 9.01E-06                            | 3.40E-05  |
| Barium                         | 7440393  | N            | 4.40E-03                                        | 1.98E-04                            | 7.49E-04  |
| Benz(a)anthracene              | 56553    | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Benzene                        | 71432    | Y            | 2.10E-03                                        | 9.46E-05                            | 3.57E-04  |
| Benzo(a)pyrene                 | 50328    | Y            | 1.20E-06                                        | 5.41E-08                            | 2.04E-07  |
| Benzo(b)fluoranthene           | 205992   | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Benzo(g,h,i)perylene           | 191242   | Y            | 1.20E-06                                        | 5.41E-08                            | 2.04E-07  |
| Benzo(k)fluoranthene           | 207089   | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Beryllium                      | 7440417  | Y            | 1.20E-05                                        | 5.41E-07                            | 2.04E-06  |
| Cadmium                        | 7440439  | Y            | 1.10E-03                                        | 4.96E-05                            | 1.87E-04  |
| Chromium                       | 7440473  | Y            | 1.40E-03                                        | 6.31E-05                            | 2.38E-04  |
| Chrysene                       | 218019   | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Cobalt                         | 7440484  | Y            | 8.40E-05                                        | 3.78E-06                            | 1.43E-05  |
| Copper                         | 7440508  | N            | 8.50E-04                                        | 3.83E-05                            | 1.45E-04  |
| Dibenz(a,h)anthracene          | 53703    | Y            | 1.20E-06                                        | 5.41E-08                            | 2.04E-07  |
| Dichlorobenzene                | 25321226 | Y            | 1.20E-03                                        | 5.41E-05                            | 2.04E-04  |
| Fluoranthene                   | 206440   | Y            | 3.00E-06                                        | 1.35E-07                            | 5.11E-07  |
| Fluorene                       | 86737    | Y            | 2.80E-06                                        | 1.26E-07                            | 4.77E-07  |
| Formaldehyde                   | 50000    | Y            | 7.50E-02                                        | 3.38E-03                            | 1.28E-02  |
| Hexane                         | 110543   | Y            | 1.80E+00                                        | 8.11E-02                            | 3.06E-01  |
| Indeno(1,2,3-c,d)pyrene        | 193395   | Y            | 1.80E-06                                        | 8.11E-08                            | 3.06E-07  |
| Manganese                      | 7439965  | Y            | 3.80E-04                                        | 1.71E-05                            | 6.47E-05  |
| Mercury                        | 7439976  | Y            | 2.60E-04                                        | 1.17E-05                            | 4.43E-05  |
| Molybdenum                     | 7439987  | N            | 1.10E-03                                        | 4.96E-05                            | 1.87E-04  |
| Nickel                         | 7440020  | Y            | 2.10E-03                                        | 9.46E-05                            | 3.57E-04  |
| Naphthalene                    | 91203    | Y            | 6.10E-04                                        | 2.75E-05                            | 1.04E-04  |
| Pentane                        | 109660   | N            | 2.60E+00                                        | 1.17E-01                            | 4.43E-01  |
| Phenanthrene                   | 85018    | Y            | 1.70E-05                                        | 7.66E-07                            | 2.89E-06  |
| Propane                        | 74986    | N            | 1.60E+00                                        | 7.21E-02                            | 2.72E-01  |
| Pyrene                         | 129000   | Y            | 5.00E-06                                        | 2.25E-07                            | 8.51E-07  |
| Selenium                       | 7782492  | Y            | 2.40E-05                                        | 1.08E-06                            | 4.09E-06  |
| Toluene                        | 108883   | Y            | 3.40E-03                                        | 1.53E-04                            | 5.79E-04  |
| Total HAPs                     |          |              | 1.89                                            | 8.51E-02                            | 3.21E-01  |

[D.1] EFs from AP-42, Tables 1.4-3 and 1.4-4. Application of these emission factors to the process gas stream is conservative because HAP emissions from flaring of the process gas stream have already been accounted for in the process emission calculations contained in Appendix B-5.  
[D.2] Flare Emissions (lbs/hr) = EF (lb/MMscf) × [Pilot Gas Stream Maximum Short Term Flow Rate (MMscf/hr) + Process Gas Stream Maximum Short Term Flow Rate (MMscf/hr)].  
[D.3] Flare Emissions (tons/yr) = EF (lb/MMscf) × [Pilot Gas Stream Maximum Annual Flow Rate (MMscf/yr) + Process Gas Stream Maximum Annual Flow Rate (MMscf/yr)] ÷ 2,000 lbs/ton.

End of calculation



APPENDIX B-9  
FUGITIVE EMISSION COMPONENTS EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. EMISSION FACTORS AND COMPONENT COUNTS                                                                                           |        |                                     |                                |                              |
|------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|--------------------------------|------------------------------|
| Components                                                                                                                         |        | Number of Components <sup>[1]</sup> | Emission Factor <sup>[2]</sup> | Emission Rate <sup>[3]</sup> |
|                                                                                                                                    |        |                                     | kg/hr-source                   | lb TOC/hr                    |
| Valve                                                                                                                              | Gas    | 178                                 | 4.50E-03                       | 1.77                         |
|                                                                                                                                    | Liquid | 142                                 | 9.80E-05                       | 3.07E-02                     |
| Compressor                                                                                                                         | Gas    | 5                                   | 2.40E-03                       | 2.65E-02                     |
| Pump                                                                                                                               | Liquid | 28                                  | 2.40E-05                       | 1.48E-03                     |
| Connector                                                                                                                          | Gas    | 193                                 | 2.00E-04                       | 8.51E-02                     |
|                                                                                                                                    | Liquid | 213                                 | 1.10E-04                       | 5.17E-02                     |
| Flange                                                                                                                             | Gas    | 233                                 | 3.90E-04                       | 2.00E-01                     |
|                                                                                                                                    | Liquid | 259                                 | 2.90E-06                       | 1.66E-03                     |
| Open-ended Lines                                                                                                                   | Gas    | 2                                   | 3.90E-04                       | 1.72E-03                     |
|                                                                                                                                    | Liquid | 0                                   | 2.90E-06                       | 0.00E+00                     |
| Relief Valve                                                                                                                       | Gas    | 18                                  | 8.80E-03                       | 3.49E-01                     |
| Total TOC Emission Rate                                                                                                            |        |                                     |                                | 2.51                         |
| [A.1] The number of components is an estimate based on calculations conducted for a sister facility.                               |        |                                     |                                |                              |
| [A.2] Emission factors taken from Table 2-4 in EPA document titled Protocol for Equipment Leak Emission Estimates - November 1995. |        |                                     |                                |                              |
| [A.3] Emission Rate (lb TOC/hr) = Number of Components × Emission Factor (kg/hr-component) × 2.20462 lb/kg                         |        |                                     |                                |                              |

| B. CRITERIA POLLUTANTS AND GREENHOUSE GASES                                                                                                                                                                                                                    |                              |                                         |                         |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------|-------------------------|--------------------------|
| Compound                                                                                                                                                                                                                                                       | Concentration <sup>[1]</sup> | Normalized Concentration <sup>[2]</sup> | Emissions               |                          |
|                                                                                                                                                                                                                                                                | (lb/scf)                     | (lb/lb TOC)                             | (lbs/hr) <sup>[3]</sup> | (tons/yr) <sup>[4]</sup> |
| Volatile Organic Compounds (VOC)                                                                                                                                                                                                                               | 6.41E-07                     | 2.76E-05                                | 6.95E-05                | 3.04E-04                 |
| Methane (CH <sub>4</sub> )                                                                                                                                                                                                                                     | 2.32E-02                     | 1.00                                    | 2.51                    | 11.01                    |
| Carbon Dioxide (CO <sub>2</sub> )                                                                                                                                                                                                                              | 5.15E-02                     | 2.22                                    | 5.58                    | 24.45                    |
| Total Organic Compounds (TOC)                                                                                                                                                                                                                                  | 2.32E-02                     | 1.00                                    | 2.51                    | 11.01                    |
| Greenhouse Gases (CO <sub>2e</sub> ) <sup>[5]</sup>                                                                                                                                                                                                            |                              |                                         | 75.98                   | 332.79                   |
| [B.1] Composition data is from Appendix B-4. The worst case VOC concentration across all four streams (raw biogas, oxygenated biogas, conditioned biogas, and BPS permeate) was used. The concentration of other compounds was based on the raw biogas stream. |                              |                                         |                         |                          |
| [B.2] Normalized Concentration (lb/lb TOC) = Concentration (lb/scf) ÷ TOC Concentration (lb/scf)                                                                                                                                                               |                              |                                         |                         |                          |
| [B.3] Emissions (lbs/hr) = Total TOC Emission Rate (lb TOC/hr) × Normalized Concentration (lb/lb TOC)                                                                                                                                                          |                              |                                         |                         |                          |
| [B.4] Emissions (tons/hr) = Emissions (lbs/hr) × 8,760 hrs/yr ÷ 2,000 lbs/ton                                                                                                                                                                                  |                              |                                         |                         |                          |
| [B.5] CO <sub>2e</sub> = CO <sub>2</sub> × CO <sub>2</sub> GWP (1) + CH <sub>4</sub> × CH <sub>4</sub> GWP (25) + N <sub>2</sub> O × N <sub>2</sub> O GWP (298). GWPs from 40 CFR Part 98, Subpart A, Table A-1.                                               |                              |                                         |                         |                          |

Continued on next page



## APPENDIX B-9

## FUGITIVE EMISSION COMPONENTS EMISSIONS SUMMARY

CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

## B. HAZARDOUS AIR POLLUTANTS AND TOXIC AIR POLLUTANTS

| Compound                                                                                                                                                                          | CAS No. | Concentration <sup>[1]</sup> | Normalized Concentration <sup>[2]</sup> | Emissions               |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------|-----------------------------------------|-------------------------|--------------------------|
|                                                                                                                                                                                   |         | (lb/scf)                     | (lb/lb VOC)                             | (lbs/hr) <sup>[3]</sup> | (tons/yr) <sup>[4]</sup> |
| Hydrogen Sulfide (H <sub>2</sub> S)                                                                                                                                               | 7783064 | 6.11E-04                     | 9.54E+02                                | 6.62E-02                | 2.90E-01                 |
| Ammonia (NH <sub>3</sub> )                                                                                                                                                        | 7664417 | 8.97E-07                     | 1.40E+00                                | 9.73E-05                | 4.26E-04                 |
| Benzene                                                                                                                                                                           | 71432   | 4.95E-09                     | 7.72E-03                                | 5.37E-07                | 2.35E-06                 |
| Carbon Tetrachloride                                                                                                                                                              | 56235   | 7.43E-09                     | 1.16E-02                                | 8.05E-07                | 3.53E-06                 |
| Pyridine                                                                                                                                                                          | 110861  | 9.14E-09                     | 1.43E-02                                | 9.91E-07                | 4.34E-06                 |
| Toluene                                                                                                                                                                           | 108883  | 3.50E-09                     | 5.46E-03                                | 3.79E-07                | 1.66E-06                 |
| 1,1,2-Trichloroethane                                                                                                                                                             | 79005   | 2.80E-08                     | 4.36E-02                                | 3.03E-06                | 1.33E-05                 |
| Tetrachloroethene                                                                                                                                                                 | 127184  | 1.00E-08                     | 1.57E-02                                | 1.09E-06                | 4.77E-06                 |
| Ethylbenzene                                                                                                                                                                      | 100414  | 1.55E-08                     | 2.42E-02                                | 1.68E-06                | 7.36E-06                 |
| m/p-Xylenes                                                                                                                                                                       | 1330207 | 1.37E-08                     | 2.13E-02                                | 1.48E-06                | 6.49E-06                 |
| Styrene                                                                                                                                                                           | 100425  | 8.43E-10                     | 1.31E-03                                | 9.14E-08                | 4.00E-07                 |
| o-Xylene                                                                                                                                                                          | 95476   | 8.16E-08                     | 1.27E-01                                | 8.85E-06                | 3.87E-05                 |
| Isopropylbenzene                                                                                                                                                                  | 98828   | 1.08E-07                     | 1.69E-01                                | 1.18E-05                | 5.15E-05                 |
| Phenol                                                                                                                                                                            | 108952  | 2.49E-09                     | 3.89E-03                                | 2.70E-07                | 1.18E-06                 |
| Aniline                                                                                                                                                                           | 62533   | 4.21E-09                     | 6.56E-03                                | 4.56E-07                | 2.00E-06                 |
| Nitrobenzene                                                                                                                                                                      | 98953   | 1.93E-09                     | 3.01E-03                                | 2.09E-07                | 9.17E-07                 |
| Naphthalene                                                                                                                                                                       | 91203   | 1.38E-09                     | 2.15E-03                                | 1.49E-07                | 6.54E-07                 |
| Di-n-butylphthalate                                                                                                                                                               | 84742   | 3.03E-10                     | 4.73E-04                                | 3.29E-08                | 1.44E-07                 |
| bis(2-Ethylhexyl)phthalate                                                                                                                                                        | 117817  | 1.69E-10                     | 2.64E-04                                | 1.83E-08                | 8.02E-08                 |
| Chlorobenzene                                                                                                                                                                     | 108907  | 1.03E-10                     | 1.60E-04                                | 1.11E-08                | 4.88E-08                 |
| 1,1,2,2-Tetrachloroethane                                                                                                                                                         | 79345   | 6.39E-10                     | 9.98E-04                                | 6.93E-08                | 3.04E-07                 |
| [B.1] Composition data is from Appendix B-4. The worst case concentration across all four streams (raw biogas, oxygenated biogas, conditioned biogas, and BPS permeate) was used. |         |                              |                                         |                         |                          |
| [B.2] Normalized Concentration (lb/lb VOC) = Concentration (lb/scf) ÷ VOC Concentration (lb/scf).                                                                                 |         |                              |                                         |                         |                          |
| [B.3] Emissions (lbs/hr) = Total VOC Emission Rate (lb VOC/hr) × Normalized Concentration (lb/lb VOC).                                                                            |         |                              |                                         |                         |                          |
| [B.4] Emissions (tons/hr) = Emissions (lbs/hr) × 8,760 hrs/yr × 1 ton/2,000 lbs.                                                                                                  |         |                              |                                         |                         |                          |

End of Calculation

# APPENDIX B-10

## SOLID MATERIAL STORAGE AND HANDLING EMISSIONS SUMMARY

CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. PROCESS UNIT INFORMATION AND GENERAL CALCULATION PARAMETERS                                                                                                                                                                                |          |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|-----|
| Digestate Solids Generation Rate                                                                                                                                                                                                              | 112      | ton/day | [1] |
| Elemental Sulfur Generation Rate                                                                                                                                                                                                              | 2.07E-01 | ton/day | [2] |
| Total Solids Generation Rate                                                                                                                                                                                                                  | 112.21   | ton/day | [3] |
|                                                                                                                                                                                                                                               | 4.68     | ton/hr  | [4] |
| Wind Velocity                                                                                                                                                                                                                                 | 15       | mph     | [5] |
| Material Moisture Content                                                                                                                                                                                                                     | 0.25     | wt%     | [6] |
| [A.1] Facility design assumption.                                                                                                                                                                                                             |          |         |     |
| [A.2] Raw Biogas H <sub>2</sub> S Content (lb/scf) × Raw Biogas Flow Rate (scf/min) × (MW S ÷ MW H <sub>2</sub> S) × 60 min/hr × 24 hr/day.<br>Raw Biogas H <sub>2</sub> S Content from Appendix B-4. Raw Biogas Flow Rate from Appendix B-5. |          |         |     |
| [A.3] 112 ton/day + 2.07E-01 ton/day                                                                                                                                                                                                          |          |         |     |
| [A.4] 112.21 ton/day ÷ 24 hrs/day                                                                                                                                                                                                             |          |         |     |
| [A.5] Wind Velocity set to maximum of allowed range for Equation 1 in AP-42 Chapter 13.2.4 for conservatism.                                                                                                                                  |          |         |     |
| [A.6] Moisture content set to minimum of allowed range for Equation 1 in AP-42 Chapter 13.2.4 for conservatism.                                                                                                                               |          |         |     |

| B. CRITERIA POLLUTANT EMISSIONS                                                                                                                                                         |                                            |                                             |                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------|----------------------------------------------|
| Pollutant                                                                                                                                                                               | Emission Factor <sup>[1]</sup><br>(lb/ton) | Hourly Emissions <sup>[2]</sup><br>(lbs/hr) | Annual Emissions <sup>[3]</sup><br>(tons/yr) |
| PM                                                                                                                                                                                      | 0.1815                                     | 8.49E-01                                    | 3.72                                         |
| PM <sub>10</sub>                                                                                                                                                                        | 0.0859                                     | 4.01E-01                                    | 1.76E+00                                     |
| PM <sub>2.5</sub>                                                                                                                                                                       | 0.0130                                     | 6.08E-02                                    | 2.66E-01                                     |
| [B.1] Emission Factors from AP-42, Table 13.2.4. $EF = k (0.0032) \times (u \div 5) 1.3 \div (M \div 2) 1.4$<br>Where:<br>PM k 0.74<br>PM <sub>10</sub> 0.35<br>PM <sub>2.5</sub> 0.053 |                                            |                                             |                                              |
| [B.2] Hourly Emissions (lbs/hr) = Emission Factor (lbs/ton) × Total Solids Generation Rate (tons/hr)                                                                                    |                                            |                                             |                                              |
| [B.3] Annual Emissions (tons/yr) = Hourly Emissions (lbs/hr) × 8,760 hrs/yr ÷ 2,000 lbs/ton                                                                                             |                                            |                                             |                                              |

End of Calculation



APPENDIX B-11  
FUGITIVE TRUCK TRAFFIC (HAUL ROADS) EMISSIONS SUMMARY  
CEA Dairy RNG Nevada, LLC | Yerington, NV Desert Hills RNG Production Facility

| A. PROCESS UNIT INFORMATION AND GENERAL CALCULATION PARAMETERS                                                    |        |            |        |
|-------------------------------------------------------------------------------------------------------------------|--------|------------|--------|
| Parameter                                                                                                         | Value  | Units      |        |
| Haul Truck Load Capacity                                                                                          | 7,000  | Gal/trip   | [A.1]  |
| Average haul truck Weight                                                                                         | 33,000 | lbs        | [A.2]  |
| Manure Delivered                                                                                                  | 0      | Gal/day    | [A.1]  |
| Digestate Solids Hauled                                                                                           | 55,406 | Gal/day    | [A.1]  |
| Digestate Solids Hauling Frequency                                                                                | 8      | trips/day  | [A.3]  |
| Additional Solids Hauling Frequency                                                                               | 2      | trips/day  | [A.4]  |
| Total Solids Hauling Frequency                                                                                    | 10     | trips/day  | [A.5]  |
| Hourly Haul Truck Frequency                                                                                       | 1      | trips/hr   | [A.1]  |
| Route Distance, Lr                                                                                                | 0.5    | miles/trip | [A.1]  |
| Vehicle Miles Traveled (VMT)                                                                                      | 0.5    | vmt/hr     | [A.6]  |
| Annual Vehicle Miles Traveled (VMT)                                                                               | 1,825  | vmt/yr     | [A.7]  |
| Silt Content for Unpaved Roads (s)                                                                                | 6.4    | %          | [A.8]  |
| Annual number of wet days (P)                                                                                     | 80     | days       | [A.9]  |
| Mean Vehicle Weight (W)                                                                                           | 16.5   | tons       | [A.10] |
| [A.1] Project design assumption.                                                                                  |        |            |        |
| [A.2] Assume Class 7 vehicle with a GVWR of up to 33,000 lbs.                                                     |        |            |        |
| [A.3] 55,406 Gal/day ÷ 7,000 Gal/trip, rounded up.                                                                |        |            |        |
| [A.4] Assumed hauling frequency for other solids generated at the Facility, e.g., nutrients and elemental sulfur. |        |            |        |
| [A.5] 8 trips/day + 2 trips/day.                                                                                  |        |            |        |
| [A.6] 1 trips/hr × 0.5 miles/trip.                                                                                |        |            |        |
| [A.7] 10 trips/day × 0.5 miles/trip × 365 days/yr.                                                                |        |            |        |
| [A.8] AP-42, Table 13.2.2-1 for MSW Landfill Unpaved Roads.                                                       |        |            |        |
| [A.9] AP-42, Figure 13.2.2-1.                                                                                     |        |            |        |
| [A.10] Mean vehicle weight with and without load.                                                                 |        |            |        |

| B. CRITERIA POLLUTANT EMISSIONS                                                                                       |                                    |                                             |                                              |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------|----------------------------------------------|
| Pollutant                                                                                                             | Unpaved Roads                      |                                             |                                              |
|                                                                                                                       | Emission Factor<br>[1]<br>(lb/VMT) | Hourly Emissions <sup>[2]</sup><br>(lbs/hr) | Annual Emissions <sup>[3]</sup><br>(tons/yr) |
| PM                                                                                                                    | 5.31                               | 2.65                                        | 4.84                                         |
| PM <sub>10</sub>                                                                                                      | 1.43                               | 0.72                                        | 1.31                                         |
| PM <sub>2.5</sub>                                                                                                     | 0.14                               | 0.07                                        | 0.13                                         |
| [B.1] Emission Factors from AP-42, Table 13.2.2. $EF = k (s \div 12) a \times (W \div 3) b \times (365 - P) \div 365$ |                                    |                                             |                                              |
| Where:                                                                                                                | k                                  | a                                           | b                                            |
| PM                                                                                                                    | 4.9                                | 0.7                                         | 0.45                                         |
| PM <sub>10</sub>                                                                                                      | 1.5                                | 0.9                                         | 0.45                                         |
| PM <sub>2.5</sub>                                                                                                     | 0.15                               | 0.9                                         | 0.45                                         |
| [B.2] Hourly Emissions (lbs/hr) = Emission Factor (lbs/VMT) × VMT (vmt/hr)                                            |                                    |                                             |                                              |
| [B.3] Annual Emissions (tons/yr) = Emission Factor (lbs/VMT) × Annual VMT (vmt/yr) ÷ 2,000 lbs/ton                    |                                    |                                             |                                              |
| End of Calculation                                                                                                    |                                    |                                             |                                              |



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APPENDIX C -  
APPLICATION FEE

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APPENDIX D -  
SUPPORTING DOCUMENTATION

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TASK 2 FINAL REPORT  
GTI PROJECT NUMBER 20614

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## Laboratory Testing and Analysis

**Reporting Period:**

October 2007 through June 2008

**Report Issued:**

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## Executive Summary

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One of the most efficient ways to use biomass resources is through the production and distribution of the resulting biomethane through existing natural gas systems. Dairy waste, for example, can be used to produce biogas of varying quality through anaerobic digestion. This biogas has been traditionally used to produce electricity. However, there is a growing trend to upgrade the biogas to biomethane and use it directly as a renewable natural gas (RNG). With the introduction of this new alternative energy source, specific issues related to gas quality, health and safety must be addressed. Therefore, GTI has conducted an extensive Biogas Testing Program to address these issues.

GTI's Laboratory Testing and Analysis Program (Task 2) focused on the investigation of raw and cleaned biogas samples, where constituents typically monitored in natural gas supplies and additional trace constituents were analyzed. The results from the testing program were compared to existing analytical parameters outlined in the American Gas Association's (AGA) *Report No. 4A - Natural Gas Contract Measurement and Quality Clauses* which compiles and references pipeline tariffs from various natural gas transmission and distribution companies in North America. The objective of Task 2 was two-fold: 1) to verify that discreet biomethane samples supplied to the study could meet overall quality natural gas parameters, and, 2) to verify that the supplied biomethane samples could meet the specific requirements of their contract to the specific pipeline company. As such, required gas quality between the two biomethane suppliers was different. This study also provides supportive information regarding constituents outside of the set of gas quality parameters covered in AGA Report 4A. These data provide input to recommendations included in the Guidance Document (Task 3) as part of this project: *Pipeline Quality Biomethane: North American Guidance Document for Introduction of Dairy Waste Derived Biomethane Into Existing Natural Gas Networks*.

A total of 40 raw biogas, partially cleaned biogas and cleaned biogas (termed biomethane) samples were collected from 14 farms in the northeast, mid-west and west coast from a variety of dairy farm operations. Farms included flush manure and scrape manure management systems; some were organic. An attempt was made to sample a wide variety of farm manure management systems across the US. All farms were processing manure and farm effluent through anaerobic digester systems to produce biogas. Some biogas was partially cleaned. *Pertaining to sampling of biomethane, only two biomethane producers and the associated farms volunteered samples for this project.* Biomethane from these plants was destined for injection into existing gas pipeline networks. Samples of natural gas and ambient air from a farm were also collected as part of the study. Samples were retrieved by a designated sampling team; the same team retrieved all samples using the same sampling equipment and protocols, for all sampling efforts. All samples were sent overnight to the GTI Gas Quality Laboratory; some samples were also sent to an outside laboratory for specific analysis. Tier I testing and Tier II testing was performed on the samples to determine chemical profiles. Biological testing was performed by GTI. Data was collected and was compared against each other, typical natural gas profiles and contract requirements specific to the biomethane suppliers.

The results from the testing program show that raw biogas, as well as biogas that has been subjected to partial cleanup, does not analytically fall within constituent ranges consistent



with natural gas tariffs for natural gas (AGA report 4A, 2001). For example, the concentrations for major components such as carbon dioxide, nitrogen, oxygen and hydrogen sulfide are significantly higher than what is specified in typical pipeline tariffs and natural gas contracts. In addition, the biogas samples were found to contain other hydrocarbons, volatile/semi-volatile organic compounds, metals and pesticides.

In contrast, the average gas quality of the biomethane (cleaned biogas) samples tested in this project were within the range of typical tariff values for natural gas *and* met the contract requirements specific to the receiving natural gas company. Biomethane contained much lower concentrations (up to four times lower) of the semi-volatile and volatile organic compounds as compared with raw and partially cleaned biogas. All concentrations of semi-volatile and volatile compounds were well below a GTI selected metric for evaluation, that is, the recommended exposure limits as defined by NIOSH and OSHA. Of note, NIOSH and OSHA exposure limit criteria is specific to hazard assessments and use assessing personal exposure of constituents over a specified period of time. These reference limits are not intended to be used as surrogate gas quality constituent limits for contracts or tariffs and may not be transferable to this context. However, they serve as reference numbers to which constituent levels may be assessed in biomethane.

No samples were found to possess concentrations of pharmaceuticals. Only one pesticide was present in one sample of biomethane, but it was present at levels four times lower than OSHA exposure limits; other pesticides were found at low levels in raw and partially cleaned biogas samples.

The results also indicated that most raw biogas samples had an average of  $2.72 \times 10^6$  live and dead heterogeneous bacteria per 100 scf of gas, most likely the result of microbial carry over from the anaerobic digestion process. In addition, acid-producing bacteria and iron oxidizing bacteria were found (the two main types of corrosion-causing bacteria). Due to the small physical size of microorganisms, the partial cleanup of biogas does not seem to be effective in reducing the bacteria number in the raw biogas stream. However, the partial cleanup process, which is typically designed for sulfur removal, can effectively kill some live bacteria in raw biogas and consequently decrease the number of live bacteria present within the resulting product biogas. Furthermore, the cleanup technology used for biomethane production seems to be more effective in reducing the number of bacteria carried over from raw biogas; however, the incidence of live bacteria, while still lower than that in raw biogas, was higher in biomethane than in partially clean biogas. However, these results may be related to the cleanup systems employed or other factors. The incidence of total live and dead bacteria were similar to those in natural gas and ambient air samples. However, live bacteria in biomethane is higher (orders of magnitude) than both of the representative natural gas samples analyzed (no live bacteria present in one and negligible in the second) and the ambient air sample (negligible). Spore count was much higher in biomethane than natural gas and ambient air samples (not detected in one natural gas sample and the ambient air sample).

Analysis of two natural gas samples was not conclusive. One natural gas sample, derived from a GTI laboratory, showed no live bacteria or spores; dead bacteria were present and some of the dead bacteria are identified as corrosion-causing. Another natural gas sample indicated

the presence of both very low levels of live bacteria as well as bacteria, corrosion-causing bacteria and spores. Ambient air samples showed negligible live anaerobic bacteria, although total live and dead bacteria were similar to natural gas samples. No spores were detected in the ambient air sample.

Spores were detected in both the biogas and biomethane samples. It is indicated that partial cleanup processes or cleanup technologies used in biomethane production may have little impact on the reduction of spores in the resulting gas.

Importantly, a limited (previously executed) study conducted at one biomethane production facility examined the use of filters for microbe reduction in the biomethane. Preliminary results indicated that using filters of various pore sizes, in parallel, as a final cleanup step appears to reduce live microbe levels to below detection. However, these data are preliminary and the study was not exhaustive.

In summary, Task 2 results conclude and demonstrate that dairy waste derived biomethane of high quality may be produced within typical tariff and contract constituent and property considerations for natural gas supplies as compiled in AGA Report 4A (2001). The tested biomethane samples also met the specific contract requirements for acceptance into the specific pipeline network. Biogas needs to be conditioned, cleaned and/or filtered in order to produce high quality biomethane. More research should be performed to create a robust database for comparison between biomethane products and processes, in order to better understand biomethane interchangeability with natural gas supplies and effects on pipeline integrity and human health and safety.



Table 17. Results from VOCs/SVOCs Analysis for 10 Raw Biogas Samples

| Compound                      | Samples Above Detection Limit | Average (ppbv) | Standard Deviation | Min (ppbv) | Max (ppbv) |
|-------------------------------|-------------------------------|----------------|--------------------|------------|------------|
| Benzene                       | 10                            | 4.20           | 4.17               | 1.07       | 13.65      |
| Carbon Tetrachloride          | 8                             | 1.30           | 0.36               | 0.87       | 1.93       |
| Pyridine                      | 1                             | 1.49           | NA                 | 1.49       | 1.49       |
| Toluene                       | 10                            | 43.27          | 44.64              | 11.63      | 147.26     |
| 1,1,2-Trichloroethane         | 4                             | 31.62          | 14.74              | 20.20      | 52.82      |
| Tetrachloroethene             | 2                             | 1.26           | 0.25               | 1.09       | 1.44       |
| Ethylbenzene                  | 9                             | 10.94          | 10.53              | 2.12       | 33.81      |
| m/p-Xylenes                   | 8                             | 9.80           | 15.12              | 1.01       | 44.67      |
| Styrene                       | 1                             | 0.45           | NA                 | 0.45       | 0.45       |
| o-Xylene                      | 8                             | 7.86           | 11.75              | 0.65       | 34.22      |
| Isopropylbenzene              | 3                             | 3.56           | 3.42               | 0.68       | 7.35       |
| n-Propylbenzene               | 4                             | 5.74           | 5.28               | 0.99       | 11.03      |
| 1,3,5-Trimethylbenzene        | 7                             | 4.72           | 5.27               | 1.15       | 13.58      |
| tert-Butylbenzene             | 3                             | 3.26           | 2.03               | 0.93       | 4.65       |
| 1,2,4-Trimethylbenzene        | 8                             | 12.02          | 17.51              | 0.67       | 41.53      |
| sec-Butylbenzene              | 6                             | 3.83           | 4.79               | 0.37       | 13.36      |
| Phenol                        | 6                             | 9.68           | 9.97               | 2.00       | 28.14      |
| Aniline                       | 2                             | 21.34          | 6.85               | 16.50      | 26.18      |
| 2-Chlorophenol                | 2                             | 0.85           | 0.45               | 0.53       | 1.17       |
| p-Isopropyltoluene            | 9                             | 3.26           | 2.53               | 0.54       | 8.17       |
| Benzyl Alcohol                | 3                             | 5.08           | 7.52               | 0.46       | 13.76      |
| 3,4-Methylphenol (o,p-cresol) | 7                             | 17.97          | 31.48              | 0.54       | 82.07      |
| bis(2-chloroisopropyl)ether   | 1                             | 3.35           | NA                 | 3.35       | 3.35       |
| n-Butylbenzene                | 5                             | 3.55           | 4.27               | 0.63       | 10.99      |
| N-nitroso-di-n-propylamine    | 1                             | 0.68           | NA                 | 0.68       | 0.68       |
| Nitrobenzene                  | 2                             | 0.55           | 0.03               | 0.53       | 0.57       |
| Naphthalene                   | 6                             | 1.62           | 0.92               | 1.02       | 3.47       |
| 2-Methylnaphthalene           | 3                             | 2.20           | 2.68               | 0.43       | 5.28       |
| 1-Methylnaphthalene           | 1                             | 3.08           | NA                 | 3.08       | 3.08       |
| Diethylphthalate              | 1                             | 0.21           | NA                 | 0.21       | 0.21       |
| Phenanthrene                  | 1                             | 1.09           | NA                 | 1.09       | 1.09       |
| Di-n-butylphthalate           | 8                             | 0.75           | 0.25               | 0.42       | 1.06       |
| Fluoranthene                  | 1                             | 0.43           | NA                 | 0.43       | 0.43       |
| bis(2-Ethylhexyl)phthalate    | 10                            | 0.39           | 0.14               | 0.21       | 0.65       |

Table 23. Results from VOCs/SVOCs Analysis for 7 Partially Clean Biogas Samples

| Compound                      | Samples Above Detection Limit | Average (ppbv) | Standard Deviation | Min (ppbv) | Max (ppbv) |
|-------------------------------|-------------------------------|----------------|--------------------|------------|------------|
| Benzene                       | 6                             | 5.85           | 5.49               | 0.84       | 12.74      |
| Carbon Tetrachloride          | 7                             | 1.35           | 0.54               | 0.70       | 2.12       |
| Toluene                       | 7                             | 22.25          | 12.25              | 7.03       | 40.35      |
| 1,1,2-Trichloroethane         | 3                             | 24.19          | 22.52              | 6.78       | 49.62      |
| Tetrachloroethene             | 1                             | 1.61           | NA                 | 1.61       | 1.61       |
| Chlorobenzene                 | 1                             | 1.48           | NA                 | 1.48       | 1.48       |
| Ethylbenzene                  | 7                             | 9.75           | 9.01               | 1.67       | 22.76      |
| m/p-Xylenes                   | 6                             | 2.98           | 2.05               | 0.86       | 5.54       |
| Styrene                       | 3                             | 1.28           | 0.30               | 1.09       | 1.63       |
| o-Xylene                      | 6                             | 2.24           | 1.64               | 0.74       | 5.10       |
| 1,1,2,2-Tetrachloroethane     | 1                             | 0.68           | NA                 | 0.68       | 0.68       |
| Isopropylbenzene              | 1                             | 1.11           | NA                 | 1.11       | 1.11       |
| n-Propylbenzene               | 2                             | 1.42           | 0.39               | 1.14       | 1.69       |
| 1,3,5-Trimethylbenzene        | 4                             | 1.61           | 0.53               | 1.01       | 2.18       |
| tert-Butylbenzene             | 1                             | 1.02           | NA                 | 1.02       | 1.02       |
| 1,2,4-Trimethylbenzene        | 6                             | 3.08           | 3.08               | 0.71       | 7.79       |
| sec-Butylbenzene              | 2                             | 0.96           | 0.87               | 0.35       | 1.58       |
| Phenol                        | 5                             | 10.53          | 11.34              | 1.46       | 29.38      |
| Aniline                       | 2                             | 12.87          | 16.59              | 1.14       | 24.60      |
| 2-Chlorophenol                | 1                             | 1.05           | NA                 | 1.05       | 1.05       |
| p-Isopropyltoluene            | 6                             | 20.13          | 43.40              | 0.55       | 108.52     |
| Benzyl Alcohol                | 4                             | 46.26          | 88.55              | 1.12       | 179.07     |
| 3,4-Methylphenol (o,p-cresol) | 3                             | 7.45           | 9.71               | 1.12       | 18.64      |
| bis(2-chloroisopropyl)ether   | 1                             | 3.15           | NA                 | 3.15       | 3.15       |
| n-Butylbenzene                | 2                             | 1.36           | 1.09               | 0.60       | 2.13       |
| N-nitroso-di-n-propylamine    | 1                             | 0.64           | NA                 | 0.64       | 0.64       |
| Naphthalene                   | 5                             | 0.90           | 0.31               | 0.50       | 1.36       |
| Diethylphthalate              | 1                             | 0.23           | NA                 | 0.23       | 0.23       |
| Di-n-butylphthalate           | 5                             | 0.74           | 0.35               | 0.38       | 1.19       |
| bis(2-Ethylhexyl)phthalate    | 7                             | 0.83           | 1.31               | 0.16       | 3.80       |



## Second Tier Chemical Testing

Thirteen (eight from Dairy Farm 1 and five from Dairy Farm 2) biomethane samples were collected for the Second Tier chemical testing and each sample was subjected to four types of analysis.

### *Volatile and Semi-volatile Organic Compounds*

Overall, the biomethane samples had very low concentrations of VOCs/SVOCs as shown in Table 32. Only 13 of the 115 target compounds were detected in the biomethane samples compared to 30 target compounds that were detected in the partially clean biogas samples and 36 in the raw biogas samples. The maximum concentration observed in the biomethane samples was 0.11 ppmv of toluene from a sample that was taken from Dairy Farm 2. The OSHA REL (recommended exposure limit) for toluene is 200 ppm and the NIOSH REL is 100 ppm. Therefore the observed concentration for toluene in this biomethane sample is 3 orders of magnitude lower than both recommended exposure limits. Toluene, phthalate, carbon tetrachloride and m/p-xylenes were the most often detected VOCs/SVOCs in the biomethane samples. A complete set of the analytical data for the VOCs/SVOCs is presented in Appendix C.

**Table 32. Results from VOCs/SVOCs Analysis for 13 Biomethane Samples**

| Compound                   | Samples Above Detection Limit | Average (ppbv) | Standard Deviation | Min (ppbv) | Max (ppbv) |
|----------------------------|-------------------------------|----------------|--------------------|------------|------------|
| Benzene                    | 1                             | 27.09          | NA                 | 27.09      | 27.09      |
| Carbon Tetrachloride       | 12                            | 1.24           | 0.50               | 0.66       | 2.01       |
| Toluene                    | 13                            | 12.52          | 28.91              | 1.67       | 107.54     |
| Ethylbenzene               | 4                             | 1.83           | 1.10               | 0.53       | 3.04       |
| m/p-Xylenes                | 12                            | 2.60           | 3.03               | 1.17       | 11.25      |
| o-Xylene                   | 5                             | 1.54           | 1.30               | 0.48       | 3.36       |
| 1,3,5-Trimethylbenzene     | 1                             | 0.69           | NA                 | 0.69       | 0.69       |
| 1,2,4-Trimethylbenzene     | 1                             | 0.71           | NA                 | 0.71       | 0.71       |
| Benzyl Alcohol             | 1                             | 2.10           | NA                 | 2.10       | 2.10       |
| N-nitroso-di-n-propylamine | 7                             | 2.92           | 0.75               | 1.45       | 3.60       |
| Naphthalene                | 4                             | 1.19           | 0.70               | 0.41       | 2.06       |
| Di-n-butylphthalate        | 12                            | 0.96           | 0.69               | 0.22       | 2.29       |
| bis(2-Ethylhexyl)phthalate | 13                            | 0.44           | 0.19               | 0.20       | 0.81       |



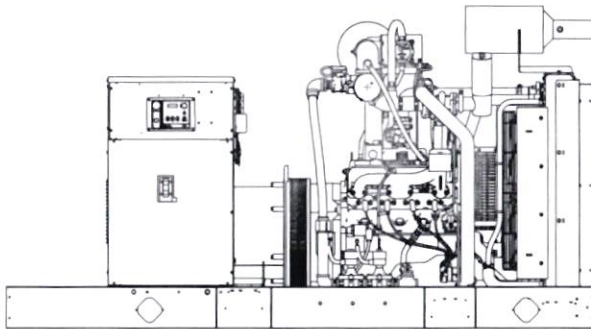


**EPA-Certified for 60 Hz Stationary  
Emergency Applications**

EPA certification not applicable at 50 Hz

### Ratings Range

| Standby: | kW<br>kVA | 60 Hz            | 50 Hz            |
|----------|-----------|------------------|------------------|
|          |           | 91-125<br>91-156 | 78-100<br>78-125 |



### Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a cULus listing.
- CSA approval is available.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- The generator set accepts rated load in one step.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Natural gas, LP gas, and dual fuel models are available.
- Dual fuel model features:
  - Natural gas is the primary fuel. Automatically transfers back to primary fuel when LPG fuel becomes low or generator stops and restarts.
  - The patent pending reset box on the generator provides the ability to manually transfer back to natural gas.
  - The natural gas rating is available when running on natural gas.
  - APM603 controller provides load shed for automatic derate to LPG ratings to prevent an overload condition.

### Generator Set Ratings

| Alternator | Voltage | Ph | Hz | Natural Gas<br>130°C Rise<br>Standby Rating |      | LP Gas<br>130°C Rise<br>Standby Rating |      |
|------------|---------|----|----|---------------------------------------------|------|----------------------------------------|------|
|            |         |    |    | kW/kVA                                      | Amps | kW/kVA                                 | Amps |
| 4R12X      | 120/208 | 3  | 60 | 120/150                                     | 417  | 105/131                                | 364  |
|            | 127/220 | 3  | 60 | 125/156                                     | 410  | 105/131                                | 344  |
|            | 120/240 | 3  | 60 | 120/150                                     | 361  | 105/131                                | 316  |
|            | 120/240 | 1  | 60 | 91/91                                       | 380  | 91/91                                  | 380  |
|            | 139/240 | 3  | 60 | 125/156                                     | 376  | 105/131                                | 316  |
|            | 220/380 | 3  | 60 | 110/138                                     | 210  | 105/131                                | 200  |
|            | 277/480 | 3  | 60 | 125/156                                     | 188  | 105/131                                | 158  |
|            | 347/600 | 3  | 60 | 125/156                                     | 151  | 105/131                                | 127  |
|            | 110/190 | 3  | 50 | 100/125                                     | 380  | 86/108                                 | 329  |
|            | 115/200 | 3  | 50 | 100/125                                     | 361  | 86/108                                 | 312  |
|            | 120/208 | 3  | 50 | 100/125                                     | 347  | 86/108                                 | 300  |
|            | 110/220 | 3  | 50 | 100/125                                     | 329  | 86/108                                 | 284  |
|            | 110/220 | 1  | 50 | 84/84                                       | 382  | 84/84                                  | 382  |
|            | 220/380 | 3  | 50 | 100/125                                     | 190  | 86/108                                 | 165  |
|            | 230/400 | 3  | 50 | 100/125                                     | 181  | 86/108                                 | 156  |
|            | 240/415 | 3  | 50 | 100/125                                     | 174  | 86/108                                 | 151  |



**RATINGS:** All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. **Standby Ratings:** The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

## Generator Set Ratings, continued

| Alternator | Voltage | Ph | Hz | Natural Gas<br>130°C Rise<br>Standby Rating |      | LP Gas<br>130°C Rise<br>Standby Rating |      |
|------------|---------|----|----|---------------------------------------------|------|----------------------------------------|------|
|            |         |    |    | kW/kVA                                      | Amps | kW/kVA                                 | Amps |
| 4R13X      | 120/208 | 3  | 60 | 125/156                                     | 434  | 105/131                                | 364  |
|            | 127/220 | 3  | 60 | 125/156                                     | 410  | 105/131                                | 344  |
|            | 120/240 | 3  | 60 | 125/156                                     | 376  | 105/131                                | 316  |
|            | 120/240 | 1  | 60 | 105/105                                     | 438  | 100/100                                | 417  |
|            | 139/240 | 3  | 60 | 125/156                                     | 376  | 105/131                                | 316  |
|            | 220/380 | 3  | 60 | 120/150                                     | 228  | 105/131                                | 200  |
|            | 277/480 | 3  | 60 | 125/156                                     | 188  | 105/131                                | 158  |
|            | 347/600 | 3  | 60 | 125/156                                     | 151  | 105/131                                | 127  |
|            | 110/190 | 3  | 50 | 100/125                                     | 380  | 86/108                                 | 329  |
|            | 115/200 | 3  | 50 | 100/125                                     | 361  | 86/108                                 | 312  |
|            | 120/208 | 3  | 50 | 100/125                                     | 347  | 86/108                                 | 300  |
|            | 115/230 | 3  | 50 | 100/125                                     | 314  | 86/108                                 | 272  |
|            | 115/230 | 1  | 50 | 78/78                                       | 340  | 78/78                                  | 340  |
|            | 220/380 | 3  | 50 | 100/125                                     | 190  | 86/108                                 | 165  |
|            | 230/400 | 3  | 50 | 100/125                                     | 181  | 86/108                                 | 156  |
| 4T13X      | 240/415 | 3  | 50 | 100/125                                     | 174  | 86/108                                 | 151  |
|            | 120/240 | 1  | 60 | 125/125                                     | 521  | 105/105                                | 438  |
|            | 110/220 | 1  | 50 | 91/91                                       | 414  | 86/86                                  | 391  |

### Alternator Specifications

| Specifications                           | Alternator                             |
|------------------------------------------|----------------------------------------|
| Manufacturer                             | Kohler                                 |
| Type                                     | 4-Pole, Rotating-Field                 |
| Exciter type                             | Brushless, Rare-Earth Permanent Magnet |
| Leads: quantity, type                    |                                        |
| 4RX                                      | 12, Reconnectable                      |
| 4TX                                      | 4, 110- 120/220- 240                   |
| Voltage regulator                        | Solid State, Volts/Hz                  |
| Insulation:                              | NEMA MG1                               |
| Material                                 | Class H                                |
| Temperature rise                         | 130°C, Standby                         |
| Bearing: quantity, type                  | 1, Sealed                              |
| Coupling                                 | Flexible Disc                          |
| Amortisseur windings                     | Full                                   |
| Voltage regulation, no-load to full-load | Controller Dependent                   |
| One-step load acceptance                 | 100% of Rating                         |
| Unbalanced load capability               | 100% of Rated Standby Current          |
| Peak motor starting kVA:                 | (35% dip for voltages below)           |
| 480 V, 380 V 4R12X (12 lead)             | 448 (60 Hz), 355 (50 Hz)               |
| 480 V, 380 V 4R13X (12 lead)             | 540 (60 Hz), 425 (50 Hz)               |
| 240 V, 220 V 4T13X (4 lead)              | 440 (60 Hz), 396 (50 Hz)               |

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and drip-proof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.

### Application Data

#### Engine

| Engine Specifications                      | 60 Hz                                         | 50 Hz     |
|--------------------------------------------|-----------------------------------------------|-----------|
| Manufacturer                               | Kohler                                        |           |
| Engine: model, type                        | KG6208THD 6.2 L Turbocharged, Aftercooled V-8 |           |
| Cylinder arrangement                       | V-8                                           |           |
| Displacement, L (cu. in.)                  | 6.2 (378)                                     |           |
| Bore and stroke, mm (in.)                  | 101.6 x 95.25 (4.00 x 3.75)                   |           |
| Compression ratio                          | 9.8:1                                         |           |
| Rated rpm                                  | 1800                                          | 1500      |
| Max. power at rated rpm, kW (HP)           |                                               |           |
| NG                                         | 152 (204)                                     | 125 (168) |
| LP                                         | 131 (175)                                     | 109 (146) |
| Cylinder head material                     | Cast Aluminum                                 |           |
| Piston type and material                   | Cast Aluminum                                 |           |
| Crankshaft material                        | Forged steel                                  |           |
| Valve (exhaust) material                   | Forged Steel                                  |           |
| Governor type                              | Electronic                                    |           |
| Frequency regulation, no-load to full-load | Isochronous                                   |           |
| Frequency regulation, steady state         | ±1.0%                                         |           |
| Frequency                                  | Fixed                                         |           |
| Air cleaner type, all models               | Dry                                           |           |

#### Exhaust

| Exhaust System                                        | 60 Hz      | 50 Hz      |
|-------------------------------------------------------|------------|------------|
| Exhaust manifold type                                 | Dry        |            |
| Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)  | 29 (1024)  | 24 (848)   |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 700 (1292) | 650 (1202) |
| Maximum allowable back pressure, kPa (in. Hg)         | 15 (4.43)  | 12 (3.54)  |
| Exhaust outlet size at engine hookup, mm (in.)        | 88.9 (3.5) |            |

#### Engine Electrical

| Engine Electrical System                       | 60 Hz     | 50 Hz |
|------------------------------------------------|-----------|-------|
| Ignition system                                | Coil Pack |       |
| Battery charging alternator:                   |           |       |
| Ground (negative/positive)                     | Negative  |       |
| Volts (DC)                                     | 12        |       |
| Ampere rating                                  | 130       |       |
| Starter motor rated voltage (DC)               | 12        |       |
| Battery, recommended cold cranking amps (CCA): |           |       |
| Qty., rating for -18°C (0°F)                   | One, 650  |       |
| Battery voltage (DC)                           | 12        |       |



## Fuel

| Fuel System                                                                | 60 Hz                             | 50 Hz         |
|----------------------------------------------------------------------------|-----------------------------------|---------------|
| Fuel type                                                                  | Natural Gas, LP Gas, or Dual Fuel |               |
| Fuel supply line inlet                                                     | 1.5 NPT                           |               |
| Natural gas and LPG vapor fuel supply pressure, kPa (in. H <sub>2</sub> O) | 1.74-2.74 (7-11)                  |               |
| <b>Fuel Composition Limits *</b>                                           | <b>Nat. Gas</b>                   | <b>LP Gas</b> |
| Methane, % by volume                                                       | 90 min.                           | —             |
| Ethane, % by volume                                                        | 4.0 max.                          | —             |
| Propane, % by volume                                                       | 1.0 max.                          | 85 min.       |
| Propene, % by volume                                                       | 0.1 max.                          | 5.0 max.      |
| C <sub>4</sub> and higher, % by volume                                     | 0.3 max.                          | 2.5 max.      |
| Sulfur, ppm mass                                                           | 25 max.                           |               |
| Lower heating value, MJ/m <sup>3</sup> (Btu/ft <sup>3</sup> ), min.        | 33.2 (890)                        | 84.2 (2260)   |

\* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

## Lubrication

| Lubricating System                                             | 60 Hz         | 50 Hz |
|----------------------------------------------------------------|---------------|-------|
| Type                                                           | Full Pressure |       |
| Oil pan capacity, L (qt.) §                                    | 5.7 (6.0)     |       |
| Oil pan capacity with filter and oil cooler, L (qt.) §         | 9.0 (9.5)     |       |
| Oil filter: quantity, type §                                   | 1, Cartridge  |       |
| § Kohler recommends the use of Kohler Genuine oil and filters. |               |       |

## Cooling

| Radiator System                                                                                    | 60 Hz       | 50 Hz       |
|----------------------------------------------------------------------------------------------------|-------------|-------------|
| Ambient temperature, °C (°F) *                                                                     | 50 (122)    |             |
| Engine jacket water capacity, L (gal.)                                                             | 7.3 (1.93)  |             |
| Radiator system capacity, including engine, L (gal.)                                               | 28.4 (7.5)  |             |
| Engine jacket water flow, Lpm (gpm)                                                                | 126 (33.3)  | 105 (27.7)  |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)                             | 81.4 (4633) | 68.9 (3922) |
| Heat rejected to charge air cooler at rated kW, dry exhaust, kW (Btu/min.)                         | 18 (1025)   | 15 (854)    |
| Water pump type                                                                                    | Centrifugal |             |
| Fan diameter, including blades, mm (in.)                                                           | 711 (28)    |             |
| Fan, kWm (HP)                                                                                      | 12 (16.1)   | 7.0 (9.4)   |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O) | 0.12 (0.5)  |             |

\* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

## Operation Requirements

| Air Requirements                                           | 60 Hz        | 50 Hz       |
|------------------------------------------------------------|--------------|-------------|
| Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) † | 290 (10,241) | 242 (8,546) |
| Combustion air, m <sup>3</sup> /min. (cfm)                 | 6.9 (244)    | 5.8 (205)   |
| Heat rejected to ambient air:                              |              |             |
| Engine, kW (Btu/min.)                                      | 37 (2106)    | 30 (1708)   |
| Alternator, kW (Btu/min.)                                  | 10 (569)     | 9 (512)     |

† Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

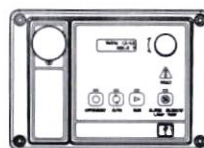
| Fuel Consumption ‡                                    | 60 Hz                  | 50 Hz       |
|-------------------------------------------------------|------------------------|-------------|
| <b>Natural Gas, m<sup>3</sup>/hr. (cfh) at % load</b> | <b>Standby Ratings</b> |             |
| 100%                                                  | 47.5 (1678)            | 38.1 (1345) |
| 75%                                                   | 39.5 (1396)            | 31.9 (1126) |
| 50%                                                   | 30.7 (1084)            | 23.7 (836)  |
| 25%                                                   | 20.4 (720)             | 14.9 (526)  |
| 0%                                                    | 8.3 (292)              | 7.1 (252)   |
| <b>LP Gas, m<sup>3</sup>/hr. (cfh) at % load</b>      | <b>Standby Ratings</b> |             |
| 100%                                                  | 18.8 (664)             | 14.0 (496)  |
| 75%                                                   | 15.1 (532)             | 10.6 (373)  |
| 50%                                                   | 11 (388)               | 6.9 (242)   |
| 25%                                                   | 6.1 (216)              | 4.5 (158)   |
| 0%                                                    | 3.4 (121)              | 2.5 (88)    |

‡ Nominal fuel rating: Natural gas, 37 MJ/m<sup>3</sup> (1000 Btu/ft.<sup>3</sup>)  
LP vapor, 93 MJ/m<sup>3</sup> (2500 Btu/ft.<sup>3</sup>)

LP vapor conversion factors:

8.58 ft.<sup>3</sup> = 1 lb.  
0.535 m<sup>3</sup> = 1 kg.  
36.39 ft.<sup>3</sup> = 1 gal.

## Controllers



### APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.



### APM603 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- 7-inch graphic display with touch screen and menu control provides easy local data access
- Measurements are selectable in metric or English units
- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
- Note: Parallel with other APM603 controllers only
- Generator management to turn paralleled generators off and on as required by load demand
- Load management to connect and disconnect loads as required
- Controller supports Modbus® RTU, Modbus® TCP, SNMP and BACnet®
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- UL-listed overcurrent protective device
- NFPA 110 Level 1 capability

Refer to G6-162 for additional controller features and accessories.

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## Standard Features

- Air Cleaner Restrictor Indicator
- Alternator Protection
- Battery Rack and Cables
- Dual Fuel Reset Box (standard on dual fuel models)
- Electronic, Isochronous Governor
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature
- Open Unit Accessory Kit (radiator duct flange, stone guard, flexible exhaust, and three-way catalyst)
- Three-Way Exhaust Catalyst

## Available Options

### Circuit Breakers

- | Type                                                              | Rating                                                           |
|-------------------------------------------------------------------|------------------------------------------------------------------|
| <input type="checkbox"/> Magnetic Trip                            | <input type="checkbox"/> 80%                                     |
| <input type="checkbox"/> Thermal Magnetic Trip                    | <input type="checkbox"/> 100%                                    |
| <input type="checkbox"/> Electronic Trip (LI)                     | <b>Operation</b>                                                 |
| <input type="checkbox"/> Electronic Trip with Short Time (LSI)    | <input type="checkbox"/> Manual                                  |
| <input type="checkbox"/> Electronic Trip with Ground Fault (LSIG) | <input type="checkbox"/> Electrically Operated (for paralleling) |

### Circuit Breaker Mounting

- ☐ Generator Mounted
- ☐ Remote Mounted
- ☐ Bus Bar (for remote mounted breakers)

### Enclosures for Remote Mounted Circuit Breakers

- ☐ NEMA 1
- ☐ NEMA 3R

### Approvals and Listings

- ☐ cULus (UL 2200 and CSA)
- ☐ Hurricane Rated Enclosure
- ☐ IBC Seismic Certification

### Enclosure

- ☐ Sound Enclosure (with enclosed critical silencer)
- ☐ Weather Enclosure (with enclosed critical silencer)

### Open Unit

- ☐ Exhaust Silencer, Critical
- ☐ Flexible Exhaust Connector, Stainless Steel

### Fuel System

- ☐ Dual Fuel NG/LPG (automatic changeover)
- ☐ Flexible Fuel Line
- ☐ Fuel Filter Kit
- ☐ Secondary Gas Solenoid Valve (NFPA Fuel System)

### Controller

- ☐ Common Failure Relay (APM603 Controller only)
- ☐ Four Input/Fifteen Output Module
- ☐ Lockable Emergency Stop
- ☐ Manual Key Switch (APM603 only)
- ☐ Manual Speed Adjust (APM402 only)
- ☐ Remote Emergency Stop
- ☐ Run Relay (Standard with APM603)
- ☐ Remote Annunciator panel
- ☐ Two Input/Five Output Module (APM402 only)

### Cooling System

- ☐ Block Heater, 1500 W, 110-120 V
  - ☐ Block Heater, 1500 W, 190-240 V
- Recommended for ambient temperatures below 10°C (50°F)

### Electrical System

- ☐ Battery
- ☐ Battery Charger
- ☐ Battery Charger Temperature Compensation
- ☐ Battery Heater
- ☐ Generator Heater

### Miscellaneous

- ☐ Certified Test Report
- ☐ Engine Fluids Added
- ☐ Rated Power Factor Testing
- ☐ Rodent Guards

### Literature

- ☐ General Maintenance
- ☐ NFPA 110
- ☐ Overhaul
- ☐ Production

### Warranty

- ☐ 2-Year Basic Limited Warranty
- ☐ 5-Year Basic Limited Warranty
- ☐ 5-Year Comprehensive Limited Warranty

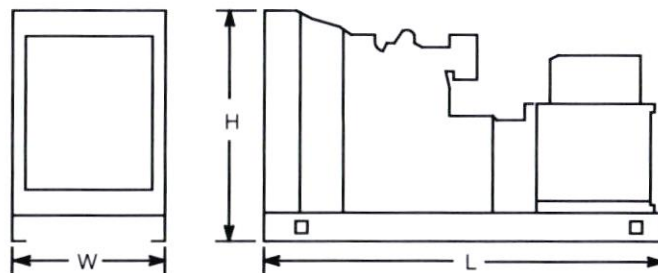
## Dimensions and Weights

Overall Size, L x W x H, mm (in.):

2800 x 1120 x 1528 (110.2 x 44.1 x 60.2)

Weight, wet, kg (lb.):

1207 (2660)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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