Facility ID: 0857100983 Issuance type: Final State Permit To Operate

This version of facility specific terms and conditions was converted from a database format to an HTML file during an upgrade of the Ohio EPA, Division of Air Pollution Control's permitting software. Every attempt has been made to convert the terms and conditions to look and substantively conform to the permit issued or being drafted in STARS. However, the format of the terms may vary slightly from the original. In addition, although it is not expected, there is a slight possibility that a term and condition may have been inadvertently "left out" of this reproduction during the conversion process. Therefore, if this version is to be used as a starting point in drafting a new version of a permit, it is imperative that the entire set of terms and conditions be reviewed to ensure they substantively mimic the issued permit. The official version of any permit issued final by Ohio EPA is kept in the Agency's Legal section. The Legal section may be contacted at (614) 644-3037.

In addition to the terms and conditions, hyperlinks have been inserted into the document so you may more readily access the section of the document you wish to review.

Finally, the term language under "Part II" and before "A. Applicable Emissions Limitations..." has been added to aid in document conversion, and was not part of the original issued permit.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0857100983 Emissions Unit ID: B009 Issuance type: Final State Permit To Operate

Go to the top of this document

Part II - Special Terms and Conditions

This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

   (a) None.

2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

   (a) None.

A. **Applicable Emissions Limitations and/or Control Requirements**

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
B009 - Internal Combustion Engine #3	OAC 3745-31-05(A)(3)	Visible particulate emissions shall not exceed 5% opacity, six-minute average.
	OAC 3745-17-11(B)(5)	The particulate emissions (PE) from this emissions unit shall not exceed 0.062 pounds per MMBtu (lb/MMBtu) of actual heat input.
	OAC 3745-17-07(A)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC 3745-35-07(B)(2) (synthetic minor to avoid Title V)	See A.2.a to A.2.c.

2. **Additional Terms and Conditions**

   (a) The emissions of sulfur dioxide from emissions units P002, P003, P004, B004, B005, B006, B007, B008, and B009, combined, shall not exceed 99.0 tons/year, based on a rolling, 365-day summation.
   The emissions of carbon monoxide from emissions units P002, P003, P004, B004, B005, B006, B007, B008, and B009, combined, shall not exceed 99.0 tons/year, based on a rolling, 365-day summation.
   The emissions of nitrogen oxides (NOx) from emissions unit P002, P003, P004, B004, B005, B006, B007, B008, and B009, combined, shall not exceed 94.0 tons/year, based on a rolling, 365-day summation.

B. **Operational Restrictions**

1. The permittee shall burn only natural gas or digester gas in this emissions unit.

2. The maximum amount of digester gas burned in emissions units P002, P003, P004, B004, B005, B006, B007, B008, and B009, combined, shall not exceed 2,800,000 cubic feet/day.

3. The hydrogen sulfide content of the digester gas shall not exceed 1007 ppm, as fired. See Section C.2.

4. Natural gas shall be burned in this emissions unit during start-up and shut-down, and as a supplemental fuel when digester gas is not available.

C. **Monitoring and/or Record Keeping Requirements**

1. The permittee shall determine daily the CO_2 content of the digester gas by the use of the Bacharach Fyrite Gas analyzer test method. The Btu/ft3 and density values of the digester gas shall be calculated based on the average daily percent of CO_2 in the digester gas and assuming the remainder of the digester gas is methane. The Btu/ft3 of CO_2 is as zero and the average Btu/ft3 of methane is assumed as 1020.

   The heat value of digester gas shall be calculated by the following:
   The heat value in Btu/ft3 digester gas = (% CO_2 in digester gas)(0 Btu/ft3) + (1-% CO_2 in digester gas)(1020 Btu/ft3).

   The density of digester gas shall be calculated by the following:
   Density of digester gas, in lbs/ft3 = (% CO_2 in digester gas)(0.1225 lb/ft3*) + (1- % CO_2 in digester gas)(0.0446 lb/ft3*).

   *0.1225 lb/ft3 is the density of CO_2

0.0446 lb/ft3 is the density of methane

As a quality control check to determine the accuracy of the Bacharach Fyrite Gas analyzer test method, within 30 days of issuance of this permit and every six months thereafter, the permittee shall collect a grab sample of digester gas to be burned. The samples shall be analyzed in accordance with the appropriate ASTM methods to determine the heat value in Btu per standard cubic foot and the density in lbs/standard cubic foot. If determined necessary by the RAPCA, more frequent testing in accordance with ASTM methods will be required.

2. The permittee shall monitor hydrogen sulfide, within 3 days of issuance of this permit and every 3 days thereafter, by using the Drager or Gastec tubes detection methods. The reliability rating of the Drager or Gastec tubes is +/- 25%. To assure compliance with a H2S concentration of 1007 ppm, H2S readings on the Drager or Gastec tube shall not exceed 806 ppm.

   The permittee shall maintain records of all data obtained by the hydrogen sulfide monitoring system including, but not limited to, parts per million hydrogen sulfide determined during each testing period and a record of the daily amount of metal salt added into the anaerobic digester system. The hydrogen sulfide concentration shall be used to determine the decimal fraction of sulfur for purposes of determining compliance with the sulfur dioxide emission limitation. The hydrogen sulfide concentration determined shall be assumed as the average daily hydrogen sulfide concentration for the day of monitoring and two days thereafter, if no additional measurements are taken during the following two days.

3. The permittee shall collect and record the following information on a daily basis:

   a. The total quantity of digester gas burned, in cubic feet, in emissions unit B009.

   b. The total quantity of digester gas burned, in cubic feet, in emissions units P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, as a 365-day summation.

   c. The total quantity of natural gas burned, in cubic feet, in emissions unit B007.

   d. The total quantity of natural gas burned, in cubic feet in emissions units P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, as a 365-day summation.

   e. The average decimal fraction of sulfur in the digester gas, by weight.

   f. The calculated heat content of the digester gas in Btu per standard cubic foot.

   g. The calculated density of the digester gas, in lb per standard cubic foot.

   h. The 365-day rolling summation of the SO2 emission rate in tons, for emission units P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, calculated based upon the methodology specified in E.1.i.

   i. The rolling, 365-day summation of the CO emission rate in tons calculated based upon the methodology outlined in Section E.1.k for emissions units P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined.

   j. The rolling 365-day summation of the NOx emission rate in tons calculated based upon the methodology outlined in Section E.1.j, for emissions units P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined.

4. For each day during which the permittee burns a fuel other than natural gas or digester gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

D. **Reporting Requirements**

1. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas or digester gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

2. The permittee shall submit quarterly deviation (excursion) reports which identify all exceedances of the following limitations:

   a. The daily usage of digester gas, in cubic feet, in emissions units P002, P003, P004, B007, B008, B009, B010, B011, B012 combined.

   b. The daily usage of digester gas in cubic feet, in emissions units P002, P003, and P004.

   c. The rolling, 365-day sulfur dioxide emissions for identified emission units combined (reference Section A.2.a).

   d. The rolling, 365-day CO emissions for identified emissions units combined (reference Section A.2.b).

   e. The rolling, 365-day NOx emissions for identified emissions units combined (reference Section A.2.c).

3. The quarterly deviation (excursion) reports shall be submitted to the Ohio EPA Central District Office or local air agency by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviations occurred during the calendar quarter, the permittee shall submit a report which states that no deviations occurred during the calendar quarter.

4. The permittee shall submit annual reports that specify the total digester gas usage, the total natural gas usage, the carbon monoxide, sulfur dioxide, and nitrogen oxides emissions for emissions units B007, B008, B009, B010, B011, B012, P002, P003, and P004, combined, as a rolling 365-day summation from this emission unit for the previous calendar year. The reports shall be submitted by April 15 of each year. This reporting requirement may be satisfied by including and identifying the specific emission data from this emissions unit in the annual Fee Emission Report.

E. **Testing Requirements**

1. Compliance with the emission limitation(s) in section A.1. of these terms and conditions shall be determined in

accordance with the following methods:

Emission Limitation-
5% opacity visible emission limitation, as a six-minute average

Applicable compliance Method-
Compliance shall be determined by visible emission evaluations performed in accordance with OAC rule 3745-17-03(B)(1) using the methods and procedures specified in USEPA Reference Method 9.
Emission Limitation-
0.062 pound particulates/mmBtu

Applicable Compliance Method-
For the use of digester gas, compliance shall be based upon multiplying the hourly gas burning capacity of the emissions unit (0.0126 mm cu.ft./hour) by the adjusted AP-42, Table 1.4-2, (7/98) emission factor for digester gas (12.50 lbs particulate/mm cu ft)* and dividing by the maximum hourly heat input capacity of the emissions unit (6.948 mm Btu/hr). For the use of natural gas, compliance shall be based upon multiplying the hourly gas burning capacity of the emissions unit (0.0085 mm cu.ft./hour) by the AP-42, Table 1.4-2, (7/98), emission factor for natural gas (7.69 lbs particulate/mm cu ft) and dividing by the maximum hourly heat input capacity of the emissions unit (6.948 mm Btu/hr).

*The AP-42 emission factor for natural gas is adjusted for digester gas by multiplying the factor for natural gas of 7.6 lbs/10^6 scf by 1020 Btu per ft3 natural gas/620 Btu per ft3 digester gas.
Emission Limitation-
99.0 tons/year SO2 emissions for P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, as a rolling, 365-day summation

Applicable Compliance Method-

(i) The formula for gaseous fuels in OAC rule 3745-18-04(F)(3) shall be used to determine the emission rate (lbs/mmBtu) from the burning of digester gas in P002, P003, P004, B007, B008, B009, B010, B011, B012, i.e.,
ER = (1 X 10^6)/H X D X S X 1.998

where: ER = the emission rate in pounds of sulfur dioxide per mmBtu;
H = the heat content of the gaseous fuel in Btu per standard cubic foot;
D = the density of the gaseous fuel in pounds per standard cubic foot;
S = the decimal fraction of sulfur in the gaseous fuel, by weight.
SO2 = ER (lbs/mmBtu) X Gas Consumption (cu.ft/year) X (Btu/cu.ft)/ 2000 lbs/ton
Or:
SO2 (lbs/year) =(D X S X 1.998 X Annual Gas Consumption)/2000 lbs/ton
where: D = the density of the gaseous fuel in pounds per standard cubic foot;
S = the decimal fraction of sulfur in the gaseous fuel, by weight;*
Gas Consumption = cubic feet/year, as a rolling 365-day summation

*The Drager or Gastic tubes read in ppm, by volume. To convert to ppm by weight, multiply by the following ratio: density of H2S/density of digester gas. The density of H2S is equal to 0.0894 lb/ft3

(ii) The emissions of SO2 from the burning of natural gas shall be determined by multiplying the AP-42 emissions factor , Chapter 1.4-2(7/9), of 0.6 lb/10^6 scf by the amount of natural gas burned each year, as a rolling 365-day summation, in emissions units P002, P003, P004, B007, B008, B009, B010, B011, and B012.

(iii) SO2 emissions shall be determined by the summation of (i) and (ii).

(iv) Dividing (iii) by 2000 lbs/ton.

Emission Limitation-
94.0 tons/year NOx for P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, as a rolling, 365-day summation

Applicable Compliance Method-
Compliance shall be determined by the calculation of the rolling 365-day emissions for all emissions units, as determined by the following methodology.

(i) multiplying the cubic feet of digester gas burned (cubic feet/year) in emissions units P002, P003, and P004 by the average heat value of digester gas as determined in C.1.;

(ii) determine the NOx emissions from P002, P003, and P004 by multiplying the product in (i) by the emission factor in AP-42 Chapter 13.5-1(9/91) of 0.068 lb NOx/mmBtu.;

(iii) determine the average heat value ratio of digester gas:natural gas by dividing the average heat value of digester gas determined in C.1. (Btu/ft3) by the heat value of natural gas (1020 Btu/ft3);

(iv) multiplying the AP-42 emission factor for natural gas of 100 lbs NOx/10^6 scf, Table 1.4-1 (7/98) by the average heat value ratio as determined in (iii);

(v) multiplying the cubic feet of digester gas burned (cubic feet/yr) by (iv);

(vi) multiplying the cubic feet of natural gas burned (cubic feet/year) in emissions units B010, B011, and B012 by the AP-42 emission factor of 100 lbs/10^6scf, Table 1.4-1(7/98);

(vii) determine the NOx emissions from B010, B011, and B012 by summing (v) and (vi);

(viii) multiplying the cubic feet of digester gas burned (cubic feet/year) in emissions units B007, B008, and B009 by the average heat value of digester gas as determined in C.1.;

(ix) multiply the value in (viii) by the AP-42 emission factor for digester gas of 0.16 lb/mmBtu, Table 3.11 (4/00);

(x) multiplying the cubic feet of natural gas burned (cubic feet/year) in emission units B007, B008, and B009 by the average heat value of 1020 Btu/cubic feet;

(xi) multiplying (x) by the AP-42 emission factor for natural gas of 0.32 lb NOx/mmBtu, Table 3.11 (4/00);

(xii) determine the NOx emission from B007, B008, and B009 by summing (ix) and (xi);

(xiii) summing (ii), (vii), and (xii);

(xiv) dividing (xiii) by 2000 lbs/ton.

Emission Limitation-
99.0 tons/year CO for P002, P003, P004, B007, B008, B009, B010, B011, and B012 combined, as a rolling, 365-day summation

Applicable Compliance Method-
Compliance shall be determined by the calculation of the rolling 365-day emissions for all emissions units, as determined by the following methodology.

(i) multiplying the cubic feet of digester gas burned (cubic feet/year) in emissions units P002, P003, and P004 by the average heat value of digester gas as determined in C.1.;

(ii) determine the CO emissions from P002, P003, and P004 by multiplying the product in (i) by the emission factor in AP-42 Chapter 13.5-1(9/91) of 0.37 lb CO/mmBtu.;

(iii) determine the average heat value ratio of digester gas:natural gas by dividing the average heat value of digester gas determined in C.1. (Btu/ft3) by the heat value of natural gas (1020 Btu/ft3);

(iv) multiplying the AP-42 emission factor for natural gas of 84 lbs CO/10^6 scf, Table 1.4-1 (7/98) by the average heat value ratio as determined in (iii);

(v) multiplying the cubic feet of digester gas burned (cubic feet/yr) by (iv);

(vi) multiplying the cubic feet of natural gas burned (cubic feet/year) in emissions units B010, B011, and B012 by the AP-42 emission factor of 84 lbs CO/10^6scf, Table 1.4-1(7/98);

(vii) determine the CO emissions from B010, B011, and B012 by summing (v) and (vi);

(viii) multiplying the cubic feet of digester gas burned (cubic feet/year) in emissions units B007, B008, and B009 by the average heat value of digester gas as determined in C.1.;

(ix) multiplying the value in (viii) by the AP-42 emission factor for digester gas of 0.017 lb CO/mmBtu, Table 3.11 (4/00);

(x) multiplying the cubic feet of natural gas burned (cubic feet/year) in emissions units B007, B008, and B009 by the average heat value of 1020 Btu/cubic feet;

(xi) multiplying (x) by the AP-42 emission factor for natural gas of 0.082 lb CO/mmBtu, Table 3.11 (4/00);

(xii) determine the CO emission from B007, B008, and B009 by summing (ix) and (xi);

(xiii) summing (ii), (vii), and (xii);

(xiv) dividing (xiii) by 2000 lbs/ton.

F. **Miscellaneous Requirements**

1. The permittee shall develop a written quality assurance/quality control plan for the hydrogen sulfide monitoring system designed to ensure valid and representative readings of hydrogen sulfide. The quality assurance/quality control plan and a logbook dedicated to the hydrogen sulfide monitoring system must be kept on site and available for inspection during regular office hours.

2. In accordance with OAC rule 3745-35-07, the following sections of this permit are federally enforceable: A - F.