

**STANDARD**  
**AIR CONTAMINANT DISCHARGE PERMIT**

Department of Environmental Quality  
Northwest Region  
2020 SW 4th Avenue, #400  
Portland, Oregon 97201  
(503) 229-5554

This permit is being issued in accordance with the provisions of ORS 468A.040 and based on the land use compatibility findings included in the permit record.

## ISSUED TO:

Columbia Biogas LLC  
721 NW 9<sup>th</sup> Avenue, Suite 195  
Portland, OR 97209

## INFORMATION RELIED UPON:

Application No.: 025298  
Date Received: 08/18/10

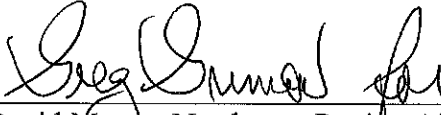
## PLANT SITE LOCATION:

6849 NE Columbia Blvd.  
Portland, OR 97218

## LAND USE COMPATIBILITY FINDING:

Approving Authority: City of Portland  
Approval Date: 08/06/10

## ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

  
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David Monro, Northwest Region Air Quality Manager

12/23/2010  
Dated

Source(s) Permitted to Discharge Air Contaminants (OAR 340-216-0020):

Table 1 Code	Source Description	SIC / NAICS
Part B, 27	Electrical power generation from combustion (generators >500 kW fired on digester gas)	4911 / 221119

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## **1.0 GENERAL EMISSION STANDARDS AND LIMITS**

- 1.1. Visible Emissions** The permittee must ensure that emissions from any air contaminant source do not equal or exceed 20% opacity for a period aggregating more than 30 seconds in any one hour.
- 1.2. Particulate Matter Emissions** The permittee must ensure that particulate matter emissions from any air contaminant source other than fugitive emission sources do not exceed 0.1 grains per standard cubic foot:
- 1.3. Fugitive Emissions** The permittee must take reasonable precautions to prevent fugitive dust emissions by:
- a. Treating vehicular traffic areas of the plant site under the control of the permittee.
  - b. Operating all air contaminant-generating processes so that fugitive type dust associated with the operation will be adequately controlled at all times.
  - c. Storing collected materials from air pollution control equipment in a covered container or other method equally effective in preventing the material from becoming airborne during storage and transfer.
- 1.4. Particulate Matter Fallout** The permittee must not cause or permit the emission of any particulate matter larger than 250 microns in size at sufficient duration or quantity, as to create an observable deposition upon the real property of another person. The Department will verify that the deposition exists and will notify the permittee that the deposition must be controlled.
- 1.5. Nuisance and Odors** The permittee must not cause or allow air contaminants from any source to cause a nuisance. Nuisance conditions will be verified by Department personnel.

## **2.0 SPECIFIC PERFORMANCE AND EMISSION STANDARDS**

- 2.1. Area Source NESHAP** The permittee must comply with the provisions of 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart JJJJ, as applicable to the spark ignition combustion engines at the facility. The permittee must provide DEQ with a copy of all notifications and reports submitted to EPA under the area source NESHAP/NSPS.

### 3.0 OPERATIONAL AND MAINTENANCE REQUIREMENTS

#### 3.1. Equipment Operations

The permittee must ensure that the control equipment and waste gas flare are operated in a manner to maximize efficiency, as follows.

- a. All biogas to be combusted must be first passed through the H<sub>2</sub>S treatment system.
- b. The permittee must perform a fuel sample analysis (using Draeger tube or similar method) upon start-up and once per week to determine the concentration of H<sub>2</sub>S at the biogas outlet of the sulfur removal system. Results of the analyses must be maintained on site. If the measured H<sub>2</sub>S concentration is greater than 25 ppm the permittee must take corrective action within 24 hours. This may include process control changes or the replacement of removal media. Following corrective action(s), the permittee must perform another fuel sample analysis to demonstrate ongoing compliance.
- c. The biogas flare must be operated at all times when emissions may be vented to it, in accordance with the following:
  - i. The flare must be operated with a continuous pilot flame when there is a demand to combust biogas. The pilot flame must be continuously monitored using a thermocouple or equivalent device. The flame must be monitored for on/off status and for flame failure, and the system equipped with alarms to signal such events. If any excess emissions events occur due to pilot flame ignition malfunction then the flare must operate with a continuous pilot flame regardless of the demand to combust biogas.
  - ii. The flare must be operated with supplemental fuel (natural gas, propane) to assist biogas combustion unless the heating value of the biogas is 500 Btu/scf or greater. As necessary, the net heating value is to be determined as described in 40 CFR 60.18.
  - iii. The flare must be operated with an internal combustion temperature of at least 1400° F.

- iv. The flare must be designed for and operated with no visible emissions as determined by EPA Method 22, except for periods not to exceed a total of 30 seconds during any hour.
- d. The permittee must install a continuous differential pressure monitoring device at each catalyst (oxidation/SCR), and an alarm system must be installed to alert operators if the differential pressure is out of the acceptable range. The permittee must keep weekly records of the differential pressure and any excursions from the acceptable range. The acceptable range will be determined during the initial emission factor verification source testing specified in section 5.0.
  - i. The permittee must investigate and commence corrective action measures within 24 hours of an excursion of the approved differential pressure range of any catalyst. Startup, shutdown, and malfunction conditions are excluded from this requirement:
  - ii. Operating outside the design range is not a violation of the permit; however, it is a violation of this permit condition if the permittee fails to take corrective action within 24 hours following a documented excursion.
- e. The permittee must install and operate an alarm system on the urea injector in such a manner that an operator will be alerted if the urea flow is outside of the designed range. The acceptable range is defined as the manufacturer's designed range.
  - i. The permittee must investigate and commence corrective action measures within 24 hours if the urea flow to the injector is outside of the manufacturer's designed range. Startup, shutdown, and malfunction conditions are excluded from this requirement.
  - ii. Operating outside the design range is not a violation of the permit; however, it is a violation of this permit condition if the permittee fails to take corrective action within 24 hours following a documented excursion.
- f. To ensure efficient operation of the biofilters, the permittee must adhere to the manufacturer's

recommendations for maintenance, which should include the following or similar actions:

- i. Inspect and clean the humidifier nozzle
- ii. Inspect the sprinkler system components
- iii. Inspect and remove weeds from the biofilter surface
- iv. Inspect and maintain the blower
- v. If the system includes a differential pressure monitor, record the pressure drop weekly

**3.2. Odor Control Plan** The permittee must implement and maintain an odor control plan. At a minimum, the following actions must be taken.

- a. All feedstock product must be received in enclosed trucks or containers.
- b. All received feedstock product must be unloaded/dumped in an enclosed area that is vented to the facility's odor control system.
- c. Product receiving/pretreatment areas must be ventilated to the facility's odor control system in a manner that ensures the areas are under negative pressure.
- d. All garbage/packer trucks and large transfer trucks (32-ton and tractor trailers) must exit through a tire wash prior to leaving the facility.

## 4.0 PLANT SITE EMISSION LIMITS

**4.1. Plant Site Emission Limits (PSEL)**

Plant site emissions must not exceed the following:

Pollutant	Limit	Units
PM <sub>10</sub>	14	tons per year
PM <sub>2.5</sub>	9	tons per year
SO <sub>2</sub>	39	tons per year
NO <sub>x</sub>	39	tons per year
CO	99	tons per year
VOC	39	tons per year

**4.2. Annual Period**

The annual plant site emissions limits apply to any 12-consecutive calendar month period.

## 5.0 SOURCE TESTING REQUIREMENTS

### 5.1. Testing Requirements

By no later than 180 days after startup, the permittee must verify the correctness of the generator emission factors presented in the application by conducting a source test for NO<sub>x</sub>, CO, and VOC emissions using the following test methods and procedures. If the generator sets and control devices installed are identical, only one generator set need be tested.

- a. Test methods must be taken from 40 CFR 60, Appendix A, to include Methods 1 – 4, for each pollutant, and
  - i. For NO<sub>x</sub>, use test method 7-E
  - ii. For CO, use test method 10
  - iii. For VOC, use test method 25 or 25A
- b. The facility must be operating at the normal maximum rate.
- c. Emission rates must be reported in terms of lb/hr, g/bhp-hr, and lb/MMBtu.
- d. The following parameters must be monitored and recorded during the source test:
  - i. visible emissions as measured by EPA Method 9 for a period of at least six minutes during or within 30 minutes before or after each test run;
  - ii. process operating parameters; including the operating (power) level of the generator, amount of gas combusted;
  - iii. pollution control device operating parameters such as: operating temperature, pressure drop across the catalysts and urea injection rate;
  - iv. and other data as agreed by the Department and the tester.
- e. All tests must be conducted in accordance with the Department's Source Sampling Manual and the approved pretest plan. The pretest plan must be submitted at least 30 days in advance and approved by the Regional Source Test Coordinator and/or Permit Writer. Test data and results must be submitted for review to the Regional Source Test Coordinator within 45 days unless otherwise approved in

the pretest plan. See Condition 11.3 for appropriate address to submit test plans/reports.

- f. Only regular operating staff may adjust the combustion system or production processes and emission control parameters during the source test and within two hours prior to the source test. Any operating adjustments made during the source test, which are a result of consultation with source testing personnel, equipment vendors or consultants, may render the source test invalid.

## 6.0 COMPLIANCE DEMONSTRATION

- 6.1. **PSEL Compliance Monitoring** Compliance with the PSEL is determined for each 12-consecutive calendar month period based on the following calculation for each pollutant:

$$E = E_{\text{flare}} + E_{\text{Engine}}$$

Where,

$$E = \text{pollutant emissions (ton/yr);}$$

$$E_{\text{Flare}} = \text{ton/yr flare emissions}$$

$$E_{\text{Engine}} = \text{ton/yr engine emissions for each engine}$$

Flare emissions must be calculated for each pollutant using the following equation:

$$E_{\text{Flare}} = \Sigma(EF \times P)/2000 \text{ lbs}$$

where,

$$E_{\text{Flare}} = \text{pollutant emissions (ton/yr);}$$

$$EF = \text{pollutant emission factor (Condition 14.0);}$$

$$P = \text{process production (MMBtu/hr)}$$

Each engines emissions must be calculated for each pollutant using the following equation:

$$E_{\text{Engine}} = \Sigma (\text{BHP} \times EF \times H \times (1 \text{ lb}/454 \text{ g}) \times (1 \text{ ton}/2000 \text{ lbs}))$$

where,

$$\text{BHP} = \text{engine maximum brake horsepower}$$

$$EF = \text{pollutant emission factor (Condition 14.0);}$$

$$H = \text{operating time in hours}$$

- 6.2. **Emission Factors** The permittee must use the default emission factors provided in

Condition 14.0 for calculating pollutant emissions, unless alternative emission factors are approved by DEQ. The permittee may request or DEQ may require using alternative emission factors provided they are based on actual test data or other documentation (e.g., AP-42 compilation of emission factors) that has been reviewed and approved by the Department. DEQ may require additional source testing for emission factor verification upon completion of construction.

## **7.0 SPECIAL CONDITIONS**

- 7.1. Equipment Specifications** Should the permittee select a type of generator other than that specified in the application, the permittee must notify DEQ in accordance with Condition 9.5, as applicable.

## **8.0 RECORDKEEPING REQUIREMENTS**

- 8.1. Operation and Maintenance** The permittee must maintain the following records related to the operation and maintenance of the plant and associated air contaminant control devices. Data must be recorded monthly, unless otherwise specified.
- a. Quantity of biogas combusted in scf and MMBtu.
  - b. Hours of operation of each generator set.
  - c. Quantity of gas combusted in the flare, in scf and MMBtu.
  - d. Any instance of a malfunction in the flare, dates/ times of the malfunction, and remedial actions taken.
  - e. Weekly pressure readings and any excursion from the approved range of the pressure drop across the bed of each catalyst, dates/times of the occurrence and corrective actions taken.
  - f. Any occurrence of an upset in the urea injection system which caused an alarm, dates/times of the occurrence and corrective actions taken.
  - g. Results of each biogas analysis for H<sub>2</sub>S content and any corrective actions taken for results above 25 ppm.
  - h. Emissions calculations for each consecutive 12-month period, as required in Condition 6.1.
- 8.2. Excess Emissions** The permittee must maintain records of excess emissions as

defined in OAR 340-214-0300 through 340-214-0340 (recorded on occurrence). Typically, excess emissions are caused by process upsets, startups, shutdowns, or scheduled maintenance. In many cases, excess emissions are evident when visible emissions are greater than 20% opacity for 3 minutes or more in any 60-minute period. If there is an ongoing excess emission caused by an upset or breakdown, the permittee must cease operation of the equipment or facility no later than 48 hours after the beginning of the excess emissions, unless continued operation is approved by the Department in accordance with OAR 340-214-0330(4).

**8.3. Complaint Log**

The permittee must maintain a log of all written complaints and complaints received via telephone that specifically refer to air pollution concerns associated to the permitted facility. The log must include a record of the permittee's actions to investigate the validity of each complaint and a record of actions taken for complaint resolution.

**8.4. Retention of Records**

Unless otherwise specified, all records must be maintained on site for a period of two years (unless otherwise noted) and made available to the Department upon request.

## **9.0 REPORTING REQUIREMENTS**

**9.1. Excess Emissions**

The permittee must notify the Department of excess emissions events if the excess emission is of a nature that could endanger public health.

- a. Such notice must be provided as soon as possible, but never more than one hour after becoming aware of the problem. Notice must be made to the regional office identified in Condition 11.3 by e-mail, telephone, facsimile, or in person.
- b. If the excess emissions occur during non-business hours, the permittee must notify the Department by calling the Oregon Emergency Response System (OERS). The current number is 1-800-452-0311.
- c. The permittee must also submit follow-up reports when required by the Department.

**9.2. Annual Report**

For each year this permit is in effect, the permittee must submit to the Department by **February 15** two (2) copies of the following information for the previous calendar year:

- a. Operating parameters:

- i. Quantity of biogas combusted;
  - ii. Total hours of operation of each generator set;
  - iii. Quantity of gas combusted in the flare, in MM Btu;
  - iv. Each excursion (operation outside normal range) of control equipment as noted in Condition 8.1
- b. A summary of annual pollutant emissions determined each month in accordance with Condition 6.1.
  - c. Records of all planned and unplanned excess emissions events.
  - d. Summary of complaints relating to air quality received by permittee during the year.
  - e. List permanent changes made in plant process, production levels, and pollution control equipment which affected air contaminant emissions.
  - f. List major maintenance performed on pollution control equipment.

**9.3. Initial Startup Notice** The permittee must notify the Department in writing of the date a new facility is started up. The notification must be submitted no later than seven (7) days after startup.

**9.4. Notice of Change of Ownership or Company Name** The permittee must notify the Department in writing using a Departmental "Permit Application Form" within 60 days after the following:

- a. Legal change of the name of the company as registered with the Corporations Division of the State of Oregon; or
- b. Sale or exchange of the activity or facility.

**9.5. Construction or Modification Notices** The permittee must notify the Department in writing using a Departmental "Notice of Construction Form," or "Permit Application Form," and obtain approval in accordance with OAR 340-210-0205 through 340-210-0250 before:

- a. Constructing, installing, or establishing a new stationary source that will cause an increase in any regulated pollutant emissions;
- b. Making any physical change or change in operation of an existing stationary source that will cause an increase, on an hourly basis at full production, in any regulated pollutant emissions; or

- c. Constructing or modifying any air pollution control equipment.

## **10.0 PERMIT RENEWAL AND MODIFICATIONS**

- 10.1. Permit Renewal Application** The completed application package for renewal of this permit is due on **May 1, 2015**. Two (2) copies of the application must be submitted to the DEQ Permit Coordinator listed in Condition 11.2.
  
- 10.2. Permit Modifications** Application for a modification of this permit must be submitted not less than **60** days prior to the source modification. A special activity fee must be submitted with an application for the permit modification. The fees and two (2) copies of the application must be submitted to the Business Office of the Department.

## **11.0 DEQ CONTACTS / ADDRESSES**

- 11.1. Business Office** The permittee must submit payments for invoices, applications to modify the permit, and any other payments to DEQ's Business Office:  
  
Department of Environmental Quality  
Business Office  
811 SW Sixth Avenue  
Portland, Oregon 97204-1390
  
- 11.2. Permit Coordinator** The permittee must submit all Notices and applications that do not include payment to the Northwest Region's Permit Coordinator:  
  
Department of Environmental Quality  
Northwest Region  
2020 SW 4th Avenue, Suite 400  
Portland, OR 97201-4987  
Telephone: (503) 229-5582
  
- 11.3. Field Office** Unless otherwise notified, the permittee must submit all reports (annual reports, source test plans and reports, etc.) to field office noted below.

Department of Environmental Quality  
NWR-ESO/AQ  
1550 NW Eastman Pkwy, Suite 290  
Gresham, OR 97030  
Telephone: (503) 667-8414

- 11.4. US EPA Address** The permittee must submit all notifications and reports associated with the area source NESHAP to DEQ and the US EPA.

US EPA, Region 10  
1200 Sixth Avenue  
Suite 900, AWT-107  
Seattle, WA 98101

- 11.5. Web Site** Information about air quality permits and the Department's regulations may be obtained from the DEQ web page at [www.deq.state.or.us](http://www.deq.state.or.us)

## **12.0 FEES**

- 12.1. Annual Compliance Fee** The Annual Fee specified in OAR 340-216-0020, Table 2, Part 2 for a Standard ACDP is due on **December 1** of each year this permit is in effect. An invoice indicating the amount, as determined by Department regulations, will be mailed prior to the above date. **Late fees in accordance with Part 4 of the table will be assessed as appropriate.**
- 12.2. Change of Ownership or Company Name Fee** The non-technical permit modification fee specified in OAR 340-216-0020, Table 2, Part 3(a) is due with an application for changing the ownership or the name of the company.
- 12.3. Special Activity Fees** The special activity fees specified in OAR 340-216-0020, Table 2, Part 3 (b through i) are due with an application to modify the permit.

## **13.0 GENERAL CONDITIONS AND DISCLAIMERS**

- 13.1. Permitted Activities** This permit allows the permittee to discharge air contaminants from processes and activities related to the air contaminant source(s) listed on the first page of this permit until this permit expires, is modified, or is revoked.

- 13.2. Other Regulations** In addition to the specific requirements listed in this permit, the permittee must comply with all other legal requirements enforceable by the Department.
- 13.3. Conflicting Conditions** In any instance in which there is an apparent conflict relative to conditions in this permit, the most stringent conditions apply.
- 13.4. Masking of Emissions** The permittee must not cause or permit the installation of any device or use any means designed to mask the emissions of an air contaminant that causes or is likely to cause detriment to health, safety, or welfare of any person or otherwise violate any other regulation or requirement.
- 13.5. Department Access** The permittee must allow the Department's representatives access to the plant site and pertinent records at all reasonable times for the purposes of performing inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emissions discharge records and conducting all necessary functions related to this permit in accordance with ORS 468-095.
- 13.6. Permit Availability** The permittee must have a copy of the permit available at the facility at all times.
- 13.7. Open Burning** The permittee may not conduct any open burning except as allowed by OAR 340 Division 264.
- 13.8. Asbestos** The permittee must comply with the asbestos abatement requirements in OAR 340, Division 248 for all activities involving asbestos-containing materials, including, but not limit to, demolition, renovation, repair, construction, and maintenance.
- 13.9. Property Rights** The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
- 13.10. Permit Expiration**
- a. A source may not be operated after the expiration date of the permit, unless any of the following occur prior to the expiration date of the permit:
    - i. a timely and complete application for renewal or for an Oregon Title V Operating Permit has been submitted, or
    - ii. another type of permit (ACDP or Oregon Title V Operating Permit) has been issued authorizing operation of the source.
  - b. For a source operating under an ACDP or Oregon Title V Operating Permit, a requirement established in an earlier

ACDP remains in effect notwithstanding expiration of the ACDP, unless the provision expires by its terms or unless the provision is modified or terminated according to the procedures used to establish the requirement initially.

**13.11. Permit  
Termination,  
Revocation, or  
Modification**

The Department may modify or revoke this permit pursuant to OAR 340-216-0082 and 340-216-0084.

**14.0 EMISSION FACTORS**

Emissions device or activity	Pollutant	Emission Factor (EF)	EF units	EF Reference
Engines	PM <sub>10/2.5</sub>	0.02	g/bhp-hr <sup>1</sup>	Mfg. Data
	SO <sub>2</sub>	0.022 <sup>2</sup>	g/bhp-hr	Engr. Est.
	NO <sub>x</sub>	0.12	g/bhp-hr	Mfg. Data
	CO	0.25	g/bhp-hr	Mfg. Data
	VOC	0.14	g/bhp-hr	Mfg. Data
Flare	PM <sub>10/2.5</sub>	0.01	Lb/MM Btu	AP-42
	SO <sub>2</sub>	0.008 <sup>2</sup>	Lb/MM Btu	Engr. Est.
	NO <sub>x</sub>	0.06	Lb/MM Btu	Mfg. Data
	CO	0.3	Lb/MM Btu	Mfg. Data
	VOC	0.2	Lb/MM Btu	AP-42

<sup>1</sup> grams per brake horsepower-hour<sup>2</sup> based on 25 ppm H<sub>2</sub>S in biogas

## 15.0 ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

ACDP	Air Contaminant Discharge Permit	NSR	New Source Review
ASTM	American Society for Testing and Materials	O <sub>2</sub>	oxygen
AQMA	Air Quality Maintenance Area	OAR	Oregon Administrative Rules
calendar year	The 12-month period beginning January 1st and ending December 31st	ORS	Oregon Revised Statutes
CFR	Code of Federal Regulations	O&M	operation and maintenance
CO	carbon monoxide	Pb	lead
DEQ	Oregon Department of Environmental Quality	PCD	pollution control device
dscf	dry standard cubic foot	PM	particulate matter
EPA	US Environmental Protection Agency	PM <sub>10</sub>	particulate matter less than 10 microns in size
FCAA	Federal Clean Air Act	ppm	part per million
gal	gallon(s)	PSD	Prevention of Significant Deterioration
gr/dscf	grains per dry standard cubic foot	PSEL	Plant Site Emission Limit
HAP	Hazardous Air Pollutant as defined by OAR 340-244-0040	PTE	Potential to Emit
I&M	inspection and maintenance	RACT	Reasonably Available Control Technology
lb	pound(s)	scf	standard cubic foot
MMBtu	million British thermal units	SCR	Selective catalytic reduction
NA	not applicable	SER	Significant Emission Rate
NESHAP	National Emissions Standards for Hazardous Air Pollutants	SIC	Standard Industrial Code
NO <sub>x</sub>	nitrogen oxides	SO <sub>2</sub>	sulfur dioxide
NSPS	New Source Performance Standard	Special Control Area	as defined in OAR 340-204-0070
		VE	visible emissions
		VOC	volatile organic compound
		year	A period consisting of any 12-consecutive calendar months