

STATE OF MISSISSIPPI AIR POLLUTION CONTROL PERMIT

TO CONSTRUCT AIR EMISSIONS EQUIPMENT

THIS CERTIFIES THAT

Greenleaf CO2 Solutions LLC
West Yellow Creek Compressor Station
Gatlin Road
Wayne County
Waynesboro, Mississippi

has been granted permission to construct air emissions equipment to comply with the emission limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Mississippi Air and Water Pollution Control Law (Section 49-17-1 et. seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder.

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD



AUTHORIZED SIGNATURE

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Issued: APR 14 2017

Permit No.: 2840-00082

SECTION 1.

A. GENERAL CONDITIONS

1. This permit is for air pollution control purposes only. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.1.D.)
2. Any activities not identified in the application are not authorized by this permit. (Ref.: Miss. Code Ann. 49-17-29 1.b)
3. The knowing submittal of a permit application with false information may serve as the basis for the Permit Board to void the permit issued pursuant thereto or subject the applicant to penalties for operating without a valid permit pursuant to State Law. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(5).)
4. It is the responsibility of the applicant/permittee to obtain all other approvals, permits, clearances, easements, agreements, etc., which may be required including, but not limited to, all required local government zoning approvals or permits. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.1.D(6).)
5. The issuance of a permit does not release the permittee from liability for constructing or operating air emissions equipment in violation of any applicable statute, rule, or regulation of state or federal environmental authorities. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(7).)
6. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit, unless halting or reducing activity would create an imminent and substantial endangerment threatening the public health and safety of the lives and property of the people of this state. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(15)(a).)
7. The permit and/or any part thereof may be modified, revoked, reopened, and reissued, or terminated for cause. Sufficient cause for a permit to be reopened shall exist when an air emissions stationary source becomes subject to Title V. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(15)(b).)
8. The permit does not convey any property rights of any sort, or any exclusive privilege. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(15)(c).)
9. The permittee shall furnish to the DEQ within a reasonable time any information the DEQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee shall furnish such records to the DEQ along with a claim of confidentiality. The permittee may furnish such

records directly to the Administrator along with a claim of confidentiality. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.B(15)(d).)

10. Design and Construction Requirements: The stationary source shall be designed and constructed so as to operate without causing a violation of an Applicable Rules and Regulations, without interfering with the attainment and maintenance of State and National Ambient Air Quality Standards, and such that the emission of air toxics does not result in an ambient concentration sufficient to adversely affect human health and well-being or unreasonably and adversely affect plant or animal life beyond the stationary source boundaries. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.A.)
11. Solids Removal: The necessary facilities shall be constructed so that solids removed in the course of control of air emissions may be disposed of in a manner such as to prevent the solids from becoming windborne and to prevent the materials from entering State waters without the proper environmental permits. (Ref.: Miss. Code Ann. 49-17-29)
12. Diversion and Bypass of Air Pollution Controls: The air pollution control facilities shall be constructed such that diversion from or bypass of collection and control facilities is not needed except as provided for in 11 Miss. Admin. Code Pt. 2, R. 1.10., "Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants", Section 10. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 1.10.)
13. Fugitive Dust Emissions from Construction Activities: The construction of the stationary source shall be performed in such a manner so as to reduce fugitive dust emissions from construction activities to a minimum. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.A(4).)
14. Right of Entry: The permittee shall allow the Mississippi Department of Environmental Quality Office of Pollution Control and the Mississippi Environmental Quality Permit Board and/or their representatives upon presentation of credentials:
 - a) To enter upon the permittee's premises where an air emission source is located or in which any records are required to be kept under the terms and conditions of this permit; and
 - b) At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any air emissions. (Ref.: Miss. Code Ann. 49-17-21)
15. Permit Modification or Revocation: After notice and opportunity for a hearing, the Permit Board may modify the permit or revoke it in whole or in part for good cause shown including, but not limited to:
 - a) Persistent violation of any of the terms or conditions of this permit;

- b) Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
or
- c) A change in federal, state, or local laws or regulations that require either a temporary or permanent reduction or elimination of previously authorized air emission.

(Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.2.C.)

16. Public Record and Confidential Information: Except for data determined to be confidential under the Mississippi Air & Water Pollution Control Law, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Mississippi Department of Environmental Quality, Office of Pollution Control. (Ref.: Miss. Code Ann. 49-17-39)
17. Permit Transfer: This permit shall not be transferred except upon approval of the Permit Board. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.16.B)
18. Severability: The provisions of this permit are severable. If any provision of the permit, or the application of any provision of the permit to any circumstances, is challenged or held invalid, the validity of the remaining permit provisions and/or portions thereof or their application to other persons or sets of circumstances, shall not be affected thereby. (Ref. 11 Miss. Admin. Code Pt. 2, R. 2.1.D(7).)
19. Permit Expiration: The permit to construct will expire if construction does not begin within eighteen (18) months from the date of issuance or if construction is suspended for eighteen (18) months or more. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.C(1).)
20. Certification of Construction: A new stationary source issued a Permit to Construct cannot begin operation until certification of construction by the permittee. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(3).)
21. Beginning Operation: Except as prohibited in Part I, Condition 24 of this permit, after certification of construction by the permittee, the Permit to Construct shall be deemed to satisfy the requirement for a permit to operate until the date the application for issuance or modification of the Title V Permit or the application for issuance or modification of the State Permit to Operate, whichever is applicable, is due. This provision is not applicable to a source excluded from the requirement for a permit to operate as provided by 11 Miss. Admin. Code Pt. 2, R. 2.13.G. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(4).)
22. Application for a Permit to Operate: Except as otherwise specified in Part I, Condition 24 of this permit, the application for issuance or modification of the State Permit to Operate or the Title V Permit, whichever is applicable, is due twelve (12) months after beginning operation or such earlier date or time as specified in the Permit to Construct. The Permit Board may specify an earlier date or time for submittal of the application. Beginning operation will be assumed to occur upon certification of construction, unless the permittee specifies differently in writing. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(5).)

23. **Operating Under a Permit to Construct:** Except as otherwise specified in Part I, Condition 24 of this permit, upon submittal of a timely and complete application for issuance or modification of a State Permit to Operate or a Title V Permit, whichever is applicable, the applicant may continue to operate under the terms and conditions of the Permit to Construct and in compliance with the submitted application until the Permit Board issues, modifies, or denies the Permit to Operate. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(6).)
24. **Application Requirements for a Permit to Operate for Moderate Modifications:** For moderate modifications that require contemporaneous enforceable emissions reductions from more than one emission point in order to “net” out of PSD/NSR, the applicable Title V Permit to Operate or State Permit to Operate must be modified prior to beginning operation of the modified facilities. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(7).)
25. **Compliance Testing:** Regarding compliance testing:
- a) The results of any emissions sampling and analysis shall be expressed both in units consistent with the standards set forth in any Applicable Rules and Regulations or this permit and in units of mass per time.
 - b) Compliance testing will be performed at the expense of the permittee.
 - c) Each emission sampling and analysis report shall include but not be limited to the following:
 - (1) detailed description of testing procedures;
 - (2) sample calculation(s);
 - (3) results; and
 - (4) comparison of results to all Applicable Rules and Regulations and to emission limitations in the permit.
- (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.6.B(3), (4), and (6).)

B. GENERAL NOTIFICATION REQUIREMENTS

- 1. Within fifteen (15) days of beginning actual construction, the permittee must notify DEQ in writing that construction has begun. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.C(2).)
- 2. The permittee must notify DEQ in writing when construction does not begin within eighteen (18) months of issuance or if construction is suspended for eighteen (18) months or more. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.C(3).)
- 3. Upon the completion of construction or installation of an approved stationary source or modification, the applicant shall notify the Permit Board that construction or installation was

performed in accordance with the approved plans and specifications on file with the Permit Board. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(1).)

4. The Permit Board shall be promptly notified in writing of any change in construction from the previously approved plans and specifications or permit. If the Permit Board determines the changes are substantial, it may require the submission of a new application to construct with “as built” plans and specifications. Notwithstanding any provision herein to the contrary, the acceptance of an “as built” application shall not constitute a waiver of the right to seek compliance penalties pursuant to State Law. (Ref.: 11 Miss. Admin. Code Pt. 2, R. 2.5.D(2).)

SECTION 2.
EMISSION POINT DESCRIPTION

The permittee is authorized to construct and operate, upon certification of construction, air emission equipment, as described below:

Emission Point ID	Description
AA-001	1875 HP Natural gas fired Compressor Engine (E-1)
AA-002	1875 HP Natural gas fired Compressor Engine (E-2)
AA-003	1875 HP Natural gas fired Compressor Engine (E-3)
AA-004	1875 HP Natural gas fired Compressor Engine (E-4)
AA-005	268 HP Natural gas fired Micro-turbine (E-7)
AA-006	268 HP Natural gas fired Micro-turbine (E-8)
AA-007	268 HP Natural gas fired Micro-turbine (E-9)
AA-008	268 HP Natural gas fired Micro-turbine (E-10)
AA-009	268 HP Natural gas fired Micro-turbine (E-11)
AA-010	268 HP Natural gas fired Micro-turbine (E-12)
AA-011	268 HP Natural gas fired Micro-turbine (E-13)
AA-012	268 HP Natural gas fired Micro-turbine (E-14)
AA-013	268 HP Natural gas fired Micro-turbine (E-15)
AA-014	8,800 Gallon Vertical Slop Oil Tank (E-5)
AA-015	8,800 Gallon Vertical Oily Water Tank (E-6)
AA-016	Equipment Fugitive Emissions (E-7)
AA-017	1875 HP Natural gas fired Compressor Engine (E-16)
AA-018	1.0 MMBTU/Hr Natural gas fired Dehydration Unit (E-17)

SECTION 3. EMISSION LIMITATIONS AND STANDARDS

EMISSION POINT ID	Applicable Requirement	Condition Number(s)	Pollutant/Parameter	Limitation/Standard
Facility Wide	11 Miss Admin Code Pt. 2 R. 1.3.A	3.1	Opacity	≤ 40%
	11 Pt. 2 R 1.3 B.	3.2	Opacity	40 % Opacity except for up to 15 min/startup in any 1 hr, not to exceed 3 startups/stack in any 24 hr. period
	11 Pt. 2 R 2.2 B.(10)	3.3	CO	≤ 99 Tons per year
	11 Pt. 2 R 2.2 B.(10)	3.4	Total HAPs	≤ 24.9 Tons per year
	11 Pt. 2 R 2.2 B.(10)	3.4	Individual HAP	≤ 9.9 Tons per year
AA-001- AA-004, AA-017	11 Pt. 2, R.1.3.D (1)(b)	3.5	PM	$E=0.8808*I^{0.1667}$
	40 CFR 60 Subpart JJJJ	3.6		Applicability
	40 CFR 60.4233(e) & Table 1 of 40 CFR 60 Subpart JJJJ	3.7	NO _x	≤ 1.0 g/hp-hr or ≤ 82 ppmvd at 15 % O ₂
		3.7	CO	≤ 2.0 g/hp-hr or ≤ 270 ppmvd at 15 % O ₂
		3.7	VOC	≤ 0.7 g/hp-hr or ≤ 60 ppmvd at 15 % O ₂
40 CFR 63 Subpart ZZZZ	3.8	HAPs	Will meet the requirements by meeting requirements of 40 CFR 60 Subpart JJJJ	
AA-001- AA-004, AA-016. AA-017	40 CFR 60, Subpart OOOO _a	3.9	GHG/VOC	Applicability
AA-001- AA-004, AA-017	40 CFR 60 Subpart OOOO _a 60.5385 (a) –(d)	3.10	GHG/VOC	Rod Packing Requirements
AA-016	40 CFR 60 Subpart OOOO _a 60.5397a	3.11	HAPs	Requirements for controlling GHG & VOCs for fugitive components
AA-018	40 CFR 63, Subpart HH	3.12	HAPs	Applicability

- 3.1 Except as otherwise specified or limited herein, the permittee shall not cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial, or waste disposal process which exceeds forty (40) percent opacity subject to the exceptions provided in (a) and (b).
- (a) Startup operations may produce emissions which exceed 40% opacity for up to fifteen (15) minutes per startup in any one hour and not to exceed three (3) startups per stack in any twenty-four (24) hour period.
 - (b) Emissions resulting from soot blowing operations shall be permitted provided such emissions do not exceed 60 percent opacity, and provided further that the aggregate duration of such emissions during any twenty-four (24) hour period does not exceed ten (10) minutes per billion BTU gross heating value of fuel in any one hour. (Ref. 11 Miss. Admin. Code Pt. 2, R.1.3 A.)
- 3.2 Except as otherwise specified or limited herein, the permittee shall not cause, allow, or permit the discharge into the ambient air from any point source or emissions, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40 % opacity, equivalent to that provided in paragraph 3.1. This shall not apply to vision obscuration caused by uncombined water droplets. (Ref. 11 Miss. Admin. Code Pt. 2 R 1.3 B)
- 3.3 The permittee shall limit Carbon Monoxide, CO, emissions to no more than 99 tons per year as determined for each consecutive 12-month period on a rolling monthly basis. (Ref. 11 Miss. Admin. Code. Pt. 2 R.2.2 B.10)
- 3.4 The permittee shall limit Total Hazardous Air Pollutants (HAPs) to no more than 24.9 tons per year, and Individual HAPs to no more than 9.9 tons per year as determined for each consecutive 12-month period on a rolling monthly basis. (Ref. 11 Miss. Admin. Code. Pt. 2 R.2.2 B.10)
- 3.5 Emissions from installations equal to or greater than 10 million BTU per hour heat input but less than 10,000 million BTU per hour heat input shall not exceed an emission rate as determined by the relationship
- $$E = 0.8808 * I^{-0.1667}$$
- where E is the emission rate in pounds per million BTU per hour heat input and I is the heat input in millions of BTU per hour. (Ref. 11 Miss. Admin. Code Pt. 2 R. 1.3 D (1)(b))
- 3.6 For Emission Points AA-001 through AA-004 and AA-017, the permittee is subject to and will comply with all applicable requirements of the Standards of Performance for Stationary Spark Ignition Combustion Engines, 40 CFR 60, Subpart JJJJ and the general provisions in Subpart A. (Ref.: 40 CFR 60, Subpart JJJJ)
- 3.7 For Emission Points AA-001 through AA-004 and AA-017, the permittee must comply with the following emission standards:

$\text{NO}_x \leq 2.0 \text{ g/Hp-hr or } 82 \text{ ppmvd @ } 15\% \text{ O}_2$
 $\text{CO} \leq 2.0 \text{ g/Hp-hr or } 270 \text{ ppmvd @ } 15\% \text{ O}_2$
 $\text{VOC} \leq 0.7 \text{ g/Hp-hr or } 60 \text{ ppmvd @ } 15\% \text{ O}_2.$

(Ref. 40 CFR 60.4233(e) and Table 1 to 40 CFR 60)

- 3.8 Emission Points AA-001 through AA-004, and AA-017 are subject to National Emission Standards for Stationary Reciprocating Internal Combustion Engines (RICE), 40 CFR 63, Subpart ZZZZ. The units are new RICE located at an area source for HAPs that must meet the requirements of this Subpart by meeting the requirements by meeting the requirements of 40 CFR 60, Subpart JJJJ. (Ref. 40 CFR 63.6590 (c) (1))
- 3.9 For Emission Points AA-001 through AA-004, AA-016, and AA-017, the permittee is subject to and will comply with all applicable requirements of 40 CFR 60, Subpart OOOO_a, Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction began after September 18, 2015. (Ref. 40 CFR 60, Subpart OOOO_a).
- 3.10 For Emission Points AA-001 through AA-004, and AA-017, the permittee shall comply with the following standards:
- (a) Replace the reciprocating compressor and rod packing according to either paragraph (a) (1) or (2) below:
 - (1) Before the compressor has operated for 26,000 hours, the number of hours must be continuously monitored beginning upon initial startup of your reciprocating compressor facility, or October 15, 2012, or the date of the most recent reciprocating compressor rod packing replacement, whichever is later.
 - (2) Prior to 36 months from the date of the most recent rod packing replacement, or 36 months from the date of startup for a new reciprocating compressor for which the rod packing has not been replaced.
 - (b) The permittee must demonstrate compliance with the standards that apply to reciprocating compressor affected facilities as required by 40 CFR 60.5410a.
 - (c) The permittee must demonstrate continuous compliance with standards that apply to reciprocating compressors affected facilities as required by 40 CFR 60.5415a.
 - (d) The permittee shall perform the required notification, recordkeeping, and reporting as required by 40 CFR 60.5420a. (Ref. 40 CFR 60.5385 (a),(b),(c) and (d)).
- 3.11 For Emission Point AA-016, the permittee must reduce the GHG (in the form of a limitation on emissions of methane) and VOC emissions by complying with the requirements of paragraphs (a) through (j) of 40 CFR 60.5379a. (Ref. 40 CFR 60.5397a)

- 3.12 The facility is subject to and shall comply all applicable requirements of the National Emission Standard for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities as described in 40 CFR 63 Subpart HH. For Emission Point AA-018, the dehydrator will be installed with a natural gas fired forced draft burner to control HAPs. (Ref. 40 CFR 63 Subpart HH)

SECTION 4. WORK PRACTICES

No work practices are being established through the permit to construct.

SECTION 5
MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

- 5.1 For Emission Points AA-001 through AA-004 and AA-017, the permittee shall comply with all the applicable notification, reporting, and recordkeeping requirements of 40 CFR 60 Subpart JJJJ. (Ref. 40 CFR 60 Subparts JJJJ, 60.4245)
- 5.2 For Emission Points AA-001 through AA-004 and AA-017, the permittee shall record the monthly and rolling 12-month total hours of operation for each emission unit. For Emission Point AA-018, the permittee shall record the amount of gas processed.(Ref. 11 Miss. Admin. Code. Pt. 2 R. 2.2(B)(11))
- 5.3 For the entire facility, the permittee shall show compliance with the CO tons per year limitations by calculating each month, the monthly emissions and the 12-month rolling average using the applicable short term limitation in section 3.7 for emission points AA-001 thru AA-004 and AA-017 and the acceptable emission factors for AA-005 through and AA-013, and the hours of operation for each emission unit. (Ref. 11 Miss. Admin. Code. Pt. 2. R.2.2(B)(11)).
- 5.4 For the entire facility, the permittee shall show compliance with the Individual HAP and combined HAP tons per year limitations by calculating each month the monthly emissions and the 12-month rolling average using the appropriate emission factor and the hours of operation for Emission Points AA-001 through AA-013, and AA-017 and the appropriate engineering methodology for Emission Points AA-014 through AA-016. For AA-018, the permittee will monitor the amount of gas processed each month and any other parameters needed to calculate the monthly emissions using Glycalc or an approved alternate methodology. (Ref. 11 Miss. Admin. Code Pt. 2 R2.2(B)(11)).
- 5.5 The permittee shall submit an annual report summarizing the monthly and 12-month rolling total CO, Individual HAP, and Combined HAPs for the facility. This report is due by January 31 for the preceding calendar year. (Ref. 11 Miss. Admin. Code Pt. 2 R2.2(B)(11)).
- 5.6 For Emission Points AA-001 – AA-004, AA-016, and AA-017, the permittee shall perform the required notification, recordkeeping, and reporting as required by 40 CFR 60, Subpart OOOO_a. (Ref. 40 CFR 60.5410a, 60.5415a, 60.5420a)
- 5.7 The permittee shall maintain records and submit reports as specified in 40 CFR 60, Subpart HH. (Ref. 40 CFR 60, Subpart HH)
- 5.8 Within 30 days from startup, the permittee shall develop and submit a detailed report of all applicable requirements of 40 CFR 60, Subpart OOOO_a including limitations, notifications, monitoring, testing, and recordkeeping. The applicability report shall be attached to the Permittee's copy of the permit. (Ref. 11 Miss Code R 2.2(B)(11))