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: 072007-009 Project Number: 2006-08-058

Parent Company: Renewable Power of Cape Girardeau, LLC

Parent Company Address: 10200 Mohawk, Leawood, KS 66206

Installation Name: Renewable Power of Cape Girardeau, LLC

Installation Address: SW Corner of Nash Road (CR218) and CR217

Location Information: Cape Girardeau County, S28, T30N, R12E

Application for Authority to Construct was made for:

The installation of a new 93,000,000 gallons per year denatured ethanol plant. This review was conducted in accordance with Section (6), 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.

JUL 27 2007
EFFECTIVE DATE

James L. Kavanaugh
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 start up of this (these) air contaminant sources(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources' Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

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 Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, Attention: Construction Permit Unit.

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."

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E

1. Haul Road Control
   Renewable Power of Cape Girardeau, LLC shall control fugitive emissions from all of the haul roads at this site by paving and washing/cleaning the haul roads.
   A. Renewable Power of Cape Girardeau, LLC shall finish paving the haul roads before start of operations.
   B. Renewable Power of Cape Girardeau, LLC shall inform the Air Pollution Control Program, in writing within fifteen (15) days, of the date when operation has commenced at this site and of the date when the paving has been completed
   C. Renewable Power of Cape Girardeau, LLC shall pave the haul roads with materials such as asphalt, concrete, and/or other material(s). If materials other than asphalt or concrete are used, Renewable Power of Cape Girardeau, LLC must receive approval from the Air Pollution Control Program. The pavement shall be applied in accordance with industry standards for such pavement so as to achieve control of fugitive emissions while the plant is operating.
   D. Maintenance and/or repair of the road surface shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas.
   E. Renewable Power of Cape Girardeau, LLC shall water, wash, and/or otherwise clean all of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
   F. Renewable Power of Cape Girardeau, LLC shall maintain a daily log detailing when watering/cleaning was performed and methods used to water/clean the haul roads.

2. Truck Traffic/Type Limitations
   A. Renewable Power of Cape Girardeau, LLC shall limit the daily number of trucks going through each haul road as specified in Table 1.

SPECIAL CONDITIONS:

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

Table 1: Daily Truck Limits

Haul Road Type	Daily Truck Limit Harvest Season June – November	Daily Truck Limit Non-Harvest Season December - May
Grain	225 Trucks	75 trucks
Ethanol	35 Trucks	35 trucks
Denaturant (Gasoline)	15 Trucks	15 Trucks
DDGS/WDGS Combined	35 Trucks	35 Trucks
Misc. Chemicals	5 Trucks	5 Trucks

B. Renewable Power of Cape Girardeau, LLC shall limit the annual number of trucks going though each haul road as specified in Table 2.

Table 2: Yearly Truck Limits

Haul Road Type	Yearly Truck Limit
Grain	37,002 Trucks
Ethanol	6,200 Trucks
Denaturant (Gasoline)	667 Trucks
DDGS/WDGS Combined	12,336 Trucks
Misc. Chemicals	620 Trucks

C. Hopper trucks are the only type of trucks that Renewable Power of Cape Girardeau, LLC shall use for grain hauling. No straight trucks shall be used.

D. To show compliance with Special Conditions 2.A. and 2.B., Renewable Power of Cape Girardeau, LLC shall keep a record of the daily and the sum of the most recent twelve (12) month truck traffic for each type of truck on each haul road at the installation. Attachment A, or equivalent form(s), shall be used for daily record keeping. Attachment B, or equivalent form(s), shall be used for record keeping of the sum of the most recent twelve (12) month period.

E. Renewable Power of Cape Girardeau, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of the month during which the records required by Special Condition 2.C. show that the truck traffic limitations have been exceeded.

3. Grain Receiving Operational Limits

A. Renewable Power of Cape Girardeau, LLC shall limit its daily grain receiving rate to 3,000 tons of grain per day.

SPECIAL CONDITIONS:

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

B. To demonstrate compliance with Special Condition 3.A., Renewable Power of Cape Girardeau, LLC shall keep a record of the daily weight (tons) of grain received per day. Attachment C, or equivalent form(s), shall be used for this purpose.

4. Ethanol Production Limits

A. Renewable Power of Cape Girardeau, LLC shall limits its annual denatured ethanol production rate to 93,000,000 gallons per twelve (12) consecutive month period.

B. To demonstrate compliance with Special Condition 4.A., Renewable Power of Cape Girardeau, LLC shall keep a record of the amount of ethanol produced per twelve (12) consecutive month period. Attachment D, or equivalent forms, shall be used for this purpose.

5. Emission Limitations

A. Emission Limit of Particulate Matter Less than Ten Microns in Diameter (PM_{10})

1.) Renewable Power of Cape Girardeau, LLC shall not discharge PM_{10} into the atmosphere from the following stacks in excess of the listed amounts in Table 3.

2.) The emission rates in Table 3 shall be verified through performance testing as detailed in Special Conditions 12 and 13.

Table 3: Emission Rate Limits for PM_{10}

Stack ID	Stack Description	Pounds per Hour (lbs/hr)
EP-1101	Receiving Pit Baghouse	0.467
EP-1102	Grain Handling and Storage Baghouse	0.00667
EP-1201	Grain Milling #1 Baghouse	0.01
EP-1202	Grain Milling #2 Baghouse	0.01
EP-1203	Grain Milling #3 Baghouse	0.01
EP-1400	Pre-Fermenter Scrubber	0.10
EP-1401	Fermenter Scrubber	0.10
EP-1501	Distillation Scrubber	0.10
EP-1801	Integrated TO/Flue Gas Recirculation #1	1.607
EP-1802	Integrated TO/Flue Gas Recirculation #2	1.607
EP-1803	Integrated TO/Flue Gas Recirculation #3	1.607
EP-2201	DDGS Handling Baghouse	0.13
EP-5001	Boiler #1	1.56
EP-5002	Boiler #2	1.56

B. Emission Limit of Nitrogen Oxides (NO_x)

1.) Renewable Power of Cape Girardeau, LLC shall not discharge NO_x into the atmosphere from the following stacks in excess of the listed

SPECIAL CONDITIONS:

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

amounts in Table 4.

2.) The emission rates in Table 4 shall be verified through performance testing as specified in Special Conditions 12 and 13.

Table 4: Emission Rate Limits for NO_x

Stack ID	Stack Description	Pounds per Hour (lbs/hr)
EP-1801	Integrated TO/Flue Gas Recirculation #1	2.75
EP-1802	Integrated TO/Flue Gas Recirculation #2	2.75
EP-1803	Integrated TO/Flue Gas Recirculation #3	2.75
EP-5001	Boiler #1	6.292
EP-5002	Boiler #2	6.292

C. Emission Limit of Hazardous Air Pollutants (HAPs)

1.) Renewable Power of Cape Girardeau, LLC shall emit less than twenty-five (25.0) tons of combined HAPs from this installation in any consecutive twelve (12) month period. Attachment E, *Monthly Total HAPs Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance.

2.) Renewable Power of Cape Girardeau, LLC shall emit less than ten (10.0) tons of individual HAPs from this installation in any consecutive twelve (12) month period. Attachment F, *Monthly Individual HAPs Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance.

3.) Renewable Power of Cape Girardeau, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of the month during which the records required by Special Conditions C.1. and C.2. show that the emission limit has been exceeded.

D. Emission Limit of Volatile Organic Compounds (VOCs)

1.) Renewable Power of Cape Girardeau, LLC shall emit less than 100 tons of VOCs from this installation in any consecutive twelve (12) month period.

2.) Renewable Power of Cape Girardeau, LLC shall record the monthly and the sum of the most recent consecutive twelve (12) months VOC emissions in tons from this installation. Attachment G, *Monthly VOC Emissions Tracking Record*, or equivalent form(s), shall be used for this purpose. The emission rates used in Attachments G shall be determined by performance testing, as detailed in Special Conditions 12 and 13, or from emission factors from AP-42 or DENCO.

SPECIAL CONDITIONS:

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

3.) Renewable Power of Cape Girardeau, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of the month during which the records required by Special Condition D.2. show that the emission limit has been exceeded.

E. Emission Limit of Carbon Monoxides (CO)

1.) Renewable Power of Cape Girardeau, LLC shall emit less than 100 tons of CO in any consecutive twelve (12) month period.

2.) Renewable Power of Cape Girardeau, LLC shall record the monthly and the sum of the most recent consecutive twelve (12) months CO emissions in tons from this installation. Attachment H, *Monthly CO Emissions Tracking Record*, or equivalent form(s), shall be used for this purpose. The emission rates used in Attachments H shall be determined by performance testing, as detailed in Special Conditions 12 and 13, or from emission factors from AP-42 or DENCO.

3.) Renewable Power of Cape Girardeau, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of the month during which the records required by Special Condition E.2. show that the emission limit has been exceeded.

6. Control Measure – 100% Capture Efficiency

A. The grain storage and handling (EP-1102) equipment shall be enclosed by ductwork and the grain milling equipment (EP-1201, EP-1202, EP-1203) shall be located in a building. The enclosures/buildings shall be maintained under negative pressure and exhausted to baghouses.

B. Renewable Power of Cape Girardeau, LLC shall demonstrate negative pressure by using visual indicators, such as negative pressure gauges, at each openings of the enclosure.

C. Renewable Power of Cape Girardeau, LLC shall perform a visual indicator check for each emission point at least once in every 24-hour period while the grain handling, grain storage, and grain milling equipment are in operation.

7. Control Equipment – Baghouses

A. The baghouses must be in use at all times when the following equipment are in operation:

SPECIAL CONDITIONS:

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

Table 5: Equipment to be Controlled by Baghouses

Emission Point	Emission Point Description
EP-1101	Grain Receiving
EP-1102	Grain Handling and Storage
EP-1201	Grain Milling #1
EP-1202	Grain Milling #2
EP-1203	Grain Milling #3
EP-2201	DDGS Truck/Rail Loadout

B. The baghouses and any related instrumentation or equipment shall be operated and maintained in accordance with the manufacturer's specifications. The baghouses shall be equipped with gauges or meters, which indicate the pressure drop across the baghouses. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

C. Replacement bags for the baghouses 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. Renewable Power of Cape Girardeau, LLC shall monitor and record, in an operating and maintenance log, the operating pressure drop across the baghouses at least once every 24 hours. Either paper copy or electronic formats of the log are acceptable. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty. If the pressure drop reading shall fall outside of this normal operating range, then the associated equipment shall be shut down as quickly as is feasible and corrective action taken to address the cause of the pressure drop problem. The problem shall be corrected and the baghouse shall be operational before restarting the equipment.

E. Renewable Power of Cape Girardeau, LLC shall maintain an operating and maintenance log for the baghouses which shall include the following:
   1.) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions
   2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

SPECIAL CONDITIONS:

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

8. Control Equipment – Wet Scrubbers

A. A wet scrubber must be in use at all times when the following equipment is in operation:

Table 6: Equipment to be Controlled by Wet Scrubbers

Emission Point	Emission Point Description
EP-1400	Pre-Fermenter
EP-1401	Fermenter
EP-1501	Distillation process which includes a 200-proof condenser, a 190-proof condenser, molecular sieve, rectifier, stripper, and beer column

B. The scrubbers and any related instrumentation or equipment shall be operated and maintained in accordance with the manufacturer's specifications. Each scrubber shall be equipped with a gauge or meter that indicates the pressure drop across the scrubber. Each scrubber shall be equipped with a flow meter that indicates the flow through the scrubber. These gauges and meters shall be located in such a way they may be easily observed by Department of Natural Resources' personnel.

C. Renewable Power of Cape Girardeau, LLC shall monitor and record the operating pressure drop across each scrubber at least once every twenty-four (24) hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

D. Renewable Power of Cape Girardeau, LLC shall monitor and record the flow rate through the scrubber at least once every twenty-four (24) hours. The flow rate shall be maintained within the design conditions specified by the manufacturer's performance warranty.

E. Renewable Power of Cape Girardeau, LLC shall maintain an operating and maintenance log for the scrubber, which shall include the following.

1.) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions.
2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspection. Either paper copy or electronic formats are acceptable.

SPECIAL CONDITIONS:

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

9. Control Equipment – Integrated Thermal Oxidation/Flue Gas Recirculation Systems.
   A. The integrated thermal oxidation/flue gas recirculation system must be in use at all times when the DDGS dryers (EP-1801, EP-1802, and EP-1803) are in operation or any time that regulated PM_{10}, Volatile Organic Compounds (VOC), or Hazardous Air Pollutant (HAP) emissions are possible from the dryers.

   B. The integrated thermal oxidation/flue gas recirculation system shall be operated and maintained in accordance with the manufacturer's specifications.

   C. The operating temperature of the integrated thermal oxidation/flue gas recirculation system shall be continuously monitored and recorded during operations.

   D. Renewable Power of Cape Girardeau, LLC shall maintain an operating and maintenance log for the integrated thermal oxidation/flue gas recirculation system which shall include the following:
      1.) Incidents of malfunction, with impact on emissions, duration of events, probable cause, and corrective actions taken.
      2.) Maintenance activities, with inspection schedules, repair actions, and replacements.
      3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

10. Control Equipment – Vacuum Jet and Condenser System.
   A. The Vacuum Jet and Condenser System shall be used at all times when the heat recovery evaporator, and the finish evaporator vent condenser are in operation.

   B. The Vacuum Jet and Condenser System shall be operated and maintained in accordance with the manufacturer's specifications.

   C. Emission rates from the system shall be tested, as detailed in Special Conditions 12 and 13.

   D. Renewable Power of Cape Girardeau, LLC shall maintain an operating and maintenance log for the system that shall include the following:

SPECIAL CONDITIONS:

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

1.) Incidents of malfunction, with impact on emissions, duration of events, probable cause, and corrective actions taken.
2.) Maintenance activities, with inspection schedules, repair actions, and replacements.
3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

11. Control Equipment – Flare

A. The flare must be in use at all times during denatured ethanol truck/rail load out (EP-2105).

B. The flare shall be operated and maintained in accordance with the manufacturer's specifications.

C. Renewable Power of Cape Girardeau, LLC shall maintain an operating and maintenance log for the flare, which shall include the following.
1.) Incidents of malfunction, with impact on emissions, duration of events, probable cause, and corrective actions taken.
2.) Maintenance activities, with inspection schedules, repair actions, and replacements.
3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

D. The flare must be operated in accordance with 40 CFR Part 60.18, *General Control Device Requirements.* Renewable Power of Cape Girardeau, LLC shall maintain records that sufficiently indicate compliance with 40 CFR Part 60.18.

12. Performance Testing

A. Renewable Power of Cape Girardeau, LLC shall conduct performance tests to verify the emission rates as follows:
1.) The following stacks shall be tested to determine the VOC and total HAP emission rates when all equipment controlled by these devices are in operation: The wet scrubber stacks for pre-fermentation, main fermentation, and distillation (EP-1400, EP-1401, and EP-1501); The vacuum jet/condenser system for heat recovery evaporator and finished evaporator (EP-1601 and EP-1651); The integrated thermal oxidation/flue gas recirculation

SPECIAL CONDITIONS:

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

system for the DDGS Dryers (EP-1801, EP-1802, and EP-1803). These emission rates shall be used to demonstrate compliance with Special Conditions 5.C.1., and 5.D.1..

2.) The following stacks shall be tested to determine the emission rates of acetaldehyde, acrolein, formaldehyde, and methanol when all equipment controlled by these devices are in operation: The wet scrubber stacks for pre-fermentation, main fermentation, and distillation (EP-1400, EP-1401, and EP-1501); The vacuum jet/condenser system for heat recovery evaporator and finished evaporators (EP-1601 and EP-1651); The integrated thermal oxidation/flue gas recirculation for the DDGS Dryers (EP-1801, EP-1802, and EP-1803). These emission rates shall be used to demonstrate compliance with Special Condition 5.C.1 and 5.C.2..

3.) The following stacks shall be tested to determine the emission rates of CO when all equipment controlled by these devices are in operation: The integrated thermal oxidation/flu gas recirculation system for the DDGS Dryers (EP-1801, EP-1802, EP-1803); The Boilers (EP-5001, EP-5002). These emission rates shall be used to demonstrate compliance with Special Condition 5.E.1..

4.) The stacks listed in Special Conditions 5.A. shall be tested to determine the PM_{10} emission rates. These emission rates shall not exceed the amounts listed in Special Condition 5.A. Table 3.

5.) The stacks listed in Special Conditions 5.B. shall be tested to determine the NO_x emission rates. These emission rates shall not exceed the amounts listed in Special Condition 5.B. Table 4.

B. The operating parameters (i.e. water flowrate, pH level, amount of additives, temperature, pressure, etc.) at which the stack tests are conducted shall be used to set the appropriate values used in actual operations of the following control devices.

1.) The Wet Scrubbers.
2.) The Vacuum Jet/Condenser System.
3.) The Integrated Thermal Oxidizer/Flue Gas Recirculation System.

C. The operating parameters discussed in Special Condition 12.B. shall be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Renewable Power of Cape Girardeau, LLC before the start of the performance tests.

D. The operating parameters discussed in Special Condition 12.B. shall be recorded on record keeping sheet(s) and be made available to Department of Natural Resources personnel upon request. The frequency

SPECIAL CONDITIONS:

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

of the record keeping is dependent upon the parameters being kept and should be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Renewable Power of Cape Girardeau, LLC before the start of the performance tests.

E. The performance tests for the pre-fermentation wet scrubber (EP-1400) and the fermentation wet scrubber (EP-1401) shall be conducted for one of the following time periods:

1.) A complete cycle, defined as the time period between load-in and load-out of material. For the fermentation process, where many fermenters are used, the time period to be tested is the complete cycle for one fermenter.

Or

2.) During period(s) of maximum emissions. Renewable Power of Cape Girardeau, LLC shall submit, in the proposed test plant outlined in Special Condition 13, sufficient data to determine the point(s) of maximum emissions. These points must be approved by the Air Pollution Control Program's compliance/assistance section prior to conducting the tests. If sufficient data is not supplied supporting these maximum emission points, Renewable Power of Cape Girardeau, LLC must conduct testing for the time period outlined in Special Condition 12.E.1..

F. The testing required may be limited to conducting tests on a representative piece(s) of each type of equipment upon approval by the Director. In addition, an alternate method(s) of quantifying the emission rates of criteria air pollutants from these sources may be used in place of the above testing requirement if requested by Renewable Power of Cape Girardeau, LLC and approved by the Director.

G. All performance tests required shall be performed within sixty (60) days after achieving the maximum production rate of the installation, but no later than 180 days after initial start-up for commercial operation.

H. All performance tests required shall be conducted in accordance with the stack test procedures outlined in Special Condition 13.

I. Renewable Power of Cape Girardeau, LLC shall conduct performance tests to verify the emission rates as indicated in Special Condition 12.A.

SPECIAL CONDITIONS:

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

once every five (5) years from the date of the most recent performance tests, except for baghouse stacks (EP-1101, EP-1102, EP-1201, EP-1202, EP-1203) and scrubber stacks (EP-1400, EP-1401, EP-1501). The baghouse stacks and scrubber stacks shall be tested once upon startup in accordance with Special Condition 12.G.. No further testing will be necessary unless the stack tests do not show compliance with limits in this permit or the facility modifies the equipment or the process that could cause a change in emission rates from these stacks.

13. Proposed Test Plan and final Test Report

A. A completed proposed test plan form must be submitted to the Air Pollution Control Program thirty (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 plant may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.

B. Two (2) copies of a written report of the performance test results shall be submitted to the Director within thirty (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 (1) sample run.

C. 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.

D. The emission factors developed through the stack testing requirements of special condition 12 shall be reported using the following units.

Table 7: Units of Emission Factors

Stack ID	Stack Description	Units
EP-1101	Receiving Pit Baghouse	Lbs of pollutant/ton of grain
EP-1102	Grain Handling and Storage Baghouse	Lbs of pollutant/ton of grain
EP-1201	Grain Milling #1 Baghouse	Lbs of pollutant/ton of grain
EP-1202	Grain Milling #2 Baghouse	Lbs of pollutant/ton of grain
EP-1203	Grain Milling #3 Baghouse	Lbs of pollutant/ton of grain
EP-1400	Pre-Fermenter Scrubber	Lbs of pollutant/gallon of ethanol
EP-1401	Fermenter Scrubber	Lbs of pollutant/gallon of ethanol
EP-1501	Distillation Scrubber	Lbs of pollutant/gallon of ethanol
EP-1801	Integrated TO/Flue Gas Recirculation #1	Lbs of pollutant/ton of DDGS

SPECIAL CONDITIONS:

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

EP-1802	Integrated TO/Flue Gas Recirculation #2	Lbs of pollutant/ton of DDGS
EP-1803	Integrated TO/Flue Gas Recirculation #3	Lbs of pollutant/ton of DDGS
EP-2201	DDGS Handling Baghouse	Lbs of pollutant/ton of DDGS
EP-5001	Boiler #1	Lbs of pollutant/MMBTU input
EP-5002	Boiler #2	Lbs of pollutant/MMBTU input

E. If the performance testing required by Special Condition 12 of this permit indicates that any of the emission limits specified in this permit are being exceeded, Renewable Power of Cape Girardeau, LLC must propose a remedial plan to the Air Pollution Control Program within thirty (30) days of submitting the performance test results. This plan must demonstrate how Renewable Power of Cape Girardeau, LLC will reduce the emission rates to show compliance with specified limits in this permit. Renewable Power of Cape Girardeau, LLC must implement any such plan immediately upon its approval by the Director and conduct stack testing .

14. Cooling Tower Requirements

A. The cooling tower(s) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specifications shall be kept onsite and made readily available to Department of Natural Resources' Employees.

B. The cooling water circulation rate shall not exceed 33,000 gallons per minute.

C. Renewable Power of Cape Girardeau, LLC shall keep records of the monthly and 12-month rolling averages of the amount of water circulated.

D. The drift loss from the towers shall not exceed 0.002 percent of the water circulation rate. Verification of drift loss shall be by manufacturer's guaranteed drift loss and shall be kept onsite and be made readily available to Department of Natural Resources' employees upon request.

E. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed a TDS concentration of 2,100 parts per million (ppm). A TDS sample shall be collected and the results recorded monthly to verify the TDS concentration.

F. The requirements for TDS Sample collection may be eliminated or the frequency reduced upon written approval by the Air Pollution Control Program if TDS sampling results demonstrate compliance for twenty-four (24) consecutive months.

SPECIAL CONDITIONS:

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

15. Emergency Equipment Requirements

A. The operating hours of the emergency fire pump shall not exceed 100 hours in any consecutive 12-month period. To facilitate the record keeping for this condition, the emergency fire pump shall be equipped with a non-resettable running time meter.

B. Attachment I, or equivalent form(s), shall be used to record the hours of operation. These records shall include the operating hours for that month and the total hours of operation for the previous 12-month period.

C. Renewable Power of Cape Girardeau, LLC shall report to the Air Pollution Control Program's Enforcement Section at P.O. Box 176, Jefferson City, MO, 65102, no later than ten (10) days after the end of the month during which the records from Special Condition 15.B. indicate that the source exceeds the Special Condition 15.A..

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16. Operating Permit Requirements

Renewable Power of Cape Girardeau, LLC shall apply for and receive an Intermediate Operating Permit from the Air Pollution Control Program for this installation.

17. Requirements for Future Emission Alterations

If the emissions from this installation as permitted, ever increase above 100 tons per year for PM_{10}, NO_x, SO_x, VOC, or CO, when the production capacity is at or below 93,000,000 gallons denatured ethanol per year, then Renewable Power of Cape Girardeau, LLC will be required to conduct a New Source Review in accordance with 10 CSR 10-6.060(8).

18. Record Keeping Requirements

All records required by this permit shall be kept onsite for no less than five (5) years and shall be made available to any Department of Natural Resources' personnel upon request.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number:

Renewable Power of Cape Girardeau, LLC Complete: May 9, 2007
SW corner of Nash Road (CR218) and CR217

Parent Company:
Renewable Power of Cape Girardeau, LLC
10200 Mohawk, Leawood, KS 66206

Cape Girardeau County, S28, T30N, R12E

REVIEW SUMMARY

- Renewable Power of Cape Girardeau, LLC has applied for authority to construct a new 93 million gallon per year denatured ethanol plant.

- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are acetaldehyde, acrolein, formaldehyde and methanol.

- The following New Source Performance Standards (NSPS) **apply** to this installation:
  - 40 CFR Part 60, Subpart DD, *Standards of Performance for Grain Elevators*, applies to the installation.
  - 40 CFR Part 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels,* applies to the storage tanks.
  - 40 CFR Part 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Manufacturing Industry (SOCMI)* apply to the installation.
  - 40 CFR Part 60, Subpart IIII, *Standards of Performance for Compression Ignition Internal Combustion Engines* apply to the emergency firewater pump.
  - 40 CFR Part 60, Subpart Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* apply to the boilers.

- The following New Source Performance Standards (NSPS) **do not apply** to this installation.
  - 40 CFR Part 60 Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional-Steam Generating Units* does not apply because the boilers do not have a design rate between 10 MMBTU/hr and 100 MMBTU/hr.
  - 40 CFR, Subpart III, *Standards of Performance for VOC Emissions from SOCMI Air Oxidation Unit Processes* does not apply to this installation because it does not produce any chemicals listed in §60.617 of the subpart as a product, co-product, by-product, or intermediate.
  - 40 CFR, Subpart NNN, *Standards of Performance for VOC Emissions from SOCMI Distillation Operations* does not apply to this installation because the EPA

did not consider bio-processes in the development of this subpart.
  - 40 CFR, Subpart RRR, *Standards of Performance for VOC Emissions from SOCMI* Reactor Processes does not apply to this installation because the EPA did not consider bio-processes in the development of this subpart.
  - 40 CFR, Subpart XX, *Standards of Performance for Bulk Gasoline Terminals,* does not apply to this installation since the fuel ethanol manufactured by the installation does not satisfy the Subpart XX definition of gasoline.

- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.

- Baghouses, wet scrubbers, vacuum jet and condensers, and integrated thermal oxidizers are being used to control the PM_{10}, VOC, NO_x, CO, and HAP emissions from the equipment in this permit.

- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of pollutants are conditioned to minor source levels.

- This installation is located in Cape Girardeau County, an attainment area for all criteria air pollutants.

- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].

- Ambient air quality modeling was performed to determine the ambient impacts of PM_{10} and NO_x.

- Emissions testing is required for the source.

- An Intermediate Operating Permit is required for this installation within 90 days of equipment startup.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Renewable Power of Cape Girardeau, LLC is proposing to construct a new ethanol plant with a maximum production capacity of 93,000,000 gallon per year of denatured ethanol. The installation will use corn (grain) to produce denatured ethanol. The installation will also produce wet distiller grain with solubles (WDGS) and dried distillers grain with solubles (DDGS) as byproducts of the ethanol production process.

This installation is a minor source and the permit is issued under 10 CSR 10-6.060 (6). An intermediate operating permit is required for this installation.

PROJECT DESCRIPTION

Renewable Power of Cape Girardeau, LLC has applied for authority to construct a 93,000,000 gallons per year denatured ethanol plant. The installation purchases corn (grain) and hauls it to the facility by truck and/or railcars and unload them into a pit that is located inside an enclosed building. The pit is fitted with conveyor belts, which feed the elevator leg and grain-to-grain storage silos. The dump pits and associated grain transfer points are controlled by two (2) separate baghouses (CE-1101, CE-1102). A 90% capture efficiency is given to the grain receiving process, and not 100%, because grain receiving occurs in a building that has overhead doors that can be opened during the loading process. A 99% control efficiency is given to the baghouse itself.

The grain is transferred to hammermills to be crushed. During the milling process, the PM_{10} emissions are vented to baghouses. A capture efficiency of 100% is applied to the hammermilling process because these emission sources are within enclosures that are operated under negative pressure while being aspirated to baghouses. Renewable Power of Cape Girardeau, LLC will conduct performance tests (i.e. installation of vacuum pressure gauges, etc.) to ensure negative pressure can be achieved in these enclosures. Milled grain is transferred from the hammermills to a mash mixer, which blends the grain with hot water, and then to a slurry tank that provides surge capacity in the cooking system, allows for pre-liquefaction of the starch, and, if necessary, controls viscosity. Caustic or anhydrous ammonia (NH_3) is also added at this point for pH control. The slurry is cooked to liquefy and breakdown the starch to sugars. Backset (thin stillage recycle) or sulfuric acid may be added to the mash to lower the pH. The slurry is then cooled and sent to a fermenter.

Saccharifying enzymes, nutrients, and industrial antibiotics are added to the fermenter during filling. The enzymes completes the conversion of starch to fermentable sugar, and the yeast converts the fermentable sugar to ethanol and carbon dioxide (CO_2). The chemical equation occurring during fermentation is

Simple Sugar + Yeast → Ethanol + Carbon Dioxide
($C_6H_{12}O_6$ + Yeast → $2CH_3CH_2OH$ + 2 CO_2)

The fermented mash consists of approximately 10% ethanol and 90% water and leftover solids from grain and yeast. The fermented mash is then distilled to separate the ethanol from the residual grain solids. The ethanol leaves the distillation section as 95% ethanol (190-proof) and is then dehydrated into 100% ethanol (200-proof) ethanol. The 200-proof ethanol is then combined with approximately 5% gasoline to produce denatured ethanol. The pollutants (including CO_2) generated from the fermentation and distillation process will be controlled by venturi scrubbers. During loadout of the denatured ethanol, the emissions will be controlled by a flare of smokeless design.

The residual grain solids from the fermentation and distillation process are pumped to a centrifuge, which splits the feed into two flows: the wet cake and thin stillage (centrate). The wet cake (WDGS) consists of approximately 33-35% solids and 65-67% water, and will be sold as animal feed. The installation will have the capacity to produce up to 844,606 tons per year of WDGS.

The thin stillage enters a heat recovery evaporator, finish evaporator vent condenser, and a finish evaporator to reduce its water content. The resulting "syrup" is then added to one of the solid by-products. The emissions from the heat recovery evaporator and finish evaporator vent condenser are controlled by vacuum jets and condensers.

The WDGS can also be conveyed into three (3) natural gas fired indirect ring dryers to be dried. During this process, the cake solid concentration increases from 33-35% to approximately 90%. The resulting product (DDGS) is stored in a building until it can be shipped offsite by truck and/or rail for use as animal feed. The DDGS dryers are capable of drying up to 100% of all the WDGS produced, and therefore, the installation will have the capacity to produce up to 309,194 tons per year of DDGS. Each DDGS dryer is designed so that the combustion/process emissions are recycled through the dryer in a flue gas recirculation system for control of pollutant emissions.

Steam is required to power the process. The installation will use two (2) natural gas fired boilers with a maximum capacity of 260 mmBTU/hr. There will be a diesel-powered emergency firewater pump. The pump will be limited to operating 100 hours per year to comply with 40 CFR Part 60 Subpart III, *Standards of Performance Compression Ignition Internal Combustion Engines.* There will be a cooling tower to provide water to the production process. The recirculating water will be limited to 2,100 parts per million (ppm) of total dissolved solids (TDS) concentration.

The installation will control fugitive emissions from haul roads by paving all haul roads and storage pile vehicular activity areas and watering the paved haul roads. A control efficiency of 95% is given for the use of both paving and watering.

EMISSIONS/CONTROLS EVALUATION

The pollutants of concern for this review are PM_{10}, SO_x, VOCs, CO, HAPs, and NO_x. The following tables provide the emissions summary for this project. The emissions summary is based on 100% DDGS production because this is the worst-case scenario. Emissions from WDGS production is expected to be less than the emissions from DDGS production because various equipment, such as the DDGS dryers, will not be in operation during WDGS production.

Table 8: Emissions Summary (tons per year) for 100% DDGS Production

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	*New Installation Conditioned Potential
PM_{10}	15.0	N/A	N/A	41.34	41.34
SOx	40.0	N/A	N/A	1.82	1.82
NOx	40.0	N/A	N/A	97.23	97.23
VOC	40.0	N/A	N/A	94.04	<100
CO	100.0	N/A	N/A	97.51	<100
HAPs	10.0/25.0	N/A	N/A	16.41	<25.0

N/A = Not Applicable

* Renewable Power of Cape Girardeau shall track its VOC, CO, and total HAP emissions to ensure the conditioned potential is not exceeded.

The sources of these emissions are discussed below.

Grain Hauling

The PM_{10} emissions from the haul roads were estimated by using haul road equations from AP-42, Section 13.2.2. *Unpaved Roads*. The emissions will be controlled by paving the haul roads and watering/cleaning these haul roads. A control efficiency of 95% is given to the haul roads for the combination of paving and washing/cleaning.

Grain Handling and Storage

PM_{10} will be emitted from the grain receiving, handling, storage, and milling processes. During these processes PM_{10} emissions will be controlled by baghouses, and the baghouses are given a device control efficiency of 99% for estimating emissions. All of these processes occur in enclosures. For grain receiving, a 90% capture efficiency is given to the aspiration system venting to the baghouse. A 100% capture efficiency cannot be given because grain receiving occurs in a building with overhead doors that will be opening and closing on a consistent basis. For grain milling, a 100% capture efficiency is given for the enclosure. Renewable Power of Cape Girardeau, LLC shall install visual devices, such as vacuum pressure gauges, to ensure 100% capture can be achieved.

Emissions from grain milling baghouses (EP-1201, EP-1202, EP-1203) are based on manufacturer's guarantee of 0.01 lbs/hr and Renewable Power of Cape Girardeau, LLC shall perform stack tests to ensure that the guarantee is not exceeded. Emissions from grain receiving, storage, and handling were calculated using PM_{10} emission factors from EPA document AP-42, *Compilation of Air Pollutant Emission Factors,* Fifth Edition, Section 9.9.1 and taking into account the various capture and control efficiencies. Even though emissions from the grain receiving baghouse (EP-1101) and grain storage and handling baghouse (EP-1102) are based on AP-42 numbers, stack tests are still required for these stacks because the ambient impact modeling analysis is based on these numbers. Any exceedances of the AP-42 based value will cause the ambient impact levels to be above the predicted values.

Fermentation and Distillation

VOCs and HAPs will be emitted from the fermentation and distillation processes. Traces of condensible PM_{10} may also be emitted. The fermentation and distillation processes are controlled by wet scrubbers. Potential emissions of VOC and HAPs were taken from manufacturer's guarantee. Renewable Power of Cape Girardeau, LLC shall perform stack tests to ensure that the manufacturer's guarantee is not exceeded. Due to lack of data on condensible PM_{10} emissions, 0.10 lbs/hr was used and the Renewable Power of Cape Girardeau, LLC shall perform stack testing to ensure it is not exceeded. 0.10 lbs/hr is the same amount recommended by the Nebraska Department of Environmental Quality.

DDGS Drying, Storage, and Loadout

VOCs, HAPs, CO, NO_x, SO_x and PM_{10} will be emitted from the operations of the DDGS Dryer (EP-1801, EP-1802, EP-1803). The potential emissions of these pollutants were calculated either from vendor data or emission factors given in AP-42, Section 1.4, *Natural Gas Combustion*. VOC and HAPs emissions are controlled by an integrated thermal oxidation system. This integrated thermal oxidation/flue gas recirculation system recycles the waste stream back into the dryer burner to control VOC and HAPs emissions. The NO_x, CO, SO_x, and PM_{10} emissions are not controlled by any control devices.

The DDGS is stored in a building until it is shipped offsite by truck or rail. During DDGS Loadout, the particulate emissions will be controlled by a baghouse and the baghouse is given a device control efficiency of 99%. Fugitive PM_{10} emissions are expected and a capture efficiency of 90% is assumed for DDGS loadout.

WDGS Storage, Handling, and Loadout

The WDGS will be stored in an open storage area, from which it can be loaded onto trucks for delivery to customers or be sent to the dryers to be dried into DDGS. The WDGS storage and handling is expected to have negligible PM_{10} emissions due to its high moisture content. However, VOC and HAPs will be emitted from the WDGS. The VOC and HAPs emissions are estimated based on the emission factors derived from the November 2004 stack test at the Diversified Energy Co. (DENCO) ethanol facility located in Morris, Minnesota.

The production of DDGS is expected to have higher emissions than the production of WDGS because certain equipment, such as the DDGS dryer, will not be in operation for the production of WDGS. As such, for permitting purposes, potential emissions are based on all WDGS being converted to DDGS.

Storage Tanks and Ethanol Loadout

VOCs will be emitted from the storage tanks and truck/rail loadout. Storage Tank Emissions were calculated using TANKS 4.0. Emissions from ethanol loadout are controlled by a smokeless, open flare. Loadout Emissions were determined using AP-42, Section 5.2, *Transportation and Marketing of Petroleum Liquids* and giving a capture and control device efficiency for the flare supplied by the vendor. Since performance tests are difficult for open flares, none are required for the flare to show emissions compliance. However, Renewable Power of Cape Girardeau shall operate the flare in accordance with 40 CFR 60.18 *General Control Device Requirements* and maintain records sufficient to show compliance with 40 CFR 60.18.

Tanker trucks previously carried natural gasoline. All rail cars are assumed to be operating under dedicated normal service.

Fugitive Emissions from Equipment Leaks

Fugitive VOC emissions will occur from plant piping, such as valves and pumps in light and heavy service, gas valves, compressor seals, pressure relief valves, sampling connections, and connectors (EP-1500). Renewable Power will perform Leak Detection and Repair (LDAR) in accordance with NSPS, Subpart VV (40 CFR 60.480 through 60.489). Fugitive emissions from the components within the plant piping system were estimated based on EPA's Synthetic Organic Chemical Manufacturing Industry (SOCMI) emission factors in EPA document 453/R-95-017, *Protocol for Equipment Leak and Emission Estimates.*

Steam Generation

Steam is required for the ethanol production process. Renewable Power will use two (2) natural gas fired boilers with a maximum capacity of 260 MMBTU/hr each. SO_x and PM_{10} emissions were calculated by using emission factors from AP-42, Section 1.4, *Natural Gas Combustion*. NO_x, CO, and VOC emissions were based on vendor information. The applicant shall perform stack tests to demonstrate compliance with limits in the permit.

Non-Contact Cooling Tower

PM_{10} emissions from the cooling tower were calculated with a mass balance approach using drift loss (0.002%), total dissolved solids (TDS) concentration in the recirculating water (2,100 ppm), and water circulation rate (33,000 gallons per minute) as suggested by AP-42, Section 13.4, *Cooling Towers*.

Emergency Firewater Pump

A diesel-powered emergency firewater pump is permitted for the plant. Potential emissions of criteria pollutants from the pump were estimated using emission factors from AP-42, Section 3.3, *Gasoline and diesel Industrial Engines* and based on 100 hours of operation per year. NSPS subpart IIII applies to any fire pump engines manufactured as a certified National Fire Protection Association (NFPA) after July 1, 2006.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of pollutant are above de minimis levels..

APPLICABLE REQUIREMENTS

Renewable Power of Cape Girardeau, 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. The installation is required to apply for an operating permit within thirty days after startup of equipment. This operating permit, once issued will have a complete list of applicable requirements for your installation.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
  The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.

- *Operating Permits*, 10 CSR 10-6.065

- *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 10-3.090

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry,* 40 CFR Part 60, Subpart VV.

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984,* 40 CFR Part 60, Subpart Kb.

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines,* 40 CFR Part 60, Subpart IIII.

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units,* 40 CFR Part 60, Subpart Db.

- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260

- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating,* 10 CSR 10-3.060

AMBIENT AIR QUALITY IMPACT ANALYSIS

The following sections give a summary of the Ambient Air Quality Impact Analysis conducted for Renewable Power of Cape Girardeau, LLC. Please see the attached Memo dated June 27, 2007 (*Ambient Air Quality Impact Analysis (AAQIA) for Renewable Power of Cape Girardeau, LLC – May 9, 2007 Submittal*) for more information.

Preliminary Impact Analysis

In order to determine whether a full impact model analysis is necessary, a preliminary model analysis was performed. The preliminary analysis was performed using the AERMOD modeling system. For PM_{10}, if modeling results exceed the significance level of 1.0 µg/m^3 on an annual basis and 5.0 µg/m^3 on a 24-hour basis, full impact modeling would be necessary. Two operating scenarios were modeled to determine the impact of PM_{10} based on 24-hour basis: Harvest season when truck traffic is heavy and non-harvest season when truck traffic is light. For NO_x, if modeling results exceed the significance level of 1.0 µg/m^3 on an annual basis, full impact modeling would be necessary. It was determined that the modeled impact for both pollutants exceeds the significance level, and a full impact analysis must be conducted for both.

NAAQS Evaluation

An NAAQS compliance demonstration is required for all pollutant that exceeds the significance levels. Unlike a significance determination, the NAAQS compliance demonstration must consider emissions from other existing sources in the area that contribute to background pollutant concentrations. To show compliance with NAAQS for PM_{10}, Renewable Power of Cape Girardeau, LLC must demonstrate that its impact will be below 150 µg/m^3 on a 24-hourl basis and 50 µg/m^3 on an annual basis. To show compliance with NAAQS for NO_x, Renewable Power of Cape Girardeau, LLC must demonstrate that its impact will be below 100 µg/m^3 on an annual basis.

For both PM_{10} and NO_x, results show that NAAQS will be exceeded due to nearby sources. However, when a violation of NAAQS is predicted at one or more receptors in the impact area, if the facility's impacts at the receptor are below the significance levels, then a permit can be issued. Modeling results show that there should not be significant impact at the violating receptor.

Increment Consumption

Renewable Power of Cape Girardeau, LLC must demonstrate that the plant will not deteriorate the air quality beyond the limits in Table 1 of 10 CSR 10-6.060 (11)(A). To show compliance with increment for PM_{10}, the facility must demonstrate that its impact will be below 30 µg/m^3 on a 24-hour basis and 17 µg/m^3 on an annual basis. To show

compliance with increment for NO_x, the facility must demonstrate that its impact will be below 25 µg/m^3.

Several violations of increment due to nearby sources are expected for both PM_{10} and NO_x. However, the same reasoning for issuance of permit used for NAAQS exceedances can be applied to increment. The facility is not expected to exceed the significance levels at the violating receptor.

The modeling analysis was based on site-specific information such as emission rates and daily truck traffic patterns. Renewable Power of Cape Girardeau, LLC must abide by the limits set in this permit and any information submitted in the application for this project in order to ensure the accuracy and integrity of the modeling analysis.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required,* I recommend this permit be granted with special conditions.

Chia-Wei Young
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated 8/16/2006, received 8/17/2006, designating Renewable Power of Cape Girardeau, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southeast Regional Office Site Survey, dated 9/13/2006.
- Modification to construction permit dated October 4, 2006, March 2, 2007, May 8, 2007.
- Response to questions letter dated November 8, 2006.
- Memorandum dated June 20. 2007.

Attachment A – Daily Truck Tracking Sheet.

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number: _____

This sheet covers the period from _____ to _____.
(Date) (Date)

Date	*Types of Trucks	**Number of Trucks
***Monthly grain receiving trucks:		
***Monthly DDGS/WDGS Combined Loadout Trucks:		
***Monthly Ethanol Loadout Trucks		
***Monthly Denaturant Trucks:		
***Monthly Misc. Chemical Trucks:		

* The types of trucks include grain, ethanol, gasoline, DDGS, WDGS, and miscellaneous chemical haul trucks.

** **The following number of trucks indicate compliance during harvest season**: Grain (**225**), Ethanol (**35**), Denaturant (**15**), DDGS/WDGS (**35**), Misc. Chemicals (**5**). **The following number of trucks indicate compliance during non-harvest season:** Grain (**75**), Ethanol (**35**), Denaturant (**15**), DDGS/WDGS Combined (**35**), Misc. Chemicals (**5**)

*** Monthly total of trucks may be used in conjunction with Attachment B.

Attachment B – Annual Truck Tracking Sheet.

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number: _____

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Month	*Types of Trucks	Number of Trucks
**Annual grain receiving trucks:		
**Annual DDGS/WDGS Combined Loadout Trucks:		
**Annual Ethanol Loadout Trucks		
**Annual Denaturant Trucks:		
**Annual Misc. Chemical Trucks:		

* The types of trucks include grain, ethanol, gasoline, DDGS, WDGS, and miscellaneous chemical haul trucks.

** **The following number of trucks indicate compliance**: Grain (**37,002**), Ethanol (**6,200**), Denaturant (**667**), DDGS/WDGS Combined (**12,336**), Misc. Chemicals (**620**).

Attachment C – Daily Grain Receiving Tracking Sheet.

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number: _____

This sheet covers the period from _____ to _____.
(Date) (Date)

Date	Weight of Grain Received (tons)

*A total of **3,000 tons** indicates compliance.

Attachment D – Annual Denatured Ethanol Tracking Sheet.

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number: _____

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Month	Monthly Ethanol Production (Gallons)	*12-Month Ethanol Total (Gallons)

* The 12-month Ethanol Totals (Gallons) are a rolling total calculated by adding the month's ethanol production to the monthly ethanol production of the previous eleven (11) months. A total of **93,000,000** gallons indicate compliance.

Attachment E – Monthly Total HAPs Emissions Tracking Record

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number:

This sheet covers the month of _____
(month)

Emission Points	Description	Amount Processed This Month	Emission Factor	(a) Monthly Emissions from Each Emission Point (tons)
(b) Total HAP Emissions Calculated for this Month (tons):				
(c) 12-Month Total HAP Emissions total from Previous Month's Attachment G (tons):				
(d) Monthly Total HAP Emissions Total from previous year's Attachment G (tons):				
(e) Current 12-month Total of HAP Emissions (tons):				

(a) Monthly Emissions from each emission point is calculated by multiplying the amount processed by the emission factors. The emission factors can be obtained from three (3) sources where applicable: Stack testing results, EPA document AP-42, or DENCO.
(b) Total HAP Emissions for this Month Calculated by Summing (a). Monthly Emissions from Each Emission Point.
(c) 12-Month Total HAP Emissions total can be taken from (e) of last month's Attachment G.
(d) The Monthly Total HAP Emissions from previous year's Attachment G is the emissions from thirteen (13) month ago.
(e) Current 12-Month HAP Emissions can be calculated by (b) + (c) – (d).

A 12-Month Total HAP emissions total (e) of less than 25 tons indicates compliance.

Attachment F – Monthly Individual HAPs Emissions Tracking Record

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number:

This sheet covers the month of _____ for HAP _____
(month) (Type of HAP)

Emission Points	Description	Amount Processed This Month	Emission Factor	(a) Monthly Emissions from Each Emission Point (tons)
(b) Individual HAP Emissions Calculated for this Month (tons):				
(c) 12-Month Individual HAP Emissions Total from Previous Month's Attachment F (tons):				
(d) Monthly Individual HAP Emissions Total from previous year's Attachment F (tons):				
(e) Current 12-month Individual HAP Emissions (tons):				

(a) Monthly Emissions from each emission point is calculated by multiplying the amount processed by the emission factors. The emission factors can be obtained from three (3) sources where applicable: Stack testing results, EPA document AP-42, or DENCO.
(b) Total HAP Emissions for this Month Calculated by Summing (a). Monthly Emissions from Each Emission Point.
(c) 12-Month Individual HAP Emissions total can be taken from (e) of last month's Attachment F.
(d) The Monthly Individual HAP Emissions from previous year's Attachment F is the emissions from thirteen (13) month ago.
(e) Current 12-Month Individual HAP Emissions can be calculated by (b) + (c) – (d).

A 12-Month Individual HAP emissions total (e) of less than 10 tons indicates compliance.

Attachment G – Monthly VOC Emissions Tracking Record

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number:

This sheet covers the month of _____
(month)

Emission Points	Description	Amount Processed This Month	Emission Factor	(a) Monthly Emissions from Each Emission Point (tons)
(b) Total VOC Emissions Calculated for this Month (tons):				
(c) 12-Month VOC Emissions from Previous Month's Attachment G (tons):				
(d) Monthly VOC Emissions Total from previous year's Attachment G (tons):				
(e) Current 12-month VOC Emissions (tons):				

(a) Monthly Emissions from each emission point is calculated by multiplying the amount processed by the emission factors. The emission factors can be obtained from three (3) sources where applicable: Stack testing results, EPA document AP-42, or DENCO.
(b) Total VOC Emissions for this Month Calculated by Summing (a). Monthly Emissions from Each Emission Point.
(c) 12-Month VOC Emissions total can be taken from (e) of last month's Attachment G.
(d) The Monthly VOC Emissions from previous year's Attachment G is the emissions from thirteen (13) month ago.
(e) Current 12-Month VOC Emissions can be calculated by (b) + (c) – (d).

A 12-Month Total VOC emissions total (e) of less than 100 tons indicates compliance.

Attachment H – Monthly CO Emissions Tracking Record

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number:

This sheet covers the month of _____
(month)

Emission Points	Description	Amount Processed This Month	Emission Factor	(a) Monthly Emissions from Each Emission Point (tons)
(b) Total CO Emissions Calculated for this Month (tons):				
(c) 12-Month CO Emissions from Previous Month's Attachment H (tons):				
(d) Monthly CO Emissions Total from previous year's Attachment H (tons):				
(e) Current 12-month CO Emissions (tons):				

(a) Monthly Emissions from each emission point is calculated by multiplying the amount processed by the emission factors. The emission factors can be obtained from three (3) sources where applicable: Stack testing results, EPA document AP-42, or DENCO.
(b) Total CO Emissions for this Month Calculated by Summing (a). Monthly Emissions from Each Emission Point.
(c) 12-Month CO Emissions total can be taken from (e) of last month's Attachment H.
(d) The Monthly CO Emissions from previous year's Attachment H is the emissions from thirteen (13) month ago.
(e) Current 12-Month CO Emissions can be calculated by (b) + (c) – (d).

A 12-Month Total CO emissions total (e) of less than 100 tons indicates compliance.

Attachment I – Emergency Fire Pump Tracking Sheet

Renewable Power of Cape Girardeau, LLC
Cape Girardeau County, S28, T30N, R12E
Project Number: 2006-08-058
Installation ID Number: 031-0109
Permit Number: _____

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Date (Month/Year)	Hours of Operation	12-Month Total*

***** The 12-month total is determined by the addition of the current month to the total of the previous 11 months. **100** hours of operation during this 12-month period is considered to be in compliance.

Mr. Phil Danforth
General Manager
Renewable Power of Cape Girardeau, LLC
P.O.. Box 894
Marshall, MO 65340

RE: New Source Review Permit - Project Number: 2006-08-058

Dear Mr. Danforth:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, 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 and your new source review permit application is necessary for continued compliance. This facility is required to submit an operating permit application. Operation in accordance with the future operating permit is also 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 have any questions regarding this permit, please contact Chia-Wei Young at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or telephone (573) 751-4817. Thank you for your time and consideration.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH: cwyk

Enclosures

c: Southeast Regional Office
PAMS File 2006-08-058
Permit Number: