



## 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: **042007-016** Project Number: 2006-12-011

Parent Company: Terra Bioenergy, LLC

Parent Company Address: 10 Westowne, Bldg. 10, Ste. 1000, Liberty, MO 64068

Installation Name: Terra Bioenergy, LLC

Installation Address: Stockyards Expressway and Bluff View Drive,  
St. Joseph, MO 64504

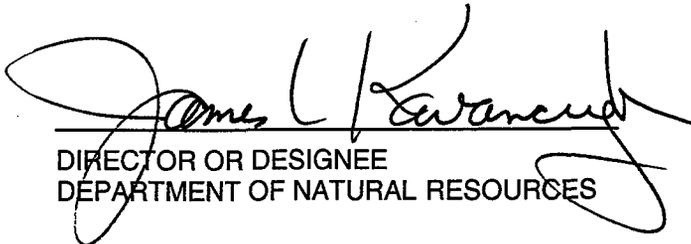
Location Information: Buchanan County, S31, T57N, R35W

Application for Authority to Construct was made for: Construction of a 20 million gallon biodiesel production plant on a greenfield site. 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.

APR 20 2007

EFFECTIVE DATE

  
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 source(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 source(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.

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:

Project Number: 2006-12-011

Parent Company: Terra Bioenergy, LLC

Parent Company Address: 10 Westowne, Bldg. 10, Ste. 1000, Liberty, MO 64068

Installation Name: Terra Bioenergy, LLC

Installation Address: Stockyards Expressway and Bluff View Drive,  
St. Joseph, MO 64504

Location Information: Buchanan County, S31, T57N, R35W

Application for Authority to Construct was made for: Construction of a 20 million gallon biodiesel production plant on a greenfield site. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

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EFFECTIVE DATE

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DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

## STANDARD CONDITIONS:

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**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 source(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 source(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.	2006-12-011

## 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."*

Terra Bioenergy, LLC  
Buchanan County, S31, T57N, R35W

1. Control Equipment – Condenser/Scrubber System
  - A. The condenser/scrubber system must be in use at all times when the associated equipment is in operation and shall be operated and maintained in accordance with the manufacturer's specifications.
  - B. Terra Bioenergy, LLC shall monitor and record the temperature of the oil into the condenser/scrubber at least once every twenty-four (24) hours. The condenser/scrubber input line shall be equipped with a gauge or meter that indicates this temperature. The temperature shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - C. Terra Bioenergy, LLC shall monitor and record the flow rate of the oil 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.
  - D. Terra Bioenergy, LLC shall maintain an operating and maintenance log for the condenser/scrubber 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.
    - 3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.
2. Best Management Practices  
Terra Bioenergy, LLC shall control fugitive emissions from all of the haul roads and stockpiles at this site by performing *Best Management Practices*, which include the usage of paving, chemical dust suppressants, or documented watering. These practices are defined in Attachment AA.

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Permit No.	
Project No.	2006-12-011

**SPECIAL CONDITIONS:**

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

3. **Cooling Tower Operating Requirements**
  - A. The cooling tower(s) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specifications shall be kept on site and made readily available to Department of Natural Resources employees.
  - B. The drift loss from the towers shall not exceed 0.02 percent of the water circulation rate. Verification of drift loss shall be by manufacturer's guaranteed drift loss and shall be kept on site and made available to Department of Natural Resources employees upon request.

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

Project Number: 2006-12-011  
Installation ID Number: 021-0120  
Permit Number:

Terra Bioenergy, LLC  
Stockyards Expressway and Bluff View Drive  
St. Joseph, MO 64504

Complete: December 5, 2006

Reviewed: February 28, 2007

Parent Company:  
Terra Bioenergy, LLC  
10 Westowne, Building 10, Ste. 1000  
Liberty, MO 64068

Buchanan County, S31, T57N, R35W

REVIEW SUMMARY

- Terra Bioenergy, LLC has applied for authority to construct a 20 million gallon biodiesel production plant on a greenfield site. No construction permits have been issued for this site from the Air Pollution Control Program.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. The HAPs of concern from this process are methanol and hexane.
- New Source Performance Standards (NSPS) apply to this installation. Specifically, 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, applies to the storage tanks. NSPS Subpart RRR, for VOC Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes, applies to the biodiesel plant. NSPS Subpart NNN, for VOC Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Processes, applies to the biodiesel plant. In addition, NSPS Subpart VV, for Equipment Leaks of VOC in the SOCMI, applies to the biodiesel plant.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart FFFF, National Emission Standards for Miscellaneous Organic Chemical Production and Processes (MON) does **not** apply to the biodiesel plant since the installation is not major for HAPs.
- A condenser/scrubber system is being used to control and partially recover the VOC and HAP emissions from the process equipment group in this permit. If the installation were, in the future, to have HAPs above major levels, this control/recovery equipment would be required by MACT Subpart FFFF.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. When using a more conservative approach the potential emissions of total HAPs and methanol (a HAP) are above de

minimis levels. However, by abiding by the emissions monitoring and record keeping required by the applicable NSPS subparts, the potential emissions of all criteria pollutants are below de minimis source levels.

- This installation is located in Buchanan 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], Number 20, *Chemical Process Plants*.
- Emissions testing is required for the source as required by applicable NSPS.
- A Basic Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

## PROJECT/INSTALLATION DESCRIPTION

Biodiesel is produced on a greenfield site from the base-catalyzed transesterification of raw non-petroleum oil with methanol. This project considered only vegetable oils, but animal fats may become a future raw material source to be permitted at that time. The co-products include free fatty acids and soapstock, which will be derived from the glycerin also produced in the transesterification reaction. Soybean oil is expected to be the main raw material of production. It will be shipped in to the plant by rail car or truck and stored in the tank farm storage tanks.

Three reactors will be used to produce the biodiesel. As the methyl esters are separated from the glycerin, the excess unreacted methanol will be recovered and recycled back into the process. Emissions from all of the processing equipment will be vented to a single emission point and controlled/partially recovered by a condenser and scrubber in order to qualify as a de minimis source. If this plant were in the future to expand such that the HAPs were above major thresholds, 40 CFR Part 63, Subpart FFFF would apply.

Biodiesel and co-products will be loaded onto tank trucks and rail cars for transport off-site. However, potential emissions were determined assuming all materials being transported on or off-site (i.e. biodiesel, raw oils, and co-products) will be shipped by truck. Fugitive emissions from all haul roads will be controlled by documented watering or chemical dust suppressants. Both types of control have the same control efficiency for emissions calculations.

Two six-MMBTU per hour natural gas boilers will be installed to provide process heat for biodiesel production. Although only one boiler is expected to operate at a time, with one boiler acting as a back up, both boilers were used in emissions calculations to represent the worst case scenario. Therefore, although it is not expected, both boilers may be used at once.

## EMISSIONS/CONTROLS EVALUATION

The emission factors and control/recovery efficiencies used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, as well as from stack test data from a similar plant (by parent company name Soymor, in Albert Lea, MN). Storage tank emissions were estimated by using the EPA TANKS program Version 4.0.9d. The remaining emissions were calculated by using mass balances. Table 1 outlines the emission points, the maximum hourly design rates (MHDRs) and the source of emission factors.

Table 1: Biodiesel Plant Emissions Points

<b>Emission Point</b>	<b>Description</b>	<b>MHDR</b>	<b>Source of Emission Factor</b>
SV 001	Stack vent for biodiesel production process: reactors, separation, biodiesel washing, biodiesel vacuum drying, glycerin soap splitting, glycerin drying, and methanol rectification	2283 gallons	Scaled stack test
FS 001	Hotwell tank for moisture and hexane removed from oil	2283 gallons	Mass Balance assuming all hexane is lost to atmosphere
FS 002 and FS 003	Haul road fugitive emissions	2640 ft	AP 42 Section 13.2.2
FS 004 and FS 005	Cooling towers	36,000 gallons	Mass balance assuming all dissolved solids in evaporation and drift water become PM <sub>10</sub>
FS 006	Loading rack fugitive emissions	N/A	AP 42 Section 5.2
FS 008	Equipment fugitive leaks	2283 gallons	EPA Protocol for Equipment Leak Emission Estimates assuming maximum allowable methanol concentration per NSPS Subpart VV
EU 008 and EU 009	Boilers	6 MMBTU (each)	AP 42 Section 1.4 and 1.3
TK 001 - TK 004	Storage tanks for feedstock and biodiesel	20 MMgal	TANKS 4.0.9d
TK 005 - TK 011	Storage tanks for methanol and sodium methylate	38,100 gal	TANKS 4.0.9d
TK 012	Storage tank for glycerine	16,000 gal	TANKS 4.0.9d
TK 013	Reserved for future	16,000 gal	No emissions.
TK 014	Storage tank for 36% hydrochloric acid	14,000 gal	Perry's Chemical Engineers' Handbook
TK 015	Storage tank for sodium hydroxide	8,000 gal	No emissions.

Prior to discharge through the stack vent (SV 001), the single emission point for the biodiesel process operations (EU 001-007), a scrubber/condenser system is utilized to capture methanol and recycle it for reuse in the process. The two stage condenser operates at 20°F to condense methanol from the process emission stream and send it back to the process. The second device is a wet oil circulating scrubber. The methanol dissolves into the vegetable oil and is sent to methanol recovery. No other control device is employed. The biodiesel process collects emissions from seven emissions units venting to a single atmospheric duct system. The duct leads to the recovery devices.

The main pollutant of concern is methanol, a HAP. When using a conservative approach the PTEs of total HAPs and methanol are above the de minimis levels. The expected PTE of the installation, however, is less than de minimis, which will be verified by record keeping required by NSPS Subparts NNN (for stack testing) and VV (for leak detection).

EU 001 – EU 007 include reactors, separation, biodiesel washing, biodiesel vacuum drying, glycerin soap splitting, glycerin drying, and methanol rectification. Emissions from these emission units are vented through a single stack, SV 001, and were calculated by doubling scaled rates of emissions from stack testing from a different plant (Soymor of Albert Lea, MN). Even if the stack test (required by subpart NNN) for this plant is several times that of the Soyomor plant's scaled stack testing results, which is extremely unlikely, the plant will still be below de minimis levels for methanol, so Terra Bioenergy will not be required to report this stack testing to demonstrate compliance with this permit.

The PTE of tanks TK 001-013, was 2.30 tpy methanol and was calculated using TANKS 4.0.d. The PTE from the fugitive sources of FS 001 – 005 and FS 007 did not include methanol. The PTE from the load out operation, FS 006, was calculated using standard AP-42 methods and came to 0.003 tpy methanol. The Controlled PTE from leaks was calculated using EPA Protocol for Equipment Leak Emission Estimates assuming the maximum allowable methanol concentrations in the various lines per NSPS Subpart VV, and was 6.3 tpy methanol. If 100% methanol in all lines is assumed, The Uncontrolled PTE from leaks, assuming 100% methanol in all lines, is 17.5 tpy. Since Subpart VV will ensure that the maximum allowable methanol concentrations are met, no further record keeping is required by the Air Pollution Control Program.

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). This installation is considered a new installation. Therefore, there are no existing potential or actual emissions associated with this installation. The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (EIQ)	Potential Emissions of the Application	Potential Controlled Emissions of the Application	New Installation Conditioned Potential
PM <sub>10</sub>	15.0	N/A	N/A	4.7	4.0	N/A
SO <sub>x</sub>	40.0	N/A	N/A	0.10	0.10	N/A
NO <sub>x</sub>	40.0	N/A	N/A	5.3	5.3	N/A
VOC	40.0	N/A	N/A	26.3	15.1	N/A
CO	100.0	N/A	N/A	4.4	4.4	N/A
Hexane	10.0	N/A	N/A	5.5	5.5	N/A
Methanol	10.0	N/A	N/A	20.2	9.0	<10.0
Total HAPs	25.0	N/A	N/A	25.8	14.6	<25.0

\*N/A = Not Applicable

### 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 criteria pollutants are below de minimis levels.

### APPLICABLE REQUIREMENTS

Terra Bioenergy, 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. For a complete list of applicable requirements for your installation, please consult your future operating permit.

### 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 June 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065  
An Operating Permit application is required for this installation within one year of equipment startup. A Basic Operation Permit will be required.
- *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 Volatile Organic Liquid Storage Vessels*, 40 CFR Part 60, Subpart Kb.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for VOC Emissions from SOCM I Reactor Processes*, 40 CFR Part 60, Subpart RRR.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Equipment Leaks of VOC in the SOCM I*, 40 CFR Part 60, Subpart VV.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations*, 40 CFR Part 60, Subpart NNN.

#### 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.

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Jeannie Kozak  
Environmental Engineer

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 20, 2006, received December 5, 2006, designating Terra Bioenergy, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- KCRO Regional Office Site Survey, dated December 12, 2006.
- TANKS 4.09d.
- Perry's Chemical Engineers' Handbook. Editors: Perry, R. H. and D. W. Green.
- EPA Protocol for Equipment Leak Emission Estimates.

**Attachment AA: Best Management Practices (BMPs)- Construction Industry  
Fugitive Emissions**

Construction Industry Sites covered by the Interim Relief Policy shall maintain Best Management Control Practices (BMPs) for fugitive emission areas at their installations when in operation. Options for BMPs are at least one of the following:

**For Haul Roads:**

1. Pavement of Road Surfaces –
  - A. The operator(s) may pave all or any portion of the haul roads with materials such as asphalt, concrete, and/or other material(s) after receiving approval from the program. The pavement will be applied in accordance with industry standards for such pavement so as to achieve “Control of Fugitive Emissions<sup>1</sup>” while the plant is operating.
  - B. Maintenance and/or repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator(s) shall periodically water, wash and/or otherwise clean all of the paved portions of the haul road(s) as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
  
2. Usage of Chemical Dust Suppressants –
  - A. The operator(s) shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to all the unpaved portions of the haul roads. The suppressant will be applied in accordance with the manufacturer’s suggested application rate (if available) and re-applied as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
  - B. The quantities of the chemical dust suppressant shall be applied, re-applied and/or maintained sufficient to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator(s) shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.
  
3. Usage of Documented Watering –
  - A. The operator(s) shall control the fugitive emissions from all the unpaved portions of the haul roads at the installation by consistently and correctly using the application of a water spray. Documented watering will be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating. For example, the operator(s) shall calculate the total square feet of unpaved vehicle activity area requiring control on any particular day, divide that product by 1,000, and multiply the quotient by 100 gallons for that day.
  - B. The operator(s) shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on day(s) the plant is in operation (e.g., meteorological situations, precipitation events, freezing, etc.)

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<sup>1</sup> For purposes of this document, Control of Fugitive Emissions means to control particulate matter that is not collected by a capture system and visible emissions to the extent necessary to prevent violations of the air pollution law or regulation. (Note: control of visible emission is not the only factor to consider in protection of ambient air quality.)

- C. Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the plant is operating.
- D. Watering may also 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. The operator(s) shall record a brief description of such events in the same log as the documented watering.
- E. The operator(s) shall record the date and the amount of water applied for each application on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.

**For Vehicle Activity Areas around Open Storage Piles:**

1. Pavement of Stockpile Vehicle Activity Surfaces –
  - A. The operator(s) may pave all or any portion of the vehicle activity areas around the storage piles with materials such as asphalt, concrete, and/or other material(s) after receiving approval from the program. The pavement will be applied in accordance with industry standards for such pavement so as to achieve control of fugitive emissions while the plant is operating.
  - B. Maintenance and/or repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator(s) shall periodically water, wash and/or otherwise clean all of the paved portions of the vehicle activity areas around the storage piles as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
  
2. Usage of Chemical Dust Suppressants –
  - A. The operator(s) shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to all the vehicle activity areas around the open storage piles. The suppressant will be applied in accordance with the manufacturer's suggested application rate (if available) and re-applied as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
  - B. The quantities of the chemical dust suppressant shall be applied, re-applied and/or maintained sufficient to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator(s) shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.
  
3. Usage of Documented Watering –
  - A. The operator(s) shall control the fugitive emissions from all the vehicle activity areas around the storage piles at the installation by consistently and correctly using the application of a water spray. Documented watering will be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of vehicle activity areas around the storage piles as necessary to achieve control of fugitive emissions from these areas while the plant is operating. (Refer to example for documented watering of haul roads.)
  - B. The operator(s) shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on day(s) the plant is in operations (e.g., meteorological situations, precipitation events, freezing, etc.)
  - C. Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the plant is operating.
  - D. Watering may also 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. The operator(s) shall record a brief description of such events in the same log as the documented watering.

- E. The operator(s) shall record the date and the amount of water applied for each application on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.

Mr. Charles Hubbard  
Manager  
Terra Bioenergy, LLC  
10 Westowne St., Building 10, Suite 1000  
Liberty, MO 64068

RE: New Source Review Permit - Project: 2006-12-011

Dear Mr. Hubbard:

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, your new source review permit application and with your future operating permit is necessary for continued compliance. A basic operating permit application is required within one year after equipment startup.

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 Jeannie Kozak or me at (573) 751-4817, or write the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102. Thank you for your time and attention.

Sincerely,

**AIR POLLUTION CONTROL PROGRAM**

Kendall B. Hale  
New Source Review Unit Chief

KBH: jkk

Enclosures

c: Kansas City Regional Office  
PAMS File 2006-12-011

Permit Number: