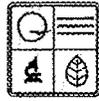


PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **032015-018**

Project Number: 2014-10-057
Installation Number: 065-0044

Parent Company: Lee Carbon, LLC

Parent Company Address: 20985 East Highway 32, Boss, MO 65440

Installation Name: Lee Carbon, LLC

Installation Address: 20985 East Highway 32, Boss, MO 65440

Location Information: Dent County, S13, T34N, R3W

Application for Authority to Construct was made for:

A new charcoal manufacturing facility. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAR 24 2015

EFFECTIVE DATE

Handwritten signature of Kyril L. Moore in black ink.

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of startup of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' regional office responsible for the area within which you are located within 15 days after the actual startup of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Permit No.	
Project No.	2014-10-057

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Lee Carbon, LLC
Dent County, S13, T34N, R3W

1. Charcoal Kiln Processing Limitation
 - A. Lee Carbon, LLC shall not simultaneously burn more than three (3) kilns in the bank of charcoal kilns #1-6 (EP-01).
 - B. Lee Carbon, LLC shall maintain a daily log for each charcoal kiln that includes startup time, cool down time, and re-light time to demonstrate compliance with Special Condition 1.A.
2. Control Device Requirement-Afterburner
 - A. Lee Carbon, LLC shall control emissions from the six charcoal kilns (EP-01) using an afterburner (CD-01), as specified in the permit application. The afterburner shall be operated and maintained in accordance with the manufacturer's specifications.
 - B. Lee Carbon, LLC shall continuously monitor and record the temperature of the afterburner any time the charcoal kilns are in operation.
 - C. Lee Carbon, LLC shall ensure that the temperature of the afterburner is maintained within the operating range established in 10 CSR 10-6.330.
 - D. Lee Carbon, LLC shall maintain the appropriate usage ratio of afterburner fuel (LPG and sawdust), as established in the stack test.
 - E. Lee Carbon, LLC shall maintain an operating and maintenance log for the afterburner, which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

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Permit No.	
Project No.	2014-10-057

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3. Control Device Requirement-Baghouse
 - A. Lee Carbon, LLC shall control emissions from the following equipment using a baghouse, as specified in the permit application:
 - 1) Hoppers (EP-05, EP-12)
 - 2) Conveyors (EP-06, EP-09, EP-10, EP-13)
 - 3) Feeder (EP-07)
 - 4) Vibratory Screen (EP-08)
 - 5) Bagger (EP-14)
 - B. The baghouse shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Lee Carbon, LLC shall monitor and record the operating pressure drop across the baghouse at least once every 24 hours while the plant is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - E. Lee Carbon, LLC shall maintain a copy of the baghouse manufacturer's performance warranty on site.
 - F. Lee Carbon, LLC shall maintain an operating and maintenance log for the baghouse which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. Haul Road Watering
 - A. Lee Carbon, LLC shall water haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.

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Permit No.	
Project No.	2014-10-057

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Watering may be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
5. Performance Testing
- A. Lee Carbon, LLC shall conduct an initial performance test on the afterburner with three kilns burning simultaneously to demonstrate compliance with Special Condition 2 and the requirements found in 10 CSR 10-6.330.
 - B. These tests shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up for commercial operation.
 - C. Lee Carbon, LLC shall conduct the test while each of the three kilns are operating between 90% and 100% of the maximum design rate, which equates to 0.1215 and 0.135 total tons of charcoal per hour.
 - D. Testing shall be conducted during periods of representative conditions at the maximum production rate, not to include periods of startup, shutdown, or malfunction. A description of the representative conditions for the performance test is listed in 10 CSR 10-6.330(3)(F).
 - E. A completed Proposed Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
 - F. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
 - G. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.

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Permit No.	
Project No.	2014-10-057

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- H. Actual conditions under which performance testing is conducted shall be recorded, as stipulated in 10 CSR 10-6.330(3)(F) and this special condition. These conditions are to include all relevant process/ production parameters, parameters relating to the status of emission controls, and the parameters set forth in 10 CSR 10-6.330(3)(F). This data is to be included in the emissions report. In addition, the report shall include emission factors for PM, VOCs, and CO which shall be determined using emission rates and recorded charcoal production rates that occur during testing. No maintenance or upgrade of emission control efficiency shall be undertaken during emissions testing.
 - I. Emissions testing results, in “mass of pollutant per volume of air,” shall be reported for the pollution source air stream, free from any extraneous source of dilution of air. Potential dilution air streams shall either be sealed off prior to testing or else be measured by appropriate EPA test methods and subtracted from the total airflow at the sampling location. Failure to account for dilution of air can lead to cancellation of testing and/ or a violation notice for “circumvention.”
 - J. Lee Carbon, LLC shall receive approval from the Air Pollution Control Program prior to any changes in the process or throughput allowed at this installation other than that which is tested at the time of the performance test.
6. Record Keeping and Reporting Requirements
- A. Lee Carbon, LLC shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources’ personnel upon request.
 - B. Lee Carbon, LLC shall report to the Air Pollution Control Program’s Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2014-10-057
Installation ID Number: 065-0044
Permit Number:

Lee Carbon, LLC
20985 East Highway 32
Boss, MO 65440

Complete: November 6, 2014

Parent Company:
Lee Carbon, LLC
20985 East Highway 32
Boss, MO 65440
Dent County, S13, T34N, R3W

REVIEW SUMMARY

- Lee Carbon, LLC has applied for authority to construct a new charcoal manufacturing facility.
- HAPs of concern from this process include methanol, polycyclic organic matter (POM), and trace amounts of sawdust combustion emissions. All HAPs are below major source levels and their respective SMALs.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- An afterburner and a baghouse are being used to control VOC, CO, HAP, and particulate emissions from the equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels.
- This installation is located in Dent County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as number 25, *Charcoal Production Facilities*. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Emissions testing is required for the afterburner (CD-01).

- No Operating Permit is required for this installation because the conditioned potential emissions are all below de minimis levels.
- Approval of this permit is recommended with special conditions.

PROJECT DESCRIPTION

Lee Carbon, LLC plans to construct a new charcoal manufacturing facility in Boss, Missouri. The facility will include six new charcoal kilns, an afterburner, and a screening/bagging operation. The kilns are ¼ the size of standard Missouri-type kilns, so the overall design rate will be 1200 tons of charcoal produced per year. The afterburner will initially be started using liquefied petroleum gas (LPG), and then sawdust will be used to assist the burning of kiln smoke to maintain the temperature required by 10 CSR 10-6.330. The maximum overall design rate of the afterburner will be 1.5 MMBTU/hr. All process equipment and respective emission points are listed in Table 1.

Table 1. Equipment List

Emission Point	Equipment	Emission Point	Equipment
EP-01	Charcoal Kilns #1-6	EP-09	Conveyor
EP-02	Truck Unloading	EP-10	Conveyor
EP-03	Charcoal Storage Piles	EP-11	Truck Loadout
EP-04	Haul Roads	EP-12	Hopper
EP-05	Charcoal Hopper	EP-13	Conveyor
EP-06	Conveyor	EP-14	Charcoal Bagger
EP-07	Feeder	CD-01	Afterburner
EP-08	Vibratory Screen		

This is a new installation, so no permits have previously been issued to Lee Carbon, LLC from the Air Pollution Control Program.

EMISSIONS/CONTROLS EVALUATION

Emissions from the six charcoal kilns will be controlled by an afterburner. Emission factors for the afterburner were adapted from the results of emissions testing performed on charcoal kiln afterburners at Goldstar Charcoal, Inc. – Raymondville on February 13, 2007 and Packaging Service Co., Inc. – Raymondville on October 4, 2011. Results of the tests were used to develop emission factors and control efficiencies for particulate matter, NO_x, VOCs, and CO. Using the stack test emission factors for this project is conservative due to the fact that this project involves kilns that are smaller than the standard size used at the test site, and testing has not been performed on this type of kiln and afterburner configuration.

The remaining criteria pollutant emission factors were taken from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition, Section 10.7, *Charcoal*, Tables 10.7-1 and 10.7-2.

Emissions from the LPG burner were calculated using butane emission factors found in AP-42 Section 1.5, *Liquefied Petroleum Gas Combustion*, Table 1.5-1. Emissions from the sawdust burner were calculated using emission factors found in AP-42 Section 1.6, *Wood Residue Combustion*, Tables 1.6-1 and 1.6-2. No emission factors for sawdust exist, so the emission factors for dry wood were used.

Particulate emissions from the screening and bagging operation were calculated using emission factors provided by the applicant. Since no emission factors for the screening of charcoal exist, the values were compared to that of crushed stone screening found in AP-42 Section 11.19.2, *Crushed Stone Processing*, Table 11.19.2-2. The emission factors provided in the application were considered conservative because the values were much higher than those listed under crushed stone screening in AP-42.

A capture efficiency of 60% was given to all process equipment EP-5 through EP-10 because the equipment is covered with a hood and uses a negative pressure to vent the exhaust to the baghouse. A capture efficiency of 100% was given to process equipment EP-12 through EP-14 because the equipment is totally enclosed, inside a building, and uses negative pressure to vent exhaust to the baghouse. The baghouse has a control efficiency of 99.5% for PM and PM₁₀, and a control efficiency of 99.0% for PM_{2.5}.

Emissions from haul roads and the loading/ unloading activity were calculated using the predictive equation from AP-42 Section 13.2.2 *Unpaved Roads*, November 2006 and Section 13.2.4 *Aggregate Handling and Storage Piles*, November 2006. A 50% control efficiency for PM and PM₁₀, and a 40% control efficiency for PM_{2.5} were applied to the haul road calculations to account for the use of undocumented watering.

The following table provides an emissions summary for this project. Because this is a new installation, there are no existing emissions. Potential emissions of the application represent the potential of the new equipment, assuming maximum throughput (1,200 tons of charcoal per year) and not considering control devices. The new installation conditioned potential was calculated using control devices and applicable special conditions.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels / SMAL	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application ¹	New Installation Conditioned Potential
PM	25.0	N/A	N/A	58.21	23.42
PM ₁₀	15.0	N/A	N/A	43.81	9.01
PM _{2.5}	10.0	N/A	N/A	38.84	5.93
SO _x	40.0	N/A	N/A	0.11	N/A
NO _x	40.0	N/A	N/A	16.66	N/A
VOC	40.0	N/A	N/A	159.75	0.61
CO	100.0	N/A	N/A	174.29	4.81
CO ₂	100,000	N/A	N/A	1,812	N/A
Methanol	10.0 / 10.0	N/A	N/A	88.70	1.04
POM	10.0 / 0.01	N/A	N/A	5.62E ⁻³	1.50E ⁻⁵
Combined HAPs	25.0	N/A	N/A	88.86	1.20

N/A = Not Applicable

¹ These potential emissions are estimates based on previous test data from other charcoal kilns. These values are being used as approximate placeholders until specific emissions test results are submitted

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Lee Carbon, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *Restriction of Emissions from Batch-Type Charcoal Kilns, 10 CSR 10-6.330*

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Ryan Schott
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 23, 2014, received October 27, 2014, designating Lee Carbon, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- *Emissions Test Report prepared for Goldstar Charcoal regarding testing of Afterburner No. 1*, performed on February 13, 2007
- *Source Emission Report prepared for Packaging Service Co., Inc. regarding Afterburner #2*, performed October 4, 2011

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Garry Parker
President
Lee Carbon, LLC
P.O. Box 294
Boss, MO 65440

RE: New Source Review Permit - Project Number: 2014-10-057

Dear Mr. Parker:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 of RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.ao.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Ryan Schott at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:rs1

Enclosures

c: Southeast Regional Office
PAMS File: 2014-10-057
Permit Number: