

2. The source is located in Macon County, which is an area designated attainment for all pollutants.
- 3a. This project has potential emissions that are more than 40 tons/year of nitrogen oxides (NO_x), 100 tons/year of carbon monoxide (CO), and 40 tons/year of sulfur dioxide (SO₂). The project is therefore subject to PSD review as a major modification for NO_x, CO, and SO₂ emissions.
- b. This permit is issued based on the project not being subject to PSD for emissions of other PSD pollutants because pollutants are emitted at a rate that is less than the significant emission rate threshold.
- 4a. After reviewing all materials submitted by ADM, the Illinois EPA has determined that the project will be in compliance with applicable Illinois Pollution Control Board emission standards.
- b. The project will utilize Best Available Control Technology (BACT) for NO_x, CO and SO₂. BACT for NO_x and CO is set by operating requirements for the flare (Refer to Condition 1.1.5(b)(iv).) BACT for SO₂ is set by operating requirements and emission limitations for the system used to clean the biogas (Refer to Conditions 1.1.5(a)(ii), (b)(i), (b)(ii), (c)(ii), and Condition 1.1.6(a).
5. The Illinois EPA has determined that the project, as proposed, would comply with all applicable Illinois Air Pollution Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
6. A copy of the application and the Illinois EPA's review of the application and a draft of this permit was forwarded to a location in the vicinity of the plant, and the public was given notice and opportunity to examine this material, to submit comments, and to request and participate in a public hearing on this matter.

The Illinois EPA is issuing this approval subject to the following conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application, including a change in the type of H₂S control system, would need to receive prior written authorization by Illinois EPA.

1.0 UNIT SPECIFIC CONDITIONS FOR SPECIFIC EMISSION UNITS

1.1 Unit: Anaerobic Wastewater Treatment System

1.1.1 Description

The Anaerobic Wastewater Treatment System will be located at ADM's East Plant. This new treatment system will reduce the load on the existing wastewater treatment plant, with its aerobic lagoons. The system will consist of four new lagoons each covered by a floating membrane which will capture biogas. The biogas, which is mostly methane, is formed by anaerobic digestion of organic matter in the wastewater. The membrane will have channels operating at negative pressure which forces the biogas to flow to the edges and out through the collection system for control.

The control system will consist of a Lo-Cat® sulfur removal system followed by either a flare or the existing combustion equipment. The sulfur removal system is a multi-stage control system consisting of a H₂S absorber and oxidizer. After being "cleaned" by the sulfur removal system, the biogas will be combusted either in the new flare or in the existing combustion equipment. The preferred disposition of the biogas is to the existing combustion equipment since this will reduce the amount of natural gas fired in these existing units. This permit also allows the biogas to be flared in a flare with a natural gas fired pilot flame.

Due to the potentially corrosive nature of biogas, changes must be made to combustion equipment to burn biogas. This permit also authorizes changes to the seven fiber feed dryers consisting of replacing the burners or burner components with an equal capacity burner, so that these units can handle the potentially corrosive biogas.

This permit does not authorize physical changes to the mill that are unrelated to the anaerobic system or that would increase the mill's capacity.

1.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Anaerobic Wastewater Treatment System	Four Anaerobic Wastewater Lagoons Each with a Cover	H ₂ S Control System and Combustion (Flare or Fuel)

1.1.3 Applicable Provisions and Regulations

- a. The "affected unit" for the purpose of these unit-specific conditions, is the wastewater treatment system described in Conditions 1.1.1 and 1.1.2.
- b. The affected unit is subject to 35 IAC 214.301, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm.
- c. The affected unit is subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit.
- d. The affected unit is subject to 35 IAC 212.321, which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).
- e. Malfunction and Breakdown Provisions

Subject to the following terms and conditions, the Permittee is authorized to continue operation of the affected unit in violation of the applicable requirements of Condition 1.1.3(b) (35 IAC 214.301) in the event of a malfunction or breakdown of the affected unit, including the H₂S control system and flare. This authorization is provided pursuant to 35 IAC 201.149, 201.161 and 201.262, as the Permittee has applied for such authorization in its application, generally explaining why such continued operation would be required to provide essential service or to prevent injury to personnel or severe damage to equipment, and describing the measures that will be taken to minimize emissions from any malfunctions and breakdowns.

- i. This authorization only allows such continued operation as necessary to provide essential service or to prevent injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.
- ii. Upon occurrence of excess emissions due to malfunction or breakdown, the Permittee shall as soon as practicable reduce load of the affected unit,

repair the affected unit, or undertake other action so that excess emissions cease.

- iii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Condition 1.1.9(f). For these purposes, time shall be measured from the start of a particular incident. The absence of excess emissions for a short period shall not be considered to end the incident if excess emissions resume. In such circumstances, the incident shall be considered to continue until corrective actions are taken so that excess emissions cease.
- iv. Following notification to the Illinois EPA of a malfunction or breakdown with excess emissions, the Permittee shall comply with all reasonable directives of the Illinois EPA with respect to such incident, pursuant to 35 IAC 201.263.
- v. This authorization does not relieve the Permittee from the continuing obligation to minimize excess emissions during malfunction or breakdown. As provided by 35 IAC 201.265, an authorization in a permit for continued operation with excess emissions during malfunction and breakdown does not shield the Permittee from enforcement for any such violation and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

1.1.4 Non-Applicability of Regulations of Concern

- a. The Permittee has addressed the applicability and compliance of 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The limits established by this permit are intended to ensure that the project addressed in this construction permit does not constitute a major modification pursuant to these rules for VOM, PM/PM₁₀ or total reduced sulfur compounds (including H₂S) emissions.

1.1.5 Control Requirements and Work Practices

- a. i. The emissions of H₂S associated with the biogas from the anaerobic wastewater treatment system shall be controlled by capture of the gas, cleaning of the gas in the H₂S control system and combustion in either process equipment (e.g., the fiber dryers) or a flare at all times, except as addressed by Condition 1.1.6(a)(ii).

- ii. The emissions of SO₂ associated with the production and use of the biogas shall be controlled at all times by the cleaning of the gas in the H₂S control system at all times, except as addressed in Condition 1.1.6(a)(ii).
- b. The various control systems shall be operated to comply with the following operating requirements, except as addressed by Condition 1.1.6(a)(ii):
 - i. The cover on each lagoon shall be vapor tight and under negative pressure insuring that all off gases are vented through the control system.
 - ii. The lagoons shall be designed so that flow through each lagoon can be readily diverted in the event of failure of the cover.
 - iii. The H₂S control system shall be operated within the operating parameters within an acceptable range as determined by the test required by Condition 1.1.7.
 - iv. The flare shall be operated to comply with the requirements of 40 CFR 60.18, including:
 - A. The flare shall be operated with a flame present at all times.
 - B. The presence of a flare pilot flame shall be monitored using a thermocouple or other comparable device to detect the presence of a flame.
 - C. If the flame goes out, the flow of biogas to the flare shall be discontinued until the pilot flame or the main flame is restored, unless the flare also is designed to serve as the emergency relief stack, in which case the flow of biogas may continue as further allowed by the malfunction and breakdown provisions of this permit.
 - D. Natural gas and biogas shall be the only fuels fired in the flare.
- c. The control system shall also have the following features:
 - i. Ability to bypass the H₂S control system, so that biogas can be flared or combusted in process equipment when the system is out of service for preventative maintenance or other outage; and

- ii. Ability to collect biogas to a bladder or other containment system capable of holding an amount of biogas equivalent to a 5-minute release.
- d. At all times, the Permittee shall generally maintain and operate the affected unit, including associated air pollution capture and control equipment, in accordance with good air pollution control practice for minimizing emissions, including:
 - i. Operating Procedures for Anaerobic Wastewater Treatment System: Written operating procedures shall be developed and maintained describing normal air pollution control equipment operation, including startup and shutdown. Such procedures shall include maintenance practices and may incorporate the manufacturers recommended operating instructions.
 - ii. Operating Procedures for H₂S Control System: Written operating practices shall be developed and maintained, including establishment of target levels and acceptable ranges for the following operating parameters for the absorber and oxidizer on an hourly average, which shall apply except during periods addressed by Condition 1.1.6(a)(ii):
 - A. Absorber level;
 - B. Absorber circulation rate; and
 - C. Oxidizer level.
 - iii. Inspections: Visual inspections of the anaerobic system and its air pollution control and monitoring equipment shall be conducted on at least a weekly basis.
 - iv. Repairs: Prompt repairs shall be made upon identification of need either as a consequence of formal inspections or other observations in conformance with good air pollution control practice.
 - v. Records: Records of inspection, maintenance, and repair activities for all equipment affecting emissions shall be kept on site and shall include as a minimum:
 - A. Date of inspection, maintenance, and repair activities.

- B. Description of maintenance or repair activity if not routine preventative maintenance.
- C. Probable cause for requiring maintenance or repair if not routine or preventative.

1.1.6 Production and Emission Limitations

- a. i. Except as addressed below, the H₂S content of the treated biogas (prior to combustion) shall not exceed 200 ppm.
- ii. Notwithstanding Condition 1.1.6(a)(i) during the following periods, the H₂S content of biogas prior to combustion may exceed 200 ppm.
 - A. During periods when operation of a lagoon is starting up and air is present in the biogas, such that the H₂S control system cannot either safely or effectively process the biogas being produced.
 - B. During previously planned startup and shutdown periods (including planned maintenance periods) of process equipment or pollution control systems, and malfunctions as defined in 40 CFR Part 63. These startup and shutdown periods shall not exceed the minimum amount of time necessary for these events, and during these events, the Permittee shall minimize emissions to the extent practicable, in a manner consistent with good air pollution control practice.
- b. i. A. Emissions from the affected unit shall not exceed the following limits. These limits account for emissions from the unit assuming that all biogas is flared, with no biogas sent for use as fuel in process equipment.

Pollutant	Emissions	
	(Lbs/Hour)	(Tons/Year)
NO _x	13.6	59.7
CO	73.1	320.0
SO ₂	10.1	44.1
PM	2.3	10.0
PM ₁₀	3.3	14.5
VOM	1.7	7.2
TRS*	1.0	4.4

* Total Reduced Sulfur Compounds

- B. Compliance with annual limits shall be determined as a running total of 12 months of data from the sum of the data for the current month plus the preceding 11 months, including emissions during maintenance, startup, shutdown and malfunction/breakdown of the sulfur removal system.
- ii. Notwithstanding Condition 1.1.6(b)(i), during periods addressed by Condition 1.1.6(a)(ii)(A) and (B)):
 - A. If the biogas can be flared, i.e., the event only affects the H₂S control system, hourly SO₂ emissions from the affected unit shall not exceed 415 pounds/hour.
 - B. If the bio-gas cannot be flared, i.e., the event affects the flare system, hourly TRS emissions from the affected unit shall not exceed 220.5 pounds/hour.

1.1.7 Testing Requirements

- a. i. No later than September 1, 2007, the reduced sulfur content in the biogas after the H₂S control system shall be measured during conditions which are representative of summer operating conditions in terms of influent load to the H₂S control system.
- ii. In conjunction with these measurements, samples of the raw gas entering the H₂S control system shall be analyzed for sulfur content.

- b. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the 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
Reduced Sulfur Compounds	USEPA Method 15A or 16A

- c. 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. Any proposed use of an alternative test method, such as use of an H₂S monitoring system with detailed justification. (Note: Use of an alternative method is subject to approval by the Illinois EPA.)
 - vii. The format and content of the Source Test Report.
- d. 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 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five 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.
 - e. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized. 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. Process information, i.e., biogas generation rate and heat content of biogas; and
 - B. Control equipment information, equipment condition and operating parameters as monitored and measured 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.

1.1.8-1 Monitoring Requirements

- a. The Permittee shall install, maintain and operate continuous monitors on each scrubber in the H₂S control system that supply continuous readings and store average hourly values for the following parameters:
 - i. Absorber level;
 - ii. Absorber circulation rate (gpm);
 - iii. Oxidizer level; and
 - iv. Oxidizer blower on/off indication (hourly average does not apply).

1.1.8-2 Instrumentation Requirements

- a. The Permittee shall install, maintain and operate metering devices to totalize:
 - i. Flow rate of biogas to the fiber dryers or other process equipment.
 - ii. Flow rate of biogas to the flare.
- b. If the control system is equipped with bypass vent(s), the Permittee shall install, operate and maintain device(s) to indicate flow through the bypass vent(s).
- c. All required monitoring devices shall be installed, calibrated, and maintained according to the supplier's specifications and/or good industry standards and shall be operated at all times that the affected unit is in use.

- d. The above data shall be manually recorded at least every two hours if automatic measurement and recording device(s) are not in service for more than two hours. For this purpose, alternative forms of measurement may be made as necessary due to the circumstances.

1.1.9 Recordkeeping Requirements

- a. The Permittee shall keep records of all measurements of the composition of biogas and emissions conducted for the affected unit including:
 - i. Records of measurements conducted pursuant to Condition 1.1.7.
 - ii. Records of other measurements conducted as part of the evaluation of the anaerobic system and its control system.
- b. The Permittee shall maintain the following operating records for the affected units:
 - i. A. Flow total of biogas to the process equipment;
and
B. Flow total of biogas to the flare.
 - ii. Records for any period when the air pollution control equipment for the affected unit was not in operation or was not operating properly.
 - A. These records shall include each period of time when an operating parameter of a control system, as monitored or recorded above, deviated outside the level set as good air pollution control practice (date, duration and description of the incident).
 - B. These records shall include the cause for pollution control equipment not operating properly or being out of normal service, for incidents when control equipment failed to operate properly and shall identify the corrective actions that were taken, the repairs that were made, and the steps that were taken to prevent any such reoccurrence.
 - C. These records shall also identify any such periods during which an emission unit exceeded the requirements of this permit, including

applicable emission limits. This record shall include the cause for noncompliance, if known, and the corrective action(s) and preventive measures taken to prevent any such reoccurrence if any.

- iii. Records, pursuant to 35 IAC 201.263, of continued operation of the affected wastewater treatment system during malfunctions and breakdown of the H₂S control system with SO₂ emissions that violated 35 IAC 214.301, which as a minimum, shall include:
 - A. Date and duration of malfunction or breakdown;
 - B. A detailed explanation of the malfunction or breakdown;
 - C. An explanation why the damaged feature(s) could not be immediately repaired or replaced without risk of injury to personnel or severe damage to equipment;
 - D. The measures used to reduce the quantity of emissions and the duration of the event;
 - E. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
 - F. The amount of release above typical emissions during malfunction/breakdown.
- c. The Permittee shall keep emission records for the affected unit as follows:
 - i. A file containing:
 - A. Emission factor for SO₂ based on tested biogas sulfur content;
 - B. Emission factors for PM/PM₁₀, NO_x and CO based on flare manufacturer's data, with supporting documentation.
 - ii. SO₂, NO_x, CO, PM, PM₁₀, VOM and total reduced sulfur (H₂S) emissions (tons/month and tons/year).
- d. i. The Permittee shall retain all records required by this permit at the source for at least five years, at a location where the records are readily accessible for inspection by the Illinois EPA.

- ii. The Permittee shall make all records required by this permit available for inspection at the source by the Illinois EPA, providing copies of records to the Illinois EPA upon request. For this purpose, the Permittee may keep records in a computerized data system provided that, upon request by the Illinois EPA during the sources normal working hours, requested information is retrieved and available prior to inspection completion to the Illinois EPA.

1.1.10-1 Notification Requirements

- a. The Permittee shall notify the Illinois EPA within 5 days of the initial startup of each anaerobic lagoon. With this notification, the Permittee shall provide the expected schedule for control of the biogas from the lagoon.
- b. The Permittee shall provide the following notification and reports to the Illinois EPA, pursuant to 35 IAC 201.263, concerning continued operation of the affected unit for 6 hours or more with SO₂ emissions in excess of 2000 ppm during malfunction or breakdown. (For an event lasting less than 6 hours, the Permittee need only submit deviation reports in accordance with Condition 1.1.10-2(a)(iii).)
 - i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three days, upon the occurrence of noncompliance due to malfunction or breakdown.
 - ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA providing a detailed explanation of the event, an explanation why continued operation of the affected wastewater treatment system was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed.
 - iii. If compliance is not achieved within 3 days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA on a daily basis, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete.

- c. Beginning one year after initial startup of the affected unit, the Permittee shall immediately notify the Illinois EPA if outage of the H₂S control system for scheduled preventative maintenance (with biogas diverted directly to the flare) extends for more than 20 hours in any 6-month period.

1.1.10-2 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with the permit requirements as follows. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.
 - i. Notifications for exceedances of 35 IAC 214.301 that continue for 6 hours or more, if any, shall be submitted in accordance with Condition 1.1.10-1(b).
 - ii. If there is an exceedance of the annual emission limits of this permit as determined by the records required by this permit or by other means, the Permittee shall submit a report to the Illinois EPA within 30 days after the exceedance. This report shall also include data for the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records.
 - iii. Other deviations shall be reported with the compliance reports required by Condition 1.1.10-2(b), which shall also include a listing of deviations for which individual notifications were provided pursuant to Condition 1.1.10-2(a)(i) and (ii).
- b. For the affected units, the Permittee shall submit quarterly or semiannual* compliance reports to the Illinois EPA. For any reporting period during which there are exceedances by the anaerobic system, this report shall include information as specified in Condition 1.1.10-2(a). If there are no exceedances during the reporting period, the Permittee shall state that no excess emissions occurred during the reporting period. This report may be combined with other reports for units in the corn wet mill.
 - * The frequency of compliance reports shall be that for the reports required for the corn wet mill by the source's CAAPP permit.

1.1.10-3 Addresses

- a. 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

- 2a. This permit does not relieve the Permittee of the responsibility to comply with all applicable local, state and federal requirements which are part of Illinois State Implementation Plan, as well as all other applicable local, state and federal requirements.
- b. In particular, this permit does not address the requirements applying to the Permittee under the Consent Decrees entered into by the Permittee with the United States and State of Illinois, in the United State District Court for the Central District of Illinois, United States, v. Archer Daniels Midland Company, Civil Action No. 03-2066, and United States of America, People of the State of Illinois, v. Archer Daniels Midland Company, Defendant, Civil No. 00-2338. As an emission unit that is to be constructed in the future, the anaerobic system itself is not directly addressed by the provisions of the Consent Decree.
- 3a.
 - i. The affected unit may be operated for a period of one year under this construction permit. During this period the Permittee shall demonstrate initial compliance with the limitations in this permit by testing in accordance with Condition 1.1.7.
 - ii. The Illinois EPA may extend this period upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing.
- b. Upon completion of the above shakedown period, provided that testing shows compliance and the Permittee has applied for a revision of its CAAPP permit, the affected unit may continue to be operated pursuant to this permit.
4. In order to accommodate the slightly corrosive biogas, the Permittee is authorized to replace any of the seven fiber dryer burners with an

equal capacity burner (and of equal or superior emissions performance) that are constructed of a material that is compatible with the biogas.

It should be noted that this permit has been revised to include hourly emission limitations that would apply during periods when the H₂S control system is not in service or operating efficiently, either due to planned maintenance, startup and shutdown events or other cause. This permit has also been revised to clarify which conditions constitute BACT requirements. Provisions for reporting exceedances of the applicable state SO₂ emission standard have also been revised.

If you have any questions on this permit, please contact Jason Schnepf at 217/782-2113.

Edwin C. Bakowski, P.E.
Acting Manager, Permit Section
Division of Air Pollution Control

Date Signed: _____

ECB:JMS:jws

cc: Region 3
Lotus Notes
CES