

217/782-2113

CONSTRUCTION PERMIT - NSPS SOURCE

PERMITTEE

Lincolnland Agri-Energy, LLC  
Attn: Norma Carder  
301 South Cross, Suite 227  
Robinson, Illinois 62454

Application No.: 02080027

I.D. No.: 033899AAA

Applicant's Designation: ETOHPLANT

Date Received: August 14, 2002

Subject: Ethanol Production

Date Issued: May 12, 2003

Location: West of the Town of Palestine at Southwest Corner of State  
Highway 33 and Township Road TR286A

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a fuel ethanol plant as described in Attachment A and other ancillary operations as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. The annual ethanol production of the plant, as shipped including denaturant, shall not exceed 45 million gallons.
- b. Annual grain receipts shall not exceed 16,100,000 bushels.
- c.
  - i. Only gaseous fuel shall be fired in the boiler and feed dryers.
  - ii. The maximum fuel firing rate of the boiler shall not exceed 135 mmBtu/hr.
  - iii. The maximum fuel firing rate of the feed dryers shall not exceed 85 mmBtu/hr, total.
- 2a. The emissions of the plant shall not exceed the limitations in Attachment B. As a consequence of this condition and other conditions of this permit, this permit is issued based on the plant not constituting a new major source subject to federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.
- b. The emissions of Hazardous Air Pollutants (HAP) as listed in Section 112(b) of the Clean Air Act from the plant shall be less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result of this condition, this permit is issued based on the emissions of all HAPs from this source not triggering the requirements to obtain a Clean Air Act Permit Program Permit (CAAPP), and Section 112(G) of the Clean Air Act.
- 3a. The boiler is subject to a New Source Performance Standard (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart A and Db. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

- b. i. The emission of nitrogen oxides (NO<sub>x</sub>) from boiler, including periods of startup, malfunction, and breakdown, shall not exceed 0.1 lb/mmBtu in accordance with the provisions of the NSPS 40 CFR 60.44b(a)(1)(i) for low heat release steam generating units.
- ii. There are no applicable NSPS requirements for particulate matter or sulfur dioxide pursuant to 40 CFR 60.43b or 60.42b respectively as the boiler is firing natural gas.
- 4a. i. Components in volatile organic compound service in the Fermentation and Distillation process units are subject to the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry (SOCMI), 40 CFR 60, Subparts VV, and related provisions in 40 CFR 60, Subpart A.
- ii. The Permittee shall implement a leak detection and repair program, including associated recordkeeping and reporting in accordance with applicable provisions of 40 CFR 60.480 through 60.488. Note: If the plant has more than 1500 components in gas or light liquid service, the leak detection and repair program must also satisfy applicable requirements of 35 IAC Part 215, Subpart Q, Leaks.
- b. i. This permit is issued based on the fermentation operations not being subject to the NSPS for VOC emissions from SOCMI Reactor Processes, 40 CFR 60 Subpart RRR, because the fermentation tanks involve a biological reaction and operate as batch processes.
- ii. This permit is issued based on the distillation operations not being subject to the NSPS for VOC emissions from SOCMI Distillation Operations, 40 CFR 60 Subpart NNN, because the operations process material produced by a biological reaction.
- 5a. Ethanol and denaturant storage tanks (Tanks T61 through T65) are subject to NSPS for Volatile Organic Liquid Storage Vessel, 40 CFR, Subparts A and Kb.
- b. Each storage tanks (T61-T65) shall be equipped with an internal floating roof with one of the following closure devices pursuant to the NSPS, 40 CFR 60.112b(a)(1)(i):
  - i. A foam-filled or liquid-filled liquid mounted seal;
  - ii. Two continuous seals; or
  - iii. A mechanical shoe.
- c. Each storage tank (T61-T65) shall be operated in compliance with the operating requirements of the NSPS, 40 CFR 60.112b(a)(1) and 60.113b(a), as summarized in Attachment C.

6. At all times, the Permittee shall maintain and operate emission units that are subject to the NSPS, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to 40 CFR 60.11(d).
- 7a. Except for the grain handling operations, which are subject to 35 IAC Part 212, Subpart S, the emission of particulate matter into the atmosphere in any one hour period from each process emission unit at the plant, either alone or in combination with the emission of particulate matter from all other similar process emission units shall not exceed the allowable emission rates specified in 35 IAC 212.321(c).
- b. The emission of smoke or other particulate matter from each emission unit shall not exceed an opacity of greater than 30 percent, except that an opacity of greater than 30 percent but less than 60 percent shall be allowed for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only once such emission unit at the plant, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period, pursuant to 35 IAC 212.123 and 212.124.
- 8a. The grain handling operation shall be operated in compliance with operating requirements of 35 IAC 212, Subpart S, as summarized in Attachment D.
- b. This permit is issued based on the grain handling and storage operations at the plant are not being subject to New Source Performance Standard for Grain Elevator, 40 CFR 60, Subpart DD because the permanent storage capacity of the plant does not meet the threshold for applicability of these standards.
- 9a. The loading/unloading rack shall be operated in compliance with the provisions in Attachment E.
- b. This permit is issued based on the loadout of ethanol not being subject to applicable requirements for handling of gasoline because the vapor pressure of the product ethanol is less than 4.0 psi.
- 10a. The boiler shall be operated whenever the distillation process or a feed dryer is in operation, as the boiler serves as the control device for VOM and CO emissions from these units.
- b.
  - i. The VOM emissions from process units shall be controlled by at least 98 weight percent (comparing the VOM entering and exiting the boiler) or to a concentration of no more than 20 ppmv as measured at the exit of the boiler, whichever is less stringent.
  - ii. The CO emissions from the feed dryers shall be controlled by at least 90 weight percent or to a concentration of no more than 100

ppmv, whichever is less stringent, determined in the same manner as above.

- c. i. The combustion chamber of the boiler shall be preheated to the manufacturer's recommended temperature or the temperature at which compliance was demonstrated in most recent compliance test, prior to beginning operation of the distillation process or the feed dryers that it controls.
- ii. During the venting of process emissions to the boiler the boiler combustion temperature shall be maintained at a temperature that is consistent with the temperature at which emission testing demonstrated compliance with applicable requirements.
- iii. Process vent streams shall be used as primary combustion air or introduced into the flame zone of the boiler, as defined by 40 CFR 60.661.
- d. Written procedures for the operation, maintenance, and monitoring of the boiler shall be kept in the boiler control room.
- e. There shall be no bypasses in the duct work connecting the distillation process and feed dryers to the boiler.
- 11a. i. Fabric filters (baghouses) on process emission units shall comply with an emission limit of 0.01 grain per standard foot (0.02 gr/scf for the feed cooler) and be operated and maintained in accordance with good air pollution practice to minimize emissions.
- ii. Particulate matter (PM) emissions and operation of process emission units shall not exceed the following limits:

<u>Equipment</u>	<u>Air Flow</u> (acfm)	<u>PM Emissions</u>	
		(Lb/Hr)	(Tons/Yr)
Grain Receiving and Handling	31,050	2.66	11.65
Hammermilling Operation	11,500	0.99	4.32
Feed Cooler	22,000	3.77	16.52
Dry Feed Loadout	4,750	0.471	1.78
Cooling Tower	----	----	4.60

These limits are based on information in the application, including the manufacturer's guarantees for control devices (0.01 gr/scf for grain unloading and handling, hammermilling operation, and loadout; and 0.02 gr/scf for feed cooler).

- iii. The above limits do not account for uncaptured emissions from the receiving of grain and loadout of feed or condensable particulate matter emissions from the feed cooler, which are assumed to be equal to the captured or filterable emissions as addressed above.

- 12a. i. A. The VOM emissions from the principle fermentation units, i.e., the fermenter tanks and beer well, shall be controlled by at least 98 weight percent or to a concentration of no more than 20 ppmv, whichever is less stringent.
- B. The operating parameter(s) of the air pollution control equipment for the principle fermentation units shall be maintained at levels that are consistent with levels at which emission testing demonstrated compliance with applicable requirements.
- ii. VOM emissions of the principle fermentation units shall not exceed the following limits:

VOM Emissions	
<u>(Lbs/Hour)</u>	<u>(Tons/Year)</u>
8.56	37.50

These limits are based on information in the application for maximum emissions including a representative VOM factor for fermentation (0.1 lbs VOM/gallon), nominal scrubber efficiency (98.5%), and continuous operation.

- b. VOM and CO emissions of distillation process, the feed dryers, certain other process emission units that are controlled by the boiler (mixer, slurry tank, flash tank, yeast tank, and centrate tank), and the boiler itself, in total, shall not exceed the following limits. Compliance with these limits shall be determined at the exhaust of the boiler, as it is used as the control device for these units, based on emission testing and monitoring as required elsewhere by this permit, and from operation of the boiler and the units which it controls.

<u>Pollutant</u>	<u>(Lbs/Hour)</u>	<u>(Tons/Year)</u>
VOM	5.88	25.76
CO	21.60	94.54

These limits are based on information in the application for maximum VOM emissions from distillation, from feed dryers and fuel combustion, and boiler VOM and CO destruction efficiency of 98% and 90%, respectively for process emissions.

- c. VOM emissions for feed cooling shall not exceed 3.32 lb/hour and 14.54 tons/year. These limits are based on information in the application for maximum emissions including VOM factor for feed cooling (0.2 lb/ton) and continuous operation.
- d. VOM emissions from the storage tanks (T61-T65) combined shall not exceed 2.74 tons/year. This limitation is based on the maximum

emissions of the storage tanks given the control measures required by the NSPS.

- e. VOM emissions of ethanol loading racks shall not exceed the following limits:

<u>VOM Loss Rate</u> (Lbs/1,000 Gal)	<u>VOM Emissions</u> (Tons/Year)
0.358	8.05

These limits are based on the throughput rate (45,000,000 gallons/year) and loading loss calculated based on Standard USEPA emission factors from AP-42.

- f. VOM emission from equipment leaks shall not exceed 4.10 tons/year. This limit is based on emission estimates of all the valves, pump seal, compressor seal, pressure relief valves, sampling connections, open ended lines and flanges. Compliance with this limit shall be determined on an annual basis.
  - g. VOM emissions from miscellaneous VOM emission units, e.g., wet cake storage pile, wet feed storage pile, mash screen vent, boiler feed water tank, syrup tank, and thin stillage tank, shall not exceed 1.0 ton/yr, total. This limit is based on estimates of maximum VOM emissions made in the application. Compliance with this limit shall be determined on an annual basis.
- 13a. Emissions and operation of the boiler (including both process and fuel combustion emissions) shall not exceed the following limits:

<u>Pollutant</u>	<u>Emissions</u> (Lb/Hour)	<u>(Tons/Year)</u>
NO <sub>x</sub>	22.0	95.92
CO	See Condition 12(b)	
SO <sub>2</sub>	0.14	0.58
PM	4.58	20.03
VOM	See Condition 12(b)	

These limits are based on information in the application including maximum firing rate (135 mmBtu/hour for boiler and 42.5 mmBtu/hour for each of the two dryers exhausted to the boiler), emission factors, nominal 90% boiler control efficiency for process PM emissions, and continuous operation.

- b. i. If the feed cooler is operated at negative pressure relative to the feed dryers, or in such other manner that the combustion emissions from the feed dryer may exhaust through the feed cooler, the above limits for NO<sub>x</sub> and CO also address emissions from the feed cooler.

- ii. Upon request by the Illinois EPA, the Permittee shall conduct measurements of the air pressures in the feed dryers and feed cooler during representative operation of these units.
- 14. Fugitive dust (PM emissions) from truck traffic shall not exceed 6.21 tons/year. Compliance with this limit shall be based on standard emission factors published by USEPA.
- 15. Compliance with annual limits established by this permit shall be determined from a running total of 12 months of data, unless another approach is specified in the applicable condition.
- 16. The Permittee shall fulfill applicable notification and recordkeeping requirements of the NSPS, 40 CFR 60.7 for the construction and operation of the emission units subject to the NSPS. Notification shall be made in writing to the Illinois EPA and shall include the following:
  - a. Written notification of commencement of construction, no later than 30 days after such date [40 CFR 60.7(a)(1)];
  - b. Written notification of the actual date of initial startup, within 15 days after such date [40 CFR 60.7(a)(3)].
- 17a. i. Within 180 days of initial startup of emission units, VOM emissions of selected units as specified in the following table, shall be measured during conditions which are representative of maximum emissions:

Emission Unit/Process	EMISSIONS					Efficiency	
	PM	VOM	NO <sub>x</sub>	CO	HAP	VOM	CO
Boiler	X	X	X	X	X	X*	X*
Grain Receiving	X						
Fermentation		X			X	X*	
Feed Cooler	X**	X			X		
Dry Feed Loadout	X						

\* Efficiency testing need not be performed if the Permittee is demonstrating compliance based on the concentration of VOM or CO in the exhaust.

\*\* Particulate matter tests shall include measurements of condensable particulate matter, as collected in the back half of the Method 5 sampling train or by separate measurements using USEPA Method 202 (40 CFR Part 51, Appendix M).

- ii. In addition to the emission testing required above, the Permittee shall perform emission tests as requested by the Illinois EPA for an emission unit within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.

- b. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the USEPA or Illinois EPA: Refer to 40 CFR 60, Appendix A, for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3
Moisture	USEPA Method 4
Particulate Matter	USEPA Method 5
Volatile Organic Material	USEPA Method 18 and 25A*
Carbon Monoxide	USEPA Method 10
Nitrogen Oxides	USEPA Method 19**
Hazardous Air Pollutants	USEPA Method 18

- \* Testing shall also be conducted in accordance with industry-specific guidance from USEPA on testing VOM emissions at ethanol plants.
- \*\* Emission testing shall be conducted in conjunction with certification of the emission monitors required by Condition 18(a).

- c. For purposes of determining compliance with the NSPS standard (Condition 3(b)(1)):
  - i. The emission tests for the boiler shall be conducted and data collected in accordance with 40 CFR 60.8 and the test methods and procedures specified in 40 CFR 60.46(e) or the test methods and procedures approved by USEPA on a case-by-case basis pursuant to 40 CFR 60.8(a), to address the NO<sub>x</sub> contained in the exhaust stream from the feed dryers that enters the boiler.
  - ii. NO<sub>x</sub> emissions shall be monitored for 30 successive boiler operating days and the 30-day average emission rate is used to determine compliance with the NSPS standard. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period, unless USEPA approves alternative procedures to demonstrate compliance with the NSPS pursuant to 40 CFR 60.13(i).
- d. The following measurements shall also be made during emission testing based on representative sampling and analysis:
  - i. VOM content in material, lb VOM/lb material, for material entering the distillation process, feed dryer, and feed cooler.
- e. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Compliance Section of the Division of Air Pollution Control for review. This plan shall describe the specific procedures for testing, including as a minimum:

- i. The person(s) who will be performing sampling and analysis and their experience with similar tests.
  - ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
  - iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations.
  - iv. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods.
  - v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
  - vi. The format and content of the Source Test Report.
- f. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- g. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 14 days after the test results are compiled and finalized but no later than thirty (30) days after completion of sampling. The Final Report shall include as a minimum:
- i. A summary of results
  - ii. General information
  - iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule
  - iv. Detailed description of test conditions, including
    - A. Plant operating rates, i.e., ethanol and feed production rate,
    - B. Unit operating information, i.e., mode(s) of operation, process rate, e.g. fuel or raw material consumption or throughput, and

- C. Control equipment information, i.e., equipment condition and operating parameters during testing.
- v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration
- h. Copies of emission test reports shall be retained for at least five years after the date that an emission test is superseded by a more recent test.
- 18a.
  - i.
    - A. The Permittee shall install, maintain, and operate a continuous monitoring system on the boiler for measuring the NO<sub>x</sub> emissions and record the output of the system. This system shall be operated during all periods of operation of the boiler except for continuous monitoring system breakdowns and repairs. Data is to be recorded during calibration checks, and zero and span adjustment. [40 CFR 60.48b]
    - B. The Permittee shall install, calibrate, maintain and operate a CO continuous emission monitoring system on the exhaust from boiler within one year after the initial emission testing required by Condition 17 unless this testing or further testing conducted by the Permittee demonstrates that the unit normally complies with the compliance in Condition 13 by a margin of at least 25 percent or the Illinois EPA approves further time for the Permittee to achieve this performance.
  - ii.
    - A. These monitoring systems shall be operated during all periods of operation of the combustion unit except for continuous emission monitoring system breakdowns and repairs. The Permittee shall comply with applicable requirements of the NSPS for continuous emission monitoring, including any requirements that USEPA may establish on a case-by-case basis pursuant to 40 CFR 60.13(i) to supplement generally applicable requirements for NO<sub>x</sub> monitoring systems to address the NO<sub>x</sub> contained in the exhaust stream from the feed dryers.
    - B. The Permittee shall maintain records for the continuous monitoring systems, including recorded emission concentrations and records of maintenance, calibration, and operational activity associated with the system.
    - C. The Permittee shall submit quarterly monitoring reports to the Illinois EPA for these systems.

- iii. The requirements for CO monitoring systems may be revised or waived in the operating permit for the source if the Illinois EPA determines that compliance with requirements for CO emissions is not facilitated to a significant degree by such monitoring.
- b.
  - i. The Permittee shall equip the boiler with a continuous monitoring device for boiler combustion chamber temperature.
  - ii. The Permittee shall either equip the boiler with device(s) to indicate flow of principle process vent stream(s) to the boiler or equip the emergency releases for such streams, if any, with device(s) to indicate flow through the emergency release, which device(s) which shall record such information at least once every hour.
  - iii. These devices shall be installed, calibrated, and maintained according to the supplier's specifications and shall be operated at all times that the boiler is in use.
- 19. The Permittee shall keep the following records for raw material and fuel usage, material throughputs, and production:
  - a. Grain receipts (tons/month and tons/year).
  - b. Ethanol production, as measured at the loading racks (gallons/month and gallons/year).
  - c. Natural gas usage for each category of equipment (feed dryers and boiler) (scf/month and scf/year).
  - d. Bio-gas usage (scf/month and scf/year).
  - e. Feed production as shipped, (dry feed: tons/month and tons/year, and wet feed: tons/month and tons/year).
  - f. Material throughput for each storage tank (gallons/month and gallons/year).
- 20a. The Permittee shall keep an operating log and a log for inspections, maintenance, and repairs for each baghouse, including the time when the baghouse is not in service.
  - b. The Permittee shall keep all other data used or relied upon to determine the particulate matter (PM) emissions of process emission units including grain handling operations.
  - c. The Permittee shall keep records of PM emissions from process emission units (tons/month and tons/year) based on appropriate emission factors and operating data, with supporting calculations.

- 21a. i. The Permittee shall equip the fermentation scrubber with a continuous monitoring device for temperature of scrubbant exiting the scrubber. This device shall be installed, calibrated and maintained according to the supplier's specifications and record data average data for 3-hour periods of scrubber operating.
  - ii. The Permittee shall keep records at least one per shift of other key operating parameters of the fermentation scrubber, such as, scrubbant flow rate scrubbant recirculation rate, gas exhaust temperature, and pressure drop.
  - iii. The Permittee shall keep an operation log and a log for inspection, maintenance, and repairs for fermentation units and associated scrubber including the time when the scrubber is not in operation.
  - iv. The Permittee shall keep records of the VOM and HAP emissions from fermentation (tons/month and tons/year), as determined at the scrubber and any other vents, based on appropriate emission factors, with supporting calculations.
  - b. The Permittee shall keep the following records for upsets in fermentation or distillation operations or other operations that could generate additional VOM emissions, with a description of the incident, an estimate of the additional VOM and HAP emissions that occurred with supporting calculations, and background information.
  - c. i. The Permittee shall keep records for the leak detection and repair program for the fermentation and distillation process units as required by applicable rules.
  - ii. The Permittee shall keep records on at least an annual basis for the VOM and HAP emissions attributable to leaking components, with supporting documentation and calculations.
22. The Permittee shall maintain records of the following items for boiler:
- a. Permittee shall maintain a file of manufacturer's or supplier's specifications for:
    - i. Boiler maximum fuel firing rate.
    - ii. Continuous monitoring devices.
  - b. Records to be kept for each operating day, pursuant to the NSPS, 40 CFR 60, Subpart Db:
    - i. Calendar date [40 CFR 60.49b(g)(1)];
    - ii. Total natural gas usage for boiler (ft<sup>3</sup>/day) [40 CFR 60.49b(d)];

- iii. The average hourly NO<sub>x</sub> emission rates (expressed in lb/million Btu heat input) measured [40 CFR 60.49b(g)(2)];
  - iv. The 30-day average NO<sub>x</sub> emission rates (lb/million Btu heat input) calculated at the end of each operating date from the measured hourly NO<sub>x</sub> emission rates for the preceding 30 operating days [40 CFR 60.49b(g)(3)];
  - v. Identification of the operating date when the calculated 30-day average NO<sub>x</sub> emission rates are in excess of the NO<sub>x</sub> emissions standards under 40 CFR 60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken [40 CFR 60.49b(g)(4)];
  - vi. Identification of the operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient and a description of corrective actions taken [40 CFR 60.49b(g)(5)];
  - vii. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data [40 CFR 60.49b(g)(7)];
  - viii. Identification of the times when the pollutant concentration exceeds full span of the continuous monitoring system [40 CFR 60.49b(g)(8)];
  - ix. Description of any modifications to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3 [40 CFR 60.49b(g)(9)];
  - x. Results of daily CEMS drift tests and quarterly accuracy assessments as required under Appendix F, Procedure 1 of 40 CFR 60 [40 CFR 60.49b(g)(10)];
- c. Calculations of the annual capacity factor, determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar quarter, per quarter [40 CFR 60.49b(d)];
  - d. The Permittee shall keep inspection, maintenance, and repair logs with date and nature of such activities for the boiler.
  - e. The Permittee shall keep all other data, not addressed above, used or relied upon by the Permittee to determine emissions, including hourly emission data for the boiler as determined by continuous emission monitoring.
  - f. The Permittee shall keep records of NO<sub>x</sub>, CO, PM, SO<sub>2</sub>, VOM, and HAP emissions from the boiler (tons/month and tons/year), based on operating data for the boiler and the processes controlled by the boiler and emission monitoring data (NO<sub>x</sub> and CO) or appropriate emission factors, with supporting calculations.

- 23a. The Permittee shall maintain a file that contains the manufacturer's specifications for maximum fuel firing rate to each feed dryer.
- b. i. The Permittee shall keep an operating log and a log for inspection, maintenance, and repairs for the feed cooler and associated baghouse.
- ii. The Permittee shall keep records of the PM, VOM, and HAP emissions from the feed cooler (tons/month and tons/year) based on operating records and appropriate emission factors, with supporting calculations.
- 24a. The Permittee shall fulfill the applicable recordkeeping requirements of 40 CFR 60.115b for storage tanks (T61-T65) pursuant to 40 CFR 60.115b(a), as follows:
- i. Keep a record of each Annual and Out-of-Service Inspection performed.
- A. The date the inspection was performed;
- B. Who performed the inspection;
- C. The method of inspection;
- D. The observed conditions of each feature of the internal floating roof (seals, roof decks, and fittings), with the raw data recorded during the inspection; and
- E. Summary of compliance.
- ii. The Permittee shall maintain record of the following for each tanks (T61-T65) to demonstrate compliance with the Out-of-Service Inspection requirements:
- Records that are sufficient to identify whenever the tank is empty for any reason or whenever repairs are made as a result of regular inspection or incident of roof damage or defect.
- iii. The Permittee shall keep the operating records required by 40 CFR 60.116b for each tank (T61-T65), as follows:
- Records of the liquid stored, the period of storage, and the maximum true vapor pressure of that liquid during the respective storage period.
- b. The Permittee shall keep records of VOM and HAP emissions from storage tanks (tons/year), as determined using published USEPA emission estimation methodology, with supporting calculation.

- 25a. The Permittee shall maintain records of the following for loading racks:
- i. The identification and properties of each product distributed through the loading rack, as related to emissions, i.e., storage temperature, vapor pressure and molecular weight;
  - ii. The amount of each product distributed through each affected loading rack, gallons/month and gallons/year, with annual records updated each month by totaling the throughput for that month plus the preceding 11 months;
- b. The Permittee shall maintain records of the following for the loading racks and associated flare:
- i. Amount of gas consumed by the pilot flame for the flare, if any.
  - ii. The use of an affected loading rack for loading when there was no pilot flame present in the associated flare or a temporary portable flare unit, including:
    - A. The date and time of the loading;
    - B. The specific problem with the flare, or flame monitor;
    - C. Amount of material loaded; and
    - D. The reason that loading occurred even though the flare did not have a pilot flame.
  - iii. Implementation of the alternative flare scenarios:
    - A. Identification of the scenario implemented;
    - B. The reason why the main flare was shutdown; and
    - C. The date and time that the alternative operating scenario was implemented.
- c. The Permittee shall keep records for each leak inspection for the loadout system that shall include, as a minimum, the following information:
- i. Date of inspection;
  - ii. Findings (may indicate no leaks discovered; or location, nature, and severity of each leak);
  - iii. Leak determination method;
  - iv. Corrective action, including the date each leak was repaired and the reasons for any repair interval in excess of 15 days; and

- v. Name and signature of the person that performed the inspection.
  - d. The Permittee shall maintain records of the total annual emissions of PM, NO<sub>x</sub>, CO, VOM and HAP from each loading rack (tons/month and tons/year, with supporting calculations. Emissions shall be calculated utilizing a published USEPA methodology, assuming 98 percent destruction if the flare is operated in accordance with 40 CFR 60.17.
- 26a. The Permittee shall maintain records of the following items related to fugitives particulate matter emissions:
- i. A map or diagram showing the location of significant emission units controlled, including the location, identification, length, and width of roadways;
  - ii. For each application of water or chemical solution to roadways by truck: the name and location of the roadway controlled, application rate of each truck, frequency of each application, width of each application, identification of each truck used, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
  - iii. For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent and, if diluted, percent of concentration, used each day; and
  - iv. A log recording incidents when control measures were not used and a statement of explanation.
- b. The Permittee shall maintain records of the operation and particulate matter emissions of the cooling tower (tons/year), with supporting calculations.
- 27a. The Permittee shall maintain records of the following items for the biomethanation system:
- i. Amount of bio-gas generation.
  - ii. Amount of bio-gas directed to the flare.
  - iii. Amount of gas consumed by the pilot flame for the flare, if any.
  - iv. Information for periods of time when the flare operated without a flame present in the flare, including amount of gas exhausted through the flare.
- b. The Permittee shall keep operating and maintenance logs for the biomethanator flare.

- c. The Permittee shall kept records of the NO<sub>x</sub>, CO, PM, SO<sub>2</sub>, VOM, and HAP emissions from the biomethanator flare (tons/year), based on operating data and appropriate emission factors, with supporting calculations.
- 28. All records and logs required by this permit shall be retained at readily accessible location at the source for at least three years from the date of entry and shall be available for inspection by the Illinois EPA upon request. Any records retained in electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
- 29. The Permittee shall submit written notifications and reports to the Illinois EPA with respect to startup and shakedown of the plant for the following:
  - a. The Permittee shall provide the Illinois EPA 30 days advance notification prior to start-up of the plant to allow inspection, and shall include a description of provisions for handling and timely disposition of feed that cannot be dried.
  - b. The Permittee shall provide to the Illinois EPA immediate notification of any event(s) that disrupts orderly shakedown of the plant.
  - c. The Permittee shall provide to the Illinois EPA progress reports, including, but not limited to, the following:
    - i. Overall operating level (gallons/produced), feed production, and percent feed dried;
    - ii. Activities accomplished/significant events;
    - iii. Current schedule for emission testing;
    - iv. A summary of any emission measurements conducted at the plant; and
    - v. Outreach activities planned/provided for local communities or interested parties.
  - d. The Permittee shall provide the Illinois EPA notice as to when shakedown of the boiler is considered complete.
- 30a. For the boiler, the Permittee shall submit excess emission reports to the Illinois EPA for any calendar quarter during which there are excess emissions from the boiler. If there are no excess emissions during the calendar quarter, the Permittee shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period.

- b. For NO<sub>x</sub> emissions from the boiler, excess emissions are defined as any calculated 30-day rolling average NO<sub>x</sub> emission rate, as (1) determined under 40 CFR 60.46b(e), that exceeds the applicable NSPS standard, and (2) any 3-hour block average NO<sub>x</sub> emission rate that exceeds the hourly NO<sub>x</sub> limitation in Condition 13(a).
- c.
  - i. For VOM and CO emissions from the boiler, excess emissions are defined as any 3-hour block average in which the average combustion chamber temperature, when process units controlled by the boiler are operating, was more than 50°F below the temperature during testing than demonstrated compliance with applicable requirements.
  - ii. Notwithstanding the above, if continuous emissions monitoring is conducted for CO, the Illinois EPA may establish alternative provisions for exceedances based on monitored data for CO.
- 31. The Permittee shall submit written notifications and reports to the Illinois EPA as required by the NSPS, for each storage tanks (T61-T65), as follows:
  - a. A report identifying any deficiencies or shortcomings identified in the Annual Inspection within 30 days of inspection. This report shall include the information specified in 40 CFR 60.115b(a)(3).
  - b. Notification at least 30 days prior to refilling an affected tank for which an Out-of-Service inspection is to afford the Illinois EPA with the opportunity to have an observer present.
  - c. If the inspection is not planned and the owner or operator of the tank could not have known about refilling the tank 30 days in advance, a shorter notification may be accepted as provided for in 40 CFR 60.113b(a)(5).
  - d. A report identifying any deficiencies or shortcomings identified in the Out-of-Service Inspection within 30 days of the inspection. This report shall include the information specified in 40 CFR 60.115b(a)(4).
- 32a. If there is any deviation of the requirements of this permit, not addressed by the above reporting requirements, as determined by the records required by this permit or by other means, the Permittee shall submit a report within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.
- b. In addition to the report required above, the Permittee shall immediately notify the Illinois EPA if:

- i. A feed dryer operates for more than one hour (60 minutes) when the combustion chamber of the boiler is below 1400°F. (See Condition 10(b))
  - ii. Both feed dryers are out of service a period of 24 hours or more, so that wet feed must be shipped from the plant.
33. Two copies of required reports and notifications concerning equipment operation or repairs, performance testing, or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance Section (#40)  
P.O. Box 19276  
Springfield, Illinois 62794-9276

and one copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
2009 Mall Street  
Collinsville, Illinois 62234

34. Under this permit, the plant may be operated for a period of 180 days from initial startup of the feed dryer to allow for equipment shakedown and emission testing as required.
- 35a. This approval to construct does not relieve the Permittee of the responsibility to comply with all local, state, and federal regulations which are part of the applicable Illinois State Implementation Plan, as well as other applicable federal, state, and local requirements.
- b. In the event that the operation of this plant results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, changes in process equipment or installation of controls, in order to eliminate the odor nuisance.

If you have any questions on this permit, please call Minesh Patel at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

DES:MVP:psj

cc: Region 3

ATTACHMENT A

Listing of Identified Emission Units and Process Equipment

Operation	Emission Unit/Process Equipment	Emission Control Equipment
Boiler	Gas Boiler (C10)	----
	Boiler Feedwater Tank	----
Corn Receiving/Storage System	Truck and Rail Dump Station	Baghouse (C20)
	Conveyors	Baghouse (C20)
	Elevators	Baghouse (C20)
	Storage Bins	Baghouse (C20)
	Day Bin	Baghouse (C20)
	Hammermill Feed	Baghouse (C20)
Hammermilling Operation	Hammermills	Baghouse (C30)
	Conveyors	Baghouse (C30)
Cooking, Liquification, Fermentation	Mixer	Boiler (C10)
	Slurry Tank	Boiler (C10)
	Cook Water Tank	----
	Recovery Tank	----
	Flash Tank	Boiler (C10)
	Liquification Tanks	----
	Yeast Tank	Boiler (C10)
	Fermenters	CO <sub>2</sub> Scrubber (C40)
Beer Well	CO <sub>2</sub> Scrubber (C40)	
Distillation	Beer Column	----
	Side Stripper	----
	Rectifier Column	----
	190 Proof Condenser	Boiler (C10)
	Molecular Sieve*	----
	200 Proof Condenser	Boiler (C10)
	Mash Screen	----
Solid Separation and Evaporation	Centrifuges*	----
	Centrate Tank	Boiler (C10)
	Evaporators*	----
	Syrup Tank	----
	Thin Stillage Tank	----
	Wastewater Methanators	Dryers or Flare
Feed** Drying and Cooling	Dryers (A and B)	Cyclone/Boiler (C10)
	Cooler	Baghouse
Feed Storage/Loadout	Dry Feed Storage	----
	Truck/Rail Car Loadout	Baghouse (C90)
	Wet Feed Storage & Loadout	----

\* Enclosed

\*\* Dry feed may also be referred to as Dried Distillers Grain with Solubles (DDGS).

ATTACHMENT A  
(Continued)

Operation	Emission Unit/Process Equipment	Emission Control Equipment
Liquid Storage	190 Proof Storage Tank (T65)	Floating Roof
	200 Proof Storage (T63)	Floating Roof
	Gasoline Denaturant (T64)	Floating Roof
	Denatured Alcohol Storage (T61, T62)	Floating Roof
Ethanol Loadout	Truck/Railcar Fuel Unload/Loading Racks	Flare (F50)
Equipment Components (Valves, Flanges, Pumps, Seals, etc.)	Processing of Material Throughout the Source's Piping System	Work Practices and Equipment Replacement
Fugitive/Uncaptured Emissions	Grain Receiving, Handling, Storage Piles, Etc.	----
	Process Building Ventilation	----
	Truck/Railcar Losses	----
	Cooling Tower	----
	Plant Roads and Parking Areas	----

ATTACHMENT B

Plant-Wide Emission Limitations (Tons/Year)

<u>Emission Unit(s)</u>	<u>PM<sub>10</sub></u>	<u>NO<sub>x</sub></u>	<u>SO<sub>2</sub></u>	<u>CO</u>	<u>VOM</u>
Boiler (Distillation and Feed Drying)	20.03	95.92	0.58	94.54	25.76
Corn Unloading & Grain Handling	23.30				
Hammermill	4.32				
Fermentation-CO <sub>2</sub> Scrubber					37.50
Feed Cooler	33.04				14.54
Feed Loading	3.56				
Storage Tanks					2.74
Ethanol Loading		0.80		4.10	8.05
Biomethanator	0.05	0.19	0.02	1.04	0.50
Cooling Tower	4.60				
Component Leaks					4.10
Plant Roads/Parking Areas	6.21				
Miscellaneous Units	1.00				1.00
Total	96.11	96.91	0.60	99.68	94.19

ATTACHMENT C

Operating Requirements for Storage Tanks

- 1a. The internal floating roof shall float on the liquid surface at all times, except during those intervals when the storage tank is being completely emptied and subsequently refilled and the roof rests on its leg supports. When the roof is resting on its leg supports, the process of emptying or refilling shall be continuous and shall be accomplished as rapidly as possible.
- b. Each opening in a non-contact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents shall provide a projection below the liquid surface.
- c. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains shall be equipped with a cover or lid which is maintained in a closed position at all times (i.e., no visible gaps) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.
- d. Automatic bleeder vents shall be equipped with a gasket and be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
- e. Rim space vents shall be equipped with a gasket and be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.
- f. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.
- g. Each penetration of the internal floating roof that allows for the passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.
- h. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.
- i. A tank that is in-service shall be repaired or emptied upon identification in an inspection that the floating roof is not resting on the surface of the VOL, there is liquid accumulated on the roof, the seal is detached, or there are holes or tears in the seal fabric. These actions shall be completed within 45 days of the inspection unless an extension is granted.

- j. A tank that is empty shall be repaired prior to refilling the tank upon identification in an inspection that the floating roof has defects, the primary seal has holes, tears or other openings in the seal or seal fabric, or the secondary seal has holes, tears, or other openings in the seal or seal fabric, or the gaskets no longer close off.
2. The Permittee shall fulfill the applicable testing and procedures requirements of 40 CFR 60.113b(a) for each tank (T61-T65) as follows:
  - a. Visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once ever 12 months (Annual Inspection) to identify any deficiency or shortcoming in the roof's features, (i.e., the internal floating roof is not resting on the surface of the VOL inside the storage tanks, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric) that the Permittee must repair or otherwise remove the storage tank from service.
  - b. Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes (if any), and sleeve seals (if any) each time the storage vessel is emptied and degassed (Out-of Service Inspection) to identify any deficiency or shortcoming in the roof's features, (i.e., internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area) that the Permittee shall repair the features prior to refilling the storage tank with VOL. These inspections shall be performed at least every 5 years for tanks equipped with two continuous seals or otherwise at least every 10 years.

ATTACHMENT D

Operating Requirements for Grain Handling Operations

1. Permittee shall implement and use the following housekeeping practices:
  - a. Air pollution control devices shall be checked daily and cleaned as necessary to insure proper operation.
  - b. Cleaning and Maintenance.
    - i. Floors shall be kept swept and cleaned from boot pit to cupola floor. Roof or bin decks and other exposed flat surfaces shall be kept clean of grain and dust that would tent to rot or become airborne.
    - ii. Cleaning shall be handled in such a manner as not to permit dust to escape to the atmosphere.
    - iii. The yard and surrounding open area, including but not limited to ditches and curbs, shall be cleaned to prevent the accumulation of rotting grain.
  - c. Dump pit.
    - i. Aspiration equipment shall be maintained and operated.
    - ii. Dust control devices shall be maintained and operated.
  - d. Head House. The head house shall be maintained in such a fashion that visible quantities of dust or dirt are not allowed to escape to the atmosphere.
  - e. Property. The yard and driveway of any source shall be asphalted, oiled or equivalently treated to control dust.
  - f. Housekeeping Check List. Housekeeping check lists to be developed by the Illinois EPA shall be completed by the manager and maintained on the premises for inspection by the Illinois EPA.
2. The Permittee shall demonstrate compliance with the following:
  - a. Cleaning and Separating Operations.
    - i. Particulate matter generated during cleaning and separating operations shall be captured to the extent necessary to prevent visible particulate matter emissions directly into the atmosphere.
    - ii. For grain-handling sources having a grain throughput of not more than 2 million bushels per year or located outside a major population area, air contaminants collected from cleaning and separating operations shall be conveyed through air pollution control equipment which has a rated

and actual particulate removal efficiency of not less than 90 percent by weight prior to release into the atmosphere.

Page 2

b. Dump-Pit Area.

i. Induced Draft.

- A. Induced draft shall be applied to major dump pits and their associated equipment (including, but not limited to, boots, hoppers and legs) to such an extent that a minimum face velocity is maintained, at the effective grate surface, sufficient to contain particulate emissions generated in unloading operations. The minimum face velocity at the effective grate surface shall be at least 200 fpm, which shall be determined by using the equation:

$$V = Q/A$$

Where:

V = Face velocity; and

Q = Induced draft volume in scfm; and

A = Effective grate area in ft<sup>2</sup>; and

- B. The induced draft air stream for grain-handling sources having a grain throughput of not more than 2 million bushels per year or located outside a major population area shall be confined and conveyed through air pollution control equipment which has an overall rated and actual particulate collection efficiency of not less than 90 percent by weight; and
- C. Means or devices (including, but not limited to, quick-closing doors, air curtains or wind deflectors) shall be employed to prevent a wind velocity in excess of 50 percent of the induced draft face velocity at the pit; provided, however, that such means or devices do not have to achieve the same degree of prevention when the ambient air wind exceeds 25 mph. The wind velocity shall be measured, with the induced draft system not operating, at a point midway between the dump-pit area walls at the point where the wind exits the dump-pit area, and at a height above the dump-pit area floor of approximately 2 ft.

Note: These requirements apply to major dump pits as defined by 35 IAC 211.3570 and do not apply to unloading of grain with portable equipment.

- c. Internal Transferring Area.
  - i. Internal transferring area shall be enclosed to the extent necessary to prohibit visible particulate matter emissions directly into the atmosphere.
  - ii. Air contaminants collected from internal transfer operations for grain-handling sources having a grain throughput of not more than 2 million bushels per year and are located outside a major population area shall be conveyed through air pollution control equipment which has a rated and actual particulate removal efficiency of not less than 90 percent by weight prior to release into the atmosphere.

ATTACHMENT E

Operating Requirements for Loading Racks

1. At all times during the loading of ethanol into any delivery vessel, the vapor control system shall operate and all vapors displaced during loading are to be vented only to the vapor control system.
2. There shall be no liquid drainage from the loading device of the loading rack when it is not in use.
3. The Permittee shall provide a pressure tap or equivalent on the vapor collection system associated with the loading rack. The vapor collection system and the gasoline loading equipment shall be operate in such a manner that it prevents avoidable leaks of liquid during loading or unloading operations and prevents the gauge pressure from exceeding 18 inches of water and the vacuum from exceeding 6 inches of water and to be measured as close as possible to the vapor hose connection.
4. A reading equal to or greater than 100 percent of the lower explosive limit (LEL measured as propane) when tested in accordance with the procedure described in reference in 35 IAC 215.112.
5. All loading and vapor return lines shall be equipped with fittings that are vapor tight.
6. A pilot flame shall be present in the flare at all times when loading may occur. The pilot flame shall be monitored using a thermocouple or equivalent device to detect the presence of a flame. An affected loading rack must be shut down and not allow loading if a pilot flame is not detected in the flare.

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